



SAR TEST REPORT

Report No.: STS2605128H02

Issued for

Hangzhou Crysound Electronics Co.,Ltd.

NO.10, Xianqiao Road, Zhongtai Street, Yuhang District,
Hangzhou, 311121, China

Product Name: SonoCam Pocket Acoustic Camera

Brand Name: N/A

Model Name: CRY8024

Series Model(s): CRY8021, CRY8022, CRY8023, CRY8025,
MPAC64, MPAC64-ADV

Test Standards: EN 50566: 2017/A1:2023
EN IEC/IEEE 62209-1528:2021
EN 50663: 2017; EN 62479: 2010

Body: 1.003 W/kg

Max. SAR (10g)

Limb: 1.100 W/kg

The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Shenzhen STS Test Services Co., Ltd.

**TEST REPORT CERTIFICATION**

Applicant's Name.....: **Hangzhou Crysound Electronics Co.,Ltd.**
Address.....: NO.10, Xianqiao Road, Zhongtai Street, Yuhang District,
Hangzhou, 311121, China
Manufacturer's Name.....: **Hangzhou Crysound Electronics Co.,Ltd.**
Address.....: NO.10, Xianqiao Road, Zhongtai Street, Yuhang District,
Hangzhou, 311121, China

Product Description

Product Name.....: SonoCam Pocket Acoustic Camera
Brand Name: N/A
Model Name: CRY8024
Series Model(s) :..... CRY8021, CRY8022, CRY8023, CRY8025, MPAC64,
MPAC64-ADV
EN 50566: 2017/A1:2023
Test Standards :..... EN IEC/IEEE 62209-1528:2021
EN 50663: 2017; EN 62479: 2010

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Date of Test

Date (s) of performance of tests.....: May 18, 2026 ~ May 29, 2026
Date of Issue.....: May 29, 2026
Test Result.....: **Pass**

Testing Engineer :

(Xin.Liu)

Technical Manager :

(Eric Zhou)

Authorized Signatory :

(Bovey Yang)





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Rev.	Issue Date	Report No.	Effect Page	Contents
00	May 29, 2026	STS2605128H02	ALL	Initial Issue



1. General Information

1.1 EUT Description

Product Name	SonoCam Pocket Acoustic Camera		
Brand Name	N/A		
Model Name	CRY8024		
Series Model	CRY8021, CRY8022, CRY8023, CRY8025, MPAC64, MPAC64-ADV		
Model difference	The PCB board, circuit, structure and internal of these models are the same, Only model number and colour is different for these model. So the tests were performed on model CRY8024 and the test results for the main test model can cover the listed models.		
Hardware Version	0x20251203		
Software Version	0.0.15		
Frequency Range	WLAN802.11b/g/n20: 2412 to2472MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80: 5180 to 5240 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80: 5260 to 5320 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80: 5500 to 5700 MHz WLAN 802.11a/n20/n40/ac20/ac40/ac80: 5745 to 5825 MHz Bluetooth: 2402 MHz to 2480 MHz		
Max. Reported SAR(10g):	Mode	Maximum Reported SAR(W/kg)	
		Body	Limb
	2.4GHz WLAN	0.390	0.390
	5.2GHz WLAN	0.115	0.115
	5.3GHz WLAN	0.085	0.085
	5.5GHz WLAN	0.111	0.111
	5.8GHz WLAN	0.119	0.119
Maximum Simultaneous SAR(W/kg)		N/A	N/A
Limit		2.0 W/Kg	4.0 W/Kg
Power supply:	Input: DC 5V/9V		
Battery	Battery: 3.85V 3900mAh , 15.015Wh		
Modulation Mode	2.4G WLAN	802.11b: DSSS 802.11g: OFDM 802.11n: OFDM	
	5G WLAN	802.11a/n: OFDM 802.11ac: OFDM 802.11ac: OFDM	
	Bluetooth	BT(1Mbps): GFSK BT EDR(2Mbps): $\pi/4$ -DQPSK BT EDR(3Mbps): 8DPSK	
	BLE	GFSK	
Antenna Specification:	Bluetooth: FPC Antenna WLAN: FPC Antenna		
Operating Mode:	Maximum continuous output		



1.2 Test Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (°C)	18-25
Humidity (%RH)	30-70

1.3 Test Factory

Company Name:	Shenzhen STS Test Services Co. Ltd.
Address:	101, Building B, Zhuoke Science Park, No.190 Chongqing Road, ZhanChengShequ, Fuhai Sub-District, Bao'an District, Shenzhen, Guang Dong, China
Telephone:	+86-755 3688 6288
Fax:	+86-755 3688 6277
Registration No.:	FCC test Firm Registration Number: 625569
	IC test Firm Registration Number: 12108A
	A2LA Certificate No.: 4338.01



2. Test Standards and Limits

No.	Identity	Document Title
1	EN 50566: 2017/A1:2023	Product standard to demonstrate the compliance of wireless communication devices with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 30 MHz to 6 GHz: hand-held and body mounted devices in close proximity to the human body
2	EN IEC/IEEE 62209-1528: 2021	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)
3	EN 50663: 2017	Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10MHz to 300GHz)
4	EN 62479: 2010	Assessment of the compliance of low-power electronic and electrical equipment with the restrictions related to human exposure to electromagnetic fields(10 MHz to 300 GHz)

This device belongs to portable device category because its radiating structure is allowed to be used within 20 centimeters of the body of the user. According to EN 50360 and 1999/519/EC the limit for General Population/Uncontrolled exposure should be applied for this device, it is 2.0 W/kg as averaged over any 10 gram of tissue.

(A). Limits for Occupational/Controlled Exposure (W/kg)

<u>Whole-Body</u>	<u>Partial-Body</u>	<u>Hands, Wrists, Feet and Ankles</u>
-------------------	---------------------	---------------------------------------

0.4	8.0	20.0
-----	-----	------

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

<u>Whole-Body</u>	<u>Partial-Body</u>	<u>Hands, Wrists, Feet and Ankles</u>
-------------------	---------------------	---------------------------------------

0.08	2.0	4.0
------	-----	-----

NOTE: **Whole-Body SAR** is averaged over the entire body, **partial-body SAR** is averaged over any 10 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:

Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled Environments:

Are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
2.0 W/kg



3. SAR Measurement System

3.1 Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

$$SAR = \frac{\sigma E^2}{\rho}$$

Where: σ is the conductivity of the tissue;

ρ is the mass density of the tissue and E is the RMS electrical field strength.

3.2 SAR Measurements System configuration

The DASY5 system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

A unit to operate the optical surface detector which is connected to the EOC.

The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.

The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 2003.

DASY5 software and SEMCAD data evaluation software.

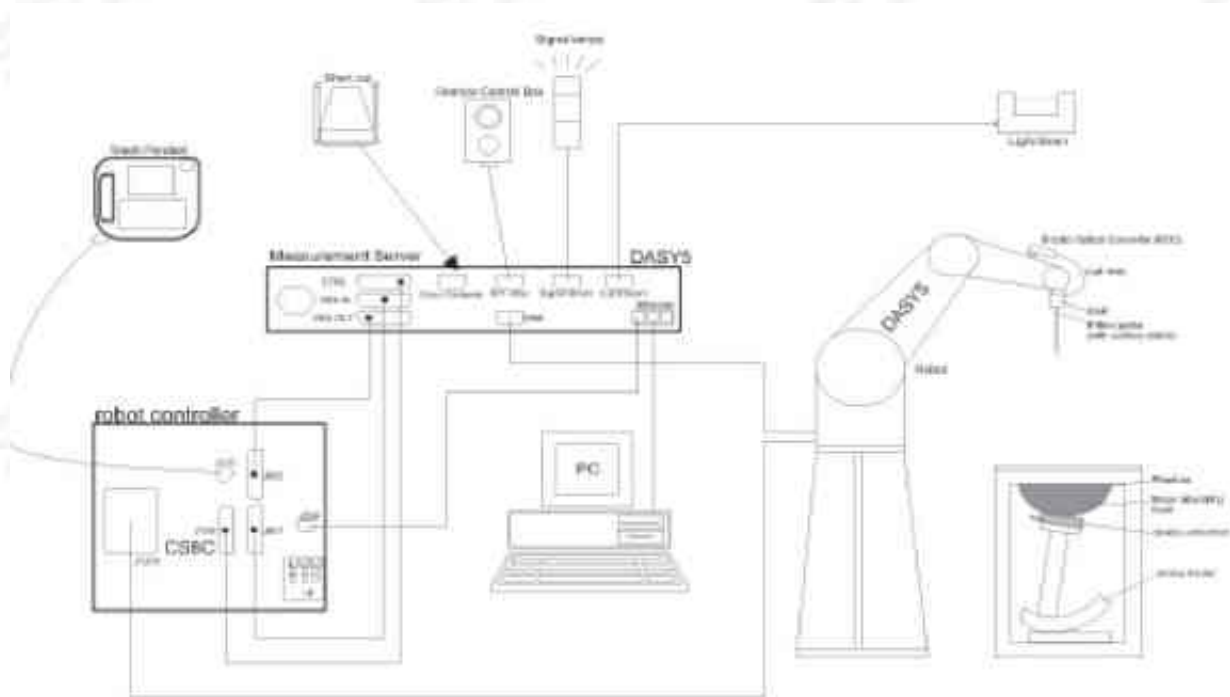
Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.

The generic twin phantom enabling the testing of left-hand and right-hand usage.

The device holder for handheld Mobile Phones.

Tissue simulating liquid mixed according to the given recipes.

System validation dipoles allowing to validate the proper functioning of the system.





3.2.2 DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ES3DV3 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

Probe Specification

Construction Symmetrical design with triangular core
Interleaved sensors
Built-in shielding against static charges
PEEK enclosure material (resistant to organic solvents, e.g., DGBE)

Calibration ISO/IEC 17025 calibration service available.

Frequency 10 MHz to 4 GHz;
Linearity: ± 0.2 dB (30 MHz to 4 GHz)

Directivity ± 0.2 dB in HSL (rotation around probe axis)
 ± 0.3 dB in tissue material (rotation normal to probe axis)

Dynamic Range 5 μ W/g to > 100 mW/g;
Linearity: ± 0.2 dB

Dimensions Overall length: 337 mm (Tip: 20 mm)
Tip diameter: 3.9 mm (Body: 12 mm)
Distance from probe tip to dipole centers: 2.0 mm

Application General dosimetry up to 4 GHz
Dosimetry in strong gradient fields
Compliance tests of Mobile Phones

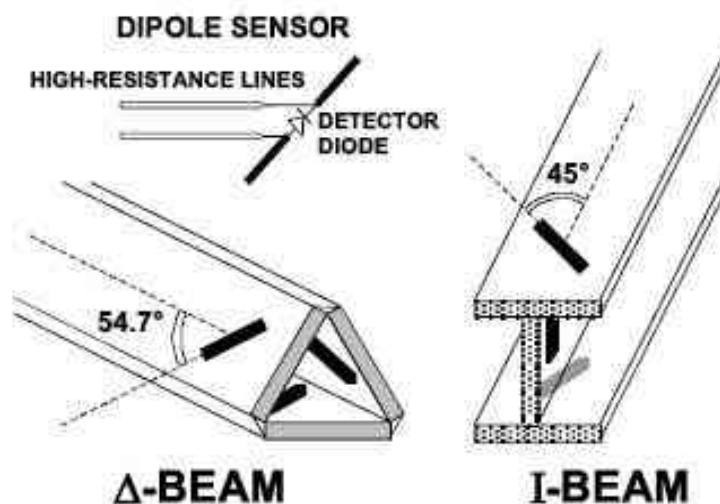
Compatibility DASY3, DASY5, DASY52 SAR and higher,
EASY4/MRI



Isotropic E-Field Probe

The isotropic E-Field probe has been fully calibrated and assessed for isotropicity, and boundary effect within a controlled environment. Depending on the frequency for which the probe is calibrated the method utilized for calibration will change.

The E-Field probe utilizes a triangular sensor arrangement as detailed in the diagram below:



3.2.2 Phantom

The phantom used for all tests i.e. for both system checks and device testing, was the twin-headed "SAM Phantom", manufactured by SPEAG. The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness increases to 6mm).

System checking was performed using the flat section, whilst Head SAR tests used the left and right head profile sections. Body SAR testing also used the flat section between the head profiles.



SAM Twin Phantom

3.2.3 Device Holder

The device was placed in the device holder (illustrated below) that is supplied by SPEAG as an integral part of the DASY system.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.





4. Tissue Simulating Liquids

4.1 Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine if the dielectric parameters are within the tolerances of the specified target values

The uncertainty due to the liquid conductivity and permittivity arises from two different sources. The first source of error is the deviation of the liquid conductivity from its target value (max $\pm 5\%$) and the second source of error arises from the measurement procedures used to assess conductivity. The uncertainty shall be assessed using a rectangular probability. For 10 g averaging, the maximum weighting coefficient for SAR is 0,5.

EN 62209 RECOMMENDED TISSUE DIELECTRIC PARAMETERS

The head and body tissue dielectric parameters recommended by the EN 62209 have been incorporated in the following table.

Frequency	ϵ_r	σ 10g S/m
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 to 2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27

**LIQUID MEASUREMENT RESULTS**

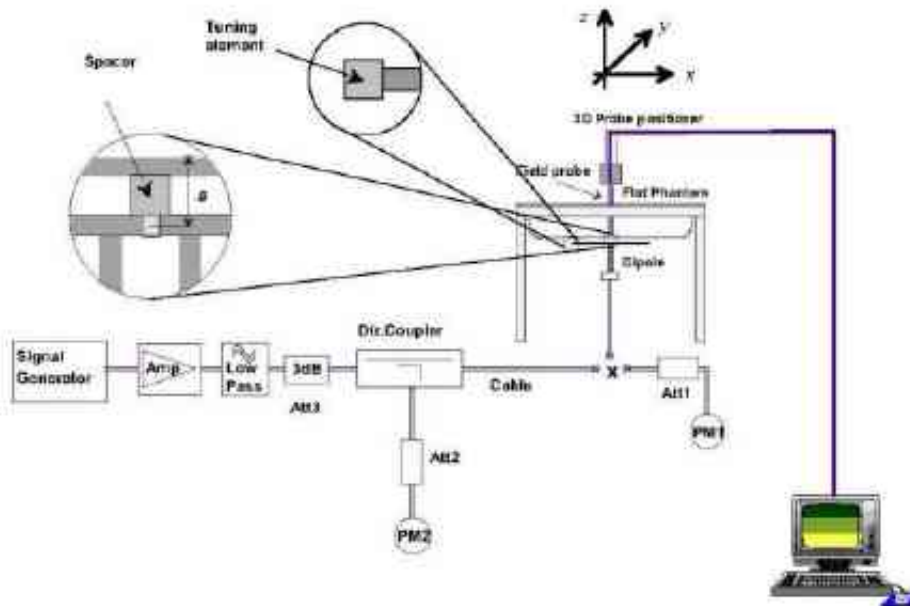
Tissue Type	Measured Frequency (MHz)	Target Tissue		Measured Tissue				Liquid Temp.	Test Data
		ϵ_r	σ	ϵ_r	Dev. (%)	σ	Dev. (%)		
2450H	2450	39.2	1.80	38.942	-0.66%	1.826	1.44%	22.2	2026-05-22
5250H	5250	36.0	4.66	36.872	2.42%	4.714	1.16%	21.8	2026-05-27
5600H	5600	35.5	5.07	34.894	-1.71%	4.978	-1.81%	21.7	2026-05-20
5750H	5750	35.3	5.27	35.836	1.52%	5.304	0.65%	21.7	2026-05-20

5. SAR System Validation

5.1 Validation System

Each MVG system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the MVG software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

The system check verifies that the system operates within its specifications. It's performed daily or before every SAR measurement. The system check uses normal SAR measurement in the flat section of the phantom with a matched dipole at a specified distance. The system validation setup is shown as below.



5.2 Validation Result

Comparing to the original SAR value provided by MVG, the validation data should be within its specification of $\pm 10\%$.

Frequency (MHz)	Liquid Type	Power fed onto reference dipole (mW)	Targeted SAR (W/kg)	Measured SAR (W/kg)	Normalized SAR (W/kg)	Deviation (%)	Date
2450H	Head	100	24.5	2.53	25.3	3.27%	2026-05-22
5250H	Head	100	23.1	2.25	22.5	-2.60%	2026-05-27
5600H	Head	100	24.7	2.27	22.7	-8.10%	2026-05-20
5750H	Head	100	23.1	2.19	21.9	-5.19%	2026-05-20



6. SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:

- Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface.
- Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.
- Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to 16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.
- Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

Area Scan& Zoom Scan:

For handsets operating above 300 MHz evaluated with the homogeneous head model, the SAR distribution is measured on a two-dimensional coarse grid at a fixed separation distance of less than 8 mm from the surface of the phantom shell. The scan region should cover all areas that are exposed and encompassed by the projection of the handset. In order to maintain a fixed distance of less than 8 mm from the surface to within ± 1 mm, as required by the measurement protocol, the exact shape and dimensions of the phantom inner surface shall be known, pre-calibrated, or preferably detected during the SAR measurement with a mechanical or optical surface-detection mechanism that meets the probe positioning requirements. This evaluation technique determines the maximum spacing between the grid points, i.e., it has been found that a 20 mm $\times$ 20 mm grid is usually sufficient to achieve the required precision if two staggered one-dimensional cubic splines [55] are used to locate the maximum SAR location;

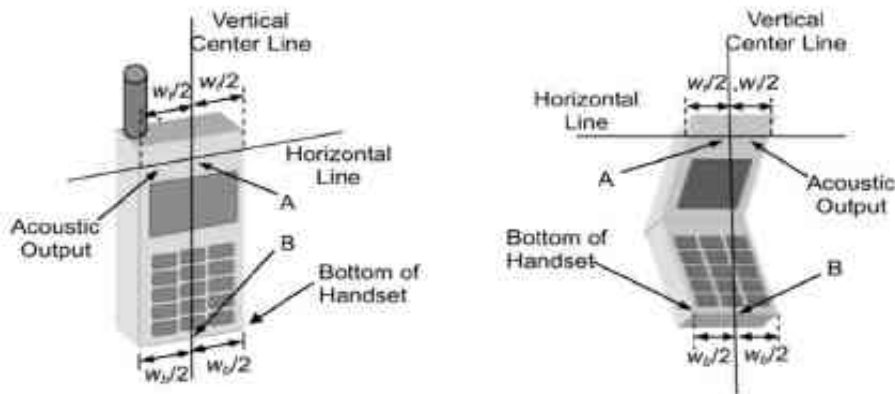
The maximum local SAR is evaluated on an interpolated grid at 1 mm to 2 mm resolution during the zoom scan. A zoom-scan volume of 32 mm x 32 mm x 30 mm, consisting of 5 x 5 x 7 points with the center at the peak SAR location determined during the area scan, can be chosen. Although a scan resolution of 8 mm is sufficient for directions parallel to the surface, 5 mm is needed in the direction normal to the surface of the phantom to achieve the required extrapolation accuracy.

7. EUT Test Position

This EUT was tested in Right Cheek, Right Titled, Left Cheek, Left Titled, Front Face and Rear Face.

Define Two Imaginary Lines On The Handset:

- 1) The vertical centerline passes through two points on the front side of the handset the midpoint of the width w_t of the handset at the level of the acoustic output, and the midpoint of the width w_b of the handset.
- 2) The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output. The horizontal line is also tangential to the face of the handset at point A.
- 3) The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily to the front face of the handset, especially for clamshell handsets, handsets with flip covers, and other irregularly shaped handsets.



7.1 Cheek Position

- 1) To position the device with the vertical center line of the body of the device and the horizontal line crossing the center piece in a plane parallel to the sagittal plane of the phantom. While maintaining the device in this plane, align the vertical center line with the reference plane containing the ear and mouth reference point (M: Mouth, RE: Right Ear, and LE: Left Ear) and align the center of the ear piece with the line RE-LE.
- 2) To move the device towards the phantom with the ear piece aligned with the line LE-RE until the phone touched the ear. While maintaining the device in the reference plane and maintaining the phone contact with ear, move the bottom of the phone until any point on the front side is in contact with the cheek of the phantom or until contact with the ear is lost



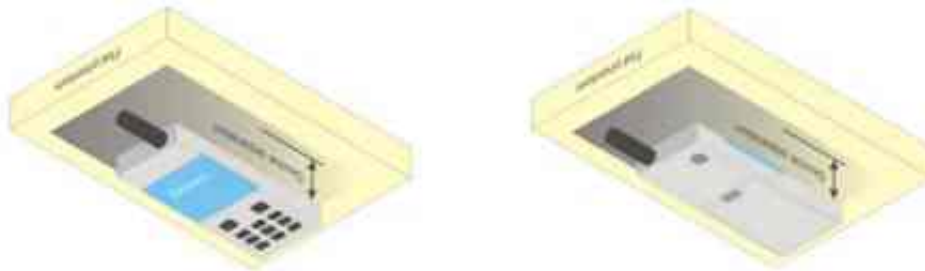
7.2 Tilt Position

- (1) To position the device in the “cheek” position described above.
- (2) While maintaining the device in the reference plane described above and pivoting against the ear, moves it outward away from the mouth by an angle of 15 degrees or until with the ear is lost.



7.3 Body-worn Position Conditions

- 1) To position the EUT parallel to the phantom surface.
- 2) To adjust the EUT parallel to the flat phantom.
- 3) To adjust the distance between the EUT surface and the flat phantom to 5mm.





8. Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Symbol	Uncertainty Component	Prob. Dist.	Unc. $a(x_i)$	Div. q_i	$u(x_i) = a(x_i)/q_i$	C_i	$u(y) = C_i * u(x_i)$	v_i
Measurement system errors								
CF	Probe calibration	N ($k = 2$)	7	2	3.50	1	3.50	∞
CF _{drift}	Probe calibration drift	R	2.31	$\sqrt{3}$	1.33	1	1.33	∞
LIN	Probe linearity and detection limit	R	2.71	$\sqrt{3}$	1.56	1	1.56	∞
BBS	Broadband signal	R	0	$\sqrt{3}$	0.00	1	0.00	∞
ISO	Probe isotropy	R	3.41	$\sqrt{3}$	1.97	1	1.97	∞
DAE	Other probe and data acquisition errors	N	0.81	1	0.81	1	0.81	∞
AMB	RF ambient and noise	N	1.73	1	1.73	1	1.73	∞
Δ_{xyz}	Probe positioning errors	N	1.89	1	1.89	$2/\delta$	1.89	
DAT	Data processing errors	N	1.33	1	1.33	1	1.33	∞
Phantom and device (DUT or validation antenna) errors								
LIQ(σ)	Measurement of phantom conductivity(σ)	N	5.06	1	5.06	$c\epsilon, c\sigma$	5.06	∞
LIQ(T_c)	Temperature effects (medium)	R	1.44	$\sqrt{3}$	0.83	$c\epsilon, c\sigma$	0.83	∞
EPS	Shell permittivity	R	1.67	$\sqrt{3}$	0.96	see 8.4.2.3	0.24	∞
DIS	Distance between the radiating element of the DUT and the phantom medium	N	2.7	1	2.7	2	5.40	∞
D _{xyz}	Repeatability of positioning the DUT or source against the phantom	N	2.6	1	2.6	1	2.60	5
H	Device holder effects	N	3	1	3	1	3.00	
MOD	Effect of operating mode on probe sensitivity	R	4.73	$\sqrt{3}$	2.73	1	2.73	∞
TAS	Time-average SAR	R	1.8	$\sqrt{3}$	1.04	1	1.04	∞
RF _{drift}	Variation in SAR due to drift in output of DUT	N	5.77	1	5.77	1	5.77	
VAL	Validation antenna uncertainty (validation measurement only)	N	2	1	2	1	2.00	
P _{in}	Uncertainty in accepted power (validation measurement only)	N	1.73	1	1.73	1	1.73	
Corrections to the SAR result (if applied)								
$C(\epsilon', \sigma)$	Phantom deviation from target (ϵ', σ)	N	1.9	1	1.9	1	1.90	
C(R)	SAR scaling	R	2.89	$\sqrt{3}$	1.67	1	1.67	
$u(\Delta SAR)$	Combined uncertainty						12.48	
U	Expanded uncertainty and effective degrees of freedom					U =	24.97	



9. Conducted Power Measurement

Test Result:

During the process of testing, the EUT was controlled to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

<Bluetooth Conducted Power>

BR/EDR

Mode	Frequency (MHz)	Conducted power (dBm)	Tune-up Power (dBm)
1-DH5	2402	3.95	4.00
1-DH5	2441	3.94	4.00
1-DH5	2480	4.01	5.00
2-DH5	2402	3.87	4.00
2-DH5	2441	3.91	4.00
2-DH5	2480	4.04	5.00
3-DH5	2402	3.86	4.00
3-DH5	2441	3.94	4.00
3-DH5	2480	4.01	5.00

BLE

Mode	Frequency (MHz)	Conducted power (dBm)	Tune-up Power (dBm)
GFSK(1Mbps)	2402	-3.19	-3.00
	2440	1.87	2.00
	2480	1.64	2.00
GFSK(2Mbps)	2402	-3.15	-3.00
	2440	1.88	2.00
	2480	1.64	2.00

Note: According to EN50663 and EN 62479, The power of this EUT BR/EDR is less than the low-power exclusion level defined (P_{max} :20 mW), So BR/EDR SAR is not required.

<WIFI 2.4GHz Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Tune-up Power (dBm)
802.11b	1	2412	11.55	12.00
	7	2442	8.36	9.00
	13	2472	12.87	13.00
802.11g	1	2412	9.21	10.00
	7	2442	5.92	6.00
	13	2472	10.37	11.00
802.11n(20MHz)	1	2412	8.77	9.00
	7	2442	5.49	6.00
	13	2472	9.89	10.00
802.11n(40MHz)	3	2422	10.59	11.00
	7	2442	9.50	10.00
	11	2462	11.66	12.00



<WIFI 5.2GHz Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Tune up (dBm)
802.11a	36	5180	7.74	8.00
802.11n(20MHz)	36	5180	7.49	8.00
802.11n(40MHz)	38	5190	7.29	8.00
802.11ac(20MHz)	36	5180	7.41	8.00
802.11ac(40MHz)	38	5190	7.22	8.00
802.11ac(80MHz)	42	5210	7.17	8.00

<WIFI 5.3GHz Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Tune up (dBm)
802.11a	64	5320	6.35	7.00
802.11n(20MHz)	64	5320	6.52	7.00
802.11n(40MHz)	62	5310	6.12	7.00
802.11ac(20MHz)	64	5320	6.47	7.00
802.11ac(40MHz)	62	5310	6.39	7.00
802.11ac(80MHz)	58	5290	6.62	7.00

<WIFI 5.5GHz Conducted Power>

Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Tune up (dBm)
802.11a	140	5700	7.24	8.00
802.11n(20MHz)	140	5700	7.21	8.00
802.11n(40MHz)	134	5670	6.63	7.00
802.11ac(20MHz)	140	5700	7.12	8.00
802.11ac(40MHz)	134	5670	6.49	7.00
802.11ac(80MHz)	122	5610	6.56	7.00



Mode	Channel	Frequency (MHz)	Conducted Output Power (dBm)	Tune up (dBm)
802.11a	149	5745	7.84	8.00
	157	5785	7.69	8.00
	165	5825	7.74	8.00
802.11n(20MHz)	149	5745	7.93	8.00
	157	5785	7.81	8.00
	165	5825	7.88	8.00
802.11n(40MHz)	151	5755	7.76	8.00
	159	5795	7.71	8.00
802.11ac(20MHz)	149	5745	7.75	8.00
	157	5785	7.68	8.00
	165	5825	7.60	8.00
802.11ac(40MHz)	151	5755	7.73	8.00
	159	5795	7.66	8.00
802.11ac(80MHz)	155	5775	7.86	8.00

10. Test Photos and Results

10.1 EUT Photos

Front side



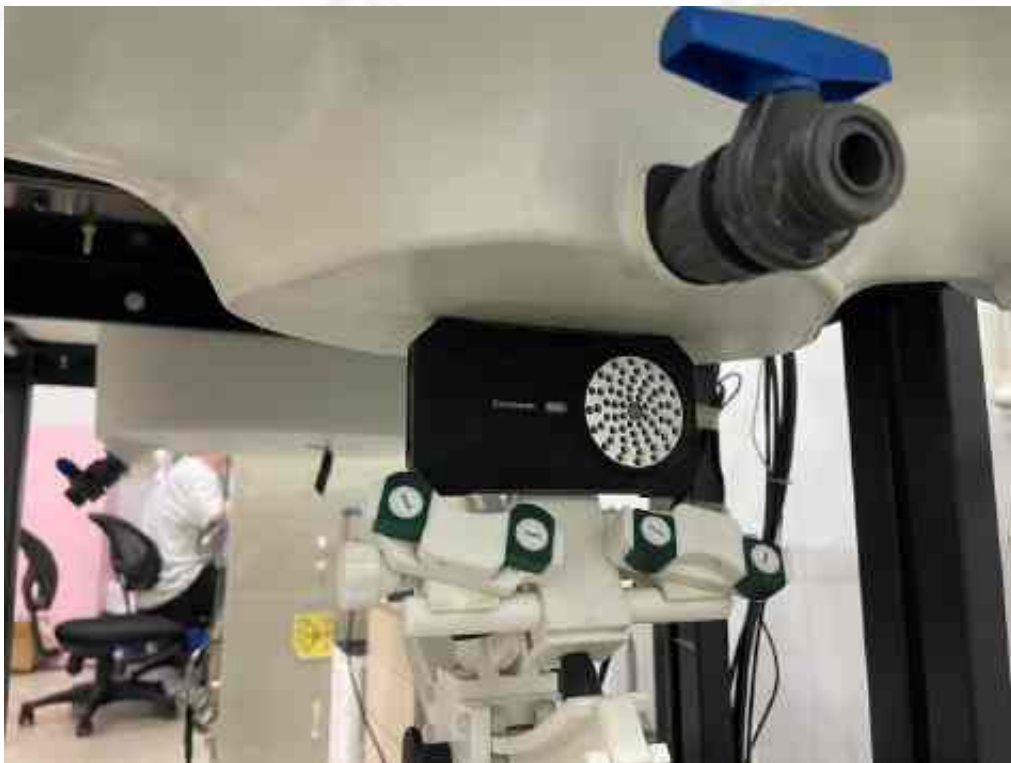
Back side



Left Edge



Right Edge



Top Edge



Bottom Edge



10.2 Setup Photos

Front Side



Back Side



Left Edge



Right Edge



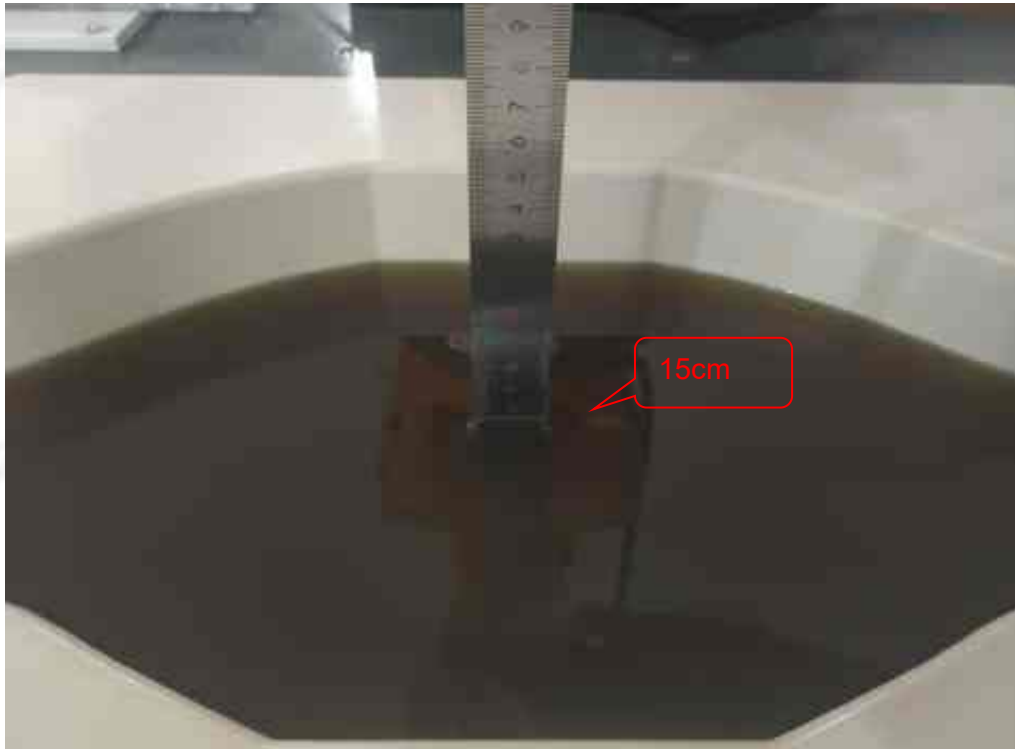
Top Edge



Bottom Edge



Liquid depth (15 cm)





11. SAR Result Summary

11.1 Body and Limb SAR

<WLAN2.4G>

Band	Mode	Test Position	Ch.	Conducted Power (dBm)	Tune-up (dBm)	Scale	SAR10g (W/kg)	Reported SAR10g (W/kg)	Plot
WLAN2.4G	802.11b	Front	13	12.87	13.00	1.030	0.244	0.251	
WLAN2.4G	802.11b	Rear	13	12.87	13.00	1.030	0.379	0.390	#32
WLAN2.4G	802.11b	Left	13	12.87	13.00	1.030	≤0.01	≤0.01	
WLAN2.4G	802.11b	Right	13	12.87	13.00	1.030	0.21	0.216	
WLAN2.4G	802.11b	Top	13	12.87	13.00	1.030	0.195	0.201	
WLAN2.4G	802.11b	Bottom	13	12.87	13.00	1.030	≤0.01	≤0.01	

<WLAN5.2G>

Band	Mode	Test Position	Ch.	Conducted Power (dBm)	Tune-up (dBm)	Scale	SAR10g (W/kg)	Reported SAR10g (W/kg)	Plot
WLAN5.2G	802.11a	Front	36	7.74	8.00	1.062	0.035	0.037	
WLAN5.2G	802.11a	Rear	36	7.74	8.00	1.062	0.108	0.115	#33
WLAN5.2G	802.11a	Left	36	7.74	8.00	1.062	≤0.01	≤0.01	
WLAN5.2G	802.11a	Right	36	7.74	8.00	1.062	0.064	0.068	
WLAN5.2G	802.11a	Top	36	7.74	8.00	1.062	0.047	0.050	
WLAN5.2G	802.11a	Bottom	36	7.74	8.00	1.062	≤0.01	≤0.01	

<WLAN5.3G>

Band	Mode	Test Position	Ch.	Conducted Power (dBm)	Tune-up (dBm)	Scale	SAR10g (W/kg)	Reported SAR10g (W/kg)	Plot
WLAN5.3G	802.11ac80	Front	62	6.62	7.00	1.091	0.007	0.008	
WLAN5.3G	802.11ac80	Rear	62	6.62	7.00	1.091	0.078	0.085	#34
WLAN5.3G	802.11ac80	Left	62	6.62	7.00	1.091	≤0.01	≤0.01	
WLAN5.3G	802.11ac80	Right	62	6.62	7.00	1.091	0.040	0.044	
WLAN5.3G	802.11ac80	Top	62	6.62	7.00	1.091	0.026	0.028	
WLAN5.3G	802.11ac80	Bottom	62	6.62	7.00	1.091	≤0.01	≤0.01	

<WLAN5.5G>

Band	Mode	Test Position	Ch.	Conducted Power (dBm)	Tune-up (dBm)	Scale	SAR10g (W/kg)	Reported SAR10g (W/kg)	Plot
WLAN5.5G	802.11a	Front	140	7.24	8.00	1.191	0.018	0.021	
WLAN5.5G	802.11a	Rear	140	7.24	8.00	1.191	0.093	0.111	#35
WLAN5.5G	802.11a	Left	140	7.24	8.00	1.191	≤0.01	≤0.01	
WLAN5.5G	802.11a	Right	140	7.24	8.00	1.191	0.041	0.049	
WLAN5.5G	802.11a	Top	140	7.24	8.00	1.191	0.030	0.036	
WLAN5.5G	802.11a	Bottom	140	7.24	8.00	1.191	≤0.01	≤0.01	

<WLAN5.8G>

Band	Mode	Test Position	Ch.	Conducted Power (dBm)	Tune-up (dBm)	Scale	SAR10g (W/kg)	Reported SAR10g (W/kg)	Plot
WLAN5.8G	802.11n20	Front	149	7.93	8.00	1.016	0.047	0.048	
WLAN5.8G	802.11n20	Rear	149	7.93	8.00	1.016	0.117	0.119	#36
WLAN5.8G	802.11n20	Left	149	7.93	8.00	1.016	≤0.01	≤0.01	
WLAN5.8G	802.11n20	Right	149	7.93	8.00	1.016	0.05	0.051	
WLAN5.8G	802.11n20	Top	149	7.93	8.00	1.016	0.066	0.067	
WLAN5.8G	802.11n20	Bottom	149	7.93	8.00	1.016	≤0.01	≤0.01	

Note:1. When the 10g SAR is $\leq 1.0\text{W/kg}$, testing for low and high channel is optional.



11.3 Simultaneous Multi-band Transmission Evaluation:

According to EN62209-2 Annex K:

Method 1:

The maximum power level, $P_{\max,m}$, that can be transmitted by a device before the SAR averaged over a mass, m , exceeds a given limit, $SAR_{\lim}$, can be defined. Any device transmitting at power levels below $P_{\max,m}$ can then be excluded from SAR testing. The lowest possible value for $P_{\max,m}$ is:

$$P_{\max,m} = SAR_{\lim} \times m$$

($SAR_{\lim} = 2 \text{ W/kg}$, an averaging mass of $m = 10 \text{ g}$, $P_{\max,m} = 20 \text{ mW}$;
 $SAR_{\lim} = 1,6 \text{ W/kg}$, an averaging mass of $m = 1 \text{ g}$, $P_{\max,m} = 1,6 \text{ mW}$)

Method 2:

Simultaneous multi-band transmission means that the device can transmit multiple transmission modes at the same time

In some cases, the secondary transmitter can be excluded from SAR testing when used alone (e.g., using Method 1). However, when the primary and secondary transmitters are used together, the SAR limit may still be exceeded. A means of determining the threshold power for the secondary transmitter that allows it to be excluded from SAR testing is needed.

One way of determining the threshold power level available to the secondary transmitter ($P_{\text{available}}$) is to calculate it from the measured peak spatial-average SAR of the primary transmitter (SAR_1) according to the equation:

$$P_{\text{available}} = P_{\text{th},m} \times (SAR_{\lim} - SAR_1) / SAR_{\lim}$$

where $P_{\text{th},m}$ is the threshold exclusion power level taken from Annex B of IEC 62479 for the frequency of the secondary transmitter at the separation distance used in the testing.

If the output power of the secondary transmitter is less than $P_{\text{available}}$, SAR measurement for the secondary transmitter is not necessary. The above formula can be easily generalized to the case where more than two transmitters are communicating simultaneously. If there are N simultaneous transmitters and the peak spatial-average SAR of the first $N - 1$ transmitters are known (SAR_i), then the threshold power level available to the N th transmitter can be found from

$$P_{\text{available}} = P_{\max,m} \times (SAR_{\lim} - \sum_{i=1}^{N-1} SAR_i) / SAR_{\lim}$$

Alternatively, $P_{\text{th},m}$ can be replaced by $P_{\max,m}$, which is an easier approach but leads to more restrictive power threshold.

EN62479 Annex B:

f GHz	BW %	Example air interface	$P_{\max}$ mW			
			$s = 5 \text{ mm}$		$s = 25 \text{ mm}$	
			$m = 1 \text{ g}$	$m = 10 \text{ g}$	$m = 1 \text{ g}$	$m = 10 \text{ g}$
2.442	3.4	802.11b	7.3	32	130	328



Simultaneous Transmission Analysis >

Not applicable



12. Equipment List

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
Data Acquisition Electronics DAEx	SPEAG	DAE3	428	2025-09-08	2026-09-07
E-field Probe	SPEAG	EX3DV4	3806	2025-09-11	2026-09-10
System Validation Dipole 735V3	SPEAG	D735V3	1118	2024-06-04	2027-06-03
System Validation Dipole 835V2	SPEAG	D835V2	484	2023-08-25	2026-08-24
System Validation Dipole 1750V2	SPEAG	D1750V2	1021	2024-06-11	2027-06-10
System Validation Dipole 1900V2	SPEAG	D1900V2	5d002	2023-08-25	2026-08-24
System Validation Dipole 2300V2	SPEAG	D2300V2	1106	2023-06-20	2026-06-19
System Validation Dipole 2450V2	SPEAG	D2450V2	745	2023-08-28	2026-08-27
System Validation Dipole 2600V2	SPEAG	D2600V2	1071	2023-06-20	2026-06-19
System Validation Dipole 5GHzV2	SPEAG	D5GHzV2	1160	2024-10-02	2027-10-01
Dielectric Probe Kit	Agilent	85070E	NA#F-EP-00777	N/A	N/A
Attenuator	Agilent	HXT-10-8-SMA	240327017	2026-02-04	2027-02-03
Directional coupler	Xi'an Xingbo	XBOH-OA08-20dB	211123-4-3	2026-02-03	2027-02-02
Network Analyzer	Agilent	E5071C	MY46520378	2025-09-26	2026-09-24
Multi Meter	Keithley	Multi Meter 2000	4050073	2025-09-22	2026-09-21
Signal Generator	Agilent	N5182A	MY50140530	2025-09-26	2026-09-25
Wireless Communication Test Set	Agilent	8960-E5515C	MY48360751	2026-02-04	2027-02-03
Wireless Communication Test Set	R&S	CMW500	156324	2025-09-25	2026-09-24
Power Amplifier	DESAY	WCS-DLNA50M8G50G1	CSKJLNA231227A	2025-09-29	2026-09-28
Power Meter	R&S	NRP	100510	2025-09-25	2026-09-24
Power Sensor	R&S	NRP-Z11	101919	2025-09-25	2026-09-24
Power Sensor	Keysight	U2021XA	MY56280002	2025-09-25	2026-09-24
Temperature hygrometer	TOPRIE	TP502V4-P	6700000124198	2025-10-09	2026-10-08
Thermograph	Elitech	RC-4	S/N EF7176501537	2025-10-17	2026-10-16



Appendix A. System Validation Plots

System Performance Check-Head 2450MHz

DUT: D2450V2; Type: D2540V2; Serial: 745

Date: 2026-05-22

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.826$ S/m; $\epsilon_r = 38.942$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 21.6°C; Liquid Temperature: 22.2°C;

DASY Configuration:

- Probe: EX3DV4 – SN3806; ConvF(6.30, 6.71, 6.90); Calibrated: September.11,2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (4x8x1): Measurement grid: dx=12 mm, dy=12 mm

Maximum value of SAR (Measurement) = 9.19 W/kg

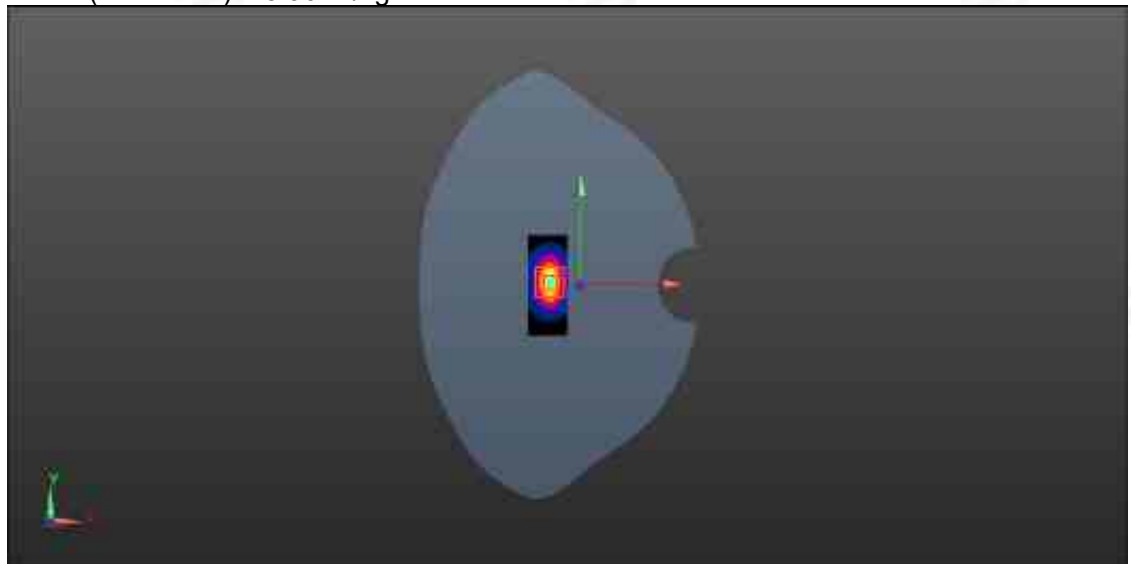
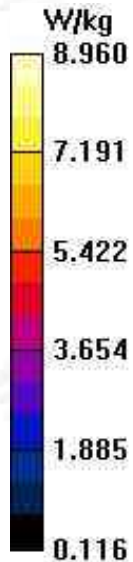
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 45.83 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 11.9 W/kg

SAR(1 g) = 5.43 W/kg; SAR(10 g) = 2.53 W/kg

Maximum value of SAR (measured) = 8.96 W/kg



SystemPerformanceCheck-Head 5250MHz

DUT: D5GHzV2; Type: D5GHzV2; Serial: 1160

Date: 2026-05-27

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5250$ MHz; $\sigma = 4.714$ S/m; $\epsilon_r = 36.872$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 20.9°C; Liquid Temperature: 21.8°C;

DASY Configuration:

- Probe: EX3DV4 – SN3806; ConvF(4.96, 5.28, 5.44); Calibrated: September.11,2025
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (5x5x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (measured) = 15.3 W/kg

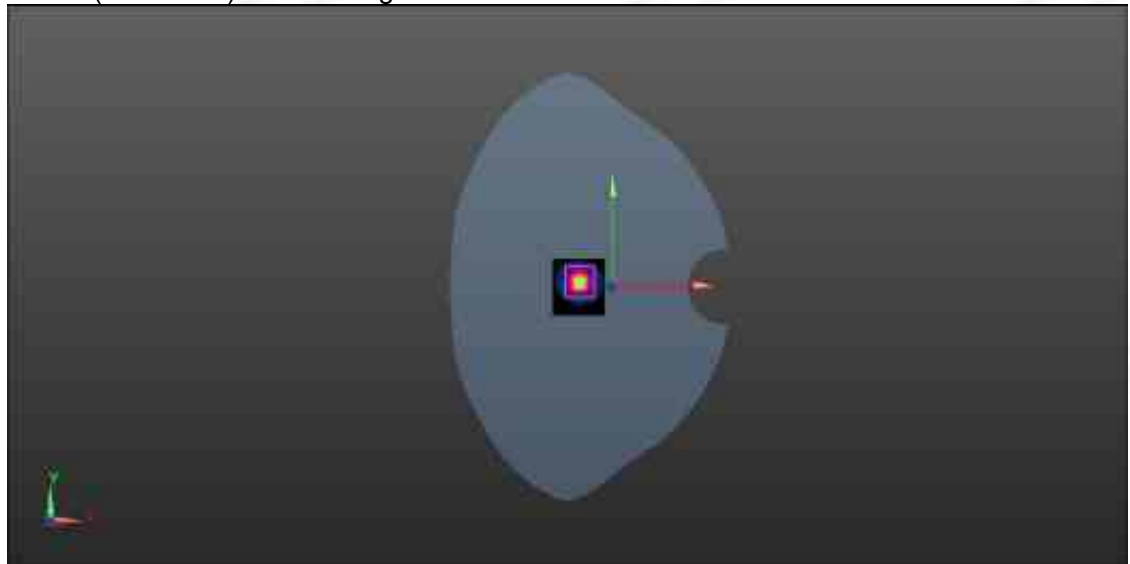
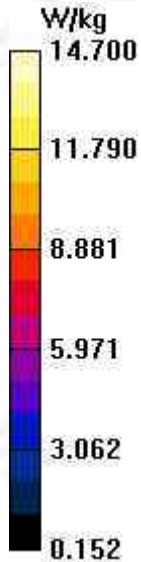
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 48.59 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 16.8 W/kg

SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.25 W/kg

Maximum value of SAR (measured) = 14.7 W/kg



**SystemPerformanceCheck-Head 5600MHz**

DUT: D5GHzV2; Type: D5GHzV2; Serial: 1160

Date: 2026-05-20

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5600$ MHz; $\sigma = 4.978$ S/m; $\epsilon_r = 34.894$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 21.3°C; Liquid Temperature: 21.7°C;

DASY Configuration:

- Probe: EX3DV4 – SN3806; ConvF(4.57, 4.87, 5.01); Calibrated: September.11,2025
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (5x5x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (measured) = 16.2 W/kg

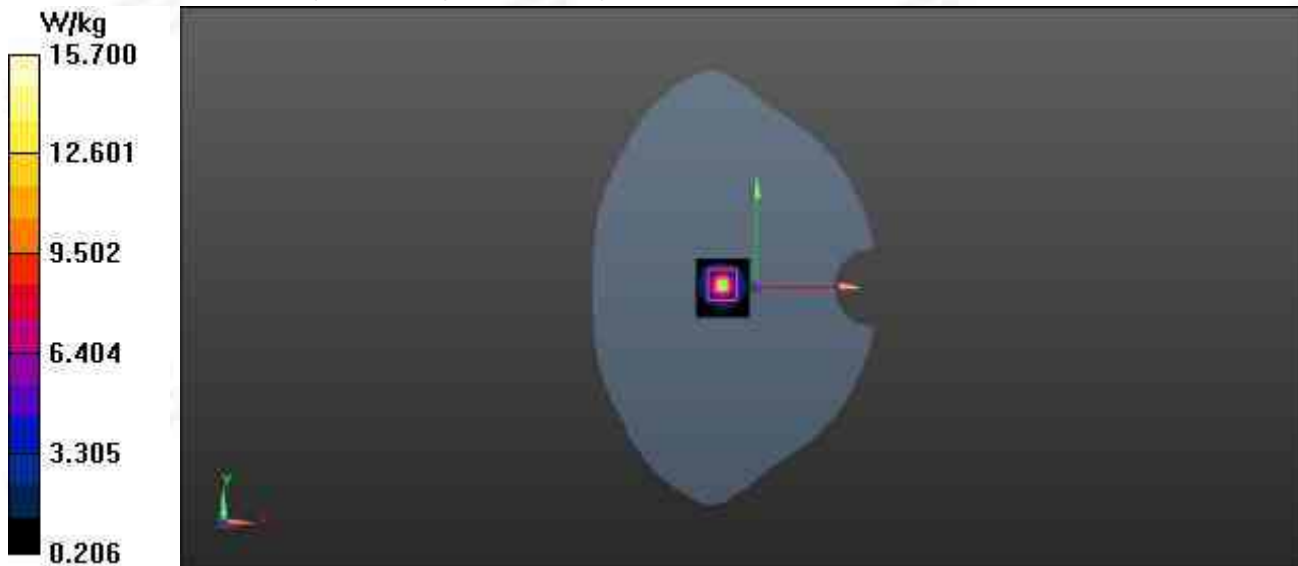
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 55.49 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 18.3 W/kg

SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.27 W/kg

Maximum value of SAR (measured) = 15.7 W/kg



**SystemPerformanceCheck-Head 5750MHz**

DUT: D5GHzV2; Type: D5GHzV2; Serial: 1160

Date: 2026-05-20

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5750$ MHz; $\sigma = 5.304$ S/m; $\epsilon_r = 35.836$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 21.3°C; Liquid Temperature: 21.7°C;

DASY Configuration:

- Probe: EX3DV4 – SN3806; ConvF(4.59, 4.89, 5.03); Calibrated: September.11,2025
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (5x5x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (measured) = 15.7 W/kg

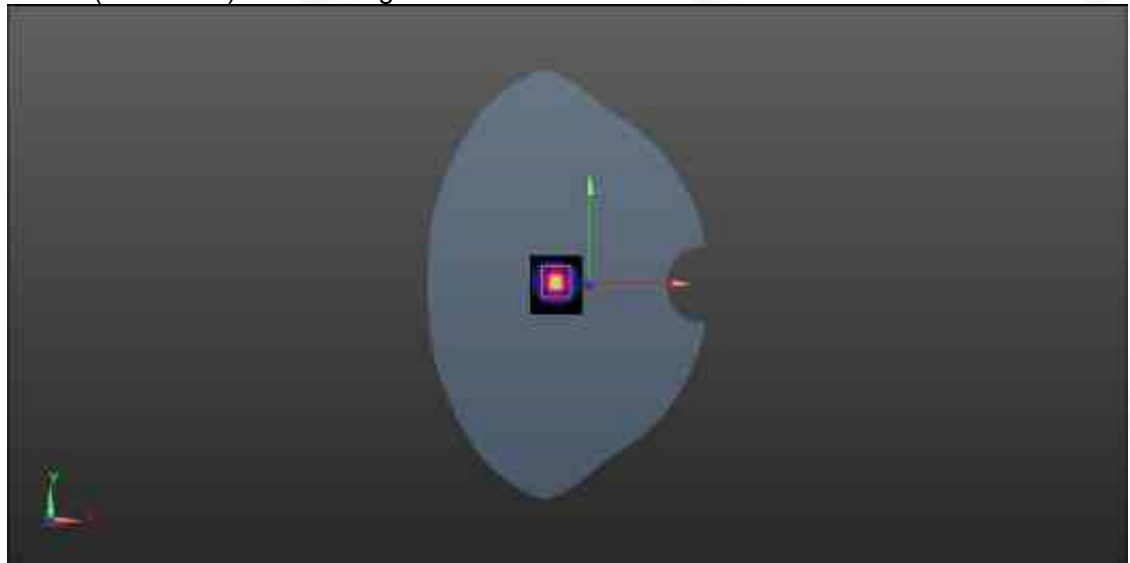
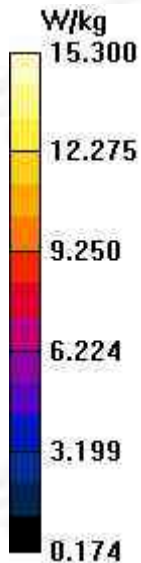
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 53.71 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.19 W/kg

Maximum value of SAR (measured) = 15.3 W/kg



Appendix B. SAR Test Plots

#1

Date: 2026-05-22

WIFI2.4G_802.11b_Rear_Ch13

Communication System: UID 0, Generic WIFI (0); Frequency: 2472 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2472$ MHz; $\sigma = 1.853$ S/m; $\epsilon_r = 39.112$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 21.6°C; Liquid Temperature: 22.2°C;

DASY Configuration:

- Probe: EX3DV4 - SN3806; ConvF(6.30, 6.71, 6.90); Calibrated: September.11,2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (9x9x1): Measurement grid: dx=12 mm, dy=12 mm

Maximum value of SAR (measured) = 0.570 W/Kg

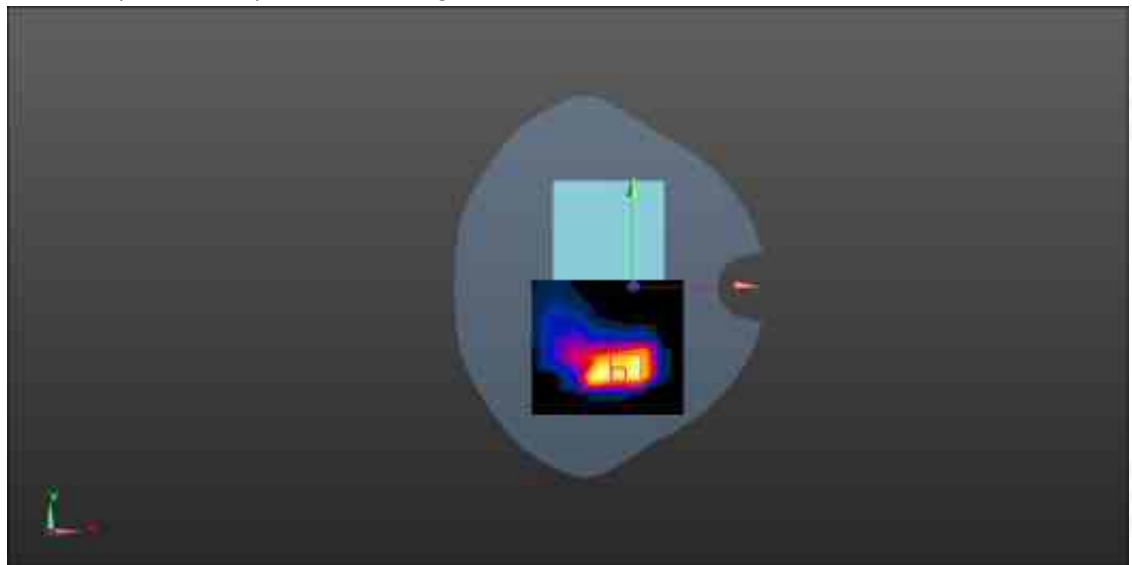
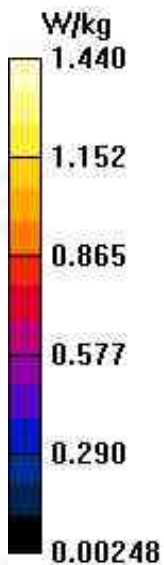
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.12 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.76 W/kg

SAR(1 g) = 0.512 W/Kg; SAR(10 g) = 0.379 W/Kg

Maximum value of SAR (measured) = 0.530 W/Kg





#2

Date: 2026-05-27

WIFI5.2G_802.11a_Rear_Ch36

Communication System: UID 0, Generic WIFI (0); Frequency: 5180 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5180$ MHz; $\sigma = 4.785$ S/m; $\epsilon_r = 37.046$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 20.9°C; Liquid Temperature: 21.8°C;

DASY Configuration:

- Probe: EX3DV4 - SN3806; ConvF(4.96, 5.28, 5.44); Calibrated: September.11,2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (11x11x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (measured) = 0.219 W/Kg

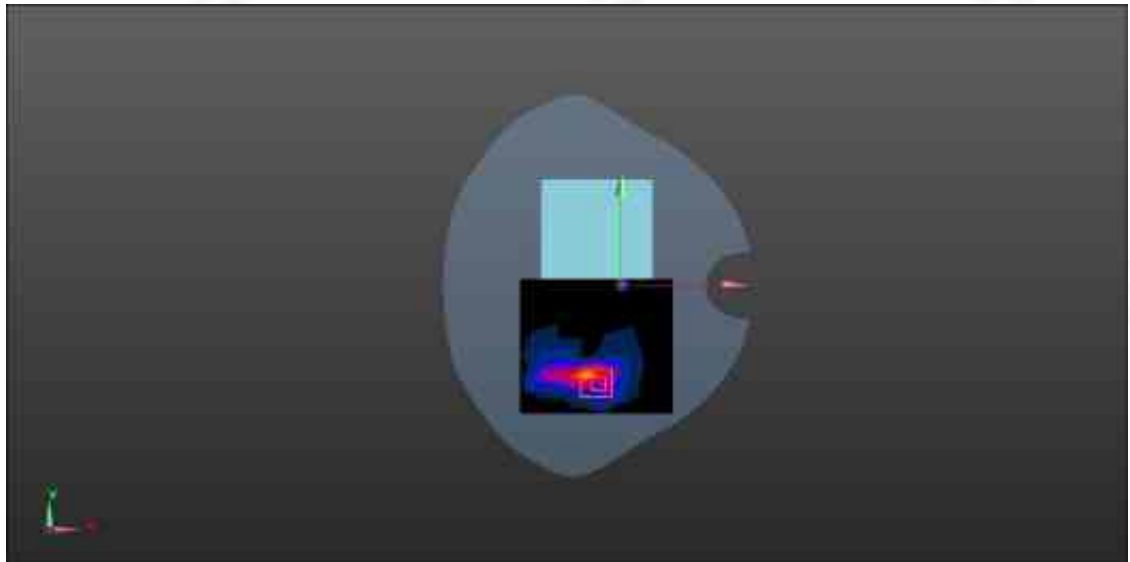
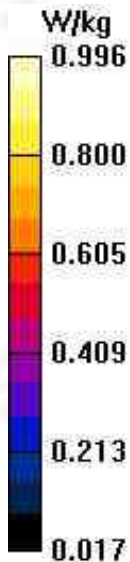
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 7.12V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.311 W/kg

SAR(1 g) = 0.197 W/Kg; SAR(10 g) = 0.106 W/Kg

Maximum value of SAR (measured) = 0.201 W/Kg





#3

Date: 2026-05-27

WIFI5.3G_802.11ac80_Rear_Ch62

Communication System: UID 0, Generic WIFI (0); Frequency: 5310 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5310$ MHz; $\sigma = 4.812$ S/m; $\epsilon_r = 37.243$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 20.9°C; Liquid Temperature: 21.8°C;

DASY Configuration:

- Probe: EX3DV4 - SN3806; ConvF(4.96, 5.28, 5.44); Calibrated: September.11,2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (11x11x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (measured) = 0.173 W/Kg

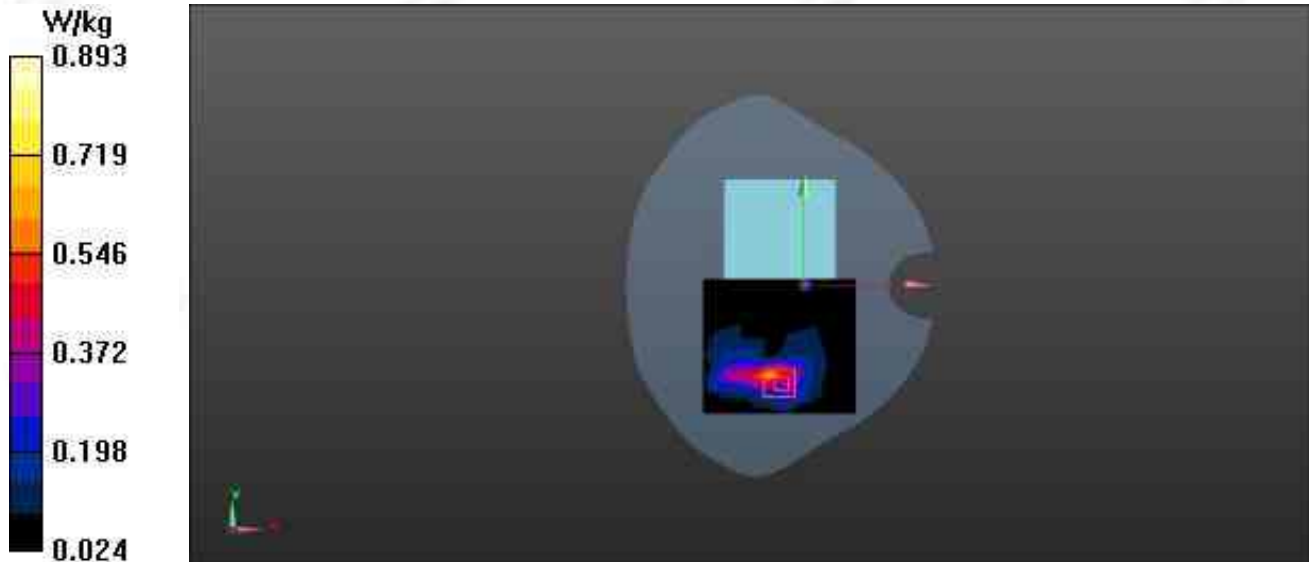
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.21V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.271W/kg

SAR(1 g) = 0.132 W/Kg; SAR(10 g) = 0.078 W/Kg

Maximum value of SAR (measured) = 0.149 W/Kg





#4

Date: 2026-05-20

WIFI5.5G_802.11a_Rear_Ch140

Communication System: UID 0, Generic WIFI (0); Frequency: 5700 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5700$ MHz; $\sigma = 4.905$ S/m; $\epsilon_r = 35.672$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient Temperature: 21.3°C; Liquid Temperature: 21.7°C;

DASY Configuration:

- Probe: EX3DV4 - SN3806; ConvF(4.57, 4.87, 5.01); Calibrated: September.11,2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (11x11x1): Measurement grid: dx=10 mm, dy=10 mm

Maximum value of SAR (measured) = 0.228 W/Kg

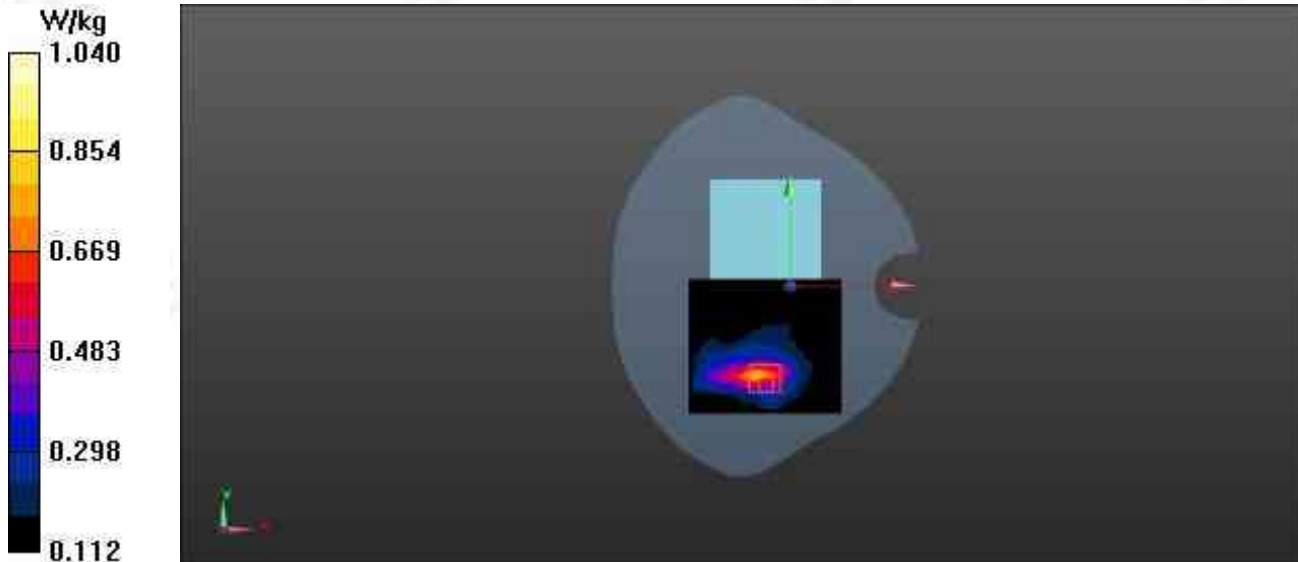
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.52V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.310 W/kg

SAR(1 g) = 0.204 W/Kg; SAR(10 g) = 0.093 W/Kg

Maximum value of SAR (measured) = 0.211 W/Kg





#5

Date: 2026-05-20

WIFI5.8G_802.11n20_Rear_Ch149

Communication System: UID 0, Generic WIFI (0); Frequency: 5745 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5745 \text{ MHz}$; $\sigma = 5.289 \text{ S/m}$; $\epsilon_r = 35.802$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient Temperature: 21.3°C; Liquid Temperature: 21.7°C;

DASY Configuration:

- Probe: EX3DV4 - SN3806; ConvF(4.59, 4.89, 5.03); Calibrated: September.11,2025
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE3 SN428; Calibrated: 09/08/2025
- Phantom: Twin-SAM V8.0 ; Type: QD 000 P41 AA; Serial: 1974
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Area Scan (11x11x1): Measurement grid: $dx=10 \text{ mm}$, $dy=10 \text{ mm}$

Maximum value of SAR (measured) = 0.235 W/Kg

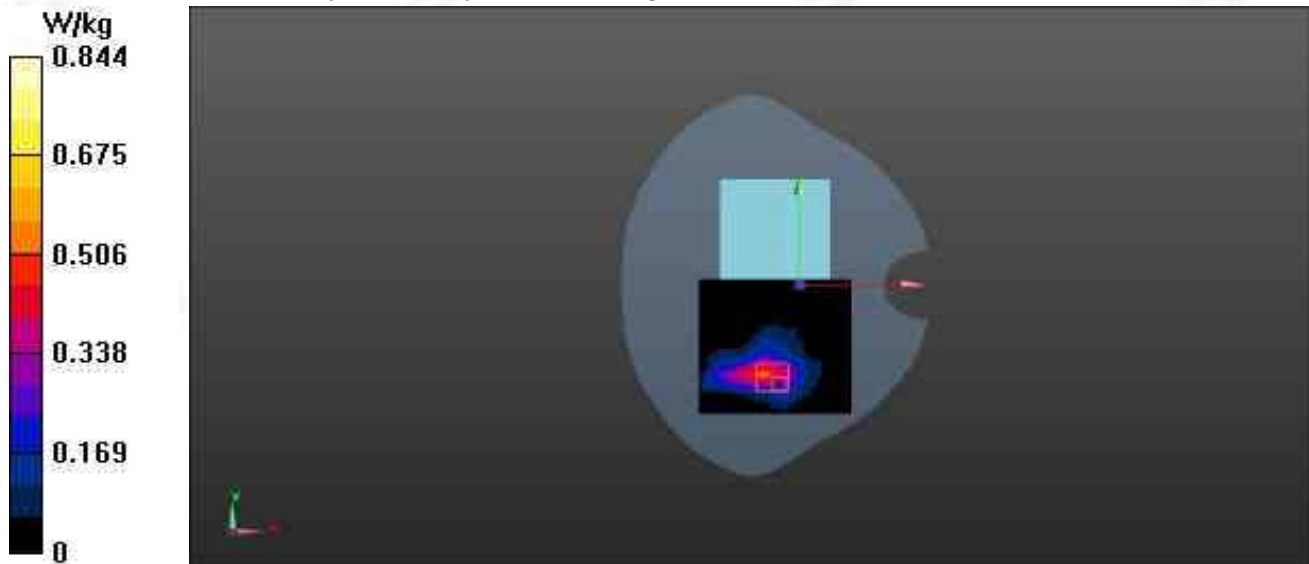
Zoom Scan (7x7x12)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 7.21V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.360 W/kg

SAR(1 g) = 0.219W/Kg; SAR(10 g) = 0.117 W/Kg

Maximum value of SAR (measured) = 0.234 W/Kg



**Appendix C. Probe Calibration and Dipole Calibration Report****Probe Calibration Certificate EX3DV4**

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland



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Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client
STS
Shenzhen

Certificate No. EX-3806_Sep25

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3806

Calibration procedure(s) QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6,
QA CAL-25.v8
Calibration procedure for dosimetric E-field probes

Calibration date September 11, 2025

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.
All calibrations have been conducted in the closed laboratory facility: environment temperature $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.
Calibration Equipment used (M&E critical for calibration)

Primary Standards	ID	Calibration Date (Certificate No.)	Sched. Cal.
Power Sensor HFS NRP-35T	SN: 10394/7	30-Apr-25 (No. 1030-300791/88)	Apr-25
N-type mismatch combination	SN: L1119	26-Mar-25 (No. 217-04292)	Mar-25
OCP DAK-12	SN: 1016	24-Sept-24 (No. OCP-DAK12-1016_Sep24)	Sep-25
OCP DAK-3.5	SN: 1349	29-Sept-24 (No. OCP-DAK3.5-1349_Sep24)	Sep-25
Reference Probe EX3DV4	SN: 7349	10-Jan-25 (No. EX3-7349_Jan25)	Jan-26
DAE4	SN: 1301	07-Nov-24 (No. DAE4-1301_Nov24)	Nov-25

Secondary Standards	ID	Check Date (in house)	Sched. Check
ACAP 2020 Setup 1	SN: L1404	30-Sept-24 (No. Report ACAP2020E-Cave_20240930a)	Sep-25
OCP DAK-12	SN: 1029	27-Feb-25 (No. OCP-DAK12-1029_Feb25)	Feb-25
OCP DAK-3.5	SN: 1336	09-Dec-24 (No. OCP-DAK3.5-1336_Dec24)	Dec-25

	Name	Function	Signature
Calibrated by	Jeffrey Kuzman	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

Issued: September 11, 2025

Certificate No: EX-3806_Sep25

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Calibration Laboratory of Schmid & Partner Engineering AG

Zougstra33 43, 8004 Zürich, Switzerland



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Accreditation No.: SCS 0108

Glossary

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
GF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\theta = 0$ is normal to probe axis
Connector Angle	Information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
- KDB 365664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\theta = 0$ ($f < 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM_{(f),x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}, B_{x,y,z}, C_{x,y,z}, D_{x,y,z}, VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: In a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).



EX3DV4 - SN:3806

September 11, 2025

Parameters of Probe: EX3DV4 - SN:3806

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k = 2)
Norm ($\mu V/(V/m)^2$) ^A	0.44	0.58	0.54	$\pm 10.1\%$
DCP (mV) ^B	100.9	107.5	100.5	$\pm 4.7\%$

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Max dev.	Max Unc ^E k = 2
0	Continuous Wave	X	0.00	0.00	1.00	0.00	141.5	$\pm 1.5\%$	$\pm 4.7\%$
		Y	0.00	0.00	1.00		142.6		
		Z	0.00	0.00	1.00		126.7		
10352	Pulse (D=10%, T=5 ms)	X	0.87	59.15	12.83	10.00	24.0	$\pm 1.3\%$	$\pm 9.6\%$
		Y	0.71	88.91	17.79		24.0		
		Z	0.94	54.01	15.53		25.0		
10353	Pulse (D=20%, T=5 ms)	X	0.81	62.17	12.70	6.99	47.0	$\pm 1.0\%$	$\pm 9.0\%$
		Y	0.67	72.92	17.84		48.0		
		Z	0.85	57.02	15.51		50.0		
10354	Pulse (D=40%, T=5 ms)	X	0.74	65.18	12.75	3.98	94.0	$\pm 1.0\%$	$\pm 9.5\%$
		Y	0.63	75.93	17.89		95.0		
		Z	0.76	70.03	15.49		99.0		
10355	Pulse (D=60%, T=5 ms)	X	0.70	66.94	12.72	2.22	141.0	$\pm 1.0\%$	$\pm 9.5\%$
		Y	0.60	77.69	17.82		142.0		
		Z	0.71	71.79	15.47		148.0		
10367	Random (BW=1 MHz, MOD=QPSK)	X	0.65	64.06	12.69	0.00	113.0	$\pm 1.7\%$	$\pm 9.6\%$
		Y	0.61	74.81	19.47		114.0		
		Z	0.74	68.91	15.48		120.0		
10388	Random (BW=10 MHz, MOD=QPSK)	X	1.53	63.95	13.06	0.00	121.0	$\pm 1.0\%$	$\pm 9.6\%$
		Y	1.56	74.70	17.26		122.0		
		Z	1.91	68.60	15.05		126.0		
10396	Random (BW=100 kHz, MOD=64QAM)	X	0.01	51.36	11.14	0.85	83.0	$\pm 1.4\%$	$\pm 9.6\%$
		Y	0.00	73.64	20.54		84.0		
		Z	0.00	57.74	14.66		88.0		
10399	Random (BW=40 MHz, MOD=64QAM)	X	2.27	62.89	13.13	0.00	111.0	$\pm 3.1\%$	$\pm 9.6\%$
		Y	3.76	73.64	17.13		112.0		
		Z	2.94	67.74	15.67		118.0		
10414	Random (BW=40 MHz, HIGH PAR)	X	3.41	60.63	13.15	0.00	90.0	$\pm 1.7\%$	$\pm 9.6\%$
		Y	4.55	71.36	17.13		91.0		
		Z	4.43	65.47	15.67		97.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainty of Norm X,Y,Z do not effect the E^2 field uncertainty inside TSL (see Page 5)^B Uncorrelation parameter uncertainty for maximum specified field strength.^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



EX3DV4 - SN:3806

September 11, 2025

Parameters of Probe: EX3DV4 - SN:3806**Sensor Model Parameters**

	C1 fF	C2 fF	α V^{-1}	T1 $ms V^{-2}$	T2 $ms V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
x	39.3	265.21	33.58	21.05	0.62	5.10	1.12	0.39	1.01
y	9.2	66.39	33.54	3.60	0.00	4.96	0.89	0.00	1.00
z	34.8	256.60	34.72	26.24	0.35	5.10	0.54	0.45	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	54.2°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	12 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3-4 mm for an Area Scan job.



EX3DV4 - SN:3806

September 11, 2025

Parameters of Probe: EX3DV4 - SN:3806**Calibration Parameter Determined in HSL**

f (MHz) ^C	Relative Permittivity ^F	Conductivity ^F (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc ^H (k=2)
750	41.9	0.89	8.35	8.89	9.14	0.34	1.27	±11.0%
835	41.5	0.90	8.20	8.73	8.98	0.34	1.27	±11.0%
1750	40.1	1.37	7.06	7.52	7.74	0.34	1.27	±11.0%
1900	40.0	1.40	6.85	7.30	7.51	0.34	1.27	±11.0%
2100	39.8	1.49	6.68	7.11	7.32	0.34	1.27	±11.0%
2300	39.5	1.67	6.46	6.87	7.07	0.34	1.27	±11.0%
2450	39.2	1.80	6.30	6.71	6.90	0.34	1.27	±11.0%
2600	39.0	1.96	6.14	6.54	6.73	0.34	1.27	±11.0%
3300	38.2	2.71	5.89	6.27	6.45	0.34	1.27	±13.1%
3500	37.9	2.91	5.82	6.19	6.37	0.34	1.27	±13.1%
3700	37.7	3.12	5.77	6.14	6.32	0.34	1.27	±13.1%
3900	37.5	3.32	5.70	6.07	6.24	0.35	1.27	±13.1%
4100	37.2	3.53	5.64	6.01	6.18	0.35	1.27	±13.1%
5250	35.9	4.71	4.96	5.28	5.44	0.31	1.27	±13.1%
5600	35.5	5.07	4.57	4.87	5.01	0.28	1.27	±13.1%
5750	35.4	5.22	4.58	4.89	5.03	0.27	1.27	±13.1%

^C Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 20, 60, 100, 150 and 225 MHz respectively. Validity of ConvF assessed at 0 MHz is 4-8 MHz, and ConvF assessed at 10 MHz is 0-10 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

^F The probes are calibrated using tissue simulating liquids (TSL) that deviate for ϵ and σ by less than ±5% from the target values (typically better than ±2%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

^H The stated uncertainty is the total calibration uncertainty (k=2) of Norm-ConvF. This is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1:2020-2020.

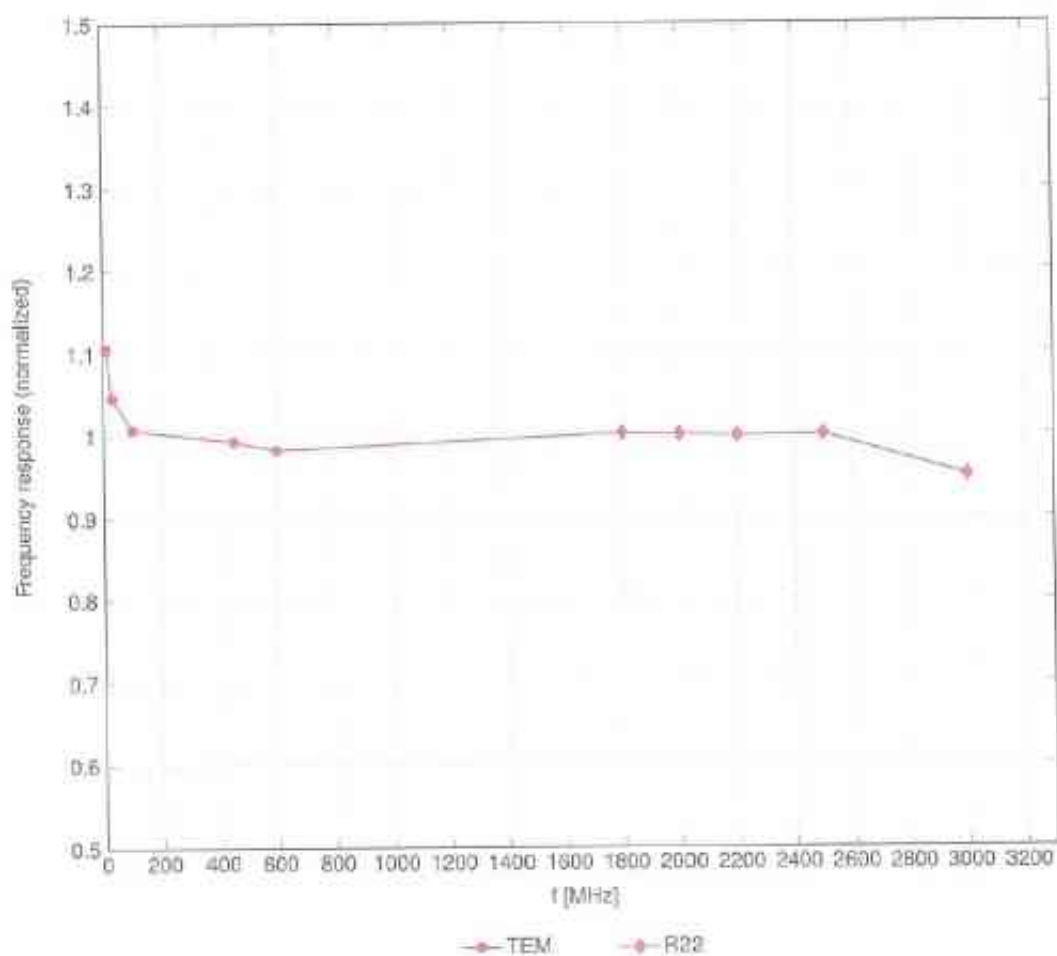


EX3DV4 - SN:3806

September 11, 2025

Frequency Response of E-Field

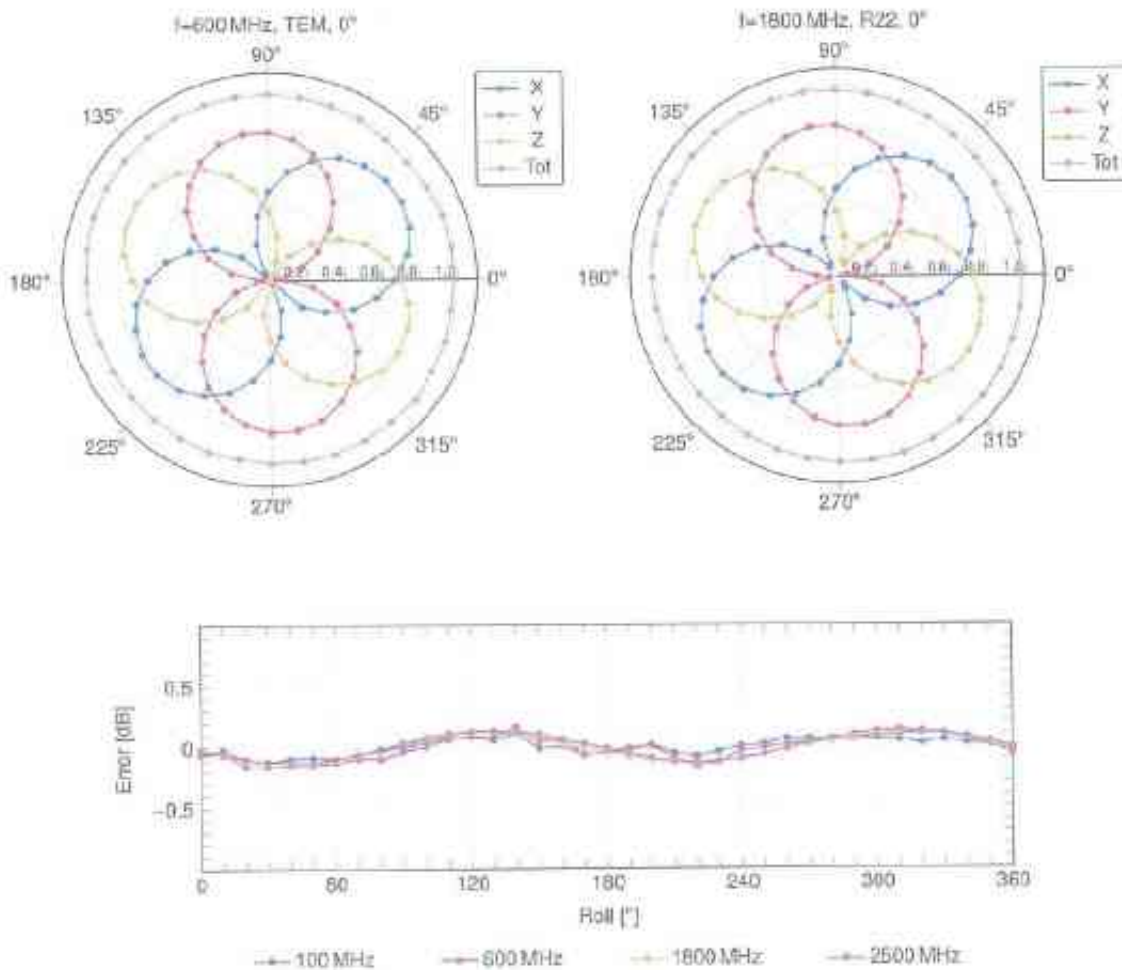
(TEM-Cell:III110 EXX, Waveguide:R22)

Uncertainty of Frequency Response of E-field: $\pm 0.3\%$ (k=2)



EX3DV4 - SN:3906

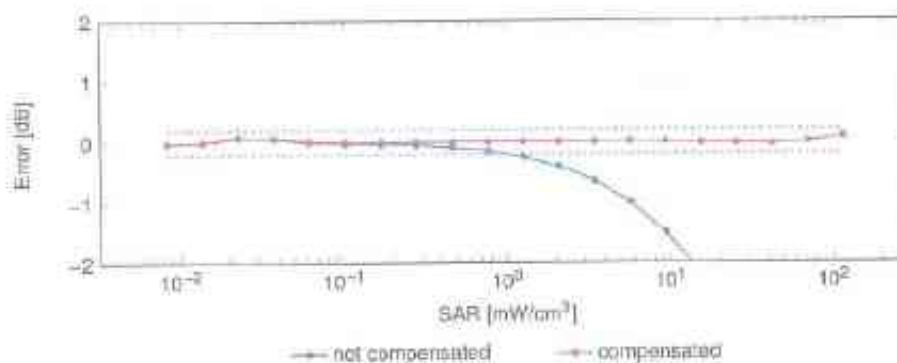
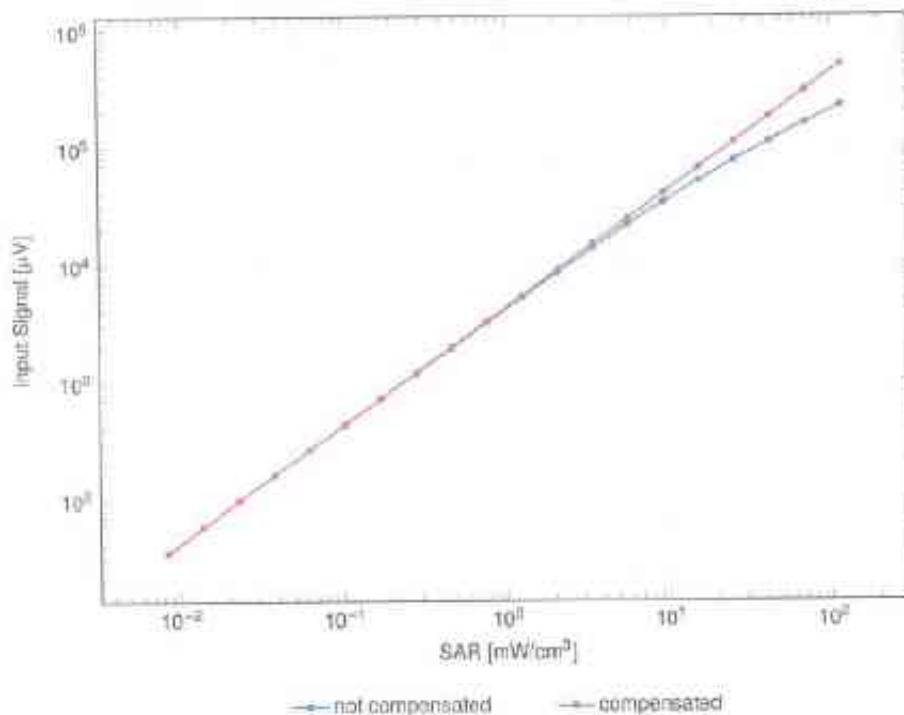
September 11, 2025

Receiving Pattern (ϕ), $\theta = 0^\circ$ Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)



EX30V4 - SN:3806

September 11, 2025

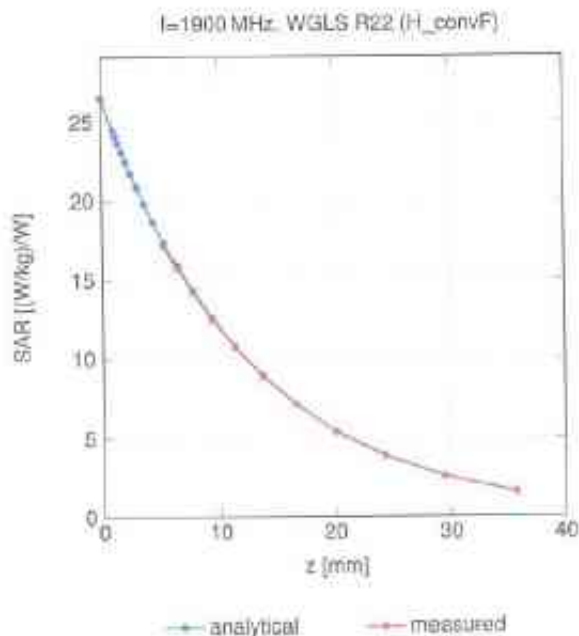
Dynamic Range f(SAR_{HSL})(TEM cell, $f_{\text{eval}} = 1000 \text{ MHz}$)Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)



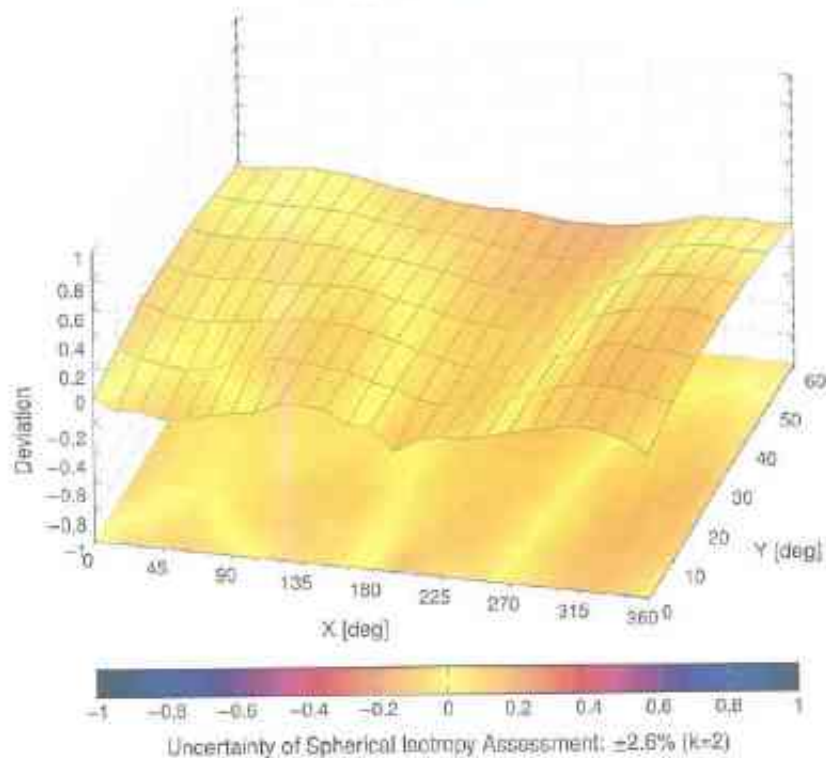
EX3DV4 - SN:3806

September 11, 2025

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f=900$ MHz



EX3DV4 - SN-3806

September 11, 2025

Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc ^E k = 2
0		Continuous Wave	CW	0.00	±4.7
10010	CAB	Pulse (D=10%, T=100 ms)	Pulse	10.00	±9.6
10011	CAC	Rel. 99, RMD, QPSK, 5.0 MHz	WCDMA	2.91	±9.6
10012	CAB	DSSS, DBPSK, 1.0 Mbps, 92.5% DC	WLAN	1.87	±9.6
10013	CAB	OFDM, BPSK, 8.0 Mbps, 72.1% DC	WLAN	3.46	±9.6
10021	DAC	Voice, GSMK, 1 slot(s)	GSM	9.30	±9.6
10023	DAC	Data, GSMK, 1 slot(s)	GSM	6.57	±9.6
10024	DAC	Data, GSMK, 2 slot(s)	GSM	9.56	±9.6
10025	DAC	Data, BPSK, 1 slot(s)	GSM	12.62	±9.6
10026	DAC	Data, BPSK, 2 slot(s)	GSM	9.55	±9.6
10027	DAC	Data, GSMK, 3 slot(s)	GSM	4.50	±9.6
10028	DAC	Data, GSMK, 4 slot(s)	GSM	3.55	±9.6
10029	DAC	Data, BPSK, 3 slot(s)	GSM	7.78	±9.6
10030	CAA	BR, DH1, QPSK	Bluetooth	5.30	±9.6
10031	CAA	BR, DH3, QPSK	Bluetooth	1.87	±9.6
10032	CAA	BR, DH5, QPSK	Bluetooth	1.78	±9.6
10033	CAA	EDR, DH1, pi/4-DQPSK	Bluetooth	7.74	±9.6
10034	CAA	EDR, DH3, pi/4-DQPSK	Bluetooth	4.53	±9.6
10035	CAA	EDR, DH5, pi/4-DQPSK	Bluetooth	3.63	±9.6
10036	CAA	EDR, DH1, 8-QPSK	Bluetooth	6.01	±9.6
10037	CAA	EDR, DH3, 8-QPSK	Bluetooth	4.77	±9.6
10038	CAA	EDR, DH5, 8-QPSK	Bluetooth	4.10	±9.6
10039	CAB	RC1, 1xRTT	CDMA2000	4.57	±9.6
10040	CAA	Full Slot, QPSK, 1 slot(s)	DECT	13.80	±9.6
10045	CAA	Double Slot, QPSK, 2 slot(s)	DECT	10.79	±9.6
10055	CAA	TU-SQDMA, QPSK, 1.5 MHz	TD-SQDMA	11.01	±9.6
10060	DAC	Data, BPSK, 4 slot(s)	GSM	6.52	±9.6
10063	CAB	DSSS, DQPSK, 2.0 Mbps, 87.4% DC	WLAN	2.12	±9.6
10060	CAB	HR-DSSS, DQPSK, 5.5 Mbps, 72.7% DC	WLAN	2.83	±9.6
10061	CAB	HR-DSSS, DQPSK, 11.0 Mbps, 57.5% DC	WLAN	3.30	±9.6
10062	CAE	OFDM, BPSK, 5.0 Mbps, 89.1% DC	WLAN	6.50	±9.6
10063	CAE	OFDM, BPSK, 8.0 Mbps, 85.3% DC	WLAN	8.53	±9.6
10064	CAE	OFDM, QPSK, 12.0 Mbps, 82.0% DC	WLAN	9.03	±9.6
10065	CAE	OFDM, QPSK, 18.0 Mbps, 76.0% DC	WLAN	9.00	±9.6
10066	CAE	OFDM, 16QAM, 24.0 Mbps, 70.0% DC	WLAN	9.38	±9.6
10067	CAE	OFDM, 16QAM, 36.0 Mbps, 62.9% DC	WLAN	10.12	±9.6
10068	CAE	OFDM, 64QAM, 48.0 Mbps, 56.0% DC	WLAN	10.24	±9.6
10069	CAE	OFDM, 64QAM, 54.0 Mbps, 54.4% DC	WLAN	10.56	±9.6
10071	CAB	CFDM, BPSK, 8.0 Mbps, 65.1% DC	WLAN	9.83	±9.6
10072	CAB	CFDM, QPSK, 12.0 Mbps, 60.1% DC	WLAN	9.62	±9.6
10073	CAB	CFDM, QPSK, 18.0 Mbps, 53.1% DC	WLAN	9.94	±9.6
10074	CAB	CFDM, 16QAM, 24.0 Mbps, 46.0% DC	WLAN	10.30	±9.6
10075	CAB	CFDM, 16QAM, 36.0 Mbps, 42.9% DC	WLAN	10.77	±9.6
10076	CAB	CFDM, 64QAM, 48.0 Mbps, 39.5% DC	WLAN	10.94	±9.6
10077	CAB	CFDM, 64QAM, 54.0 Mbps, 38.5% DC	WLAN	11.00	±9.6
10081	CAB	RC3, 1xRTT	CDMA2000	3.97	±9.6
10097	CAC	Rel. 5 HSDPA, QPSK, 5.0 MHz	WCDMA	3.38	±9.6
10098	CAC	Rel. 6 HSUPA, Subnet 2, QPSK, 5.0 MHz	WCDMA	3.98	±9.6
10100	CAF	20.0 MHz, QPSK, 100% RB	LTE-FDD	5.57	±9.6
10101	CAF	20.0 MHz, 16QAM, 100% RB	LTE-FDD	6.42	±9.6
10102	CAF	20.0 MHz, 64QAM, 100% RB	LTE-FDD	6.60	±9.6
10103	CAH	20.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.29	±9.6
10104	CAH	20.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.97	±9.6
10105	CAH	20.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	10.01	±9.6
10106	CAH	10.0 MHz, QPSK, 100% RB	LTE-FDD	5.88	±9.6
10109	CAH	10.0 MHz, 16QAM, 100% RB	LTE-FDD	6.43	±9.6
10110	CAH	5.0 MHz, QPSK, 100% RB	LTE-FDD	5.75	±9.6
10111	CAH	5.0 MHz, 16QAM, 100% RB	LTE-FDD	6.44	±9.6
10112	CAH	10.0 MHz, 64QAM, 100% RB	LTE-FDD	6.59	±9.6
10113	CAH	5.0 MHz, 64QAM, 100% RB	LTE-FDD	5.82	±9.6
10114	CAE	HT40 Greenfield, MCS6 (13.5 Mbps), 89.7% DC	WLAN	6.10	±9.6
10115	CAE	HT40 Greenfield, MCS4 (8.0 Mbps), 89.7% DC	WLAN	5.46	±9.6
10116	CAE	HT40 Greenfield, MCS7 (13.5 Mbps), 89.7% DC	WLAN	6.15	±9.6



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10117	CAE	HT40 Mixed, MCS0 (13.5 Mbps), 99.7% DC	WLAN	8.07	±0.5
10118	CAE	HT40 Mixed, MCS4 (81.0 Mbps), 99.7% DC	WLAN	8.59	±0.5
10119	CAE	HT40 Mixed, MCS7 (135.0 Mbps), 99.7% DC	WLAN	8.13	±0.5
10140	CAF	15.0 MHz, 16QAM, 100% RB	LTE-FDD	8.49	±0.5
10141	CAF	15.0 MHz, 64QAM, 100% RB	LTE-FDD	8.53	±0.5
10142	CAF	3.0 MHz, QPSK, 100% RB	LTE-FDD	5.73	±0.5
10143	CAF	3.0 MHz, 16QAM, 100% RB	LTE-FDD	6.35	±0.5
10144	CAF	3.0 MHz, 64QAM, 100% RB	LTE-FDD	6.65	±0.5
10145	CAG	1.4 MHz, QPSK, 100% RB	LTE-FDD	5.76	±0.5
10146	CAG	1.4 MHz, 16QAM, 100% RB	LTE-FDD	6.41	±0.5
10147	CAG	1.4 MHz, 64QAM, 100% RB	LTE-FDD	6.72	±0.5
10148	DAF	20.0 MHz, 16QAM, 50% RB	LTE-FDD	5.42	±0.5
10150	CAF	20.0 MHz, 64QAM, 50% RB	LTE-FDD	6.60	±0.5
10151	CAH	20.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.28	±0.5
10152	CAH	20.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.92	±0.5
10153	CAH	20.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	10.05	±0.5
10154	CAH	10.0 MHz, QPSK, 50% RB	LTE-FDD	5.75	±0.5
10155	CAH	10.0 MHz, 16QAM, 50% RB	LTE-FDD	6.43	±0.5
10156	CAH	5.0 MHz, QPSK, 50% RB	LTE-FDD	5.79	±0.5
10157	CAH	5.0 MHz, 16QAM, 50% RB	LTE-FDD	6.49	±0.5
10158	CAH	10.0 MHz, 64QAM, 50% RB	LTE-FDD	6.62	±0.5
10159	CAH	5.0 MHz, 64QAM, 50% RB	LTE-FDD	6.56	±0.5
10160	CAF	15.0 MHz, QPSK, 50% RB	LTE-FDD	5.82	±0.5
10161	CAF	15.0 MHz, 16QAM, 50% RB	LTE-FDD	6.43	±0.5
10162	CAF	15.0 MHz, 64QAM, 50% RB	LTE-FDD	6.56	±0.5
10168	CAG	1.4 MHz, QPSK, 50% RB	LTE-FDD	5.46	±0.5
10167	CAG	1.4 MHz, 16QAM, 50% RB	LTE-FDD	6.21	±0.5
10168	CAG	1.4 MHz, 64QAM, 50% RB	LTE-FDD	5.78	±0.5
10169	CAF	20.0 MHz, QPSK, 1 RB	LTE-FDD	5.73	±0.5
10170	CAF	20.0 MHz, 16QAM, 1 RB	LTE-FDD	5.52	±0.5
10171	AAF	20.0 MHz, 64QAM, 1 RB	LTE-FDD	6.40	±0.5
10172	CAH	20.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.21	±0.5
10173	CAH	20.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.48	±0.5
10174	CAH	20.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	10.25	±0.5
10175	CAH	10.0 MHz, QPSK, 1 RB	LTE-FDD	5.72	±0.5
10176	CAH	10.0 MHz, 16QAM, 1 RB	LTE-FDD	6.52	±0.5
10177	CAJ	5.0 MHz, QPSK, 1 RB	LTE-FDD	5.73	±0.5
10178	CAH	5.0 MHz, 16QAM, 1 RB	LTE-FDD	6.52	±0.5
10179	CAH	10.0 MHz, 64QAM, 1 RB	LTE-FDD	6.50	±0.5
10180	CAH	5.0 MHz, 64QAM, 1 RB	LTE-FDD	6.50	±0.5
10181	CAF	15.0 MHz, QPSK, 1 RB	LTE-FDD	5.72	±0.5
10182	CAF	15.0 MHz, 16QAM, 1 RB	LTE-FDD	6.52	±0.5
10183	AAE	15.0 MHz, 64QAM, 1 RB	LTE-FDD	6.56	±0.5
10184	CAF	3.0 MHz, QPSK, 1 RB	LTE-FDD	5.73	±0.5
10185	CAF	3.0 MHz, 16QAM, 1 RB	LTE-FDD	6.31	±0.5
10186	AAF	3.0 MHz, 64QAM, 1 RB	LTE-FDD	6.50	±0.5
10187	CAG	1.4 MHz, QPSK, 1 RB	LTE-FDD	5.73	±0.5
10188	CAG	1.4 MHz, 16QAM, 1 RB	LTE-FDD	6.52	±0.5
10189	AAO	1.4 MHz, 64QAM, 1 RB	LTE-FDD	6.50	±0.5
10193	CAE	HT20 Greenfield, MCS0 (6.5 Mbps), 99.4% DC	WLAN	8.09	±0.5
10194	CAE	HT20 Greenfield, MCS4 (39.0 Mbps), 99.5% DC	WLAN	8.10	±0.5
10195	CAE	HT20 Greenfield, MCS7 (65.0 Mbps), 99.5% DC	WLAN	8.21	±0.5
10196	CAE	HT20 Mixed, MCS0 (6.5 Mbps), 99.4% DC	WLAN	8.10	±0.5
10197	CAE	HT20 Mixed, MCS4 (39.0 Mbps), 99.5% DC	WLAN	8.13	±0.5
10198	CAE	HT20 Mixed, MCS7 (65.0 Mbps), 99.5% DC	WLAN	8.27	±0.5
10219	CAE	HT20 Mixed, MCS0 (7.2 Mbps), 99.3% DC	WLAN	8.03	±0.5
10220	CAE	HT20 Mixed, MCS4 (43.3 Mbps), 99.4% DC	WLAN	8.13	±0.5
10221	CAE	HT20 Mixed, MCS7 (72.2 Mbps), 99.4% DC	WLAN	8.27	±0.5
10222	CAE	HT40 Mixed, MCS0 (15.0 Mbps), 99.7% DC	WLAN	8.06	±0.5
10223	CAE	HT40 Mixed, MCS4 (96.0 Mbps), 99.7% DC	WLAN	8.46	±0.5
10224	CAE	HT40 Mixed, MCS7 (150.0 Mbps), 99.7% DC	WLAN	8.00	±0.5
10225	CAC	Rel. 7 HSPA+, 16QAM, 5.0 MHz	WCDMA	6.57	±0.5
10226	CAC	1.4 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.98	±0.5
10227	CAC	1.4 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	10.26	±0.5
10228	CAC	1.4 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	8.22	±0.5
10229	CAE	3.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.43	±0.5



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10230	CAE	3.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	10.25	±9.5
10231	CAE	3.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.19	±9.5
10232	CAH	5.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.48	±9.5
10233	CAH	5.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	10.25	±9.5
10234	CAH	5.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.21	±9.5
10235	CAH	10.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.48	±9.5
10236	CAH	10.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	10.25	±9.5
10237	CAH	10.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.21	±9.5
10238	CAG	15.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.48	±9.5
10239	CAG	15.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	10.25	±9.5
10240	CAG	15.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 1 RB	LTE-TDD	9.21	±9.5
10241	CAC	1.4 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.82	±9.5
10242	CAC	1.4 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.66	±9.5
10243	CAC	1.4 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.45	±9.5
10244	CAE	3.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	10.05	±9.5
10245	CAE	3.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	10.05	±9.5
10246	CAE	3.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.30	±9.5
10247	CAH	5.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.31	±9.5
10248	CAH	5.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	10.09	±9.5
10249	CAH	5.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.29	±9.5
10250	CAH	10.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.81	±9.5
10251	CAH	10.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	10.17	±9.5
10252	CAH	10.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.24	±9.5
10253	CAG	15.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.99	±9.5
10254	CAG	15.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	10.14	±9.5
10255	CAG	15.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 50% RB	LTE-TDD	9.20	±9.5
10256	CAC	1.4 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.99	±9.5
10257	CAC	1.4 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	10.08	±9.5
10258	CAC	1.4 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.34	±9.5
10259	CAE	3.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.88	±9.5
10260	CAE	3.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.37	±9.5
10261	CAE	3.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.24	±9.5
10262	CAH	5.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.33	±9.5
10263	CAH	5.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	10.10	±9.5
10264	CAH	5.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.23	±9.5
10265	CAH	10.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.92	±9.5
10266	CAH	10.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	10.07	±9.5
10267	CAH	10.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.30	±9.5
10268	CAG	15.0 MHz, 16QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	10.06	±9.5
10269	CAG	15.0 MHz, 64QAM, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	10.13	±9.5
10270	CAG	15.0 MHz, QPSK, UL/DL CFG: 1, SSC: 4, 100% RB	LTE-TDD	9.58	±9.5
10274	CAC	Rel. 6 HSUPA Subset 2, beta_d 0, QPSK, 5.0 MHz	WCDMA	4.87	±9.5
10275	CAC	Rel. 6 HSUPA Subset 2, beta_d 15, QPSK, 5.0 MHz	WCDMA	3.96	±9.5
10280	AAB	RC1, SC255, Full frame rate, 1xRTT	CDMA2000	3.91	±9.5
10291	AAB	RC3, SC255, Full frame rate, 1xRTT	CDMA2000	3.46	±9.5
10292	AAB	RC3, SC255, Full frame rate, SCH0 disabled, 1xRTT	CDMA2000	3.38	±9.5
10293	AAB	RC3, SC3, Full frame rate, 1xRTT	CDMA2000	3.50	±9.5
10295	AAB	RC3, SC3, 1/8 frame rate, 1xRTT	CDMA2000	12.49	±9.5
10297	AAE	20.0 MHz, QPSK, 50% RB	LTE-FDD	5.61	±9.5
10298	AAE	3.0 MHz, QPSK, 50% RB	LTE-FDD	5.70	±9.5
10299	AAE	3.0 MHz, 16QAM, 50% RB	LTE-FDD	6.39	±9.5
10300	AAE	3.0 MHz, 64QAM, 50% RB	LTE-FDD	6.50	±9.5
10301	AAA	PUSC, 29:18, QPSK, 5.0 ms, 15 TRAF SYM	WIMAX	12.00	±9.5
10302	AAA	PUSC, 29:18, QPSK, 5.0 ms, 15 TRAF SYM	WIMAX	12.57	±9.5
10303	AAA	PUSC, 31:15, 64QAM, 5.0 ms, 15 TRAF SYM	WIMAX	12.52	±9.5
10304	AAA	PUSC, 29:18, 64QAM, 5.0 ms, 15 TRAF SYM	WIMAX	11.86	±9.5
10305	AAA	PUSC, 31:15, 64QAM, 10.0 ms, 15 TRAF SYM	WIMAX	15.24	±9.5
10306	AAA	PUSC, 29:18, 64QAM, 10.0 ms, 15 TRAF SYM	WIMAX	14.67	±9.5
10307	AAA	PUSC, 29:18, QPSK, 10.0 ms, 15 TRAF SYM	WIMAX	14.49	±9.5
10308	AAA	PUSC, 29:18, 16QAM, 10.0 ms, 15 TRAF SYM	WIMAX	14.48	±9.5
10309	AAA	AMC 2x3, 29:18, 16QAM, 10.0 ms, 15 TRAF SYM	WIMAX	14.58	±9.5
10310	AAA	AMC 2x3, 29:18, QPSK, 10.0 ms, 15 TRAF SYM	WIMAX	14.57	±9.5
10311	AAE	15.0 MHz, QPSK, 100% RB	LTE-FDD	8.06	±9.5
10315	AAB	DSSS, DSSS, 1.0 Mbps, 95.0% DC	WLAN	1.71	±9.5
10316	AAB	OFDM, BPSK, 6.0 Mbps, 95.5% DC	WLAN	8.36	±9.5
10317	AAE	OFDM, BPSK, 6.0 Mbps, 95.5% DC	WLAN	8.36	±9.5



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10352	AAA	Pulse (D=10%, T=5 ms)	Generic	10.00	±0.0
10353	AAA	Pulse (D=20%, T=5 ms)	Generic	6.99	±0.5
10354	AAA	Pulse (D=40%, T=5 ms)	Generic	3.98	±0.5
10355	AAA	Pulse (D=60%, T=5 ms)	Generic	2.22	±0.5
10356	AAA	Pulse (D=80%, T=5 ms)	Generic	0.97	±0.5
10387	AAA	Random (BW=1 MHz, MOD=QPSK)	Generic	5.19	±0.5
10388	AAA	Random (BW=10 MHz, MOD=QPSK)	Generic	5.22	±0.5
10389	AAA	Random (BW=100 kHz, MOD=64QAM)	Generic	6.27	±0.5
10399	AAA	Random (BW=40 MHz, MOD=64QAM)	Generic	6.27	±0.5
10400	AAF	VHT10, MCS5 (52.0 Mbps), 99.0% DC	WLAN	8.37	±0.5
10401	AAF	VHT10, MCS5 (108.0 Mbps), 99.7% DC	WLAN	0.88	±0.5
10402	AAF	VHT10, MCS5 (234.0 Mbps), 99.0% DC	WLAN	0.53	±0.5
10403	AAE	Rev. 0, 1xEV-DO	CDMA2000	3.76	±0.5
10404	AAE	Rev. A, 1xEV-DO	CDMA2000	3.77	±0.5
10406	AAE	RC3, SC22, Full frame rate, BCH0 enabled, 1xRTT	CDMA2000	5.22	±0.5
10410	AAH	10.0 MHz, QPSK, UL/DL CFG: 0, SSC: 4, 1 RB	LTE-TDD	7.92	±0.5
10414	AAA	Random (BW=40 MHz, HIGH PAR)	Generic	0.54	±0.5
10415	AAA	QSSS, DQPSK, 1.0 Mbps, 89.9% DC	WLAN	1.54	±0.5
10416	AAA	OFDM, BPSK, 6.0 Mbps, 99.9% DC	WLAN	8.33	±0.5
10417	AAE	OFDM, BPSK, 6.0 Mbps, 99.9% DC	WLAN	8.23	±0.5
10418	AAA	OFDM (ITF), BPSK, 6.0 Mbps, 99.8% DC	WLAN	8.14	±0.5
10419	AAA	OFDM (ITF), BPSK, 6.0 Mbps, 99.8% DC	WLAN	8.10	±0.5
10422	AAE	HT20 Greenfield, MCS0 (7.2 Mbps), 99.3% DC	WLAN	8.32	±0.5
10423	AAE	HT20 Greenfield, MCS4 (43.0 Mbps), 99.3% DC	WLAN	8.47	±0.5
10424	AAE	HT20 Greenfield, MCS7 (72.0 Mbps), 99.3% DC	WLAN	8.40	±0.5
10425	AAE	HT40 Greenfield, MCS0 (15.0 Mbps), 99.2% DC	WLAN	8.41	±0.5
10426	AAE	HT40 Greenfield, MCS4 (90.0 Mbps), 99.2% DC	WLAN	8.45	±0.5
10427	AAE	HT40 Greenfield, MCS7 (150.0 Mbps), 99.2% DC	WLAN	8.41	±0.5
10430	AAE	5.0 MHz, 64-QAM, 100% RB	LTE-FDD	8.38	±0.5
10431	AAE	10.0 MHz, 64-QAM, 100% RB	LTE-FDD	8.38	±0.5
10432	AAE	15.0 MHz, 64-QAM, 100% RB	LTE-FDD	8.34	±0.5
10433	AAE	20.0 MHz, 64-QAM, 100% RB	LTE-FDD	8.04	±0.5
10434	AAE	BS Test Model 1, 64 DPCCH, 64QAM, 5.0 MHz (DL)	WCDMA	8.50	±0.5
10435	AAE	20.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	7.82	±0.5
10447	AAE	5.0 MHz, 64-QAM, 100% RB	LTE-FDD	7.56	±0.5
10448	AAE	10.0 MHz, 64-QAM, 100% RB	LTE-FDD	7.53	±0.5
10449	AAE	15.0 MHz, 64-QAM, 100% RB	LTE-FDD	7.51	±0.5
10450	AAE	20.0 MHz, 64-QAM, 100% RB	LTE-FDD	7.49	±0.5
10451	AAE	BS Test Model 1, 64 DPCCH, Clipping 44%, 64QAM, 5.0 MHz (DL)	WCDMA	7.59	±0.5
10456	AAE	VHT10, MCS5 (58.5 Mbps), 99.0% DC	WLAN	8.62	±0.5
10457	AAE	Rel. 8 DC-HSDPA, QPSK, 10.0 MHz	WCDMA	8.82	±0.5
10458	AAA	Rev. E, 3 carriers, 1xEV-DO	CDMA2000	6.95	±0.5
10459	AAA	Rev. E, 3 carriers, 1xEV-DO	CDMA2000	6.25	±0.5
10460	AAE	Rel. 99, AMR, QPSK, 5.0 MHz	WCDMA	2.09	±0.5
10461	AAG	1.4 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	7.82	±0.5
10462	AAG	1.4 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.30	±0.5
10463	AAG	1.4 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.58	±0.5
10464	AAG	3.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	7.88	±0.5
10465	AAG	3.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.32	±0.5
10468	AAG	3.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.57	±0.5
10467	AAG	5.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	7.52	±0.5
10466	AAG	5.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.38	±0.5
10469	AAG	5.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.58	±0.5
10470	AAG	10.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	7.82	±0.5
10471	AAG	10.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.32	±0.5
10472	AAG	10.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.57	±0.5
10473	AAG	15.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	7.82	±0.5
10474	AAG	15.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.32	±0.5
10475	AAG	15.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.57	±0.5
10477	AAG	20.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.32	±0.5
10478	AAG	20.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 1 RB	LTE-TDD	8.57	±0.5
10479	AAG	1.4 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	7.74	±0.5
10480	AAG	1.4 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.18	±0.5
10481	AAG	1.4 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.45	±0.5
10482	AAG	3.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	7.71	±0.5
10483	AAG	3.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.38	±0.5



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10484	AAD	3.0 MHz, 84QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.47	±0.6
10485	AAG	5.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	7.59	±0.5
10486	AAJ	5.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.38	±0.5
10487	AAG	5.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.00	±0.5
10488	AAJ	10.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	7.70	±0.5
10489	AAJ	10.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.37	±0.5
10490	AAJ	10.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.54	±0.5
10491	AAF	15.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	7.74	±0.5
10492	AAF	15.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.41	±0.5
10493	AAF	15.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.55	±0.5
10494	AAJ	20.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	7.74	±0.5
10495	AAJ	20.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.37	±0.5
10496	AAJ	20.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 50% RB	LTE-TDD	8.54	±0.5
10497	AAC	1.4 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	7.67	±0.5
10498	AAC	1.4 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.40	±0.5
10499	AAC	1.4 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.58	±0.5
10500	AAD	3.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	7.87	±0.5
10501	AAD	3.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.44	±0.5
10502	AAD	3.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.52	±0.5
10503	AAJ	5.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	7.72	±0.5
10504	AAJ	5.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.31	±0.5
10505	AAJ	5.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.54	±0.5
10506	AAJ	10.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	7.74	±0.5
10507	AAJ	10.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.38	±0.5
10508	AAJ	10.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.55	±0.5
10509	AAF	15.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	7.99	±0.5
10510	AAF	15.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.40	±0.5
10511	AAF	15.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.51	±0.5
10512	AAJ	20.0 MHz, QPSK, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	7.74	±0.5
10513	AAJ	20.0 MHz, 16QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.42	±0.5
10514	AAD	20.0 MHz, 64QAM, UL/DL CFG: 0, SSC: 7, 100% RB	LTE-TDD	8.45	±0.5
10515	AAA	DSSS, DQPSK, 2.0 Mbps, 99.0% DC	WLAN	1.50	±0.5
10516	AAA	HR-DSSS, DQPSK, 5.5 Mbps, 99.0% DC	WLAN	1.57	±0.5
10517	AAA	HR-DSSS, DQPSK, 11.0 Mbps, 99.0% DC	WLAN	1.58	±0.5
10518	AAD	OFDM, BPSK, 9.0 Mbps, 99.9% DC	WLAN	8.23	±0.5
10519	AAD	OFDM, QPSK, 12.0 Mbps, 99.0% DC	WLAN	8.39	±0.5
10520	AAD	OFDM, QPSK, 18.0 Mbps, 99.0% DC	WLAN	8.12	±0.5
10521	AAD	OFDM, 16QAM, 24.0 Mbps, 99.0% DC	WLAN	7.97	±0.5
10522	AAD	OFDM, 16QAM, 36.0 Mbps, 99.0% DC	WLAN	8.45	±0.5
10523	AAD	OFDM, 64QAM, 48.0 Mbps, 99.0% DC	WLAN	8.08	±0.5
10524	AAD	OFDM, 64QAM, 54.0 Mbps, 99.0% DC	WLAN	8.27	±0.5
10525	AAD	VHT20, MCS0 (6.5 Mbps), 99.9% DC	WLAN	8.36	±0.5
10526	AAD	VHT20, MCS1 (13.0 Mbps), 99.0% DC	WLAN	8.43	±0.5
10527	AAD	VHT20, MCS2 (19.5 Mbps), 99.0% DC	WLAN	8.21	±0.5
10528	AAD	VHT20, MCS3 (26.0 Mbps), 99.0% DC	WLAN	8.38	±0.5
10529	AAD	VHT20, MCS4 (32.5 Mbps), 99.0% DC	WLAN	8.36	±0.5
10530	AAD	VHT20, MCS5 (39.0 Mbps), 99.0% DC	WLAN	8.43	±0.5
10531	AAD	VHT20, MCS6 (45.5 Mbps), 99.0% DC	WLAN	8.29	±0.5
10532	AAD	VHT20, MCS7 (52.0 Mbps), 99.0% DC	WLAN	8.38	±0.5
10533	AAD	VHT20, MCS8 (58.5 Mbps), 99.0% DC	WLAN	8.38	±0.5
10534	AAD	VHT40, MCS0 (13.5 Mbps), 99.9% DC	WLAN	8.45	±0.5
10535	AAD	VHT40, MCS1 (27.0 Mbps), 99.8% DC	WLAN	8.45	±0.5
10536	AAD	VHT40, MCS2 (40.5 Mbps), 99.8% DC	WLAN	8.32	±0.5
10537	AAD	VHT40, MCS3 (54.0 Mbps), 99.7% DC	WLAN	8.44	±0.5
10538	AAD	VHT40, MCS4 (67.5 Mbps), 99.5% DC	WLAN	8.54	±0.5
10539	AAD	VHT40, MCS5 (81.0 Mbps), 99.5% DC	WLAN	8.39	±0.5
10540	AAD	VHT40, MCS6 (94.5 Mbps), 99.3% DC	WLAN	8.38	±0.5
10541	AAD	VHT40, MCS7 (108.0 Mbps), 99.2% DC	WLAN	8.46	±0.5
10542	AAD	VHT40, MCS8 (121.5 Mbps), 99.1% DC	WLAN	8.05	±0.5
10543	AAD	VHT40, MCS9 (135.0 Mbps), 99.0% DC	WLAN	8.65	±0.5
10544	AAD	VHT80, MCS0 (27.0 Mbps), 99.0% DC	WLAN	8.47	±0.5
10545	AAD	VHT80, MCS1 (54.0 Mbps), 99.0% DC	WLAN	8.55	±0.5
10546	AAD	VHT80, MCS2 (81.0 Mbps), 99.0% DC	WLAN	8.35	±0.5
10547	AAD	VHT80, MCS3 (108.0 Mbps), 99.0% DC	WLAN	8.49	±0.5
10548	AAD	VHT80, MCS4 (135.0 Mbps), 99.0% DC	WLAN	8.57	±0.5
10549	AAD	VHT80, MCS5 (162.0 Mbps), 99.0% DC	WLAN	8.58	±0.5
10550	AAD	VHT80, MCS6 (189.0 Mbps), 99.0% DC	WLAN	8.50	±0.5
10551	AAD	VHT80, MCS7 (216.0 Mbps), 99.0% DC	WLAN	8.50	±0.5
10552	AAD	VHT80, MCS8 (243.0 Mbps), 99.0% DC	WLAN	8.42	±0.5



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10553	AAE	VHT180, MCS9 (390.0 Mbps), 99.9% DC	WLAN	8.45	±9.5
10554	AAE	VHT160, MCS9 (360.0 Mbps), 99.9% DC	WLAN	8.48	±9.5
10555	AAE	VHT160, MCS1 (117.0 Mbps), 99.9% DC	WLAN	8.47	±9.5
10556	AAE	VHT180, MCS2 (175.5 Mbps), 99.9% DC	WLAN	8.50	±9.5
10557	AAE	VHT160, MCS3 (234.0 Mbps), 99.9% DC	WLAN	8.52	±9.5
10558	AAE	VHT160, MCS4 (351.0 Mbps), 99.9% DC	WLAN	8.51	±9.5
10559	AAE	VHT160, MCS5 (526.5 Mbps), 99.9% DC	WLAN	8.73	±9.5
10560	AAE	VHT160, MCS7 (585.0 Mbps), 99.9% DC	WLAN	8.58	±9.5
10561	AAE	VHT160, MCS8 (702.0 Mbps), 99.9% DC	WLAN	8.60	±9.5
10562	AAE	VHT160, MCS9 (790.0 Mbps), 99.9% DC	WLAN	8.77	±9.5
10563	AAA	OFDM, BPSK, 2.0 Mbps, 99.9% DC	WLAN	8.25	±9.5
10564	AAA	OFDM, QPSK, 4.0 Mbps, 99.9% DC	WLAN	8.45	±9.5
10565	AAA	OFDM, QPSK, 8.0 Mbps, 99.9% DC	WLAN	8.13	±9.5
10566	AAA	OFDM, 16QAM, 16.0 Mbps, 99.9% DC	WLAN	8.00	±9.5
10567	AAA	OFDM, 16QAM, 32.0 Mbps, 99.9% DC	WLAN	8.37	±9.5
10568	AAA	OFDM, 64QAM, 48.0 Mbps, 99.9% DC	WLAN	8.15	±9.5
10569	AAA	OFDM, 64QAM, 96.0 Mbps, 99.9% DC	WLAN	8.30	±9.5
10570	AAA	DSSS, DQPSK, 1.0 Mbps, 99.9% DC	WLAN	1.98	±9.5
10571	AAA	DSSS, DQPSK, 2.0 Mbps, 99.9% DC	WLAN	1.99	±9.5
10572	AAA	HR-DSSS, DQPSK, 5.5 Mbps, 99.9% DC	WLAN	1.96	±9.5
10573	AAA	HR-DSSS, DQPSK, 11.0 Mbps, 99.9% DC	WLAN	1.98	±9.5
10574	AAA	OFDM, BPSK, 6.0 Mbps, 99.9% DC	WLAN	8.59	±9.5
10575	AAA	OFDM, BPSK, 9.0 Mbps, 99.9% DC	WLAN	8.60	±9.5
10576	AAA	OFDM, QPSK, 12.0 Mbps, 99.9% DC	WLAN	8.70	±9.5
10577	AAA	OFDM, QPSK, 18.0 Mbps, 99.9% DC	WLAN	8.49	±9.5
10578	AAA	OFDM, 16QAM, 24.0 Mbps, 99.9% DC	WLAN	8.36	±9.5
10579	AAA	OFDM, 16QAM, 36.0 Mbps, 99.9% DC	WLAN	8.76	±9.5
10580	AAA	OFDM, 64QAM, 48.0 Mbps, 99.9% DC	WLAN	8.35	±9.5
10581	AAA	OFDM, 64QAM, 96.0 Mbps, 99.9% DC	WLAN	8.67	±9.5
10582	AAA	OFDM, BPSK, 8.0 Mbps, 99.9% DC	WLAN	8.59	±9.5
10583	AAA	OFDM, BPSK, 11.0 Mbps, 99.9% DC	WLAN	8.50	±9.5
10584	AAA	OFDM, QPSK, 12.0 Mbps, 99.9% DC	WLAN	8.70	±9.5
10585	AAA	OFDM, QPSK, 18.0 Mbps, 99.9% DC	WLAN	8.49	±9.5
10586	AAA	OFDM, 16QAM, 24.0 Mbps, 99.9% DC	WLAN	8.36	±9.5
10587	AAA	OFDM, 16QAM, 36.0 Mbps, 99.9% DC	WLAN	8.76	±9.5
10588	AAA	OFDM, 64QAM, 48.0 Mbps, 99.9% DC	WLAN	8.35	±9.5
10589	AAA	OFDM, 64QAM, 96.0 Mbps, 99.9% DC	WLAN	8.67	±9.5
10590	AAA	OFDM, BPSK, 8.0 Mbps, 99.9% DC	WLAN	8.59	±9.5
10591	AAA	OFDM, BPSK, 11.0 Mbps, 99.9% DC	WLAN	8.50	±9.5
10592	AAA	OFDM, QPSK, 12.0 Mbps, 99.9% DC	WLAN	8.70	±9.5
10593	AAA	OFDM, QPSK, 18.0 Mbps, 99.9% DC	WLAN	8.49	±9.5
10594	AAA	OFDM, 16QAM, 24.0 Mbps, 99.9% DC	WLAN	8.36	±9.5
10595	AAA	OFDM, 16QAM, 36.0 Mbps, 99.9% DC	WLAN	8.76	±9.5
10596	AAA	OFDM, 64QAM, 48.0 Mbps, 99.9% DC	WLAN	8.35	±9.5
10597	AAA	OFDM, 64QAM, 96.0 Mbps, 99.9% DC	WLAN	8.67	±9.5
10598	AAA	OFDM, BPSK, 8.0 Mbps, 99.9% DC	WLAN	8.59	±9.5
10599	AAA	OFDM, BPSK, 11.0 Mbps, 99.9% DC	WLAN	8.50	±9.5
10600	AAA	OFDM, QPSK, 12.0 Mbps, 99.9% DC	WLAN	8.70	±9.5
10601	AAA	OFDM, QPSK, 18.0 Mbps, 99.9% DC	WLAN	8.49	±9.5
10602	AAA	OFDM, 16QAM, 24.0 Mbps, 99.9% DC	WLAN	8.36	±9.5
10603	AAA	OFDM, 16QAM, 36.0 Mbps, 99.9% DC	WLAN	8.76	±9.5
10604	AAA	OFDM, 64QAM, 48.0 Mbps, 99.9% DC	WLAN	8.35	±9.5
10605	AAA	OFDM, 64QAM, 96.0 Mbps, 99.9% DC	WLAN	8.67	±9.5
10606	AAA	OFDM, BPSK, 8.0 Mbps, 99.9% DC	WLAN	8.59	±9.5
10607	AAA	OFDM, BPSK, 11.0 Mbps, 99.9% DC	WLAN	8.50	±9.5
10608	AAA	OFDM, QPSK, 12.0 Mbps, 99.9% DC	WLAN	8.70	±9.5
10609	AAA	OFDM, QPSK, 18.0 Mbps, 99.9% DC	WLAN	8.49	±9.5
10610	AAA	OFDM, 16QAM, 24.0 Mbps, 99.9% DC	WLAN	8.36	±9.5
10611	AAA	OFDM, 16QAM, 36.0 Mbps, 99.9% DC	WLAN	8.76	±9.5
10612	AAA	OFDM, 64QAM, 48.0 Mbps, 99.9% DC	WLAN	8.35	±9.5
10613	AAA	OFDM, 64QAM, 96.0 Mbps, 99.9% DC	WLAN	8.67	±9.5
10614	AAA	OFDM, BPSK, 8.0 Mbps, 99.9% DC	WLAN	8.59	±9.5
10615	AAA	OFDM, BPSK, 11.0 Mbps, 99.9% DC	WLAN	8.50	±9.5
10616	AAA	OFDM, QPSK, 12.0 Mbps, 99.9% DC	WLAN	8.70	±9.5
10617	AAA	OFDM, QPSK, 18.0 Mbps, 99.9% DC	WLAN	8.49	±9.5
10618	AAA	OFDM, 16QAM, 24.0 Mbps, 99.9% DC	WLAN	8.36	±9.5
10619	AAA	OFDM, 16QAM, 36.0 Mbps, 99.9% DC	WLAN	8.76	±9.5



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UID	Rev	Communication System Name	Group	PAR (dB)	Unc ¹ a = 2
10620	AAD	VHT40, MCS4 (81.0 Mbps), 89.2% DC	WLAN	8.87	±0.6
10621	AAD	VHT40, MCS5 (108.0 Mbps), 88.9% DC	WLAN	8.77	±0.6
10622	AAD	VHT40, MCS6 (121.5 Mbps), 88.6% DC	WLAN	8.88	±0.6
10623	AAD	VHT40, MCS7 (135.0 Mbps), 88.6% DC	WLAN	8.82	±0.6
10624	AAD	VHT40, MCS8 (162.0 Mbps), 88.4% DC	WLAN	8.96	±0.6
10625	AAD	VHT40, MCS9 (180.0 Mbps), 88.2% DC	WLAN	8.98	±0.6
10626	AAD	VHT80, MCS0 (29.3 Mbps), 90.0% DC	WLAN	8.63	±0.6
10627	AAD	VHT80, MCS1 (58.5 Mbps), 90.0% DC	WLAN	8.89	±0.6
10628	AAD	VHT80, MCS2 (87.8 Mbps), 90.0% DC	WLAN	8.71	±0.6
10629	AAD	VHT80, MCS3 (117.0 Mbps), 90.0% DC	WLAN	8.85	±0.6
10630	AAD	VHT80, MCS4 (175.5 Mbps), 90.0% DC	WLAN	8.72	±0.6
10631	AAD	VHT80, MCS5 (234.0 Mbps), 90.0% DC	WLAN	8.81	±0.6
10632	AAD	VHT80, MCS6 (283.5 Mbps), 90.0% DC	WLAN	8.74	±0.6
10633	AAD	VHT80, MCS7 (292.5 Mbps), 90.0% DC	WLAN	8.83	±0.6
10634	AAD	VHT80, MCS8 (351.0 Mbps), 90.0% DC	WLAN	8.80	±0.6
10635	AAD	VHT80, MCS9 (390.0 Mbps), 90.0% DC	WLAN	8.81	±0.6
10636	AAE	VHT160, MCS0 (58.5 Mbps), 90.0% DC	WLAN	8.83	±0.6
10637	AAE	VHT160, MCS1 (117.0 Mbps), 90.0% DC	WLAN	8.79	±0.6
10638	AAE	VHT160, MCS2 (175.5 Mbps), 90.0% DC	WLAN	8.83	±0.6
10639	AAE	VHT160, MCS3 (234.0 Mbps), 90.0% DC	WLAN	8.85	±0.6
10640	AAE	VHT160, MCS4 (351.0 Mbps), 90.0% DC	WLAN	8.85	±0.6
10641	AAE	VHT160, MCS5 (468.0 Mbps), 90.0% DC	WLAN	9.06	±0.6
10642	AAE	VHT160, MCS6 (526.5 Mbps), 90.0% DC	WLAN	9.06	±0.6
10643	AAE	VHT160, MCS7 (585.0 Mbps), 90.0% DC	WLAN	8.89	±0.6
10644	AAE	VHT160, MCS8 (702.0 Mbps), 90.0% DC	WLAN	9.06	±0.6
10645	AAE	VHT160, MCS9 (790.0 Mbps), 90.0% DC	WLAN	9.11	±0.6
10646	AAH	±0.0MHz, QPSK, UL/DL CFG: 2, SSC: 4, 1 RE	LTE-TDD	11.96	±0.6
10647	AAH	±0.0MHz, QPSK, UL/DL CFG: 2, SSC: 7, 1 RE	LTE-TDD	11.96	±0.6
10648	AAA	RC8, 5075, 1xAdvanced	CDMA2000	9.45	±0.6
10670	AAA	LE, Test, GFSK	Bluetooth	8.19	±0.6
10671	AAC	ET20, MCS0 (8.6 Mbps), 90.0% DC	WLAN	8.09	±0.6
10672	AAC	ET20, MCS1 (17.0 Mbps), 90.0% DC	WLAN	8.57	±0.6
10673	AAC	ET20, MCS2 (26.0 Mbps), 90.0% DC	WLAN	8.78	±0.6
10674	AAC	ET20, MCS3 (34.0 Mbps), 90.0% DC	WLAN	8.74	±0.6
10675	AAC	ET20, MCS4 (52.0 Mbps), 90.0% DC	WLAN	8.90	±0.6
10676	AAC	ET20, MCS5 (69.0 Mbps), 90.0% DC	WLAN	8.77	±0.6
10677	AAC	ET20, MCS6 (77.0 Mbps), 90.0% DC	WLAN	8.73	±0.6
10678	AAC	ET20, MCS7 (96.0 Mbps), 90.0% DC	WLAN	8.75	±0.6
10679	AAC	ET20, MCS8 (103.0 Mbps), 90.0% DC	WLAN	8.88	±0.6
10680	AAC	ET20, MCS9 (115.0 Mbps), 90.0% DC	WLAN	8.80	±0.6
10681	AAC	ET20, MCS10 (122.0 Mbps), 90.0% DC	WLAN	8.82	±0.6
10682	AAC	ET20, MCS11 (135.0 Mbps), 90.0% DC	WLAN	8.83	±0.6
10683	AAC	ET20, MCS0 (8.6 Mbps), 100.0% DC	WLAN	8.42	±0.6
10684	AAC	ET20, MCS1 (17.0 Mbps), 100.0% DC	WLAN	8.26	±0.6
10685	AAC	ET20, MCS2 (26.0 Mbps), 100.0% DC	WLAN	8.30	±0.6
10686	AAC	ET20, MCS3 (34.0 Mbps), 100.0% DC	WLAN	8.38	±0.6
10687	AAC	ET20, MCS4 (52.0 Mbps), 100.0% DC	WLAN	8.46	±0.6
10688	AAC	ET20, MCS5 (69.0 Mbps), 100.0% DC	WLAN	8.29	±0.6
10689	AAC	ET20, MCS6 (77.0 Mbps), 100.0% DC	WLAN	8.55	±0.6
10690	AAC	ET20, MCS7 (96.0 Mbps), 100.0% DC	WLAN	8.29	±0.6
10691	AAC	ET20, MCS8 (103.0 Mbps), 100.0% DC	WLAN	8.35	±0.6
10692	AAC	ET20, MCS9 (115.0 Mbps), 100.0% DC	WLAN	8.25	±0.6
10693	AAC	ET20, MCS10 (122.0 Mbps), 100.0% DC	WLAN	8.25	±0.6
10694	AAC	ET20, MCS11 (135.0 Mbps), 100.0% DC	WLAN	8.57	±0.6
10695	AAC	ET40, MCS0 (17.2 Mbps), 89.8% DC	WLAN	8.79	±0.6
10696	AAC	ET40, MCS1 (34.0 Mbps), 89.8% DC	WLAN	8.91	±0.6
10697	AAC	ET40, MCS2 (52.0 Mbps), 89.7% DC	WLAN	8.61	±0.6
10698	AAC	ET40, MCS3 (69.0 Mbps), 89.7% DC	WLAN	8.89	±0.6
10699	AAC	ET40, MCS4 (103.0 Mbps), 89.8% DC	WLAN	8.82	±0.6
10700	AAC	ET40, MCS5 (135.0 Mbps), 89.9% DC	WLAN	8.79	±0.6
10701	AAC	ET40, MCS6 (155.0 Mbps), 89.8% DC	WLAN	8.86	±0.6
10702	AAC	ET40, MCS7 (172.0 Mbps), 89.8% DC	WLAN	8.70	±0.6
10703	AAC	ET40, MCS8 (207.0 Mbps), 89.8% DC	WLAN	8.82	±0.6
10704	AAC	ET40, MCS9 (229.0 Mbps), 89.8% DC	WLAN	8.56	±0.6
10705	AAC	ET40, MCS10 (256.0 Mbps), 89.8% DC	WLAN	8.88	±0.6
10706	AAC	ET40, MCS11 (267.0 Mbps), 89.8% DC	WLAN	8.56	±0.6



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10707	AAC	ET40, MCS0 (17.2 Mbps), 99.9% DC	WLAN	8.32	±9.6
10708	AAC	ET40, MCS1 (34.0 Mbps), 99.7% DC	WLAN	8.55	±9.6
10709	AAC	ET40, MCS2 (52.0 Mbps), 99.7% DC	WLAN	8.33	±9.6
10710	AAC	ET40, MCS3 (69.0 Mbps), 99.7% DC	WLAN	8.29	±9.6
10711	AAC	ET40, MCS4 (103.0 Mbps), 99.8% DC	WLAN	8.39	±9.6
10712	AAC	ET40, MCS5 (155.0 Mbps), 99.8% DC	WLAN	8.67	±9.6
10713	AAC	ET40, MCS6 (155.0 Mbps), 99.8% DC	WLAN	8.33	±9.6
10714	AAC	ET40, MCS7 (172.0 Mbps), 99.8% DC	WLAN	8.26	±9.6
10715	AAC	ET40, MCS8 (207.0 Mbps), 99.8% DC	WLAN	8.45	±9.6
10716	AAC	ET40, MCS9 (228.0 Mbps), 99.8% DC	WLAN	8.38	±9.6
10717	AAC	ET40, MCS10 (259.0 Mbps), 99.8% DC	WLAN	8.48	±9.6
10718	AAC	ET40, MCS11 (267.0 Mbps), 99.8% DC	WLAN	8.24	±9.6
10719	AAC	ET80, MCS0 (36.0 Mbps), 99.0% DC	WLAN	8.81	±9.6
10720	AAC	ET80, MCS1 (72.1 Mbps), 99.0% DC	WLAN	8.87	±9.6
10721	AAC	ET80, MCS2 (108.1 Mbps), 99.0% DC	WLAN	8.78	±9.6
10722	AAC	ET80, MCS3 (144.1 Mbps), 99.0% DC	WLAN	8.55	±9.6
10723	AAC	ET80, MCS4 (216.2 Mbps), 99.0% DC	WLAN	8.70	±9.6
10724	AAC	ET80, MCS5 (288.2 Mbps), 99.0% DC	WLAN	8.90	±9.6
10725	AAC	ET80, MCS6 (324.4 Mbps), 99.0% DC	WLAN	8.74	±9.6
10726	AAC	ET80, MCS7 (360.3 Mbps), 99.0% DC	WLAN	8.72	±9.6
10727	AAC	ET80, MCS8 (432.4 Mbps), 99.0% DC	WLAN	8.86	±9.6
10728	AAC	ET80, MCS9 (488.4 Mbps), 99.0% DC	WLAN	8.88	±9.6
10729	AAC	ET80, MCS10 (540.4 Mbps), 99.0% DC	WLAN	8.64	±9.6
10730	AAC	ET80, MCS11 (72.0 Mbps), 99.0% DC	WLAN	8.87	±9.6
10731	AAC	ET80, MCS0 (36.0 Mbps), 100.0% DC	WLAN	8.42	±9.6
10732	AAC	ET80, MCS1 (72.1 Mbps), 100.0% DC	WLAN	8.46	±9.6
10733	AAC	ET80, MCS2 (108.1 Mbps), 100.0% DC	WLAN	8.40	±9.6
10734	AAC	ET80, MCS3 (144.1 Mbps), 100.0% DC	WLAN	8.75	±9.6
10735	AAC	ET80, MCS4 (216.2 Mbps), 100.0% DC	WLAN	8.33	±9.6
10736	AAC	ET80, MCS5 (288.2 Mbps), 100.0% DC	WLAN	8.27	±9.6
10737	AAC	ET80, MCS6 (324.4 Mbps), 100.0% DC	WLAN	8.36	±9.6
10738	AAC	ET80, MCS7 (360.3 Mbps), 100.0% DC	WLAN	8.42	±9.6
10739	AAC	ET80, MCS8 (432.4 Mbps), 100.0% DC	WLAN	8.29	±9.6
10740	AAC	ET80, MCS9 (488.4 Mbps), 100.0% DC	WLAN	8.48	±9.6
10741	AAC	ET80, MCS10 (540.4 Mbps), 100.0% DC	WLAN	8.40	±9.6
10742	AAC	ET80, MCS11 (600.5 Mbps), 100.0% DC	WLAN	8.43	±9.6
10743	AAC	ET160, MCS0 (72.0 Mbps), 99.2% DC	WLAN	8.94	±9.6
10744	AAC	ET160, MCS1 (144.0 Mbps), 97.1% DC	WLAN	8.16	±9.6
10745	AAC	ET160, MCS2 (216.0 Mbps), 97.4% DC	WLAN	8.93	±9.6
10746	AAC	ET160, MCS3 (288.0 Mbps), 97.1% DC	WLAN	9.11	±9.6
10747	AAC	ET160, MCS4 (432.0 Mbps), 97.4% DC	WLAN	9.04	±9.6
10748	AAC	ET160, MCS5 (576.0 Mbps), 98.8% DC	WLAN	8.93	±9.6
10749	AAC	ET160, MCS6 (648.0 Mbps), 98.7% DC	WLAN	8.90	±9.6
10750	AAC	ET160, MCS7 (721.0 Mbps), 98.7% DC	WLAN	8.79	±9.6
10751	AAC	ET160, MCS8 (865.0 Mbps), 98.3% DC	WLAN	8.82	±9.6
10752	AAC	ET160, MCS9 (961.0 Mbps), 98.3% DC	WLAN	8.81	±9.6
10753	AAC	ET160, MCS10 (1081.0 Mbps), 98.7% DC	WLAN	8.90	±9.6
10754	AAC	ET160, MCS11 (1201.0 Mbps), 98.7% DC	WLAN	8.94	±9.6
10755	AAC	ET160, MCS0 (72.0 Mbps), 98.0% DC	WLAN	8.64	±9.6
10756	AAC	ET160, MCS1 (144.0 Mbps), 98.8% DC	WLAN	8.77	±9.6
10757	AAC	ET160, MCS2 (216.0 Mbps), 97.1% DC	WLAN	8.77	±9.6
10758	AAC	ET160, MCS3 (288.0 Mbps), 98.8% DC	WLAN	8.86	±9.6
10759	AAC	ET160, MCS4 (432.0 Mbps), 97.1% DC	WLAN	8.56	±9.6
10760	AAC	ET160, MCS5 (576.0 Mbps), 98.5% DC	WLAN	8.40	±9.6
10761	AAC	ET160, MCS6 (648.0 Mbps), 98.3% DC	WLAN	8.56	±9.6
10762	AAC	ET160, MCS7 (721.0 Mbps), 98.3% DC	WLAN	8.49	±9.6
10763	AAC	ET160, MCS8 (865.0 Mbps), 98.9% DC	WLAN	8.53	±9.6
10764	AAC	ET160, MCS9 (961.0 Mbps), 98.8% DC	WLAN	8.54	±9.6
10765	AAC	ET160, MCS10 (1081.0 Mbps), 98.3% DC	WLAN	8.54	±9.6
10766	AAC	ET160, MCS11 (1201.0 Mbps), 98.3% DC	WLAN	8.51	±9.6
10767	AAC	CP-OFDM, 8.0 MHz, QPSK, 15 kHz, 99.9% DC, 1 RB	5G NR FR1 TDD	7.69	±9.6
10768	AAC	CP-OFDM, 10.0 MHz, QPSK, 15 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	8.01	±9.6
10769	AAC	CP-OFDM, 15.0 MHz, QPSK, 15 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	8.01	±9.6
10770	AAC	CP-OFDM, 20.0 MHz, QPSK, 15 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	8.02	±9.6
10771	AAC	CP-OFDM, 25.0 MHz, QPSK, 15 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	8.02	±9.6
10772	AAC	CP-OFDM, 30.0 MHz, QPSK, 15 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	8.23	±9.6

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10858	AAF	CP-OFDM, 40.0 MHz, QPSK, 60 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	8.04	±0.8
10860	AAE	CP-OFDM, 50.0 MHz, QPSK, 60 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	8.41	±0.8
10861	AAF	CP-OFDM, 60.0 MHz, QPSK, 60 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	8.40	±0.8
10863	AAF	CP-OFDM, 80.0 MHz, QPSK, 60 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	8.41	±0.8
10864	AAE	CP-OFDM, 90.0 MHz, QPSK, 60 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	8.27	±0.8
10865	AAF	CP-OFDM, 100.0 MHz, QPSK, 60 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	8.41	±0.8
10866	AAF	DFT-s-OFDM, 100.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.88	±0.8
10868	AAF	DFT-s-OFDM, 100.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.89	±0.8
10869	AAE	DFT-s-OFDM, 100.0 MHz, QPSK, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	5.75	±0.8
10870	AAE	DFT-s-OFDM, 100.0 MHz, QPSK, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	5.06	±0.8
10871	AAE	DFT-s-OFDM, 100.0 MHz, 16QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	5.75	±0.8
10872	AAE	DFT-s-OFDM, 100.0 MHz, 16QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	5.52	±0.8
10873	AAE	DFT-s-OFDM, 100.0 MHz, 64QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	6.61	±0.8
10874	AAE	DFT-s-OFDM, 100.0 MHz, 64QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	6.85	±0.8
10875	AAE	CP-OFDM, 100.0 MHz, QPSK, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	7.79	±0.8
10876	AAE	CP-OFDM, 100.0 MHz, QPSK, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	8.29	±0.8
10877	AAE	CP-OFDM, 100.0 MHz, 16QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	7.95	±0.8
10878	AAE	CP-OFDM, 100.0 MHz, 16QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	8.41	±0.8
10879	AAE	CP-OFDM, 100.0 MHz, 64QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	8.12	±0.8
10880	AAE	CP-OFDM, 100.0 MHz, 64QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	8.36	±0.8
10881	AAE	DFT-s-OFDM, 50.0 MHz, QPSK, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	5.75	±0.8
10882	AAE	DFT-s-OFDM, 50.0 MHz, QPSK, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	5.96	±0.8
10883	AAE	DFT-s-OFDM, 50.0 MHz, 16QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	6.57	±0.8
10884	AAE	DFT-s-OFDM, 50.0 MHz, 16QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	6.53	±0.8
10885	AAE	DFT-s-OFDM, 50.0 MHz, 64QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	6.61	±0.8
10886	AAE	DFT-s-OFDM, 50.0 MHz, 64QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	6.65	±0.8
10887	AAE	CP-OFDM, 50.0 MHz, QPSK, 120 kHz, 99.9% DC, 1 RB	5G NR FR2 TDD	7.78	±0.8
10888	AAE	CP-OFDM, 50.0 MHz, QPSK, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	8.25	±0.8
10889	AAE	CP-OFDM, 50.0 MHz, 16QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	8.02	±0.8
10890	AAE	CP-OFDM, 50.0 MHz, 16QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	8.40	±0.8
10891	AAE	CP-OFDM, 50.0 MHz, 64QAM, 120 kHz, 100.0% DC, 1 RB	5G NR FR2 TDD	8.13	±0.8
10892	AAE	CP-OFDM, 50.0 MHz, 64QAM, 120 kHz, 100.0% DC, 100% RB	5G NR FR2 TDD	8.41	±0.8
10893	AAE	DFT-s-OFDM, 8.0 MHz, QPSK, 30 kHz, 99.9% DC, 1 RB	5G NR FR1 TDD	5.55	±0.8
10896	AAC	DFT-s-OFDM, 10.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.57	±0.8
10898	AAB	DFT-s-OFDM, 15.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.67	±0.8
10900	AAC	DFT-s-OFDM, 20.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.66	±0.8
10901	AAB	DFT-s-OFDM, 25.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.68	±0.8
10902	AAC	DFT-s-OFDM, 30.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.68	±0.8
10903	AAD	DFT-s-OFDM, 40.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.68	±0.8
10904	AAC	DFT-s-OFDM, 50.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.88	±0.8
10905	AAD	DFT-s-OFDM, 60.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.88	±0.8
10906	AAD	DFT-s-OFDM, 80.0 MHz, QPSK, 30 kHz, 100.0% DC, 1 RB	5G NR FR1 TDD	5.68	±0.8
10907	AAE	DFT-s-OFDM, 5.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.78	±0.8
10908	AAC	DFT-s-OFDM, 10.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.69	±0.8
10909	AAB	DFT-s-OFDM, 15.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.66	±0.8
10910	AAC	DFT-s-OFDM, 20.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.63	±0.8
10911	AAB	DFT-s-OFDM, 25.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.93	±0.8
10912	AAC	DFT-s-OFDM, 30.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.84	±0.8
10913	AAD	DFT-s-OFDM, 40.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.84	±0.8
10914	AAC	DFT-s-OFDM, 50.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.85	±0.8
10915	AAD	DFT-s-OFDM, 60.0 MHz, QPSK, 30 kHz, 100.0% DC, 60% RB	5G NR FR1 TDD	5.83	±0.8
10916	AAD	DFT-s-OFDM, 80.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.67	±0.8
10917	AAD	DFT-s-OFDM, 100.0 MHz, QPSK, 30 kHz, 100.0% DC, 50% RB	5G NR FR1 TDD	5.84	±0.8
10918	AAE	DFT-s-OFDM, 5.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.88	±0.8
10919	AAC	DFT-s-OFDM, 10.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.88	±0.8
10920	AAB	DFT-s-OFDM, 15.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.87	±0.8
10921	AAC	DFT-s-OFDM, 20.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.84	±0.8
10922	AAB	DFT-s-OFDM, 25.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.83	±0.8
10923	AAC	DFT-s-OFDM, 30.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.84	±0.8
10924	AAD	DFT-s-OFDM, 40.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.84	±0.8
10925	AAC	DFT-s-OFDM, 50.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.95	±0.8
10926	AAD	DFT-s-OFDM, 60.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.84	±0.8
10927	AAD	DFT-s-OFDM, 80.0 MHz, QPSK, 30 kHz, 100.0% DC, 100% RB	5G NR FR1 TDD	5.84	±0.8
10928	AAD	DFT-s-OFDM, 5.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.52	±0.8
10929	AAD	DFT-s-OFDM, 10.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.52	±0.8
10930	AAC	DFT-s-OFDM, 15.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.52	±0.8



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10931	AAC	DFT-s-OFDM, 20.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.51	±9.5
10932	AAC	DFT-s-OFDM, 25.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.51	±9.5
10933	AAC	DFT-s-OFDM, 30.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.51	±9.5
10934	AAC	DFT-s-OFDM, 40.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.51	±9.5
10935	AAC	DFT-s-OFDM, 50.0 MHz, QPSK, 15 kHz, 1 RB	5G NR FR1 FDD	5.51	±9.5
10936	AAC	DFT-s-OFDM, 5.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.90	±9.5
10937	AAC	DFT-s-OFDM, 10.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.77	±9.5
10938	AAC	DFT-s-OFDM, 15.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.90	±9.5
10939	AAC	DFT-s-OFDM, 20.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.80	±9.5
10940	AAC	DFT-s-OFDM, 25.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.89	±9.5
10941	AAC	DFT-s-OFDM, 30.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.83	±9.5
10942	AAC	DFT-s-OFDM, 40.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.85	±9.5
10943	AAC	DFT-s-OFDM, 50.0 MHz, QPSK, 15 kHz, 50% RB	5G NR FR1 FDD	5.95	±9.5
10944	AAC	DFT-s-OFDM, 5.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.81	±9.5
10945	AAC	DFT-s-OFDM, 10.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.85	±9.5
10946	AAC	DFT-s-OFDM, 15.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.83	±9.5
10947	AAC	DFT-s-OFDM, 20.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.87	±9.5
10948	AAC	DFT-s-OFDM, 25.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.94	±9.5
10949	AAC	DFT-s-OFDM, 30.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.87	±9.5
10950	AAC	DFT-s-OFDM, 40.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.94	±9.5
10951	AAC	DFT-s-OFDM, 50.0 MHz, QPSK, 15 kHz, 100% RB	5G NR FR1 FDD	5.92	±9.5
10976	AAA	HDR, 1.0 MHz, 70.7% DC	ULLA	1.15	±9.5
10979	AAA	HDR, 2.0 MHz, 25.1% DC	ULLA	5.58	±9.5
10980	AAA	HDR, 4.0 MHz, 16.5% DC	ULLA	10.32	±9.5
10981	AAA	HDRp, 2.0 MHz, 88.0% DC	ULLA	3.19	±9.5
10982	AAA	HDRp, 4.0 MHz, 90.9% DC	ULLA	2.43	±9.5
11013	AAB	EHT320, MCS1 (372.0 Mbps), 100.0% DC	WLAN	8.47	±9.5
11014	AAB	EHT320, MCS2 (408.0 Mbps), 100.0% DC	WLAN	8.45	±9.5
11015	AAB	EHT320, MCS3 (544.0 Mbps), 100.0% DC	WLAN	8.44	±9.5
11016	AAB	EHT320, MCS4 (817.0 Mbps), 100.0% DC	WLAN	8.44	±9.5
11017	AAB	EHT320, MCS5 (1099.0 Mbps), 100.0% DC	WLAN	8.41	±9.5
11018	AAB	EHT320, MCS6 (1225.0 Mbps), 100.0% DC	WLAN	8.40	±9.5
11019	AAB	EHT320, MCS7 (1361.0 Mbps), 100.0% DC	WLAN	8.35	±9.5
11020	AAB	EHT320, MCS8 (1639.0 Mbps), 100.0% DC	WLAN	8.27	±9.5
11021	AAB	EHT320, MCS9 (1815.0 Mbps), 100.0% DC	WLAN	8.40	±9.5
11022	AAB	EHT320, MCS10 (2042.0 Mbps), 100.0% DC	WLAN	8.30	±9.5
11023	AAB	EHT320, MCS11 (2299.0 Mbps), 100.0% DC	WLAN	8.09	±9.5
11024	AAB	EHT320, MCS12 (2450.0 Mbps), 100.0% DC	WLAN	8.42	±9.5
11025	AAB	EHT320, MCS13 (2722.0 Mbps), 100.0% DC	WLAN	8.37	±9.5
11026	AAB	EHT320, MCS14 (3150.0 Mbps), 100.0% DC	WLAN	8.39	±9.5

[†] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.



D750V3 Dipole Calibration Certificate



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CNAS L0570

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Client

Anbotek (Auden)

Certificate No:

Z24-97076

CALIBRATION CERTIFICATE

Object

D750V3 - SN: 1118

Calibration Procedure(s)

FD-Z11-003-01

Calibration Procedures for dipole validation kits

Calibration date:

June 04, 2024

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	01-Jul-23 (CTTL, No.J27X04256)	Jun-21
Power sensor NRP-Z91	101547	01-Jul-23 (CTTL, No.J27X04256)	Jun-21
Reference Probe EX3DV4	SN 7307	18-Feb-24(SPEAG No.EX3-7307_Feb18)	Feb-22
DAE4	SN 771	02-Feb-24(CTTL-SPEAG.No.Z24-97011)	Feb-22
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-21 (CTTL, No.J18X00893)	Jan-22
Network Analyzer E5071C	MY46110673	26-Jan-21 (CTTL, No.J18X00894)	Jan-22

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 07, 2024

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Certificate No: Z24-97076

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx.y.z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices- Part 1: Device used next to the ear (Frequency range of 300MHz to 6GHz)", July 2016
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.0.1442
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	42.1 $\pm$ 6 %	0.88 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.06 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	8.31 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.37 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	5.52 mW / g $\pm$ 18.7 % (k=2)

Body TSL parameters

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	55.7 $\pm$ 6 %	0.97 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	—	—

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.21 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	8.76 mW / g $\pm$ 18.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	1.48 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	5.88 mW / g $\pm$ 18.7 % (k=2)

Certificate No: Z24-97076

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Appendix (Additional assessments outside the scope of CNAS L0570)**Antenna Parameters with Head TSL**

Impedance, transformed to feed point	53.30- 4.83jΩ
Return Loss	- 24.9dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.50- 6.11jΩ
Return Loss	- 23.9dB

General Antenna Parameters and Design

Electrical Delay (one-direction)	1.135 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 06.04.2024

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 -SN: 1118

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.882 \text{ S/m}$; $\epsilon_r = 42.14$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(10.05, 10.05, 10.05); Calibrated: 2/19/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2024-02-02
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7372)

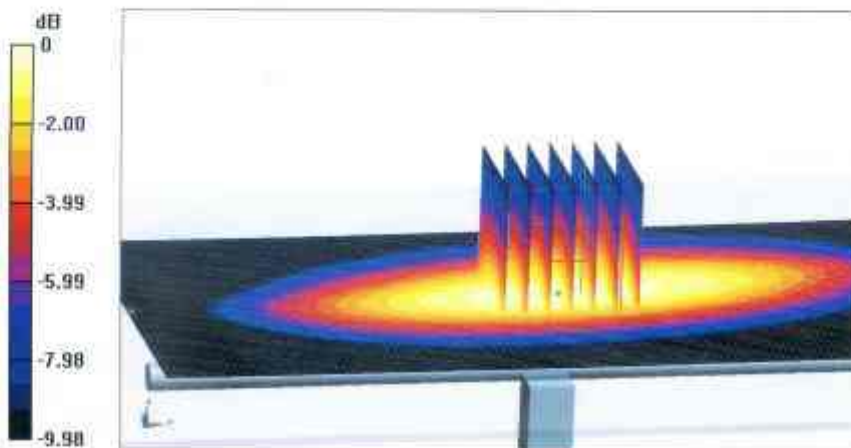
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.45 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.37 W/kg

Maximum value of SAR (measured) = 2.75 W/kg



0 dB = 2.75 W/kg = 4.39 dBW/kg

Certificate No: Z24-97076

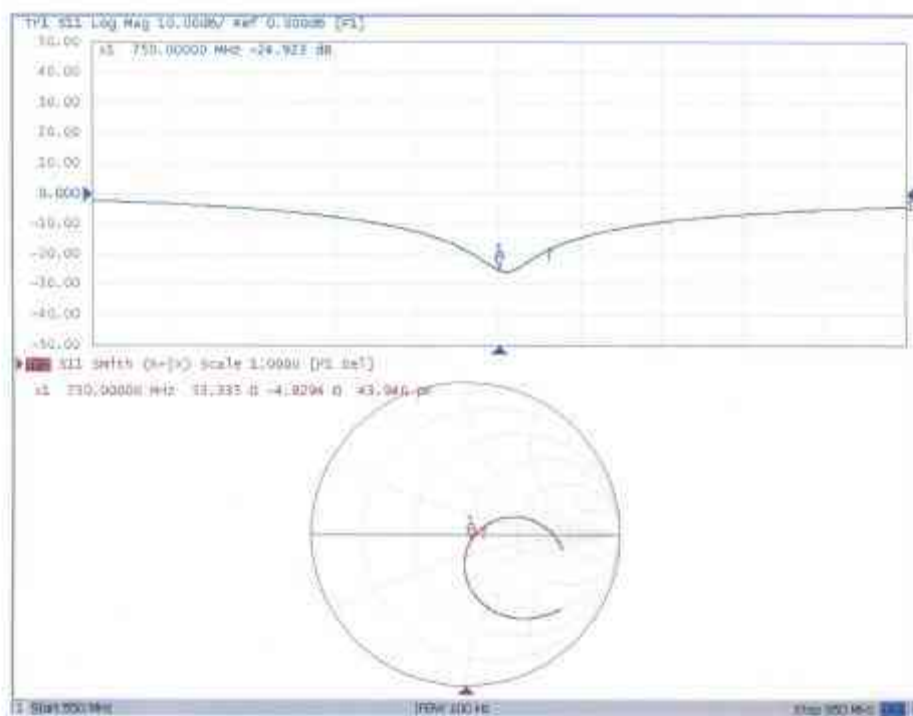
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 06.04.2024

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1118

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750$ MHz; $\sigma = 0.972$ S/m; $\epsilon_r = 55.73$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(9.8, 9.8, 9.8); Calibrated: 2/19/2024;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2024-02-02
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7372)

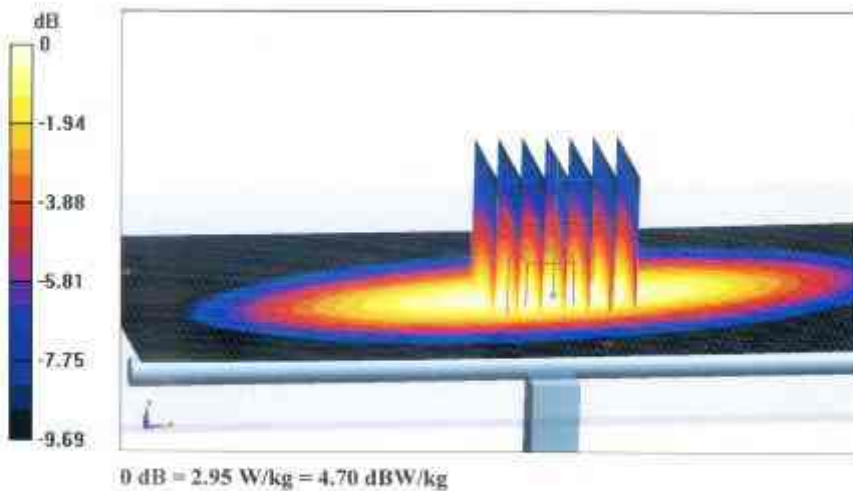
Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.05 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.37 W/kg

SAR(1 g) = 2.21 W/kg; SAR(10 g) = 1.48 W/kg

Maximum value of SAR (measured) = 2.95 W/kg



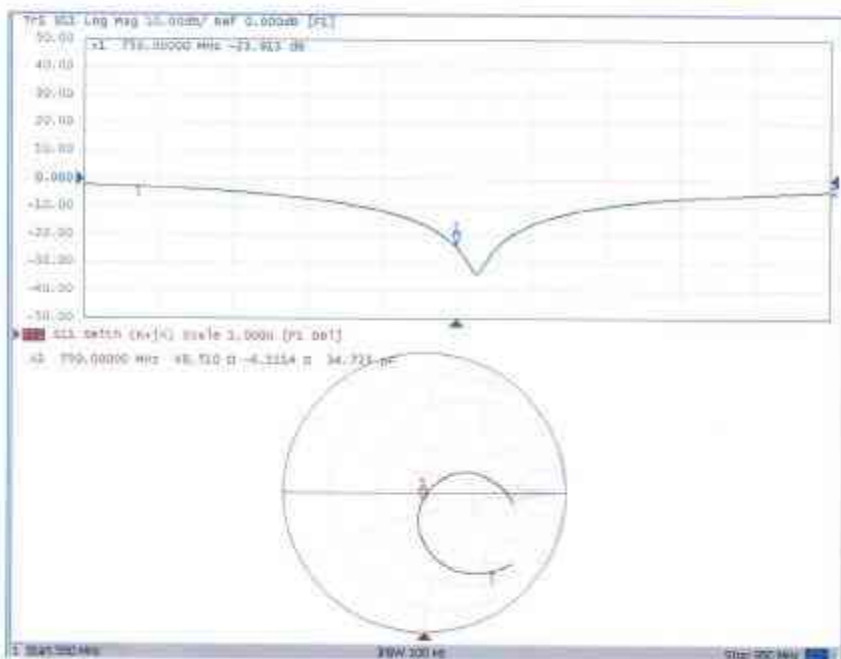


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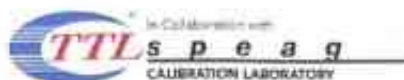
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Impedance Measurement Plot for Body TSL





D835V2 Dipole Calibration Certificate



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Certificate No: J23Z60387

CALIBRATION CERTIFICATE

Object D835V2 - SN: 484

Calibration Procedure(s) FF-Z11-003-01
Calibration Procedures for dipole validation kits

Calibration date: August 25, 2023

This calibration Certificate documents the traceability to national standards, which realizes the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (23±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	22-Sep-22 (CTTL, No.J22X09561)	Sep-23
Power sensor NRP8S	104291	22-Sep-22 (CTTL, No.J22X09561)	Sep-23
Reference Probe EX3DV4	SN 3617	31-Mar-23(CTTL-SPEAG, No.Z23-80161)	Mar-24
DAE4	SN 1556	11-Jan-23(CTTL-SPEAG, No.Z23-80004)	Jan-24
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4439C	MY49071430	05-Jan-23 (CTTL, No. J23X00107)	Jan-24
NetworkAnalyzer E5071C	MY46110673	10-Jan-23 (CTTL, No. J23X00104)	Jan-24

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: September 1, 2023

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Certificate No: J23Z60387

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 865654, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 nS/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	42.1 $\pm$ 6 %	0.90 nS/m $\pm$ 8 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	3.08 W/kg $\pm$ 13.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	1.58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.24 W/kg $\pm$ 18.7 % (k=2)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.60-2.74jΩ
Return Loss	-31.2dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.299 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
 No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 2023-08-25

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 484

Communication System: UID 0, CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.904 \text{ S/m}$; $\epsilon_r = 42.11$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(10,1, 10,1, 10,1) @ 835 MHz; Calibrated: 2023-03-31
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51-Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 57.93 V/m; Power Drift = -0.01 dB

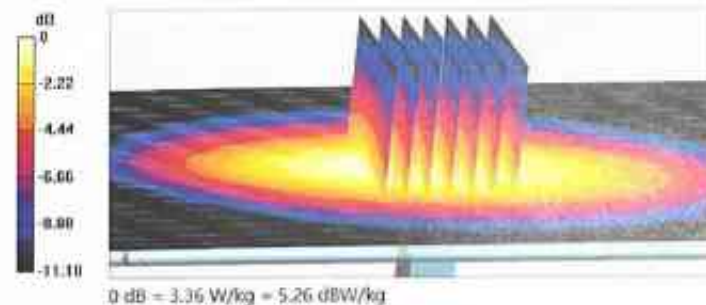
Peak SAR (extrapolated) = 3.92 W/kg

SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.56 W/kg

Smallest distance from peaks to all points 3 dB below = 16.3 mm

Ratio of SAR at M2 to SAR at M1 = 62.1%

Maximum value of SAR (measured) = 3.36 W/kg



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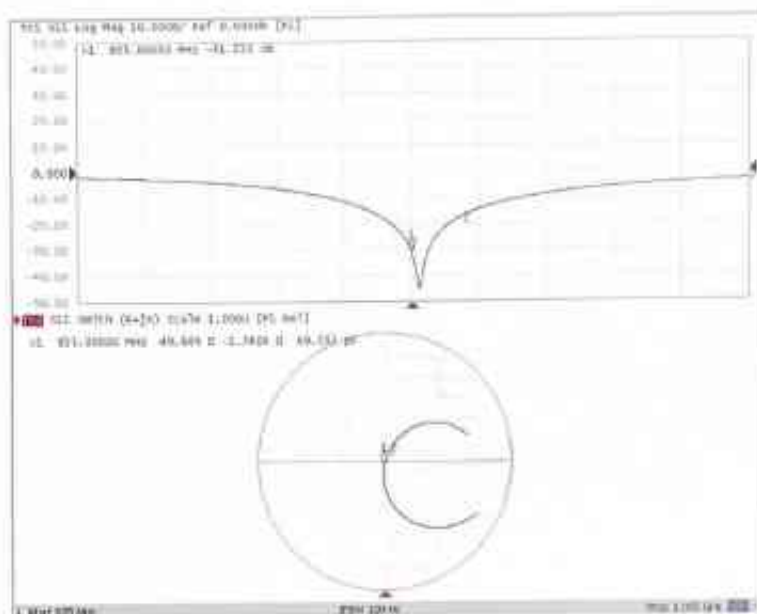


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Impedance Measurement Plot for Head TSL



Certificate No: J23260387

Page 6 of 6



D1750V2 Dipole Calibration Certificate



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E-mail: cttl@cttmtl.com Http://www.cttmtl.com

Client: **Anibotek (Aiden)**Certificate No: **224-97103****CALIBRATION CERTIFICATE**Object: **D1750V2 -SN: 1021**Calibration Procedure(s): **FD-Z11-2-003-01**
Calibration Procedures for dipole validation kitsCalibration date: **Jun 11, 2024**

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	1-Jul-23(CTTL, No.J23X04256)	Jun-24
Power sensor NRP-Z91	101547	1-Jul-23(CTTL, No.J23X04256)	Jun-24
Reference Probe EX3DV4	SN 7307	19-Feb-24(SPEAG, No.EX3-7307_Feb24)	Feb-25
DAE4	SN 771	02-Feb-24(CTTL-SPEAG, No.Z24-97011)	Feb-25
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	01-Feb-24(CTTL, No.J24X00893)	Jan-25
Network Analyzer E5071C	MY46110673	28-Jan-24 (CTTL, No.J24X00894)	Jan-25

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Qi Diaryuan	SAR Project Leader	
Approved by:	Lu Bingsong	Deputy Director of the laboratory	

Issued: Jun 12, 2024

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORMx,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) For hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution Corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.8.8.1258
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.5 $\pm$ 6 %	1.38 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	17 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	36.9 mW / g $\pm$ 20.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	4.94 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.8 mW / g $\pm$ 20.4 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.1 $\pm$ 6 %	1.51 mho/m $\pm$ 6 %
Body TSL temperature change during test	<1.0 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.25 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	36.7 mW / g $\pm$ 20.8 % (k=2)
SAR averaged over 10 cm^3 (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	4.94 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	19.7 mW / g $\pm$ 20.4 % (k=2)

Certificate No: Z.24-97103

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Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.8Ω- 1.40jΩ
Return Loss	- 33.9dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.0Ω+ 0.61jΩ
Return Loss	- 27.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.318 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Test Laboratory: CTTL, Beijing, China

Date: 06.11.2024

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1021

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.362$ S/m; $\epsilon_r = 40.49$; $\rho = 1000$ kg/m³

Phantom section: Center Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7307; ConvF(8.37, 8.37, 8.37); Calibrated: 2/19/2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2/2/2021
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7372)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

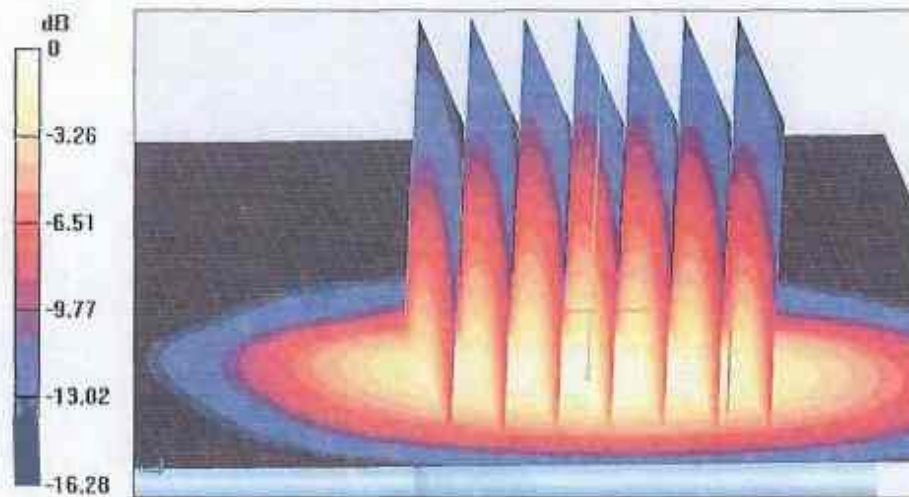
$dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 47.1 IV/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.94 W/kg

Maximum value of SAR (measured) = 13.0 W/kg

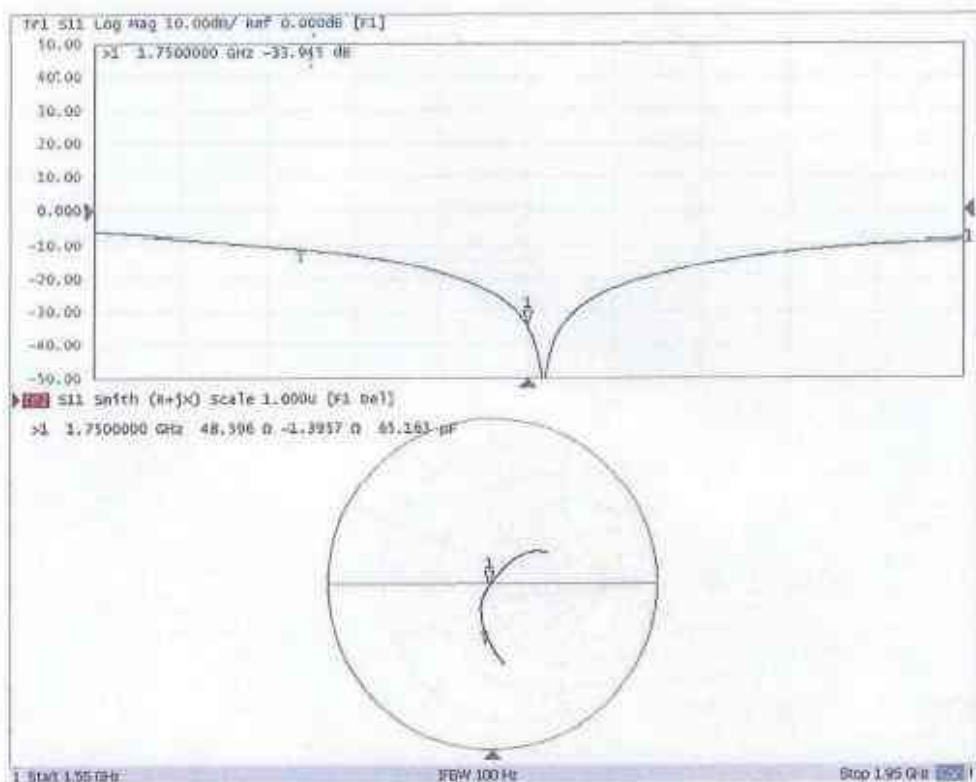


0 dB = 13.0 W/kg = 11.14 dBW/kg



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Impedance Measurement Plot for Head TSL





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DASY5 Validation Report for Body TSL

Date: 06.11.2024

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1021

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1750 \text{ MHz}$; $\sigma = 1.505 \text{ S/m}$; $\epsilon_r = 53.06$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 -SN7307; ConvF(8.18, 8.18, 8.18); Calibrated: 2/19/2021;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn77 I; Calibrated: 2/2/2021
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51CA; Serial: 1161/I
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7372)

System Performance Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid:

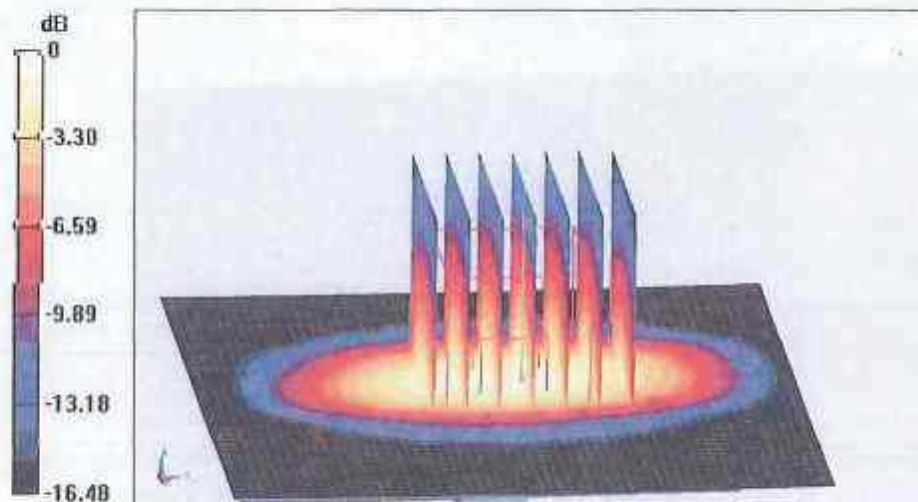
 $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 94.11 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 9.25 W/kg; SAR(10 g) = 4.94 W/kg

Maximum value of SAR (measured) = 13.1 W/kg



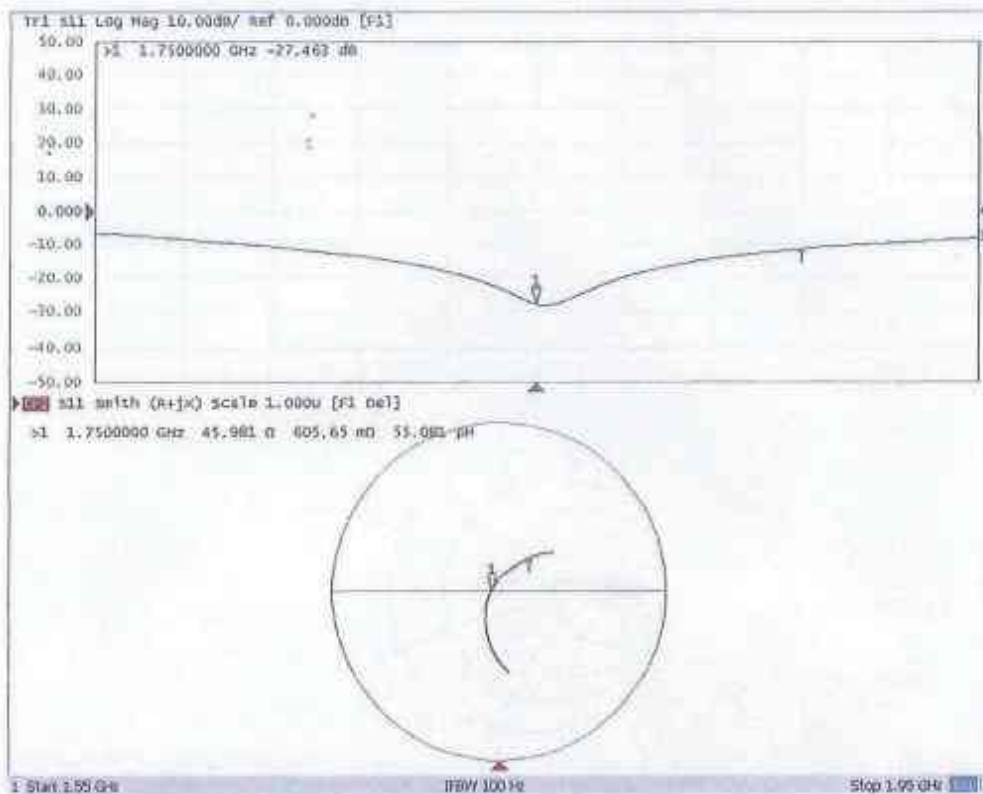
0 dB = 13.1 W/kg = 11.17 dBW/kg



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Impedance Measurement Plot for Body TSL



D1900V2 Dipole Calibration Certificate

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Client	CTA	Certificate No:	J23Z60388	
CALIBRATION CERTIFICATE				
Object	D1900V2 - SN: 5d002			
Calibration Procedure(s)	FF-Z11-003-01 Calibration Procedures for dipole validation kits			
Calibration date:	August 25, 2023			
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.				
All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity<70%.				
Calibration Equipment used (M&E critical for calibration)				
Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration	
Power Meter NRP2	106277	22-Sep-22 (CTTL, No.J22X09561)	Sep-23	
Power sensor NRP85	104291	22-Sep-22 (CTTL, No.J22X09561)	Sep-23	
Reference Probe EX3DV4	SN 3617	31-Mar-23(CTTL-SPEAG, No.Z23-60161)	Mar-24	
DAE4	SN 1556	11-Jan-23(CTTL-SPEAG, No.Z23-60034)	Jan-24	
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration	
Signal Generator E4438C	MY49071430	05-Jan-23 (CTTL, No. J23X00107)	Jan-24	
NetworkAnalyzer E5071C	MY46110673	10-Jan-23 (CTTL, No. J23X00104)	Jan-24	
Calibrated by:	Name Zhao Jing	Function SAR Test Engineer	Signature 	
Reviewed by:	Name Lin Hao	Function SAR Test Engineer	Signature 	
Approved by:	Name Qi Diqiyuan	Function SAR Project Leader	Signature 	
Issued: September 1, 2023				
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.				
Certificate No: J23Z60388		Page 1 of 1		



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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	82.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 6.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	$dx, dy, dz = 5 \text{ mm}$	
Frequency	$1900 \text{ MHz} \pm 1 \text{ MHz}$	

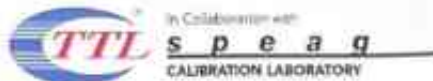
Head TSL parameters

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	$22.0 \text{ }^{\circ}\text{C}$	40.0	1.40 mho/m
Measured Head TSL parameters	$(22.0 \pm 0.2) \text{ }^{\circ}\text{C}$	$39.0 \pm 6 \%$	$1.36 \text{ mho/m} \pm 8 \%$
Head TSL temperature change during test	$\leq 1.0 \text{ }^{\circ}\text{C}$	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.0 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	$40.1 \text{ W/kg} \pm 18.8 \%$ ($k=2$)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.10 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	$26.6 \text{ W/kg} \pm 18.7 \%$ ($k=2$)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$50.6\Omega \pm 1.54\Omega$
Return Loss	-35.7dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.084 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

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DASYS Validation Report for Hand TSL

Date: 2023-08-25

Test Laboratory: CTIL, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 50002

Communication System: UTD 0, CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.378 \text{ S/m}$; $\epsilon_r = 38.95$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASYS Configuration:

- Probe: EX3DV4 - SN3617; ConvF(8.14, 8.14, 8.14) @ 1900 MHz; Calibrated: 2023-03-31
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P5; Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 94.11 V/m; Power Drift = 0.06 dB

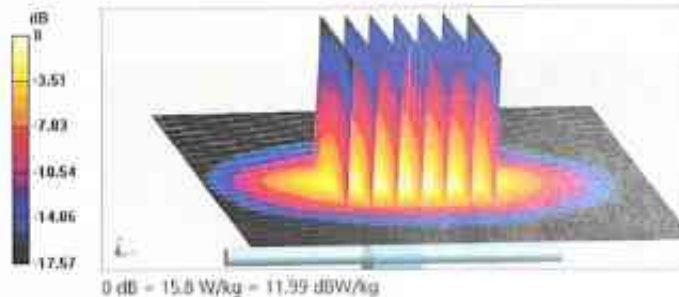
Peak SAR (extrapolated) = 19.1 W/kg

SAR(1 g) = 10 W/kg; SAR(10 g) = 5.19 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 53.4%

Maximum value of SAR (measured) = 15.8 W/kg



Certificate No: J23260388

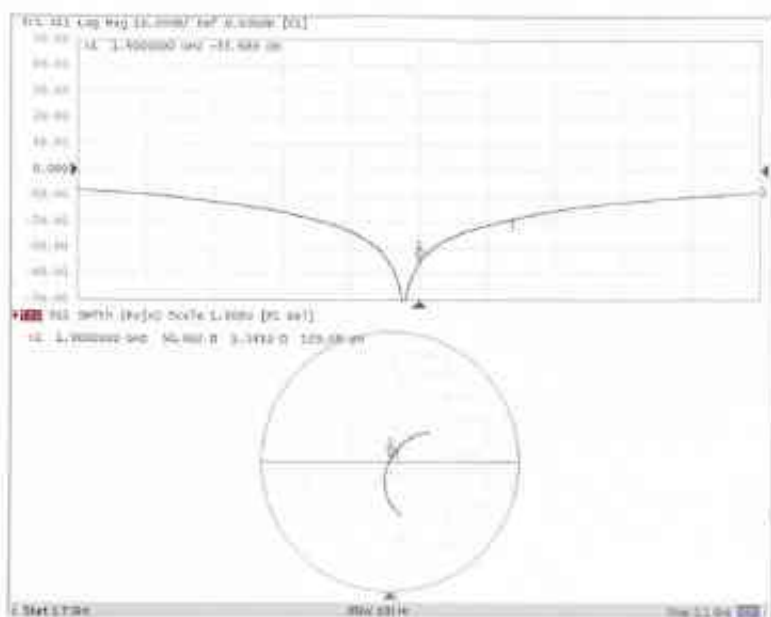
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Impedance Measurement Plot for Head TSL



Certificate No. J2326038H

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D2300V2 Dipole Calibration Certificate



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CNAS L0570

Client **SHENZHEN LCS**Certificate No: **Z23-60082****CALIBRATION CERTIFICATE**Object **D2300V2 - SN: 1106**

Calibration Procedure(s) **FF-Z11-003-01**
Calibration Procedures for dipole validation kits

Calibration date: **June 20, 2023**

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	10-May-23 (CTTL, No.J22X03103)	May-24
Power sensor NRP6A	101369	10-May-23 (CTTL, No.J22X03103)	May-24
Reference Probe EX3DV4	SN 7464	19-Jan-23 (CTTL-SPEAG, No.Z22-60565)	Jan-24
DAE4	SN 1556	11-Jan-23(CTTL-SPEAG, No.Z23-60034)	Jan-24
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49070393	17-May-23 (CTTL, No.J22X03157)	May-24
NetworkAnalyzer E5071C	MY46110673	10-Jan-23 (CTTL, No. J23X00104)	Jan-24

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 26, 2023

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Certificate No: Z23-60082

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- c) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2300 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.5	1.67 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.3 $\pm$ 6 %	1.67 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	12.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	49.2 W/kg $\pm$ 18.8 % ($k=2$)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	5.98 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.9 W/kg $\pm$ 18.7 % ($k=2$)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.2Ω- 1.90jΩ
Return Loss	- 31.5dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.077 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard. No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

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DASY5 Validation Report for Head TSL

Date: 2023-06-20

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN: 1106

Communication System: UID 0, CW; Frequency: 2300 MHz

Medium parameters used: $f = 2300$ MHz; $\sigma = 1.668$ S/m; $\epsilon_r = 39.27$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(7.95, 7.95, 7.95) @ 2300 MHz; Calibrated: 2023-01-19
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.11 V/m; Power Drift = -0.05 dB

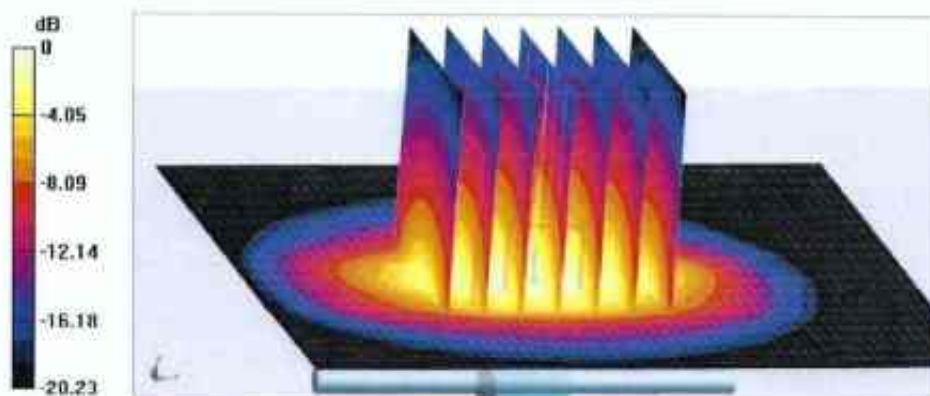
Peak SAR (extrapolated) = 24.1 W/kg

SAR(1 g) = 12.3 W/kg; SAR(10 g) = 5.98 W/kg

Smallest distance from peaks to all points 3 dB below = 9.8 mm

Ratio of SAR at M2 to SAR at M1 = 51.7%

Maximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.99 dBW/kg

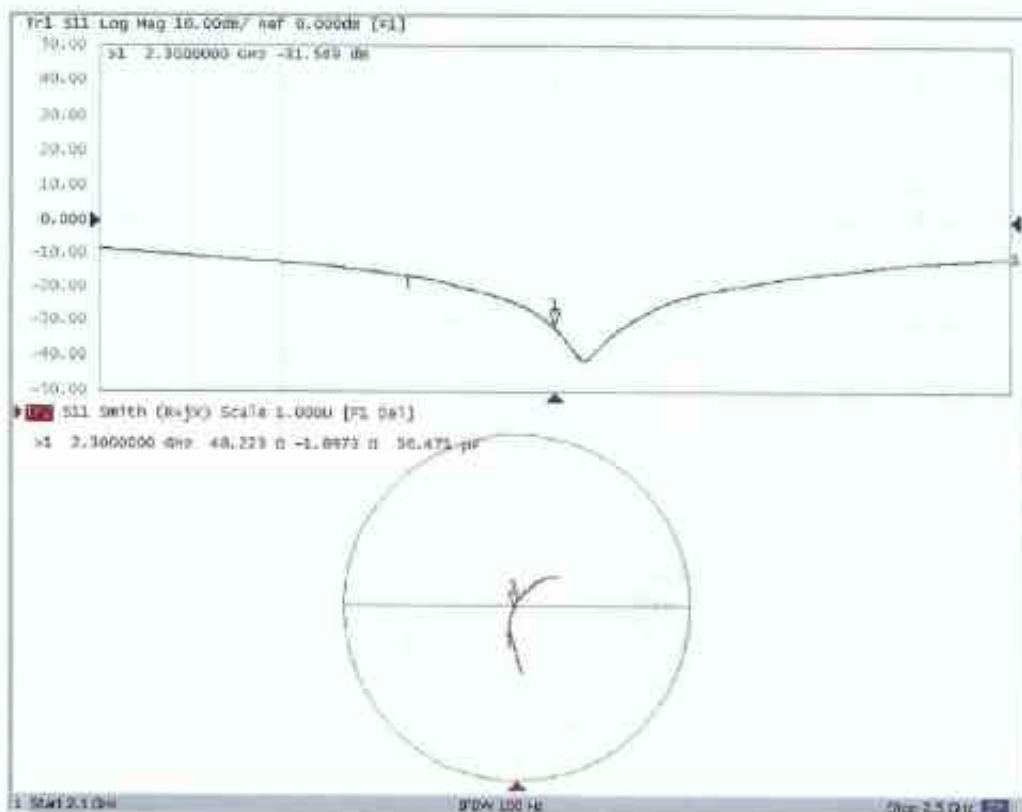


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Impedance Measurement Plot for Head TSL





D2450V2 Dipole Calibration Certificate

 In Collaboration with SPEAG CALIBRATION LABORATORY		  中国合格评定 国家认可 校准 CALIBRATION CNAS L8570	
Add: No. 52 HuaYuanBei Road, Huilisi District, Beijing, 100193 Tel: +86-10-42396633-2117 E-mail: info@ttml.com.cn http://www.cnas.ac.cn			
Client	CTA	Certificate No:	J23Z60389
CALIBRATION CERTIFICATE			
Object	D2450V2 - SN: 745		
Calibration Procedure(s)	FF-Z11-003-01 Calibration Procedures for dipole validation kits		
Calibration date:	August 28, 2023		
This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.			
All calibrations have been conducted in the closed laboratory facility; environment temperature (22±3/°C and humidity<70%.			
Calibration Equipment used (M&TE critical for calibration)			
Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	22-Sep-22 (CTTL, No. J22X09561)	Sep-23
Power sensor NRP6S	104291	22-Sep-22 (CTTL, No. J22X09561)	Sep-23
Reference Probe EX3DV4	SN 3617	31-Mar-23 (CTTL-SPEAG, No. J23-60161)	Mar-24
DAE4	SN 1556	11-Jan-23 (CTTL-SPEAG, No. J23-60034)	Jan-24
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49071430	05-Jan-23 (CTTL, No. J23X00107)	Jan-24
Network Analyzer E5071C	MY46110673	16-Jan-23 (CTTL, No. J23X00104)	Jan-24
Calibrated by:	Name Zhao Jing	Function SAR Test Engineer	Signature 
Reviewed by:	Name Lin Hao	Function SAR Test Engineer	Signature 
Approved by:	Name Qi Dianyan	Function SAR Project Leader	Signature 
Issued: September 1, 2023			
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Certificate No: J23Z60389 Page 1 of 6



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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 855664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY32	32.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.88 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.0 $\pm$ 8 %	1.84 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	12.7 W/kg $\pm$ 18.8 % ($k=2$)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.16 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	34.5 W/kg $\pm$ 18.7 % ($k=2$)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.2Ω ± 5.4Ω
Return Loss	-23.7dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.077 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

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DASY5 Validation Report for Head TSL

Date: 2023-08-28

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 745

Communication System: UTD 0, CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.835$ S/m; $\epsilon_r = 39.03$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3617; ConvF(7.68, 7.68, 7.68) @ 2450 MHz; Calibrated: 2023-03-31
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4-Sn1556; Calibrated: 2023-01-11
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.5 V/m; Power Drift = -0.05 dB

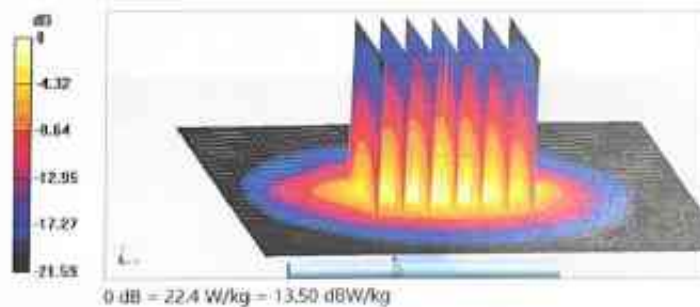
Peak SAR (extrapolated) = 27.7 W/kg

SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.16 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 48.5%

Maximum value of SAR (measured) = 22.4 W/kg



Certificate No: J23260389

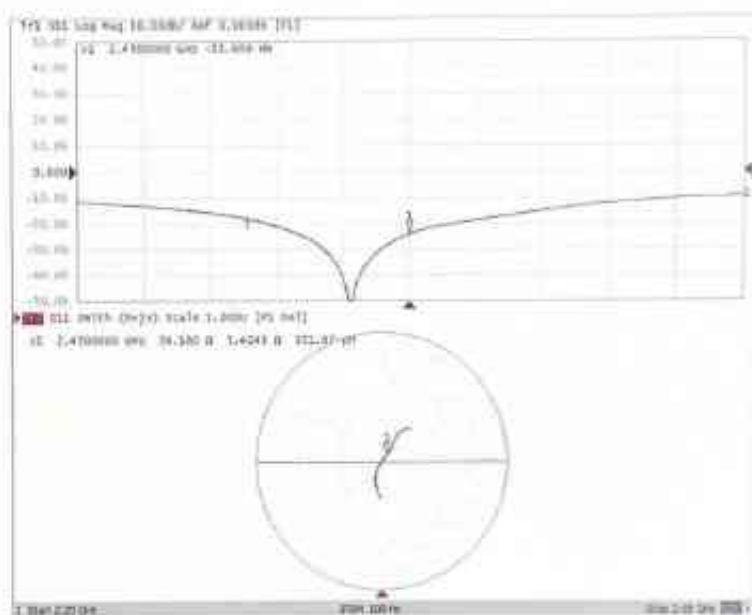
Page: 5 of 6



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Impedance Measurement Plot for Head TSL



Certificate No: 423260389

Page 8 of 8



D2600V2 Dipole Calibration Certificate



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CALIBRATION
CNAS L0570



Client

SHENZHEN LCS

Certificate No: Z23-60085

CALIBRATION CERTIFICATE

Object

D2600V2 - SN: 1071

Calibration Procedure(s)

FF-Z11-003-01

Calibration Procedures for dipole validation kits

Calibration date:

June 20, 2023

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22\pm3)^{\circ}\text{C}$ and humidity $<70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106276	10-May-23 (CTTL, No.J22X03103)	May-24
Power sensor NRP6A	101369	10-May-23 (CTTL, No.J22X03103)	May-24
Reference Probe EX3DV4	SN 7464	19-Jan-23 (CTTL-SPEAG, No.Z22-60565)	Jan-24
DAE4	SN 1558	11-Jan-23 (CTTL-SPEAG, No.Z23-60034)	Jan-24
Secondary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Signal Generator E4438C	MY49070393	17-May-23 (CTTL, No.J22X03157)	May-24
NetworkAnalyzer E5071C	MY46110673	10-Jan-23 (CTTL, No. J23X00104)	Jan-24

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 26, 2023

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Certificate No: Z23-60085

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM _{x,y,z}
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEC/IEEE 62209-1528, "Measurement Procedure for The Assessment of Specific Absorption Rate of Human Exposure to Radio Frequency Fields from Hand-held and Body-mounted Wireless Communication Devices- Part 1528: Human Models, Instrumentation and Procedures (Frequency range of 4 MHz to 10 GHz)", October 2020
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

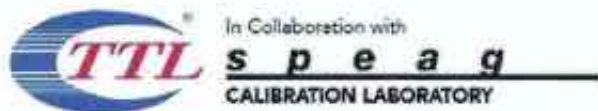
Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution Corresponds to a coverage probability of approximately 95%.



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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Triple Flat Phantom 5.1C	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.8 $\pm$ 8 %	1.98 mho/m $\pm$ 6 %
Head TSL temperature change during test	<1.0 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	56.8 W/kg $\pm$ 18.6 % ($k=2$)
SAR averaged over 10 cm^3 (10 g) of Head TSL	Condition	
SAR measured	250 mW input power	6.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	25.5 W/kg $\pm$ 18.7 % ($k=2$)



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Appendix (Additional assessments outside the scope of CNAS L0570)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.6Ω- 6.32jΩ
Return Loss	- 23.7dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.058 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feed-point can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feed-point may be damaged.

Additional EUT Data

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DASY5 Validation Report for Head TSL

Date: 2023-06-20

Test Laboratory: CTTL, Beijing, China

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1071

Communication System: UID 0, CW; Frequency: 2600 MHz

Medium parameters used: $f = 2600$ MHz; $\sigma = 1.98$ S/m; $\epsilon_r = 39.75$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7464; ConvF(7.5, 7.5, 7.5) @ 2600 MHz; Calibrated: 2023-01-19
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1556; Calibrated: 2023-01-11
- Phantom: MFP_V5.1C (20deg probe tilt); Type: QD 000 P51 Cx; Serial: 1062
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 98.06 V/m; Power Drift = -0.04 dB

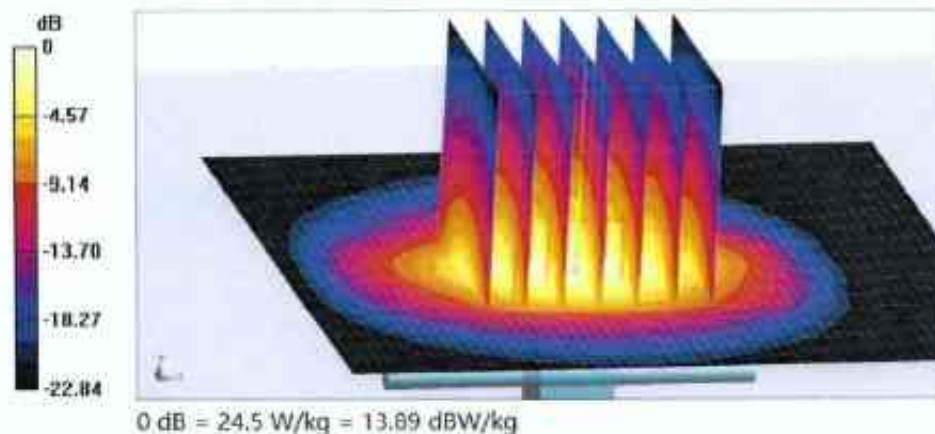
Peak SAR (extrapolated) = 30.6 W/kg

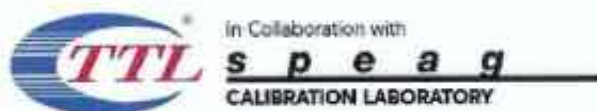
SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.36 W/kg

Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 47.1%

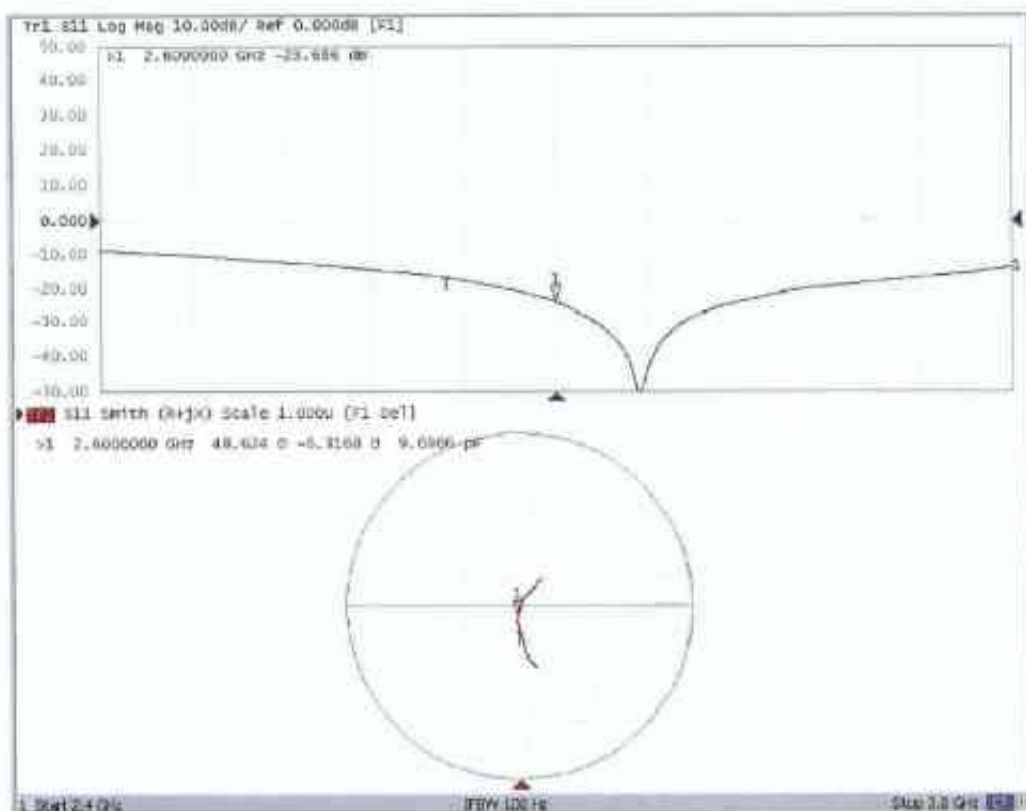
Maximum value of SAR (measured) = 24.5 W/kg





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Impedance Measurement Plot for Head TSL





D5GHzV2 Dipole Calibration Certificate

Calibration Laboratory of
Schmid & Partner
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Zeughausstrasse 43, 8004 Zurich, Switzerland



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S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: SCS 0108

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Multilateral Agreement for the recognition of calibration certificates

Client: **Anbotek (Alden)**

Certificate No: **D5GHzV2-1160_Oct11**

CALIBRATION CERTIFICATE

Object: **D5GHzV2 - SN: 1160**

Calibration procedure(s): **QA CAL-22.v2**
Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: **October 02, 2024**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given in the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3) °C and humidity < 70%.

Calibration Equipment used (MATE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-402A	GB37480704	07-Oct-17 (No. 217-02020)	Oct-18
Power sensor HP 8481A	US37292763	07-Oct-20 (No. 217-02020)	Oct-18
Power sensor HP 8481A	MY41062117	07-Oct-20 (No. 217-02021)	Oct-18
Reference 20 dB Attenuator	SN: 5056 (20k)	01-Apr-21 (No. 217-02131)	Mar-19
Type-N mismatch combination	SN: 5042-2 / 00307	01-Apr-21 (No. 217-02134)	Mar-19
Reference Probe EX30V4	SN: 3505	30-Dec-20 (No. EX3-3501, Dec-14)	Dec-15
DAEs	SN: 601	17-Aug-21 (No. DAE4-601, Aug-15)	Aug-16
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SM1-06	100877	16-Jun-21 (in house check Jun-13)	in house check: Jun-18
Network Analyzer HP 8753E	US37390585 54205	15-Oct-20 (in house check Dec-14)	in house check: Oct-15

Calibrated by: **Leif Klyster** Name: **Leif Klyster** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Name: **Katja Pokovic** Function: **Technical Manager**

Signature

Issued: October 6, 2024

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**Calibration Laboratory of
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Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0106**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz $\pm$ 1 MHz 5300 MHz $\pm$ 1 MHz 5600 MHz $\pm$ 1 MHz 5800 MHz $\pm$ 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.86 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	36.4 $\pm$ 6 %	4.57 mho/m $\pm$ 5 %
Head TSL temperature change during test	$\leq$ 0.5 °C	—	—

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition:	
SAR measured	100 mW input power	8.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.7 W/kg $\pm$ 19.9 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.1 W/kg $\pm$ 19.5 % (k=2)

Head TSL parameters at 5300 MHz

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.2 ± 6 %	4.68 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	82.7 W / kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.9 W/kg ± 19.5 % (k=2)

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.7 ± 6 %	5.03 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.69 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	87.0 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.47 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.7 W/kg ± 19.5 % (k=2)

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.3 ± 6 %	5.26 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	—	—

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.20 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	82.0 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	23.1 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.9 ± 6 %	5.35 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.61 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	77.6 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.18 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.7 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.7 ± 6 %	5.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.66 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	78.4 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.9 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	46.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.7 ± 6 %	5.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	8.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	61.5 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.30 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	22.8 W/kg ± 19.5 % (k=2)

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	45.4 ± 6 %	6.27 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	—	—

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.65 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	78.3 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.8 W/kg ± 19.5 % (k=2)

**Appendix (Additional assessments outside the scope of SCS 0108)****Antenna Parameters with Head TSL at 5200 MHz**

Impedance, transformed to feed point	$48.1 \Omega - 8.5 \mu\Omega$
Return Loss	-21.0 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	$50.2 \Omega - 5.2 \mu\Omega$
Return Loss	-25.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	$54.8 \Omega - 2.5 \mu\Omega$
Return Loss	-25.7 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	$53.0 \Omega - 3.0 \mu\Omega$
Return Loss	-27.7 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	$48.6 \Omega - 6.8 j\Omega$
Return Loss	-23.0 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	$49.0 \Omega - 4.2 j\Omega$
Return Loss	-27.1 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	$56.2 \Omega - 0.7 j\Omega$
Return Loss	-24.6 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	$55.9 \Omega - 1.7 j\Omega$
Return Loss	-24.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	-1,130 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	June 06, 2013

DASY5 Validation Report for Head TSL

Date: 24.09.2021

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1160

Communication System: UID 0 - CW; Frequency: 5200 MHz; Frequency: 5300 MHz; Frequency: 5600 MHz; Frequency: 5800 MHz

Medium parameters used: $f = 5200$ MHz; $\sigma = 4.57$ S/m; $\epsilon_r = 36.4$; $\rho = 1000$ kg/m³; Medium parameters used: $f = 5300$ MHz; $\sigma = 4.68$ S/m; $\epsilon_r = 36.2$; $\rho = 1000$ kg/m³; Medium parameters used: $f = 5600$ MHz; $\sigma = 5.03$ S/m; $\epsilon_r = 35.7$; $\rho = 1000$ kg/m³; Medium parameters used: $f = 5800$ MHz; $\sigma = 5.26$ S/m; $\epsilon_r = 35.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30.12.2021, ConvF(5.21, 5.21, 5.21); Calibrated: 30.12.2021, ConvF(4.92, 4.92, 4.92); Calibrated: 30.12.2021, ConvF(4.9, 4.9, 4.9); Calibrated: 30.12.2021,
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4-Sn601; Calibrated: 17.08.2021
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52.52.8.8(1222); SEMCAD X (4.6.10(7331))

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 64.41 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 29.3 W/kg

SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.31 W/kg

Maximum value of SAR (measured) = 18.7 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.31 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 31.1 W/kg

SAR(1 g) = 8.26 W/kg; SAR(10 g) = 2.39 W/kg

Maximum value of SAR (measured) = 19.4 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan,

dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 65.34 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 34.7 W/kg

SAR(1 g) = 8.69 W/kg; SAR(10 g) = 2.47 W/kg

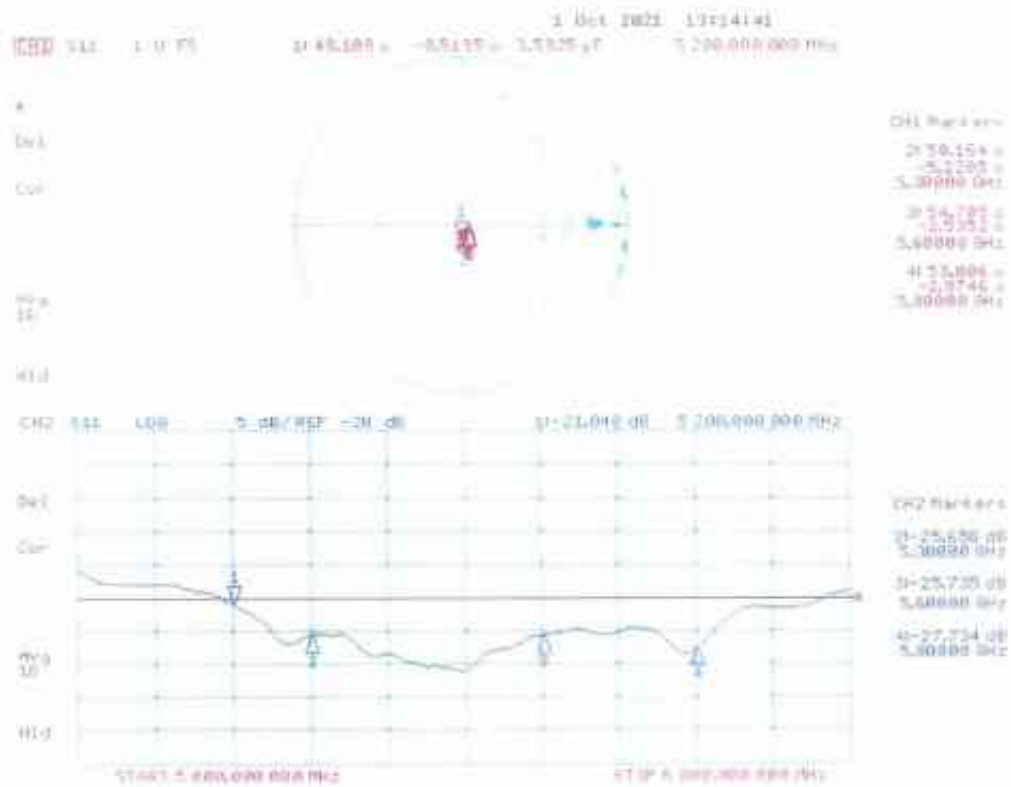
Maximum value of SAR (measured) = 21.0 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan,
dist=1.4mm (8x8x7)/Cube 0: Measurement grid: $dx=4mm$, $dy=4mm$, $dz=1.4mm$
Reference Value = 62.41 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 34.5 W/kg
SAR(1 g) = 8.2 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 20.5 W/kg





Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 05.10.2021

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1160

Communication System: UID 0 - CW; Frequency: 5200 MHz; Frequency: 5300 MHz; Frequency: 5600 MHz; Frequency: 5800 MHz

Medium parameters used: $f = 5200$ MHz; $\sigma = 5.35$ S/m; $\epsilon_r = 47.9$; $\rho = 1000$ kg/m³; Medium parameters used: $f = 5300$ MHz; $\sigma = 5.49$ S/m; $\epsilon_r = 47.7$; $\rho = 1000$ kg/m³; Medium parameters used: $f = 5600$ MHz; $\sigma = 5.99$ S/m; $\epsilon_r = 46.7$; $\rho = 1000$ kg/m³; Medium parameters used: $f = 5800$ MHz; $\sigma = 6.27$ S/m; $\epsilon_r = 46.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19:2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.95, 4.95, 4.95); Calibrated: 30.12.2021, ConvF(4.78, 4.78, 4.78); Calibrated: 30.12.2021, ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2021, ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2021.
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 17.08.2021
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.32 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 30.4 W/kg

SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.18 W/kg

Maximum value of SAR (measured) = 18.2 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 67.22 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 31.6 W/kg

SAR(1 g) = 7.88 W/kg; SAR(10 g) = 2.2 W/kg

Maximum value of SAR (measured) = 18.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

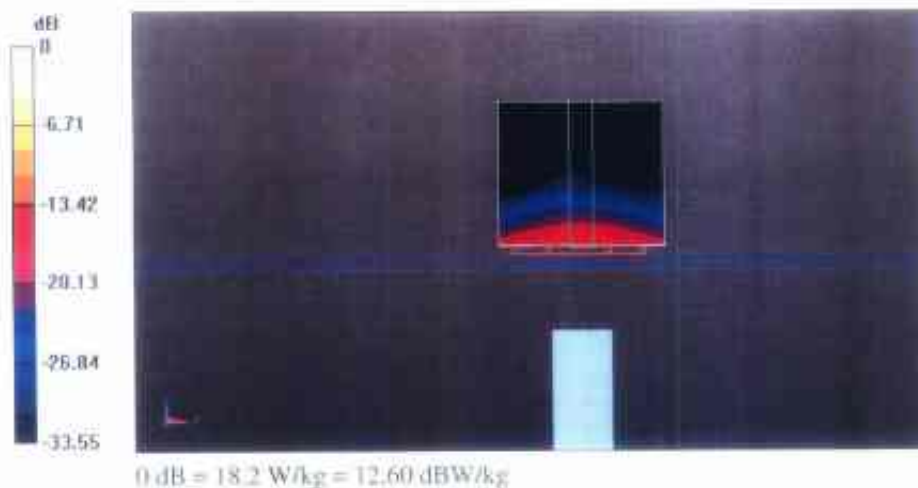
Reference Value = 67.36 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 36.6 W/kg

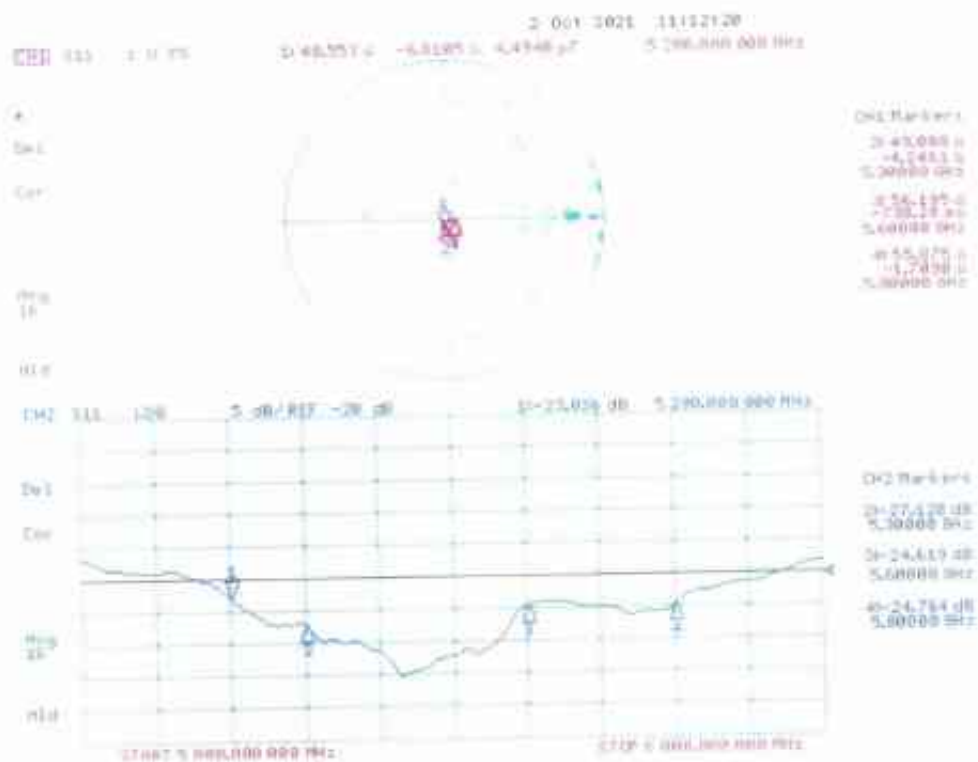
SAR(1 g) = 8.2 W/kg; SAR(10 g) = 2.3 W/kg

Maximum value of SAR (measured) = 20.2 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.22 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 37.1 W/kg
SAR(1 g) = 7.88 W/kg; SAR(10 g) = 2.2 W/kg
Maximum value of SAR (measured) = 19.7 W/kg.



Impedance Measurement Plot for Body TSL





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Client: **STS (Shenzhen)**



中国认可
国际互认
校准
CALIBRATION
CNAS L0570

Certificate No: 25J02Z000524

CALIBRATION CERTIFICATE

Object: DAE3 - SN: 428

Calibration Procedure(s): FF-Z11-002-01
Calibration Procedure for the Data Acquisition Electronics (DAEx)

Calibration date: September 08, 2025

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature $(22\pm3)^{\circ}\text{C}$ and humidity $<70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	11-Jun-25 (CTTL, No.25J02X004977)	Jun-26

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Danyuan	SAR Project Leader	

Issued: September 10, 2025

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: 25J02Z000524

Page 1 of 3



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Glossary:

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters:

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.



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DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = 6.1 μ V, full range = -100...+300 mV

Low Range: 1LSB = 61nV, full range = -1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.480 $\pm$ 0.15% (k=2)	404.830 $\pm$ 0.15% (k=2)	404.597 $\pm$ 0.15% (k=2)
Low Range	3.95732 $\pm$ 0.7% (k=2)	3.95225 $\pm$ 0.7% (k=2)	3.91650 $\pm$ 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	258.5° $\pm$ 1°
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