TESTING
NVLAP LAB CODE 600118-0

SAR TEST REPORT

No. I21Z62362-SEM03

For

TCL Communication Ltd.

LINKKEY LTE Cat4 USB Dongle

Model Name: IK42UC

With

Hardware Version: V01

Software Version: IK42_ZZ_02.00_02

FCC ID: 2ACCJB167

Issued Date: 2022-2-16

Note:

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I21Z62362-SEM03	Rev.0	2022-1-18	Initial creation of test report
I21Z62362-SEM03	Rev.1	2022-2-16	1. Revise the tune up for LTE B7 low power in Table11.3-3 page26. 2. Add KDB 616217 D04 in section5.2 page9. 3. Revise the Test Lab address on page1. 4. Add P-sensor location in the file of SAR photos.

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1 Test Laboratory

1.1 Testing Location

Company Name:	CTTL(Shouxiang)
Address:	No. 51 Shouxiang Science Building, Xueyuan Road, Haidian District, Beijing, P. R. China100191

1.2 Testing Environment

Temperature:	18°C~25°C,
Relative humidity:	30%~ 70%
Ground system resistance:	< 0.5 Ω
Ambient noise & Reflection:	< 0.012 W/kg

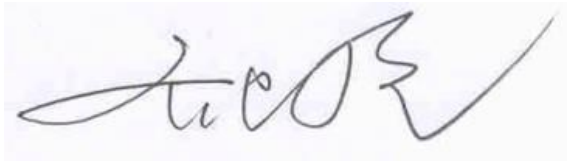
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Yao Juming
Testing Start Date:	December 10, 2021
Testing End Date:	December 14, 2021

1.4 Signature

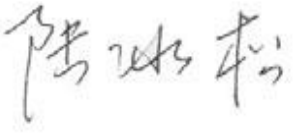
Yao Juming

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for TCL Communication Ltd. LINKKEY LTE Cat4 USB Dongle IK42UC is as follows:

Table 2.1: Highest Reported SAR (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/kg)
Main antenna (Separation Distance 5/9/14mm)	GSM 850	**0.94**
	PCS 1900	**1.16**
	WCDMA 1900	**1.12**
	WCDMA 1700	**1.37**
	WCDMA 850	**0.78**
	LTE Band 2	**1.36**
	LTE Band 4	**1.39**
	LTE Band 5	**0.54**
	LTE Band 7	**1.35**
	LTE Band 12	**0.42**
	LTE Band 13	**0.45**
	LTE Band 14	**0.49**
	LTE Band 71	**0.18**

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.

For body operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and which provides a minimum separation distance of 5/9/14 mm between this device and the body of the user. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output.

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),** and the values are**: 1.39W/kg(1g).**

3 Client Information

3.1 Applicant Information

Company Name:	TCL Communication Ltd.
Address/Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
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Telephone:	+86 755 3664 5759
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3.2 Manufacturer Information

Company Name:	TCL Communication Ltd.
Address/Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person:	Peter yang
Contact Email:	peter.yang@tcl.com
Telephone:	+86 755 3664 5759
Fax	+86 755 3661 2000-81722

4 Equipment Under Test (EUT) and Ancillary Equipment (AE)

4.1 About EUT

Description:	LINKKEY LTE Cat4 USB Dongle
Model name:	IK42UC
Operating mode(s):	GSM850/900/1800/1900, WDMA850/1700/1900 LTE Band 2/4/5/7/12/13/14/17/71
Tested Tx Frequency:	824.2 – 848.8 MHz (GSM 850)
	1850.2 – 1909.8 MHz (GSM 1900)
	826.4–846.6 MHz (WCDMA 850 Band V)
	1710 – 1755 MHz (WCDMA 1700 Band IV)
	1850–1910 MHz (WCDMA1900 Band II)
	1850.7 – 1909.3 MHz (LTE Band 2)
	1710.7 – 1754.3 MHz (LTE Band 4)
	824.7 – 848.3 MHz (LTE Band 5)
	2502.5 – 2567.5 MHz (LTE Band 7)
	699.7 – 715.3 MHz (LTE Band 12)
	779.5 – 784.5 MHz (LTE Band 13)
	790.5 – 795.5 MHz (LTE Band 14)
	665.5 – 695.5 MHz (LTE Band 71)
GPRS/EGPRS Multislot Class:	33
GPRS capability Class:	B
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	016167000000413	V01	IK42_ZZ_02.00_02
EUT2	016167000000421	V01	IK42_ZZ_02.00_02
EUT3	016167000000405	V01	IK42_ZZ_02.00_02

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

Note: It is performed to test SAR with the EUT1~2 and conducted power with the EUT3.

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: Measurement Techniques.

KDB447498 D01: General RF Exposure Guidance v06: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

KDB447498 D02: SAR Procedures for Dongle Xmtr v02r01: SAR Measurement Procedures for USB Dongle Transmitters

KDB941225 D05 SAR for LTE Devices v02r05: SAR Evaluation Considerations for LTE Devices

KDB865664 D01SAR measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz.

KDB865664 D02RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

KDB616217 D04 SAR for laptop and tablets v01r02 SAR Evaluation Considerations for Laptop, Notebook, Notebook and Tablet Computers.

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

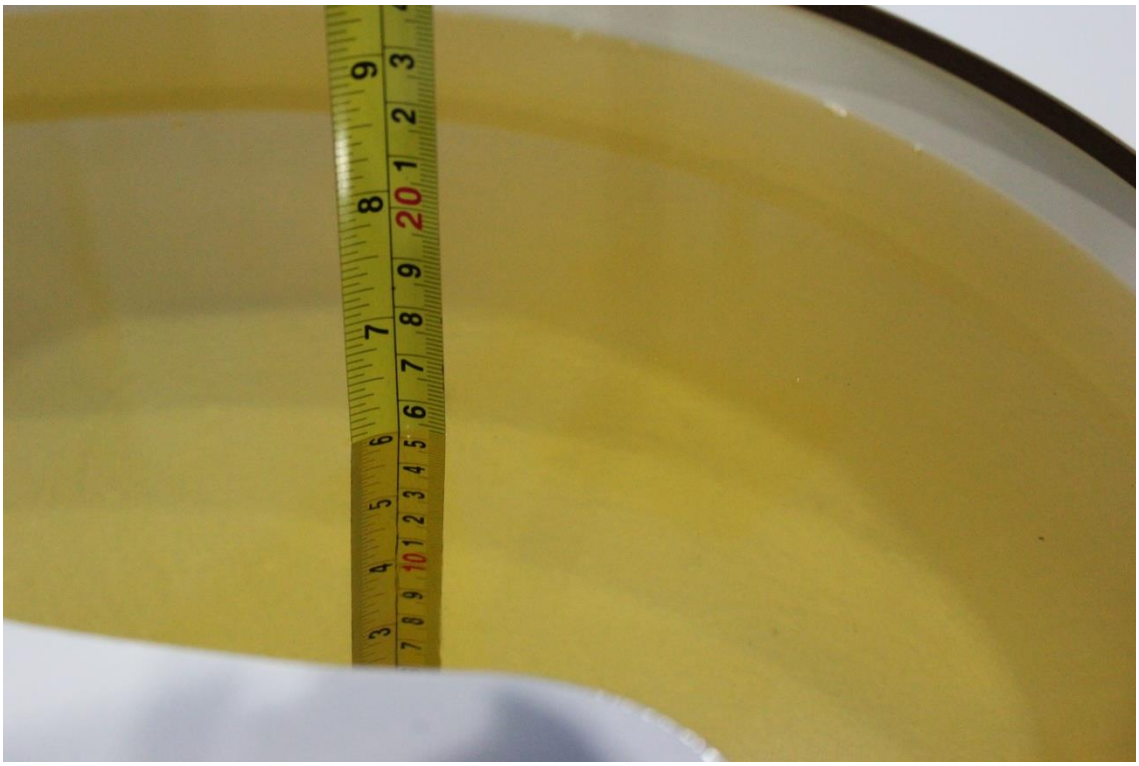
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
750	Head	0.89	0.85～0.93	41.94	39.8～44.0
900	Head	0.97	0.92～1.02	41.50	39.40～43.60
1800	Head	1.40	1.33～1.47	40.00	38.00～42.00
1900	Head	1.40	1.33～1.47	40.00	38.00～42.00
2600	Head	1.96	1.86～2.06	39.01	37.06～40.96

7.2 Dielectric Performance

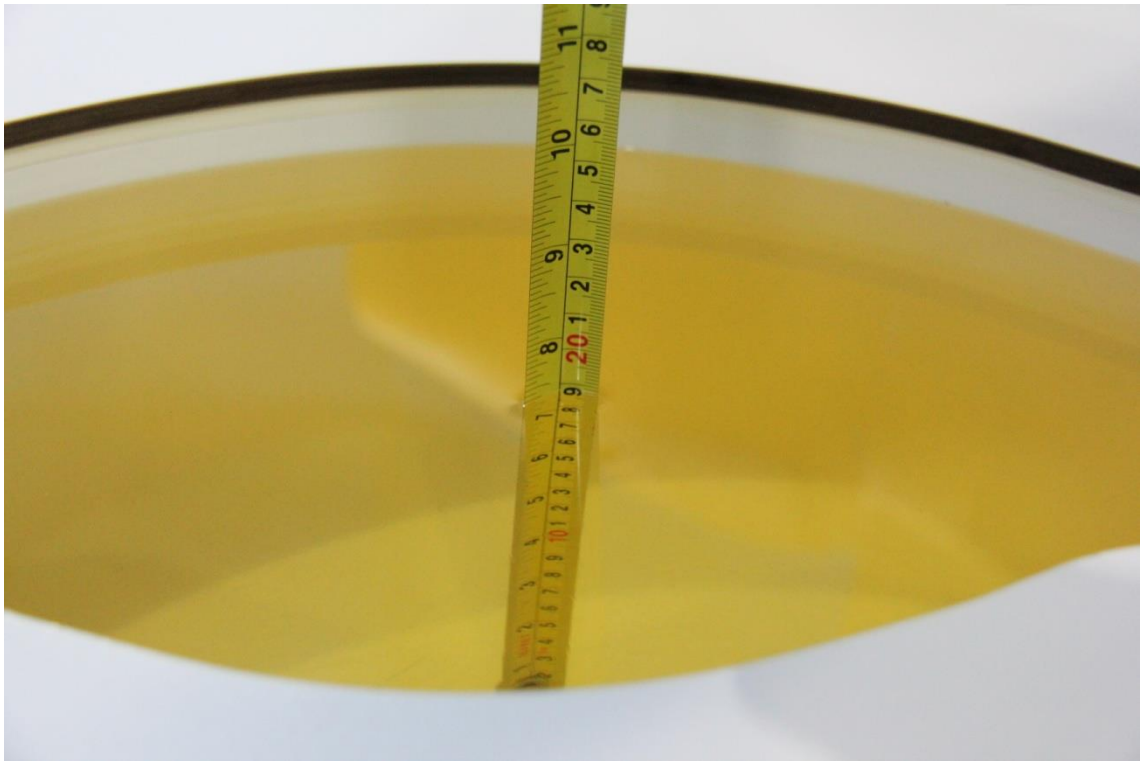
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2021-12-10	Body	750 MHz	45.89	9.42	0.8459	-4.96
2021-12-11	Body	900 MHz	45.36	9.30	0.9052	-6.68
2021-12-12	Body	1800 MHz	42.96	7.40	1.459	4.21
2021-12-13	Body	1900 MHz	42.79	6.98	1.527	9.07
2021-12-14	Body	2600 MHz	41.19	5.59	2.109	7.60

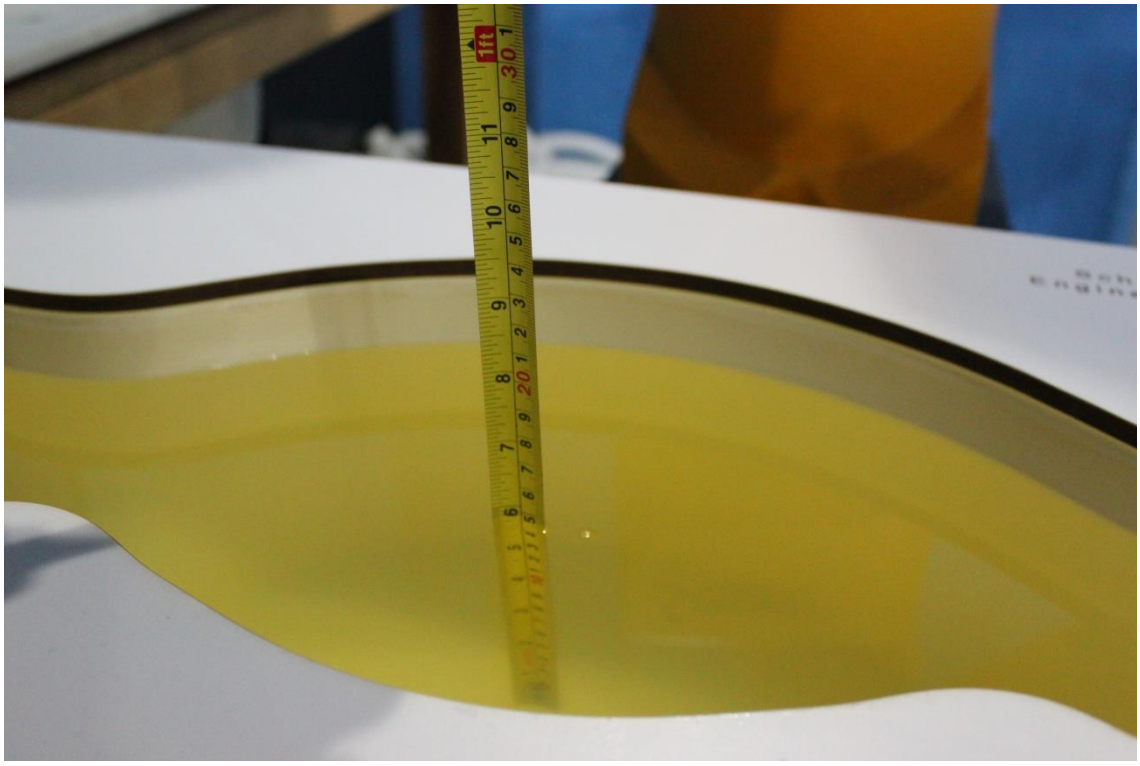
Note: The liquid temperature is 22.0℃



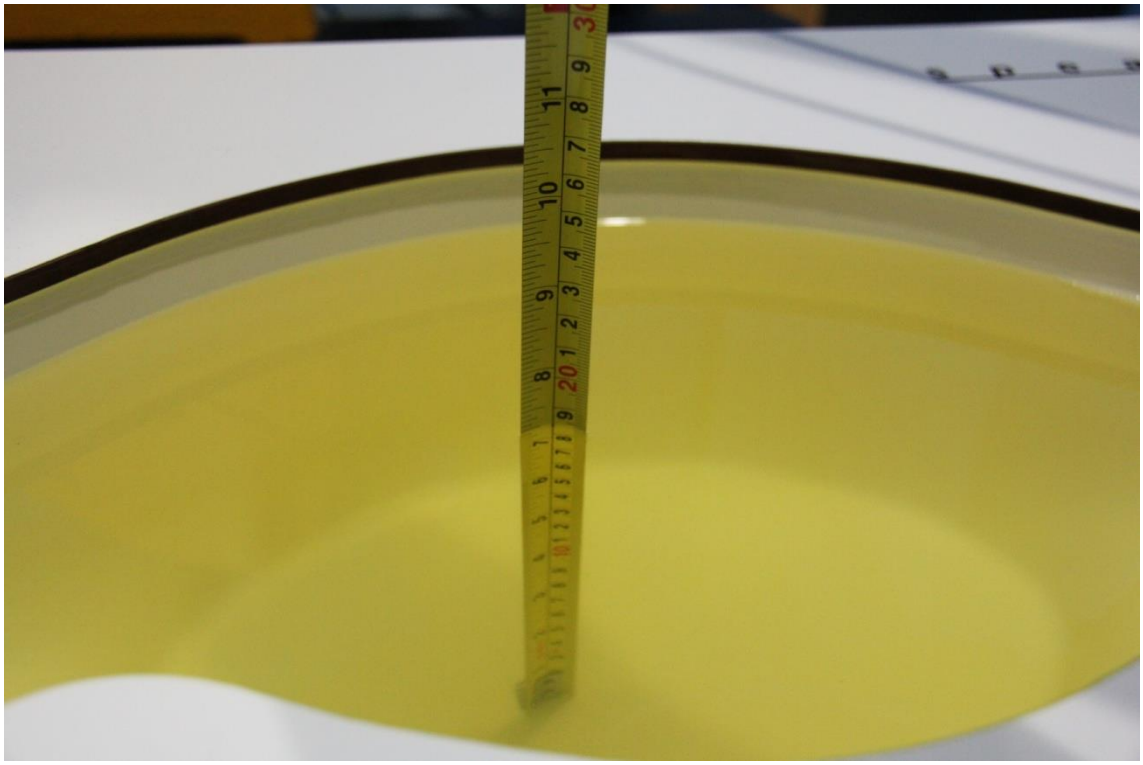
Picture 7-1 Liquid depth in the Flat Phantom (750MHz)



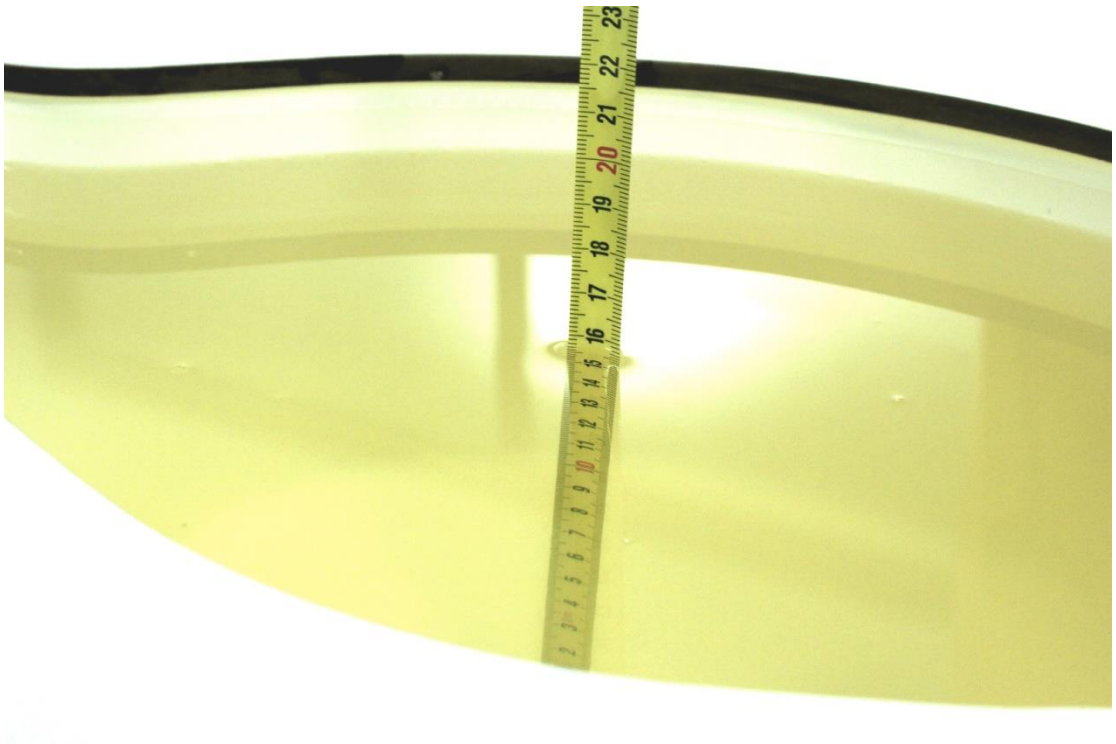
Picture 7-2 Liquid depth in the Flat Phantom (900 MHz)



Picture 7-3 Liquid depth in the Flat Phantom (1800MHz)



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

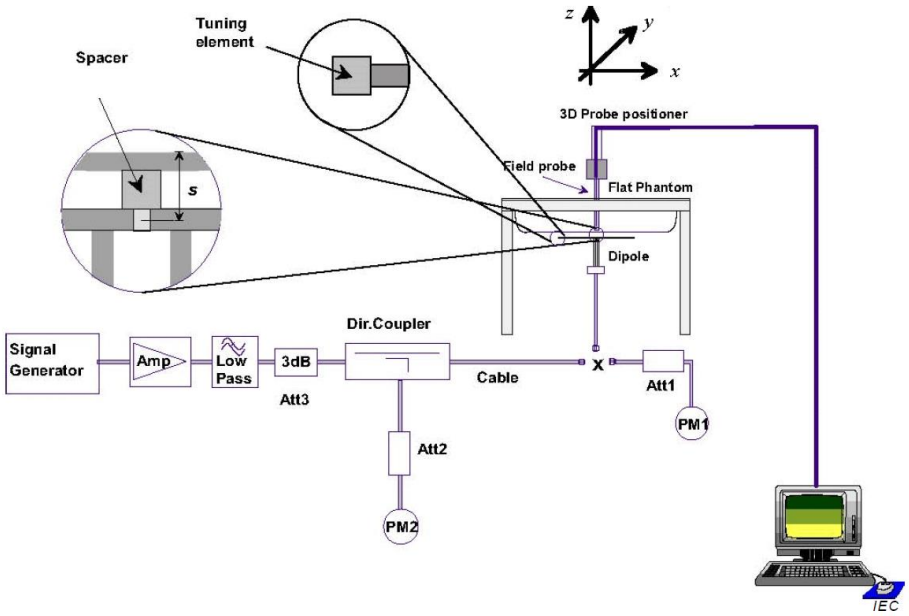


Picture 7-5 Liquid depth in the Flat Phantom (2600MHz)

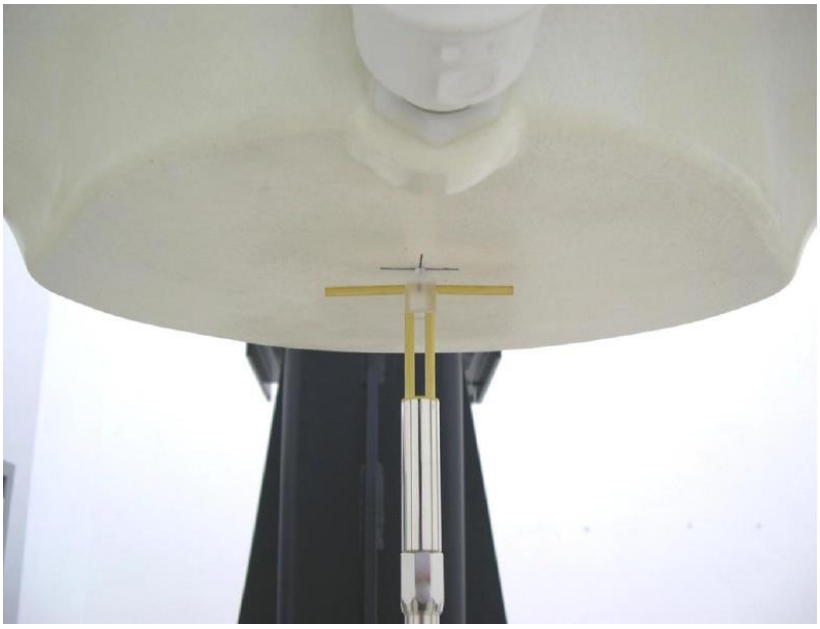
8 System Verification

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



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.

The system verification results are required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR. The details are presented in annex B.

Table 8.1: System Verification of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2021-12-10	750 MHz	5.65	8.68	5.8	8.92	2.65%	2.76%
2021-12-11	900 MHz	7.01	11	6.88	10.8	-1.85%	-1.82%
2021-12-12	1800 MHz	19.9	38.3	20.16	38.68	1.31%	0.99%
2021-12-13	1900 MHz	20.9	40.1	20.6	39.44	-1.44%	-1.65%
2021-12-14	2600 MHz	25.5	57.1	25.92	57.84	1.65%	1.30%

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.

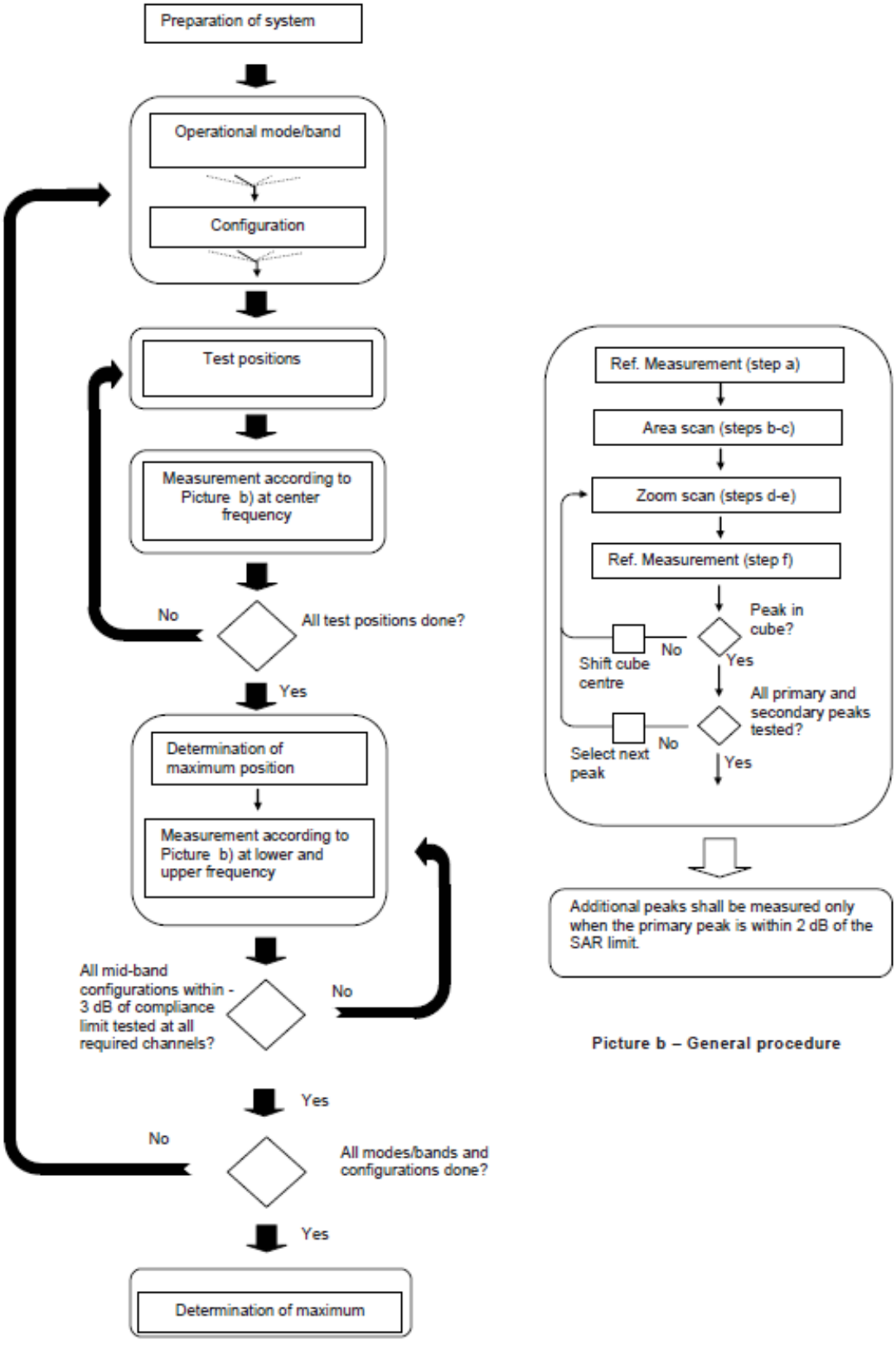
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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 within3 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 9.1Block 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 1528-2003. 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 SAR Measurement for LTE

SAR tests for LTE are performed with a base station simulator, Rohde & Rchwarz CMW500. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. All powers were measured with the CMW 500.
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.

9.4 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 section14 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

10 Area Scan Based 1-g SAR

10.1 Requirement of KDB

According to the KDB447498 D01, when the implementation is based the specific polynomial fit algorithm as presented at the 29th Bioelectromagnetics Society meeting (2007) and the estimated 1-gSAR is ≤ 1.2 W/kg, a zoom scan measurement is not required provided it is also not needed for any other purpose; for example, if the peak SAR location required for simultaneous transmission SAR test exclusion can be determined accurately by the SAR system or manually to discriminate between distinctive peaks and scattered noisy SAR distributions from area scans.

There must not be any warning or alert messages due to various measurement concerns identified by the SAR system; for example, noise in measurements, peaks too close to scan boundary, peaks are too sharp, spatial resolution and uncertainty issues etc. The SAR system verification must also demonstrate that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR (See Annex B). When all the SAR results for each exposure condition in a frequency band and wireless mode are based on estimated 1-g SAR, the 1-g SAR for the highest SAR configuration must be determined by a zoom scan.

10.2 Fast SAR Algorithms

The approach is based on the area scan measurement applying a frequency dependent attenuation parameter. This attenuation parameter was empirically determined by analyzing a large number of phones. The MOTOROLA FAST SAR was developed and validated by the MOTOROLA Research Group in Ft. Lauderdale.

In the initial study, an approximation algorithm based on Linear fit was developed. The accuracy of the algorithm has been demonstrated across a broad frequency range (136-2450 MHz)and for both 1- and 10-g averaged SAR using a sample of 264 SAR measurements from 55wireless handsets. For the sample size studied, the root-mean-squared errors of the algorithm mare 1.2% and 5.8% for 1- and 10-g averaged SAR, respectively. The paper describing the algorithm in detail is expected to be published in August 2004 within the Special Issue of Transactions on MTT.

In the second step, the same research group optimized the fitting algorithm to an Polynomial fit whereby the frequency validity was extended to cover the range 30-6000MHz. Details of this study can be found in the BEMS 2007 Proceedings.

Both algorithms are implemented in DASY software.

11 Conducted Output Power

There are two sets of tune-up power, Normal power and Low power, for the band include GSM1900, W1700, W1900, LTE B2, LTE B4 and LTE B7 by SAR sensor. The detail of SAR sensor is presented in annex I.

11.1 GSM Measurement result

Table 11.1-1: The conducted power measurement results for GPRS and EGPRS-Normal Power

GSM 850 GPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.70	32.62	32.51	33.50	-9.03	23.67	23.59	23.48
2 Txslots	30.49	30.49	30.44	30.50	-6.02	24.47	24.47	24.42
3Txslots	28.32	28.35	28.37	28.50	-4.26	24.06	24.09	24.11
4 Txslots	26.66	26.69	26.88	27.50	-3.01	23.65	23.68	23.87
GSM 850 EGPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	32.90	32.75	32.64	33.50	-9.03	23.87	23.72	23.61
2 Txslots	30.48	30.47	30.45	30.50	-6.02	24.46	24.45	24.43
3Txslots	28.34	28.24	28.13	28.50	-4.26	24.08	23.98	23.87
4 Txslots	26.99	26.92	26.83	27.50	-3.01	23.98	23.91	23.82
GSM 850 EGPRS (8PSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	251	190	128			251	190	128
1 Txslot	27.29	27.08	26.99	28.00	-9.03	18.26	18.05	17.96
2 Txslots	24.97	24.96	24.95	25.00	-6.02	18.95	18.94	18.93
3Txslots	23.45	23.40	23.43	23.50	-4.26	19.19	19.14	19.17
4 Txslots	21.49	21.78	21.43	22.50	-3.01	18.48	18.77	18.42

PCS1900 GPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	29.01	29.16	28.93	30.50	-9.03	19.98	20.13	19.90
2 Txslots	27.49	27.33	27.20	27.50	-6.02	21.47	21.31	21.18
3 Txslots	25.20	24.94	24.48	25.50	-4.26	20.94	20.68	20.22
4 Txslots	23.42	23.26	22.75	24.50	-3.01	20.41	20.25	19.74
PCS1900 EGPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	28.74	28.70	28.94	30.50	-9.03	19.71	19.67	19.91
2 Txslots	27.46	27.28	27.16	27.50	-6.02	21.44	21.26	21.14
3Txslots	25.15	24.90	24.49	25.50	-4.26	20.89	20.64	20.23
4 Txslots	23.39	23.11	22.81	24.50	-3.01	20.38	20.10	19.80
PCS1900 EGPRS (8PSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	25.07	25.02	25.06	27.00	-9.03	16.04	15.99	16.03
2 Txslots	22.90	22.77	22.54	24.00	-6.02	16.88	16.75	16.52
3Txslots	20.94	20.85	20.58	22.50	-4.26	16.68	16.59	16.32
4 Txslots	19.11	19.05	19.03	21.00	-3.01	16.10	16.04	16.02

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 2Txslots for GSM850 and GSM1900.

Table 11.1-2: The conducted power measurement results for GPRS and EGPRS-Low Power

PCS1900 GPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	24.81	25.23	26.16	26.50	-9.03	15.78	16.20	17.13
2 Txslots	23.71	24.89	25.38	25.50	-6.02	17.69	18.87	19.36
3 Txslots	21.56	22.61	23.14	23.50	-4.26	17.30	18.35	18.88
4 Txslots	19.60	20.67	21.35	21.50	-3.01	16.59	17.66	18.34
PCS1900 EGPRS (GMSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	24.85	25.88	26.12	26.50	-9.03	15.82	16.85	17.09
2 Txslots	23.80	24.87	25.41	25.50	-6.02	17.78	18.85	19.39
3Txslots	21.89	22.54	23.16	23.50	-4.26	17.63	18.28	18.90
4 Txslots	19.64	20.66	21.29	21.50	-3.01	16.63	17.65	18.28
PCS1900 EGPRS (8PSK)	Measured timeslot-averaged output power (dBm)				calculation	Source-based time-averaged output power (dBm)		
	810	661	512			810	661	512
1 Txslot	23.61	24.35	24.84	25.00	-9.03	14.58	15.32	15.81
2 Txslots	22.63	23.31	23.75	24.00	-6.02	16.61	17.29	17.73
3Txslots	20.66	21.32	21.82	22.00	-4.26	16.40	17.06	17.56
4 Txslots	18.74	19.39	19.96	20.00	-3.01	15.73	16.38	16.95

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 2Txslots for GSM1900.

11.2 WCDMA Measurement result

Table 11.2-1: The conducted Power for WCDMA-Normal Power

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4182 (836.4MHz)	4132 (826.4MHz)	Tune up
WCDMA	\	22.23	22.43	22.33	23.00
HSUPA	1	21.05	20.77	20.73	21.50
	2	20.38	20.44	20.47	20.50
	3	19.91	20.11	20.20	21.00
	4	20.70	21.05	20.85	21.50
	5	21.27	21.19	21.21	21.50
HSPA+	\	21.18	21.26	21.24	22.50
DC-HSDPA	1	21.36	21.42	21.52	23.00
	2	21.34	21.36	21.43	23.00
	3	20.89	21.02	21.01	22.50
	4	21.10	21.08	21.14	22.50
Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	
WCDMA	\	21.71	21.75	21.72	21.80
HSUPA	1	20.23	20.69	20.52	21.00
	2	19.81	19.92	19.78	21.00
	3	19.11	19.05	19.06	21.00
	4	20.07	19.75	20.29	21.00
	5	20.53	20.65	20.55	21.00
HSPA+	\	20.69	20.56	20.54	21.00
DC-HSDPA	1	20.95	20.84	20.74	21.00
	2	20.75	20.77	20.73	21.00
	3	20.36	20.30	20.21	21.00
	4	20.43	20.46	20.35	21.00
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	22.09	22.04	22.01	23.00
HSUPA	1	20.46	21.03	20.52	22.00
	2	19.86	19.99	19.86	21.00
	3	19.68	19.51	19.12	21.00
	4	20.07	20.30	20.05	22.00
	5	21.10	20.93	20.93	22.00
HSPA+	\	20.74	20.78	20.90	22.00
DC-HSDPA	1	21.21	21.42	21.43	22.50
	2	20.96	21.08	21.08	22.50
	3	20.57	20.74	20.77	22.00
	4	20.71	20.91	20.73	22.00

Table 11.2-2: The conducted Power for WCDMA-Low Power

Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	
WCDMA	\	19.05	19.03	19.01	19.50
HSUPA	1	17.28	17.75	16.85	18.00
	2	16.72	16.66	16.60	18.00
	3	16.11	16.64	16.03	18.00
	4	17.07	16.92	16.80	18.00
	5	18.00	17.93	17.84	18.00
HSPA+	\	17.62	17.52	17.51	19.50
DC-HSDPA	1	17.03	17.11	17.06	17.50
	2	17.21	17.26	17.11	17.50
	3	16.57	16.71	16.66	17.50
	4	16.54	16.66	16.58	17.50
Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	19.38	19.39	19.47	20.00
HSUPA	1	17.98	17.43	18.35	18.50
	2	16.86	17.10	16.98	18.50
	3	16.53	16.95	16.89	18.50
	4	17.69	17.54	17.35	18.50
	5	18.10	18.30	18.44	18.50
HSPA+	\	17.77	18.02	18.05	18.50
DC-HSDPA	1	17.58	17.55	17.73	18.50
	2	17.52	17.57	17.70	18.50
	3	17.09	17.26	17.29	18.50
	4	17.05	17.06	17.21	18.50

11.3 LTE Measurement result

Table 11.3-1: Maximum Power Reduction (MPR) for LTE

Modulation	Channel bandwidth / Transmission bandwidth configuration [RB]						MPR (dB)
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

Table 11.3-2: The tune up for LTE– Normal Power

Band	Tune up
LTE Band 2	23
LTE Band 4	23
LTE Band 5	23
LTE Band 7	22.5
LTE Band 12	23
LTE Band 13	23
LTE Band 14	23
LTE Band 71	23

Table 11.3-3: The tune up for LTE– Low Power

Band	Tune up
LTE Band 2	20
LTE Band 4	19.5
LTE Band 7	19.5

Table 11.3-4: The conducted Power for LTE

Band 2-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	1909.3	21.48	20.51
		1880	21.60	20.44
		1850.7	21.45	20.23
	1RB Middle (3)	1909.3	21.56	20.59
		1880	21.73	20.39
		1850.7	21.54	20.34
	1RB Low (0)	1909.3	21.40	20.36
		1880	21.61	20.37
		1850.7	21.33	20.22
	3RB High (3)	1909.3	21.47	20.35
		1880	21.68	20.42
		1850.7	21.52	20.61
	3RB Middle (1)	1909.3	21.69	20.60
		1880	21.58	20.59
		1850.7	21.47	20.70
	3RB Low (0)	1909.3	21.54	20.57
		1880	21.52	20.53
		1850.7	21.39	20.55
	6RB (0)	1909.3	20.62	19.62
		1880	20.60	19.53
		1850.7	20.57	19.43
3 MHz	1RB High (14)	1908.5	21.40	20.37
		1880	21.41	20.48
		1851.5	21.47	20.46
	1RB Middle (7)	1908.5	21.52	20.48
		1880	21.75	20.33
		1851.5	21.38	20.27
	1RB Low (0)	1908.5	21.71	20.60
		1880	21.77	20.43
		1851.5	21.12	20.22
	8RB High (7)	1908.5	20.72	19.69
		1880	20.69	19.80
		1851.5	20.54	19.65
	8RB Middle (4)	1908.5	20.80	19.70
		1880	20.78	19.79
		1851.5	20.49	19.61
	8RB Low (0)	1908.5	20.69	19.84
		1880	20.76	19.66
		1851.5	20.42	19.59
	15RB (0)	1908.5	20.57	19.66
		1880	20.71	19.60
		1851.5	20.52	19.51

5 MHz	1RB High (24)	1907.5	21.51	20.44
		1880	21.58	20.68
		1852.5	21.16	20.17
	1RB Middle (12)	1907.5	21.82	20.54
		1880	21.48	20.76
		1852.5	21.30	20.19
	1RB Low (0)	1907.5	21.48	20.41
		1880	21.37	20.24
		1852.5	21.22	20.12
	12RB High (13)	1907.5	20.68	19.45
		1880	20.53	19.66
		1852.5	20.46	19.56
	12RB Middle (6)	1907.5	20.74	19.60
		1880	20.58	19.75
		1852.5	20.43	19.53
	12RB Low (0)	1907.5	20.78	19.66
		1880	20.59	19.65
		1852.5	20.47	19.42
	25RB (0)	1907.5	20.63	19.60
		1880	20.55	19.80
		1852.5	20.44	19.49
10 MHz	1RB High (49)	1905	21.63	20.37
		1880	21.48	20.31
		1855	21.38	20.38
	1RB Middle (24)	1905	21.75	20.52
		1880	21.65	20.51
		1855	21.48	20.26
	1RB Low (0)	1905	21.73	20.50
		1880	21.48	20.58
		1855	21.54	20.42
	25RB High (25)	1905	20.59	19.59
		1880	20.63	19.84
		1855	20.51	19.46
	25RB Middle (12)	1905	20.78	19.80
		1880	20.68	19.80
		1855	20.55	19.53
	25RB Low (0)	1905	20.76	19.76
		1880	20.64	19.78
		1855	20.48	19.53
	50RB (0)	1905	20.70	19.62
		1880	20.64	19.69
		1855	20.53	19.53
15 MHz	1RB High (74)	1902.5	21.65	20.52
		1880	21.56	20.36
		1857.5	21.47	20.32
	1RB Middle (37)	1902.5	21.92	20.50
		1880	21.68	20.39
		1857.5	21.56	20.29

	1RB Low (0)	1902.5	21.96	20.49
		1880	21.66	20.26
		1857.5	21.51	20.37
	36RB High (38)	1902.5	20.77	19.58
		1880	20.75	19.62
		1857.5	20.59	19.49
	36RB Middle (19)	1902.5	20.88	19.57
		1880	20.69	19.66
		1857.5	20.59	19.47
	36RB Low (0)	1902.5	20.87	19.56
		1880	20.68	19.65
		1857.5	20.54	19.54
	75RB (0)	1902.5	20.71	19.60
		1880	20.64	19.61
		1857.5	20.61	19.49
20 MHz	1RB High (99)	1900	21.53	20.58
		1880	21.60	20.41
		1860	21.57	20.35
	1RB Middle (50)	1900	21.75	20.76
		1880	21.84	20.77
		1860	21.83	20.61
	1RB Low (0)	1900	21.42	20.39
		1880	21.42	20.33
		1860	21.68	20.40
	50RB High (50)	1900	20.71	19.72
		1880	20.68	19.79
		1860	20.63	19.56
	50RB Middle (25)	1900	20.60	19.73
		1880	20.47	19.86
		1860	20.71	19.64
	50RB Low (0)	1900	20.83	19.61
		1880	20.85	19.55
		1860	20.52	19.39
	100RB (0)	1900	20.72	19.71
		1880	20.67	19.71
		1860	20.59	19.48

Band4-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	1754.3	21.20	20.39
		1732.5	21.54	20.50
		1710.7	21.65	20.64
	1RB Middle (3)	1754.3	21.37	20.45
		1732.5	21.69	20.55
		1710.7	21.64	20.91
	1RB Low (0)	1754.3	21.32	20.44
		1732.5	21.44	20.40
		1710.7	21.52	20.76
	3RB High (3)	1754.3	21.57	20.36
		1732.5	21.65	20.70
		1710.7	21.61	20.79
	3RB Middle (1)	1754.3	21.59	20.34
		1732.5	21.50	20.73
		1710.7	21.62	20.82
	3RB Low (0)	1754.3	21.54	20.29
		1732.5	21.56	20.71
		1710.7	21.57	20.93
	6RB (0)	1754.3	20.50	19.47
		1732.5	20.50	19.45
		1710.7	20.54	19.69
3 MHz	1RB High (14)	1753.5	22.00	20.63
		1732.5	21.95	20.63
		1711.5	21.96	20.96
	1RB Middle (7)	1753.5	22.00	20.51
		1732.5	22.22	20.70
		1711.5	22.03	20.65
	1RB Low (0)	1753.5	21.80	20.45
		1732.5	21.93	20.70
		1711.5	21.82	20.59
	8RB High (7)	1753.5	20.73	19.35
		1732.5	20.87	19.49
		1711.5	20.91	19.84
	8RB Middle (4)	1753.5	20.80	19.58
		1732.5	20.80	19.44
		1711.5	21.00	19.84
	8RB Low (0)	1753.5	20.68	19.50
		1732.5	20.86	19.32
		1711.5	20.87	19.80
	15RB (0)	1753.5	20.78	19.48
		1732.5	20.73	19.43
		1711.5	20.92	19.71

5 MHz	1RB High (24)	1752.5	22.00	20.63
		1732.5	21.95	20.65
		1712.5	21.89	20.54
	1RB Middle (12)	1752.5	21.91	20.50
		1732.5	21.98	20.66
		1712.5	21.97	20.54
	1RB Low (0)	1752.5	21.82	20.80
		1732.5	21.87	20.67
		1712.5	21.87	20.60
	12RB High (13)	1752.5	20.88	19.85
		1732.5	20.90	19.58
		1712.5	20.83	19.66
	12RB Middle (6)	1752.5	20.75	19.79
		1732.5	20.71	19.47
		1712.5	20.88	19.85
	12RB Low (0)	1752.5	20.82	19.53
		1732.5	20.81	19.51
		1712.5	20.96	19.59
	25RB (0)	1752.5	20.81	19.87
		1732.5	20.76	19.57
		1712.5	20.86	19.82
10 MHz	1RB High (49)	1750	22.09	20.54
		1732.5	21.66	20.55
		1715	21.50	20.52
	1RB Middle (24)	1750	21.89	20.56
		1732.5	21.58	20.48
		1715	21.99	20.70
	1RB Low (0)	1750	21.64	20.62
		1732.5	21.34	20.47
		1715	21.50	20.70
	25RB High (25)	1750	20.71	19.61
		1732.5	20.68	19.60
		1715	20.74	19.55
	25RB Middle (12)	1750	20.86	19.76
		1732.5	20.70	19.65
		1715	20.89	19.82
	25RB Low (0)	1750	20.88	19.80
		1732.5	20.66	19.73
		1715	20.86	19.86
	50RB (0)	1750	20.77	19.82
		1732.5	20.86	19.63
		1715	20.71	19.68
15 MHz	1RB High (74)	1747.5	21.79	20.55
		1732.5	21.70	20.58
		1717.5	21.61	20.46
	1RB Middle (37)	1747.5	21.75	20.57
		1732.5	21.61	20.46
		1717.5	21.72	20.56

	1RB Low (0)	1747.5	21.94	20.68
		1732.5	21.63	20.53
		1717.5	21.79	20.69
	36RB High (38)	1747.5	20.83	19.58
		1732.5	20.67	19.66
		1717.5	20.80	19.62
	36RB Middle (19)	1747.5	20.90	19.65
		1732.5	20.71	19.57
		1717.5	20.84	19.73
	36RB Low (0)	1747.5	20.89	19.72
		1732.5	20.69	19.57
		1717.5	20.69	19.73
	75RB (0)	1747.5	20.91	19.67
		1732.5	20.82	19.79
		1717.5	20.77	19.76
20 MHz	1RB High (99)	1745	21.81	20.54
		1732.5	21.59	20.49
		1720	21.56	20.38
	1RB Middle (50)	1745	21.96	20.65
		1732.5	21.94	20.41
		1720	21.86	20.52
	1RB Low (0)	1745	21.80	20.61
		1732.5	21.69	20.41
		1720	21.80	20.48
	50RB High (50)	1745	20.74	19.68
		1732.5	20.67	19.64
		1720	20.64	19.65
	50RB Middle (25)	1745	20.84	19.76
		1732.5	20.62	19.50
		1720	20.71	19.66
	50RB Low (0)	1745	20.82	19.82
		1732.5	20.77	19.55
		1720	20.73	19.67
	100RB (0)	1745	20.83	19.75
		1732.5	20.73	19.50
		1720	20.65	19.57

Band5-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	848.3	22.10	20.89
		836.5	22.17	21.06
		824.7	21.85	20.92
	1RB Middle (3)	848.3	22.22	21.19
		836.5	22.29	21.18
		824.7	22.04	21.17
	1RB Low (0)	848.3	22.06	20.92
		836.5	22.01	20.93
		824.7	22.06	21.02
	3RB High (3)	848.3	22.19	20.79
		836.5	22.23	21.30
		824.7	22.09	21.01
	3RB Middle (1)	848.3	22.27	20.97
		836.5	22.22	21.14
		824.7	22.20	21.14
	3RB Low (0)	848.3	22.24	21.01
		836.5	22.15	21.02
		824.7	22.15	21.02
	6RB (0)	848.3	21.15	20.11
		836.5	21.20	20.12
		824.7	21.14	20.01
3 MHz	1RB High (14)	847.5	22.45	21.07
		836.5	22.15	20.99
		825.5	22.22	21.27
	1RB Middle (7)	847.5	22.34	21.11
		836.5	22.47	21.14
		825.5	22.19	20.93
	1RB Low (0)	847.5	22.44	21.23
		836.5	22.32	21.08
		825.5	22.24	21.05
	8RB High (7)	847.5	21.32	20.25
		836.5	21.29	20.20
		825.5	21.17	19.72
	8RB Middle (4)	847.5	21.35	20.21
		836.5	21.40	20.24
		825.5	21.12	20.07
	8RB Low (0)	847.5	21.33	20.20
		836.5	21.40	20.26
		825.5	21.18	20.11
	15RB (0)	847.5	21.26	20.02
		836.5	21.23	20.21
		825.5	21.15	19.98
5 MHz	1RB High (24)	846.5	22.15	20.82
		836.5	21.81	20.69
		826.5	21.86	20.84

	1RB Middle (12)	846.5	22.05	20.92
		836.5	21.81	20.57
		826.5	21.68	20.74
	1RB Low (0)	846.5	21.95	20.87
		836.5	21.82	20.95
		826.5	21.68	20.94
	12RB High (13)	846.5	20.96	20.06
		836.5	20.89	19.83
		826.5	20.76	19.86
	12RB Middle (6)	846.5	21.02	20.04
		836.5	21.00	19.87
		826.5	20.89	19.70
	12RB Low (0)	846.5	20.91	19.95
		836.5	21.02	19.78
		826.5	20.90	19.69
	25RB (0)	846.5	21.03	19.97
		836.5	20.86	19.81
		826.5	20.76	19.93
10 MHz	1RB High (49)	844.0	22.20	21.09
		836.5	22.06	20.93
		829.0	22.10	21.09
	1RB Middle (24)	844.0	22.35	21.12
		836.5	22.20	21.02
		829.0	22.33	21.16
	1RB Low (0)	844.0	22.18	20.90
		836.5	22.03	21.07
		829.0	22.14	20.89
	25RB High (25)	844.0	21.25	19.91
		836.5	21.24	20.22
		829.0	21.20	20.10
	25RB Middle (12)	844.0	21.32	20.01
		836.5	21.27	20.06
		829.0	21.29	20.09
	25RB Low (0)	844.0	21.22	19.95
		836.5	21.24	20.03
		829.0	21.05	20.08
	50RB (0)	844.0	21.12	19.97
		836.5	21.26	20.06
		829.0	21.10	19.84

Band7-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
5 MHz	1RB High (24)	2567.5	21.06	19.56
		2535	20.85	19.81
		2502.5	20.85	19.58
	1RB Middle (12)	2567.5	21.34	19.76
		2535	21.08	19.96
		2502.5	21.14	19.82
	1RB Low (0)	2567.5	21.21	19.86
		2535	21.06	19.96
		2502.5	20.96	19.74
	12RB High (13)	2567.5	20.15	18.88
		2535	20.09	19.09
		2502.5	19.92	18.91
	12RB Middle (6)	2567.5	20.16	19.03
		2535	20.11	19.09
		2502.5	20.02	18.96
	12RB Low (0)	2567.5	20.19	19.02
		2535	20.14	19.04
		2502.5	19.94	18.94
	25RB (0)	2567.5	20.16	19.11
		2535	20.10	19.12
		2502.5	19.92	19.04
10 MHz	1RB High (49)	2565	21.20	19.73
		2535	20.97	19.96
		2505	21.05	19.96
	1RB Middle (24)	2565	21.17	19.98
		2535	21.28	19.88
		2505	21.08	19.76
	1RB Low (0)	2565	21.10	19.96
		2535	21.18	20.08
		2505	20.98	19.86
	25RB High (25)	2565	20.07	19.11
		2535	20.07	19.09
		2505	20.01	19.01
	25RB Middle (12)	2565	20.27	19.16
		2535	20.24	19.27
		2505	19.98	19.07
	25RB Low (0)	2565	20.20	19.14
		2535	20.22	19.16
		2505	19.96	18.93
	50RB (0)	2565	20.19	19.06
		2535	20.16	19.14
		2505	19.91	18.90
15 MHz	1RB High (74)	2562.5	20.89	20.66
		2535	21.10	19.94
		2507.5	21.03	19.77

	1RB Middle (37)	2562.5	21.08	19.86
		2535	21.19	20.07
		2507.5	21.14	19.94
	1RB Low (0)	2562.5	21.14	19.93
		2535	21.18	19.90
		2507.5	21.10	19.81
	36RB High (38)	2562.5	20.20	19.08
		2535	20.12	19.09
		2507.5	20.13	19.06
	36RB Middle (19)	2562.5	20.08	19.09
		2535	20.21	19.16
		2507.5	20.09	19.04
	36RB Low (0)	2562.5	20.10	19.07
		2535	20.20	19.13
		2507.5	20.02	18.92
	75RB (0)	2562.5	20.02	19.04
		2535	20.22	19.21
		2507.5	19.95	18.98
20 MHz	1RB High (99)	2560	21.23	20.35
		2535	21.12	19.85
		2510	21.07	19.91
	1RB Middle (50)	2560	21.33	20.11
		2535	21.36	20.24
		2510	21.32	20.25
	1RB Low (0)	2560	21.26	20.13
		2535	21.25	20.01
		2510	21.04	19.85
	50RB High (50)	2560	20.08	18.93
		2535	20.16	19.23
		2510	20.05	19.16
	50RB Middle (25)	2560	20.25	19.14
		2535	20.26	19.25
		2510	20.16	19.26
	50RB Low (0)	2560	20.26	19.17
		2535	20.30	19.18
		2510	20.28	19.15
	100RB (0)	2560	20.23	19.12
		2535	20.25	19.24
		2510	20.15	19.03

Band12-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	715.3	22.43	21.05
		707.5	22.01	20.91
		699.7	22.17	20.93
	1RB Middle (3)	715.3	22.58	21.22
		707.5	22.13	21.28
		699.7	22.31	21.04
	1RB Low (0)	715.3	22.36	21.04
		707.5	22.13	20.97
		699.7	22.15	21.11
	3RB High (3)	715.3	22.43	21.20
		707.5	22.38	21.15
		699.7	22.16	20.90
	3RB Middle (1)	715.3	22.43	21.27
		707.5	22.36	21.14
		699.7	22.36	21.09
	3RB Low (0)	715.3	22.44	21.25
		707.5	22.29	21.17
		699.7	22.34	21.09
	6RB (0)	715.3	21.36	20.29
		707.5	21.33	20.16
		699.7	21.20	20.05
3 MHz	1RB High (14)	714.5	22.25	20.97
		707.5	22.16	20.85
		700.5	22.07	21.01
	1RB Middle (7)	714.5	22.28	20.85
		707.5	21.94	20.82
		700.5	22.03	20.70
	1RB Low (0)	714.5	22.29	20.76
		707.5	21.86	20.71
		700.5	22.09	21.04
	8RB High (7)	714.5	21.27	20.04
		707.5	21.12	20.09
		700.5	21.06	20.15
	8RB Middle (4)	714.5	21.31	20.15
		707.5	21.04	19.99
		700.5	21.00	20.09
	8RB Low (0)	714.5	21.18	20.05
		707.5	21.10	20.04
		700.5	21.01	20.03
	15RB (0)	714.5	21.04	20.07
		707.5	21.14	19.98
		700.5	21.06	20.05
5 MHz	1RB High (24)	713.5	22.00	21.10
		707.5	22.05	20.73
		701.5	21.74	20.92

	1RB Middle (12)	713.5	22.05	21.17
		707.5	21.86	20.83
		701.5	21.86	20.99
	1RB Low (0)	713.5	22.09	20.93
		707.5	21.85	20.81
		701.5	21.73	20.88
	12RB High (13)	713.5	20.97	19.89
		707.5	21.09	19.97
		701.5	20.87	19.90
	12RB Middle (6)	713.5	21.01	19.93
		707.5	21.00	19.83
		701.5	21.08	20.00
	12RB Low (0)	713.5	21.02	19.89
		707.5	21.00	19.81
		701.5	21.12	20.03
	25RB (0)	713.5	21.02	19.96
		707.5	21.11	20.17
		701.5	21.00	19.82
10 MHz	1RB High (49)	711	22.15	20.82
		707.5	22.10	20.87
		704	22.12	20.76
	1RB Middle (24)	711	22.27	21.11
		707.5	22.10	20.98
		704	22.15	20.79
	1RB Low (0)	711	22.00	20.88
		707.5	21.97	20.92
		704	21.73	20.72
	25RB High (25)	711	21.12	20.12
		707.5	21.01	19.88
		704	21.13	20.11
	25RB Middle (12)	711	21.14	20.13
		707.5	21.05	20.01
		704	21.06	19.81
	25RB Low (0)	711	21.11	20.02
		707.5	21.04	19.99
		704	20.93	19.75
	50RB (0)	711	21.10	20.04
		707.5	21.13	19.99
		704	21.07	19.97

Band13-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
5 MHz	1RB High (24)	784.5	22.48	21.26
		782	22.41	21.11
		779.5	22.36	21.14
	1RB Middle (12)	784.5	22.55	21.29
		782	22.47	21.19
		779.5	22.34	21.15
	1RB Low (0)	784.5	22.52	21.22
		782	22.24	21.12
		779.5	22.32	21.18
	12RB High (13)	784.5	21.43	20.35
		782	21.34	20.12
		779.5	21.40	20.19
	12RB Middle (6)	784.5	21.55	20.39
		782	21.48	20.04
		779.5	21.42	20.07
	12RB Low (0)	784.5	21.42	19.95
		782	21.36	19.93
		779.5	21.26	19.98
	25RB (0)	784.5	21.55	20.29
		782	21.30	20.08
		779.5	21.44	20.38
10 MHz	1RB High (49)	782	22.00	20.89
	1RB Middle(24)	782	22.28	21.17
	1RB Low (0)	782	21.98	21.00
	25RB High(25)	782	21.16	19.83
	25RB Middle(12)	782	21.04	19.99
	25RB Low (0)	782	21.03	19.98
	50RB (0)	782	21.11	19.97

Band14-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
5 MHz	1RB High (24)	795.5	22.10	21.20
		793	22.13	21.13
		790.5	22.05	21.17
	1RB Middle (12)	795.5	22.08	21.11
		793	22.39	21.13
		790.5	22.39	21.09
	1RB Low (0)	795.5	22.04	21.00
		793	22.24	21.05
		790.5	22.11	21.15
	12RB High (13)	795.5	21.33	20.29
		793	21.18	20.13
		790.5	21.36	20.27
	12RB Middle (6)	795.5	21.19	20.14
		793	21.22	20.04
		790.5	21.35	20.35
	12RB Low (0)	795.5	21.19	20.10
		793	21.32	20.03
		790.5	21.25	20.25
	25RB (0)	795.5	21.30	20.19
		793	21.14	20.13
		790.5	21.27	20.37
10 MHz	1RB High (49)	793	22.03	21.11
	1RB Middle(24)	793	22.18	21.08
	1RB Low (0)	793	22.09	21.06
	25RB High(25)	793	21.04	20.13
	25RB Middle(12)	793	21.02	20.09
	25RB Low (0)	793	21.11	20.07
	50RB (0)	793	21.15	20.07

Band71-Normal Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
5 MHz	1RB High (24)	695.5	21.75	20.52
		680.5	21.80	20.74
		665.5	21.74	20.64
	1RB Middle (12)	695.5	22.06	20.84
		680.5	21.81	20.41
		665.5	22.14	20.69
	1RB Low (0)	695.5	21.89	20.80
		680.5	21.83	20.80
		665.5	21.84	20.77
	12RB High (13)	695.5	20.86	19.74
		680.5	20.92	19.77
		665.5	20.90	19.90
	12RB Middle (6)	695.5	20.88	19.83
		680.5	20.99	20.07
		665.5	20.90	19.92
	12RB Low (0)	695.5	20.92	19.75
		680.5	21.02	20.08
		665.5	20.83	19.86
	25RB (0)	695.5	20.85	19.81
		680.5	20.90	19.98
		665.5	20.84	19.93
10 MHz	1RB High (49)	693	21.86	20.12
		680.5	21.67	20.78
		668	21.92	20.80
	1RB Middle (24)	693	22.15	20.93
		680.5	22.07	20.80
		668	21.97	20.85
	1RB Low (0)	693	21.68	20.18
		680.5	21.93	20.66
		668	21.58	20.81
	25RB High (25)	693	20.89	19.71
		680.5	20.93	20.13
		668	20.92	20.08
	25RB Middle (12)	693	21.02	20.22
		680.5	21.03	20.21
		668	20.97	19.93
	25RB Low (0)	693	20.89	19.90
		680.5	21.01	20.22
		668	20.91	19.78
	50RB (0)	693	20.97	19.73
		680.5	20.96	20.02
		668	20.97	19.85
15 MHz	1RB High (74)	690.5	21.93	20.69
		680.5	22.10	20.67
		670.5	21.98	20.58

	1RB Middle (37)	690.5	22.15	20.78
		680.5	22.07	20.89
		670.5	21.94	20.77
	1RB Low (0)	690.5	21.89	20.72
		680.5	22.17	21.27
		670.5	21.82	20.92
	36RB High (38)	690.5	21.09	20.01
		680.5	21.13	20.02
		670.5	21.12	20.03
	36RB Middle (19)	690.5	21.16	20.11
		680.5	21.16	20.14
		670.5	21.06	19.99
	36RB Low (0)	690.5	21.02	19.96
		680.5	21.10	20.03
		670.5	21.00	19.83
	75RB (0)	690.5	20.95	19.91
		680.5	20.98	20.02
		670.5	21.09	19.95
20 MHz	1RB High (99)	688	21.83	20.75
		683	21.77	20.56
		673	21.62	20.52
	1RB Middle (50)	688	22.29	21.04
		683	22.33	21.08
		673	21.87	21.06
	1RB Low (0)	688	21.98	20.86
		683	21.82	20.68
		673	21.90	20.59
	50RB High (50)	688	20.95	19.85
		683	20.86	19.85
		673	20.97	19.86
	50RB Middle (25)	688	21.10	20.00
		683	21.15	20.13
		673	21.12	20.10
	50RB Low (0)	688	21.05	19.98
		683	21.07	20.00
		673	21.02	19.90
	100RB (0)	688	20.91	19.84
		683	20.95	19.94
		673	21.04	19.92

Band 2-Low Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	1909.3	19.11	18.03
		1880	19.03	17.94
		1850.7	19.22	17.90
	1RB Middle (3)	1909.3	19.22	18.05
		1880	19.20	18.03
		1850.7	19.24	18.24
	1RB Low (0)	1909.3	19.15	18.05
		1880	19.09	17.90
		1850.7	18.90	17.94
	3RB High (3)	1909.3	19.19	18.13
		1880	19.30	18.28
		1850.7	19.24	18.46
	3RB Middle (1)	1909.3	19.19	18.07
		1880	19.27	18.21
		1850.7	19.15	18.34
	3RB Low (0)	1909.3	19.07	18.02
		1880	19.18	18.29
		1850.7	19.16	18.25
	6RB (0)	1909.3	18.07	17.16
		1880	18.19	17.11
		1850.7	18.13	17.07
3 MHz	1RB High (14)	1908.5	19.14	17.92
		1880	19.13	17.86
		1851.5	19.18	17.99
	1RB Middle (7)	1908.5	19.42	17.86
		1880	19.16	17.89
		1851.5	19.16	17.95
	1RB Low (0)	1908.5	19.19	17.94
		1880	19.09	17.82
		1851.5	19.04	17.87
	8RB High (7)	1908.5	18.12	17.20
		1880	18.19	17.21
		1851.5	18.20	17.34
	8RB Middle (4)	1908.5	18.12	17.52
		1880	18.16	17.27
		1851.5	18.09	17.16
	8RB Low (0)	1908.5	18.09	17.31
		1880	18.11	17.12
		1851.5	18.14	17.09
	15RB (0)	1908.5	18.03	17.16
		1880	17.99	17.06
		1851.5	18.20	17.22

5 MHz	1RB High (24)	1907.5	19.13	17.76
		1880	19.05	17.88
		1852.5	19.00	17.81
	1RB Middle (12)	1907.5	19.13	17.90
		1880	19.28	17.80
		1852.5	19.39	18.10
	1RB Low (0)	1907.5	18.85	17.82
		1880	19.06	18.05
		1852.5	18.99	17.81
	12RB High (13)	1907.5	18.07	17.03
		1880	18.16	17.09
		1852.5	18.06	17.13
	12RB Middle (6)	1907.5	18.16	16.99
		1880	18.15	17.11
		1852.5	18.12	16.98
	12RB Low (0)	1907.5	18.04	16.99
		1880	18.05	16.99
		1852.5	18.07	16.86
	25RB (0)	1907.5	18.07	17.08
		1880	18.08	17.12
		1852.5	18.22	17.28
10 MHz	1RB High (49)	1905	18.96	17.85
		1880	19.19	17.70
		1855	19.14	17.86
	1RB Middle (24)	1905	19.25	17.94
		1880	19.23	17.93
		1855	19.33	17.93
	1RB Low (0)	1905	18.74	17.59
		1880	18.92	17.87
		1855	18.95	18.01
	25RB High (25)	1905	18.07	17.17
		1880	18.10	17.18
		1855	18.03	16.97
	25RB Middle (12)	1905	18.16	17.09
		1880	18.09	17.11
		1855	18.26	17.14
	25RB Low (0)	1905	18.04	17.00
		1880	18.12	16.93
		1855	18.25	17.21
	50RB (0)	1905	18.12	17.17
		1880	18.12	17.06
		1855	18.21	16.99
15 MHz	1RB High (74)	1902.5	19.11	17.80
		1880	19.10	17.80
		1857.5	18.88	17.60
	1RB Middle (37)	1902.5	19.26	17.95
		1880	19.16	17.87
		1857.5	19.33	17.90

	1RB Low (0)	1902.5	18.85	17.83
		1880	19.19	18.01
		1857.5	19.36	18.08
	36RB High (38)	1902.5	18.19	17.10
		1880	18.23	17.12
		1857.5	18.03	16.97
	36RB Middle (19)	1902.5	18.20	17.03
		1880	18.20	17.15
		1857.5	18.15	17.17
	36RB Low (0)	1902.5	18.02	16.78
		1880	18.16	17.03
		1857.5	18.17	17.24
	75RB (0)	1902.5	18.13	17.09
		1880	18.12	17.09
		1857.5	18.17	17.04
20 MHz	1RB High (99)	1900	19.12	17.79
		1880	18.98	17.85
		1860	18.89	17.82
	1RB Middle (50)	1900	19.38	18.08
		1880	19.40	18.16
		1860	19.28	18.13
	1RB Low (0)	1900	19.06	17.56
		1880	19.01	17.66
		1860	19.22	17.99
	50RB High (50)	1900	18.20	17.24
		1880	18.19	17.25
		1860	18.00	16.89
	50RB Middle (25)	1900	18.20	17.13
		1880	18.15	17.32
		1860	18.14	17.19
	50RB Low (0)	1900	18.26	16.78
		1880	18.29	17.15
		1860	18.27	17.15
	100RB (0)	1900	18.22	17.07
		1880	18.20	17.21
		1860	18.13	17.07

Band4-Low Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
1.4 MHz	1RB High (5)	1754.3	18.71	17.60
		1732.5	18.69	17.38
		1710.7	18.64	17.50
	1RB Middle (3)	1754.3	18.71	17.68
		1732.5	18.75	17.64
		1710.7	18.67	17.76
	1RB Low (0)	1754.3	18.70	17.45
		1732.5	18.59	17.54
		1710.7	18.65	17.44
	3RB High (3)	1754.3	18.70	17.53
		1732.5	18.79	17.81
		1710.7	18.74	17.56
	3RB Middle (1)	1754.3	18.83	17.57
		1732.5	18.72	17.83
		1710.7	18.73	17.83
	3RB Low (0)	1754.3	18.66	17.44
		1732.5	18.66	17.84
		1710.7	18.66	17.61
	6RB (0)	1754.3	17.69	16.28
		1732.5	17.70	16.82
		1710.7	17.70	16.85
3 MHz	1RB High (14)	1753.5	18.67	17.59
		1732.5	18.72	17.53
		1711.5	18.78	17.57
	1RB Middle (7)	1753.5	18.36	17.16
		1732.5	18.80	17.55
		1711.5	18.89	17.62
	1RB Low (0)	1753.5	18.25	16.95
		1732.5	18.73	17.55
		1711.5	18.82	17.64
	8RB High (7)	1753.5	17.75	16.80
		1732.5	17.67	16.85
		1711.5	17.73	16.90
	8RB Middle (4)	1753.5	17.68	16.83
		1732.5	17.73	16.94
		1711.5	17.70	16.87
	8RB Low (0)	1753.5	17.60	16.72
		1732.5	17.70	16.77
		1711.5	17.78	16.85
	15RB (0)	1753.5	17.63	16.74
		1732.5	17.61	16.72
		1711.5	17.77	16.79

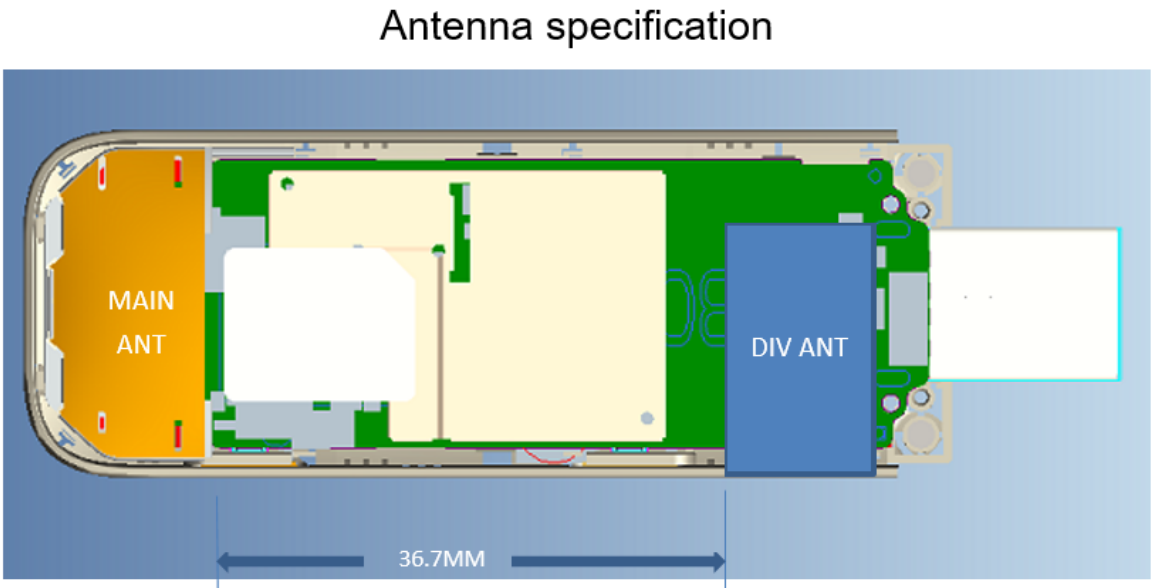
5 MHz	1RB High (24)	1752.5	18.80	17.71
		1732.5	18.37	17.42
		1712.5	18.77	17.50
	1RB Middle (12)	1752.5	18.44	17.45
		1732.5	18.54	17.43
		1712.5	18.61	17.57
	1RB Low (0)	1752.5	18.56	17.49
		1732.5	18.60	17.37
		1712.5	18.72	17.54
	12RB High (13)	1752.5	17.99	16.85
		1732.5	17.67	16.52
		1712.5	17.69	16.78
	12RB Middle (6)	1752.5	17.79	16.64
		1732.5	17.72	16.67
		1712.5	17.65	16.64
	12RB Low (0)	1752.5	17.73	16.66
		1732.5	17.75	16.81
		1712.5	17.68	16.57
	25RB (0)	1752.5	17.87	16.82
		1732.5	17.60	16.67
		1712.5	17.75	16.72
10 MHz	1RB High (49)	1750	18.66	17.80
		1732.5	18.63	17.48
		1715	18.96	17.58
	1RB Middle (24)	1750	18.85	17.56
		1732.5	18.77	17.35
		1715	18.80	17.70
	1RB Low (0)	1750	18.75	17.56
		1732.5	18.91	17.60
		1715	18.65	17.64
	25RB High (25)	1750	17.66	16.84
		1732.5	17.62	16.85
		1715	17.80	16.80
	25RB Middle (12)	1750	17.88	16.79
		1732.5	17.74	16.77
		1715	17.80	16.78
	25RB Low (0)	1750	17.88	16.82
		1732.5	17.76	16.81
		1715	17.77	16.76
	50RB (0)	1750	17.78	16.77
		1732.5	17.67	16.83
		1715	17.87	16.77
15 MHz	1RB High (74)	1747.5	18.82	17.62
		1732.5	18.63	17.38
		1717.5	18.81	17.64
	1RB Middle (37)	1747.5	18.62	17.49
		1732.5	18.83	17.47
		1717.5	18.69	17.58

	1RB Low (0)	1747.5	18.87	17.72
		1732.5	18.87	17.68
		1717.5	18.83	17.49
	36RB High (38)	1747.5	17.78	16.75
		1732.5	17.74	16.78
		1717.5	17.91	16.89
	36RB Middle (19)	1747.5	17.83	16.75
		1732.5	17.82	16.83
		1717.5	17.75	16.73
	36RB Low (0)	1747.5	17.85	16.69
		1732.5	17.84	16.77
		1717.5	17.78	16.74
	75RB (0)	1747.5	17.80	16.86
		1732.5	17.70	16.76
		1717.5	17.95	16.90
20 MHz	1RB High (99)	1745	18.72	17.69
		1732.5	18.72	17.49
		1720	18.79	17.60
	1RB Middle (50)	1745	18.76	17.71
		1732.5	18.81	17.66
		1720	18.84	17.71
	1RB Low (0)	1745	18.99	17.65
		1732.5	18.87	17.63
		1720	18.89	17.50
	50RB High (50)	1745	17.85	16.85
		1732.5	17.69	16.58
		1720	17.75	17.00
	50RB Middle (25)	1745	17.76	16.71
		1732.5	17.82	16.80
		1720	17.64	16.87
	50RB Low (0)	1745	17.87	16.73
		1732.5	17.86	16.76
		1720	17.75	16.67
	100RB (0)	1745	17.95	16.80
		1732.5	17.72	16.69
		1720	17.79	16.91

LTE Band7-Low Power				
Bandwidth (MHz)	RB allocation RB offset (Start RB)	Frequency (MHz)	QPSK Actual output power (dBm)	16QAM Actual output power (dBm)
5 MHz	1RB High (24)	2567.5	18.70	17.95
		2535	19.26	18.10
		2502.5	19.45	18.47
	1RB Middle (12)	2567.5	18.75	18.06
		2535	19.35	18.11
		2502.5	19.41	18.32
	1RB Low (0)	2567.5	18.81	17.91
		2535	19.16	18.20
		2502.5	19.46	18.45
	12RB High (13)	2567.5	18.03	16.97
		2535	18.34	17.31
		2502.5	18.50	17.42
	12RB Middle (6)	2567.5	18.13	17.08
		2535	18.30	17.29
		2502.5	18.47	17.45
	12RB Low (0)	2567.5	18.14	17.12
		2535	18.38	17.37
		2502.5	18.45	17.46
	25RB (0)	2567.5	18.14	17.10
		2535	18.33	17.39
		2502.5	18.47	17.46
10 MHz	1RB High (49)	2565	19.21	18.09
		2535	19.47	18.29
		2505	19.45	18.40
	1RB Middle (24)	2565	19.26	18.12
		2535	19.40	18.28
		2505	19.46	18.37
	1RB Low (0)	2565	19.16	18.10
		2535	19.33	18.20
		2505	19.49	18.47
	25RB High (25)	2565	18.19	17.18
		2535	18.31	17.29
		2505	18.47	17.49
	25RB Middle (12)	2565	18.27	17.16
		2535	18.34	17.30
		2505	18.47	17.45
	25RB Low (0)	2565	18.17	17.14
		2535	18.42	17.29
		2505	18.43	17.46
	50RB (0)	2565	18.25	17.23
		2535	18.33	17.38
		2505	18.47	17.44
15 MHz	1RB High (74)	2562.5	19.10	18.02
		2535	19.31	18.18
		2507.5	19.47	18.45

	1RB Middle (37)	2562.5	19.32	17.95
		2535	19.36	18.23
		2507.5	19.47	18.19
	1RB Low (0)	2562.5	19.26	18.00
		2535	19.40	18.35
		2507.5	19.47	18.47
	36RB High (38)	2562.5	18.25	17.07
		2535	18.41	17.28
		2507.5	18.47	17.45
	36RB Middle (19)	2562.5	18.24	17.16
		2535	18.45	17.33
		2507.5	18.47	17.46
	36RB Low (0)	2562.5	18.30	17.14
		2535	18.45	17.31
		2507.5	18.47	17.48
	75RB (0)	2562.5	18.17	17.22
		2535	18.38	17.43
		2507.5	18.46	17.49
20 MHz	1RB High (99)	2560	18.61	17.62
		2535	18.70	17.56
		2510	19.02	17.67
	1RB Middle (50)	2560	18.92	17.88
		2535	18.99	17.85
		2510	19.18	18.15
	1RB Low (0)	2560	19.14	17.86
		2535	19.10	17.89
		2510	19.23	18.05
	50RB High (50)	2560	18.07	16.66
		2535	18.12	16.93
		2510	18.18	17.30
	50RB Middle (25)	2560	17.89	16.88
		2535	17.90	16.83
		2510	18.15	17.17
	50RB Low (0)	2560	17.95	17.04
		2535	17.98	16.91
		2510	18.17	17.09
	100RB (0)	2560	17.74	16.75
		2535	18.00	16.94
		2510	18.20	17.12

12 Transmit Antenna Position and Size



MAIN

Type	Supplier	Comments
FPC	Haitong	

DIV ANT

Type	Supplier	Comments
PCB ANT	TRIPOD	

Picture 12.1 Antenna Position and size

13 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom. The distance is 5mm 9mm or 14mm and just applied to the condition of body worn accessory.

It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-g SAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or more than 1.2W/kg.

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 11.

Table 13.1: Duty Cycle

Mode	Duty Cycle
GPRS&EGPRS for GSM850/1900	1:4
WCDMA&LTE FDD	1:1

13.1 SAR results for Fast SAR

.

Table 13.1-1: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.5 °C											
Liquid Temperature: 22.3°C											
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
251	848.8	GPRS (2)	Top	/	30.49	30.5	0.707	**0.71**	0.467	**0.47**	-0.03
190	836.6	GPRS (2)	Top	/	30.49	30.5	0.655	**0.66**	0.41	**0.41**	-0.09
128	824.2	GPRS (2)	Top	/	30.44	30.5	0.651	**0.66**	0.429	**0.43**	0.13
251	848.8	GPRS (2)	Bottom	Fig.1	30.49	30.5	0.942	**0.94**	0.605	**0.61**	-0.07
190	836.6	GPRS (2)	Bottom	/	30.49	30.5	0.848	**0.85**	0.552	**0.55**	-0.17
128	824.2	GPRS (2)	Bottom	/	30.44	30.5	0.814	**0.83**	0.522	**0.53**	-0.05
190	836.6	GPRS (2)	Front	/	30.49	30.5	0.369	**0.37**	0.24	**0.24**	0.18
190	836.6	GPRS (2)	Rear	/	30.49	30.5	0.291	**0.29**	0.181	**0.18**	-0.02
251	848.8	EGPRS (2)	Bottom	/	30.48	30.5	0.924	**0.93**	0.588	**0.59**	0.12

Note: The distance between the EUT and the phantom bottom is 5mm.

Table 13.1-2: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.5 ºC Liquid Temperature: 22.3ºC											
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
810	1909.8	GPRS (2)	Top	14mm	27.49	27.5	0.436	**0.44**	0.257	**0.26**	0.11
661	1880	GPRS (2)	Top	14mm	27.33	27.5	0.544	**0.57**	0.314	**0.33**	-0.15
512	1850.2	GPRS (2)	Top	14mm	27.2	27.5	0.617	**0.66**	0.373	**0.40**	0.14
661	1880	GPRS (2)	Bottom	14mm	27.33	27.5	0.445	**0.46**	0.260	**0.27**	-0.02
661	1880	GPRS (3)	Front	9mm	27.33	27.5	0.399	**0.41**	0.225	**0.23**	0.01
661	1880	GPRS (3)	Rear	9mm	27.33	27.5	0.519	**0.54**	0.293	**0.30**	0.18
512	1850.2	EGPRS (2)	Bottom	14mm	27.16	27.5	0.588	**0.64**	0.342	**0.37**	0.06
810	1909.8	GPRS (2)	Top	/	23.71	25.5	0.723	**1.09**	0.422	**0.64**	-0.09
661	1880	GPRS (2)	Top	/	24.89	25.5	0.969	**1.12**	0.557	**0.64**	0.11
512	1850.2	GPRS (2)	Top	/	25.38	25.5	1.10	**1.13**	0.627	**0.64**	-0.01
810	1909.8	GPRS (2)	Bottom	/	23.71	25.5	0.701	**1.06**	0.411	**0.62**	0.14
661	1880	GPRS (2)	Bottom	/	24.89	25.5	0.987	**1.14**	0.538	**0.62**	0.05
512	1850.2	GPRS (2)	Bottom	Fig.2	25.38	25.5	1.13	**1.16**	0.639	**0.66**	-0.15
661	1880	GPRS (2)	Front	/	24.89	25.5	0.784	**0.90**	0.436	**0.50**	-0.18
661	1880	GPRS (2)	Rear	/	24.89	25.5	0.596	**0.69**	0.344	**0.40**	0.16
512	1850.2	EGPRS (2)	Bottom	/	25.41	25.5	1.08	**1.10**	0.622	**0.64**	-0.03

Note1: The distance between the EUT and the phantom bottom is 14mm/9mm by sensor, the distance for other results is 5mm.

Table 13.1-3: SAR Values (WCDMA1900 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9400	1880	Top	14mm	22.04	23	0.554	**0.69**	0.329	**0.41**	0.16
9538	1907.6	Bottom	14mm	22.09	23	0.585	**0.72**	0.346	**0.43**	-0.13
9400	1880	Bottom	14mm	22.04	23	0.497	**0.62**	0.3	**0.37**	-0.02
9262	1852.4	Bottom	14mm	22.01	23	0.598	**0.75**	0.354	**0.44**	0.09
9400	1880	Front	9mm	22.04	23	0.354	**0.44**	0.213	**0.27**	0.11
9538	1907.6	Rear	9mm	22.09	23	0.535	**0.66**	0.302	**0.37**	-0.02
9400	1880	Rear	9mm	22.04	23	0.595	**0.74**	0.349	**0.44**	0.09
9262	1852.4	Rear	9mm	22.01	23	0.713	**0.90**	0.406	**0.51**	0.09
9538	1907.6	Top	/	19.38	20	0.862	**0.99**	0.451	**0.52**	0.17
9400	1880	Top	/	19.39	20	0.709	**0.82**	0.375	**0.43**	0.06
9262	1852.4	Top	Fig.3	19.47	20	0.989	**1.12**	0.548	**0.62**	0.12
9538	1907.6	Bottom	/	19.38	20	0.74	**0.85**	0.409	**0.47**	0.14
9400	1880	Bottom	/	19.39	20	0.709	**0.82**	0.407	**0.47**	-0.20
9262	1852.4	Bottom	/	19.47	20	0.669	**0.76**	0.384	**0.43**	-0.07

9400	1880	Front	/	19.39	20	0.271	**0.31**	0.162	**0.19**	0.03
9400	1880	Rear	/	19.39	20	0.518	**0.60**	0.27	**0.31**	-0.01

Note1: The distance between the EUT and the phantom bottom is 14mm/9mm by sensor, the distance for other results is 5mm.

Table 13.1-4: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1513	1752.6	Top	14mm	21.71	21.8	0.933	**0.95**	0.522	**0.53**	-0.14
1412	1732.4	Top	14mm	21.75	21.8	0.995	**1.01**	0.593	**0.60**	-0.05
1312	1712.4	Top	14mm	21.72	21.8	0.867	**0.88**	0.476	**0.48**	0.01
1513	1752.6	Bottom	14mm	21.71	21.8	0.811	**0.83**	0.48	**0.49**	0.11
1412	1732.4	Bottom	14mm	21.75	21.8	0.857	**0.87**	0.506	**0.51**	0.07
1312	1712.4	Bottom	14mm	21.72	21.8	0.846	**0.86**	0.497	**0.51**	-0.12
1412	1732.4	Front	9mm	21.75	21.8	0.599	**0.61**	0.351	**0.36**	-0.14
1513	1752.6	Rear	9mm	21.71	21.8	1.15	**1.17**	0.632	**0.65**	-0.20
1412	1732.4	Rear	9mm/ Fig.4	21.75	21.8	1.35	**1.37**	0.761	**0.77**	0.09
1312	1712.4	Rear	9mm	21.72	21.8	1.32	**1.34**	0.758	**0.77**	0.15
1513	1752.6	Top	/	19.05	19.5	1.14	**1.26**	0.632	**0.70**	0.20
1412	1732.4	Top	/	19.03	19.5	1.12	**1.25**	0.624	**0.70**	-0.06
1312	1712.4	Top	/	19.01	19.5	1.06	**1.19**	0.588	**0.66**	0.11
1513	1752.6	Bottom	/	19.05	19.5	1.06	**1.18**	0.602	**0.67**	-0.04
1412	1732.4	Bottom	/	19.03	19.5	1.15	**1.28**	0.645	**0.72**	0.12
1312	1712.4	Bottom	/	19.01	19.5	1.11	**1.24**	0.622	**0.70**	-0.17
1412	1732.4	Front	/	19.03	19.5	0.475	**0.53**	0.277	**0.31**	-0.17
1513	1752.6	Rear	/	19.05	19.5	0.892	**0.99**	0.492	**0.55**	0.00
1412	1732.4	Rear	/	19.03	19.5	0.976	**1.09**	0.535	**0.60**	-0.09
1312	1712.4	Rear	/	19.01	19.5	1.09	**1.22**	0.591	**0.66**	0.20

Note1: The distance between the EUT and the phantom bottom is 14mm/9mm by sensor, the distance for other results is 5mm.

Table 13.1-5: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz									
4183	836.6	Top	/	22.43	23	0.630	**0.72**	0.421	**0.48**	0.04
4233	846.6	Bottom	Fig.5	22.23	23	0.652	**0.78**	0.431	**0.51**	0.04
4183	836.6	Bottom	/	22.43	23	0.630	**0.72**	0.425	**0.48**	0.14
4132	826.4	Bottom	/	22.33	23	0.619	**0.72**	0.409	**0.48**	0.05
4183	836.6	Front	/	22.43	23	0.370	**0.42**	0.232	**0.26**	-0.17
4132	826.4	Rear	/	22.43	23	0.324	**0.37**	0.214	**0.24**	0.08

Note: The distance between the EUT and the phantom bottom is 5mm.

Table 13.1-6: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃												
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
18900	1880	1RB_Mid	Top	14mm	21.84	23	0.431	**0.56**	0.182	**0.24**	0.11
18900	1880	1RB_Mid	Bottom	14mm	21.84	23	0.515	**0.67**	0.203	**0.27**	0.04
18900	1880	1RB_Mid	Front	9mm	21.84	23	0.436	**0.57**	0.174	**0.23**	0.17
19100	1900	1RB_Mid	Rear	9mm	21.75	23	0.627	**0.84**	0.331	**0.44**	0.20
18900	1880	1RB_Mid	Rear	9mm	21.84	23	0.702	**0.92**	0.272	**0.36**	-0.01
18700	1860	1RB_Mid	Rear	9mm	21.83	23	0.692	**0.91**	0.28	**0.37**	0.06
19100	1900	100RB	Rear	9mm	20.72	22	0.645	**0.87**	0.232	**0.31**	-0.11
18900	1880	50RB_Low	Top	14mm	20.85	22	0.311	**0.41**	0.133	**0.17**	-0.06
18900	1880	50RB_Low	Bottom	14mm	20.85	22	0.607	**0.79**	0.232	**0.30**	0.18
19100	1900	50RB_Low	Front	/	19.88	20	0.489	**0.50**	0.248	**0.26**	0.09
19100	1900	50RB_Low	Rear	/	19.88	20	0.607	**0.62**	0.306	**0.31**	0.10
19100	1900	1RB_Mid	Top	Fig.6	19.38	20	1.18	**1.36**	0.58	**0.67**	0.02
18900	1880	1RB_Mid	Top	/	19.4	20	1.01	**1.16**	0.518	**0.59**	-0.16
18700	1860	1RB_Mid	Top	/	19.28	20	0.919	**1.08**	0.485	**0.57**	0.08
19100	1900	100RB	Top	/	18.22	19	0.897	**1.07**	0.445	**0.53**	0.13
19100	1900	1RB_Mid	Bottom	/	19.38	20	0.873	**1.01**	0.457	**0.53**	0.17
18900	1880	1RB_Mid	Bottom	/	19.4	20	0.795	**0.91**	0.424	**0.49**	-0.08
18700	1860	1RB_Mid	Bottom	/	19.28	20	0.732	**0.86**	0.403	**0.48**	-0.03
19100	1900	100RB	Bottom	/	18.22	19	0.625	**0.75**	0.331	**0.40**	-0.10
18900	1880	1RB_Mid	Rear	/	19.4	20	0.484	**0.56**	0.264	**0.30**	-0.01
18900	1880	1RB_Mid	Front	/	19.4	20	0.654	**0.75**	0.348	**0.40**	-0.08
19100	1900	50RB_Low	Top	/	18.26	19	0.881	**1.04**	0.431	**0.51**	0.05
18900	1880	50RB_Low	Top	/	18.29	19	0.75	**0.88**	0.379	**0.45**	-0.14
18700	1860	50RB_Low	Top	/	18.27	19	0.729	**0.86**	0.376	**0.44**	-0.17
19100	1900	50RB_Low	Bottom	/	18.26	19	0.945	**1.12**	0.399	**0.47**	0.03
18900	1880	50RB_Low	Bottom	/	18.29	19	0.847	**1.00**	0.455	**0.54**	0.15
18700	1860	50RB_Low	Bottom	/	18.27	19	0.894	**1.06**	0.486	**0.57**	0.13
18900	1880	50RB_Low	Rear	/	18.29	19	0.549	**0.65**	0.276	**0.33**	0.10
18900	1880	50RB_Low	Front	/	18.29	19	0.314	**0.37**	0.169	**0.20**	-0.12

Note1: The distance between the EUT and the phantom bottom is 14mm/9mm by sensor, the distance for other results is 5mm.

Note2: The LTE mode is QPSK_20MHz.

Table 13.1-7: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.5 ℃					Liquid Temperature: 22.3℃						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20300	1745	1RB_Mid	Top	14mm	21.96	23	0.751	**0.95**	0.418	**0.53**	0.07
20175	1732.5	1RB_Mid	Top	14mm	21.94	23	0.730	**0.93**	0.405	**0.52**	-0.11
20050	1720	1RB_Mid	Top	14mm	21.86	23	0.598	**0.78**	0.332	**0.43**	0.11
20300	1745	100RB	Top	14mm	20.83	22	0.595	**0.78**	0.332	**0.43**	-0.11
20300	1745	1RB_Mid	Bottom	14mm	21.96	23	0.586	**0.74**	0.338	**0.43**	-0.13
20300	1745	1RB_Mid	Front	9mm	21.96	23	0.487	**0.62**	0.276	**0.35**	-0.12
20050	1720	1RB_Mid	Rear	9mm	21.96	23	0.916	**1.16**	0.489	**0.62**	-0.06
20175	1732.5	1RB_Mid	Rear	9mm	21.94	23	1.03	**1.31**	0.550	**0.70**	-0.05
20300	1745	1RB_Mid	Rear	9mm/Fig.7	21.86	23	1.070	**1.39**	0.582	**0.76**	0.07
20300	1745	100RB	Rear	9mm	20.83	22	0.595	**0.78**	0.342	**0.45**	0.11
20300	1745	50RB_Mid	Top	14mm	20.84	22	0.588	**0.77**	0.332	**0.43**	-0.09
20300	1745	50RB_Mid	Bottom	14mm	20.84	22	0.608	**0.79**	0.345	**0.45**	0.10
20300	1745	50RB_Mid	Front	9mm	20.84	22	0.313	**0.41**	0.181	**0.24**	-0.13
20300	1745	50RB_Mid	Rear	9mm	20.84	22	0.567	**0.74**	0.316	**0.41**	-0.04
20300	1745	1RB_High	Top	/	18.99	19.5	1.23	**1.38**	0.645	**0.73**	0.20
20175	1732.5	1RB_High	Top	/	18.87	19.5	1.15	**1.33**	0.596	**0.69**	0.08
20050	1720	1RB_High	Top	/	18.89	19.5	1.18	**1.36**	0.615	**0.71**	-0.15
20175	1732.5	100RB	Top	/	17.95	18.5	0.941	**1.07**	0.492	**0.56**	0.07
20300	1745	1RB_High	Bottom	/	18.99	19.5	0.869	**0.98**	0.484	**0.54**	0.04
20175	1732.5	1RB_High	Bottom	/	18.87	19.5	0.842	**0.97**	0.462	**0.53**	-0.01
20050	1720	1RB_High	Bottom	/	18.89	19.5	0.912	**1.05**	0.496	**0.57**	0.03
20300	1745	100RB	Bottom	/	17.95	18.5	0.73	**0.83**	0.405	**0.46**	-0.10
20300	1745	1RB_High	Rear	/	18.99	19.5	0.924	**1.04**	0.474	**0.53**	0.08
20175	1732.5	1RB_High	Rear	/	18.87	19.5	0.856	**0.99**	0.417	**0.48**	0.11
20050	1720	1RB_High	Rear	/	18.89	19.5	0.787	**0.91**	0.385	**0.44**	0.17
20300	1745	100RB	Rear	/	17.95	18.5	0.743	**0.84**	0.377	**0.43**	0.05
20050	1720	1RB_High	Front	/	18.99	19.5	0.534	**0.60**	0.271	**0.30**	0.08
20300	1745	50RB_High	Top	/	17.87	18.5	0.934	**1.08**	0.496	**0.57**	0.13
20175	1732.5	50RB_High	Top	/	17.86	18.5	0.924	**1.07**	0.481	**0.56**	-0.07
20050	1720	50RB_High	Top	/	17.75	18.5	0.878	**1.04**	0.412	**0.49**	0.02
20300	1745	50RB_High	Bottom	/	17.87	18.5	0.71	**0.82**	0.396	**0.46**	0.02
20175	1732.5	50RB_High	Bottom	/	17.86	18.5	0.702	**0.81**	0.391	**0.45**	-0.02
20050	1720	50RB_High	Bottom	/	17.75	18.5	0.668	**0.79**	0.358	**0.43**	0.08
20050	1720	50RB_High	Rear	/	17.87	18.5	0.547	**0.63**	0.275	**0.32**	-0.11
20050	1720	50RB_High	Front	/	17.87	18.5	0.38	**0.44**	0.192	**0.22**	-0.05

Note1: The distance between the EUT and the phantom bottom is 14mm/9mm by sensor, the distance for other results is 5mm.
Note2: The LTE mode is QPSK_20MHz.

Table 13.1-8: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃												
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20600	844	1RB_Mid	Top	/	22.35	23	0.347	**0.40**	0.224	**0.26**	-0.06
20600	844	1RB_Mid	Bottom	Fig.8	22.35	23	0.464	**0.54**	0.304	**0.35**	-0.03
20600	844	1RB_Mid	Front	/	22.35	23	0.235	**0.27**	0.147	**0.17**	-0.17
20600	844	1RB_Mid	Rear	/	22.35	23	0.219	**0.25**	0.142	**0.16**	0.04
20600	844	25RB_Mid	Top	/	21.32	22	0.276	**0.32**	0.172	**0.20**	-0.01
20600	844	25RB_Mid	Bottom	/	21.32	22	0.365	**0.43**	0.239	**0.28**	0.15
20600	844	25RB_Mid	Front	/	21.32	22	0.160	**0.19**	0.101	**0.12**	0.05
20600	844	25RB_Mid	Rear	/	21.32	22	0.154	**0.18**	0.103	**0.12**	0.06

Note: The distance between the EUT and the phantom bottom is 5mm.
Note1: The LTE mode is QPSK_10MHz.

Table 13.1-9: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃												
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
21100	2535	1RB_Mid	Top	14mm	21.36	22.5	0.483	**0.63**	0.261	**0.34**	0.07
21350	2560	1RB_Mid	Bottom	14mm	21.33	22.5	0.551	**0.72**	0.286	**0.37**	0.14
21100	2535	1RB_Mid	Bottom	14mm	21.36	22.5	0.663	**0.86**	0.346	**0.45**	-0.01
20850	2510	1RB_Mid	Bottom	14mm	21.32	22.5	0.847	**1.11**	0.439	**0.58**	0.03
20850	2510	100RB	Bottom	14mm	20.15	21.5	0.623	**0.85**	0.331	**0.45**	0.04
21100	2535	1RB_Mid	Front	9mm	21.36	22.5	0.278	**0.36**	0.138	**0.18**	-0.05
21350	2560	1RB_Mid	Rear	9mm	21.33	22.5	0.482	**0.63**	0.257	**0.34**	0.14
21100	2535	1RB_Mid	Rear	9mm	21.36	22.5	0.638	**0.83**	0.329	**0.43**	-0.08
20850	2510	1RB_Mid	Rear	9mm	21.32	22.5	0.931	**1.22**	0.478	**0.63**	-0.20
20850	2510	100RB	Rear	9mm	20.15	21.5	0.631	**0.86**	0.323	**0.44**	-0.06
21100	2535	50RB_Mid	Top	14mm	20.3	21.5	0.338	**0.45**	0.188	**0.25**	-0.15
21100	2535	50RB_Mid	Bottom	14mm	20.3	21.5	0.51	**0.67**	0.272	**0.36**	0.13
21100	2535	50RB_Mid	Front	9mm	20.3	21.5	0.221	**0.29**	0.109	**0.14**	-0.15
21100	2535	50RB_Mid	Rear	9mm	20.3	21.5	0.526	**0.69**	0.271	**0.36**	0.18
21350	2560	1RB_Low	Top	/	19.14	19.5	0.895	**0.97**	0.432	**0.47**	-0.05
21100	2535	1RB_Low	Top	/	19.1	19.5	0.844	**0.93**	0.407	**0.45**	-0.17

20850	2510	1RB_Low	Top	/	19.23	19.5	0.999	**1.06**	0.481	**0.51**	-0.20
20850	2510	100RB	Top	/	18.2	18.5	0.747	**0.80**	0.366	**0.39**	0.14
21350	2560	1RB_Low	Bottom	/	19.14	19.5	1.06	**1.15**	0.483	**0.52**	-0.01
21100	2535	1RB_Low	Bottom	/	19.1	19.5	1.12	**1.23**	0.515	**0.56**	-0.04
20850	2510	1RB_Low	Bottom	Fig.9	19.23	19.5	1.27	**1.35**	0.595	**0.63**	-0.12
20850	2510	100RB	Bottom	/	18.2	18.5	0.953	**1.02**	0.445	**0.48**	0.08
20850	2510	1RB_Low	Front	/	19.23	19.5	0.228	**0.24**	0.112	**0.12**	0.04
21350	2560	1RB_Low	Rear	/	19.14	19.5	0.654	**0.71**	0.297	**0.32**	-0.18
21100	2535	1RB_Low	Rear	/	19.1	19.5	0.916	**1.00**	0.412	**0.45**	0.12
20850	2510	1RB_Low	Rear	/	19.23	19.5	1.01	**1.07**	0.45	**0.48**	-0.16
20850	2510	100RB	Rear	/	18.2	18.5	0.792	**0.85**	0.354	**0.38**	0.03
21350	2560	50RB_Mid	Top	/	18.07	18.5	0.676	**0.75**	0.327	**0.36**	-0.03
21100	2535	50RB_Mid	Top	/	18.12	18.5	0.726	**0.79**	0.349	**0.38**	0.01
20850	2510	50RB_Mid	Top	/	18.18	18.5	0.77	**0.83**	0.371	**0.40**	0.02
21350	2560	50RB_Mid	Bottom	/	18.07	18.5	0.78	**0.86**	0.357	**0.39**	0.14
21100	2535	50RB_Mid	Bottom	/	18.12	18.5	0.821	**0.90**	0.381	**0.42**	-0.15
20850	2510	50RB_Mid	Bottom	/	18.18	18.5	0.916	**0.99**	0.43	**0.46**	-0.05
20850	2510	50RB_Mid	Front	/	18.18	19.5	0.182	**0.25**	0.087	**0.12**	-0.18
21350	2560	50RB_Mid	Rear	/	18.07	18.5	0.458	**0.51**	0.211	**0.23**	0.01
21100	2535	50RB_Mid	Rear	/	18.12	18.5	0.646	**0.71**	0.292	**0.32**	-0.12
20850	2510	50RB_Mid	Rear	/	18.18	18.5	0.789	**0.85**	0.354	**0.38**	-0.17

Note1: The distance between the EUT and the phantom bottom is 14mm/9mm by sensor, the distance for other results is 5mm.

Note2: The LTE mode is QPSK_20MHz.

Table 13.1-10: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.5 ℃											
Frequency		**Mode**	**Test Position**	**Figure No./ Note**	**Conducted Power (dBm)**	**Max. tune-up Power (dBm)**	**Measured SAR(1g) (W/kg)**	**Reported SAR(1g) (W/kg)**	**Measured SAR(10g) (W/kg)**	**Reported SAR(10g) (W/kg)**	**Power Drift (dB)**
Ch.	MHz										
23130	711	1RB_Mid	Top	Fig.10	22.27	23	0.358	**0.42**	0.231	**0.27**	-0.01
23130	711	1RB_Mid	Bottom	/	22.27	23	0.188	**0.22**	0.130	**0.15**	0.01
23130	711	1RB_Mid	Front	/	22.27	23	0.162	**0.19**	0.114	**0.13**	0.11
23130	711	1RB_Mid	Rear	/	22.27	23	0.150	**0.18**	0.094	**0.11**	0.09
23130	711	25RB_Mid	Top	/	21.14	22	0.291	**0.35**	0.188	**0.23**	0.08
23130	711	25RB_Mid	Bottom	/	21.14	22	0.152	**0.19**	0.103	**0.13**	0.18
23130	711	25RB_Mid	Front	/	21.14	22	0.125	**0.15**	0.078	**0.10**	0.12
23130	711	25RB_Mid	Rear	/	21.14	22	0.141	**0.17**	0.089	**0.11**	-0.02

Note1: The distance between the EUT and the phantom bottom is 5mm.

Note2: The LTE mode is QPSK_10MHz.

Table 13.1-11: SAR Values (LTE Band13 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23230	782	1RB_Mid	Top	/	22.28	23	0.263	**0.31**	0.091	**0.11**	-0.12
23230	782	1RB_Mid	Bottom	Fig.11	22.28	23	0.380	**0.45**	0.250	**0.30**	0.03
23230	782	1RB_Mid	Front	/	22.28	23	0.176	**0.21**	0.110	**0.13**	0.15
23230	782	1RB_Mid	Rear	/	22.28	23	0.144	**0.17**	0.088	**0.10**	-0.01
23230	782	25RB_High	Top	/	21.16	22	0.211	**0.26**	0.138	**0.17**	-0.16
23230	782	25RB_High	Bottom	/	21.16	22	0.285	**0.35**	0.189	**0.23**	-0.13
23230	782	25RB_High	Front	/	21.16	22	0.144	**0.17**	0.089	**0.11**	-0.01
23230	782	25RB_High	Rear	/	21.16	22	0.115	**0.14**	0.070	**0.08**	0.04

Note1: The distance between the EUT and the phantom bottom is 5mm.

Note2: The LTE mode is QPSK_10MHz.

Table 13.1-12: SAR Values (LTE Band14 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23330	793	1RB_Mid	Top	/	22.18	23	0.336	**0.41**	0.198	**0.24**	-0.17
23330	793	1RB_Mid	Bottom	Fig.12	22.18	23	0.404	**0.49**	0.243	**0.29**	0.06
23330	793	1RB_Mid	Front	/	22.18	23	0.196	**0.24**	0.110	**0.13**	-0.10
23330	793	1RB_Mid	Rear	/	22.18	23	0.157	**0.19**	0.091	**0.11**	-0.09
23330	793	25RB_Low	Top	/	21.11	22	0.255	**0.31**	0.151	**0.19**	-0.15
23330	793	25RB_Low	Bottom	/	21.11	22	0.360	**0.44**	0.219	**0.27**	-0.02
23330	793	25RB_Low	Front	/	21.11	22	0.149	**0.18**	0.083	**0.10**	-0.11
23330	793	25RB_Low	Rear	/	21.11	22	0.117	**0.14**	0.068	**0.08**	-0.12

Note1: The distance between the EUT and the phantom bottom is 5mm.

Note2: The LTE mode is QPSK_10MHz.

Table 13.1-13: SAR Values (LTE Band71 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
133322	683	1RB_Mid	Top	/	22.33	23	0.141	**0.16**	0.094	**0.11**	0.01
133322	683	1RB_Mid	Bottom	Fig.13	22.33	23	0.154	**0.18**	0.104	**0.12**	0.07
133322	683	1RB_Mid	Front	/	22.33	23	0.128	**0.15**	0.085	**0.10**	0.17
133322	683	1RB_Mid	Rear	/	22.33	23	0.104	**0.12**	0.072	**0.08**	0.16
133322	683	50RB_Mid	Top	/	21.15	22	0.100	**0.12**	0.067	**0.08**	0.11
133322	683	50RB_Mid	Bottom	/	21.15	22	0.127	**0.15**	0.085	**0.10**	0.05
133322	683	50RB_Mid	Front	/	21.15	22	0.065	**0.08**	0.044	**0.05**	-0.11
133322	683	50RB_Mid	Rear	/	21.15	22	0.072	**0.09**	0.049	**0.06**	-0.11

Note1: The distance between the EUT and the phantom bottom is 5mm.

Note2: The LTE mode is QPSK_20MHz.

13.2 SAR results for Standard procedure

There is zoom scan measurement to be added for the highest measured SAR in each exposure configuration/band.

Table 13.2-1: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
251	848.8	GPRS (2)	Bottom	Fig.1	30.49	30.5	0.942	**0.94**	0.605	**0.61**	-0.07

Note: The distance between the EUT and the phantom bottom is 5mm.

Table 13.2-2: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
512	1850.2	GPRS (2)	Bottom	Fig.2	25.38	25.5	1.13	**1.16**	0.639	**0.66**	-0.15

Note: The distance between the EUT and the phantom bottom is 5mm.

Table 13.2-3: SAR Values (WCDMA1900 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9262	1852.4	Top	Fig.3	19.47	20	0.989	**1.12**	0.548	**0.62**	0.12

Note: The distance between the EUT and the phantom bottom is 5mm.

Table 13.2-4: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1412	1732.4	Rear	9mm/ Fig.4	21.75	21.8	1.35	**1.37**	0.761	**0.77**	0.09

Note1: The distance between the EUT and the phantom bottom is 9mm by sensor.

Table 13.2-5: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz									
4233	846.6	Bottom	Fig.5	22.23	23	0.652	**0.78**	0.431	**0.51**	0.04

Note: The distance between the EUT and the phantom bottom is 5mm.

Table 13.2-6: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃												
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
19100	1900	1RB_Mid	Top	Fig.6	19.38	20	1.18	**1.36**	0.58	**0.67**	0.02

Note1: The distance between the EUT and the phantom bottom is 5mm.

Note2: The LTE mode is QPSK_20MHz.

Table 13.2-7: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20300	1745	1RB_Mid	Rear	9mm/Fig.7	21.86	23	1.070	**1.39**	0.582	**0.76**	0.07

Note1: The distance between the EUT and the phantom bottom is 9mm by sensor.

Note2: The LTE mode is QPSK_20MHz.

Table 13.2-8: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20600	844	1RB_Mid	Bottom	Fig.8	22.35	23	0.464	**0.54**	0.304	**0.35**	-0.03

Note: The distance between the EUT and the phantom bottom is 5mm.

Note1: The LTE mode is QPSK_10MHz.

Table 13.2-9: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.5 ℃ Liquid Temperature: 22.3℃											
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20850	2510	1RB_Low	Bottom	Fig.9	19.23	19.5	1.27	**1.35**	0.595	**0.63**	-0.12

Note1: The distance between the EUT and the phantom bottom is 5mm.

Note2: The LTE mode is QPSK_20MHz.

Table 13.2-10: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.5 ℃					Liquid Temperature: 22.3℃						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23130	711	1RB_Mid	Top	Fig.10	22.27	23	0.358	**0.42**	0.231	**0.27**	-0.01

Note1: The distance between the EUT and the phantom bottom is 5mm.
Note2: The LTE mode is QPSK_10MHz.

Table 13.2-11: SAR Values (LTE Band13 - Body)

Ambient Temperature: 22.5 ℃					Liquid Temperature: 22.3℃						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23230	782	1RB_Mid	Bottom	Fig.11	22.28	23	0.380	**0.45**	0.250	**0.30**	0.03

Note1: The distance between the EUT and the phantom bottom is 5mm.
Note2: The LTE mode is QPSK_10MHz.

Table 13.2-12: SAR Values (LTE Band14 - Body)

Ambient Temperature: 22.5 ℃					Liquid Temperature: 22.3℃						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23330	793	1RB_Mid	Bottom	Fig.12	22.18	24	0.404	**0.61**	0.243	**0.37**	0.06

Note1: The distance between the EUT and the phantom bottom is 5mm.
Note2: The LTE mode is QPSK_10MHz.

Table 13.2-13: SAR Values (LTE Band71 - Body)

Ambient Temperature: 22.5 ℃					Liquid Temperature: 22.3℃						
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Power Drift (dB)
Ch.	MHz										
133322	683	1RB_Mid	Bottom	Fig.13	22.33	23	0.154	**0.18**	0.104	**0.12**	0.07

Note1: The distance between the EUT and the phantom bottom is 5mm.
Note2: The LTE mode is QPSK_20MHz.

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; steps2) 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 ≥ 1.45W/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 GSM850 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
251	848.8	GPRS (2)	Bottom	5	0.942	0.923	1.02	/

Table 14.2: SAR Measurement Variability for Body GSM1900 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
512	1850.2	GPRS (2)	Top	5	1.1	1.05	1.05	/
512	1850.2	GPRS (2)	Bottom	5	1.13	1.09	1.04	/

Table 14.3: SAR Measurement Variability for Body WCDMA1900 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
9262	1852.4	RMC	Top	5	0.989	0.958	1.03	/

Table 14.4: SAR Measurement Variability for Body WCDMA1700 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
1412	1732.4	RMC	Top	14	0.995	0.97	1.03	/
1412	1732.4	RMC	Bottom	14	0.857	0.832	1.03	/
1412	1732.4	RMC	Rear	9	1.35	1.3	1.04	/
1513	1752.6	RMC	Top	5	1.14	1.08	1.06	/
1412	1732.4	RMC	Bottom	5	1.15	1.1	1.05	/
1312	1712.4	RMC	Rear	5	1.09	1.05	1.04	/

Table 14.5: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	1RB_Mid	Top	5	1.18	1.15	1.03	/
19100	1900	50RB_Low	Bottom	5	0.945	0.933	1.01	/

Table 14.6: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20300	1745	1RB_High	Rear	9	1.07	1.03	1.04	/
20300	1745	1RB_High	Top	5	1.23	1.2	1.03	/
20050	1720	1RB_High	Bottom	5	0.912	0.894	1.02	/
20300	1745	1RB_High	Rear	5	0.924	0.911	1.01	/

Table 14.7: SAR Measurement Variability for Body LTE B7 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20850	2510	1RB_Mid	Bottom	14	0.847	0.824	1.03	/
20850	2510	1RB_Mid	Rear	9	0.931	0.92	1.01	/
20850	2510	1RB_Mid	Top	5	0.999	0.989	1.01	/
20850	2510	1RB_Mid	Bottom	5	1.27	1.25	1.02	/
20850	2510	1RB_Mid	Rear	5	1.01	0.977	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	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	√3	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	√3	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	√3	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	√3	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521

Combined standard uncertainty	$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.55	9.43	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					19.1	18.9	

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

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	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	√3	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	√3	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.8	R	√3	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	√3	1	1	3.9	3.9	∞
13	Post-processing	B	4.0	R	√3	1	1	2.3	2.3	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞

21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.7	10.6	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.4	21.1	

15.3 Measurement Uncertainty for Fast 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	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	√3	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	√3	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	R	√3	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	√3	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	√3	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	√3	1	1	4.0	4.0	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	√3	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	√3	0.64	0.43	1.8	1.2	∞

20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	√3	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

15.4 Measurement Uncertainty for Fast SAR Tests (3~6GHz)

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	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	√3	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	√3	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	√3	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	√3	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	√3	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	√3	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	√3	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	√3	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	√3	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	√3	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	√3	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	√3	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	14.0	R	√3	1	1	8.1	8.1	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	√3	1	1	2.9	2.9	∞

Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.5	13.4	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						27.0	26.8	

16 MAIN TEST INSTRUMENTS

Table 16.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 14, 2021	One year
02	Power meter	NRP2	106276	May 11, 2021	One year
03	Power sensor	NRP6A	101369		
04	Signal Generator	E4438C	MY49071430	February 1, 2021	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	159889	January 13, 2021	One year
07	E-field Probe	SPEAG EX3DV4	7548	June 25, 2021	One year
08	DAE	SPEAG DAE4	1331	September 1, 2021	One year
09	Dipole Validation Kit	SPEAG D750V2	1017	July 12,,2021	One year
10	Dipole Validation Kit	SPEAG D900V2	1d051	July 12,,2021	One year
11	Dipole Validation Kit	SPEAG D1800V2	2d145	July 12,,2021	One year
12	Dipole Validation Kit	SPEAG D1900V2	5d101	July 15,2021	One year
13	Dipole Validation Kit	SPEAG D2600V2	1012	July 26,2021	One year

END OF REPORT BODY

ANNEX A Graph Results

GSM850_CH251 Bottom 5mm
Date: 12/11/2021
Electronics: DAE4 Sn1331
Medium: head 900 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.877 S/m; ε_r = 45.045;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: GSM850 848.8 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.60 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.64 W/kg
SAR(1 g) = 0.942 W/kg; SAR(10 g) = 0.605 W/kg
Maximum value of SAR (measured) = 1.32 W/kg

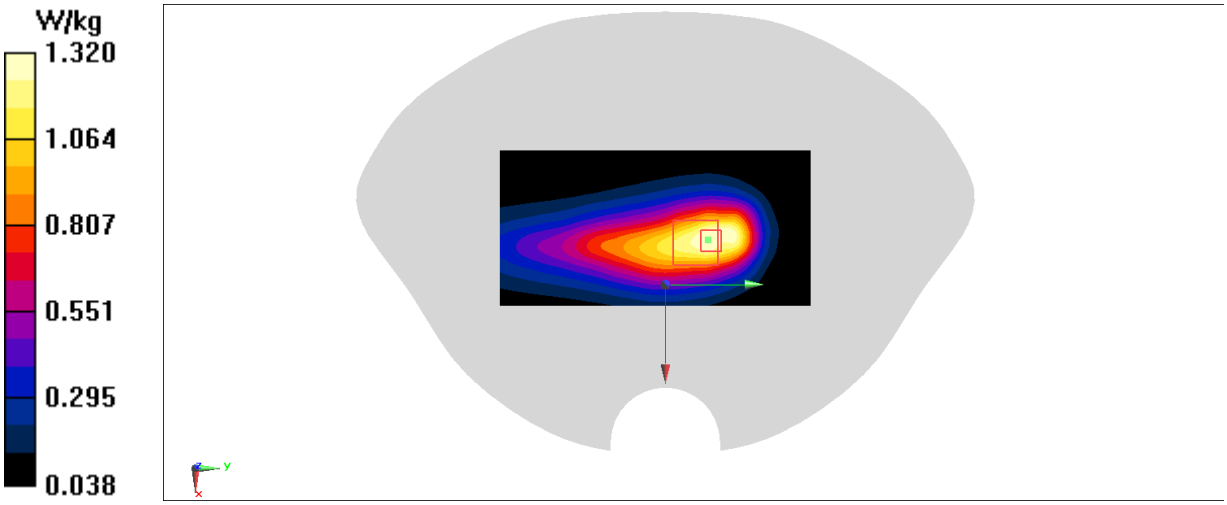


Fig A.1

PCS1900_CH512 Bottom 5mm
Date: 12/13/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1850.2 MHz; σ = 1.448 S/m; ε_r = 42.243;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: PCS1900 1850.2 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.75 W/kg

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.60 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.639 W/kg
Maximum value of SAR (measured) = 1.63 W/kg

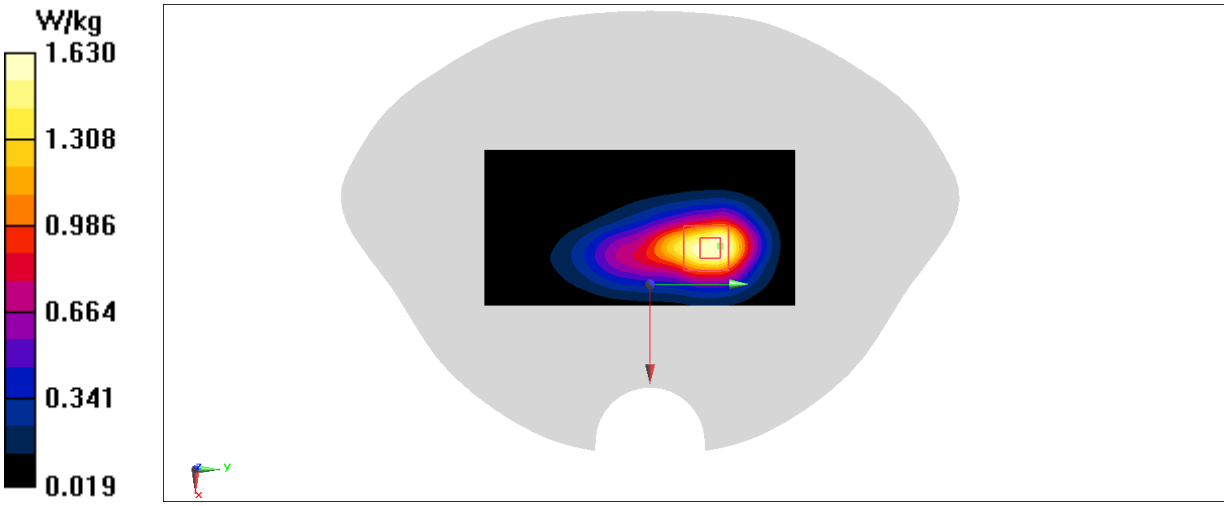


Fig A.2

WCDMA1900-BII_CH9262 Top 5mm
Date: 12/13/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1852.4 MHz; σ = 1.495 S/m; ε_r = 42.854; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1900-BII 1852.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.58 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.30 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 0.989 W/kg; SAR(10 g) = 0.548 W/kg
Maximum value of SAR (measured) = 1.41 W/kg

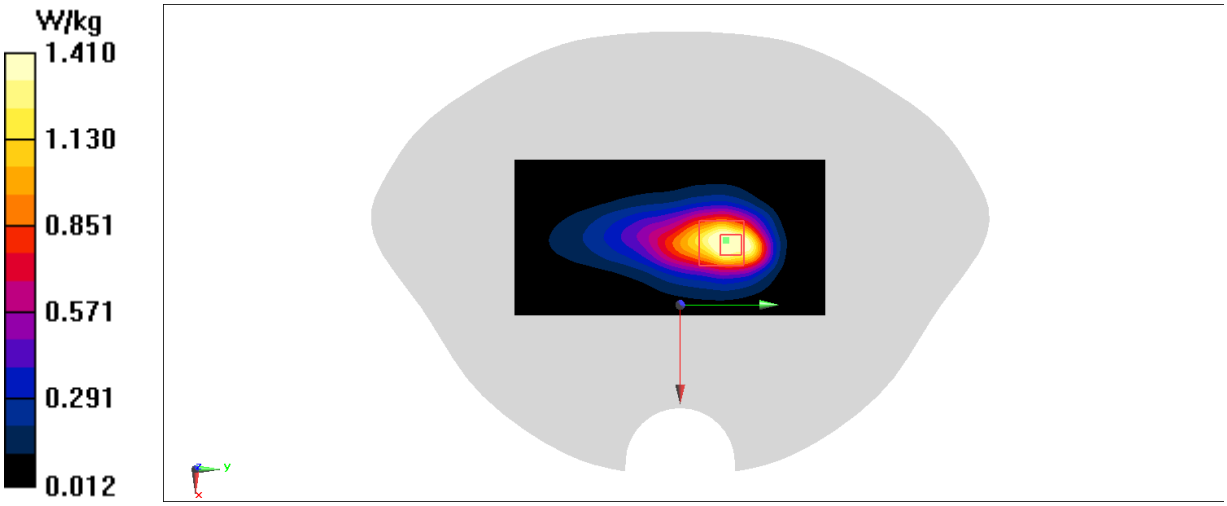


Fig A.3

WCDMA1700-BIV_CH1412 Rear 9mm
Date: 12/12/2021
Electronics: DAE4 Sn1331
Medium: head 1750 MHz
Medium parameters used: f = 1732.4 MHz; σ = 1.375 S/m; ε_r = 42.514;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA1700-BIV 1732.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(8.14,8.14,8.14)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.07 W/kg

Configuration/Body REAR 9mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.05 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 2.32 W/kg
SAR(1 g) = 1.35 W/kg; SAR(10 g) = 0.761 W/kg
Maximum value of SAR (measured) = 1.97 W/kg

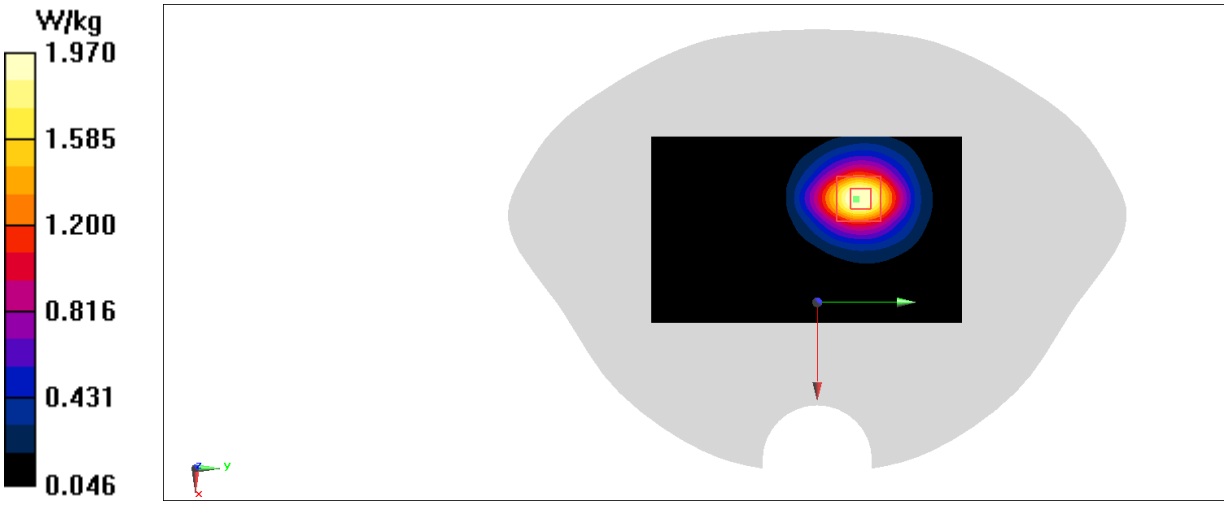


Fig A.4

WCDMA850-BV_CH4233 Bottom 5mm
Date: 12/11/2021
Electronics: DAE4 Sn1331
Medium: head 835 MHz
Medium parameters used: f = 846.6 MHz; σ = 0.876 S/m; ε_r = 45.051;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: WCDMA850-BV 846.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.963 W/kg

Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.61 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.652 W/kg; SAR(10 g) = 0.431 W/kg
Maximum value of SAR (measured) = 0.864 W/kg

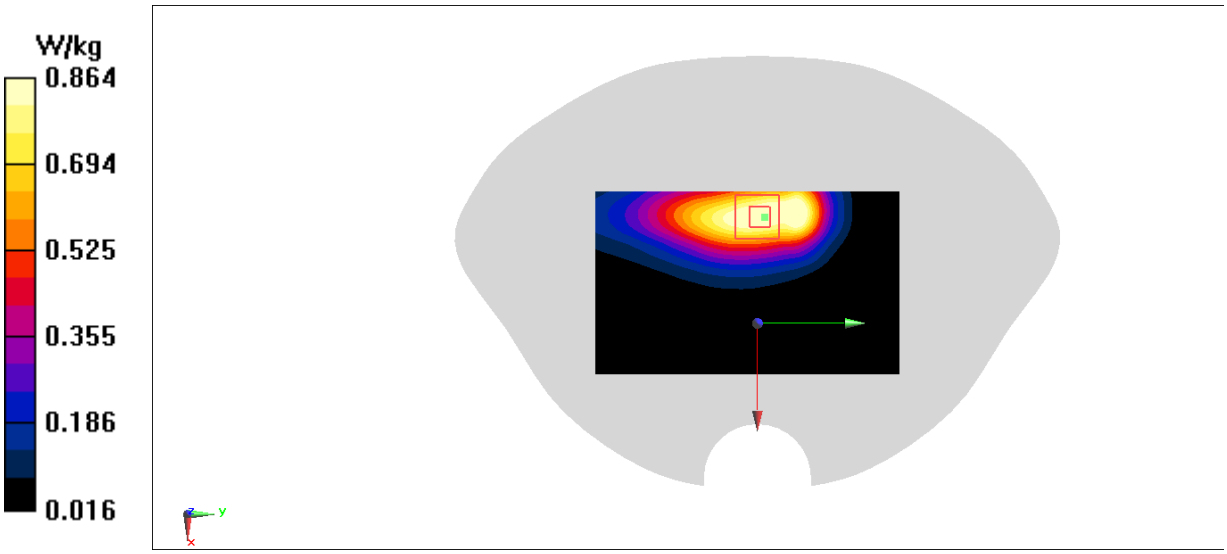


Fig A.5

LTE1900-FDD2_CH19100 Top 5mm
Date: 12/13/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.527 S/m; ε_r = 42.795;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1900-FDD2 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.99 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.42 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.27 W/kg
SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.580 W/kg
Maximum value of SAR (measured) = 1.82 W/kg

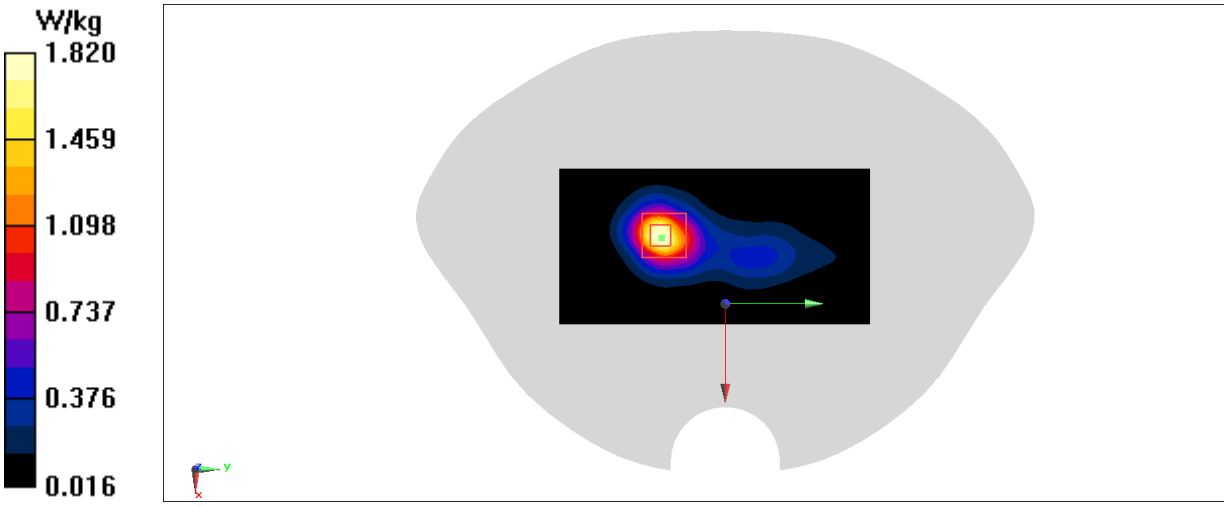


Fig A.6

LTE1700-FDD4_CH20300 Rear 9mm
Date: 12/12/2021
Electronics: DAE4 Sn1331
Medium: head 1750 MHz
Medium parameters used: f = 1745 MHz; σ = 1.419 S/m; ε_r = 43.08;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE1700-FDD4 1745 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(8.14,8.14,8.14)

Area Scan (71x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.54 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.55 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.89 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.582 W/kg
Maximum value of SAR (measured) = 1.58 W/kg

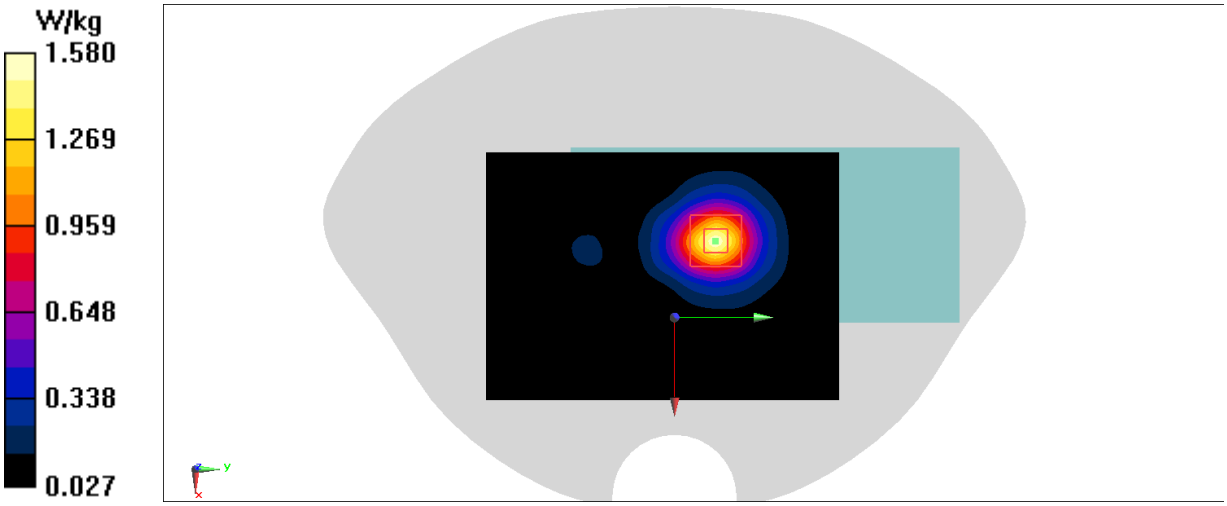


Fig A.7

LTE850-FDD5_CH20600 Bottom 5mm
Date: 12/11/2021
Electronics: DAE4 Sn1331
Medium: head 835 MHz
Medium parameters used: f = 844 MHz; σ = 0.861 S/m; ε_r = 44.144;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 844 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36, 10.36, 10.36)

Area Scan (81x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.735 W/kg

Configuration/BOTTOM 5mm 1-M 2/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.48 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.779 W/kg
SAR(1 g) = 0.464 W/kg; SAR(10 g) = 0.304 W/kg
Maximum value of SAR (measured) = 0.621 W/kg

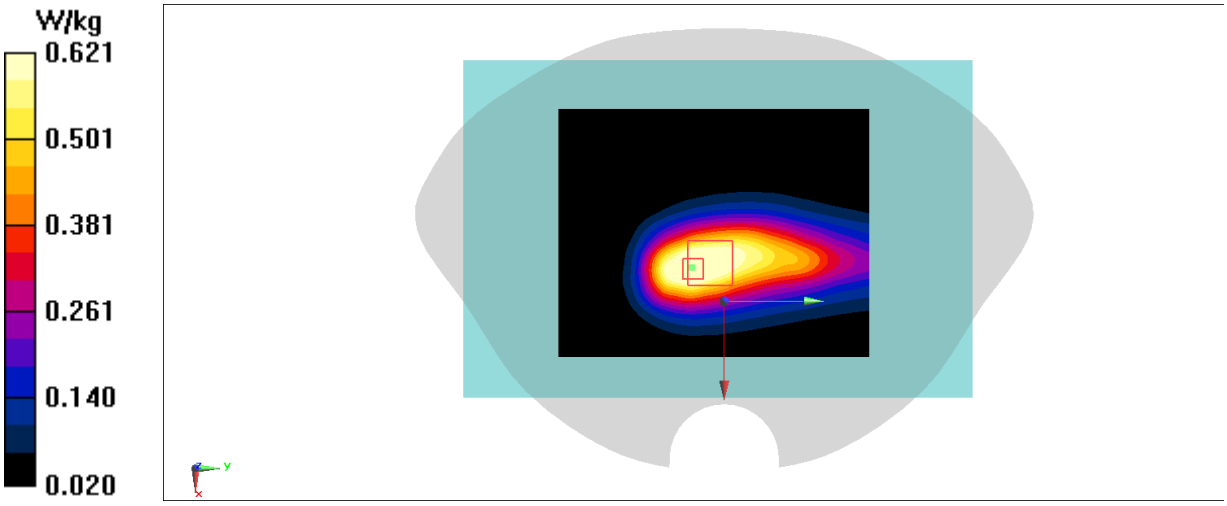


Fig A.8

LTE2500-FDD7_CH20850 Bottom 5mm
Date: 12/14/2021
Electronics: DAE4 Sn1331
Medium: head 2600 MHz
Medium parameters used: f = 2510 MHz; σ = 2.02 S/m; ε_r = 41.444; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE2500-FDD7 2510 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.35,7.35,7.35)

Area Scan (61x121x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 2.37 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.04 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.84 W/kg
SAR(1 g) = 1.27 W/kg; SAR(10 g) = 0.595 W/kg
Maximum value of SAR (measured) = 2.18 W/kg

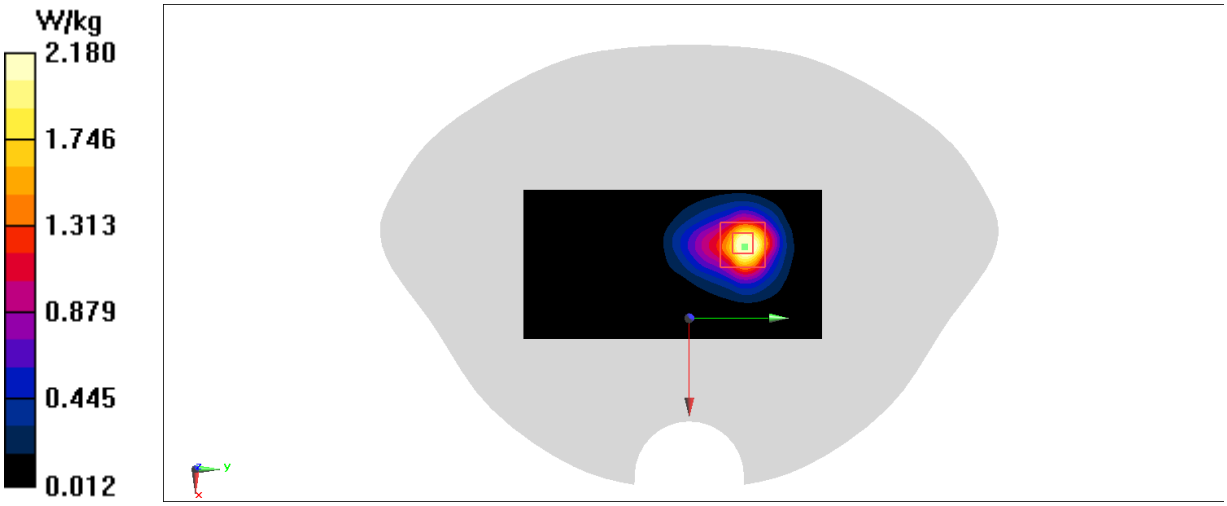


Fig A.9

LTE700-FDD12_CH23130 Top 5mm
Date: 12/10/2021
Electronics: DAE4 Sn1331
Medium: head 750 MHz
Medium parameters used: f = 711 MHz; σ = 0.816 S/m; ε_r = 45.549; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD12 711 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.538 W/kg

Zoom Scan (6x8x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.50 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.775 W/kg
SAR(1 g) = 0.358 W/kg; SAR(10 g) = 0.231 W/kg

Maximum value of SAR (measured) = 0.568 W/kg

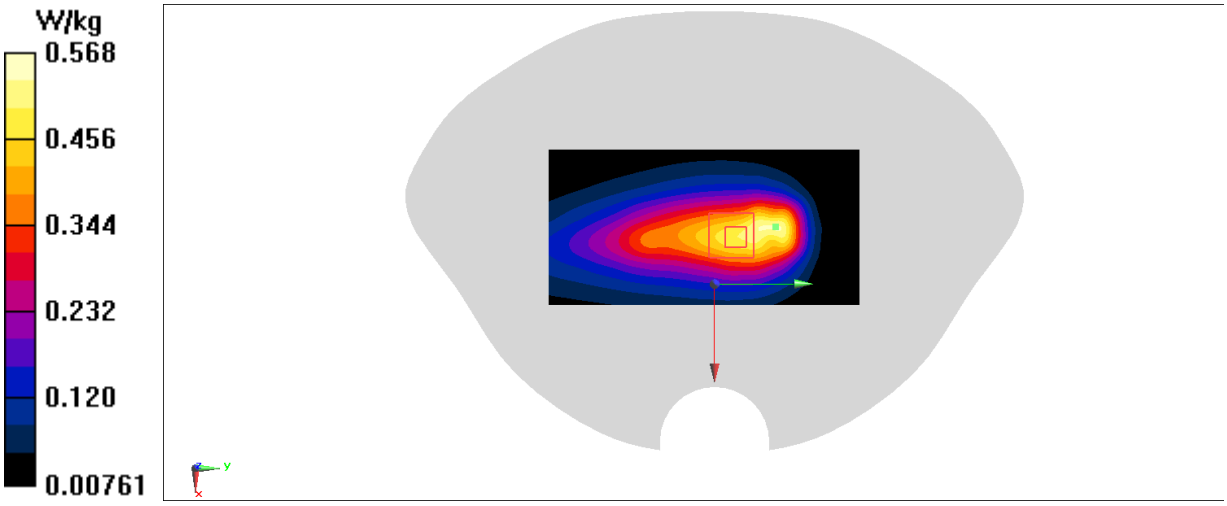


Fig A.10

LTE750-FDD13_CH23230 Bottom 5mm
Date: 12/10/2021
Electronics: DAE4 Sn1331
Medium: head 750 MHz
Medium parameters used: f = 782 MHz; σ = 0.847 S/m; ε_r = 45.261;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE750-FDD13 782 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.562 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.10 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.701 W/kg
SAR(1 g) = 0.380 W/kg; SAR(10 g) = 0.250 W/kg

Maximum value of SAR (measured) = 0.543 W/kg

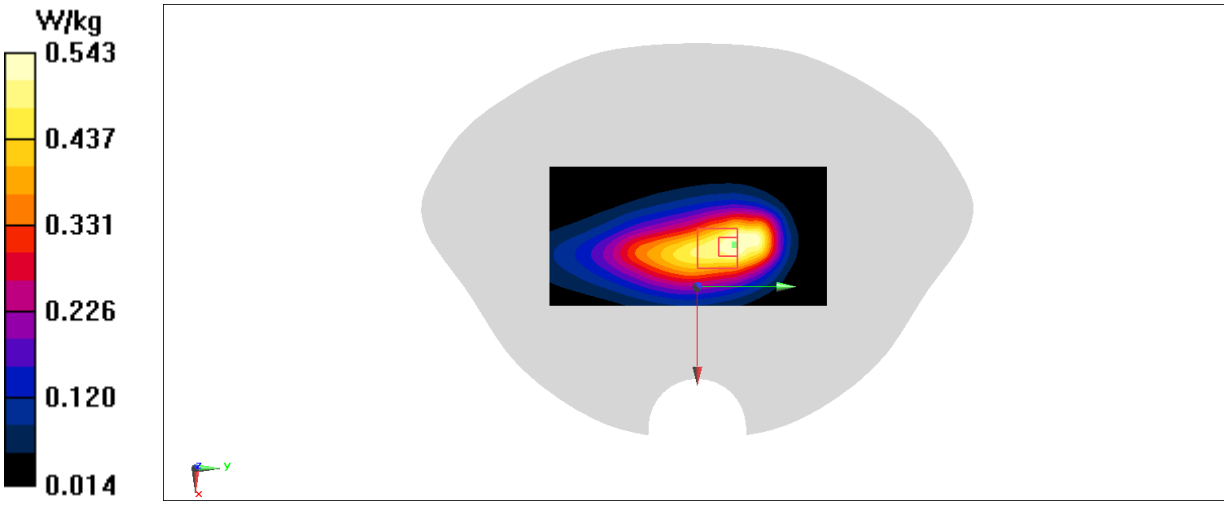


Fig A.11

LTE700-FDD14_CH23330 Bottom 5mm
Date: 12/10/2021
Electronics: DAE4 Sn1331
Medium: head 750 MHz
Medium parameters used: f = 793 MHz; σ = 0.852 S/m; ε_r = 45.214;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD14 793 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.540 W/kg

Zoom Scan (6x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 23.22 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.844 W/kg
SAR(1 g) = 0.404 W/kg; SAR(10 g) = 0.243 W/kg
Maximum value of SAR (measured) = 0.485 W/kg

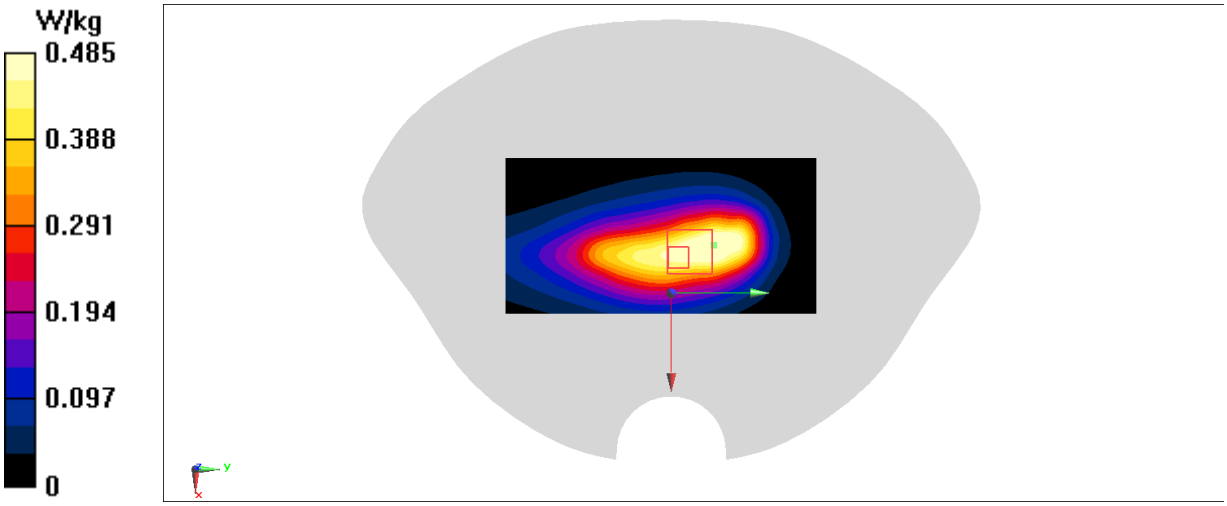


Fig A.12

LTE700-FDD71_CH133322 Bottom 5mm
Date: 12/10/2021
Electronics: DAE4 Sn1331
Medium: head 750 MHz
Medium parameters used: f = 683 MHz; σ = 0.803 S/m; ε_r = 45.659;ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE700-FDD71 683 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (51x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.284 W/kg

Zoom Scan (5x7x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.21 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.325 W/kg
SAR(1 g) = 0.154 W/kg; SAR(10 g) = 0.104 W/kg
Maximum value of SAR (measured) = 0.221 W/kg

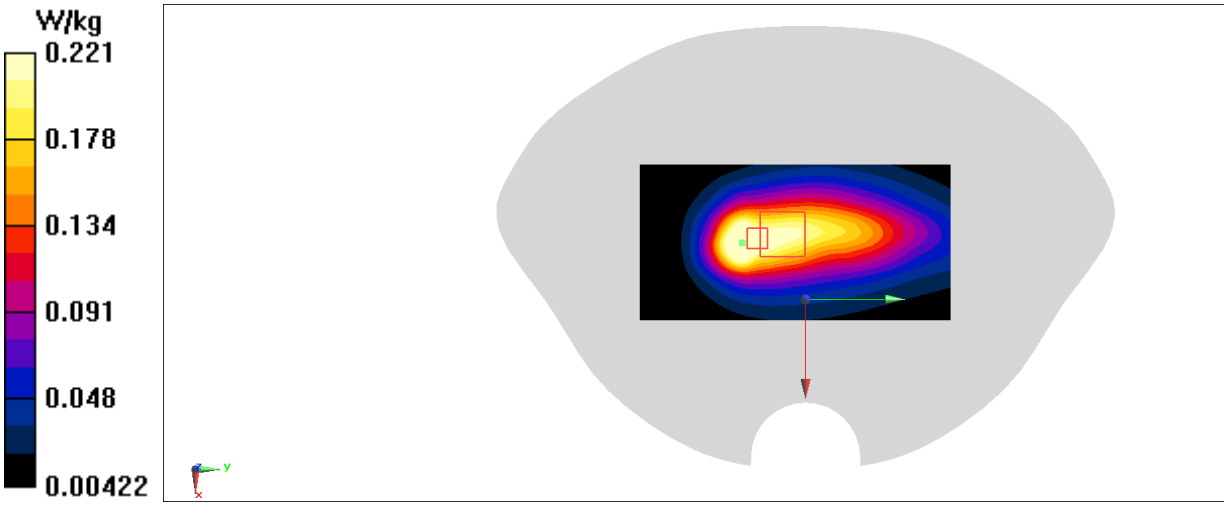


Fig A.13

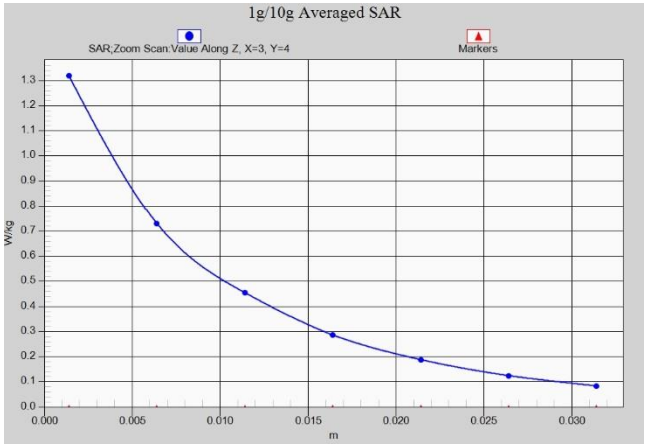


Fig. 1-1 Z-Scan at power reference point (850 MHz Body)

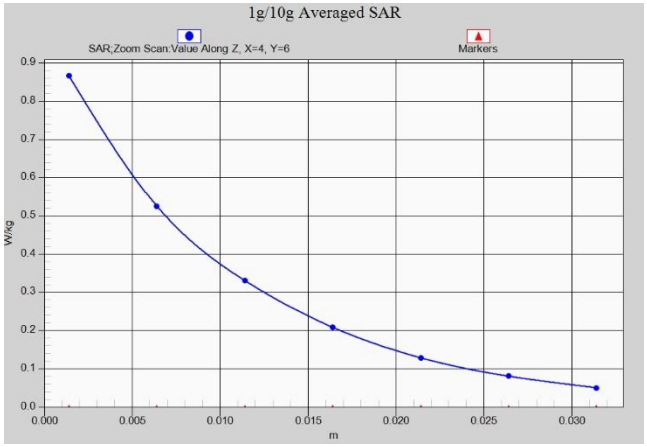


Fig. 1-2 Z-Scan at power reference point (1900 MHz Body)

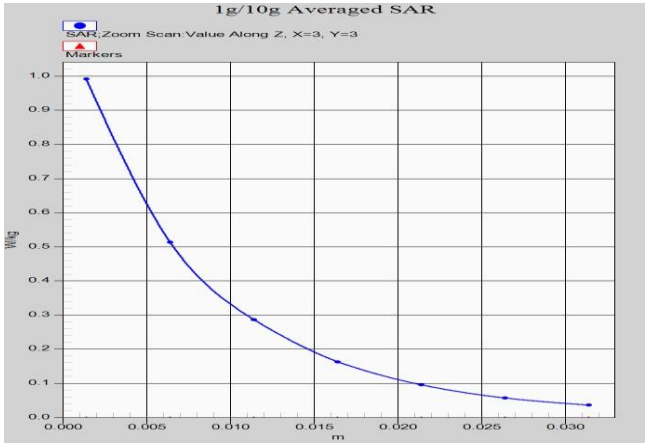


Fig. 1-3 Z-Scan at power reference point (WCDMA1900 Body)

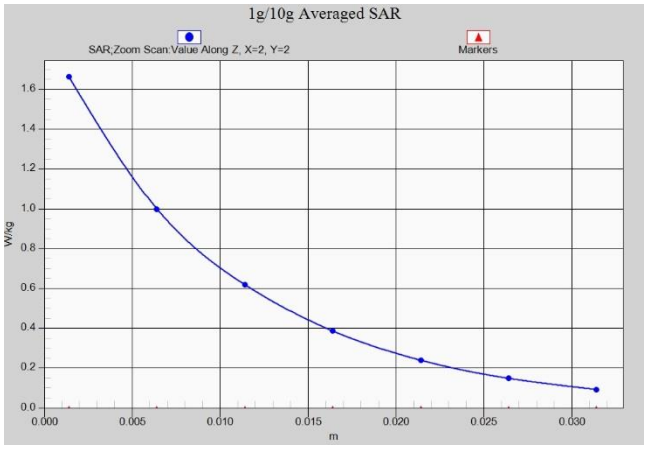


Fig. 1-4 Z-Scan at power reference point (WCDMA1700 Body)

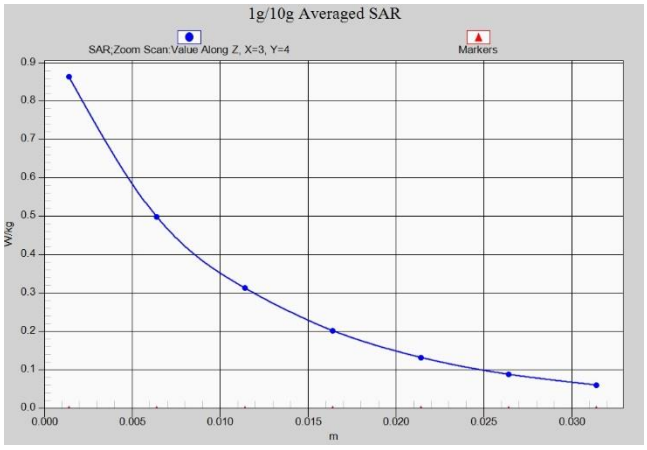


Fig. 1-5 Z-Scan at power reference point (WCDMA850 Body)

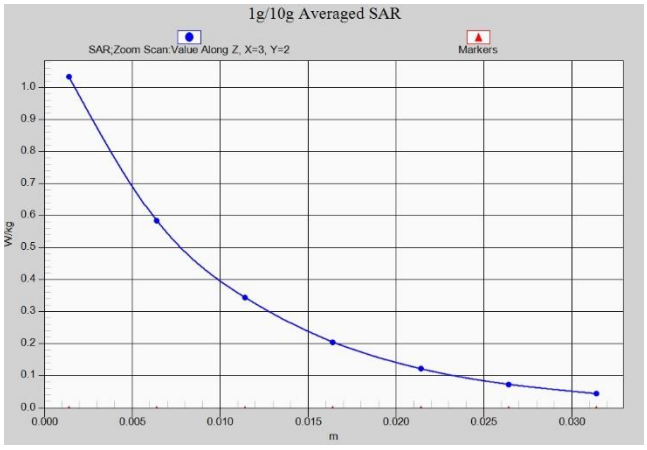


Fig. 1-6 Z-Scan at power reference point (LTE B2 Body)

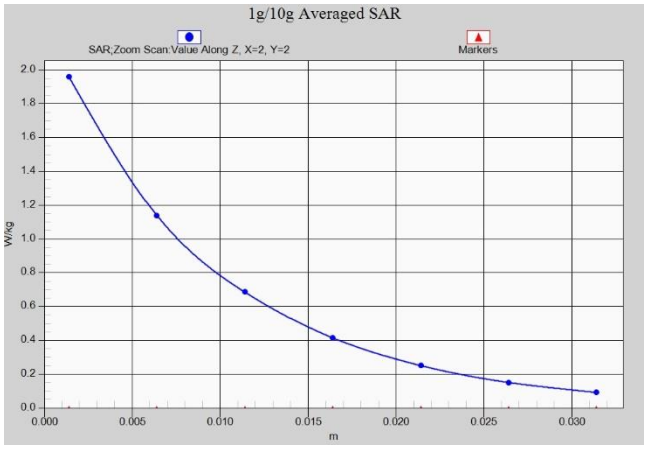


Fig. 1-7 Z-Scan at power reference point (LTE B4 Body)

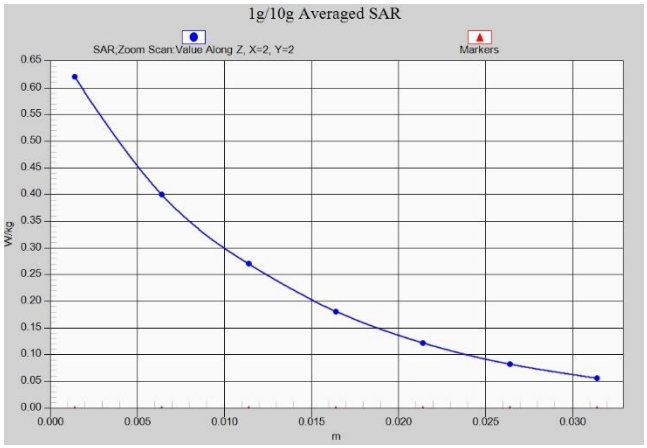


Fig. 1-8 Z-Scan at power reference point (LTE B5 Body)

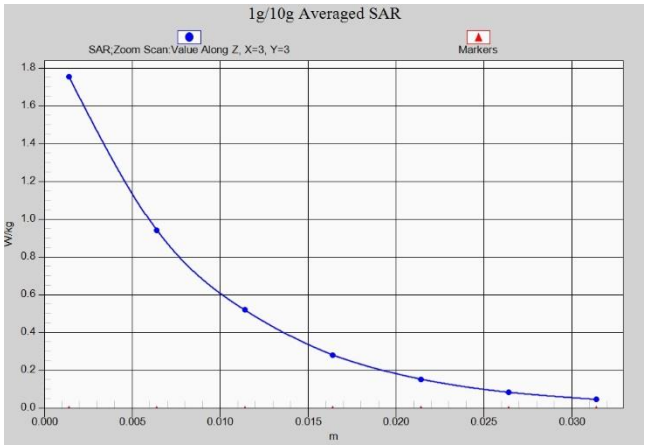


Fig. 1-9 Z-Scan at power reference point (LTE B7 Body)

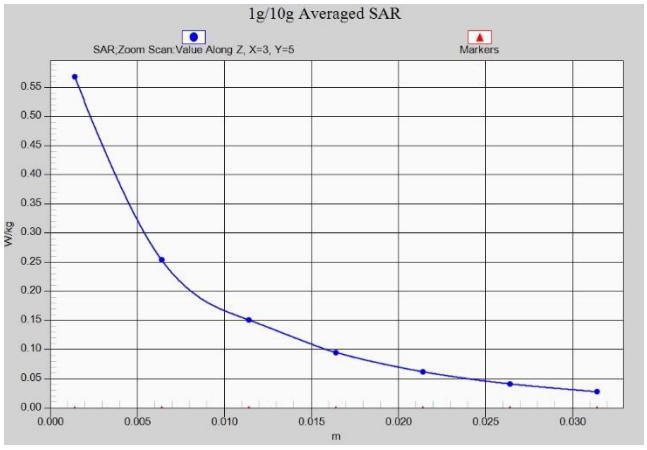


Fig. 1-10 Z-Scan at power reference point (LTE B12 Body)

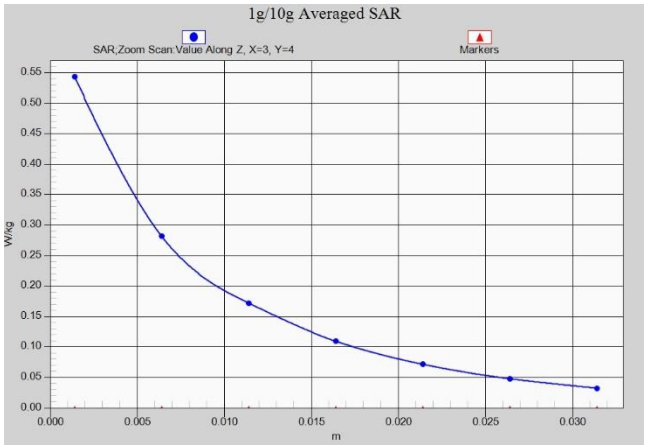


Fig. 1-11 Z-Scan at power reference point (LTE B13 Body)

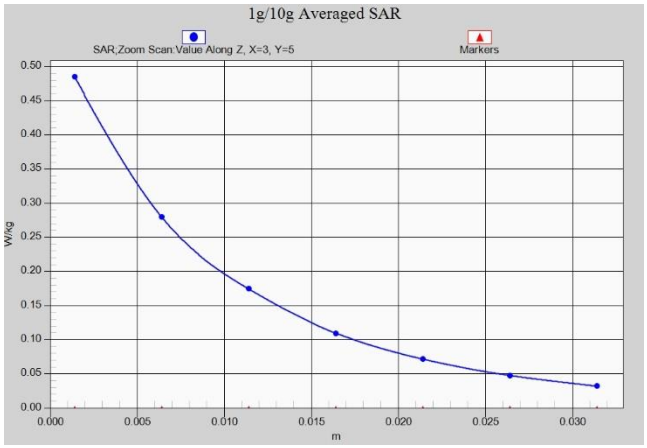


Fig. 1-12 Z-Scan at power reference point (LTE B14 Body)

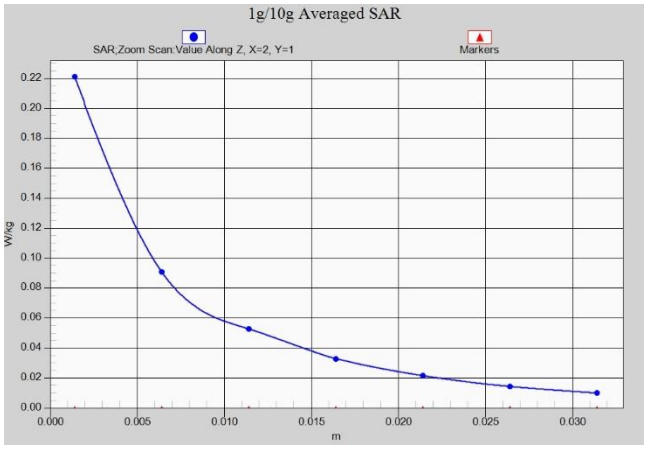


Fig. 1-13 Z-Scan at power reference point (LTE B71 Body)

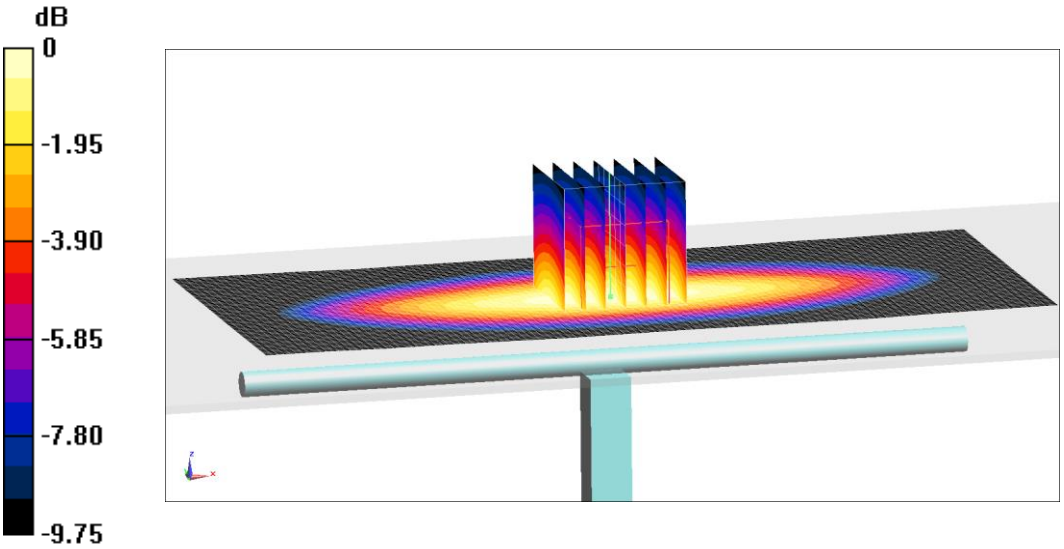
ANNEX B System Verification Results

750MHz

Date: 12/10/2021
Electronics: DAE4 Sn1331
Medium: Head 750MHz
Medium parameters used: f = 750MHz; σ =0.8459 mho/m; ε_r = 45.89; ρ = 1000 kg/m^3
Ambient Temperature: 22.2ºC Liquid Temperature: 22ºC
Communication System: CW Frequency: 750MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 59.21 V/m; Power Drift = 0.05
Fast SAR: SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.4 W/kg
Maximum value of SAR (interpolated) = 2.84 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =59.21 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.29 W/kg
SAR(1 g) = 2.23 W/kg; SAR(10 g) = 1.45 W/kg
Maximum value of SAR (measured) = 2.85 W/kg



0 dB = 2.85 W/kg = 4.55 dB W/kg

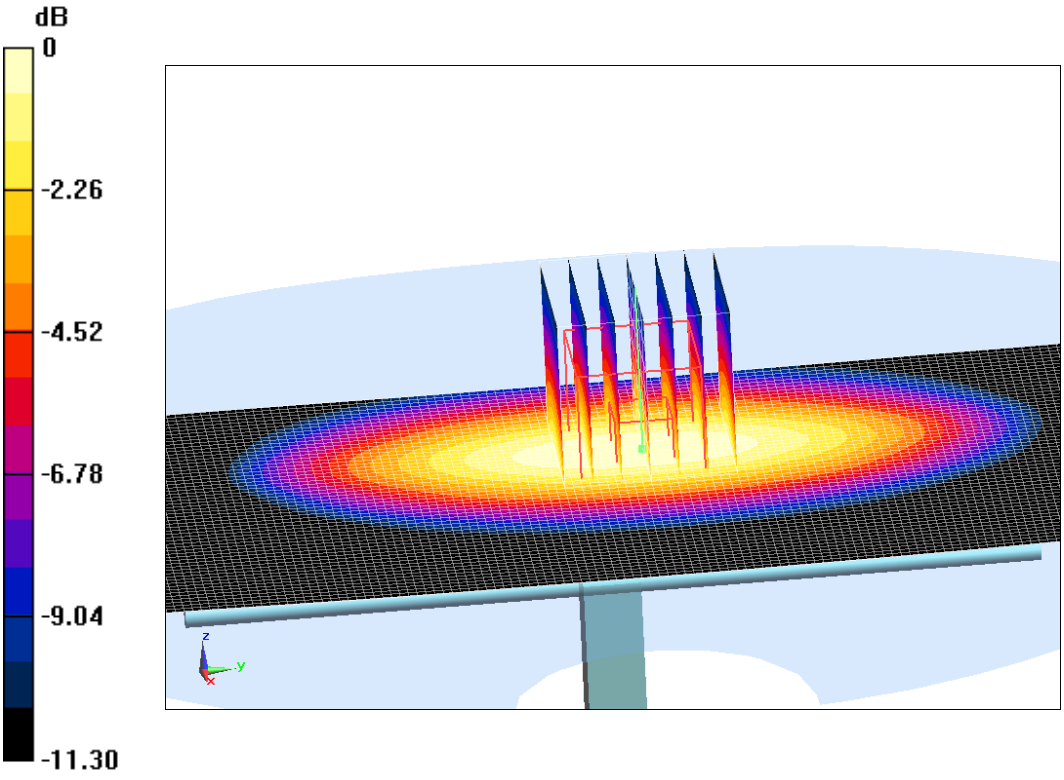
Fig.B.1 validation 750MHz 250mW

900MHz

Date: 12/11/2021
Electronics: DAE4 Sn1331
Medium: Head 900MHz
Medium parameters used: f = 900MHz; σ =0.9052 mho/m; ε_r = 45.36; ρ = 1000 kg/m^3
Ambient Temperature: 22.2ºC Liquid Temperature: 22ºC
Communication System: CW Frequency: 900MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(9.74,9.74,9.74)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 65.77 V/m; Power Drift = 0.04
Fast SAR: SAR(1 g) = 2.65 W/kg; SAR(10 g) = 1.69 W/kg
Maximum value of SAR (interpolated) = 3.58 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =65.77 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 4.08 W/kg
SAR(1 g) = 2.7 W/kg; SAR(10 g) = 1.72 W/kg
Maximum value of SAR (measured) = 3.72 W/kg



0 dB = 3.72 W/kg = 5.71 dB W/kg

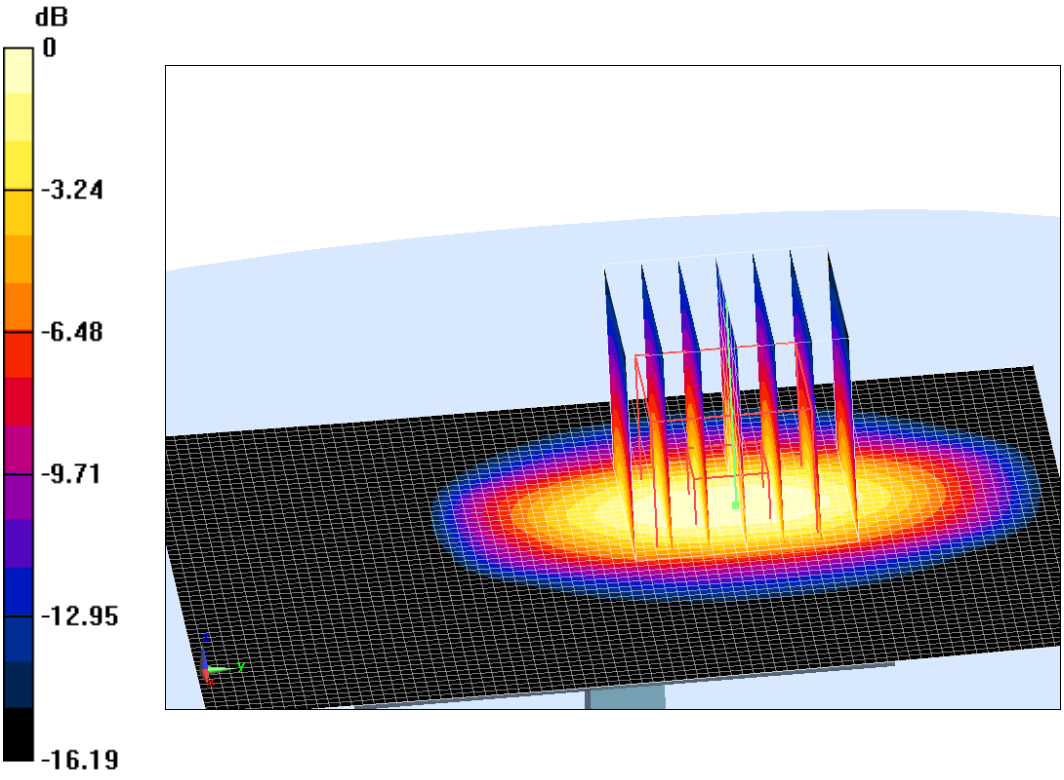
Fig.B.2 validation 900MHz 250mW

1800MHz

Date: 12/12/2021
Electronics: DAE4 Sn1331
Medium: Head 1800MHz
Medium parameters used: f = 1800MHz; σ =1.459 mho/m; ε_r = 42.96; ρ = 1000 kg/m^3
Ambient Temperature: 22.2ºC Liquid Temperature: 22ºC
Communication System: CW Frequency: 1800MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(8.14,8.14,8.14)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 107.27 V/m; Power Drift = -0.08
Fast SAR: SAR(1 g) = 9.71 W/kg; SAR(10 g) = 5.09 W/kg
Maximum value of SAR (interpolated) = 15.18 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =107.27 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 9.67 W/kg; SAR(10 g) = 5.04 W/kg
Maximum value of SAR (measured) = 15.19 W/kg



0 dB = 15.19 W/kg = 11.82 dB W/kg

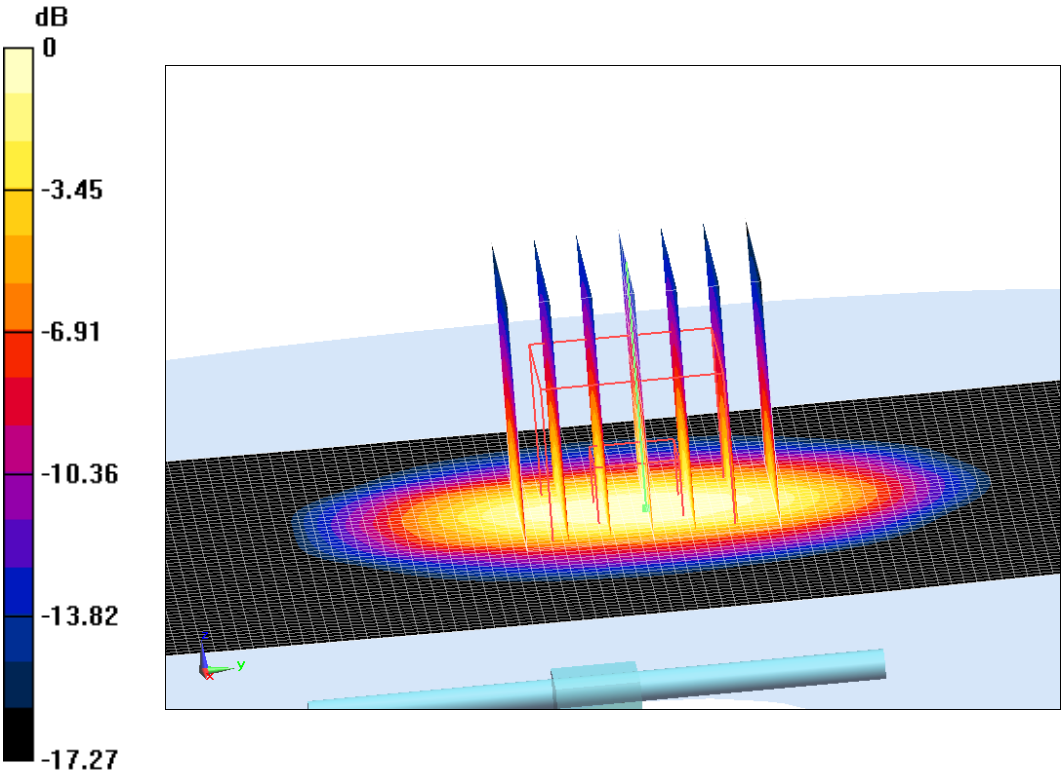
Fig.B.3 validation 1800MHz 250mW

1900MHz

Date: 12/13/2021
Electronics: DAE4 Sn1331
Medium: Head 1900MHz
Medium parameters used: f = 1900MHz; σ =1.527 mho/m; ε_r = 42.79; ρ = 1000 kg/m^3
Ambient Temperature: 22.2ºC Liquid Temperature: 22ºC
Communication System: CW Frequency: 1900MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 106.73 V/m; Power Drift = -0.04
Fast SAR: SAR(1 g) = 9.95 W/kg; SAR(10 g) = 5.19 W/kg
Maximum value of SAR (interpolated) = 15.07 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =106.73 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 17.96 W/kg
SAR(1 g) = 9.86 W/kg; SAR(10 g) = 5.15 W/kg
Maximum value of SAR (measured) = 14.94 W/kg



0 dB = 14.94 W/kg = 11.74 dB W/kg

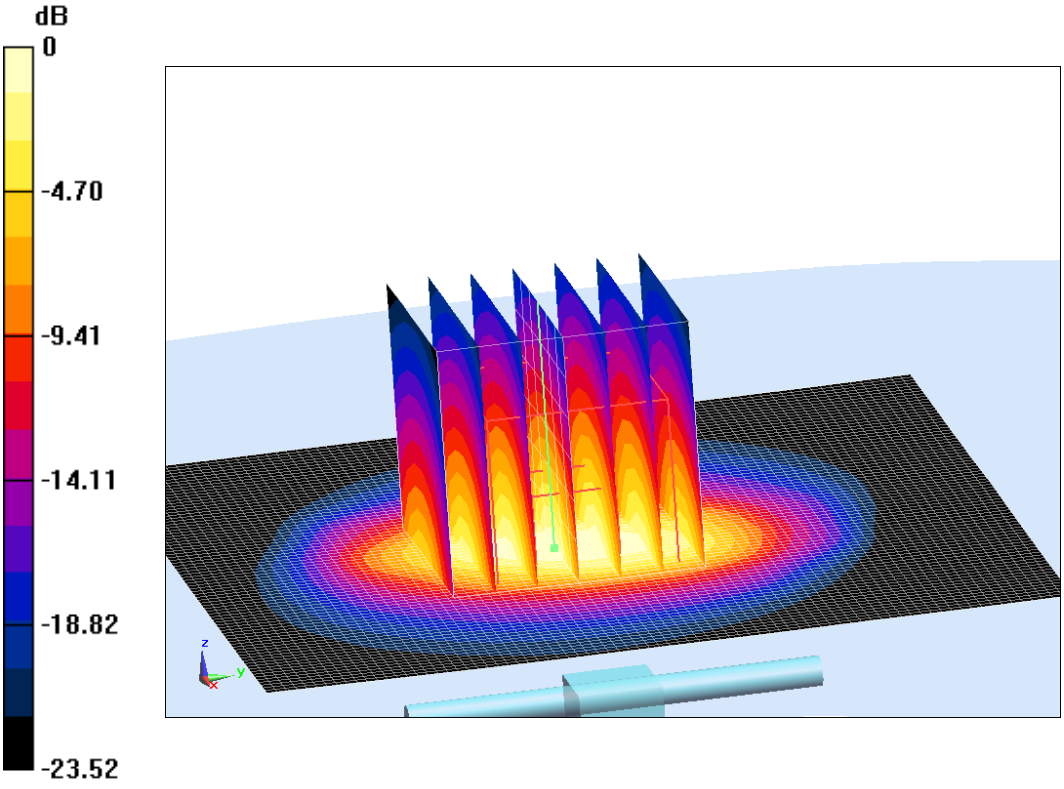
Fig.B.4 validation 1900MHz 250mW

2600MHz

Date: 12/14/2021
Electronics: DAE4 Sn1331
Medium: Head 2600MHz
Medium parameters used: f = 2600MHz; σ =2.109 mho/m; ε_r = 41.19; ρ = 1000 kg/m^3
Ambient Temperature: 22.2ºC Liquid Temperature: 22ºC
Communication System: CW Frequency: 2600MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.11,7.11,7.11)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 123.55 V/m; Power Drift = -0.08
Fast SAR: SAR(1 g) = 14.55 W/kg; SAR(10 g) = 6.53 W/kg
Maximum value of SAR (interpolated) = 24.72 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =123.55 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 29.12 W/kg
SAR(1 g) = 14.46 W/kg; SAR(10 g) = 6.48 W/kg
Maximum value of SAR (measured) = 24.57 W/kg



0 dB = 24.57 W/kg = 13.9 dB W/kg

Fig.B.5 validation 2600MHz 250mW

The SAR system verification must be required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR.

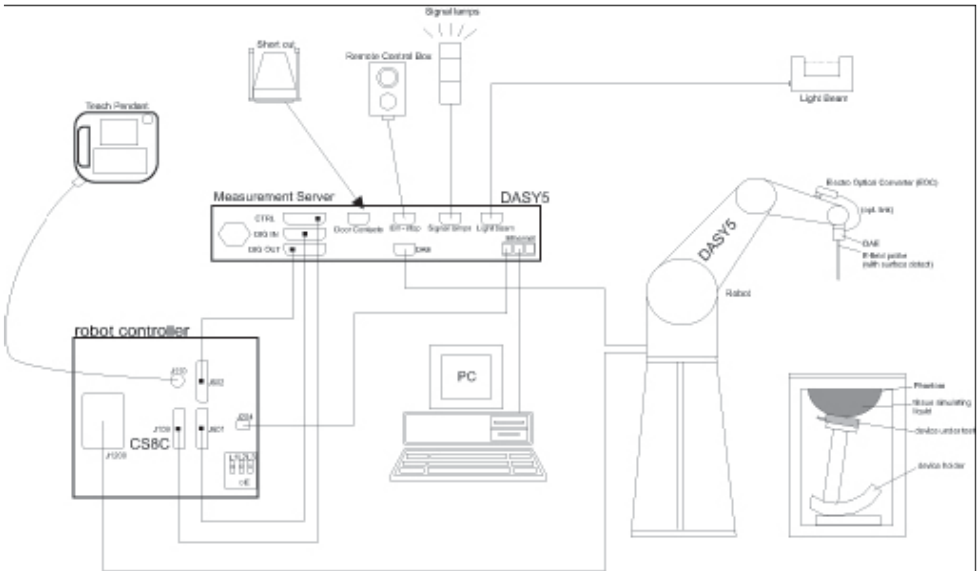
Table B.1 Comparison between area scan and zoom scan for system verification

Date	Frequency (MHz)	Liquid Type	Area scan (1g)	Zoom scan (1g)	Drift (%)
2021-12-10	750	Head	2.19	2.23	-1.79%
2021-12-11	900	Head	2.65	2.7	-1.85%
2021-12-12	1800	Head	9.71	9.67	0.41%
2021-12-13	1900	Head	9.95	9.86	0.91%
2021-12-14	2600	Head	14.55	14.46	0.62%

ANNEX C SAR Measurement Setup

C.1 Measurement Set-up

The Dasy4 or DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (StäubliTX=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 DASY4 or 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 Dasy4 or 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 DASY4 or DASY5 software reads the reflection durning a software approach and looks for the maximum using 2nd ord 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
DynamicRange: 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 ofmobile phones
Dosimetry in strong gradient fields

Picture C.2Near-field Probe

Picture C.3E-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 (DASY4: RX90XL; 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.5DASY 4

Picture C.6DASY 5

C.4.3 Measurement Server

The Measurement server is based on a PC/104 CPU broad with CPU (dasy4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128MB), RAM (DASY4: 64 MB, 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.7 Server for DASY 4

Picture C.8 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.

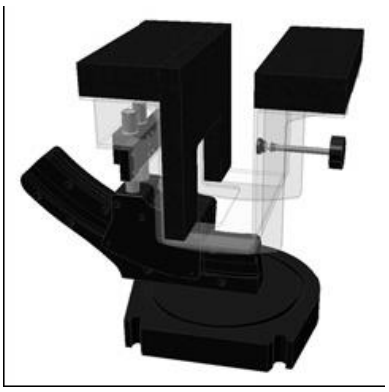
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales are the ear reference 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.9-1: Device Holder



Picture C.9-2: Laptop Extension Kit