TEST REPORT

No.I22N02185-SAR

For

unitech electronics co., ltd.

Rugged Handheld Computer

Model Name: PA768

With

Hardware Version: FH09_MB_PCB_V1.3

Software Version: RAYA_V03.25b02_20221010

FCC ID: HLEPA768BWNW

Issued Date: 2023-02-15

Designation Number: CN1210

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518000.

Tel:+86(0)755-33322000, Fax:+86(0)755-33322001

Email: yewu@caict.ac.cn. www.saict.ac.cn

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I22N02185-SAR	Rev.0	1st edition	2023-02-15

CONTENTS

1. Summary of Test Report

1.1. Test Items

Description:	Rugged Handheld Computer
Model Name:	PA768
Applicant's Name:	unitech electronics co., ltd.
Manufacturer's Name:	unitech electronics co., ltd.

1.2. Test Standards

ANSI C95.1:1992, IEEE 1528:2013

1.3. Test Result

Pass. Please refer to "13. Summary of Test Results"

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

1.5. Project Data

Testing Start Date: 2022-12-13 Testing End Date: 2022-12-29

1.6. Signature

Li Yongfu
(Prepared this test report)

Liu Jian
(Reviewed this test report)

Cao Junfei
(Approved this test report)

2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for unitech electronics co., ltd. Rugged Handheld Computer PA768 are as follows:

Table 2.1: Highest Reported SAR (1g)

Equipment Class	Frequency Bands	1g SAR (W/kg)	
		Hotspot (Separation Distance 10mm)	Body-worn (Separation Distance 10/15mm)
PCT	GSM 850	0.34	0.34
	GSM 1900	0.33	0.33
	WCDMA Band 2	0.61	0.61
	WCDMA Band 5	0.32	0.32
	LTE Band 2	0.45	0.45
	LTE Band 4	0.23	0.23
	LTE Band 5	0.31	0.31
	LTE Band 7	0.90	0.90
	LTE Band 17	0.19	0.19
	LTE Band 41/38	0.52	0.52
	LTE Band 71	0.13	0.09
	NR n2	0.54	0.54
	NR n5	0.25	0.25
	NR n41	1.14	**1.14**
	NR n71	0.09	0.09
	NR n77 Part 27Q/NR n78	0.69	0.40
	NR n77 Part 27O	**1.52**	0.69
DSS	Bluetooth	0.02	0.02
DTS	WLAN 2.4GHz	0.22	0.22
NII	WLAN 5GHz	0.16	0.13

Table 2.2: Highest Reported SAR (10g)

Equipment Class	Frequency Bands	Extremity 10g SAR (W/kg) (Separation Distance 0mm)
PCT	NR n77 Part 27O	**1.98**
NII	WLAN 5GHz	0.25

The SAR values found for the Mobile Phone are below the maximum recommended levels of 1.6 W/Kg as averaged over any 1g tissue according to the ANSI C95.1-1992.

The measurement together with the test system set-up is described in annex C of this test report. A detailed description of the equipment under test can be found in chapter 4 of this test report.

The highest reported SAR value is obtained at the case of **(Table 2.1 & 2.2)**, Hotspot value is **1.52 W/kg (1g)**, Body-worn value is **1.14 W/kg (1g)** and Extremity SAR value is **1.98 W/kg (10g)**.

Table 2.3: Maximum Simultaneous Transmission SAR

/	Position	Sum (W/kg)
Highest reported SAR value for Hotspot	Bottom Side (NR n77 Part 27O + Bluetooth/WLAN)	**1.52**
Highest reported SAR value for Body-worn	Rear Side (NR n41 + WLAN 2.4GHz Ant.3 + WLAN 2.4GHz Ant.2)	**1.49**
Highest reported SAR value for Extremity	Bottom Side (NR n77 Part 27O + Bluetooth/WLAN)	**1.98**

Note: the test positions of above tables are for the worse case that has been evaluated.

According to the above tables, the highest sum of reported SAR values is **1.52 W/kg (1g)** and **1.98 W/kg (10g)**.

The detail for simultaneous transmission consideration is described in chapter 12.

3. Client Information

3.1. Applicant Information

Company Name:	unitech electronics co., ltd.
Address:	5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 231028 , Taiwan
City:	New Taipei
Country:	China
Telephone:	886-2-8912-1122

3.2. Manufacturer Information

Company Name:	unitech electronics co., ltd.
Address:	5F., No. 136, Ln. 235, Baoqiao Rd., Xindian Dist., New Taipei City 231028 , Taiwan
City:	New Taipei
Country:	China
Telephone:	886-2-8912-1122

4. Equipment under Test (EUT) and Ancillary Equipment (AE)

4.1. About EUT

Description:	Rugged Handheld Computer
Model Name:	PA768
Condition of EUT as received:	No obvious damage in appearance
Frequency Bands:	GSM 850/1900, WCDMA Band 2/5, LTE Band 2/4/5/7/17/38/41/71, NR n2/n5/n41/n71/n77/n78, Bluetooth, WLAN 2.4GHz/5GHz/6GHz
Tested Tx Frequency:	824 – 849MHz (GSM850)
	1850 – 1910MHz (GSM1900)
	1850 – 1910MHz (WCDMA Band 2)
	824 – 849MHz (WCDMA Band 5)
	1850 – 1910MHz (LTE Band 2)
	1700 – 1755MHz (LTE Band 4)
	824 – 849MHz (LTE Band 5)
	2500 – 2570MHz (LTE Band 7)
	704 – 716MHz (LTE Band 17)
	2570 – 2620MHz (LTE Band 38)
	2496 – 2690MHz (LTE Band 41)
	663 – 698MHz (LTE Band 71)
	1850 – 1910MHz (NR n2)
	824 – 849MHz (NR n5)
	1710 – 1780MHz (NR n41)
	3450 – 3550MHz, 3700 – 3980MHz (NR n77)
	3450 – 3550MHz (NR n78)
	2402 – 2480MHz (Bluetooth)
	2412 – 2462MHz (WLAN 2.4GHz)
	5150 – 5850MHz (WLAN 5GHz)
	5925 – 7125MHz (WLAN 6GHz)
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Embedded antenna
Hotspot mode:	Support
Product Dimensions:	Long 167.0mm;Wide 75.5mm;Overall Diagonal 177.6mm
Remark: 1. This device does not support DTM operation. 2. This device WLAN 5GHz U-NII-2A and U-NII-2C don't support hotspot operation. 3. The WLAN 6GHz test data is referenced to I22Z62049-SEM01 report.	

4.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Receipt Date
UT11aa	358585240005494	FH09_MB_PCB_V1.3	RAYA_V03.25b02 _20221010	2022-10-24
UT12aa	358585240005395	FH09_MB_PCB_V1.3	RAYA_V03.25b02 _20221010	2022-10-24
UT13aa	358585240008124	FH09_MB_PCB_V1.3	RAYA_V03.25b02 _20221010	2022-10-24

*EUT ID: is used to identify the test sample in the lab internally.

Note: It is performed to test SAR with the UT11aa & UT12aa, and conducted power with the UT13aa.

4.3. Internal Identification of AE used during the test

AE ID*	Description	Model	Manufacturer
AE1	Battery	1400-900069G	LIFUN TECHNOLOGY CO.,LTD.

*AE ID: is used to identify the test sample in the lab internally.

5. Test Methodology

5.1. Applicable Limit Regulations

ANSI C95.1:1992 IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

5.2. Applicable Measurement Standards

IEEE 1528:2013 Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Experimental Techniques.

KDB 447498 D01 General RF Exposure Guidance v06 RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices

KDB 648474 D04 Handset SAR v01r03 SAR Evaluation Considerations for Wireless Handsets.

KDB 941225 D01 SAR test for 3G devices v03r01 SAR Measurement Procedures for 3G Devices

KDB 941225 D05 SAR for LTE Devices v02r05 SAR Evaluation Considerations for LTE Devices

KDB 941225 D06 Hot Spot SAR v02r01 SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

KDB 248227 D01 802.11 Wi-Fi SAR v02r02 SAR Guidance for IEEE 802.11 (Wi-Fi) Transmitters.

KDB 865664 D01SAR measurement 100 MHz to 6 GHz v01r04 SAR Measurement Requirements for 100 MHz to 6 GHz

KDB 865664 D02 RF Exposure Reporting v01r02 RF Exposure Compliance Reporting and Documentation Considerations

KDB 941225 D07 UMPC Mini Tablet v01r02 SAR Evaluation Procedures for UMPC Mini-Tablet Devices

KDB 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02: REL. 10 LTE SAR TEST GUIDANCE AND KDB INQUIRIES

TCB workshop May 2017: RF Exposure Procedures

TCB workshop October 2018: RF Exposure Procedures

TCB workshop April 2019: RF Exposure Procedures

TCB workshop November 2019: RF Exposure Policy Updates

TCB workshop April 2020: RF Exposure Policies and Procedures - Status

TCB workshop October 2020: RF Exposure Procedures

TCB workshop April 2022: RF Exposure Procedures

6. Specific Absorption Rate (SAR)

6.1. Introduction

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.

6.2. SAR Definition

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 either related to the temperature elevation in tissue by

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, δT is the temperature rise and δt is the exposure duration, or 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 tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

7. Tissue Simulating Liquids

7.1. Targets for tissue simulating liquid

Table 7.1: Targets for tissue simulating liquid

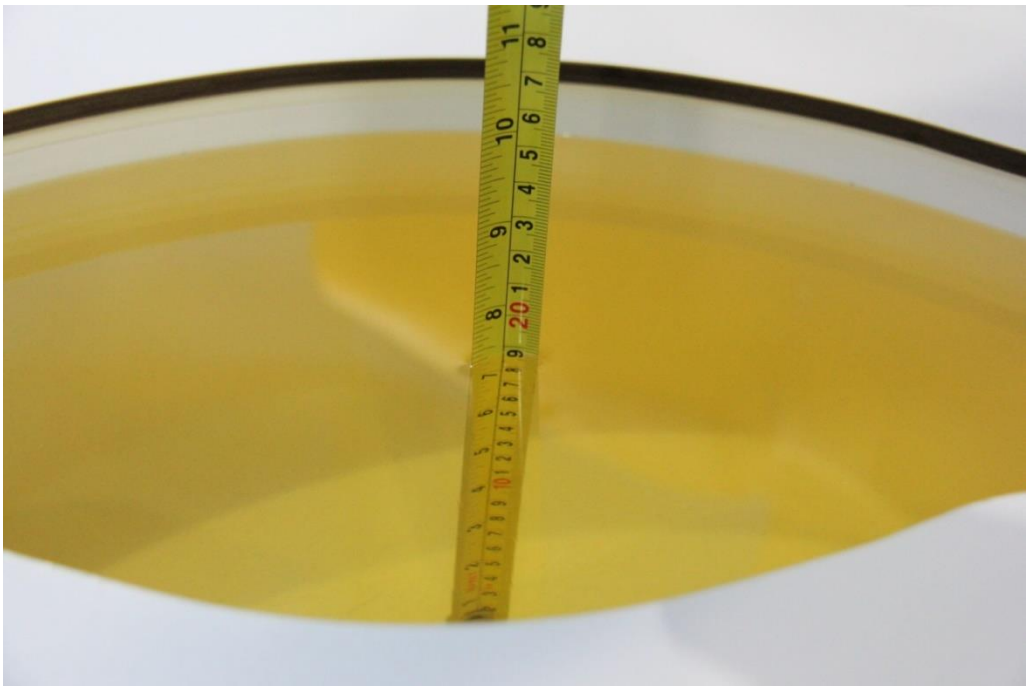
Frequency (MHz)	Liquid Type	Conductivity (σ)	± 5% Range	Permittivity (ε)	± 5% Range
750	Head	0.89	0.85～0.93	41.9	39.8～44.0
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
1750	Head	1.37	1.30～1.44	40.1	38.1～42.1
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
2450	Head	1.80	1.71～1.89	39.2	37.2～41.2
2550	Head	1.91	1.81～2.01	39.1	37.1～41.0
3500	Head	2.91	2.77～3.05	37.9	36.0～39.7
3900	Head	3.32	3.16～3.48	37.5	35.7～39.3
5250	Head	4.71	4.47～4.95	35.9	34.1～37.7
5600	Head	5.07	4.82～5.32	35.5	33.8～37.3
5750	Head	5.22	4.96～5.48	35.4	33.6～37.1

7.2. Dielectric Performance

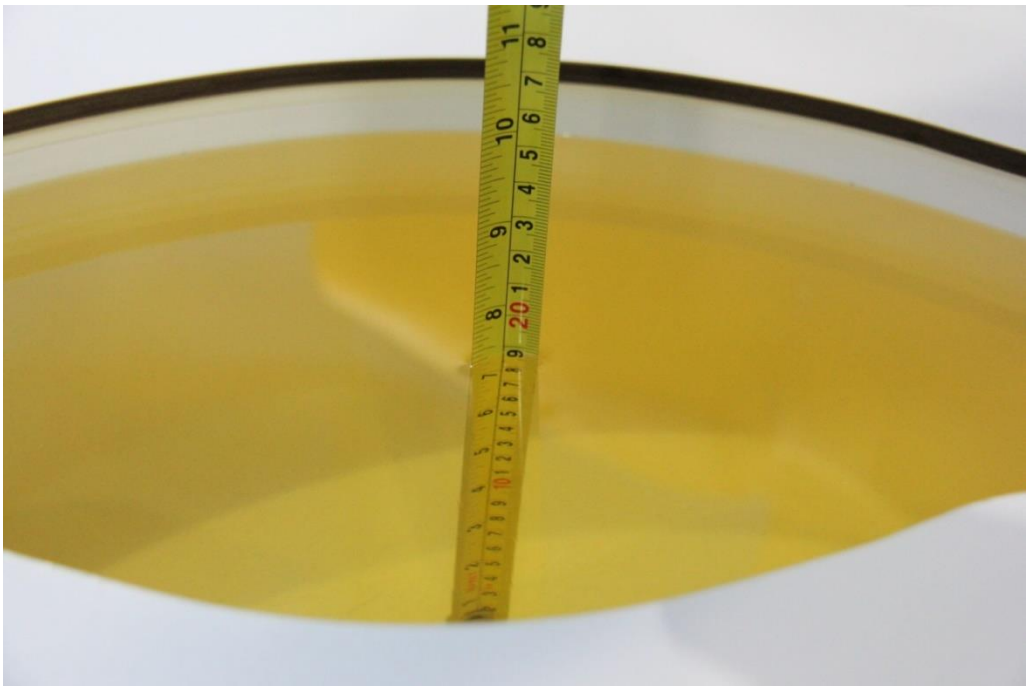
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency (MHz)	Conductivity σ (S/m)	Drift (%)	Permittivity ε	Drift (%)
2022-12-14	750	Head	0.916	2.92	41.08	-1.96
2022-12-13	835	Head	0.928	3.11	40.74	-1.83
2022-12-17	1750	Head	1.360	-0.73	40.56	1.15
2022-12-18	1900	Head	1.422	1.57	39.49	-1.28
2022-12-24	2450	Head	1.845	2.50	38.41	-2.02
2022-12-20	2550	Head	1.951	2.15	38.15	-2.43
2022-12-29	3500	Head	2.857	-1.82	38.67	2.03
2022-12-29	3900	Head	3.372	1.57	36.74	-2.03
2022-12-26	5250	Head	4.767	1.21	35.35	-1.53
2022-12-26	5600	Head	5.019	-1.01	36.23	2.06
2022-12-26	5750	Head	5.125	-1.82	36.51	3.14

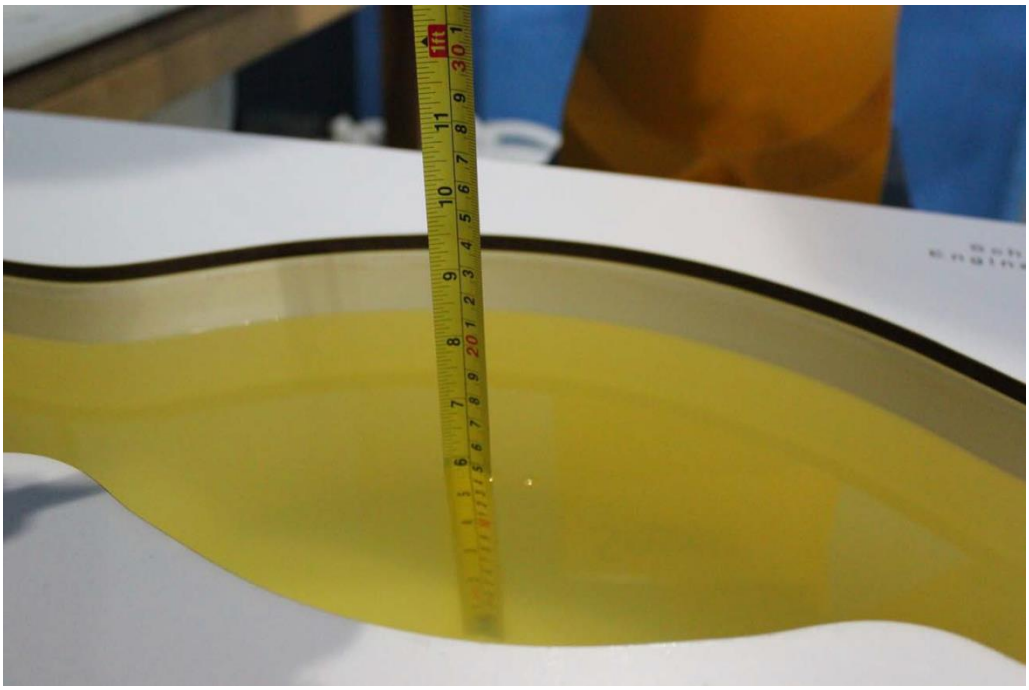
Note: The liquid temperature is 22.0^{o}C.



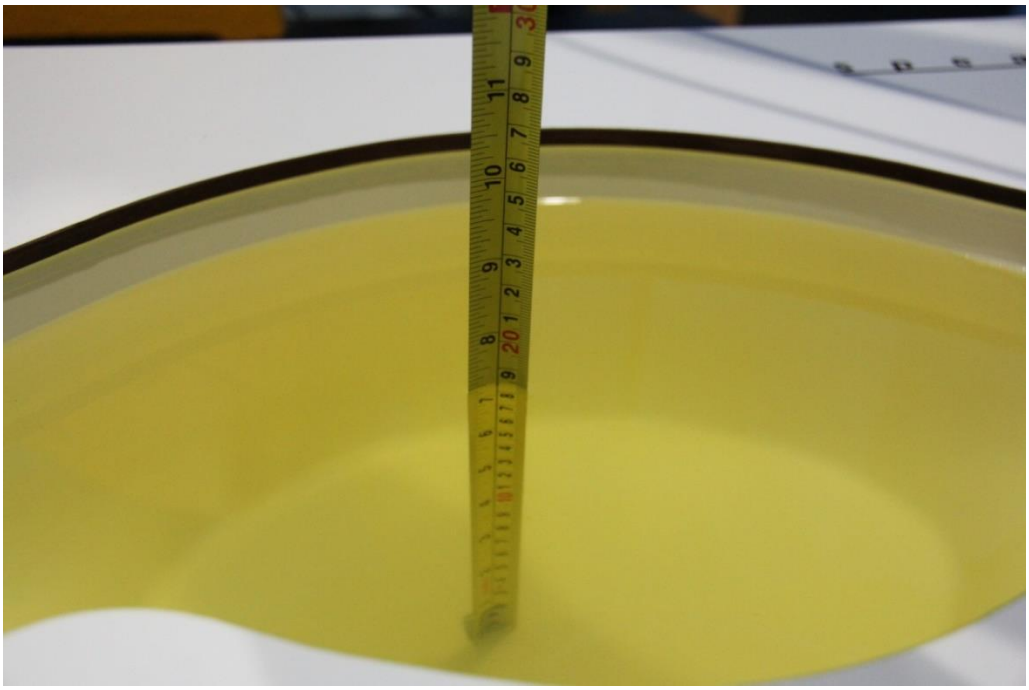
Picture 7-1: Liquid depth in the Flat Phantom (750MHz)



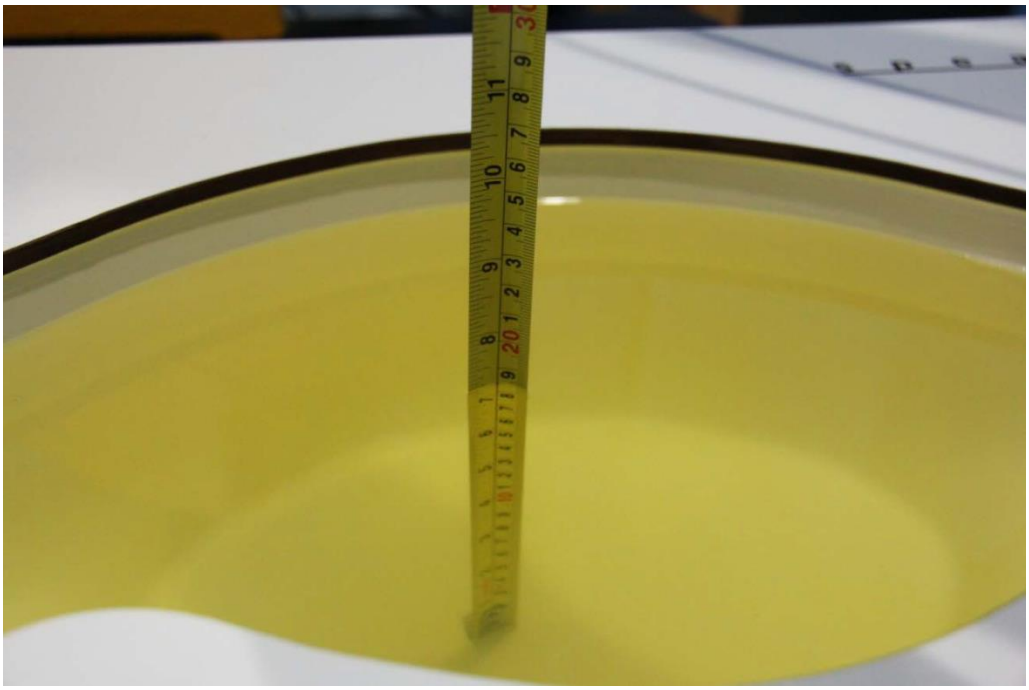
Picture 7-2: Liquid depth in the Flat Phantom (835MHz)



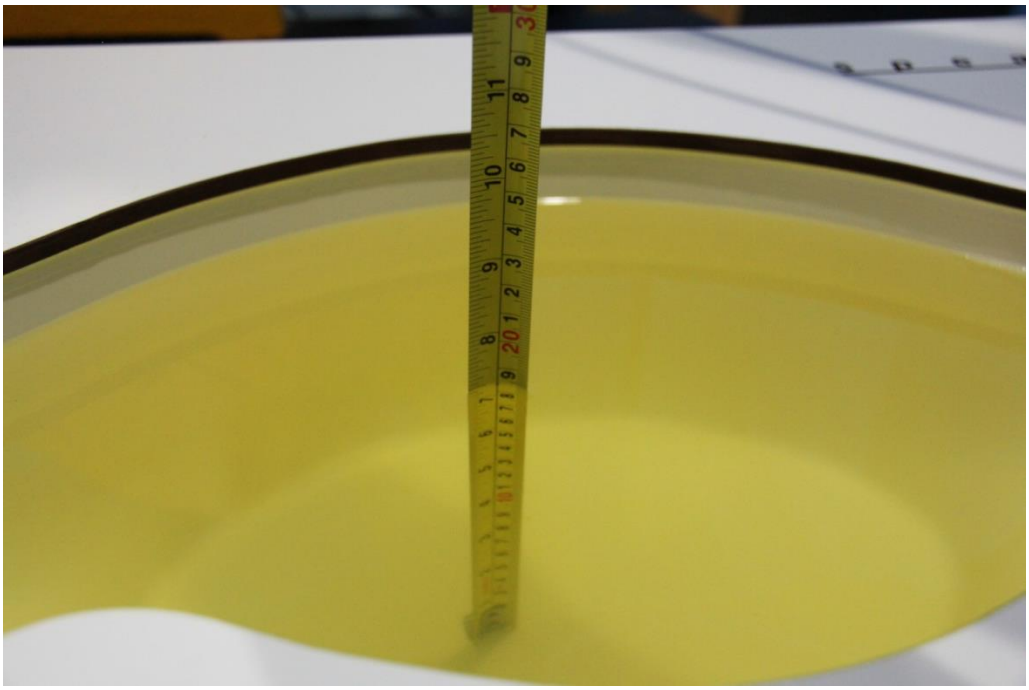
Picture 7-3: Liquid depth in the Flat Phantom (1750MHz)



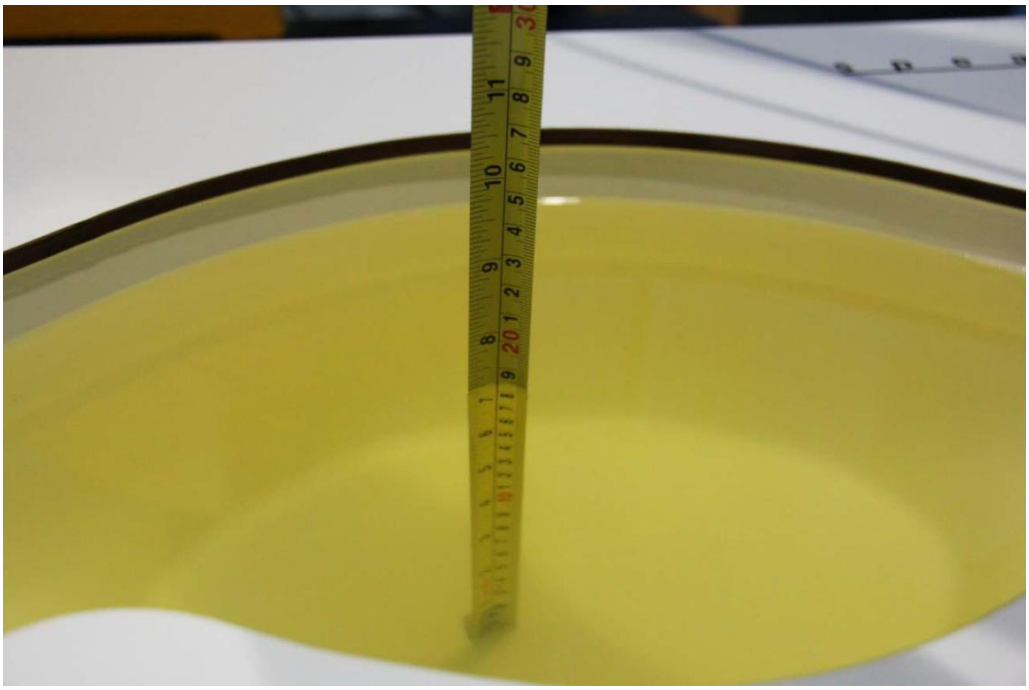
Picture 7-4: Liquid depth in the Flat Phantom (1900MHz)



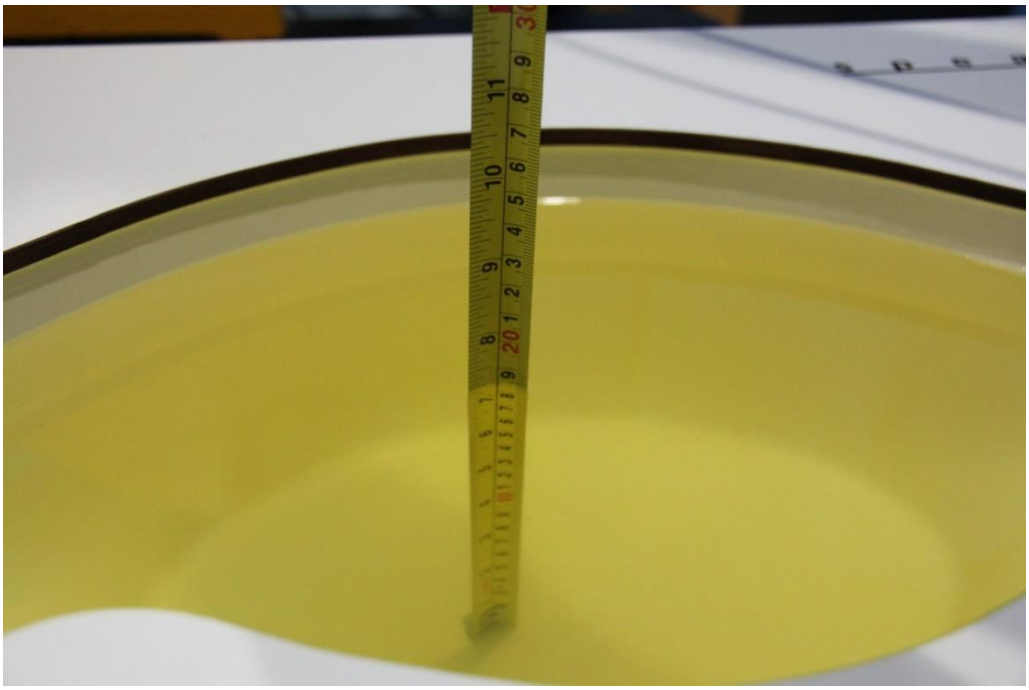
Picture 7-5: Liquid depth in the Flat Phantom (2450MHz)



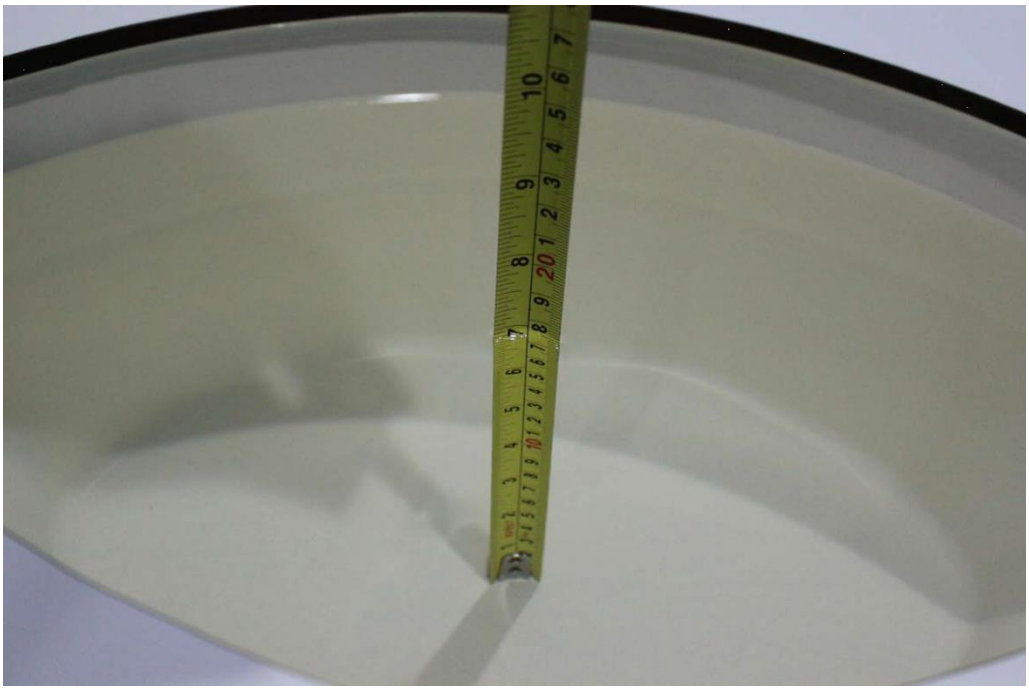
Picture 7-6: Liquid depth in the Flat Phantom (2550MHz)



Picture 7-7: Liquid depth in the Flat Phantom (3500MHz)



Picture 7-8: Liquid depth in the Flat Phantom (3900MHz)

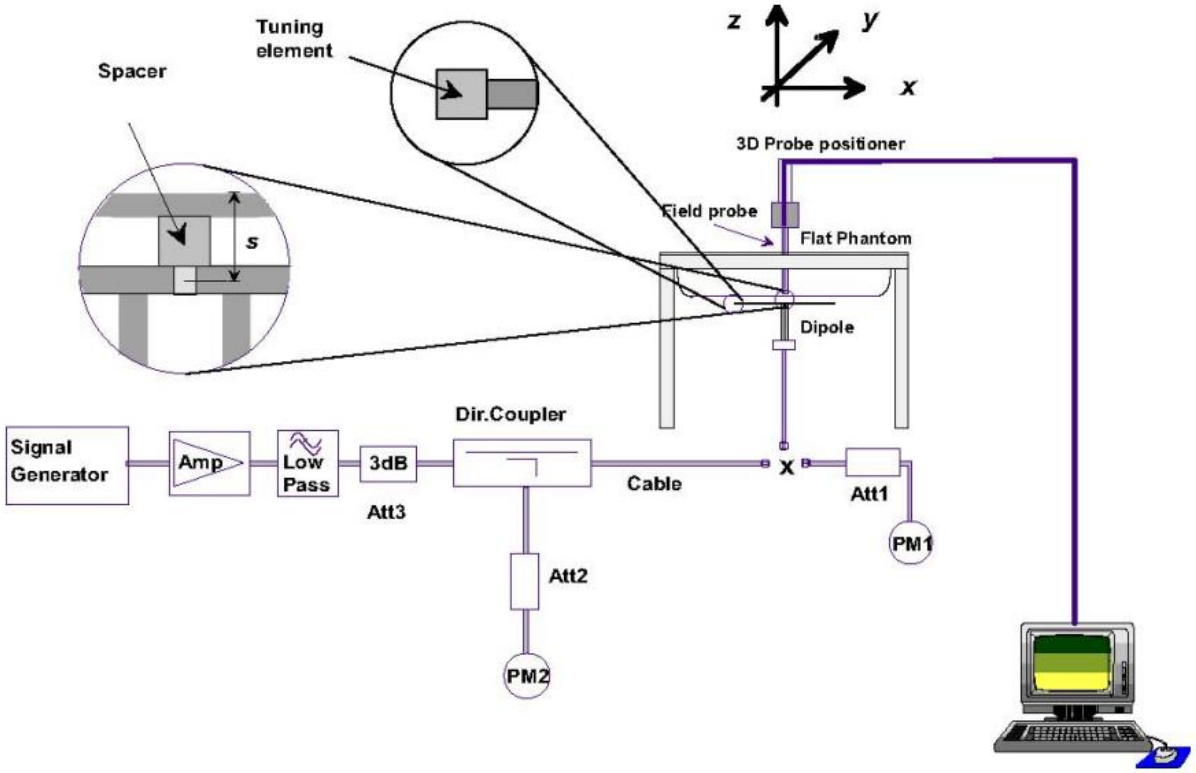


Picture 7-9: Liquid depth in the Flat Phantom (5GHz)

8. System verification

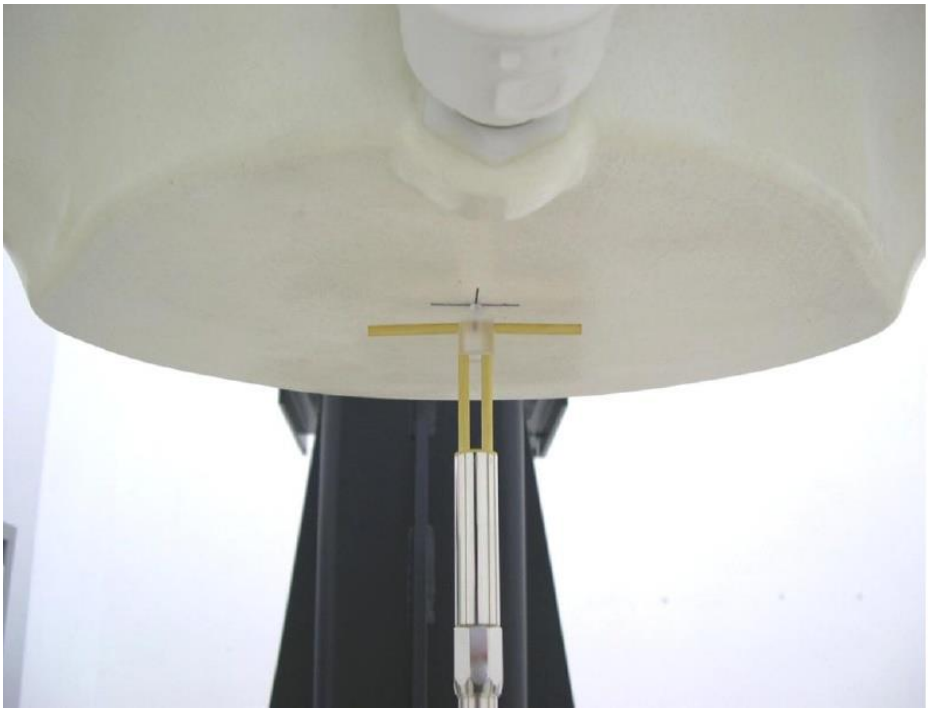
8.1. System Setup

In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The equipment setup is shown below:



Picture 8.1 System Setup for System Evaluation

For the dipole below 3GHz, the output power on dipole port must be calibrated to 24 dBm (250mW) before dipole is connected.
For the dipole above 3GHz, the output power on dipole port must be calibrated to 20 dBm (100mW) before dipole is connected.



Picture 8.2 Photo of Dipole Setup

8.2. System Verification

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device.

Table 8.1: System Verification of Head

Measurement Date	Frequency (MHz)	Target value (W/kg)		Measured value (W/kg)				Deviation (%)	
				/		Normalize to 1W			
		10 g	1 g	10 g	1 g	10 g	1 g	10 g	1 g
2022-12-14	750	5.62	8.48	1.44	2.20	5.76	8.80	2.49	3.77
2022-12-13	835	6.29	9.64	1.63	2.52	6.52	10.08	3.66	4.56
2022-12-17	1750	19.60	36.30	4.79	8.77	19.16	35.08	-2.24	-3.36
2022-12-18	1900	20.50	40.20	5.24	10.4	20.96	41.60	2.24	3.48
2022-12-24	2450	24.20	53.20	6.23	13.9	24.92	55.60	2.98	4.51
2022-12-20	2550	25.20	55.90	6.41	14.5	25.64	58.00	1.75	3.76
2022-12-29	3500	25.20	66.80	2.46	6.42	24.60	64.20	-2.38	-3.89
2022-12-29	3900	24.80	71.30	2.53	7.39	25.30	73.90	2.02	3.65
2022-12-26	5250	22.80	79.70	2.33	8.31	23.30	83.10	2.19	4.27
2022-12-26	5600	23.60	82.60	2.29	7.87	22.90	78.70	-2.97	-4.72
2022-12-26	5750	22.10	78.50	2.18	7.64	21.80	76.40	-1.36	-2.68

9. Measurement Procedures

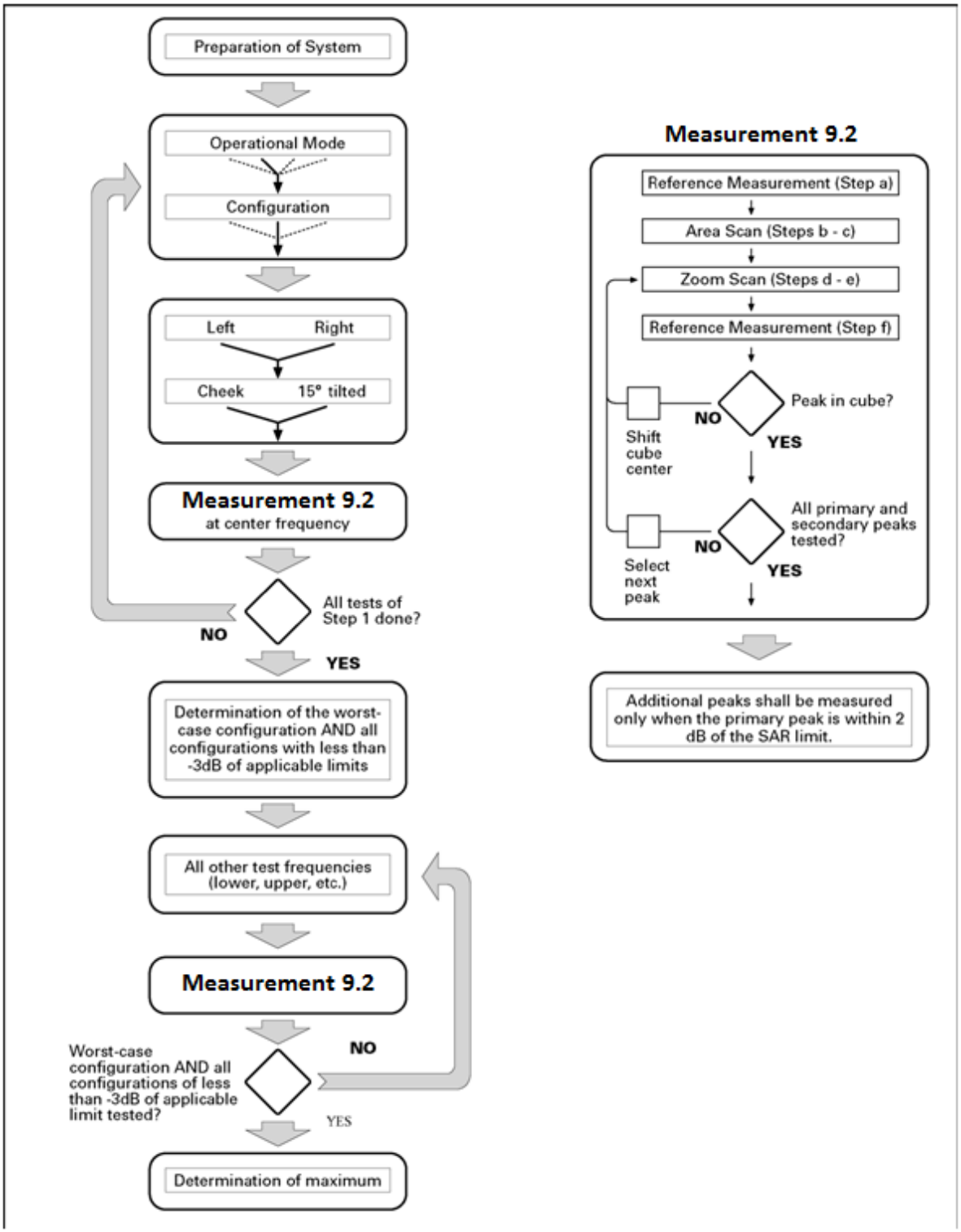
9.1. Tests to be performed

In order to determine the highest value of the peak spatial-average SAR of a handset, all device positions, configurations and operational modes shall be tested for each frequency band according to steps 1 to 3 below. A flowchart of the test process is shown in picture 9.1.

Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the center of the transmit frequency band (f_c) for:
a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom, as described in annex D),
b) all configurations for each device position in a), e.g., antenna extended and retracted, and
c) all operational modes, e.g., analogue and digital, for each device position in a) and configuration in b) in each frequency band.
If more than three frequencies need to be tested according to 11.1 (i.e., $N_c > 3$), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

Step 2: For the condition providing highest peak spatial-average SAR determined in Step 1, perform all tests described in 9.2 at all other test frequencies, i.e., lowest and highest frequencies. In addition, for all other conditions (device position, configuration and operational mode) where the peak spatial-average SAR value determined in Step 1 is within 3 dB of the applicable SAR limit, it is recommended that all other test frequencies shall be tested as well.

Step 3: Examine all data to determine the highest value of the peak spatial-average SAR found in Steps 1 to 2.



Picture 9.1 Block diagram of the tests to be performed

9.2. General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2013. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

9.3. WCDMA Measurement Procedures for SAR

The following procedures are applicable to WCDMA handsets operating under 3GPP Release99, Release 5 and Release 6. The default test configuration is to measure SAR with an established radio link between the DUT and a communication test set using a 12.2kbps RMC (reference measurement channel) configured in Test Loop Mode 1. SAR is selectively confirmed for other physical channel configurations (DPCCH & $DPDCH_n$), HSDPA and HSPA (HSUPA/HSDPA) modes according to output power, exposure conditions and device operating capabilities. Both uplink and downlink should be configured with the same RMC or AMR, when required. SAR for Release 5 HSDPA and Release 6 HSPA are measured using the applicable FRC (fixed reference channel) and E-DCH reference channel configurations. Maximum output power is verified according to applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. When Maximum Power Reduction (MPR) is not implemented according to Cubic Metric (CM) requirements for Release 6 HSPA, the following procedures do not apply.

For Release 5 HSDPA Data Devices:

Sub-test	β_c	β_d	β_d （SF）	β_c / β_d	β_{hs}	CM/dB
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15	15/15	64	12/15	24/25	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

For Release 6 HSPA Data Devices

Sub-test	β_c	β_d	β_d （SF）	β_c / β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} （SF）	β_{ed} （codes）	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.0	0.0	21	81

9.4. SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Anristu MT8820C. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. All powers were measured with the Anristu MT8820C.It is performed for conducted power and SAR based on the KDB941225 D05.

SAR is evaluated separately according to the following procedures for the different test positions in each exposure condition – head, body, body-worn accessories and other use conditions. The procedures in the following subsections are applied separately to test each LTE frequency band.

1) QPSK with 1 RB allocation
   Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
2) QPSK with 50% RB allocation
   The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.
3) QPSK with 100% RB allocation
   For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

9.5. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.
SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.
LTE TDD Band 38/41 support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle

Calculated Duty Cycle = Extended cyclic prefix in uplink x (Ts) x # of S + # of U
Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%
Where
Ts = 1/(15000 x 2048) seconds

9.6. Bluetooth & WLAN Measurement Procedures for SAR

Normal network operating configurations are not suitable for measuring the SAR of 802.11 transmitters in general. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure that the results are consistent and reliable.

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in a test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

9.7. Power Drift

To control the output power stability during the SAR test, DASY5 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Section 14 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

10. Conducted Output Power

According to April 2015 TCB workshop, SAR Test exclusion can be applied for testing overlapping LTE Bands as follows:

a) The maximum out power, including tolerance, for the smaller band must be ≤ the larger band to qualify for SAR test exclusion.

b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.

LTE Band 38 (2570-2620MHz) is covered by LTE Band 41 (2496-2690MHz)

NR n78 (3450-3550MHz) is covered by NR n77 Part 27Q (3450-3550MHz)

10.1. GSM Measurement result

Table 10.1: The conducted power measurement results for GPRS/ EGPRS

GPRS850/ EGPRS850	Tune up	Measured Power (dBm)			calculation	Averaged Power (dBm)		
		Ch.251	Ch.190	Ch.128		Ch.251	Ch.190	Ch.128
1Tx-slot	**34.0**	32.71	32.63	32.58	-9.03dB	23.68	23.60	23.55
2Tx-slots	**32.5**	**30.96**	30.90	30.88	-6.02dB	24.94	24.88	24.86
3Tx-slots	**30.5**	29.82	29.51	29.62	-4.26dB	25.56	25.25	25.36
4Tx-slots	**29.0**	27.64	27.42	28.02	-3.01dB	24.63	24.41	25.01
EGPRS850 8PSK	**Tune up**	Measured Power (dBm)			calculation	Averaged Power (dBm)		
		Ch.251	Ch.190	Ch.128		Ch.251	Ch.190	Ch.128
1Tx-slot	**27.5**	26.78	26.58	26.38	-9.03dB	17.75	17.55	17.35
2Tx-slots	**26.5**	25.50	25.35	25.22	-6.02dB	19.48	19.33	19.20
3Tx-slots	**25.5**	24.28	24.08	24.96	-4.26dB	20.02	19.82	20.70
4Tx-slots	**22.5**	21.03	21.62	21.45	-3.01dB	18.02	18.61	18.44
GPRS1900/ EGPRS1900	**Tune up**	Measured Power (dBm)			calculation	Averaged Power (dBm)		
		Ch.810	Ch.661	Ch.512		Ch.810	Ch.661	Ch.512
1Tx-slot	**31.5**	30.75	30.34	30.13	-9.03dB	21.72	21.31	21.10
2Tx-slots	**30.0**	28.72	28.57	29.06	-6.02dB	22.70	22.55	23.04
3Tx-slots	**28.5**	27.09	27.30	**27.84**	-4.26dB	22.83	23.04	23.58
4Tx-slots	**26.5**	25.04	24.98	25.54	-3.01dB	22.03	21.97	22.53
EGPRS1900 8PSK	**Tune up**	Measured Power (dBm)			calculation	Averaged Power (dBm)		
		Ch.810	Ch.661	Ch.512		Ch.810	Ch.661	Ch.512
1Tx-slot	**25.5**	24.30	24.14	24.95	-9.03dB	15.27	15.11	15.92
2Tx-slots	**24.5**	23.08	23.97	23.88	-6.02dB	17.06	17.95	17.86
3Tx-slots	**22.5**	21.83	21.74	21.63	-4.26dB	17.57	17.48	17.37
4Tx-slots	**20.5**	19.54	19.56	19.68	-3.01dB	16.53	16.55	16.67

Notes:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

According to the conducted power as above, the body measurements are performed with 2Tx slots for GSM850 and 3Tx slots for GSM1900.

10.2. WCDMA Measurement result

Table 10.2: The conducted power measurement results WCDMA

Item	band	WCDMA Band 2			
	ARFCN	Tune up	Ch.9538 (1907.6MHz)	Ch.9400 (1880MHz)	Ch.9262 (1852.4MHz)
WCDMA	\	24.5	**23.76**	23.73	23.74
HSUPA	1	23.0	22.28	22.17	22.21
	2	23.5	22.74	22.69	22.67
	3	22.5	21.92	21.77	21.83
	4	23.5	22.78	22.74	22.68
	5	23.0	21.97	21.92	22.04
HSDPA	1	23.5	22.83	22.89	22.87
	2	23.5	22.68	22.64	22.62
	3	22.5	21.21	21.19	21.16
	4	22.5	21.18	21.07	21.13
DC-HSDPA	1	23.5	22.77	22.85	22.80
	2	23.5	22.71	22.68	22.64
	3	22.0	21.18	21.15	21.13
	4	22.0	21.16	21.06	21.10
Item	band	WCDMA Band 5			
	ARFCN	Tune up	Ch.4233 (846.6MHz)	Ch.4183 (836.6MHz)	Ch.4132 (826.4MHz)
WCDMA	\	24.5	23.50	**23.58**	23.56
HSUPA	1	23.0	21.82	21.89	21.92
	2	23.5	22.48	22.52	22.53
	3	22.5	21.31	21.38	21.46
	4	23.5	22.50	22.58	22.55
	5	23.0	21.67	21.74	21.68
HSDPA	1	23.5	22.52	22.56	22.57
	2	23.5	22.31	22.35	22.38
	3	22.0	20.75	20.93	20.89
	4	22.0	20.61	20.71	20.85
DC-HSDPA	1	23.5	22.53	22.58	22.55
	2	23.5	22.35	22.39	22.40
	3	22.0	20.77	20.90	20.86
	4	22.0	20.64	20.76	20.82

10.3. LTE Measurement result

The maximum output power (Tune-up Limit)

Band	Tune up (dBm)
LTE Band 2	**24.0**
LTE Band 4	**24.0**
LTE Band 5	**24.5**
LTE Band 7	**24.0**
LTE Band 17	**24.5**
LTE Band 38	**24.0**
LTE Band 41	**24.0**
LTE Band 71	**24.5**

Table 10.3: The conducted Power for LTE

LTE Band 2			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
1.4 MHz	1RB_5	1909.3	22.71	22.08	21.07	17.86
		1880.0	22.75	21.79	20.83	17.87
		1850.7	22.91	21.89	20.87	18.00
	1RB_3	1909.3	22.81	22.27	21.32	17.95
		1880.0	22.85	21.89	20.89	17.99
		1850.7	22.97	22.05	21.09	18.14
	1RB_0	1909.3	22.90	22.21	21.26	18.05
		1880.0	22.82	21.84	20.83	17.97
		1850.7	22.85	22.07	21.07	17.95
	3RB_3	1909.3	23.15	22.14	21.14	18.31
		1880.0	22.92	21.82	20.82	18.03
		1850.7	22.92	22.00	21.05	18.07
	3RB_1	1909.3	22.89	22.20	21.22	17.99
		1880.0	22.88	21.76	20.74	17.99
		1850.7	22.90	21.99	21.04	18.07
	3RB_0	1909.3	22.87	22.15	21.19	17.97
		1880.0	22.90	21.86	20.87	18.04
		1850.7	22.92	22.11	21.14	18.01
	6RB_0	1909.3	22.10	21.11	20.14	18.05
		1880.0	21.93	20.93	20.02	17.86
		1850.7	21.96	21.01	20.03	17.89

LTE Band 2			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
3 MHz	1RB_14	1908.5	22.84	21.92	21.08	17.89
		1880.0	22.83	22.07	20.86	17.84
		1851.5	22.83	22.02	20.87	18.02
	1RB_7	1908.5	22.87	22.12	21.33	17.97
		1880.0	22.92	22.13	20.88	18.01
		1851.5	22.82	22.20	21.05	18.13
	1RB_0	1908.5	22.68	22.24	21.24	18.09
		1880.0	22.92	22.18	20.86	17.93
		1851.5	22.95	22.27	21.10	17.97
	8RB_7	1908.5	22.22	21.28	20.19	18.33
		1880.0	21.96	21.02	19.86	17.99
		1851.5	21.99	21.00	20.11	18.03
	8RB_4	1908.5	22.30	21.43	20.24	18.01
		1880.0	21.97	20.98	19.76	18.01
		1851.5	22.05	21.10	20.04	18.06
	8RB_0	1908.5	22.28	21.34	20.25	17.96
		1880.0	22.00	21.01	19.89	18.02
		1851.5	22.05	21.11	20.15	18.01
	15RB_0	1908.5	22.27	21.19	19.14	18.07
		1880.0	21.92	20.83	19.04	17.83
		1851.5	22.01	21.10	19.07	17.90

LTE Band 2			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	1907.5	22.92	22.27	21.07	17.86
		1880.0	22.95	21.98	20.88	17.85
		1852.5	22.90	22.00	20.87	17.99
	1RB_12	1907.5	22.85	22.27	21.34	17.97
		1880.0	22.81	22.17	20.86	17.98
		1852.5	22.86	22.02	21.03	18.13
	1RB_0	1907.5	22.69	22.33	21.25	18.08
		1880.0	22.78	22.27	20.86	17.94
		1852.5	22.83	21.98	21.13	18.00
	12RB_13	1907.5	22.20	21.28	20.16	18.33
		1880.0	21.99	21.04	19.83	17.96
		1852.5	22.05	21.07	20.10	18.01
	12RB_6	1907.5	22.23	21.28	20.25	17.97
		1880.0	21.99	21.09	19.73	17.98
		1852.5	22.05	21.10	20.04	18.06
	12RB_0	1907.5	22.25	21.29	20.26	17.94
		1880.0	22.03	21.06	19.88	18.02
		1852.5	22.06	21.11	20.12	18.03
	25RB_0	1907.5	22.20	21.25	19.10	18.10
		1880.0	21.95	20.93	19.07	17.84
		1852.5	22.00	21.06	19.11	17.89

LTE Band 2			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	1905.0	22.86	22.10	21.06	17.87
		1880.0	22.89	22.10	20.87	17.84
		1855.0	22.95	22.28	20.88	18.01
	1RB_24	1905.0	22.87	22.01	21.30	17.95
		1880.0	22.89	22.20	20.88	18.02
		1855.0	22.89	22.27	20.99	18.17
	1RB_0	1905.0	22.90	22.34	21.28	18.11
		1880.0	22.94	22.31	20.87	17.90
		1855.0	22.92	22.29	21.14	17.97
	25RB_25	1905.0	22.18	21.26	20.13	18.32
		1880.0	22.03	21.11	19.87	18.00
		1855.0	22.08	21.13	20.07	18.00
	25RB_12	1905.0	22.26	21.27	20.22	17.96
		1880.0	22.05	21.11	19.71	17.96
		1855.0	22.11	21.11	20.03	18.07
	25RB_0	1905.0	22.21	21.30	20.26	17.94
		1880.0	22.02	21.09	19.87	18.01
		1855.0	22.08	21.09	20.08	18.01
	50RB_0	1905.0	22.20	21.22	19.08	18.08
		1880.0	22.00	21.02	19.03	17.87
		1855.0	22.13	21.12	19.10	17.89

LTE Band 2			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
15 MHz	1RB_74	1902.5	22.95	21.93	21.04	17.88
		1880.0	22.77	22.19	20.92	17.83
		1857.5	22.83	22.25	20.91	17.99
	1RB_37	1902.5	22.94	21.93	21.32	17.96
		1880.0	22.74	22.10	20.88	17.94
		1857.5	22.75	22.19	21.03	18.12
	1RB_0	1902.5	22.78	21.74	21.25	18.04
		1880.0	22.80	22.26	20.87	17.98
		1857.5	22.73	22.13	21.14	18.04
	36RB_38	1902.5	21.99	21.01	20.18	18.34
		1880.0	21.90	20.95	19.80	17.99
		1857.5	21.96	20.99	20.11	17.99
	36RB_19	1902.5	22.02	21.01	20.27	17.96
		1880.0	21.88	20.95	19.75	17.97
		1857.5	21.93	20.95	20.02	18.06
	36RB_0	1902.5	22.02	21.01	20.26	17.93
		1880.0	21.89	20.94	19.87	18.04
		1857.5	21.94	20.99	20.15	18.05
	75RB_0	1902.5	22.13	21.09	19.13	18.10
		1880.0	21.85	20.83	19.04	17.80
		1857.5	21.94	20.94	19.14	17.89

LTE Band 2			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
20 MHz	1RB_99	1900.0	22.92	22.29	21.03	17.85
		1880.0	22.83	22.02	20.91	17.84
		1860.0	**22.96**	21.99	20.84	18.02
	1RB_50	1900.0	22.82	22.12	21.37	17.98
		1880.0	22.79	22.00	20.86	18.01
		1860.0	22.85	22.10	21.01	18.17
	1RB_0	1900.0	22.75	21.99	21.21	18.07
		1880.0	22.94	22.14	20.84	17.97
		1860.0	22.84	22.01	21.17	18.03
	50RB_50	1900.0	22.18	21.03	20.16	18.36
		1880.0	22.19	20.97	19.87	17.95
		1860.0	22.22	21.02	20.13	17.98
	50RB_25	1900.0	**22.35**	21.07	20.24	17.99
		1880.0	22.29	20.98	19.75	17.95
		1860.0	22.25	20.98	20.01	18.08
	50RB_0	1900.0	22.28	21.03	20.27	17.95
		1880.0	22.24	20.96	19.90	18.05
		1860.0	22.26	21.01	20.14	18.04
	100RB_0	1900.0	21.88	21.00	19.13	18.13
		1880.0	21.93	20.90	19.08	17.85
		1860.0	22.00	21.00	19.10	17.85

LTE Band 4			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
1.4 MHz	1RB_5	1754.3	22.61	21.87	20.93	17.70
		1732.5	22.81	22.09	21.09	17.89
		1710.7	22.79	21.98	21.02	17.87
	1RB_3	1754.3	22.68	21.83	20.82	17.76
		1732.5	22.84	22.04	21.08	17.86
		1710.7	22.83	22.14	21.15	17.87
	1RB_0	1754.3	22.61	21.78	20.82	17.69
		1732.5	22.73	22.08	21.06	17.77
		1710.7	22.75	21.97	20.97	17.82
	3RB_3	1754.3	22.74	21.79	20.80	17.76
		1732.5	22.73	21.78	20.78	17.79
		1710.7	22.79	21.93	20.93	17.88
	3RB_1	1754.3	22.75	21.74	20.80	17.82
		1732.5	22.75	21.86	20.92	17.78
		1710.7	22.76	21.93	20.97	17.79
	3RB_0	1754.3	22.75	21.64	20.67	17.77
		1732.5	22.77	22.01	21.06	17.86
		1710.7	22.78	21.92	20.92	17.81
	6RB_0	1754.3	21.67	20.87	19.91	17.61
		1732.5	21.88	20.74	19.78	17.82
		1710.7	21.94	21.01	19.99	17.89

LTE Band 4			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
3 MHz	1RB_14	1753.5	22.70	21.93	20.97	17.76
		1732.5	22.86	21.95	20.98	17.88
		1711.5	22.82	22.06	21.07	17.90
	1RB_7	1753.5	22.84	21.97	21.01	17.93
		1732.5	22.83	22.13	21.14	17.91
		1711.5	22.81	22.16	21.14	17.85
	1RB_0	1753.5	22.76	21.93	20.94	17.84
		1732.5	22.78	21.99	21.04	17.81
		1711.5	22.84	22.18	21.18	17.90
	8RB_7	1753.5	21.81	20.87	19.92	17.72
		1732.5	21.92	20.90	19.95	17.85
		1711.5	22.00	21.02	20.07	17.94
	8RB_4	1753.5	21.86	20.87	19.85	17.77
		1732.5	21.83	20.91	19.91	17.80
		1711.5	22.02	21.05	20.07	17.92
	8RB_0	1753.5	21.84	20.96	20.00	17.81
		1732.5	21.83	20.89	19.92	17.79
		1711.5	22.08	21.11	20.16	18.03
	15RB_0	1753.5	21.81	20.89	19.90	17.74
		1732.5	21.92	21.00	20.00	17.87
		1711.5	22.06	21.05	20.05	18.01

LTE Band 4			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	1752.5	22.75	21.92	20.91	17.79
		1732.5	22.77	22.20	21.23	17.81
		1712.5	22.85	22.03	21.07	17.88
	1RB_12	1752.5	22.84	21.79	20.79	17.88
		1732.5	22.79	22.24	21.23	17.80
		1712.5	22.82	22.05	21.08	17.88
	1RB_0	1752.5	22.75	22.01	21.04	17.78
		1732.5	22.80	21.97	20.97	17.84
		1712.5	22.83	22.02	21.06	17.86
	12RB_13	1752.5	21.92	20.96	20.00	17.82
		1732.5	21.85	20.92	19.92	17.79
		1712.5	22.04	20.98	19.99	17.96
	12RB_6	1752.5	21.89	20.93	19.97	17.81
		1732.5	21.85	20.89	19.92	17.81
		1712.5	22.03	20.98	20.03	17.99
	12RB_0	1752.5	21.87	20.94	19.96	17.84
		1732.5	21.85	20.89	19.92	17.80
		1712.5	22.02	21.03	20.08	17.96
	25RB_0	1752.5	21.87	20.95	20.01	17.78
		1732.5	21.94	20.91	19.89	17.88
		1712.5	22.01	21.04	20.03	17.92

LTE Band 4			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	1750.0	22.59	21.71	20.75	17.64
		1732.5	22.81	22.10	21.10	17.87
		1715.0	22.65	21.90	20.88	17.68
	1RB_24	1750.0	22.74	21.72	20.75	17.81
		1732.5	22.78	22.04	21.03	17.86
		1715.0	22.76	22.03	21.05	17.81
	1RB_0	1750.0	22.80	21.89	20.91	17.89
		1732.5	22.68	21.99	20.98	17.74
		1715.0	22.82	22.27	21.28	17.86
	25RB_25	1750.0	21.91	20.95	19.99	17.81
		1732.5	21.84	20.91	19.96	17.81
		1715.0	21.99	21.02	20.03	17.89
	25RB_12	1750.0	21.90	20.98	20.02	17.81
		1732.5	21.85	20.90	19.94	17.83
		1715.0	21.94	21.03	20.04	17.88
	25RB_0	1750.0	21.90	20.96	19.96	17.81
		1732.5	21.91	20.96	19.99	17.88
		1715.0	21.98	21.01	20.01	17.91
	50RB_0	1750.0	21.87	20.93	19.95	17.82
		1732.5	21.88	20.94	19.93	17.80
		1715.0	21.96	20.98	19.97	17.87

LTE Band 4			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
15 MHz	1RB_74	1747.5	22.54	21.57	20.61	17.60
		1732.5	22.76	22.16	21.18	17.81
		1717.5	22.44	21.89	20.91	17.50
	1RB_37	1747.5	22.71	21.71	20.77	17.76
		1732.5	22.65	22.02	21.06	17.72
		1717.5	22.54	21.85	20.88	17.56
	1RB_0	1747.5	22.69	21.74	20.75	17.71
		1732.5	22.62	22.00	20.99	17.66
		1717.5	22.70	22.08	21.11	17.75
	36RB_38	1747.5	21.86	20.83	19.88	17.84
		1732.5	21.73	20.82	19.88	17.63
		1717.5	21.79	20.83	19.81	17.70
	36RB_19	1747.5	21.84	20.81	19.82	17.82
		1732.5	21.73	20.84	19.87	17.66
		1717.5	21.78	20.82	19.83	17.74
	36RB_0	1747.5	21.86	20.84	19.90	17.80
		1732.5	21.73	20.82	19.81	17.71
		1717.5	21.78	20.77	19.76	17.69
	75RB_0	1747.5	21.86	20.84	19.84	17.79
		1732.5	21.77	20.80	19.82	17.73
		1717.5	21.79	20.83	19.89	17.74

LTE Band 4			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
20 MHz	1RB_99	1745.0	22.54	21.91	20.91	17.60
		1732.5	**22.87**	22.10	21.15	17.96
		1720.0	22.70	21.89	20.90	17.74
	1RB_50	1745.0	22.63	21.87	20.89	17.69
		1732.5	22.70	21.89	20.91	17.72
		1720.0	22.68	21.78	20.77	17.76
	1RB_0	1745.0	22.64	21.96	20.99	17.66
		1732.5	22.73	21.91	20.94	17.81
		1720.0	22.83	21.99	21.01	17.92
	50RB_50	1745.0	22.16	20.95	19.93	18.10
		1732.5	22.18	20.76	19.78	18.10
		1720.0	22.24	20.74	19.74	18.16
	50RB_25	1745.0	22.12	20.91	19.91	18.06
		1732.5	22.17	20.73	19.76	18.08
		1720.0	22.15	20.82	19.86	18.09
	50RB_0	1745.0	**22.27**	20.93	19.92	18.21
		1732.5	22.18	20.75	19.80	18.11
		1720.0	22.22	20.77	19.82	18.19
	100RB_0	1745.0	21.87	20.89	19.93	17.79
		1732.5	21.80	20.80	19.82	17.74
		1720.0	21.80	20.82	19.82	17.78

LTE Band 5			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
1.4 MHz	1RB_5	848.3	22.92	22.09	21.14	18.07
		836.5	23.20	22.24	21.32	18.31
		824.7	23.33	22.48	21.53	18.44
	1RB_3	848.3	23.23	22.52	21.56	18.35
		836.5	23.25	22.43	21.52	18.40
		824.7	23.40	22.54	21.63	18.48
	1RB_0	848.3	22.76	21.86	20.94	17.91
		836.5	23.17	22.33	21.37	18.30
		824.7	23.33	22.51	21.55	18.42
	3RB_3	848.3	23.38	22.45	21.55	18.52
		836.5	23.23	22.23	21.31	18.35
		824.7	23.33	22.40	21.47	18.46
	3RB_1	848.3	23.38	22.45	21.47	18.49
		836.5	23.27	22.22	21.25	18.37
		824.7	23.32	22.39	21.48	18.42
	3RB_0	848.3	23.38	22.46	21.48	18.48
		836.5	23.26	22.21	21.28	18.34
		824.7	23.32	22.32	21.38	18.47
	6RB_0	848.3	22.35	21.32	20.37	18.45
		836.5	22.37	21.38	20.45	18.46
		824.7	22.39	21.28	20.37	18.46

LTE Band 5			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
3 MHz	1RB_14	847.5	22.96	22.07	21.12	18.11
		836.5	23.33	22.58	21.65	18.46
		825.5	23.36	22.56	21.61	18.49
	1RB_7	847.5	22.78	21.83	20.88	17.91
		836.5	23.33	22.67	21.71	18.43
		825.5	23.37	22.66	21.68	18.52
	1RB_0	847.5	23.35	22.49	21.55	18.49
		836.5	23.37	22.51	21.54	18.49
		825.5	23.35	22.65	21.67	18.43
	8RB_7	847.5	22.57	21.64	20.71	18.65
		836.5	22.47	21.51	20.54	18.53
		825.5	22.48	21.48	20.51	18.56
	8RB_4	847.5	22.32	21.37	20.46	18.42
		836.5	22.40	21.39	20.45	18.45
		825.5	22.50	21.51	20.55	18.60
	8RB_0	847.5	22.27	21.36	20.46	18.35
		836.5	22.42	21.39	20.45	18.51
		825.5	22.47	21.59	20.62	18.54
	15RB_0	847.5	21.93	20.92	20.00	17.98
		836.5	22.40	21.43	20.50	18.45
		825.5	22.46	21.56	20.65	18.55

LTE Band 5			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	846.5	23.04	22.18	21.20	18.15
		836.5	23.24	22.83	21.91	18.33
		826.5	23.18	22.43	21.46	18.28
	1RB_12	846.5	23.30	22.42	21.45	18.38
		836.5	23.24	22.69	21.73	18.39
		826.5	23.21	22.66	21.69	18.35
	1RB_0	846.5	23.35	22.42	21.49	18.50
		836.5	23.26	22.74	21.78	18.39
		826.5	23.17	22.54	21.58	18.28
	12RB_13	846.5	22.40	21.48	20.55	18.44
		836.5	22.47	21.53	20.60	18.56
		826.5	22.52	21.49	20.52	18.57
	12RB_6	846.5	22.39	21.46	20.50	18.50
		836.5	22.48	21.48	20.57	18.51
		826.5	22.49	21.50	20.59	18.59
	12RB_0	846.5	22.44	21.44	20.54	18.47
		836.5	22.46	21.57	20.61	18.50
		826.5	22.54	21.50	20.58	18.63
	25RB_0	846.5	22.23	21.29	20.32	18.33
		836.5	22.46	21.47	20.52	18.53
		826.5	22.52	21.54	20.62	18.63

LTE Band 5			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	844.0	23.18	22.19	21.21	18.28
		836.5	23.33	22.57	21.66	18.44
		829.0	23.32	22.71	21.78	18.47
	1RB_24	844.0	23.36	22.27	21.33	18.44
		836.5	**23.43**	22.57	21.63	18.57
		829.0	23.27	22.59	21.61	18.40
	1RB_0	844.0	23.32	22.28	21.34	18.40
		836.5	23.27	22.61	21.64	18.39
		829.0	23.32	22.68	21.74	18.41
	25RB_25	844.0	22.64	21.54	20.59	18.75
		836.5	**22.71**	21.52	20.61	18.77
		829.0	22.62	21.44	20.49	18.65
	25RB_12	844.0	22.58	21.56	20.64	18.66
		836.5	22.51	21.53	20.58	18.54
		829.0	22.52	21.46	20.51	18.56
	25RB_0	844.0	22.59	21.55	20.61	18.67
		836.5	22.60	21.53	20.61	18.69
		829.0	22.55	21.44	20.50	18.64
	50RB_0	844.0	22.44	21.41	20.49	18.48
		836.5	22.44	21.48	20.57	18.55
		829.0	22.50	21.54	20.60	18.53

LTE Band 7			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	2567.5	22.69	22.17	21.24	17.83
		2535.0	22.72	22.29	21.34	17.86
		2502.5	22.56	22.11	21.16	17.66
	1RB_12	2567.5	22.67	22.06	21.08	17.75
		2535.0	22.71	22.26	21.34	17.83
		2502.5	22.70	22.19	21.23	17.78
	1RB_0	2567.5	22.66	22.02	21.05	17.81
		2535.0	22.72	22.18	21.20	17.86
		2502.5	22.69	22.08	21.13	17.83
	12RB_13	2567.5	21.91	20.96	20.02	17.96
		2535.0	21.84	20.88	19.97	17.93
		2502.5	21.99	21.02	20.08	18.03
	12RB_6	2567.5	21.88	20.94	20.00	17.92
		2535.0	21.86	20.88	19.90	17.96
		2502.5	22.02	21.04	20.13	18.11
	12RB_0	2567.5	21.90	20.94	20.01	17.98
		2535.0	21.87	20.88	19.91	17.96
		2502.5	22.01	21.05	20.09	18.06
	25RB_0	2567.5	21.99	21.02	20.06	18.07
		2535.0	21.90	20.90	19.98	17.94
		2502.5	22.07	21.07	20.10	18.12

LTE Band 7			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	2565.0	22.65	22.07	21.14	17.75
		2535.0	22.70	22.18	21.25	17.82
		2505.0	22.62	22.24	21.27	17.73
	1RB_24	2565.0	22.63	21.88	20.91	17.73
		2535.0	22.67	22.27	21.34	17.77
		2505.0	22.59	22.22	21.27	17.74
	1RB_0	2565.0	22.57	21.78	20.84	17.66
		2535.0	22.59	22.11	21.18	17.71
		2505.0	22.71	22.26	21.30	17.83
	25RB_25	2565.0	21.99	21.09	20.15	18.02
		2535.0	21.92	20.96	20.05	17.96
		2505.0	22.09	21.04	20.10	18.18
	25RB_12	2565.0	21.98	21.08	20.13	18.05
		2535.0	22.00	21.00	20.03	18.07
		2505.0	22.07	21.04	20.14	18.10
	25RB_0	2565.0	22.01	21.06	20.08	18.04
		2535.0	21.93	20.94	20.01	17.98
		2505.0	22.08	21.07	20.16	18.15
	50RB_0	2565.0	21.99	21.05	20.12	18.07
		2535.0	21.94	20.95	20.03	17.98
		2505.0	22.09	21.10	20.20	18.15

LTE Band 7			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
15 MHz	1RB_74	2562.5	22.64	21.67	20.74	17.78
		2535.0	22.76	22.11	21.18	17.92
		2507.5	22.72	22.07	21.15	17.86
	1RB_37	2562.5	22.65	21.72	20.81	17.77
		2535.0	22.72	22.05	21.13	17.86
		2507.5	22.73	22.07	21.10	17.82
	1RB_0	2562.5	22.66	21.72	20.77	17.77
		2535.0	22.64	22.01	21.05	17.75
		2507.5	22.66	21.98	21.07	17.81
	36RB_38	2562.5	21.73	20.75	19.84	17.83
		2535.0	21.77	20.86	19.95	17.84
		2507.5	21.90	20.88	19.97	17.97
	36RB_19	2562.5	21.74	20.75	19.81	17.83
		2535.0	21.81	20.83	19.91	17.87
		2507.5	21.90	20.90	19.96	17.94
	36RB_0	2562.5	21.72	20.72	19.77	17.75
		2535.0	21.80	20.81	19.89	17.90
		2507.5	21.88	20.88	19.94	17.93
	75RB_0	2562.5	21.75	20.73	19.83	17.78
		2535.0	21.77	20.81	19.86	17.88
		2507.5	21.86	20.85	19.92	17.89

LTE Band 7			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
20 MHz	1RB_99	2560.0	22.56	21.83	20.87	17.67
		2535.0	**22.80**	22.11	21.17	17.93
		2510.0	22.79	21.88	20.92	17.88
	1RB_50	2560.0	22.57	21.76	20.80	17.67
		2535.0	22.77	22.01	21.06	17.89
		2510.0	22.79	21.90	20.97	17.92
	1RB_0	2560.0	22.61	21.85	20.93	17.76
		2535.0	22.71	21.97	21.07	17.80
		2510.0	22.78	21.96	21.03	17.93
	50RB_50	2560.0	22.04	20.82	19.84	18.11
		2535.0	22.07	20.82	19.89	18.12
		2510.0	22.14	20.88	19.92	18.25
	50RB_25	2560.0	22.11	20.82	19.86	18.20
		2535.0	22.06	20.81	19.87	18.14
		2510.0	22.08	20.91	19.99	18.14
	50RB_0	2560.0	22.12	20.86	19.89	18.22
		2535.0	22.09	20.82	19.91	18.17
		2510.0	**22.15**	20.91	19.97	18.20
	100RB_0	2560.0	21.84	20.82	19.90	17.94
		2535.0	21.78	20.80	19.88	17.85
		2510.0	21.95	20.95	19.99	18.02

LTE Band 17			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	713.5	23.37	22.53	21.63	18.52
		710.0	23.41	22.74	21.76	18.50
		706.5	23.42	22.57	21.65	18.52
	1RB_12	713.5	23.37	22.60	21.70	18.48
		710.0	23.35	22.89	21.99	18.47
		706.5	23.32	22.85	21.95	18.47
	1RB_0	713.5	23.34	22.63	21.72	18.44
		710.0	23.38	22.83	21.86	18.52
		706.5	23.37	22.59	21.62	18.51
	12RB_13	713.5	22.51	21.55	20.62	18.55
		710.0	22.49	21.57	20.64	18.54
		706.5	22.51	21.49	20.59	18.58
	12RB_6	713.5	22.50	21.55	20.58	18.56
		710.0	22.48	21.55	20.58	18.55
		706.5	22.51	21.49	20.57	18.58
	12RB_0	713.5	22.50	21.52	20.57	18.60
		710.0	22.50	21.52	20.59	18.57
		706.5	22.50	21.46	20.49	18.53
	25RB_0	713.5	22.52	21.58	20.65	18.62
		710.0	22.46	21.42	20.50	18.54
		706.5	22.56	21.54	20.64	18.59

LTE Band 17			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	711.0	23.42	22.38	21.46	18.54
		710.0	23.38	22.72	21.77	18.49
		709.0	23.37	22.68	21.72	18.45
	1RB_24	711.0	**23.49**	22.35	21.38	18.60
		710.0	23.42	22.72	21.77	18.53
		709.0	23.36	22.61	21.70	18.50
	1RB_0	711.0	23.36	22.53	21.60	18.51
		710.0	23.39	22.62	21.69	18.55
		709.0	23.34	22.61	21.67	18.48
	25RB_25	711.0	22.53	21.52	20.59	18.64
		710.0	22.50	21.49	20.52	18.59
		709.0	22.50	21.48	20.53	18.59
	25RB_12	711.0	**22.57**	21.58	20.63	18.65
		710.0	22.50	21.49	20.58	18.58
		709.0	22.47	21.47	20.56	18.55
	25RB_0	711.0	22.54	21.58	20.63	18.62
		710.0	22.51	21.56	20.65	18.57
		709.0	22.50	21.51	20.55	18.58
	50RB_0	711.0	22.46	21.51	20.56	18.51
		710.0	22.49	21.50	20.57	18.53
		709.0	22.46	21.40	20.45	18.55

LTE Band 41			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	2687.5	22.78	22.33	21.40	17.92
		2640.3	22.77	22.38	21.41	17.90
		2593.0	22.81	22.48	21.52	17.89
		2545.8	22.71	22.42	21.46	17.86
		2498.5	22.79	22.54	21.58	17.90
	1RB_12	2687.5	22.75	22.28	21.35	17.89
		2640.3	22.72	22.21	21.29	17.87
		2593.0	22.74	22.12	21.17	17.88
		2545.8	22.73	22.18	21.24	17.82
		2498.5	22.76	22.47	21.52	17.87
	1RB_0	2687.5	22.68	22.24	21.32	17.79
		2640.3	22.63	22.26	21.35	17.71
		2593.0	22.74	22.06	21.12	17.84
		2545.8	22.70	22.34	21.42	17.83
		2498.5	22.75	22.56	21.64	17.83
	12RB_13	2687.5	22.06	21.08	20.15	18.15
		2640.3	22.03	21.02	20.06	18.11
		2593.0	22.07	21.10	20.18	18.11
		2545.8	22.02	21.15	20.23	18.07
		2498.5	22.15	21.23	20.26	18.22
	12RB_6	2687.5	22.08	21.11	20.14	18.14
		2640.3	21.81	20.84	19.90	17.88
		2593.0	22.06	21.06	20.13	18.11
		2545.8	21.89	20.63	19.70	17.96
		2498.5	22.14	21.19	20.28	18.22
	12RB_0	2687.5	22.08	21.08	20.11	18.13
		2640.3	21.87	20.03	19.11	17.91
		2593.0	22.07	21.08	20.15	18.11
		2545.8	21.92	20.94	20.02	18.02
		2498.5	22.15	21.18	20.27	18.25
	25RB_0	2687.5	22.07	21.10	20.15	18.10
		2640.3	21.02	21.06	20.13	17.99
		2593.0	22.07	21.09	20.13	18.13
		2545.8	21.05	20.99	20.06	17.96
		2498.5	22.14	21.19	20.23	18.23

LTE Band 41			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	2685.0	22.96	22.00	21.03	18.07
		2639.0	22.92	22.34	21.37	18.04
		2593.0	22.96	22.48	21.51	18.11
		2547.0	22.91	22.46	21.48	18.01
		2501.0	22.94	22.56	21.61	18.10
	1RB_24	2685.0	22.95	21.98	21.02	18.03
		2639.0	22.89	22.37	21.39	18.00
		2593.0	22.87	22.42	21.50	17.98
		2547.0	22.83	22.32	21.38	17.94
		2501.0	22.79	22.43	21.49	17.89
	1RB_0	2685.0	22.75	21.95	21.01	17.90
		2639.0	22.71	21.98	21.00	17.81
		2593.0	22.73	22.26	21.32	17.82
		2547.0	22.76	22.37	21.44	17.90
		2501.0	22.74	22.39	21.44	17.84
	25RB_25	2685.0	22.11	21.05	20.15	18.16
		2639.0	21.89	21.03	20.09	17.99
		2593.0	22.03	21.19	20.21	18.09
		2547.0	22.03	21.10	20.15	18.11
		2501.0	22.13	21.22	20.25	18.21
	25RB_12	2685.0	22.09	21.10	20.15	18.13
		2639.0	22.01	21.08	20.14	18.08
		2593.0	22.03	21.15	20.18	18.11
		2547.0	21.95	21.24	20.31	18.01
		2501.0	22.05	21.26	20.36	18.12
	25RB_0	2685.0	22.07	21.09	20.16	18.11
		2639.0	22.03	21.01	20.05	18.07
		2593.0	22.05	21.18	20.27	18.09
		2547.0	22.02	21.09	20.16	18.07
		2501.0	22.08	21.22	20.26	18.15
	50RB_0	2685.0	22.14	21.08	20.12	18.22
		2639.0	22.05	21.08	20.14	18.10
		2593.0	22.10	21.12	20.15	18.14
		2547.0	22.01	21.06	20.08	18.05
		2501.0	22.13	21.13	20.19	18.19

LTE Band 41			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
15 MHz	1RB_74	2682.5	22.76	21.99	21.03	17.87
		2637.8	22.72	22.03	21.08	17.81
		2593.0	22.78	22.20	21.27	17.93
		2548.3	22.74	22.16	21.25	17.88
		2503.5	22.78	22.25	21.30	17.89
	1RB_37	2682.5	22.84	22.00	21.08	17.99
		2637.8	22.75	22.09	21.16	17.85
		2593.0	22.79	22.18	21.21	17.93
		2548.3	22.70	22.15	21.19	17.80
		2503.5	22.78	22.27	21.32	17.94
	1RB_0	2682.5	22.77	22.00	21.05	17.91
		2637.8	22.79	22.06	21.14	17.95
		2593.0	22.86	22.27	21.35	17.98
		2548.3	22.83	22.24	21.31	17.96
		2503.5	22.80	22.29	21.36	17.89
	36RB_38	2682.5	21.97	20.98	20.03	18.04
		2637.8	21.91	20.95	20.03	17.97
		2593.0	21.93	20.98	20.08	17.97
		2548.3	21.90	20.92	20.01	17.95
		2503.5	21.90	20.95	20.03	17.93
	36RB_19	2682.5	21.99	20.98	20.04	18.05
		2637.8	21.93	20.94	20.00	18.00
		2593.0	21.95	20.99	20.06	18.00
		2548.3	21.91	20.92	19.99	17.94
		2503.5	21.98	20.90	19.93	18.06
	36RB_0	2682.5	21.94	20.99	20.06	18.03
		2637.8	21.90	20.96	20.06	17.96
		2593.0	21.94	21.00	20.05	18.00
		2548.3	21.91	20.93	19.97	17.96
		2503.5	21.96	20.97	20.01	18.02
	75RB_0	2682.5	21.92	20.99	20.05	18.00
		2637.8	21.84	20.90	19.95	17.90
		2593.0	21.87	20.93	19.95	17.95
		2548.3	21.86	20.91	19.93	17.92
		2503.5	22.00	20.96	19.98	18.05

LTE Band 41			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
20 MHz	1RB_99	2680.0	22.96	21.63	20.68	18.11
		2636.5	22.82	21.95	21.02	17.97
		2593.0	22.89	22.12	21.20	18.01
		2549.5	22.80	22.03	21.08	17.93
		2506.0	22.80	22.08	21.17	17.91
	1RB_50	2680.0	22.87	21.52	20.61	17.96
		2636.5	22.76	22.05	21.08	17.88
		2593.0	22.82	22.12	21.20	17.96
		2549.5	22.79	22.01	21.08	17.91
		2506.0	22.78	22.06	21.16	17.91
	1RB_0	2680.0	**22.98**	21.63	20.71	18.08
		2636.5	22.89	22.13	21.16	18.02
		2593.0	22.91	22.20	21.25	18.07
		2549.5	22.85	22.06	21.08	17.99
		2506.0	22.79	22.13	21.17	17.89
	50RB_50	2680.0	22.00	21.00	20.05	18.07
		2636.5	21.84	21.01	20.04	17.92
		2593.0	21.94	21.03	20.11	18.00
		2549.5	21.92	21.00	20.02	17.95
		2506.0	21.96	21.01	20.10	18.02
	50RB_25	2680.0	22.00	21.05	20.08	18.06
		2636.5	21.94	20.92	19.98	18.01
		2593.0	**22.01**	20.99	20.06	18.09
		2549.5	21.98	20.95	20.02	18.01
		2506.0	21.96	21.05	20.14	18.02
	50RB_0	2680.0	21.96	21.05	20.10	18.04
		2636.5	21.92	20.93	19.99	18.00
		2593.0	21.99	21.02	20.10	18.09
		2549.5	21.90	20.98	20.05	17.99
		2506.0	21.94	21.06	20.14	18.01
	100RB_0	2680.0	21.96	21.03	20.07	18.07
		2636.5	21.90	20.89	19.94	17.97
		2593.0	21.94	20.97	20.02	17.99
		2549.5	21.85	20.87	19.94	17.95
		2506.0	22.01	21.02	20.05	18.10

LTE Band 71			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
5 MHz	1RB_24	695.5	23.20	22.35	21.38	18.35
		680.5	23.26	22.42	21.48	18.35
		665.5	23.19	23.06	22.14	18.30
	1RB_12	695.5	23.24	22.59	21.65	18.33
		680.5	23.18	22.64	21.73	18.30
		665.5	23.21	22.77	21.85	18.34
	1RB_0	695.5	23.31	22.26	21.34	18.43
		680.5	23.25	22.31	21.38	18.34
		665.5	23.49	22.90	21.93	18.59
	12RB_13	695.5	22.32	21.25	20.30	18.39
		680.5	22.39	21.46	20.51	18.46
		665.5	22.55	21.53	20.55	18.63
	12RB_6	695.5	22.31	21.28	20.35	18.42
		680.5	22.35	21.46	20.53	18.40
		665.5	22.50	21.56	20.60	18.57
	12RB_0	695.5	22.32	21.30	20.40	18.43
		680.5	22.33	21.41	20.46	18.42
		665.5	22.52	21.57	20.64	18.56
	25RB_0	695.5	22.38	21.43	20.48	18.43
		680.5	22.40	21.48	20.53	18.49
		665.5	22.56	21.51	20.57	18.60

LTE Band 71			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
10 MHz	1RB_49	693.0	23.22	22.62	21.66	18.32
		680.5	23.25	22.43	21.46	18.36
		668.0	23.24	22.56	21.61	18.38
	1RB_24	693.0	23.25	22.68	21.76	18.37
		680.5	23.27	22.46	21.56	18.38
		668.0	23.24	22.59	21.62	18.37
	1RB_0	693.0	23.26	22.67	21.70	18.37
		680.5	23.27	22.43	21.50	18.42
		668.0	23.22	22.63	21.67	18.36
	25RB_25	693.0	22.39	21.33	20.39	18.47
		680.5	22.38	21.55	20.60	18.43
		668.0	22.50	21.45	20.51	18.55
	25RB_12	693.0	22.39	21.33	20.37	18.49
		680.5	22.39	21.46	20.55	18.47
		668.0	22.50	21.51	20.54	18.57
	25RB_0	693.0	22.44	21.36	20.39	18.55
		680.5	22.45	21.49	20.56	18.52
		668.0	22.45	21.52	20.61	18.54
	50RB_0	693.0	22.47	21.39	20.42	18.55
		680.5	22.38	21.39	20.47	18.45
		668.0	22.52	21.53	20.58	18.59

LTE Band 71			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
15 MHz	1RB_74	690.5	23.00	22.36	21.43	18.10
		680.5	23.26	22.30	21.35	18.35
		670.5	23.13	22.61	21.69	18.26
	1RB_37	690.5	23.12	22.46	21.56	18.26
		680.5	23.23	22.36	21.44	18.35
		670.5	23.15	22.48	21.55	18.25
	1RB_0	690.5	23.19	22.33	21.37	18.34
		680.5	23.20	22.37	21.40	18.30
		670.5	23.22	22.59	21.64	18.32
	36RB_38	690.5	22.29	21.26	20.29	18.37
		680.5	22.26	21.25	20.31	18.29
		670.5	22.25	21.34	20.42	18.31
	36RB_19	690.5	22.28	21.32	20.36	18.38
		680.5	22.28	21.22	20.28	18.34
		670.5	22.26	21.37	20.46	18.32
	36RB_0	690.5	22.25	21.25	20.32	18.31
		680.5	22.26	21.24	20.29	18.31
		670.5	22.20	21.29	20.38	18.25
	75RB_0	690.5	22.34	21.30	20.35	18.41
		680.5	22.25	21.26	20.31	18.30
		670.5	22.29	21.36	20.39	18.34

LTE Band 71			Actual output Power (dBm)			
Band-width	RB No. / RB offset	Frequency (MHz)	Modulation			
			QPSK	16QAM	64QAM	256QAM
20 MHz	1RB_99	688.0	23.19	22.26	21.32	18.30
		683.0	23.18	22.46	21.54	18.31
		673.0	23.30	22.56	21.60	18.43
	1RB_50	688.0	23.21	22.25	21.33	18.29
		683.0	23.14	22.24	21.27	18.27
		673.0	23.25	22.45	21.51	18.36
	1RB_0	688.0	23.18	22.29	21.33	18.32
		683.0	23.06	22.24	21.31	18.17
		673.0	**23.32**	22.51	21.59	18.48
	50RB_50	688.0	22.23	21.23	20.28	18.31
		683.0	22.24	21.32	20.34	18.35
		673.0	22.27	21.27	20.31	18.32
	50RB_25	688.0	22.21	21.24	20.27	18.28
		683.0	22.26	21.30	20.38	18.31
		673.0	22.27	21.28	20.34	18.36
	50RB_0	688.0	22.21	21.26	20.31	18.28
		683.0	**22.29**	21.29	20.33	18.39
		673.0	22.27	21.24	20.28	18.37
	100RB_0	688.0	22.32	21.22	20.29	18.37
		683.0	22.27	21.29	20.33	18.34
		673.0	22.38	21.35	20.45	18.42

10.4. NR Measurement result

Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)	
	Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM PI/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
	0.5[2]	0.5[2]	0[2]
DFT-s-OFDM QPSK	≤ 1		0
DFT-s-OFDM 16 QAM	≤ 2		≤ 1
DFT-s-OFDM 64 QAM	≤ 2.5		
DFT-s-OFDM 256 QAM	4.5		
CP-OFDM QPSK	≤ 3		≤ 1.5
CP-OFDM 16 QAM	≤ 3		≤ 2
CP-OFDM 64 QAM	≤ 3.5		
CP-OFDM 256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with PI/2 PBSK modulation and UE indicates support for UE capability [*powerBoosting-pi2BPSK*] and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for band n41/n77/n78. The reference power of 0 dB MPR is 26dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n41/n77/n78 and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for band n41/n77/n78.

Note: For this device, NR n41/n77/n78 band support PC3 and PC2 mode with 100% duty cycle, so we choose high power PC2 mode to measure conducted power and SAR testing.

NR n2						Tune up: 24.5	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	1907.5	381500	23.51
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	1880.0	376000	23.48
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	1852.5	370500	23.35
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	1900.0	380000	23.31
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	1880.0	376000	**23.56**
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	1860.0	372000	23.24
15	20	DFT-s-OFDM PI/2 BPSK	Inner_Full	50@25	1880.0	376000	23.41
15	20	DFT-s-OFDM 16QAM	Inner_Full	50@25	1880.0	376000	22.33
15	20	DFT-s-OFDM 64QAM	Inner_Full	50@25	1880.0	376000	20.78
15	20	DFT-s-OFDM 256QAM	Inner_Full	50@25	1880.0	376000	18.73
15	20	CP-OFDM QPSK	Inner_Full	53@26	1880.0	376000	21.80
15	20	CP-OFDM 16QAM	Inner_Full	53@26	1880.0	376000	21.21
15	20	CP-OFDM 64QAM	Inner_Full	53@26	1880.0	376000	19.84
15	20	CP-OFDM 256QAM	Inner_Full	53@26	1880.0	376000	17.02
15	20	DFT-s-OFDM QPSK	Edge_Full _Right	2@104	1880.0	376000	22.58
15	20	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	1880.0	376000	22.39
15	20	DFT-s-OFDM QPSK	Inner_1RB _Right	1@104	1880.0	376000	23.43
15	20	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	1880.0	376000	23.23
15	20	DFT-s-OFDM QPSK	Outer_Full	100@0	1880.0	376000	22.41
15	10	DFT-s-OFDM QPSK	Inner_Full	25@12	1880.0	376000	23.55
15	15	DFT-s-OFDM QPSK	Inner_Full	36@18	1880.0	376000	23.19

NR n5						Tune up: 24.5	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	846.5	169300	22.42
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	836.5	167300	23.24
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	826.5	165300	23.28
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	839.0	167800	22.30
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	836.5	167300	**23.36**
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	834.0	166800	23.32
15	20	DFT-s-OFDM PI/2 BPSK	Inner_Full	50@25	836.5	167300	23.35
15	20	DFT-s-OFDM 16QAM	Inner_Full	50@25	836.5	167300	22.22
15	20	DFT-s-OFDM 64QAM	Inner_Full	50@25	836.5	167300	20.84
15	20	DFT-s-OFDM 256QAM	Inner_Full	50@25	836.5	167300	19.12
15	20	CP-OFDM QPSK	Inner_Full	53@26	836.5	167300	21.38
15	20	CP-OFDM 16QAM	Inner_Full	53@26	836.5	167300	20.94
15	20	CP-OFDM 64QAM	Inner_Full	53@26	836.5	167300	20.33
15	20	CP-OFDM 256QAM	Inner_Full	53@26	836.5	167300	17.11
15	20	DFT-s-OFDM QPSK	Edge_Full _Right	2@104	836.5	167300	22.08
15	20	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	836.5	167300	22.12
15	20	DFT-s-OFDM QPSK	Inner_1RB _Right	1@104	836.5	167300	22.92
15	20	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	836.5	167300	22.32
15	20	DFT-s-OFDM QPSK	Outer_Full	100@0	836.5	167300	20.82
15	10	DFT-s-OFDM QPSK	Inner_Full	25@12	836.5	167300	23.18
15	15	DFT-s-OFDM QPSK	Inner_Full	36@18	836.5	167300	23.30

NR n41 PC2						Tune up: 26.0	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	2680.0	535998	24.88
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	2593.0	518598	24.94
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	2506.0	501204	25.02
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	2640.0	528000	24.93
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	2593.0	518598	**25.10**
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	2546.0	509202	25.06
30	100	DFT-s-OFDM PI/2 BPSK	Inner_Full	135@67	2593.0	518598	24.96
30	100	DFT-s-OFDM 16QAM	Inner_Full	135@67	2593.0	518598	23.94
30	100	DFT-s-OFDM 64QAM	Inner_Full	135@67	2593.0	518598	22.55
30	100	DFT-s-OFDM 256QAM	Inner_Full	135@67	2593.0	518598	20.49
30	100	CP-OFDM QPSK	Inner_Full	137@68	2593.0	518598	23.42
30	100	CP-OFDM 16QAM	Inner_Full	137@68	2593.0	518598	22.85
30	100	CP-OFDM 64QAM	Inner_Full	137@68	2593.0	518598	21.44
30	100	CP-OFDM 256QAM	Inner_Full	137@68	2593.0	518598	18.42
30	100	DFT-s-OFDM QPSK	Edge_Full _Right	2@271	2593.0	518598	20.71
30	100	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	2593.0	518598	21.38
30	100	DFT-s-OFDM QPSK	Inner_1RB _Right	1@271	2593.0	518598	24.90
30	100	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	2593.0	518598	25.07
30	100	DFT-s-OFDM QPSK	Outer_Full	270@0	2593.0	518598	23.94
30	40	DFT-s-OFDM QPSK	Inner_Full	50@25	2593.0	518598	25.03
30	50	DFT-s-OFDM QPSK	Inner_Full	64@32	2593.0	518598	25.08
30	60	DFT-s-OFDM QPSK	Inner_Full	81@40	2593.0	518598	25.09
30	80	DFT-s-OFDM QPSK	Inner_Full	108@54	2593.0	518598	24.99
30	90	DFT-s-OFDM QPSK	Inner_Full	120@60	2593.0	518598	24.98

NR n71						Tune up: 24.5	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	695.5	139100	23.42
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	680.5	136100	23.86
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	665.5	133100	23.72
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	688.0	137600	23.73
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	680.5	136100	**23.94**
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	673.0	134600	23.84
15	20	DFT-s-OFDM PI/2 BPSK	Inner_Full	50@25	680.5	136100	23.86
15	20	DFT-s-OFDM 16QAM	Inner_Full	50@25	680.5	136100	22.86
15	20	DFT-s-OFDM 64QAM	Inner_Full	50@25	680.5	136100	21.47
15	20	DFT-s-OFDM 256QAM	Inner_Full	50@25	680.5	136100	19.32
15	20	CP-OFDM QPSK	Inner_Full	53@26	680.5	136100	22.35
15	20	CP-OFDM 16QAM	Inner_Full	53@26	680.5	136100	21.98
15	20	CP-OFDM 64QAM	Inner_Full	53@26	680.5	136100	20.37
15	20	CP-OFDM 256QAM	Inner_Full	53@26	680.5	136100	17.38
15	20	DFT-s-OFDM QPSK	Edge_Full _Right	2@104	680.5	136100	22.36
15	20	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	680.5	136100	22.74
15	20	DFT-s-OFDM QPSK	Inner_1RB _Right	1@104	680.5	136100	23.71
15	20	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	680.5	136100	23.80
15	20	DFT-s-OFDM QPSK	Outer_Full	100@0	680.5	136100	22.82
15	10	DFT-s-OFDM QPSK	Inner_Full	25@12	680.5	136100	23.92
15	15	DFT-s-OFDM QPSK	Inner_Full	36@18	680.5	136100	23.72

Ant.1 - NR n77 PC2 Part 27Q						Tune up: 25.5	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3540.0	636000	24.39
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3520.0	634666	24.42
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3500.0	633334	24.44
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3480.0	632000	24.37
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3460.0	630668	24.31
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3500.0	633334	**24.48**
30	100	DFT-s-OFDM PI/2 BPSK	Inner_Full	135@67	3500.0	633334	24.25
30	100	DFT-s-OFDM 16QAM	Inner_Full	135@67	3500.0	633334	24.17
30	100	DFT-s-OFDM 64QAM	Inner_Full	135@67	3500.0	633334	24.23
30	100	DFT-s-OFDM 256QAM	Inner_Full	135@67	3500.0	633334	22.64
30	100	CP-OFDM QPSK	Inner_Full	137@68	3500.0	633334	24.31
30	100	CP-OFDM 16QAM	Inner_Full	137@68	3500.0	633334	24.35
30	100	CP-OFDM 64QAM	Inner_Full	137@68	3500.0	633334	23.91
30	100	CP-OFDM 256QAM	Inner_Full	137@68	3500.0	633334	20.80
30	100	DFT-s-OFDM QPSK	Edge_Full _Right	2@271	3500.0	633334	23.79
30	100	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	3500.0	633334	23.49
30	100	DFT-s-OFDM QPSK	Inner_1RB _Right	1@271	3500.0	633334	24.24
30	100	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	3500.0	633334	24.38
30	100	DFT-s-OFDM QPSK	Outer_Full	270@0	3500.0	633334	24.35
30	40	DFT-s-OFDM QPSK	Inner_Full	50@25	3485.0	632334	24.34
30	50	DFT-s-OFDM QPSK	Inner_Full	64@32	3487.5	632500	24.28
30	60	DFT-s-OFDM QPSK	Inner_Full	81@40	3490.0	632666	24.21
30	80	DFT-s-OFDM QPSK	Inner_Full	108@54	3495.0	633000	24.33
30	90	DFT-s-OFDM QPSK	Inner_Full	120@60	3497.5	633166	24.24

Ant.4 - NR n77 PC2 Part 27Q						Tune up: 25.5	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3540.0	636000	23.84
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3520.0	634666	23.76
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3500.0	633334	23.74
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3480.0	632000	23.80
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3460.0	630668	23.70
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3500.0	633334	**23.94**
30	100	DFT-s-OFDM PI/2 BPSK	Inner_Full	135@67	3500.0	633334	23.82
30	100	DFT-s-OFDM 16QAM	Inner_Full	135@67	3500.0	633334	23.77
30	100	DFT-s-OFDM 64QAM	Inner_Full	135@67	3500.0	633334	23.38
30	100	DFT-s-OFDM 256QAM	Inner_Full	135@67	3500.0	633334	21.45
30	100	CP-OFDM QPSK	Inner_Full	137@68	3500.0	633334	23.72
30	100	CP-OFDM 16QAM	Inner_Full	137@68	3500.0	633334	23.83
30	100	CP-OFDM 64QAM	Inner_Full	137@68	3500.0	633334	22.45
30	100	CP-OFDM 256QAM	Inner_Full	137@68	3500.0	633334	19.56
30	100	DFT-s-OFDM QPSK	Edge_Full _Right	2@271	3500.0	633334	22.68
30	100	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	3500.0	633334	22.82
30	100	DFT-s-OFDM QPSK	Inner_1RB _Right	1@271	3500.0	633334	23.78
30	100	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	3500.0	633334	23.65
30	100	DFT-s-OFDM QPSK	Outer_Full	270@0	3500.0	633334	23.89
30	40	DFT-s-OFDM QPSK	Inner_Full	50@25	3485.0	632334	23.91
30	50	DFT-s-OFDM QPSK	Inner_Full	64@32	3487.5	632500	23.82
30	60	DFT-s-OFDM QPSK	Inner_Full	81@40	3490.0	632666	23.85
30	80	DFT-s-OFDM QPSK	Inner_Full	108@54	3495.0	633000	23.74
30	90	DFT-s-OFDM QPSK	Inner_Full	120@60	3497.5	633166	23.80

Ant.1 - NR n77 PC2 Part 27O						Tune up: 26.0	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3970.0	664666	24.75
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3905.0	660334	24.83
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3840.0	656000	24.82
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3775.0	651666	24.79
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3710.0	647334	24.88
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3930.0	662000	24.82
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3885.0	659000	24.80
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3840.0	656000	**24.90**
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3795.0	653000	24.83
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3750.0	650000	24.86
30	100	DFT-s-OFDM PI/2 BPSK	Inner_Full	135@67	3840.0	656000	24.75
30	100	DFT-s-OFDM 16QAM	Inner_Full	135@67	3840.0	656000	24.62
30	100	DFT-s-OFDM 64QAM	Inner_Full	135@67	3840.0	656000	24.38
30	100	DFT-s-OFDM 256QAM	Inner_Full	135@67	3840.0	656000	22.31
30	100	CP-OFDM QPSK	Inner_Full	137@68	3840.0	656000	24.87
30	100	CP-OFDM 16QAM	Inner_Full	137@68	3840.0	656000	24.70
30	100	CP-OFDM 64QAM	Inner_Full	137@68	3840.0	656000	23.34
30	100	CP-OFDM 256QAM	Inner_Full	137@68	3840.0	656000	20.68
30	100	DFT-s-OFDM QPSK	Edge_Full _Right	2@271	3840.0	656000	23.35
30	100	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	3840.0	656000	23.39
30	100	DFT-s-OFDM QPSK	Inner_1RB _Right	1@271	3840.0	656000	24.77
30	100	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	3840.0	656000	24.80
30	100	DFT-s-OFDM QPSK	Outer_Full	270@0	3840.0	656000	24.86
30	40	DFT-s-OFDM QPSK	Inner_Full	50@25	3840.0	656000	24.72
30	50	DFT-s-OFDM QPSK	Inner_Full	64@32	3840.0	656000	24.63
30	60	DFT-s-OFDM QPSK	Inner_Full	81@40	3840.0	656000	24.60
30	80	DFT-s-OFDM QPSK	Inner_Full	108@54	3840.0	656000	24.71
30	90	DFT-s-OFDM QPSK	Inner_Full	120@60	3840.0	656000	24.58

Ant.4 - NR n77 PC2 Part 27O						Tune up: 26.0	
SCS (kHz)	BW (MHz)	Modulation	RB allocation		Frequency (MHz)	Channel	Conducted Power (dBm)
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3970.0	664666	25.24
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3905.0	660334	25.16
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3840.0	656000	25.02
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3775.0	651666	24.93
30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3710.0	647334	25.25
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3930.0	662000	25.14
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3885.0	659000	25.10
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3840.0	656000	**25.34**
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3795.0	653000	25.09
30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3750.0	650000	25.30
30	100	DFT-s-OFDM PI/2 BPSK	Inner_Full	135@67	3840.0	656000	25.18
30	100	DFT-s-OFDM 16QAM	Inner_Full	135@67	3840.0	656000	25.04
30	100	DFT-s-OFDM 64QAM	Inner_Full	135@67	3840.0	656000	24.74
30	100	DFT-s-OFDM 256QAM	Inner_Full	135@67	3840.0	656000	22.80
30	100	CP-OFDM QPSK	Inner_Full	137@68	3840.0	656000	25.29
30	100	CP-OFDM 16QAM	Inner_Full	137@68	3840.0	656000	25.22
30	100	CP-OFDM 64QAM	Inner_Full	137@68	3840.0	656000	23.75
30	100	CP-OFDM 256QAM	Inner_Full	137@68	3840.0	656000	20.91
30	100	DFT-s-OFDM QPSK	Edge_Full _Right	2@271	3840.0	656000	23.71
30	100	DFT-s-OFDM QPSK	Edge_Full _Left	2@0	3840.0	656000	23.76
30	100	DFT-s-OFDM QPSK	Inner_1RB _Right	1@271	3840.0	656000	25.22
30	100	DFT-s-OFDM QPSK	Inner_1RB _Left	1@1	3840.0	656000	25.27
30	100	DFT-s-OFDM QPSK	Outer_Full	270@0	3840.0	656000	25.31
30	40	DFT-s-OFDM QPSK	Inner_Full	50@25	3840.0	656000	25.18
30	50	DFT-s-OFDM QPSK	Inner_Full	64@32	3840.0	656000	25.22
30	60	DFT-s-OFDM QPSK	Inner_Full	81@40	3840.0	656000	25.16
30	80	DFT-s-OFDM QPSK	Inner_Full	108@54	3840.0	656000	25.18
30	90	DFT-s-OFDM QPSK	Inner_Full	120@60	3840.0	656000	25.11

10.5. Bluetooth and WLAN Measurement result

Table 10.5: The conducted Power measurement results for Bluetooth

Averaged Power (dBm)				
Mode	**Tune up**	Ch.0 (2402MHz)	Ch.39 (2441MHz)	Ch.78 (2480MHz)
GFSK	**10.5**	7.00	**9.82**	7.88
EDR2M-4_DQPSK	**9.5**	5.30	8.35	6.29
EDR3M-8DPSK	**9.5**	5.70	8.71	6.62
/	**/**	Ch.0 (2402MHz)	Ch.19 (2440MHz)	Ch.39 (2480MHz)
BLE(1M)	**1.0**	-0.42	0.17	-0.30
BLE(2M)	**1.0**	-0.55	0.08	-0.42

Table 10.6: The conducted Power measurement results for WLAN 2.4GHz

Ant.3				
Averaged Power (dBm) Duty Cycle: **100%**				
Mode	**Tune up**	Ch.1 (2412MHz)	Ch.6 (2437MHz)	Ch.11 (2462MHz)
802.11b	**18.5**	16.81	**17.52**	16.13
802.11g	**16.5**	14.73	15.32	14.18
802.11n(20MHz)	**15.5**	13.87	14.57	13.34
802.11ax(20MHz)	**14.5**	13.07	13.81	12.63
/	**/**	Ch.3 (2422MHz)	Ch.6 (2437MHz)	Ch.9 (2452MHz)
802.11n(40MHz)	**15.0**	14.37	14.07	13.31
802.11ax(40MHz)	**14.0**	13.18	13.21	12.24
Ant.2				
Averaged Power (dBm) Duty Cycle: **100%**				
Mode	**Tune up**	Ch.1 (2412MHz)	Ch.6 (2437MHz)	Ch.11 (2462MHz)
802.11b	**18.0**	15.67	**17.25**	15.31
802.11g	**16.0**	13.58	15.02	13.44
802.11n(20MHz)	**15.0**	12.67	14.17	12.16
802.11ax(20MHz)	**14.0**	12.01	13.51	12.11
/	**/**	Ch.3 (2422MHz)	Ch.6 (2437MHz)	Ch.9 (2452MHz)
802.11n(40MHz)	**14.5**	13.31	13.96	12.81
802.11ax(40MHz)	**13.5**	12.23	12.74	11.67

MIMO				
Averaged Power (dBm) Duty Cycle: **100%**				
Mode	**Tune up**	Ch.1 (2412MHz)	Ch.6 (2437MHz)	Ch.11 (2462MHz)
802.11n(20MHz)	**18.5**	16.21	17.40	16.17
802.11ax(20MHz)	**17.0**	14.72	15.88	14.51
/	**/**	Ch.3 (2422MHz)	Ch.6 (2437MHz)	Ch.9 (2452MHz)
802.11n(40MHz)	**17.0**	15.98	15.99	15.29
802.11ax(40MHz)	**16.0**	14.87	14.82	14.08

Note: WLAN 2.4GHz 802.11n/11ax of Ant.3 and Ant.2 can transmit in MIMO mode, and the power level in MIMO mode are equivalent to SISO mode, so we choose the sum SAR values of 802.11b mode to evaluate simultaneous transmission SAR.

Table 10.7: The conducted Power measurement results for WLAN 5GHz

Ant.3														
Averaged Power (dBm) **Duty Cycle: 100%**														
Mode	802.11a	802.11n-20MHz	802.11ac-20MHz	802.11ax-20MHz	Mode	802.11n-40MHz	802.11ac-40MHz	802.11ax-40MHz	Mode	802.11ac-80MHz	802.11ax-80MHz	Mode	802.11ac-160MHz	802.11ax-160MHz
Channel	6Mbps	MCS0	MCS0	MCS0	Channel	MCS0	MCS0	MCS0	Channel	MCS0	MCS0	Channel	MCS0	MCS0
<U-NII-1>														
Tune up	**16.5**	**15.5**	**13.5**	**13.5**	**/**	**13.5**	**12.5**	**12.5**	**/**	**11.5**	**11.5**	**/**	**10.5**	**10.5**
36(5180MHz)	15.55	14.21	12.45	12.56	38(5190MHz)	12.48	11.48	11.65	42(5210MHz)	10.41	10.42	50(5250MHz)	9.22	9.32
40(5200MHz)	**15.67**	14.55	12.61	12.51	46(5230MHz)	12.29	11.37	11.61	/	/	/	/	/	/
44(5220MHz)	15.52	14.23	12.46	12.34	/	/	/	/	/	/	/	/	/	/
48(5240MHz)	15.41	14.28	12.45	12.28	/	/	/	/	/	/	/	/	/	/
<U-NII-2A>														
Tune up	**16.5**	**15.5**	**13.5**	**13.5**	**/**	**13.5**	**12.5**	**12.5**	**/**	**11.5**	**11.5**	**/**	**/**	**/**
52(5260MHz)	15.72	14.42	12.58	12.38	54(5270MHz)	12.51	11.61	11.78	58(5290MHz)	10.71	10.84	/	/	/
56(5280MHz)	**15.86**	14.51	12.61	12.36	62(5310MHz)	12.16	11.35	11.52	/	/	/	/	/	/
60(5300MHz)	15.48	14.41	12.41	12.22	/	/	/	/	/	/	/	/	/	/
64(5320MHz)	15.61	14.57	12.30	12.33	/	/	/	/	/	/	/	/	/	/
<U-NII-2A>														
Tune up	**17.5**	**16.5**	**14.0**	**14.0**	**/**	**14.0**	**13.0**	**13.0**	**/**	**12.0**	**12.0**	**/**	**10.5**	**10.5**
100(5500MHz)	16.02	15.39	13.19	13.11	102(5510MHz)	12.75	11.94	11.97	106(5530MHz)	11.05	11.33	114(5570MHz)	9.18	9.25
116(5580MHz)	15.68	14.95	12.58	12.57	110(5550MHz)	12.32	11.44	11.62	122(5610MHz)	10.73	10.82	/	/	/
124(5620MHz)	15.62	15.24	12.66	12.48	126(5630MHz)	12.51	11.05	11.23	138(5690MHz)	11.51	11.46	/	/	/
132(5660MHz)	16.34	15.35	12.87	12.54	134(5670MHz)	12.84	12.03	12.25	/	/	/	/	/	/
140(5700MHz)	16.68	15.95	13.49	13.13	142(5710MHz)	13.28	12.52	12.46	/	/	/	/	/	/
144(5720MHz)	**16.84**	15.93	13.54	13.22	/	/	/	/	/	/	/	/	/	/
<U-NII-3>														
Tune up	**17.0**	**16.0**	**14.0**	**14.0**	**/**	**14.0**	**13.0**	**13.0**	**/**	**12.0**	**12.0**	**/**	**/**	**/**
149(5745MHz)	**16.12**	15.25	12.96	12.78	151(5755MHz)	12.62	11.88	11.97	155(5775MHz)	10.88	10.96	/	/	/
157(5785MHz)	16.06	15.09	12.82	12.83	159(5795MHz)	12.77	11.97	12.06	/	/	/	/	/	/
165(5825MHz)	15.56	14.75	12.58	12.35	/	/	/	/	/	/	/	/	/	/

Ant.2														
Averaged Power (dBm) **Duty Cycle: 100%**														
Mode	802.11a	802.11n-20MHz	802.11ac-20MHz	802.11ax-20MHz	Mode	802.11n-40MHz	802.11ac-40MHz	802.11ax-40MHz	Mode	802.11ac-80MHz	802.11ax-80MHz	Mode	802.11ac-160MHz	802.11ax-160MHz
Channel	6Mbps	MCS0	MCS0	MCS0	Channel	MCS0	MCS0	MCS0	Channel	MCS0	MCS0	Channel	MCS0	MCS0
<U-NII-1>														
Tune up	**16.0**	**15.0**	**13.0**	**13.0**	**/**	**13.0**	**12.0**	**12.0**	**/**	**11.0**	**11.0**	**/**	**10.0**	**10.0**
36(5180MHz)	15.07	14.06	11.69	11.47	38(5190MHz)	11.66	10.35	10.57	42(5210MHz)	9.64	9.99	50(5250MHz)	8.72	8.87
40(5200MHz)	**15.08**	14.24	11.91	11.75	46(5230MHz)	12.05	10.45	10.65	/	/	/	/	/	/
44(5220MHz)	15.07	13.94	11.56	11.37	/	/	/	/	/	/	/	/	/	/
48(5240MHz)	15.04	13.91	11.63	11.44	/	/	/	/	/	/	/	/	/	/
<U-NII-2A>														
Tune up	**16.5**	**15.0**	**13.0**	**13.0**	**/**	**13.0**	**12.0**	**12.0**	**/**	**11.0**	**11.0**	**/**	**/**	**/**
52(5260MHz)	15.03	13.83	11.78	11.57	54(5270MHz)	12.07	10.56	10.52	58(5290MHz)	10.27	10.47	/	/	/
56(5280MHz)	15.02	14.24	12.22	11.79	62(5310MHz)	12.02	10.97	11.04	/	/	/	/	/	/
60(5300MHz)	15.26	14.34	12.41	12.02	/	/	/	/	/	/	/	/	/	/
64(5320MHz)	**15.40**	14.25	12.21	12.17	/	/	/	/	/	/	/	/	/	/
<U-NII-2A>														
Tune up	**16.5**	**15.5**	**13.5**	**13.5**	**/**	**13.5**	**12.0**	**12.0**	**/**	**11.5**	**11.5**	**/**	**10.0**	**10.0**
100(5500MHz)	15.26	14.69	12.05	12.02	102(5510MHz)	11.63	10.74	10.94	106(5530MHz)	10.08	10.40	114(5570MHz)	9.03	9.33
116(5580MHz)	15.31	14.56	11.87	12.01	110(5550MHz)	11.86	10.44	10.86	122(5610MHz)	10.48	10.81	/	/	/
124(5620MHz)	15.45	14.73	12.34	12.27	126(5630MHz)	11.95	10.72	11.11	138(5690MHz)	10.89	10.62	/	/	/
132(5660MHz)	**15.49**	14.71	12.62	11.97	134(5670MHz)	12.36	11.04	11.28	/	/	/	/	/	/
140(5700MHz)	15.35	14.77	12.87	12.66	142(5710MHz)	12.64	11.32	11.23	/	/	/	/	/	/
144(5720MHz)	15.21	14.43	12.69	12.42	/	/	/	/	/	/	/	/	/	/
<U-NII-3>														
Tune up	**16.0**	**15.0**	**13.5**	**13.5**	**/**	**13.5**	**12.0**	**12.0**	**/**	**11.5**	**11.5**	**/**	**/**	**/**
149(5745MHz)	15.11	14.48	12.81	12.50	151(5755MHz)	12.31	11.48	11.18	155(5775MHz)	10.24	10.47	/	/	/
157(5785MHz)	14.90	14.02	12.38	12.07	159(5795MHz)	12.36	11.54	11.69	/	/	/	/	/	/
165(5825MHz)	**15.24**	14.55	12.11	12.08	/	/	/	/	/	/	/	/	/	/

MIMO														
Averaged Power (dBm) **Duty Cycle: 100%**														
Mode	802.11a	802.11n-20MHz	802.11ac-20MHz	802.11ax-20MHz	Mode	802.11n-40MHz	802.11ac-40MHz	802.11ax-40MHz	Mode	802.11ac-80MHz	802.11ax-80MHz	Mode	802.11ac-160MHz	802.11ax-160MHz
Channel	6Mbps	MCS0	MCS0	MCS0	Channel	MCS0	MCS0	MCS0	Channel	MCS0	MCS0	Channel	MCS0	MCS0
<U-NII-1>														
Tune up	**/**	**17.5**	**16.0**	**16.0**	**/**	**16.0**	**15.0**	**15.0**	**/**	**14.0**	**14.0**	**/**	**13.0**	**13.0**
36(5180MHz)	/	16.57	14.95	14.98	38(5190MHz)	15.05	13.93	14.13	42(5210MHz)	13.12	13.42	50(5250MHz)	11.97	12.09
40(5200MHz)	/	16.50	14.96	15.03	46(5230MHz)	15.16	13.89	14.00	/	/	/	/	/	/
44(5220MHz)	/	16.34	14.75	14.68	/	/	/	/	/	/	/	/	/	/
48(5240MHz)	/	16.24	14.75	14.65	/	/	/	/	/	/	/	/	/	/
<U-NII-2A>														
Tune up	**/**	**17.5**	**16.0**	**16.0**	**/**	**16.0**	**15.0**	**15.0**	**/**	**14.0**	**14.0**	**/**	**/**	**/**
52(5260MHz)	/	16.49	14.84	14.71	54(5270MHz)	15.29	14.06	14.10	58(5290MHz)	13.44	13.70	/	/	/
56(5280MHz)	/	16.63	15.11	14.87	62(5310MHz)	15.14	14.07	14.12	/	/	/	/	/	/
60(5300MHz)	/	16.64	15.04	14.89	/	/	/	/	/	/	/	/	/	/
64(5320MHz)	/	16.66	14.99	14.99	/	/	/	/	/	/	/	/	/	/
<U-NII-2A>														
Tune up	**/**	**18.0**	**16.5**	**16.5**	**/**	**16.5**	**15.5**	**15.5**	**/**	**14.5**	**14.5**	**/**	**13.0**	**13.0**
100(5500MHz)	/	17.22	15.23	15.47	102(5510MHz)	15.27	14.09	14.45	106(5530MHz)	13.55	13.99	114(5570MHz)	12.13	12.30
116(5580MHz)	/	17.15	15.09	15.27	110(5550MHz)	15.10	13.90	14.28	122(5610MHz)	13.58	13.87	/	/	/
124(5620MHz)	/	17.13	15.37	15.19	126(5630MHz)	15.26	13.95	14.22	138(5690MHz)	14.11	14.32	/	/	/
132(5660MHz)	/	17.00	15.39	15.40	134(5670MHz)	15.59	14.54	14.61	/	/	/	/	/	/
140(5700MHz)	/	17.27	15.83	15.67	142(5710MHz)	16.04	14.94	14.71	/	/	/	/	/	/
144(5720MHz)	/	17.24	15.76	15.63	/	/	/	/	/	/	/	/	/	/
<U-NII-3>														
Tune up	**/**	**18.0**	**16.5**	**16.5**	**/**	**16.5**	**15.5**	**15.5**	**/**	**14.5**	**14.5**	**/**	**/**	**/**
149(5745MHz)	/	17.31	15.69	15.46	151(5755MHz)	15.52	14.57	14.54	155(5775MHz)	13.63	13.74	/	/	/
157(5785MHz)	/	17.16	15.51	15.33	159(5795MHz)	15.63	14.63	14.62	/	/	/	/	/	/
165(5825MHz)	/	17.24	15.19	15.22	/	/	/	/	/	/	/	/	/	/

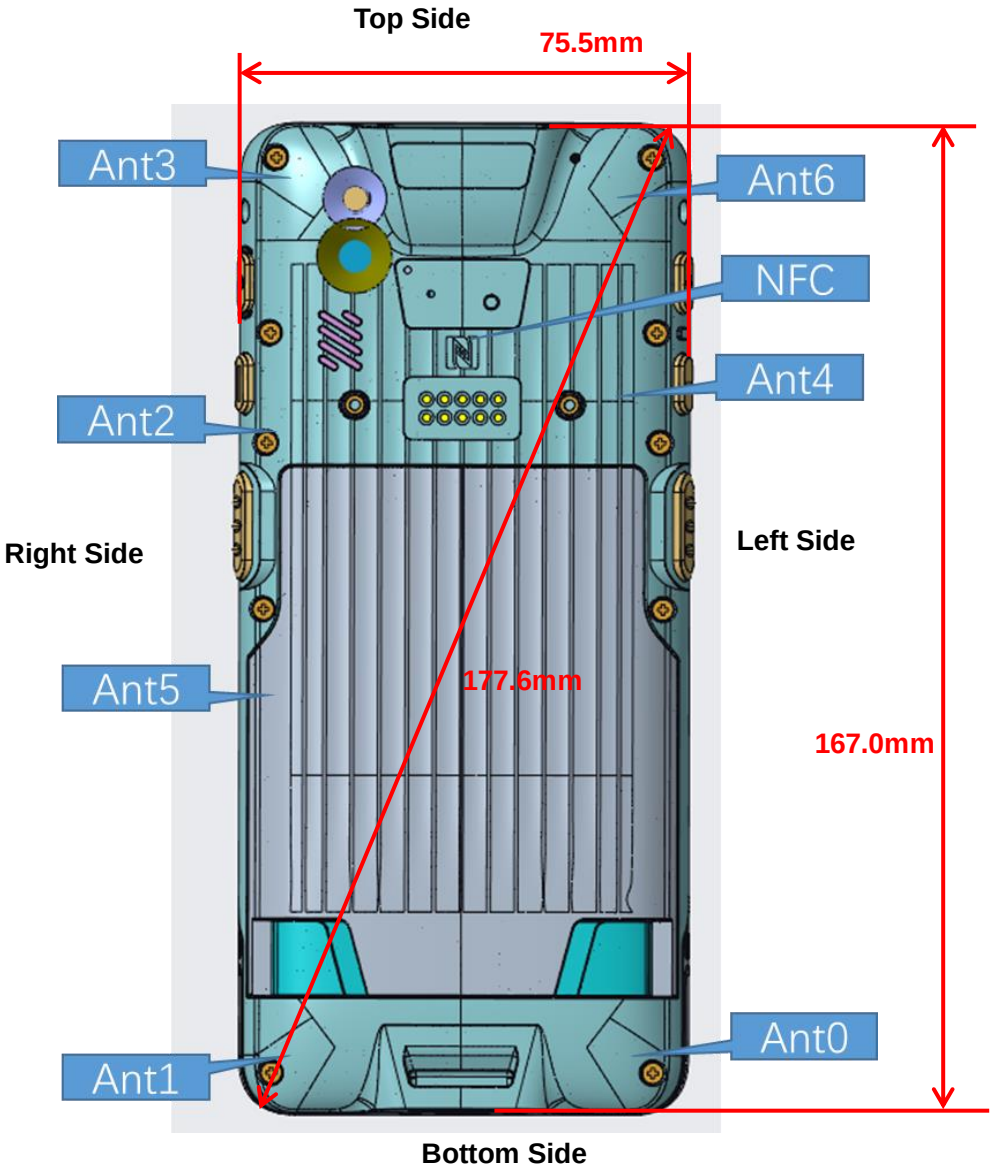
Note: WLAN 5GHz 802.11n/11ac/11ax of Ant.3 and Ant.2 can transmit in MIMO mode, and the power level in MIMO mode are equivalent to SISO mode, so we choose the sum SAR values of 802.11a mode to evaluate simultaneous transmission SAR.

11. Simultaneous TX SAR Considerations

11.1. Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.
For this device, the Bluetooth and WLAN can transmit simultaneous with other transmitters.

11.2. Transmit Antenna Separation Distances



Picture 11.1 Antenna Locations (Back View)

Antenna	To Top Side	To Bottom Side	To Left Side	To Right Side
	(mm)	(mm)	(mm)	(mm)
Ant 0	158.0	10.3	7.0	62.0
Ant 1	153.0	12.6	65.5	8.2
Ant 2	65.0	125.0	66.7	9.0
Ant 3	3.7	136.0	69.0	9.0
Ant 4	37.5	115.0	13.7	66.0
Ant 5	82.0	53.0	66.0	9.6
Ant 6	3.7	138.0	17.0	65.0

Note:

Antenna	Support band
Ant.0	TX: GSM 850/1900, WCDMA Band 2/5, LTE Band 2/4/5/7/17/38/41/71, NR n2/n5/n41/n71
Ant.1	TX: n77/n78
Ant.2	TX: WLAN 2.4GHz/5GHz CH1
Ant.3	TX: GPS L1/L5, Bluetooth, WLAN 2.4GHz/5GHz CH0
Ant.4	TX: NR n77/n78 (SRS)
Ant.5	RX
Ant.6	RX

11.3. SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, the edges with less than 25mm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Antenna	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Ant.0	Yes	Yes	Yes	Yes	No	Yes
Ant.1	Yes	Yes	No	Yes	No	Yes
Ant.2	Yes	Yes	No	Yes	No	No
Ant.3	Yes	Yes	No	Yes	Yes	No
Ant.4	Yes	Yes	Yes	No	No	No

12. Evaluation of Simultaneous

No.	Simultaneous Transmission Configuration
01	WWAN + WLAN(2.4GHz) Ant2
02	WWAN + WLAN(2.4GHz) Ant3
03	WWAN + WLAN(5GHz/6GHz) Ant2
04	WWAN + WLAN(5GHz/6GHz) Ant3
05	WWAN + Bluetooth
06	WWAN + WLAN(2.4GHz) Ant2 + WLAN(5GHz/6GHz) Ant3
07	WWAN + WLAN(2.4GHz) Ant3 + WLAN(5GHz/6GHz) Ant2
08	WWAN + WLAN(5GHz/6GHz) Ant2 + Bluetooth
09	WWAN + WLAN(2.4GHz) MIMO
10	WWAN + WLAN(5GHz/6GHz) MIMO
11	WWAN + WLAN(5GHz/6GHz) MIMO + Bluetooth
12	WLAN(2.4GHz) Ant2 + WLAN(5GHz/6GHz) Ant3
13	WLAN(2.4GHz) Ant3 + WLAN(5GHz/6GHz) Ant2
14	WLAN(5GHz/6GHz) Ant2 + Bluetooth
15	WLAN(5GHz/6GHz) MIMO + Bluetooth

Table 12.6: Maximum Simultaneous Transmission SAR

/	Position	Sum (W/kg)
Highest reported SAR value for Hotspot	Bottom Side (NR n77 Part 27O + Bluetooth/WLAN)	**1.52**
Highest reported SAR value for Body-worn	Rear Side (NR n41 + WLAN 2.4GHz Ant.3 + WLAN 2.4GHz Ant.2)	**1.49**
Highest reported SAR value for Extremity	Bottom Side (NR n77 Part 27O + Bluetooth/WLAN)	**1.98**

Note: the test positions of above tables are for the worse case that has been evaluated.

Conclusion:

According to the above tables, the sum of reported SAR values is less than limit. So the simultaneous transmission SAR with volume scans is not required.

13. Summary of Test Results

According to the client's decision rule in the test registration form, which is "based on the measurement results as the basis of the conformity statement", the test conclusion of this report meets the limit requirements.

The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} \times 10^{(P_{Target} - P_{Measured})/10}$$

Where P_{Target} is the power of manufacturing upper limit;

$P_{Measured}$ is the measured power in chapter 10.

General Note:

1. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension> 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

a. WLAN5GHz U-NII-2A and U-NII-2C tested the product specific 10g SAR since it has no hotspot mode.

b. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.

Duty Cycle

Mode	Duty Cycle
GPRS	1:4/1:2.67
WCDMA	1:1
FDD_LTE	1:1
TDD_LTE	1:1.58
5G NR	1:1
Bluetooth	1:1
WLAN	1:1

13.1. Testing Environment

Temperature:	18°C~25°C
Relative humidity:	30%~70%
Ambient noise & Reflection:	< 0.012 W/kg

13.2. SAR results for 2G/3G/4G

Table 13.1: SAR Values (GSM850 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
251	848.8	GPRS-2	Front	/	30.96	32.5	0.064	**0.09**	0.03
251	848.8	GPRS-2	Rear	**1**	30.96	32.5	**0.241**	**0.34**	-0.06
251	848.8	GPRS-2	Left	/	30.96	32.5	0.048	**0.07**	-0.01
251	848.8	GPRS-2	Right	/	30.96	32.5	0.055	**0.08**	-0.08
251	848.8	GPRS-2	Bottom	/	30.96	32.5	0.105	**0.15**	0.02
Body-Worn Test Data (10mm)									
251	848.8	GPRS-2	Front	/	30.96	32.5	0.064	**0.09**	0.03
251	848.8	GPRS-2	Rear	/	30.96	32.5	0.241	**0.34**	-0.06

Table 13.2: SAR Values (GSM1900 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
512	1850.2	GPRS-3	Front	/	27.84	28.5	0.069	**0.08**	0.11
512	1850.2	GPRS-3	Rear	**2**	27.84	28.5	**0.283**	**0.33**	0.15
512	1850.2	GPRS-3	Left	/	27.84	28.5	0.058	**0.07**	0.01
512	1850.2	GPRS-3	Right	/	27.84	28.5	0.025	**0.03**	0.20
512	1850.2	GPRS-3	Bottom	/	27.84	28.5	0.182	**0.21**	-0.15
Body-Worn Test Data (10mm)									
512	1850.2	GPRS-3	Front	/	27.84	28.5	0.069	**0.08**	0.11
512	1850.2	GPRS-3	Rear	/	27.84	28.5	0.283	**0.33**	0.15

Table 13.3: SAR Values (WCDMA Band 2 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
9538	1907.6	RMC	Front	/	23.76	24.5	0.154	**0.18**	-0.02
9538	1907.6	RMC	Rear	**3**	23.76	24.5	**0.512**	**0.61**	0.05
9538	1907.6	RMC	Left	/	23.76	24.5	0.148	**0.18**	0.03
9538	1907.6	RMC	Right	/	23.76	24.5	0.047	**0.06**	0.08
9538	1907.6	RMC	Bottom	/	23.76	24.5	0.399	**0.47**	0.05
Body-Worn Test Data (10mm)									
9538	1907.6	RMC	Front	/	23.76	24.5	0.154	**0.18**	-0.02
9538	1907.6	RMC	Rear	/	23.76	24.5	0.512	**0.61**	0.05

Table 13.4: SAR Values (WCDMA Band 5 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
4183	836.6	RMC	Front	/	23.58	24.5	0.084	**0.10**	0.00
4183	836.6	RMC	Rear	**4**	23.58	24.5	**0.258**	**0.32**	-0.07
4183	836.6	RMC	Left	/	23.58	24.5	0.048	**0.06**	0.08
4183	836.6	RMC	Right	/	23.58	24.5	0.154	**0.19**	0.08
4183	836.6	RMC	Bottom	/	23.58	24.5	0.170	**0.21**	-0.12
Body-Worn Test Data (10mm)									
4183	836.6	RMC	Front	/	23.58	24.5	0.084	**0.10**	0.00
4183	836.6	RMC	Rear	/	23.58	24.5	0.258	**0.32**	-0.07

Table 13.5: SAR Values (LTE Band 2 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
18700	1860.0	1RB99	Front	/	22.96	24.0	0.098	**0.12**	0.01
19100	1900.0	50RB25	Front	/	22.35	23.0	0.121	**0.14**	0.01
18700	1860.0	1RB99	Rear	**5**	22.96	24.0	**0.353**	**0.45**	0.03
19100	1900.0	50RB25	Rear	/	22.35	23.0	0.349	**0.41**	0.03
18700	1860.0	1RB99	Left	/	22.96	24.0	0.064	**0.08**	0.03
19100	1900.0	50RB25	Left	/	22.35	23.0	0.084	**0.10**	0.00
18700	1860.0	1RB99	Right	/	22.96	24.0	0.040	**0.05**	0.01
19100	1900.0	50RB25	Right	/	22.35	23.0	0.028	**0.03**	0.02
18700	1860.0	1RB99	Bottom	/	22.96	24.0	0.203	**0.26**	0.07
19100	1900.0	50RB25	Bottom	/	22.35	23.0	0.230	**0.27**	0.08
Body-Worn Test Data (10mm)									
18700	1860.0	1RB99	Front	/	22.96	24.0	0.098	**0.12**	0.01
19100	1900.0	50RB25	Front	/	22.35	23.0	0.121	**0.14**	0.01
18700	1860.0	1RB99	Rear	/	22.96	24.0	0.353	**0.45**	0.03
19100	1900.0	50RB25	Rear	/	22.35	23.0	0.349	**0.41**	0.03

Table 13.6: SAR Values (LTE Band 4 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
20175	1732.5	1RB99	Front	/	22.87	24.0	0.055	**0.07**	0.02
20300	1745.0	50RB0	Front	/	22.27	23.0	0.055	**0.07**	-0.10
20175	1732.5	1RB99	Rear	**6**	22.87	24.0	**0.181**	**0.23**	0.06
20300	1745.0	50RB0	Rear	/	22.27	23.0	0.167	**0.20**	0.07
20175	1732.5	1RB99	Left	/	22.87	24.0	0.037	**0.05**	0.06
20300	1745.0	50RB0	Left	/	22.27	23.0	0.036	**0.04**	0.01
20175	1732.5	1RB99	Right	/	22.87	24.0	0.019	**0.02**	0.09
20300	1745.0	50RB0	Right	/	22.27	23.0	0.019	**0.02**	0.08
20175	1732.5	1RB99	Bottom	/	22.87	24.0	0.157	**0.20**	0.14
20300	1745.0	50RB0	Bottom	/	22.27	23.0	0.128	**0.15**	0.07
Body-Worn Test Data (10mm)									
20175	1732.5	1RB99	Front	/	22.87	24.0	0.055	**0.07**	0.02
20300	1745.0	50RB0	Front	/	22.27	23.0	0.055	**0.07**	-0.10
20175	1732.5	1RB99	Rear	/	22.87	24.0	0.181	**0.23**	0.06
20300	1745.0	50RB0	Rear	/	22.27	23.0	0.167	**0.20**	0.07

Table 13.7: SAR Values (LTE Band 5 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
20525	836.5	1RB24	Front	/	23.43	24.5	0.070	**0.09**	0.02
20525	836.5	25RB25	Front	/	22.71	23.5	0.053	**0.06**	0.05
20525	836.5	1RB24	Rear	**7**	23.43	24.5	**0.244**	**0.31**	0.18
20525	836.5	25RB25	Rear	/	22.71	23.5	0.202	**0.24**	-0.03
20525	836.5	1RB24	Left	/	23.43	24.5	0.061	**0.08**	-0.03
20525	836.5	25RB25	Left	/	22.71	23.5	0.047	**0.06**	0.19
20525	836.5	1RB24	Right	/	23.43	24.5	0.105	**0.13**	0.08
20525	836.5	25RB25	Right	/	22.71	23.5	0.094	**0.11**	0.08
20525	836.5	1RB24	Bottom	/	23.43	24.5	0.084	**0.11**	0.00
20525	836.5	25RB25	Bottom	/	22.71	23.5	0.085	**0.10**	-0.10
Body-Worn Test Data (10mm)									
20525	836.5	1RB24	Front	/	23.43	24.5	0.070	**0.09**	0.02
20525	836.5	25RB25	Front	/	22.71	23.5	0.053	**0.06**	0.05
20525	836.5	1RB24	Rear	/	23.43	24.5	0.244	**0.31**	0.18
20525	836.5	25RB25	Rear	/	22.71	23.5	0.202	**0.24**	-0.03

Table 13.8: SAR Values (LTE Band 7 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
21100	2535.0	1RB99	Front	/	22.80	24.0	0.086	**0.11**	-0.05
20850	2510.0	50RB0	Front	/	22.15	23.0	0.067	**0.08**	0.04
21100	2535.0	1RB99	Rear	**8**	22.80	24.0	**0.680**	**0.90**	0.18
20850	2510.0	50RB0	Rear	/	22.15	23.0	0.381	**0.46**	0.09
21100	2535.0	1RB99	Left	/	22.80	24.0	0.130	**0.17**	0.01
20850	2510.0	50RB0	Left	/	22.15	23.0	0.096	**0.12**	0.01
21100	2535.0	1RB99	Right	/	22.80	24.0	0.031	**0.04**	-0.06
20850	2510.0	50RB0	Right	/	22.15	23.0	0.022	**0.03**	0.04
21100	2535.0	1RB99	Bottom	/	22.80	24.0	0.434	**0.57**	0.06
20850	2510.0	50RB0	Bottom	/	22.15	23.0	0.259	**0.31**	0.10
20850	2510.0	1RB49	Rear	/	22.79	24.0	0.489	**0.65**	0.11
21350	2560.0	1RB0	Rear	/	22.61	24.0	0.644	**0.89**	0.14
20850	2510.0	100RB	Rear	/	21.95	23.0	0.425	**0.54**	-0.13
Body-Worn Test Data (10mm)									
21100	2535.0	1RB99	Front	/	22.80	24.0	0.086	**0.11**	-0.05
20850	2510.0	50RB0	Front	/	22.15	23.0	0.067	**0.08**	0.04
21100	2535.0	1RB99	Rear	/	22.80	24.0	0.680	**0.90**	0.18
20850	2510.0	50RB0	Rear	/	22.15	23.0	0.381	**0.46**	0.09
20850	2510.0	1RB49	Rear	/	22.79	24.0	0.489	**0.65**	0.11
21350	2560.0	1RB0	Rear	/	22.61	24.0	0.644	**0.89**	0.14
20850	2510.0	100RB	Rear	/	21.95	23.0	0.425	**0.54**	-0.13

Table 13.9: SAR Values (LTE Band 17 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
23800	711.0	1RB24	Front	/	23.49	24.5	0.046	**0.06**	0.06
23800	711.0	25RB12	Front	/	22.57	23.5	0.043	**0.05**	0.03
23800	711.0	1RB24	Rear	**9**	23.49	24.5	**0.147**	**0.19**	-0.12
23800	711.0	25RB12	Rear	/	22.57	23.5	0.121	**0.15**	0.01
23800	711.0	1RB24	Left	/	23.49	24.5	0.053	**0.07**	0.08
23800	711.0	25RB12	Left	/	22.57	23.5	0.042	**0.05**	0.09
23800	711.0	1RB24	Right	/	23.49	24.5	0.079	**0.10**	0.09
23800	711.0	25RB12	Right	/	22.57	23.5	0.086	**0.11**	0.09
23800	711.0	1RB24	Bottom	/	23.49	24.5	0.048	**0.06**	-0.05
23800	711.0	25RB12	Bottom	/	22.57	23.5	0.046	**0.06**	-0.13
Body-Worn Test Data (10mm)									
23800	711.0	1RB24	Front	/	23.49	24.5	0.046	**0.06**	0.06
23800	711.0	25RB12	Front	/	22.57	23.5	0.043	**0.05**	0.03
23800	711.0	1RB24	Rear	/	23.49	24.5	0.147	**0.19**	-0.12
23800	711.0	25RB12	Rear	/	22.57	23.5	0.121	**0.15**	0.01

Table 13.10: SAR Values (LTE Band 41 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
41490	2680.0	1RB0	Front	/	22.98	24.0	0.046	**0.06**	0.12
40620	2593.0	50RB25	Front	/	22.01	23.0	0.023	**0.03**	-0.05
41490	2680.0	1RB0	Rear	**10**	22.98	24.0	**0.413**	**0.52**	0.09
40620	2593.0	50RB25	Rear	/	22.01	23.0	0.324	**0.41**	0.10
41490	2680.0	1RB0	Left	/	22.98	24.0	0.080	**0.10**	0.09
40620	2593.0	50RB25	Left	/	22.01	23.0	0.039	**0.05**	0.08
41490	2680.0	1RB0	Right	/	22.98	24.0	0.014	**0.02**	0.15
40620	2593.0	50RB25	Right	/	22.01	23.0	0.011	**0.01**	0.01
41490	2680.0	1RB0	Bottom	/	22.98	24.0	0.193	**0.24**	-0.04
40620	2593.0	50RB25	Bottom	/	22.01	23.0	0.113	**0.14**	-0.08
Body-Worn Test Data (10mm)									
41490	2680.0	1RB0	Front	/	22.98	24.0	0.046	**0.06**	0.12
40620	2593.0	50RB25	Front	/	22.01	23.0	0.023	**0.03**	-0.05
41490	2680.0	1RB0	Rear	/	22.98	24.0	0.413	**0.52**	0.09
40620	2593.0	50RB25	Rear	/	22.01	23.0	0.324	**0.41**	0.10

Note: SAR for LTE Band 38 is covered by LTE Band 41 due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

Table 13.11: SAR Values (LTE Band 71 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
133222	673.0	1RB0	Front	/	23.32	24.5	0.049	**0.06**	-0.08
133322	683.0	50RB0	Front	/	22.29	23.5	0.028	**0.04**	0.03
133222	673.0	1RB0	Rear	/	23.32	24.5	0.068	**0.09**	-0.04
133322	683.0	50RB0	Rear	/	22.29	23.5	0.060	**0.08**	0.00
133222	673.0	1RB0	Left	/	23.32	24.5	0.080	**0.10**	0.12
133322	683.0	50RB0	Left	/	22.29	23.5	0.053	**0.07**	0.12
133222	673.0	1RB0	Right	**11**	23.32	24.5	**0.101**	**0.13**	0.10
133322	683.0	50RB0	Right	/	22.29	23.5	0.071	**0.09**	-0.07
133222	673.0	1RB0	Bottom	/	23.32	24.5	0.034	**0.04**	0.07
133322	683.0	50RB0	Bottom	/	22.29	23.5	0.031	**0.04**	-0.01
Body-Worn Test Data (10mm)									
133222	673.0	1RB0	Front	/	23.32	24.5	0.049	**0.06**	-0.08
133322	683.0	50RB0	Front	/	22.29	23.5	0.028	**0.04**	0.03
133222	673.0	1RB0	Rear	/	23.32	24.5	0.068	**0.09**	-0.04
133322	683.0	50RB0	Rear	/	22.29	23.5	0.060	**0.08**	0.00

13.3. Test Results for SUB 6G

Note: For this device, NR n41/n77/n78 band support PC3 and PC2 with same 100% duty cycle, so we choose PC2 for SAR test.

Table 13.12: SAR Values (NR n2 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
376000	1880.0	50@25	Front	/	23.56	24.5	0.102	**0.13**	-0.10
376000	1880.0	50@25	Rear	**12**	23.56	24.5	**0.433**	**0.54**	-0.06
376000	1880.0	50@25	Left	/	23.56	24.5	0.087	**0.11**	0.05
376000	1880.0	50@25	Right	/	23.56	24.5	0.037	**0.05**	0.00
376000	1880.0	50@25	Bottom	/	23.56	24.5	0.246	**0.31**	0.01
Body-Worn Test Data (10mm)									
376000	1880.0	50@25	Front	/	23.56	24.5	0.102	**0.13**	-0.10
376000	1880.0	50@25	Rear	/	23.56	24.5	0.433	**0.54**	-0.06

Table 13.13: SAR Values (NR n5 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
167300	836.5	50@25	Front	/	23.36	24.5	0.059	**0.08**	-0.02
167300	836.5	50@25	Rear	**13**	23.36	24.5	**0.196**	**0.25**	0.19
167300	836.5	50@25	Left	/	23.36	24.5	0.064	**0.08**	0.03
167300	836.5	50@25	Right	/	23.36	24.5	0.106	**0.14**	-0.05
167300	836.5	50@25	Bottom	/	23.36	24.5	0.105	**0.14**	-0.16
Body-Worn Test Data (10mm)									
167300	836.5	50@25	Front	/	23.36	24.5	0.059	**0.08**	-0.02
167300	836.5	50@25	Rear	/	23.36	24.5	0.196	**0.25**	0.19

Table 13.14: SAR Values (NR n41 PC2 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
518598	2593.0	135@67	Front	/	25.10	26.0	0.087	**0.11**	-0.05
518598	2593.0	135@67	Rear	/	25.10	26.0	0.905	**1.11**	0.01
518598	2593.0	135@67	Left	/	25.10	26.0	0.117	**0.14**	0.09
518598	2593.0	135@67	Right	/	25.10	26.0	0.038	**0.05**	0.05
518598	2593.0	135@67	Bottom	/	25.10	26.0	0.580	**0.71**	0.12
528000	2640.0	135@67	Rear	/	24.93	26.0	0.838	**1.07**	0.06
509202	2546.0	135@67	Rear	**14**	25.06	26.0	**0.915**	**1.14**	0.04
Body-Worn Test Data (10mm)									
518598	2593.0	135@67	Front	/	25.10	26.0	0.087	**0.11**	-0.05
518598	2593.0	135@67	Rear	/	25.10	26.0	0.905	**1.11**	0.01
528000	2640.0	135@67	Rear	/	24.93	26.0	0.838	**1.07**	0.06
509202	2546.0	135@67	Rear	/	25.06	26.0	**0.915**	**1.14**	0.04

Table 13.15: SAR Values (NR n71 - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
136100	680.5	50@25	Front	/	23.94	24.5	0.040	**0.05**	0.03
136100	680.5	50@25	Rear	**15**	23.94	24.5	**0.083**	**0.09**	-0.15
136100	680.5	50@25	Left	/	23.94	24.5	0.055	**0.06**	0.04
136100	680.5	50@25	Right	/	23.94	24.5	0.079	**0.09**	0.11
136100	680.5	50@25	Bottom	/	23.94	24.5	0.037	**0.04**	0.12
Body-Worn Test Data (10mm)									
136100	680.5	50@25	Front	/	23.94	24.5	0.040	**0.05**	0.03
136100	680.5	50@25	Rear	/	23.94	24.5	0.083	**0.09**	-0.15

Table 13.16: SAR Values (NR n77 PC2 Part 27Q - Body) - Ant.1

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
633334	3500.0	135@67	Front	/	24.48	25.5	0.313	**0.40**	0.00
633334	3500.0	135@67	Rear	/	24.48	25.5	0.223	**0.28**	-0.02
633334	3500.0	135@67	Right	/	24.48	25.5	0.458	**0.58**	0.14
633334	3500.0	135@67	Bottom	/	24.48	25.5	0.143	**0.18**	0.05
Body-Worn Test Data (10mm)									
633334	3500.0	135@67	Front	/	24.48	25.5	0.313	**0.40**	0.00
633334	3500.0	135@67	Rear	/	24.48	25.5	0.223	**0.28**	-0.02

Table 13.17: SAR Values (NR n77 PC2 Part 27Q - Body) - Ant.4

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
633334	3500.0	135@67	Front	/	23.94	25.5	0.181	**0.26**	-0.08
633334	3500.0	135@67	Rear	/	23.94	25.5	0.208	**0.30**	0.13
633334	3500.0	135@67	Left	**16**	23.94	25.5	**0.479**	**0.69**	0.03
Body-Worn Test Data (10mm)									
633334	3500.0	135@67	Front	/	23.94	25.5	0.181	**0.26**	-0.08
633334	3500.0	135@67	Rear	/	23.94	25.5	0.208	**0.30**	0.13

Note: SAR for NR n78 is covered by NR n77 Part 27Q due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

Table 13.18: SAR Values (NR n77 PC2 Part 27O - Body) - Ant.1

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
656000	3840.0	135@67	Front	/	24.90	26.0	0.460	**0.59**	0.06
656000	3840.0	135@67	Rear	/	24.90	26.0	0.537	**0.69**	0.06
656000	3840.0	135@67	Right	/	24.90	26.0	0.313	**0.40**	0.00
656000	3840.0	135@67	Bottom	/	24.90	26.0	0.745	**0.96**	0.01
662000	3930.0	135@67	Bottom	**17**	24.82	26.0	**1.160**	**1.52**	0.06
650000	3750.0	135@67	Bottom	/	24.86	26.0	0.523	**0.68**	0.08
Body-Worn Test Data (10mm)									
656000	3840.0	135@67	Front	/	24.90	26.0	0.460	**0.59**	0.06
656000	3840.0	135@67	Rear	/	24.90	26.0	0.537	**0.69**	0.06

Table 13.19: SAR Values (NR n77 PC2 Part 27O - Body) - Ant.4

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
656000	3840.0	135@67	Front	/	25.34	26.0	0.085	**0.10**	-0.02
656000	3840.0	135@67	Rear	/	25.34	26.0	0.320	**0.37**	0.00
656000	3840.0	135@67	Left	/	25.34	26.0	0.405	**0.47**	-0.05
Body-Worn Test Data (10mm)									
656000	3840.0	135@67	Front	/	25.34	26.0	0.085	**0.10**	-0.02
656000	3840.0	135@67	Rear	/	25.34	26.0	0.320	**0.37**	0.00

13.4. Test Results for Bluetooth

Table 13.20: SAR Values (Bluetooth - Body)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Test Data (10mm)									
39	2441.0	GFSK	Front	/	9.82	10.5	<0.01	**<0.01**	0.00
39	2441.0	GFSK	Rear	**18**	9.82	10.5	**0.019**	**0.02**	0.06
39	2441.0	GFSK	Right	/	9.82	10.5	0.012	**0.01**	0.09
39	2441.0	GFSK	Top	/	9.82	10.5	0.001	**<0.01**	0.00

13.5. WLAN Evaluation for 2.4GHz

According to the KDB248227 D01, SAR is measured for 2.4GHz 802.11b DSSS using the initial test position procedure.

Table 13.21: SAR Values (WLAN 2.4GHz - Body) - Ant.3

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
6	2437.0	802.11b	Front	/	17.52	18.5	0.007	**0.01**	0.00
6	2437.0	802.11b	Rear	**19**	17.52	18.5	**0.178**	**0.22**	0.04
6	2437.0	802.11b	Right	/	17.52	18.5	0.080	**0.10**	0.12
6	2437.0	802.11b	Top	/	17.52	18.5	0.029	**0.04**	0.18
Body-Worn Test Data (10mm)									
6	2437.0	802.11b	Front	/	17.52	18.5	0.007	**0.01**	0.00
6	2437.0	802.11b	Rear	/	17.52	18.5	0.178	**0.22**	0.04

Table 13.22: SAR Values (WLAN 2.4GHz - Body) - Ant.2

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Hotspot Test Data (10mm)									
6	2437.0	802.11b	Front	/	17.25	18.0	0.023	**0.03**	-0.14
6	2437.0	802.11b	Rear	/	17.25	18.0	0.111	**0.13**	0.02
6	2437.0	802.11b	Right	/	17.25	18.0	0.112	**0.13**	0.06
Body-Worn Test Data (10mm)									
6	2437.0	802.11b	Front	/	17.25	18.0	0.023	**0.03**	-0.14
6	2437.0	802.11b	Rear	/	17.25	18.0	0.111	**0.13**	0.02

Note: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

Table 13.23: SAR Values (WLAN - Body) – 802.11b (Scaled Reported SAR)

Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
Ch.	MHz					
6	2437.0	Rear	100%	100%	0.22	**0.22**

SAR is not required for OFDM because the 802.11b adjusted SAR ≤ 1.2 W/kg.

13.6. WLAN Evaluation for 5GHz

Table 13.24: SAR Values (WLAN 5GHz - Body) - Ant.3

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
<U-NII-1> - Hotspot Test Data (10mm)									
40	5200.0	802.11a	Front	/	15.67	16.5	0.005	**0.01**	0.00
40	5200.0	802.11a	Rear	**20**	15.67	16.5	**0.136**	**0.16**	0.00
40	5200.0	802.11a	Right	/	15.67	16.5	0.047	**0.06**	0.14
40	5200.0	802.11a	Top	/	15.67	16.5	0.087	**0.11**	0.01
<U-NII-3> - Hotspot Test Data (10mm)									
149	5745.0	802.11a	Front	/	16.12	17.0	<0.01	**<0.01**	0.03
149	5745.0	802.11a	Rear	/	16.12	17.0	0.028	**0.03**	0.13
149	5745.0	802.11a	Right	/	16.12	17.0	0.004	**<0.01**	0.05
149	5745.0	802.11a	Top	/	16.12	17.0	0.002	**<0.01**	0.09
< U-NII-2A> - Body-Worn Test Data (10mm)									
56	5280.0	802.11a	Front	/	15.86	16.5	<0.01	**<0.01**	-0.12
56	5280.0	802.11a	Rear	/	15.86	16.5	0.089	**0.10**	-0.05
< U-NII-2C> - Body-Worn Test Data (10mm)									
144	5720.0	802.11a	Front	/	16.84	17.5	**<0.01**	**<0.01**	0.06
144	5720.0	802.11a	Rear	/	16.84	17.5	0.026	**0.03**	0.11
< U-NII-3> - Body-Worn Test Data (10mm)									
149	5745.0	802.11a	Front	/	16.12	17.0	**<0.01**	**<0.01**	0.07
149	5745.0	802.11a	Rear	/	16.12	17.0	0.028	**0.03**	0.02

Table 13.25: SAR Values (WLAN 5GHz - Body) - Ant.2

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
Ch.	MHz								
<U-NII-1> - Hotspot Test Data (10mm)									
40	5200.0	802.11a	Front	/	15.08	16.0	0.003	**<0.01**	0.00
40	5200.0	802.11a	Rear	/	15.08	16.0	0.059	**0.07**	-0.08
40	5200.0	802.11a	Right	/	15.08	16.0	0.071	**0.09**	0.02
<U-NII-3> - Hotspot Test Data (10mm)									
165	5825.0	802.11a	Front	/	15.24	16.0	<0.01	**<0.01**	0.00
165	5825.0	802.11a	Rear	/	15.24	16.0	0.056	**0.07**	0.11
165	5825.0	802.11a	Right	/	15.24	16.0	0.077	**0.09**	-0.06
< U-NII-2A> - Body-Worn Test Data (10mm)									
64	5320.0	802.11a	Front	/	15.40	16.5	0.005	**0.01**	0.00
64	5320.0	802.11a	Rear	/	15.40	16.5	0.041	**0.05**	0.00
< U-NII-2C> - Body-Worn Test Data (10mm)									
132	5660.0	802.11a	Front	/	15.49	16.5	0.004	**0.01**	0.00

132	5660.0	802.11a	Rear	/	15.49	16.5	0.106	**0.13**	-0.05
< U-NII-3> - Body-Worn Test Data (10mm)									
165	5825.0	802.11a	Front	/	15.24	16.0	**<0.01**	**<0.01**	0.00
165	5825.0	802.11a	Rear	/	15.24	16.0	0.056	**0.07**	0.11

Note:

1. U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is ≤ 1.2W/kg, SAR is not required for U-NII-1 band.
2. For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

Table 13.26: SAR Values (WLAN - Body) - 802.11a (Scaled Reported SAR)

Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
Ch.	MHz					
40	5200.0	Rear	100%	100%	0.16	**0.16**

13.7. Product specific 10g SAR

Table 13.27: SAR Values (NR n77 PC2 Part 27O - Extremity)

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift(dB)
Ch.	MHz								
Test Data (0mm)									
662000	3930.0	135@67	Bottom	**21**	24.82	26.0	**1.510**	**1.98**	-0.04

Table 13.28: SAR Values (WLAN 5GHz - Extremity) - Ant.3

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift(dB)
Ch.	MHz								
<U-NII-2A> - Test Data (0mm)									
56	5280.0	802.11a	Front	/	15.86	16.5	0.008	**0.01**	0.06
56	5280.0	802.11a	Rear	**22**	15.86	16.5	**0.216**	**0.25**	0.05
56	5280.0	802.11a	Right	/	15.86	16.5	0.064	**0.07**	0.03
56	5280.0	802.11a	Top	/	15.86	16.5	0.041	**0.05**	0.07
<U-NII-2C> - Test Data (0mm)									
144	5720.0	802.11a	Front	/	16.84	17.5	0.002	**<0.01**	-0.03
144	5720.0	802.11a	Rear	/	16.84	17.5	0.038	**0.04**	0.05
144	5720.0	802.11a	Right	/	16.84	17.5	0.008	**0.01**	0.12
144	5720.0	802.11a	Top	/	16.84	17.5	0.005	**0.01**	-0.06

Table 13.29: SAR Values (WLAN 5GHz - Extremity) - Ant.2

Frequency		Test Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift(dB)
Ch.	MHz								
<U-NII-2A> - Test Data (0mm)									
64	5320.0	802.11a	Front	/	15.40	16.5	0.036	**0.05**	0.00
64	5320.0	802.11a	Rear	/	15.40	16.5	0.171	**0.22**	0.03
64	5320.0	802.11a	Right	/	15.40	16.5	0.104	**0.13**	-0.04
<U-NII-2C> - Test Data (0mm)									
132	5660.0	802.11a	Front	/	15.49	16.5	0.013	**0.02**	0.05
132	5660.0	802.11a	Rear	/	15.49	16.5	0.142	**0.18**	0.07
132	5660.0	802.11a	Right	/	15.49	16.5	0.115	**0.15**	0.18

14. SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Table 14.1: SAR Measurement Variability for Body - NR n41

Frequency		Test Position	Original	1st Repeated	Ratio	2nd Repeated
Ch.	MHz		SAR (W/kg)	SAR (W/kg)		SAR (W/kg)
528000	2640.0	Rear	0.915	0.896	1.02	/

Table 14.1: SAR Measurement Variability for Body - NR n77 PC2 Part 27O

Frequency		Test Position	Original	1st Repeated	Ratio	2nd Repeated
Ch.	MHz		SAR (W/kg)	SAR (W/kg)		SAR (W/kg)
662000	3930.0	Bottom	1.160	1.130	1.03	/

15. Measurement Uncertainty

15.1. Measurement Uncertainty for Normal SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	12	N	2	1	1	6.0	6.0	∞
2	Axial isotropy	B	4.7	R	$\sqrt{3}$	√0.5	√0.5	4.3	4.3	∞
3	Hemispherical isotropy	B	9.6	R	$\sqrt{3}$	1	1	4.8	4.8	∞
4	Boundary effect	B	1.1	R	$\sqrt{3}$	1	1	0.6	0.6	∞
5	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
6	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
7	Modulation response	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
8	Readout electronics	B	1.0	N	1	1	1	1.0	1.0	∞
9	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
10	Integration time	B	1.7	R	$\sqrt{3}$	1	1	1.0	1.0	∞
11	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
12	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Probe positioned mech. restrictions	B	0.35	R	$\sqrt{3}$	1	1	0.2	0.2	∞
14	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
15	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
16	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	5
17	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
18	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
19	Phantom uncertainty	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
20	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
21	Liquid conductivity (meas.)	A	1.3	N	1	0.64	0.43	0.83	0.56	9
22	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
23	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	0.96	0.78	9
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{23} c_i^2 u_i^2}$						11.3	11.2	95.5
Expanded uncertainty (Confidence interval of 95 %)		$u_e = 2u_c$						22.6	22.4	

15.2. Measurement Uncertainty for Normal SAR Tests (3GHz~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	13.1	N	2	1	1	6.65	6.65	∞
2	Axial isotropy	B	4.7	R	$\sqrt{3}$	√0.5	√0.5	4.3	4.3	∞
3	Hemispherical isotropy	B	9.6	R	$\sqrt{3}$	1	1	4.8	4.8	∞
4	Boundary effect	B	1.1	R	$\sqrt{3}$	1	1	0.6	0.6	∞
5	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
6	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
7	modulation response	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
8	Readout electronics	B	1.0	N	1	1	1	1.0	1.0	∞
9	Response time	B	0.0	R	$\sqrt{3}$	1	1	0.0	0.0	∞
10	Integration time	B	1.7	R	$\sqrt{3}$	1	1	1.0	1.0	∞
11	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
12	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Probe positioned mech. Restrictions	B	0.35	R	$\sqrt{3}$	1	1	0.2	0.2	∞
14	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
15	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
16	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	5
17	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
18	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
19	Phantom uncertainty	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
20	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
21	Liquid conductivity (meas.)	A	1.3	N	1	0.64	0.43	0.83	0.56	43
22	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
23	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	0.96	0.78	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						11.6	11.5	257
Expanded uncertainty (Confidence interval of 95 %)		$u_e = 2u_c$						23.2	23.0	

16. Main Test Instruments

Table 16.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46103759	2022-11-14	One year
02	Dielectric probe	85070E	MY44300317	/	/
03	Power meter	E4418B	MY50000366	2022-12-11	One year
04	Power sensor	E9304A	MY50000188	2022-12-11	One year
05	Power meter	NRP	101260	2021-12-30	One year
06	Power sensor	NRP-Z91	102211	2021-12-30	One year
07	Signal Generator	E8257D	MY47461211	2022-01-14	One year
08	Amplifier	VTL5400	0404	/	/
09	DAE	DAE4	1527	2022-06-21	One year
10	E-field Probe	EX3DV4	7621	2022-05-06	One year
11	Dipole Validation Kit	D750V3	1163	2022-08-22	Three years
12	Dipole Validation Kit	D835V2	4d057	2021-10-18	Three years
13	Dipole Validation Kit	D1750V2	1152	2022-08-22	Three years
14	Dipole Validation Kit	D1900V2	5d088	2021-10-18	Three years
15	Dipole Validation Kit	D2450V2	873	2021-10-21	Three years
16	Dipole Validation Kit	D2550V2	1010	2021-05-21	Three years
17	Dipole Validation Kit	D3500V2	1084	2019-09-20	Three years
18	Dipole Validation Kit	D3900V2	1028	2019-09-20	Three years
19	Dipole Validation Kit	D5GHzV2	1238	2022-08-17	Three years
20	BTS	E5515C	GB46110722	2022-01-14	One year
21	BTS	MT8820C	6201341853	2022-01-14	One year
22	BTS	CMW500	152499	2022-07-15	One year
23	Software	DASY5	/	/	/

ANNEX A: Graph Results

GSM 850 Body

Date: 2022-12-13

Electronics: DAE4 Sn1527

Medium: Head 835MHz

Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.941 S/m; ε_r = 40.57; ρ = 1000 kg/m^3

Communication System: UID 0, 2 slot GPRS (0) Frequency: 848.8 MHz Duty Cycle: 1:4

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Rear Side High/Area Scan (71x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.325 W/kg

Rear Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.07 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.506 W/kg

SAR(1 g) = 0.241 W/kg; SAR(10 g) = 0.129 W/kg

Maximum value of SAR (measured) = 0.389 W/kg

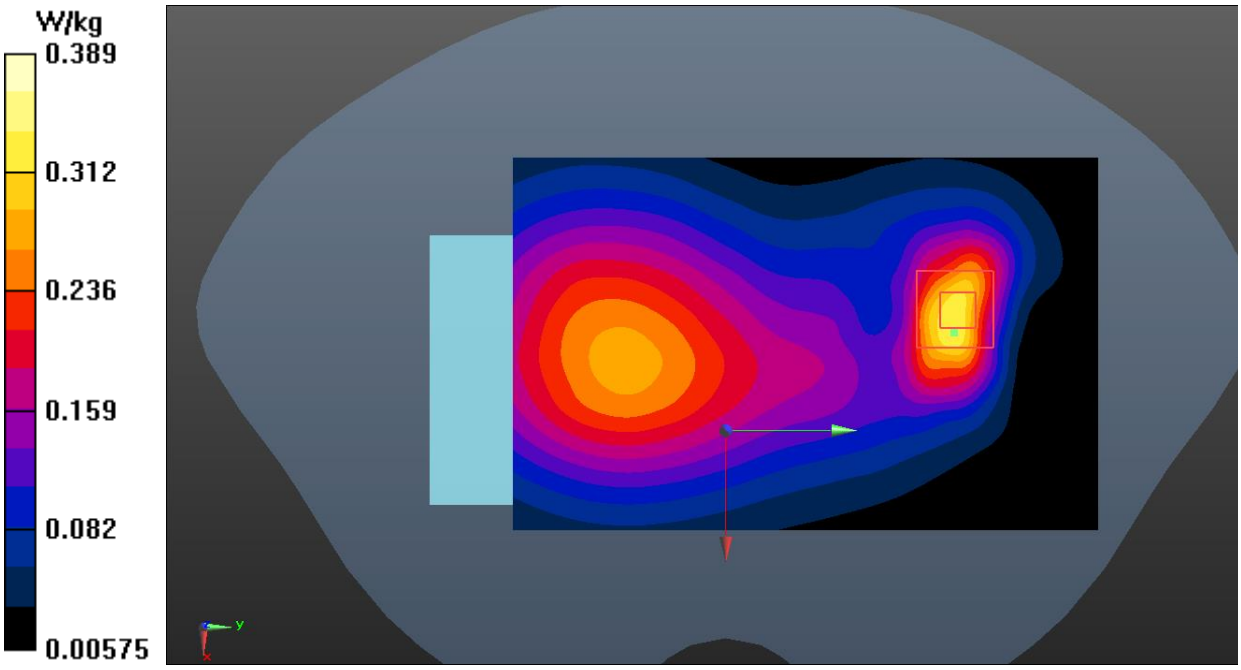


Fig. 1 GSM 850 Body

GSM 1900 Body
Date: 2022-12-18
Electronics: DAE4 Sn1527
Medium: Head 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.378 S/m; ε_r = 39.686; ρ = 1000 kg/m^3
Communication System: UID 0, 3 slot GPRS (0) Frequency: 1850.2 MHz Duty Cycle: 1:2.67
Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

Rear Side Low/Area Scan (71x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.431 W/kg

Rear Side Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.224 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.503 W/kg
SAR(1 g) = 0.283 W/kg; SAR(10 g) = 0.154 W/kg
Maximum value of SAR (measured) = 0.422 W/kg

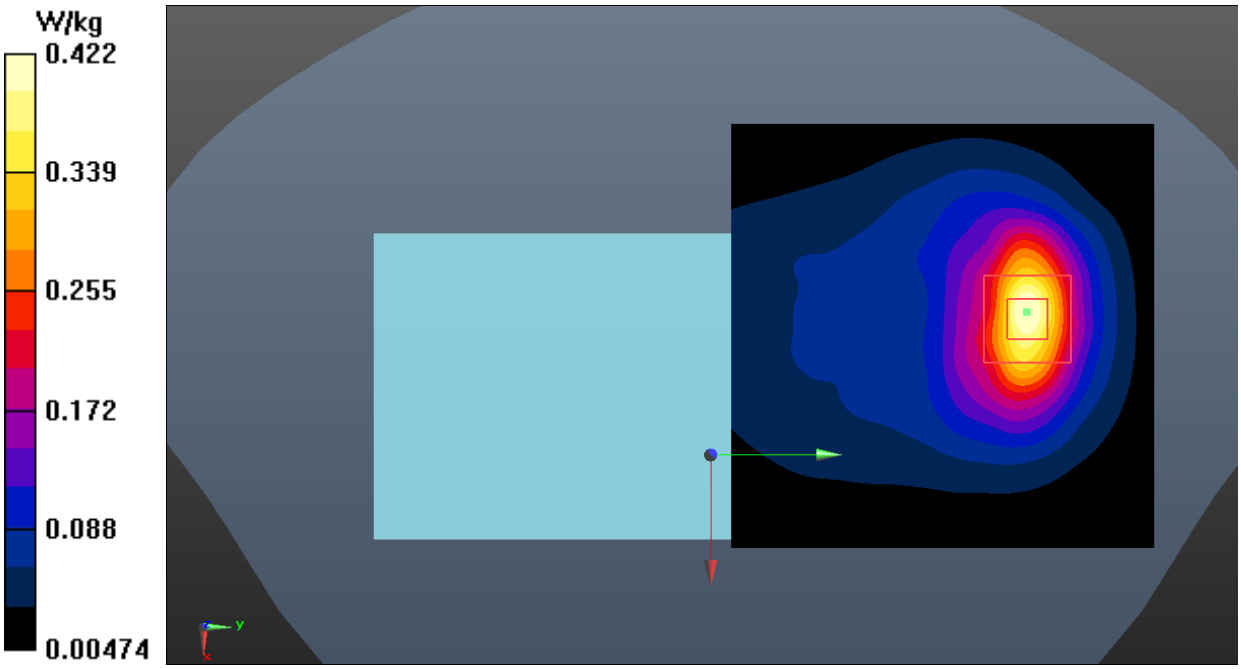


Fig. 2 GSM 1900 Body

WCDMA Band 2 Body

Date: 2022-12-18

Electronics: DAE4 Sn1527

Medium: Head 1900MHz

Medium parameters used (interpolated): f = 1907.6 MHz; σ = 1.429 S/m; ε_r = 39.462; ρ = 1000 kg/m^3

Communication System: UID 0, WCDMA (0) Frequency: 1907.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

Rear Side High/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.766 W/kg

Rear Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.949 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.909 W/kg

SAR(1 g) = 0.512 W/kg; SAR(10 g) = 0.282 W/kg

Maximum value of SAR (measured) = 0.761 W/kg

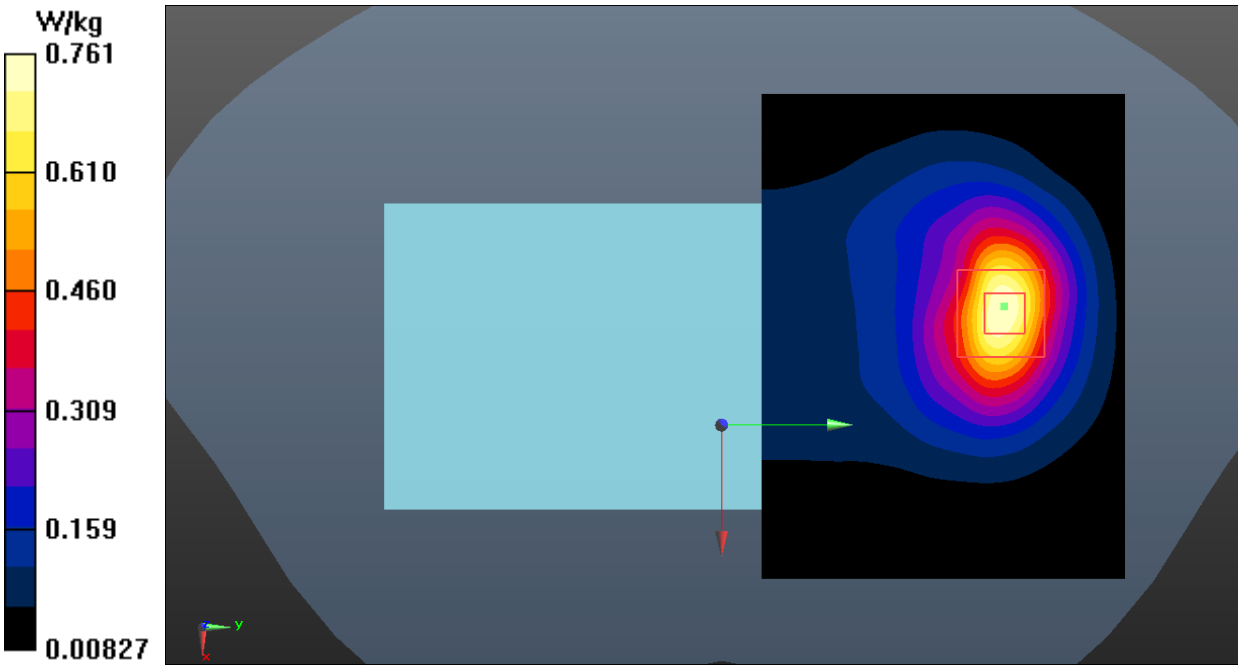


Fig. 3 WCDMA Band 2 Body

WCDMA Band 5 Body
Date: 2022-12-13
Electronics: DAE4 Sn1527
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.929 S/m; ε_r = 40.717; ρ = 1000 kg/m^3
Communication System: UID 0, WCDMA (0) Frequency: 836.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Rear Side Middle/Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.422 W/kg

Rear Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.14 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.549 W/kg
SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.135 W/kg
Maximum value of SAR (measured) = 0.418 W/kg

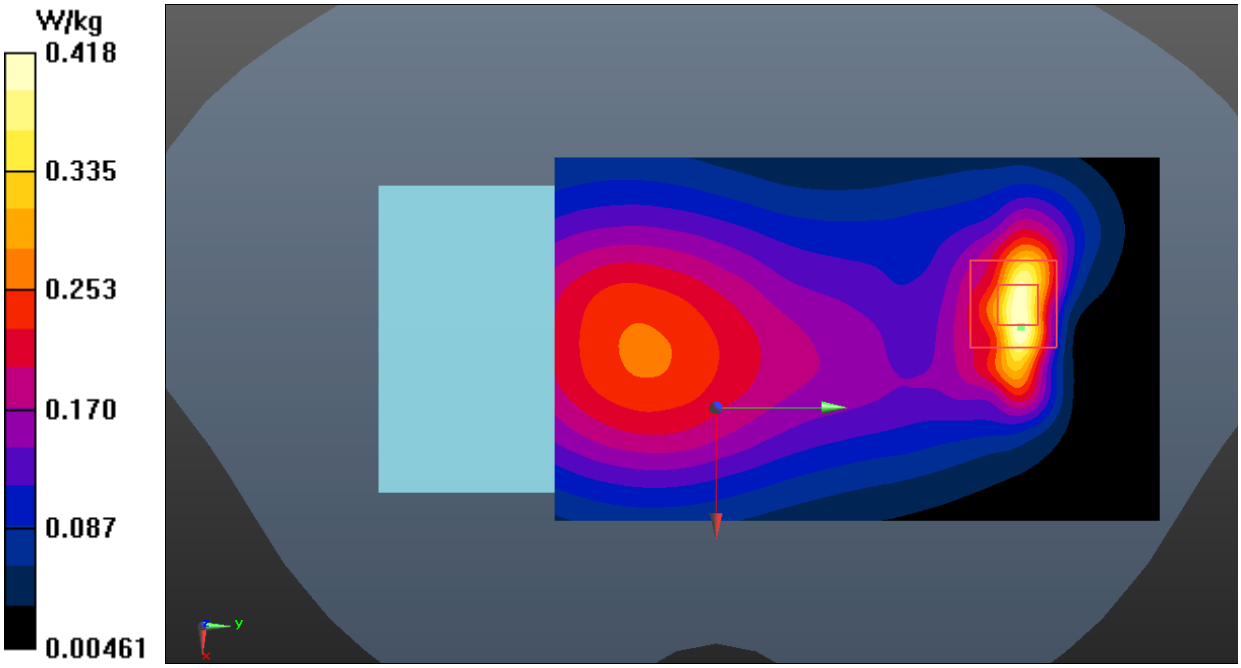


Fig. 4 WCDMA Band 5 Body

LTE Band 2 Body
Date: 2022-12-18
Electronics: DAE4 Sn1527
Medium: Head 1900MHz
Medium parameters used: f = 1860 MHz; σ = 1.387 S/m; ε_r = 39.648; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_FDD (0) Frequency: 1860 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

Rear Side Low 1RB99/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.527 W/kg

Rear Side Low 1RB99/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 6.848 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.620 W/kg
SAR(1 g) = 0.353 W/kg; SAR(10 g) = 0.195 W/kg
Maximum value of SAR (measured) = 0.522 W/kg

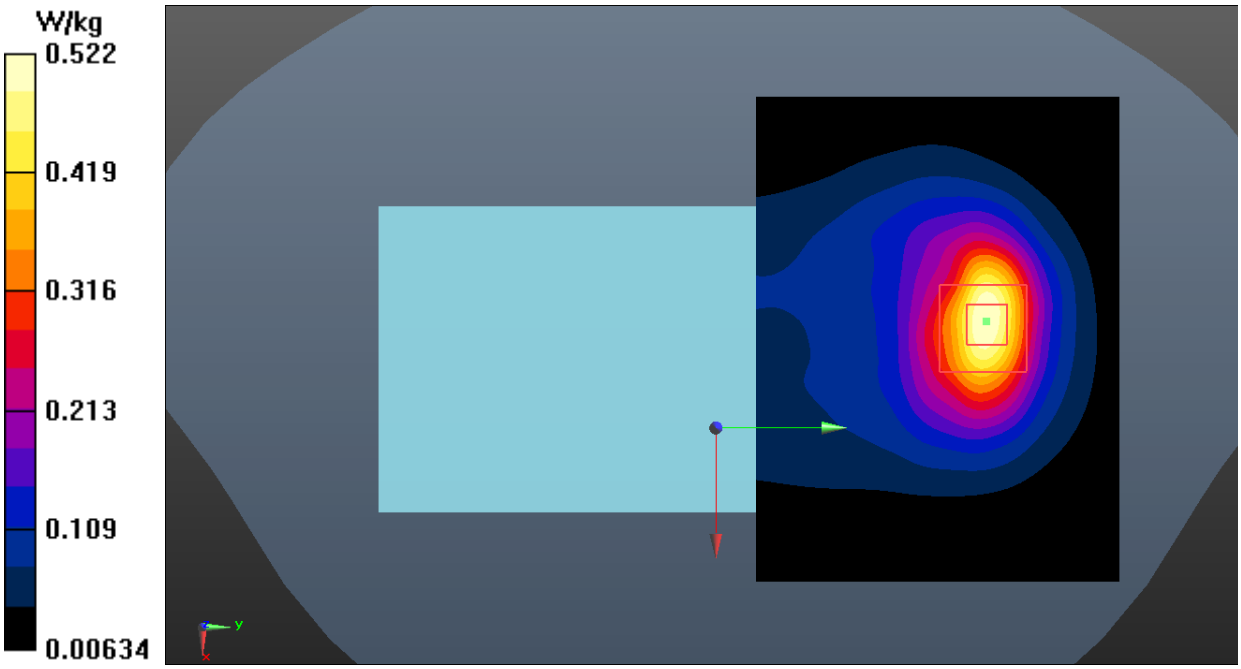


Fig. 5 LTE Band 2 Body

LTE Band 4 Body
Date: 2022-12-17
Electronics: DAE4 Sn1527
Medium: Head 1750MHz
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.345 S/m; ε_r = 40.627; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_FDD (0) Frequency: 1732.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

Rear Side Middle 1RB99/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.248 W/kg

Rear Side Middle 1RB99/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 4.093 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.325 W/kg
SAR(1 g) = 0.181 W/kg; SAR(10 g) = 0.099 W/kg
Maximum value of SAR (measured) = 0.276 W/kg

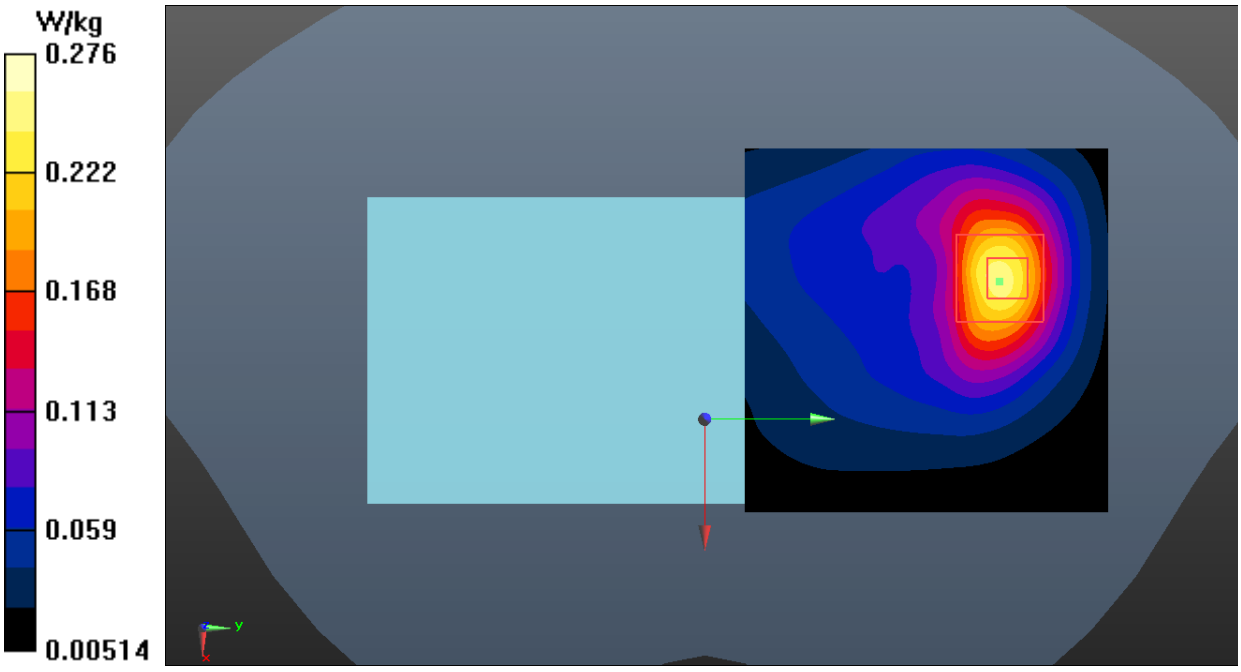


Fig. 6 LTE Band 4 Body

LTE Band 5 Body
Date: 2022-12-13
Electronics: DAE4 Sn1527
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.929 S/m; ε_r = 40.718; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_FDD (0) Frequency: 836.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Rear Side Middle 1RB24/Area Scan (81x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.408 W/kg

Rear Side Middle 1RB24/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.85 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.514 W/kg
SAR(1 g) = 0.244 W/kg; SAR(10 g) = 0.127 W/kg
Maximum value of SAR (measured) = 0.397 W/kg

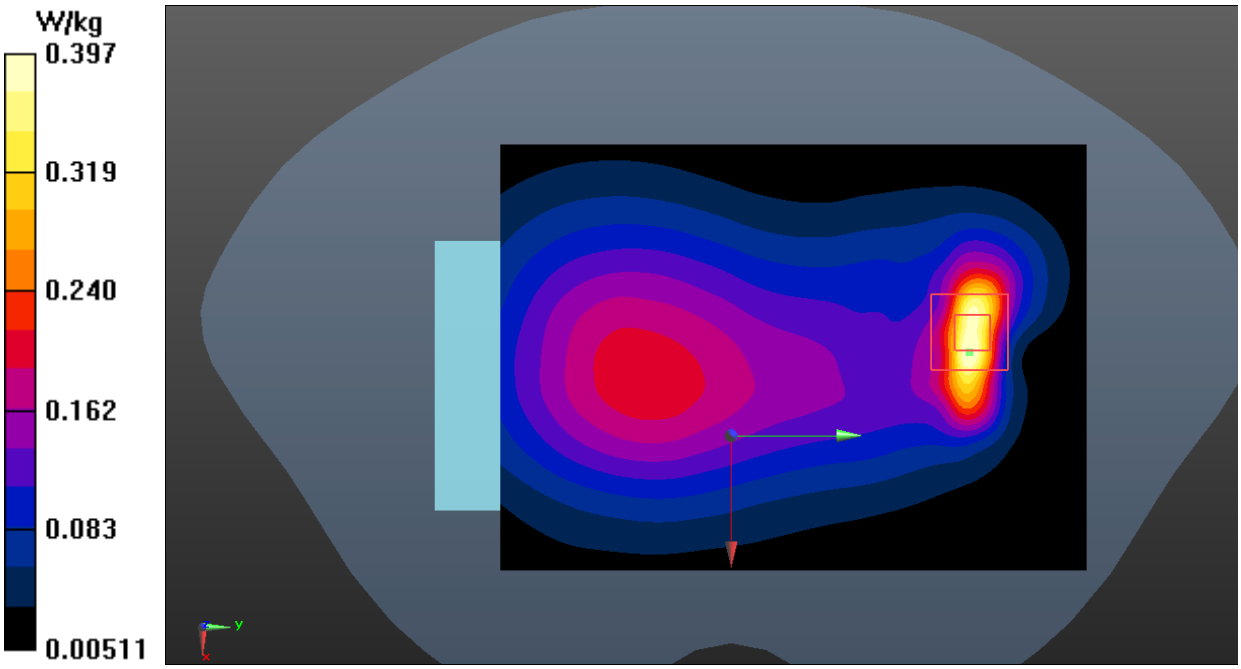


Fig. 7 LTE Band 5 Body

LTE Band 7 Body
Date: 2022-12-20
Electronics: DAE4 Sn1527
Medium: Head 2550MHz
Medium parameters used (interpolated): f = 2535 MHz; σ = 1.933 S/m; ε_r = 38.197; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_FDD (0) Frequency: 2535 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

Rear Side Middle 1RB99/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.12 W/kg

Rear Side Middle 1RB99/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.840 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 0.680 W/kg; SAR(10 g) = 0.316 W/kg
Maximum value of SAR (measured) = 1.12 W/kg

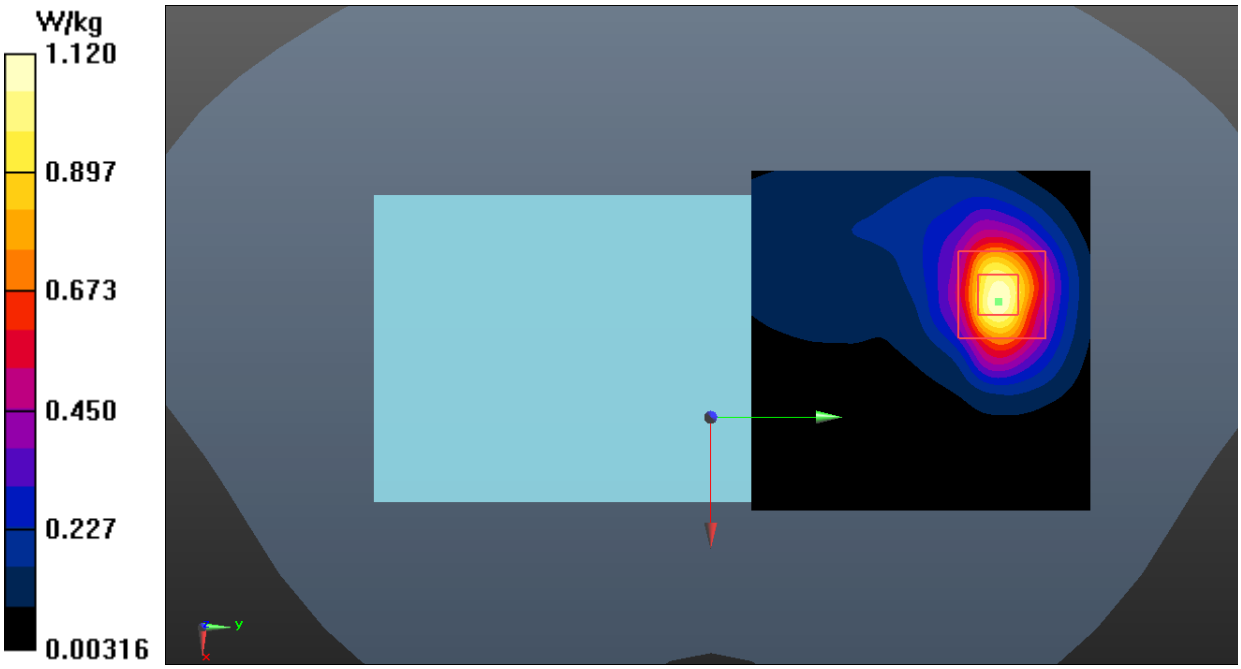


Fig. 8 LTE Band 7 Body

LTE Band 17 Body
Date: 2022-12-14
Electronics: DAE4 Sn1527
Medium: Head 750MHz
Medium parameters used (interpolated): f = 711 MHz; σ = 0.891 S/m; ε_r = 41.55; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_FDD (0) Frequency: 711 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Rear Side High 1RB24/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.188 W/kg

Rear Side High 1RB24/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.30 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.217 W/kg
SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.107 W/kg
Maximum value of SAR (measured) = 0.189 W/kg

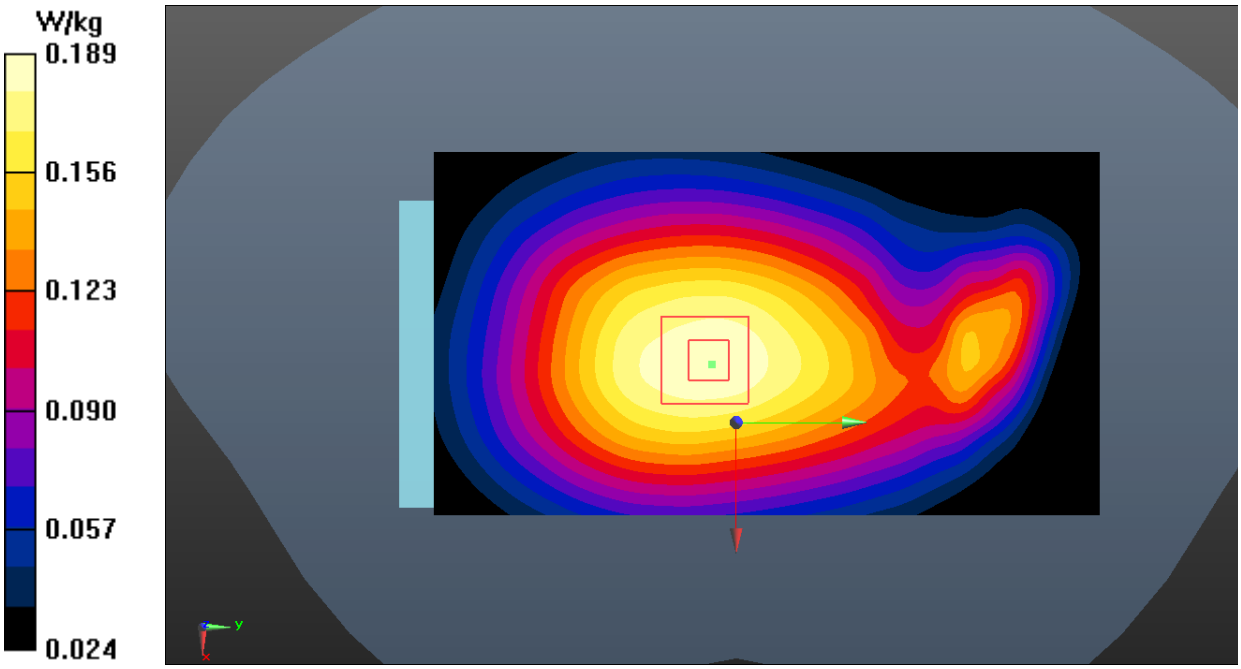


Fig. 9 LTE Band 17 Body

LTE Band 41 Body
Date: 2022-12-20
Electronics: DAE4 Sn1527
Medium: Head 2550MHz
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.002 S/m; ε_r = 38.005; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_TDD (0) Frequency: 2593 MHz Duty Cycle: 1:1.58
Probe: EX3DV4 - SN7621 ConvF (7.93, 7.93, 7.93)

Rear Side Middle 1RB0/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.705 W/kg

Rear Side Middle 1RB0/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.628 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 0.871 W/kg
SAR(1 g) = 0.413 W/kg; SAR(10 g) = 0.187 W/kg
Maximum value of SAR (measured) = 0.696 W/kg

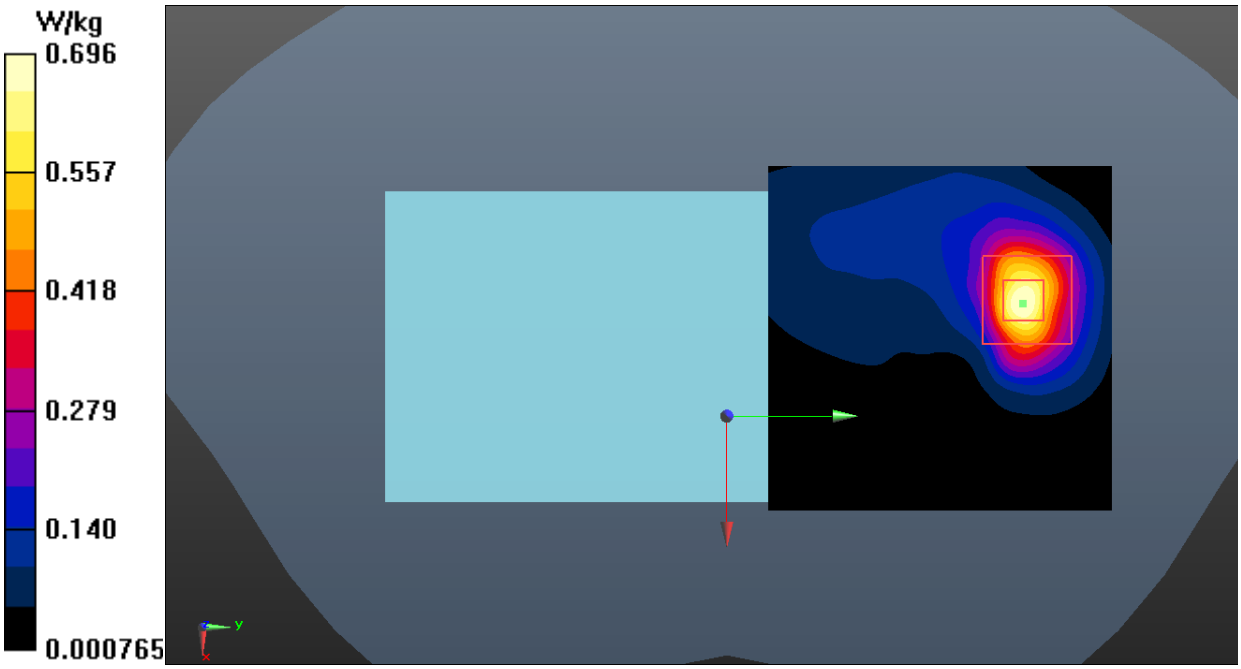


Fig. 10 LTE Band 41 Body

LTE Band 71 Body
Date: 2022-12-14
Electronics: DAE4 Sn1527
Medium: Head 750MHz
Medium parameters used (interpolated): f = 673 MHz; σ = 0.867 S/m; ε_r = 42.006; ρ = 1000 kg/m^3
Communication System: UID 0, LTE_FDD (0) Frequency: 673 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Right Side Low 1RB0/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.138 W/kg

Right Side Low 1RB0/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.61 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 0.159 W/kg
SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.069 W/kg
Maximum value of SAR (measured) = 0.136 W/kg

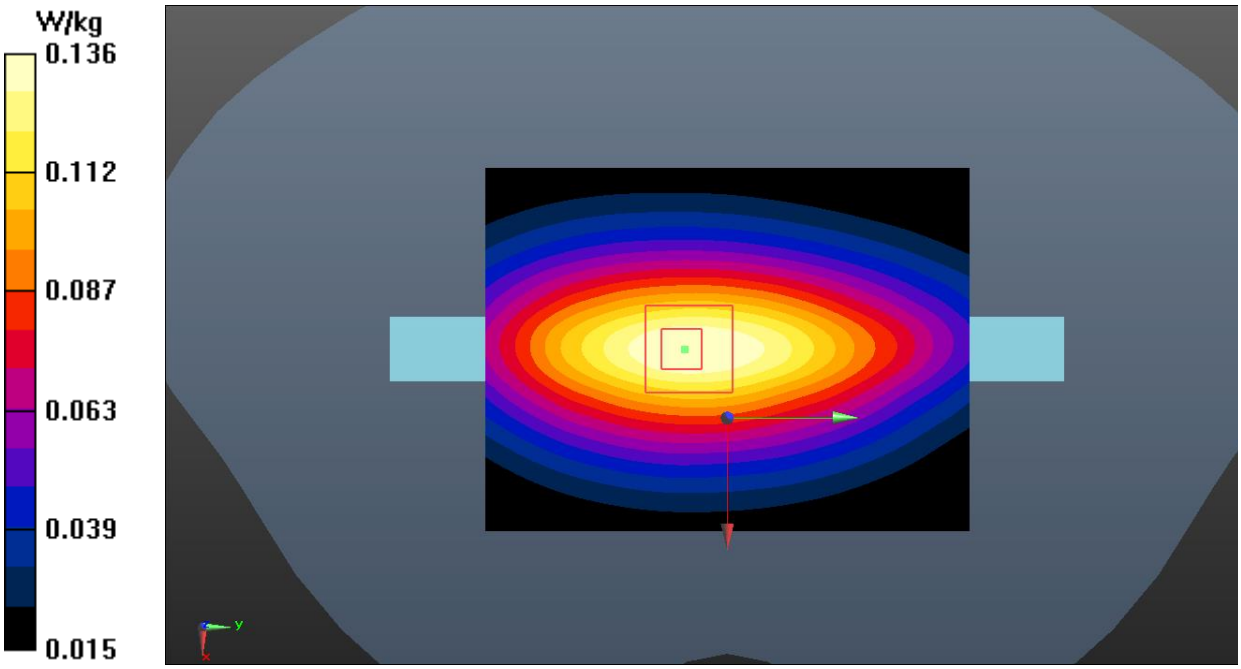


Fig. 11 LTE Band 71 Body

NR n2 Body
Date: 2022-12-18
Electronics: DAE4 Sn1527
Medium: Head 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.404 S/m; ε_r = 39.57; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 1880 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

Rear Side Middle 50@25/Area Scan (61x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.649 W/kg

Rear Side Middle 50@25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 7.244 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.774 W/kg
SAR(1 g) = 0.433 W/kg; SAR(10 g) = 0.236 W/kg
Maximum value of SAR (measured) = 0.643 W/kg

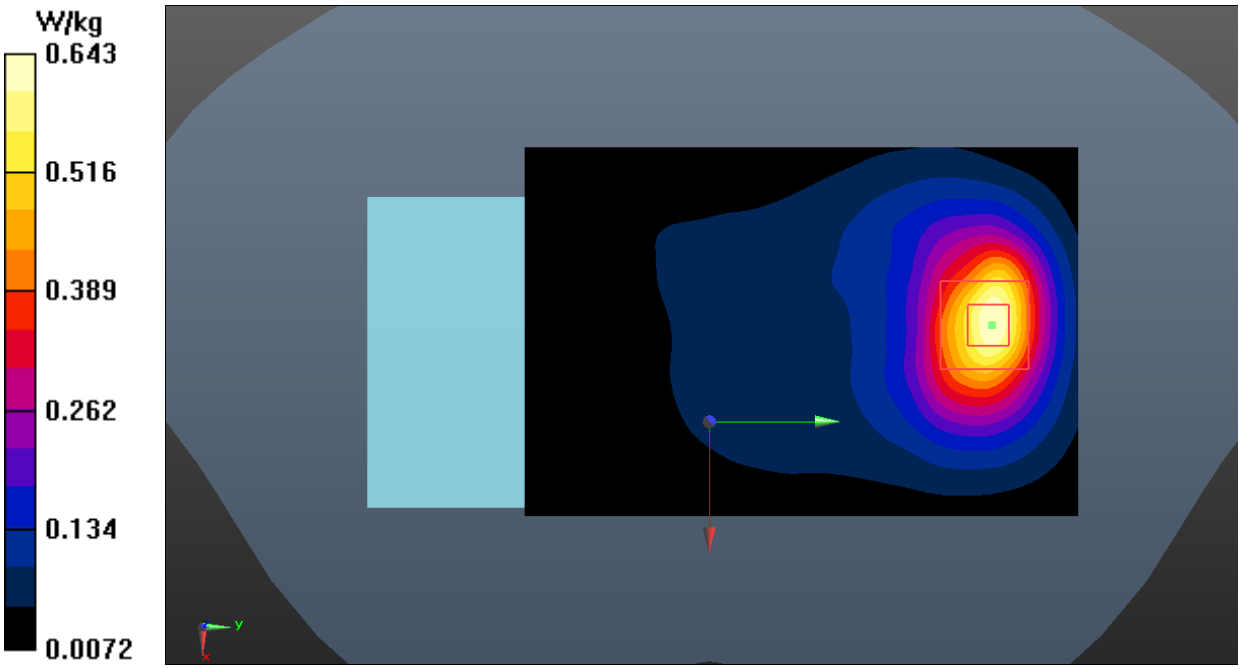


Fig. 12 NR n2 Body

NR n5 Body
Date: 2022-12-13
Electronics: DAE4 Sn1527
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.929 S/m; ε_r = 40.718; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 836.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Rear Side Middle 50@25/Area Scan (71x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.273 W/kg

Rear Side Middle 50@25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 14.01 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.413 W/kg
SAR(1 g) = 0.196 W/kg; SAR(10 g) = 0.103 W/kg
Maximum value of SAR (measured) = 0.320 W/kg

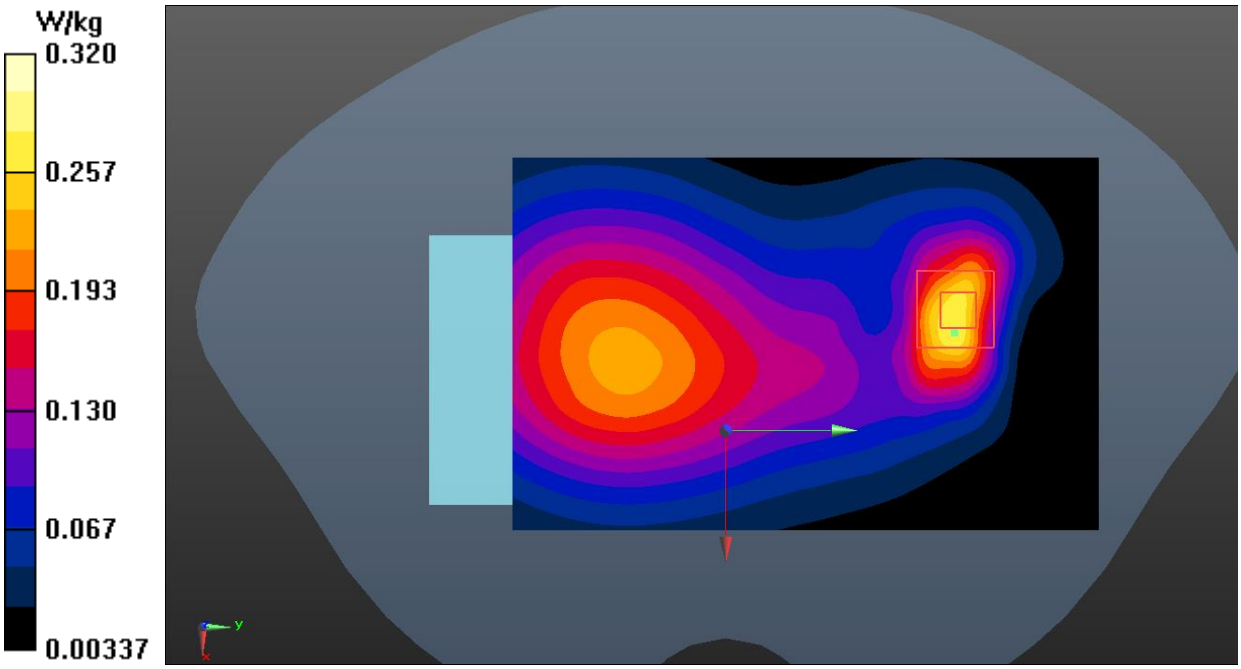


Fig. 13 NR n5 Body

NR n41 Body
Date: 2022-12-20
Electronics: DAE4 Sn1527
Medium: Head 2550MHz
Medium parameters used: f = 2546 MHz; σ = 1.946 S/m; ε_r = 38.16; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 2546 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

Rear Side Low 135@67/Area Scan (81x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.91 W/kg

Rear Side Low 135@67/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.636 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.91 W/kg
SAR(1 g) = 0.915 W/kg; SAR(10 g) = 0.428 W/kg
Maximum value of SAR (measured) = 1.54 W/kg

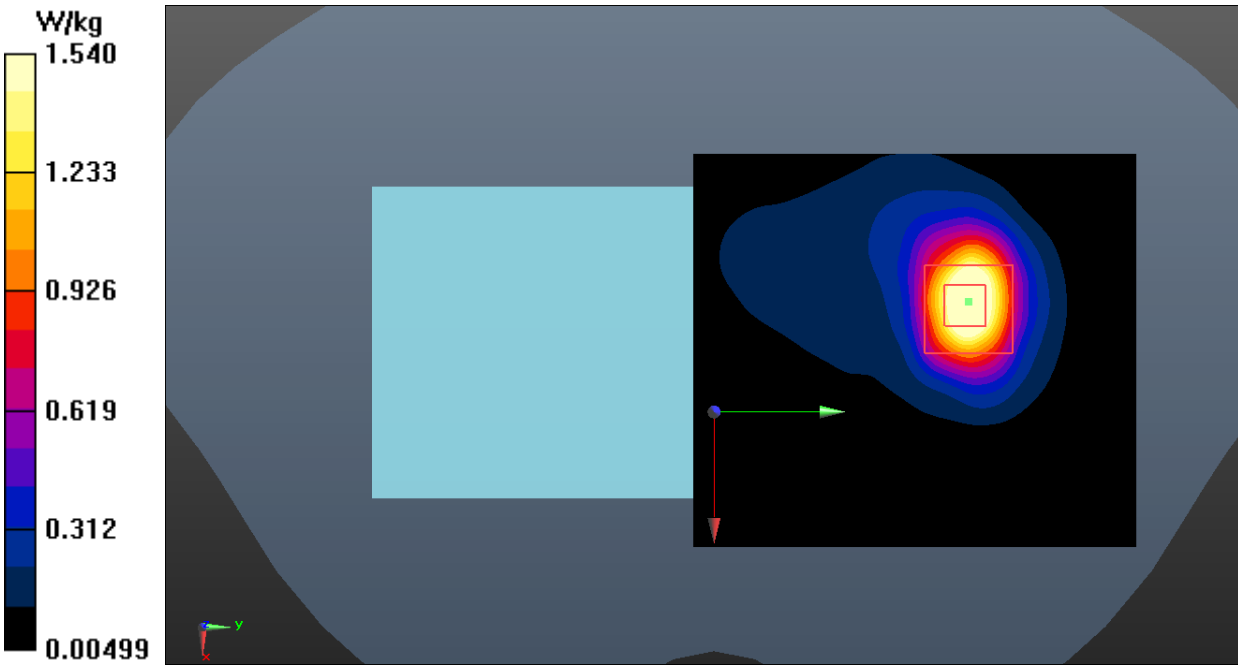


Fig. 14 NR n41 Body

NR n71 Body
Date: 2022-12-14
Electronics: DAE4 Sn1527
Medium: Head 750MHz
Medium parameters used (interpolated): f = 680.5 MHz; σ = 0.872 S/m; ε_r = 41.916; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 680.5 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

Rear Side Middle 50@25/Area Scan (71x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.144 W/kg

Rear Side Middle 50@25/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.22 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.177 W/kg
SAR(1 g) = 0.083 W/kg; SAR(10 g) = 0.048 W/kg
Maximum value of SAR (measured) = 0.134 W/kg

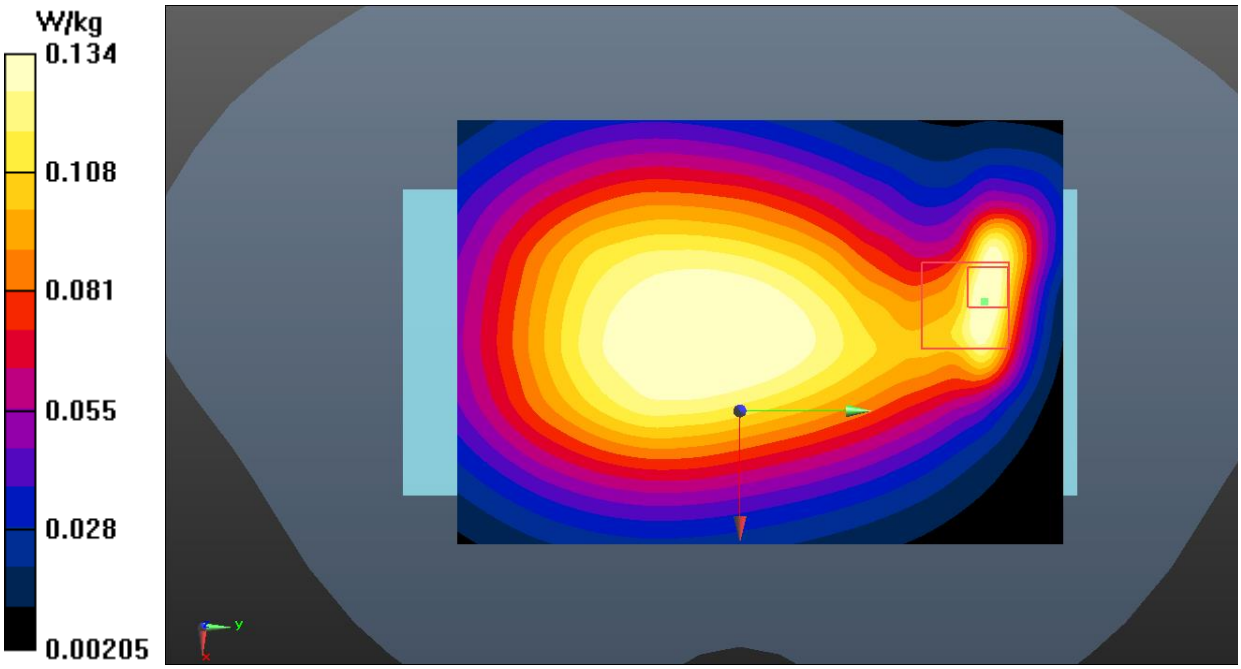


Fig. 15 NR n71 Body

NR n77 Part 27Q (PC2) Body
Date: 2022-12-29
Electronics: DAE4 Sn1527
Medium: Head 3500MHz
Medium parameters used: f = 3500 MHz; σ = 2.857 S/m; ε_r = 38.671; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 3500 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (7.56, 7.56, 7.56)

Left Side Middle 135@67/Area Scan (71x111x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.957 W/kg

Left Side Middle 135@67/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.314 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.479 W/kg; SAR(10 g) = 0.209 W/kg
Maximum value of SAR (measured) = 0.851 W/kg

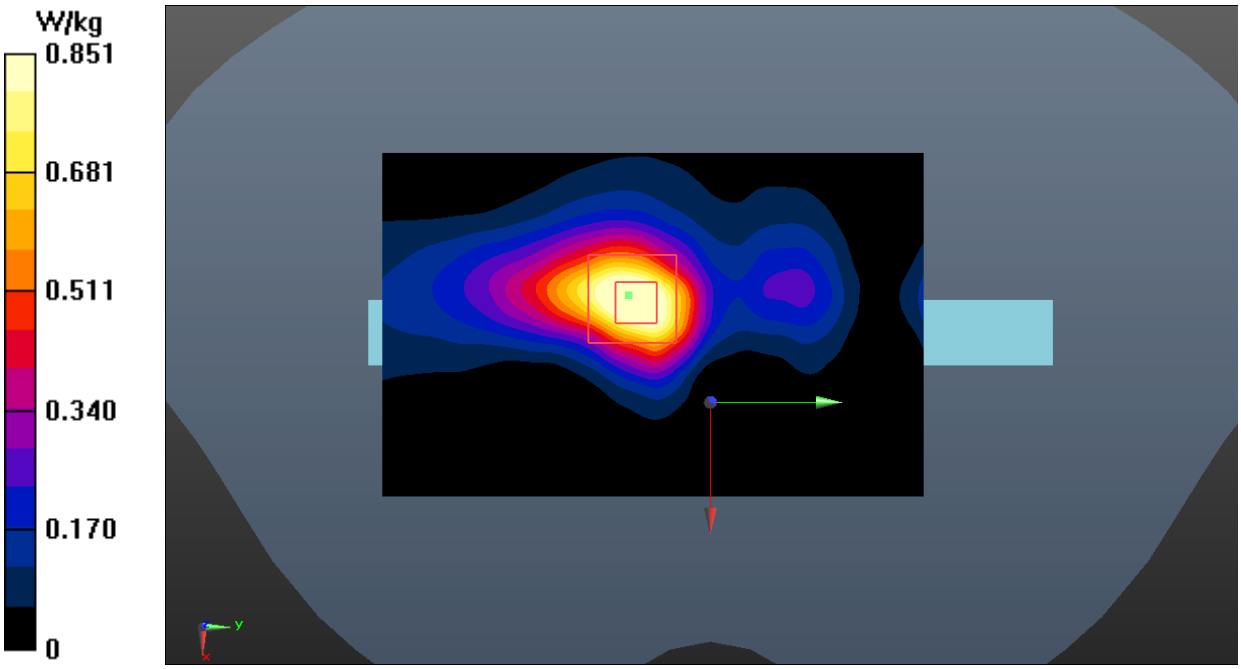


Fig. 16 NR n77 Part 27Q Body

NR n77 Part 27O (PC2) Body
Date: 2022-12-29
Electronics: DAE4 Sn1527
Medium: Head 3900MHz
Medium parameters used: f = 3930 MHz; σ = 3.407 S/m; ε_r = 36.638; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 3930 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (7.26, 7.26, 7.26)

Bottom Side High 135RB67/Area Scan (51x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.63 W/kg

Bottom Side High 135RB67/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.33 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 3.07 W/kg
SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.456 W/kg
Maximum value of SAR (measured) = 2.00 W/kg

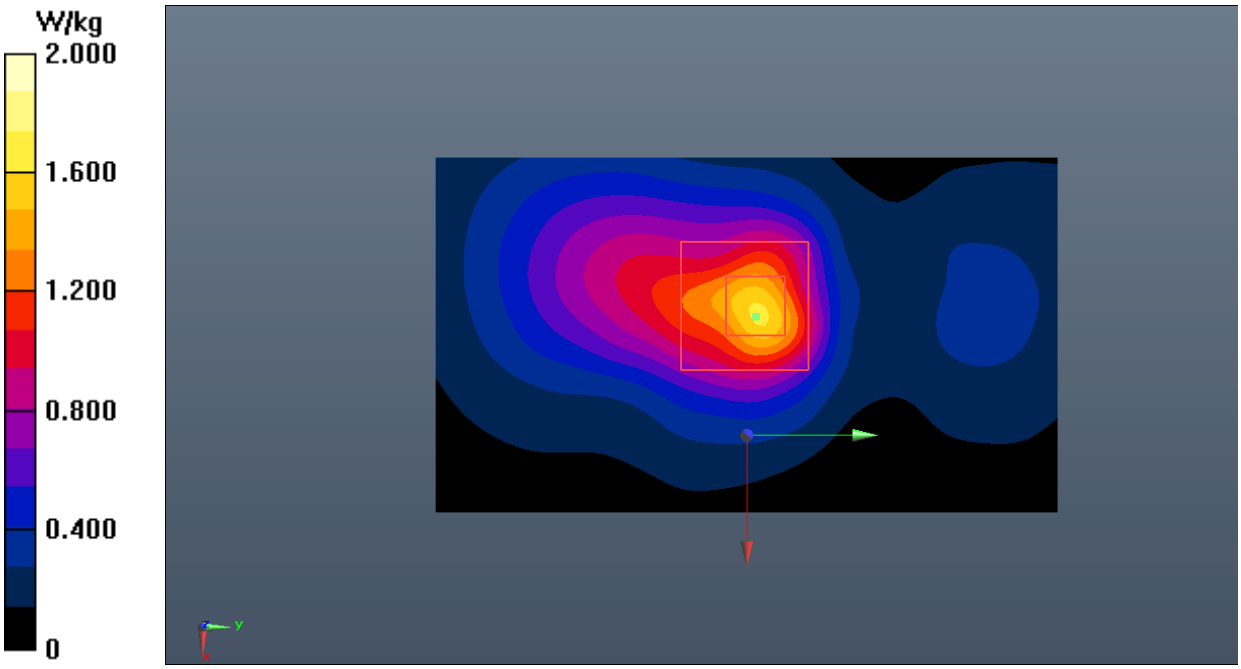


Fig. 17 NR n77 Part 27O Body

Bluetooth Body

Date: 2022-12-24

Electronics: DAE4 Sn1527

Medium: Head 2450MHz

Medium parameters used (interpolated): f = 2441 MHz; σ = 1.834 S/m; ε_r = 38.441; ρ = 1000 kg/m^3

Communication System: UID 0, BT (0) Frequency: 2441 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

Rear Side Ch.39/Area Scan (91x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.0339 W/kg

Rear Side Ch.39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.083 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.0420 W/kg

SAR(1 g) = 0.019 W/kg; SAR(10 g) = 0.00839 W/kg

Maximum value of SAR (measured) = 0.0329 W/kg

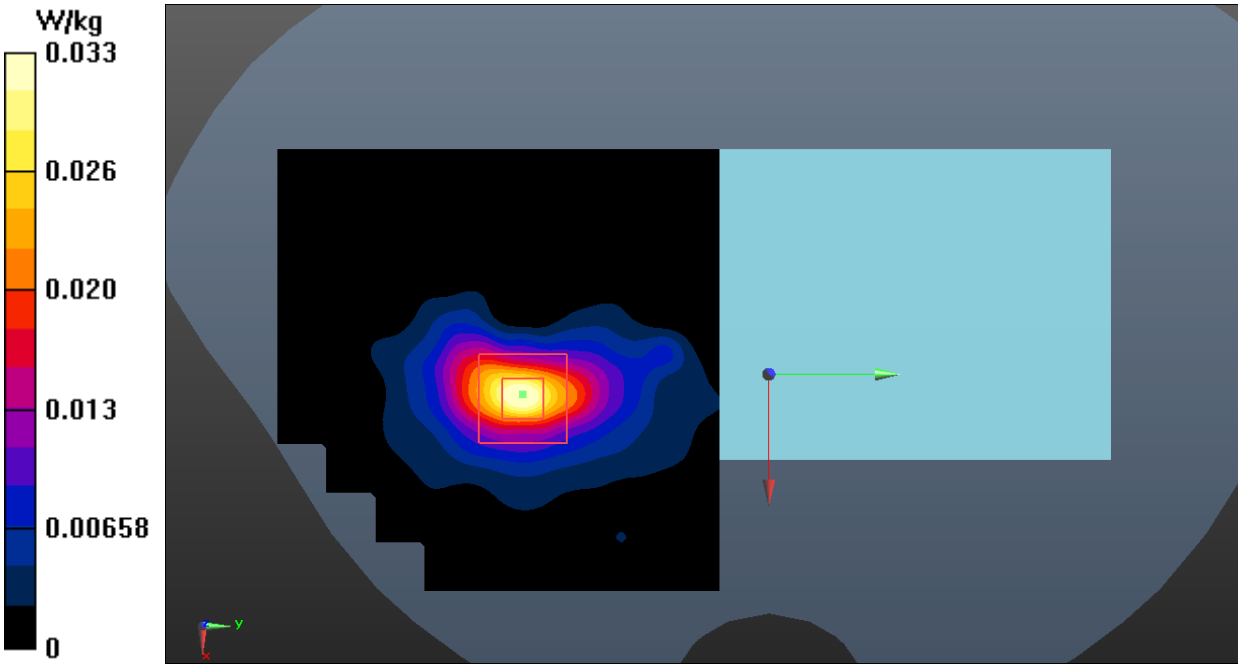


Fig. 18 Bluetooth Body

WLAN 2.4GHz Body
Date: 2022-12-24
Electronics: DAE4 Sn1527
Medium: Head 2450MHz
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.83 S/m; ε_r = 38.454; ρ = 1000 kg/m^3
Communication System: UID 0, WLAN (0) Frequency: 2437 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

Rear Side Ch.6/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.272 W/kg

Rear Side Ch.6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.744 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.372 W/kg
SAR(1 g) = 0.178 W/kg; SAR(10 g) = 0.081 W/kg
Maximum value of SAR (measured) = 0.297 W/kg

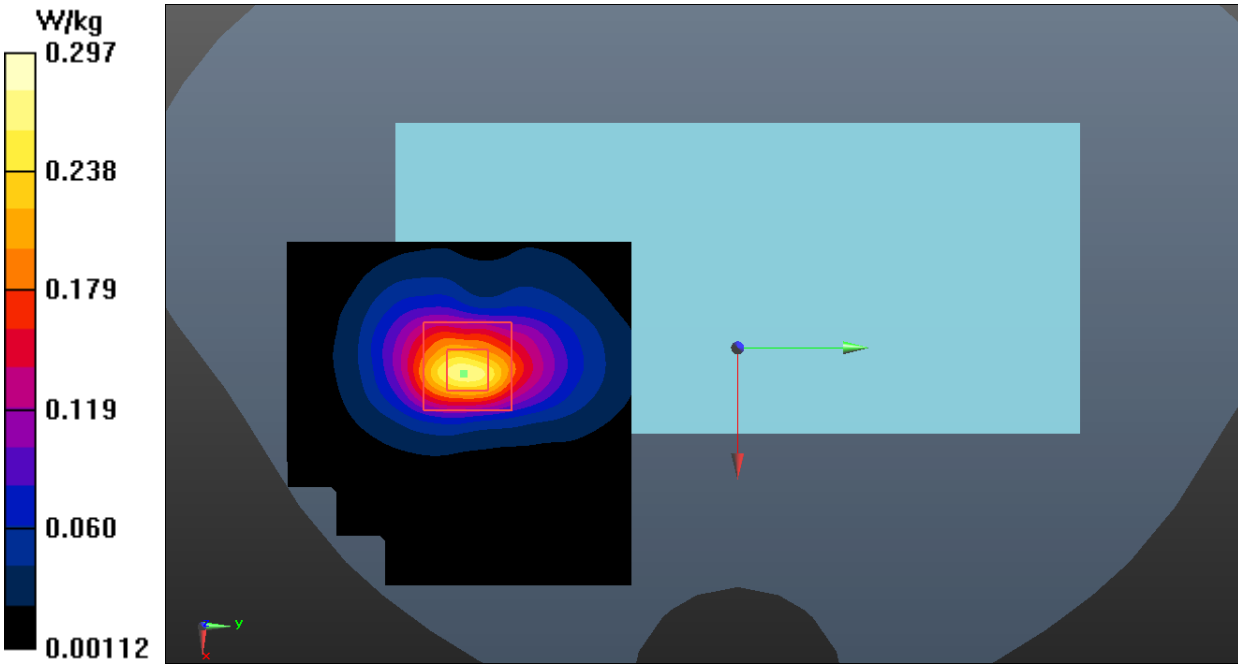


Fig. 19 WLAN 2.4GHz Body

WLAN 5GHz Body
Date: 2022-12-26
Electronics: DAE4 Sn1527
Medium: Head 5250MHz
Medium parameters used: f = 5200 MHz; σ = 4.7 S/m; ε_r = 35.488; ρ = 1000 kg/m^3
Communication System: UID 0, WLAN 5G (0) Frequency: 5200 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (5.98, 5.98, 5.98)

Rear Side Ch.40/Area Scan (101x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.309 W/kg

Rear Side Ch.40/Zoom Scan (8x8x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0.7710 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.544 W/kg
SAR(1 g) = 0.136 W/kg; SAR(10 g) = 0.052 W/kg
Maximum value of SAR (measured) = 0.319 W/kg

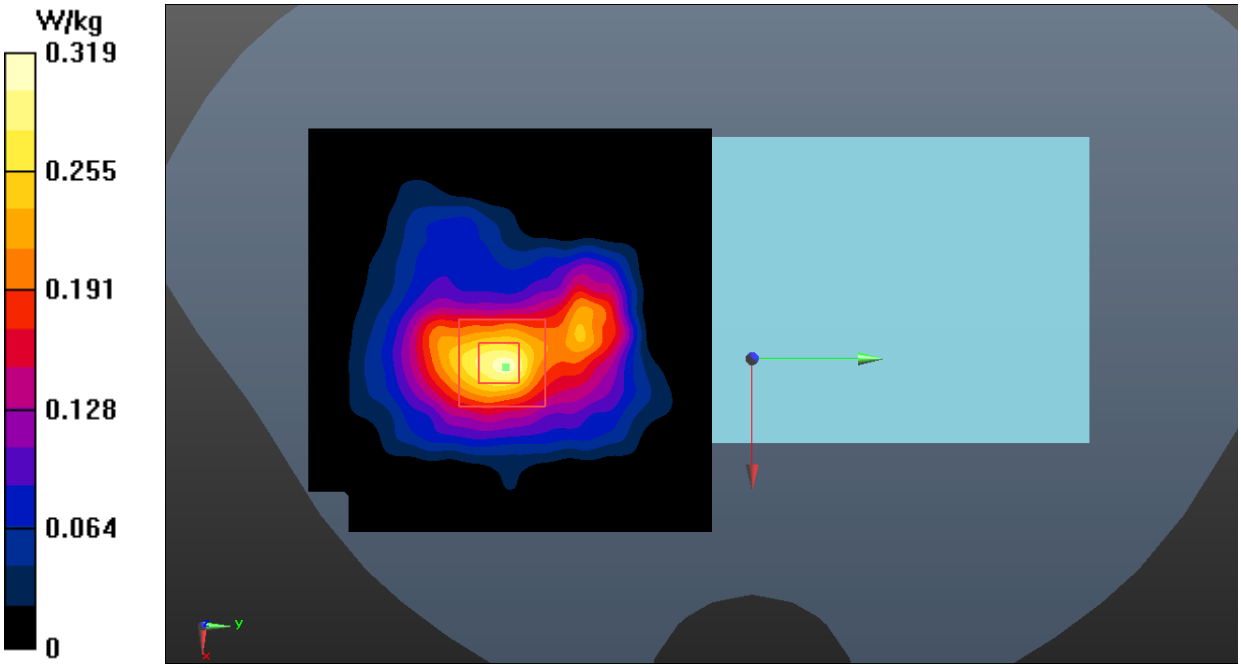


Fig. 20 WLAN 5GHz Body

NR n77 Part 27O (PC2) Extremity
Date: 2022-12-29
Electronics: DAE4 Sn1527
Medium: Head 3900MHz
Medium parameters used: f = 3930 MHz; σ = 3.407 S/m; ε_r = 36.638; ρ = 1000 kg/m^3
Communication System: UID 0, NR (0) Frequency: 3930 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (7.26, 7.26, 7.26)

Bottom Side High 135RB67/Area Scan (51x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 9.15 W/kg

Bottom Side High 135RB67/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.796 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 16.2 W/kg
SAR(1 g) = 4.85 W/kg; SAR(10 g) = 1.51 W/kg
Maximum value of SAR (measured) = 10.0 W/kg

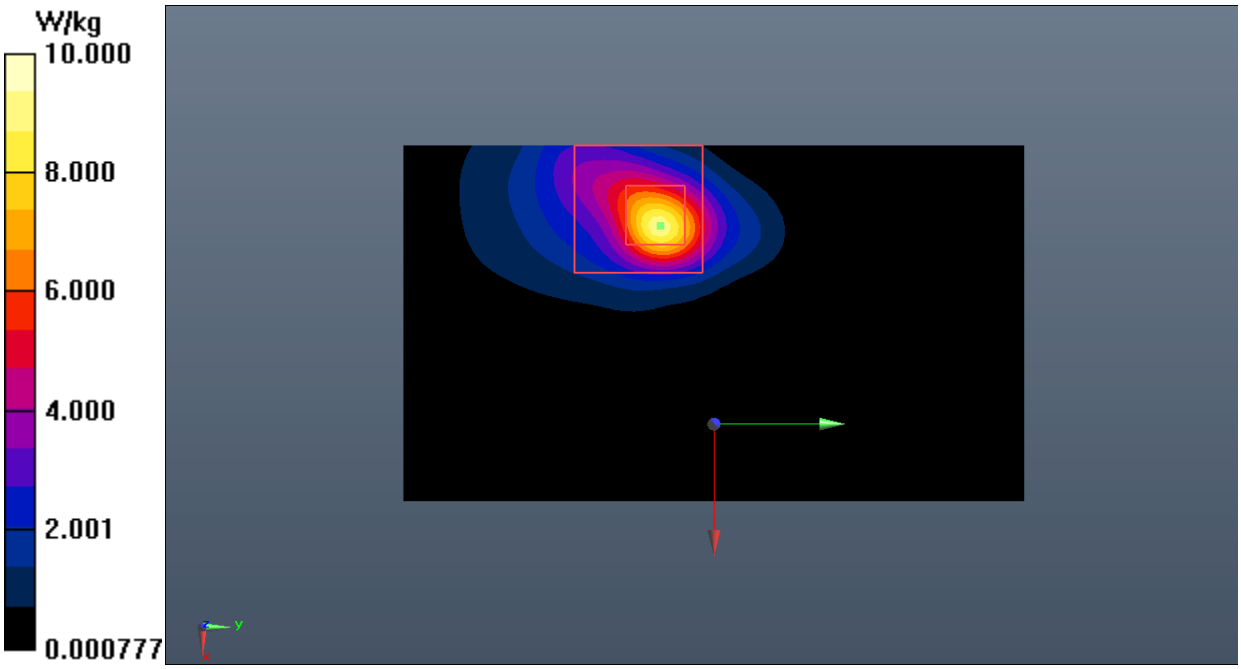


Fig. 21 NR n77 Part 27O Extremity

WLAN 5GHz Extremity

Date: 2022-12-26

Electronics: DAE4 Sn1527

Medium: Head 5250MHz

Medium parameters used: f = 5280 MHz; σ = 4.808 S/m; ε_r = 35.272; ρ = 1000 kg/m^3

Communication System: UID 0, WLAN 5G (0) Frequency: 5280 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (5.98, 5.98, 5.98)

Rear Side Ch.56/Area Scan (111x111x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 3.17 W/kg

Rear Side Ch.56/Zoom Scan (8x8x21)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 0.2310 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 6.01 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.216 W/kg

Maximum value of SAR (measured) = 3.18 W/kg

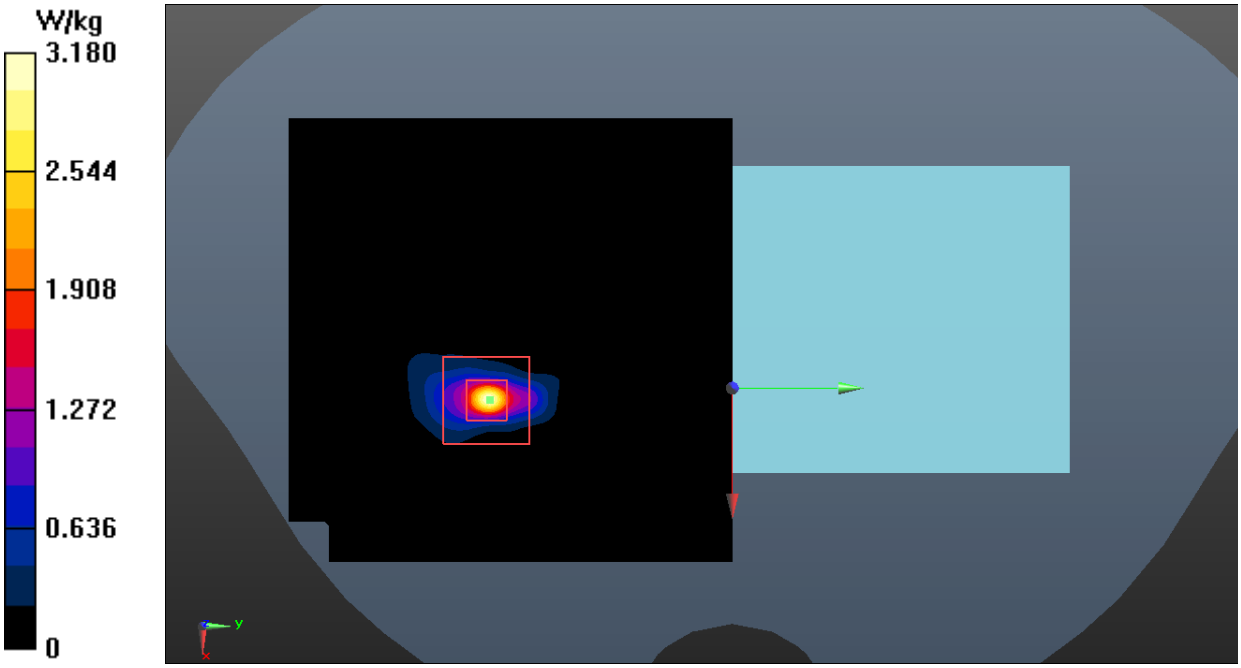


Fig. 22 WLAN 5GHz Extremity

ANNEX B: SystemVerification Results

750MHz

Date: 2022-12-14

Electronics: DAE4 Sn1527

Medium: Head 750MHz

Medium parameters used: f = 750 MHz; σ = 0.916 S/m; ε_r = 41.082; ρ = 1000 kg/m^3

Communication System: CW_TMC Frequency: 750 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

System Validation/Area Scan (81x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 61.082 V/m; Power Drift = 0.09 dB

SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.42 W/kg

Maximum value of SAR (interpolated) = 2.82 W/kg

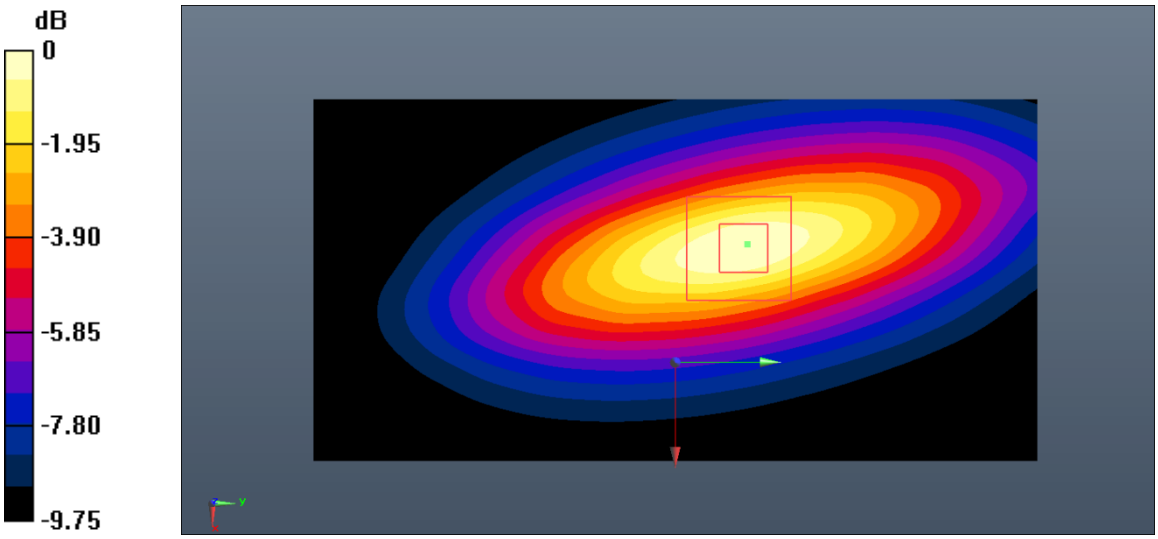
System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 61.082 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 3.25 W/kg

SAR(1 g) = 2.20 W/kg; SAR(10 g) = 1.44 W/kg

Maximum value of SAR (measured) = 2.86 W/kg



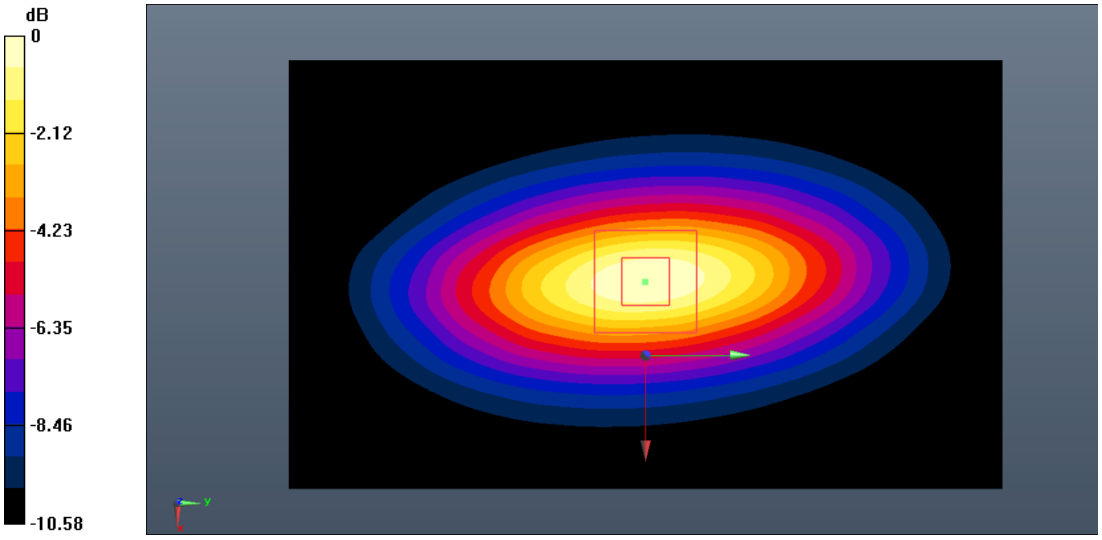
0 dB = 2.86 W/kg = 4.56 dB W/kg

Fig.B.1. Validation 750MHz 250mW

835MHz
Date: 2022-12-13
Electronics: DAE4 Sn1527
Medium: Head 835MHz
Medium parameters used: f = 835 MHz; σ = 0.928 S/m; εr = 40.736; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (11.12, 11.12, 11.12)

System Validation/Area Scan (91x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 63.745 V/m; Power Drift = 0.06 dB
SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.60 W/kg
Maximum value of SAR (interpolated) = 3.66 W/kg

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 63.745 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 4.39 W/kg
SAR(1 g) = 2.52 W/kg; SAR(10 g) = 1.63 W/kg
Maximum value of SAR (measured) = 3.69 W/kg



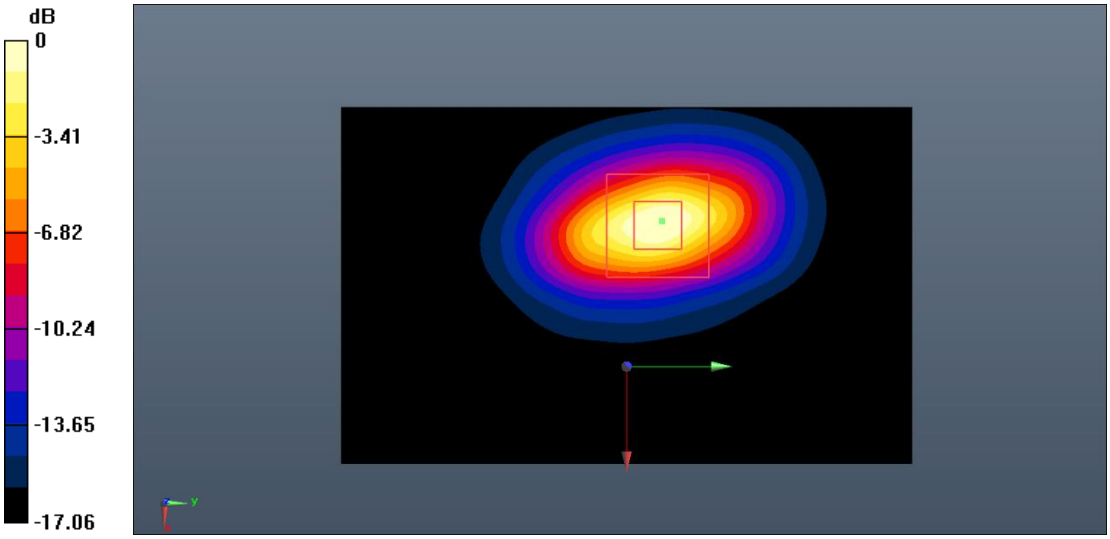
0 dB = 3.69 W/kg = 5.67 dB W/kg

Fig.B.2. Validation 835MHz 250mW

1750MHz
Date: 2022-12-17
Electronics: DAE4 Sn1527
Medium: Head 1750MHz
Medium parameters used: f = 1750 MHz; σ = 1.36 S/m; ε_r = 40.559; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (9.22, 9.22, 9.22)

System Validation/Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 79.364 V/m; Power Drift = -0.08 dB
SAR(1 g) = 8.94 W/kg; SAR(10 g) = 4.86 W/kg
Maximum value of SAR (interpolated) = 11.0 W/kg

System Validation/Zoom Scan (7x7x7)/Cube0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 79.364 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 21.3 W/kg
SAR(1 g) = 8.77 W/kg; SAR(10 g) = 4.79 W/kg
Maximum value of SAR (measured) = 10.8 W/kg



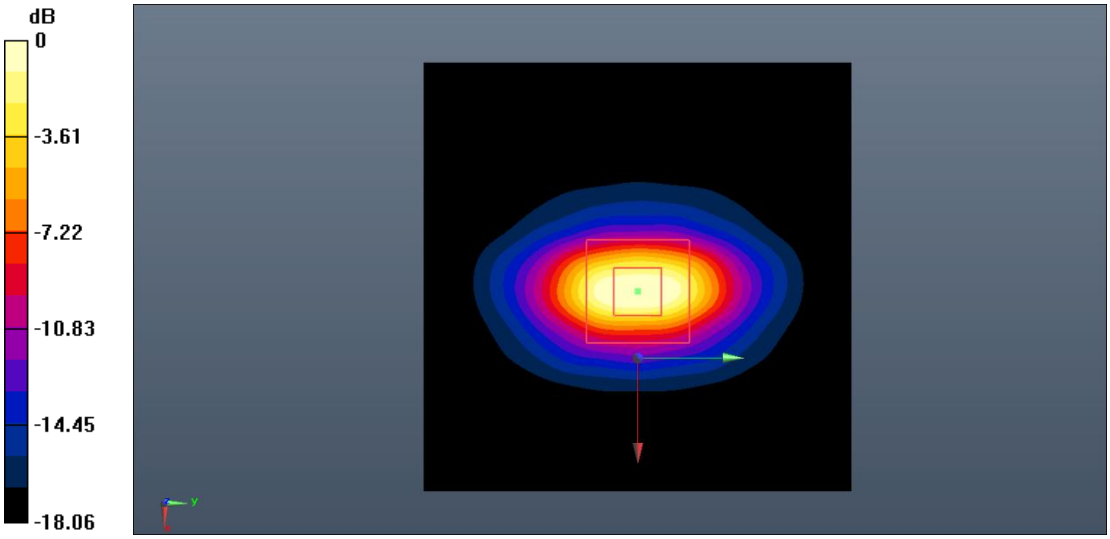
0 dB = 10.8 W/kg = 10.33 dB W/kg

Fig.B.3. Validation 1750MHz 250mW

1900MHz
Date: 2022-12-18
Electronics: DAE4 Sn1527
Medium: Head 1900MHz
Medium parameters used: f = 1900 MHz; σ = 1.422 S/m; ε_r = 39.492; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.90, 8.90, 8.90)

System Validation/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 81.795 V/m; Power Drift = 0.13 dB
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.15 W/kg
Maximum value of SAR (interpolated) = 12.1 W/kg

System Validation/Zoom Scan (7x7x7)/Cube0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 81.795 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 25.8 W/kg
SAR(1 g) = 10.4 W/kg; SAR(10 g) = 5.24 W/kg
Maximum value of SAR (measured) = 12.3 W/kg



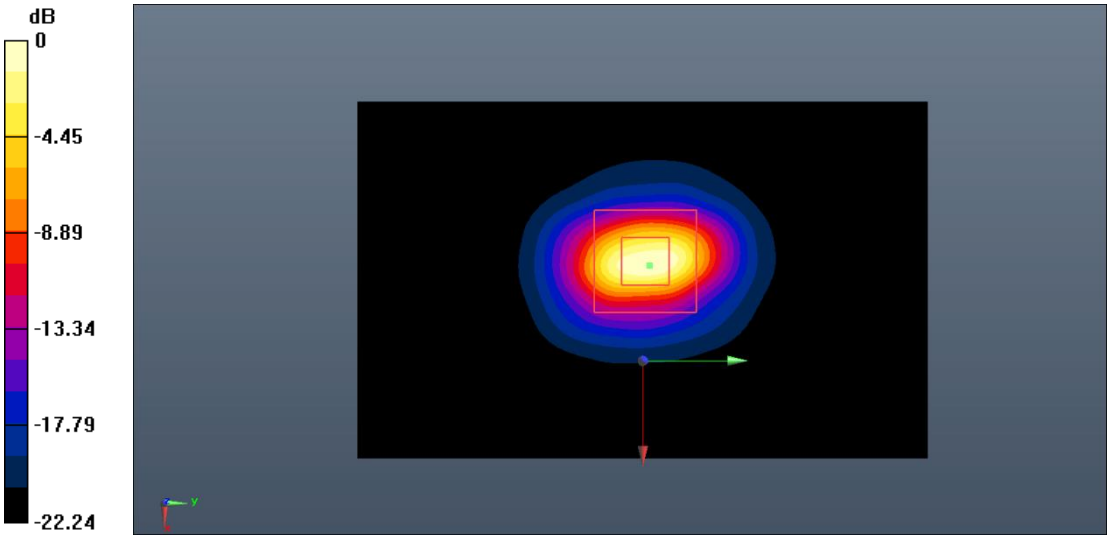
0 dB = 12.3 W/kg = 10.90 dB W/kg

Fig.B.4. Validation 1900MHz 250mW

2450MHz
Date: 2022-12-24
Electronics: DAE4 Sn1527
Medium: Head 2450MHz
Medium parameters used: f = 2450 MHz; σ = 1.845 S/m; ε_r = 38.411; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 2450 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

System Validation/Area Scan (81x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 92.146 V/m; Power Drift = 0.05 dB
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.10 W/kg
Maximum value of SAR (interpolated) = 15.5 W/kg

System Validation/Zoom Scan (7x7x7)/Cube0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.146 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 36.5 W/kg
SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.23 W/kg
Maximum value of SAR (measured) = 15.8 W/kg



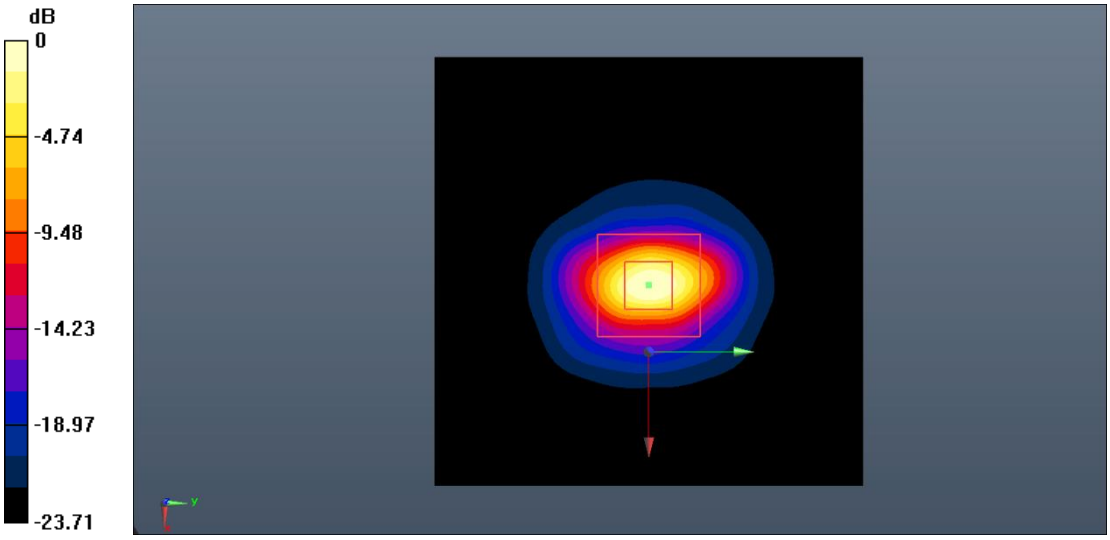
0 dB = 15.8 W/kg = 11.99 dB W/kg

Fig.B.5. Validation 2450MHz 250mW

2550MHz
Date: 2022-12-20
Electronics: DAE4 Sn1527
Medium: Head 2550MHz
Medium parameters used: f = 2550 MHz; σ = 1.951 S/m; ε_r = 38.147; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 2550 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (8.17, 8.17, 8.17)

System Validation/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 94.887 V/m; Power Drift = 0.07 dB
SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.29 W/kg
Maximum value of SAR (interpolated) = 16.2 W/kg

System Validation/Zoom Scan (7x7x7)/Cube0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.887 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.41 W/kg
Maximum value of SAR (measured) = 16.4 W/kg



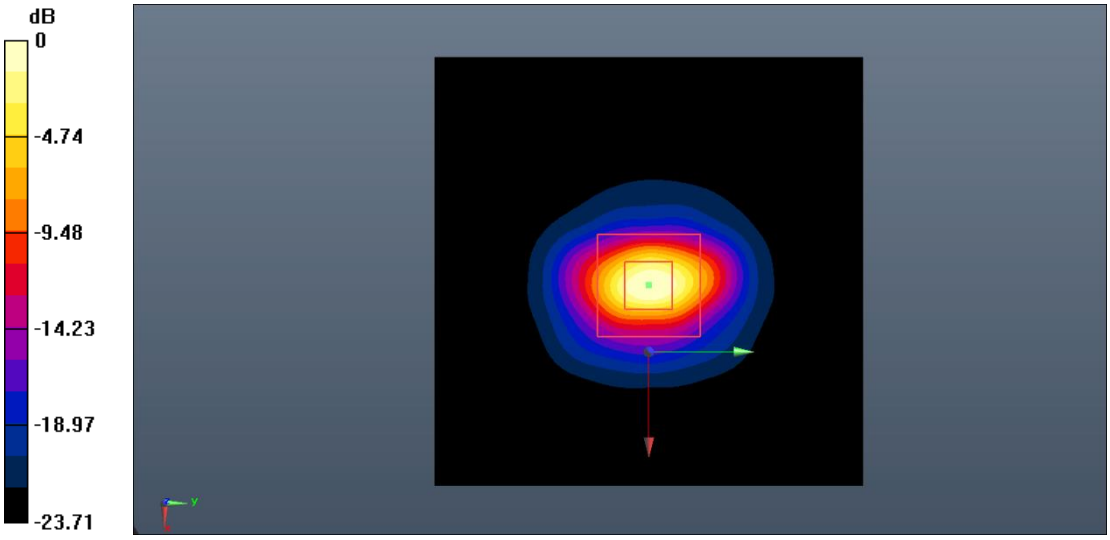
0 dB = 16.4 W/kg = 12.15 dB W/kg

Fig.B.6. Validation 2550MHz 250mW

3500MHz
Date: 2022-12-29
Electronics: DAE4 Sn1527
Medium: Head 3500MHz
Medium parameters used: f = 3500 MHz; σ = 2.857 S/m; ε_r = 38.671; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 3500 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (7.56, 7.56, 7.56)

System Validation/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 69.556 V/m; Power Drift = -0.12 dB
SAR(1 g) = 6.59 W/kg; SAR(10 g) = 2.51 W/kg
Maximum value of SAR (interpolated) = 7.63 W/kg

System Validation/Zoom Scan (7x7x7)/Cube0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 69.556 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 18.3 W/kg
SAR(1 g) = 6.42 W/kg; SAR(10 g) = 2.46 W/kg
Maximum value of SAR (measured) = 7.59 W/kg



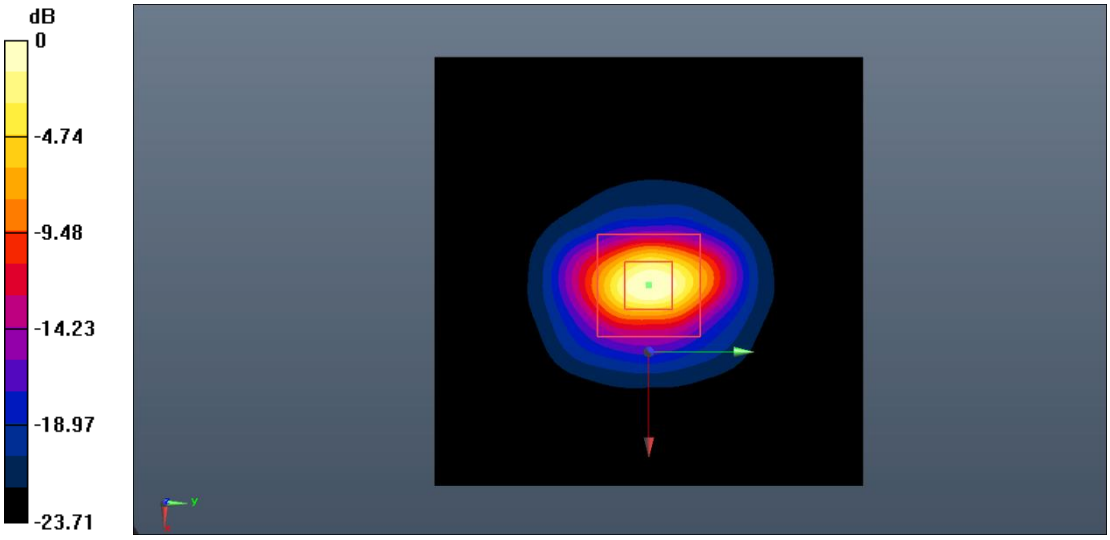
0 dB = 7.59 W/kg = 8.80 dB W/kg

Fig.B.7. Validation 3500MHz 100mW

3900MHz
Date: 2022-12-29
Electronics: DAE4 Sn1527
Medium: Head 3900MHz
Medium parameters used: f = 3900 MHz; σ = 3.372 S/m; ε_r = 36.737; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 3900 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (7.26, 7.26, 7.26)

System Validation/Area Scan (61x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 74.783 V/m; Power Drift = 0.11 dB
SAR(1 g) = 7.22 W/kg; SAR(10 g) = 2.48 W/kg
Maximum value of SAR (interpolated) = 8.32 W/kg

System Validation/Zoom Scan (7x7x7)/Cube0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 74.783 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 20.6 W/kg
SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.53 W/kg
Maximum value of SAR (measured) = 8.39 W/kg



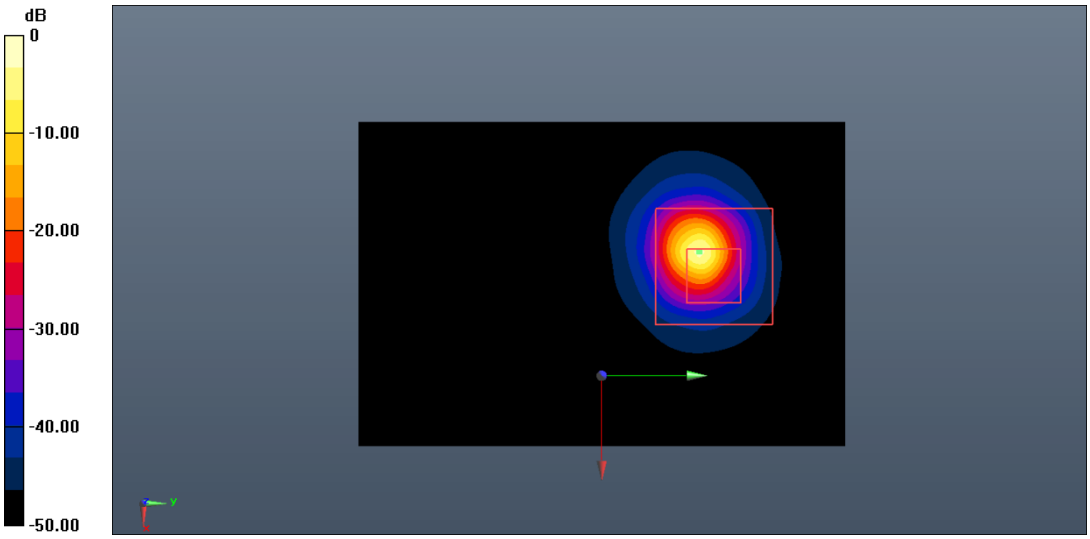
0 dB = 8.39 W/kg = 9.24 dB W/kg

Fig.B.8. Validation 3900MHz 100mW

5250MHz
Date: 2022-12-26
Electronics: DAE4 Sn1527
Medium: Head 5250MHz
Medium parameters used: f = 5250 MHz; σ = 4.767 S/m; ε_r = 35.353; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 5250 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (5.98, 5.98, 5.98)

System Validation/Area Scan (61x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 68.155 V/m; Power Drift = 0.08 dB
SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (interpolated) = 10.1 W/kg

System Validation/Zoom Scan (8x8x21)/Cube0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 68.155 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 8.31 W/kg; SAR(10 g) = 2.33 W/kg
Maximum value of SAR (measured) = 10.3 W/kg



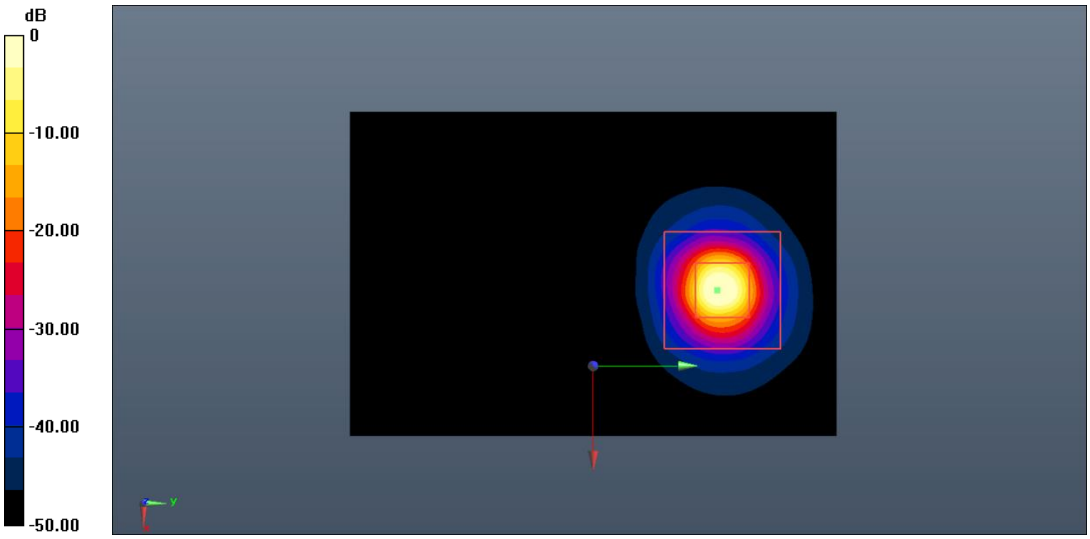
0 dB = 10.3 W/kg = 10.13 dB W/kg

Fig.B.9. Validation 5250MHz 100mW

5600MHz
Date: 2022-12-26
Electronics: DAE4 Sn1527
Medium: Head 5600MHz
Medium parameters used: f = 5600 MHz; σ = 5.019 S/m; ε_r = 36.225; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 5600 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (5.47, 5.47, 5.47)

System Validation/Area Scan (61x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 66.742 V/m; Power Drift = -0.15 dB
SAR(1 g) = 8.04 W/kg; SAR(10 g) = 2.32 W/kg
Maximum value of SAR (interpolated) = 10.0 W/kg

System Validation/Zoom Scan (8x8x21)/Cube0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.742 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 25.9 W/kg
SAR(1 g) = 7.87 W/kg; SAR(10 g) = 2.29 W/kg
Maximum value of SAR (measured) = 9.95 W/kg



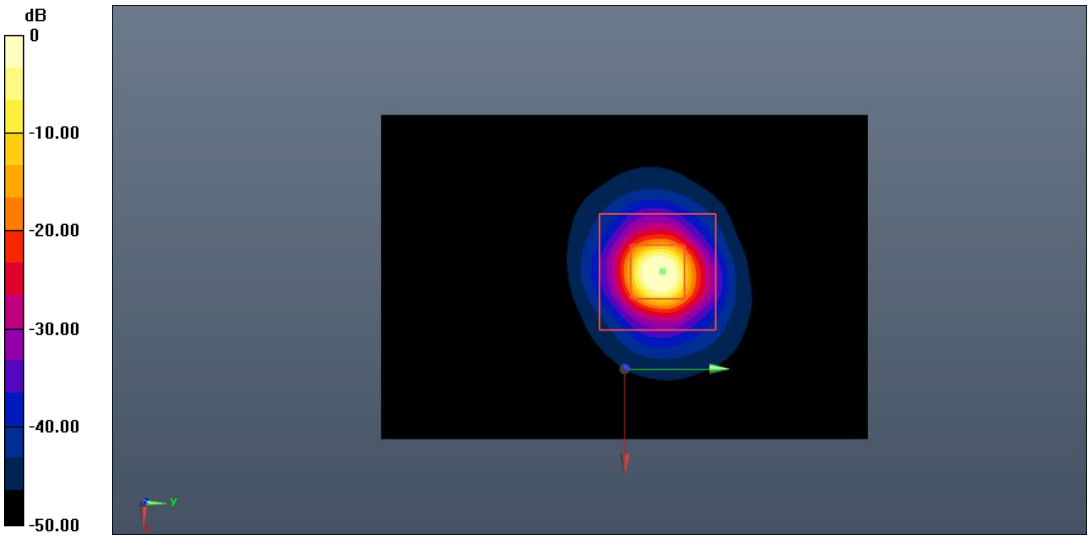
0 dB = 9.95 W/kg = 9.98 dB W/kg

Fig.B.10. Validation 5600MHz 100mW

5750MHz
Date: 2022-12-26
Electronics: DAE4 Sn1527
Medium: Head 5750MHz
Medium parameters used: f = 5750 MHz; σ = 5.125 S/m; ε_r = 36.509; ρ = 1000 kg/m^3
Communication System: CW_TMC Frequency: 5750 MHz Duty Cycle: 1:1
Probe: EX3DV4 - SN7621 ConvF (5.40, 5.40, 5.40)

System Validation/Area Scan (61x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 64.958 V/m; Power Drift = -0.06 dB
SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.20 W/kg
Maximum value of SAR (interpolated) = 9.84 W/kg

System Validation/Zoom Scan (8x8x21)/Cube0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.958 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 24.7 W/kg
SAR(1 g) = 7.64 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 9.78 W/kg



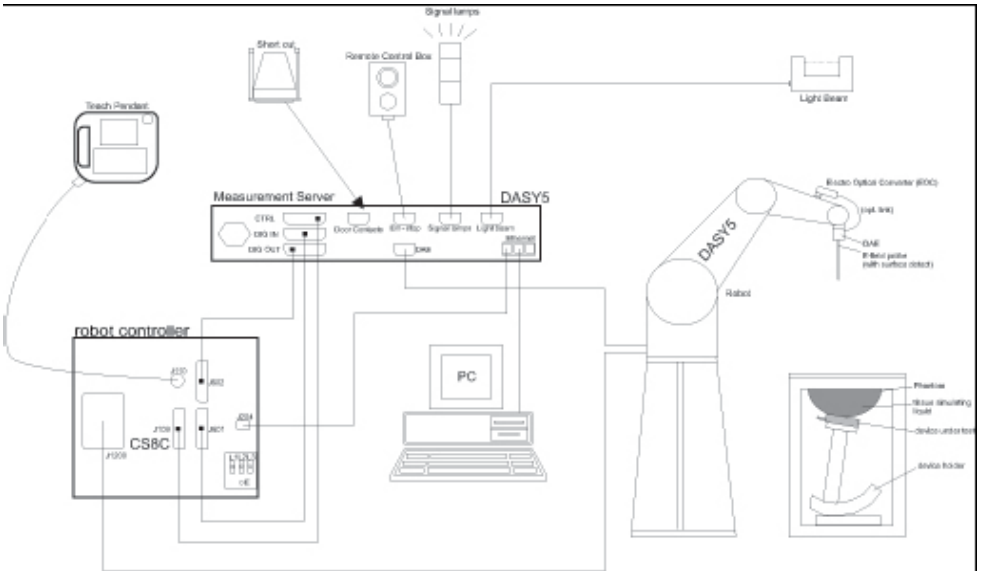
0 dB = 9.78 W/kg = 9.90 dB W/kg

Fig.B.11. Validation 5750MHz 100mW

ANNEX C: SAR Measurement Setup

C.1. Measurement Set-up

DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1 SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (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.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

C.2. DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 software reads the reflection durning a software approach and looks for the maximum using 2ndord curve fitting. The approach is stopped at reaching the maximum.

Probe Specifications:

Model: ES3DV3, EX3DV4
Frequency 10MHz — 6.0GHz(EX3DV4)
Range: 10MHz — 4GHz(ES3DV3)
Calibration: In head and body simulating tissue at Frequencies from 835 up to 5800MHz
Linearity: ± 0.2 dB(30 MHz to 6 GHz) for EX3DV4
± 0.2 dB(30 MHz to 4 GHz) for ES3DV3
Dynamic Range: 10 mW/kg — 100W/kg
Probe Length: 330 mm
Probe Tip Length: 20 mm
Body Diameter: 12 mm
Tip Diameter: 2.5 mm (3.9 mm for ES3DV3)
Tip-Center: 1 mm (2.0mm for ES3DV3)
Application: SAR Dosimetry Testing
Compliance tests of mobile phones
Dosimetry in strong gradient fields

Picture C.2 Near-field Probe

Picture C.3 E-field Probe

C.3. E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm^2) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and inn a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/ cm^2.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:
Δt = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
ΔT = Temperature increase due to RF exposure.

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

Where:
σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m^3).

C.4. Other Test Equipment

C.4.1. Data Acquisition Electronics (DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

PictureC.4: DAE

C.4.2. Robot

The SPEAG DASY system uses the high precision robots (DASY5: RX160L) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchron motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

Picture C.5 DASY 5

C.4.3. Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (DASY5: 400 MHz, Intel Celeron), chipdisk (DASY5:128MB), RAM (DASY5:128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O broad, which is directly connected to the PC/104 bus of the CPU broad.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

Picture C.6 Server for DASY 5

C.4.4. Device Holder for Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ±0.5mm would produce a SAR uncertainty of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

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.

The DASY device holder is constructed of low-loss

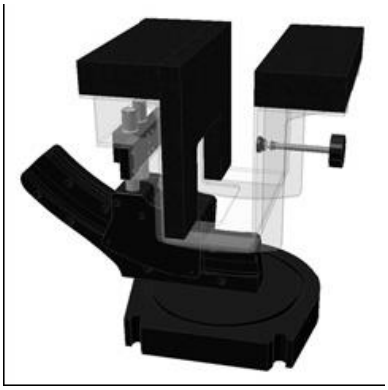
POM material having the following dielectric

parameters: relative permittivity ε =3 and loss tangent δ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.

Picture C.7-1: Device Holder



Picture C.7-2: Laptop Extension Kit

C.4.5. Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to
Represent the 90th percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

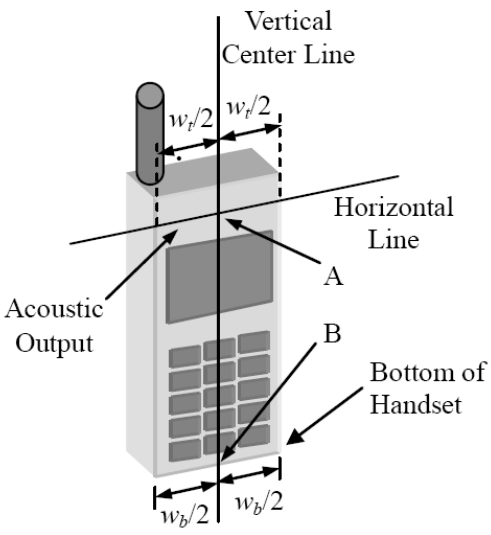
Shell Thickness:	2 ± 0. 2 mm
Filling Volume:	Approx. 25 liters
Dimensions:	810 x l000 x 500 mm (H x L x W)
Available:	Special

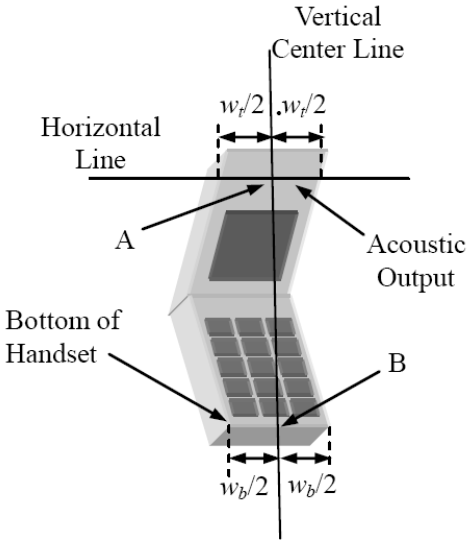
Picture C.8: SAM Twin Phantom

ANNEX D: Position of the wireless device in relation to the phantom

D.1. General considerations

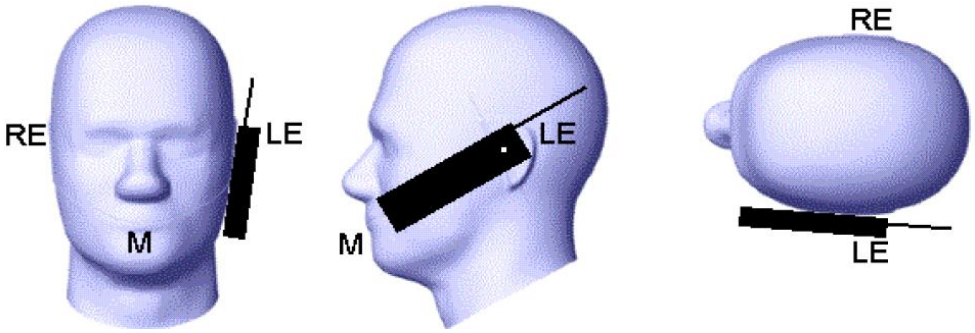
This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.



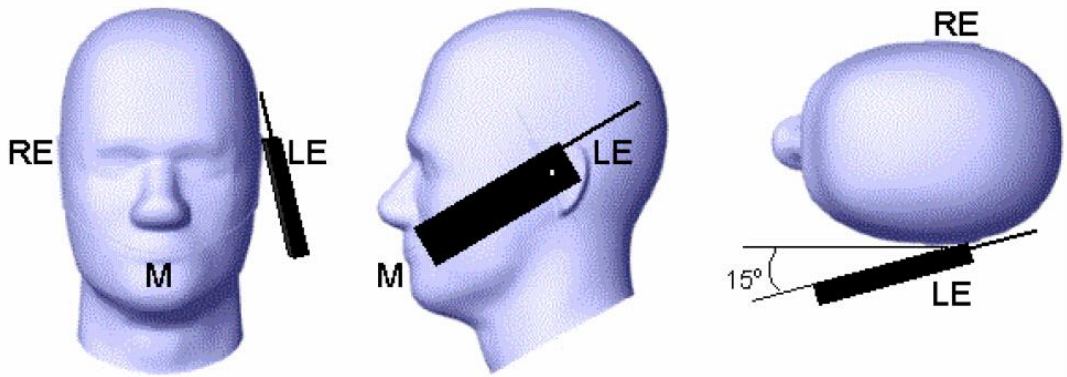


w_t	Width of the handset at the level of the acoustic
w_b	Width of the bottom of the handset
A	Midpoint of the width w_t of the handset at the level of the acoustic output
B	Midpoint of the width w_b of the bottom of the handset

Picture D.1-a Typical “fixed” case handset **Picture D.1-b Typical “clam-shell” case handset**



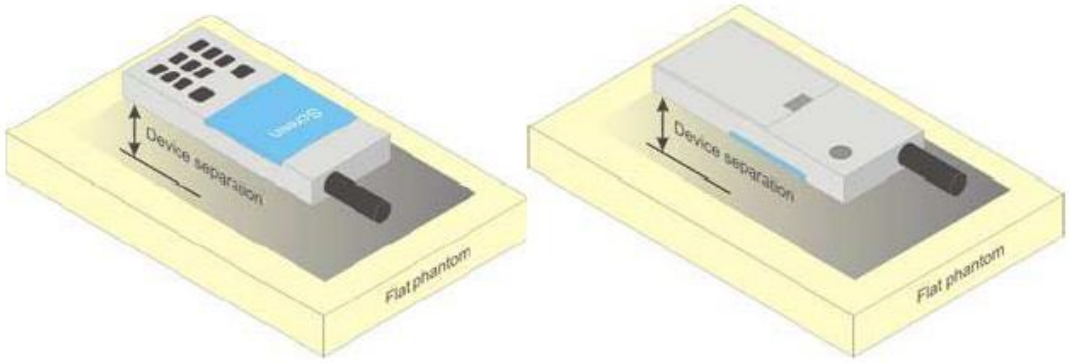
Picture D.2 Cheek position of the wireless device on the left side of SAM



Picture D.3 Tilt position of the wireless device on the left side of SAM

D.2. Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

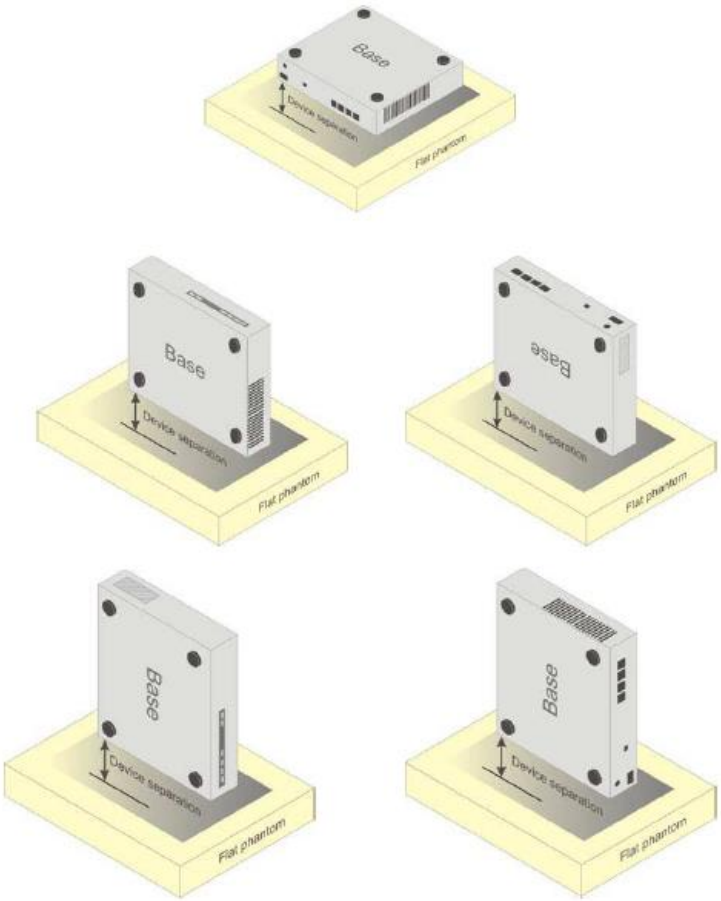


Picture D.4 Test positions for body-worn devices

D.3. Desktop device

A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture 8.5 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture D.5 Test positions for desktop devices

D.4. DUT Setup Photos

Picture D.6

ANNEX E: Equivalent Media Recipes

The liquid used for the frequency range of 700-6000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table E.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

Table E.1: Composition of the Tissue Equivalent Matter

Frequency (MHz)	835	1750	1900	2450	2600	5200	5800
Water	41.45	55.242	55.242	58.79	58.79	65.53	66.10
Sugar	56.0	/	/	/	/	/	/
Salt	1.45	0.306	0.306	0.06	0.06		
Preventol	0.1	/	/	/	/	17.24	16.95
Cellulose	1.0	/	/	/	/	17.24	16.95
Glycol Monobutyl	/	44.452	44.452	41.15	41.15	/	/
Diethylenglycol monohexylether	/	/	/	/	/	/	/
Triton X-100	/	/	/	/	/	/	/
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=40.08 σ=1.37	ε=40.0 σ=1.40	ε=39.20 σ=1.80	ε=39.01 σ=1.96	ε=35.99 σ=4.66	ε=35.30 σ=5.27

Note: There is a little adjustment respectively for 750, 5300 and 5600, based on the recipe of closest frequency in table E.1

ANNEX F: System Validation

The SAR system must be validated against its performance specifications before it is deployed. When SAR probes, system components or software are changed, upgraded or recalibrated, these must be validated with the SAR system(s) that operates with such components.

Table F.1: System Validation

Probe SN.	Liquid name (MHz)	Validation date	Frequency point	CW Validation	Modulation Signal Validation		
					Modulation Type	Duty Factor	PAR
7621	Head 750	2022-05-09	750MHz	Pass	N/A	N/A	N/A
7621	Head 835	2022-05-09	835MHz	Pass	GMSK	Pass	N/A
7621	Head 1750	2022-05-09	1750MHz	Pass	N/A	N/A	N/A
7621	Head 1900	2022-05-09	1900MHz	Pass	GMSK	Pass	N/A
7621	Head 2450	2022-05-08	2450MHz	Pass	OFDM/TDD	Pass	Pass
7621	Head 2550	2022-05-08	2550MHz	Pass	TDD	Pass	N/A
7621	Head 3500	2022-05-10	3500MHz	Pass	TDD	Pass	N/A
7621	Head 3700	2022-05-10	3700MHz	Pass	TDD	Pass	N/A
7621	Head 3900	2022-05-10	3900MHz	Pass	TDD	Pass	N/A
7621	Head 5250	2022-05-08	5250MHz	Pass	OFDM	N/A	Pass
7621	Head 5600	2022-05-08	5600MHz	Pass	OFDM	N/A	Pass
7621	Head 5750	2022-05-08	5750MHz	Pass	OFDM	N/A	Pass

ANNEX G: DAE Calibration Certificate

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client: Saict-SZ (Auden)

Certificate No: DAE4-1527_Jun22

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BM - SN: 1527
Calibration procedure(s)	QA CAL-06.v30 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	June 21, 2022

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 (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	31-Aug-21 (No:31368)	Aug-22
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	24-Jan-22 (in house check)	In house check: Jan-23
Calibrator Box V2.1	SE UMS 006 AA 1002	24-Jan-22 (in house check)	In house check: Jan-23

	Name	Function	Signature
Calibrated by:	Adrian Gehring	Laboratory Technician	
Approved by:	Sven Kühn	Technical Manager	

Issued: June 21, 2022

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

Certificate No: DAE4-1527_Jun22 Page 1 of 5

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

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S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

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 following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	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	403.865 ± 0.02% (k=2)	403.595 ± 0.02% (k=2)	403.805 ± 0.02% (k=2)
Low Range	3.95898 ± 1.50% (k=2)	3.98939 ± 1.50% (k=2)	3.96763 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	61.0 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	200037.59	1.98	0.00
Channel X	+ Input	20007.61	1.34	0.01
Channel X	- Input	-20004.09	1.79	-0.01
Channel Y	+ Input	200037.45	1.53	0.00
Channel Y	+ Input	20002.68	-3.42	-0.02
Channel Y	- Input	-20007.17	-1.14	0.01
Channel Z	+ Input	200037.73	2.17	0.00
Channel Z	+ Input	20005.72	-0.34	-0.00
Channel Z	- Input	-20006.63	-0.49	0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.36	-0.15	-0.01
Channel X	+ Input	201.70	0.16	0.08
Channel X	- Input	-198.10	0.49	-0.24
Channel Y	+ Input	2001.44	0.07	0.00
Channel Y	+ Input	201.07	-0.21	-0.11
Channel Y	- Input	-199.66	-0.98	0.50
Channel Z	+ Input	2001.52	0.21	0.01
Channel Z	+ Input	200.81	-0.41	-0.20
Channel Z	- Input	-199.00	-0.15	0.07

2. Common mode sensitivity

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

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	-3.95	-5.31
	- 200	5.96	4.97
Channel Y	200	-16.18	-16.25
	- 200	14.41	14.34
Channel Z	200	3.01	2.86
	- 200	-3.93	-4.13

3. Channel separation

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

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-0.68	-2.76
Channel Y	200	5.43	-	-0.31
Channel Z	200	10.73	3.29	-

4. AD-Converter Values with inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	16059	17078
Channel Y	15965	16219
Channel Z	15888	13556

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	1.40	0.30	2.25	0.35
Channel Y	-0.62	-1.30	0.47	0.33
Channel Z	-0.18	-0.90	0.60	0.31

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

ANNEX H: Probe Calibration Certificate

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2117
E-mail: cttl@chinattl.com http://www.caict.ac.cn

CALIBRATION
CNAS L0570

Client SAICT Certificate No: Z22-60124

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN : 7621
Calibration Procedure(s)	FF-Z11-004-02 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	May 06, 2022

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	15-Jun-21(CTTL, No.J21X04466)	Jun-22
Power sensor NRP-Z91	101547	15-Jun-21(CTTL, No.J21X04466)	Jun-22
Power sensor NRP-Z91	101548	15-Jun-21(CTTL, No.J21X04466)	Jun-22
Reference 10dBAttenuator	18N50W-10dB	20-Jan-21(CTTL, No.J21X00486)	Jan-23
Reference 20dBAttenuator	18N50W-20dB	20-Jan-21(CTTL, No.J21X00485)	Jan-23
Reference Probe EX3DV4	SN 7464	26-Jan-22(SPEAG, No.EX3-7464_Jan22)	Jan-23
DAE4	SN 1555	20-Aug-21(SPEAG, No.DAE4-1555_Aug21/2)	Aug-22

Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	16-Jun-21(CTTL, No.J21X04467)	Jun-22
Network Analyzer E5071C	MY46110673	14-Jan-22(CTTL, No.J22X00406)	Jan-23

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

Issued: May 23, 2022

In Collaboration with
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CALIBRATION LABORATORY

CAICT

Add: No.52 HuaYuanBei Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2117
E-mail: cttl@chinattl.com http://www.caict.ac.cn

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	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 θ=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:

a) 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

b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016

c) 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

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,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.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). 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.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z*:A,B,C 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≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,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±50MHz to±100MHz.
- *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 *NORMx* (no uncertainty required).

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E-mail: cttl@chinattl.com http://www.caict.ac.cn

DASY/EASY – Parameters of Probe: EX3DV4 – SN:7621

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)²)[A]	0.71	0.71	0.56	±10.0%
DCP(mV)[B]	111.7	111.8	115.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	210.8	±3.5%
		Y	0.0	0.0	1.0		218.6	
		Z	0.0	0.0	1.0		190.8	

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 uncertainties of Norm X, Y, Z do not affect the E²-field uncertainty inside TSL (see Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.