SAR TEST REPORT

No. I23Z61566-SEM05

For

Wingtech Group (Hong Kong) Limited

4G Mobile Hotspot

Model Name: ATTCKTHS02

With

Hardware Version: 80177_1_11

Software Version: ATTCKTHS02_0.00.010

FCC ID: 2APXW-ATTCKTHS02

Issued Date: 2023-10-27

Note:

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

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I23Z61566-SEM05	Rev.0	2023-09-26	Initial creation of test report
I23Z61566-SEM05	Rev.1	2023-10-24	Update the information on page72
I23Z61566-SEM05	Rev.2	2023-10-27	Update the information on page72

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1 Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191

1.3. Testing Environment

Normal Temperature: 15-35℃

Extreme Temperature: -10/+55℃

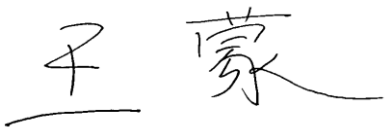
Relative Humidity: 20-75%

1.4. Project data

Testing Start Date: 2023-9-5

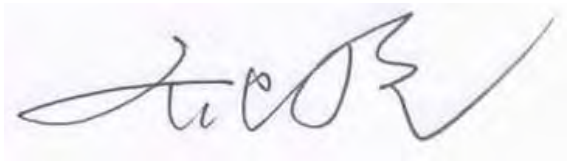
Testing End Date: 2023-9-18

1.5. Signature



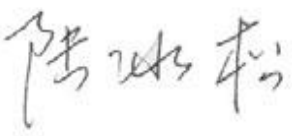
Wang Meng

(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 Wingtech Group (Hong Kong) Limited 4G Mobile Hotspot ATTCKTHS02 as follows:

Table 2.1: Highest Reported SAR (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/kg) Non-USB	Highest Reported SAR 1g(W/kg) USB	Equipment Class
Body	UMTS FDD 2	0.82	0.82	PCB
	UMTS FDD 4	1.05	1.05	
	UMTS FDD 5	0.74	0.74	
	LTE Band 2	0.70	0.70	
	LTE Band 4	1.01	1.01	
	LTE Band 5	0.65	0.65	
	LTE Band 12	0.37	0.37	
	LTE Band 14	0.47	0.47	
	LTE Band 30	0.84	0.71	
	LTE Band 66	0.99	0.99	
	WLAN 2.4 GHz	0.40	0.46	DTS
	WLAN 5 GHz	0.90	0.86	NII

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 0/10/15 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**: 1.05 W/kg(1g).**

Table 2.2: The sum of reported SAR values for Main antenna and WiFi

	Position	**Cellular antenna**	**WiFi5G**	**Sum**
Highest reported SAR value for Body	Front 15mm	1.045	0.485	**1.53**

According to the above tables, the highest sum of reported SAR values is **1.53 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	Wingtech Group (Hong Kong) Limited
Address/Post:	Flat/RM 1903 19/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, KL, HK
Contact Person:	sharui
Contact Email:	sharui@wingtech.com
Telephone:	+86-21-53529900
Fax	/

3.2 Manufacturer Information

Company Name:	Wingtech Group (Hong Kong) Limited
Address/Post:	Flat/RM 1903 19/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, KL, HK
Contact Person:	sharui
Contact Email:	sharui@wingtech.com
Telephone:	+86-21-53529900
Fax	/

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

4.1 About EUT

Description:	4G Mobile Hotspot	
Model name:	ATTCKTHS02	
Operating mode(s):	WCDMA850/1700/1900，Wi-Fi2.4G/5G LTE Band 2/4/5/12/14/29/30/66	
Tested Tx Frequency:	824–849 MHz (WCDMA 850 Band V)	
	1710 – 1755 MHz (WCDMA 1700 Band IV)	
	1850–1910 MHz (WCDMA1900 Band II)	
	1850 – 1910 MHz(LTE Band 2)	
	1710 – 1755 MHz (LTE Band 4)	
	824 – 849 MHz (LTE Band 5)	
	699 – 716 MHz (LTE Band 12)	
	788 – 798 MHz (LTE Band 14)	
	2305 – 2315 MHz (LTE Band 30)	
	1710 – 1780 MHz (LTE Band 66)	
	2412 – 2462 MHz (Wi-Fi 2.4G)	
	5180 – 5240 MHz	(Wi-Fi 5G)
	5260 – 5320 MHz	
	5500 – 5720 MHz	
	5745 – 5825 MHz	
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	864747070000642	80177_1_11	ATTCKTHS02_0.00.010
EUT2	864747070000675	80177_1_11	ATTCKTHS02_0.00.010
EUT3	864747070000634	80177_1_11	ATTCKTHS02_0.00.010
EUT4	864747070000600	80177_1_11	ATTCKTHS02_0.00.010
EUT5	864747070000394	80177_1_11	ATTCKTHS02_0.00.010
EUT6	864747070000386	80177_1_11	ATTCKTHS02_0.00.010
EUT7	864747070000618	80177_1_11	ATTCKTHS02_0.00.010

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

Note: It is performed to test SAR with the EUT1-4 and conducted power with the EUT5-7.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	MF02	/	Jiade Energy Technology（Zhuhai）Co., Ltd.

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

5 TEST METHODOLOGY

5.1 Applicable Limit Regulations

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

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

5.2 Applicable Measurement Standards

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

KDB248227 D01 802.11 Wi-Fi SAR v02r02: SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS

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

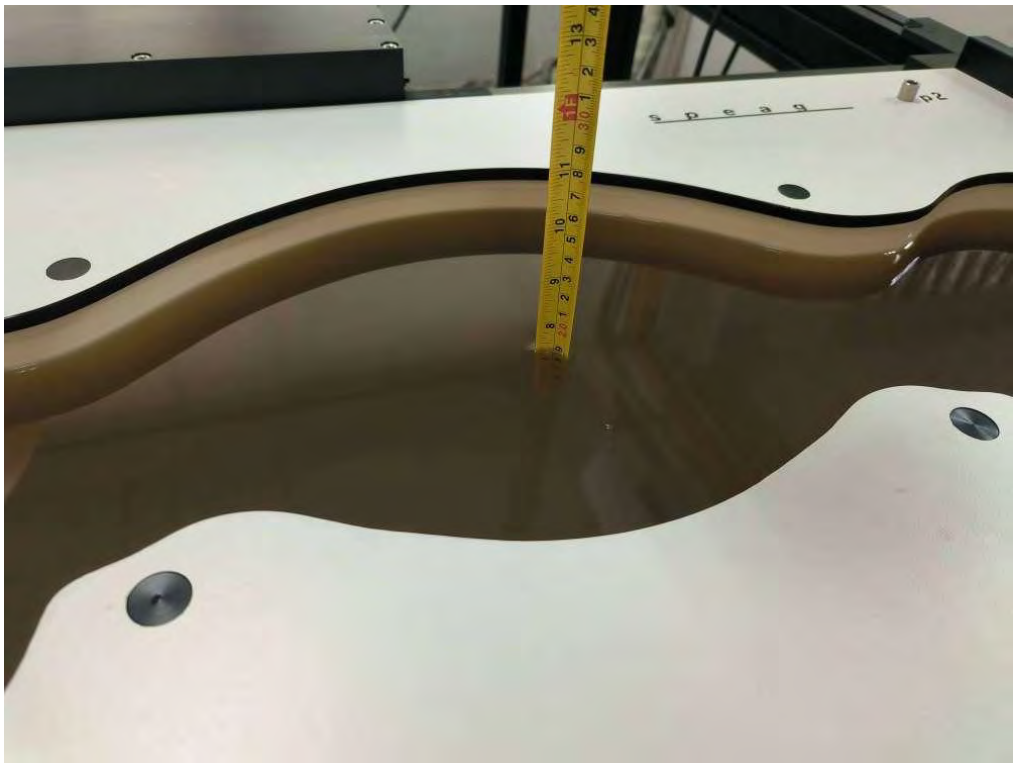
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
750	Head	0.89	0.85～0.93	41.94	39.8～44.0
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
1750	Head	1.37	1.30～1.44	40.08	38.1～42.1
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
2300	Head	1.67	1.50～1.84	39.47	37.5～41.4
2450	Head	1.80	1.71～1.89	39.2	37.2～41.2
5250	Head	4.71	4.47～4.95	35.93	34.13～37.73
5600	Head	5.07	4.82～5.32	35.53	33.8～37.3
5750	Head	5.22	4.96～5.48	35.36	33.59～37.13

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 (%)
2023/9/10	Head	750 MHz	43.37	3.41	0.901	1.24
2023/9/8	Head	835 MHz	43.12	3.90	0.935	3.89
2023/9/6	Head	1750 MHz	41.05	2.42	1.384	1.02
2023/9/5	Head	1900 MHz	40.76	1.90	1.466	4.71
2023/9/11	Head	2300 MHz	40.2	1.85	1.718	2.87
2023/9/12	Head	2450 MHz	39.92	1.84	1.845	2.50
2023/9/18	Head	5250 MHz	34.99	-2.62	4.521	-4.01
2023/9/18	Head	5600 MHz	34.4	-3.18	4.867	-4.00
2023/9/18	Head	5750 MHz	34.06	-3.68	5.04	-3.45

Note: The liquid temperature is 22.0°C

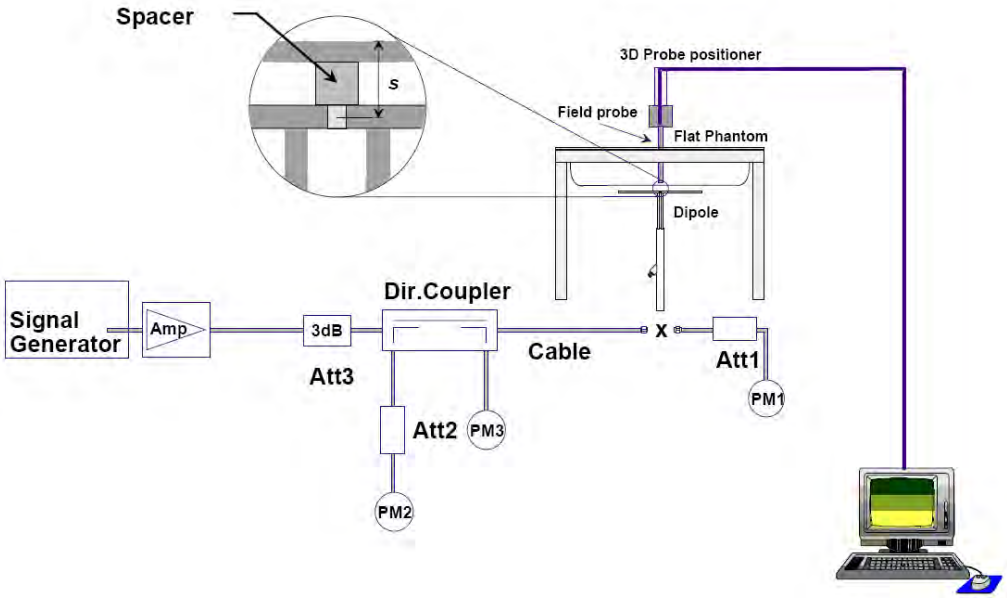


Picture 7-1 Liquid depth in the Flat Phantom

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
2023/9/10	750 MHz	5.49	8.42	5.68	8.56	3.46%	1.66%
2023/9/8	835 MHz	6.25	9.62	6.24	9.52	-0.16%	-1.04%
2023/9/6	1750 MHz	18.9	35.8	19.2	36.7	1.38%	2.46%
2023/9/5	1900 MHz	20.7	39.8	20.1	39.4	-3.00%	-0.90%
2023/9/11	2300 MHz	24.0	49.1	22.7	47.6	-5.50%	-3.05%
2023/9/12	2450 MHz	24.7	52.1	23.8	51.6	-3.81%	-0.96%
2023/9/18	5250 MHz	22.8	79.6	22.3	76.9	-2.19%	-3.39%
2023/9/18	5600 MHz	23.8	83.6	23.8	82.1	0.00%	-1.79%
2023/9/18	5750 MHz	22.7	80.5	22.5	78.9	-0.88%	-1.99%

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.

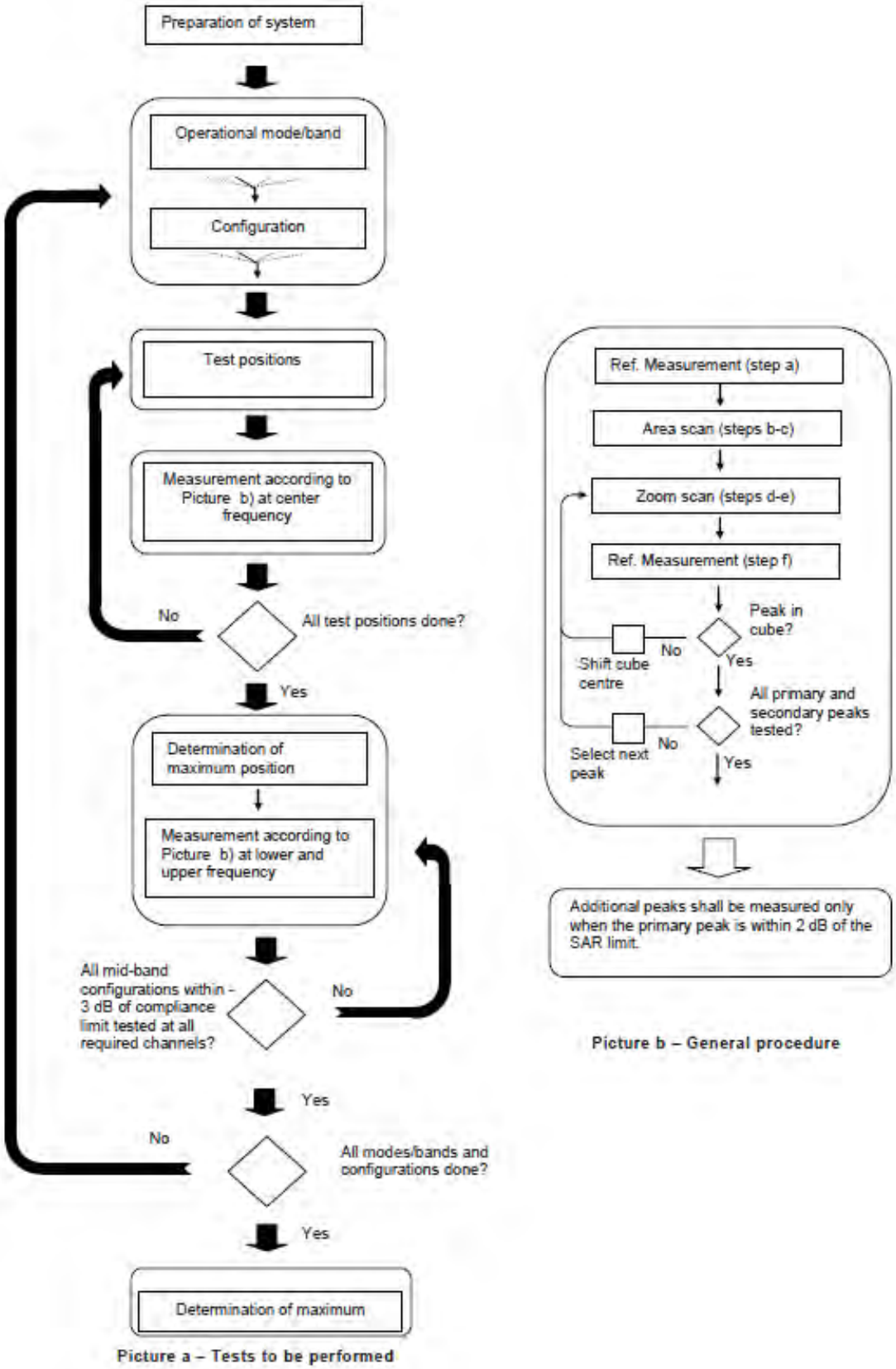
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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 IEC/IEEE 62209-1528. 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 colspan="2">Minimum zoom scan volume</td><td>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 reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

9.3 WCDMA Measurement Procedures for SAR

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

For Release 5 HSDPA Data Devices:

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

For Release 6 HSPA Data Devices

Sub-test	β_c	β_d	β_d （SF）	β_c / β_d	β_{hs}	β_{ec}	β_{ed}	β_{ed} （SF）	β_{ed} （codes）	CM (dB)	MPR (dB)	AG Index	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1039/225	4	1	1.5	1.5	20	75
2	6/15	15/15	64	6/15	12/15	12/15	12/15	4	1	1.5	1.5	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}:47/15 β_{ed2}:47/15	4	2	1.5	1.5	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	1.5	1.5	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	1.5	1.5	21	81

Rel.8 DC-HSDPA (Cat 24)

SAR test exclusion for Rel.8 DC-HSDPA must satisfy the SAR test exclusion requirements of Rel.5 HSDPA. SAR test exclusion for DC-HSDPA devices is determined by power measurements according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to qualify for SAR test exclusion.

9.4 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.

9.5 Wi-Fi Measurement Procedures for SAR

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

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

9.6 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 three sets of tune-up power, Normal power and Low power, Low power includes sensor+ USB and sensor+ Non-USB, While the DUT is used independently, sensor+ Non-USB mode. While DUT is connected to PC and used as USB Dongle, sensor+ USB mode. for all bands by SAR sensor . The detail of SAR sensor is presented in annex I.

Normal Power	Sensor + Non-USB	Sensor + USB
Power Level A1	Power Level B1	Power Level C1

11.1 WCDMA Measurement result

WCDMA1900_ Power Level A1

Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	24.11	24.16	24.08	24.50
HSUPA	1	22.93	22.80	22.82	23.30
	2	21.01	21.00	21.04	22.30
	3	21.9	21.72	21.83	22.30
	4	20.59	20.43	20.48	21.80
	5	23.15	23.10	23.13	23.30
HSPA+	\	22.48	22.39	22.49	23.30
DC-HSDPA	1	23.26	23.23	23.23	23.30
	2	23.3	23.15	23.19	23.30
	3	22.77	22.60	22.69	22.80
	4	22.36	22.41	22.44	22.80

WCDMA1900_ Power Level B1

Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	18.77	18.79	18.56	20.00
HSUPA	1	16.35	16.51	16.41	17.80
	2	12.84	12.78	12.67	13.80
	3	14.36	14.39	14.47	15.80
	4	12.46	12.49	12.55	13.80
	5	15.78	15.81	15.87	16.80
HSPA+	\	15.23	15.13	15.26	16.80
DC-HSDPA	1	15.8	15.68	15.80	16.80
	2	15.83	15.81	15.87	16.80
	3	15.48	15.48	15.58	16.80
	4	15.36	15.45	15.52	16.80

WCDMA1900_ Power Level C1

Item	band	FDDII result			
	ARFCN	9538 (1907.6MHz)	9400 (1880MHz)	9262 (1852.4MHz)	Tune up
WCDMA	\	12.89	12.81	12.89	14.00
HSUPA	1	11.48	11.59	11.52	12.80
	2	9.07	9.03	8.95	10.80
	3	10.11	10.13	10.19	11.80
	4	8.81	8.83	8.87	9.80
	5	11.09	11.11	11.15	12.80
HSPA+	\	10.71	10.64	10.73	11.80
DC-HSDPA	1	11.1	11.02	11.10	12.80
	2	11.12	11.11	11.15	12.80
	3	10.88	10.88	10.95	11.80
	4	10.8	10.86	10.91	11.80

WCDMA1700_ Power Level A1

Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	Tune up
WCDMA	\	23.92	23.89	23.76	24.50
HSUPA	1	23.01	22.94	23.19	23.30
	2	20.5	20.54	20.52	22.30
	3	22.09	22.02	22.02	22.30
	4	20.61	20.80	20.75	21.80
	5	23.16	23.08	23.05	23.30
HSPA+	\	22.59	22.47	22.63	23.30
DC-HSDPA	1	23.19	23.22	23.30	23.30
	2	23.26	23.25	23.25	23.30
	3	22.71	22.63	22.78	22.80
	4	22.54	22.60	22.63	22.80

WCDMA1700_ Power Level B1

Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	Tune up
WCDMA	\	16.87	16.75	16.65	18.00
HSUPA	1	15.18	15.29	15.22	16.80
	2	12.65	12.59	12.57	13.80
	3	13.53	13.64	13.58	14.80
	4	12.49	12.41	12.49	13.80
	5	15.09	14.93	14.95	16.80
HSPA+	\	13.97	14.02	13.88	15.80
DC-HSDPA	1	14.41	14.53	14.45	15.80
	2	14.41	14.53	14.46	15.80
	3	14.11	13.92	14.05	15.80
	4	13.92	14.12	14.03	15.80

WCDMA1700_ Power Level C1

Item	band	FDDIV result			
	ARFCN	1513 (1752.6MHz)	1412 (1732.4MHz)	1312 (1712.4MHz)	Tune up
WCDMA	\	13.13	13.18	13.01	14.00
HSUPA	1	11.99	12.08	12.02	13.80
	2	10.02	9.98	9.96	11.80
	3	10.71	10.79	10.75	11.80
	4	9.9	9.84	9.90	10.80
	5	11.92	11.80	11.81	12.80
HSPA+	\	11.05	11.09	10.98	12.80
DC-HSDPA	1	11.39	11.49	11.42	12.80
	2	11.39	11.49	11.43	12.80
	3	11.16	11.01	11.11	12.80
	4	11.01	11.17	11.10	12.80

WCDMA850_ Power Level A1

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4183 (836.6MHz)	4132 (826.4MHz)	Tune up
WCDMA	\	23.62	23.54	23.57	24.50
HSUPA	1	22.29	22.37	22.39	23.30
	2	21.09	21.22	21.12	22.30
	3	21.41	21.48	21.45	22.30
	4	20.93	20.96	20.95	22.80
	5	23.52	23.44	23.45	23.80
HSPA+	\	22.63	22.64	22.72	23.30
DC-HSDPA	1	23.26	23.29	23.23	23.30
	2	23.43	23.46	23.34	23.80
	3	22.81	22.84	22.77	23.80
	4	22.83	22.90	22.66	23.80

WCDMA850_ Power Level B1

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4183 (836.6MHz)	4132 (826.4MHz)	Tune up
WCDMA	\	21.45	21.39	21.24	22.00
HSUPA	1	18.74	18.79	18.71	19.80
	2	15.59	15.84	15.62	16.80
	3	17.47	17.43	17.37	18.80
	4	15.74	15.84	15.74	16.80
	5	18.84	18.85	18.73	19.80
HSPA+	\	18.78	18.93	18.88	19.80
DC-HSDPA	1	19.61	19.72	19.67	20.80
	2	19.6	19.80	19.68	20.80
	3	19.03	19.10	19.13	20.80
	4	19.06	19.21	19.04	20.80

WCDMA850_ Power Level C1

Item	band	FDDV result			
	ARFCN	4233 (846.6MHz)	4183 (836.6MHz)	4132 (826.4MHz)	Tune up
WCDMA	\	15.52	15.56	15.50	17.00
HSUPA	1	13.78	13.82	13.76	14.80
	2	11.5	11.68	11.52	12.80
	3	12.86	12.83	12.79	13.80
	4	11.61	11.68	11.61	12.80
	5	13.85	13.86	13.77	14.80
HSPA+	\	13.81	13.92	13.88	14.80
DC-HSDPA	1	14.41	14.49	14.45	15.80
	2	14.4	14.55	14.46	15.80
	3	13.99	14.04	14.06	15.80
	4	14.01	14.12	14.00	15.80

11.2 LTE Measurement result

Table 11.2-1: 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

Maximum Target Power for Production Unit

Band	ANT	Tune up (dBm)		
		Power Level A1	Power Level B1	Power Level C1
Band 2	0	24	19	14
Band 4	0	24	17	14
Band 5	4	24	22	17
Band 12	1	22.5	22	18
Band 14	4	24	22	18
Band 30	0	24	20	14
Band 66	0	24	18	14

LTE B2 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1909.3 (19193)	23.12	22.16
		1880 (18900)	23.03	22.40
		1850.7 (18607)	23.40	22.56
	1RB-Middle (3)	1909.3 (19193)	23.11	22.24
		1880 (18900)	23.19	22.27
		1850.7 (18607)	23.47	22.74
	1RB-Low (0)	1909.3 (19193)	23.06	22.20
		1880 (18900)	23.05	22.22
		1850.7 (18607)	23.35	22.60
	3RB-High (3)	1909.3 (19193)	23.13	22.00
		1880 (18900)	23.15	22.05
		1850.7 (18607)	23.36	22.31
	3RB-Middle (1)	1909.3 (19193)	23.21	22.08
		1880 (18900)	23.14	22.06
		1850.7 (18607)	23.39	22.44
	3RB-Low (0)	1909.3 (19193)	23.15	21.95
		1880 (18900)	23.13	22.05
		1850.7 (18607)	23.34	22.42
	6RB (0)	1909.3 (19193)	22.05	21.11
		1880 (18900)	22.11	21.10
		1850.7 (18607)	22.36	21.49
3MHz	1RB-High (14)	1908.5 (19185)	23.02	22.23
		1880 (18900)	23.12	22.21
		1851.5 (18615)	23.38	22.68
	1RB-Middle (7)	1908.5 (19185)	23.16	22.34
		1880 (18900)	23.22	22.47
		1851.5 (18615)	23.46	22.71
	1RB-Low (0)	1908.5 (19185)	23.08	22.23
		1880 (18900)	23.02	22.31
		1851.5 (18615)	23.40	22.67
	8RB-High (7)	1908.5 (19185)	22.10	21.12
		1880 (18900)	22.20	21.14
		1851.5 (18615)	22.45	21.50
	8RB-Middle (4)	1908.5 (19185)	22.15	21.13
		1880 (18900)	22.06	21.18
		1851.5 (18615)	22.45	21.51
	8RB-Low (0)	1908.5 (19185)	22.10	21.14
		1880 (18900)	22.03	21.17
		1851.5 (18615)	22.36	21.49
	15RB (0)	1908.5 (19185)	22.13	21.09
		1880 (18900)	22.11	21.06
		1851.5 (18615)	22.45	21.45

5MHz	1RB-High (24)	1907.5 (19175)	23.37	22.31
		1880 (18900)	23.26	22.36
		1852.5 (18625)	23.60	22.79
	1RB-Middle (12)	1907.5 (19175)	23.28	22.36
		1880 (18900)	23.23	22.39
		1852.5 (18625)	23.49	22.76
	1RB-Low (0)	1907.5 (19175)	23.22	22.28
		1880 (18900)	23.25	22.42
		1852.5 (18625)	23.47	22.82
	12RB-High (13)	1907.5 (19175)	22.34	21.19
		1880 (18900)	22.25	21.16
		1852.5 (18625)	22.51	21.55
	12RB-Middle (6)	1907.5 (19175)	22.38	21.14
		1880 (18900)	22.33	21.25
		1852.5 (18625)	22.59	21.53
	12RB-Low (0)	1907.5 (19175)	22.33	21.09
		1880 (18900)	22.30	21.19
		1852.5 (18625)	22.59	21.59
	25RB (0)	1907.5 (19175)	22.26	21.13
		1880 (18900)	22.30	21.18
		1852.5 (18625)	22.52	21.59
10MHz	1RB-High (49)	1905 (19150)	23.35	22.35
		1880 (18900)	23.30	22.40
		1855 (18650)	23.44	22.70
	1RB-Middle (24)	1905 (19150)	23.38	22.44
		1880 (18900)	23.29	22.31
		1855 (18650)	23.60	22.77
	1RB-Low (0)	1905 (19150)	23.51	22.62
		1880 (18900)	23.31	22.56
		1855 (18650)	23.49	22.79
	25RB-High (25)	1905 (19150)	22.37	21.25
		1880 (18900)	22.46	21.20
		1855 (18650)	22.57	21.45
	25RB-Middle (12)	1905 (19150)	22.34	21.29
		1880 (18900)	22.31	21.24
		1855 (18650)	22.69	21.62
	25RB-Low (0)	1905 (19150)	22.44	21.29
		1880 (18900)	22.33	21.19
		1855 (18650)	22.59	21.58
	50RB (0)	1905 (19150)	22.45	21.27
		1880 (18900)	22.33	21.24
		1855 (18650)	22.44	21.50

15MHz	1RB-High (74)	1902.5 (19125)	23.45	22.45
		1880 (18900)	23.39	22.54
		1857.5 (18675)	23.40	22.73
	1RB-Middle (37)	1902.5 (19125)	23.49	22.49
		1880 (18900)	23.37	22.58
		1857.5 (18675)	23.57	22.79
	1RB-Low (0)	1902.5 (19125)	23.51	22.56
		1880 (18900)	23.37	22.54
		1857.5 (18675)	23.57	22.77
	36RB-High (38)	1902.5 (19125)	22.49	21.26
		1880 (18900)	22.41	21.34
		1857.5 (18675)	22.47	21.50
	36RB-Middle (19)	1902.5 (19125)	22.52	21.36
		1880 (18900)	22.43	21.34
		1857.5 (18675)	22.51	21.57
	36RB-Low (0)	1902.5 (19125)	22.52	21.33
		1880 (18900)	22.43	21.35
		1857.5 (18675)	22.57	21.59
	75RB (0)	1902.5 (19125)	22.52	21.35
		1880 (18900)	22.46	21.33
		1857.5 (18675)	22.47	21.47
20MHz	1RB-High (99)	1900 (19100)	23.62	22.51
		1880 (18900)	23.48	22.55
		1860 (18700)	23.58	22.79
	1RB-Middle (50)	1900 (19100)	23.79	22.66
		1880 (18900)	23.68	22.61
		1860 (18700)	23.60	22.73
	1RB-Low (0)	1900 (19100)	23.75	22.72
		1880 (18900)	23.77	22.74
		1860 (18700)	23.74	22.83
	50RB-High (50)	1900 (19100)	22.77	21.43
		1880 (18900)	22.57	21.43
		1860 (18700)	22.70	21.63
	50RB-Middle (25)	1900 (19100)	22.78	21.51
		1880 (18900)	22.65	21.47
		1860 (18700)	22.72	21.64
	50RB-Low (0)	1900 (19100)	22.74	21.49
		1880 (18900)	22.64	21.48
		1860 (18700)	22.69	21.65
	100RB (0)	1900 (19100)	22.74	21.43
		1880 (18900)	22.60	21.44
		1860 (18700)	22.65	21.60

LTE B2 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1909.3 (19193)	17.38	16.50
		1880 (18900)	17.43	16.64
		1850.7 (18607)	17.54	16.81
	1RB-Middle (3)	1909.3 (19193)	17.45	16.59
		1880 (18900)	17.56	16.85
		1850.7 (18607)	17.58	16.90
	1RB-Low (0)	1909.3 (19193)	17.36	16.57
		1880 (18900)	17.43	16.63
		1850.7 (18607)	17.54	16.73
	3RB-High (3)	1909.3 (19193)	17.45	16.32
		1880 (18900)	17.51	16.36
		1850.7 (18607)	17.57	16.46
	3RB-Middle (1)	1909.3 (19193)	17.48	16.42
		1880 (18900)	17.57	16.52
		1850.7 (18607)	17.59	16.60
	3RB-Low (0)	1909.3 (19193)	17.45	16.33
		1880 (18900)	17.45	16.48
		1850.7 (18607)	17.55	16.58
	6RB (0)	1909.3 (19193)	16.49	15.41
		1880 (18900)	16.48	15.59
		1850.7 (18607)	16.59	15.69
3MHz	1RB-High (14)	1908.5 (19185)	17.47	16.75
		1880 (18900)	17.55	16.76
		1851.5 (18615)	17.68	16.90
	1RB-Middle (7)	1908.5 (19185)	17.57	16.93
		1880 (18900)	17.65	16.92
		1851.5 (18615)	17.79	17.14
	1RB-Low (0)	1908.5 (19185)	17.41	16.68
		1880 (18900)	17.54	16.71
		1851.5 (18615)	17.67	16.85
	8RB-High (7)	1908.5 (19185)	16.52	15.57
		1880 (18900)	16.59	15.66
		1851.5 (18615)	16.72	15.84
	8RB-Middle (4)	1908.5 (19185)	16.54	15.62
		1880 (18900)	16.62	15.60
		1851.5 (18615)	16.78	15.85
	8RB-Low (0)	1908.5 (19185)	16.52	15.57
		1880 (18900)	16.56	15.67
		1851.5 (18615)	16.76	15.74
	15RB (0)	1908.5 (19185)	16.55	15.59
		1880 (18900)	16.60	15.58
		1851.5 (18615)	16.72	15.80

5MHz	1RB-High (24)	1907.5 (19175)	17.58	16.78
		1880 (18900)	17.69	16.95
		1852.5 (18625)	17.73	17.05
	1RB-Middle (12)	1907.5 (19175)	17.57	16.77
		1880 (18900)	17.68	16.92
		1852.5 (18625)	17.70	16.85
	1RB-Low (0)	1907.5 (19175)	17.57	16.82
		1880 (18900)	17.64	16.81
		1852.5 (18625)	17.69	17.02
	12RB-High (13)	1907.5 (19175)	16.68	15.55
		1880 (18900)	16.75	15.76
		1852.5 (18625)	16.81	15.84
	12RB-Middle (6)	1907.5 (19175)	16.60	15.57
		1880 (18900)	16.79	15.63
		1852.5 (18625)	16.80	15.86
	12RB-Low (0)	1907.5 (19175)	16.64	15.58
		1880 (18900)	16.74	15.75
		1852.5 (18625)	16.77	15.82
	25RB (0)	1907.5 (19175)	16.57	15.57
		1880 (18900)	16.74	15.70
		1852.5 (18625)	16.83	15.83

10MHz	1RB-High (49)	1905 (19150)	17.62	16.93
		1880 (18900)	17.72	17.01
		1855 (18650)	17.87	17.08
	1RB-Middle (24)	1905 (19150)	17.60	16.74
		1880 (18900)	17.68	17.06
		1855 (18650)	17.87	17.10
	1RB-Low (0)	1905 (19150)	17.71	16.93
		1880 (18900)	17.64	16.91
		1855 (18650)	17.84	17.14
	25RB-High (25)	1905 (19150)	16.70	15.69
		1880 (18900)	16.78	15.77
		1855 (18650)	16.91	15.86
	25RB-Middle (12)	1905 (19150)	16.66	15.71
		1880 (18900)	16.80	15.78
		1855 (18650)	16.89	15.89
	25RB-Low (0)	1905 (19150)	16.73	15.68
		1880 (18900)	16.73	15.74
		1855 (18650)	16.89	15.83
	50RB (0)	1905 (19150)	16.82	15.65
		1880 (18900)	16.82	15.74
		1855 (18650)	16.94	15.88

15MHz	1RB-High (74)	1902.5 (19125)	17.91	17.01
		1880 (18900)	17.87	17.09
		1857.5 (18675)	17.87	17.04
	1RB-Middle (37)	1902.5 (19125)	17.86	16.91
		1880 (18900)	17.89	17.08
		1857.5 (18675)	17.85	17.08
	1RB-Low (0)	1902.5 (19125)	17.96	16.98
		1880 (18900)	17.91	16.94
		1857.5 (18675)	17.94	17.05
	36RB-High (38)	1902.5 (19125)	16.93	15.74
		1880 (18900)	16.94	15.79
		1857.5 (18675)	16.86	15.85
	36RB-Middle (19)	1902.5 (19125)	17.11	15.84
		1880 (18900)	16.97	15.83
		1857.5 (18675)	16.98	15.94
	36RB-Low (0)	1902.5 (19125)	16.91	15.83
		1880 (18900)	16.97	15.81
		1857.5 (18675)	16.91	15.88
	75RB (0)	1902.5 (19125)	16.97	15.83
		1880 (18900)	16.95	15.83
		1857.5 (18675)	16.87	15.87
20MHz	1RB-High (99)	1900 (19100)	18.38	17.25
		1880 (18900)	18.25	17.14
		1860 (18700)	18.22	17.15
	1RB-Middle (50)	1900 (19100)	18.49	17.17
		1880 (18900)	18.33	17.27
		1860 (18700)	18.21	17.29
	1RB-Low (0)	1900 (19100)	18.33	17.20
		1880 (18900)	18.36	17.31
		1860 (18700)	18.24	17.21
	50RB-High (50)	1900 (19100)	17.43	16.03
		1880 (18900)	17.31	16.06
		1860 (18700)	17.24	16.03
	50RB-Middle (25)	1900 (19100)	17.42	16.11
		1880 (18900)	17.32	16.09
		1860 (18700)	17.30	16.10
	50RB-Low (0)	1900 (19100)	17.47	16.06
		1880 (18900)	17.33	16.08
		1860 (18700)	17.29	16.08
	100RB (0)	1900 (19100)	17.42	16.03
		1880 (18900)	17.29	16.09
		1860 (18700)	17.24	16.02

LTE B2 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1909.3 (19193)	12.28	11.30
		1880 (18900)	12.18	11.42
		1850.7 (18607)	12.43	11.83
	1RB-Middle (3)	1909.3 (19193)	12.30	11.39
		1880 (18900)	12.26	11.42
		1850.7 (18607)	12.52	11.83
	1RB-Low (0)	1909.3 (19193)	12.19	11.33
		1880 (18900)	12.19	11.52
		1850.7 (18607)	12.48	11.67
	3RB-High (3)	1909.3 (19193)	12.14	11.02
		1880 (18900)	12.28	11.12
		1850.7 (18607)	12.52	11.64
	3RB-Middle (1)	1909.3 (19193)	12.27	11.15
		1880 (18900)	12.27	11.28
		1850.7 (18607)	12.53	11.63
	3RB-Low (0)	1909.3 (19193)	12.14	11.09
		1880 (18900)	12.28	11.23
		1850.7 (18607)	12.55	11.49
	6RB (0)	1909.3 (19193)	11.17	10.14
		1880 (18900)	11.30	10.22
		1850.7 (18607)	11.56	10.46
3MHz	1RB-High (14)	1908.5 (19185)	12.41	11.38
		1880 (18900)	12.42	11.64
		1851.5 (18615)	12.64	11.86
	1RB-Middle (7)	1908.5 (19185)	12.49	11.66
		1880 (18900)	12.47	11.67
		1851.5 (18615)	12.89	11.93
	1RB-Low (0)	1908.5 (19185)	12.38	11.53
		1880 (18900)	12.38	11.65
		1851.5 (18615)	12.65	11.89
	8RB-High (7)	1908.5 (19185)	11.47	10.32
		1880 (18900)	11.47	10.40
		1851.5 (18615)	11.66	10.66
	8RB-Middle (4)	1908.5 (19185)	11.48	10.35
		1880 (18900)	11.45	10.46
		1851.5 (18615)	11.76	10.72
	8RB-Low (0)	1908.5 (19185)	11.34	10.30
		1880 (18900)	11.48	10.44
		1851.5 (18615)	11.70	10.73
	15RB (0)	1908.5 (19185)	11.33	10.22
		1880 (18900)	11.41	10.37
		1851.5 (18615)	11.65	10.65

5MHz	1RB-High (24)	1907.5 (19175)	12.24	11.27
		1880 (18900)	12.42	11.46
		1852.5 (18625)	12.60	11.86
	1RB-Middle (12)	1907.5 (19175)	12.29	11.58
		1880 (18900)	12.31	11.54
		1852.5 (18625)	12.59	11.82
	1RB-Low (0)	1907.5 (19175)	12.28	11.44
		1880 (18900)	12.30	11.56
		1852.5 (18625)	12.57	11.91
	12RB-High (13)	1907.5 (19175)	11.29	10.15
		1880 (18900)	11.37	10.41
		1852.5 (18625)	11.63	10.70
	12RB-Middle (6)	1907.5 (19175)	11.41	10.21
		1880 (18900)	11.41	10.35
		1852.5 (18625)	11.64	10.69
	12RB-Low (0)	1907.5 (19175)	11.29	10.19
		1880 (18900)	11.33	10.25
		1852.5 (18625)	11.67	10.63
	25RB (0)	1907.5 (19175)	11.21	10.18
		1880 (18900)	11.36	10.29
		1852.5 (18625)	11.64	10.70
10MHz	1RB-High (49)	1905 (19150)	12.14	11.34
		1880 (18900)	12.29	11.57
		1855 (18650)	12.53	11.80
	1RB-Middle (24)	1905 (19150)	12.20	11.37
		1880 (18900)	12.35	11.67
		1855 (18650)	12.55	11.94
	1RB-Low (0)	1905 (19150)	12.32	11.48
		1880 (18900)	12.36	11.59
		1855 (18650)	12.62	11.87
	25RB-High (25)	1905 (19150)	11.25	10.17
		1880 (18900)	11.36	10.42
		1855 (18650)	11.51	10.58
	25RB-Middle (12)	1905 (19150)	11.25	10.17
		1880 (18900)	11.37	10.43
		1855 (18650)	11.67	10.68
	25RB-Low (0)	1905 (19150)	11.32	10.27
		1880 (18900)	11.38	10.35
		1855 (18650)	11.63	10.64
	50RB (0)	1905 (19150)	11.33	10.30
		1880 (18900)	11.37	10.41
		1855 (18650)	11.54	10.51

15MHz	1RB-High (74)	1902.5 (19125)	12.65	11.67
		1880 (18900)	12.72	11.74
		1857.5 (18675)	12.78	11.83
	1RB-Middle (37)	1902.5 (19125)	12.69	11.79
		1880 (18900)	12.70	11.77
		1857.5 (18675)	12.88	12.07
	1RB-Low (0)	1902.5 (19125)	12.82	11.79
		1880 (18900)	12.77	11.91
		1857.5 (18675)	12.92	12.03
	36RB-High (38)	1902.5 (19125)	11.80	10.44
		1880 (18900)	11.80	10.62
		1857.5 (18675)	11.88	10.65
	36RB-Middle (19)	1902.5 (19125)	11.75	10.62
		1880 (18900)	11.82	10.66
		1857.5 (18675)	11.94	10.72
	36RB-Low (0)	1902.5 (19125)	11.78	10.54
		1880 (18900)	11.79	10.61
		1857.5 (18675)	11.86	10.75
	75RB (0)	1902.5 (19125)	11.74	10.54
		1880 (18900)	11.81	10.62
		1857.5 (18675)	11.87	10.72
20MHz	1RB-High (99)	1900 (19100)	12.83	11.83
		1880 (18900)	12.91	11.92
		1860 (18700)	12.97	12.18
	1RB-Middle (50)	1900 (19100)	12.99	11.96
		1880 (18900)	12.97	12.19
		1860 (18700)	13.02	12.29
	1RB-Low (0)	1900 (19100)	12.91	11.91
		1880 (18900)	13.05	12.22
		1860 (18700)	13.11	12.23
	50RB-High (50)	1900 (19100)	12.01	10.81
		1880 (18900)	11.96	10.91
		1860 (18700)	12.09	10.98
	50RB-Middle (25)	1900 (19100)	12.02	10.82
		1880 (18900)	12.03	10.92
		1860 (18700)	12.11	11.05
	50RB-Low (0)	1900 (19100)	12.00	10.80
		1880 (18900)	11.98	10.95
		1860 (18700)	12.08	11.02
	100RB (0)	1900 (19100)	12.00	10.79
		1880 (18900)	12.01	10.83
		1860 (18700)	12.12	10.99

LTE B4 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1754.3 (20393)	22.73	22.00
		1732.5 (20175)	22.83	22.18
		1710.7 (19957)	22.78	22.13
	1RB-Middle (3)	1754.3 (20393)	22.83	22.12
		1732.5 (20175)	22.83	22.36
		1710.7 (19957)	22.91	22.28
	1RB-Low (0)	1754.3 (20393)	22.80	21.99
		1732.5 (20175)	22.84	22.21
		1710.7 (19957)	22.79	22.17
	3RB-High (3)	1754.3 (20393)	22.82	21.88
		1732.5 (20175)	22.93	21.92
		1710.7 (19957)	22.85	21.86
	3RB-Middle (1)	1754.3 (20393)	22.83	21.84
		1732.5 (20175)	22.93	22.03
		1710.7 (19957)	22.94	21.94
	3RB-Low (0)	1754.3 (20393)	22.81	21.90
		1732.5 (20175)	22.95	21.96
		1710.7 (19957)	22.85	21.91
	6RB (0)	1754.3 (20393)	21.79	20.90
		1732.5 (20175)	21.90	21.04
		1710.7 (19957)	21.85	20.96
3MHz	1RB-High (14)	1753.5 (20385)	22.91	22.23
		1732.5 (20175)	22.96	22.25
		1711.5 (19965)	22.84	22.19
	1RB-Middle (7)	1753.5 (20385)	22.93	22.22
		1732.5 (20175)	23.03	22.42
		1711.5 (19965)	23.01	22.26
	1RB-Low (0)	1753.5 (20385)	22.80	22.18
		1732.5 (20175)	22.90	22.36
		1711.5 (19965)	22.86	22.14
	8RB-High (7)	1753.5 (20385)	21.84	20.94
		1732.5 (20175)	21.93	21.07
		1711.5 (19965)	21.92	20.99
	8RB-Middle (4)	1753.5 (20385)	21.87	20.94
		1732.5 (20175)	22.04	21.16
		1711.5 (19965)	21.94	21.05
	8RB-Low (0)	1753.5 (20385)	21.82	20.94
		1732.5 (20175)	21.99	21.06
		1711.5 (19965)	21.91	20.97
	15RB (0)	1753.5 (20385)	21.83	20.91
		1732.5 (20175)	22.01	20.99
		1711.5 (19965)	21.92	20.94

5MHz	1RB-High (24)	1752.5 (20375)	22.88	22.10
		1732.5 (20175)	22.89	22.21
		1712.5 (19975)	22.88	22.17
	1RB-Middle (12)	1752.5 (20375)	22.91	22.15
		1732.5 (20175)	22.96	22.35
		1712.5 (19975)	22.86	22.30
	1RB-Low (0)	1752.5 (20375)	22.87	22.06
		1732.5 (20175)	22.88	22.19
		1712.5 (19975)	22.87	22.27
	12RB-High (13)	1752.5 (20375)	21.86	20.89
		1732.5 (20175)	22.02	21.00
		1712.5 (19975)	21.92	20.93
	12RB-Middle (6)	1752.5 (20375)	22.03	20.94
		1732.5 (20175)	22.06	21.00
		1712.5 (19975)	22.00	21.01
	12RB-Low (0)	1752.5 (20375)	21.99	20.88
		1732.5 (20175)	21.99	21.00
		1712.5 (19975)	21.96	20.95
	25RB (0)	1752.5 (20375)	21.86	20.88
		1732.5 (20175)	21.99	20.98
		1712.5 (19975)	21.95	20.95
10MHz	1RB-High (49)	1750 (20350)	22.83	22.10
		1732.5 (20175)	22.93	22.34
		1715 (20000)	22.91	22.18
	1RB-Middle (24)	1750 (20350)	22.90	22.12
		1732.5 (20175)	22.97	22.38
		1715 (20000)	22.88	22.21
	1RB-Low (0)	1750 (20350)	22.88	22.19
		1732.5 (20175)	22.94	22.40
		1715 (20000)	22.93	22.36
	25RB-High (25)	1750 (20350)	21.96	20.84
		1732.5 (20175)	21.96	21.03
		1715 (20000)	21.89	20.94
	25RB-Middle (12)	1750 (20350)	22.01	20.86
		1732.5 (20175)	22.02	21.06
		1715 (20000)	21.99	20.98
	25RB-Low (0)	1750 (20350)	21.96	20.91
		1732.5 (20175)	21.99	21.07
		1715 (20000)	21.92	20.93
	50RB (0)	1750 (20350)	21.97	20.90
		1732.5 (20175)	21.99	21.02
		1715 (20000)	21.91	20.90

15MHz	1RB-High (74)	1747.5 (20325)	22.84	22.02
		1732.5 (20175)	23.00	22.27
		1717.5 (20025)	22.96	22.42
	1RB-Middle (37)	1747.5 (20325)	22.86	22.17
		1732.5 (20175)	23.13	22.22
		1717.5 (20025)	22.88	22.29
	1RB-Low (0)	1747.5 (20325)	22.88	22.08
		1732.5 (20175)	23.15	22.38
		1717.5 (20025)	22.85	22.24
	36RB-High (38)	1747.5 (20325)	21.96	20.88
		1732.5 (20175)	22.09	21.01
		1717.5 (20025)	22.01	21.09
	36RB-Middle (19)	1747.5 (20325)	22.03	20.86
		1732.5 (20175)	22.00	21.05
		1717.5 (20025)	22.05	21.09
	36RB-Low (0)	1747.5 (20325)	21.96	20.88
		1732.5 (20175)	22.09	21.01
		1717.5 (20025)	21.90	20.93
	75RB (0)	1747.5 (20325)	21.95	20.88
		1732.5 (20175)	21.96	21.02
		1717.5 (20025)	22.04	21.08
20MHz	1RB-High (99)	1745 (20300)	22.79	22.31
		1732.5 (20175)	22.89	22.38
		1720 (20050)	22.96	22.34
	1RB-Middle (50)	1745 (20300)	22.88	22.30
		1732.5 (20175)	23.04	22.32
		1720 (20050)	22.91	22.23
	1RB-Low (0)	1745 (20300)	22.83	22.23
		1732.5 (20175)	22.98	22.37
		1720 (20050)	22.92	22.16
	50RB-High (50)	1745 (20300)	21.94	20.96
		1732.5 (20175)	22.03	21.09
		1720 (20050)	22.02	21.09
	50RB-Middle (25)	1745 (20300)	22.01	20.98
		1732.5 (20175)	22.07	21.14
		1720 (20050)	22.02	21.01
	50RB-Low (0)	1745 (20300)	21.95	20.95
		1732.5 (20175)	22.05	21.17
		1720 (20050)	21.94	20.94
	100RB (0)	1745 (20300)	21.97	20.99
		1732.5 (20175)	22.12	21.07
		1720 (20050)	22.00	21.06

LTE B4 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1754.3 (20393)	15.39	14.72
		1732.5 (20175)	15.60	14.98
		1710.7 (19957)	15.62	14.80
	1RB-Middle (3)	1754.3 (20393)	15.41	14.77
		1732.5 (20175)	15.65	15.07
		1710.7 (19957)	15.64	15.01
	1RB-Low (0)	1754.3 (20393)	15.39	14.70
		1732.5 (20175)	15.63	14.78
		1710.7 (19957)	15.61	14.93
	3RB-High (3)	1754.3 (20393)	15.40	14.43
		1732.5 (20175)	15.63	14.67
		1710.7 (19957)	15.60	14.68
	3RB-Middle (1)	1754.3 (20393)	15.48	14.45
		1732.5 (20175)	15.67	14.74
		1710.7 (19957)	15.68	14.72
	3RB-Low (0)	1754.3 (20393)	15.45	14.49
		1732.5 (20175)	15.62	14.73
		1710.7 (19957)	15.61	14.67
	6RB (0)	1754.3 (20393)	14.41	13.50
		1732.5 (20175)	14.62	13.73
		1710.7 (19957)	14.58	13.78
3MHz	1RB-High (14)	1753.5 (20385)	15.37	14.75
		1732.5 (20175)	15.64	14.97
		1711.5 (19965)	15.62	14.84
	1RB-Middle (7)	1753.5 (20385)	15.51	14.78
		1732.5 (20175)	15.76	15.06
		1711.5 (19965)	15.73	15.01
	1RB-Low (0)	1753.5 (20385)	15.38	14.62
		1732.5 (20175)	15.65	14.96
		1711.5 (19965)	15.68	15.00
	8RB-High (7)	1753.5 (20385)	14.45	13.59
		1732.5 (20175)	14.70	13.77
		1711.5 (19965)	14.70	13.77
	8RB-Middle (4)	1753.5 (20385)	14.48	13.60
		1732.5 (20175)	14.76	13.84
		1711.5 (19965)	14.71	13.77
	8RB-Low (0)	1753.5 (20385)	14.45	13.56
		1732.5 (20175)	14.74	13.81
		1711.5 (19965)	14.72	13.79
	15RB (0)	1753.5 (20385)	14.50	13.47
		1732.5 (20175)	14.76	13.74
		1711.5 (19965)	14.72	13.73

5MHz	1RB-High (24)	1752.5 (20375)	15.43	14.70
		1732.5 (20175)	15.65	14.85
		1712.5 (19975)	15.64	14.92
	1RB-Middle (12)	1752.5 (20375)	15.44	14.77
		1732.5 (20175)	15.72	15.05
		1712.5 (19975)	15.69	14.89
	1RB-Low (0)	1752.5 (20375)	15.42	14.68
		1732.5 (20175)	15.71	15.12
		1712.5 (19975)	15.66	14.95
	12RB-High (13)	1752.5 (20375)	14.45	13.50
		1732.5 (20175)	14.73	13.72
		1712.5 (19975)	14.73	13.74
	12RB-Middle (6)	1752.5 (20375)	14.51	13.54
		1732.5 (20175)	14.72	13.83
		1712.5 (19975)	14.74	13.80
	12RB-Low (0)	1752.5 (20375)	14.47	13.48
		1732.5 (20175)	14.74	13.73
		1712.5 (19975)	14.73	13.78
	25RB (0)	1752.5 (20375)	14.45	13.49
		1732.5 (20175)	14.77	13.78
		1712.5 (19975)	14.67	13.73
10MHz	1RB-High (49)	1750 (20350)	15.41	14.78
		1732.5 (20175)	15.67	15.03
		1715 (20000)	15.63	14.92
	1RB-Middle (24)	1750 (20350)	15.48	14.88
		1732.5 (20175)	15.68	15.04
		1715 (20000)	15.70	15.11
	1RB-Low (0)	1750 (20350)	15.46	14.86
		1732.5 (20175)	15.71	15.04
		1715 (20000)	15.65	14.94
	25RB-High (25)	1750 (20350)	14.49	13.45
		1732.5 (20175)	14.71	13.70
		1715 (20000)	14.70	13.66
	25RB-Middle (12)	1750 (20350)	14.55	13.50
		1732.5 (20175)	14.79	13.75
		1715 (20000)	14.75	13.72
	25RB-Low (0)	1750 (20350)	14.51	13.51
		1732.5 (20175)	14.70	13.76
		1715 (20000)	14.74	13.70
	50RB (0)	1750 (20350)	14.48	13.55
		1732.5 (20175)	14.72	13.73
		1715 (20000)	14.68	13.74

15MHz	1RB-High (74)	1747.5 (20325)	15.43	14.79
		1732.5 (20175)	15.62	15.05
		1717.5 (20025)	15.73	14.97
	1RB-Middle (37)	1747.5 (20325)	15.42	14.72
		1732.5 (20175)	15.71	15.10
		1717.5 (20025)	15.63	14.75
	1RB-Low (0)	1747.5 (20325)	15.57	14.86
		1732.5 (20175)	15.72	15.11
		1717.5 (20025)	15.68	14.89
	36RB-High (38)	1747.5 (20325)	14.50	13.49
		1732.5 (20175)	14.71	13.70
		1717.5 (20025)	14.74	13.75
	36RB-Middle (19)	1747.5 (20325)	14.54	13.52
		1732.5 (20175)	14.77	13.76
		1717.5 (20025)	14.85	13.75
	36RB-Low (0)	1747.5 (20325)	14.64	13.63
		1732.5 (20175)	14.76	13.74
		1717.5 (20025)	14.69	13.59
	75RB (0)	1747.5 (20325)	14.57	13.61
		1732.5 (20175)	14.69	13.72
		1717.5 (20025)	14.82	13.71
20MHz	1RB-High (99)	1745 (20300)	15.41	14.72
		1732.5 (20175)	15.64	14.86
		1720 (20050)	15.59	14.87
	1RB-Middle (50)	1745 (20300)	15.46	14.75
		1732.5 (20175)	15.69	15.07
		1720 (20050)	15.51	14.96
	1RB-Low (0)	1745 (20300)	15.57	15.03
		1732.5 (20175)	15.72	15.13
		1720 (20050)	15.51	14.94
	50RB-High (50)	1745 (20300)	14.50	13.47
		1732.5 (20175)	14.69	13.72
		1720 (20050)	14.67	13.67
	50RB-Middle (25)	1745 (20300)	14.65	13.62
		1732.5 (20175)	14.73	13.81
		1720 (20050)	14.70	13.71
	50RB-Low (0)	1745 (20300)	14.66	13.62
		1732.5 (20175)	14.76	13.74
		1720 (20050)	14.62	13.64
	100RB (0)	1745 (20300)	14.57	13.62
		1732.5 (20175)	14.75	13.71
		1720 (20050)	14.68	13.69

LTE B4 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1754.3 (20393)	12.36	11.48
		1732.5 (20175)	12.44	11.69
		1710.7 (19957)	12.36	11.60
	1RB-Middle (3)	1754.3 (20393)	12.38	11.64
		1732.5 (20175)	12.49	11.68
		1710.7 (19957)	12.39	11.58
	1RB-Low (0)	1754.3 (20393)	12.30	11.47
		1732.5 (20175)	12.44	11.64
		1710.7 (19957)	12.33	11.57
	3RB-High (3)	1754.3 (20393)	12.34	11.34
		1732.5 (20175)	12.46	11.35
		1710.7 (19957)	12.38	11.26
	3RB-Middle (1)	1754.3 (20393)	12.34	11.32
		1732.5 (20175)	12.51	11.41
		1710.7 (19957)	12.41	11.37
	3RB-Low (0)	1754.3 (20393)	12.30	11.39
		1732.5 (20175)	12.47	11.48
		1710.7 (19957)	12.37	11.29
	6RB (0)	1754.3 (20393)	11.38	10.45
		1732.5 (20175)	11.44	10.58
		1710.7 (19957)	11.36	10.38
3MHz	1RB-High (14)	1753.5 (20385)	12.47	11.63
		1732.5 (20175)	12.45	11.76
		1711.5 (19965)	12.35	11.67
	1RB-Middle (7)	1753.5 (20385)	12.59	11.76
		1732.5 (20175)	12.60	11.95
		1711.5 (19965)	12.45	11.76
	1RB-Low (0)	1753.5 (20385)	12.45	11.71
		1732.5 (20175)	12.56	11.83
		1711.5 (19965)	12.37	11.66
	8RB-High (7)	1753.5 (20385)	11.54	10.49
		1732.5 (20175)	11.55	10.61
		1711.5 (19965)	11.49	10.53
	8RB-Middle (4)	1753.5 (20385)	11.56	10.56
		1732.5 (20175)	11.59	10.62
		1711.5 (19965)	11.49	10.53
	8RB-Low (0)	1753.5 (20385)	11.52	10.51
		1732.5 (20175)	11.59	10.61
		1711.5 (19965)	11.43	10.51
	15RB (0)	1753.5 (20385)	11.38	10.45
		1732.5 (20175)	11.54	10.56
		1711.5 (19965)	11.49	10.48

5MHz	1RB-High (24)	1752.5 (20375)	12.48	11.71
		1732.5 (20175)	12.57	11.84
		1712.5 (19975)	12.47	11.83
	1RB-Middle (12)	1752.5 (20375)	12.45	11.82
		1732.5 (20175)	12.58	11.89
		1712.5 (19975)	12.47	11.81
	1RB-Low (0)	1752.5 (20375)	12.45	11.78
		1732.5 (20175)	12.57	11.83
		1712.5 (19975)	12.49	11.58
	12RB-High (13)	1752.5 (20375)	11.48	10.53
		1732.5 (20175)	11.65	10.72
		1712.5 (19975)	11.54	10.48
	12RB-Middle (6)	1752.5 (20375)	11.53	10.59
		1732.5 (20175)	11.67	10.72
		1712.5 (19975)	11.58	10.51
	12RB-Low (0)	1752.5 (20375)	11.53	10.61
		1732.5 (20175)	11.63	10.70
		1712.5 (19975)	11.56	10.56
	25RB (0)	1752.5 (20375)	11.56	10.51
		1732.5 (20175)	11.63	10.69
		1712.5 (19975)	11.52	10.48
10MHz	1RB-High (49)	1750 (20350)	12.62	11.87
		1732.5 (20175)	12.62	11.78
		1715 (20000)	12.52	11.82
	1RB-Middle (24)	1750 (20350)	12.59	11.72
		1732.5 (20175)	12.61	11.95
		1715 (20000)	12.51	11.81
	1RB-Low (0)	1750 (20350)	12.61	11.71
		1732.5 (20175)	12.57	11.99
		1715 (20000)	12.51	11.81
	25RB-High (25)	1750 (20350)	11.62	10.55
		1732.5 (20175)	11.63	10.68
		1715 (20000)	11.56	10.57
	25RB-Middle (12)	1750 (20350)	11.71	10.55
		1732.5 (20175)	11.73	10.70
		1715 (20000)	11.62	10.61
	25RB-Low (0)	1750 (20350)	11.66	10.61
		1732.5 (20175)	11.68	10.68
		1715 (20000)	11.55	10.62
	50RB (0)	1750 (20350)	11.63	10.59
		1732.5 (20175)	11.72	10.67
		1715 (20000)	11.55	10.60

15MHz	1RB-High (74)	1747.5 (20325)	12.63	11.78
		1732.5 (20175)	12.68	11.87
		1717.5 (20025)	12.64	11.84
	1RB-Middle (37)	1747.5 (20325)	12.68	11.89
		1732.5 (20175)	12.68	11.85
		1717.5 (20025)	12.61	11.87
	1RB-Low (0)	1747.5 (20325)	12.65	11.86
		1732.5 (20175)	12.70	11.85
		1717.5 (20025)	12.59	11.82
	36RB-High (38)	1747.5 (20325)	11.73	10.64
		1732.5 (20175)	11.77	10.75
		1717.5 (20025)	11.79	10.73
	36RB-Middle (19)	1747.5 (20325)	11.79	10.71
		1732.5 (20175)	11.78	10.70
		1717.5 (20025)	11.77	10.69
	36RB-Low (0)	1747.5 (20325)	11.73	10.68
		1732.5 (20175)	11.78	10.71
		1717.5 (20025)	11.72	10.55
	75RB (0)	1747.5 (20325)	11.75	10.63
		1732.5 (20175)	11.79	10.68
		1717.5 (20025)	11.81	10.74

20MHz	1RB-High (99)	1745 (20300)	13.03	12.04
		1732.5 (20175)	13.00	12.05
		1720 (20050)	12.93	12.11
	1RB-Middle (50)	1745 (20300)	13.03	12.04
		1732.5 (20175)	13.05	12.11
		1720 (20050)	12.75	11.96
	1RB-Low (0)	1745 (20300)	13.05	11.95
		1732.5 (20175)	12.95	12.11
		1720 (20050)	12.79	11.96
	50RB-High (50)	1745 (20300)	12.05	10.74
		1732.5 (20175)	11.99	10.92
		1720 (20050)	11.90	10.88
	50RB-Middle (25)	1745 (20300)	12.09	10.79
		1732.5 (20175)	12.02	10.91
		1720 (20050)	11.94	10.84
	50RB-Low (0)	1745 (20300)	12.10	10.79
		1732.5 (20175)	11.96	10.86
		1720 (20050)	11.79	10.79
	100RB (0)	1745 (20300)	11.94	10.74
		1732.5 (20175)	11.99	10.79
		1720 (20050)	11.89	10.86

LTE B5 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	848.3 (20643)	22.54	21.86
		836.5 (20525)	22.43	21.68
		824.7 (20407)	22.32	21.57
	1RB-Middle (3)	848.3 (20643)	22.64	22.00
		836.5 (20525)	22.52	21.76
		824.7 (20407)	22.44	21.70
	1RB-Low (0)	848.3 (20643)	22.58	22.02
		836.5 (20525)	22.45	21.76
		824.7 (20407)	22.32	21.55
	3RB-High (3)	848.3 (20643)	22.62	21.76
		836.5 (20525)	22.50	21.52
		824.7 (20407)	22.40	21.32
	3RB-Middle (1)	848.3 (20643)	22.69	21.67
		836.5 (20525)	22.57	21.55
		824.7 (20407)	22.44	21.38
	3RB-Low (0)	848.3 (20643)	22.65	21.73
		836.5 (20525)	22.46	21.55
		824.7 (20407)	22.40	21.41
	6RB (0)	848.3 (20643)	21.64	20.80
		836.5 (20525)	21.48	20.60
		824.7 (20407)	21.41	20.42
3MHz	1RB-High (14)	847.5 (20635)	22.49	21.89
		836.5 (20525)	22.52	21.83
		825.5 (20415)	22.40	21.69
	1RB-Middle (7)	847.5 (20635)	22.66	22.17
		836.5 (20525)	22.62	21.85
		825.5 (20415)	22.46	21.78
	1RB-Low (0)	847.5 (20635)	22.55	22.01
		836.5 (20525)	22.50	21.80
		825.5 (20415)	22.37	21.59
	8RB-High (7)	847.5 (20635)	21.64	20.79
		836.5 (20525)	21.59	20.64
		825.5 (20415)	21.48	20.51
	8RB-Middle (4)	847.5 (20635)	21.74	20.90
		836.5 (20525)	21.58	20.66
		825.5 (20415)	21.52	20.58
	8RB-Low (0)	847.5 (20635)	21.69	20.83
		836.5 (20525)	21.60	20.67
		825.5 (20415)	21.46	20.47
	15RB (0)	847.5 (20635)	21.76	20.85
		836.5 (20525)	21.65	20.58
		825.5 (20415)	21.48	20.45

5MHz	1RB-High (24)	846.5 (20625)	22.41	21.92
		836.5 (20525)	22.43	21.73
		826.5 (20425)	22.40	21.64
	1RB-Middle (12)	846.5 (20625)	22.60	22.01
		836.5 (20525)	22.45	21.78
		826.5 (20425)	22.39	21.63
	1RB-Low (0)	846.5 (20625)	22.66	22.02
		836.5 (20525)	22.47	21.78
		826.5 (20425)	22.39	21.54
	12RB-High (13)	846.5 (20625)	21.58	20.68
		836.5 (20525)	21.50	20.61
		826.5 (20425)	21.44	20.47
	12RB-Middle (6)	846.5 (20625)	21.69	20.76
		836.5 (20525)	21.63	20.66
		826.5 (20425)	21.46	20.50
	12RB-Low (0)	846.5 (20625)	21.65	20.77
		836.5 (20525)	21.65	20.62
		826.5 (20425)	21.50	20.48
	25RB (0)	846.5 (20625)	21.64	20.76
		836.5 (20525)	21.65	20.60
		826.5 (20425)	21.46	20.51

10MHz	1RB-High (49)	844 (20600)	22.53	21.85
		836.5 (20525)	22.38	21.71
		829 (20450)	22.29	21.50
	1RB-Middle (24)	844 (20600)	22.58	21.82
		836.5 (20525)	22.41	21.58
		829 (20450)	22.25	21.58
	1RB-Low (0)	844 (20600)	22.55	21.78
		836.5 (20525)	22.44	21.68
		829 (20450)	22.31	21.51
	25RB-High (25)	844 (20600)	21.64	20.63
		836.5 (20525)	21.43	20.45
		829 (20450)	21.43	20.39
	25RB-Middle (12)	844 (20600)	21.69	20.70
		836.5 (20525)	21.48	20.49
		829 (20450)	21.47	20.44
	25RB-Low (0)	844 (20600)	21.59	20.60
		836.5 (20525)	21.48	20.52
		829 (20450)	21.32	20.36
	50RB (0)	844 (20600)	21.56	20.53
		836.5 (20525)	21.46	20.50
		829 (20450)	21.43	20.44

LTE B5 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	848.3 (20643)	20.87	20.09
		836.5 (20525)	20.79	20.15
		824.7 (20407)	20.65	19.97
	1RB-Middle (3)	848.3 (20643)	21.00	20.29
		836.5 (20525)	20.89	20.14
		824.7 (20407)	20.76	20.11
	1RB-Low (0)	848.3 (20643)	20.91	20.24
		836.5 (20525)	20.81	20.09
		824.7 (20407)	20.72	19.98
	3RB-High (3)	848.3 (20643)	20.95	20.05
		836.5 (20525)	20.88	19.90
		824.7 (20407)	20.68	19.76
	3RB-Middle (1)	848.3 (20643)	21.01	20.06
		836.5 (20525)	20.91	19.93
		824.7 (20407)	20.75	19.84
	3RB-Low (0)	848.3 (20643)	20.99	19.98
		836.5 (20525)	20.88	19.86
		824.7 (20407)	20.73	19.75
	6RB (0)	848.3 (20643)	20.00	19.03
		836.5 (20525)	19.86	18.98
		824.7 (20407)	19.71	18.82
3MHz	1RB-High (14)	847.5 (20635)	20.93	20.30
		836.5 (20525)	20.86	20.20
		825.5 (20415)	20.69	19.95
	1RB-Middle (7)	847.5 (20635)	21.06	20.41
		836.5 (20525)	20.96	20.24
		825.5 (20415)	20.81	20.13
	1RB-Low (0)	847.5 (20635)	20.98	20.31
		836.5 (20525)	20.93	20.19
		825.5 (20415)	20.72	19.90
	8RB-High (7)	847.5 (20635)	20.02	19.06
		836.5 (20525)	19.87	18.95
		825.5 (20415)	19.78	18.80
	8RB-Middle (4)	847.5 (20635)	20.07	19.17
		836.5 (20525)	19.93	18.99
		825.5 (20415)	19.81	18.88
	8RB-Low (0)	847.5 (20635)	20.00	19.10
		836.5 (20525)	19.90	19.01
		825.5 (20415)	19.80	18.80
	15RB (0)	847.5 (20635)	20.07	19.05
		836.5 (20525)	19.89	18.94
		825.5 (20415)	19.76	18.81

5MHz	1RB-High (24)	846.5 (20625)	20.99	20.20
		836.5 (20525)	20.83	20.10
		826.5 (20425)	20.73	20.01
	1RB-Middle (12)	846.5 (20625)	21.05	20.21
		836.5 (20525)	20.91	20.10
		826.5 (20425)	20.71	19.98
	1RB-Low (0)	846.5 (20625)	21.02	20.19
		836.5 (20525)	20.88	20.15
		826.5 (20425)	20.75	20.03
	12RB-High (13)	846.5 (20625)	20.00	19.07
		836.5 (20525)	19.91	18.88
		826.5 (20425)	19.78	18.79
	12RB-Middle (6)	846.5 (20625)	20.06	19.10
		836.5 (20525)	19.98	18.95
		826.5 (20425)	19.78	18.85
	12RB-Low (0)	846.5 (20625)	20.11	19.04
		836.5 (20525)	19.89	18.91
		826.5 (20425)	19.78	18.80
	25RB (0)	846.5 (20625)	20.05	19.08
		836.5 (20525)	19.88	18.94
		826.5 (20425)	19.82	18.78
10MHz	1RB-High (49)	844 (20600)	20.82	20.07
		836.5 (20525)	20.83	20.12
		829 (20450)	20.79	19.96
	1RB-Middle (24)	844 (20600)	20.91	20.10
		836.5 (20525)	20.89	20.13
		829 (20450)	20.70	20.09
	1RB-Low (0)	844 (20600)	21.01	20.29
		836.5 (20525)	20.92	20.13
		829 (20450)	20.81	20.03
	25RB-High (25)	844 (20600)	19.94	18.96
		836.5 (20525)	19.88	18.88
		829 (20450)	19.84	18.83
	25RB-Middle (12)	844 (20600)	20.04	19.01
		836.5 (20525)	19.94	18.97
		829 (20450)	19.85	18.93
	25RB-Low (0)	844 (20600)	20.02	19.03
		836.5 (20525)	19.95	18.92
		829 (20450)	19.77	18.86
	50RB (0)	844 (20600)	20.02	19.03
		836.5 (20525)	19.87	18.96
		829 (20450)	19.89	18.88

LTE B5 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	848.3 (20643)	15.63	15.01
		836.5 (20525)	15.48	14.77
		824.7 (20407)	15.34	14.52
	1RB-Middle (3)	848.3 (20643)	15.66	15.08
		836.5 (20525)	15.53	14.81
		824.7 (20407)	15.41	14.67
	1RB-Low (0)	848.3 (20643)	15.70	14.99
		836.5 (20525)	15.44	14.68
		824.7 (20407)	15.36	14.56
	3RB-High (3)	848.3 (20643)	15.74	14.72
		836.5 (20525)	15.51	14.52
		824.7 (20407)	15.36	14.34
	3RB-Middle (1)	848.3 (20643)	15.81	14.84
		836.5 (20525)	15.62	14.59
		824.7 (20407)	15.42	14.45
	3RB-Low (0)	848.3 (20643)	15.76	14.67
		836.5 (20525)	15.50	14.54
		824.7 (20407)	15.40	14.43
	6RB (0)	848.3 (20643)	14.78	13.76
		836.5 (20525)	14.52	13.58
		824.7 (20407)	14.44	13.53
3MHz	1RB-High (14)	847.5 (20635)	15.68	14.98
		836.5 (20525)	15.52	14.73
		825.5 (20415)	15.34	14.67
	1RB-Middle (7)	847.5 (20635)	15.80	15.20
		836.5 (20525)	15.64	14.88
		825.5 (20415)	15.51	14.84
	1RB-Low (0)	847.5 (20635)	15.72	14.99
		836.5 (20525)	15.54	14.75
		825.5 (20415)	15.42	14.72
	8RB-High (7)	847.5 (20635)	14.84	13.84
		836.5 (20525)	14.63	13.63
		825.5 (20415)	14.48	13.52
	8RB-Middle (4)	847.5 (20635)	14.82	13.91
		836.5 (20525)	14.62	13.61
		825.5 (20415)	14.50	13.58
	8RB-Low (0)	847.5 (20635)	14.81	13.85
		836.5 (20525)	14.59	13.61
		825.5 (20415)	14.45	13.59
	15RB (0)	847.5 (20635)	14.80	13.84
		836.5 (20525)	14.61	13.62
		825.5 (20415)	14.46	13.47

5MHz	1RB-High (24)	846.5 (20625)	15.64	15.01
		836.5 (20525)	15.50	14.79
		826.5 (20425)	15.35	14.69
	1RB-Middle (12)	846.5 (20625)	15.71	14.98
		836.5 (20525)	15.55	14.70
		826.5 (20425)	15.38	14.56
	1RB-Low (0)	846.5 (20625)	15.69	14.99
		836.5 (20525)	15.57	14.79
		826.5 (20425)	15.46	14.60
	12RB-High (13)	846.5 (20625)	14.70	13.80
		836.5 (20525)	14.62	13.58
		826.5 (20425)	14.46	13.45
	12RB-Middle (6)	846.5 (20625)	14.79	13.83
		836.5 (20525)	14.62	13.64
		826.5 (20425)	14.49	13.51
	12RB-Low (0)	846.5 (20625)	14.76	13.81
		836.5 (20525)	14.63	13.59
		826.5 (20425)	14.46	13.55
	25RB (0)	846.5 (20625)	14.78	13.83
		836.5 (20525)	14.62	13.61
		826.5 (20425)	14.54	13.48
10MHz	1RB-High (49)	844 (20600)	15.63	14.86
		836.5 (20525)	15.43	14.69
		829 (20450)	15.41	14.73
	1RB-Middle (24)	844 (20600)	15.68	14.96
		836.5 (20525)	15.52	14.83
		829 (20450)	15.35	14.64
	1RB-Low (0)	844 (20600)	15.67	14.96
		836.5 (20525)	15.55	14.91
		829 (20450)	15.39	14.64
	25RB-High (25)	844 (20600)	14.73	13.71
		836.5 (20525)	14.61	13.61
		829 (20450)	14.56	13.56
	25RB-Middle (12)	844 (20600)	14.82	13.78
		836.5 (20525)	14.66	13.65
		829 (20450)	14.57	13.57
	25RB-Low (0)	844 (20600)	14.68	13.66
		836.5 (20525)	14.63	13.62
		829 (20450)	14.49	13.54
	50RB (0)	844 (20600)	14.71	13.70
		836.5 (20525)	14.63	13.64
		829 (20450)	14.54	13.54

LTE B12 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	715.3 (23173)	21.76	21.08
		707.5 (23095)	21.84	20.97
		699.7 (23017)	21.48	20.64
	1RB-Middle (3)	715.3 (23173)	21.85	21.01
		707.5 (23095)	21.94	21.27
		699.7 (23017)	21.45	20.76
	1RB-Low (0)	715.3 (23173)	21.78	20.90
		707.5 (23095)	21.83	21.05
		699.7 (23017)	21.43	20.61
	3RB-High (3)	715.3 (23173)	21.86	20.75
		707.5 (23095)	21.89	20.80
		699.7 (23017)	21.49	20.42
	3RB-Middle (1)	715.3 (23173)	21.88	20.79
		707.5 (23095)	21.86	20.93
		699.7 (23017)	21.53	20.57
	3RB-Low (0)	715.3 (23173)	21.85	20.68
		707.5 (23095)	21.93	20.74
		699.7 (23017)	21.59	20.54
	6RB (0)	715.3 (23173)	20.86	19.99
		707.5 (23095)	20.82	19.94
		699.7 (23017)	20.46	19.58
3MHz	1RB-High (14)	714.5 (23165)	21.91	20.99
		707.5 (23095)	21.91	21.12
		700.5 (23025)	21.62	20.91
	1RB-Middle (7)	714.5 (23165)	21.97	21.26
		707.5 (23095)	21.97	21.32
		700.5 (23025)	21.78	21.03
	1RB-Low (0)	714.5 (23165)	21.90	21.07
		707.5 (23095)	21.90	21.11
		700.5 (23025)	21.74	21.02
	8RB-High (7)	714.5 (23165)	20.93	19.92
		707.5 (23095)	20.93	19.98
		700.5 (23025)	20.66	19.85
	8RB-Middle (4)	714.5 (23165)	20.93	20.03
		707.5 (23095)	20.97	20.02
		700.5 (23025)	20.76	19.72
	8RB-Low (0)	714.5 (23165)	20.92	19.96
		707.5 (23095)	20.99	19.92
		700.5 (23025)	20.66	19.83
	15RB (0)	714.5 (23165)	20.97	19.94
		707.5 (23095)	20.96	19.86
		700.5 (23025)	20.77	19.76

5MHz	1RB-High (24)	713.5 (23155)	21.90	21.00
		707.5 (23095)	21.85	21.05
		701.5 (23035)	21.66	20.88
	1RB-Middle (12)	713.5 (23155)	21.91	21.20
		707.5 (23095)	21.89	21.20
		701.5 (23035)	21.63	20.88
	1RB-Low (0)	713.5 (23155)	21.89	21.16
		707.5 (23095)	21.92	21.13
		701.5 (23035)	21.70	20.88
	12RB-High (13)	713.5 (23155)	20.92	19.90
		707.5 (23095)	20.97	19.99
		701.5 (23035)	20.82	19.85
	12RB-Middle (6)	713.5 (23155)	20.95	20.03
		707.5 (23095)	21.05	20.04
		701.5 (23035)	20.76	19.81
	12RB-Low (0)	713.5 (23155)	20.94	19.98
		707.5 (23095)	21.01	20.02
		701.5 (23035)	20.72	19.79
	25RB (0)	713.5 (23155)	20.91	19.95
		707.5 (23095)	21.01	20.04
		701.5 (23035)	20.89	19.89
10MHz	1RB-High (49)	711 (23130)	21.97	21.07
		707.5 (23095)	21.93	21.18
		704 (23060)	21.88	21.15
	1RB-Middle (24)	711 (23130)	22.09	21.21
		707.5 (23095)	22.03	21.31
		704 (23060)	21.99	21.24
	1RB-Low (0)	711 (23130)	22.14	21.28
		707.5 (23095)	21.99	21.26
		704 (23060)	21.96	21.17
	25RB-High (25)	711 (23130)	21.05	20.03
		707.5 (23095)	21.04	20.06
		704 (23060)	20.98	20.02
	25RB-Middle (12)	711 (23130)	21.09	20.12
		707.5 (23095)	21.17	20.11
		704 (23060)	21.04	20.07
	25RB-Low (0)	711 (23130)	21.13	20.13
		707.5 (23095)	21.10	20.12
		704 (23060)	21.08	20.12
	50RB (0)	711 (23130)	21.10	20.08
		707.5 (23095)	21.12	20.15
		704 (23060)	21.03	20.08

LTE B12 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	715.3 (23173)	20.50	19.66
		707.5 (23095)	20.40	19.72
		699.7 (23017)	20.05	19.29
	1RB-Middle (3)	715.3 (23173)	20.61	19.70
		707.5 (23095)	20.48	19.60
		699.7 (23017)	20.14	19.42
	1RB-Low (0)	715.3 (23173)	20.52	19.64
		707.5 (23095)	20.39	19.63
		699.7 (23017)	20.06	19.27
	3RB-High (3)	715.3 (23173)	20.57	19.40
		707.5 (23095)	20.42	19.42
		699.7 (23017)	20.08	19.04
	3RB-Middle (1)	715.3 (23173)	20.61	19.51
		707.5 (23095)	20.50	19.50
		699.7 (23017)	20.19	19.19
	3RB-Low (0)	715.3 (23173)	20.60	19.44
		707.5 (23095)	20.45	19.49
		699.7 (23017)	20.13	19.11
	6RB (0)	715.3 (23173)	19.59	18.50
		707.5 (23095)	19.43	18.49
		699.7 (23017)	19.10	18.14
3MHz	1RB-High (14)	714.5 (23165)	20.58	19.65
		707.5 (23095)	20.53	19.63
		700.5 (23025)	20.18	19.52
	1RB-Middle (7)	714.5 (23165)	20.74	19.86
		707.5 (23095)	20.58	19.80
		700.5 (23025)	20.30	19.67
	1RB-Low (0)	714.5 (23165)	20.58	19.70
		707.5 (23095)	20.45	19.69
		700.5 (23025)	20.31	19.58
	8RB-High (7)	714.5 (23165)	19.59	18.58
		707.5 (23095)	19.50	18.55
		700.5 (23025)	19.29	18.36
	8RB-Middle (4)	714.5 (23165)	19.64	18.66
		707.5 (23095)	19.51	18.59
		700.5 (23025)	19.32	18.36
	8RB-Low (0)	714.5 (23165)	19.60	18.63
		707.5 (23095)	19.49	18.56
		700.5 (23025)	19.29	18.33
	15RB (0)	714.5 (23165)	19.64	18.53
		707.5 (23095)	19.56	18.51
		700.5 (23025)	19.25	18.30

5MHz	1RB-High (24)	713.5 (23155)	20.56	19.79
		707.5 (23095)	20.37	19.59
		701.5 (23035)	20.30	19.53
	1RB-Middle (12)	713.5 (23155)	20.60	19.80
		707.5 (23095)	20.50	19.77
		701.5 (23035)	20.21	19.41
	1RB-Low (0)	713.5 (23155)	20.60	19.72
		707.5 (23095)	20.55	19.84
		701.5 (23035)	20.37	19.60
	12RB-High (13)	713.5 (23155)	19.64	18.50
		707.5 (23095)	19.45	18.49
		701.5 (23035)	19.32	18.32
	12RB-Middle (6)	713.5 (23155)	19.69	18.55
		707.5 (23095)	19.54	18.57
		701.5 (23035)	19.28	18.30
	12RB-Low (0)	713.5 (23155)	19.56	18.51
		707.5 (23095)	19.54	18.58
		701.5 (23035)	19.28	18.31
	25RB (0)	713.5 (23155)	19.60	18.47
		707.5 (23095)	19.51	18.50
		701.5 (23035)	19.39	18.42
10MHz	1RB-High (49)	711 (23130)	20.43	19.67
		707.5 (23095)	20.37	19.70
		704 (23060)	20.30	19.52
	1RB-Middle (24)	711 (23130)	20.42	19.79
		707.5 (23095)	20.47	19.85
		704 (23060)	20.43	19.67
	1RB-Low (0)	711 (23130)	20.45	19.82
		707.5 (23095)	20.44	19.77
		704 (23060)	20.38	19.67
	25RB-High (25)	711 (23130)	19.42	18.42
		707.5 (23095)	19.50	18.45
		704 (23060)	19.38	18.42
	25RB-Middle (12)	711 (23130)	19.54	18.48
		707.5 (23095)	19.58	18.51
		704 (23060)	19.49	18.52
	25RB-Low (0)	711 (23130)	19.50	18.54
		707.5 (23095)	19.57	18.61
		704 (23060)	19.49	18.47
	50RB (0)	711 (23130)	19.50	18.53
		707.5 (23095)	19.49	18.52
		704 (23060)	19.41	18.45

LTE B12 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	715.3 (23173)	16.50	15.82
		707.5 (23095)	16.41	15.76
		699.7 (23017)	16.06	15.41
	1RB-Middle (3)	715.3 (23173)	16.55	15.85
		707.5 (23095)	16.52	15.84
		699.7 (23017)	16.22	15.37
	1RB-Low (0)	715.3 (23173)	16.52	15.79
		707.5 (23095)	16.48	15.69
		699.7 (23017)	16.15	15.41
	3RB-High (3)	715.3 (23173)	16.62	15.50
		707.5 (23095)	16.51	15.39
		699.7 (23017)	16.14	15.22
	3RB-Middle (1)	715.3 (23173)	16.58	15.59
		707.5 (23095)	16.54	15.51
		699.7 (23017)	16.23	15.17
	3RB-Low (0)	715.3 (23173)	16.53	15.52
		707.5 (23095)	16.48	15.52
		699.7 (23017)	16.16	15.18
	6RB (0)	715.3 (23173)	15.58	14.61
		707.5 (23095)	15.53	14.58
		699.7 (23017)	15.11	14.22
3MHz	1RB-High (14)	714.5 (23165)	16.49	15.70
		707.5 (23095)	16.51	15.69
		700.5 (23025)	16.25	15.44
	1RB-Middle (7)	714.5 (23165)	16.69	15.92
		707.5 (23095)	16.63	15.81
		700.5 (23025)	16.28	15.50
	1RB-Low (0)	714.5 (23165)	16.52	15.76
		707.5 (23095)	16.51	15.70
		700.5 (23025)	16.20	15.44
	8RB-High (7)	714.5 (23165)	15.53	14.56
		707.5 (23095)	15.51	14.50
		700.5 (23025)	15.17	14.28
	8RB-Middle (4)	714.5 (23165)	15.62	14.58
		707.5 (23095)	15.60	14.52
		700.5 (23025)	15.25	14.27
	8RB-Low (0)	714.5 (23165)	15.55	14.55
		707.5 (23095)	15.55	14.45
		700.5 (23025)	15.19	14.27
	15RB (0)	714.5 (23165)	15.64	14.47
		707.5 (23095)	15.41	14.44
		700.5 (23025)	15.21	14.20

5MHz	1RB-High (24)	713.5 (23155)	16.54	15.75
		707.5 (23095)	16.50	15.55
		701.5 (23035)	16.30	15.52
	1RB-Middle (12)	713.5 (23155)	16.59	15.78
		707.5 (23095)	16.48	15.67
		701.5 (23035)	16.16	15.36
	1RB-Low (0)	713.5 (23155)	16.49	15.59
		707.5 (23095)	16.57	15.63
		701.5 (23035)	16.19	15.40
	12RB-High (13)	713.5 (23155)	15.60	14.48
		707.5 (23095)	15.57	14.43
		701.5 (23035)	15.28	14.29
	12RB-Middle (6)	713.5 (23155)	15.61	14.60
		707.5 (23095)	15.54	14.49
		701.5 (23035)	15.21	14.28
	12RB-Low (0)	713.5 (23155)	15.50	14.40
		707.5 (23095)	15.58	14.46
		701.5 (23035)	15.21	14.19
	25RB (0)	713.5 (23155)	15.51	14.44
		707.5 (23095)	15.56	14.42
		701.5 (23035)	15.34	14.34
10MHz	1RB-High (49)	711 (23130)	16.42	15.72
		707.5 (23095)	16.35	15.55
		704 (23060)	16.21	15.53
	1RB-Middle (24)	711 (23130)	16.39	15.70
		707.5 (23095)	16.39	15.77
		704 (23060)	16.34	15.68
	1RB-Low (0)	711 (23130)	16.42	15.73
		707.5 (23095)	16.37	15.59
		704 (23060)	16.35	15.64
	25RB-High (25)	711 (23130)	15.41	14.39
		707.5 (23095)	15.46	14.40
		704 (23060)	15.37	14.38
	25RB-Middle (12)	711 (23130)	15.46	14.44
		707.5 (23095)	15.47	14.49
		704 (23060)	15.45	14.46
	25RB-Low (0)	711 (23130)	15.49	14.47
		707.5 (23095)	15.52	14.52
		704 (23060)	15.45	14.45
	50RB (0)	711 (23130)	15.47	14.46
		707.5 (23095)	15.49	14.49
		704 (23060)	15.36	14.37

LTE B14 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	795.5 (23355)	22.33	21.41
		793 (23330)	22.39	21.57
		790.5 (23305)	22.38	21.53
	1RB-Middle (12)	795.5 (23355)	22.34	21.48
		793 (23330)	22.42	21.60
		790.5 (23305)	22.41	21.55
	1RB-Low (0)	795.5 (23355)	22.39	21.62
		793 (23330)	22.38	21.61
		790.5 (23305)	22.39	21.58
	12RB-High (13)	795.5 (23355)	21.40	20.33
		793 (23330)	21.47	20.36
		790.5 (23305)	21.37	20.42
	12RB-Middle (6)	795.5 (23355)	21.45	20.36
		793 (23330)	21.45	20.40
		790.5 (23305)	21.49	20.38
	12RB-Low (0)	795.5 (23355)	21.42	20.30
		793 (23330)	21.48	20.34
		790.5 (23305)	21.42	20.33
	25RB (0)	795.5 (23355)	21.47	20.36
		793 (23330)	21.46	20.39
		790.5 (23305)	21.43	20.37
10MHz	1RB-High (49)	793 (23330)	22.23	21.55
	1RB-Middle (24)	793 (23330)	22.32	21.58
	1RB-Low (0)	793 (23330)	22.26	21.46
	25RB-High (25)	793 (23330)	21.33	20.33
	25RB-Middle (12)	793 (23330)	21.41	20.42
	25RB-Low (0)	793 (23330)	21.44	20.38
	50RB (0)	793 (23330)	21.37	20.40

LTE B14 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	795.5 (23355)	20.62	19.91
		793 (23330)	20.66	19.91
		790.5 (23305)	20.63	19.94
	1RB-Middle (12)	795.5 (23355)	20.68	19.91
		793 (23330)	20.69	20.01
		790.5 (23305)	20.76	19.99
	1RB-Low (0)	795.5 (23355)	20.73	19.95
		793 (23330)	20.73	20.02
		790.5 (23305)	20.76	20.04
	12RB-High (13)	795.5 (23355)	19.70	18.69
		793 (23330)	19.75	18.71
		790.5 (23305)	19.81	18.81
	12RB-Middle (6)	795.5 (23355)	19.76	18.72
		793 (23330)	19.76	18.81
		790.5 (23305)	19.79	18.82
	12RB-Low (0)	795.5 (23355)	19.76	18.71
		793 (23330)	19.78	18.78
		790.5 (23305)	19.79	18.80
	25RB (0)	795.5 (23355)	19.71	18.76
		793 (23330)	19.78	18.74
		790.5 (23305)	19.80	18.75
10MHz	1RB-High (49)	793 (23330)	20.60	19.88
	1RB-Middle (24)	793 (23330)	20.66	19.99
	1RB-Low (0)	793 (23330)	20.76	20.05
	25RB-High (25)	793 (23330)	19.71	18.76
	25RB-Middle (12)	793 (23330)	19.79	18.78
	25RB-Low (0)	793 (23330)	19.78	18.76
	50RB (0)	793 (23330)	19.70	18.76

LTE B14 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	795.5 (23355)	16.42	15.58
		793 (23330)	16.46	15.70
		790.5 (23305)	16.43	15.70
	1RB-Middle (12)	795.5 (23355)	16.46	15.73
		793 (23330)	16.50	15.74
		790.5 (23305)	16.50	15.78
	1RB-Low (0)	795.5 (23355)	16.51	15.68
		793 (23330)	16.52	15.73
		790.5 (23305)	16.42	15.71
	12RB-High (13)	795.5 (23355)	15.47	14.47
		793 (23330)	15.50	14.52
		790.5 (23305)	15.52	14.49
	12RB-Middle (6)	795.5 (23355)	15.50	14.53
		793 (23330)	15.52	14.51
		790.5 (23305)	15.58	14.57
	12RB-Low (0)	795.5 (23355)	15.46	14.51
		793 (23330)	15.54	14.58
		790.5 (23305)	15.47	14.48
	25RB (0)	795.5 (23355)	15.50	14.48
		793 (23330)	15.51	14.54
		790.5 (23305)	15.55	14.52
10MHz	1RB-High (49)	793 (23330)	16.43	15.59
	1RB-Middle (24)	793 (23330)	16.37	15.69
	1RB-Low (0)	793 (23330)	16.35	15.56
	25RB-High (25)	793 (23330)	15.49	14.45
	25RB-Middle (12)	793 (23330)	15.46	14.46
	25RB-Low (0)	793 (23330)	15.44	14.46
	50RB (0)	793 (23330)	15.50	14.57

LTE B30 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2312.5 (27735)	22.92	21.80
		2310 (27710)	22.71	21.86
		2307.5 (27685)	22.61	21.81
	1RB-Middle (12)	2312.5 (27735)	22.75	21.65
		2310 (27710)	22.75	21.89
		2307.5 (27685)	22.60	21.88
	1RB-Low (0)	2312.5 (27735)	22.86	21.83
		2310 (27710)	22.74	21.86
		2307.5 (27685)	22.72	22.03
	12RB-High (13)	2312.5 (27735)	21.83	20.63
		2310 (27710)	21.81	20.74
		2307.5 (27685)	21.65	20.68
	12RB-Middle (6)	2312.5 (27735)	21.81	20.75
		2310 (27710)	21.80	20.76
		2307.5 (27685)	21.74	20.73
	12RB-Low (0)	2312.5 (27735)	21.83	20.75
		2310 (27710)	21.84	20.68
		2307.5 (27685)	21.75	20.79
	25RB (0)	2312.5 (27735)	21.89	20.76
		2310 (27710)	21.87	20.74
		2307.5 (27685)	21.72	20.68
10MHz	1RB-High (49)	2310 (27710)	22.56	21.73
	1RB-Middle (24)	2310 (27710)	22.60	21.78
	1RB-Low (0)	2310 (27710)	22.74	21.93
	25RB-High (25)	2310 (27710)	21.72	20.64
	25RB-Middle (12)	2310 (27710)	21.66	20.64
	25RB-Low (0)	2310 (27710)	21.71	20.59
	50RB (0)	2310 (27710)	21.69	20.66

LTE B30 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2312.5 (27735)	18.56	17.79
		2310 (27710)	18.58	17.88
		2307.5 (27685)	18.38	17.70
	1RB-Middle (12)	2312.5 (27735)	18.58	17.83
		2310 (27710)	18.40	17.73
		2307.5 (27685)	18.44	17.75
	1RB-Low (0)	2312.5 (27735)	18.54	17.64
		2310 (27710)	18.40	17.72
		2307.5 (27685)	18.33	17.62
	12RB-High (13)	2312.5 (27735)	17.60	16.56
		2310 (27710)	17.50	16.50
		2307.5 (27685)	17.47	16.48
	12RB-Middle (6)	2312.5 (27735)	17.59	16.51
		2310 (27710)	17.61	16.49
		2307.5 (27685)	17.44	16.52
	12RB-Low (0)	2312.5 (27735)	17.55	16.54
		2310 (27710)	17.49	16.46
		2307.5 (27685)	17.30	16.35
	25RB (0)	2312.5 (27735)	17.60	16.47
		2310 (27710)	17.47	16.51
		2307.5 (27685)	17.43	16.46
10MHz	1RB-High (49)	2310 (27710)	18.47	17.80
	1RB-Middle (24)	2310 (27710)	18.40	17.71
	1RB-Low (0)	2310 (27710)	18.38	17.59
	25RB-High (25)	2310 (27710)	17.50	16.51
	25RB-Middle (12)	2310 (27710)	17.48	16.51
	25RB-Low (0)	2310 (27710)	17.51	16.52
	50RB (0)	2310 (27710)	17.53	16.50

LTE B30 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
5MHz	1RB-High (24)	2312.5 (27735)	12.58	11.75
		2310 (27710)	12.57	11.82
		2307.5 (27685)	12.57	11.78
	1RB-Middle (12)	2312.5 (27735)	12.57	11.81
		2310 (27710)	12.62	11.85
		2307.5 (27685)	12.61	11.89
	1RB-Low (0)	2312.5 (27735)	12.55	11.82
		2310 (27710)	12.58	11.79
		2307.5 (27685)	12.56	11.94
	12RB-High (13)	2312.5 (27735)	11.53	10.55
		2310 (27710)	11.68	10.65
		2307.5 (27685)	11.62	10.66
	12RB-Middle (6)	2312.5 (27735)	11.64	10.68
		2310 (27710)	11.73	10.67
		2307.5 (27685)	11.70	10.70
	12RB-Low (0)	2312.5 (27735)	11.64	10.69
		2310 (27710)	11.68	10.63
		2307.5 (27685)	11.63	10.68
	25RB (0)	2312.5 (27735)	11.66	10.72
		2310 (27710)	11.68	10.63
		2307.5 (27685)	11.67	10.66
10MHz	1RB-High (49)	2310 (27710)	12.39	11.78
	1RB-Middle (24)	2310 (27710)	12.48	11.86
	1RB-Low (0)	2310 (27710)	12.51	11.75
	25RB-High (25)	2310 (27710)	11.60	10.55
	25RB-Middle (12)	2310 (27710)	11.60	10.62
	25RB-Low (0)	2310 (27710)	11.58	10.68
	50RB (0)	2310 (27710)	11.54	10.67

LTE B66 (Power Level A1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1779.3 (132665)	22.41	21.98
		1745 (132322)	22.43	21.58
		1710.7 (131979)	23.15	22.61
	1RB-Middle (3)	1779.3 (132665)	22.48	22.14
		1745 (132322)	22.45	21.78
		1710.7 (131979)	23.26	22.58
	1RB-Low (0)	1779.3 (132665)	22.47	21.97
		1745 (132322)	22.38	21.61
		1710.7 (131979)	23.20	22.60
	3RB-High (3)	1779.3 (132665)	22.48	21.74
		1745 (132322)	22.48	21.32
		1710.7 (131979)	23.25	22.29
	3RB-Middle (1)	1779.3 (132665)	22.52	21.71
		1745 (132322)	22.50	21.54
		1710.7 (131979)	23.27	22.36
	3RB-Low (0)	1779.3 (132665)	22.48	21.67
		1745 (132322)	22.44	21.43
		1710.7 (131979)	23.27	22.32
	6RB (0)	1779.3 (132665)	21.47	20.79
		1745 (132322)	21.41	20.50
		1710.7 (131979)	22.27	21.33
3MHz	1RB-High (14)	1778.5 (132657)	22.57	21.98
		1745 (132322)	22.46	21.64
		1711.5 (131987)	23.38	22.56
	1RB-Middle (7)	1778.5 (132657)	22.60	22.15
		1745 (132322)	22.62	21.69
		1711.5 (131987)	23.46	22.70
	1RB-Low (0)	1778.5 (132657)	22.45	22.01
		1745 (132322)	22.48	21.61
		1711.5 (131987)	23.34	22.69
	8RB-High (7)	1778.5 (132657)	21.57	20.80
		1745 (132322)	21.53	20.55
		1711.5 (131987)	22.38	21.38
	8RB-Middle (4)	1778.5 (132657)	21.57	20.84
		1745 (132322)	21.58	20.55
		1711.5 (131987)	22.37	21.48
	8RB-Low (0)	1778.5 (132657)	21.56	20.76
		1745 (132322)	21.57	20.54
		1711.5 (131987)	22.32	21.46
	15RB (0)	1778.5 (132657)	21.56	20.77
		1745 (132322)	21.57	20.51
		1711.5 (131987)	22.36	21.32

5MHz	1RB-High (24)	1777.5 (132647)	22.89	22.09
		1745 (132322)	22.48	21.87
		1712.5 (131997)	23.30	22.83
	1RB-Middle (12)	1777.5 (132647)	22.92	22.12
		1745 (132322)	22.61	21.73
		1712.5 (131997)	23.36	22.82
	1RB-Low (0)	1777.5 (132647)	22.91	22.17
		1745 (132322)	22.49	21.68
		1712.5 (131997)	23.38	22.66
	12RB-High (13)	1777.5 (132647)	21.86	20.85
		1745 (132322)	21.60	20.55
		1712.5 (131997)	22.42	21.36
	12RB-Middle (6)	1777.5 (132647)	21.89	20.84
		1745 (132322)	21.60	20.62
		1712.5 (131997)	22.43	21.49
	12RB-Low (0)	1777.5 (132647)	21.73	20.86
		1745 (132322)	21.60	20.55
		1712.5 (131997)	22.39	21.39
	25RB (0)	1777.5 (132647)	21.70	20.84
		1745 (132322)	21.58	20.56
		1712.5 (131997)	22.46	21.39
10MHz	1RB-High (49)	1775 (132622)	22.93	22.14
		1745 (132322)	22.51	21.75
		1715 (132022)	23.36	22.63
	1RB-Middle (24)	1775 (132622)	22.81	22.03
		1745 (132322)	22.55	21.83
		1715 (132022)	23.35	22.76
	1RB-Low (0)	1775 (132622)	22.89	22.13
		1745 (132322)	22.54	21.82
		1715 (132022)	23.42	22.72
	25RB-High (25)	1775 (132622)	21.79	20.71
		1745 (132322)	21.51	20.48
		1715 (132022)	22.40	21.39
	25RB-Middle (12)	1775 (132622)	21.73	20.77
		1745 (132322)	21.60	20.56
		1715 (132022)	22.46	21.36
	25RB-Low (0)	1775 (132622)	21.66	20.84
		1745 (132322)	21.57	20.50
		1715 (132022)	22.43	21.40
	50RB (0)	1775 (132622)	21.69	20.82
		1745 (132322)	21.61	20.48
		1715 (132022)	22.44	21.35

15MHz	1RB-High (74)	1772.5 (132597)	22.82	21.94
		1745 (132322)	22.43	21.78
		1717.5 (132047)	23.33	22.58
	1RB-Middle (37)	1772.5 (132597)	22.75	21.96
		1745 (132322)	22.45	21.75
		1717.5 (132047)	23.34	22.61
	1RB-Low (0)	1772.5 (132597)	22.81	22.13
		1745 (132322)	22.48	21.81
		1717.5 (132047)	23.31	22.73
	36RB-High (38)	1772.5 (132597)	21.79	20.71
		1745 (132322)	21.48	20.49
		1717.5 (132047)	22.32	21.40
	36RB-Middle (19)	1772.5 (132597)	21.86	20.80
		1745 (132322)	21.50	20.48
		1717.5 (132047)	22.37	21.39
	36RB-Low (0)	1772.5 (132597)	21.82	20.72
		1745 (132322)	21.50	20.51
		1717.5 (132047)	22.32	21.39
	75RB (0)	1772.5 (132597)	21.85	20.72
		1745 (132322)	21.47	20.51
		1717.5 (132047)	22.35	21.40
20MHz	1RB-High (99)	1770 (132572)	22.68	21.99
		1745 (132322)	22.41	21.75
		1720 (132072)	23.09	22.65
	1RB-Middle (50)	1770 (132572)	22.69	22.13
		1745 (132322)	22.43	21.69
		1720 (132072)	23.24	22.49
	1RB-Low (0)	1770 (132572)	22.71	22.13
		1745 (132322)	22.47	21.67
		1720 (132072)	23.15	22.64
	50RB-High (50)	1770 (132572)	21.76	20.72
		1745 (132322)	21.45	20.54
		1720 (132072)	22.25	21.26
	50RB-Middle (25)	1770 (132572)	21.79	20.78
		1745 (132322)	21.53	20.52
		1720 (132072)	22.24	21.32
	50RB-Low (0)	1770 (132572)	21.72	20.74
		1745 (132322)	21.52	20.49
		1720 (132072)	22.26	21.29
	100RB (0)	1770 (132572)	21.75	20.75
		1745 (132322)	21.49	20.46
		1720 (132072)	22.23	21.28

LTE B66 (Power Level B1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1779.3 (132665)	16.18	15.55
		1745 (132322)	16.17	15.47
		1710.7 (131979)	16.95	16.31
	1RB-Middle (3)	1779.3 (132665)	16.32	15.66
		1745 (132322)	16.29	15.57
		1710.7 (131979)	17.03	16.33
	1RB-Low (0)	1779.3 (132665)	16.19	15.44
		1745 (132322)	16.17	15.54
		1710.7 (131979)	16.92	16.35
	3RB-High (3)	1779.3 (132665)	16.25	15.22
		1745 (132322)	16.21	15.30
		1710.7 (131979)	17.01	16.02
	3RB-Middle (1)	1779.3 (132665)	16.30	15.30
		1745 (132322)	16.31	15.34
		1710.7 (131979)	17.05	16.01
	3RB-Low (0)	1779.3 (132665)	16.28	15.27
		1745 (132322)	16.24	15.31
		1710.7 (131979)	17.00	16.06
	6RB (0)	1779.3 (132665)	15.25	14.32
		1745 (132322)	15.16	14.32
		1710.7 (131979)	16.04	15.20
3MHz	1RB-High (14)	1778.5 (132657)	16.33	15.62
		1745 (132322)	16.20	15.55
		1711.5 (131987)	16.98	16.34
	1RB-Middle (7)	1778.5 (132657)	16.34	15.67
		1745 (132322)	16.36	15.61
		1711.5 (131987)	17.13	16.48
	1RB-Low (0)	1778.5 (132657)	16.23	15.58
		1745 (132322)	16.22	15.55
		1711.5 (131987)	17.05	16.44
	8RB-High (7)	1778.5 (132657)	15.30	14.32
		1745 (132322)	15.28	14.32
		1711.5 (131987)	16.14	15.17
	8RB-Middle (4)	1778.5 (132657)	15.32	14.42
		1745 (132322)	15.31	14.37
		1711.5 (131987)	16.14	15.27
	8RB-Low (0)	1778.5 (132657)	15.26	14.29
		1745 (132322)	15.31	14.34
		1711.5 (131987)	16.15	15.19
	15RB (0)	1778.5 (132657)	15.28	14.33
		1745 (132322)	15.28	14.27
		1711.5 (131987)	16.09	15.10

5MHz	1RB-High (24)	1777.5 (132647)	16.22	15.57
		1745 (132322)	16.16	15.54
		1712.5 (131997)	16.97	16.41
	1RB-Middle (12)	1777.5 (132647)	16.23	15.54
		1745 (132322)	16.24	15.62
		1712.5 (131997)	17.05	16.44
	1RB-Low (0)	1777.5 (132647)	16.25	15.52
		1745 (132322)	16.30	15.47
		1712.5 (131997)	17.03	16.32
	12RB-High (13)	1777.5 (132647)	15.32	14.26
		1745 (132322)	15.26	14.29
		1712.5 (131997)	16.11	15.13
	12RB-Middle (6)	1777.5 (132647)	15.34	14.38
		1745 (132322)	15.35	14.34
		1712.5 (131997)	16.17	15.23
	12RB-Low (0)	1777.5 (132647)	15.27	14.31
		1745 (132322)	15.30	14.30
		1712.5 (131997)	16.14	15.12
	25RB (0)	1777.5 (132647)	15.28	14.32
		1745 (132322)	15.28	14.29
		1712.5 (131997)	16.13	15.17
10MHz	1RB-High (49)	1775 (132622)	16.20	15.61
		1745 (132322)	16.22	15.48
		1715 (132022)	17.01	16.34
	1RB-Middle (24)	1775 (132622)	16.26	15.58
		1745 (132322)	16.28	15.50
		1715 (132022)	17.06	16.40
	1RB-Low (0)	1775 (132622)	16.24	15.48
		1745 (132322)	16.24	15.64
		1715 (132022)	17.05	16.37
	25RB-High (25)	1775 (132622)	15.27	14.25
		1745 (132322)	15.27	14.23
		1715 (132022)	16.09	15.11
	25RB-Middle (12)	1775 (132622)	15.34	14.35
		1745 (132322)	15.30	14.27
		1715 (132022)	16.12	15.16
	25RB-Low (0)	1775 (132622)	15.32	14.29
		1745 (132322)	15.31	14.33
		1715 (132022)	16.11	15.13
	50RB (0)	1775 (132622)	15.25	14.26
		1745 (132322)	15.26	14.29
		1715 (132022)	16.08	15.18

15MHz	1RB-High (74)	1772.5 (132597)	16.27	15.50
		1745 (132322)	16.23	15.51
		1717.5 (132047)	16.97	16.35
	1RB-Middle (37)	1772.5 (132597)	16.26	15.64
		1745 (132322)	16.29	15.51
		1717.5 (132047)	17.03	16.39
	1RB-Low (0)	1772.5 (132597)	16.32	15.62
		1745 (132322)	16.28	15.61
		1717.5 (132047)	17.02	16.37
	36RB-High (38)	1772.5 (132597)	15.26	14.29
		1745 (132322)	15.29	14.25
		1717.5 (132047)	16.06	15.10
	36RB-Middle (19)	1772.5 (132597)	15.33	14.28
		1745 (132322)	15.33	14.28
		1717.5 (132047)	16.17	15.17
	36RB-Low (0)	1772.5 (132597)	15.41	14.38
		1745 (132322)	15.28	14.28
		1717.5 (132047)	16.09	15.09
	75RB (0)	1772.5 (132597)	15.42	14.38
		1745 (132322)	15.33	14.26
		1717.5 (132047)	16.12	15.12
20MHz	1RB-High (99)	1770 (132572)	16.19	15.56
		1745 (132322)	16.10	15.36
		1720 (132072)	16.85	16.14
	1RB-Middle (50)	1770 (132572)	16.21	15.58
		1745 (132322)	16.21	15.61
		1720 (132072)	16.87	16.19
	1RB-Low (0)	1770 (132572)	16.34	15.59
		1745 (132322)	16.30	15.60
		1720 (132072)	16.91	16.14
	50RB-High (50)	1770 (132572)	15.26	14.26
		1745 (132322)	15.30	14.26
		1720 (132072)	15.96	14.98
	50RB-Middle (25)	1770 (132572)	15.42	14.38
		1745 (132322)	15.34	14.29
		1720 (132072)	15.94	15.01
	50RB-Low (0)	1770 (132572)	15.35	14.39
		1745 (132322)	15.23	14.28
		1720 (132072)	15.95	15.01
	100RB (0)	1770 (132572)	15.34	14.36
		1745 (132322)	15.28	14.30
		1720 (132072)	16.03	14.96

LTE B66 (Power Level C1)

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM
1.4MHz	1RB-High (5)	1779.3 (132665)	12.57	11.43
		1745 (132322)	12.32	11.48
		1710.7 (131979)	12.73	11.85
	1RB-Middle (3)	1779.3 (132665)	12.57	11.52
		1745 (132322)	12.45	11.60
		1710.7 (131979)	12.86	12.09
	1RB-Low (0)	1779.3 (132665)	12.53	11.40
		1745 (132322)	12.39	11.38
		1710.7 (131979)	12.79	11.91
	3RB-High (3)	1779.3 (132665)	12.61	11.37
		1745 (132322)	12.42	11.16
		1710.7 (131979)	12.74	11.73
	3RB-Middle (1)	1779.3 (132665)	12.50	11.20
		1745 (132322)	12.43	11.25
		1710.7 (131979)	12.76	11.67
	3RB-Low (0)	1779.3 (132665)	12.47	11.20
		1745 (132322)	12.27	11.14
		1710.7 (131979)	12.71	11.77
	6RB (0)	1779.3 (132665)	11.45	10.32
		1745 (132322)	11.33	10.37
		1710.7 (131979)	11.71	10.86
3MHz	1RB-High (14)	1778.5 (132657)	12.62	11.51
		1745 (132322)	12.47	11.48
		1711.5 (131987)	12.74	12.01
	1RB-Middle (7)	1778.5 (132657)	12.84	11.59
		1745 (132322)	12.57	11.59
		1711.5 (131987)	12.91	12.02
	1RB-Low (0)	1778.5 (132657)	12.59	11.53
		1745 (132322)	12.47	11.48
		1711.5 (131987)	12.80	12.01
	8RB-High (7)	1778.5 (132657)	11.56	10.40
		1745 (132322)	11.48	10.34
		1711.5 (131987)	11.84	10.88
	8RB-Middle (4)	1778.5 (132657)	11.68	10.45
		1745 (132322)	11.48	10.42
		1711.5 (131987)	11.88	10.85
	8RB-Low (0)	1778.5 (132657)	11.59	10.42
		1745 (132322)	11.47	10.31
		1711.5 (131987)	11.87	10.87
	15RB (0)	1778.5 (132657)	11.51	10.36
		1745 (132322)	11.46	10.36
		1711.5 (131987)	11.87	10.81

5MHz	1RB-High (24)	1777.5 (132647)	12.30	11.40
		1745 (132322)	12.13	11.17
		1712.5 (131997)	12.59	11.91
	1RB-Middle (12)	1777.5 (132647)	12.38	11.39
		1745 (132322)	12.08	11.33
		1712.5 (131997)	12.66	11.88
	1RB-Low (0)	1777.5 (132647)	12.24	11.43
		1745 (132322)	12.12	11.07
		1712.5 (131997)	12.59	11.90
	12RB-High (13)	1777.5 (132647)	11.34	10.05
		1745 (132322)	11.16	10.03
		1712.5 (131997)	11.67	10.71
	12RB-Middle (6)	1777.5 (132647)	11.42	10.05
		1745 (132322)	11.21	10.06
		1712.5 (131997)	11.75	10.79
	12RB-Low (0)	1777.5 (132647)	11.22	10.06
		1745 (132322)	11.04	10.06
		1712.5 (131997)	11.68	10.72
	25RB (0)	1777.5 (132647)	11.24	10.05
		1745 (132322)	11.03	10.04
		1712.5 (131997)	11.67	10.73

10MHz	1RB-High (49)	1775 (132622)	12.41	11.58
		1745 (132322)	12.11	11.46
		1715 (132022)	12.85	12.16
	1RB-Middle (24)	1775 (132622)	12.44	11.52
		1745 (132322)	12.25	11.35
		1715 (132022)	12.89	12.09
	1RB-Low (0)	1775 (132622)	12.43	11.50
		1745 (132322)	12.16	11.40
		1715 (132022)	12.87	12.24
	25RB-High (25)	1775 (132622)	11.49	10.27
		1745 (132322)	11.20	10.22
		1715 (132022)	11.90	10.95
	25RB-Middle (12)	1775 (132622)	11.34	10.29
		1745 (132322)	11.22	10.20
		1715 (132022)	11.98	10.97
	25RB-Low (0)	1775 (132622)	11.39	10.26
		1745 (132322)	11.20	10.23
		1715 (132022)	11.94	10.99
	50RB (0)	1775 (132622)	11.32	10.31
		1745 (132322)	11.19	10.21
		1715 (132022)	11.91	10.97

15MHz	1RB-High (74)	1772.5 (132597)	12.38	11.43
		1745 (132322)	12.09	11.39
		1717.5 (132047)	12.84	12.16
	1RB-Middle (37)	1772.5 (132597)	12.28	11.44
		1745 (132322)	12.16	11.45
		1717.5 (132047)	12.84	12.20
	1RB-Low (0)	1772.5 (132597)	12.28	11.50
		1745 (132322)	12.16	11.40
		1717.5 (132047)	12.81	12.14
	36RB-High (38)	1772.5 (132597)	11.37	10.29
		1745 (132322)	11.16	10.19
		1717.5 (132047)	11.92	10.96
	36RB-Middle (19)	1772.5 (132597)	11.38	10.24
		1745 (132322)	11.25	10.26
		1717.5 (132047)	11.97	10.97
	36RB-Low (0)	1772.5 (132597)	11.36	10.24
		1745 (132322)	11.17	10.22
		1717.5 (132047)	11.93	10.93
	75RB (0)	1772.5 (132597)	11.29	10.28
		1745 (132322)	11.19	10.20
		1717.5 (132047)	11.92	10.97
20MHz	1RB-High (99)	1770 (132572)	12.16	11.48
		1745 (132322)	12.10	11.39
		1720 (132072)	12.53	12.09
	1RB-Middle (50)	1770 (132572)	12.22	11.55
		1745 (132322)	12.17	11.50
		1720 (132072)	12.57	12.09
	1RB-Low (0)	1770 (132572)	12.23	11.53
		1745 (132322)	12.17	11.41
		1720 (132072)	12.53	11.97
	50RB-High (50)	1770 (132572)	11.27	10.26
		1745 (132322)	11.15	10.20
		1720 (132072)	11.59	10.83
	50RB-Middle (25)	1770 (132572)	11.26	10.31
		1745 (132322)	11.23	10.21
		1720 (132072)	11.65	10.86
	50RB-Low (0)	1770 (132572)	11.25	10.32
		1745 (132322)	11.18	10.23
		1720 (132072)	11.61	10.83
	100RB (0)	1770 (132572)	11.21	10.24
		1745 (132322)	11.15	10.20
		1720 (132072)	11.81	10.83

11.3 Wi-Fi Measurement result

WIFI2.4G Tune up

Mode	Rate	Channel	Freq. (MHz)	Power Level A1	Power Level B1	Power Level C1
802.11b	1-11Mbps	1	2412	21	19	14
		6	2437	21	19	14
		11	2462	21	19	14
802.11g	6Mbps	1	2412	18.5	18.5	14
		6	2437	18.5	18.5	14
		11	2462	18.5	18.5	14
	9Mbps	1	2412	18.5	18.5	14
		6	2437	18.5	18.5	14
		11	2462	18.5	18.5	14
	12Mbps	1	2412	18.5	18.5	14
		6	2437	18.5	18.5	14
		11	2462	18.5	18.5	14
	18Mbps	1	2412	18.5	18.5	14
		6	2437	18.5	18.5	14
		11	2462	18.5	18.5	14
	24Mbps	1	2412	18.5	18.5	14
		6	2437	18.5	18.5	14
		11	2462	18.5	18.5	14
	36Mbps	1	2412	18	16.5	14
		6	2437	18	16.5	14
		11	2462	18	16.5	14
	48Mbps	1	2412	18	16.5	14
		6	2437	18	16.5	14
		11	2462	18	16.5	14
	54Mbps	1	2412	17.5	16.5	14
		6	2437	17.5	16.5	14
		11	2462	17.5	16.5	14
802.11n-20M	11n MCS0	1	2412	18.5	17.5	14
		6	2437	18.5	17.5	14
		11	2462	18.5	17.5	14
	MCS1	1	2412	18.5	17.5	14
		6	2437	18.5	17.5	14
		11	2462	18.5	17.5	14
	MCS2	1	2412	18.5	17.5	14
		6	2437	18.5	17.5	14
		11	2462	18.5	17.5	14

	MCS3	1	2412	18	16.5	14
		6	2437	18	16.5	14
		11	2462	18	16.5	14
	MCS4	1	2412	18	16.5	14
		6	2437	18	16.5	14
		11	2462	18	16.5	14
	MCS5	1	2412	17.5	16.5	14
		6	2437	17.5	16.5	14
		11	2462	17.5	16.5	14
	MCS6	1	2412	17	16.5	14
		6	2437	17	16.5	14
		11	2462	17	16.5	14
	MCS7	1	2412	17	16.5	14
		6	2437	17	16.5	14
		11	2462	17	16.5	14
802.11n-40M	11n MCS0	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS1	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS2	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS3	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS4	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS5	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS6	3	2412	16.5	16.5	14
		6	2437	16.5	16.5	14
		9	2462	16.5	16.5	14
	MCS7	3	2412	15.5	15.5	14
		6	2437	15.5	15.5	14
		9	2462	15.5	15.5	14

WIFI5G Tune up

Mode	Rate	Ch #	Freq. (MHz)	Power Level A1	Power Level B1	Power Level C1
802.11a 20M	6Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	9Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	12Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	18Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	24Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	36Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	48Mbps	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	54Mbps	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
802.11n 20M	MCS0	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS1	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS2	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS3	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS4	36-64	5180-5320	18	17	8

		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS5	36-64	5180-5320	17	17	8
		100-144	5500-5720	17	17	8
		149-165	5745-5825	17	17	8
	MCS6	36-64	5180-5320	16.5	17	8
		100-144	5500-5720	16.5	17	8
		149-165	5745-5825	16.5	17	8
	MCS7	36-64	5180-5320	16	16	8
		100-144	5500-5720	16	16	8
		149-165	5745-5825	16	16	8
802.11n 40M	MCS0	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS1	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS2	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS3	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS4	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS5	36-64	5180-5320	17	17	8
		100-144	5500-5720	17	17	8
		149-165	5745-5825	17	17	8
	MCS6	36-64	5180-5320	16.5	17	8
		100-144	5500-5720	16.5	17	8
		149-165	5745-5825	16.5	17	8
	MCS7	36-64	5180-5320	16	16	8
		100-144	5500-5720	16	16	8
		149-165	5745-5825	16	16	8
802.11ac 20M	MCS0	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS1	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8

	MCS2	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS3	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS4	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS5	36-64	5180-5320	17	17	8
		100-144	5500-5720	17	17	8
		149-165	5745-5825	17	17	8
	MCS6	36-64	5180-5320	16.5	17	8
		100-144	5500-5720	16.5	17	8
		149-165	5745-5825	16.5	17	8
	MCS7	36-64	5180-5320	16	16	8
		100-144	5500-5720	16	16	8
		149-165	5745-5825	16	16	8
	MCS8	36-64	5180-5320	15	15	8
		100-144	5500-5720	15	15	8
		149-165	5745-5825	15	15	8
802.11ac 40M	MCS0	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS1	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS2	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS3	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS4	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS5	36-64	5180-5320	17	17	8
		100-144	5500-5720	17	17	8
		149-165	5745-5825	17	17	8
	MCS6	36-64	5180-5320	16.5	17	8
		100-144	5500-5720	16.5	17	8

		149-165	5745-5825	16.5	17	8
	MCS7	36-64	5180-5320	16	16	8
		100-144	5500-5720	16	16	8
		149-165	5745-5825	16	16	8
	MCS8	36-64	5180-5320	14.5	15	8
		100-144	5500-5720	14.5	15	8
		149-165	5745-5825	14.5	15	8
	MCS9	36-64	5180-5320	14	14	8
		100-144	5500-5720	14	14	8
		149-165	5745-5825	14	14	8
802.11ac 80M	MCS0	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS1	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS2	36-64	5180-5320	18.5	19	8
		100-144	5500-5720	18.5	19	8
		149-165	5745-5825	18.5	19	8
	MCS3	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS4	36-64	5180-5320	18	17	8
		100-144	5500-5720	18	17	8
		149-165	5745-5825	18	17	8
	MCS5	36-64	5180-5320	17	17	8
		100-144	5500-5720	17	17	8
		149-165	5745-5825	17	17	8
	MCS6	36-64	5180-5320	16.5	17	8
		100-144	5500-5720	16.5	17	8
		149-165	5745-5825	16.5	17	8
	MCS7	36-64	5180-5320	16	16	8
		100-144	5500-5720	16	16	8
		149-165	5745-5825	16	16	8
	MCS8	36-64	5180-5320	14.5	15	8
		100-144	5500-5720	14.5	15	8
		149-165	5745-5825	14.5	15	8
	MCS9	36-64	5180-5320	13.5	14	8
		100-144	5500-5720	13.5	14	8
		149-165	5745-5825	13.5	14	8

Power Level A1

The average conducted power for Wi-Fi is as following-WIFI2.4G

802.11b(dBm)	
Channel\data rate	1Mbps
11(2462MHz)	19.21
6(2437MHz)	19.28
1(2412MHz)	19.25
802.11g(dBm)	
Channel\data rate	6Mbps
11(2462MHz)	16.95
6(2437MHz)	16.80
1(2412MHz)	16.92
802.11n(dBm)-20MHz	
Channel\data rate	MCS0
11(2462MHz)	16.79
6(2437MHz)	16.67
1(2412MHz)	16.75
802.11n(dBm)-40MHz	
Channel\data rate	MCS0
9(2452MHz)	17.08
6(2437MHz)	16.92
3(2422MHz)	17.07

Power Level B1

The average conducted power for Wi-Fi is as following-WIFI2.4G

802.11b(dBm)	
Channel\data rate	1Mbps
11(2462MHz)	17.58
6(2437MHz)	17.55
1(2412MHz)	17.47
802.11g(dBm)	
Channel\data rate	6Mbps
11(2462MHz)	16.95
6(2437MHz)	16.80
1(2412MHz)	16.92
802.11n(dBm)-20MHz	
Channel\data rate	MCS0
11(2462MHz)	16.05
6(2437MHz)	16.02
1(2412MHz)	16.03
802.11n(dBm)-40MHz	
Channel\data rate	MCS0
9(2452MHz)	16.07
6(2437MHz)	16.09
3(2422MHz)	16.05

Power Level C1

The average conducted power for Wi-Fi is as following-WIFI2.4G

802.11b(dBm)	
Channel\data rate	1Mbps
11(2462MHz)	12.22
6(2437MHz)	12.18
1(2412MHz)	12.21
802.11g(dBm)	
Channel\data rate	6Mbps
11(2462MHz)	12.07
6(2437MHz)	12.06
1(2412MHz)	12.04
802.11n(dBm)-20MHz	
Channel\data rate	MCS0
11(2462MHz)	12.09
6(2437MHz)	12.03
1(2412MHz)	12.04
802.11n(dBm)-40MHz	
Channel\data rate	MCS0
9(2452MHz)	12.06
6(2437MHz)	12.05
3(2422MHz)	12.09

Power Level A1

The average conducted power for Wi-Fi is as following-WIFI5G

802.11ac(dBm)-80MHz	
Channel\data rate	MCS0
42(5210 MHz)	19.39
58(5290 MHz)	19.39
106(5530 MHz)	19.29
122(5610 MHz)	19.34
138(5690 MHz)	19.33
155(5775 MHz)	19.03

Power Level B1

The average conducted power for Wi-Fi is as following-WIFI5G

802.11ac(dBm)-80MHz	
Channel\data rate	MCS0
42(5210 MHz)	18.34
58(5290 MHz)	18.39
106(5530 MHz)	18.46
122(5610 MHz)	18.28
138(5690 MHz)	18.49
155(5775 MHz)	18.28

Power Level C1

The average conducted power for Wi-Fi is as following-WIFI5G

802.11ac(dBm)-80MHz	
Channel\data rate	MCS0
42(5210 MHz)	6.53
58(5290 MHz)	6.48
106(5530 MHz)	6.55
122(5610 MHz)	6.40
138(5690 MHz)	6.53
155(5775 MHz)	6.38

Power Level B1

The average conducted power for Wi-Fi is as following:

802.11b		
Channel\data rate	1Mbps	Tune up
11(2462MHz)	17.74	18.00
6(2437(MHz)	17.57	18.00
1(2412MHz)	17.44	18.00
802.11g		
Channel\data rate	6Mbps	Tune up
11(2462MHz)	16.97	18.00
6(2437(MHz)	16.65	18.00
1(2412MHz)	17.46	18.00
802.11n-20MHz		
Channel\data rate	MCS0	Tune up
11(2462MHz)	16.78	18.00
6(2437(MHz)	16.41	18.00
1(2412MHz)	17.17	18.00
802.11n-40MHz		
Channel\data rate	MCS0	Tune up
9(2452MHz)	16.47	18.00
6(2437MHz)	16.38	18.00
3(2422MHz)	16.18	18.00

802.11ac(dBm)-80MHz		
Channel\data rate	MCS0	Tune up
42(5210 MHz)	11.45	12.50
58(5290 MHz)	10.78	12.50
106(5530 MHz)	11.43	12.50
122(5610 MHz)	11.54	12.50
138(5690 MHz)	11.72	12.50
155(5775 MHz)	11.35	12.50

Power Level C1

The average conducted power for Wi-Fi is as following:

802.11b		
Channel\data rate	1Mbps	Tune up
11(2462MHz)	12.39	12.50
6(2437(MHz)	12.17	12.50
1(2412MHz)	12.38	12.50
802.11g		
Channel\data rate	6Mbps	Tune up
11(2462MHz)	11.74	12.50
6(2437(MHz)	10.89	12.50
1(2412MHz)	11.93	12.50
802.11n-20MHz		
Channel\data rate	MCS0	Tune up
11(2462MHz)	11.45	12.50
6(2437(MHz)	10.83	12.50
1(2412MHz)	11.50	12.50
802.11n-40MHz		
Channel\data rate	MCS0	Tune up
9(2452MHz)	11.40	12.50
6(2437MHz)	10.64	12.50
3(2422MHz)	11.16	12.50

802.11ac(dBm)-80MHz		
Channel\data rate	MCS0	Tune up
42(5210 MHz)	4.18	6.00
58(5290 MHz)	4.57	6.00
106(5530 MHz)	4.12	6.00
122(5610 MHz)	4.16	6.00
138(5690 MHz)	4.28	6.00
155(5775 MHz)	4.04	6.00

12 Transmit Antenna Position and Size

12.1 Transmit Antenna Separation Distances

The detail for transmit antenna separation distances is described in the additional document:
Appendix to test report No.I23Z61566-SEM05
The photos of SAR test

12.2 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR v01, the edges with less than 2.5 cm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Main antenna-ANT1(Non-USB)	Yes	Yes	Yes	Yes	Yes	Yes
Main antenna-ANT1(USB)	Yes	Yes	Yes	Yes	Yes	No
WLAN antenna-ANT3(Non-USB)	Yes	Yes	Yes	Yes	Yes	Yes
WLAN antenna-ANT3(USB)	Yes	Yes	Yes	Yes	Yes	No

13 Evaluation of Simultaneous

Non-USB

Test Postition / SAR 1g(W/kg)		ANT0 WCDMA850	ANT0 WCDMA1700	ANT0 WCDMA1900	ANT0 LTE B2	ANT0 LTE B4	ANT1 LTE B5	ANT0 LTE B12	ANT0 LTE B14	ANT0 LTE B30	ANT1 LTE B66	MAX. SAR 1g
Body	Front 10mm	0.557	0.356	0.469	0.335	0.354	0.528	0.287	0.414	0.838	0.689	0.838
	Rear 10mm	0.528	0.276	0.394	0.265	0.285	0.511	0.256	0.407	0.640	0.539	0.640
	Left 10mm	0.203	0.141	0.207	0.152	0.156	0.202	0.111	0.152	0.819	0.292	0.819
	Right 10mm	0.230	0.000	0.180	0.160	0.051	0.203	0.152	0.201	0.168	0.057	0.230
	Bottom 10mm	0.047	0.045	0.075	0.044	0.106	0.045	0.051	0.056	0.051	0.203	0.203
	Top 10mm	0.066	0.279	0.535	0.392	0.324	0.065	0.038	0.068	0.203	0.643	0.643
	Front 15mm	0.737	1.045	0.635	0.555	1.008	0.650	0.372	0.467	0.712	0.987	1.045
	Rear 15mm	0.656	0.873	0.590	0.456	0.843	0.480	0.350	0.458	0.580	0.674	0.873
	Left 15mm	0.233	0.395	0.386	0.341	0.481	0.232	0.159	0.168	0.662	0.376	0.662
	Right 15mm	0.213	0.167	0.218	0.202	0.151	0.258	0.191	0.183	0.166	0.124	0.258
	Bottom 15mm	0.049	0.092	0.052	0.051	0.079	0.050	0.042	0.053	0.061	0.049	0.092
	Top 15mm	0.057	1.045	0.824	0.695	0.921	0.057	0.033	0.062	0.187	0.828	1.045

Test Postition / SAR 1g(W/kg)		1 WWAN	2 WIFI2.4G	3 WIFI5G
Body	Front 10mm	0.838	0.168	0.537
	Rear 10mm	0.640	0.208	0.786
	Left 10mm	0.819	0.065	0.000
	Right 10mm	0.230	0.300	0.896
	Bottom 10mm	0.203	0.046	0.000
	Top 10mm	0.643	0.100	0.000
	Front 15mm	1.045	0.217	0.485
	Rear 15mm	0.873	0.184	0.616
	Left 15mm	0.662	0.065	0.000
	Right 15mm	0.258	0.397	0.600
	Bottom 15mm	0.092	0.046	0.000
	Top 15mm	1.045	0.100	0.000

Test Postition / SAR 1g/10g(W/kg)		simultaneous transmission 1+2	simultaneous transmission 1+3	MAX. SAR 1g
Body	Front 10mm	1.006	1.375	1.375
	Rear 10mm	0.848	1.426	1.426
	Left 10mm	0.884	0.819	0.884
	Right 10mm	0.530	1.126	1.126
	Bottom 10mm	0.249	0.203	0.249
	Top 10mm	0.743	0.643	0.743
	Front 15mm	1.262	1.530	1.530
	Rear 15mm	1.057	1.489	1.489
	Left 15mm	0.727	0.662	0.727
	Right 15mm	0.655	0.858	0.858
	Bottom 15mm	0.138	0.092	0.138
	Top 15mm	1.145	1.045	1.145

USB

Test Postition / SAR 1g(W/kg)		ANT0 WCDMA850	ANT0 WCDMA1700	ANT0 WCDMA1900	ANT0 LTE B2	ANT0 LTE B4	ANT1 LTE B5	ANT0 LTE B12	ANT0 LTE B14	ANT0 LTE B30	ANT1 LTE B66	MAX. SAR 1g
Body	Front 0mm	0.385	0.393	0.259	0.271	0.331	0.351	0.306	0.370	0.451	0.402	0.451
	Rear 0mm	0.358	0.331	0.306	0.307	0.306	0.328	0.295	0.224	0.342	0.334	0.358
	Left 0mm	0.145	0.140	0.122	0.122	0.141	0.150	0.141	0.083	0.431	0.153	0.431
	Right 0mm	0.235	0.122	0.225	0.153	0.139	0.140	0.222	0.291	0.218	0.246	0.291
	Top 0mm	0.311	0.374	0.509	0.420	0.353	0.248	0.176	0.289	0.189	0.386	0.509
	Front 15mm	0.737	1.045	0.635	0.555	1.008	0.650	0.372	0.467	0.712	0.987	1.045
	Rear 15mm	0.656	0.873	0.590	0.456	0.843	0.480	0.350	0.458	0.580	0.674	0.873
	Left 15mm	0.233	0.395	0.386	0.341	0.481	0.232	0.159	0.168	0.662	0.376	0.662
	Right 15mm	0.213	0.167	0.218	0.202	0.151	0.258	0.191	0.183	0.166	0.124	0.258
	Top 15mm	0.057	1.045	0.824	0.695	0.921	0.057	0.033	0.062	0.187	0.828	1.045

Test Postition / SAR 1g(W/kg)		1 WWAN	2 WIFI2.4G	3 WIFI5G
Body	Front 0mm	0.451	0.461	0.485
	Rear 0mm	0.358	0.372	0.616
	Left 0mm	0.431	0.111	0.023
	Right 0mm	0.291	0.252	0.600
	Top 0mm	0.509	0.571	0.024
	Front 15mm	1.045	0.217	0.116
	Rear 15mm	0.873	0.184	0.114
	Left 15mm	0.662	0.111	0.023
	Right 15mm	0.258	0.397	0.855
	Top 15mm	1.045	0.059	0.024

Test Postition / SAR 1g/10g(W/kg)		simultaneous transmission 1+2	simultaneous transmission 1+3	MAX. SAR 1g
Body	Front 0mm	0.912	0.936	0.936
	Rear 0mm	0.730	0.974	0.974
	Left 0mm	0.542	0.454	0.542
	Right 0mm	0.543	0.891	0.891
	Top 0mm	1.080	0.533	1.080
	Front 15mm	1.262	1.161	1.262
	Rear 15mm	1.057	0.987	1.057
	Left 15mm	0.773	0.685	0.773
	Right 15mm	0.655	1.113	1.113
	Top 15mm	1.104	1.069	1.104

Conclusion:

According to the above tables, the sum of reported SAR values is<1.6W/kg. So the simultaneous transmission SAR with volume scans is not required.

14 SAR Test Result

Note:

KDB 447498 D01 General RF Exposure Guidance:

For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor

For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz

≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

KDB 648474 D04 Handset SAR:

With headset attached, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% 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 for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.

Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low,Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.

Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.

Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is <1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the

group of overlapping channels should be selected for testing; therefore, the requirement for H, M and L channels may not fully apply.

KDB 248227 D01 SAR meas for 802.11:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions.An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

To determine the initial test position, Area Scans were performed to determine the position with the Maximum Value of SAR (measured). The position that produced the highest Maximum Value of SAR is considered the worst case position; thus used as the initial test position.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the initial test position(s) by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s).

When the reported SAR for the initial test position is:

≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.

> 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions are tested.

- For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
- When it is unclear, all equivalent conditions must be tested.

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

- The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.

When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.

When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

Table 15.1: Duty Cycle

Mode	Duty Cycle
WCDMA&LTE FDD	1:1

14.1 SAR results for 2G/3G/4G (Non-USB)

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
1	Body	WCDMA 850	4183	836.6	RMC	Front	10mm	\	21.39	22.00	0.484	**0.557**	0.328	**0.377**	-0.01
1	Body	WCDMA 850	4183	836.6	RMC	Rear	10mm	\	21.39	22.00	0.459	**0.528**	0.311	**0.358**	0.01
1	Body	WCDMA 850	4183	836.6	RMC	Left	10mm	\	21.39	22.00	0.176	**0.203**	0.119	**0.137**	-0.07
1	Body	WCDMA 850	4183	836.6	RMC	Right	10mm	\	21.39	22.00	0.200	**0.230**	0.131	**0.151**	-0.06
1	Body	WCDMA 850	4183	836.6	RMC	Bottom	10mm	\	21.39	22.00	0.041	**0.047**	0.020	**0.023**	-0.05
1	Body	WCDMA 850	4183	836.6	RMC	Top	10mm	\	21.39	22.00	0.057	**0.066**	0.034	**0.039**	0.01
1	Body	WCDMA 850	4233	846.6	RMC	Front	15mm	FIG A.1	23.62	24.50	0.602	**0.737**	0.445	**0.545**	-0.06
1	Body	WCDMA 850	4183	836.6	RMC	Front	15mm	\	23.54	24.50	0.581	**0.725**	0.425	**0.530**	0.09
1	Body	WCDMA 850	4132	826.4	RMC	Front	15mm	\	23.57	24.50	0.491	**0.608**	0.365	**0.452**	-0.12
1	Body	WCDMA 850	4183	836.6	RMC	Rear	15mm	\	23.54	24.50	0.526	**0.656**	0.394	**0.491**	-0.19
1	Body	WCDMA 850	4183	836.6	RMC	Left	15mm	\	23.54	24.50	0.187	**0.233**	0.141	**0.176**	0.17
1	Body	WCDMA 850	4183	836.6	RMC	Right	15mm	\	23.54	24.50	0.171	**0.213**	0.116	**0.145**	0.12
1	Body	WCDMA 850	4183	836.6	RMC	Bottom	10mm	\	23.54	24.50	0.029	**0.036**	0.021	**0.026**	-0.02
1	Body	WCDMA 850	4183	836.6	RMC	Top	15mm	\	23.54	24.50	0.046	**0.057**	0.034	**0.042**	-0.08
1	Body	WCDMA1700	1412	1732.5	RMC	Front	10mm	\	16.75	18.00	0.267	**0.356**	0.169	**0.225**	-0.13
1	Body	WCDMA1700	1412	1732.5	RMC	Rear	10mm	\	16.75	18.00	0.207	**0.276**	0.135	**0.180**	-0.17
1	Body	WCDMA1700	1412	1732.5	RMC	Left	10mm	\	16.75	18.00	0.106	**0.141**	0.069	**0.092**	-0.16
1	Body	WCDMA1700	1412	1732.5	RMC	Right	10mm	\	16.75	18.00	0.034	**0.045**	0.023	**0.031**	0.10
1	Body	WCDMA1700	1412	1732.5	RMC	Bottom	10mm	\	16.75	18.00	0.076	**0.101**	0.046	**0.061**	-0.05
1	Body	WCDMA1700	1412	1732.5	RMC	Top	10mm	\	16.75	18.00	0.209	**0.279**	0.132	**0.176**	0.01
1	Body	WCDMA1700	1513	1752.6	RMC	Front	15mm		23.92	24.50	0.894	**1.022**	0.506	**0.578**	-0.02
1	Body	WCDMA1700	1412	1732.5	RMC	Front	15mm	FIG A.2	23.89	24.50	0.908	**1.045**	0.519	**0.597**	-0.15
1	Body	WCDMA1700	1312	1712.4	RMC	Front	15mm		23.76	24.50	0.834	**0.989**	0.490	**0.581**	-0.08
1	Body	WCDMA1700	1513	1752.6	RMC	Rear	15mm	\	23.92	24.50	0.764	**0.873**	0.428	**0.489**	-0.19
1	Body	WCDMA1700	1412	1732.5	RMC	Rear	15mm	\	23.89	24.50	0.747	**0.860**	0.439	**0.505**	0.15
1	Body	WCDMA1700	1312	1712.4	RMC	Rear	15mm	\	23.76	24.50	0.717	**0.850**	0.413	**0.490**	-0.05
1	Body	WCDMA1700	1412	1732.5	RMC	Left	15mm	\	23.89	24.50	0.343	**0.395**	0.196	**0.226**	0.06
1	Body	WCDMA1700	1412	1732.5	RMC	Right	15mm	\	23.89	24.50	0.145	**0.167**	0.087	**0.100**	0.19
1	Body	WCDMA1700	1412	1732.5	RMC	Bottom	10mm	\	23.89	24.50	0.399	**0.459**	0.229	**0.264**	0.14
1	Body	WCDMA1700	1513	1752.6	RMC	Top	15mm		23.92	24.50	0.796	**0.910**	0.444	**0.507**	0.02
1	Body	WCDMA1700	1412	1732.5	RMC	Top	15mm	\	23.89	24.50	0.841	**0.968**	0.468	**0.539**	-0.10
1	Body	WCDMA1700	1312	1712.4	RMC	Top	15mm		23.76	24.50	0.881	**1.045**	0.487	**0.577**	-0.09
1	Body	WCDMA1900	9400	1880	RMC	Front	10mm	\	18.79	20.00	0.355	**0.469**	0.224	**0.296**	0.11
1	Body	WCDMA1900	9400	1880	RMC	Rear	10mm	\	18.79	20.00	0.298	**0.394**	0.188	**0.248**	-0.17
1	Body	WCDMA1900	9400	1880	RMC	Left	10mm	\	18.79	20.00	0.157	**0.207**	0.095	**0.126**	-0.19
1	Body	WCDMA1900	9400	1880	RMC	Right	10mm	\	18.79	20.00	0.136	**0.180**	0.084	**0.111**	0.05
1	Body	WCDMA1900	9400	1880	RMC	Bottom	10mm	\	18.79	20.00	0.057	**0.075**	0.031	**0.041**	-0.05
1	Body	WCDMA1900	9400	1880	RMC	Top	10mm	\	18.79	20.00	0.405	**0.535**	0.232	**0.307**	-0.16
1	Body	WCDMA1900	9400	1880	RMC	Front	15mm	\	24.16	24.50	0.587	**0.635**	0.381	**0.412**	-0.07
1	Body	WCDMA1900	9400	1880	RMC	Rear	15mm	\	24.16	24.50	0.546	**0.590**	0.335	**0.362**	0.14
1	Body	WCDMA1900	9400	1880	RMC	Left	15mm	\	24.16	24.50	0.357	**0.386**	0.224	**0.242**	-0.14
1	Body	WCDMA1900	9400	1880	RMC	Right	15mm	\	24.16	24.50	0.202	**0.218**	0.132	**0.143**	-0.09
1	Body	WCDMA1900	9400	1880	RMC	Bottom	10mm	\	24.16	24.50	0.161	**0.174**	0.086	**0.093**	-0.01
1	Body	WCDMA1900	9538	1907.6	RMC	Top	15mm	FIG A.3	24.11	24.50	0.753	**0.824**	0.460	**0.503**	-0.02
1	Body	WCDMA1900	9400	1880	RMC	Top	15mm	\	24.16	24.50	0.659	**0.713**	0.404	**0.437**	0.07
1	Body	WCDMA1900	9262	1852.4	RMC	Top	15mm	\	24.08	24.50	0.748	**0.824**	0.459	**0.506**	-0.01
1	Body	LTE Band2	19100	1900	1RB-Middle	Front	10mm	\	18.49	19.00	0.298	**0.335**	0.176	**0.198**	-0.03
1	Body	LTE Band2	19100	1900	1RB-Middle	Rear	10mm	\	18.49	19.00	0.236	**0.265**	0.145	**0.163**	0.13
1	Body	LTE Band2	19100	1900	1RB-Middle	Left	10mm	\	18.49	19.00	0.135	**0.152**	0.078	**0.088**	0.00
1	Body	LTE Band2	19100	1900	1RB-Middle	Right	10mm	\	18.49	19.00	0.142	**0.160**	0.083	**0.093**	0.16
1	Body	LTE Band2	19100	1900	1RB-Middle	Bottom	10mm	\	18.49	19.00	0.039	**0.044**	0.017	**0.019**	0.16
1	Body	LTE Band2	19100	1900	1RB-Middle	Top	10mm	\	18.49	19.00	0.349	**0.392**	0.201	**0.226**	-0.08
1	Body	LTE Band2	19100	1900	50B-Low	Front	10mm	\	17.47	18.00	0.245	**0.277**	0.146	**0.165**	-0.04
1	Body	LTE Band2	19100	1900	50B-Low	Rear	10mm	\	17.47	18.00	0.192	**0.217**	0.119	**0.134**	-0.16
1	Body	LTE Band2	19100	1900	50B-Low	Left	10mm	\	17.47	18.00	0.112	**0.127**	0.065	**0.073**	-0.01
1	Body	LTE Band2	19100	1900	50B-Low	Right	10mm	\	17.47	18.00	0.113	**0.128**	0.066	**0.075**	-0.08
1	Body	LTE Band2	19100	1900	50B-Low	Bottom	10mm	\	17.47	18.00	0.031	**0.035**	0.014	**0.016**	0.02
1	Body	LTE Band2	19100	1900	50B-Low	Top	10mm	\	17.47	18.00	0.316	**0.357**	0.180	**0.203**	-0.18
1	Body	LTE Band2	19100	1900	1RB-Middle	Front	15mm	\	23.79	24.00	0.529	**0.555**	0.334	**0.351**	0.09
1	Body	LTE Band2	19100	1900	1RB-Middle	Rear	15mm	\	23.79	24.00	0.434	**0.456**	0.285	**0.299**	-0.13
1	Body	LTE Band2	19100	1900	1RB-Middle	Left	15mm	\	23.79	24.00	0.325	**0.341**	0.199	**0.209**	-0.16
1	Body	LTE Band2	19100	1900	1RB-Middle	Right	15mm	\	23.79	24.00	0.192	**0.202**	0.122	**0.128**	-0.05
1	Body	LTE Band2	19100	1900	1RB-Middle	Bottom	10mm	\	23.79	24.00	0.133	**0.140**	0.068	**0.071**	-0.05
1	Body	LTE Band2	19100	1900	1RB-Middle	Top	15mm	FIG A.4	23.79	24.00	0.662	**0.695**	0.404	**0.424**	-0.09
1	Body	LTE Band2	19100	1900	50B-Middle	Front	15mm	\	22.78	23.00	0.425	**0.447**	0.269	**0.283**	0.08
1	Body	LTE Band2	19100	1900	50B-Middle	Rear	15mm	\	22.78	23.00	0.348	**0.366**	0.226	**0.238**	0.02
1	Body	LTE Band2	19100	1900	50B-Middle	Left	15mm	\	22.78	23.00	0.262	**0.276**	0.162	**0.170**	-0.16
1	Body	LTE Band2	19100	1900	50B-Middle	Right	15mm	\	22.78	23.00	0.156	**0.164**	0.099	**0.104**	-0.06
1	Body	LTE Band2	19100	1900	50B-Middle	Bottom	10mm	\	22.78	23.00	0.108	**0.114**	0.056	**0.059**	-0.02
1	Body	LTE Band2	19100	1900	50B-Middle	Top	15mm	\	22.78	23.00	0.541	**0.569**	0.329	**0.346**	-0.02

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
1	Body	LTE Band4	20175	1732.5	1RB-Low	Front	10mm	\	15.72	17.00	0.264	**0.354**	0.163	**0.219**	0.07
1	Body	LTE Band4	20175	1732.5	1RB-Low	Rear	10mm	\	15.72	17.00	0.212	**0.285**	0.130	**0.175**	0.19
1	Body	LTE Band4	20175	1732.5	1RB-Low	Left	10mm	\	15.72	17.00	0.116	**0.156**	0.070	**0.094**	-0.12
1	Body	LTE Band4	20175	1732.5	1RB-Low	Right	10mm	\	15.72	17.00	0.038	**0.051**	0.024	**0.032**	0.03
1	Body	LTE Band4	20175	1732.5	1RB-Low	Bottom	10mm	\	15.72	17.00	0.079	**0.106**	0.045	**0.060**	0.04
1	Body	LTE Band4	20175	1732.5	1RB-Low	Top	10mm	\	15.72	17.00	0.241	**0.324**	0.139	**0.187**	0.18
1	Body	LTE Band4	20175	1732.5	50RB-Low	Front	10mm	\	14.76	16.00	0.209	**0.278**	0.129	**0.172**	-0.06
1	Body	LTE Band4	20175	1732.5	50RB-Low	Rear	10mm	\	14.76	16.00	0.166	**0.221**	0.102	**0.136**	-0.08
1	Body	LTE Band4	20175	1732.5	50RB-Low	Left	10mm	\	14.76	16.00	0.092	**0.122**	0.055	**0.073**	-0.08
1	Body	LTE Band4	20175	1732.5	50RB-Low	Right	10mm	\	14.76	16.00	0.032	**0.043**	0.018	**0.024**	-0.09
1	Body	LTE Band4	20175	1732.5	50RB-Low	Bottom	10mm	\	14.76	16.00	0.062	**0.082**	0.036	**0.048**	0.14
1	Body	LTE Band4	20175	1732.5	50RB-Low	Top	10mm	\	14.76	16.00	0.194	**0.258**	0.112	**0.149**	0.08
1	Body	LTE Band4	20300	1745	1RB-Middle	Front	15mm	\	22.88	24.00	0.763	**0.987**	0.500	**0.647**	-0.01
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Front	15mm	\	23.04	24.00	0.781	**0.974**	0.507	**0.632**	-0.11
1	Body	LTE Band4	20050	1720	1RB-High	Front	15mm	FIG A.5	22.96	24.00	0.793	**1.008**	0.515	**0.654**	-0.02
1	Body	LTE Band4	20300	1745	1RB-Middle	Rear	15mm	\	23.04	24.00	0.651	**0.812**	0.429	**0.535**	0.16
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Rear	15mm	\	23.04	24.00	0.666	**0.831**	0.435	**0.543**	0.19
1	Body	LTE Band4	20050	1720	1RB-High	Rear	15mm	\	23.04	24.00	0.676	**0.843**	0.442	**0.551**	0.08
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Left	15mm	\	23.04	24.00	0.386	**0.481**	0.250	**0.312**	-0.07
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Right	15mm	\	23.04	24.00	0.121	**0.151**	0.084	**0.105**	-0.15
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Bottom	10mm	\	23.04	24.00	0.351	**0.438**	0.201	**0.251**	0.14
1	Body	LTE Band4	20300	1745	1RB-Middle	Top	15mm	\	23.04	24.00	0.710	**0.886**	0.453	**0.565**	0.19
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Top	15mm	\	23.04	24.00	0.727	**0.907**	0.459	**0.573**	0.05
1	Body	LTE Band4	20050	1720	1RB-High	Top	15mm	\	23.04	24.00	0.738	**0.921**	0.466	**0.581**	0.02
1	Body	LTE Band4	20175	1732.5	50B-Middle	Front	15mm	\	22.07	23.00	0.626	**0.775**	0.409	**0.507**	-0.11
1	Body	LTE Band4	20175	1732.5	50B-Middle	Rear	15mm	\	22.07	23.00	0.545	**0.675**	0.352	**0.436**	0.03
1	Body	LTE Band4	20175	1732.5	50B-Middle	Left	15mm	\	22.07	23.00	0.314	**0.389**	0.204	**0.253**	-0.18
1	Body	LTE Band4	20175	1732.5	50B-Middle	Right	15mm	\	22.07	23.00	0.096	**0.119**	0.067	**0.083**	0.10
1	Body	LTE Band4	20175	1732.5	50B-Middle	Bottom	10mm	\	22.07	23.00	0.291	**0.360**	0.166	**0.206**	0.12
1	Body	LTE Band4	20175	1732.5	50B-Middle	Top	15mm	\	22.07	23.00	0.582	**0.721**	0.368	**0.456**	0.09
1	Body	LTE Band4	20175	1732.5	100RB	Front	15mm	\	22.12	23.00	0.619	**0.758**	0.403	**0.494**	0.05
1	Body	LTE Band4	20175	1732.5	100RB	Rear	15mm	\	22.12	23.00	0.525	**0.643**	0.339	**0.415**	-0.09
1	Body	LTE Band4	20175	1732.5	100RB	Top	15mm	\	22.12	23.00	0.602	**0.737**	0.376	**0.460**	0.11
1	Body	LTE Band5	20600	844	1RB-Low	Front	10mm	\	21.01	22.00	0.420	**0.528**	0.310	**0.389**	0.13
1	Body	LTE Band5	20600	844	1RB-Low	Rear	10mm	\	21.01	22.00	0.407	**0.511**	0.299	**0.376**	0.07
1	Body	LTE Band5	20600	844	1RB-Low	Left	10mm	\	21.01	22.00	0.161	**0.202**	0.120	**0.151**	0.18
1	Body	LTE Band5	20600	844	1RB-Low	Right	10mm	\	21.01	22.00	0.162	**0.203**	0.117	**0.147**	-0.12
1	Body	LTE Band5	20600	844	1RB-Low	Bottom	10mm	\	21.01	22.00	0.036	**0.045**	0.019	**0.024**	-0.07
1	Body	LTE Band5	20600	844	1RB-Low	Top	10mm	\	21.01	22.00	0.052	**0.065**	0.033	**0.041**	-0.05
1	Body	LTE Band5	20600	844	25RB-Middle	Front	10mm	\	20.04	21.00	0.336	**0.419**	0.248	**0.309**	-0.12
1	Body	LTE Band5	20600	844	25RB-Middle	Rear	10mm	\	20.04	21.00	0.328	**0.409**	0.242	**0.302**	0.06
1	Body	LTE Band5	20600	844	25RB-Middle	Left	10mm	\	20.04	21.00	0.129	**0.161**	0.087	**0.109**	-0.17
1	Body	LTE Band5	20600	844	25RB-Middle	Right	10mm	\	20.04	21.00	0.129	**0.161**	0.094	**0.117**	0.15
1	Body	LTE Band5	20600	844	25RB-Middle	Bottom	10mm	\	20.04	21.00	0.032	**0.040**	0.015	**0.019**	0.19
1	Body	LTE Band5	20600	844	25RB-Middle	Top	10mm	\	20.04	21.00	0.042	**0.052**	0.026	**0.032**	0.03
1	Body	LTE Band5	20600	844	1RB-Middle	Front	15mm	FIG A.6	22.58	24.00	0.469	**0.650**	0.348	**0.483**	-0.13
1	Body	LTE Band5	20600	844	1RB-Middle	Rear	15mm	\	22.58	24.00	0.311	**0.431**	0.232	**0.322**	-0.19
1	Body	LTE Band5	20600	844	1RB-Middle	Left	15mm	\	22.58	24.00	0.167	**0.232**	0.125	**0.173**	-0.12
1	Body	LTE Band5	20600	844	1RB-Middle	Right	15mm	\	22.58	24.00	0.186	**0.258**	0.140	**0.194**	-0.04
1	Body	LTE Band5	20600	844	1RB-Middle	Bottom	10mm	\	22.58	24.00	0.059	**0.082**	0.023	**0.032**	0.14
1	Body	LTE Band5	20600	844	1RB-Middle	Top	15mm	\	22.58	24.00	0.041	**0.057**	0.028	**0.039**	0.12
1	Body	LTE Band5	20600	844	25RB-Middle	Front	15mm	\	21.69	23.00	0.377	**0.510**	0.279	**0.377**	-0.18
1	Body	LTE Band5	20600	844	25RB-Middle	Rear	15mm	\	21.69	23.00	0.355	**0.480**	0.264	**0.357**	-0.07
1	Body	LTE Band5	20600	844	25RB-Middle	Left	15mm	\	21.69	23.00	0.086	**0.116**	0.065	**0.088**	-0.15
1	Body	LTE Band5	20600	844	25RB-Middle	Right	15mm	\	21.69	23.00	0.142	**0.192**	0.106	**0.143**	0.13
1	Body	LTE Band5	20600	844	25RB-Middle	Bottom	10mm	\	21.69	23.00	0.043	**0.058**	0.019	**0.026**	0.02
1	Body	LTE Band5	20600	844	25RB-Middle	Top	15mm	\	21.69	23.00	0.034	**0.046**	0.023	**0.031**	-0.11
1	Body	LTE Band12	23095	707.5	1RB-Middle	Front	10mm	\	20.47	22.00	0.202	**0.287**	0.148	**0.211**	-0.08
1	Body	LTE Band12	23095	707.5	1RB-Middle	Rear	10mm	\	20.47	22.00	0.180	**0.256**	0.134	**0.191**	0.04
1	Body	LTE Band12	23095	707.5	1RB-Middle	Left	10mm	\	20.47	22.00	0.078	**0.111**	0.056	**0.080**	-0.11
1	Body	LTE Band12	23095	707.5	1RB-Middle	Right	10mm	\	20.47	22.00	0.107	**0.152**	0.078	**0.111**	-0.18
1	Body	LTE Band12	23095	707.5	1RB-Middle	Bottom	10mm	\	20.47	22.00	0.036	**0.051**	0.020	**0.028**	-0.18
1	Body	LTE Band12	23095	707.5	1RB-Middle	Top	10mm	\	20.47	22.00	0.027	**0.038**	0.016	**0.023**	-0.07
1	Body	LTE Band12	23095	707.5	25RB-Middle	Front	10mm	\	19.58	21.00	0.162	**0.225**	0.119	**0.165**	0.18
1	Body	LTE Band12	23095	707.5	25RB-Middle	Rear	10mm	\	19.58	21.00	0.143	**0.198**	0.106	**0.147**	0.19
1	Body	LTE Band12	23095	707.5	25RB-Middle	Left	10mm	\	19.58	21.00	0.061	**0.085**	0.044	**0.061**	0.03
1	Body	LTE Band12	23095	707.5	25RB-Middle	Right	10mm	\	19.58	21.00	0.085	**0.118**	0.062	**0.086**	0.01
1	Body	LTE Band12	23095	707.5	25RB-Middle	Bottom	10mm	\	19.58	21.00	0.031	**0.043**	0.017	**0.024**	0.07
1	Body	LTE Band12	23095	707.5	25RB-Middle	Top	10mm	\	19.58	21.00	0.020	**0.028**	0.012	**0.017**	0.04
1	Body	LTE Band12	23130	711	1RB-Low	Front	15mm	FIG A.7	22.14	22.50	0.342	**0.372**	0.253	**0.275**	-0.12
1	Body	LTE Band12	23130	711	1RB-Low	Rear	15mm	\	22.14	22.50	0.322	**0.350**	0.236	**0.256**	0.05
1	Body	LTE Band12	23130	711	1RB-Low	Left	15mm	\	22.14	22.50	0.146	**0.159**	0.107	**0.116**	-0.15
1	Body	LTE Band12	23130	711	1RB-Low	Right	15mm	\	22.14	22.50	0.176	**0.191**	0.130	**0.141**	0.06
1	Body	LTE Band12	23130	711	1RB-Low	Bottom	10mm	\	22.14	22.50	0.062	**0.067**	0.037	**0.040**	0.15
1	Body	LTE Band12	23130	711	1RB-Low	Top	15mm	\	22.14	22.50	0.030	**0.033**	0.021	**0.023**	0.16
1	Body	LTE Band12	23095	707.5	25RB-Middle	Front	15mm	\	21.17	21.50	0.271	**0.292**	0.199	**0.215**	0.05
1	Body	LTE Band12	23095	707.5	25RB-Middle	Rear	15mm	\	21.17	21.50	0.249	**0.269**	0.182	**0.196**	0.09
1	Body	LTE Band12	23095	707.5	25RB-Middle	Left	15mm	\	21.17	21.50	0.106	**0.114**	0.078	**0.084**	0.17
1	Body	LTE Band12	23095	707.5	25RB-Middle	Right	15mm	\	21.17	21.50	0.082	**0.088**	0.055	**0.059**	0.03
1	Body	LTE Band12	23095	707.5	25RB-Middle	Bottom	10mm	\	21.17	21.50	0.051	**0.055**	0.032	**0.035**	0.11
1	Body	LTE Band12	23095	707.5	25RB-Middle	Top	15mm	\	21.17	21.50	0.028	**0.030**	0.019	**0.020**	-0.19

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
1	Body	LTE Band14	23330	793	1RB-Low	Front	10mm	\	20.76	22.00	0.311	**0.414**	0.222	**0.295**	-0.19
1	Body	LTE Band14	23330	793	1RB-Low	Rear	10mm	\	20.76	22.00	0.306	**0.407**	0.220	**0.293**	0.10
1	Body	LTE Band14	23330	793	1RB-Low	Left	10mm	\	20.76	22.00	0.114	**0.152**	0.082	**0.109**	-0.01
1	Body	LTE Band14	23330	793	1RB-Low	Right	10mm	\	20.76	22.00	0.151	**0.201**	0.106	**0.141**	-0.08
1	Body	LTE Band14	23330	793	1RB-Low	Bottom	10mm	\	20.76	22.00	0.042	**0.056**	0.027	**0.036**	-0.06
1	Body	LTE Band14	23330	793	1RB-Low	Top	10mm	\	20.76	22.00	0.051	**0.068**	0.031	**0.041**	0.10
1	Body	LTE Band14	23330	793	25RB-Middle	Front	10mm	\	19.79	21.00	0.253	**0.334**	0.181	**0.239**	0.13
1	Body	LTE Band14	23330	793	25RB-Middle	Rear	10mm	\	19.79	21.00	0.248	**0.328**	0.176	**0.233**	0.17
1	Body	LTE Band14	23330	793	25RB-Middle	Left	10mm	\	19.79	21.00	0.092	**0.122**	0.065	**0.086**	-0.13
1	Body	LTE Band14	23330	793	25RB-Middle	Right	10mm	\	19.79	21.00	0.120	**0.159**	0.083	**0.110**	-0.17
1	Body	LTE Band14	23330	793	25RB-Middle	Bottom	10mm	\	19.79	21.00	0.040	**0.053**	0.022	**0.029**	-0.14
1	Body	LTE Band14	23330	793	25RB-Middle	Top	10mm	\	19.79	21.00	0.047	**0.062**	0.027	**0.036**	0.01
1	Body	LTE Band14	23330	793	1RB-Middle	Front	15mm	FIG A.8	22.32	24.00	0.317	0.467	0.234	**0.345**	0.14
1	Body	LTE Band14	23330	793	1RB-Middle	Rear	15mm	\	22.32	24.00	0.311	**0.458**	0.228	**0.336**	0.18
1	Body	LTE Band14	23330	793	1RB-Middle	Left	15mm	\	22.32	24.00	0.114	**0.168**	0.085	**0.125**	0.14
1	Body	LTE Band14	23330	793	1RB-Middle	Right	15mm	\	22.32	24.00	0.124	**0.183**	0.089	**0.131**	0.16
1	Body	LTE Band14	23330	793	1RB-Middle	Bottom	10mm	\	22.32	24.00	0.043	**0.063**	0.028	**0.041**	0.16
1	Body	LTE Band14	23330	793	1RB-Middle	Top	15mm	\	22.32	24.00	0.042	**0.062**	0.028	**0.041**	0.09
1	Body	LTE Band14	23330	793	25RB-Low	Front	15mm	\	21.44	23.00	0.258	**0.370**	0.190	**0.272**	0.01
1	Body	LTE Band14	23330	793	25RB-Low	Rear	15mm	\	21.44	23.00	0.248	**0.355**	0.182	**0.261**	-0.01
1	Body	LTE Band14	23330	793	25RB-Low	Left	15mm	\	21.44	23.00	0.091	**0.130**	0.069	**0.099**	0.18
1	Body	LTE Band14	23330	793	25RB-Low	Right	15mm	\	21.44	23.00	0.123	**0.176**	0.089	**0.127**	-0.15
1	Body	LTE Band14	23330	793	25RB-Low	Bottom	10mm	\	21.44	23.00	0.039	**0.056**	0.025	**0.036**	0.17
1	Body	LTE Band14	23330	793	25RB-Low	Top	15mm	\	21.44	23.00	0.034	**0.049**	0.023	**0.033**	0.11
1	Body	LTE Band30	27710	2310	1RB-High	Front	10mm	FIG A.9	18.47	20.00	0.589	0.838	0.352	**0.501**	-0.17
1	Body	LTE Band30	27710	2310	1RB-High	Rear	10mm	\	18.47	20.00	0.450	**0.640**	0.268	**0.381**	0.00
1	Body	LTE Band30	27710	2310	1RB-High	Left	10mm	\	18.47	20.00	0.576	**0.819**	0.349	**0.496**	0.11
1	Body	LTE Band30	27710	2310	1RB-High	Right	10mm	\	18.47	20.00	0.118	**0.168**	0.070	**0.100**	0.03
1	Body	LTE Band30	27710	2310	1RB-High	Bottom	10mm	\	18.47	20.00	0.036	**0.051**	0.019	**0.027**	0.15
1	Body	LTE Band30	27710	2310	1RB-High	Top	10mm	\	18.47	20.00	0.143	**0.203**	0.085	**0.121**	0.17
1	Body	LTE Band30	27710	2310	25RB-Low	Front	10mm	\	17.51	19.00	0.471	**0.664**	0.284	**0.400**	0.17
1	Body	LTE Band30	27710	2310	25RB-Low	Rear	10mm	\	17.51	19.00	0.358	**0.505**	0.214	**0.302**	0.05
1	Body	LTE Band30	27710	2310	25RB-Low	Left	10mm	\	17.51	19.00	0.488	**0.688**	0.282	**0.397**	-0.08
1	Body	LTE Band30	27710	2310	25RB-Low	Right	10mm	\	17.51	19.00	0.096	**0.135**	0.056	**0.079**	-0.19
1	Body	LTE Band30	27710	2310	25RB-Low	Bottom	10mm	\	17.51	19.00	0.031	**0.044**	0.017	**0.024**	-0.14
1	Body	LTE Band30	27710	2310	25RB-Low	Top	10mm	\	17.51	19.00	0.112	**0.158**	0.066	**0.093**	-0.03
1	Body	LTE Band30	27710	2310	50RB	Front	10mm	\	17.53	19.00	0.457	**0.641**	0.266	**0.373**	0.02
1	Body	LTE Band30	27710	2310	1RB-Low	Front	15mm	\	22.74	24.00	0.533	**0.712**	0.326	**0.436**	-0.10
1	Body	LTE Band30	27710	2310	1RB-Low	Rear	15mm	\	22.74	24.00	0.434	**0.580**	0.265	**0.354**	-0.08
1	Body	LTE Band30	27710	2310	1RB-Low	Left	15mm	\	22.74	24.00	0.495	**0.662**	0.298	**0.398**	0.05
1	Body	LTE Band30	27710	2310	1RB-Low	Right	15mm	\	22.74	24.00	0.124	**0.166**	0.077	**0.103**	-0.09
1	Body	LTE Band30	27710	2310	1RB-Low	Bottom	10mm	\	22.74	24.00	0.089	**0.119**	0.052	**0.070**	0.12
1	Body	LTE Band30	27710	2310	1RB-Low	Top	15mm	\	22.74	24.00	0.140	**0.187**	0.085	**0.114**	0.13
1	Body	LTE Band30	27710	2310	25RB-High	Front	15mm	\	21.72	23.00	0.431	**0.579**	0.263	**0.353**	-0.18
1	Body	LTE Band30	27710	2310	25RB-High	Rear	15mm	\	21.72	23.00	0.331	**0.444**	0.202	**0.271**	0.19
1	Body	LTE Band30	27710	2310	25RB-High	Left	15mm	\	21.72	23.00	0.396	**0.532**	0.238	**0.320**	-0.14
1	Body	LTE Band30	27710	2310	25RB-High	Right	15mm	\	21.72	23.00	0.101	**0.136**	0.063	**0.085**	0.00
1	Body	LTE Band30	27710	2310	25RB-High	Bottom	10mm	\	21.72	23.00	0.071	**0.095**	0.042	**0.056**	-0.03
1	Body	LTE Band30	27710	2310	25RB-High	Top	15mm	\	21.72	23.00	0.106	**0.142**	0.066	**0.089**	0.01
1	Body	LTE Band66	132072	1720	1RB-Low	Front	10mm	\	16.91	18.00	0.536	**0.689**	0.334	**0.429**	0.19
1	Body	LTE Band66	132072	1720	1RB-Low	Rear	10mm	\	16.91	18.00	0.419	**0.539**	0.261	**0.335**	0.06
1	Body	LTE Band66	132072	1720	1RB-Low	Left	10mm	\	16.91	18.00	0.227	**0.292**	0.139	**0.179**	0.01
1	Body	LTE Band66	132072	1720	1RB-Low	Right	10mm	\	16.91	18.00	0.044	**0.057**	0.029	**0.037**	0.10
1	Body	LTE Band66	132072	1720	1RB-Low	Bottom	10mm	\	16.91	18.00	0.158	**0.203**	0.091	**0.117**	0.09
1	Body	LTE Band66	132072	1720	1RB-Low	Top	10mm	\	16.91	18.00	0.500	**0.643**	0.292	**0.375**	-0.18
1	Body	LTE Band66	132072	1720	50RB-High	Front	10mm	\	15.96	17.00	0.426	**0.541**	0.264	**0.335**	-0.14
1	Body	LTE Band66	132072	1720	50RB-High	Rear	10mm	\	15.96	17.00	0.339	**0.431**	0.210	**0.267**	0.19
1	Body	LTE Band66	132072	1720	50RB-High	Left	10mm	\	15.96	17.00	0.174	**0.221**	0.106	**0.135**	0.18
1	Body	LTE Band66	132072	1720	50RB-High	Right	10mm	\	15.96	17.00	0.038	**0.048**	0.024	**0.030**	-0.11
1	Body	LTE Band66	132072	1720	50RB-High	Bottom	10mm	\	15.96	17.00	0.125	**0.159**	0.073	**0.093**	0.18
1	Body	LTE Band66	132072	1720	50RB-High	Top	10mm	\	15.96	17.00	0.401	**0.510**	0.234	**0.297**	0.09
1	Body	LTE Band66	132572	1770	1RB-Low	Front	15mm	FIG A.10	22.71	24.00	0.733	0.987	0.475	**0.639**	-0.15
1	Body	LTE Band66	132322	1745	1RB-Low	Front	15mm	\	22.47	24.00	0.583	**0.829**	0.377	**0.536**	-0.14
1	Body	LTE Band66	132072	1720	1RB-Middle	Front	15mm	\	23.24	24.00	0.676	**0.805**	0.426	**0.507**	-0.03
1	Body	LTE Band66	132072	1720	1RB-Middle	Rear	15mm	\	23.24	24.00	0.566	**0.674**	0.359	**0.428**	0.16
1	Body	LTE Band66	132072	1720	1RB-Middle	Left	15mm	\	23.24	24.00	0.316	**0.376**	0.193	**0.230**	0.12
1	Body	LTE Band66	132072	1720	1RB-Middle	Right	15mm	\	23.24	24.00	0.104	**0.124**	0.070	**0.083**	-0.13
1	Body	LTE Band66	132072	1720	1RB-Middle	Bottom	10mm	\	23.24	24.00	0.373	**0.444**	0.216	**0.257**	0.01
1	Body	LTE Band66	132572	1770	1RB-Low	Top	15mm	\	22.71	24.00	0.571	**0.768**	0.353	**0.475**	-0.02
1	Body	LTE Band66	132322	1745	1RB-Low	Top	15mm	\	22.47	24.00	0.582	**0.828**	0.361	**0.513**	-0.09
1	Body	LTE Band66	132072	1720	1RB-Middle	Top	15mm	\	23.24	24.00	0.688	**0.820**	0.427	**0.509**	-0.05
1	Body	LTE Band66	132072	1720	50RB-Low	Front	15mm	\	22.26	23.00	0.558	**0.662**	0.351	**0.416**	0.19
1	Body	LTE Band66	132072	1720	50RB-Low	Rear	15mm	\	22.26	23.00	0.464	**0.550**	0.294	**0.349**	0.01
1	Body	LTE Band66	132072	1720	50RB-Low	Left	15mm	\	22.26	23.00	0.232	**0.275**	0.147	**0.174**	0.04
1	Body	LTE Band66	132072	1720	50RB-Low	Right	15mm	\	22.26	23.00	0.081	**0.096**	0.053	**0.063**	-0.14
1	Body	LTE Band66	132072	1720	50RB-Low	Bottom	10mm	\	22.26	23.00	0.318	**0.377**	0.184	**0.218**	0.05
1	Body	LTE Band66	132072	1720	50RB-Low	Top	15mm	\	22.26	23.00	0.566	**0.671**	0.351	**0.416**	-0.08
1	Body	LTE Band66	132072	1720	100RB	Front	15mm	\	22.23	23.00	0.539	**0.644**	0.338	**0.404**	0.15
1	Body	LTE Band66	132072	1720	100RB	Top	15mm	\	22.23	23.00	0.524	**0.626**	0.331	**0.395**	-0.06

14.2 SAR results for 2G/3G/4G (USB)

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
1	Body	WCDMA 850	4183	836.6	RMC	Front	0mm	\	15.56	17.00	0.276	**0.385**	0.175	**0.244**	0.05
1	Body	WCDMA 850	4183	836.6	RMC	Rear	0mm	\	15.56	17.00	0.257	**0.358**	0.172	**0.240**	0.13
1	Body	WCDMA 850	4183	836.6	RMC	Left	0mm	\	15.56	17.00	0.104	**0.145**	0.070	**0.098**	0.01
1	Body	WCDMA 850	4183	836.6	RMC	Right	0mm	\	15.56	17.00	0.169	**0.235**	0.053	**0.074**	-0.04
1	Body	WCDMA 850	4183	836.6	RMC	Top	0mm	\	15.56	17.00	0.223	**0.311**	0.103	**0.143**	0.18
1	Body	WCDMA 850	4233	846.6	RMC	Front	15mm	FIG A.1	23.62	24.50	0.602	**0.737**	0.445	**0.545**	-0.06
1	Body	WCDMA 850	4183	836.6	RMC	Front	15mm	\	23.54	24.50	0.581	**0.725**	0.425	**0.530**	0.09
1	Body	WCDMA 850	4132	826.4	RMC	Front	15mm	\	23.57	24.50	0.491	**0.608**	0.365	**0.452**	-0.12
1	Body	WCDMA 850	4183	836.6	RMC	Rear	15mm	\	23.54	24.50	0.526	**0.656**	0.394	**0.491**	-0.19
1	Body	WCDMA 850	4183	836.6	RMC	Left	15mm	\	23.54	24.50	0.187	**0.233**	0.141	**0.176**	0.17
1	Body	WCDMA 850	4183	836.6	RMC	Right	15mm	\	23.54	24.50	0.171	**0.213**	0.116	**0.145**	0.12
1	Body	WCDMA 850	4183	836.6	RMC	Top	15mm	\	23.54	24.50	0.046	**0.057**	0.034	**0.042**	-0.08
1	Body	WCDMA1700	1412	1732.5	RMC	Front	0mm	\	13.18	14.00	0.325	**0.393**	0.184	**0.222**	-0.18
1	Body	WCDMA1700	1412	1732.5	RMC	Rear	0mm	\	13.18	14.00	0.274	**0.331**	0.149	**0.180**	0.16
1	Body	WCDMA1700	1412	1732.5	RMC	Left	0mm	\	13.18	14.00	0.116	**0.140**	0.064	**0.077**	-0.16
1	Body	WCDMA1700	1412	1732.5	RMC	Right	0mm	\	13.18	14.00	0.101	**0.122**	0.043	**0.052**	0.16
1	Body	WCDMA1700	1412	1732.5	RMC	Top	0mm	\	13.18	14.00	0.310	**0.374**	0.155	**0.187**	0.03
1	Body	WCDMA1700	1513	1752.6	RMC	Front	15mm		23.92	24.50	0.894	**1.022**	0.506	**0.578**	-0.02
1	Body	WCDMA1700	1412	1732.5	RMC	Front	15mm	FIG A.2	23.89	24.50	0.908	**1.045**	0.519	**0.597**	-0.15
1	Body	WCDMA1700	1312	1712.4	RMC	Front	15mm		23.76	24.50	0.834	**0.989**	0.490	**0.581**	-0.08
1	Body	WCDMA1700	1513	1752.6	RMC	Rear	15mm	\	23.92	24.50	0.764	**0.873**	0.428	**0.489**	-0.19
1	Body	WCDMA1700	1412	1732.5	RMC	Rear	15mm	\	23.89	24.50	0.747	**0.860**	0.439	**0.505**	0.15
1	Body	WCDMA1700	1312	1712.4	RMC	Rear	15mm	\	23.76	24.50	0.717	**0.850**	0.413	**0.490**	-0.05
1	Body	WCDMA1700	1412	1732.5	RMC	Left	15mm	\	23.89	24.50	0.343	**0.395**	0.196	**0.226**	0.06
1	Body	WCDMA1700	1412	1732.5	RMC	Right	15mm	\	23.89	24.50	0.145	**0.167**	0.087	**0.100**	0.19
1	Body	WCDMA1700	1513	1752.6	RMC	Top	15mm		23.92	24.50	0.796	**0.910**	0.444	**0.507**	0.02
1	Body	WCDMA1700	1412	1732.5	RMC	Top	15mm	\	23.89	24.50	0.841	**0.968**	0.468	**0.539**	-0.10
1	Body	WCDMA1700	1312	1712.4	RMC	Top	15mm		23.76	24.50	0.881	**1.045**	0.487	**0.577**	-0.09
1	Body	WCDMA1900	9400	1880	RMC	Front	0mm	\	12.81	14.00	0.197	**0.259**	0.120	**0.158**	-0.16
1	Body	WCDMA1900	9400	1880	RMC	Rear	0mm	\	12.81	14.00	0.233	**0.306**	0.098	**0.129**	-0.10
1	Body	WCDMA1900	9400	1880	RMC	Left	0mm	\	12.81	14.00	0.093	**0.122**	0.052	**0.068**	0.19
1	Body	WCDMA1900	9400	1880	RMC	Right	0mm	\	12.81	14.00	0.171	**0.225**	0.083	**0.109**	-0.09
1	Body	WCDMA1900	9400	1880	RMC	Top	0mm	\	12.81	14.00	0.387	**0.509**	0.185	**0.243**	-0.01
1	Body	WCDMA1900	9400	1880	RMC	Front	15mm	\	24.16	24.50	0.587	**0.635**	0.381	**0.412**	-0.07
1	Body	WCDMA1900	9400	1880	RMC	Rear	15mm	\	24.16	24.50	0.546	**0.590**	0.335	**0.362**	0.14
1	Body	WCDMA1900	9400	1880	RMC	Left	15mm	\	24.16	24.50	0.357	**0.386**	0.224	**0.242**	-0.14
1	Body	WCDMA1900	9400	1880	RMC	Right	15mm	\	24.16	24.50	0.202	**0.218**	0.132	**0.143**	-0.09
1	Body	WCDMA1900	9538	1907.6	RMC	Top	15mm	FIG A.3	24.11	24.50	0.753	**0.824**	0.460	**0.503**	-0.02
1	Body	WCDMA1900	9400	1880	RMC	Top	15mm	\	24.16	24.50	0.659	**0.713**	0.404	**0.437**	0.07
1	Body	WCDMA1900	9262	1852.4	RMC	Top	15mm	\	24.08	24.50	0.748	**0.824**	0.459	**0.506**	-0.01
1	Body	LTE Band2	18700	1860	1RB-Low	Front	0mm	\	13.11	14.00	0.221	**0.271**	0.131	**0.161**	0.05
1	Body	LTE Band2	18700	1860	1RB-Low	Rear	0mm	\	13.11	14.00	0.250	**0.307**	0.137	**0.168**	-0.02
1	Body	LTE Band2	18700	1860	1RB-Low	Left	0mm	\	13.11	14.00	0.099	**0.122**	0.054	**0.066**	0.13
1	Body	LTE Band2	18700	1860	1RB-Low	Right	0mm	\	13.11	14.00	0.125	**0.153**	0.060	**0.074**	0.08
1	Body	LTE Band2	18700	1860	1RB-Low	Top	0mm	\	13.11	14.00	0.342	**0.420**	0.168	**0.206**	0.04
1	Body	LTE Band2	18700	1860	50B-Middle	Front	0mm	\	12.11	13.00	0.173	**0.212**	0.103	**0.126**	-0.14
1	Body	LTE Band2	18700	1860	50B-Middle	Rear	0mm	\	12.11	13.00	0.208	**0.255**	0.113	**0.139**	-0.08
1	Body	LTE Band2	18700	1860	50B-Middle	Left	0mm	\	12.11	13.00	0.079	**0.097**	0.044	**0.054**	0.03
1	Body	LTE Band2	18700	1860	50B-Middle	Right	0mm	\	12.11	13.00	0.110	**0.135**	0.052	**0.064**	-0.06
1	Body	LTE Band2	18700	1860	50B-Middle	Top	0mm	\	12.11	13.00	0.274	**0.336**	0.136	**0.167**	0.07
1	Body	LTE Band2	19100	1900	1RB-Middle	Front	15mm	\	23.79	24.00	0.529	**0.555**	0.334	**0.351**	0.09
1	Body	LTE Band2	19100	1900	1RB-Middle	Rear	15mm	\	23.79	24.00	0.434	**0.456**	0.285	**0.299**	-0.13
1	Body	LTE Band2	19100	1900	1RB-Middle	Left	15mm	\	23.79	24.00	0.325	**0.341**	0.199	**0.209**	-0.16
1	Body	LTE Band2	19100	1900	1RB-Middle	Right	15mm	\	23.79	24.00	0.192	**0.202**	0.122	**0.128**	-0.05
1	Body	LTE Band2	19100	1900	1RB-Middle	Top	15mm	FIG A.4	23.79	24.00	0.662	**0.695**	0.404	**0.424**	-0.09
1	Body	LTE Band2	19100	1900	50B-Middle	Front	15mm	\	22.78	23.00	0.425	**0.447**	0.269	**0.283**	0.08
1	Body	LTE Band2	19100	1900	50B-Middle	Rear	15mm	\	22.78	23.00	0.348	**0.366**	0.226	**0.238**	0.02
1	Body	LTE Band2	19100	1900	50B-Middle	Left	15mm	\	22.78	23.00	0.262	**0.276**	0.162	**0.170**	-0.16
1	Body	LTE Band2	19100	1900	50B-Middle	Right	15mm	\	22.78	23.00	0.156	**0.164**	0.099	**0.104**	-0.06
1	Body	LTE Band2	19100	1900	50B-Middle	Top	15mm	\	22.78	23.00	0.541	**0.569**	0.329	**0.346**	-0.02

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Front	0mm	\	13.05	14.00	0.266	**0.331**	0.156	**0.194**	0.02
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Rear	0mm	\	13.05	14.00	0.246	**0.306**	0.139	**0.173**	-0.16
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Left	0mm	\	13.05	14.00	0.113	**0.141**	0.065	**0.081**	-0.18
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Right	0mm	\	13.05	14.00	0.112	**0.139**	0.051	**0.063**	0.12
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Top	0mm	\	13.05	14.00	0.284	**0.353**	0.141	**0.175**	0.15
1	Body	LTE Band4	20300	1745	50RB-Low	Front	0mm	\	12.10	13.00	0.217	**0.267**	0.126	**0.155**	0.15
1	Body	LTE Band4	20300	1745	50RB-Low	Rear	0mm	\	12.10	13.00	0.196	**0.241**	0.112	**0.138**	0.14
1	Body	LTE Band4	20300	1745	50RB-Low	Left	0mm	\	12.10	13.00	0.092	**0.113**	0.053	**0.065**	-0.16
1	Body	LTE Band4	20300	1745	50RB-Low	Right	0mm	\	12.10	13.00	0.052	**0.064**	0.024	**0.030**	-0.15
1	Body	LTE Band4	20300	1745	50RB-Low	Top	0mm	\	12.10	13.00	0.220	**0.271**	0.111	**0.137**	-0.08
1	Body	LTE Band4	20300	1745	1RB-Middle	Front	15mm	\	22.88	24.00	0.763	**0.987**	0.500	**0.647**	-0.01
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Front	15mm	\	23.04	24.00	0.781	**0.974**	0.507	**0.632**	-0.11
1	Body	LTE Band4	20050	1720	1RB-High	Front	15mm	FIG A.5	22.96	24.00	0.793	**1.008**	0.515	**0.654**	-0.02
1	Body	LTE Band4	20300	1745	1RB-Middle	Rear	15mm	\	23.04	24.00	0.651	**0.812**	0.429	**0.535**	0.16
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Rear	15mm	\	23.04	24.00	0.666	**0.831**	0.435	**0.543**	0.19
1	Body	LTE Band4	20050	1720	1RB-High	Rear	15mm	\	23.04	24.00	0.676	**0.843**	0.442	**0.551**	0.08
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Left	15mm	\	23.04	24.00	0.386	**0.481**	0.250	**0.312**	-0.07
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Right	15mm	\	23.04	24.00	0.121	**0.151**	0.084	**0.105**	-0.15
1	Body	LTE Band4	20300	1745	1RB-Middle	Top	15mm	\	23.04	24.00	0.710	**0.886**	0.453	**0.565**	0.19
1	Body	LTE Band4	20175	1732.5	1RB-Middle	Top	15mm	\	23.04	24.00	0.727	**0.907**	0.459	**0.573**	0.05
1	Body	LTE Band4	20050	1720	1RB-High	Top	15mm	\	23.04	24.00	0.738	**0.921**	0.466	**0.581**	0.02
1	Body	LTE Band4	20175	1732.5	50B-Middle	Front	15mm	\	22.07	23.00	0.626	**0.775**	0.409	**0.507**	-0.11
1	Body	LTE Band4	20175	1732.5	50B-Middle	Rear	15mm	\	22.07	23.00	0.545	**0.675**	0.352	**0.436**	0.03
1	Body	LTE Band4	20175	1732.5	50B-Middle	Left	15mm	\	22.07	23.00	0.314	**0.389**	0.204	**0.253**	-0.18
1	Body	LTE Band4	20175	1732.5	50B-Middle	Right	15mm	\	22.07	23.00	0.096	**0.119**	0.067	**0.083**	0.10
1	Body	LTE Band4	20175	1732.5	50B-Middle	Top	15mm	\	22.07	23.00	0.582	**0.721**	0.368	**0.456**	0.09
1	Body	LTE Band4	20175	1732.5	100RB	Front	15mm	\	22.12	23.00	0.619	**0.758**	0.403	**0.494**	0.05
1	Body	LTE Band4	20175	1732.5	100RB	Rear	15mm	\	22.12	23.00	0.525	**0.643**	0.339	**0.415**	-0.09
1	Body	LTE Band4	20175	1732.5	100RB	Top	15mm	\	22.12	23.00	0.602	**0.737**	0.376	**0.460**	0.11
1	Body	LTE Band5	20600	844	1RB-Middle	Front	0mm	\	15.68	17.00	0.259	**0.351**	0.169	**0.229**	-0.16
1	Body	LTE Band5	20600	844	1RB-Middle	Rear	0mm	\	15.68	17.00	0.242	**0.328**	0.151	**0.205**	-0.10
1	Body	LTE Band5	20600	844	1RB-Middle	Left	0mm	\	15.68	17.00	0.111	**0.150**	0.074	**0.100**	-0.19
1	Body	LTE Band5	20600	844	1RB-Middle	Right	0mm	\	15.68	17.00	0.103	**0.140**	0.040	**0.054**	0.15
1	Body	LTE Band5	20600	844	1RB-Middle	Top	0mm	\	15.68	17.00	0.183	**0.248**	0.097	**0.131**	-0.06
1	Body	LTE Band5	20600	844	25RB-Middle	Front	0mm	\	14.82	16.00	0.189	**0.248**	0.122	**0.160**	0.07
1	Body	LTE Band5	20600	844	25RB-Middle	Rear	0mm	\	14.82	16.00	0.195	**0.256**	0.122	**0.160**	0.05
1	Body	LTE Band5	20600	844	25RB-Middle	Left	0mm	\	14.82	16.00	0.090	**0.118**	0.059	**0.077**	-0.07
1	Body	LTE Band5	20600	844	25RB-Middle	Right	0mm	\	14.82	16.00	0.080	**0.105**	0.030	**0.039**	0.16
1	Body	LTE Band5	20600	844	25RB-Middle	Top	0mm	\	14.82	16.00	0.137	**0.180**	0.073	**0.096**	0.06
1	Body	LTE Band5	20600	844	1RB-Middle	Front	15mm	FIG A.6	22.58	24.00	0.469	**0.650**	0.348	**0.483**	-0.13
1	Body	LTE Band5	20600	844	1RB-Middle	Rear	15mm	\	22.58	24.00	0.311	**0.431**	0.232	**0.322**	-0.19
1	Body	LTE Band5	20600	844	1RB-Middle	Left	15mm	\	22.58	24.00	0.167	**0.232**	0.125	**0.173**	-0.12
1	Body	LTE Band5	20600	844	1RB-Middle	Right	15mm	\	22.58	24.00	0.186	**0.258**	0.140	**0.194**	-0.04
1	Body	LTE Band5	20600	844	1RB-Middle	Top	15mm	\	22.58	24.00	0.041	**0.057**	0.028	**0.039**	0.12
1	Body	LTE Band5	20600	844	25RB-Middle	Front	15mm	\	21.69	23.00	0.377	**0.510**	0.279	**0.377**	-0.18
1	Body	LTE Band5	20600	844	25RB-Middle	Rear	15mm	\	21.69	23.00	0.355	**0.480**	0.264	**0.357**	-0.07
1	Body	LTE Band5	20600	844	25RB-Middle	Left	15mm	\	21.69	23.00	0.086	**0.116**	0.065	**0.088**	-0.15
1	Body	LTE Band5	20600	844	25RB-Middle	Right	15mm	\	21.69	23.00	0.142	**0.192**	0.106	**0.143**	0.13
1	Body	LTE Band5	20600	844	25RB-Middle	Top	15mm	\	21.69	23.00	0.034	**0.046**	0.023	**0.031**	-0.11
1	Body	LTE Band12	23130	711	1RB-High	Front	0mm	\	16.42	18.00	0.213	**0.306**	0.135	**0.194**	0.16
1	Body	LTE Band12	23130	711	1RB-High	Rear	0mm	\	16.42	18.00	0.205	**0.295**	0.129	**0.186**	0.09
1	Body	LTE Band12	23130	711	1RB-High	Left	0mm	\	16.42	18.00	0.098	**0.141**	0.065	**0.094**	0.17
1	Body	LTE Band12	23130	711	1RB-High	Right	0mm	\	16.42	18.00	0.154	**0.222**	0.054	**0.078**	-0.12
1	Body	LTE Band12	23130	711	1RB-High	Top	0mm	\	16.42	18.00	0.101	**0.145**	0.039	**0.056**	-0.11
1	Body	LTE Band12	23095	707.5	25RB-Low	Front	0mm	\	15.52	17.00	0.206	**0.290**	0.130	**0.183**	0.08
1	Body	LTE Band12	23095	707.5	25RB-Low	Rear	0mm	\	15.52	17.00	0.186	**0.262**	0.112	**0.157**	0.16
1	Body	LTE Band12	23095	707.5	25RB-Low	Left	0mm	\	15.52	17.00	0.074	**0.104**	0.048	**0.067**	-0.09
1	Body	LTE Band12	23095	707.5	25RB-Low	Right	0mm	\	15.52	17.00	0.137	**0.193**	0.051	**0.072**	-0.19
1	Body	LTE Band12	23095	707.5	25RB-Low	Top	0mm	\	15.52	17.00	0.125	**0.176**	0.047	**0.066**	0.09
1	Body	LTE Band12	23130	711	1RB-Low	Front	15mm	FIG A.7	22.14	22.50	0.342	**0.372**	0.253	**0.275**	-0.12
1	Body	LTE Band12	23130	711	1RB-Low	Rear	15mm	\	22.14	22.50	0.322	**0.350**	0.236	**0.256**	0.05
1	Body	LTE Band12	23130	711	1RB-Low	Left	15mm	\	22.14	22.50	0.146	**0.159**	0.107	**0.116**	-0.15
1	Body	LTE Band12	23130	711	1RB-Low	Right	15mm	\	22.14	22.50	0.176	**0.191**	0.130	**0.141**	0.06
1	Body	LTE Band12	23130	711	1RB-Low	Top	15mm	\	22.14	22.50	0.030	**0.033**	0.021	**0.023**	0.16
1	Body	LTE Band12	23095	707.5	25RB-Middle	Front	15mm	\	21.17	21.50	0.271	**0.292**	0.199	**0.215**	0.05
1	Body	LTE Band12	23095	707.5	25RB-Middle	Rear	15mm	\	21.17	21.50	0.249	**0.269**	0.182	**0.196**	0.09
1	Body	LTE Band12	23095	707.5	25RB-Middle	Left	15mm	\	21.17	21.50	0.106	**0.114**	0.078	**0.084**	0.17
1	Body	LTE Band12	23095	707.5	25RB-Middle	Right	15mm	\	21.17	21.50	0.082	**0.088**	0.055	**0.059**	0.03
1	Body	LTE Band12	23095	707.5	25RB-Middle	Top	15mm	\	21.17	21.50	0.028	**0.030**	0.019	**0.020**	-0.19

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
1	Body	LTE Band14	23330	793	1RB-High	Front	0mm	\	16.43	18.00	0.258	**0.370**	0.168	**0.241**	0.12
1	Body	LTE Band14	23330	793	1RB-High	Rear	0mm	\	16.43	18.00	0.156	**0.224**	0.124	**0.178**	0.05
1	Body	LTE Band14	23330	793	1RB-High	Left	0mm	\	16.43	18.00	0.058	**0.083**	0.047	**0.067**	0.16
1	Body	LTE Band14	23330	793	1RB-High	Right	0mm	\	16.43	18.00	0.203	**0.291**	0.073	**0.105**	-0.09
1	Body	LTE Band14	23330	793	1RB-High	Top	0mm	\	16.43	18.00	0.201	**0.289**	0.090	**0.129**	-0.14
1	Body	LTE Band14	23330	793	25RB-High	Front	0mm	\	15.49	17.00	0.204	**0.289**	0.131	**0.185**	-0.06
1	Body	LTE Band14	23330	793	25RB-High	Rear	0mm	\	15.49	17.00	0.134	**0.190**	0.108	**0.153**	-0.10
1	Body	LTE Band14	23330	793	25RB-High	Left	0mm	\	15.49	17.00	0.047	**0.067**	0.038	**0.054**	0.18
1	Body	LTE Band14	23330	793	25RB-High	Right	0mm	\	15.49	17.00	0.163	**0.231**	0.057	**0.081**	-0.08
1	Body	LTE Band14	23330	793	25RB-High	Top	0mm	\	15.49	17.00	0.174	**0.246**	0.078	**0.110**	-0.08
1	Body	LTE Band14	23330	793	1RB-Middle	Front	15mm	FIG A.8	22.32	24.00	0.317	0.467	0.234	**0.345**	0.14
1	Body	LTE Band14	23330	793	1RB-Middle	Rear	15mm	\	22.32	24.00	0.311	**0.458**	0.228	**0.336**	0.18
1	Body	LTE Band14	23330	793	1RB-Middle	Left	15mm	\	22.32	24.00	0.114	**0.168**	0.085	**0.125**	0.14
1	Body	LTE Band14	23330	793	1RB-Middle	Right	15mm	\	22.32	24.00	0.124	**0.183**	0.089	**0.131**	0.16
1	Body	LTE Band14	23330	793	1RB-Middle	Top	15mm	\	22.32	24.00	0.042	**0.062**	0.028	**0.041**	0.09
1	Body	LTE Band14	23330	793	25RB-Low	Front	15mm	\	21.44	23.00	0.258	**0.370**	0.190	**0.272**	0.01
1	Body	LTE Band14	23330	793	25RB-Low	Rear	15mm	\	21.44	23.00	0.248	**0.355**	0.182	**0.261**	-0.01
1	Body	LTE Band14	23330	793	25RB-Low	Left	15mm	\	21.44	23.00	0.091	**0.130**	0.069	**0.099**	0.18
1	Body	LTE Band14	23330	793	25RB-Low	Right	15mm	\	21.44	23.00	0.123	**0.176**	0.089	**0.127**	-0.15
1	Body	LTE Band14	23330	793	25RB-Low	Top	15mm	\	21.44	23.00	0.034	**0.049**	0.023	**0.033**	0.11
1	Body	LTE Band30	27710	2310	1RB-Low	Front	0mm	\	12.51	14.00	0.320	**0.451**	0.155	**0.218**	0.13
1	Body	LTE Band30	27710	2310	1RB-Low	Rear	0mm	\	12.51	14.00	0.243	**0.342**	0.125	**0.176**	0.05
1	Body	LTE Band30	27710	2310	1RB-Low	Left	0mm	\	12.51	14.00	0.306	**0.431**	0.151	**0.213**	-0.11
1	Body	LTE Band30	27710	2310	1RB-Low	Right	0mm	\	12.51	14.00	0.155	**0.218**	0.067	**0.094**	0.11
1	Body	LTE Band30	27710	2310	1RB-Low	Top	0mm	\	12.51	14.00	0.134	**0.189**	0.063	**0.089**	-0.19
1	Body	LTE Band30	27710	2310	25RB-High	Front	0mm	\	11.60	13.00	0.256	**0.353**	0.125	**0.173**	-0.17
1	Body	LTE Band30	27710	2310	25RB-High	Rear	0mm	\	11.60	13.00	0.196	**0.271**	0.101	**0.139**	-0.12
1	Body	LTE Band30	27710	2310	25RB-High	Left	0mm	\	11.60	13.00	0.234	**0.323**	0.116	**0.160**	-0.16
1	Body	LTE Band30	27710	2310	25RB-High	Right	0mm	\	11.60	13.00	0.054	**0.075**	0.026	**0.036**	0.19
1	Body	LTE Band30	27710	2310	25RB-High	Top	0mm	\	11.60	13.00	0.124	**0.171**	0.058	**0.080**	0.07
1	Body	LTE Band30	27710	2310	1RB-Low	Front	15mm	FIG A.11	22.74	24.00	0.533	0.712	0.326	**0.436**	-0.10
1	Body	LTE Band30	27710	2310	1RB-Low	Rear	15mm	\	22.74	24.00	0.434	**0.580**	0.265	**0.354**	-0.08
1	Body	LTE Band30	27710	2310	1RB-Low	Left	15mm	\	22.74	24.00	0.495	**0.662**	0.298	**0.398**	0.05
1	Body	LTE Band30	27710	2310	1RB-Low	Right	15mm	\	22.74	24.00	0.124	**0.166**	0.077	**0.103**	-0.09
1	Body	LTE Band30	27710	2310	1RB-Low	Top	15mm	\	22.74	24.00	0.140	**0.187**	0.085	**0.114**	0.13
1	Body	LTE Band30	27710	2310	25RB-High	Front	15mm	\	21.72	23.00	0.431	**0.579**	0.263	**0.353**	-0.18
1	Body	LTE Band30	27710	2310	25RB-High	Rear	15mm	\	21.72	23.00	0.331	**0.444**	0.202	**0.271**	0.19
1	Body	LTE Band30	27710	2310	25RB-High	Left	15mm	\	21.72	23.00	0.396	**0.532**	0.238	**0.320**	-0.14
1	Body	LTE Band30	27710	2310	25RB-High	Right	15mm	\	21.72	23.00	0.101	**0.136**	0.063	**0.085**	0.00
1	Body	LTE Band30	27710	2310	25RB-High	Top	15mm	\	21.72	23.00	0.106	**0.142**	0.066	**0.089**	0.01
1	Body	LTE Band66	132072	1720	1RB-Middle	Front	0mm	\	12.57	14.00	0.289	**0.402**	0.264	**0.367**	0.08
1	Body	LTE Band66	132072	1720	1RB-Middle	Rear	0mm	\	12.57	14.00	0.240	**0.334**	0.209	**0.291**	-0.15
1	Body	LTE Band66	132072	1720	1RB-Middle	Left	0mm	\	12.57	14.00	0.110	**0.153**	0.095	**0.132**	-0.19
1	Body	LTE Band66	132072	1720	1RB-Middle	Right	0mm	\	12.57	14.00	0.177	**0.246**	0.121	**0.168**	-0.03
1	Body	LTE Band66	132072	1720	1RB-Middle	Top	0mm	\	12.57	14.00	0.278	**0.386**	0.216	**0.300**	-0.09
1	Body	LTE Band66	132072	1720	50RB-Middle	Front	0mm	\	11.65	13.00	0.230	**0.314**	0.210	**0.287**	-0.12
1	Body	LTE Band66	132072	1720	50RB-Middle	Rear	0mm	\	11.65	13.00	0.196	**0.267**	0.172	**0.235**	0.03
1	Body	LTE Band66	132072	1720	50RB-Middle	Left	0mm	\	11.65	13.00	0.089	**0.121**	0.077	**0.105**	0.02
1	Body	LTE Band66	132072	1720	50RB-Middle	Right	0mm	\	11.65	13.00	0.083	**0.113**	0.069	**0.094**	0.05
1	Body	LTE Band66	132072	1720	50RB-Middle	Top	0mm	\	11.65	13.00	0.201	**0.274**	0.163	**0.222**	0.06
1	Body	LTE Band66	132572	1770	1RB-Low	Front	15mm	FIG A.10	22.71	24.00	0.733	0.987	0.475	**0.639**	-0.15
1	Body	LTE Band66	132322	1745	1RB-Low	Front	15mm	\	22.47	24.00	0.583	**0.829**	0.377	**0.536**	-0.14
1	Body	LTE Band66	132072	1720	1RB-Middle	Front	15mm	\	23.24	24.00	0.676	**0.805**	0.426	**0.507**	-0.03
1	Body	LTE Band66	132072	1720	1RB-Middle	Rear	15mm	\	23.24	24.00	0.566	**0.674**	0.359	**0.428**	0.16
1	Body	LTE Band66	132072	1720	1RB-Middle	Left	15mm	\	23.24	24.00	0.316	**0.376**	0.193	**0.230**	0.12
1	Body	LTE Band66	132072	1720	1RB-Middle	Right	15mm	\	23.24	24.00	0.104	**0.124**	0.070	**0.083**	-0.13
1	Body	LTE Band66	132572	1770	1RB-Low	Top	15mm	\	22.71	24.00	0.571	**0.768**	0.353	**0.475**	-0.02
1	Body	LTE Band66	132322	1745	1RB-Low	Top	15mm	\	22.47	24.00	0.582	**0.828**	0.361	**0.513**	-0.09
1	Body	LTE Band66	132072	1720	1RB-Middle	Top	15mm	\	23.24	24.00	0.688	**0.820**	0.427	**0.509**	-0.05
1	Body	LTE Band66	132072	1720	50RB-Low	Front	15mm	\	22.26	23.00	0.558	**0.662**	0.351	**0.416**	0.19
1	Body	LTE Band66	132072	1720	50RB-Low	Rear	15mm	\	22.26	23.00	0.464	**0.550**	0.294	**0.349**	0.01
1	Body	LTE Band66	132072	1720	50RB-Low	Left	15mm	\	22.26	23.00	0.232	**0.275**	0.147	**0.174**	0.04
1	Body	LTE Band66	132072	1720	50RB-Low	Right	15mm	\	22.26	23.00	0.081	**0.096**	0.053	**0.063**	-0.14
1	Body	LTE Band66	132072	1720	50RB-Low	Top	15mm	\	22.26	23.00	0.566	**0.671**	0.351	**0.416**	-0.08
1	Body	LTE Band66	132072	1720	100RB	Front	15mm	\	22.23	23.00	0.539	**0.644**	0.338	**0.404**	0.15
1	Body	LTE Band66	132072	1720	100RB	Top	15mm	\	22.23	23.00	0.524	**0.626**	0.331	**0.395**	-0.06

14.3 SAR results for WLAN (Non-USB)

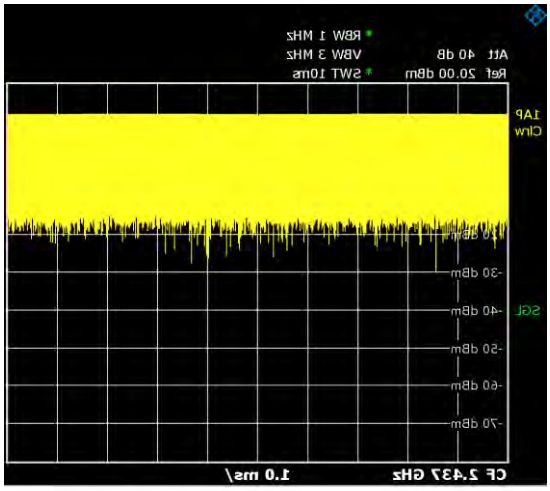
he maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac then ax) is selected.

SAR Test reduction was applied from KDB 248227 guidance, when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

Duty factor plot

CH6



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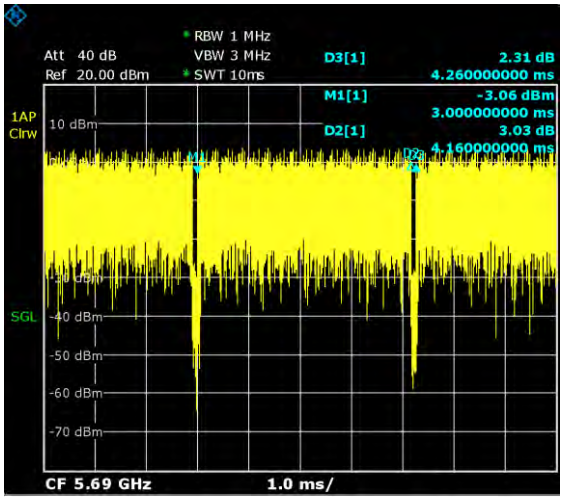


WLAN 2.4G

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	Duty Cycle	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
3	Body	WIFI 2.4G	6	2437	11b	Front	15mm	\	100.00%	19.28	21.00	0.146	**0.217**	0.075	**0.111**	0.13
3	Body	WIFI 2.4G	6	2437	11b	Rear	15mm	\	100.00%	19.28	21.00	0.124	**0.184**	0.069	**0.103**	0.13
3	Body	WIFI 2.4G	6	2437	11b	Left	10mm	\	100.00%	19.28	21.00	0.044	**0.065**	0.023	**0.034**	-0.11
3	Body	WIFI 2.4G	6	2437	11b	Right	15mm	FIG A.12	100.00%	19.28	21.00	0.267	**0.397**	0.152	**0.226**	0.05
3	Body	WIFI 2.4G	6	2437	11b	Bottom	10mm	\	100.00%	19.28	21.00	0.031	**0.046**	0.016	**0.024**	-0.19
3	Body	WIFI 2.4G	6	2437	11b	Top	10mm	\	100.00%	19.28	21.00	0.067	**0.100**	0.034	**0.051**	0.13
3	Body	WIFI 2.4G	11	2462	11b	Front	10mm	\	100.00%	17.58	19.00	0.121	**0.168**	0.066	**0.092**	0.07
3	Body	WIFI 2.4G	11	2462	11b	Rear	10mm	\	100.00%	17.58	19.00	0.150	**0.208**	0.082	**0.114**	0.15
3	Body	WIFI 2.4G	11	2462	11b	Right	10mm	\	100.00%	17.58	19.00	0.216	**0.300**	0.125	**0.173**	-0.06

WLAN 5G

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	Duty Cycle	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
3	Body	WIFI 5G	58	5290	11ac-80m	Front	15mm	\	97.65%	19.39	19.50	0.277	**0.291**	0.116	**0.119**	-0.10
3	Body	WIFI 5G	58	5290	11ac-80m	Rear	15mm	\	97.65%	19.39	19.50	0.315	**0.331**	0.125	**0.128**	-0.16
3	Body	WIFI 5G	58	5290	11ac-80m	Left	10mm	\	97.65%	19.39	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	58	5290	11ac-80m	Right	15mm	\	97.65%	19.39	19.50	0.284	**0.298**	0.117	**0.120**	0.08
3	Body	WIFI 5G	58	5290	11ac-80m	Bottom	10mm	\	97.65%	19.39	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	58	5290	11ac-80m	Top	10mm	\	97.65%	19.39	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	122	5610	11ac-80m	Front	15mm	\	97.65%	19.34	19.50	0.394	**0.419**	0.159	**0.165**	0.01
3	Body	WIFI 5G	122	5610	11ac-80m	Rear	15mm	\	97.65%	19.34	19.50	0.461	**0.490**	0.184	**0.191**	-0.18
3	Body	WIFI 5G	122	5610	11ac-80m	Left	10mm	\	97.65%	19.34	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	122	5610	11ac-80m	Right	15mm	\	97.65%	19.34	19.50	0.471	**0.500**	0.183	**0.190**	0.01
3	Body	WIFI 5G	122	5610	11ac-80m	Bottom	10mm	\	97.65%	19.34	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	122	5610	11ac-80m	Top	10mm	\	97.65%	19.34	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	155	5775	11ac-80m	Front	15mm	\	97.65%	19.03	19.50	0.425	**0.485**	0.166	**0.185**	0.01
3	Body	WIFI 5G	155	5775	11ac-80m	Rear	15mm	\	97.65%	19.03	19.50	0.540	**0.616**	0.216	**0.241**	-0.02
3	Body	WIFI 5G	155	5775	11ac-80m	Left	10mm	\	97.65%	19.03	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	155	5775	11ac-80m	Right	15mm	\	97.65%	19.03	19.50	0.526	**0.600**	0.207	**0.231**	-0.09
3	Body	WIFI 5G	155	5775	11ac-80m	Bottom	10mm	\	97.65%	19.03	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	155	5775	11ac-80m	Top	10mm	\	97.65%	19.03	19.50	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	42	5210	11ac-80m	Front	10mm	\	97.65%	18.34	19.00	0.241	**0.287**	0.089	**0.103**	-0.05
3	Body	WIFI 5G	42	5210	11ac-80m	Rear	10mm	\	97.65%	18.34	19.00	0.246	**0.293**	0.093	**0.108**	0.00
3	Body	WIFI 5G	42	5210	11ac-80m	Right	10mm	\	97.65%	18.34	19.00	0.442	**0.527**	0.164	**0.191**	0.01
3	Body	WIFI 5G	58	5290	11ac-80m	Front	10mm	\	97.65%	18.39	19.00	0.362	**0.427**	0.141	**0.162**	0.15
3	Body	WIFI 5G	58	5290	11ac-80m	Rear	10mm	\	97.65%	18.39	19.00	0.407	**0.480**	0.164	**0.189**	-0.08
3	Body	WIFI 5G	58	5290	11ac-80m	Right	10mm	\	97.65%	18.39	19.00	0.492	**0.580**	0.182	**0.209**	0.02
3	Body	WIFI 5G	138	5690	11ac-80m	Front	10mm	\	97.65%	18.49	19.00	0.466	**0.537**	0.176	**0.198**	-0.12
3	Body	WIFI 5G	138	5690	11ac-80m	Rear	10mm	\	97.65%	18.49	19.00	0.645	**0.743**	0.252	**0.283**	0.10
3	Body	WIFI 5G	106	5530	11ac-80m	Right	10mm	\	97.65%	18.46	19.00	0.739	**0.857**	0.270	**0.306**	-0.15
3	Body	WIFI 5G	138	5690	11ac-80m	Right	10mm	FIG A.13	97.65%	18.49	19.00	0.778	**0.896**	0.277	**0.312**	-0.09
3	Body	WIFI 5G	155	5775	11ac-80m	Front	10mm	\	97.65%	18.28	19.00	0.437	**0.528**	0.158	**0.186**	-0.04
3	Body	WIFI 5G	155	5775	11ac-80m	Rear	10mm	\	97.65%	18.28	19.00	0.650	**0.786**	0.252	**0.297**	0.14
3	Body	WIFI 5G	155	5775	11ac-80m	Right	10mm	\	97.65%	18.28	19.00	0.684	**0.827**	0.238	**0.281**	0.06

14.3 SAR results for WLAN (USB)

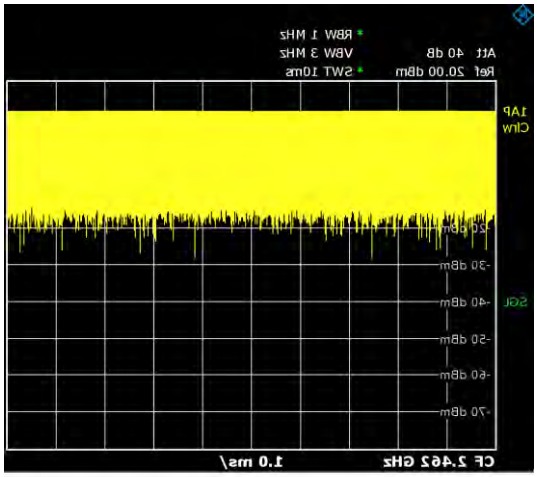
he maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac/ax modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n ac then ax) is selected.

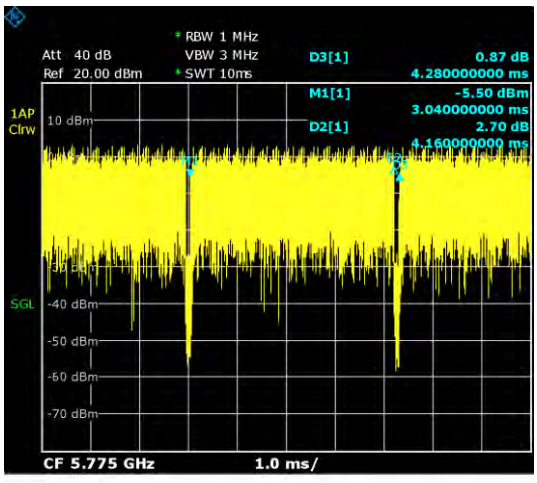
SAR Test reduction was applied from KDB 248227 guidance, when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

Duty factor plot

CH11



CH155



WLAN 2.4G

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	Duty Cycle	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
3	Body	WIFI 2.4G	6	2437	11b	Front	15mm	\	100.00%	19.28	21.00	0.146	**0.217**	0.075	**0.111**	0.13
3	Body	WIFI 2.4G	6	2437	11b	Rear	15mm	\	100.00%	19.28	21.00	0.124	**0.184**	0.069	**0.103**	0.13
3	Body	WIFI 2.4G	6	2437	11b	Left	0mm	\	100.00%	19.28	21.00	0.075	**0.111**	0.026	**0.039**	0.17
3	Body	WIFI 2.4G	6	2437	11b	Right	15mm	\	100.00%	19.28	21.00	0.267	**0.397**	0.152	**0.226**	0.05
3	Body	WIFI 2.4G	6	2437	11b	Top	0mm	\	100.00%	19.28	21.00	0.384	**0.571**	0.175	**0.260**	0.15
3	Body	WIFI 2.4G	6	2437	11b	Top	15mm	\	100.00%	19.28	21.00	0.040	**0.059**	0.016	**0.024**	0.06
3	Body	WIFI 2.4G	11	2462	11b	Front	0mm	FIG A.14	100.00%	12.22	14.00	0.306	0.461	0.143	**0.215**	0.04
3	Body	WIFI 2.4G	11	2462	11b	Rear	0mm	\	100.00%	12.22	14.00	0.247	**0.372**	0.113	**0.170**	0.06
3	Body	WIFI 2.4G	11	2462	11b	Right	0mm	\	100.00%	12.22	14.00	0.167	**0.252**	0.084	**0.126**	0.07

WLAN 5G

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Figure No.	Duty Cycle	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
3	Body	WIFI 5G	58	5290	11ac-80m	Front	15mm	\	97.65%	19.39	19.50	0.277	**0.291**	0.116	**0.119**	-0.10
3	Body	WIFI 5G	58	5290	11ac-80m	Rear	15mm	\	97.65%	19.39	19.50	0.315	**0.331**	0.125	**0.128**	-0.16
3	Body	WIFI 5G	58	5290	11ac-80m	Left	0mm	\	97.65%	19.39	19.50	0.011	**0.012**	0.002	**0.002**	-0.16
3	Body	WIFI 5G	58	5290	11ac-80m	Right	15mm	\	97.65%	19.39	19.50	0.284	**0.298**	0.117	**0.120**	0.08
3	Body	WIFI 5G	58	5290	11ac-80m	Top	0mm	\	97.65%	19.39	19.50	0.063	**0.066**	0.018	**0.018**	0.05
3	Body	WIFI 5G	122	5610	11ac-80m	Front	15mm	\	97.65%	19.34	19.50	0.394	**0.419**	0.159	**0.165**	0.01
3	Body	WIFI 5G	122	5610	11ac-80m	Rear	15mm	\	97.65%	19.34	19.50	0.461	**0.490**	0.184	**0.191**	-0.18
3	Body	WIFI 5G	122	5610	11ac-80m	Left	0mm	\	97.65%	19.34	19.50	0.022	**0.023**	0.005	**0.005**	0.03
3	Body	WIFI 5G	122	5610	11ac-80m	Right	15mm	\	97.65%	19.34	19.50	0.471	**0.500**	0.183	**0.190**	0.01
3	Body	WIFI 5G	122	5610	11ac-80m	Top	0mm	\	97.65%	19.34	19.50	0.023	**0.024**	0.008	**0.008**	0.15
3	Body	WIFI 5G	155	5775	11ac-80m	Front	15mm	\	97.65%	19.03	19.50	0.425	**0.485**	0.166	**0.185**	0.01
3	Body	WIFI 5G	155	5775	11ac-80m	Rear	15mm	\	97.65%	19.03	19.50	0.540	**0.616**	0.216	**0.241**	-0.02
3	Body	WIFI 5G	155	5775	11ac-80m	Left	0mm	\	97.65%	19.03	19.50	0.007	**0.008**	0.001	**0.001**	0.10
3	Body	WIFI 5G	155	5775	11ac-80m	Right	15mm	\	97.65%	19.03	19.50	0.526	**0.600**	0.207	**0.231**	-0.09
3	Body	WIFI 5G	155	5775	11ac-80m	Top	0mm	\	97.65%	19.03	19.50	0.011	**0.013**	0.002	**0.002**	0.15
3	Body	WIFI 5G	58	5290	11ac-80m	Front	0mm	\	97.65%	6.48	8.00	0.048	**0.070**	0.009	**0.013**	0.03
3	Body	WIFI 5G	58	5290	11ac-80m	Rear	0mm	\	97.65%	6.48	8.00	<0.01	**<0.01**	<0.01	**<0.01**	/
3	Body	WIFI 5G	58	5290	11ac-80m	Right	0mm	\	97.65%	6.48	8.00	0.346	**0.503**	0.066	**0.094**	0.15
3	Body	WIFI 5G	106	5530	11ac-80m	Front	0mm	\	97.65%	6.55	8.00	0.081	**0.116**	0.019	**0.027**	0.02
3	Body	WIFI 5G	106	5530	11ac-80m	Rear	0mm	\	97.65%	6.55	8.00	0.080	**0.114**	0.017	**0.024**	0.01
3	Body	WIFI 5G	106	5530	11ac-80m	Right	0mm	\	97.65%	6.55	8.00	0.583	**0.834**	0.105	**0.147**	0.09
3	Body	WIFI 5G	138	5690	11ac-80m	Right	0mm	\	97.65%	6.53	8.00	0.542	**0.779**	0.099	**0.139**	0.15
3	Body	WIFI 5G	155	5775	11ac-80m	Front	0mm	\	97.65%	6.38	8.00	0.059	**0.088**	0.013	**0.019**	0.01
3	Body	WIFI 5G	155	5775	11ac-80m	Rear	0mm	\	97.65%	6.38	8.00	0.065	**0.097**	0.015	**0.022**	-0.08
3	Body	WIFI 5G	155	5775	11ac-80m	Right	0mm	FIG A.15	97.65%	6.38	8.00	0.575	0.855	0.094	**0.136**	0.18

15 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

ANT	Test Position	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test setup	Distance	Original SAR 1g (W/kg)	First Repeated SAR 1g (W/kg)	Second Repeated SAR 1g (W/kg)	The Ratio
1	Body	WCDMA1700	1513	1752.6	RMC	Front	15mm	0.894	0.862	/	1.037
1	Body	WCDMA1700	1412	1732.5	RMC	Front	15mm	0.908	0.881	/	1.031
1	Body	WCDMA1700	1312	1712.4	RMC	Front	15mm	0.834	0.824	/	1.012
1	Body	WCDMA1700	1412	1732.5	RMC	Top	15mm	0.841	0.819	/	1.027
1	Body	WCDMA1700	1312	1712.4	RMC	Top	15mm	0.881	0.860	/	1.024

16 Measurement Uncertainty

16.1 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	

16.2 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	

16.3 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	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	$\sqrt{3}$	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	$\sqrt{3}$	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		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

16.4 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	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	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	$\sqrt{3}$	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	

17 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 10, 2023	One year
02	Power sensor	NRP110T	101139	January 13, 2023	One year
03	Power sensor	NRP110T	101159	January 13, 2023	One year
04	Signal Generator	E4438C	MY49071430	January 19, 2023	One year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	159890	January 12, 2023	One year
07	E-field Probe	SPEAG EX3DV4	7517	January 27, 2023	One year
08	DAE	SPEAG DAE4	777	January 11, 2023	One year
09	E-field Probe	SPEAG EX3DV4	7464	January 19, 2023	One year
10	DAE	SPEAG DAE4	1588	September 14, 2023	One year
11	Dipole Validation Kit	SPEAG D750V3	1017	July 14,2023	One year
12	Dipole Validation Kit	SPEAG D835V2	4d069	July 14,2023	One year
13	Dipole Validation Kit	SPEAG D1750V2	1003	July 12,2023	One year
14	Dipole Validation Kit	SPEAG D1900V2	5d101	July 17,2023	One year
15	Dipole Validation Kit	SPEAG D2300V2	1018	July 11,2023	One year
16	Dipole Validation Kit	SPEAG D2450V2	853	July 11,2023	One year
17	Dipole Validation Kit	SPEAG D5GHzV2	1060	June 19,2023	One year

END OF REPORT BODY

ANNEX A Graph Results

WCDMA1900 Body 15mm

Date: 9/5/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used (interpolated): f = 1907.6 MHz; σ = 1.471 S/m; εr = 40.73; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WCDMA1900(B2) (0) Frequency: 1907.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.13, 8.13, 8.13)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.10 W/kg

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

Reference Value = 25.00 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.753 W/kg; SAR(10 g) = 0.460 W/kg

Maximum value of SAR (measured) = 1.04 W/kg

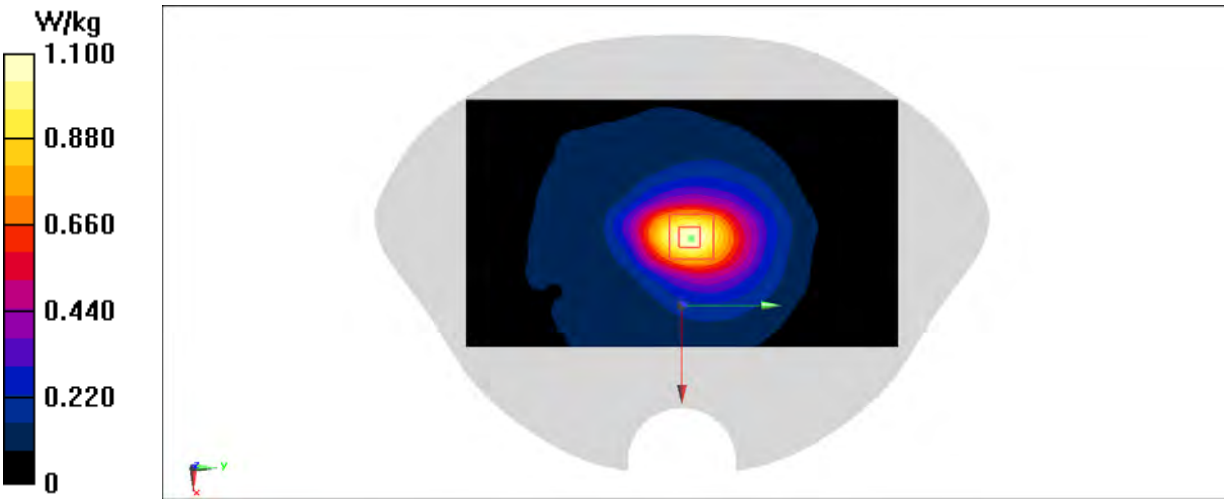


Fig A.1

WCDMA1700 Body 15mm

Date: 9/6/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 1732.5 MHz; σ = 1.376 S/m; εr = 41.07; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WCDMA1700(B4) (0) Frequency: 1732.4 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.54, 8.54, 8.54)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.30 W/kg

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

Reference Value = 11.87 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.27 W/kg

SAR(1 g) = 0.908 W/kg; SAR(10 g) = 0.519 W/kg

Maximum value of SAR (measured) = 1.16 W/kg

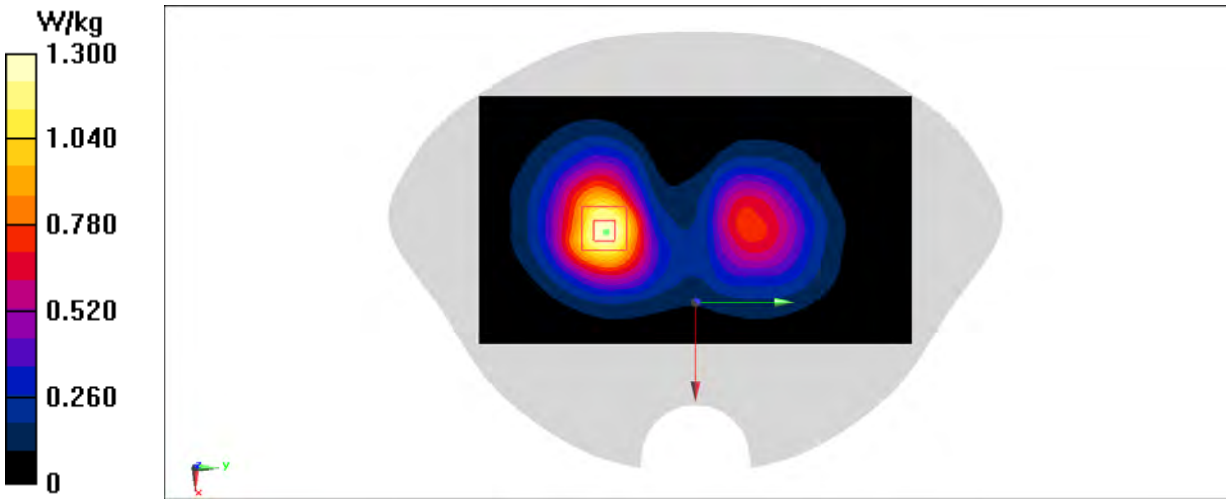


Fig A.2

WCDMA850 Body 15mm

Date: 9/8/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 847.5 MHz; σ = 0.941 S/m; εr = 43.07; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WCDMA850(B5) (0) Frequency: 846.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(10.26, 10.26, 10.26)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.738 W/kg

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

Reference Value = 26.94 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.814 W/kg

SAR(1 g) = 0.602 W/kg; SAR(10 g) = 0.445 W/kg

Maximum value of SAR (measured) = 0.737 W/kg

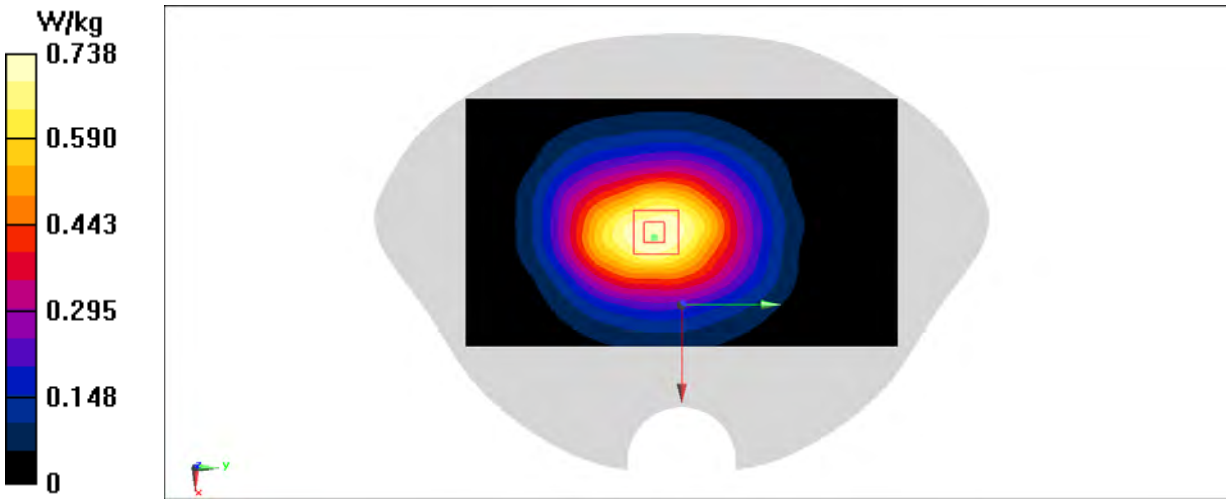


Fig A.3

LTE Band2 Body 15mm

Date: 9/5/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 1900 MHz; σ = 1.466 S/m; εr = 40.76; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band2 (0) Frequency: 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.13, 8.13, 8.13)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.01 W/kg

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

Reference Value = 22.90 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.662 W/kg; SAR(10 g) = 0.404 W/kg

Maximum value of SAR (measured) = 0.917 W/kg

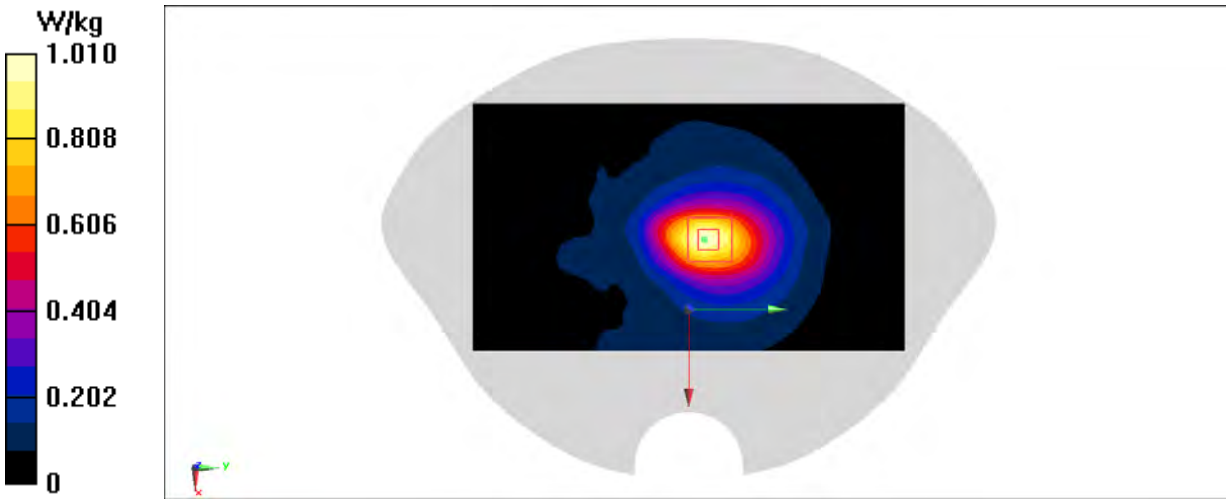


Fig A.4

LTE Band4 Body 15mm

Date: 9/6/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 1720 MHz; σ = 1.368 S/m; εr = 41.09; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band4 (0) Frequency: 1720 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.54, 8.54, 8.54)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.14 W/kg

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

Reference Value = 11.16 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.11 W/kg

SAR(1 g) = 0.793 W/kg; SAR(10 g) = 0.515 W/kg

Maximum value of SAR (measured) = 1.01 W/kg

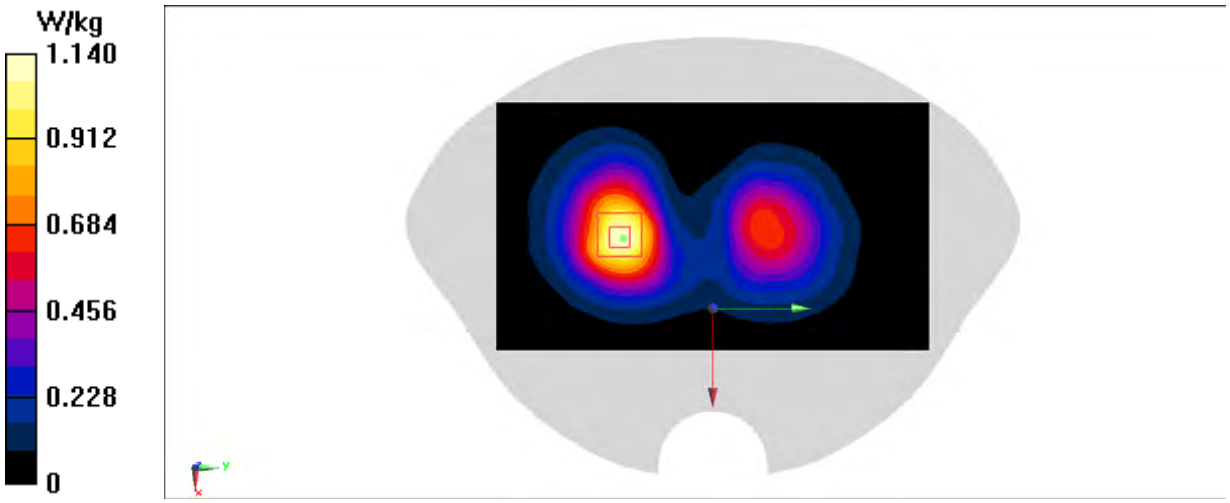


Fig A.5

LTE Band5 Body 15mm

Date: 9/8/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used (interpolated): f = 844 MHz; σ = 0.939 S/m; εr = 43.09; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band5 (0) Frequency: 844 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(10.26, 10.26, 10.26)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.593 W/kg

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

Reference Value = 24.14 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.632 W/kg

SAR(1 g) = 0.469 W/kg; SAR(10 g) = 0.348 W/kg

Maximum value of SAR (measured) = 0.572 W/kg

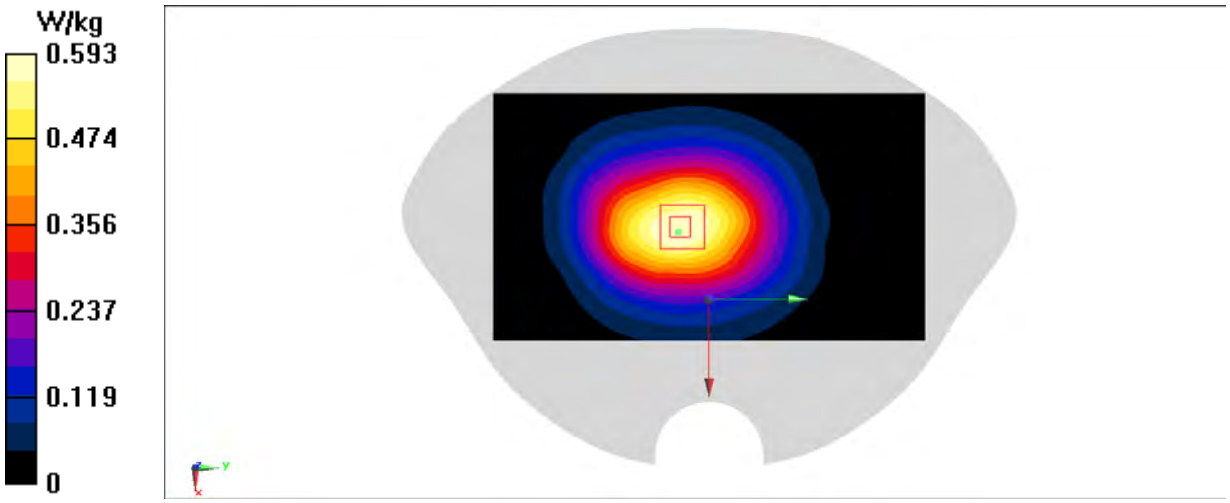


Fig A.6

LTE Band12 Body 15mm

Date: 9/10/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used (interpolated): f = 711 MHz; σ = 0.888 S/m; εr = 43.53; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band12 (0) Frequency: 711 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(10.26, 10.26, 10.26)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.435 W/kg

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

Reference Value = 20.31 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.465 W/kg

SAR(1 g) = 0.342 W/kg; SAR(10 g) = 0.253 W/kg

Maximum value of SAR (measured) = 0.420 W/kg

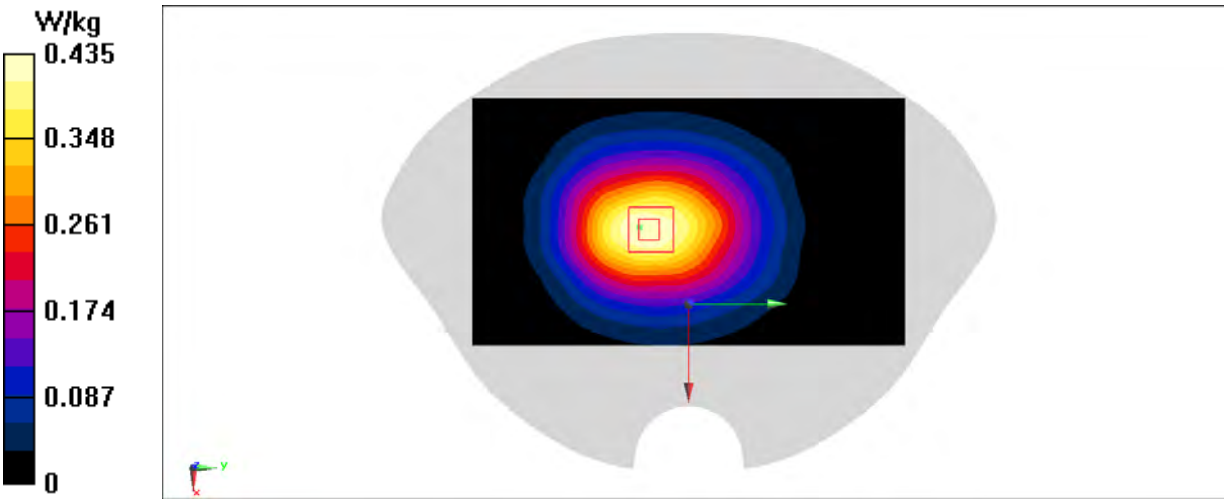


Fig A.7

LTE Band14 Body 15mm

Date: 9/10/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used (interpolated): f = 793 MHz; σ = 0.919 S/m; εr = 43.19; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band14 (0) Frequency: 793 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(10.26, 10.26, 10.26)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.400 W/kg

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

Reference Value = 19.81 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.430 W/kg

SAR(1 g) = 0.317 W/kg; SAR(10 g) = 0.234 W/kg

Maximum value of SAR (measured) = 0.390 W/kg

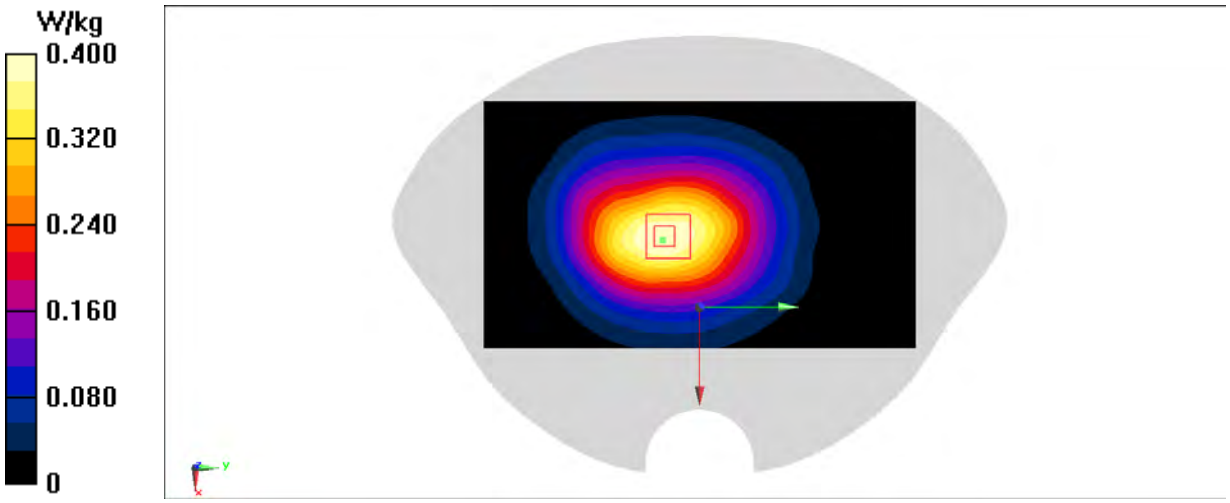


Fig A.8

LTE Band30 Body 15mm

Date: 9/11/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 2310 MHz; σ = 1.725 S/m; εr = 40.19; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band30 (0) Frequency: 2310 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(7.95, 7.95, 7.95)

Area Scan (81x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.886 W/kg

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

Reference Value = 10.15 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.899 W/kg

SAR(1 g) = 0.589 W/kg; SAR(10 g) = 0.352 W/kg

Maximum value of SAR (measured) = 0.792 W/kg

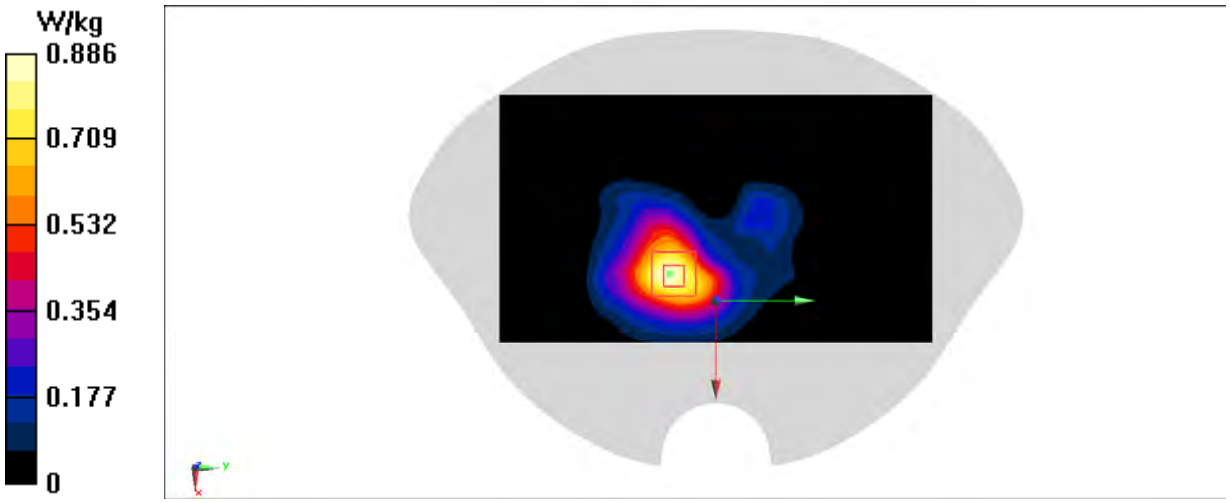


Fig A.9

LTE Band 66 Body 15mm

Date: 9/6/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 1770 MHz; σ = 1.395 S/m; εr = 41.01; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band66 (0) Frequency: 1770 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.54, 8.54, 8.54)

Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.08 W/kg

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

Reference Value = 15.02 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.733 W/kg; SAR(10 g) = 0.475 W/kg

Maximum value of SAR (measured) = 0.925 W/kg

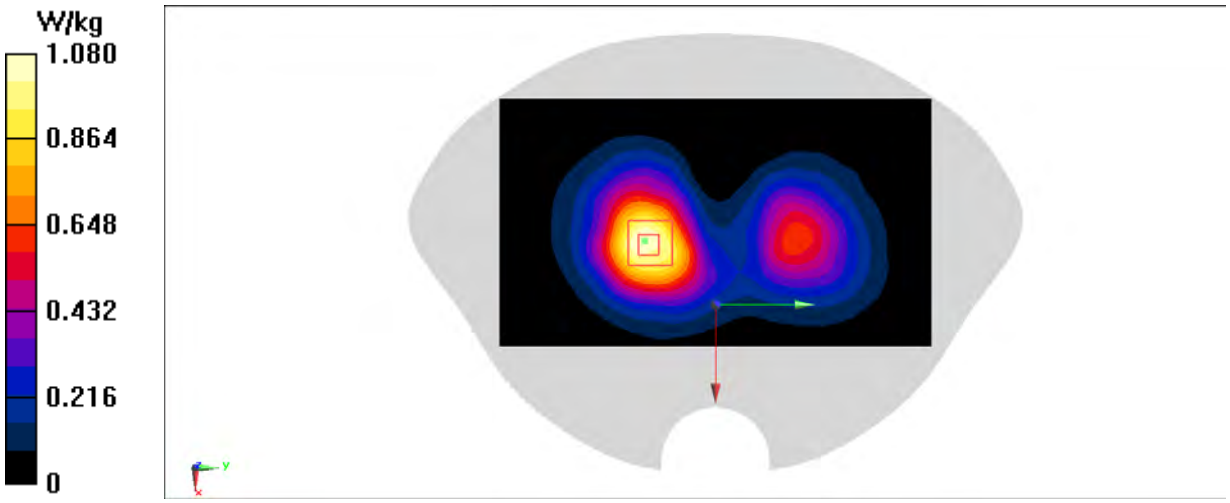


Fig A.10

LTE Band30 Body 15mm

Date: 9/11/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 2310 MHz; σ = 1.725 S/m; εr = 40.19; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: LTE Band30 (0) Frequency: 2310 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(7.95, 7.95, 7.95)

Area Scan (81x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.787 W/kg

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

Reference Value = 17.10 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.809 W/kg

SAR(1 g) = 0.533 W/kg; SAR(10 g) = 0.326 W/kg

Maximum value of SAR (measured) = 0.711 W/kg

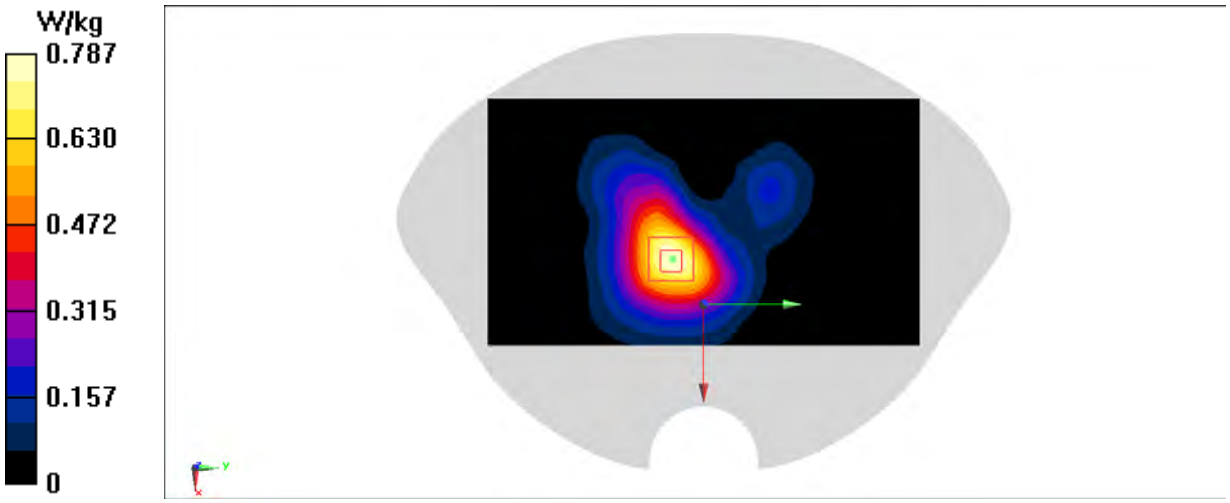


Fig A.11

WIFI 2.4G Body 15mm

Date: 9/12/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used (interpolated): f = 2437 MHz; σ = 1.837 S/m; εr = 39.95; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WIFI 2450 (0) Frequency: 2437 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7517 ConvF(7.75, 7.16, 7.37)

Area Scan (101x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.408 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.61 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.486 W/kg

SAR(1 g) = 0.267 W/kg; SAR(10 g) = 0.152 W/kg

Maximum value of SAR (measured) = 0.400 W/kg

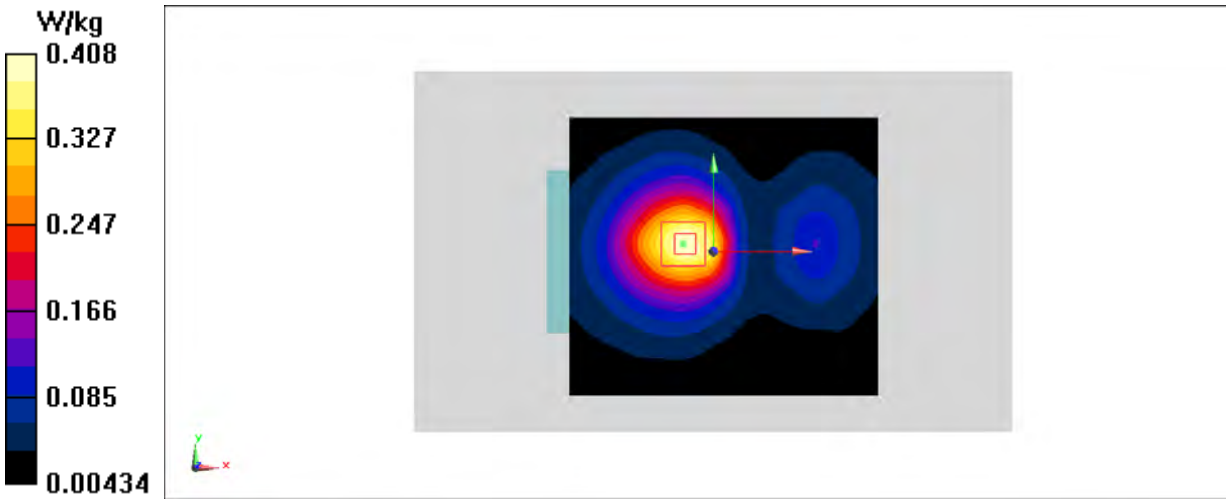


Fig A.12

WIFI 5G Body 10mm

Date: 9/18/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 5690 MHz; σ = 5.097 S/m; εr = 35.512; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WLAN 11a (0) Frequency: 5690 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7517 ConvF(5.16, 4.72, 4.83)

Area Scan (131x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.69 W/kg

/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 9.341 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 3.08 W/kg

SAR(1 g) = 0.778 W/kg; SAR(10 g) = 0.277 W/kg

Maximum value of SAR (measured) = 1.81 W/kg

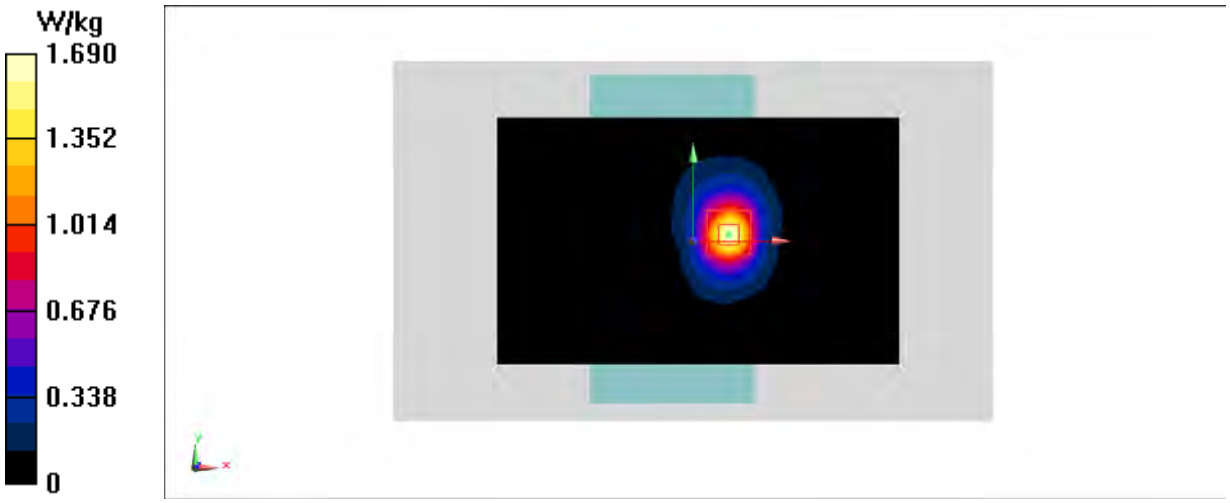


Fig A.13

WIFI 2.4G Body 0mm

Date: 9/12/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 2460 MHz; σ = 1.852 S/m; εr = 39.89; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WLan 2450 (0) Frequency: 2462 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7517 ConvF(7.75, 7.16, 7.37)

Area Scan (91x91x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.510 W/kg

Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.403 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.699 W/kg

SAR(1 g) = 0.306 W/kg; SAR(10 g) = 0.143 W/kg

Maximum value of SAR (measured) = 0.507 W/kg

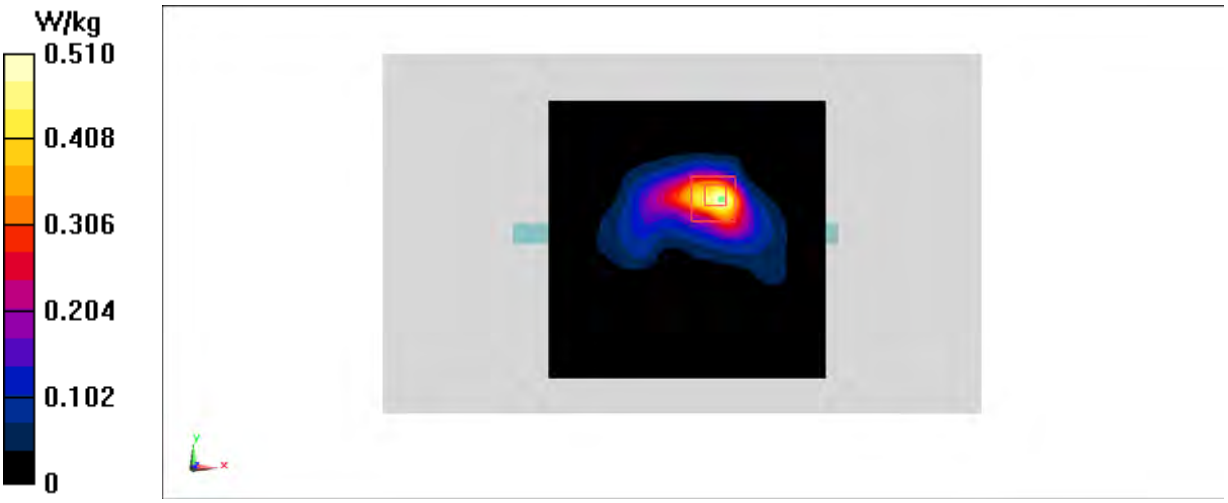


Fig A.14

WIFI 5G Body 0mm

Date: 9/18/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 5775 MHz; σ = 5.087 S/m; εr = 33.98; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: WIFI 5G (0) Frequency: 5775 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7517 ConvF(5.16, 4.72, 4.83)

Area Scan (81x141x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.87 W/kg

Zoom Scan (6x6x4)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 1.294 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 7.71 W/kg

SAR(1 g) = 0.575 W/kg; SAR(10 g) = 0.094 W/kg

Maximum value of SAR (measured) = 2.18 W/kg

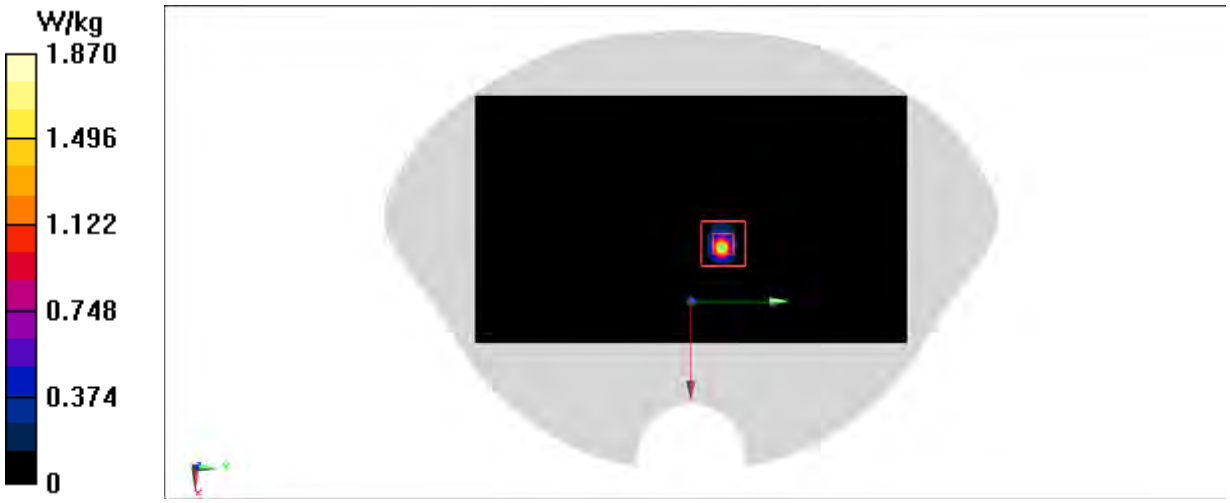
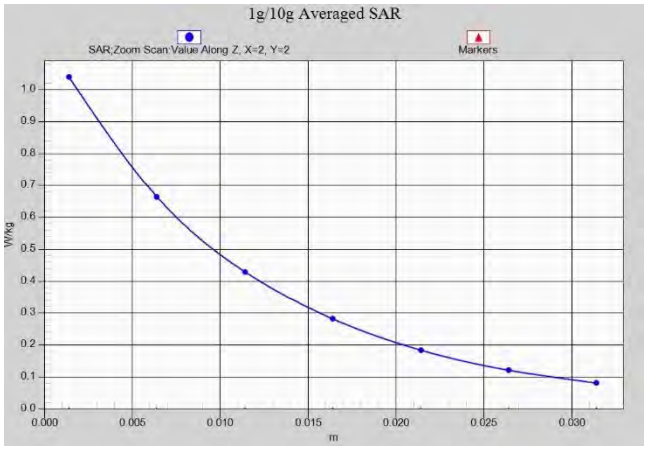
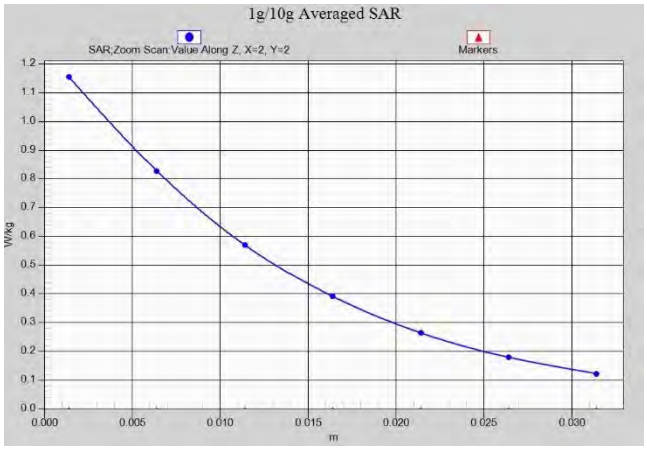


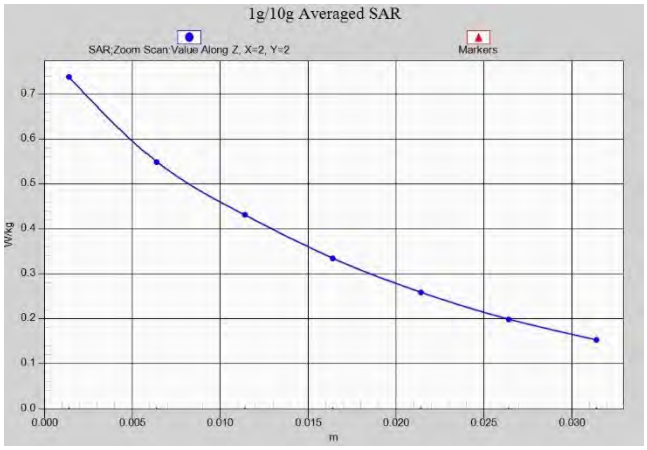
Fig A.15



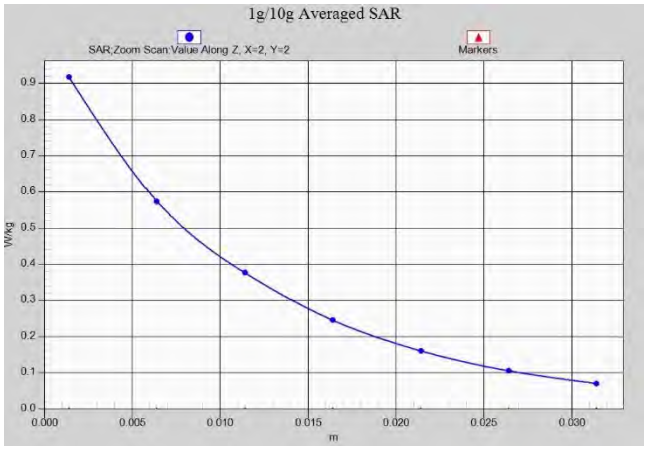
Z-Scan at power reference point (WCDMA1900 MHz Body)



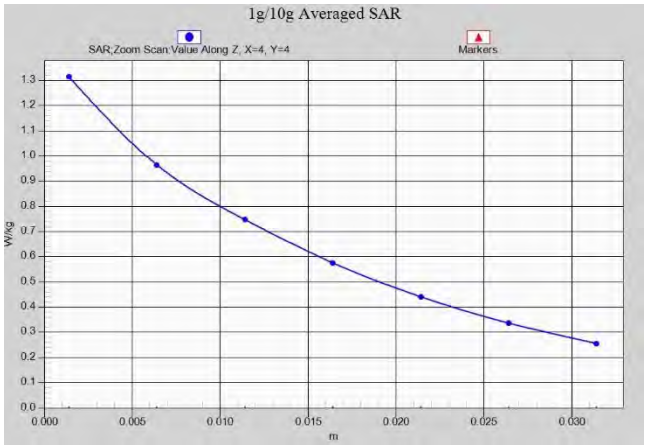
Z-Scan at power reference point (WCDMA1700 MHz Body)



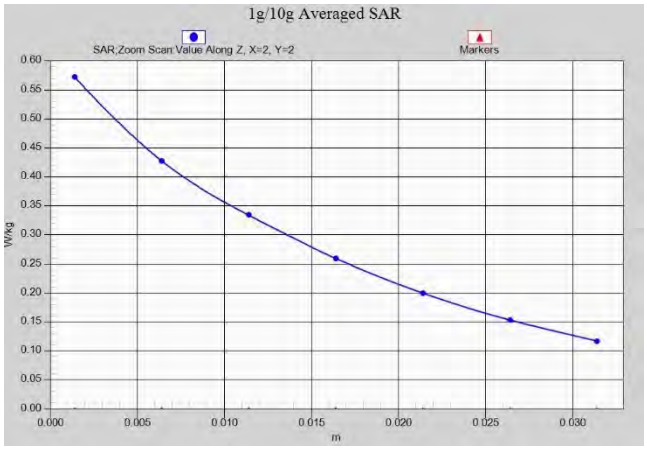
Z-Scan at power reference point (WCDMA850 MHz Body)



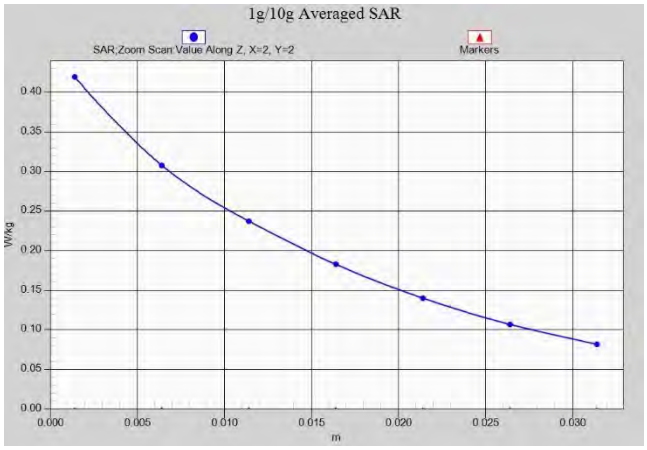
Z-Scan at power reference point (LTE B2 Body)



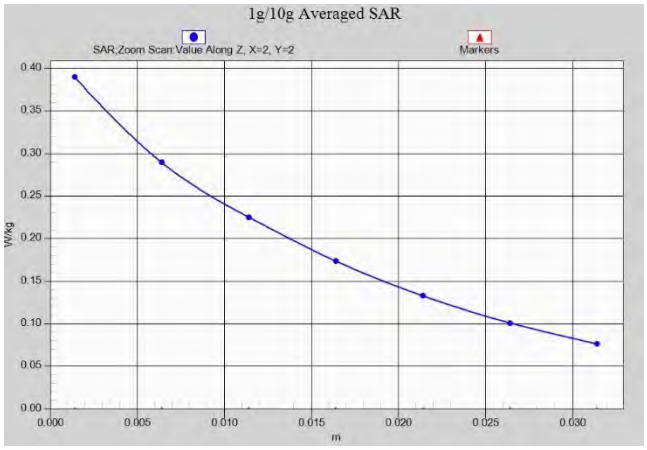
Z-Scan at power reference point (LTE B4 Body)



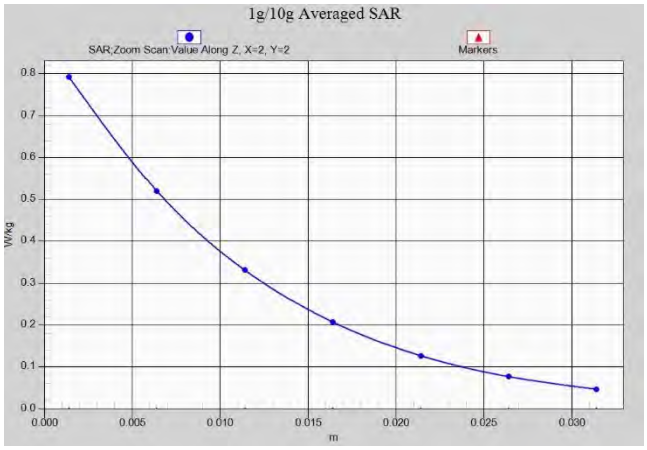
Z-Scan at power reference point (LTE B5 Body)



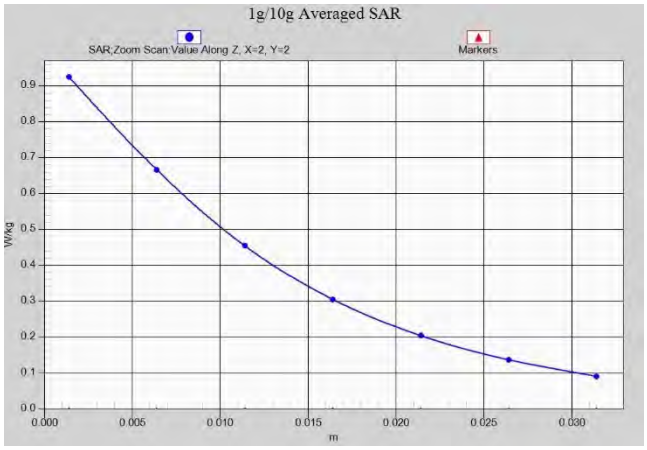
Z-Scan at power reference point (LTE B12 Body)



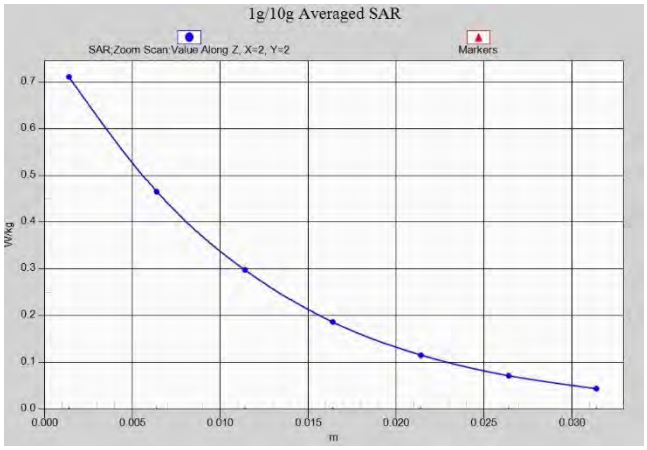
Z-Scan at power reference point (LTE B14 Body)



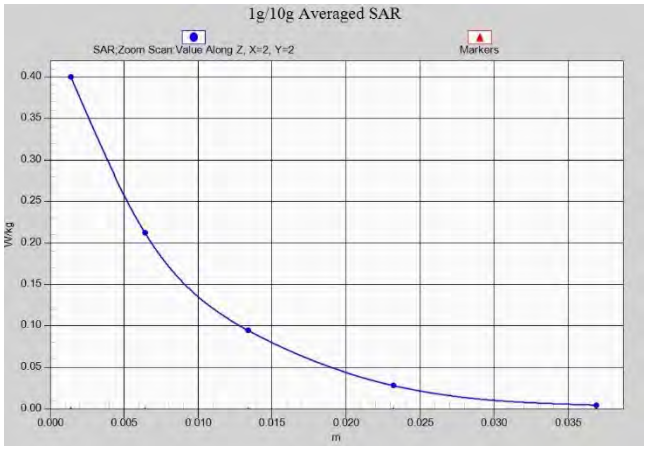
Z-Scan at power reference point (LTE B30 Body)



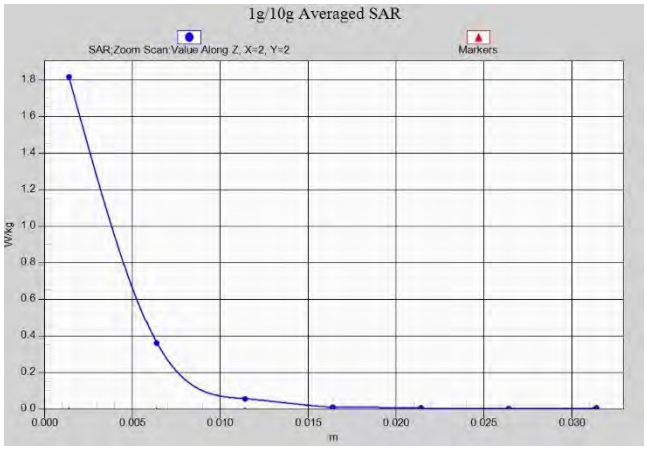
Z-Scan at power reference point (LTE B66 Body)



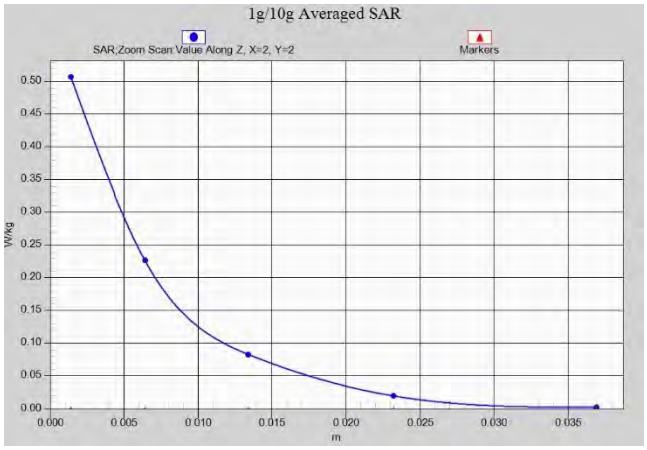
Z-Scan at power reference point (LTE B30 Body)



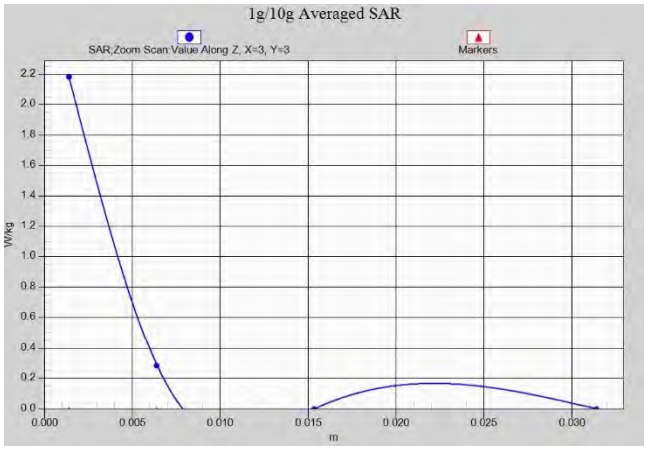
Z-Scan at power reference point (WLAN2.4G Body)



Z-Scan at power reference point (WLAN5G Body)



Z-Scan at power reference point (WLAN2.4G Body)



Z-Scan at power reference point (WLAN5G Body)

ANNEX B System Verification Results

750 MHz

Date: 9/10/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 750 MHz; σ = 0.901 S/m; εr = 43.37; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: CW (0) Frequency: 750 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(10.26, 10.26, 10.26)

Area Scan (131x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

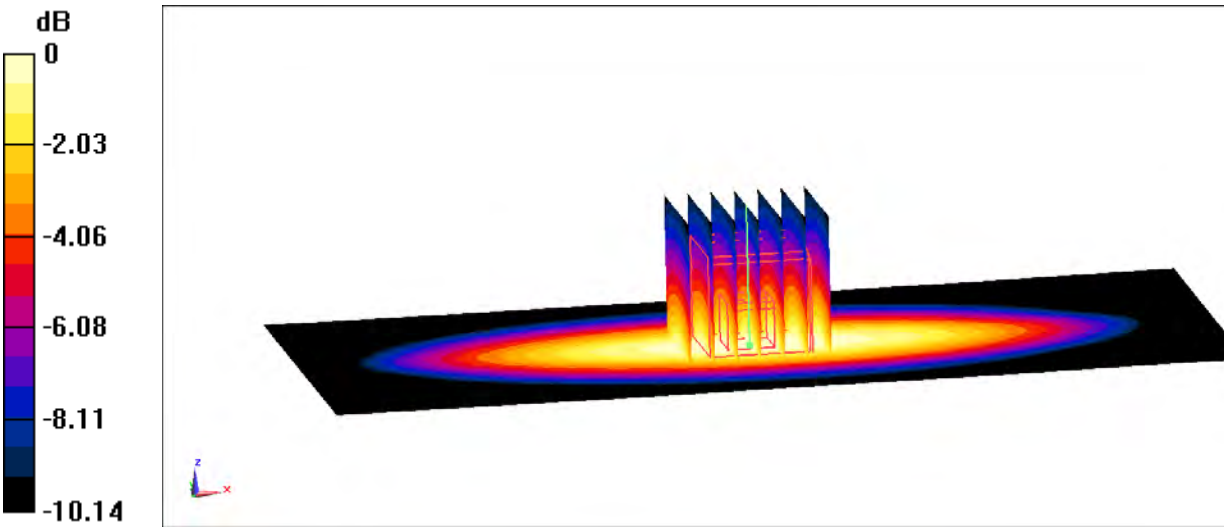
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.11 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 3.26 W/kg

SAR(1 g) = 2.14 W/kg; SAR(10 g) = 1.42 W/kg

Maximum value of SAR (measured) = 2.85 W/kg



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

Fig.B.1 validation 750 MHz 250mW

835 MHz

Date: 9/8/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 835 MHz; σ = 0.935 S/m; εr = 43.12; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: CW (0) Frequency: 835 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(10.26, 10.26, 10.26)

Area Scan (131x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

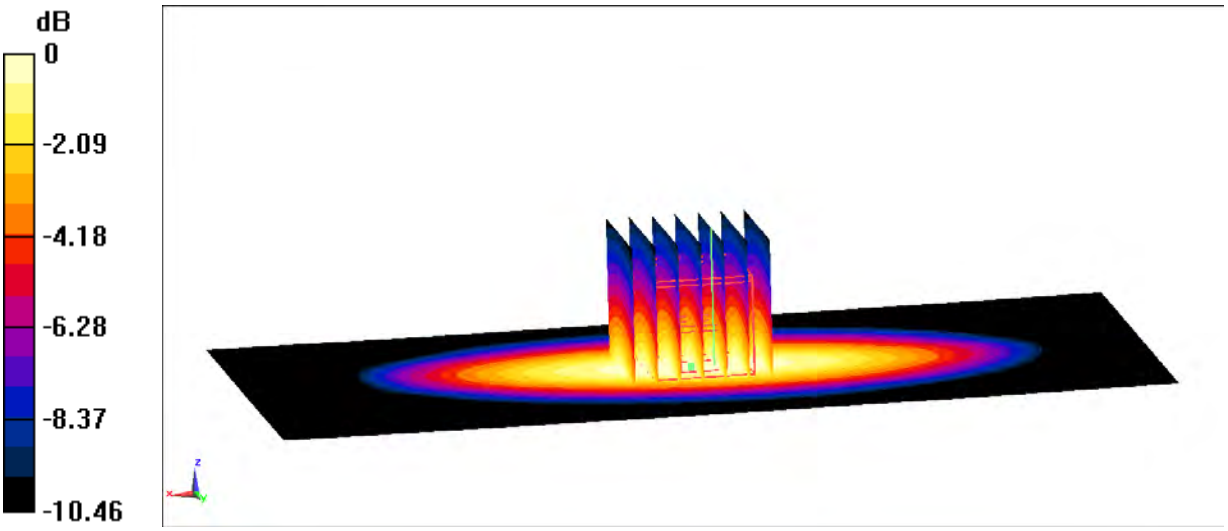
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.31 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 3.64 W/kg

SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.56 W/kg

Maximum value of SAR (measured) = 3.20 W/kg



0 dB = 3.20 W/kg = 5.05 dBW/kg

Fig.B.2 validation 835 MHz 250mW

1750 MHz

Date: 9/6/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 1750 MHz; σ = 1.384 S/m; εr = 41.05; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: CW (0) Frequency: 1750 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.54, 8.54, 8.54)

Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 14.2 W/kg

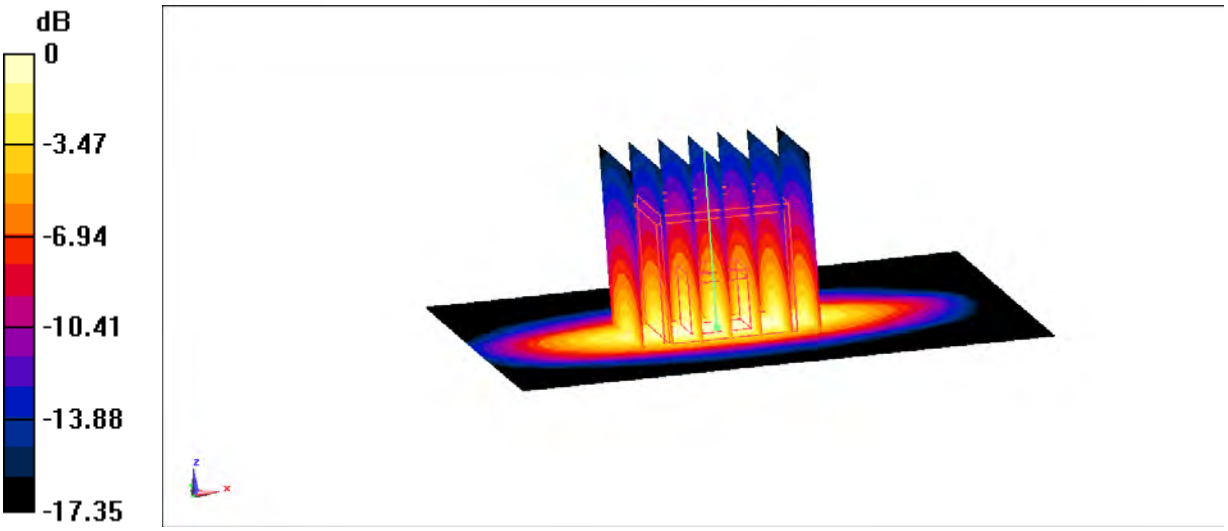
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 95.72 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 17.4 W/kg

SAR(1 g) = 9.17 W/kg; SAR(10 g) = 4.79 W/kg

Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

Fig.B.3 validation 1750 MHz 250mW

1900 MHz

Date: 9/5/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 1900 MHz; σ = 1.466 S/m; εr = 40.76; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: CW (0) Frequency: 1900 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(8.13, 8.13, 8.13)

Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 16.1 W/kg

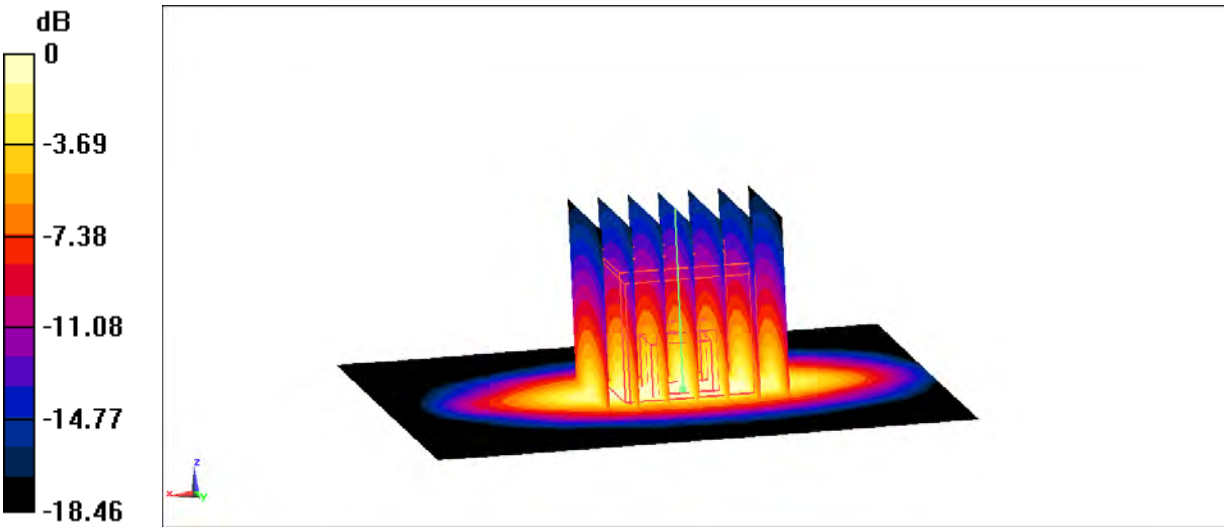
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.4 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 19.5 W/kg

SAR(1 g) = 9.86 W/kg; SAR(10 g) = 5.02 W/kg

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



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

Fig.B.4 validation 1900 MHz 250mW

2300 MHz

Date: 9/11/2023

Electronics: DAE4 Sn1588

Medium: H650-7000M

Medium parameters used: f = 2300 MHz; σ = 1.718 S/m; εr = 40.2; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

Communication System: CW (0) Frequency: 2300 MHz Duty Cycle: 1:1

Probe: EX3DV4 - SN7464 ConvF(7.95, 7.95, 7.95)

Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

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

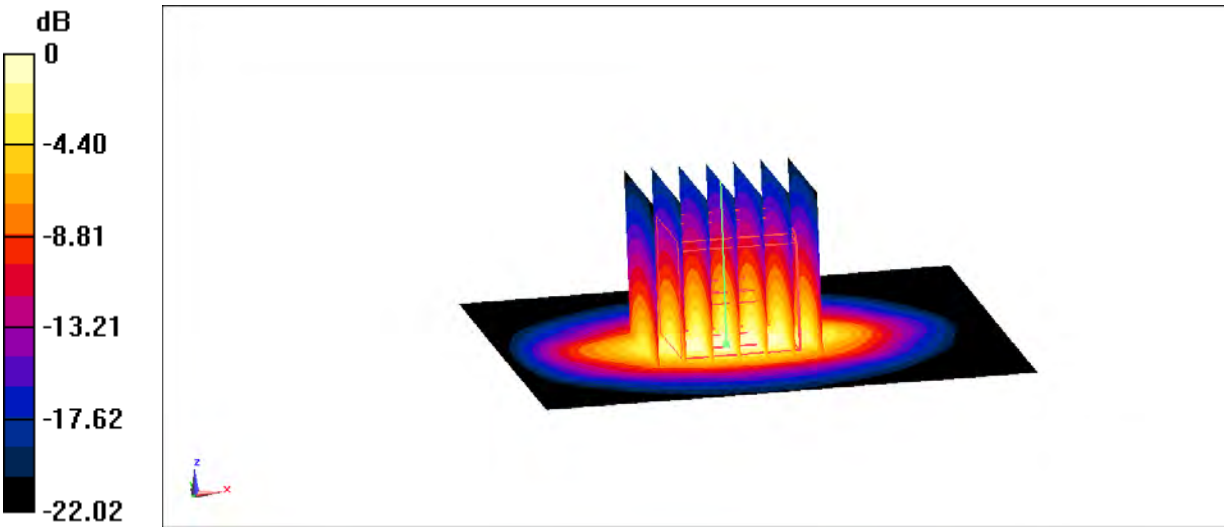
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.8 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 24.8 W/kg

SAR(1 g) = 11.9 W/kg; SAR(10 g) = 5.67 W/kg

Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

Fig.B.5 validation 2300 MHz 250mW

2450 MHz

Date: 9/12/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 2450 MHz; σ = 1.845 S/m; εr = 39.92; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

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

Probe: EX3DV4 - SN7517 ConvF(7.75, 7.16, 7.37)

Area Scan (61x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

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

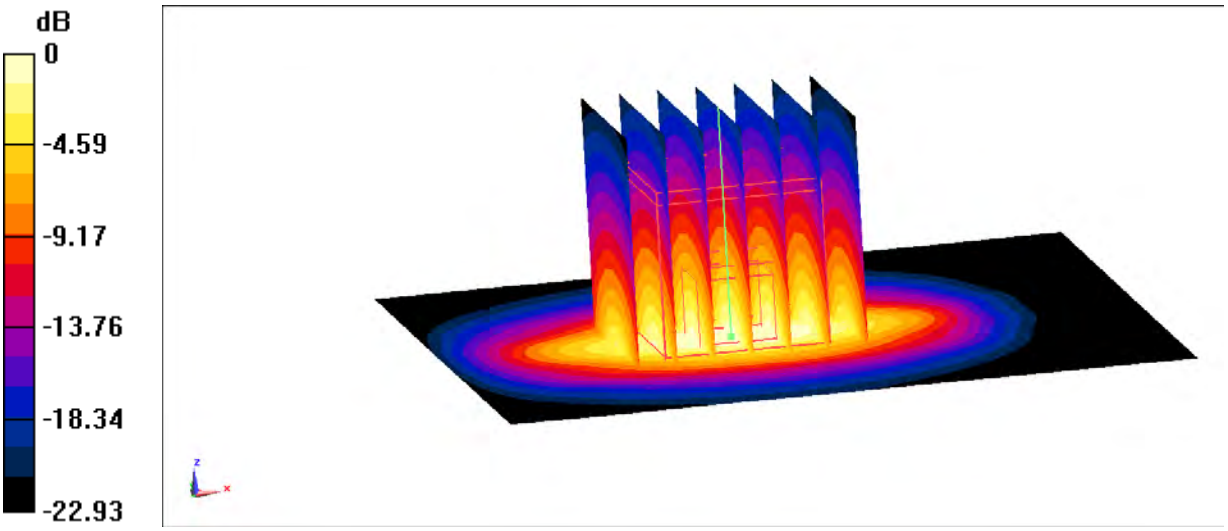
Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 106.3 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 27.5 W/kg

SAR(1 g) = 12.9 W/kg; SAR(10 g) = 5.94 W/kg

Maximum value of SAR (measured) = 22.1 W/kg



0 dB = 22.1 W/kg = 13.44 dBW/kg

Fig.B.6 validation 2450 MHz 250mW

5250 MHz

Date: 9/18/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 5250 MHz; σ = 4.521 S/m; εr = 34.99; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

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

Probe: EX3DV4 - SN7517 ConvF(5.83, 5.28, 5.47)

Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 18.5 W/kg

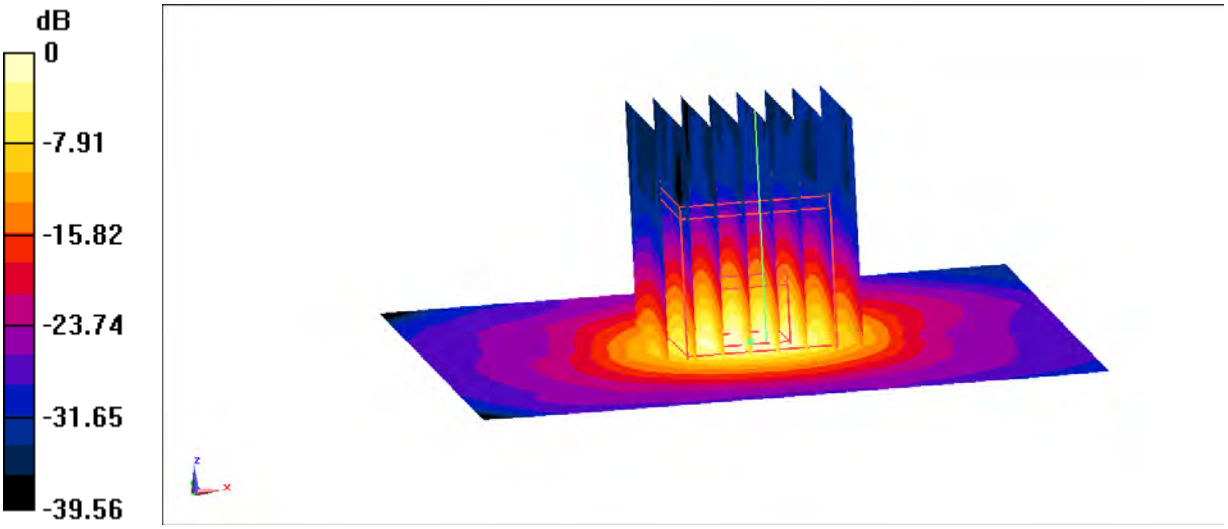
Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 70.12 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 31.9 W/kg

SAR(1 g) = 7.69 W/kg; SAR(10 g) = 2.23 W/kg

Maximum value of SAR (measured) = 17.8 W/kg



0 dB = 17.8 W/kg = 12.50 dBW/kg

Fig.B.7 validation 5250 MHz 100mW

5600 MHz

Date: 9/18/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 5600 MHz; σ = 4.867 S/m; εr = 34.4; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

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

Probe: EX3DV4 - SN7517 ConvF(4.91, 4.55, 4.63)

Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.1 W/kg

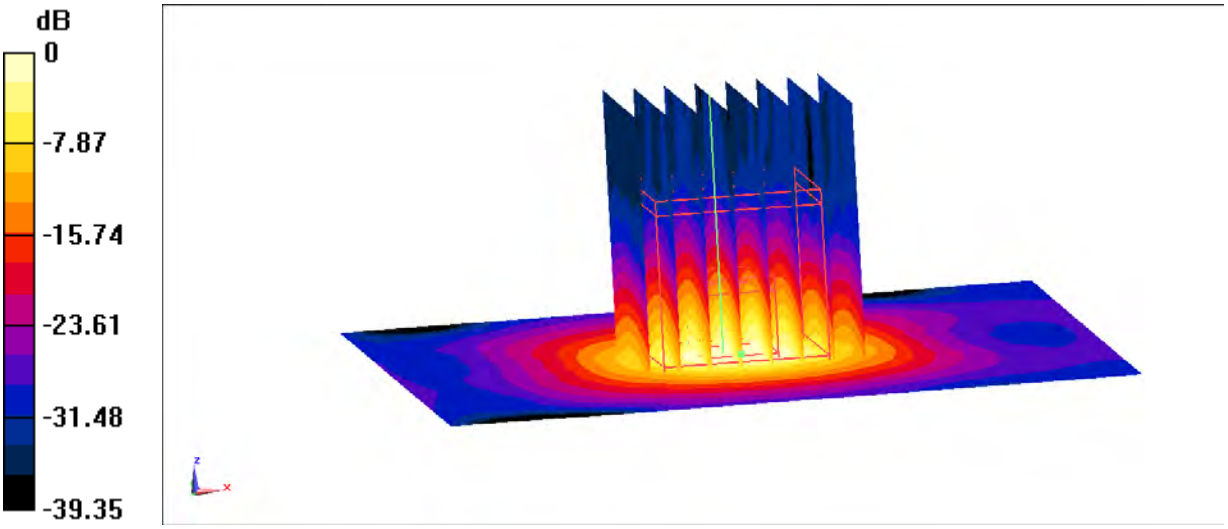
Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 72.22 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 35.3 W/kg

SAR(1 g) = 8.21 W/kg; SAR(10 g) = 2.38 W/kg

Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg = 13.01 dBW/kg

Fig.B.8 validation 5600 MHz 100mW

5750 MHz

Date: 9/18/2023

Electronics: DAE4 Sn777

Medium: H700-6000M

Medium parameters used: f = 5750 MHz; σ = 5.04 S/m; εr = 34.06; ρ = 1000 kg/m3

Ambient Temperature:23.3℃ Liquid Temperature: 22.5℃

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

Probe: EX3DV4 - SN7517 ConvF(5.16, 4.72, 4.83)

Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

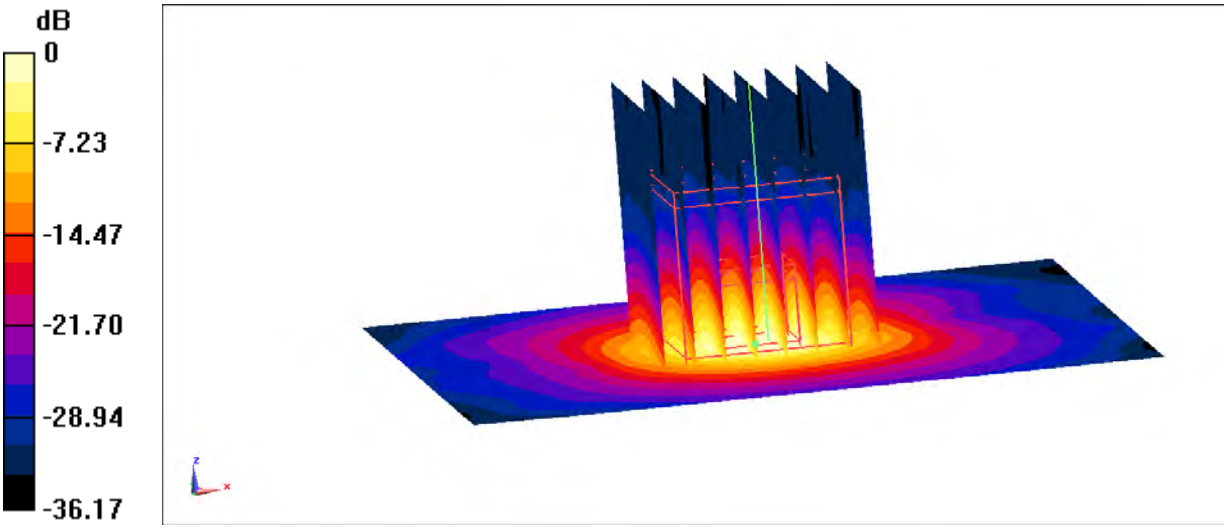
Zoom Scan (4x4x1.4mm, graded), dist=1.4mm (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 70.14 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 34.3 W/kg

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

Maximum value of SAR (measured) = 19.2 W/kg



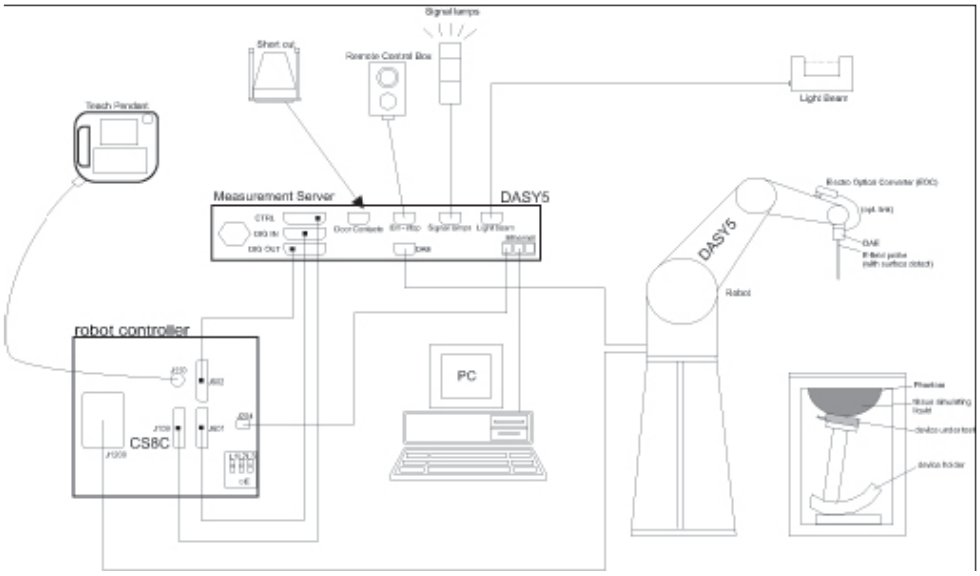
0 dB = 19.2 W/kg = 12.83 dBW/kg

Fig.B.9 validation 5750 MHz 100mW

ANNEX C SAR Measurement Setup

C.1 Measurement Set-up

The Dasy5 or DASY6 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 E℃.
- The Electro-optical converter (E℃) 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 E℃ is required. The E℃ signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 or DASY6 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

C.2 Dasy5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the E℃ box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY5 or DASY6 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 pr℃edure 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 cl℃k.

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

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

PictureC.4: DAE

C.4.2 Robot

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

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

Picture C.5 DASY 5

C.4.3 Measurement Server

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

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

Picture C.6 Server for DASY 5

C.4.4 Device Holder for Phantom

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

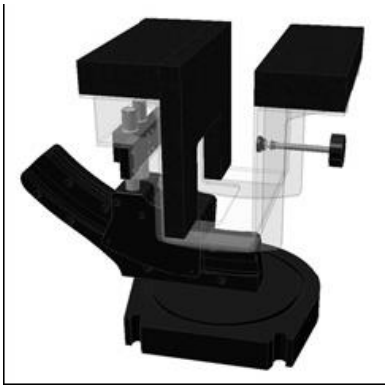
The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales are the ear reference 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 C7-1: Device Holder



Picture C.7-2: Laptop Extension Kit

C.4.5 Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to

Represent the 90th percentile of the population. The phantom enables the dissymmetric evaluation of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

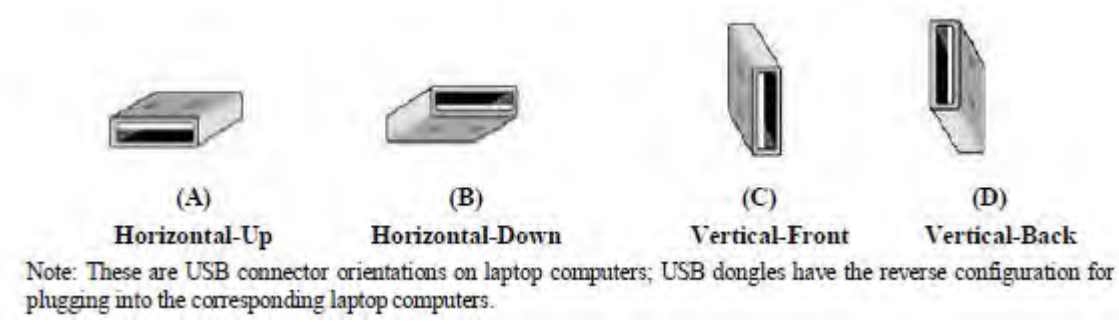
Shell Thickness: 2±0. 2 mm
Filling Volume: Approx. 25 liters
Dimensions: 810 x l000 x 500 mm (H x L x W)
Available: Special

Picture C.8: SAM Twin Phantom

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

D.1 USB Dongle device

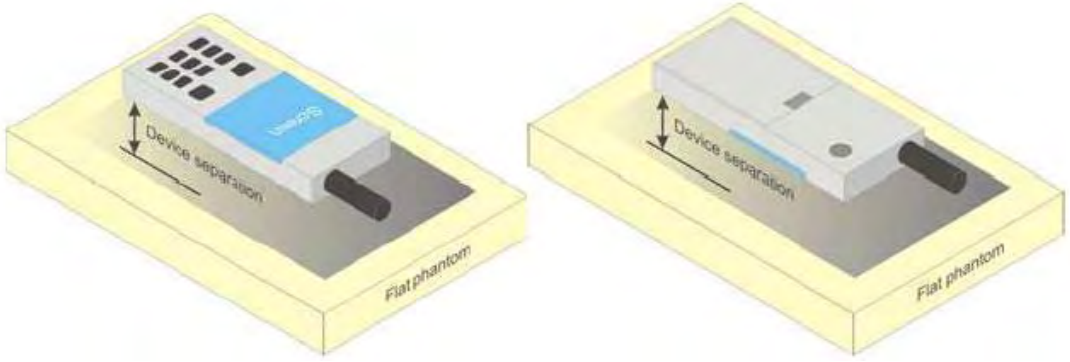
Test all USB orientations [see figure below: (A) Horizontal-Up, (B) Horizontal-Down, (C) Vertical-Front, and (D) Vertical-Back] with a device-to-phantom separation distance of 5 mm or less. These test orientations are intended for the exposure conditions found in typical laptop/notebook/netbook or tablet computers with either horizontal or vertical USB connector configurations at various locations in the keyboard section of the computer. Current generation portable host computers should be used to establish the required SAR measurement separation distance.The same test separation distance must be used to test all frequency bands and modes in each USB orientation. The typical Horizontal-Up USB connection (A), found in the majority of host computers, must be tested using an appropriate host computer. A host computer with either Vertical-Front (C) or VerticalBack (D) USB connection should be used to test one of the vertical USB orientations.



Picture D.1 Test positions for desktop devices

D.2 Body-worn device

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

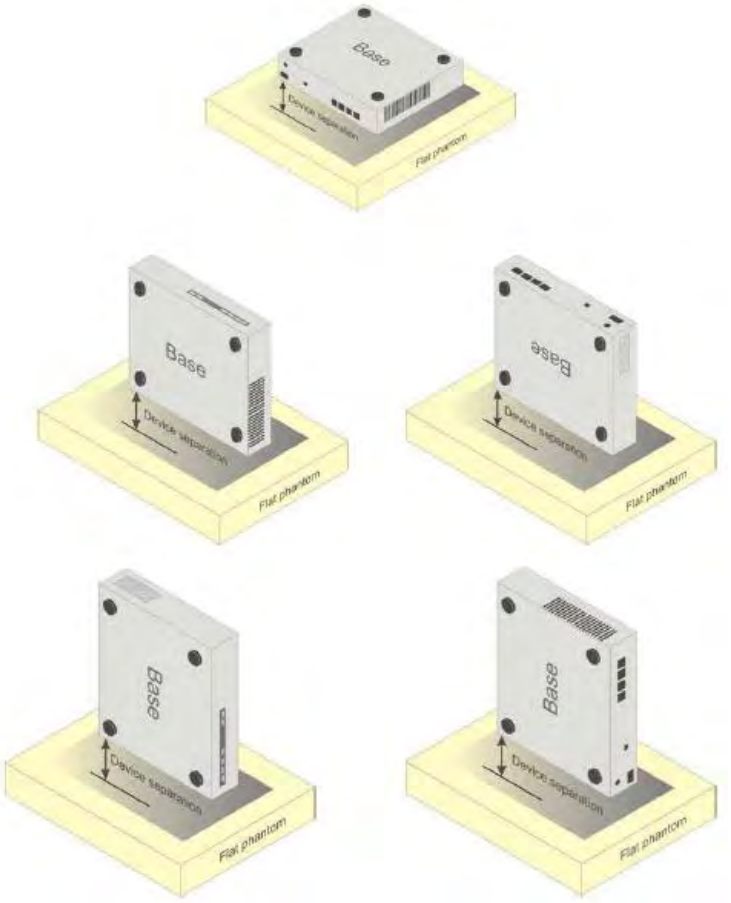


Picture D.4Test positions for body-worn devices

D.3 Desktop device

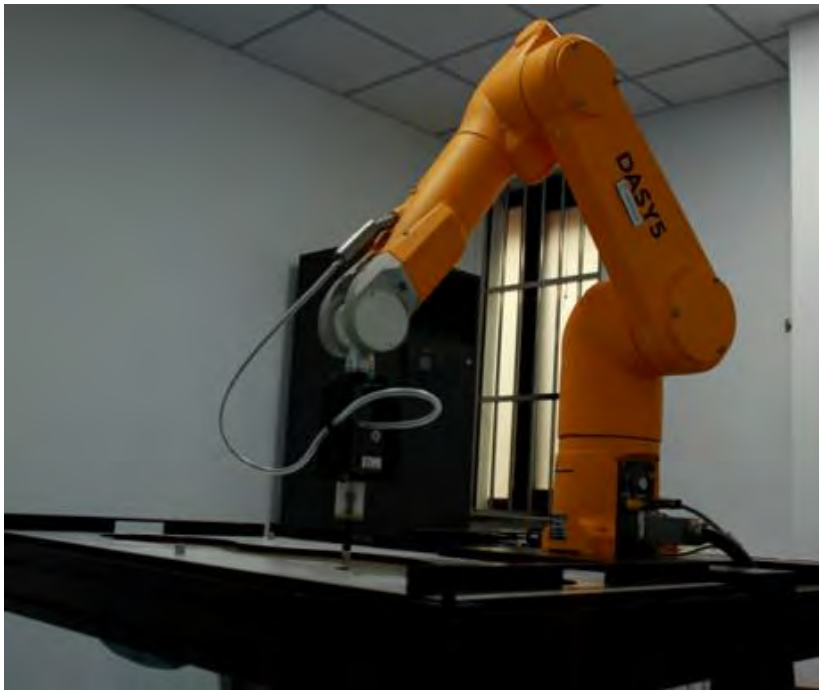
A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture8.5 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture D.5 Test positions for desktop devices

D.2 DUT Setup Photos



Picture D.3

ANNEX E Equivalent Media Recipes

The liquid used for the frequency range of 800-3000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table E.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

TableE.1: Composition of the Tissue Equivalent Matter

Frequency (MHz)	835Head	835Body	1900 Head	1900 Body	2450 Head	2450 Body	5800 Head	5800 Body
Ingredients (% by weight)								
Water	41.45	52.5	55.242	69.91	58.79	72.60	65.53	65.53
Sugar	56.0	45.0	\	\	\	\	\	\
Salt	1.45	1.4	0.306	0.13	0.06	0.18	\	\
Preventol	0.1	0.1	\	\	\	\	\	\
Cellulose	1.0	1.0	\	\	\	\	\	\
Glycol Monobutyl	\	\	44.452	29.96	41.15	27.22	\	\
Diethylenglycol monohexylether	\	\	\	\	\	\	17.24	17.24
Triton X-100	\	\	\	\	\	\	17.24	17.24
Dielectric Parameters Target Value	ε=41.5 σ=0.90	ε=55.2 σ=0.97	ε=40.0 σ=1.40	ε=53.3 σ=1.52	ε=39.2 σ=1.80	ε=52.7 σ=1.95	ε=35.3 σ=5.27	ε=48.2 σ=6.00

Note: There are a little adjustment respectively for 750, 1750, 2600, 5200, 5300 and 5600 based on the recipe of closest frequency in table E.1.

ANNEX F System Validation

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

Table F.3: System Validation for 7517

Probe SN.	Liquid name	Validation date	Frequency point	Status (OK or Not)
7517	Head 13MHz	February 24,2023	13MHz	OK
7517	Head 64MHz	February 24,2023	64MHz	OK
7517	Head 150MHz	February 24,2023	150MHz	OK
7517	Head 300MHz	February 24,2023	300MHz	OK
7517	Head 450MHz	February 24,2023	450MHz	OK
7517	Head 750MHz	February 24,2023	750MHz	OK
7517	Head 835MHz	February 24,2023	835MHz	OK
7517	Head 900MHz	February 24,2023	900MHz	OK
7517	Head 1450MHz	February 24,2023	1450MHz	OK
7517	Head 1750MHz	February 25,2023	1750MHz	OK
7517	Head 1810MHz	February 25,2023	1810MHz	OK
7517	Head 1900MHz	February 25,2023	1900MHz	OK
7517	Head 2000MHz	February 25,2023	2000MHz	OK
7517	Head 2100MHz	February 25,2023	2100MHz	OK
7517	Head 2300MHz	February 25,2023	2300MHz	OK
7517	Head 2450MHz	February 25,2023	2450MHz	OK
7517	Head 2600MHz	February 25,2023	2600MHz	OK
7517	Head 3300MHz	February 26,2023	3300MHz	OK
7517	Head 3500MHz	February 26,2023	3500MHz	OK
7517	Head 3700MHz	February 26,2023	3700MHz	OK
7517	Head 3900MHz	February 26,2023	3900MHz	OK
7517	Head 4100MHz	February 26,2023	4100MHz	OK
7517	Head 4200MHz	February 26,2023	4200MHz	OK
7517	Head 4400MHz	February 26,2023	4400MHz	OK
7517	Head 4600MHz	February 26,2023	4600MHz	OK
7517	Head 4800MHz	February 26,2023	4800MHz	OK
7517	Head 4950MHz	February 26,2023	4950MHz	OK
7517	Head 5200MHz	February 27,2023	5200MHz	OK
7517	Head 5250MHz	February 27,2023	5250MHz	OK
7517	Head 5300MHz	February 27,2023	5300MHz	OK
7517	Head 5500MHz	February 27,2023	5500MHz	OK
7517	Head 5600MHz	February 27,2023	5600MHz	OK
7517	Head 5750MHz	February 27,2023	5750MHz	OK
7517	Head 5800MHz	February 27,2023	5800MHz	OK
7517	Head 6500MHz	February 27,2023	6500MHz	OK
7517	Head 7000MHz	February 27,2023	7000MHz	OK

Table F.1: System Validation for 7464

Probe SN.	Liquid name	Validation date	Frequency point	Status (OK or Not)
7464	Head 750MHz	February.20,2023	750 MHz	OK
7464	Head 900MHz	February.20,2023	900 MHz	OK
7464	Head 1450MHz	February.20,2023	1450 MHz	OK
7464	Head 1750MHz	February.20,2023	1750 MHz	OK
7464	Head 1900MHz	February.20,2023	1900 MHz	OK
7464	Head 2100MHz	February.20,2023	2100 MHz	OK
7464	Head 2300MHz	February.21,2023	2300 MHz	OK
7464	Head 2450MHz	February.21,2023	2450 MHz	OK
7464	Head 2600MHz	February.21,2023	2600 MHz	OK
7464	Head 3300MHz	February.21,2023	3300 MHz	OK
7464	Head 3500MHz	February.21,2023	3500 MHz	OK
7464	Head 3700MHz	February.21,2023	3700 MHz	OK
7464	Head 3900MHz	February.21,2023	3900 MHz	OK
7464	Head 4100MHz	February.22,2023	4100 MHz	OK
7464	Head 4200MHz	February.22,2023	4200 MHz	OK
7464	Head 4400MHz	February.22,2023	4400 MHz	OK
7464	Head 4600MHz	February.22,2023	4600 MHz	OK
7464	Head 4800MHz	February.22,2023	4800 MHz	OK
7464	Head 4950MHz	February.22,2023	4950 MHz	OK
7464	Head 5250MHz	February.23,2023	5250 MHz	OK
7464	Head 5600MHz	February.23,2023	5600 MHz	OK
7464	Head 5750MHz	February.23,2023	5750 MHz	OK

ANNEX G Probe Calibration Certificate

Probe 7464 Calibration Certificate

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CALIBRATION
CNAS L0570

Client CTTL Certificate No: Z22-60565

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN : 7464
Calibration Procedure(s)	FF-Z11-004-02 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	January 19, 2023

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	14-Jun-22(CTTL, No.J22X04181)	Jun-23
Power sensor NRP-Z91	101547	14-Jun-22(CTTL, No.J22X04181)	Jun-23
Power sensor NRP-Z91	101548	14-Jun-22(CTTL, No.J22X04181)	Jun-23
Reference 10dBAttenuator	18N50W-10dB	20-Jan-21(CTTL, No.J21X00486)	Jan-23
Reference 20dBAttenuator	18N50W-20dB	20-Jan-21(CTTL, No.J21X00485)	Jan-23
Reference Probe EX3DV4	SN 3846	20-May-22(SPEAG, No.EX3-3846_May22)	May-23
DAE4	SN 771	20-Jan-22(SPEAG, No.DAE4-771_Jan22)	Jan-23
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGenerator MG3700A	6201052605	14-Jun-22(CTTL, No.J22X04182)	Jun-23
Network Analyzer E5071C	MY46110673	10-Jan-23(CTTL, No.J23X00104)	Jan-24

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

Issued: January 31, 2023

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

Certificate No: Z22-60565 Page 1 of 9

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Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013

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

c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7464

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)²)[A]	0.47	0.45	0.46	±10.0%
DCP(mV)[B]	100.0	100.1	99.0	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	165.7	±2.3%
		Y	0.0	0.0	1.0		156.7	
		Z	0.0	0.0	1.0		161.4	

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

[A] The uncertainties of Norm X, Y, Z do not affect the E²-field uncertainty inside TSL (see Page 5).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7464

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (k=2)
750	41.9	0.89	10.26	10.26	10.26	0.10	1.56	±12.7%
900	41.5	0.97	9.85	9.85	9.85	0.15	1.23	±12.7%
1450	40.5	1.20	8.88	8.88	8.88	0.14	1.11	±12.7%
1750	40.1	1.37	8.54	8.54	8.54	0.19	1.13	±12.7%
1900	40.0	1.40	8.13	8.13	8.13	0.19	1.16	±12.7%
2100	39.8	1.49	8.30	8.30	8.30	0.20	1.15	±12.7%
2300	39.5	1.67	7.95	7.95	7.95	0.42	0.76	±12.7%
2450	39.2	1.80	7.67	7.67	7.67	0.44	0.74	±12.7%
2600	39.0	1.96	7.50	7.50	7.50	0.48	0.71	±12.7%
3300	38.2	2.71	7.20	7.20	7.20	0.30	1.05	±13.9%
3500	37.9	2.91	7.06	7.06	7.06	0.30	1.15	±13.9%
3700	37.7	3.12	6.90	6.90	6.90	0.31	1.09	±13.9%
3900	37.5	3.32	6.77	6.77	6.77	0.30	1.45	±13.9%
4100	37.2	3.53	6.72	6.72	6.72	0.30	1.40	±13.9%
4200	37.1	3.63	6.62	6.62	6.62	0.30	1.45	±13.9%
4400	36.9	3.84	6.53	6.53	6.53	0.30	1.50	±13.9%
4600	36.7	4.04	6.42	6.42	6.42	0.40	1.30	±13.9%
4800	36.4	4.25	6.32	6.32	6.32	0.40	1.35	±13.9%
4950	36.3	4.40	6.06	6.06	6.06	0.40	1.35	±13.9%
5250	35.9	4.71	5.42	5.42	5.42	0.45	1.35	±13.9%
5600	35.5	5.07	4.85	4.85	4.85	0.45	1.40	±13.9%
5750	35.4	5.22	4.92	4.92	4.92	0.45	1.40	±13.9%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequency up to 6 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

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

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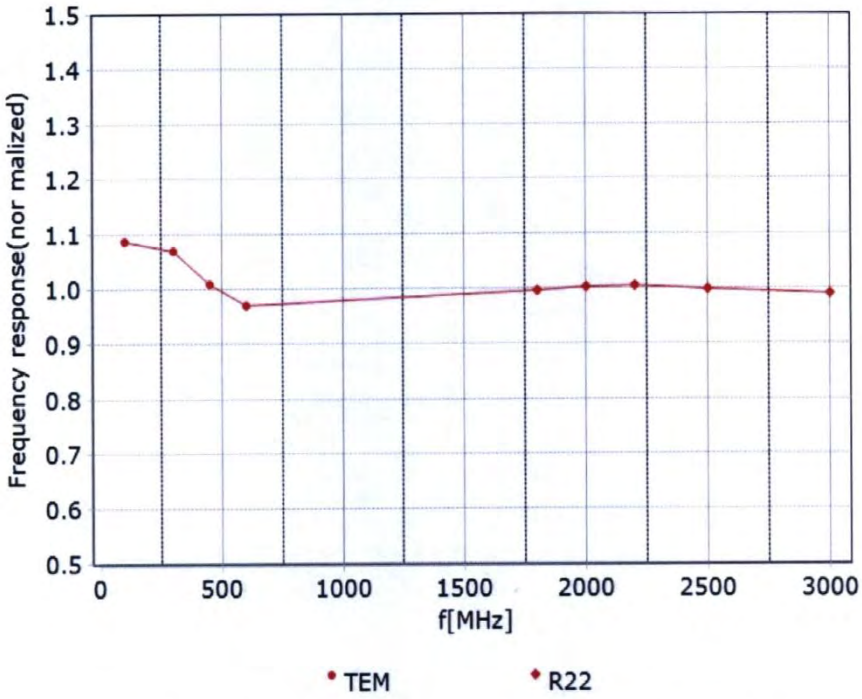
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)

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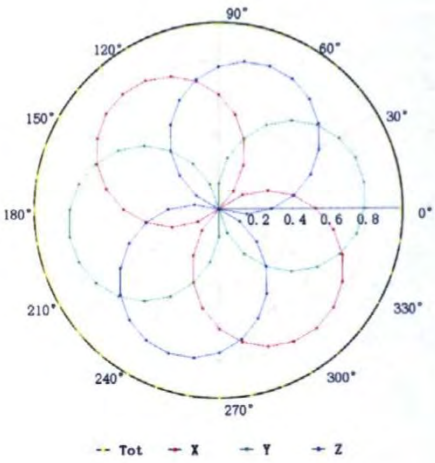
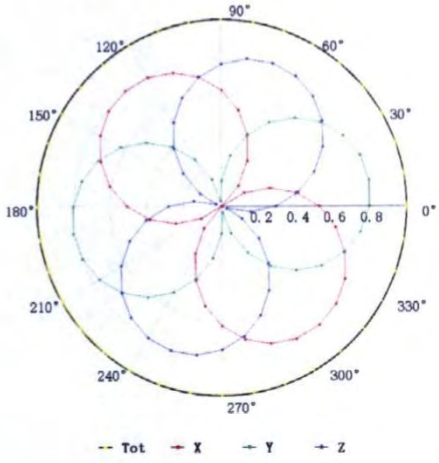
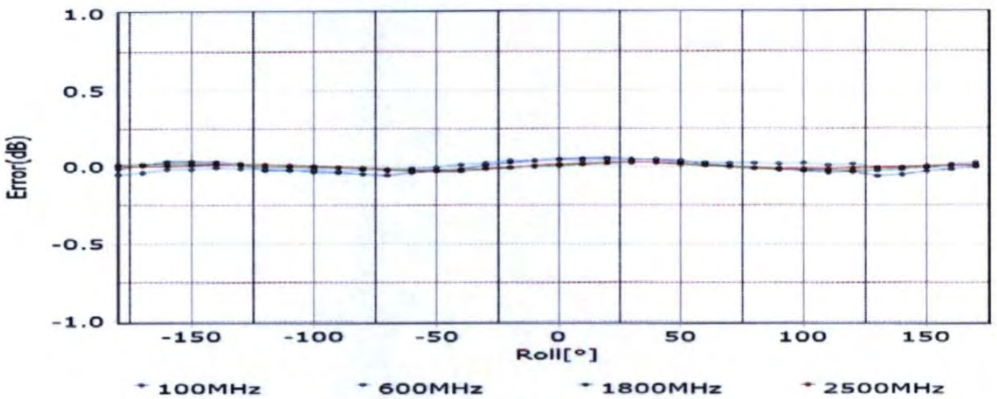
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)

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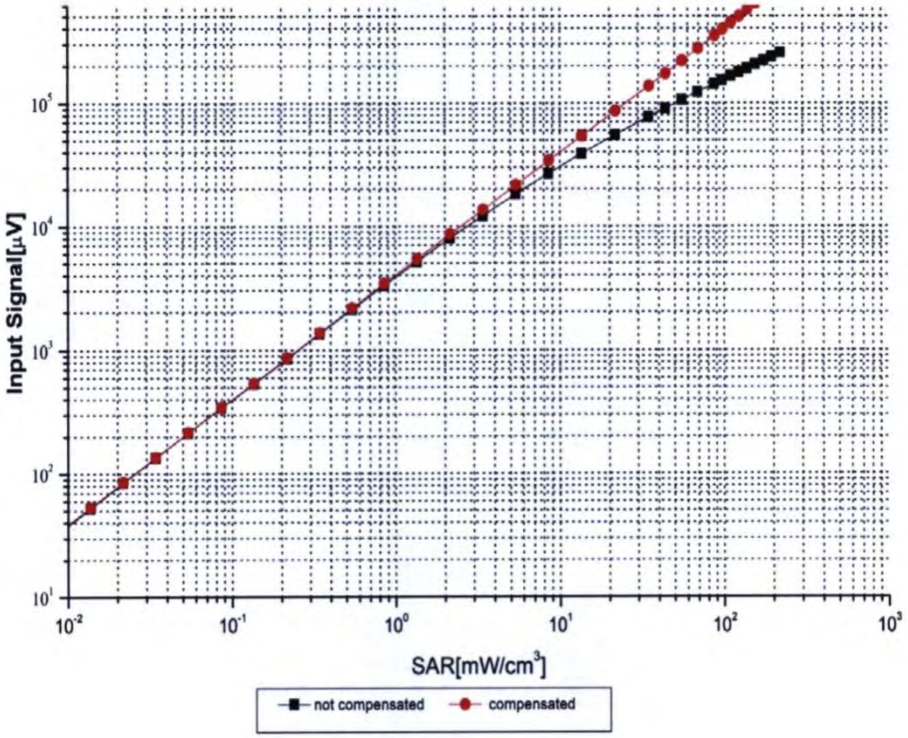
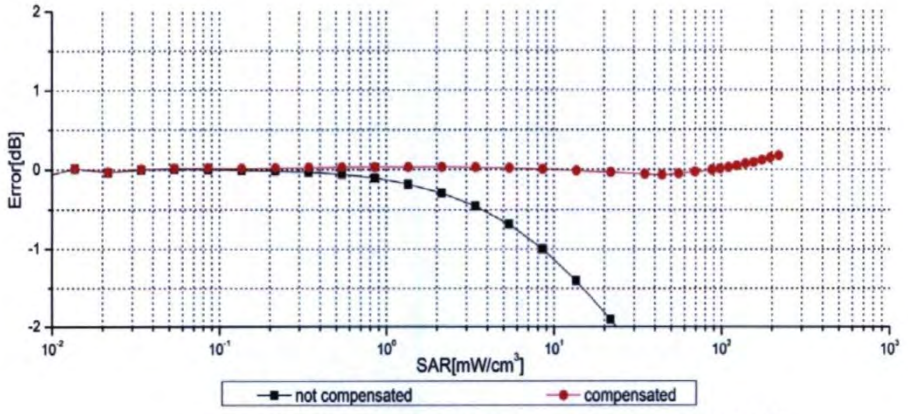
Dynamic Range f(SAR$_{head}$)
(TEM cell, f = 900 MHz)





Uncertainty of Linearity Assessment: ±0.9% (*k*=2)

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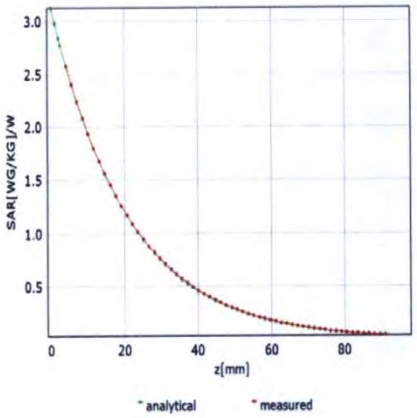
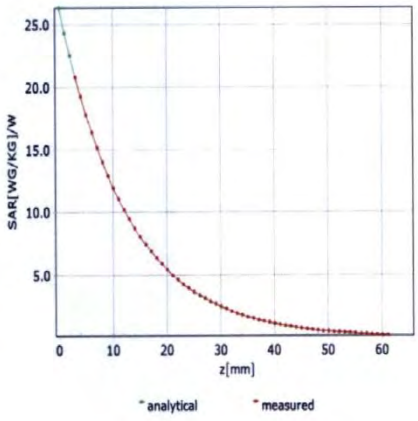
Conversion Factor Assessment

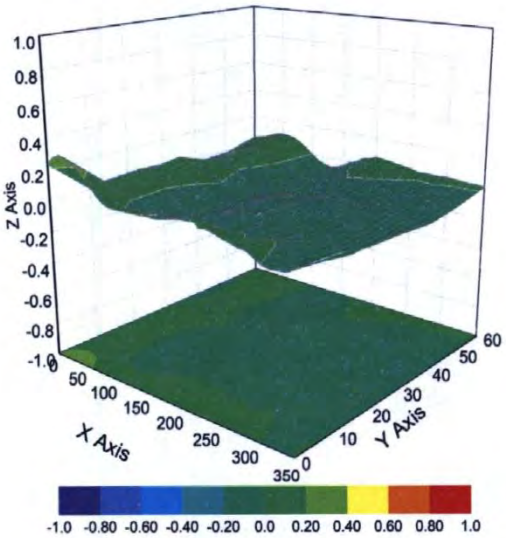
f=750 MHz,WGLS R9(H_convF)



f=1750 MHz,WGLS R22(H_convF)



Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (*k*=2)

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7464

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	31.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

Probe 7517 Calibration Certificate

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

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

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

Accreditation No.: SCS 0108

Client	CTTL (Auden)	Certificate No	EX-7517_Jan23

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7517
Calibration procedure(s)	QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8 Calibration procedure for dosimetric E-field probes
Calibration date	January 27, 2023

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-22 (No. 217-03525/03524)	Apr-23
Power sensor NRP-Z91	SN: 103244	04-Apr-22 (No. 217-03524)	Apr-23
OCP DAK-3.5 (weighted)	SN: 1249	20-Oct-22 (OCP-DAK3.5-1249_Oct22)	Oct-23
OCP DAK-12	SN: 1016	20-Oct-22 (OCP-DAK12-1016_Oct22)	Oct-23
Reference 20 dB Attenuator	SN: CC2552 (20x)	04-Apr-22 (No. 217-03527)	Apr-23
DAE4	SN: 660	10-Oct-22 (No. DAE4-660_Oct22)	Oct-23
Reference Probe ES3DV2	SN: 3013	06-Jan-23 (No. ES3-3013_Jan23)	Jan-24

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-22)	In house check: Jun-24
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-22)	In house check: Jun-24
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by	Jeton Kastrati	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	

Issued: February 03, 2023

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

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

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Accreditation No.: SCS 0108

Glossary

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

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \le 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \le 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ±50 MHz to ±100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Parameters of Probe: EX3DV4 - SN:7517

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc ($k = 2$)
Norm ($\mu V/(V/m)^2$) [A]	0.48	0.51	0.54	±10.1%
DCP (mV) [B]	96.0	95.0	97.0	±4.7%

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B $dB\sqrt{\mu V}$	C	D dB	VR mV	Max dev.	Max Unc[E] $k = 2$
0	CW	X	0.00	0.00	1.00	0.00	114.5	±2.4%	±4.7%
		Y	0.00	0.00	1.00		120.2		
		Z	0.00	0.00	1.00		143.2		
10352	Pulse Waveform (200Hz, 10%)	X	5.12	73.33	13.52	10.00	60.0	±3.1%	±9.6%
		Y	2.09	63.63	8.90		60.0		
		Z	20.00	88.14	18.44		60.0		
10353	Pulse Waveform (200Hz, 20%)	X	20.00	86.91	16.39	6.99	80.0	±2.1%	±9.6%
		Y	1.23	62.23	7.44		80.0		
		Z	20.00	89.91	17.98		80.0		
10354	Pulse Waveform (200Hz, 40%)	X	20.00	87.17	15.04	3.98	95.0	±1.3%	±9.6%
		Y	0.67	61.60	6.49		95.0		
		Z	20.00	93.97	18.38		95.0		
10355	Pulse Waveform (200Hz, 60%)	X	20.00	84.43	12.64	2.22	120.0	±1.1%	±9.6%
		Y	0.59	63.73	7.01		120.0		
		Z	20.00	96.54	18.21		120.0		
10387	QPSK Waveform, 1 MHz	X	1.54	67.24	14.89	1.00	150.0	±3.0%	±9.6%
		Y	1.46	66.17	14.39		150.0		
		Z	1.41	65.65	14.01		150.0		
10388	QPSK Waveform, 10 MHz	X	2.05	67.83	15.64	0.00	150.0	±1.1%	±9.6%
		Y	1.94	66.59	15.05		150.0		
		Z	1.90	66.31	14.84		150.0		
10396	64-QAM Waveform, 100 kHz	X	2.64	69.92	18.57	3.01	150.0	±1.4%	±9.6%
		Y	2.12	65.93	16.62		150.0		
		Z	2.10	65.89	16.87		150.0		
10399	64-QAM Waveform, 40 MHz	X	3.38	67.04	15.73	0.00	150.0	±2.1%	±9.6%
		Y	3.30	66.42	15.40		150.0		
		Z	3.27	66.26	15.31		150.0		
10414	WLAN CCDF, 64-QAM, 40 MHz	X	4.67	65.69	15.56	0.00	150.0	±3.8%	±9.6%
		Y	4.57	65.30	15.32		150.0		
		Z	4.57	65.21	15.29		150.0		

Note: For details on UID parameters see Appendix

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

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 to 7).
[B] Linearization parameter uncertainty for maximum specified field strength.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Parameters of Probe: EX3DV4 - SN:7517

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms\,V^{-2}$	T2 $ms\,V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
x	33.3	248.62	35.47	6.24	0.08	5.04	1.01	0.20	1.01
y	31.4	232.68	35.06	9.43	0.00	4.97	0.38	0.21	1.00
z	32.2	242.61	36.05	6.15	0.00	5.05	0.00	0.25	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	17.5°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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

Parameters of Probe: EX3DV4 - SN:7517

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc ($k = 2$)
13	55.0	0.75	18.20	18.20	18.20	0.00	1.25	±13.3%
64	54.2	0.75	13.30	13.30	13.30	0.00	1.25	±13.3%
150	52.3	0.76	12.22	12.22	12.22	0.00	1.25	±13.3%
300	45.3	0.87	11.41	11.41	11.41	0.09	1.00	±13.3%
450	43.5	0.87	10.53	10.53	10.53	0.16	1.30	±13.3%
750	41.9	0.89	9.39	8.81	9.17	0.40	1.27	±12.0%
835	41.5	0.90	9.84	8.48	8.98	0.39	1.27	±12.0%
900	41.5	0.97	9.36	9.08	9.25	0.40	1.27	±12.0%
1450	40.5	1.20	8.28	7.60	7.84	0.40	1.27	±12.0%
1640	40.2	1.31	8.28	7.42	7.59	0.40	1.27	±12.0%
1750	40.1	1.37	8.43	7.84	8.08	0.28	1.27	±12.0%
1810	40.0	1.40	8.42	7.76	8.00	0.29	1.27	±12.0%
1900	40.0	1.40	8.34	7.75	7.97	0.29	1.27	±12.0%
2000	40.0	1.40	8.05	7.46	7.73	0.29	1.27	±12.0%
2100	39.8	1.49	8.20	7.54	7.85	0.30	1.27	±12.0%
2300	39.5	1.67	7.92	7.31	7.58	0.30	1.27	±12.0%
2450	39.2	1.80	7.75	7.16	7.37	0.30	1.27	±12.0%
2600	39.0	1.96	7.75	7.17	7.36	0.30	1.27	±12.0%
3300	38.2	2.71	6.84	6.29	6.48	0.33	1.27	±14.0%
3500	37.9	2.91	6.90	6.34	6.53	0.34	1.27	±14.0%
3700	37.7	3.12	6.74	6.21	6.39	0.34	1.27	±14.0%
3900	37.5	3.32	6.67	6.12	6.31	0.36	1.27	±14.0%
4100	37.2	3.53	6.66	6.11	6.31	0.37	1.27	±14.0%
4200	37.1	3.63	6.71	6.12	6.35	0.36	1.27	±14.0%
4400	36.9	3.84	6.49	5.93	6.14	0.37	1.27	±14.0%
4600	36.7	4.04	6.60	6.01	6.24	0.37	1.27	±14.0%
4800	36.4	4.25	6.74	6.12	6.35	0.38	1.27	±14.0%
4950	36.3	4.40	5.97	5.43	5.58	0.43	1.36	±14.0%

[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10%. If TSL with deviations from the target of less than ±5% are used, the calibration uncertainties are 11.1% for 0.7 - 3 GHz and 13.1% for 3 - 6 GHz.

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

Parameters of Probe: EX3DV4 - SN:7517

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc ($k = 2$)
5200	36.0	4.66	5.78	5.32	5.48	0.38	1.60	±14.0%
5250	35.9	4.71	5.83	5.28	5.47	0.34	1.62	±14.0%
5300	35.9	4.76	5.50	5.17	5.32	0.38	1.66	±14.0%
5500	35.6	4.96	5.06	4.69	4.71	0.46	1.61	±14.0%
5600	35.5	5.07	4.91	4.55	4.63	0.44	1.67	±14.0%
5750	35.4	5.22	5.16	4.72	4.83	0.43	1.75	±14.0%
5800	35.3	5.27	5.00	4.59	4.69	0.44	1.78	±14.0%

[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.

[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10%. If TSL with deviations from the target of less than ±5% are used, the calibration uncertainties are 11.1% for 0.7 - 3 GHz and 13.1% for 3 - 6 GHz.

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

Parameters of Probe: EX3DV4 - SN:7517

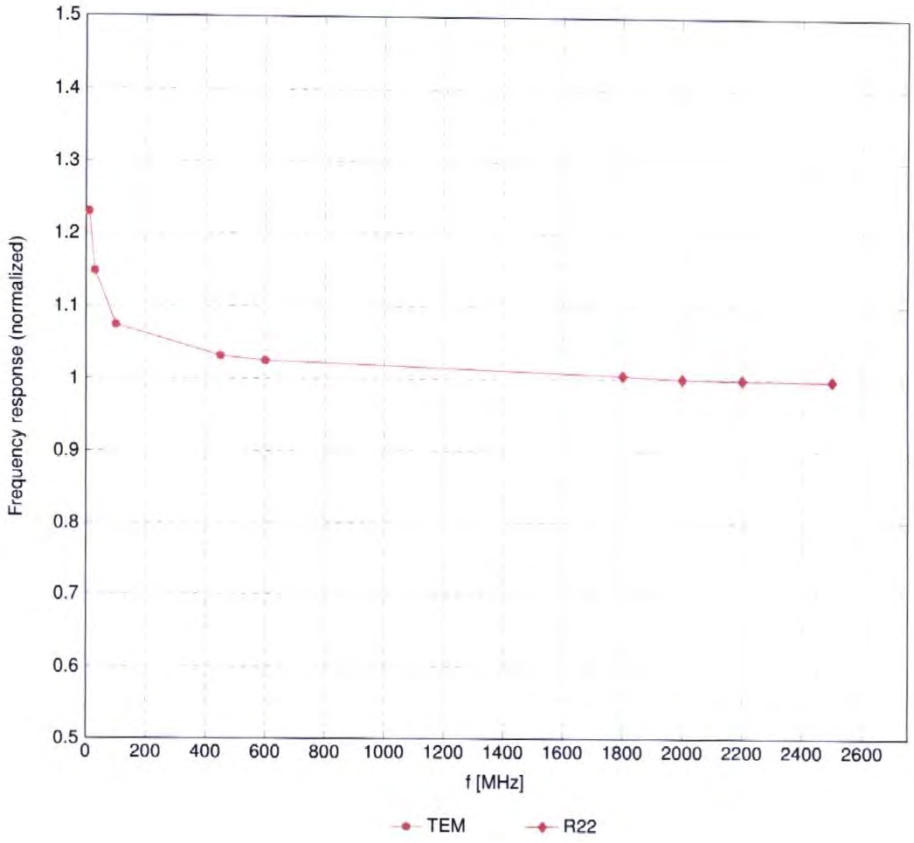
Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc ($k = 2$)
6500	34.5	6.07	5.42	4.77	4.86	0.20	2.50	±18.6%
7000	33.9	6.65	5.79	4.99	5.24	0.20	2.50	±18.6%

[C] Frequency validity at 6.5 GHz is −600/+700 MHz, and ±700 MHz at or above 7 GHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±10% from the target values (typically better than ±6%) and are valid for TSL with deviations of up to ±10%.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz; below ±2% for frequencies between 3–6 GHz; and below ±4% for frequencies between 6–10 GHz at any distance larger than half the probe tip diameter from the boundary.

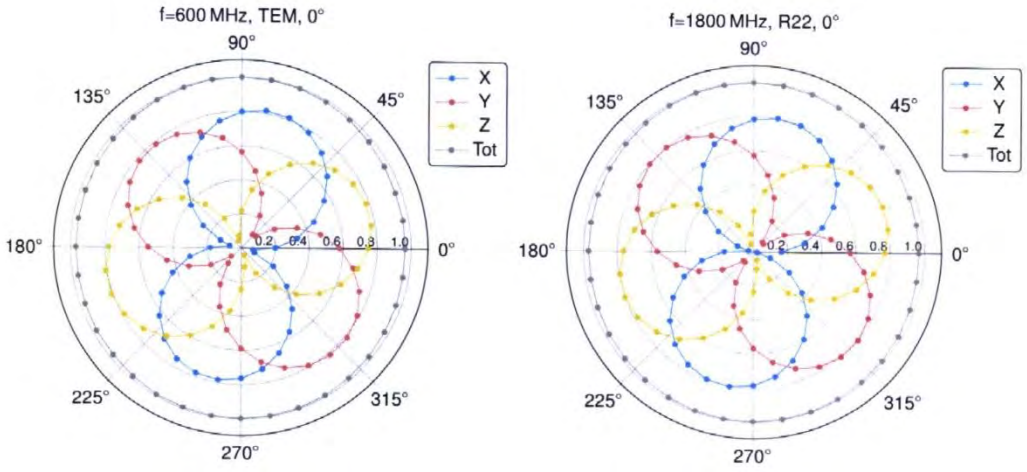
Frequency Response of E-Field

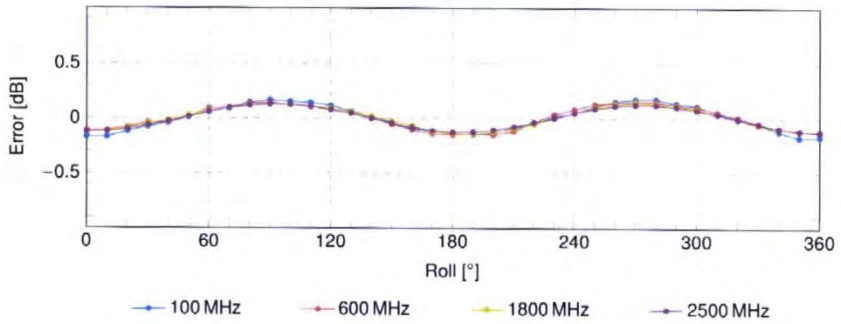
(TEM-Cell:ifi110 EXX, Waveguide:R22)



Uncertainty of Frequency Response of E-field: ±6.3% (k=2)

Receiving Pattern (ϕ), $\vartheta = 0°$

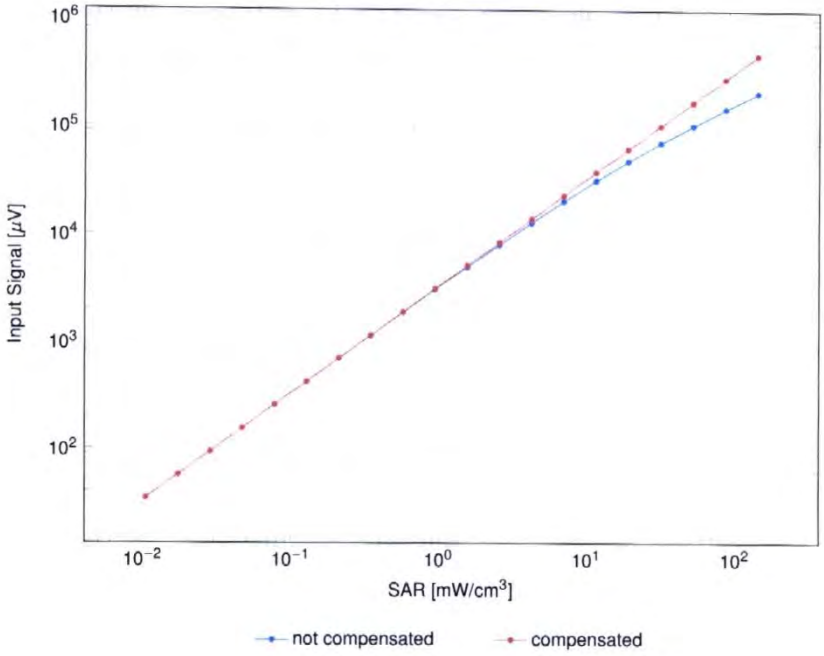


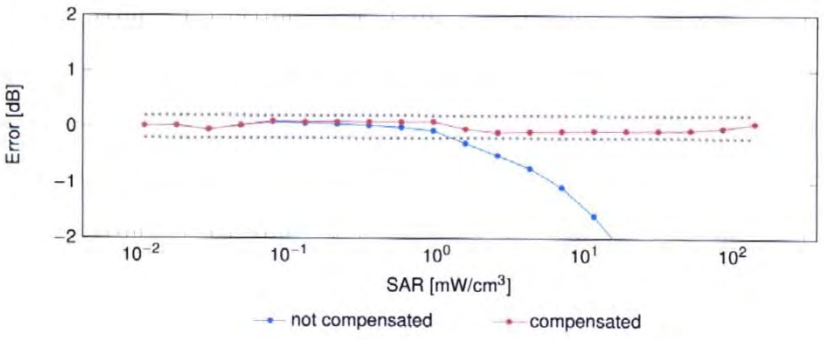


Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)

Dynamic Range f(SAR_{head})

(TEM cell, f_{eval} = 1900 MHz)





Uncertainty of Linearity Assessment: ±0.6% (k=2)

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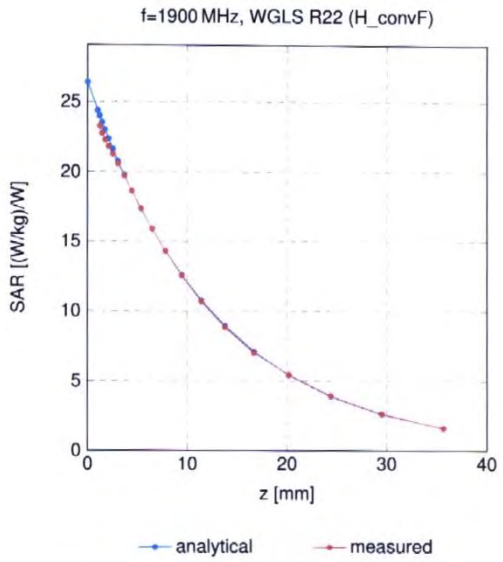
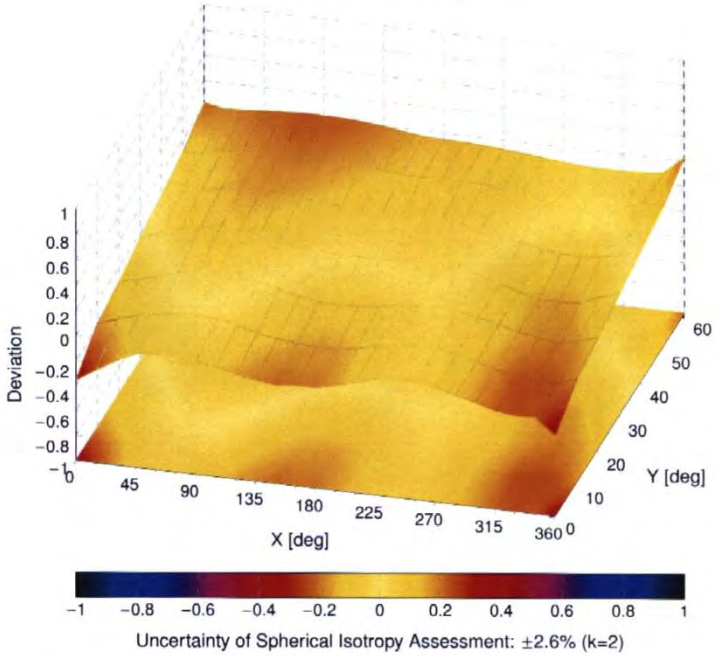
Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ±2.6% (k=2)

Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc^E $k = 2$
0		CW	CW	0.00	±4.7
10010	CAB	SAR Validation (Square, 100 ms, 10 ms)	Test	10.00	±9.6
10011	CAC	UMTS-FDD (WCDMA)	WCDMA	2.91	±9.6
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	±9.6
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	±9.6
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	±9.6
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	±9.6
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	±9.6
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	±9.6
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	±9.6
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	±9.6
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	±9.6
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	±9.6
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	±9.6
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	±9.6
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	±9.6
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	±9.6
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	±9.6
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	±9.6
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	±9.6
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	±9.6
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	±9.6
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	±9.6
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	±9.6
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	±9.6
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	±9.6
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	±9.6
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	±9.6
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	±9.6
10059	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	±9.6
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	±9.6
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	±9.6
10062	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	±9.6
10063	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	±9.6
10064	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	±9.6
10065	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	±9.6
10066	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	±9.6
10067	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	±9.6
10068	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	±9.6
10069	CAD	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	±9.6
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	±9.6
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	±9.6
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	±9.6
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	±9.6
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	±9.6
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	±9.6
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	±9.6
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	±9.6
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	±9.6
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	±9.6
10097	CAC	UMTS-FDD (HSDPA)	WCDMA	3.98	±9.6
10098	CAC	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	±9.6
10099	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	±9.6
10100	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	±9.6
10101	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	±9.6
10102	CAF	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	±9.6
10103	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	±9.6
10104	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	±9.6
10105	CAH	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	±9.6
10108	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	±9.6
10109	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
10110	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	±9.6
10111	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	±9.6

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UID	Rev	Communication System Name	Group	PAR (dB)	Unc^E $k = 2$
10112	CAH	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	6.59	±9.6
10113	CAH	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	6.62	±9.6
10114	CAD	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	WLAN	8.10	±9.6
10115	CAD	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	WLAN	8.46	±9.6
10116	CAD	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	±9.6
10117	CAD	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	±9.6
10118	CAD	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	WLAN	8.59	±9.6
10119	CAD	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	±9.6
10140	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	±9.6
10141	CAF	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	±9.6
10142	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-FDD	5.73	±9.6
10143	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-FDD	6.35	±9.6
10144	CAF	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	±9.6
10145	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-FDD	5.76	±9.6
10146	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.41	±9.6
10147	CAG	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.72	±9.6
10149	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	±9.6
10150	CAF	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	±9.6
10151	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	±9.6
10152	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	±9.6
10153	CAH	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	±9.6
10154	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	±9.6
10155	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
10156	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	±9.6
10157	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-FDD	6.49	±9.6
10158	CAH	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	±9.6
10159	CAH	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-FDD	6.56	±9.6
10160	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	±9.6
10161	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	±9.6
10162	CAF	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	±9.6
10166	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	±9.6
10167	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	±9.6
10168	CAG	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	±9.6
10169	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	±9.6
10170	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10171	AAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-FDD	6.49	±9.6
10172	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-TDD	9.21	±9.6
10173	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TDD	9.48	±9.6
10174	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-TDD	10.25	±9.6
10175	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	±9.6
10176	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10177	CAJ	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	±9.6
10178	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10179	CAH	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10180	CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10181	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	±9.6
10182	CAF	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10183	AAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10184	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	±9.6
10185	CAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	6.51	±9.6
10186	AAF	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10187	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	±9.6
10188	CAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.52	±9.6
10189	AAG	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	±9.6
10193	CAD	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	WLAN	8.09	±9.6
10194	CAD	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	±9.6
10195	CAD	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	±9.6
10196	CAD	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	±9.6
10197	CAD	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	WLAN	8.13	±9.6
10198	CAD	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	WLAN	8.27	±9.6
10219	CAD	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	WLAN	8.03	±9.6
10220	CAD	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	WLAN	8.13	±9.6
10221	CAD	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	WLAN	8.27	±9.6
10222	CAD	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	±9.6
10223	CAD	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	WLAN	8.48	±9.6
10224	CAD	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	±9.6