SAR TEST REPORT

No. 24T04Z200128-011

For

Samsung Electronics Co., Ltd.

Multi-band GSM/WCDMA/LTE Mobile Phone with Bluetooth, WLAN

Model Name: SM-A065F/DS

FCC ID: ZCASMA065F

with

Hardware Version: REV1.0

Software Version: A065F.001

Issued Date: 2024-6-25

Note:

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

Test Laboratory:

CTTL-Telecommunication Technology Labs, CAICT

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REPORT HISTORY

Report Number	Revision	Issue Date	Description
24T04Z200128-011	Rev.0	2024-6-25	Initial creation of test report

TABLE OF CONTENT

1 Test Laboratory

1.1 Introduction & Accreditation

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

1.2 Testing Location

Location 1: CTTL(huayuan North Road)

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

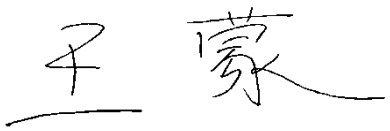
1.3 Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-10/+55℃
Relative Humidity:	20-75%

1.4 Project data

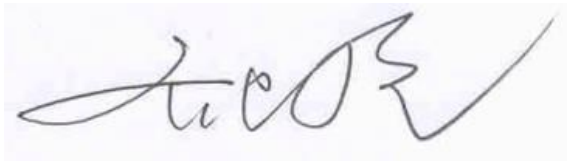
Testing Start Date:	2024-5-27
Testing End Date:	2024-6-20

1.5 Signature



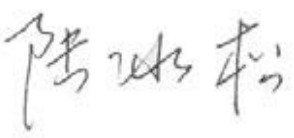
Wang Meng

(Prepared this test report)



Qi Dianyuan

(Reviewed this test report)



Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Samsung Electronics Co., Ltd. Multi-band GSM/WCDMA/LTE Mobile Phone with Bluetooth, WLAN SM-A065F/DS are as follows:

Table 2.1: Highest Reported SAR (1g)

Technology Band	Antenna	Head	Body
GSM850	2	0.57	0.48
WCDMA 850	2	0.71	0.50
LTE Band5	2	0.43	0.41
LTE Band7	2	0.58	0.79
LTE Band38	2	0.52	0.40
LTE Band41	2	0.58	0.53
WLAN 2.4GHz	3	0.15	0.19
WLAN 5GHz	4	0.29	0.60
BT	3	0.02	0.01

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**:**
Head: 0.71 W/kg(1g)
Body:0.79 W/kg(1g).

Table 2.2: The sum of SAR values for Main antenna+WiFi5G+BT

	Position	**ULCA-LTE**	**WiFi-5G**	**BT**	**Sum**
Highest SAR value	Top 15mm	0.56 (LTEB7-ANT2)	0.6	0.01	**1.17**

According to the above tables, the highest sum of reported SAR values is **1.17 W/kg (1g)**. The detail for simultaneous transmission consideration is described in chapter 13.

3 Client Information

3.1 Applicant Information

Company Name:	Samsung Electronics Co., Ltd.
Address/Post:	Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea
Contact Person:	Sunghoon Cho
Contact Email:	ggobi.cho@samsung.com
Telephone:	+82-10-2722-4159

3.2 Manufacturer Information

Company Name:	Samsung Electronics Co., Ltd.
Address/Post:	Samsung R5, Maetan dong 129, Samsung ro Youngtong gu, Suwon city 443 742, Korea
Contact Person:	Sunghoon Cho
Contact Email:	ggobi.cho@samsung.com
Telephone:	+82-10-2722-4159

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

4.1 About EUT

Description:	Multi-band GSM/WCDMA/LTE Mobile Phone with Bluetooth, WLAN
Model name:	SM-A065F/DS
Operating mode(s):	GSM850, WCDMA850 LTE Band 5/7/38/41 BT, Wi-Fi(2.4G/5G)
Tested Tx Frequency:	824 – 849 MHz (GSM 850)
	824 – 849 MHz (WCDMA 850 Band V)
	869 – 894 MHz (LTE Band 5)
	2502.5 – 2567.5 MHz (LTE Band 7)
	2570 – 2620 MHz (LTE Band 38)
	2498.5 –2687.5 MHz (LTE Band 41)
	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	24T04Z200127-20a	REV1.0	A065F.001
EUT2	24T04Z200127-21a	REV1.0	A065F.001
EUT3	24T04Z200127-30a	REV1.0	A065F.001
EUT4	24T04Z200127-24a	REV1.0	A065F.001

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

Note: It is performed to test SAR with the EUT1-3 and conducted power with the EUT4.

4.3 Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
AE1	Battery	HQ-7160SS	/	SCUD (Fujian) Electronics CO.,LTD
AE2	Battery	HQ-7160SD	/	SCUD (Fujian) Electronics CO.,LTD
AE3	Battery	HQ-7160NA		Ningde Amperex technology limited

*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

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 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

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

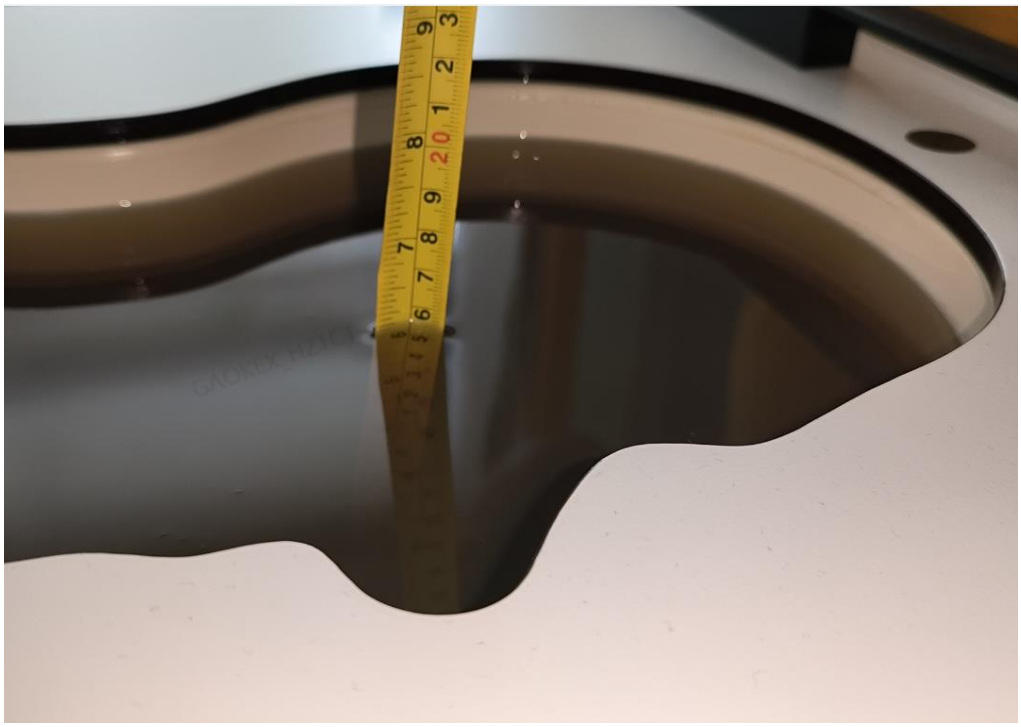
Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.50	39.40～43.60
2450	Head	1.80	1.71 ~ 1.89	39.20	37.30 ~ 41.10
2600	Head	1.96	1.86～2.06	39.01	37.06～40.96
5250	Head	4.71	4.47 ~ 4.95	35.93	34.13 ~ 37.73
5600	Head	5.07	4.82 ~ 5.32	35.53	33.8 ~ 37.3
5750	Head	5.22	4.96 ~ 5.48	35.36	33.59 ~ 37.13

7.2 Dielectric Performance

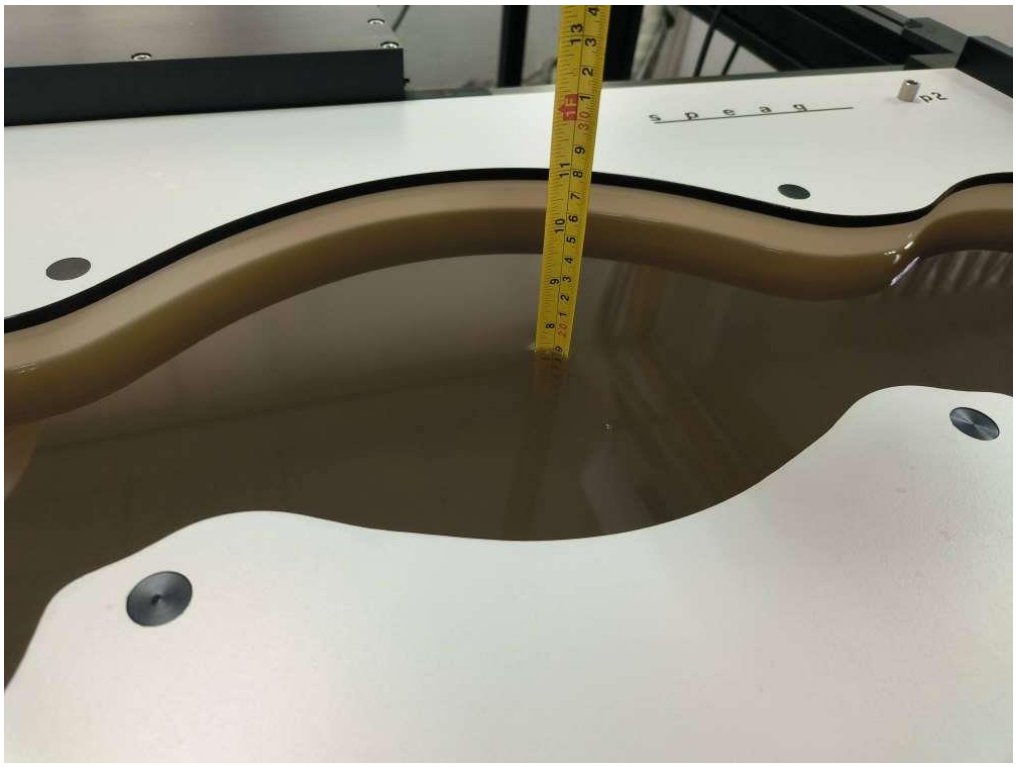
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2024/6/3	Head	835 MHz	41.31	-0.46	0.9362	4.02
2024/6/9	Head	2450 MHz	39.89	1.76	1.897	5.39
2024/6/11	Head	2600 MHz	39.63	1.59	2.016	2.86
2024/6/18	Head	5250 MHz	34.73	-3.34	4.602	-2.29
2024/6/18	Head	5600 MHz	34.25	-3.60	4.974	-1.89
2024/6/18	Head	5750 MHz	33.95	-3.99	5.195	-0.48

Note: The liquid temperature is 22.0℃



Picture 7-1 Liquid depth in the Head Phantom

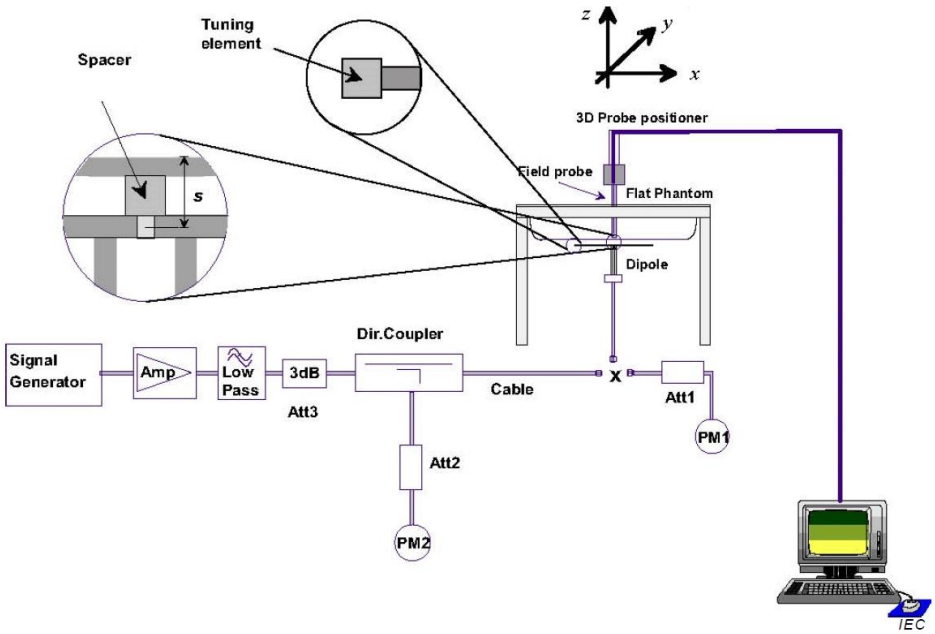


Picture 7-2 Liquid depth in the Flat Phantom

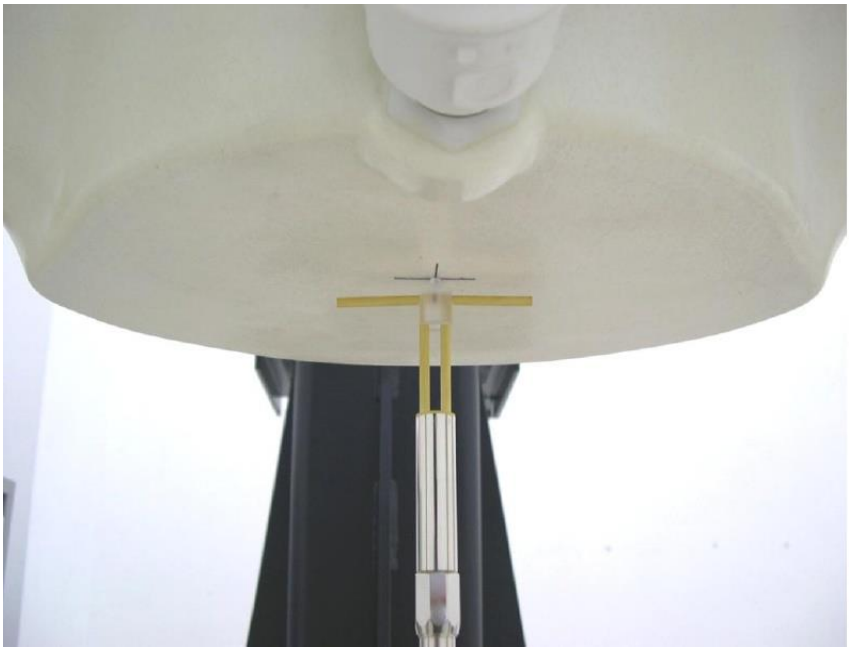
8 System verification

8.1 System Setup

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



Picture 8.1 System Setup for System Evaluation



Picture 8.2 Photo of Dipole Setup

8.2 System Verification

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

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

Table 8.1: System Verification of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2024/6/3	835 MHz	6.25	9.62	6.04	9.48	-3.36%	-1.46%
2024/6/9	2450 MHz	24.7	52.1	26.5	52.4	7.37%	0.58%
2024/6/11	2600 MHz	25.1	55.2	27.0	55.6	7.41%	0.72%
2024/6/18	5250 MHz	22.6	78.2	23.3	79.1	3.10%	1.15%
2024/6/18	5600 MHz	23.9	83.4	23.4	82.1	-2.09%	-1.56%
2024/6/18	5750 MHz	22.7	79.7	24.2	76.6	6.61%	-3.89%

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.

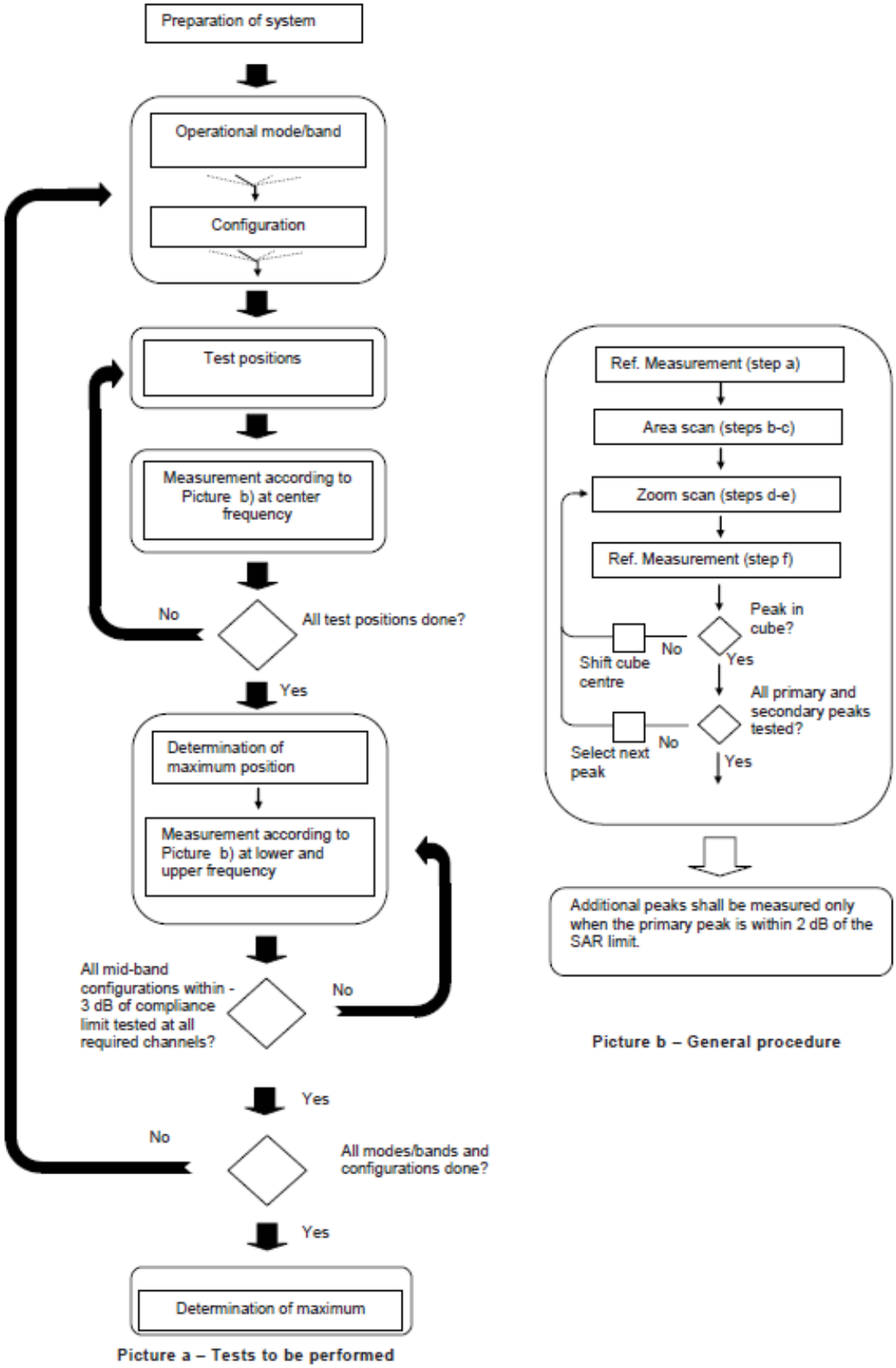
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the centre of the transmit frequency band (f_c) for:

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.

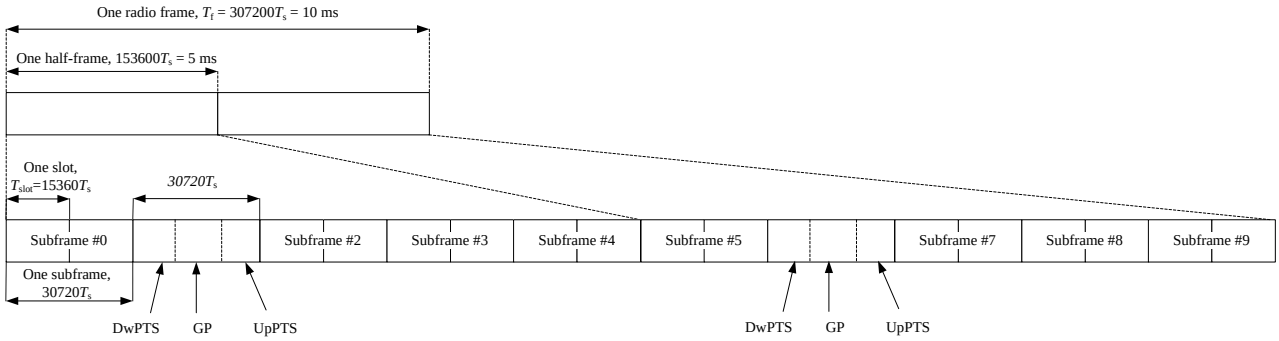


Figure 9.2: Frame structure type 2 (for 5 ms switch-point periodicity)

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

Sensor on	Sensor off
A0	A1

11.1 GSM Measurement result

GSM850- ANT2 A0

GSM Part				
GSM850	Conducted Power (dBm)			Tune up
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)	
	30.92	31.04	31.03	31.50
GSM 850	Measured Power (dBm)			
GPRS (GMSK)	251	190	128	
1 Txslot	31.01	31.12	31.06	31.50
2 Txslots	**28.92**	**29.10**	**28.95**	29.50
3Txslots	26.96	27.06	27.01	27.50
4 Txslots	25.88	26.03	25.92	26.50
GSM 850	Measured Power (dBm)			
EGPRS (GMSK)	251	190	128	
1 Txslot	30.94	31.05	31.08	31.50
2 Txslots	**28.96**	**29.03**	**29.01**	29.50
3Txslots	26.89	27.00	26.99	27.50
4 Txslots	25.95	26.00	25.99	26.50
GSM 850	Measured Power (dBm)			
EGPRS (8PSK)	251	190	128	
1 Txslot	25.91	25.57	25.73	26.00
2 Txslots	23.45	23.45	23.40	24.00
3Txslots	21.19	21.44	21.16	22.00
4 Txslots	20.41	20.03	20.45	21.00

GSM850- ANT2 A1

GSM Part				
GSM850	Conducted Power (dBm)			Tune up
	Channel 251(848.8MHz)	Channel 190(836.6MHz)	Channel 128(824.2MHz)	
	32.37	32.51	32.48	33.50
GSM 850	Measured Power (dBm)			
GPRS (GMSK)	251	190	128	
1 Txslot	32.41	32.65	32.55	33.00
2 Txslots	30.60	30.52	30.57	31.50
3Txslots	28.65	28.82	28.79	29.50
4 Txslots	**27.67**	**27.83**	**27.82**	28.50
GSM 850	Measured Power (dBm)			
EGPRS (GMSK)	251	190	128	
1 Txslot	32.45	32.51	32.59	33.00
2 Txslots	30.50	30.57	30.56	31.50
3Txslots	28.70	28.73	28.73	29.50
4 Txslots	**27.70**	**27.73**	**27.74**	28.50
GSM 850	Measured Power (dBm)			
EGPRS (8PSK)	251	190	128	
1 Txslot	27.33	27.30	27.24	28.00
2 Txslots	25.43	25.34	25.40	26.00
3Txslots	23.25	23.31	23.37	24.00
4 Txslots	22.22	22.14	22.12	23.00

11.2 WCDMA Measurement result

WCDMA850- ANT2 A0

WCDMA850	FDDV result (dBm)			
	4233/4458	4182/4407	4132/4357	
	(846.6MHz)	(836.4MHz)	(826.4MHz)	tune up
	22.28	22.40	22.36	23.50
HSUPA	19.9	19.96	20.08	21.00
	19.73	19.63	19.73	21.00
	20.75	20.87	20.88	22.00
	19.42	19.53	19.46	20.50
	20.87	20.94	20.94	22.00
HSPA+	20.69	20.80	20.87	21.50
DC-HSDPA	21.99	21.99	22.03	23.00
	21.08	21.18	21.09	23.00
	20.7	20.79	20.83	22.50
	20.69	20.64	20.61	22.50

WCDMA850- ANT2 A1

WCDMA850	FDDV result (dBm)			
	4233/4458	4182/4407	4132/4357	
	(846.6MHz)	(836.4MHz)	(826.4MHz)	tune up
	24.45	24.38	24.47	25.50
HSUPA	21.94	22.00	21.98	23.00
	21.93	21.85	22.00	23.00
	22.97	23.04	22.95	24.00
	21.56	21.63	21.49	22.50
	23.03	23.00	22.91	24.00
HSPA+	22.65	22.67	22.80	23.50
DC-HSDPA	24.2	24.14	24.01	25.00
	23.3	23.15	23.14	25.00
	22.64	22.55	22.65	24.50
	22.82	22.74	22.66	24.50

11.3 LTE Measurement result

Band	ANT	Tune up (dBm)	
		A0	A1
LTE Band5	**2**	22	25
LTE Band7	**2**	18.5	24.5
LTE Band38	**2**	23.5	24.5
LTE Band41	**2**	18.5	25

LTEB5- ANT2 A0

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	848.3 (20643)	20.84	21.10	20.92
		836.5 (20525)	20.68	21.02	20.95
		824.7 (20407)	20.97	21.25	21.38
	1RB-Middle (3)	848.3 (20643)	20.90	21.03	21.10
		836.5 (20525)	21.17	21.25	21.00
		824.7 (20407)	21.15	21.33	21.23
	1RB-Low (0)	848.3 (20643)	20.98	21.13	21.06
		836.5 (20525)	21.13	21.10	21.05
		824.7 (20407)	20.93	21.34	21.07
	3RB-High (3)	848.3 (20643)	20.78	20.76	20.94
		836.5 (20525)	21.09	20.80	20.97
		824.7 (20407)	21.33	20.85	21.03
	3RB-Middle (1)	848.3 (20643)	20.76	20.69	20.71
		836.5 (20525)	20.93	20.98	21.04
		824.7 (20407)	20.76	20.94	20.81
	3RB-Low (0)	848.3 (20643)	20.87	21.02	21.05
		836.5 (20525)	20.96	20.95	21.16
		824.7 (20407)	20.88	21.00	21.05
	6RB (0)	848.3 (20643)	20.86	20.80	20.88
		836.5 (20525)	20.90	20.91	20.79
		824.7 (20407)	20.87	21.02	21.12
3MHz	1RB-High (14)	847.5 (20635)	20.79	21.13	20.88
		836.5 (20525)	20.63	21.01	20.85
		825.5 (20415)	21.00	21.19	21.32
	1RB-Middle (7)	847.5 (20635)	20.88	21.09	21.10
		836.5 (20525)	21.18	21.29	21.00

		825.5 (20415)	21.18	21.37	21.24
	1RB-Low (0)	847.5 (20635)	20.92	21.13	21.07
		836.5 (20525)	21.04	21.20	21.13
		825.5 (20415)	21.02	21.26	21.11
	8RB-High (7)	847.5 (20635)	20.78	20.76	20.94
		836.5 (20525)	21.03	20.79	20.93
		825.5 (20415)	21.23	20.95	21.11
	8RB-Middle (4)	847.5 (20635)	20.70	20.76	20.81
		836.5 (20525)	20.89	21.00	21.06
		825.5 (20415)	20.85	20.95	20.89
	8RB-Low (0)	847.5 (20635)	20.93	21.05	20.98
		836.5 (20525)	20.95	21.03	21.11
		825.5 (20415)	20.97	21.06	21.14
	15RB (0)	847.5 (20635)	20.85	20.87	20.84
		836.5 (20525)	20.86	20.97	20.85
		825.5 (20415)	20.90	20.98	21.17
5MHz	1RB-High (24)	846.5 (20625)	20.82	21.04	20.92
		836.5 (20525)	20.69	21.01	20.89
		826.5 (20425)	20.91	21.15	21.23
	1RB-Middle (12)	846.5 (20625)	20.93	21.18	21.08
		836.5 (20525)	21.09	21.27	21.08
		826.5 (20425)	21.10	21.43	21.22
	1RB-Low (0)	846.5 (20625)	20.82	21.16	21.00
		836.5 (20525)	20.99	21.28	21.21
		826.5 (20425)	20.93	21.18	21.15
	12RB-High (13)	846.5 (20625)	20.74	20.73	20.87
		836.5 (20525)	21.00	20.81	20.97
		826.5 (20425)	21.13	20.97	21.03
	12RB-Middle (6)	846.5 (20625)	20.79	20.86	20.86
		836.5 (20525)	20.97	21.00	21.06
		826.5 (20425)	20.93	20.99	20.94
	12RB-Low (0)	846.5 (20625)	20.89	21.04	21.04
		836.5 (20525)	20.97	20.97	21.05
		826.5 (20425)	20.96	20.97	21.05
	25RB (0)	846.5 (20625)	20.86	20.89	20.84
		836.5 (20525)	20.91	20.87	20.88

		826.5 (20425)	20.98	20.97	21.10
10MHz	1RB-High (49)	844 (20600)	20.72	20.95	20.92
		836.5 (20525)	20.77	21.05	20.99
		829 (20450)	20.89	21.24	21.13
	1RB-Middle (24)	844 (20600)	20.84	21.18	21.02
		836.5 (20525)	21.11	21.31	21.10
		829 (20450)	21.04	21.39	21.24
	1RB-Low (0)	844 (20600)	20.88	21.10	20.99
		836.5 (20525)	20.93	21.29	21.20
		829 (20450)	20.91	21.20	21.06
	25RB-High (25)	844 (20600)	20.78	20.75	20.78
		836.5 (20525)	20.90	20.86	20.87
		829 (20450)	21.04	21.06	21.02
	25RB-Middle (12)	844 (20600)	20.84	20.82	20.84
		836.5 (20525)	21.14	20.97	20.99
		829 (20450)	21.02	21.06	21.04
	25RB-Low (0)	844 (20600)	20.98	20.96	20.96
		836.5 (20525)	20.99	20.99	21.04
		829 (20450)	20.98	20.99	20.97
	50RB (0)	844 (20600)	20.84	20.86	20.85
		836.5 (20525)	20.94	20.93	20.95
		829 (20450)	20.98	20.99	21.02

LTEB5- ANT2 A1

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
1.4MHz	1RB-High (5)	848.3 (20643)	23.82	22.31	21.90
		836.5 (20525)	23.62	22.85	22.14
		824.7 (20407)	23.49	23.37	21.97
	1RB-Middle (3)	848.3 (20643)	23.87	22.56	21.89
		836.5 (20525)	23.86	23.02	22.17
		824.7 (20407)	23.45	23.32	22.12
	1RB-Low (0)	848.3 (20643)	23.86	22.52	22.04
		836.5 (20525)	23.77	23.30	22.00
		824.7 (20407)	23.51	22.82	22.02
	3RB-High (3)	848.3 (20643)	22.63	21.24	20.66
		836.5 (20525)	22.41	21.83	20.82

		824.7 (20407)	22.62	21.78	20.89
	3RB-Middle (1)	848.3 (20643)	22.78	21.65	20.84
		836.5 (20525)	22.94	21.97	21.04
		824.7 (20407)	22.59	22.00	21.12
	3RB-Low (0)	848.3 (20643)	22.91	21.69	21.11
		836.5 (20525)	22.93	22.06	20.97
		824.7 (20407)	22.64	21.94	21.09
	6RB (0)	848.3 (20643)	22.92	21.83	20.90
		836.5 (20525)	23.04	21.91	21.01
		824.7 (20407)	22.59	21.90	21.05
3MHz	1RB-High (14)	847.5 (20635)	23.77	22.38	21.80
		836.5 (20525)	23.65	22.92	22.05
		825.5 (20415)	23.54	23.38	21.91
	1RB-Middle (7)	847.5 (20635)	23.88	22.60	21.90
		836.5 (20525)	23.86	23.09	22.08
		825.5 (20415)	23.52	23.39	22.21
	1RB-Low (0)	847.5 (20635)	23.83	22.56	22.05
		836.5 (20525)	23.70	23.24	22.08
		825.5 (20415)	23.46	22.78	22.09
	8RB-High (7)	847.5 (20635)	22.72	21.21	20.62
		836.5 (20525)	22.40	21.76	20.91
		825.5 (20415)	22.64	21.76	20.93
	8RB-Middle (4)	847.5 (20635)	22.75	21.74	20.86
		836.5 (20525)	22.93	22.06	21.01
		825.5 (20415)	22.56	22.02	21.09
	8RB-Low (0)	847.5 (20635)	22.95	21.78	21.09
		836.5 (20525)	22.98	21.98	21.03
		825.5 (20415)	22.61	21.86	21.00
	15RB (0)	847.5 (20635)	22.90	21.80	20.98
		836.5 (20525)	22.94	21.95	21.02
		825.5 (20415)	22.55	21.88	20.98
5MHz	1RB-High (24)	846.5 (20625)	23.80	22.48	21.87
		836.5 (20525)	23.68	22.93	21.96
		826.5 (20425)	23.59	23.28	22.01
	1RB-Middle (12)	846.5 (20625)	23.79	22.53	21.99
		836.5 (20525)	23.79	23.03	22.18
		826.5 (20425)	23.62	23.29	22.24
	1RB-Low (0)	846.5 (20625)	23.89	22.52	22.02

		836.5 (20525)	23.61	23.24	22.14
		826.5 (20425)	23.49	22.80	22.03
	12RB-High (13)	846.5 (20625)	22.79	21.22	20.68
		836.5 (20525)	22.48	21.84	20.97
		826.5 (20425)	22.58	21.83	20.99
	12RB-Middle (6)	846.5 (20625)	22.83	21.79	20.78
		836.5 (20525)	22.94	22.05	20.93
		826.5 (20425)	22.59	21.92	20.99
	12RB-Low (0)	846.5 (20625)	23.00	21.72	21.08
		836.5 (20525)	23.03	21.99	20.95
		826.5 (20425)	22.55	21.93	20.91
	25RB (0)	846.5 (20625)	22.82	21.87	20.90
		836.5 (20525)	23.01	21.85	20.95
		826.5 (20425)	22.63	21.96	20.91
10MHz	1RB-High (49)	844 (20600)	23.71	22.57	21.91
		836.5 (20525)	23.74	22.90	22.00
		829 (20450)	23.68	23.20	22.01
	1RB-Middle (24)	844 (20600)	23.81	22.59	21.92
		836.5 (20525)	23.87	23.04	22.20
		829 (20450)	23.62	23.36	22.31
	1RB-Low (0)	844 (20600)	23.80	22.57	22.07
		836.5 (20525)	23.62	23.21	22.15
		829 (20450)	23.47	22.87	22.08
	25RB-High (25)	844 (20600)	22.79	21.32	20.78
		836.5 (20525)	22.54	21.75	20.89
		829 (20450)	22.53	21.85	21.03
	25RB-Middle (12)	844 (20600)	22.86	21.71	20.87
		836.5 (20525)	22.98	21.99	20.98
		829 (20450)	22.64	21.96	21.05
	25RB-Low (0)	844 (20600)	22.93	21.81	20.99
		836.5 (20525)	22.89	22.01	21.01
		829 (20450)	22.62	21.95	21.00
	50RB (0)	844 (20600)	22.88	21.84	20.85
		836.5 (20525)	22.98	21.94	20.94
		829 (20450)	22.54	21.96	20.99

LTEB7- ANT2 A0

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM

5MHz	1RB-High (24)	2567.5 (21425)	15.73	16.11	16.07
		2535 (21100)	15.93	15.84	15.87
		2502.5 (20775)	15.92	16.34	16.04
	1RB-Middle (12)	2567.5 (21425)	16.51	16.58	16.64
		2535 (21100)	16.03	16.43	16.31
		2502.5 (20775)	16.44	16.64	16.39
	1RB-Low (0)	2567.5 (21425)	16.15	16.61	16.26
		2535 (21100)	15.99	16.22	16.18
		2502.5 (20775)	15.76	16.31	15.96
	12RB-High (13)	2567.5 (21425)	16.36	16.45	16.51
		2535 (21100)	16.15	16.25	16.15
		2502.5 (20775)	16.22	16.22	16.40
	12RB-Middle (6)	2567.5 (21425)	16.46	16.60	16.38
		2535 (21100)	16.06	16.16	16.15
		2502.5 (20775)	16.33	16.32	16.46
	12RB-Low (0)	2567.5 (21425)	16.49	16.49	16.45
		2535 (21100)	16.28	16.13	16.05
		2502.5 (20775)	16.21	16.26	16.09
	25RB (0)	2567.5 (21425)	16.25	16.39	16.30
		2535 (21100)	16.05	16.15	16.02
		2502.5 (20775)	16.39	16.50	16.50
10MHz	1RB-High (49)	2565 (21400)	15.83	16.05	15.99
		2535 (21100)	15.86	15.93	15.94
		2505 (20800)	15.95	16.42	16.14
	1RB-Middle (24)	2565 (21400)	16.45	16.49	16.68
		2535 (21100)	16.06	16.48	16.24
		2505 (20800)	16.39	16.57	16.37
	1RB-Low (0)	2565 (21400)	16.15	16.56	16.28
		2535 (21100)	15.90	16.17	16.19
		2505 (20800)	15.81	16.27	15.99
	25RB-High (25)	2565 (21400)	16.30	16.41	16.51
		2535 (21100)	16.11	16.17	16.20
		2505 (20800)	16.21	16.25	16.39
	25RB-Middle (12)	2565 (21400)	16.46	16.53	16.41
		2535 (21100)	16.10	16.08	16.24
		2505 (20800)	16.38	16.28	16.37

	25RB-Low (0)	2565 (21400)	16.39	16.51	16.55
		2535 (21100)	16.19	16.17	16.08
		2505 (20800)	16.11	16.29	16.18
	50RB (0)	2565 (21400)	16.34	16.44	16.39
		2535 (21100)	16.04	16.23	15.95
		2505 (20800)	16.35	16.48	16.45
15MHz	1RB-High (74)	2562.5 (21375)	15.90	16.04	16.04
		2535 (21100)	15.90	15.96	15.97
		2507.5 (20825)	15.88	16.43	16.14
	1RB-Middle (37)	2562.5 (21375)	16.35	16.58	16.63
		2535 (21100)	16.07	16.55	16.30
		2507.5 (20825)	16.29	16.52	16.47
	1RB-Low (0)	2562.5 (21375)	16.06	16.57	16.23
		2535 (21100)	15.81	16.25	16.10
		2507.5 (20825)	15.79	16.17	16.06
	36RB-High (38)	2562.5 (21375)	16.37	16.41	16.49
		2535 (21100)	16.05	16.20	16.20
		2507.5 (20825)	16.31	16.30	16.32
	36RB-Middle (19)	2562.5 (21375)	16.52	16.47	16.46
		2535 (21100)	16.19	16.15	16.16
		2507.5 (20825)	16.32	16.19	16.37
	36RB-Low (0)	2562.5 (21375)	16.42	16.47	16.51
		2535 (21100)	16.11	16.17	16.14
		2507.5 (20825)	16.16	16.34	16.18
	75RB (0)	2562.5 (21375)	16.44	16.41	16.40
		2535 (21100)	16.12	16.18	16.05
		2507.5 (20825)	16.35	16.42	16.37
20MHz	1RB-High (99)	2560 (21350)	15.90	16.10	16.06
		2535 (21100)	15.85	16.05	16.05
		2510 (20850)	15.91	16.33	16.21
	1RB-Middle (50)	2560 (21350)	16.39	16.67	16.68
		2535 (21100)	16.44	16.48	16.31
		2510 (20850)	16.28	16.61	16.52
	1RB-Low (0)	2560 (21350)	16.10	16.47	16.26
		2535 (21100)	15.89	16.25	16.11

		2510 (20850)	15.82	16.25	16.06
	50RB-High (50)	2560 (21350)	16.37	16.40	16.40
		2535 (21100)	16.15	16.13	16.14
		2510 (20850)	16.28	16.32	16.34
	50RB-Middle (25)	2560 (21350)	16.42	16.44	16.45
		2535 (21100)	16.44	16.15	16.16
		2510 (20850)	16.23	16.28	16.28
	50RB-Low (0)	2560 (21350)	16.41	16.47	16.45
		2535 (21100)	16.11	16.12	16.12
		2510 (20850)	16.24	16.29	16.27
	100RB (0)	2560 (21350)	16.41	16.42	16.44
		2535 (21100)	16.12	16.12	16.11
		2510 (20850)	16.29	16.32	16.32

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BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2567.5 (21425)	23.42	22.10	21.07
		2535 (21100)	22.84	22.02	21.12
		2502.5 (20775)	22.93	22.32	21.10
	1RB-Middle (12)	2567.5 (21425)	23.82	22.67	21.54
		2535 (21100)	23.13	22.24	21.49
		2502.5 (20775)	23.43	22.45	21.55
	1RB-Low (0)	2567.5 (21425)	23.16	22.44	21.25
		2535 (21100)	22.97	22.13	21.03
		2502.5 (20775)	22.94	22.14	21.05
	12RB-High (13)	2567.5 (21425)	22.34	21.36	20.28
		2535 (21100)	21.88	21.05	20.31
		2502.5 (20775)	22.15	21.34	20.20
	12RB-Middle (6)	2567.5 (21425)	22.38	21.41	20.52
		2535 (21100)	22.21	21.37	20.23
		2502.5 (20775)	22.30	21.45	20.32
	12RB-Low (0)	2567.5 (21425)	22.40	21.32	20.37
		2535 (21100)	22.19	20.94	20.19
		2502.5 (20775)	22.23	21.08	20.14
	25RB (0)	2567.5 (21425)	22.49	21.36	20.28
		2535 (21100)	22.25	20.98	20.45
		2502.5 (20775)	22.13	21.07	20.21

10MHz	1RB-High (49)	2565 (21400)	23.46	22.20	21.17
		2535 (21100)	22.84	22.00	21.08
		2505 (20800)	22.92	22.31	21.12
	1RB-Middle (24)	2565 (21400)	23.88	22.63	21.57
		2535 (21100)	23.16	22.25	21.43
		2505 (20800)	23.36	22.39	21.47
	1RB-Low (0)	2565 (21400)	23.19	22.39	21.24
		2535 (21100)	22.91	22.07	21.08
		2505 (20800)	22.84	22.22	21.12
	25RB-High (25)	2565 (21400)	22.33	21.38	20.36
		2535 (21100)	21.98	21.09	20.30
		2505 (20800)	22.25	21.41	20.30
	25RB-Middle (12)	2565 (21400)	22.30	21.48	20.45
		2535 (21100)	22.22	21.27	20.28
		2505 (20800)	22.22	21.41	20.36
	25RB-Low (0)	2565 (21400)	22.36	21.40	20.42
		2535 (21100)	22.18	21.02	20.20
		2505 (20800)	22.22	21.09	20.16
	50RB (0)	2565 (21400)	22.46	21.38	20.26
		2535 (21100)	22.17	20.98	20.42
		2505 (20800)	22.18	21.16	20.25
15MHz	1RB-High (74)	2562.5 (21375)	23.40	22.19	21.08
		2535 (21100)	23.29	21.93	21.12
		2507.5 (20825)	23.27	22.21	21.03
	1RB-Middle (37)	2562.5 (21375)	23.96	22.72	21.58
		2535 (21100)	23.16	22.29	21.40
		2507.5 (20825)	23.27	22.48	21.53
	1RB-Low (0)	2562.5 (21375)	23.24	22.48	21.27
		2535 (21100)	23.26	22.10	21.01
		2507.5 (20825)	23.38	22.14	21.06
	36RB-High (38)	2562.5 (21375)	22.28	21.33	20.33
		2535 (21100)	22.01	21.17	20.21
		2507.5 (20825)	22.21	21.31	20.21
	36RB-Middle (19)	2562.5 (21375)	22.33	21.47	20.47
		2535 (21100)	22.16	21.21	20.21
		2507.5 (20825)	22.24	21.36	20.31
	36RB-Low (0)	2562.5 (21375)	22.28	21.44	20.44
		2535 (21100)	22.10	21.12	20.16
		2507.5 (20825)	22.26	21.14	20.21

	75RB (0)	2562.5 (21375)	22.44	21.30	20.31
		2535 (21100)	22.07	21.07	20.37
		2507.5 (20825)	22.25	21.23	20.19
20MHz	1RB-High (99)	2560 (21350)	23.35	22.12	21.07
		2535 (21100)	23.13	22.02	21.04
		2510 (20850)	23.23	22.18	21.12
	1RB-Middle (50)	2560 (21350)	23.49	22.64	21.66
		2535 (21100)	23.51	22.33	21.30
		2510 (20850)	23.29	22.56	21.49
	1RB-Low (0)	2560 (21350)	23.34	22.40	21.32
		2535 (21100)	23.20	22.09	21.11
		2510 (20850)	23.12	22.07	21.03
	50RB-High (50)	2560 (21350)	22.38	21.37	20.35
		2535 (21100)	22.10	21.12	20.15
		2510 (20850)	22.25	21.31	20.31
	50RB-Middle (25)	2560 (21350)	22.39	21.47	20.43
		2535 (21100)	22.46	21.15	20.16
		2510 (20850)	22.26	21.32	20.29
	50RB-Low (0)	2560 (21350)	22.37	21.42	20.43
		2535 (21100)	22.09	21.12	20.20
		2510 (20850)	22.20	21.24	20.24
	100RB (0)	2560 (21350)	22.35	21.38	20.40
		2535 (21100)	22.07	21.09	20.38
		2510 (20850)	22.23	21.29	20.29

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BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2617.5 (38225)	17.67	17.88	17.18
		2595 (38000)	17.52	17.65	17.35
		2572.5 (37775)	17.30	17.70	16.89
	1RB-Middle (12)	2617.5 (38225)	17.85	18.23	17.82
		2595 (38000)	17.88	18.13	17.41
		2572.5 (37775)	17.53	17.68	17.34
	1RB-Low (0)	2617.5 (38225)	17.74	17.74	17.43
		2595 (38000)	17.41	17.60	17.28
		2572.5 (37775)	17.49	17.71	17.31
	12RB-High (13)	2617.5 (38225)	18.08	18.04	17.95

		2595 (38000)	17.83	17.80	17.80
		2572.5 (37775)	17.56	17.75	17.55
	12RB-Middle (6)	2617.5 (38225)	17.81	18.19	18.20
		2595 (38000)	17.63	17.73	17.86
		2572.5 (37775)	17.52	17.78	17.78
	12RB-Low (0)	2617.5 (38225)	18.03	18.24	17.94
		2595 (38000)	17.76	17.93	17.73
		2572.5 (37775)	17.68	17.98	17.86
	25RB (0)	2617.5 (38225)	18.09	18.07	18.02
		2595 (38000)	17.79	17.80	17.74
		2572.5 (37775)	17.67	17.75	17.78
10MHz	1RB-High (49)	2615 (38200)	17.67	17.89	17.23
		2595 (38000)	17.56	17.63	17.33
		2575 (37800)	17.32	17.60	16.99
	1RB-Middle (24)	2615 (38200)	17.92	18.20	17.74
		2595 (38000)	17.80	18.05	17.48
		2575 (37800)	17.63	17.69	17.42
	1RB-Low (0)	2615 (38200)	17.68	17.72	17.39
		2595 (38000)	17.49	17.51	17.20
		2575 (37800)	17.56	17.68	17.26
	25RB-High (25)	2615 (38200)	18.08	18.00	17.95
		2595 (38000)	17.76	17.74	17.85
		2575 (37800)	17.60	17.85	17.62
	25RB-Middle (12)	2615 (38200)	17.80	18.22	18.10
		2595 (38000)	17.69	17.81	17.86
		2575 (37800)	17.44	17.82	17.75
	25RB-Low (0)	2615 (38200)	17.99	18.17	17.94
		2595 (38000)	17.69	17.83	17.67
		2575 (37800)	17.58	17.89	17.85
	50RB (0)	2615 (38200)	18.16	18.04	18.04
		2595 (38000)	17.78	17.71	17.84
		2575 (37800)	17.71	17.67	17.84
15MHz	1RB-High (74)	2612.5 (38175)	17.63	17.80	17.20
		2595 (38000)	17.57	17.69	17.23
		2577.5 (37825)	17.24	17.53	17.04

	1RB-Middle (37)	2612.5 (38175)	17.94	18.22	17.71
		2595 (38000)	17.82	18.00	17.51
		2577.5 (37825)	17.63	17.77	17.39
	1RB-Low (0)	2612.5 (38175)	17.62	17.72	17.30
		2595 (38000)	17.47	17.56	17.14
		2577.5 (37825)	17.54	17.65	17.27
	36RB-High (38)	2612.5 (38175)	17.98	17.96	17.97
		2595 (38000)	17.77	17.81	17.90
		2577.5 (37825)	17.64	17.80	17.61
	36RB-Middle (19)	2612.5 (38175)	17.85	18.14	18.12
		2595 (38000)	17.64	17.76	17.86
		2577.5 (37825)	17.49	17.83	17.68
	36RB-Low (0)	2612.5 (38175)	17.90	18.14	17.99
		2595 (38000)	17.75	17.80	17.77
		2577.5 (37825)	17.68	17.92	17.81
	75RB (0)	2612.5 (38175)	18.08	18.00	18.07
		2595 (38000)	17.72	17.77	17.80
		2577.5 (37825)	17.73	17.69	17.82
20MHz	1RB-High (99)	2610 (38150)	17.60	17.73	17.27
		2595 (38000)	17.56	17.68	17.29
		2580 (37850)	17.34	17.47	17.03
	1RB-Middle (50)	2610 (38150)	18.00	18.12	17.66
		2595 (38000)	18.08	17.90	17.47
		2580 (37850)	17.68	17.80	17.35
	1RB-Low (0)	2610 (38150)	17.66	17.77	17.32
		2595 (38000)	17.45	17.54	17.12
		2580 (37850)	17.55	17.65	17.22
	50RB-High (50)	2610 (38150)	17.88	18.04	17.95
		2595 (38000)	17.70	17.90	17.87
		2580 (37850)	17.58	17.72	17.71
	50RB-Middle (25)	2610 (38150)	17.89	18.07	18.07
		2595 (38000)	17.67	17.84	17.83
		2580 (37850)	17.58	17.74	17.69
	50RB-Low (0)	2610 (38150)	17.93	18.10	17.99
		2595 (38000)	17.95	17.85	17.79
		2580 (37850)	17.63	17.82	17.79

	100RB (0)	2610 (38150)	17.99	18.02	18.02
		2595 (38000)	17.77	17.84	17.79
		2580 (37850)	17.70	17.73	17.75

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BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2617.5 (38225)	23.71	22.75	21.33
		2595 (38000)	23.57	22.60	21.34
		2572.5 (37775)	23.26	22.49	20.94
	1RB-Middle (12)	2617.5 (38225)	23.87	22.90	21.68
		2595 (38000)	23.93	22.97	21.51
		2572.5 (37775)	23.60	22.59	21.43
	1RB-Low (0)	2617.5 (38225)	23.79	22.71	21.25
		2595 (38000)	23.61	22.27	20.96
		2572.5 (37775)	23.66	22.55	21.20
	12RB-High (13)	2617.5 (38225)	22.77	22.00	21.03
		2595 (38000)	22.57	21.56	20.92
		2572.5 (37775)	22.54	21.37	20.51
	12RB-Middle (6)	2617.5 (38225)	22.87	21.80	21.08
		2595 (38000)	22.50	21.90	20.59
		2572.5 (37775)	22.63	21.36	20.76
	12RB-Low (0)	2617.5 (38225)	22.90	21.82	20.81
		2595 (38000)	22.50	21.70	20.74
		2572.5 (37775)	22.48	21.74	20.83
	25RB (0)	2617.5 (38225)	22.86	22.09	21.04
		2595 (38000)	22.74	21.92	20.83
		2572.5 (37775)	22.42	21.56	20.84
10MHz	1RB-High (49)	2615 (38200)	23.75	22.69	21.29
		2595 (38000)	23.51	22.66	21.30
		2575 (37800)	23.26	22.50	20.90
	1RB-Middle (24)	2615 (38200)	23.89	22.99	21.63
		2595 (38000)	23.86	22.94	21.54
		2575 (37800)	23.57	22.65	21.44
	1RB-Low (0)	2615 (38200)	23.70	22.67	21.24
		2595 (38000)	23.64	22.35	21.02
		2575 (37800)	23.56	22.58	21.26
	25RB-High (25)	2615 (38200)	22.81	21.95	20.98
		2595 (38000)	22.64	21.62	20.83

		2575 (37800)	22.49	21.43	20.60
	25RB-Middle (12)	2615 (38200)	22.88	21.88	21.02
		2595 (38000)	22.52	21.81	20.63
		2575 (37800)	22.57	21.42	20.78
	25RB-Low (0)	2615 (38200)	22.91	21.80	20.89
		2595 (38000)	22.56	21.65	20.70
		2575 (37800)	22.40	21.72	20.74
	50RB (0)	2615 (38200)	22.84	22.09	21.06
		2595 (38000)	22.72	21.88	20.86
		2575 (37800)	22.50	21.48	20.76
15MHz	1RB-High (74)	2612.5 (38175)	23.65	22.79	21.20
		2595 (38000)	23.55	22.70	21.30
		2577.5 (37825)	23.28	22.44	20.91
	1RB-Middle (37)	2612.5 (38175)	23.96	23.09	21.69
		2595 (38000)	23.76	22.93	21.50
		2577.5 (37825)	23.62	22.74	21.38
	1RB-Low (0)	2612.5 (38175)	23.65	22.70	21.28
		2595 (38000)	23.58	22.44	20.99
		2577.5 (37825)	23.59	22.54	21.22
	36RB-High (38)	2612.5 (38175)	22.76	21.85	20.90
		2595 (38000)	22.66	21.65	20.89
		2577.5 (37825)	22.58	21.50	20.64
	36RB-Middle (19)	2612.5 (38175)	22.96	21.95	20.93
		2595 (38000)	22.60	21.72	20.71
		2577.5 (37825)	22.63	21.45	20.75
	36RB-Low (0)	2612.5 (38175)	22.85	21.90	20.98
		2595 (38000)	22.59	21.61	20.62
		2577.5 (37825)	22.47	21.67	20.70
	75RB (0)	2612.5 (38175)	22.78	22.02	20.96
		2595 (38000)	22.68	21.79	20.77
		2577.5 (37825)	22.46	21.57	20.72
20MHz	1RB-High (99)	2610 (38150)	23.61	22.70	21.23
		2595 (38000)	23.60	22.62	21.23
		2580 (37850)	23.36	22.43	20.99
	1RB-Middle (50)	2610 (38150)	23.71	23.05	21.63
		2595 (38000)	23.76	22.84	21.41
		2580 (37850)	23.67	22.74	21.31
	1RB-Low (0)	2610 (38150)	23.69	22.72	21.27

		2595 (38000)	23.48	22.50	21.03
		2580 (37850)	23.53	22.60	21.18
	50RB-High (50)	2610 (38150)	22.82	21.89	20.87
		2595 (38000)	22.64	21.68	20.81
		2580 (37850)	22.48	21.54	20.60
	50RB-Middle (25)	2610 (38150)	22.88	21.95	21.01
		2595 (38000)	22.94	21.64	20.76
		2580 (37850)	22.53	21.54	20.65
	50RB-Low (0)	2610 (38150)	22.83	21.94	20.97
		2595 (38000)	22.61	21.66	20.71
		2580 (37850)	22.54	21.59	20.68
	100RB (0)	2610 (38150)	22.87	21.92	20.94
		2595 (38000)	22.69	21.69	20.75
		2580 (37850)	22.55	21.60	20.68

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BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	16.69	16.85	16.78
		2640.3(41093)	17.07	16.85	16.69
		2593 (40620)	17.11	17.06	16.64
		2545.8(40148)	16.94	17.25	16.72
		2498.5 (39675)	17.19	17.10	16.58
	1RB-Middle (12)	2687.5 (41565)	17.24	17.30	16.86
		2640.3(41093)	17.31	17.27	17.01
		2593 (40620)	17.29	17.23	17.02
		2545.8(40148)	17.22	17.64	17.22
		2498.5 (39675)	17.18	17.64	16.86
	1RB-Low (0)	2687.5 (41565)	17.06	17.21	16.63
		2640.3(41093)	17.28	17.27	16.88
		2593 (40620)	17.08	17.04	16.66
		2545.8(40148)	17.19	17.12	16.58
		2498.5 (39675)	16.85	16.95	16.55
	12RB-High (13)	2687.5 (41565)	16.97	17.19	17.20
		2640.3(41093)	17.35	17.38	17.31
		2593 (40620)	17.23	17.38	17.29
		2545.8(40148)	17.41	17.48	17.60
		2498.5 (39675)	17.46	17.49	17.45

	12RB-Middle (6)	2687.5 (41565)	17.23	17.17	17.14
		2640.3(41093)	17.15	17.29	17.44
		2593 (40620)	17.18	17.36	17.33
		2545.8(40148)	17.15	17.43	17.53
		2498.5 (39675)	17.22	17.45	17.49
	12RB-Low (0)	2687.5 (41565)	17.18	17.03	17.18
		2640.3(41093)	17.36	17.46	17.40
		2593 (40620)	17.24	17.20	17.35
		2545.8(40148)	17.28	17.37	17.25
		2498.5 (39675)	17.09	17.34	17.26
	25RB (0)	2687.5 (41565)	17.25	17.18	17.23
		2640.3(41093)	17.38	17.39	17.38
		2593 (40620)	17.09	17.23	17.17
		2545.8(40148)	17.28	17.38	17.54
		2498.5 (39675)	17.23	17.27	17.47
10MHz	1RB-High (49)	2685 (41540)	16.57	16.75	16.75
		2639(41080)	16.89	17.02	16.70
		2593 (40620)	17.06	17.09	16.82
		2547(40160)	16.96	17.05	16.79
		2501 (39700)	17.12	17.06	16.66
	1RB-Middle (24)	2685 (41540)	17.15	17.24	16.83
		2639(41080)	17.40	17.43	16.92
		2593 (40620)	17.31	17.38	17.06
		2547(40160)	17.45	17.74	17.15
		2501 (39700)	17.28	17.43	17.00
	1RB-Low (0)	2685 (41540)	16.90	17.18	16.66
		2639(41080)	17.28	17.22	16.85
		2593 (40620)	16.99	17.02	16.75
		2547(40160)	17.04	17.14	16.76
		2501 (39700)	16.93	16.98	16.88
	25RB-High (25)	2685 (41540)	16.93	17.14	17.03
		2639(41080)	17.29	17.32	17.25
		2593 (40620)	17.34	17.41	17.28
		2547(40160)	17.42	17.49	17.52
		2501 (39700)	17.44	17.57	17.40
	25RB-Middle (12)	2685 (41540)	17.11	17.12	17.23

		2639(41080)	17.35	17.35	17.40
		2593 (40620)	17.28	17.39	17.40
		2547(40160)	17.26	17.40	17.43
		2501 (39700)	17.17	17.39	17.45
	25RB-Low (0)	2685 (41540)	17.15	17.12	17.16
		2639(41080)	17.31	17.45	17.48
		2593 (40620)	17.32	17.31	17.28
		2547(40160)	17.24	17.35	17.40
		2501 (39700)	17.20	17.39	17.20
	50RB (0)	2685 (41540)	17.14	17.25	17.28
		2639(41080)	17.26	17.26	17.37
		2593 (40620)	17.18	17.27	17.40
		2547(40160)	17.35	17.32	17.46
		2501 (39700)	17.19	17.21	17.30
15MHz	1RB-High (74)	2682.5 (41515)	16.66	16.77	16.69
		2637.8(41068)	17.00	16.95	16.62
		2593 (40620)	17.01	17.15	16.72
		2548.3(40173)	16.96	17.20	16.71
		2503.5 (39725)	17.09	17.17	16.60
	1RB-Middle (37)	2682.5 (41515)	17.14	17.38	16.83
		2637.8(41068)	17.31	17.31	17.08
		2593 (40620)	17.22	17.27	16.92
		2548.3(40173)	17.32	17.67	17.12
		2503.5 (39725)	17.24	17.54	16.94
	1RB-Low (0)	2682.5 (41515)	16.99	17.17	16.71
		2637.8(41068)	17.25	17.22	16.96
		2593 (40620)	17.05	17.02	16.56
		2548.3(40173)	17.10	17.07	16.65
		2503.5 (39725)	16.93	17.03	16.51
	36RB-High (38)	2682.5 (41515)	16.99	17.21	17.12
		2637.8(41068)	17.27	17.42	17.34
		2593 (40620)	17.16	17.36	17.23
		2548.3(40173)	17.34	17.58	17.58
		2503.5 (39725)	17.44	17.39	17.52
	36RB-Middle (19)	2682.5 (41515)	17.13	17.21	17.08
		2637.8(41068)	17.18	17.29	17.39

		2593 (40620)	17.15	17.33	17.35
		2548.3(40173)	17.25	17.51	17.52
		2503.5 (39725)	17.21	17.50	17.42
	36RB-Low (0)	2682.5 (41515)	17.10	17.06	17.24
		2637.8(41068)	17.43	17.42	17.36
		2593 (40620)	17.33	17.25	17.40
		2548.3(40173)	17.22	17.37	17.34
		2503.5 (39725)	17.10	17.39	17.32
	75RB (0)	2682.5 (41515)	17.15	17.15	17.24
		2637.8(41068)	17.31	17.43	17.28
		2593 (40620)	17.19	17.22	17.25
		2548.3(40173)	17.29	17.41	17.45
		2503.5 (39725)	17.33	17.36	17.39
20MHz	1RB-High (99)	2680 (41490)	16.67	16.81	16.74
		2636.5(41055)	16.92	17.00	16.61
		2593 (40620)	17.07	17.15	16.74
		2549.5(40185)	17.00	17.14	16.75
		2506 (39750)	17.05	17.13	16.70
	1RB-Middle (50)	2680 (41490)	17.20	17.30	16.86
		2636.5(41055)	17.30	17.41	16.99
		2593 (40620)	17.43	17.34	16.96
		2549.5(40185)	17.37	17.67	17.17
		2506 (39750)	17.34	17.49	17.04
	1RB-Low (0)	2680 (41490)	16.99	17.11	16.69
		2636.5(41055)	17.19	17.31	16.88
		2593 (40620)	17.00	17.08	16.65
		2549.5(40185)	17.01	17.14	16.71
		2506 (39750)	16.85	16.96	16.55
	50RB-High (50)	2680 (41490)	17.02	17.17	17.12
		2636.5(41055)	17.22	17.33	17.27
		2593 (40620)	17.26	17.36	17.33
		2549.5(40185)	17.43	17.49	17.49
		2506 (39750)	17.35	17.47	17.44
	50RB-Middle (25)	2680 (41490)	17.04	17.18	17.16
		2636.5(41055)	17.25	17.33	17.32
		2593 (40620)	17.49	17.35	17.33

		2549.5(40185)	17.35	17.45	17.45
		2506 (39750)	17.25	17.46	17.45
	50RB-Low (0)	2680 (41490)	17.09	17.15	17.16
		2636.5(41055)	17.37	17.48	17.41
		2593 (40620)	17.25	17.35	17.33
		2549.5(40185)	17.27	17.39	17.38
		2506 (39750)	17.16	17.32	17.30
	100RB (0)	2680 (41490)	17.14	17.19	17.19
		2636.5(41055)	17.31	17.36	17.28
		2593 (40620)	17.28	17.32	17.32
		2549.5(40185)	17.37	17.42	17.43
		2506 (39750)	17.27	17.31	17.30

LTEB41 – ANT2 A1

BANDWIDTH	Number of RBs	Frequency	QPSK	16QAM	64QAM
5MHz	1RB-High (24)	2687.5 (41565)	23.14	22.37	21.13
		2640.3(41093)	23.47	22.50	21.14
		2593 (40620)	23.52	22.75	21.09
		2545.8(40148)	23.32	22.54	21.10
		2498.5 (39675)	23.53	22.50	21.32
	1RB-Middle (12)	2687.5 (41565)	23.72	22.69	21.22
		2640.3(41093)	23.69	22.92	21.36
		2593 (40620)	23.68	22.95	21.54
		2545.8(40148)	23.75	23.13	21.32
		2498.5 (39675)	23.79	22.91	21.54
	1RB-Low (0)	2687.5 (41565)	23.53	22.65	21.31
		2640.3(41093)	23.49	22.66	21.53
		2593 (40620)	23.42	22.43	21.09
		2545.8(40148)	23.47	22.48	21.09
		2498.5 (39675)	23.43	22.64	21.23
	12RB-High (13)	2687.5 (41565)	22.51	21.38	20.53
		2640.3(41093)	22.62	21.79	20.83
		2593 (40620)	22.81	21.77	20.67
		2545.8(40148)	22.71	21.82	20.79
		2498.5 (39675)	22.73	21.80	20.82
	12RB-Middle (6)	2687.5 (41565)	22.54	21.58	20.76
		2640.3(41093)	22.57	21.76	20.83
		2593 (40620)	22.48	21.82	20.82

		2545.8(40148)	22.48	21.84	20.95
		2498.5 (39675)	22.56	21.59	20.87
	12RB-Low (0)	2687.5 (41565)	22.55	21.50	20.77
		2640.3(41093)	22.77	21.69	20.99
		2593 (40620)	22.60	21.67	20.86
		2545.8(40148)	22.68	21.73	20.73
		2498.5 (39675)	22.48	21.46	20.65
	25RB (0)	2687.5 (41565)	22.38	21.41	20.45
		2640.3(41093)	22.98	21.88	20.88
		2593 (40620)	22.66	21.89	20.76
		2545.8(40148)	22.64	21.93	21.08
		2498.5 (39675)	22.80	21.71	20.84
10MHz	1RB-High (49)	2685 (41540)	23.05	22.35	21.15
		2639(41080)	23.48	22.57	21.06
		2593 (40620)	23.54	22.67	21.04
		2547(40160)	23.34	22.54	21.02
		2501 (39700)	23.43	22.59	21.37
	1RB-Middle (24)	2685 (41540)	23.72	22.78	21.23
		2639(41080)	23.73	22.90	21.38
		2593 (40620)	23.68	23.00	21.49
		2547(40160)	23.81	23.03	21.38
		2501 (39700)	23.87	22.91	21.52
	1RB-Low (0)	2685 (41540)	23.46	22.60	21.21
		2639(41080)	23.55	22.75	21.43
		2593 (40620)	23.35	22.41	21.17
		2547(40160)	23.50	22.56	21.08
		2501 (39700)	23.39	22.58	21.06
	25RB-High (25)	2685 (41540)	22.46	21.38	20.54
		2639(41080)	22.53	21.69	20.73
		2593 (40620)	22.83	21.85	20.74
		2547(40160)	22.73	21.89	20.88
		2501 (39700)	22.64	21.78	20.90
	25RB-Middle (12)	2685 (41540)	22.63	21.58	20.71
		2639(41080)	22.62	21.82	20.76
		2593 (40620)	22.54	21.81	20.83
		2547(40160)	22.58	21.79	20.85
		2501 (39700)	22.50	21.68	20.88
	25RB-Low (0)	2685 (41540)	22.49	21.60	20.68
		2639(41080)	22.79	21.78	21.04

		2593 (40620)	22.51	21.62	20.89
		2547(40160)	22.60	21.75	20.63
		2501 (39700)	22.43	21.51	20.66
	50RB (0)	2685 (41540)	22.41	21.47	20.48
		2639(41080)	22.91	21.89	20.81
		2593 (40620)	22.68	21.90	20.83
		2547(40160)	22.69	21.95	21.05
		2501 (39700)	22.75	21.71	20.79
15MHz	1RB-High (74)	2682.5 (41515)	23.09	22.32	21.12
		2637.8(41068)	23.38	22.49	21.15
		2593 (40620)	23.59	22.57	21.08
		2548.3(40173)	23.44	22.50	21.12
		2503.5 (39725)	23.53	22.56	21.28
	1RB-Middle (37)	2682.5 (41515)	23.72	22.72	21.33
		2637.8(41068)	23.74	22.89	21.45
		2593 (40620)	23.76	22.92	21.49
		2548.3(40173)	23.87	22.93	21.40
		2503.5 (39725)	23.88	22.81	21.49
	1RB-Low (0)	2682.5 (41515)	23.49	22.64	21.14
		2637.8(41068)	23.61	22.78	21.41
		2593 (40620)	23.44	22.49	21.25
		2548.3(40173)	23.57	22.64	21.11
		2503.5 (39725)	23.49	22.50	21.18
	36RB-High (38)	2682.5 (41515)	22.47	21.44	20.57
		2637.8(41068)	22.59	21.76	20.74
		2593 (40620)	22.76	21.76	20.70
		2548.3(40173)	22.80	21.89	20.90
		2503.5 (39725)	22.59	21.70	20.86
	36RB-Middle (19)	2682.5 (41515)	22.53	21.61	20.66
		2637.8(41068)	22.65	21.79	20.74
		2593 (40620)	22.52	21.75	20.76
		2548.3(40173)	22.64	21.85	20.79
		2503.5 (39725)	22.59	21.66	20.86
	36RB-Low (0)	2682.5 (41515)	22.58	21.68	20.66
		2637.8(41068)	22.85	21.80	20.95
		2593 (40620)	22.58	21.63	20.80
		2548.3(40173)	22.60	21.66	20.66
		2503.5 (39725)	22.43	21.50	20.62
	75RB (0)	2682.5 (41515)	22.47	21.51	20.56

		2637.8(41068)	22.85	21.86	20.83
		2593 (40620)	22.71	21.81	20.75
		2548.3(40173)	22.72	21.86	20.95
		2503.5 (39725)	22.73	21.66	20.79
20MHz	1RB-High (99)	2680 (41490)	23.19	22.25	21.16
		2636.5(41055)	23.37	22.44	21.06
		2593 (40620)	23.58	22.60	21.17
		2549.5(40185)	23.54	22.58	21.14
		2506 (39750)	23.57	22.62	21.19
	1RB-Middle (50)	2680 (41490)	23.67	22.70	21.33
		2636.5(41055)	23.80	22.83	21.45
		2593 (40620)	23.99	22.84	21.42
		2549.5(40185)	23.96	22.95	21.49
		2506 (39750)	23.83	22.88	21.47
	1RB-Low (0)	2680 (41490)	23.49	22.54	21.09
		2636.5(41055)	23.70	22.79	21.35
		2593 (40620)	23.49	22.54	21.15
		2549.5(40185)	23.55	22.63	21.15
		2506 (39750)	23.43	22.41	21.06
	50RB-High (50)	2680 (41490)	22.46	21.47	20.55
		2636.5(41055)	22.65	21.67	20.71
		2593 (40620)	22.69	21.75	20.78
		2549.5(40185)	22.76	21.80	20.85
		2506 (39750)	22.69	21.71	20.82
	50RB-Middle (25)	2680 (41490)	22.56	21.55	20.57
		2636.5(41055)	22.70	21.81	20.83
		2593 (40620)	22.62	21.70	20.76
		2549.5(40185)	22.74	21.80	20.82
		2506 (39750)	22.65	21.75	20.84
	50RB-Low (0)	2680 (41490)	22.52	21.60	20.60
		2636.5(41055)	22.81	21.85	20.91
		2593 (40620)	22.88	21.68	20.71
		2549.5(40185)	22.67	21.69	20.75
		2506 (39750)	22.52	21.60	20.69
	100RB (0)	2680 (41490)	22.54	21.61	20.64
		2636.5(41055)	22.75	21.79	20.77
		2593 (40620)	22.68	21.71	20.75
		2549.5(40185)	22.77	21.77	20.85
		2506 (39750)	22.64	21.73	20.75

11.4 Wi-Fi and BT Measurement result

The maximum output power of BT antenna is 8.47dBm.
The maximum tune up of BT antenna is 9dBm.

Sensor on	Sensor off
A0	A1

Wi-Fi 2.4G –A0

2.4GHz				
FCC			Power setting	Tune up
802.11b	Channel\data	1Mbps		
WLAN2450	11(2462MHz)	13.14	**13**	14.00
	6(2437(MHz)	13.69	**13**	14.00
	1(2412MHz)	13.61	**13**	14.00
802.11g	Channel\data	6Mbps		
WLAN2450	11(2462MHz)	12.63	**13**	14.00
	6(2437(MHz)	13.31	**13**	14.00
	1(2412MHz)	13.29	**13**	14.00
802.11n-20MHz	Channel\data	MCS0		
WLAN2450	11(2462MHz)	12.75	**13**	14.00
	6(2437(MHz)	12.93	**13**	14.00
	1(2412MHz)	13.21	**13**	14.00

Wi-Fi 2.4G –A1

2.4GHz				
FCC			Power setting	Tune up
802.11b	Channel\data	1Mbps		
WLAN2450	11(2462MHz)	14.23	**14**	15.00
	6(2437(MHz)	14.31	**14**	15.00
	1(2412MHz)	14.18	**14**	15.00
802.11g	Channel\data	6Mbps		
WLAN2450	11(2462MHz)	14.37	**14.5**	15.50
	6(2437(MHz)	16.23	**16**	17.00
	1(2412MHz)	16.18	**16**	17.00
802.11n-20MHz	Channel\data	MCS0		
WLAN2450	11(2462MHz)	14.33	**14.5**	15.50
	6(2437(MHz)	16.17	**16**	17.00
	1(2412MHz)	16.14	**16**	17.00

Wi-Fi 5G –A0

5GHz FCC			
802.11ac(dBm)-80MHz			
Channel\data rate	MCS0	Power setting	Tune up
42(5210 MHz)	10.59	11	12
58(5290 MHz)	10.69	11	12
106(5530 MHz)	10.49	11	12
122(5610 MHz)	10.45	11	12
138(5690 MHz)	10.43	11	12
155(5775 MHz)	10.70	11	12

Wi-Fi 5G –A1

5GHz FCC			
802.11a(dBm)			
Channel\data rate	6Mbps	Power setting	Tune up
36(5180 MHz)	15.07	16.00	17.00
40(5200 MHz)	15.35	16.00	17.00
44(5220 MHz)	15.25	16.00	17.00
48(5240 MHz)	15.17	16.00	17.00
52(5260 MHz)	15.20	16.00	17.00
56(5280 MHz)	15.19	16.00	17.00
60(5300 MHz)	15.21	16.00	17.00
64(5320 MHz)	15.29	16.00	17.00
100(5500 MHz)	14.38	15.00	16.00
104(5520 MHz)	14.49	15.00	16.00
108(5540 MHz)	14.48	15.00	16.00
112(5560 MHz)	14.48	15.00	16.00
116(5580 MHz)	14.45	15.00	16.00
120(5600 MHz)	14.44	15.00	16.00
124(5620 MHz)	14.50	15.00	16.00
128(5640 MHz)	14.31	15.00	16.00
132(5660 MHz)	14.42	15.00	16.00
136(5680 MHz)	14.30	15.00	16.00
140(5700 MHz)	14.38	15.00	16.00
144(5720 MHz)	14.40	15.00	16.00
149(5745 MHz)	12.80	13.50	14.50
153(5765 MHz)	12.86	13.50	14.50
157(5785 MHz)	12.94	13.50	14.50
161(5805 MHz)	12.93	13.50	14.50
165(5825 MHz)	12.81	13.50	14.50

12 Simultaneous TX SAR Considerations

12.1 Transmit Antenna Separation Distances

The detail for transmit antenna separation distances is described in the additional document:
Appendix to test report No.24T04Z200128-011
The photos of SAR test

13 Evaluation of Simultaneous

WWAN+WIFI		GSM850	W850	LTEB5	LTEB7	LTEB38	LTEB41	WIFI2.4G	WIFI5G	BT	WWAN+WIFI2.4G	WWAN+WIFI5G+BT
Cheek Left	0mm	0.36	0.5	0.34	0.39	0.31	0.32	0.14	0.25	0.02	0.64	0.77
Tilt Left	0mm	0.32	0.46	0.32	0.45	0.35	0.39	0.15	0.29	0.02	0.61	0.77
Cheek Right	0mm	0.57	0.71	0.43	0.42	0.42	0.5	0.05	0.2	0	0.76	0.91
Tilt Right	0mm	0.48	0.68	0.42	0.58	0.52	0.58	0.05	0.21	0	0.73	0.89
											0	0
Front	10mm	0.27	0.3	0.21	0.35	0.1	0.15	0.14	0.31	0	0.49	0.66
Rear	10mm	0.48	0.5	0.34	0.11	0.22	0.28	0.1	0.03	0.01	0.6	0.54
Left	10mm	0.24	0.23	0.18	0.03	0	0	0	0.15	0.01	0.24	0.4
Top	10mm	0.21	0.19	0.18	0.09	0.13	0.19	0.07	0.02	0.01	0.28	0.24
Front	11mm	0.23	0.34	0.39	0.79	0.33	0.51	0.14	0.31	0	0.93	1.1
Rear	15mm	0.28	0.36	0.41	0.69	0.4	0.53	0.16	0.25	0.01	0.85	0.95
Rear	12mm							0.16	0.25	0.01	0.16	0.26
Left	12mm	0.22	0.24	0.25	0.15	0.08	0.11	0	0.15	0.01	0.25	0.41
Right	10mm	0.04	0.09	0.1	0.18	0.1	0.16	0.19	0.18	0.01	0.37	0.37
Top	15mm	0.1	0.2	0.22	0.56	0.32	0.49	0.11	0.6	0.01	0.67	1.17
Top	12mm							0.11	0.6	0.01	0.11	0.61
Bottom	10mm	0	0	0	0	0	0	0.05	0.12	0.01	0.05	0.13

Conclusion:

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

14 SAR Test Result

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

B2=Battery2（HQ-7160SD）

B3=Battery3（HQ-7160NA）

DSI	RF Exposure Conditions	Frequency Band	Channel Number	Frequency (MHz)	Mode/RB	Test Position	Distance	Figure No./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Reported SAR 10g (W/kg)	Power Drift
sensor on	Head	GSM850	190	836.6	GPRS(2TX)	Cheek Left	0mm	\	29.10	29.5	0.331	**0.36**	0.202	**0.22**	-0.02
sensor on	Head	GSM850	190	836.6	GPRS(2TX)	Tilt Left	0mm	\	29.10	29.5	0.295	**0.32**	0.17	**0.19**	0.04
sensor on	Head	GSM850	251	848.8	GPRS(2TX)	Cheek Right	0mm	F.1	28.92	29.5	0.497	**0.57**	0.293	**0.33**	0.11
sensor on	Head	GSM850	190	836.6	GPRS(2TX)	Cheek Right	0mm	\	29.10	29.5	0.472	**0.52**	0.273	**0.30**	-0.18
sensor on	Head	GSM850	128	824.2	GPRS(2TX)	Cheek Right	0mm	\	28.95	29.5	0.451	**0.51**	0.265	**0.30**	-0.07
sensor on	Head	GSM850	190	836.6	GPRS(2TX)	Tilt Right	0mm	\	29.10	29.5	0.441	**0.48**	0.238	**0.26**	-0.14
sensor on	Body	GSM850	190	836.6	GPRS(2TX)	Front	10mm	\	29.10	29.5	0.248	**0.27**	0.158	**0.17**	-0.07
sensor on	Body	GSM850	251	848.8	GPRS(2TX)	Rear	10mm	\	28.92	29.5	0.407	**0.47**	0.262	**0.30**	0.10
sensor on	Body	GSM850	190	836.6	GPRS(2TX)	Rear	10mm	F.2	29.10	29.5	0.434	**0.48**	0.268	**0.29**	-0.06
sensor on	Body	GSM850	128	824.2	GPRS(2TX)	Rear	10mm	\	28.95	29.5	0.404	**0.46**	0.246	**0.28**	0.05
sensor on	Body	GSM850	190	836.6	GPRS(2TX)	Left	10mm	\	29.10	29.5	0.216	**0.24**	0.116	**0.13**	0.18
sensor on	Body	GSM850	190	836.6	GPRS(2TX)	Top	10mm	\	29.10	29.5	0.192	**0.21**	0.114	**0.12**	0.12
sensor on	Body	GSM850	190	836.6	EGPRS(2TX)	Rear	10mm	\	29.03	29.5	0.411	**0.46**	0.257	**0.29**	0.02
sensor off	Body	GSM850	190	836.6	GPRS(4TX)	Front	11mm	\	27.83	28.5	0.193	**0.23**	0.126	**0.15**	0.04
sensor off	Body	GSM850	251	848.8	GPRS(4TX)	Rear	15mm	\	27.67	28.5	0.233	**0.28**	0.149	**0.18**	-0.01
sensor off	Body	GSM850	190	836.6	GPRS(4TX)	Rear	15mm	\	27.83	28.5	0.225	**0.26**	0.148	**0.17**	-0.12
sensor off	Body	GSM850	128	824.2	GPRS(4TX)	Rear	15mm	\	27.82	28.5	0.216	**0.25**	0.136	**0.16**	0.15
sensor off	Body	GSM850	190	836.6	GPRS(4TX)	Left	12mm	\	27.83	28.5	0.185	**0.22**	0.113	**0.13**	-0.07
sensor off	Body	GSM850	190	836.6	GPRS(4TX)	Right	10mm	\	27.83	28.5	0.032	**0.04**	0.023	**0.03**	0.04
sensor off	Body	GSM850	190	836.6	GPRS(4TX)	Top	15mm	\	27.83	28.5	0.084	**0.10**	0.055	**0.06**	0.04
sensor off	Body	GSM850	190	836.6	GPRS(4TX)	Bottom	10mm	\	27.83	28.5	<0.01	**<0.01**	<0.01	<0.01	\
sensor on	Head	WCDMA 850	4183	836.6	RMC	Cheek Left	0mm	\	22.40	23.50	0.385	**0.50**	0.24	**0.31**	0.18
sensor on	Head	WCDMA 850	4183	836.6	RMC	Tilt Left	0mm	\	22.40	23.50	0.358	**0.46**	0.207	**0.27**	-0.07
sensor on	Head	WCDMA 850	4233	846.6	RMC	Cheek Right	0mm	\	22.28	23.50	0.471	**0.62**	0.286	**0.38**	-0.10
sensor on	Head	WCDMA 850	4183	836.6	RMC	Cheek Right	0mm	\	22.40	23.50	0.532	**0.69**	0.321	**0.41**	0.14
sensor on	Head	WCDMA 850	4132	826.4	RMC	Cheek Right	0mm	F.3	22.36	23.50	0.544	**0.71**	0.322	**0.42**	0.19
sensor on	Head	WCDMA 850	4183	836.6	RMC	Tilt Right	0mm	\	22.40	23.50	0.525	**0.68**	0.282	**0.36**	-0.14
sensor on	Head	WCDMA 850	4132	826.4	RMC	Cheek Right	0mm	B2	22.36	23.50	0.531	**0.69**	0.309	**0.40**	0
sensor on	Head	WCDMA 850	4132	826.4	RMC	Cheek Right	0mm	B3	22.36	23.50	0.536	**0.70**	0.324	**0.42**	0.13
sensor on	Head	WCDMA 850	4132	826.4	RMC	Cheek Right	0mm	SIM2	22.36	23.50	0.516	**0.67**	0.303	**0.39**	-0.03
sensor on	Body	WCDMA 850	4183	836.6	RMC	Front	10mm	\	22.40	23.50	0.231	**0.30**	0.144	**0.19**	0.12
sensor on	Body	WCDMA 850	4233	846.6	RMC	Rear	10mm	\	22.28	23.50	0.325	**0.43**	0.202	**0.27**	-0.09
sensor on	Body	WCDMA 850	4183	836.6	RMC	Rear	10mm	\	22.40	23.50	0.351	**0.45**	0.22	**0.28**	0.07
sensor on	Body	WCDMA 850	4132	826.4	RMC	Rear	10mm	F.4	22.36	23.50	0.388	**0.50**	0.241	**0.31**	0.01
sensor on	Body	WCDMA 850	4183	836.6	RMC	Left	10mm	\	22.40	23.50	0.177	**0.23**	0.092	**0.12**	-0.04
sensor on	Body	WCDMA 850	4183	836.6	RMC	Top	10mm	\	22.40	23.50	0.15	**0.19**	0.092	**0.12**	0.13
sensor off	Body	WCDMA 850	4183	836.6	RMC	Front	11mm	\	24.38	25.50	0.265	**0.34**	0.168	**0.22**	0.18
sensor off	Body	WCDMA 850	4233	846.6	RMC	Rear	15mm	\	24.45	25.50	0.237	**0.30**	0.155	**0.20**	0.14
sensor off	Body	WCDMA 850	4183	836.6	RMC	Rear	15mm	\	24.38	25.50	0.278	**0.36**	0.18	**0.23**	-0.05
sensor off	Body	WCDMA 850	4132	826.4	RMC	Rear	15mm	\	24.47	25.50	0.276	**0.35**	0.179	**0.23**	0.01
sensor off	Body	WCDMA 850	4183	836.6	RMC	Left	12mm	\	24.38	25.50	0.189	**0.24**	0.097	**0.13**	0.06
sensor off	Body	WCDMA 850	4183	836.6	RMC	Right	10mm	\	24.38	25.50	0.068	**0.09**	0.046	**0.06**	-0.02
sensor off	Body	WCDMA 850	4183	836.6	RMC	Top	15mm	\	24.38	25.50	0.155	**0.20**	0.098	**0.13**	-0.13
sensor off	Body	WCDMA 850	4183	836.6	RMC	Bottom	10mm	\	24.38	25.50	<0.01	**<0.01**	<0.01	<0.01	\
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sensor on	Head	LTE Band5	20525	836.5	1RB-Mid	Cheek Left	0mm	\	21.11	22.00	0.278	**0.34**	0.164	**0.20**	-0.04
sensor on	Head	LTE Band5	20525	836.5	1RB-Mid	Tilt Left	0mm	\	21.11	22.00	0.258	**0.32**	0.142	**0.17**	-0.09
sensor on	Head	LTE Band5	20600	844	1RB-Mid	Cheek Right	0mm	\	20.84	22.00	0.318	**0.42**	0.175	**0.23**	-0.16
sensor on	Head	LTE Band5	20525	836.5	1RB-Mid	Cheek Right	0mm	F.5	21.11	22.00	0.354	**0.43**	0.205	**0.25**	0.01
sensor on	Head	LTE Band5	20450	829	1RB-Mid	Cheek Right	0mm	\	21.04	22.00	0.293	**0.37**	0.162	**0.20**	0.05
sensor on	Head	LTE Band5	20525	836.5	1RB-Mid	Tilt Right	0mm	\	21.11	22.00	0.339	**0.42**	0.172	**0.21**	-0.05
sensor on	Head	LTE Band5	20525	836.5	25RB-Mid	Cheek Left	0mm	\	21.14	22.00	0.276	**0.34**	0.162	**0.20**	0.02
sensor on	Head	LTE Band5	20525	836.5	25RB-Mid	Tilt Left	0mm	\	21.14	22.00	0.252	**0.31**	0.139	**0.17**	0.15
sensor on	Head	LTE Band5	20525	836.5	25RB-Mid	Cheek Right	0mm	\	21.14	22.00	0.344	**0.42**	0.197	**0.24**	-0.03
sensor on	Head	LTE Band5	20525	836.5	25RB-Mid	Tilt Right	0mm	\	21.14	22.00	0.331	**0.40**	0.168	**0.20**	0.04
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sensor on	Body	LTE Band5	20525	836.5	1RB-Mid	Front	10mm	\	21.11	22.00	0.173	**0.21**	0.109	**0.13**	0.07
sensor on	Body	LTE Band5	20525	836.5	1RB-Mid	Rear	10mm	\	21.11	22.00	0.276	**0.34**	0.17	**0.21**	-0.01
sensor on	Body	LTE Band5	20525	836.5	1RB-Mid	Left	10mm	\	21.11	22.00	0.145	**0.18**	0.081	**0.10**	0.13
sensor on	Body	LTE Band5	20525	836.5	1RB-Mid	Top	10mm	\	21.11	22.00	0.117	**0.14**	0.069	**0.08**	0.01
sensor on	Body	LTE Band5	20525	836.5	25RB-Mid	Front	10mm	\	21.14	22.00	0.17	**0.21**	0.105	**0.13**	0.11
sensor on	Body	LTE Band5	20525	836.5	25RB-Mid	Rear	10mm	\	21.14	22.00	0.27	**0.33**	0.168	**0.20**	0.18
sensor on	Body	LTE Band5	20525	836.5	25RB-Mid	Left	10mm	\	21.14	22.00	0.14	**0.17**	0.081	**0.10**	0.01
sensor on	Body	LTE Band5	20525	836.5	25RB-Mid	Top	10mm	\	21.14	22.00	0.148	**0.18**	0.089	**0.11**	-0.16

sensor off	Body	LTE Band5	20525	836.5	1RB-Mid	Front	11mm	\	23.87	25.00	0.3	**0.39**	0.17	**0.22**	-0.14
sensor off	Body	LTE Band5	20600	844	1RB-Mid	Rear	15mm	\	23.81	25.00	0.273	**0.36**	0.118	**0.16**	-0.07
sensor off	Body	LTE Band5	20525	836.5	1RB-Mid	Rear	15mm	F.6	23.87	25.00	0.314	**0.41**	0.203	**0.26**	0.08
sensor off	Body	LTE Band6	20450	829	1RB-Mid	Rear	15mm	\	23.62	25.00	0.229	**0.31**	0.104	**0.14**	-0.19
sensor off	Body	LTE Band5	20525	836.5	1RB-Mid	Left	12mm	\	23.87	25.00	0.196	**0.25**	0.12	**0.16**	0.11
sensor off	Body	LTE Band5	20525	836.5	1RB-Mid	Right	10mm	\	23.87	25.00	0.079	**0.10**	0.049	**0.06**	0.16
sensor off	Body	LTE Band5	20525	836.5	1RB-Mid	Top	15mm	\	23.87	25.00	0.173	**0.22**	0.097	**0.13**	-0.08
sensor off	Body	LTE Band5	20525	836.5	1RB-Mid	Bottom	10mm	\	23.87	25.00	<0.01	**<0.01**	<0.01	<0.01	\
sensor off	Body	LTE Band5	20525	836.5	25RB-Mid	Front	11mm	\	22.98	24.00	0.232	**0.29**	0.131	**0.17**	-0.10
sensor off	Body	LTE Band5	20525	836.5	25RB-Mid	Rear	15mm	\	22.98	24.00	0.243	**0.31**	0.14	**0.18**	0.17
sensor off	Body	LTE Band5	20525	836.5	25RB-Mid	Left	12mm	\	22.98	24.00	0.151	**0.19**	0.092	**0.12**	-0.12
sensor off	Body	LTE Band5	20525	836.5	25RB-Mid	Right	10mm	\	22.98	24.00	0.064	**0.08**	0.039	**0.05**	-0.03
sensor off	Body	LTE Band5	20525	836.5	25RB-Mid	Top	15mm	\	22.98	24.00	0.135	**0.17**	0.076	**0.10**	-0.05
sensor off	Body	LTE Band5	20525	836.5	25RB-Mid	Bottom	10mm	\	22.98	24.00	<0.01	**<0.01**	<0.01	<0.01	\
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sensor on	Head	LTE Band7	21100	2535	1RB-Mid	Cheek Left	0mm	\	16.44	17	0.347	**0.39**	0.164	**0.19**	0.01
sensor on	Head	LTE Band7	21100	2535	1RB-Mid	Tilt Left	0mm	\	16.44	17	0.396	**0.45**	0.181	**0.21**	-0.14
sensor on	Head	LTE Band7	21100	2535	1RB-Mid	Cheek Right	0mm	\	16.44	17	0.357	**0.41**	0.18	**0.20**	0.15
sensor on	Head	LTE Band7	21350	2560	1RB-Mid	Tilt Right	0mm	\	16.39	17	0.491	**0.57**	0.215	**0.25**	-0.18
sensor on	Head	LTE Band7	21100	2535	1RB-Mid	Tilt Right	0mm	F.7	16.44	17	0.507	**0.58**	0.225	**0.26**	0.11
sensor on	Head	LTE Band7	20850	2510	1RB-Mid	Tilt Right	0mm	\	16.28	17	0.476	**0.56**	0.215	**0.25**	0.11
sensor on	Head	LTE Band7	21100	2535	50RB-Mid	Cheek Left	0mm	\	16.44	17	0.334	**0.38**	0.159	**0.18**	0.08
sensor on	Head	LTE Band7	21100	2535	50RB-Mid	Tilt Left	0mm	\	16.44	17	0.382	**0.43**	0.18	**0.20**	-0.10
sensor on	Head	LTE Band7	21100	2535	50RB-Mid	Cheek Right	0mm	\	16.44	17	0.366	**0.42**	0.185	**0.21**	0.17
sensor on	Head	LTE Band7	21100	2535	50RB-Mid	Tilt Right	0mm	\	16.44	17	0.5	**0.57**	0.222	**0.25**	-0.01
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sensor on	Body	LTE Band7	21350	2560	1RB-Mid	Front	10mm	\	16.39	17	0.231	**0.27**	0.132	**0.15**	-0.13
sensor on	Body	LTE Band7	21100	2535	1RB-Mid	Front	10mm	\	16.44	17	0.304	**0.35**	0.171	**0.19**	0.07
sensor on	Body	LTE Band7	20850	2510	1RB-Mid	Front	10mm	\	16.28	17	0.277	**0.33**	0.163	**0.19**	-0.15
sensor on	Body	LTE Band7	21100	2535	1RB-Mid	Rear	10mm	\	16.44	17	0.095	**0.11**	0.048	**0.05**	-0.17
sensor on	Body	LTE Band7	21100	2535	1RB-Mid	Left	10mm	\	16.44	17	0.025	**0.03**	0.008	**0.01**	0.02
sensor on	Body	LTE Band7	21100	2535	1RB-Mid	Top	10mm	\	16.44	17	0.009	**0.01**	0.048	**0.05**	0.17
sensor on	Body	LTE Band7	21100	2535	50RB-Mid	Front	10mm	\	16.44	17	0.252	**0.29**	0.138	**0.16**	-0.10
sensor on	Body	LTE Band7	21100	2535	50RB-Mid	Rear	10mm	\	16.44	17	0.094	**0.11**	0.047	**0.05**	-0.06
sensor on	Body	LTE Band7	21100	2535	50RB-Mid	Left	10mm	\	16.44	17	0.027	**0.03**	0.008	**0.01**	0.15
sensor on	Body	LTE Band7	21100	2535	50RB-Mid	Top	10mm	\	16.44	17	0.077	**0.09**	0.039	**0.04**	-0.01
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sensor off	Body	LTE Band7	21350	2560	1RB-Mid	Front	11mm	\	23.49	24.5	0.47	**0.59**	0.207	**0.26**	-0.17
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Front	11mm	F.8	23.51	24.5	0.628	**0.79**	0.331	**0.42**	-0.09
sensor off	Body	LTE Band7	20850	2510	1RB-Mid	Front	11mm	\	23.29	24.5	0.526	**0.70**	0.289	**0.38**	0.14
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Rear	15mm	\	23.51	24.5	0.552	**0.69**	0.266	**0.33**	-0.13
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Left	12mm	\	23.51	24.5	0.119	**0.15**	0.062	**0.08**	-0.1
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Right	10mm	\	23.51	24.5	0.147	**0.18**	0.082	**0.10**	0.04
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Top	15mm	\	23.51	24.5	0.445	**0.56**	0.235	**0.30**	-0.05
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Bottom	10mm	\	23.51	24.5	<0.01	**<0.01**	<0.01	<0.01	\
sensor off	Body	LTE Band7	21100	2535	50RB-Mid	Front	11mm	\	22.46	23.5	0.439	**0.56**	0.236	**0.30**	0.01
sensor off	Body	LTE Band7	21100	2535	50RB-Mid	Rear	15mm	\	22.46	23.5	0.433	**0.55**	0.208	**0.26**	0.16
sensor off	Body	LTE Band7	21100	2535	50RB-Mid	Left	12mm	\	22.46	23.5	0.096	**0.12**	0.05	**0.06**	0.02
sensor off	Body	LTE Band7	21100	2535	50RB-Mid	Right	10mm	\	22.46	23.5	0.115	**0.15**	0.065	**0.08**	0.17
sensor off	Body	LTE Band7	21100	2535	50RB-Mid	Top	15mm	\	22.46	23.5	0.393	**0.50**	0.207	**0.26**	0.10
sensor off	Body	LTE Band7	21100	2535	50RB-Mid	Bottom	10mm	\	22.46	23.5	<0.01	**<0.01**	<0.01	<0.01	\
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Front	11mm	B2	23.51	24.5	0.526	**0.66**	0.279	**0.35**	0.02
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Front	11mm	B3	23.51	24.5	0.561	**0.70**	0.301	**0.38**	-0.02
sensor off	Body	LTE Band7	21100	2535	1RB-Mid	Front	11mm	SIM2	23.51	24.5	0.593	**0.74**	0.312	**0.39**	-0.04
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sensor on	Head	LTE Band38	38000	2595	1RB-Mid	Cheek Left	0mm	\	18.08	18.5	0.281	**0.31**	0.127	**0.14**	-0.17
sensor on	Head	LTE Band38	38000	2595	1RB-Mid	Tilt Left	0mm	\	18.08	18.5	0.315	**0.35**	0.139	**0.15**	0.13
sensor on	Head	LTE Band38	38000	2595	1RB-Mid	Cheek Right	0mm	\	18.08	18.5	0.385	**0.42**	0.176	**0.19**	-0.17
sensor on	Head	LTE Band38	38150	2610	1RB-Mid	Tilt Right	0mm	F.9	18.00	18.5	0.461	**0.52**	0.202	**0.23**	-0.01
sensor on	Head	LTE Band38	38000	2595	1RB-Mid	Tilt Right	0mm	\	18.08	18.5	0.452	**0.50**	0.187	**0.21**	-0.13
sensor on	Head	LTE Band38	37850	2580	1RB-Mid	Tilt Right	0mm	\	17.68	18.5	0.418	**0.50**	0.178	**0.21**	-0.07
sensor on	Head	LTE Band38	38000	2595	50RB-Low	Cheek Left	0mm	\	17.95	18.5	0.264	**0.30**	0.119	**0.14**	-0.02
sensor on	Head	LTE Band38	38000	2595	50RB-Low	Tilt Left	0mm	\	17.95	18.5	0.3	**0.34**	0.131	**0.15**	-0.03
sensor on	Head	LTE Band38	38000	2595	50RB-Low	Cheek Right	0mm	\	17.95	18.5	0.362	**0.41**	0.168	**0.19**	0.14
sensor on	Head	LTE Band38	38000	2595	50RB-Low	Tilt Right	0mm	\	17.95	18.5	0.448	**0.51**	0.196	**0.22**	-0.17
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sensor on	Body	LTE Band38	38000	2595	1RB-Mid	Front	10mm	\	18.08	18.5	0.092	**0.10**	0.048	**0.05**	-0.11
sensor on	Body	LTE Band38	38000	2595	1RB-Mid	Rear	10mm	\	18.08	18.5	0.197	**0.22**	0.089	**0.10**	0.06
sensor on	Body	LTE Band38	38000	2595	1RB-Mid	Left	10mm	\	18.08	18.5	<0.01	**<0.01**	<0.01	<0.01	\
sensor on	Body	LTE Band38	38000	2595	1RB-Mid	Top	10mm	\	18.08	18.5	0.12	**0.13**	0.063	**0.07**	-0.10
sensor on	Body	LTE Band38	38000	2595	50RB-Low	Front	10mm	\	17.95	18.5	0.089	**0.10**	0.048	**0.05**	0.00
sensor on	Body	LTE Band38	38000	2595	50RB-Low	Rear	10mm	\	17.95	18.5	0.178	**0.20**	0.084	**0.10**	0.05
sensor on	Body	LTE Band38	38000	2595	50RB-Low	Left	10mm	\	17.95	18.5	<0.01	**<0.01**	<0.01	<0.01	\
sensor on	Body	LTE Band38	38000	2595	50RB-Low	Top	10mm	\	17.95	18.5	0.115	**0.13**	0.056	**0.06**	0.04
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sensor off	Body	LTE Band38	38000	2595	1RB-Mid	Front	11mm	\	23.76	24.5	0.281	**0.33**	0.151	**0.18**	-0.01
sensor off	Body	LTE Band38	38000	2595	1RB-Mid	Rear	15mm	F.10	23.76	24.5	0.341	**0.40**	0.169	**0.20**	-0.07
sensor off	Body	LTE Band38	38000	2595	1RB-Mid	Left	12mm	\	23.76	24.5	0.067	**0.08**	0.037	**0.04**	0.02
sensor off	Body	LTE Band38	38000	2595	1RB-Mid	Right	10mm	\	23.76	24.5	0.085	**0.10**	0.049	**0.06**	-0.05
sensor off	Body	LTE Band38	38000	2595	1RB-Mid	Top	15mm	\	23.76	24.5	0.273	**0.32**	0.14	**0.17**	-0.13
sensor off	Body	LTE Band38	38000	2595	1RB-Mid	Bottom	10mm	\	23.76	24.5	<0.01	**<0.01**	<0.01	<0.01	\
sensor off	Body	LTE Band38	38000	2595	50RB-Mid	Front	11mm	\	22.94	23.5	0.216	**0.25**	0.117	**0.13**	0.09
sensor off	Body	LTE Band38	38000	2595	50RB-Mid	Rear	15mm	\	22.94	23.5	0.261	**0.30**	0.13	**0.15**	-0.11
sensor off	Body	LTE Band38	38000	2595	50RB-Mid	Left	12mm	\	22.94	23.5	0.052	**0.06**	0.029	**0.03**	-0.11
sensor off	Body	LTE Band38	38000	2595	50RB-Mid	Right	10mm	\	22.94	23.5	0.066	**0.08**	0.038	**0.04**	-0.07
sensor off	Body	LTE Band38	38000	2595	50RB-Mid	Top	15mm	\	22.94	23.5	0.212	**0.24**	0.108	**0.12**	-0.03
sensor off	Body	LTE Band38	38000	2595	50RB-Mid	Bottom	10mm	\	22.94	23.5	<0.01	**<0.01**	<0.01	<0.01	\

sensor on	Head	LTE Band41	40620	2593	1RB-Mid	Cheek Left	0mm	\	17.43	18.50	0.248	**0.32**	0.115	**0.15**	0.07
sensor on	Head	LTE Band41	40620	2593	1RB-Mid	Tilt Left	0mm	\	17.43	18.50	0.301	**0.39**	0.137	**0.18**	-0.12
sensor on	Head	LTE Band41	40620	2593	1RB-Mid	Cheek Right	0mm	\	17.43	18.50	0.388	**0.50**	0.176	**0.23**	-0.12
sensor on	Head	LTE Band41	41490	2680	1RB-Mid	Tilt Right	0mm	\	17.20	18.50	0.424	**0.57**	0.174	**0.23**	0.18
sensor on	Head	LTE Band41	41055	2636.5	1RB-Mid	Tilt Right	0mm	\	17.30	18.50	0.4	**0.53**	0.157	**0.21**	0.07
sensor on	Head	LTE Band41	40620	2593	1RB-Mid	Tilt Right	0mm	F.11	17.43	18.50	0.456	**0.58**	0.2	**0.26**	0.03
sensor on	Head	LTE Band41	40185	2549.5	1RB-Mid	Tilt Right	0mm	\	17.37	18.50	0.347	**0.45**	0.148	**0.19**	0.15
sensor on	Head	LTE Band41	39750	2506	1RB-Mid	Tilt Right	0mm	\	17.34	18.50	0.393	**0.51**	0.163	**0.21**	-0.14
sensor on	Head	LTE Band41	40620	2593	50RB-Mid	Cheek Left	0mm	\	17.49	18.50	0.23	**0.29**	0.108	**0.14**	-0.13
sensor on	Head	LTE Band41	40620	2593	50RB-Mid	Tilt Left	0mm	\	17.49	18.50	0.297	**0.37**	0.134	**0.17**	-0.09
sensor on	Head	LTE Band41	40620	2593	50RB-Mid	Cheek Right	0mm	\	17.49	18.50	0.359	**0.45**	0.167	**0.21**	-0.18
sensor on	Head	LTE Band41	40620	2593	50RB-Mid	Tilt Right	0mm	\	17.49	18.50	0.448	**0.57**	0.197	**0.25**	-0.07
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sensor on	Body	LTE Band41	40620	2593	1RB-Mid	Front	10mm	\	17.43	18.50	0.118	**0.15**	0.049	**0.06**	0.05
sensor on	Body	LTE Band41	40620	2593	1RB-Mid	Rear	10mm	\	17.43	18.50	0.215	**0.28**	0.09	**0.12**	-0.04
sensor on	Body	LTE Band41	40620	2593	1RB-Mid	Left	10mm	\	17.43	18.50	<0.01	**<0.01**	<0.01	<0.01	\
sensor on	Body	LTE Band41	40620	2593	1RB-Mid	Top	10mm	\	17.43	18.50	0.152	**0.19**	0.065	**0.08**	-0.01
sensor on	Body	LTE Band41	40620	2593	50RB-Mid	Front	10mm	\	17.49	18.50	0.11	**0.14**	0.052	**0.07**	0.17
sensor on	Body	LTE Band41	40620	2593	50RB-Mid	Rear	10mm	\	17.49	18.50	0.213	**0.27**	0.089	**0.11**	-0.12
sensor on	Body	LTE Band41	40620	2593	50RB-Mid	Left	10mm	\	17.49	18.50	<0.01	**<0.01**	<0.01	<0.01	\
sensor on	Body	LTE Band41	40620	2593	50RB-Mid	Top	10mm	\	17.49	18.50	0.147	**0.19**	0.062	**0.08**	-0.08
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sensor off	Body	LTE Band41	40620	2593	1RB-Mid	Front	11mm	\	23.99	25	0.404	**0.51**	0.208	**0.26**	-0.10
sensor off	Body	LTE Band41	40620	2593	1RB-Mid	Rear	15mm	F.12	23.99	25	0.423	**0.53**	0.209	**0.26**	-0.04
sensor off	Body	LTE Band41	40620	2593	1RB-Mid	Left	12mm	\	23.99	25	0.088	**0.11**	0.049	**0.06**	-0.10
sensor off	Body	LTE Band41	40620	2593	1RB-Mid	Right	10mm	\	23.99	25	0.124	**0.16**	0.069	**0.09**	-0.16
sensor off	Body	LTE Band41	40620	2593	1RB-Mid	Top	15mm	\	23.99	25	0.385	**0.49**	0.19	**0.24**	0.11
sensor off	Body	LTE Band41	40620	2593	1RB-Mid	Bottom	10mm	\	23.99	25	<0.01	**<0.01**	<0.01	<0.01	\
sensor off	Body	LTE Band41	40620	2593	50RB-Mid	Front	11mm	\	22.88	24	0.312	**0.40**	0.161	**0.21**	0.12
sensor off	Body	LTE Band41	40620	2593	50RB-Mid	Rear	15mm	\	22.88	24	0.326	**0.42**	0.161	**0.21**	-0.06
sensor off	Body	LTE Band41	40620	2593	50RB-Mid	Left	12mm	\	22.88	24	0.067	**0.09**	0.038	**0.05**	-0.03
sensor off	Body	LTE Band41	40620	2593	50RB-Mid	Right	10mm	\	22.88	24	0.1	**0.13**	0.055	**0.07**	0.19
sensor off	Body	LTE Band41	40620	2593	50RB-Mid	Top	15mm	\	22.88	24	0.291	**0.38**	0.143	**0.19**	0.08
sensor off	Body	LTE Band41	40620	2593	50RB-Mid	Bottom	10mm	\	22.88	24	<0.01	**<0.01**	<0.01	<0.01	\

14.2 WLAN Evaluation for 2.4G

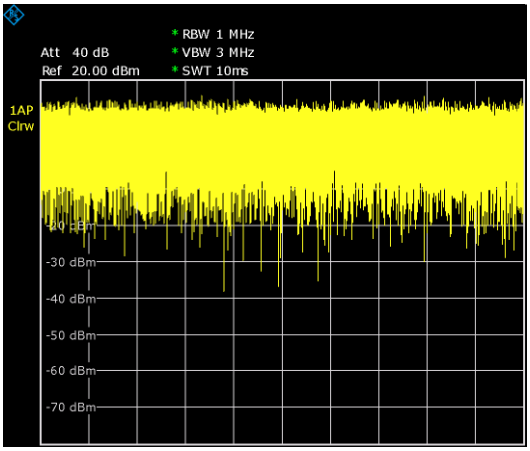
The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default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

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

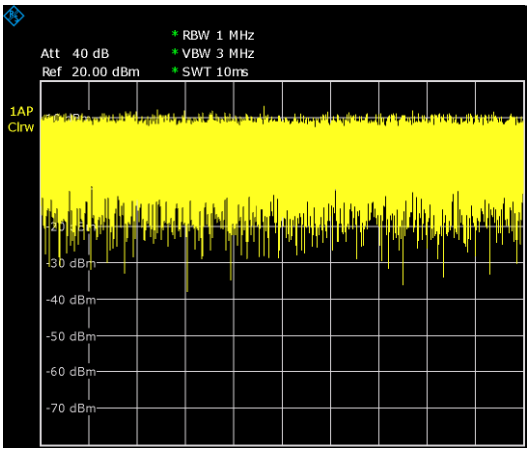
SAR Test reduction was applied from KDB 248227 guidance, when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest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

Duty factor plot

Wifi2.4G



WIFI5G



WIFI2.4G

sensor on	Head	WLAN 2.4G	6	2437	11b	Cheek Left	0mm	\	13.69	14	0.131	**0.14**	0.06	**0.06**	0.17
sensor on	Head	WLAN 2.4G	6	2437	11b	Tilt Left	0mm	F.13	13.69	14	0.142	**0.15**	0.07	**0.08**	0.02
sensor on	Head	WLAN 2.4G	6	2437	11b	Cheek Right	0mm	\	13.69	14	0.043	**0.05**	0.025	**0.03**	0.1
sensor on	Head	WLAN 2.4G	6	2437	11b	Tilt Right	0mm	\	13.69	14	0.049	**0.05**	0.024	**0.03**	-0.17
								\							
sensor on	Body	WLAN 2.4G	11	2462	11b	Rear	10mm	\	13.14	14	0.067	**0.08**	0.036	**0.04**	0.04
sensor on	Body	WLAN 2.4G	6	2437	11b	Rear	10mm	\	13.69	14	0.0931	**0.10**	0.0449	**0.05**	0.08
sensor on	Body	WLAN 2.4G	1	2412	11b	Rear	10mm	\	13.61	14	0.091	**0.10**	0.044	**0.05**	-0.01
sensor on	Body	WLAN 2.4G	6	2437	11b	Top	10mm	\	13.69	14	0.067	**0.07**	0.025	**0.03**	-0.08
								\							
sensor off	Body	WLAN 2.4G	6	2437	11g	Front	10mm	\	16.23	17	0.122	**0.15**	0.066	**0.08**	0.05
sensor off	Body	WLAN 2.4G	6	2437	11g	Rear	12mm	\	16.23	17	0.135	**0.16**	0.067	**0.08**	-0.09
sensor off	Body	WLAN 2.4G	6	2437	11g	Left	10mm	\	16.23	17	<0.01	**<0.01**	<0.01	<0.01	\
sensor off	Body	WLAN 2.4G	6	2437	11g	Right	10mm	F.14	16.23	17	0.158	**0.19**	0.083	**0.10**	0.05
sensor off	Body	WLAN 2.4G	6	2437	11g	Top	12mm	\	16.23	17	0.095	**0.11**	0.045	**0.05**	0.13
sensor off	Body	WLAN 2.4G	6	2437	11g	Bottom	10mm	\	16.23	17	0.046	**0.05**	0.013	**0.02**	0.12

14.3 WLAN Evaluation For 5G

WIFI5G

sensor on	Head	WLAN 5G	42	5210	11AC 80M	Cheek Left	0mm	\	10.59	12	0.119	**0.16**	0.042	**0.06**	0.03
sensor on	Head	WLAN 5G	42	5210	11AC 80M	Tilt Left	0mm	\	10.59	12	0.153	**0.21**	0.049	**0.07**	0.18
sensor on	Head	WLAN 5G	42	5210	11AC 80M	Cheek Right	0mm	\	10.59	12	0.072	**0.10**	0.03	**0.04**	0.16
sensor on	Head	WLAN 5G	42	5210	11AC 80M	Tilt Right	0mm	\	10.59	12	0.086	**0.12**	0.034	**0.05**	-0.1
sensor on	Head	WLAN 5G	58	5290	11AC 80M	Cheek Left	0mm	\	10.69	12	0.11	**0.15**	0.044	**0.06**	0.07
sensor on	Head	WLAN 5G	58	5290	11AC 80M	Tilt Left	0mm	\	10.69	12	0.109	**0.15**	0.047	**0.06**	0.18
sensor on	Head	WLAN 5G	58	5290	11AC 80M	Cheek Right	0mm	\	10.69	12	0.077	**0.10**	0.031	**0.04**	-0.1
sensor on	Head	WLAN 5G	58	5290	11AC 80M	Tilt Right	0mm	\	10.69	12	0.097	**0.13**	0.04	**0.05**	0.01
sensor on	Head	WLAN 5G	106	5530	11AC 80M	Cheek Left	0mm	\	10.49	12	0.18	**0.25**	0.064	**0.09**	-0.15
sensor on	Head	WLAN 5G	106	5530	11AC 80M	Tilt Left	0mm	F.15	10.49	12	0.203	**0.29**	0.072	**0.10**	0.16
sensor on	Head	WLAN 5G	106	5530	11AC 80M	Cheek Right	0mm	\	10.49	12	0.139	**0.20**	0.056	**0.08**	0.19
sensor on	Head	WLAN 5G	106	5530	11AC 80M	Tilt Right	0mm	\	10.49	12	0.144	**0.20**	0.059	**0.08**	0.07
sensor on	Head	WLAN 5G	155	5775	11AC 80M	Cheek Left	0mm	\	10.7	12	0.154	**0.21**	0.059	**0.08**	-0.18
sensor on	Head	WLAN 5G	155	5775	11AC 80M	Tilt Left	0mm	\	10.7	12	0.167	**0.23**	0.066	**0.09**	0.03
sensor on	Head	WLAN 5G	155	5775	11AC 80M	Cheek Right	0mm	\	10.7	12	0.131	**0.18**	0.049	**0.07**	-0.15
sensor on	Head	WLAN 5G	155	5775	11AC 80M	Tilt Right	0mm	\	10.7	12	0.153	**0.21**	0.056	**0.08**	-0.15
								\							
sensor on	Body	WLAN 5G	42	5210	11AC 80M	Rear	10mm	\	10.59	12	0.011	**0.02**	0.004	**0.01**	0.07
sensor on	Body	WLAN 5G	42	5210	11AC 80M	Top	10mm	\	10.59	12	0.01	**0.01**	0.006	**0.01**	0.16
sensor on	Body	WLAN 5G	58	5290	11AC 80M	Rear	10mm	\	10.69	12	0.012	**0.02**	0.004	**0.01**	0.13
sensor on	Body	WLAN 5G	58	5290	11AC 80M	Top	10mm	\	10.69	12	0.015	**0.02**	0.005	**0.01**	-0.18
sensor on	Body	WLAN 5G	106	5530	11AC 80M	Rear	10mm	\	10.49	12	0.018	**0.03**	0.006	**0.01**	0.02
sensor on	Body	WLAN 5G	106	5530	11AC 80M	Top	10mm	\	10.49	12	0.016	**0.02**	0.009	**0.01**	0.16
sensor on	Body	WLAN 5G	155	5775	11AC 80M	Rear	10mm	\	10.7	12	0.0254	**0.03**	0.00947	**0.01**	0
sensor on	Body	WLAN 5G	155	5775	11AC 80M	Top	10mm	\	10.7	12	0.014	**0.02**	0.008	**0.01**	-0.03
								\							
sensor off	Body	WLAN 5G	40	5200	11a	Front	10mm	\	15.35	17	0.135	**0.20**	0.055	**0.08**	0.07
sensor off	Body	WLAN 5G	40	5200	11a	Rear	12mm	\	15.35	17	0.134	**0.20**	0.049	**0.07**	0
sensor off	Body	WLAN 5G	40	5200	11a	Left	10mm	\	15.35	17	0.088	**0.13**	0.02	**0.03**	0.01
sensor off	Body	WLAN 5G	40	5200	11a	Right	10mm	\	15.35	17	0.088	**0.13**	0.02	**0.03**	-0.01
sensor off	Body	WLAN 5G	40	5200	11a	Top	12mm	\	15.35	17	0.182	**0.27**	0.067	**0.10**	-0.06
sensor off	Body	WLAN 5G	40	5200	11a	Bottom	10mm	\	15.35	17	0.038	**0.06**	0.008	**0.01**	-0.04
sensor off	Body	WLAN 5G	64	5320	11a	Front	10mm	\	15.29	17	0.166	**0.25**	0.065	**0.10**	-0.09
sensor off	Body	WLAN 5G	64	5320	11a	Rear	12mm	\	15.29	17	0.141	**0.21**	0.057	**0.08**	-0.17
sensor off	Body	WLAN 5G	64	5320	11a	Left	10mm	\	15.29	17	0.080	**0.12**	0.031	**0.05**	-0.1
sensor off	Body	WLAN 5G	64	5320	11a	Right	10mm	\	15.29	17	0.111	**0.16**	0.041	**0.06**	0.18
sensor off	Body	WLAN 5G	64	5320	11a	Top	12mm	\	15.29	17	0.212	**0.31**	0.081	**0.12**	-0.17
sensor off	Body	WLAN 5G	64	5320	11a	Bottom	10mm	\	15.29	17	0.069	**0.10**	0.015	**0.02**	-0.04
sensor off	Body	WLAN 5G	124	5620	11a	Front	10mm	\	14.5	16	0.218	**0.31**	0.085	**0.12**	-0.05
sensor off	Body	WLAN 5G	124	5620	11a	Rear	12mm	\	14.5	16	0.178	**0.25**	0.064	**0.09**	0
sensor off	Body	WLAN 5G	124	5620	11a	Left	10mm	\	14.5	16	0.105	**0.15**	0.044	**0.06**	-0.13
sensor off	Body	WLAN 5G	124	5620	11a	Right	10mm	\	14.5	16	0.078	**0.11**	0.017	**0.02**	-0.01
sensor off	Body	WLAN 5G	124	5620	11a	Top	12mm	F.16	14.5	16	0.425	**0.60**	0.156	**0.22**	0
sensor off	Body	WLAN 5G	124	5620	11a	Bottom	10mm	\	14.5	16	0.058	**0.08**	0.012	**0.02**	-0.09
sensor off	Body	WLAN 5G	157	5785	11a	Front	10mm	\	12.94	14.5	0.127	**0.18**	0.047	**0.07**	0.05
sensor off	Body	WLAN 5G	157	5785	11a	Rear	12mm	\	12.94	14.5	0.125	**0.18**	0.029	**0.04**	0.02
sensor off	Body	WLAN 5G	157	5785	11a	Left	10mm	\	12.94	14.5	0.065	**0.09**	0.026	**0.04**	-0.13
sensor off	Body	WLAN 5G	157	5785	11a	Right	10mm	\	12.94	14.5	0.123	**0.18**	0.029	**0.04**	0.17
sensor off	Body	WLAN 5G	157	5785	11a	Top	12mm	\	12.94	14.5	0.146	**0.21**	0.055	**0.08**	0.06
sensor off	Body	WLAN 5G	157	5785	11a	Bottom	10mm	\	12.94	14.5	0.084	**0.12**	0.018	**0.03**	0

14.4 SAR results for BT

sensor off	Head	BT	39	2441	DH5	Cheek Left	0mm	\	8.47	9	0.016	**0.02**	0.008	**0.01**	0.13
sensor off	Head	BT	39	2441	DH5	Tilt Left	0mm	F.17	8.47	9	0.018	**0.02**	0.009	**0.01**	0.05
sensor off	Head	BT	39	2441	DH5	Cheek Right	0mm	\	8.47	9	<0.01	**<0.01**	<0.01	**<0.01**	\
sensor off	Head	BT	39	2441	DH5	Tilt Right	0mm	\	8.47	9	<0.01	**<0.01**	<0.01	**<0.01**	\
sensor off	Body	BT	39	2441	DH5	Front	10mm	\	8.47	9	0.004	**0.00**	0.002	**0.00**	-0.14
sensor off	Body	BT	39	2441	DH5	Rear	10mm	\	8.47	9	0.006	**0.01**	0.002	**0.00**	0.07
sensor off	Body	BT	39	2441	DH5	Left	10mm	\	8.47	9	0.008	**0.01**	0.003	**0.00**	0.07
sensor off	Body	BT	39	2441	DH5	Right	10mm	\	8.47	9	0.006	**0.01**	0.003	**0.00**	0.09
sensor off	Body	BT	39	2441	DH5	Bottom	10mm	\	8.47	9	0.007	**0.01**	0.003	**0.00**	0
sensor off	Body	BT	78	2480	DH5	Top	10mm	\	8.47	9	0.005	**0.01**	0.003	**0.00**	0.19
sensor off	Body	BT	39	2441	DH5	Top	10mm	F.18	8.47	9	0.009	**0.01**	0.004	**0.00**	0.06
sensor off	Body	BT	0	2402	DH5	Top	10mm	\	8.47	9	0.006	**0.01**	0.002	**0.00**	0.13

14.5 SAR results for Phablet

According to the KDB648474 D04, for smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and support voice calls next to the ear, unless it is confirmed otherwise through KDB inquiries, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance.

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. 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; however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold. The normal tablet procedures in KDB Publication 616217 are required when the overall diagonal dimension of the device is > 20.0 cm. Hotspot mode SAR is not required when normal tablet procedures are applied. Extremity 10-g SAR is also not required for the front (top) surface of larger form factor full size tablets. The more conservative normal tablet SAR results can be used to support phablet mode 10-g extremity SAR.
3. The simultaneous transmission operating configurations applicable to voice and data transmissions for both phone and mini-tablet modes must be taken into consideration separately for 1-g and 10-g SAR to determine the simultaneous transmission SAR test exclusion and measurement requirements for the relevant wireless modes and exposure conditions

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

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	N5239A	MY55491241	May 21, 2024	One year
02	Power sensor	NRP110T	101139	January 13, 2024	One year
03	Power sensor	NRP110T	101159		
04	Signal Generator	E4438C	MY49070393	May 31 2024	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	CMW500	149646	November 21, 2023	One year
07	DAE	SPEAG DAE4	777	January 09,2024	One year
08	E-field Probe	SPEAG EX3DV4	3617	April 18,2024	One year
10	Dipole Validation Kit	SPEAG D835V2	4d069	July 14,2023	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 11,2023	One year
15	Dipole Validation Kit	SPEAG D2600V2	1012	July 11,2023	One year
16	Dipole Validation Kit	SPEAG D5GHzV2	1262	January 24,2024	One year

END OF REPORT BODY

Appendixes

Refer to separated files for the following appendixes

ANNEX A Graph Results

ANNEX B System Verification Results

ANNEX C SAR Measurement Setup

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

ANNEX E Equivalent Media Recipes

ANNEX F System Validation

ANNEX G Probe Calibration Certificate

ANNEX H Dipole Calibration Certificate

ANNEX I SAR Sensor Triggering Data Summary

ANNEX J Accreditation Certificate