TESTING
NVLAP LAB CODE 600118-0

SAR TEST REPORT

No. I21Z61051-SEM03

For

TCL Communication Ltd.

GSM/UMTS/LTE/NR Mobile phone

Model Name: T767H

with

Hardware Version: PIO

Software Version: 2B56

FCC ID: 2ACCJH140

Issued Date: 2021-8-10

Note:

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
I21Z61051-SEM03	Rev.0	2021-8-2	Initial creation of test report
I21Z61051-SEM03	Rev.1	2021-8-6	1. Revise frequency range of WIFI5.5G on section 4.1 page9. 2. Add power of UL CA on page44. 3. Revise the probe converse factor on page 109~114.
I21Z61051-SEM03	Rev.2	2021-8-10	1. Revise the results of simultaneous transmission for WIFI5G on page 7 and 60.
I21Z61051-SEM03	Rev.3	2021-8-10	1. Revise frequency range for LTE B41 on section 4.1.

TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

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

1.2 Testing Environment

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

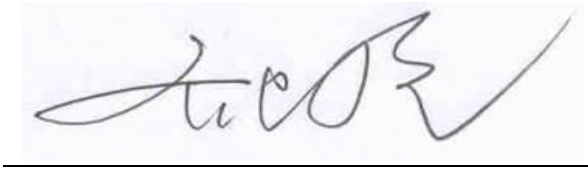
1.3 Project Data

Project Leader:	Qi Dianyuan
Test Engineer:	Yao Juming
Testing Start Date:	July 19, 2021
Testing End Date:	July 26, 2021

1.4 Signature

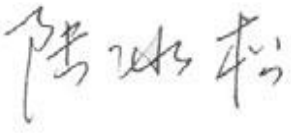
Yao Juming

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for TCL Communication Ltd. GSM/UMTS/LTE/NR Mobile phone T767H are as follows:

Table 2.1: Highest Reported SAR (1g)

Technology Band	Head (Separation Distance 0mm)	Hotspot (Separation Distance 10mm)	Phablet-10g (Separation Distance 0mm)	Equipment Class
GSM850	**0.98**	**0.35**	/	PCE
GSM1900	**1.28**	**0.85**	/	
WCDMA1900	**1.10**	**1.16**	**3.36**	
WCDMA1700	**0.18**	**1.30**	**3.19**	
WCDMA 850	**1.14**	**0.45**	/	
LTE Band7	**0.65**	**1.10**	/	
LTE Band26	**0.72**	**0.33**	/	
LTE Band41	**0.48**	**0.91**	/	
5G NR n5	**0.74**	**0.29**	/	
5G NR n7	**1.35**	**1.12**	/	
WLAN 2.4GHz	**0.29**	**0.19**	**0.61**	DTS
WLAN 5GHz	**0.89**	**1.00**	**0.50**	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 10 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**: 1.35 W/kg(1g).**

Remark：
This device supports both LTE B5/B38 and LTE B26/B41.Since the supported frequency span for LTE B5/B38 falls completely within the supports frequency span for LTE B26/B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B26/B41.

Table 2.2: The sum of SAR values for Main antenna + WiFi-2.4G

	Position	Main antenna	WiFi-2.4G	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.19	**1.47**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.06	**1.36**

Table 2.3: The sum of SAR values for Main antenna + WiFi-5G

	Position	Main antenna	WiFi-5G	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.04	**1.45**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.23	**1.53**

Table 2.4: The sum of reported SAR values for main antenna and BT

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left head, Cheek (n7)	1.35	<0.01	**1.35**
Maximum reported SAR value for Body	Rear 10mm (WCDMA1700)	1.30	<0.01	**1.30**

Table 2.5: The sum of SAR values for Main antenna + WiFi-2.4G + BT

	Position	Main antenna	WiFi-2.4G	BT	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.19	<0.01	**1.47**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.06	<0.01	**1.36**

Table 2.6: The sum of SAR values for Main antenna + WiFi-5G + BT

	Position	Main antenna	WiFi-5G	BT	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.17	<0.01	**1.45**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.23	<0.01	**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:	TCL Communication Ltd.
Address/Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person:	Gong Zhizhou
Contact Email:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722

3.2 Manufacturer Information

Company Name:	TCL Communication Ltd.
Address/Post:	5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person:	Gong Zhizhou
Contact Email:	zhizhou.gong@tcl.com
Telephone:	0086-755-36611722

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

4.1 About EUT

Description:	GSM/UMTS/LTE/NR Mobile phone
Model name:	T767H
Operating mode(s):	GSM850/900/1800/1900, WCDMA850/900/1700/1900/2100 LTE Band 1/3/5/7/8/20/26/28/32/38/40/41 BT, Wi-Fi(2.4G/5G),NR 5G
Tested Tx Frequency:	824 – 849 MHz (GSM 850)
	1850 – 1910 MHz (GSM 1900)
	824 – 849 MHz (WCDMA 850 Band V)
	1710-1755 MHz (WCDMA1700 Band IV)
	1850 – 1910 MHz (WCDMA1900 Band II)
	2502.5 – 2567.5 MHz (LTE Band 7)
	814.7–848.3 MHz (LTE Band 26)
	2498.5 –2687.5 MHz (LTE Band 41)
	824 – 849 MHz (n5)
	2500-2570 MHz (n7)
	2412 – 2462 MHz (Wi-Fi 2.4G)
	5180 – 5240 MHz (Wi-Fi 5.2G)
	5260 – 5320 MHz (Wi-Fi 5.3G)
	5500 – 5720 MHz (Wi-Fi 5.5G)
	5745 – 5825 MHz (Wi-Fi 5.8G)
	2400 – 2483.5 MHz (Bluetooth)
GPRS/EGPRS Multislot Class:	12
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support

4.2 Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
EUT1	354382910000839/354382910000847	PIO	2B56
EUT2	354382910000771/354382910000789	PIO	2B56
EUT3	354382910000730/354382910000748	PIO	2B56
EUT4	354382910000870/354382910000888	PIO	2B56

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

Note: It is performed to test SAR with the EUT1-2 and conducted power with the EUT3-4.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	TLp043E7	/	VEKEN
AE2	Headset	CCB0049A12C1	/	DALIN

*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.

KDB648474 D04 Handset SAR v01r03: SAR Evaluation Considerations for Wireless Handsets.

KDB941225 D01 SAR test for 3G devices v03r01: SAR Measurement Procedures for 3G Devices

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

KDB941225 D06 Hotspot Mode SAR v02r01: SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities

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

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

TCB Workshop Nov 2017: RF Exposure Procedures (Carrier Aggregation SAR)

TCB Workshop October 2020: 5G and RF Exposure Policies (5G NR SAR)

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

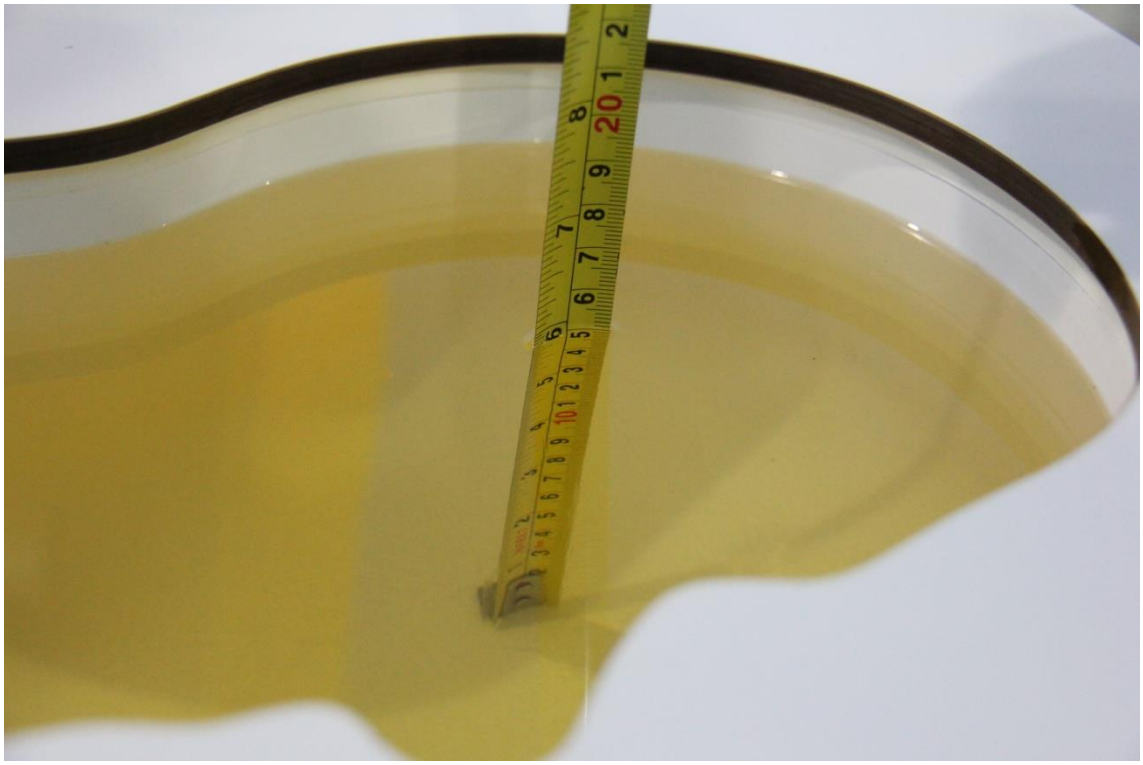
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
1750	Head	1.37	1.30～1.44	40.08	38.1～42.1
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
2450	Head	1.67	1.59～1.75	39.47	37.5～41.4
2550	Head	1.91	1.81～2.01	39.07	37.12～41.02
5250	Head	4.66	4.43～4.89	35.99	34.19～37.79
5600	Head	5.07	4.82～5.32	35.53	33.75～37.31
5750	Head	5.27	5.01～5.53	35.3	33.5～37.1

7.2 Dielectric Performance

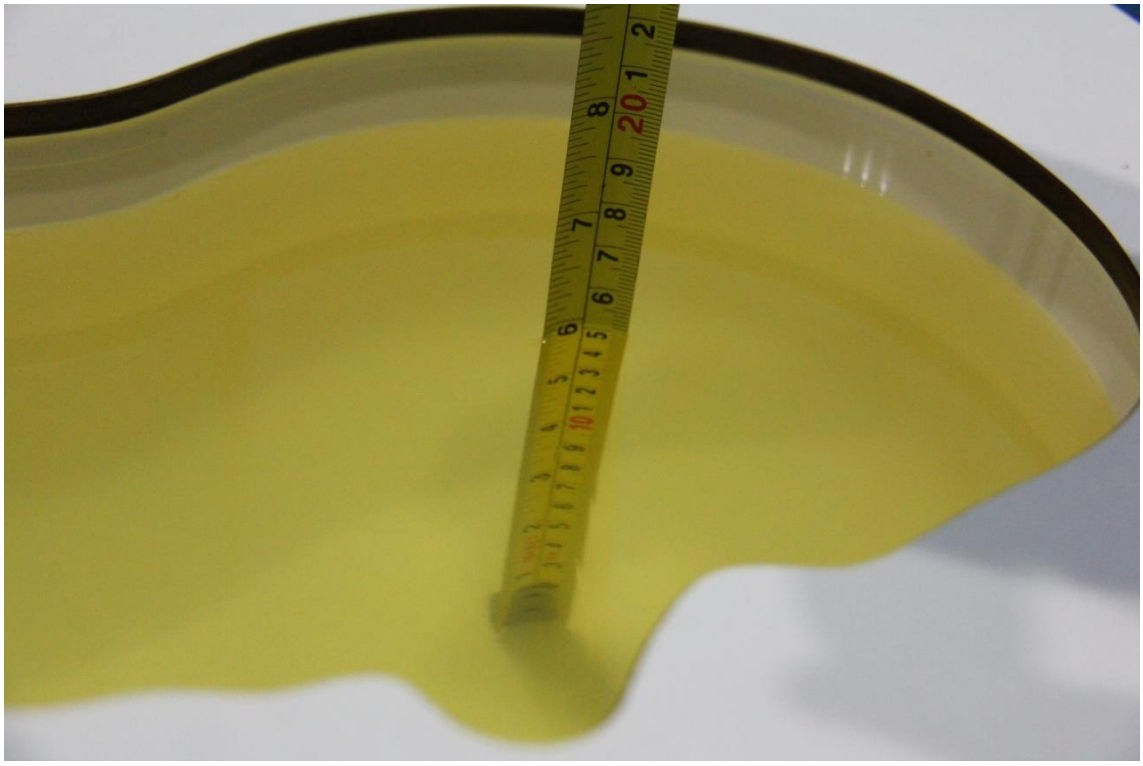
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2021/7/19	Head	835 MHz	45.61	9.90	0.9023	0.26
2021/7/20	Head	1750 MHz	43.07	7.46	1.397	1.97
2021/7/21	Head	1900 MHz	42.78	6.95	1.498	7.00
2021/7/22	Head	2450 MHz	41.57	6.05	1.92	6.67
2021/7/23	Head	2550 MHz	41.43	6.04	1.997	4.55
2021/7/24	Head	5250 MHz	35.21	-2.00	4.656	-1.15
2021/7/25	Head	5600 MHz	34.54	-2.79	5.018	-1.03
2021/7/26	Head	5750 MHz	34.27	-3.08	5.175	-0.86

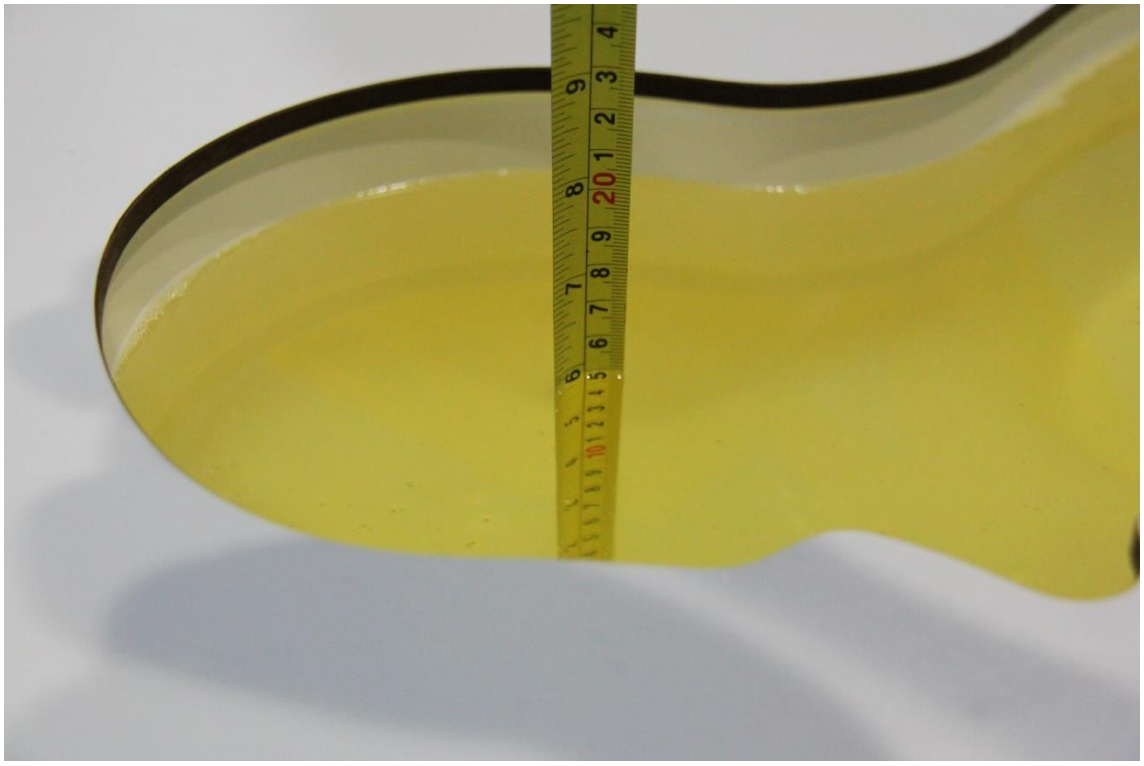
Note: The liquid temperature is 22.0℃



Picture 7-1 Liquid depth in the Head Phantom (835 MHz)

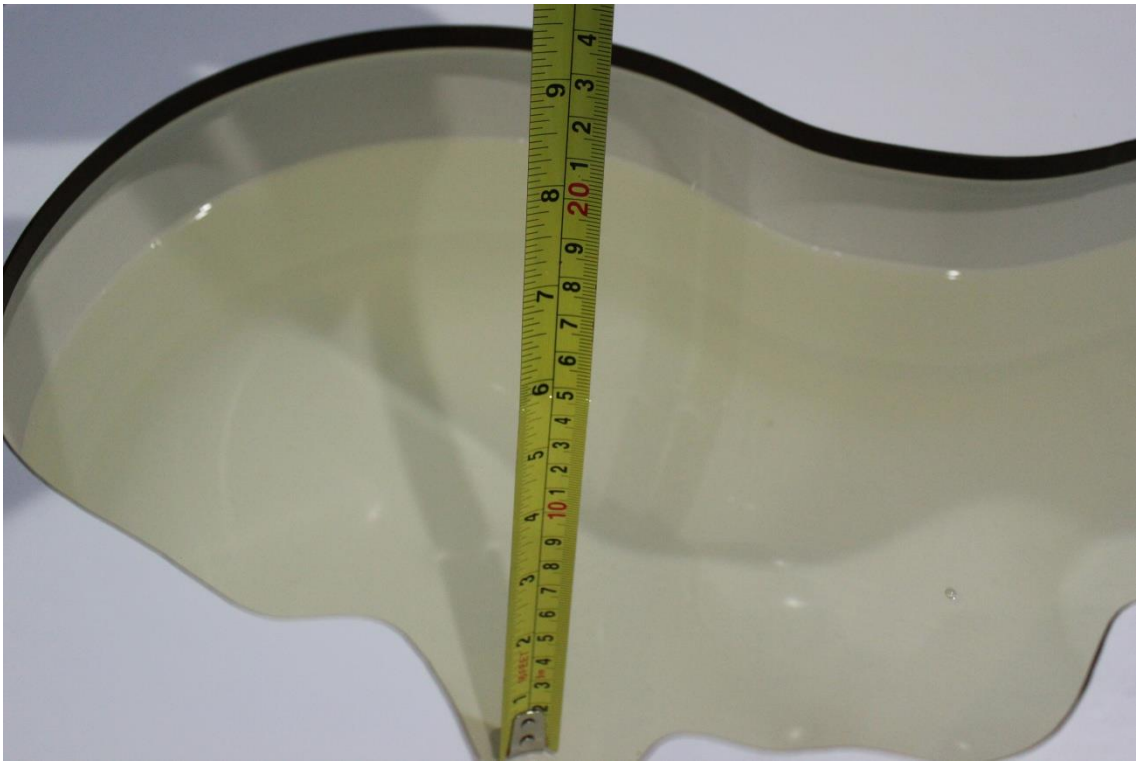


Picture 7-2 Liquid depth in the Head Phantom (1900 MHz)



Picture 7-3 Liquid depth in the Head Phantom (2450MHz)

Picture 7-4 Liquid depth in the Head Phantom (2550 MHz)

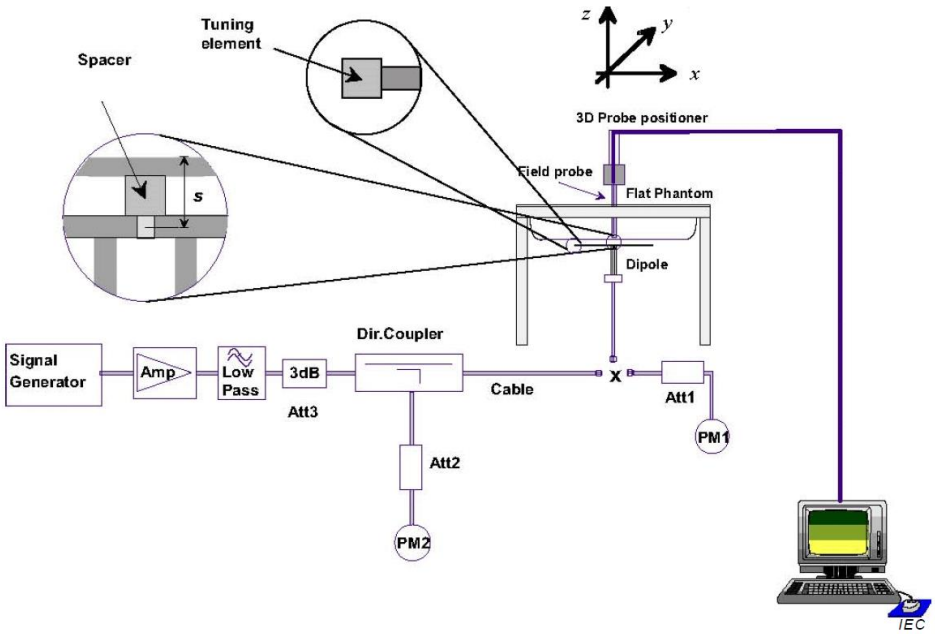


Picture 7-5 Liquid depth in the Head Phantom (5GHz)

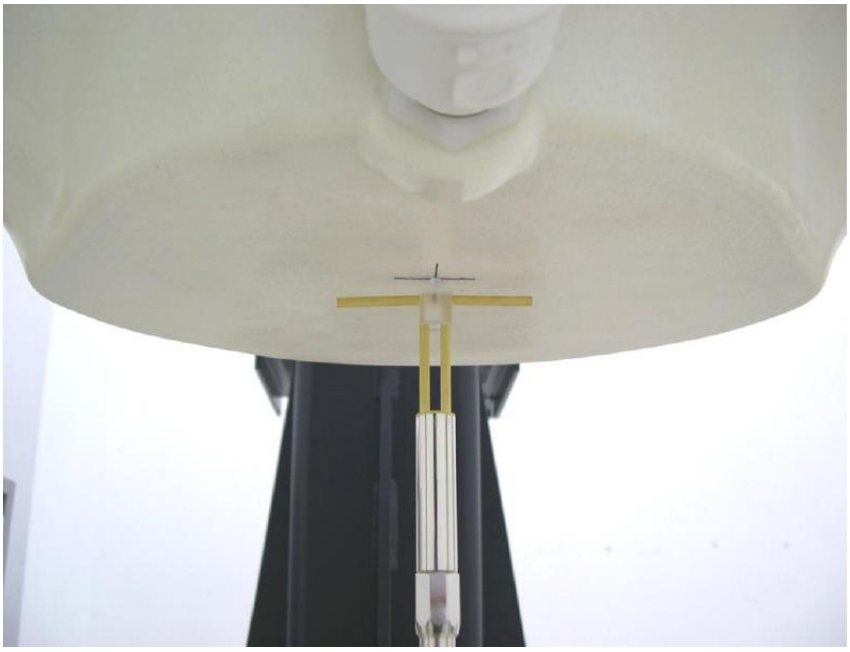
8 System verification

8.1 System Setup

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



Picture 8.1 System Setup for System Evaluation



Picture 8.2 Photo of Dipole Setup

8.2 System Verification

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

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

Table 8.1: System Verification of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2021/7/19	835 MHz	6.11	9.49	6.36	9.64	3.93%	1.56%
2021/7/20	1750 MHz	18.9	36.4	19.12	36.6	1.15%	0.55%
2021/7/21	1900 MHz	20.6	39.6	20.52	40.12	-0.39%	1.30%
2021/7/22	2450 MHz	24	53.1	24.88	51.52	3.54%	-3.07%
2021/7/23	2600 MHz	24.9	56.9	25.52	55.88	2.43%	-1.83%
2021/7/24	5250 MHz	22.5	78.5	23.3	80.4	3.43%	2.36%
2021/7/25	5600 MHz	23.3	81.6	23.6	84.3	1.27%	3.20%
2021/7/26	5750 MHz	21.8	76.7	23.1	79.2	5.63%	3.16%

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.

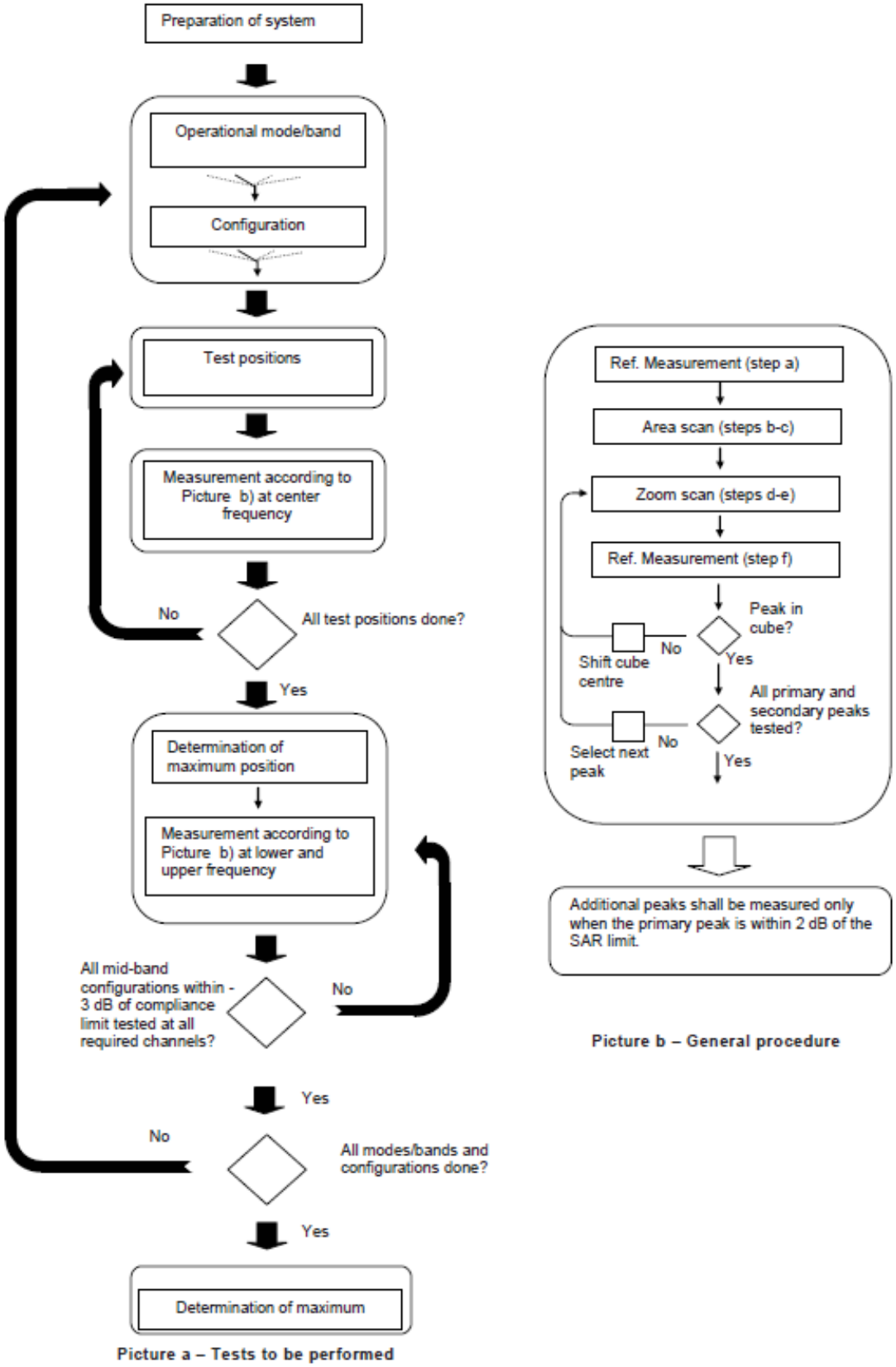
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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 a – Tests to be performed

Picture b – General procedure

Picture 9.1Block diagram of the tests to be performed

9.2 General Measurement Procedure

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements and fully documented in SAR reports to qualify for TCB approval. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std 1528-2003. The results should be documented as part of the system validation records and may be requested to support test results when all the measurement parameters in the following table are not satisfied.

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

9.3 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.

TDD test:

TDD testing is performed using guidance from FCC KDB 941225 D05 and the SAR test guidance provided in April 2013 TCB works hop notes. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211.

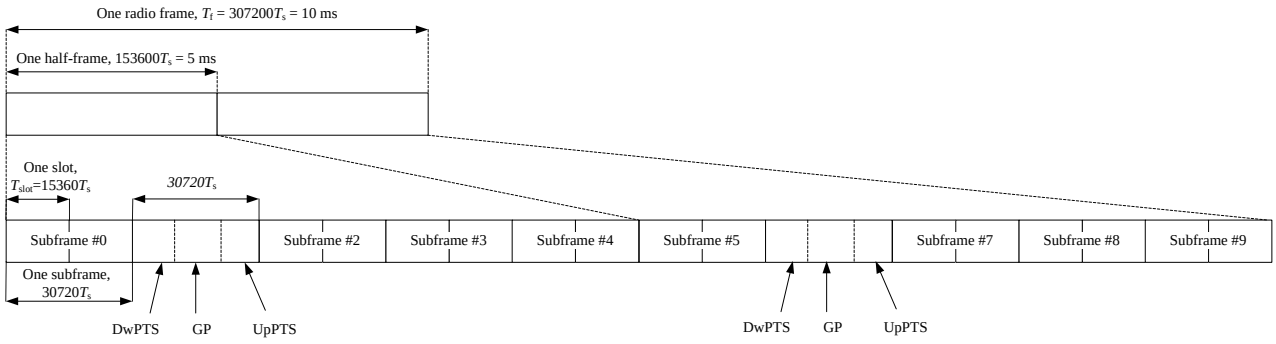


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

Table 9.1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

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

Table 9.2: Uplink-downlink configurations

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Duty factor is calculated by:

Duty factor = uplink frame*6+UpPTS*2/one frame length

= (30720.T_s * 6+5120. T_s*2)/307200.T_s

= 0.633

9.5 Bluetooth & 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

Table11-1: Summary of Receiver detection mechanism-WWAN

Antenna	Receiver on (head scenario)	Receiver off (Body scenario)
Main Antenna	Power Level A1	Power Level B1

For WWAN, When the phone is working with receiver on, then power reduction will be implemented immediately at WCDMA B2, LTE B7 and 5G NR n7.

Table11-2: Summary of Receiver detection mechanism-WIFI

Antenna	Transmit alone	Transmit with WWAN
WIFI Antenna	Power Level C1	Power Level D1

For WiFi, when the WIFI antenna is transmitting with WWAN, then power reduction will be implemented immediately at WiFi2.4G/WiFi5G.

11.1 GSM Measurement result

During the process of testing, the EUT was controlled via Agilent Digital Radio Communication tester (E5515C) to ensure the maximum power transmission and proper modulation. This result contains conducted output power for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

Table 11.1-1: The conducted power measurement results-Power Level A1/B1

GSM 850	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
Speech (GMSK)	251	190	128			251	190	128
1 Txslot	32.34	32.43	32.38	33.50	/	/	/	/
GSM 850	Measured Power (dBm)				calculation	Averaged Power (dBm)		
GPRS (GMSK)	251	190	128			251	190	128
1 Txslot	32.41	32.46	32.39	33.50	-9.03	23.38	23.43	23.36
2 Txslots	28.96	29.05	28.97	30.50	-6.02	22.94	23.03	22.95
3 Txslots	27.03	27.05	27.04	29.00	-4.26	22.77	22.79	22.78
4 Txslots	26.44	26.47	26.41	27.50	-3.01	23.43	23.46	23.40
GSM 850	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (GMSK)	251	190	128			251	190	128
1 Txslot	32.29	32.38	32.34	33.50	-9.03	23.26	23.35	23.31
2 Txslots	28.87	28.98	28.92	30.50	-6.02	22.85	22.96	22.90
3 Txslots	21.03	27.05	27.06	29.00	-4.26	16.77	22.79	22.80
4 Txslots	26.32	26.40	26.37	27.50	-3.01	23.31	23.39	23.36
GSM 850	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (8PSK)	251	190	128			251	190	128
1 Txslot	26.91	25.42	25.48	27.50	-9.03	17.88	16.39	16.45
2 Txslots	23.98	23.88	23.93	25.50	-6.02	17.96	17.86	17.91
3Txslots	22.73	22.62	22.66	24.50	-4.26	18.47	18.36	18.40
4 Txslots	21.43	21.11	22.03	23.00	-3.01	18.42	18.10	19.02
PCS1900	Measured Power (dBm)			Tune up	calculation	Averaged Power (dBm)		
Speech (GMSK)	810	661	512			810	661	512
1 Txslot	29.21	28.84	28.73	30.00	/	/	/	/
PCS1900	Measured Power (dBm)				calculation	Averaged Power (dBm)		
GPRS (GMSK)	810	661	512			810	661	512
1 Txslot	28.64	28.96	28.85	29.50	-9.03	19.61	19.93	19.82
2 Txslots	26.75	26.73	26.72	28.70	-6.02	20.73	20.71	20.70
3 Txslots	24.12	24.26	24.08	26.00	-4.26	19.86	20.00	19.82
4 Txslots	23.32	23.48	23.33	25.00	-3.01	20.31	20.47	20.32
PCS1900	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (GMSK)	810	661	512			810	661	512
1 Txslot	28.64	28.98	28.86	29.50	-9.03	19.61	19.95	19.83
2 Txslots	26.72	26.73	26.75	28.70	-6.02	20.70	20.71	20.73
3 Txslots	24.05	24.28	24.09	26.00	-4.26	19.79	20.02	19.83

4 Txslots	23.55	23.52	23.53	25.00	-3.01	20.54	20.51	20.52
PCS1900	Measured Power (dBm)				calculation	Averaged Power (dBm)		
EGPRS (8PSK)	810	661	512			810	661	512
1 Txslot	24.33	25.36	25.74	27.00	-9.03	15.30	16.33	16.71
2 Txslots	22.95	23.89	23.77	24.00	-6.02	16.93	17.87	17.75
3Txslots	20.56	21.89	21.40	22.00	-4.26	16.30	17.63	17.14
4 Txslots	20.21	20.45	20.48	20.50	-3.01	17.20	17.44	17.47

NOTES:

1) Division Factors

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

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

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

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

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

According to the conducted power as above, the body measurements are performed with 4Txslots for GSM850 and 2Txslots for GSM1900.

11.2 WCDMA Measurement result

Table 11.2-1: The conducted Power for WCDMA B4/B5-Power Level A1/B1

WCDMA1700	Band	FDDIV result (dBm)			Tune up
	ARFCN	1513/1738	1412/1637	1312/1537	
		(1752.6MHz)	(1732.4MHz)	(1712.4MHz)	
	/	23.46	23.47	23.48	24.00
HSUPA	1	20.97	20.86	20.88	22.50
	2	20.48	20.40	20.40	20.50
	3	20.49	20.36	20.40	21.50
	4	19.99	19.91	19.92	20.50
	5	21.46	21.40	21.37	22.50
HSPA+(16QAM)	/	22.03	21.89	22.00	22.50
DC-HSDPA	1	22.41	22.45	22.40	22.50
	2	22.34	22.34	22.42	22.50
	3	21.95	21.44	21.98	22.00
	4	21.91	21.93	21.92	22.00

WCDMA850	Band	FDDV result (dBm)			Tune up
	ARFCN	4233/4458	4183/4408	4132/4357	
		(846.6MHz)	(836.6MHz)	(826.4MHz)	
	/	23.45	23.52	23.47	24.00
HSUPA	1	21.53	21.43	21.51	22.70
	2	21.67	21.56	21.64	22.70
	3	21.65	21.55	21.66	21.70
	4	20.95	20.96	20.98	21.00
	5	22.66	22.56	22.63	22.70
HSPA+(16QAM)	/	22.84	23.07	22.94	23.50
DC-HSDPA	1	23.32	23.25	22.95	23.50
	2	23.29	23.21	23.00	23.50
	3	22.82	22.81	22.48	23.00
	4	22.76	22.76	22.56	23.00

Table 11.2-2: The conducted Power for WCDMA B2-Power Level A1

WCDMA1900	Band	FDDII result (dBm)			Tune up
	ARFCN	9538/9938	9400/9800	9262/9662	
		(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	/	19.56	19.84	19.75	20.50
HSUPA	1	16.36	16.85	16.64	17.50
	2	16.33	16.86	16.78	17.50
	3	16.37	16.88	16.81	17.50
	4	15.90	16.42	16.31	17.00
	5	17.35	17.89	17.88	18.00
HSPA+(16QAM)	/	17.95	18.31	18.27	19.00
DC-HSDPA	1	18.50	18.80	18.70	19.50
	2	18.46	18.81	18.63	19.50
	3	18.18	18.50	18.39	19.50
	4	18.09	18.45	18.36	19.50

Table 11.2-3: The conducted Power for WCDMA B2-Power Level B1

WCDMA1900	Band	FDDII result (dBm)			Tune up
	ARFCN	9538/9938	9400/9800	9262/9662	
		(1907.6MHz)	(1880MHz)	(1852.4MHz)	
	/	22.85	22.87	22.76	23.50
HSUPA	1	19.62	19.65	19.56	21.50
	2	19.25	19.78	19.69	20.50
	3	19.55	19.78	19.70	21.50
	4	18.80	19.31	19.19	20.50
	5	20.25	20.29	20.24	22.00
HSPA+(16QAM)	/	20.88	21.35	21.25	22.00
DC-HSDPA	1	21.46	21.87	21.72	22.50
	2	21.50	21.85	21.68	22.50
	3	21.06	21.38	21.29	22.00
	4	21.04	21.36	21.28	22.00

11.3 LTE Measurement result

Maximum Target Power for Production Unit – Power Level A1/B1

Band	Tune up (dBm)	
	Receiver on (head scenario)	Receiver off (Body scenario)
	Level A1	Level B1
Band 7	21	23
Band 26	24.5	24.5
Band 41	24	24

MPR condition (1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz)-Normal power

RB Size	Mod.	MPR	MPR (1.4MHz case)
1	QPSK	0	0
50%	QPSK	1	0
100%	QPSK	1	1
1	16-QAM	1	1
50%	16-QAM	2	1
100%	16-QAM	2	2

*MPR Tolerance:±0.5dB

MPR condition (1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz)-Low power

RB Size	Mod.	MPR	MPR (1.4MHz case)
1	QPSK	0	0
50%	QPSK	0	0
100%	QPSK	0	0
1	16-QAM	0	0
50%	16-QAM	0	0
100%	16-QAM	0	0

*MPR Tolerance:±0.5dB

LTE Band7-Power Level A1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	2567.5 (21425)	20.68	20.92
		2535 (21100)	20.61	20.96
		2502.5 (20775)	20.56	20.90
	1RB-Middle (12)	2567.5 (21425)	20.68	20.90
		2535 (21100)	20.64	20.91
		2502.5 (20775)	20.56	20.90
	1RB-Low (0)	2567.5 (21425)	20.70	20.92
		2535 (21100)	20.60	20.90
		2502.5 (20775)	20.54	20.94
	12RB-High (13)	2567.5 (21425)	20.69	20.69
		2535 (21100)	20.60	20.61
		2502.5 (20775)	20.57	20.58
	12RB-Middle (6)	2567.5 (21425)	20.69	20.69
		2535 (21100)	20.60	20.66
		2502.5 (20775)	20.59	20.59
	12RB-Low (0)	2567.5 (21425)	20.70	20.73
		2535 (21100)	20.65	20.63
		2502.5 (20775)	20.63	20.61
	25RB (0)	2567.5 (21425)	20.68	20.70
		2535 (21100)	20.63	20.60
		2502.5 (20775)	20.59	20.66
10MHz	1RB-High (49)	2565 (21400)	20.68	21.04
		2535 (21100)	20.72	20.97
		2505 (20800)	20.53	20.81
	1RB-Middle (24)	2565 (21400)	20.69	20.98
		2535 (21100)	20.65	20.90
		2505 (20800)	20.49	20.83
	1RB-Low (0)	2565 (21400)	20.65	20.85
		2535 (21100)	20.57	20.83
		2505 (20800)	20.65	20.88
	25RB-High (25)	2565 (21400)	20.76	20.74
		2535 (21100)	20.72	20.73
		2505 (20800)	20.61	20.62
	25RB-Middle (12)	2565 (21400)	20.73	20.75
		2535 (21100)	20.62	20.65
		2505 (20800)	20.56	20.61
	25RB-Low (0)	2565 (21400)	20.74	20.73
		2535 (21100)	20.64	20.63
		2505 (20800)	20.55	20.58
	50RB (0)	2565 (21400)	20.78	20.77
		2535 (21100)	20.73	20.73
		2505 (20800)	20.58	20.59

15MHz	1RB-High (74)	2562.5 (21375)	20.70	20.99
		2535 (21100)	20.60	20.91
		2507.5 (20825)	20.52	20.97
	1RB-Middle (37)	2562.5 (21375)	20.66	20.98
		2535 (21100)	20.59	20.89
		2507.5 (20825)	20.51	20.90
	1RB-Low (0)	2562.5 (21375)	20.54	20.84
		2535 (21100)	20.43	20.68
		2507.5 (20825)	20.48	20.90
	36RB-High (38)	2562.5 (21375)	20.72	20.74
		2535 (21100)	20.65	20.67
		2507.5 (20825)	20.57	20.58
	36RB-Middle (19)	2562.5 (21375)	20.65	20.65
		2535 (21100)	20.60	20.61
		2507.5 (20825)	20.52	20.56
	36RB-Low (0)	2562.5 (21375)	20.63	20.64
		2535 (21100)	20.59	20.62
		2507.5 (20825)	20.52	20.54
	75RB (0)	2562.5 (21375)	20.67	20.67
		2535 (21100)	20.64	20.62
		2507.5 (20825)	20.59	20.60
20MHz	1RB-High (99)	2560 (21350)	20.79	21.03
		2535 (21100)	20.77	21.10
		2510 (20850)	20.60	20.86
	1RB-Middle (50)	2560 (21350)	20.87	21.06
		2535 (21100)	20.73	21.02
		2510 (20850)	20.46	20.76
	1RB-Low (0)	2560 (21350)	20.63	21.03
		2535 (21100)	20.48	20.73
		2510 (20850)	20.23	20.55
	50RB-High (50)	2560 (21350)	20.89	20.88
		2535 (21100)	20.92	20.95
		2510 (20850)	20.62	20.59
	50RB-Middle (25)	2560 (21350)	20.93	20.94
		2535 (21100)	20.82	20.79
		2510 (20850)	20.58	20.54
	50RB-Low (0)	2560 (21350)	20.89	20.89
		2535 (21100)	20.78	20.75
		2510 (20850)	20.40	20.41
	100RB (0)	2560 (21350)	20.85	20.87
		2535 (21100)	20.85	20.82
		2510 (20850)	20.52	20.51

LTE Band7-Power Level B1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	2567.5 (21425)	22.42	21.72
		2535 (21100)	22.41	21.70
		2502.5 (20775)	22.37	21.66
	1RB-Middle (12)	2567.5 (21425)	22.40	21.66
		2535 (21100)	22.39	21.61
		2502.5 (20775)	22.41	21.63
	1RB-Low (0)	2567.5 (21425)	22.40	21.68
		2535 (21100)	22.39	21.66
		2502.5 (20775)	22.43	21.67
	12RB-High (13)	2567.5 (21425)	21.35	20.37
		2535 (21100)	21.37	20.35
		2502.5 (20775)	21.36	20.35
	12RB-Middle (6)	2567.5 (21425)	21.37	20.38
		2535 (21100)	21.37	20.34
		2502.5 (20775)	21.37	20.34
	12RB-Low (0)	2567.5 (21425)	21.37	20.39
		2535 (21100)	21.41	20.36
		2502.5 (20775)	21.40	20.35
	25RB (0)	2567.5 (21425)	21.41	20.39
		2535 (21100)	21.37	20.36
		2502.5 (20775)	21.39	20.39
10MHz	1RB-High (49)	2565 (21400)	22.43	21.65
		2535 (21100)	22.40	21.67
		2505 (20800)	22.33	21.63
	1RB-Middle (24)	2565 (21400)	22.40	21.65
		2535 (21100)	22.38	21.65
		2505 (20800)	22.32	21.59
	1RB-Low (0)	2565 (21400)	22.37	21.62
		2535 (21100)	22.32	21.57
		2505 (20800)	22.38	21.64
	25RB-High (25)	2565 (21400)	21.40	20.43
		2535 (21100)	21.42	20.43
		2505 (20800)	21.39	20.38
	25RB-Middle (12)	2565 (21400)	21.40	20.43
		2535 (21100)	21.36	20.40
		2505 (20800)	21.36	20.35
	25RB-Low (0)	2565 (21400)	21.44	20.42
		2535 (21100)	21.32	20.32
		2505 (20800)	21.29	20.33
	50RB (0)	2565 (21400)	21.42	20.42
		2535 (21100)	21.38	20.38
		2505 (20800)	21.39	20.35

15MHz	1RB-High (74)	2562.5 (21375)	22.39	21.65
		2535 (21100)	22.39	21.62
		2507.5 (20825)	22.32	21.61
	1RB-Middle (37)	2562.5 (21375)	22.41	21.65
		2535 (21100)	22.36	21.61
		2507.5 (20825)	22.31	21.57
	1RB-Low (0)	2562.5 (21375)	22.29	21.56
		2535 (21100)	22.22	21.50
		2507.5 (20825)	22.29	21.55
	36RB-High (38)	2562.5 (21375)	21.38	20.40
		2535 (21100)	21.41	20.40
		2507.5 (20825)	21.39	20.37
	36RB-Middle (19)	2562.5 (21375)	21.35	20.35
		2535 (21100)	21.37	20.36
		2507.5 (20825)	21.33	20.33
	36RB-Low (0)	2562.5 (21375)	21.37	20.31
		2535 (21100)	21.27	20.29
		2507.5 (20825)	21.29	20.26
	75RB (0)	2562.5 (21375)	21.41	20.35
		2535 (21100)	21.33	20.31
		2507.5 (20825)	21.36	20.31
20MHz	1RB-High (99)	2560 (21350)	22.36	21.68
		2535 (21100)	22.40	21.70
		2510 (20850)	22.35	21.63
	1RB-Middle (50)	2560 (21350)	22.43	21.69
		2535 (21100)	22.41	21.67
		2510 (20850)	22.38	21.60
	1RB-Low (0)	2560 (21350)	22.24	21.55
		2535 (21100)	22.18	21.53
		2510 (20850)	22.27	21.53
	50RB-High (50)	2560 (21350)	21.40	20.39
		2535 (21100)	21.42	20.40
		2510 (20850)	21.36	20.36
	50RB-Middle (25)	2560 (21350)	21.45	20.42
		2535 (21100)	21.39	20.39
		2510 (20850)	21.39	20.35
	50RB-Low (0)	2560 (21350)	21.38	20.38
		2535 (21100)	21.33	20.31
		2510 (20850)	21.24	20.25
	100RB (0)	2560 (21350)	21.37	20.33
		2535 (21100)	21.37	20.29
		2510 (20850)	21.30	20.28

LTE Band26-Power Level A1/B1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
1.4MHz	1RB-High (5)	848.3 (27033)	23.24	22.45
		831.5 (26865)	23.15	22.40
		814.7 (26697)	23.18	21.79
	1RB-Middle (3)	848.3 (27033)	23.24	22.41
		831.5 (26865)	23.15	22.43
		814.7 (26697)	23.06	22.25
	1RB-Low (0)	848.3 (27033)	23.26	22.45
		831.5 (26865)	23.22	22.34
		814.7 (26697)	23.15	22.29
	3RB-High (3)	848.3 (27033)	23.26	22.24
		831.5 (26865)	23.15	22.25
		814.7 (26697)	23.34	22.35
	3RB-Middle (1)	848.3 (27033)	23.26	22.26
		831.5 (26865)	23.40	22.32
		814.7 (26697)	23.23	22.24
	3RB-Low (0)	848.3 (27033)	23.27	22.30
		831.5 (26865)	23.16	22.32
		814.7 (26697)	23.25	22.25
	6RB (0)	848.3 (27033)	22.32	21.29
		831.5 (26865)	22.34	21.15
		814.7 (26697)	22.31	20.69
3MHz	1RB-High (14)	847.5 (27025)	23.25	22.47
		831.5 (26865)	23.25	22.35
		815.5 (26705)	23.24	22.23
	1RB-Middle (7)	847.5 (27025)	23.33	22.45
		831.5 (26865)	23.23	22.15
		815.5 (26705)	23.12	22.19
	1RB-Low (0)	847.5 (27025)	23.12	21.89
		831.5 (26865)	22.89	21.58
		815.5 (26705)	22.78	21.55
	8RB-High (7)	847.5 (27025)	22.31	21.43
		831.5 (26865)	22.32	21.05
		815.5 (26705)	22.24	20.78
	8RB-Middle (4)	847.5 (27025)	22.28	21.35
		831.5 (26865)	22.15	21.34
		815.5 (26705)	22.16	21.56
	8RB-Low (0)	847.5 (27025)	22.24	21.35
		831.5 (26865)	22.15	21.33
		815.5 (26705)	22.05	21.26
	15RB (0)	847.5 (27025)	22.29	21.34
		831.5 (26865)	22.18	21.52
		815.5 (26705)	22.25	21.36

5MHz	1RB-High (24)	846.5 (27015)	23.33	22.55
		831.5 (26865)	23.23	21.58
		816.5 (26715)	23.17	22.43
	1RB-Middle (12)	846.5 (27015)	23.25	21.86
		831.5 (26865)	23.33	21.97
		816.5 (26715)	23.29	22.39
	1RB-Low (0)	846.5 (27015)	23.15	22.15
		831.5 (26865)	23.18	22.18
		816.5 (26715)	23.25	22.28
	12RB-High (13)	846.5 (27015)	22.67	21.61
		831.5 (26865)	22.32	20.96
		816.5 (26715)	22.26	21.27
	12RB-Middle (6)	846.5 (27015)	22.34	21.27
		831.5 (26865)	22.45	21.25
		816.5 (26715)	22.20	21.19
	12RB-Low (0)	846.5 (27015)	22.25	21.38
		831.5 (26865)	22.15	21.45
		816.5 (26715)	22.20	21.20
	25RB (0)	846.5 (27015)	21.78	21.60
		831.5 (26865)	22.23	20.51
		816.5 (26715)	22.25	21.29
10MHz	1RB-High (49)	844 (26990)	23.36	22.48
		831.5 (26865)	23.28	22.49
		820 (26750)	23.31	22.35
	1RB-Middle (24)	844 (26990)	23.15	22.42
		831.5 (26865)	23.25	22.52
		820 (26750)	23.27	22.52
	1RB-Low (0)	844 (26990)	23.29	22.47
		831.5 (26865)	23.20	22.30
		820 (26750)	23.34	22.44
	25RB-High (25)	844 (26990)	22.57	21.57
		831.5 (26865)	22.11	21.53
		820 (26750)	22.11	21.15
	25RB-Middle (12)	844 (26990)	22.42	21.39
		831.5 (26865)	22.35	21.34
		820 (26750)	22.22	21.18
	25RB-Low (0)	844 (26990)	22.76	21.78
		831.5 (26865)	22.15	21.42
		820 (26750)	21.95	20.93
	50RB (0)	844 (26990)	22.70	21.73
		831.5 (26865)	22.54	21.48
		820 (26750)	22.09	21.04

15MHz	1RB-High (74)	841.5 (26965)	23.35	22.43
		831.5 (26865)	23.22	22.39
		822.5 (26775)	23.34	22.19
	1RB-Middle (37)	841.5 (26965)	23.39	22.50
		831.5 (26865)	23.38	22.45
		822.5 (26775)	23.37	22.48
	1RB-Low (0)	841.5 (26965)	23.34	22.49
		831.5 (26865)	23.29	22.34
		822.5 (26775)	23.36	22.38
	36RB-High (38)	841.5 (26965)	22.53	21.16
		831.5 (26865)	22.51	21.53
		822.5 (26775)	22.47	20.98
	36RB-Middle (19)	841.5 (26965)	22.35	21.26
		831.5 (26865)	22.34	21.27
		822.5 (26775)	22.25	21.21
	36RB-Low (0)	841.5 (26965)	22.11	21.08
		831.5 (26865)	22.46	21.47
		822.5 (26775)	21.97	20.96
	75RB (0)	841.5 (26965)	22.21	21.17
		831.5 (26865)	22.52	21.49
		822.5 (26775)	22.02	20.92

LTE Band41-Power Level A1/B1				
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**
5MHz	1RB-High (24)	2687.5 (41565)	23.42	22.41
		2640.3(41093)	23.66	22.61
		2593 (40620)	23.56	22.54
		2545.8(40148)	23.41	22.42
		2498.5 (39675)	23.07	22.10
	1RB-Middle (12)	2687.5 (41565)	23.43	22.41
		2640.3(41093)	23.69	22.64
		2593 (40620)	23.51	22.44
		2545.8(40148)	23.39	22.33
		2498.5 (39675)	23.06	22.07
	1RB-Low (0)	2687.5 (41565)	23.44	22.46
		2640.3(41093)	23.75	22.69
		2593 (40620)	23.51	22.45
		2545.8(40148)	23.39	22.37
		2498.5 (39675)	23.10	22.10
	12RB-High (13)	2687.5 (41565)	22.27	21.21
		2640.3(41093)	22.58	21.51
		2593 (40620)	22.39	21.31
		2545.8(40148)	22.26	21.18
		2498.5 (39675)	22.00	20.91
	12RB-Middle (6)	2687.5 (41565)	22.29	21.24
		2640.3(41093)	22.57	21.49
		2593 (40620)	22.36	21.32
		2545.8(40148)	22.27	21.20
		2498.5 (39675)	21.99	20.91
	12RB-Low (0)	2687.5 (41565)	22.32	21.26
		2640.3(41093)	22.62	21.55
		2593 (40620)	22.40	21.32
		2545.8(40148)	22.30	21.22
		2498.5 (39675)	21.99	20.93
	25RB (0)	2687.5 (41565)	22.33	21.32
		2640.3(41093)	22.61	21.60
		2593 (40620)	22.40	21.41
		2545.8(40148)	22.29	21.28
		2498.5 (39675)	22.00	21.00

10MHz	1RB-High (49)	2685 (41540)	23.38	22.40
		2639(41080)	23.61	22.61
		2593 (40620)	23.52	22.49
		2547(40160)	23.42	22.43
		2501 (39700)	23.04	22.05
	1RB-Middle (24)	2685 (41540)	23.43	22.43
		2639(41080)	23.68	22.67
		2593 (40620)	23.47	22.46
		2547(40160)	23.39	22.38
		2501 (39700)	23.03	22.10
	1RB-Low (0)	2685 (41540)	23.47	22.50
		2639(41080)	23.74	22.71
		2593 (40620)	23.47	22.45
		2547(40160)	23.38	22.38
		2501 (39700)	23.06	22.09
	25RB-High (25)	2685 (41540)	22.29	21.32
		2639(41080)	22.57	21.56
		2593 (40620)	22.41	21.43
		2547(40160)	22.32	21.29
		2501 (39700)	22.01	20.99
	25RB-Middle (12)	2685 (41540)	22.36	21.33
		2639(41080)	22.62	21.63
		2593 (40620)	22.39	21.43
		2547(40160)	22.33	21.28
		2501 (39700)	21.98	20.95
	25RB-Low (0)	2685 (41540)	22.37	21.38
		2639(41080)	22.64	21.64
		2593 (40620)	22.40	21.40
		2547(40160)	22.29	21.28
		2501 (39700)	21.97	20.95
	50RB (0)	2685 (41540)	22.34	21.37
		2639(41080)	22.63	21.63
		2593 (40620)	22.43	21.43
		2547(40160)	22.31	21.34
		2501 (39700)	22.02	21.00

15MHz	1RB-High (74)	2682.5 (41515)	23.27	22.32
		2637.8(41068)	23.51	22.50
		2593 (40620)	23.40	22.39
		2548.3(40173)	23.30	22.32
		2503.5 (39725)	22.94	21.98
	1RB-Middle (37)	2682.5 (41515)	23.42	22.43
		2637.8(41068)	23.68	22.63
		2593 (40620)	23.46	22.45
		2548.3(40173)	23.40	22.42
		2503.5 (39725)	23.02	22.01
	1RB-Low (0)	2682.5 (41515)	23.41	22.43
		2637.8(41068)	23.61	22.57
		2593 (40620)	23.36	22.37
		2548.3(40173)	23.27	22.29
		2503.5 (39725)	22.97	22.00
	36RB-High (38)	2682.5 (41515)	22.27	21.24
		2637.8(41068)	22.55	21.51
		2593 (40620)	22.39	21.37
		2548.3(40173)	22.28	21.24
		2503.5 (39725)	21.94	20.94
	36RB-Middle (19)	2682.5 (41515)	22.29	21.29
		2637.8(41068)	22.59	21.56
		2593 (40620)	22.39	21.36
		2548.3(40173)	22.26	21.23
		2503.5 (39725)	21.93	20.91
	36RB-Low (0)	2682.5 (41515)	22.31	21.28
		2637.8(41068)	22.63	21.59
		2593 (40620)	22.33	21.30
		2548.3(40173)	22.25	21.21
		2503.5 (39725)	21.93	20.89
	75RB (0)	2682.5 (41515)	22.35	21.34
		2637.8(41068)	22.58	21.60
		2593 (40620)	22.42	21.41
		2548.3(40173)	22.31	21.29
		2503.5 (39725)	21.97	20.96

20MHz	1RB-High (99)	2680 (41490)	23.67	22.80
		2636.5(41055)	23.85	22.99
		2593 (40620)	23.75	22.84
		2549.5(40185)	23.72	22.85
		2506 (39750)	23.34	22.47
	1RB-Middle (50)	2680 (41490)	23.90	22.89
		2636.5(41055)	23.98	22.87
		2593 (40620)	23.95	22.81
		2549.5(40185)	23.79	22.90
		2506 (39750)	23.48	22.62
	1RB-Low (0)	2680 (41490)	23.89	22.83
		2636.5(41055)	23.90	22.99
		2593 (40620)	23.84	22.93
		2549.5(40185)	23.57	22.69
		2506 (39750)	23.45	22.62
	50RB-High (50)	2680 (41490)	22.78	21.77
		2636.5(41055)	22.98	21.99
		2593 (40620)	22.85	21.84
		2549.5(40185)	22.69	21.69
		2506 (39750)	22.43	21.43
	50RB-Middle (25)	2680 (41490)	22.85	21.85
		2636.5(41055)	22.88	21.91
		2593 (40620)	22.88	21.87
		2549.5(40185)	22.71	21.75
		2506 (39750)	22.45	21.43
	50RB-Low (0)	2680 (41490)	22.86	21.91
		2636.5(41055)	22.84	21.86
		2593 (40620)	22.83	21.87
		2549.5(40185)	22.63	21.68
		2506 (39750)	22.42	21.40
	100RB (0)	2680 (41490)	22.81	21.82
		2636.5(41055)	22.97	21.88
		2593 (40620)	22.85	21.84
		2549.5(40185)	22.65	21.66
		2506 (39750)	22.39	21.39

SAR test is not required since maximum output power when downlink carrier aggregation active is not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

The conducted power measurement results of downlink LTE CA Conduted Power are as below (Normal Power):

DL LTE CA Class	PCC								SCC			Power		
	PCC Band	PCC Band width (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band width (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	Rel 10 DL LTE CA Tx Power(dBm)	Tune-up
5A-7A	5	10	1	49	1	99	20600	2600	7	20	3100	23.83	23.78	24.5
5A-7A	7	20	1	50	1	99	21350	3350	5	10	2525	22.43	22.25	23
7C	7	20	1	50	1	24	20850	2850	7	10	2994	22.38	22.32	23
7A-7A	7	10	1	0	1	24	20800	2800	7	5	3425	22.38	22.35	23

Note: Testing is not required in bands or modes not intended/allowed for US operation.

The conducted power measurement results of downlink LTE CA Conduted Power are as below (Low Power):

DL LTE CA Class	PCC								SCC			Power		
	PCC Band	PCC Band width (MHz)	PCC UL RB size	PCC UL RB offset	PCC DL RB size	PCC DL RB offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band width (MHz)	SCC DL Channel	Rel 8 LTE Tx Power(dBm)	Rel 10 DL LTE CA Tx Power(dBm)	Tune-up
5A-7A	7	20	1	50	1	99	21350	3350	5	10	2525	20.87	20.68	21
7C	7	20	1	99	1	24	20850	2850	7	10	2994	20.6	20.53	21
7A-7A	7	10	1	0	1	24	20800	2800	7	5	3425	20.65	20.62	21

Note: Testing is not required in bands or modes not intended/allowed for US operation.

The conductive power of UL CA-7C(Power Level A1)

Configure		CA List	PCC						SCC						Power	
			LTE Band	BW (MHz)	UL Freq. (MHz)	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	UL Freq. (MHz)	Mod.	UL# RB	UL RB Offset	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Intra-Band	Contiguous	CA_7C	Band 7	20M	2560	QPSK	1	0	Band 7	20M	2579.8	QPSK	1	99	20.85	20.87

The conductive power of UL CA-7C(Power Level B1)

Configure		CA List	PCC						SCC						Power	
			LTE Band	BW (MHz)	UL Freq. (MHz)	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	UL Freq. (MHz)	Mod.	UL# RB	UL RB Offset	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Intra-Band	Contiguous	CA_7C	Band 7	20M	2535	QPSK	1	0	Band 7	20M	2554.8	QPSK	1	99	22.19	22.22

11.4 Wi-Fi and BT Measurement result

The maximum output power of BT antenna is 8.81dBm.
The maximum tune up of BT antenna is 9.7dBm.

The average conducted power for Wi-Fi 2.4G is as following-Power Level C1 (Transmit alone):

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	18.03	18.50
		CH 6	2437		17.38	18.50
		CH 11	2462		17.90	18.50
	802.11g	CH 1	2412	6Mbps	17.15	17.50
		CH 6	2437		16.43	17.50
		CH 11	2462		16.92	17.50
	802.11n-HT20	CH 1	2412	MCS0	15.17	15.50
		CH 6	2437		14.56	15.50
		CH 11	2462		14.89	15.50
	802.11n-HT40	CH 3	2422	MCS0	13.22	13.50
		CH 6	2437		12.77	13.50
		CH 9	2452		12.93	13.50

The average conducted power for Wi-Fi 2.4G is as following-Power Level D1 (Transmit with WWAN):

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	16.16	16.50
		CH 6	2437		15.42	16.50
		CH 11	2462		15.79	16.50
	802.11g	CH 1	2412	6Mbps	15.28	15.50
		CH 6	2437		14.42	15.50
		CH 11	2462		14.82	15.50
	802.11n-HT20	CH 1	2412	MCS0	13.21	13.50
		CH 6	2437		12.46	13.50
		CH 11	2462		12.84	13.50
	802.11n-HT40	CH 3	2422	MCS0	11.25	11.50
		CH 6	2437		10.66	11.50
		CH 9	2452		10.75	11.50

The average conducted power for Wi-Fi 5G is as following- Power Level C1 (Transmit alone):

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	15.87	16.50
		CH 40	5200		16.14	16.50
		CH 44	5220		15.77	16.50
		CH 48	5240		15.89	16.50
	802.11n-HT20	CH 36	5180	MCS0	14.79	15.50
		CH 40	5200		14.68	15.50
		CH 44	5220		14.56	15.50
		CH 48	5240		14.39	15.50
	802.11n-HT40	CH 38	5190	MCS0	14.24	15.50
		CH 46	5230		13.95	15.50
	802.11ac-VHT20	CH 36	5180	MCS0	15.71	16.50
		CH 40	5200		15.97	16.50
		CH 44	5220		15.52	16.50
		CH 48	5240		15.36	16.50
	802.11ac-VHT40	CH 38	5190	MCS0	15.36	16.00
		CH 46	5230		15.08	16.00
	802.11ac-VHT80	CH 42	5210	MCS0	15.25	16.00

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	15.88	16.50
		CH 56	5280		15.71	16.50
		CH 60	5300		15.65	16.50
		CH 64	5320		15.61	16.50
	802.11n-HT20	CH 52	5260	MCS0	14.36	15.50
		CH 56	5280		14.27	15.50
		CH 60	5300		14.23	15.50
		CH 64	5320		14.16	15.50
	802.11n-HT40	CH 54	5270	MCS0	13.84	15.50
		CH 62	5310		13.71	15.50
	802.11ac-VHT20	CH 52	5260	MCS0	15.30	16.50
		CH 56	5280		15.25	16.50
		CH 60	5300		15.49	16.50
		CH 64	5320		15.07	16.50
	802.11ac-VHT40	CH 54	5270	MCS0	14.87	16.00
		CH 62	5310		14.68	16.00
	802.11ac-VHT80	CH 58	5290	MCS0	14.83	16.00

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	15.85	17.00
		CH 116	5580		16.17	17.00
		CH 124	5620		16.39	17.00
		CH 132	5660		16.55	17.00
		CH 140	5700		16.79	17.00
		CH 144	5720		16.81	17.00
	802.11n-HT20	CH 100	5500	MCS0	14.75	16.00
		CH 116	5580		15.08	16.00
		CH 124	5620		15.26	16.00
		CH 132	5660		15.48	16.00
		CH 140	5700		15.69	16.00
		CH 144	5720		15.65	16.00
	802.11n-HT40	CH 102	5510	MCS0	14.37	16.00
		CH 110	5550		14.56	16.00
		CH 126	5630		14.93	16.00
		CH 134	5670		15.04	16.00
		CH 142	5710		15.25	16.00
	802.11ac-VHT20	CH 100	5500	MCS0	15.68	17.00
		CH 116	5580		16.01	17.00
		CH 124	5620		16.20	17.00
		CH 132	5660		16.44	17.00
		CH 140	5700		16.60	17.00
		CH 144	5720		16.66	17.00
	802.11ac-VHT40	CH 102	5510	MCS0	15.46	16.50
		CH 110	5550		15.66	16.50
		CH 126	5630		16.01	16.50
		CH 134	5670		16.25	16.50
		CH 142	5710		16.42	16.50
	802.11ac-VHT80	CH 106	5530	MCS0	15.48	16.50
		CH 122	5610		15.91	16.50
		CH 138	5690		16.23	16.50

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	16.42	17.50
		CH 157	5785		16.58	17.50
		CH 165	5825		16.64	17.50
	802.11n-HT20	CH 149	5745	MCS0	15.28	16.50
		CH 157	5785		15.47	16.50
		CH 165	5825		15.55	16.50
	802.11n-HT40	CH 151	5755	MCS0	15.03	16.50
		CH 159	5795		15.15	16.50
	802.11ac-VHT20	CH 149	5745	MCS0	16.25	17.50
		CH 157	5785		16.43	17.50
		CH 165	5825		16.51	17.50
	802.11ac-VHT40	CH 151	5755	MCS0	16.07	17.00
		CH 159	5795		16.22	17.00
	802.11ac-VHT80	CH 155	5775	MCS0	16.12	17.00

The average conducted power for Wi-Fi 5G is as following- Power Level D1 (Transmit with WWAN):

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.2GHz WLAN	802.11a	CH 36	5180	6Mbps	10.00	11.50
		CH 40	5200		10.20	11.50
		CH 44	5220		10.18	11.50
		CH 48	5240		10.58	11.50
	802.11n-HT20	CH 36	5180	MCS0	9.58	11.50
		CH 40	5200		10.82	11.50
		CH 44	5220		11.15	11.50
		CH 48	5240		9.61	11.50
	802.11n-HT40	CH 38	5190	MCS0	8.78	10.00
		CH 46	5230		8.84	10.00
	802.11ac-VHT20	CH 36	5180	MCS0	10.16	11.00
		CH 40	5200		10.08	11.00
		CH 44	5220		10.18	11.00
		CH 48	5240		10.22	11.00
	802.11ac-VHT40	CH 38	5190	MCS0	9.89	10.50
		CH 46	5230		9.90	10.50
	802.11ac-VHT80	CH 42	5210	MCS0	9.91	10.50

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.3GHz WLAN	802.11a	CH 52	5260	6Mbps	**10.54**	11.50
		CH 56	5280		10.51	11.50
		CH 60	5300		10.51	11.50
		CH 64	5320		10.11	11.50
	802.11n-HT20	CH 52	5260	MCS0	9.66	11.50
		CH 56	5280		10.82	11.50
		CH 60	5300		11.15	11.50
		CH 64	5320		9.68	11.50
	802.11n-HT40	CH 54	5270	MCS0	8.92	10.00
		CH 62	5310		8.96	10.00
	802.11ac-VHT20	CH 52	5260	MCS0	10.33	11.00
		CH 56	5280		10.60	11.00
		CH 60	5300		10.70	11.00
		CH 64	5320		10.18	11.00
	802.11ac-VHT40	CH 54	5270	MCS0	10.09	10.50
		CH 62	5310		10.04	10.50
	802.11ac-VHT80	CH 58	5290	MCS0	10.05	10.50

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.5GHz WLAN	802.11a	CH 100	5500	6Mbps	10.47	12.50
		CH 116	5580		10.71	12.50
		CH 124	5620		10.75	12.50
		CH 132	5660		10.79	12.50
		CH 140	5700		10.82	12.50
		CH 144	5720		**11.15**	12.50
	802.11n-HT20	CH 100	5500	MCS0	9.41	11.00
		CH 116	5580		9.73	11.00
		CH 124	5620		9.72	11.00
		CH 132	5660		9.79	11.00
		CH 140	5700		9.77	11.00
		CH 144	5720		9.68	11.00
	802.11n-HT40	CH 102	5510	MCS0	9.15	10.50
		CH 110	5550		9.36	10.50
		CH 126	5630		9.45	10.50
		CH 134	5670		9.47	10.50
		CH 142	5710		9.36	10.50
	802.11ac-VHT20	CH 100	5500	MCS0	10.52	12.00
		CH 116	5580		10.80	12.00
		CH 124	5620		11.11	12.00
		CH 132	5660		11.14	12.00
		CH 140	5700		10.87	12.00
		CH 144	5720		10.71	12.00
	802.11ac-VHT40	CH 102	5510	MCS0	10.29	12.00
		CH 110	5550		10.52	12.00
		CH 126	5630		10.55	12.00
		CH 134	5670		10.56	12.00
		CH 142	5710		10.54	12.00
	802.11ac-VHT80	CH 106	5530	MCS0	10.38	12.00
		CH 122	5610		10.61	12.00
		CH 138	5690		10.47	12.00

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit
5.8GHz WLAN	802.11a	CH 149	5745	MCS0	10.23	11.50
		CH 157	5785		10.23	11.50
		CH 165	5825		10.50	11.50
	802.11n-HT20	CH 149	5745	MCS0	9.20	10.50
		CH 157	5785		9.32	10.50
		CH 165	5825		9.40	10.50
	802.11n-HT40	CH 151	5755	MCS0	8.97	10.50
		CH 159	5795		9.02	10.50
	802.11ac-VHT20	CH 149	5745	MCS0	10.28	11.00
		CH 157	5785		10.31	11.00
		CH 165	5825		10.39	11.00
	802.11ac-VHT40	CH 151	5755	MCS0	10.05	11.00
		CH 159	5795		10.17	11.00
	802.11ac-VHT80	CH 155	5775	MCS0	10.05	11.00

11.5 5G NR Measurement result

Maximum Target Power for Production Unit

Band	Tune up (dBm)	
	Level A1 (Receiver on)	Level B1 (Receiver off)
N5	24	24
N7	21	23

Maximum power reduction (MPR) for power class 3

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

NOTE 1: Applicable for UE operating in TDD mode with PI/2 PBSK modulation and UE indicates support for UE capability [*powerBoosting-pi2BPSK*]and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

n5-Power Level A1/B1								
SCS (kHz)	NR BW (MHz)	Modulation	RB allocation		NR Test Freq. (MHz)	NR Test CH.	Tune up	Power Results (dBm)
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	846.5	169300	24.00	23.73
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	836.5	167300	24.00	23.74
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	826.5	165300	24.00	23.67
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	839	167800	24.00	23.65
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	836.5	167300	24.00	23.64
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	834	166800	24.00	23.62
15	5	DFT-s-OFDM PI/2 BPSK1	Inner_Full	12@6	836.5	167300	24.00	23.41
15	5	DFT-s-OFDM 16QAM	Inner_Full	12@6	836.5	167300	23.00	22.87
15	5	DFT-s-OFDM 64QAM	Inner_Full	12@6	836.5	167300	21.50	21.29
15	5	DFT-s-OFDM 256QAM	Inner_Full	12@6	836.5	167300	19.50	18.98
15	5	CP-OFDM QPSK	Inner_Full	13@6	836.5	167300	22.50	22.46
15	5	CP-OFDM 16QAM	Inner_Full	13@6	836.5	167300	22.00	21.95
15	5	CP-OFDM 64QAM	Inner_Full	13@6	836.5	167300	20.50	20.48
15	5	CP-OFDM 256QAM	Inner_Full	13@6	836.5	167300	17.50	17.15
15	5	DFT-s-OFDM QPSK	Edge_Full_Right	2@23	836.5	165300	23.50	22.50
15	5	DFT-s-OFDM QPSK	Edge_Full_Left	2@0	836.5	165300	23.50	22.53
15	5	DFT-s-OFDM QPSK	Inner_1RB_Right	1@23	836.5	165300	24.00	23.57
15	5	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	836.5	165300	24.00	23.62
15	5	DFT-s-OFDM QPSK	Outer_Full	25@0	836.5	165300	23.50	22.51
15	10	DFT-s-OFDM QPSK	Inner_Full	25@12	836.5	167300	24.00	23.37
15	15	DFT-s-OFDM QPSK	Inner_Full	36@18	836.5	167300	24.00	23.59

n7-Power Level A1							
SCS (kHz)	NR BW (MHz)	Modulation	RB allocation		NR Test Freq. (MHz)	NR Test CH.	Power Results (dBm)
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	2502.5	500500	19.91
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	2535	507000	20.35
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	2567.5	513500	20.01
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	2510	502000	19.88
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	2535	507000	19.93
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	2560	512000	19.99
15	5	DFT-s-OFDM PI/2 BPSK1	Inner_Full	12@6	2535	507000	19.98
15	5	DFT-s-OFDM 16QAM	Inner_Full	12@6	2535	507000	19.99
15	5	DFT-s-OFDM 64QAM	Inner_Full	12@6	2535	507000	19.92
15	5	DFT-s-OFDM 256QAM	Inner_Full	12@6	2535	507000	18.93
15	5	CP-OFDM QPSK	Inner_Full	13@6	2535	507000	19.94
15	5	CP-OFDM 16QAM	Inner_Full	13@6	2535	507000	20.02
15	5	CP-OFDM 64QAM	Inner_Full	13@6	2535	507000	19.61
15	5	CP-OFDM 256QAM	Inner_Full	13@6	2535	507000	16.49
15	5	DFT-s-OFDM QPSK	Edge_Full_Right	2@23	2535	507000	19.91
15	5	DFT-s-OFDM QPSK	Edge_Full_Left	2@0	2535	507000	19.89
15	5	DFT-s-OFDM QPSK	Inner_1RB_Right	1@23	2535	507000	19.67
15	5	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	2535	507000	19.65
15	5	DFT-s-OFDM QPSK	Outer_Full	25@0	2535	507000	19.99
15	10	DFT-s-OFDM QPSK	Inner_Full	25@12	2535	507000	19.76
15	15	DFT-s-OFDM QPSK	Inner_Full	36@18	2535	507000	19.86

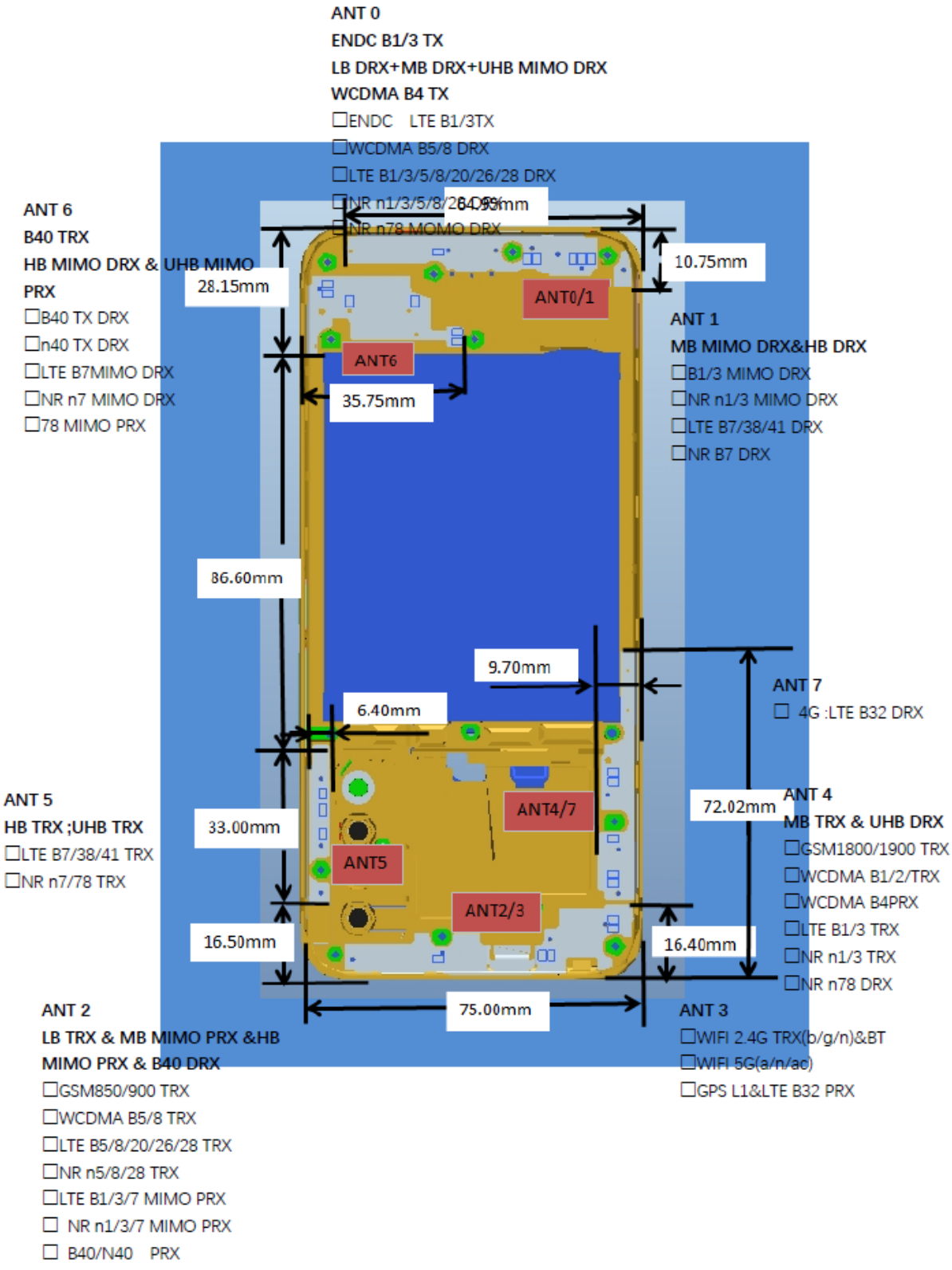
n7-Power Level B1								
SCS (kHz)	NR BW (MHz)	Modulation	RB allocation		NR Test Freq. (MHz)	NR Test CH.	Tune up	Power Results (dBm)
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	2502.5	500500	23.00	22.84
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	2535	507000	23.00	22.88
15	5	DFT-s-OFDM QPSK	Inner_Full	12@6	2567.5	513500	23.00	22.77
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	2510	502000	23.00	22.76
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	2535	507000	23.00	22.72
15	20	DFT-s-OFDM QPSK	Inner_Full	50@25	2560	512000	23.00	22.63
15	5	DFT-s-OFDM PI/2 BPSK1	Inner_Full	12@6	2535	507000	23.00	22.65
15	5	DFT-s-OFDM 16QAM	Inner_Full	12@6	2535	507000	22.00	21.98
15	5	DFT-s-OFDM 64QAM	Inner_Full	12@6	2535	507000	20.50	20.41
15	5	DFT-s-OFDM 256QAM	Inner_Full	12@6	2535	507000	18.50	18.35
15	5	CP-OFDM QPSK	Inner_Full	13@6	2535	507000	21.50	21.49
15	5	CP-OFDM 16QAM	Inner_Full	13@6	2535	507000	21.00	19.65
15	5	CP-OFDM 64QAM	Inner_Full	13@6	2535	507000	19.50	17.64
15	5	CP-OFDM 256QAM	Inner_Full	13@6	2535	507000	16.50	16.37
15	5	DFT-s-OFDM QPSK	Edge_Full_Right	2@23	2535	507000	22.50	21.69
15	5	DFT-s-OFDM QPSK	Edge_Full_Left	2@0	2535	507000	22.50	21.65
15	5	DFT-s-OFDM QPSK	Inner_1RB_Right	1@23	2535	507000	23.00	22.74
15	5	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	2535	507000	23.00	22.75
15	5	DFT-s-OFDM QPSK	Outer_Full	25@0	2535	507000	22.50	21.66
15	10	DFT-s-OFDM QPSK	Inner_1RB_Left	25@12	2535	507000	23.00	22.57
15	15	DFT-s-OFDM QPSK	Inner_1RB_Left	36@18	2535	507000	23.00	22.63

12 Simultaneous TX SAR Considerations

12.1 Introduction

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

12.2 Transmit Antenna Separation Distances



Picture 12 Antenna Locations

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, 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	Right	Top	Bottom
ANT0/1	Yes	Yes	Yes	Yes	No	Yes
ANT2/3	Yes	Yes	Yes	Yes	No	No
ANT4/7	Yes	Yes	Yes	No	Yes	No
ANT5	Yes	Yes	No	Yes	Yes	No

12.4 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied. The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Table 12.1: Standalone SAR test exclusion considerations

Band/Mode	F(GHz)	Position	SAR test exclusion threshold(mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.441	Head	9.60	9.7	9.33	Yes
		Body	19.20	9.7	9.33	Yes
2.4GHz WLAN	2.45	Head	9.58	18.5	70.79	No
		Body	19.17	18.5	70.79	No
5GHz WLAN	5.2	Head	6.58	16.5	44.67	No
		Body	13.16	16.5	44.67	No
	5.3	Head	6.52	16.5	44.67	No
		Body	13.03	16.5	44.67	No
	5.6	Head	6.34	16.5	44.67	No
		Body	12.68	16.5	44.67	No
	5.8	Head	6.23	16.5	44.67	No
		Body	12.46	16.5	44.67	No

13 Evaluation of Simultaneous

Table 13.1: The sum of SAR values for Main antenna + WiFi-2.4G

	Position	Main antenna	WiFi-2.4G	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.19	**1.47**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.06	**1.36**

Table 13.2: The sum of SAR values for Main antenna + WiFi-5G

	Position	Main antenna	WiFi-5G	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.04	**1.45**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.23	**1.53**

Table 13.3: The sum of reported SAR values for main antenna and BT

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Left head, Cheek (n7)	1.35	<0.01	**1.35**
Maximum reported SAR value for Body	Rear 10mm (WCDMA1700)	1.30	<0.01	**1.30**

Table 13.4: The sum of SAR values for Main antenna + WiFi-2.4G + BT

	Position	Main antenna	WiFi-2.4G	BT	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.19	<0.01	**1.47**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.06	<0.01	**1.36**

Table 13.5: The sum of SAR values for Main antenna + WiFi-5G + BT

	Position	Main antenna	WiFi-5G	BT	Sum
Highest SAR value for Head	Right head, Cheek (n7)	1.28	0.17	<0.01	**1.45**
Highest SAR value for Body	Rear 10mm (WCDMA1700)	1.30	0.23	<0.01	**1.53**

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.

Table 13.5: The sum of reported SAR values for main antenna and WiFi (Extremity SAR)

	band	Position	Main antenna	WiFi	Sum (10g)	Distance (mm)	Ratio
Highest reported SAR value for Phablet	WCDMA B2	Left 0mm	3.36	0.31	**3.67**	/	/
	WCDMA B4	Rear 0mm	3.19	0.61	**3.80**	/	/

According to the KDB 447498 D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio. The ratio is determined by $(SAR1 + SAR2)^{1.5}/Ri$, rounded to two decimal digits, and must be ≤ 0.1 for all antenna pairs in the configuration to qualify for 10-g SAR test exclusion.

14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom. The distance is 10 mm and just applied to the condition of body worn accessory.

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

The calculated SAR is obtained by the following formula:

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

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

$P_{Measured}$ is the measured power in chapter 11.

Table 14.1: Duty Cycle

Mode	Duty Cycle
Speech for GSM850/1900	1:8.3
GPRS&EGPRS for GSM 850	1:2
GPRS&EGPRS for GSM 1900	1:4
WCDMA&LTE FDD&5G NR	1:1
LTE TDD	1:1.58

The evaluation of multi-SIM cards:

We'll perform the head measurement in all bands with the primary SIM depending on the evaluation of multi-SIM cards and retest on highest value point with other SIM. Then, repeat the measurement in the Body test.

Frequency		Side	Test Position	SIM cards	SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.					
848.8	251	Right	Cheek	S1	0.764	-0.03
848.8	251	Right	Cheek	S2	0.752	0.02

Note: According to the values in the above table, the **S1** is the primary SIM card.

We'll perform the head measurement with the **S1** and retest on highest value point with others.

requency		Test Position	Spacing (mm)	SIM cards	SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.					
848.8	251	Rear	10	S1	0.274	-0.16
848.8	251	Rear	10	S2	0.269	0.01

Note: According to the values in the above table, the **S1** is the primary SIM card.

We'll perform the body measurement with the **S1** and retest on highest value point with others.

Note

S1: SIM1

S2: SIM2

H: The headset of CCB0049A12C1 by DALIN

14.1 SAR results for 2G/3G/4G

Table 14.1-1: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
190	836.6	Left	Cheek	/	26.47	27.5	0.32	**0.41**	0.552	**0.70**	-0.18
190	836.6	Left	Tilt	/	26.47	27.5	0.241	**0.31**	0.472	**0.60**	0.01
251	848.8	Right	Cheek	Fig.1	26.44	27.5	0.494	**0.63**	0.764	**0.98**	-0.03
190	836.6	Right	Cheek	/	26.47	27.5	0.431	**0.55**	0.678	**0.86**	0.10
128	824.2	Right	Cheek	/	26.41	27.5	0.419	**0.54**	0.671	**0.86**	-0.13
190	836.6	Right	Tilt	/	26.47	27.5	0.322	**0.41**	0.546	**0.69**	-0.17
251	848.8	Right	Cheek	S2	26.44	27.5	0.479	**0.61**	0.752	**0.96**	0.02

Note: the head SAR of GSM850 is tested with GPRS (4Txslots) mode because of VoIP.

Table 14.1-2: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
190	836.6	GPRS (4)	Front	/	26.47	27.5	0.125	**0.16**	0.201	**0.25**	0.12
251	848.8	GPRS (4)	Rear	Fig.2	26.44	27.5	0.171	**0.22**	0.274	**0.35**	-0.16
190	836.6	GPRS (4)	Rear	/	26.47	27.5	0.163	**0.21**	0.258	**0.33**	-0.07
128	824.2	GPRS (4)	Rear	/	26.41	27.5	0.161	**0.21**	0.267	**0.34**	0.15
190	836.6	GPRS (4)	Left	/	26.47	27.5	0.047	**0.06**	0.083	**0.11**	0.11
190	836.6	GPRS (4)	Right	/	26.47	27.5	0.09	**0.11**	0.153	**0.19**	0.02
190	836.6	GPRS (4)	Top	/	26.47	27.5	0.08	**0.10**	0.175	**0.22**	0.18
251	848.8	EGPRS (4)	Rear	/	26.4	27.5	0.156	**0.20**	0.235	**0.30**	0.03
251	848.8	GPRS (4)	Rear	S2	26.44	27.5	0.158	**0.20**	0.269	**0.34**	0.01

Note: The distance between the EUT and the phantom bottom is 10mm.

Table 14.1-3: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	Left	Cheek	/	26.73	28.7	0.177	**0.28**	0.301	**0.47**	-0.02
661	1880	Left	Tilt	/	26.73	28.7	0.31	**0.49**	0.589	**0.93**	0.02
810	1909.8	Right	Cheek	Fig.3	26.75	28.7	0.417	**0.65**	0.818	**1.28**	0.05
661	1880	Right	Cheek	/	26.73	28.7	0.36	**0.57**	0.74	**1.16**	0.16
512	1850.2	Right	Cheek	/	26.72	28.7	0.314	**0.50**	0.646	**1.02**	-0.09
661	1880	Right	Tilt	/	26.73	28.7	0.131	**0.21**	0.261	**0.41**	-0.08
810	1909.8	Right	Cheek	S2	26.75	28.7	0.4	**0.63**	0.801	**1.25**	0.02

Note: the head SAR of GSM1900 is tested with GPRS (2Txslots) mode because of VoIP.

Table 14.1-4: SAR Values (GSM 1900 MHz Band – Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
Frequency		Mode (number of timeslots)	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
661	1880	GPRS (4)	Front	/	26.73	28.7	0.118	**0.19**	0.208	**0.33**	-0.11
661	1880	GPRS (4)	Rear	/	26.73	28.7	0.254	**0.40**	0.489	**0.77**	-0.12
810	1909.8	GPRS (4)	Left	Fig.4	26.75	28.7	0.271	**0.42**	0.544	**0.85**	-0.07
661	1880	GPRS (4)	Left	/	26.73	28.7	0.246	**0.39**	0.517	**0.81**	-0.08
512	1850.2	GPRS (4)	Left	/	26.72	28.7	0.232	**0.37**	0.452	**0.71**	0.08
661	1880	GPRS (4)	Right	/	26.73	28.7	0.049	**0.08**	0.092	**0.14**	-0.12
661	1880	GPRS (4)	Top	/	26.73	28.7	0.103	**0.16**	0.197	**0.31**	-0.10
810	1909.8	EGPRS (4)	Left	/	26.72	28.7	0.234	**0.37**	0.523	**0.83**	0.09
810	1909.8	GPRS (4)	Left	S2	26.75	28.7	0.239	**0.37**	0.522	**0.82**	0.08

Note: The distance between the EUT and the phantom bottom is 10mm

Table 14.1-5: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C						
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
9400	1880	Left	Cheek	/	19.84	20.5	0.23	**0.27**	0.36	**0.42**	0.13
9400	1880	Left	Tilt	/	19.84	20.5	0.102	**0.12**	0.168	**0.20**	-0.12
9538	1907.6	Right	Cheek	Fig.5	19.56	20.5	0.436	**0.54**	0.882	**1.10**	0.03
9400	1880	Right	Cheek	/	19.84	20.5	0.392	**0.46**	0.72	**0.84**	-0.08
9262	1852.4	Right	Cheek	/	19.75	20.5	0.36	**0.43**	0.72	**0.86**	-0.11
9400	1880	Right	Tilt	/	19.84	20.5	0.145	**0.17**	0.255	**0.30**	0.16
9538	1907.6	Right	Cheek	S2	19.56	20.5	0.417	**0.52**	0.868	**1.08**	0.02

Table 14.1-6: SAR Values (WCDMA 1900 MHz Band – Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C					
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
9400	1880	Front	/	22.87	23.5	0.239	**0.28**	0.436	**0.50**	0.17
9538	1907.6	Rear	/	22.85	23.5	0.439	**0.51**	0.849	**0.99**	0.09
9400	1880	Rear	/	22.87	23.5	0.445	**0.51**	0.856	**0.99**	-0.11
9262	1852.4	Rear	/	22.76	23.5	0.391	**0.46**	0.75	**0.89**	-0.09
9538	1907.6	Left	Fig.6	22.85	23.5	0.491	**0.57**	1	**1.16**	-0.01
9400	1880	Left	/	22.87	23.5	0.435	**0.50**	0.863	**1.00**	0.07
9262	1852.4	Left	/	22.76	23.5	0.463	**0.55**	0.942	**1.12**	0.15
9400	1880	Top	/	22.87	23.5	0.201	**0.23**	0.361	**0.42**	0.06
9538	1907.6	Left	S2	22.85	23.5	0.421	**0.49**	0.866	**1.01**	0.08
9538	1907.6	Left	H	22.85	23.5	0.432	**0.50**	0.885	**1.03**	0.08

Note: The distance between the EUT and the phantom bottom is 10mm

Table 14.1-7: SAR Values (WCDMA 1700 MHz Band - Head)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5°C						
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
1513	1752.6	Left	Cheek	/	23.46	24	0.094	**0.11**	0.134	**0.15**	0.07
1412	1732.4	Left	Cheek	Fig.7	23.47	24	0.107	**0.12**	0.158	**0.18**	0.08
1312	1712.4	Left	Cheek	/	23.48	24	0.095	**0.11**	0.136	**0.15**	0.18
1412	1732.4	Left	Tilt	/	23.47	24	0.083	**0.09**	0.122	**0.14**	0.08
1412	1732.4	Right	Cheek	/	23.47	24	0.104	**0.12**	0.149	**0.17**	-0.04
1412	1732.4	Right	Tilt	/	23.47	24	0.072	**0.08**	0.102	**0.12**	0.07
1412	1732.4	Left	Cheek	S2	23.47	24	0.099	**0.11**	0.143	**0.16**	0.05

Table 14.1-8: SAR Values (WCDMA 1700 MHz Band – Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
1412	1732.4	Front	/	23.45	24	0.185	**0.21**	0.329	**0.37**	0.18
1513	1752.6	Rear	/	23.46	24	0.471	**0.53**	0.926	**1.05**	0.15
1412	1732.4	Rear	Fig.8	23.47	24	0.612	**0.69**	1.15	**1.30**	-0.02
1312	1712.4	Rear	/	23.48	24	0.462	**0.52**	0.911	**1.03**	-0.04
1412	1732.4	Left	/	23.45	24	0.074	**0.08**	0.125	**0.14**	-0.14
1412	1732.4	Right	/	23.45	24	0.019	**0.02**	0.033	**0.04**	-0.17
1513	1752.6	Bottom	/	23.46	24	0.383	**0.43**	0.738	**0.84**	0.08
1412	1732.4	Bottom	/	23.45	24	0.396	**0.45**	0.759	**0.86**	-0.11
1312	1712.4	Bottom	/	23.48	24	0.352	**0.40**	0.686	**0.77**	0.16
1412	1732.4	Rear	S2	23.45	24	0.598	**0.68**	1.01	**1.15**	0.08
1412	1732.4	Rear	H	23.45	24	0.603	**0.68**	1.06	**1.20**	0.12

Note: The distance between the EUT and the phantom bottom is 10mm

Table 14.1-9: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
4233	846.6	Left	Cheek	/	23.45	24	0.729	**0.83**	0.989	**1.12**	0.03
4183	836.6	Left	Cheek	Fig.9	23.52	24	0.748	**0.84**	1.02	**1.14**	0.09
4132	826.4	Left	Cheek	/	23.47	24	0.318	**0.36**	0.449	**0.51**	-0.13
4233	846.6	Left	Tilt	/	23.12	24	0.479	**0.59**	0.749	**0.92**	-0.18
4183	836.6	Left	Tilt	/	23.52	24	0.549	**0.61**	0.844	**0.94**	0.06
4132	826.4	Left	Tilt	/	23.17	24	0.216	**0.26**	0.335	**0.41**	0.14
4233	846.6	Right	Cheek	/	23.12	24	0.539	**0.66**	0.71	**0.87**	0.07
4183	836.6	Right	Cheek	/	23.52	24	0.624	**0.70**	0.818	**0.91**	0.10
4132	826.4	Right	Cheek	/	23.17	24	0.241	**0.29**	0.317	**0.38**	0.10
4183	836.6	Right	Tilt	/	23.52	24	0.445	**0.50**	0.631	**0.70**	-0.09
4183	836.6	Left	Cheek	S2	23.52	24	0.68	**0.76**	0.9	**1.01**	0.04

Table 14.1-10: SAR Values (WCDMA 850 MHz Band - Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
4183	836.6	Front	/	23.52	24	0.193	**0.22**	0.284	**0.32**	0.01
4233	846.6	Rear	/	23.12	24	0.239	**0.29**	0.311	**0.38**	-0.06
4183	836.6	Rear	Fig.10	23.52	24	0.309	**0.35**	0.402	**0.45**	0.12
4132	826.4	Rear	/	23.17	24	0.129	**0.16**	0.179	**0.22**	0.12
4183	836.6	Left	/	23.52	24	0.062	**0.07**	0.087	**0.10**	0.09
4183	836.6	Right	/	23.52	24	0.204	**0.23**	0.286	**0.32**	-0.02
4183	836.6	Top	/	23.52	24	0.155	**0.17**	0.272	**0.30**	-0.10
4183	836.6	Rear	S2	23.52	24	0.287	**0.32**	0.387	**0.43**	0.01

Note: The distance between the EUT and the phantom bottom is 10mm.

Table 14.1-11: SAR Values (LTE Band7 - Head)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
21350	2560	1RB_Mid	Left	Cheek	Fig.11	20.87	21	0.299	**0.31**	0.626	**0.65**	0.02
21350	2560	1RB_Mid	Left	Tilt	/	20.87	21	0.106	**0.11**	0.196	**0.20**	0.01
21350	2560	1RB_Mid	Right	Cheek	/	20.87	21	0.209	**0.22**	0.422	**0.43**	0.07
21350	2560	1RB_Mid	Right	Tilt	/	20.87	21	0.045	**0.05**	0.083	**0.09**	0.16
21350	2560	50RB-Mid	Left	Cheek	/	20.93	21	0.287	**0.29**	0.614	**0.62**	0.02
21350	2560	50RB-Mid	Left	Tilt	/	20.93	21	0.115	**0.12**	0.210	**0.21**	-0.08
21350	2560	50RB-Mid	Right	Cheek	/	20.93	21	0.213	**0.22**	0.435	**0.44**	0.15
21350	2560	50RB-Mid	Right	Tilt	/	20.93	21	0.045	**0.05**	0.083	**0.08**	0.04
21350	2560	UL CA	Left	Cheek	/	20.85	21	0.298	**0.31**	0.622	**0.64**	-0.03
21350	2560	1RB_Mid	Left	Cheek	S2	20.87	21	0.288	**0.30**	0.618	**0.64**	0.01

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-12: SAR Values (LTE Band7 – Body)

Ambient Temperature: 22.9 °C Liquid Temperature: 22.5°C										
Frequency		Mode	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
21350	2560	1RB-Mid Front	/	22.23	23	0.191	**0.23**	0.374	**0.45**	-0.15
21350	2560	1RB-Mid Rear	/	22.23	23	0.390	**0.47**	0.823	**0.98**	0.03
21100	2535	1RB-Mid Rear	Fig.12	22.22	23	0.437	**0.52**	0.919	**1.10**	-0.17
20850	2510	1RB-Mid Rear	/	22.15	23	0.391	**0.48**	0.793	**0.96**	0.01
21350	2560	100RB Rear	/	21.25	22	0.351	**0.42**	0.754	**0.90**	0.01
21350	2560	1RB-Mid Left	/	22.23	23	0.010	**0.01**	0.025	**0.03**	0.05
21350	2560	1RB-Mid Right	/	22.23	23	0.426	**0.51**	0.907	**1.08**	0.03
21100	2535	1RB-Mid Right	/	22.22	23	0.395	**0.47**	0.833	**1.00**	-0.02
20850	2510	1RB-Mid Right	/	22.15	23	0.418	**0.51**	0.889	**1.08**	0.12
21350	2560	100RB Right	/	21.25	22	0.342	**0.41**	0.731	**0.87**	-0.12
21350	2560	1RB-Mid Top	/	22.23	23	0.023	**0.03**	0.040	**0.05**	0.04
21350	2560	50RB-Mid Front	/	21.27	22	0.151	**0.18**	0.298	**0.35**	0.05
21350	2560	50RB-Mid Rear	/	21.27	22	0.312	**0.37**	0.660	**0.78**	0.02
21350	2560	50RB-Mid Left	/	21.27	22	0.007	**0.01**	0.020	**0.02**	0.08
21350	2560	50RB-Mid Right	/	21.27	22	0.338	**0.40**	0.721	**0.85**	0.04
21100	2535	50RB-Mid Right	/	21.24	22	0.343	**0.41**	0.729	**0.87**	-0.17
20850	2510	50RB-Mid Right	/	21.22	22	0.349	**0.42**	0.727	**0.87**	-0.09
21350	2560	50RB-Mid Top	/	21.27	22	0.018	**0.02**	0.032	**0.04**	0.03
21100	2535	UL CA	/	22.19	23	0.431	**0.52**	0.907	**1.09**	-0.02
21100	2535	1RB-Mid Rear	S2	22.22	23	0.413	**0.49**	0.899	**1.08**	0.03

Note: The distance between the EUT and the phantom bottom is 10mm. The LTE mode is QPSK_20MHz.

Table 14.1-13: SAR Values (LTE Band26 - Head)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
26965	841.5	1RB_Mid	Left	Cheek	Fig.13	23.39	24.5	0.407	**0.53**	0.56	**0.72**	0.11
26965	841.5	1RB_Mid	Left	Tilt	/	23.39	24.5	0.345	**0.45**	0.552	**0.71**	0.12
26965	841.5	1RB_Mid	Right	Cheek	/	23.39	24.5	0.338	**0.44**	0.474	**0.61**	-0.04
26965	841.5	1RB_Mid	Right	Tilt	/	23.39	24.5	0.289	**0.37**	0.456	**0.59**	0.12
26965	841.5	36RB-High	Left	Cheek	/	22.53	23.5	0.31	**0.39**	0.424	**0.53**	-0.03
26965	841.5	36RB-High	Left	Tilt	/	22.53	23.5	0.26	**0.33**	0.417	**0.52**	-0.18
26965	841.5	36RB-High	Right	Cheek	/	22.53	23.5	0.266	**0.33**	0.369	**0.46**	0.16
26965	841.5	36RB-High	Right	Tilt	/	22.53	23.5	0.22	**0.28**	0.349	**0.44**	0.03
26965	841.5	1RB_Mid	Left	Cheek	S2	23.39	24.5	0.378	**0.49**	0.523	**0.68**	0.02

Note1: The LTE mode is QPSK_15MHz.

Table 14.1-14: SAR Values (LTE Band26 – Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC										
Frequency		Mode	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
26965	841.5	1RB-Mid Front	/	23.39	24.5	0.121	**0.16**	0.181	**0.23**	-0.02
26965	841.5	1RB-Mid Rear	Fig.14	23.39	24.5	0.198	**0.26**	0.258	**0.33**	-0.01
26965	841.5	1RB-Mid Left	/	23.39	24.5	0.1	**0.13**	0.14	**0.18**	-0.08
26965	841.5	1RB-Mid Right	/	23.39	24.5	0.16	**0.21**	0.223	**0.29**	0.15
26965	841.5	1RB-Mid Top	/	23.39	24.5	0.136	**0.18**	0.231	**0.30**	-0.03
26965	841.5	36RB-High Front	/	22.53	23.5	0.094	**0.12**	0.139	**0.17**	-0.13
26965	841.5	36RB-High Left	/	22.53	23.5	0.151	**0.19**	0.194	**0.24**	-0.08
26965	841.5	36RB-High Right	/	22.53	23.5	0.069	**0.09**	0.096	**0.12**	0.01
26965	841.5	36RB-High Bottom	/	22.53	23.5	0.084	**0.11**	0.116	**0.15**	0.10
26965	841.5	1RB-Mid Rear	S2	22.53	23.5	0.107	**0.13**	0.182	**0.23**	0.12

Note: The distance between the EUT and the phantom bottom is 10mm. The LTE mode is QPSK_15MHz.

Table 14.1-15: SAR Values (LTE Band41 - Head)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
41055	2636.5	1RB-Mid	Left	Cheek	/	23.98	24	0.03	**0.03**	0.089	**0.09**	-0.09
41055	2636.5	1RB-Mid	Left	Tilt	/	23.98	24	<0.01	<0.01	<0.01	<0.01	/
41055	2636.5	1RB-Mid	Right	Cheek	Fig.15	23.98	24	0.242	**0.24**	0.477	**0.48**	0.07
41055	2636.5	1RB-Mid	Right	Tilt	/	23.98	24	0.045	**0.05**	0.08	**0.08**	0.07
41055	2636.5	50RB-High	Left	Cheek	/	22.98	23	0.017	**0.02**	0.054	**0.05**	-0.10
41055	2636.5	50RB-High	Left	Tilt	/	22.98	23	<0.01	<0.01	<0.01	<0.01	/
41055	2636.5	50RB-High	Right	Cheek	/	22.98	23	0.208	**0.21**	0.416	**0.42**	0.03
41055	2636.5	50RB-High	Right	Tilt	/	22.98	23	0.045	**0.05**	0.083	**0.08**	0.17
41055	2636.5	1RB-Mid	Left	Cheek	S2	23.98	24	0.213	**0.21**	0.432	**0.43**	0.09

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-16: SAR Values (LTE Band41 - Body)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃										
Frequency		Mode	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
41055	2636.5	1RB-Mid Front	/	23.98	24	0.123	**0.12**	0.247	**0.25**	0.15
41055	2636.5	1RB-Mid Rear	/	23.98	24	0.224	**0.23**	0.459	**0.46**	0.17
41490	2680	1RB-Mid Right	/	23.9	24	0.339	**0.35**	0.735	**0.75**	0.06
41055	2636.5	1RB-Mid Right	/	23.98	24	0.361	**0.36**	0.802	**0.81**	0.13
40620	2593	1RB-Mid Right	/	23.95	24	0.348	**0.35**	0.754	**0.76**	0.04
40185	2549.5	1RB-Mid Right	/	23.79	24	0.365	**0.38**	0.788	**0.83**	0.11
39750	2506	1RB-Mid Right	Fig.16	23.48	24	0.372	**0.42**	0.806	**0.91**	0.04
39750	2506	100RB Right	/	23.39	24	0.256	**0.29**	0.523	**0.60**	0.13
41055	2636.5	1RB-Mid Top	/	23.98	24	0.026	**0.03**	0.049	**0.05**	-0.16
41055	2636.5	50RB-High Front	/	22.98	23	0.103	**0.10**	0.202	**0.20**	-0.02
41055	2636.5	50RB-High Rear	/	22.98	23	0.197	**0.20**	0.396	**0.40**	-0.15
41055	2636.5	50RB-High Right	/	22.98	23	0.245	**0.25**	0.514	**0.52**	0.17
41055	2636.5	50RB-High Top	/	22.98	23	0.018	**0.02**	0.035	**0.04**	0.16
39750	2506	1RB-Mid Right	S2	23.48	24	0.232	**0.26**	0.698	**0.79**	0.02

Note: The distance between the EUT and the phantom bottom is 10mm. The LTE mode is QPSK_20MHz.

14.2 SAR results for 5G NR

Table 14.2-1: SAR Values (5G NR n5-Head)

Ambient Temperature: 22.2 ℃ Liquid Temperature: 22 ℃											
Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
167300	836.5	Left	Cheek	Fig.17	23.74	24	0.511	**0.54**	0.7	**0.74**	-0.03
167300	836.5	Left	Tilt	/	23.74	24	0.307	**0.33**	0.476	**0.51**	0.13
167300	836.5	Right	Cheek	/	23.74	24	0.391	**0.42**	0.528	**0.56**	-0.06
167300	836.5	Right	Tilt	/	23.74	24	0.373	**0.40**	0.551	**0.58**	-0.11
167300	836.5	Left	Cheek	S2	23.74	24	0.489	**0.52**	0.632	**0.67**	-0.08

Table 14.2-2: SAR Values (5G NR n5-Body)

Ambient Temperature: 22.2 ℃ Liquid Temperature: 22 ℃										
Frequency		Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
167300	836.5	Front	/	23.74	24	0.156	**0.17**	0.208	**0.22**	0.07
167300	836.5	Rear	/	23.74	24	0.178	**0.19**	0.263	**0.28**	0.05
167300	836.5	Left	/	23.74	24	0.119	**0.13**	0.17	**0.18**	-0.07
167300	836.5	Right	Fig.18	23.74	24	0.188	**0.20**	0.271	**0.29**	0.04
167300	836.5	Top	/	23.74	24	0.126	**0.13**	0.232	**0.25**	0.03
167300	836.5	Right	S2	23.74	24	0.176	**0.19**	0.255	**0.27**	0.02

Note: The distance between the EUT and the phantom bottom is 10mm.

Table 14.2-3: SAR Values (5G NR n7-Head)

Ambient Temperature: 22.2 ℃ Liquid Temperature: 22 ℃											
Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
513500	2567.5	Left	Cheek	/	19.91	21	0.414	**0.53**	0.964	**1.24**	0.15
507000	2535	Left	Cheek	Fig.19	20.35	21	0.503	**0.58**	1.160	**1.35**	-0.07
500500	2502.5	Left	Cheek	/	20.01	21	0.448	**0.56**	0.998	**1.25**	-0.09
50700	2535	Left	Tilt	/	20.35	21	0.176	**0.20**	0.357	**0.41**	0.03
50700	2535	Right	Cheek	/	20.35	21	0.304	**0.35**	0.675	**0.78**	0.04
50700	2535	Right	Tilt	/	20.35	21	0.079	**0.09**	0.154	**0.18**	0.13
50700	2535	Right	Cheek	S2	20.35	21	0.484	**0.56**	0.988	**1.15**	0.02

Table 14.2-4: SAR Values (5G NR n7-Body)

Ambient Temperature: 22.2 ℃ Liquid Temperature: 22 ℃										
Frequency		Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
50700	2535	Front	/	22.88	23	0.211	**0.22**	0.428	**0.44**	0.09
50700	2535	Rear	/	22.88	23	0.379	**0.39**	0.781	**0.80**	-0.09
513500	2567.5	Right	/	22.77	23	0.472	**0.50**	0.989	**1.04**	-0.11
507000	2535	Right	Fig.20	22.88	23	0.494	**0.51**	1.090	**1.12**	-0.17
500500	2502.5	Right	/	22.84	23	0.482	**0.50**	1.060	**1.10**	0.06
50700	2535	Top	/	22.88	23	0.052	**0.05**	0.090	**0.09**	-0.07
50700	2535	Right	S2	22.88	23	0.479	**0.49**	0.956	**0.98**	-0.02

Note: The distance between the EUT and the phantom bottom is 10mm.

14.3 WLAN Evaluation for 2.4G

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

Head Evaluation

Table 14.3-1: SAR Values (WLAN - Head)– 802.11b (Fast SAR)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
Frequency		Side	Test Position	Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
Ch.	MHz										
1	2412	Left	Cheek	Note1	18.03	18.5	0.073	**0.08**	0.130	**0.14**	-0.15
1	2412	Left	Tilt	Note1	18.03	18.5	0.072	**0.08**	0.152	**0.17**	-0.20
1	2412	Right	Cheek	Note1	18.03	18.5	0.13	**0.15**	0.261	**0.29**	0.06
1	2412	Right	Tilt	Note1	18.03	18.5	0.091	**0.10**	0.201	**0.22**	-0.04
1	2412	Left	Cheek	Note2	16.16	16.5	0.045	**0.05**	0.081	**0.09**	0.14
1	2412	Left	Tilt	Note2	16.16	16.5	0.044	**0.05**	0.095	**0.10**	0.06
1	2412	Right	Cheek	Note2	16.16	16.5	0.085	**0.09**	0.172	**0.19**	-0.13
1	2412	Right	Tilt	Note2	16.16	16.5	0.056	**0.06**	0.125	**0.14**	0.13

Note1: The results are for Wifi antenna transmit standalone.

Note2: The results are for Wifi antenna transmit with WWAN.

As shown above table, the initial test position for head is “Right Cheek”. So the head SAR of WLAN is presented as below:

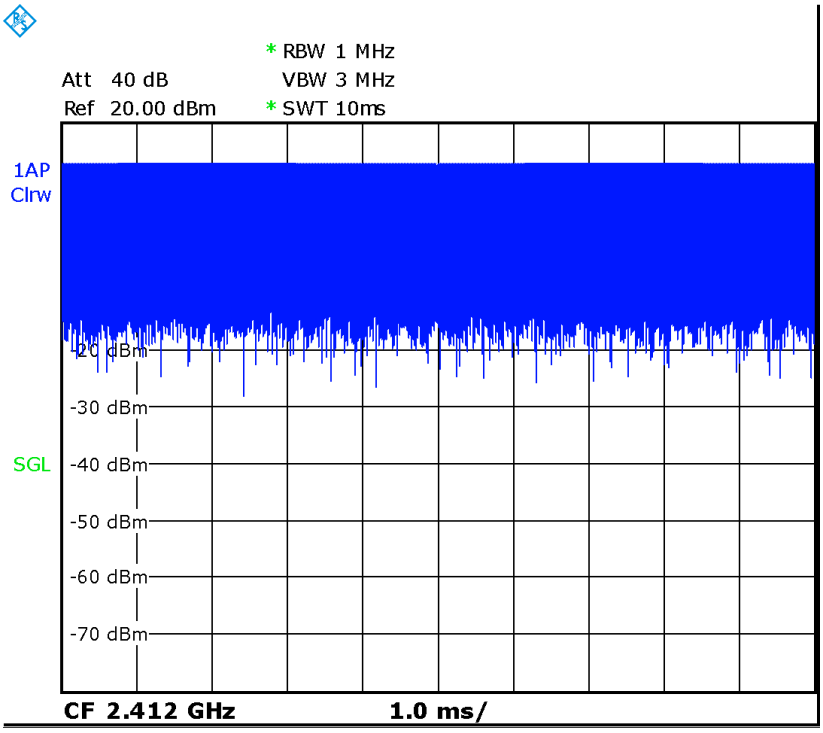
Table 14.3-2: SAR Values (WLAN - Head)– 802.11b (Full SAR)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃											
Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
Ch.	MHz										
1	2412	Right	Cheek	Fig.21	18.03	18.5	0.131	**0.15**	0.262	**0.29**	0.06

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

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



Picture 14.3-1 Duty factor plot

Table 14.3-3: SAR Values (WLAN - Head) – 802.11b (Scaled Reported SAR)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃							
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
Ch.	MHz						
1	2412	Right	Cheek	100%	100%	**0.29**	**0.29**

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

Body Evaluation

Table 14.3-4: SAR Values (WLAN - Body)– 802.11b (Fast SAR)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
Ch.	MHz									
1	2412	Front	Note1	18.03	18.5	0.024	**0.03**	0.044	**0.05**	0.02
1	2412	Rear	Note1	18.03	18.5	0.072	**0.08**	0.167	**0.19**	0.04
1	2412	Left	Note1	18.03	18.5	0.051	**0.06**	0.115	**0.13**	0.15
1	2412	Right	Note1	18.03	18.5	<0.01	<0.01	<0.01	<0.01	/
1	2412	Top	Note1	18.03	18.5	0.030	**0.03**	0.056	**0.06**	0.07
1	2412	Front	Note2	16.16	16.5	0.009	**0.01**	0.015	**0.02**	-0.13
1	2412	Rear	Note2	16.16	16.5	0.026	**0.03**	0.060	**0.06**	0.09
1	2412	Left	Note2	16.16	16.5	0.018	**0.02**	0.041	**0.04**	-0.02
1	2412	Right	Note2	16.16	16.5	<0.01	<0.01	<0.01	<0.01	/
1	2412	Top	Note2	16.16	16.5	0.010	**0.01**	0.020	**0.02**	0.10

Note1: The results are for Wifi antenna transmit standalone.

Note2: The results are for Wifi antenna transmit with WWAN.

Note3: The distance between the EUT and the phantom bottom is 10mm.

As shown above table, the initial test position for body is “Rear 10mm”. So the body SAR of WLAN is presented as below:

Table 14.3-5: SAR Values (WLAN - Body)– 802.11b (Full SAR)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃										
Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
Ch.	MHz									
1	2412	Rear	Fig.22	18.03	18.5	0.075	**0.08**	0.169	**0.19**	0.04

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

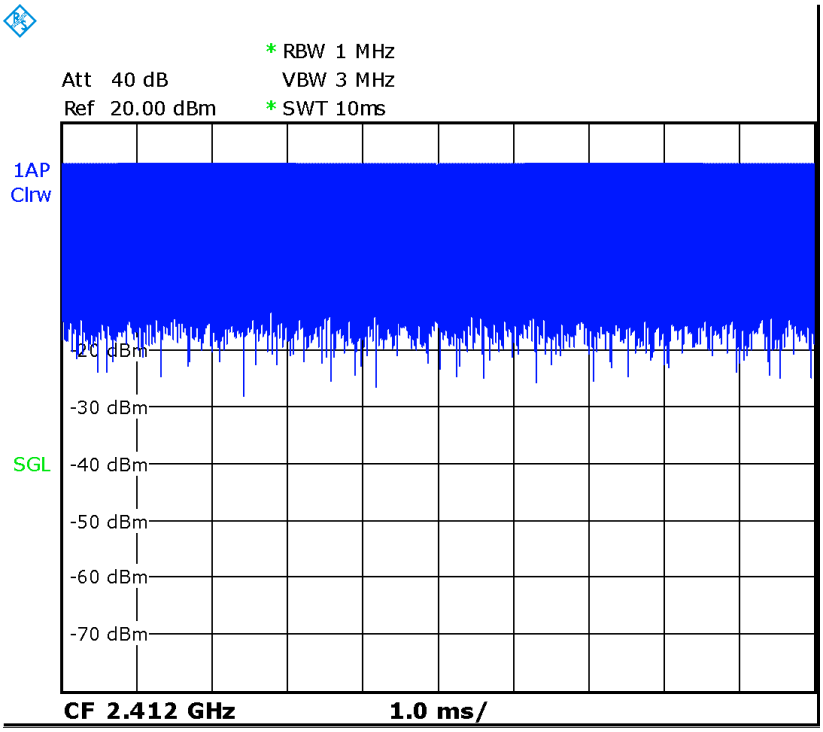
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

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

Table 14.3-6: SAR Values (WLAN - Body) – 802.11b (Scaled Reported SAR)

Ambient Temperature: 22.9 ℃ Liquid Temperature: 22.5℃						
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
Ch.	MHz					
1	2412	Rear	100%	100%	**0.19**	**0.19**

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



Picture 14.3-2 Duty factor plot

14.4 WLAN Evaluation For 5G

Table 14.4-1: OFDM mode specified maximum output power of WLAN antenna

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	X		X	X	X	X	X	
U-NII-2A	X		X	X	X	X	X	
U-NII-2C	X		X	X	X	X	X	
U-NII-3	X		X	X	X	X	X	
§ 15.247 (5.8 GHz)								
X: maximum(conducted) output power(mW), including tolerance, specified for production units								

Table 14.4-2: Maximum output power specified of WLAN antenna – Transmit alone

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	45		35	35	45	40	40	
U-NII-2A	45		35	35	45	40	40	
U-NII-2C	50		40	40	50	45	45	
U-NII-3	56		45	45	56	50	50	
§ 15.247 (5.8 GHz)								

- The maximum output power specified for production units is the same for all channels, modulations and data rates in each channel bandwidth configuration of the 802.11a/g/n/ac modes.
- The blue highlighted cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.

Table 14.4-3: Maximum output power specified of WLAN antenna–Transmit with WWAN

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	14		14	10	13	11	11	
U-NII-2A	14		14	10	13	11	11	
U-NII-2C	18		13	11	16	16	16	
U-NII-3	14		11	11	13	13	13	
§ 15.247 (5.8 GHz)								

- The maximum output power specified for production units is the same for all channels, modulations and data rates in each channel bandwidth configuration of the 802.11a/g/n/ac modes.
- The blue highlighted cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.

Table 14.4-4: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations – Transmit alone

802.11 Mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48 **15.9/16.1/** **15.8/15.9**	36/40/44/48 Lower power	38/46 Lower power	36/40/44/48 Lower power	38/46 Lower power	42 Lower power
U-NII-2A	52/56/60/64 **15.9/15.7/** **15.7/15.6**	52/56/60/64 Lower power	54/62 Lower power	52/56/60/64 Lower power	54/62 Lower power	58 Lower power
U-NII-2C	100/116/124/ 132/140/144 **15.9/16.2/16.4/** **16.6/16.7/16.8**	100/116/124/ 132/140/144 Lower power	102/110/118/ 126/134/142 Lower power	100/116/124/ 132/140/144 Lower power	102/110/126 /134/142 Lower power	106/122/ 138 Lower power
U-NII-3	149/157/165 **16.4/16.5/16.6**	149/157/165 Lower power	151/159 Lower power	149/157/165 Lower power	151/159 Lower power	155 Lower power

- The **bold numbers** is the maximum output measured power (mW).
- Channels with measured maximum power within 0.25dB are considered to have the same measured output. Channels selected for initial test configuration are highlighted in yellow.

Table 14.4-5: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations – Transmit with WWAN

802.11 Mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48 **15.9/16.1/** **15.8/15.9**	36/40/44/48 Lower power	38/46 Lower power	36/40/44/48 Lower power	38/46 Lower power	42 Lower power
U-NII-2A	52/56/60/64 **11.3/11.2/** **11.2/10.3**	52/56/60/64 Lower power	54/62 Lower power	52/56/60/64 Lower power	54/62 Lower power	58 Lower power
U-NII-2C	100/116/124/ 132/140/144 **11.1/11.8/11.9/** **12/12.1/13**	100/116/124/ 132/140/144 Lower power	102/110/118/ 126/134/142 Lower power	100/116/124/ 132/140/144 Lower power	102/110/126 /134/142 Lower power	106/122/ 138 Lower power
U-NII-3	149/157/165 **10.5/10.5/11.2**	149/157/165 Lower power	151/159 Lower power	149/157/165 Lower power	151/159 Lower power	155 Lower power

- The **bold numbers** is the maximum output measured power (mW).
- Channels with measured maximum power within 0.25dB are considered to have the same measured output. Channels selected for initial test configuration are highlighted in yellow.

Table 14.4-6: Reported SAR of initial test configuration for Head-Transmit alone

802.11 mode	a	n		ac		
BW(MHz)	**20**	**20**	**40**	**20**	**40**	**80**
U-NII-1	36/40/44/48	36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64 **0.50**	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/116/124/ 132/140/144 **0.89/0.80**	100/116/124/ 132/140/144	102/110/118/ 126/134/142	100/116/124/ 132/140/144	102/110/12 6/134/142	106/122 /138
U-NII-3	149/157/165 **0.68**	149/153/157/161/1 65	151/159	149/153/157/ 161/165	151/159	155
Highest measured output power channel tested initially are in yellow highlight. The green highlighted channels are next highest measured output channel in the initial test configuration.						

Table 14.4-7: Reported SAR of initial test configuration for Body-Transmit alone

802.11 mode	a	n		ac		
BW(MHz)	**20**	**20**	**40**	**20**	**40**	**80**
U-NII-1	36/40/44/48	36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64 **0.57**	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/116/124/ 132/140/144 1.00/0.99	100/116/124/ 132/140/144	102/110/118/ 126/134 **0.30**	100/116/124/ 132/140/144	102/110/ 126/134/142	106/12 2/138
U-NII-3	149/157/165 0.70	149/153/157/161/1 65	151/159	149/153/157/1 61/165	151/159	155 **0.24**
Highest measured output power channel tested initially are in yellow highlight. The green highlighted channels are next highest measured output channel in the initial test configuration.						

Table 14.4-8: SAR Values (WLAN 5G - Head)

Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
52	5260	Left	Cheek	Note1	15.88	16.5	0.033	**0.04**	0.116	**0.13**	0.06
52	5260	Left	Tilt	Note1	15.88	16.5	0.043	**0.05**	0.119	**0.14**	0.06
52	5260	Right	Cheek	Note1	15.88	16.5	0.130	**0.15**	0.435	**0.50**	0.12
52	5260	Right	Tilt	Note1	15.88	16.5	0.102	**0.09**	0.318	**0.37**	-0.07
144	5720	Left	Cheek	Note1	16.81	17.0	0.091	**0.09**	0.300	**0.31**	0.02
144	5720	Left	Tilt	Note1	16.81	17.0	0.089	**0.09**	0.273	**0.29**	0.07
144	5720	Right	Cheek	Note1	16.81	17.0	0.218	**0.23**	0.767	**0.80**	0.09
144	5720	Right	Tilt	Note1	16.81	17.0	0.216	**0.23**	0.752	**0.79**	0.01
140	5700	Right	Cheek	Note1/ Fig.23	16.79	17.0	0.247	**0.26**	**0.849**	**0.89**	0.09
155	5775	Left	Cheek	Note1	16.64	17.5	0.076	**0.09**	0.243	**0.30**	0.08
165	5825	Left	Tilt	Note1	16.64	17.5	0.070	**0.09**	0.202	**0.25**	-0.09
165	5825	Right	Cheek	Note1	16.64	17.5	0.165	**0.20**	0.561	**0.68**	-0.01
165	5825	Right	Tilt	Note1	16.64	17.5	0.135	**0.16**	0.462	**0.56**	0.16
52	5260	Left	Cheek	Note2	10.54	11.5	0.006	**0.01**	0.026	**0.03**	0.19
52	5260	Left	Tilt	Note2	10.54	11.5	0.008	**0.01**	0.027	**0.03**	-0.11
52	5260	Right	Cheek	Note2	10.54	11.5	0.024	**0.03**	0.096	**0.12**	0.08
52	5260	Right	Tilt	Note2	10.54	11.5	0.019	**0.02**	0.072	**0.09**	0.16
144	5720	Left	Cheek	Note2	11.15	11.5	0.017	**0.02**	0.062	**0.07**	0.00
144	5720	Left	Tilt	Note2	11.15	11.5	0.016	**0.02**	0.056	**0.06**	-0.09
144	5720	Right	Cheek	Note2	11.15	11.5	0.040	**0.04**	**0.158**	**0.17**	-0.15
144	5720	Right	Tilt	Note2	11.15	11.5	0.039	**0.04**	0.155	**0.17**	-0.11
165	5825	Left	Cheek	Note2	10.50	11.5	0.015	**0.02**	0.059	**0.07**	-0.01
165	5825	Left	Tilt	Note2	10.50	11.5	0.014	**0.02**	0.049	**0.06**	-0.14
165	5825	Right	Cheek	Note2	10.50	11.5	0.033	**0.04**	0.135	**0.17**	0.08
165	5825	Right	Tilt	Note2	10.50	11.5	0.027	**0.03**	0.112	**0.14**	0.10

Note1: The results are for Wifi antenna transmit standalone.

Note2: The results are for Wifi antenna transmit with WWAN.

Table 14.4-9: SAR Values (WLAN 5G - Body)

Frequency		Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
52	5260	Front	Note1	15.88	16.5	0.035	**0.04**	0.095	**0.11**	0.09
52	5260	Rear	Note1	15.88	16.5	0.182	**0.21**	**0.493**	**0.57**	0.01
52	5260	Left	Note1	15.88	16.5	0.132	**0.15**	0.339	**0.39**	0.05
52	5260	Right	Note1	15.88	16.5	<0.01	**<0.01**	<0.01	**<0.01**	/
52	5260	Top	Note1	15.88	16.5	0.061	**0.07**	0.151	**0.17**	-0.04
144	5720	Front	Note1	16.81	17.0	0.080	**0.08**	0.246	**0.26**	0.00
144	5720	Rear	Note1	16.81	17.0	0.312	**0.33**	0.951	**0.99**	0.07
144	5720	Left	Note1	16.81	17.0	0.196	**0.20**	0.535	**0.56**	-0.07
144	5720	Right	Note1	16.81	17.0	<0.01	**<0.01**	<0.01	**<0.01**	/
144	5720	Top	Note1	16.81	17.0	0.170	**0.18**	0.388	**0.41**	0.01
140	5700	Rear	Note1/ Fig.24	16.79	17.0	0.315	**0.33**	**0.955**	**1.00**	0.09
165	5825	Front	Note1	16.64	17.5	0.059	**0.07**	0.174	**0.21**	0.09
165	5825	Rear	Note1	16.64	17.5	0.189	**0.23**	0.574	**0.70**	0.09
165	5825	Left	Note1	16.64	17.5	0.121	**0.15**	0.315	**0.38**	0.06
165	5825	Right	Note1	16.64	17.5	<0.01	**<0.01**	<0.01	**<0.01**	/
165	5825	Top	Note1	16.64	17.5	0.105	**0.13**	0.264	**0.32**	0.09
52	5260	Front	Note2	10.54	11.5	0.008	**0.01**	0.023	**0.03**	-0.12
52	5260	Rear	Note2	10.54	11.5	0.040	**0.05**	0.120	**0.15**	0.12
52	5260	Left	Note2	10.54	11.5	0.029	**0.04**	0.083	**0.10**	0.11
52	5260	Right	Note2	10.54	11.5	<0.01	**<0.01**	<0.01	**<0.01**	/
52	5260	Top	Note2	10.54	11.5	0.014	**0.02**	0.037	**0.05**	-0.17
144	5720	Front	Note2	11.15	11.5	0.018	**0.02**	0.058	**0.06**	-0.09
144	5720	Rear	Note2	11.15	11.5	0.069	**0.07**	0.215	**0.23**	0.09
144	5720	Left	Note2	11.15	11.5	0.044	**0.05**	0.125	**0.14**	0.18
144	5720	Right	Note2	11.15	11.5	<0.01	**<0.01**	<0.01	**<0.01**	/
144	5720	Top	Note2	11.15	11.5	0.038	**0.04**	0.091	**0.10**	-0.15
165	5825	Front	Note2	10.50	11.5	0.014	**0.02**	0.041	**0.05**	0.12
165	5825	Rear	Note2	10.50	11.5	0.045	**0.06**	0.135	**0.17**	0.09
165	5825	Left	Note2	10.50	11.5	0.029	**0.04**	0.074	**0.09**	-0.03
165	5825	Right	Note2	10.50	11.5	<0.01	**<0.01**	<0.01	**<0.01**	0.00
165	5825	Top	Note2	10.50	11.5	0.025	**0.03**	0.062	**0.08**	-0.13

Note1: The results are for Wifi antenna transmit standalone.

Note2: The results are for Wifi antenna transmit with WWAN.

Note3: The distance between the EUT and the phantom bottom is 10mm.

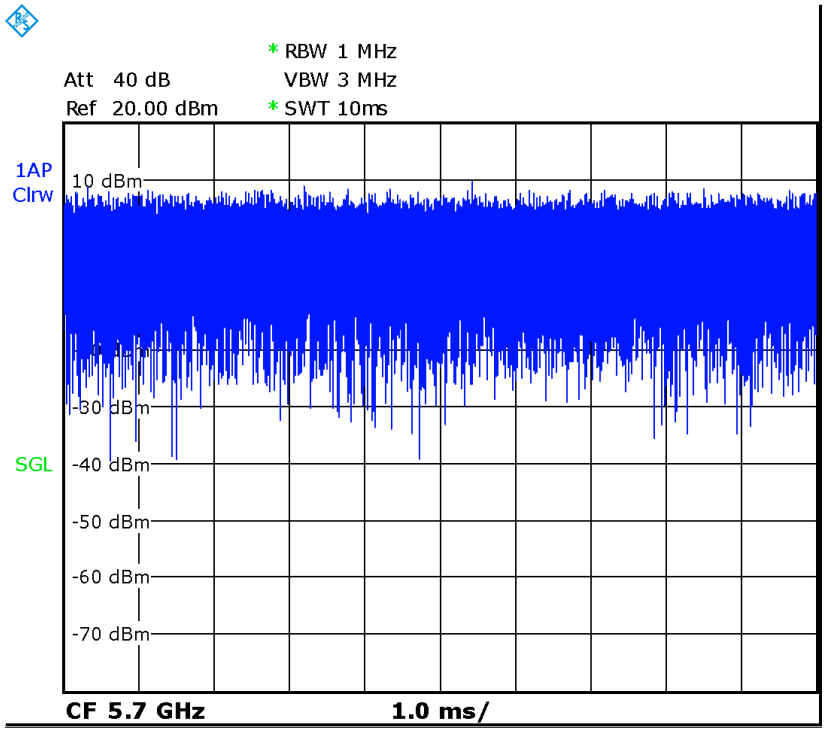
According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.4-10: SAR Values (WLAN 5G - Head) (Scaled Reported SAR)

Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
Ch.	MHz						
140	5700	Right	Cheek	100%	100%	**0.89**	**0.89**

Table 14.4-11: SAR Values (WLAN 5G - Body) (Scaled Reported SAR)

Frequency		Test Position	D (mm)	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
Ch.	MHz						
140	5700	Rear	10	100%	100%	**1.00**	**1.00**



Picture 14.4-1 The plot of duty factor for CH140

14.5 SAR results for BT

Table 14.5-1: SAR Values (BT - Head)

Frequency		Side	Test Position	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
Ch.	MHz									
0	2402	Left	Cheek	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/
0	2402	Left	Tilt	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/
0	2402	Right	Cheek	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/
0	2402	Right	Tilt	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/

Table 14.5-2: SAR Values (BT - Body)

Frequency		Test Position	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
Ch.	MHz								
0	2402	Front	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/
0	2402	Rear	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/
0	2402	Right	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/
0	2402	Top	8.81	9.7	<0.01	<0.01	<0.01	<0.01	/

Note1: The distance between the EUT and the phantom bottom is 10mm.

14.6 SAR results for 10-g extremity SAR

According to the KDB648474 D04, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB Publication 865664 D01 to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg

Table 14.6-1: SAR Values for phablet

Band	Frequency		Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g)(W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
	Ch.	MHz									
WCDMA B4	1513	1752.6	Rear	/	23.46	24	2.56	**2.90**	6.25	**7.08**	0.03
WCDMA B4	1412	1732.4	Rear	/	23.47	24	2.68	**3.03**	6.48	**7.32**	-0.11
WCDMA B4	1312	1712.4	Rear	/	23.48	24	2.83	**3.19**	6.7	**7.55**	0.07
WCDMA B2	9538	1907.6	Left	Fig.25	22.85	23.5	2.89	**3.36**	7.93	**9.21**	-0.01
WCDMA B2	9400	1880	Left	/	22.87	23.5	2.59	**2.99**	7.07	**8.17**	0.07
WCDMA B2	9262	1852.4	Left	/	22.76	23.5	2.46	**2.92**	6.72	**7.97**	0.15
WIFI2450	1	2412	Rear	/	16.16	16.5	0.567	**0.61**	1.520	**1.64**	-0.04
WIFI2450	1	2412	Left	/	16.16	16.5	0.289	**0.31**	0.733	**0.79**	0.05
WIFI5G	144	5720	Rear	/	11.15	11.5	0.459	**0.50**	2.460	**2.67**	0.04
WIFI5G	144	5720	Left	/	11.15	11.5	0.068	**0.07**	0.283	**0.31**	0.09

Note: The distance between the EUT and the phantom bottom is 0mm.

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

Table 15.1: SAR Measurement Variability for Head GSM1900 (1g)

Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz					
810	1909.8	Right Cheek	0.818	0.785	1.04	/

Table 15.2: SAR Measurement Variability for Head WCDMA850 (1g)

Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz					
4183	836.6	Left Cheek	1.02	0.989	1.03	/
4183	836.6	Left Tilt	0.844	0.812	1.04	/
4183	836.6	Right Cheek	0.818	0.789	1.04	/

Table 15.3: SAR Measurement Variability for Head WCDMA1900 (1g)

Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz					
9538	1907.6	Right Cheek	0.882	0.845	1.04	/

Table 15.4: SAR Measurement Variability for Body WCDMA1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
9400	1880	Rear	10	0.851	0.833	1.02	/
9538	1907.6	Left	10	1	0.989	1.01	/

Table 15.5: SAR Measurement Variability for Body WCDMA1700 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
1412	1732.4	Rear	10	1.15	1.08	1.06	/

Table 15.6: SAR Measurement Variability for Body LTE Band7 (1g)

Frequency		Test Mode	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
21100	2535	1RB-Mid Rear	10	0.919	0.907	1.01	/
21350	2560	1RB-Mid Right	10	0.907	0.895	1.01	/

Table 15.7: SAR Measurement Variability for Body LTE Band41 (1g)

Frequency		Test Mode	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
39750	2506	1RB-Mid Rear	10	0.806	0.792	1.02	/

Table 15.8: SAR Measurement Variability for Head n7 (1g)

Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz					
507000	2535	Left Cheek	1.16	1.1	1.05	/

Table 15.9: SAR Measurement Variability for Body n7 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
507000	2535	Right	10	1.09	1.05	1.04	/

Table 15.10: SAR Measurement Variability for Head WIFI5G (1g)

Frequency		Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz					
140	5700	Right Cheek	0.849	0.839	1.01	/

Table 15.11: SAR Measurement Variability for Body WIFI5G (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
140	5700	Rear	10	0.955	0.934	1.02	/

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	$\sqrt{3}$	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	N	1	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	∞
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	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	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	$\sqrt{3}$	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 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 14, 2021	One year
02	Power meter	NRP2	106276	May 11, 2021	One year
03	Power sensor	NRP6A	101369		
04	Signal Generator	E4438C	MY49071430	February 1, 2021	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	159889	January 13, 2021	One year
07	E-field Probe	SPEAG EX3DV4	7548	June 25, 2021	One year
08	DAE	SPEAG DAE4	1331	September 2, 2020	One year
09	Dipole Validation Kit	SPEAG D835V2	4d120	June 23,,2021	One year
10	Dipole Validation Kit	SPEAG D1750V2	1023	June 23,2021	One year
11	Dipole Validation Kit	SPEAG D1900V2	5d101	July 28,2020	One year
12	Dipole Validation Kit	SPEAG D2450V2	869	June 22,2021	One year
13	Dipole Validation Kit	SPEAG D2550V2	1002	June 17,2021	One year
14	Dipole Validation Kit	SPEAG D5GHzV2	1203	December 22,2020	One year

END OF REPORT BODY

ANNEX A Graph Results

GSM850_CH251 Right Cheek
Date: 7/19/2021
Electronics: DAE4 Sn1331
Medium: head 835 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.878 mho/m; εr = 44.852; ρ = 1000 kg/m^3
Ambient Temperature: 22.9ºC, Liquid Temperature: 22.5ºC
Communication System: GSM850 848.8 MHz Duty Cycle: 1:2
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.81 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.764 W/kg; SAR(10 g) = 0.494 W/kg
Maximum value of SAR (measured) = 1.1 W/kg

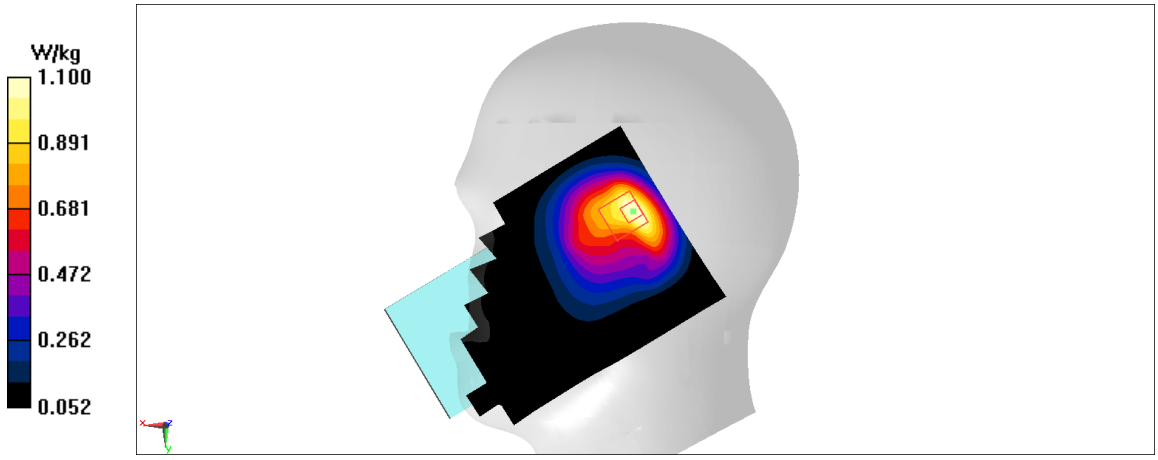


Fig A.1

GSM850_CH251 Rear 10mm
Date: 7/19/2021
Electronics: DAE4 Sn1331
Medium: head 835 MHz
Medium parameters used: f = 848.8 MHz; σ = 0.878 mho/m; εr = 44.852; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C, Liquid Temperature: 22.5°C
Communication System: GSM850 848.8 MHz Duty Cycle: 1:2
Probe: EX3DV4 – SN7548 ConvF(10.36,10.36,10.36)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.4 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.31 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 0.466 W/kg
SAR(1 g) = 0.274 W/kg; SAR(10 g) = 0.171 W/kg
Maximum value of SAR (measured) = 0.39 W/kg

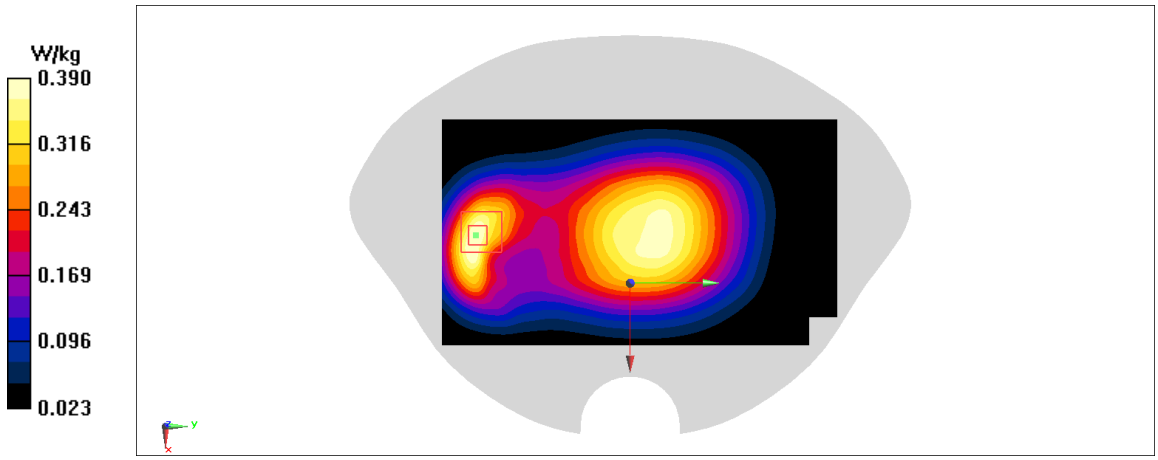


Fig A.2

PCS1900_CH810 Right Cheek
Date: 7/21/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.463 mho/m; εr = 42.465; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C, Liquid Temperature: 22.5°C
Communication System: PCS1900 1909.8 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.44 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.72 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 1.7 W/kg
SAR(1 g) = 0.818 W/kg; SAR(10 g) = 0.417 W/kg
Maximum value of SAR (measured) = 1.31 W/kg

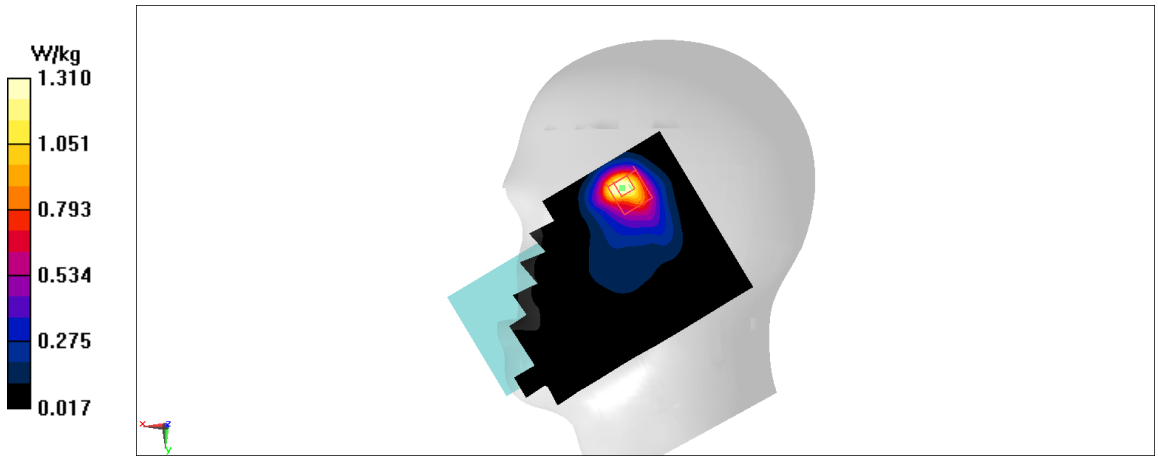


Fig A.3

PCS1900_CH810 Left 10mm
Date: 7/21/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1909.8 MHz; σ = 1.463 mho/m; εr = 42.465; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C, Liquid Temperature: 22.5°C
Communication System: PCS1900 1909.8 MHz Duty Cycle: 1:4
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.871 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.54 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.544 W/kg; SAR(10 g) = 0.271 W/kg
Maximum value of SAR (measured) = 0.867 W/kg

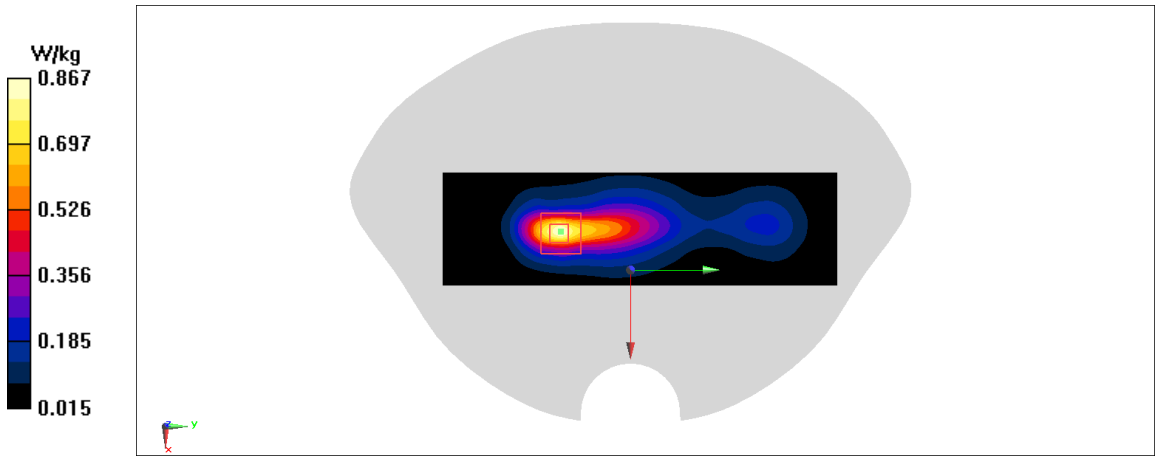


Fig A.4

WCDMA1900-BII_CH9538 Right Cheek
Date: 7/21/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1907.6 MHz; σ = 1.461 mho/m; εr = 42.471; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C, Liquid Temperature: 22.5°C
Communication System: WCDMA1900-BII 1907.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.28 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 0.882 W/kg; SAR(10 g) = 0.436 W/kg
Maximum value of SAR (measured) = 1.48 W/kg

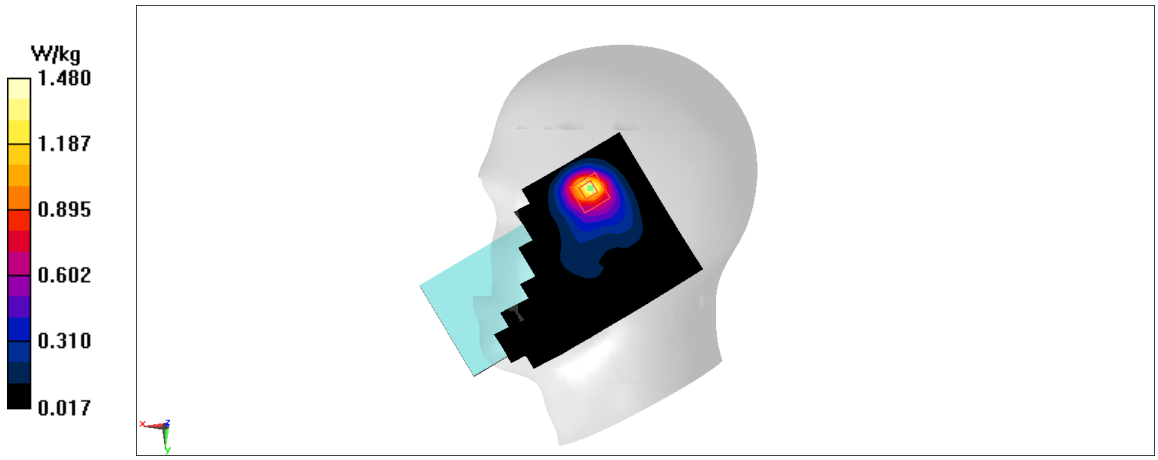


Fig A.5

WCDMA1900-BII_CH9538 Left 10mm
Date: 7/21/2021
Electronics: DAE4 Sn1331
Medium: head 1900 MHz
Medium parameters used: f = 1907.6 MHz; σ = 1.461 mho/m; εr = 42.471; ρ = 1000 kg/m^3
Ambient Temperature: 22.9°C, Liquid Temperature: 22.5°C
Communication System: WCDMA1900-BII 1907.6 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(7.88,7.88,7.88)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.32 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.85 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.1 W/kg
SAR(1 g) = 1 W/kg; SAR(10 g) = 0.491 W/kg
Maximum value of SAR (measured) = 1.68 W/kg

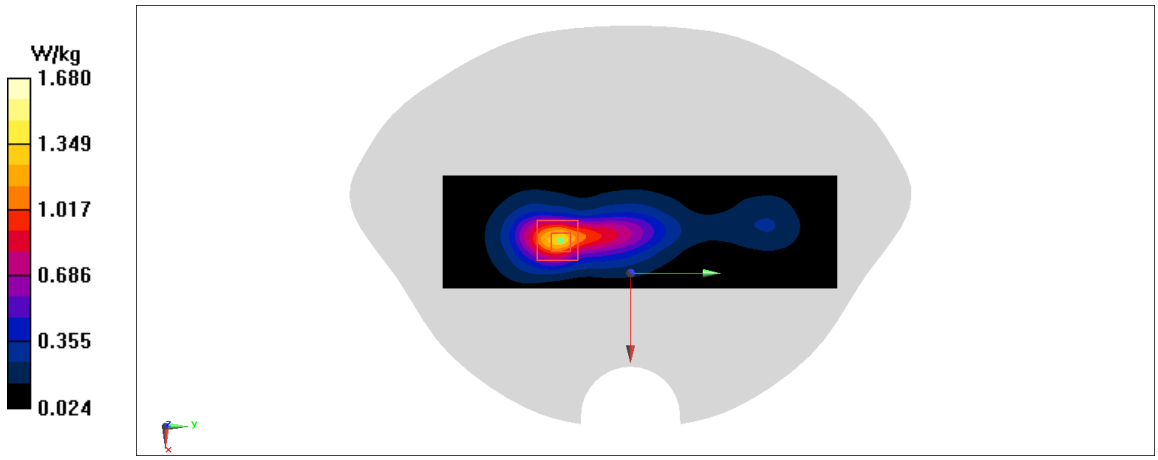


Fig A.6

WCDMA1700-BIV_CH1412 Left Cheek
Date: 7/20/2021
Electronics: DAE4 Sn1331
Medium: head 1750 MHz
Medium parameters used: f = 1732.4 MHz; σ = 1.349 mho/m; εr = 42.9; ρ = 1000 kg/m^3
Ambient Temperature: 22.9ºC, Liquid Temperature: 22.5ºC
Communication System: WCDMA1700-BIV 1732.4 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(8.14,8.14,8.14)

Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.214 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.263 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.226 W/kg
SAR(1 g) = 0.158 W/kg; SAR(10 g) = 0.107 W/kg
Maximum value of SAR (measured) = 0.201 W/kg

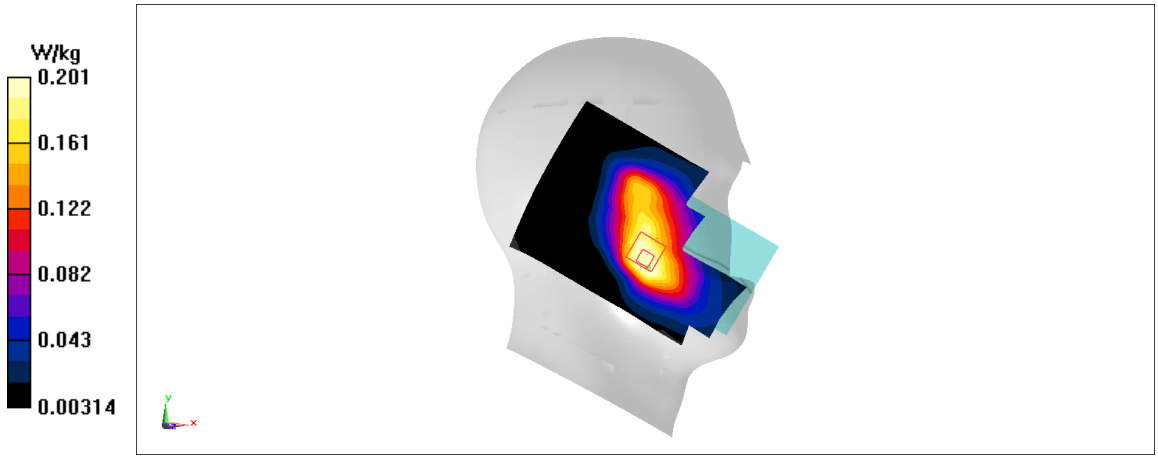


Fig A.7