



TEST REPORT

No.B22N01716-SAR

For

i.safe MOBILE GmbH

LTE SMARTPHONE

Model Name: M53A01

With

Hardware Version: V1.00

Software Version: IS530_EEA_1.0.0.0_1_20200331

FCC ID: 2AACZ-M53A01

IC: 11122A-M53A01

Issued Date: 2022-09-19

Designation Number: CN1210

Note:

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

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

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

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

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



REPORT HISTORY

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1. Summary of Test Report

1.1. Test Items

Description: LTE SMARTPHONE
Model Name: M53A01
Applicant's Name: i.safe MOBILE GmbH
Manufacturer's Name: i.safe MOBILE GmbH

1.2. Test Standards

ANSI C95.1:1992, IEEE 1528:2013

1.3. Test Result

Pass. Please refer to "13. Summary of Test Results" and "ANNEX K: Spot Check Test"

1.4. Testing Location

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

1.5. Project Data

Testing Start Date: 2020-04-23

Testing End Date: 2022-09-15

1.6. Signature

Li Yongfu

(Prepared this test report)

Zhang Yunzhan

(Reviewed this test report)

Cao Junfei

(Approved this test report)

2. Statement of Compliance

This EUT is a variant product and the report of original sample is No.B20N00421-SAR. According to “Justification Letter” provided by applicant, we quote the test results of original sample and spot check the worst case in annex K.

The maximum results of Specific Absorption Rate (SAR) found during testing for i.safe MOBILE GmbH LTE SMARTPHONE M53A01 are as follows:

Table 2.1: Highest Reported SAR for Head (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/Kg)	Equipment Class
Head	GSM850	0.79	PCE
	PCS1900	0.57	
	WCDMA Band 2	0.77	
	WCDMA Band 4	0.60	
	WCDMA Band 5	0.48	
	LTE Band 5	0.60	
	LTE Band 7	0.58	
	LTE Band 12/17	0.30	
	LTE Band 13	0.47	
	LTE Band 14	0.60	
	LTE Band 25/2	0.79	
	LTE Band 26	0.55	
	LTE Band 30	0.49	
	LTE Band 41/38	0.60	
	LTE Band 66/4	0.76	
	WLAN 2.4GHz	1.08	DTS
	WLAN 5GHz	0.61	NII

Table 2.2: Highest Reported SAR for Hotspot (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/Kg)	Equipment Class
Hotspot	GSM850	0.74	PCE
	PCS1900	0.38	
	WCDMA Band 2	0.67	
	WCDMA Band 4	0.75	
	WCDMA Band 5	0.40	
	LTE Band 5	0.36	
	LTE Band 7	0.51	
	LTE Band 12/17	0.32	
	LTE Band 13	0.42	
	LTE Band 14	0.50	
	LTE Band 25/2	0.41	
	LTE Band 26	0.46	
	LTE Band 30	0.74	
	LTE Band 41/38	0.57	
	LTE Band 66/4	0.63	
	WLAN 2.4GHz	0.29	DTS
	WLAN 5GHz	0.34	NII

Table 2.3: Highest Reported SAR for Body-worn (1g)

Exposure Configuration	Technology Band	Highest Reported SAR 1g(W/Kg)	Equipment Class
Body-worn	GSM850	0.74	PCE
	PCS1900	0.38	
	WCDMA Band 2	0.67	
	WCDMA Band 4	0.75	
	WCDMA Band 5	0.40	
	LTE Band 5	0.36	
	LTE Band 7	0.61	
	LTE Band 12/17	0.32	
	LTE Band 13	0.42	
	LTE Band 14	0.50	
	LTE Band 25/2	0.41	
	LTE Band 26	0.46	
	LTE Band 30	0.74	
	LTE Band 41/38	0.49	
	LTE Band 66/4	0.63	
	WLAN 2.4GHz	0.29	DTS
	WLAN 5GHz	0.34	NII

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

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

The highest reported SAR value is obtained at the case of **(Table 2.1 & 2.2 & 2.3)**, and the value is: **1.08 W/kg (1g)**.

Table2.4: The sum of reported SAR values for main antenna and WLAN

/	Position	Main Antenna (W/kg)	WLAN (W/kg)	Sum (W/kg)
Highest reported SAR value for Head	Left Touch	0.51	1.08	1.59
Highest reported SAR value for Hotspot	Front Side	0.75	0.29	1.04
Highest reported SAR value for Body-worn	Front Side	0.75	0.29	1.04

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

Table2.5: The sum of reported SAR values for main antenna and Bluetooth

/	Position	Main Antenna (W/kg)	Bluetooth (W/kg)	Sum (W/kg)
Highest reported SAR value for Head	Right Touch	0.79	0.29	1.08
Highest reported SAR value for Hotspot	Front Side	0.75	0.15	0.90
Highest reported SAR value for Body-worn	Front Side	0.75	0.15	0.90

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

According to the above tables, the highest sum of reported SAR values is **1.59 W/kg (1g)**.

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



3. Client Information

3.1. Applicant Information

Company Name:	i.safe MOBILE GmbH
Address:	i_Park Tauberfranken 10 97922 Lauda-Koenigshofen Germany
City:	/
Country:	Germany
Telephone:	+49 9343 60148-401

3.2. Manufacturer Information

Company Name:	i.safe MOBILE GmbH
Address /Post:	i_Park Tauberfranken 10 97922 Lauda-Koenigshofen Germany
City:	/
Country:	Germany
Telephone:	+49 9343 60148-401

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

4.1. About EUT

Description:	LTE SMARTPHONE
Model Name:	M53A01
Marketing Name:	IS530
Condition of EUT as received	No obvious damage in appearance
Operating mode(s):	GSM 850/1900, WCDMA Band 2/4/5, LTE Band 2/4/5/7/12/13/14/17/25/26/30/38/41/66, Bluetooth, WLAN 2.4GHz/5GHz
Tx Frequency:	825 – 848.8MHz (GSM 850)
	1850.2 – 1910MHz (GSM 1900)
	1852.4 – 1907.6MHz (WCDMA Band 2)
	1712.4 – 1752.6MHz (WCDMA Band 4)
	826.4 – 846.6MHz (WCDMA Band 5)
	1850.7 – 1909.3MHz (LTE Band 2)
	1710.7 – 1754.3MHz (LTE Band 4)
	824.7 – 848.3MHz (LTE Band 5)
	2502.5 – 2567.5MHz (LTE Band 7)
	699.7 – 715.3MHz (LTE Band 12)
	779.5 – 784.5MHz (LTE Band 13)
	788 – 798MHz (LTE Band 14)
	704 – 716MHz (LTE Band 17)
	1850.7 – 1914.3MHz (LTE Band 25)
	814.7 – 848.3MHz (LTE Band 26)
	2307.5 – 2312.5MHz (LTE Band 30)
	2572.5 – 2617.5MHz (LTE Band 38)
	2498.5 – 2687.5MHz (LTE Band 41)
1710.7 – 1779.3MHz (LTE Band 66)	
2402 – 2480MHz (Bluetooth)	
2412 – 2462MHz (WLAN 2.4GHz)	
5180 – 5825MHz (WLAN 5GHz)	
GPRS / EGPRS Multislot Class:	33
GPRS capability Class:	B
Test device Production information:	Production unit
Device type:	Portable device
Antenna type:	Integrated antenna
Hotspot mode:	Support
Product Dimensions:	Long 154mm ;Wide 79mm ; Overall Diagonal 159mm
Remark: This device does not support DTM operation.	

4.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Receipt Date
UT13aa	358121101505925	V1.00	IS530_EEA_1.0.0.0.0_1_20200331	2020-04-06
UT15aa	358121101505446	V1.00	IS530_EEA_1.0.0.0.0_1_20200331	2020-04-06
UT02aa	358121105509015	V1.00	IS530_EEA_1.0.0.0.0_1_20200331	2022-09-01

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

Note: It is performed to test SAR with the UT15aa & UT02aa, and conducted power with the UT13aa.

4.3. Internal Identification of AE used during the test

AE ID*	Description	Type	Manufacturer
AE1	Battery	MBP53A01	FPR Connectivity Technology Inc.
AE2	Battery	BL360AAP	FPR Connectivity Technology Inc.
AE3	Headset	AC-4035-M6	SHENZHEN CXD SCIENCE & TECHNOLOGY CO., LTD.

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

4.4. General Description

According to client's description, the table below shows the difference between original and variant:

/	Original	Variant
Model	M53A01	M53A01
Differences		
Battery Model	MBP53A01	BL360AAP

We'll perform Variant product for spot check test. The results of spot check are presented in annex K.

5. Test Methodology

5.1. Applicable Limit Regulations

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

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

5.2. Applicable Measurement Standards

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

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

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

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

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

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

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

KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04 SAR Measurement Requirements for 100 MHz to 6 GHz

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

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

TCB workshop November 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)

TCB workshop April 2019; RF Exposure Procedures (Tissue Simulating Liquids)

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 heat 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

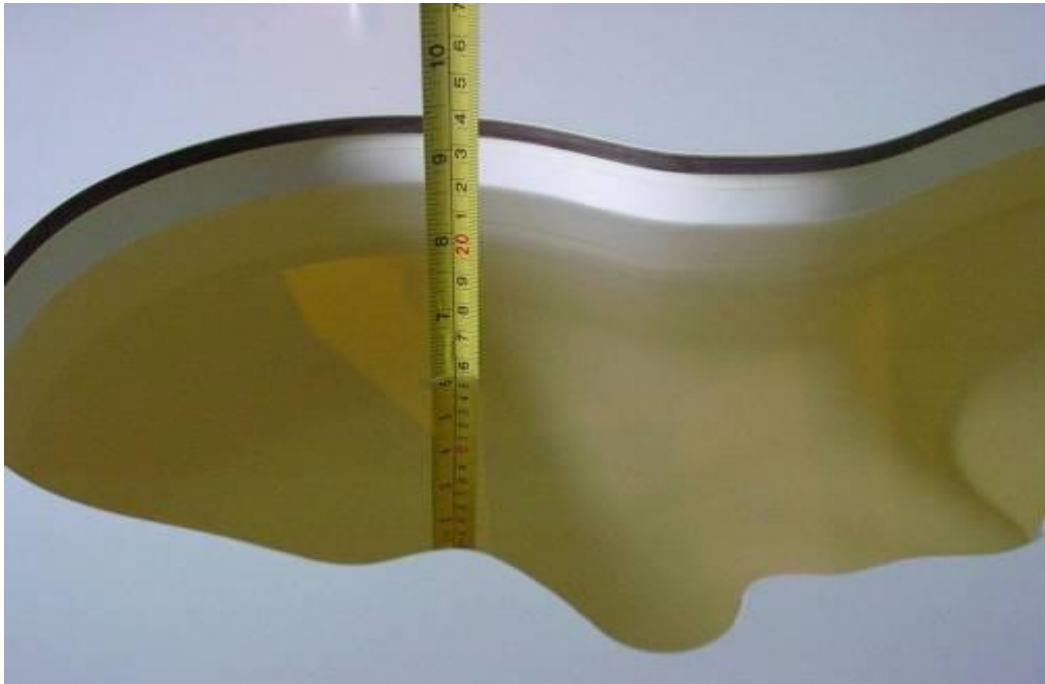
Frequency (MHz)	Liquid Type	Conductivity (σ)	$\pm 5\%$ Range	Permittivity (ϵ)	$\pm 5\%$ Range
750	Head	0.89	0.85~0.93	41.9	39.8~44.0
835	Head	0.90	0.86~0.95	41.5	39.4~43.6
1750	Head	1.37	1.30~1.44	40.1	38.1~42.1
1900	Head	1.40	1.33~1.47	40.0	38.0~42.0
2300	Head	1.67	1.57~1.75	39.5	37.5~41.4
2450	Head	1.80	1.71~1.89	39.2	37.2~41.2
2550	Head	1.91	1.81~2.01	39.1	37.1~41.0
5250	Head	4.71	4.47~4.95	35.9	34.1~37.7
5600	Head	5.07	4.82~5.32	35.5	33.8~37.3
5750	Head	5.22	4.96~5.48	35.4	33.6~37.1

7.2. Dielectric Performance

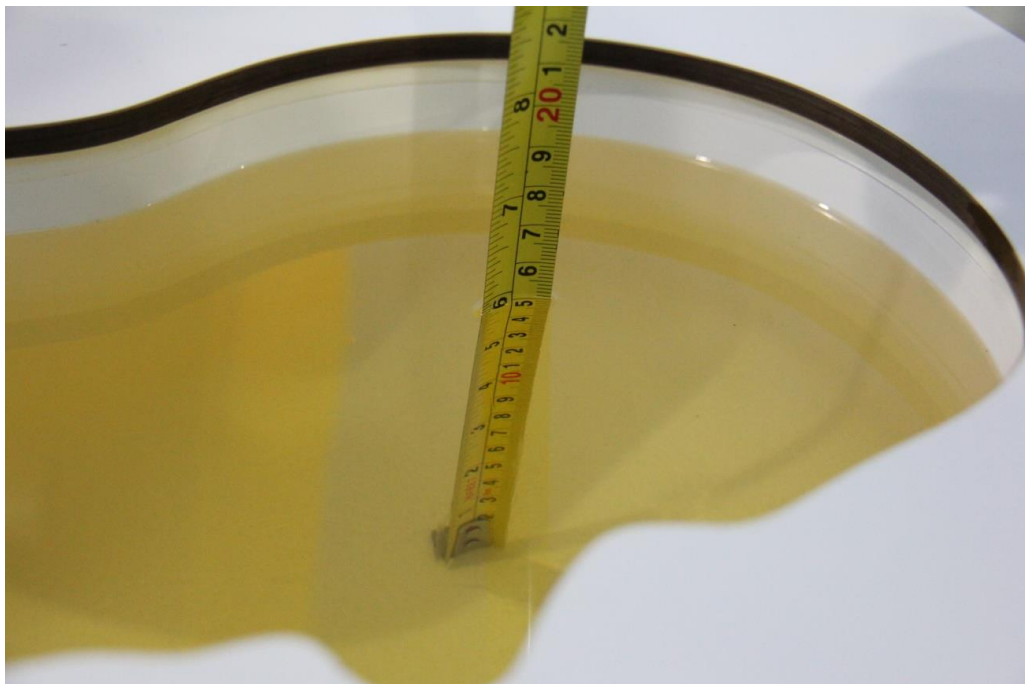
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency (MHz)	Conductivity σ (S/m)	Drift (%)	Permittivity ϵ	Drift (%)
2020-04-25	Head	750	0.884	-0.67	42.46	1.34
2020-04-23	Head	835	0.891	-1.00	41.97	1.13
2020-04-29	Head	1750	1.386	1.17	39.33	-1.92
2020-05-01	Head	1900	1.422	1.57	39.02	-2.45
2020-05-02	Head	2300	1.648	-1.32	39.94	1.11
2020-05-05	Head	2450	1.845	2.50	38.75	-1.15
2020-06-01	Head	2550	1.939	1.52	38.08	-2.61
2020-05-06	Head	5250	4.661	-1.04	36.49	1.64
2020-05-06	Head	5600	5.134	1.26	34.55	-2.68
2020-05-06	Head	5750	5.157	-1.21	36.42	2.88
2022-09-10	Head	750	0.879	-1.24	42.68	1.86
2022-09-10	Head	835	0.917	1.89	41.15	-0.84
2022-09-15	Head	1750	1.388	1.31	39.42	-1.70
2022-09-15	Head	1900	1.414	1.00	39.06	-2.35
2022-09-15	Head	2300	1.649	-1.26	38.85	-1.65
2022-09-13	Head	2450	1.839	2.17	38.44	-1.94
2022-09-15	Head	2550	1.937	1.41	38.15	-2.43
2022-09-13	Head	5600	5.153	1.64	34.87	-1.77
2022-09-13	Head	5750	5.345	2.39	34.41	-2.80

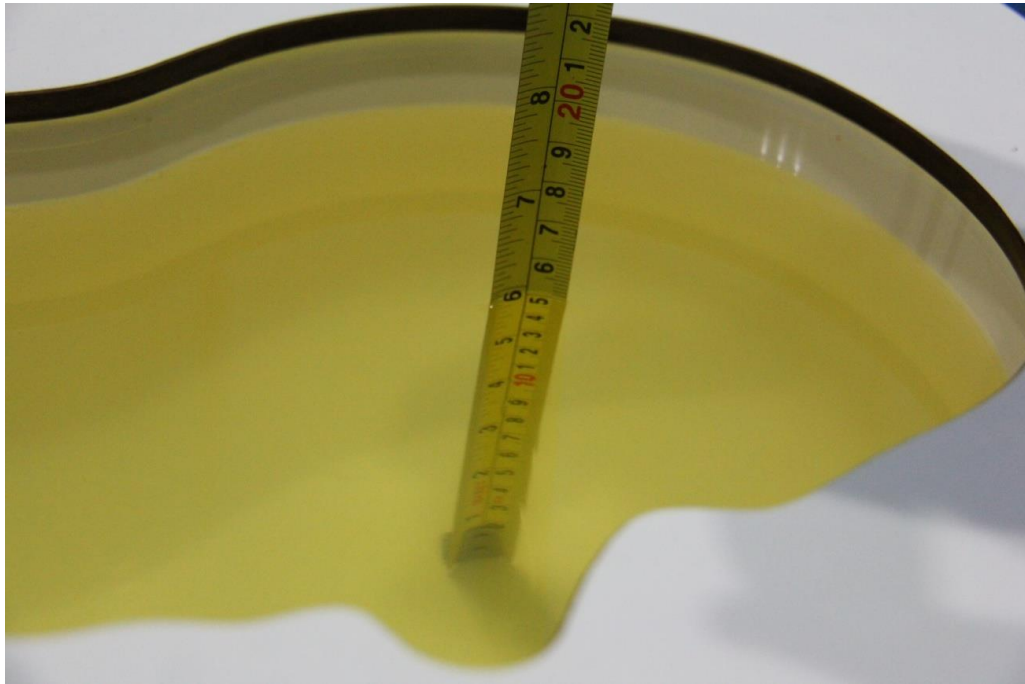
Note: The liquid temperature is 22.0°C.



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



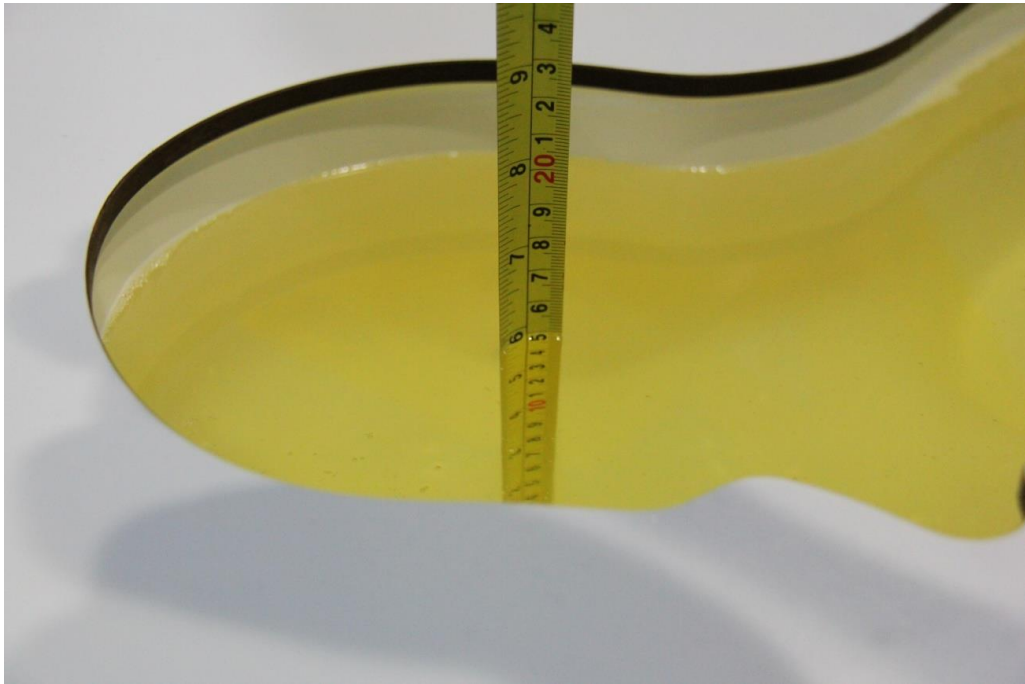
Picture 7-2: Liquid depth in the Head Phantom (835MHz)



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



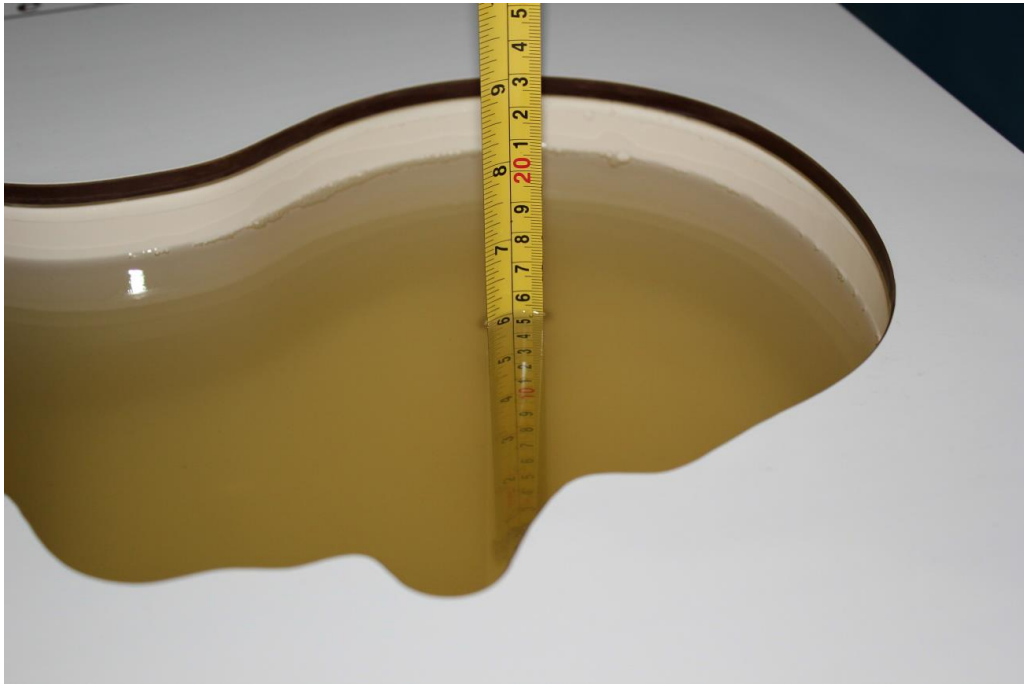
Picture 7-4: Liquid depth in the Head Phantom (1900MHz)



Picture 7-5: Liquid depth in the Head Phantom (2300MHz)



Picture 7-6: Liquid depth in the Head Phantom(2450MHz)



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

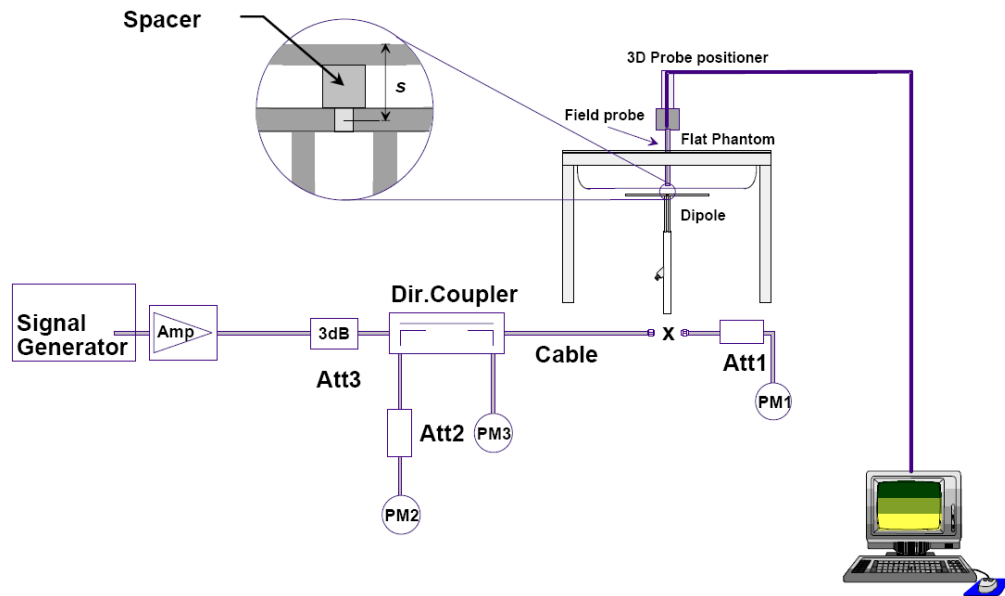


Picture 7-8: Liquid depth in the Head Phantom (5GHz)

8. System verification

8.1. System Setup

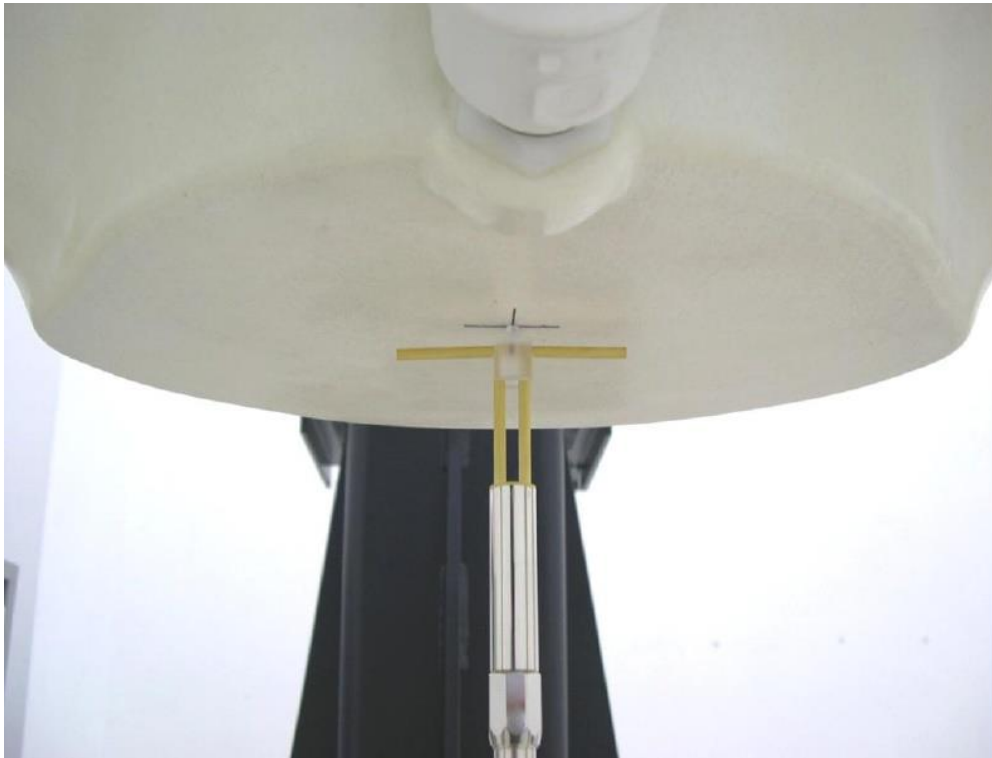
In the simplified setup for system evaluation, the DUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave that comes from a signal generator. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder.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



Picture 8.1 System Setup for System Evaluation

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

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



Picture 8.2 Photo of Dipole Setup

8.2. System Verification

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

Table 8.1: System Verification of Head

Measurement Date	Frequency (MHz)	Target value (W/kg)		Measured value (W/kg)				Deviation (%)	
		10 g	1 g	/		Normalize to 1W		10 g	1 g
				10 g	1 g	10 g	1 g		
2020-04-25	750	5.70	8.53	1.41	2.07	5.64	8.28	-1.05	-2.93
2020-04-23	835	6.29	9.62	1.55	2.33	6.20	9.32	-1.43	-3.12
2020-04-29	1750	19.30	36.40	4.93	9.45	19.72	37.80	2.18	3.85
2020-05-01	1900	21.00	40.50	5.38	10.6	21.52	42.40	2.48	4.69
2020-05-02	2300	23.70	49.10	5.77	11.7	23.08	46.80	-2.62	-4.68
2020-05-05	2450	24.10	52.00	6.18	13.5	24.72	54.00	2.57	3.85
2020-06-01	2550	26.50	57.80	6.74	14.8	26.96	59.20	1.74	2.42
2020-05-06	5250	22.30	78.00	2.20	7.62	22.00	76.20	-1.35	-2.31
2020-05-06	5600	22.70	79.50	2.32	8.26	23.20	82.60	2.20	3.90
2020-05-06	5750	22.20	78.40	2.16	7.46	21.60	74.60	-2.70	-4.85
2022-09-10	750	5.62	8.48	1.36	2.02	5.44	8.08	-3.20	-4.72
2022-09-10	835	6.29	9.64	1.60	2.48	6.40	9.92	1.75	2.90
2022-09-15	1750	19.60	36.30	5.01	9.46	20.04	37.84	2.24	4.24
2022-09-15	1900	20.50	40.20	5.24	10.4	20.96	41.60	2.24	3.48
2022-09-15	2300	22.70	48.30	5.59	11.7	22.36	46.80	-1.50	-3.11
2022-09-13	2450	24.20	53.20	6.18	13.8	24.72	55.20	2.15	3.76
2022-09-15	2550	25.20	55.90	6.42	14.4	25.68	57.60	1.90	3.04
2022-09-13	5600	23.60	82.60	2.39	8.45	23.90	84.50	1.27	2.30
2022-09-13	5750	22.10	78.50	2.27	8.19	22.70	81.90	2.71	4.33

9. Measurement Procedures

9.1. Tests to be performed

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

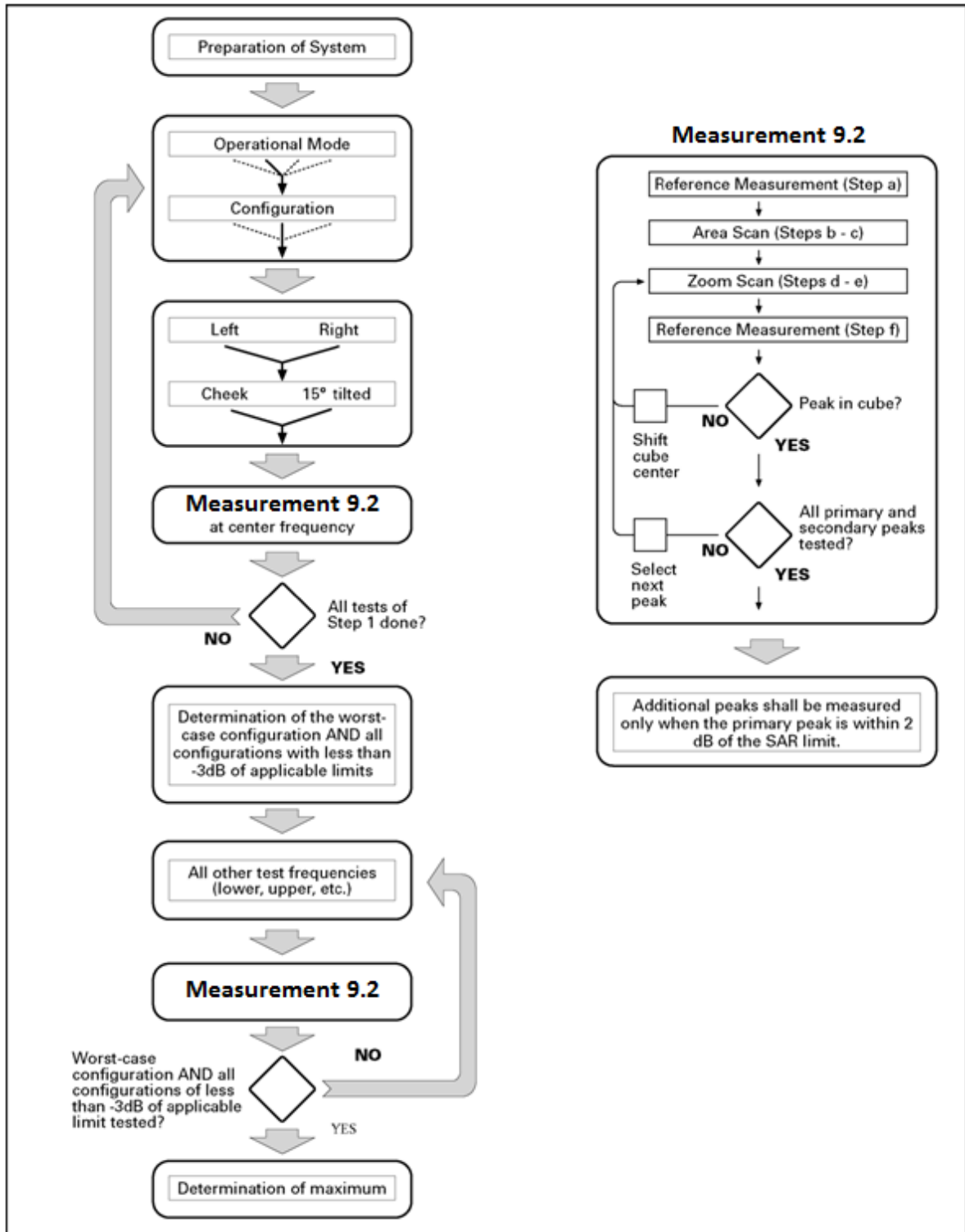
Step 1: The tests described in 9.2 shall be performed at the channel that is closest to the center of the transmit frequency band (f_c) for:

- a) all device positions (cheek and tilt, for both left and right sides of the SAM phantom, as described in annex D),
- b) all configurations for each device position in a), e.g., antenna extended and retracted, and
- c) all operational modes, e.g., analogue and digital, for each device position in a) and configuration in b) in each frequency band.

If more than three frequencies need to be tested according to 11.1 (i.e., $N_c > 3$), then all frequencies, configurations and modes shall be tested for all of the above test conditions.

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

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



Picture 9.1 Block diagram of the tests to be performed

9.2. General Measurement Procedure

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

		≤ 3 GHz	> 3 GHz	
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm	
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$	
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$		≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm	
		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 \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.		
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
<p>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.</p> <p>* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</p>				

9.3. WCDMA Measurement Procedures for SAR

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

For Release 5 HSDPA Data Devices:

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

For Release 6 HSPA Data Devices

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

9.4. Bluetooth & WLAN Measurement Procedures for SAR

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

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

9.5. LTE Measurement Procedures for SAR

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

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

1) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

2) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in 1) are applied to measure the SAR for QPSK with 50% RB allocation.

3) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100% RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 1) and 2) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

9.6. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band 38/41 support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

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

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

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

Calculated Duty Cycle

Calculated Duty Cycle = Extended cyclic prefix in uplink x (Ts) x # of S + # of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

Where

$T_s = 1/(15000 \times 2048)$ seconds



9.7. Power Drift

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

10. Conducted Output Power

10.1. GSM Measurement result

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

Table 10.1: The conducted power measurement results for GSM

GSM 850MHz	Tune up	Conducted Power (dBm)		
		Channel 128(824.2MHz)	Channel 190(836.6MHz)	Channel 251(848.8MHz)
	33.0	32.41	32.43	32.44
GSM 1900MHz	Tune up	Conducted Power(dBm)		
		Channel512(1850.2MHz)	Channel 661(1880MHz)	Channel 810(1909.8MHz)
	30.0	28.42	28.94	29.15

Table 10.2: The conducted power measurement results for GPRS and EGPRS

GPRS/ EGPRS850	Tune up	Measured Power (dBm)			calculation	Average Power (dBm)		
		128	190	251		128	190	251
1Tx-slots	33.0	32.33	32.36	32.39	-9.03dB	23.30	23.33	23.36
2Tx-slots	31.5	30.60	31.01	31.17	-6.02dB	24.58	24.99	25.15
3Tx-slots	30.0	29.25	29.38	29.40	-4.26dB	24.99	25.12	25.14
4Tx-slots	28.5	27.25	27.82	27.86	-3.01dB	24.24	24.81	24.85
EGPRS 850 (8PSK)	Tune up	Measured Power (dBm)			calculation	Measured Power (dBm)		
		128	190	251		128	190	251
1Tx-slots	27.5	26.86	26.25	27.02	-9.03dB	17.83	17.22	17.99
2Tx-slots	26.0	25.05	25.36	25.53	-6.02dB	19.03	19.34	19.51
3Tx-slots	24.0	23.22	23.40	23.52	-4.26dB	18.96	19.14	19.26
4Tx-slots	21.0	19.93	20.53	20.68	-3.01dB	16.92	17.52	17.67
GPRS1900/ EGPRS1900	Tune up	Measured Power (dBm)			calculation	Average Power (dBm)		
		512	661	810		512	661	810
1Tx-slots	30.0	28.48	28.95	29.16	-9.03dB	19.45	19.92	20.13
2Tx-slots	28.5	27.04	27.39	27.82	-6.02dB	21.02	21.37	21.80
3Tx-slots	27.0	25.39	26.03	26.44	-4.26dB	21.13	21.77	22.18
4Tx-slots	25.5	23.98	24.39	24.70	-3.01dB	20.97	21.38	21.69
EGPRS 1900 (8PSK)	Tune up	Measured Power (dBm)			calculation	Measured Power (dBm)		
		512	661	810		512	661	810
1Tx-slots	26.0	24.57	25.19	25.44	-9.03dB	15.54	16.16	16.41
2Tx-slots	24.5	23.15	23.51	23.97	-6.02dB	17.13	17.49	17.95
3Tx-slots	22.5	21.33	21.76	22.12	-4.26dB	17.07	17.50	17.86
4Tx-slots	19.5	18.94	19.08	18.95	-3.01dB	15.93	16.07	15.94

Notes:

1) Division Factors

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

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

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

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

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

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

10.2. WCDMA Measurement result

Table 10.3: The conducted power measurement results WCDMA

Item	band	WCDMA Band 2 result			
	ARFCN	Tune up	9262 (1852.4MHz)	9400 (1880MHz)	9538 (1907.6MHz)
WCDMA	\	23.5	22.31	22.78	22.91
HSUPA	1	21.0	20.15	20.26	20.34
	2	21.0	19.93	20.43	20.61
	3	21.0	20.03	19.96	20.05
	4	21.0	19.98	20.02	20.11
	5	22.0	20.85	21.34	21.49
HSDPA	1	22.5	21.31	21.65	21.80
	2	22.5	21.34	22.01	21.97
	3	22.0	20.82	21.34	21.48
	4	22.0	20.86	21.31	21.47
DC-HSDPA	1	22.5	21.36	21.59	21.77
	2	22.5	21.30	21.86	21.93
	3	22.0	20.76	21.39	21.44
	4	22.0	20.88	21.36	21.49
Item	band	WCDMA Band 4 result			
	ARFCN	Tune up	1312 (1712.4MHz)	1413 (1732.6MHz)	1513 (1752.6MHz)
WCDMA	\	23.0	22.37	22.04	21.78
HSUPA	1	21.0	20.71	20.66	20.68
	2	21.0	20.01	19.66	19.37
	3	21.0	20.26	20.31	20.16
	4	21.0	20.13	20.26	20.18
	5	21.5	20.87	20.61	20.31
HSDPA	1	22.0	21.37	21.08	20.67
	2	22.0	21.45	21.10	20.83
	3	21.5	20.93	20.60	20.32
	4	21.5	20.92	20.60	20.31
DC-HSDPA	1	22.0	21.25	21.09	20.59
	2	22.0	21.49	21.16	20.89
	3	21.5	20.95	20.66	20.36
	4	21.5	20.98	20.62	20.35

Item	band	WCDMA Band 5 result			
	ARFCN	Tune up	4132 (826.4MHz)	4182 (836.4MHz)	4233 (846.6MHz)
WCDMA	\	23.5	22.97	22.85	22.98
HSUPA	1	21.5	21.04	21.13	20.96
	2	21.5	20.56	20.46	20.55
	3	21.5	20.72	20.64	20.75
	4	21.5	20.81	20.69	20.66
	5	22.0	21.53	21.36	21.48
HSDPA	1	22.5	21.98	21.72	21.81
	2	22.5	21.99	21.83	21.98
	3	22.0	21.49	21.34	21.45
	4	22.0	21.46	21.32	21.45
DC-HSDPA	1	22.5	21.94	21.77	21.86
	2	22.5	21.92	21.80	21.85
	3	22.0	21.41	21.32	21.48
	4	22.0	21.44	21.30	21.42

10.3. LTE Measurement result

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

- a) The maximum out power, including tolerance, for the smaller band must be \leq the larger band to qualify for SAR test exclusion.
- b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.

LTE Band 2 (1850-1910 MHz) is covered by LTE Band 25 (1850-1915 MHz)

LTE Band 4 (1710-1755 MHz) is covered by LTE Band 66 (1710-1780 MHz)

LTE Band 17 (704-716 MHz) is covered by LTE Band 12 (699-716 MHz)

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

Table 10.4: The conducted Power for LTE

LTE-FDD Band 5				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
1.4 MHz	Modulation	RB Size	RB offset	824.7MHz	836.5MHz	848.3MHz		
	QPSK	1RB	5	23.02	23.26	22.99	24.0	
			3	23.25	23.05	23.12	24.0	
			0	23.06	23.26	23.00	24.0	
		3RB	3	23.09	23.32	23.14	24.0	
			1	23.27	23.30	22.97	24.0	
			0	23.32	23.12	23.21	24.0	
		6RB	0	22.27	22.14	22.07	23.0	
		16QAM	1RB	5	22.19	22.28	22.48	23.0
				3	22.03	22.18	22.36	23.0
	0			22.11	22.23	22.38	23.0	
	3RB		3	22.32	22.48	22.17	23.0	
			1	22.33	22.40	22.13	23.0	
			0	22.35	22.49	22.17	23.0	
	6RB		0	21.26	21.29	21.05	22.0	
	64QAM		1RB	5	21.35	21.40	21.20	22.0
				3	21.25	21.30	21.14	22.0
		0		21.21	21.11	21.25	22.0	
		3RB	3	21.37	21.40	21.08	22.0	
			1	21.22	21.24	21.23	22.0	
			0	21.23	21.34	21.09	22.0	
		6RB	0	20.51	20.19	20.04	21.0	



LTE-FDD Band 5				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
3 MHz	Modulation	RB Size	RB offset	825.5MHz	836.5MHz	847.5MHz			
	QPSK	1RB	14	23.09	23.28	23.08	24.0		
			7	23.12	23.07	23.02	24.0		
			0	23.15	23.20	22.98	24.0		
		8RB	7	22.17	22.18	22.12	23.0		
			4	22.24	22.19	22.07	23.0		
			0	22.24	22.13	22.05	23.0		
			15RB	0	22.22	22.15	22.01	23.0	
			16QAM	1RB	14	22.03	22.16	22.44	23.0
					7	22.13	22.35	22.54	23.0
	0	22.14			22.24	22.41	23.0		
	8RB	7		21.20	21.45	21.26	22.0		
		4		21.26	21.39	21.08	22.0		
		0		21.32	21.54	21.19	22.0		
	15RB	0	21.33	21.32	21.17	22.0			
	64QAM	1RB	14	21.37	21.37	21.24	22.0		
			7	21.27	21.26	21.20	22.0		
			0	21.29	21.20	21.24	22.0		
		8RB	7	20.37	20.21	20.23	21.0		
			4	20.29	20.22	20.14	21.0		
0			20.17	20.28	20.09	21.0			
15RB			0	20.49	20.16	20.22	21.0		



LTE-FDD Band 5				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
5 MHz	Modulation	RB Size	RB offset	826.5MHz	836.5MHz	846.5MHz			
	QPSK	1RB	24	22.99	23.16	23.16	24.0		
			12	23.19	23.13	23.12	24.0		
			0	23.13	23.25	23.06	24.0		
		12RB	13	22.23	22.27	22.05	23.0		
			6	22.17	22.33	22.01	23.0		
			0	22.30	22.21	22.07	23.0		
			25RB	0	22.12	22.16	22.12	23.0	
			16QAM	1RB	24	22.13	22.22	22.41	23.0
					12	22.14	22.21	22.53	23.0
	0	22.12			22.27	22.49	23.0		
	12RB	13		21.28	21.46	21.23	22.0		
		6		21.36	21.33	21.19	22.0		
		0		21.38	21.44	21.24	22.0		
	25RB	0	21.16	21.33	21.18	22.0			
	64QAM	1RB	24	21.30	21.48	21.19	22.0		
			12	21.18	21.28	21.22	22.0		
			0	21.30	21.13	21.12	22.0		
		12RB	13	20.45	20.31	20.22	21.0		
			6	20.24	20.22	20.04	21.0		
0			20.25	20.41	19.98	21.0			
25RB			0	20.54	20.24	20.07	21.0		



LTE-FDD Band 5				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	Modulation	RB Size	RB offset	829MHz	836.5MHz	844MHz		
	QPSK	1RB	49	23.17	23.31	23.16	24.0	
			24	23.27	23.22	23.22	24.0	
			0	23.17	23.30	23.11	24.0	
		25RB	25	22.26	22.32	22.22	23.0	
			12	22.33	22.37	22.17	23.0	
			0	22.36	22.29	22.21	23.0	
		50RB	0	22.32	22.28	22.14	23.0	
		16QAM	1RB	49	22.20	22.36	22.60	23.0
				24	22.19	22.38	22.55	23.0
	0			22.15	22.33	22.56	23.0	
	25RB		25	21.38	21.54	21.32	22.0	
			12	21.41	21.52	21.28	22.0	
			0	21.42	21.55	21.32	22.0	
	50RB		0	21.35	21.40	21.21	22.0	
	64QAM		1RB	49	21.44	21.49	21.32	22.0
				24	21.32	21.35	21.28	22.0
		0		21.35	21.29	21.32	22.0	
		25RB	25	20.48	20.41	20.24	21.0	
			12	20.30	20.34	20.23	21.0	
			0	20.31	20.46	20.14	21.0	
		50RB	0	20.56	20.31	20.24	21.0	



Full Power								
LTE-FDD Band 7				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
5 MHz	QPSK	1RB	24	22.37	22.61	22.31	23.5	
			12	22.43	22.64	22.27	23.5	
			0	22.58	22.30	22.29	23.5	
		12RB	13	21.49	21.85	21.47	23.5	
			6	21.70	21.85	21.56	23.5	
			0	21.58	21.63	21.59	23.5	
		25RB	0	21.68	21.78	21.40	22.5	
		16QAM	1RB	24	21.86	22.08	21.95	22.5
				12	22.07	22.00	22.10	22.5
	0			22.02	21.73	22.03	22.5	
	12RB		13	20.62	20.86	20.55	21.5	
			6	20.79	20.91	20.72	21.5	
			0	20.80	20.68	20.76	21.5	
	25RB		0	20.83	20.77	20.74	21.5	
	64QAM		1RB	24	20.66	20.66	20.72	21.5
				12	20.54	20.80	20.64	21.5
		0		20.69	20.58	20.49	21.5	
		12RB	13	19.86	19.65	19.50	20.5	
			6	19.70	19.74	19.78	20.5	
			0	19.53	19.84	19.49	20.5	
		25RB	0	19.70	19.70	19.62	20.5	



Full Power								
LTE-FDD Band 7				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	QPSK	1RB	49	22.39	22.51	22.37	20.5	
			24	22.54	22.63	22.31	20.5	
			0	22.57	22.37	22.42	20.5	
		25RB	25	21.57	21.87	21.41	20.5	
			12	21.71	21.76	21.49	20.5	
			0	21.57	21.62	21.63	20.5	
		50RB	0	21.72	21.64	21.53	20.5	
		16QAM	1RB	49	21.90	21.98	22.00	20.5
				24	21.96	22.00	21.98	20.5
	0			21.99	21.74	21.87	20.5	
	25RB		25	20.60	20.77	20.65	20.5	
			12	20.89	20.87	20.56	20.5	
			0	20.79	20.76	20.76	20.5	
	50RB		0	20.77	20.90	20.68	20.5	
	64QAM		1RB	49	20.62	20.66	20.61	20.5
				24	20.64	20.78	20.57	20.5
		0		20.67	20.71	20.55	20.5	
		25RB	25	19.85	19.73	19.61	20.5	
			12	19.76	19.77	19.80	20.5	
			0	19.56	19.75	19.44	20.5	
		50RB	0	19.68	19.73	19.55	20.5	



Full Power								
LTE-FDD Band 7				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
15 MHz	QPSK	1RB	74	22.33	22.55	22.35	20.5	
			37	22.43	22.74	22.38	20.5	
			0	22.62	22.24	22.39	20.5	
		36RB	38	21.56	21.79	21.53	20.5	
			19	21.83	21.79	21.49	20.5	
			0	21.72	21.64	21.66	20.5	
		75RB	0	21.62	21.66	21.37	20.5	
		16QAM	1RB	74	22.01	22.02	21.99	20.5
				37	22.06	22.16	22.15	20.5
	0			21.95	21.78	21.92	20.5	
	36RB		38	20.59	20.86	20.70	20.5	
			19	20.93	20.87	20.67	20.5	
			0	20.82	20.70	20.58	20.5	
	75RB		0	20.76	20.77	20.71	20.5	
	64QAM		1RB	74	20.76	20.69	20.70	20.5
				37	20.53	20.83	20.55	20.5
		0		20.71	20.61	20.49	20.5	
		36RB	38	19.83	19.58	19.68	20.5	
			19	19.71	19.82	19.80	20.5	
			0	19.55	19.69	19.43	20.5	
		75RB	0	19.76	19.68	19.48	20.5	



Full Power								
LTE-FDD Band 7				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
20 MHz	QPSK	1RB	99	22.52	22.67	22.38	20.5	
			50	22.61	22.75	22.47	20.5	
			0	22.62	22.38	22.48	20.5	
		50RB	50	21.67	21.87	21.55	20.5	
			25	21.84	21.85	21.61	20.5	
			0	21.75	21.81	21.66	20.5	
		100RB	0	21.73	21.84	21.55	20.5	
		16QAM	1RB	99	22.02	22.12	22.10	20.5
				50	22.10	22.17	22.16	20.5
	0			22.06	21.84	22.05	20.5	
	36RB		50	20.75	20.90	20.74	20.5	
			25	20.93	20.93	20.75	20.5	
			0	20.85	20.86	20.77	20.5	
	75RB		0	20.84	20.92	20.79	20.5	
	64QAM		1RB	99	20.82	20.78	20.74	20.5
				50	20.67	20.87	20.73	20.5
		0		20.74	20.78	20.69	20.5	
		36RB	50	19.89	19.75	19.69	20.5	
			25	19.87	19.84	19.83	20.5	
			0	19.67	19.86	19.58	20.5	
		75RB	0	19.78	19.77	19.66	20.5	



LTE-FDD Band 12				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
1.4 MHz	Modulation	RB Size	RB offset	699.7MHz	707.5MHz	715.3MHz		
	QPSK	1RB	5	23.13	23.22	23.05	24.0	
			3	23.09	23.25	23.15	24.0	
			0	23.05	23.22	23.26	24.0	
		3RB	3	23.15	23.20	23.20	24.0	
			1	23.31	23.32	23.20	24.0	
			0	23.27	23.23	23.17	24.0	
		6RB	0	22.20	22.25	22.12	23.0	
			1RB	5	22.10	22.18	22.63	23.0
				3	22.12	22.38	22.67	23.0
	0	22.23		22.24	22.55	23.0		
	16QAM	3RB	3	22.30	22.33	22.32	23.0	
			1	22.48	22.39	22.31	23.0	
			0	22.36	22.41	22.27	23.0	
		6RB	0	21.41	21.47	21.39	22.0	
			1RB	5	21.44	21.33	21.30	22.0
				3	21.31	21.35	21.37	22.0
	0	21.47		21.33	21.30	22.0		
	64QAM	3RB	3	21.40	21.33	21.29	22.0	
			1	21.37	21.38	21.33	22.0	
			0	21.54	21.35	21.39	22.0	
		6RB	0	20.22	20.28	20.47	21.0	



LTE-FDD Band 12				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
3 MHz	Modulation	RB Size	RB offset	700.5MHz	707.5MHz	714.5MHz		
	QPSK	1RB	14	23.05	23.27	23.19	24.0	
			7	23.01	23.24	23.10	24.0	
			0	23.21	23.16	23.12	24.0	
		8RB	7	22.27	22.22	22.11	23.0	
			4	22.30	22.16	22.28	23.0	
			0	22.20	22.23	22.16	23.0	
		15RB	0	22.27	22.30	22.22	23.0	
		16QAM	1RB	14	22.17	22.31	22.65	23.0
				7	22.12	22.42	22.66	23.0
	0			22.20	22.18	22.65	23.0	
	8RB		7	21.33	21.40	21.24	22.0	
			4	21.39	21.53	21.24	22.0	
			0	21.36	21.43	21.41	22.0	
	15RB		0	21.42	21.34	21.40	22.0	
	64QAM		1RB	14	21.35	21.41	21.26	22.0
				7	21.36	21.48	21.30	22.0
		0		21.49	21.47	21.21	22.0	
		8RB	7	20.35	20.34	20.24	21.0	
			4	20.35	20.38	20.34	21.0	
0			20.43	20.42	20.27	21.0		
15RB		0	20.38	20.39	20.33	21.0		



LTE-FDD Band 12				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
5 MHz	Modulation	RB Size	RB offset	701.5MHz	707.5MHz	713.5MHz			
	QPSK	1RB	24	23.06	23.09	23.03	24.0		
			12	23.00	23.31	23.24	24.0		
			0	23.24	23.09	23.10	24.0		
		12RB	13	22.33	22.29	22.07	23.0		
			6	22.29	22.25	22.20	23.0		
			0	22.17	22.25	22.29	23.0		
			25RB	0	22.28	22.24	22.18	23.0	
				1RB	24	22.07	22.28	22.51	23.0
					12	22.13	22.45	22.55	23.0
	0	22.14	22.23		22.47	23.0			
	16QAM	12RB	13	21.39	21.42	21.39	22.0		
			6	21.37	21.50	21.41	22.0		
			0	21.43	21.36	21.26	22.0		
		25RB	0	21.39	21.39	21.35	22.0		
		64QAM	1RB	24	21.43	21.47	21.34	22.0	
				12	21.41	21.51	21.21	22.0	
	0			21.43	21.31	21.32	22.0		
	12RB		13	20.34	20.39	20.35	21.0		
			6	20.39	20.37	20.35	21.0		
0			20.54	20.38	20.41	21.0			
25RB			0	20.31	20.36	20.39	21.0		



LTE-FDD Band 12				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	Modulation	RB Size	RB offset	704MHz	707.5MHz	711MHz		
	QPSK	1RB	49	23.14	23.28	23.23	24.0	
			24	23.19	23.34	23.28	24.0	
			0	23.25	23.24	23.27	24.0	
		25RB	25	22.34	22.30	22.24	23.0	
			12	22.37	22.33	22.29	23.0	
			0	22.33	22.25	22.33	23.0	
		50RB	0	22.37	22.35	22.26	23.0	
		16QAM	1RB	49	22.20	22.36	22.66	23.0
				24	22.25	22.47	22.71	23.0
	0			22.28	22.33	22.67	23.0	
	25RB		25	21.46	21.49	21.41	22.0	
			12	21.50	21.55	21.42	22.0	
			0	21.54	21.44	21.43	22.0	
	50RB		0	21.44	21.48	21.51	22.0	
	64QAM		1RB	49	21.47	21.48	21.38	22.0
				24	21.49	21.52	21.39	22.0
		0		21.58	21.48	21.40	22.0	
		25RB	25	20.44	20.47	20.36	21.0	
			12	20.47	20.52	20.40	21.0	
0			20.56	20.44	20.42	21.0		
50RB		0	20.42	20.46	20.48	21.0		



LTE-FDD Band 13				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
5 MHz	Modulation	RB Size	RB offset	779.5MHz	782MHz	784.5MHz		
	QPSK	1RB	24	23.04	23.05	23.06	24.0	
			12	22.92	22.91	22.93	24.0	
			0	22.98	22.97	22.99	24.0	
		12RB	13	22.02	22.03	22.04	23.0	
			6	22.11	22.10	22.12	23.0	
			0	22.05	22.06	22.08	23.0	
		25RB	0	22.07	22.08	22.09	23.0	
		16QAM	1RB	24	22.35	22.34	22.36	23.0
				12	22.31	22.31	22.33	23.0
	0			22.48	22.45	22.46	23.0	
	12RB		13	21.22	21.18	21.20	22.0	
			6	21.15	21.11	21.13	22.0	
			0	21.23	21.21	21.22	22.0	
	25RB		0	21.13	21.09	21.11	22.0	
	64QAM		1RB	24	21.15	21.16	21.18	22.0
				12	21.13	21.10	21.11	22.0
		0		21.14	21.08	21.10	22.0	
		12RB	13	20.22	20.21	20.23	21.0	
			6	20.10	20.12	20.13	21.0	
			0	20.21	20.21	20.23	21.0	
		25RB	0	20.02	20.01	20.03	21.0	



LTE-FDD Band 13				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	Modulation	RB Size	RB offset	/	782MHz	/		
	QPSK	1RB	49	/	23.16	/	24.0	
			24	/	23.11	/	24.0	
			0	/	23.08	/	24.0	
		25RB	25	/	22.18	/	23.0	
			12	/	22.13	/	23.0	
			0	/	22.10	/	23.0	
		50RB	0	/	22.14	/	23.0	
		16QAM	1RB	49	/	22.40	/	23.0
				24	/	22.37	/	23.0
	0			/	22.55	/	23.0	
	25RB		25	/	21.27	/	22.0	
			12	/	21.22	/	22.0	
			0	/	21.28	/	22.0	
	50RB		0	/	21.23	/	22.0	
	64QAM		1RB	49	/	21.26	/	22.0
				24	/	21.20	/	22.0
		0		/	21.28	/	22.0	
		25RB	25	/	20.25	/	21.0	
			12	/	20.17	/	21.0	
			0	/	20.24	/	21.0	
		50RB	0	/	20.19	/	21.0	



LTE-FDD Band 14				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
5 MHz	Modulation	RB Size	RB offset	790.5MHz	793MHz	795.5MHz		
	QPSK	1RB	24	22.83	22.82	22.80	24.0	
			12	23.12	23.11	23.09	24.0	
			0	23.03	23.02	23.00	24.0	
		12RB	13	22.13	22.12	22.10	23.0	
			6	22.07	22.06	22.04	23.0	
			0	21.99	21.98	21.96	23.0	
		25RB	0	22.10	22.09	22.07	23.0	
		16QAM	1RB	24	21.91	21.90	21.88	23.0
				12	21.94	21.93	21.91	23.0
	0			21.92	21.91	21.89	23.0	
	12RB		13	21.22	21.21	21.19	22.0	
			6	21.19	21.18	21.16	22.0	
			0	21.05	21.04	21.02	22.0	
	25RB		0	21.04	21.03	21.01	22.0	
	64QAM		1RB	24	21.17	21.16	21.14	22.0
				12	21.12	21.11	21.09	22.0
		0		21.07	21.06	21.04	22.0	
		12RB	13	20.08	20.07	20.05	21.0	
			6	20.02	20.01	19.99	21.0	
0			20.14	20.13	20.11	21.0		
25RB		0	20.15	20.14	20.12	21.0		



LTE-FDD Band 14				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	Modulation	RB Size	RB offset	/	793MHz	/		
	QPSK	1RB	49	/	23.02	/	24.0	
			24	/	23.13	/	24.0	
			0	/	23.07	/	24.0	
		25RB	25	/	22.25	/	23.0	
			12	/	22.20	/	23.0	
			0	/	22.11	/	23.0	
		50RB	0	/	22.17	/	23.0	
		16QAM	1RB	49	/	22.09	/	23.0
				24	/	22.05	/	23.0
	0			/	22.08	/	23.0	
	25RB		25	/	21.34	/	22.0	
			12	/	21.27	/	22.0	
			0	/	21.20	/	22.0	
	50RB		0	/	21.22	/	22.0	
	64QAM		1RB	49	/	21.32	/	22.0
				24	/	21.27	/	22.0
		0		/	21.18	/	22.0	
		25RB	25	/	20.25	/	21.0	
			12	/	20.19	/	21.0	
			0	/	20.16	/	21.0	
		50RB	0	/	20.21	/	21.0	



LTE-FDD Band 25				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
1.4 MHz	Modulation	RB Size	RB offset	1850.7MHz	1882.5MHz	1914.3MHz			
	QPSK	1RB	5	22.02	22.42	22.44	23.5		
			3	22.11	22.48	22.20	23.5		
			0	22.35	22.49	22.49	23.5		
		3RB	3	22.15	22.51	22.71	23.5		
			1	22.29	22.62	22.67	23.5		
			0	22.19	22.70	22.83	23.5		
		6RB	0	21.08	21.57	21.24	22.5		
			16QAM	1RB	5	21.65	21.69	21.69	22.5
					3	21.94	21.82	21.85	22.5
	0	21.80			21.76	20.97	22.5		
	3RB	3	21.30	21.62	21.92	22.5			
		1	21.36	21.75	21.95	22.5			
		0	21.30	21.80	21.86	22.5			
	6RB	0	20.33	20.76	20.90	21.5			
		64QAM	1RB	5	20.15	20.73	20.76	21.5	
				3	20.28	20.75	20.78	21.5	
	0			20.45	20.83	20.97	21.5		
	3RB	3	20.16	20.76	20.93	21.5			
		1	20.32	20.72	20.92	21.5			
		0	20.31	20.99	20.99	21.5			
	6RB	0	19.28	19.70	19.85	20.5			



LTE-FDD Band 25				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
3 MHz	Modulation	RB Size	RB offset	1851.5MHz	1882.5MHz	1913.5MHz			
	QPSK	1RB	14	21.97	22.34	22.44	23.5		
			7	22.16	22.44	22.24	23.5		
			0	22.23	22.46	22.49	23.5		
		8RB	7	7	21.19	21.56	21.62	22.5	
				4	21.14	21.55	21.81	22.5	
				0	21.30	21.69	21.77	22.5	
			15RB	0	21.03	21.62	21.28	22.5	
				1RB	14	21.67	21.76	21.83	22.5
					7	21.78	21.80	21.83	22.5
	0	21.67	21.77		20.98	22.5			
	16QAM	8RB	7	20.36	20.70	20.77	21.5		
			4	20.31	20.85	20.98	21.5		
			0	20.46	20.92	20.88	21.5		
		15RB	0	20.21	20.70	20.90	21.5		
		64QAM	1RB	14	20.28	20.71	20.81	21.5	
				7	20.30	20.87	20.85	21.5	
	0			20.27	20.84	20.87	21.5		
	8RB		7	7	19.18	19.70	19.87	20.5	
				4	19.38	19.80	19.94	20.5	
				0	19.43	19.96	19.83	20.5	
			15RB	0	19.33	19.69	19.74	20.5	



LTE-FDD Band 25				Actual output Power (dBm)			Tune up			
Band-width				Low	Middle	High				
5 MHz	Modulation	RB Size	RB offset	1852.5MHz	1882.5MHz	1912.5MHz				
	QPSK	1RB	24	22.03	22.32	22.45	23.5			
			12	22.13	22.56	22.35	23.5			
			0	22.16	22.60	22.34	23.5			
		12RB	13	21.07	21.62	21.71	22.5			
			6	21.22	21.61	21.76	22.5			
			0	21.22	21.81	21.74	22.5			
			25RB	0	21.11	21.63	21.28	22.5		
				16QAM	1RB	24	21.60	21.68	21.76	22.5
						12	21.92	21.86	21.79	22.5
	0	21.72	21.81			20.97	22.5			
	12RB	13	20.28	20.69	20.84	21.5				
		6	20.21	20.72	20.84	21.5				
		0	20.44	20.87	20.92	21.5				
		25RB	0	20.20	20.64	20.76	21.5			
			64QAM	1RB	24	20.24	20.69	20.91	21.5	
					12	20.28	20.69	20.90	21.5	
	0	20.43			20.94	20.83	21.5			
	12RB	13	19.22	19.71	19.81	20.5				
		6	19.40	19.74	19.87	20.5				
		0	19.36	19.98	19.83	20.5				
		25RB	0	19.32	19.78	19.83	20.5			



LTE-FDD Band 25				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
10 MHz	Modulation	RB Size	RB offset	1855MHz	1882.5MHz	1910MHz			
	QPSK	1RB	49	21.87	22.42	22.46	23.5		
			24	22.23	22.53	22.26	23.5		
			0	22.28	22.52	22.43	23.5		
		25RB	25	21.16	21.61	21.77	22.5		
			12	21.18	21.58	21.70	22.5		
			0	21.22	21.61	21.88	22.5		
		50RB	0	21.19	21.67	21.20	22.5		
			16QAM	1RB	49	21.78	21.68	21.77	22.5
					24	21.90	21.91	21.80	22.5
	0	21.66			21.72	20.94	22.5		
	25RB	25	20.17	20.60	20.82	21.5			
		12	20.32	20.79	20.81	21.5			
		0	20.46	20.80	20.96	21.5			
	50RB	0	20.34	20.66	20.90	21.5			
		64QAM	1RB	49	20.27	20.68	20.74	21.5	
				24	20.20	20.71	20.82	21.5	
	0			20.43	20.94	20.87	21.5		
	25RB	25	19.23	19.74	19.79	20.5			
		12	19.36	19.81	19.91	20.5			
		0	19.33	19.81	19.81	20.5			
	50RB	0	19.19	19.67	19.77	20.5			



LTE-FDD Band 25				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
15 MHz	Modulation	RB Size	RB offset	1857.5MHz	1882.5MHz	1907.5MHz		
	QPSK	1RB	74	21.86	22.26	22.55	23.5	
			37	22.25	22.49	22.23	23.5	
			0	22.31	22.51	22.43	23.5	
		36RB	38	21.10	21.61	21.76	22.5	
			19	21.21	21.66	21.74	22.5	
			0	21.34	21.68	21.80	22.5	
		75RB	0	21.08	21.72	21.33	22.5	
		16QAM	1RB	74	21.70	21.76	21.70	22.5
				37	21.91	21.83	21.82	22.5
	0			21.71	21.76	20.91	22.5	
	36RB		38	20.22	20.70	20.77	21.5	
			19	20.28	20.78	20.88	21.5	
			0	20.48	20.82	20.87	21.5	
	75RB		0	20.30	20.72	20.81	21.5	
	64QAM		1RB	74	20.18	20.76	20.76	21.5
				37	20.21	20.83	20.89	21.5
		0		20.45	20.92	20.87	21.5	
		36RB	38	19.21	19.76	19.92	20.5	
			19	19.25	19.78	19.90	20.5	
			0	19.47	19.92	19.87	20.5	
		75RB	0	19.28	19.77	19.85	20.5	



LTE-FDD Band 25				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
20 MHz	Modulation	RB Size	RB offset	1860MHz	1882.5MHz	1905MHz		
	QPSK	1RB	99	22.04	22.43	22.61	23.5	
			50	22.30	22.57	22.39	23.5	
			0	22.35	22.66	22.50	23.5	
		50RB	50	21.22	21.68	21.82	22.5	
			25	21.31	21.74	21.86	22.5	
			0	21.36	21.81	21.91	22.5	
		100RB	0	21.19	21.72	21.38	22.5	
		16QAM	1RB	99	21.80	21.85	21.86	22.5
				50	21.95	21.94	21.97	22.5
	0			21.86	21.84	21.10	22.5	
	36RB		50	20.37	20.79	20.96	21.5	
			25	20.40	20.92	20.99	21.5	
			0	20.49	20.98	21.00	21.5	
	75RB		0	20.35	20.84	20.92	21.5	
	64QAM		1RB	99	20.35	20.77	20.93	21.5
				50	20.37	20.89	20.98	21.5
		0		20.46	20.97	21.01	21.5	
		36RB	50	19.36	19.79	19.95	20.5	
			25	19.42	19.86	19.97	20.5	
0			19.48	19.99	19.99	20.5		
75RB		0	19.35	19.84	19.87	20.5		



LTE-FDD Band 26				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
3 MHz	Modulation	RB Size	RB offset	814.7MHz	831.5MHz	848.3MHz			
	QPSK	1RB	14	23.02	22.93	23.20	24.0		
			7	23.00	23.19	23.18	24.0		
			0	23.15	23.00	23.07	24.0		
		8RB	7	22.96	22.97	23.10	23.0		
			4	23.04	23.17	23.12	23.0		
			0	22.99	23.18	23.19	23.0		
			15RB	0	21.95	22.08	22.10	23.0	
			16QAM	1RB	14	21.85	22.50	22.65	23.0
					7	21.97	22.48	22.48	23.0
	0	22.07			22.45	22.41	23.0		
	8RB	7		22.11	22.26	22.05	22.0		
		4		22.27	22.24	22.19	22.0		
		0		22.21	22.21	22.27	22.0		
	15RB	0	21.14	21.27	21.11	22.0			
	64QAM	1RB	14	21.06	21.26	21.10	22.0		
			7	21.11	21.19	21.09	22.0		
			0	21.24	21.36	21.18	22.0		
		8RB	7	21.08	21.12	21.04	21.0		
			4	21.14	21.27	21.22	21.0		
			0	21.17	21.20	21.16	21.0		
			15RB	0	20.09	20.19	20.19	21.0	



LTE-FDD Band 26				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
3 MHz	Modulation	RB Size	RB offset	815.5MHz	831.5MHz	847.5MHz		
	QPSK	1RB	14	22.96	23.10	23.14	24.0	
			7	22.99	23.11	23.10	24.0	
			0	22.98	22.95	22.92	24.0	
		8RB	7	21.99	22.06	22.12	23.0	
			4	21.98	22.14	22.17	23.0	
			0	22.03	22.14	22.15	23.0	
		15RB	0	21.95	22.02	22.19	23.0	
		16QAM	1RB	14	21.93	22.36	22.53	23.0
				7	21.99	22.53	22.57	23.0
	0			21.94	22.47	22.48	23.0	
	8RB		7	21.04	21.21	21.10	22.0	
			4	21.16	21.30	21.11	22.0	
			0	21.31	21.24	21.20	22.0	
	15RB		0	21.27	21.12	21.26	22.0	
	64QAM		1RB	14	21.00	21.14	21.21	22.0
				7	21.20	21.32	21.15	22.0
		0		21.26	21.26	21.12	22.0	
		8RB	7	20.08	20.14	20.18	21.0	
			4	20.19	20.15	20.09	21.0	
0			20.20	20.27	20.14	21.0		
15RB		0	20.19	20.16	20.24	21.0		



LTE-FDD Band 26				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
5 MHz	Modulation	RB Size	RB offset	816.5MHz	831.5MHz	846.5MHz		
	QPSK	1RB	24	22.94	22.98	23.18	24.0	
			12	22.92	23.12	23.09	24.0	
			0	23.01	23.09	22.94	24.0	
		12RB	13	22.10	22.01	22.11	23.0	
			6	22.09	22.04	22.13	23.0	
			0	22.10	22.14	22.13	23.0	
		25RB	0	21.95	22.00	22.06	23.0	
		16QAM	1RB	24	21.95	22.37	22.58	23.0
				12	22.07	22.44	22.54	23.0
	0			21.96	22.41	22.31	23.0	
	12RB		13	21.04	21.19	21.13	22.0	
			6	21.09	21.23	21.08	22.0	
			0	21.18	21.21	21.29	22.0	
	25RB		0	21.13	21.08	21.18	22.0	
	64QAM		1RB	24	21.02	21.21	21.05	22.0
				12	21.11	21.31	21.24	22.0
		0		21.27	21.28	21.14	22.0	
		12RB	13	20.02	20.28	20.13	21.0	
			6	20.22	20.27	20.08	21.0	
0			20.08	20.16	20.15	21.0		
25RB		0	20.16	20.13	20.17	21.0		



LTE-FDD Band 26				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	Modulation	RB Size	RB offset	820MHz	831.5MHz	844MHz		
	QPSK	1RB	49	23.05	23.02	23.09	24.0	
			24	22.93	23.18	23.10	24.0	
			0	23.09	23.03	22.91	24.0	
		25RB	25	21.99	21.98	22.03	23.0	
			12	22.02	22.07	22.21	23.0	
			0	21.98	22.11	22.06	23.0	
		50RB	0	22.08	22.02	22.20	23.0	
		16QAM	1RB	49	21.92	22.48	22.56	23.0
				24	21.93	22.43	22.40	23.0
	0			21.94	22.45	22.33	23.0	
	25RB		25	21.03	21.18	21.21	22.0	
			12	21.24	21.22	21.25	22.0	
			0	21.24	21.22	21.29	22.0	
	50RB		0	21.19	21.21	21.09	22.0	
	64QAM		1RB	49	20.97	21.22	21.02	22.0
				24	21.16	21.26	21.14	22.0
		0		21.14	21.27	21.28	22.0	
		25RB	25	20.02	20.30	20.06	21.0	
			12	20.22	20.15	20.08	21.0	
0			20.12	20.27	20.16	21.0		
50RB		0	20.09	20.08	20.21	21.0		



LTE-FDD Band 26				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
15 MHz	Modulation	RB Size	RB offset	822.5MHz	831.5MHz	841.5MHz		
	QPSK	1RB	74	23.12	23.11	23.24	24.0	
			37	23.01	23.21	23.23	24.0	
			0	23.18	23.15	23.09	24.0	
		36RB	38	22.11	22.16	22.14	23.0	
			19	22.16	22.23	22.24	23.0	
			0	22.17	22.21	22.25	23.0	
		75RB	0	22.14	22.15	22.22	23.0	
		16QAM	1RB	74	22.01	22.51	22.71	23.0
				37	22.12	22.59	22.58	23.0
	0			22.14	22.60	22.51	23.0	
	36RB		38	21.17	21.32	21.23	22.0	
			19	21.29	21.33	21.28	22.0	
			0	21.31	21.36	21.31	22.0	
	75RB		0	21.27	21.28	21.28	22.0	
	64QAM		1RB	74	21.15	21.31	21.21	22.0
				37	21.27	21.34	21.26	22.0
		0		21.29	21.39	21.29	22.0	
		36RB	38	20.17	20.32	20.19	21.0	
			19	20.25	20.31	20.24	21.0	
			0	20.28	20.32	20.26	21.0	
		75RB	0	20.25	20.26	20.30	21.0	



LTE-FDD Band 30				Actual output Power (dBm)			Tune up			
Band-width				Low	Middle	High				
5 MHz	Modulation	RB Size	RB offset	2307.5MHz	2310MHz	2312.5MHz				
	QPSK	1RB	24	22.55	22.54	22.52	23.5			
			12	22.68	22.67	22.65	23.5			
			0	22.44	22.43	22.41	23.5			
		12RB	13	13	21.85	21.84	21.82	22.5		
				6	21.78	21.77	21.75	22.5		
				0	21.84	21.83	21.81	22.5		
			25RB	0	21.85	21.84	21.82	22.5		
				16QAM	1RB	24	22.15	22.14	22.12	22.5
						12	22.18	22.17	22.15	22.5
	0	21.97	21.96			21.94	22.5			
	12RB	13	13	21.01	21.00	20.98	21.5			
			6	20.96	20.95	20.93	21.5			
			0	20.96	20.95	20.93	21.5			
		25RB	0	20.97	20.96	20.94	21.5			
			64QAM	1RB	24	21.01	21.00	20.98	21.5	
					12	21.09	21.08	21.06	21.5	
	0	20.94			20.93	20.91	21.5			
	12RB	13		20.08	20.07	20.05	20.5			
		6		20.06	20.05	20.03	20.5			
		0		20.03	20.02	20.00	20.5			
	25RB	0	20.01	20.00	19.98	20.5				



LTE-FDD Band 30				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	Modulation	RB Size	RB offset	/	2310MHz	/		
	QPSK	1RB	49	/	22.69	/	23.5	
			24	/	22.76	/	23.5	
			0	/	22.61	/	23.5	
		25RB	25	/	21.86	/	22.5	
			12	/	21.92	/	22.5	
			0	/	21.90	/	22.5	
		50RB	0	/	21.94	/	22.5	
		16QAM	1RB	49	/	22.23	/	22.5
				24	/	22.34	/	22.5
	0			/	22.07	/	22.5	
	25RB		25	/	21.07	/	21.5	
			12	/	21.12	/	21.5	
			0	/	21.10	/	21.5	
	50RB		0	/	21.07	/	21.5	
	64QAM		1RB	49	/	21.05	/	21.5
				24	/	21.14	/	21.5
		0		/	21.08	/	21.5	
		25RB	25	/	20.07	/	20.5	
			12	/	20.12	/	20.5	
			0	/	20.04	/	20.5	
		50RB	0	/	20.08	/	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
5 MHz	QPSK	1RB	24	21.68	22.43	22.78	23.5	
			12	22.47	22.38	22.46	23.5	
			0	22.46	22.46	22.51	23.5	
		12RB	13	21.74	21.35	21.72	22.5	
			6	21.59	21.52	21.57	22.5	
			0	21.54	21.54	21.83	22.5	
		25RB	0	21.71	21.47	21.70	22.5	
		16QAM	1RB	24	20.60	21.34	21.86	22.5
				12	21.57	21.35	21.69	22.5
	0			21.57	21.29	21.72	22.5	
	12RB		13	20.83	20.58	20.85	21.5	
			6	20.73	20.49	20.62	21.5	
			0	20.82	20.66	20.83	21.5	
	25RB		0	20.73	20.46	20.83	21.5	
	64QAM		1RB	24	20.74	20.54	20.75	21.5
				12	20.74	20.49	20.56	21.5
		0		20.82	20.53	20.79	21.5	
		12RB	13	19.77	19.41	19.75	20.5	
			6	19.70	19.49	19.72	20.5	
			0	19.79	19.62	19.78	20.5	
		25RB	0	19.78	19.50	19.72	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
10 MHz	QPSK	1RB	49	21.79	22.43	22.81	23.5	
			24	22.52	22.33	22.50	23.5	
			0	22.48	22.39	22.59	23.5	
		25RB	25	21.68	21.42	21.76	22.5	
			12	21.58	21.46	21.60	22.5	
			0	21.74	21.57	21.76	22.5	
		50RB	0	21.71	21.39	21.60	22.5	
		16QAM	1RB	49	20.63	21.26	21.95	22.5
				24	21.62	21.37	21.59	22.5
	0			21.57	21.43	21.79	22.5	
	25RB		25	20.73	20.44	20.85	21.5	
			12	20.76	20.59	20.74	21.5	
			0	20.65	20.50	20.86	21.5	
	50RB		0	20.68	20.57	20.69	21.5	
	64QAM		1RB	49	20.69	20.38	20.69	21.5
				24	20.71	20.43	20.59	21.5
		0		20.63	20.63	20.83	21.5	
		25RB	25	19.79	19.58	19.69	20.5	
			12	19.55	19.48	19.73	20.5	
			0	19.67	19.48	19.81	20.5	
		50RB	0	19.77	19.53	19.82	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
15 MHz	QPSK	1RB	RB offset	2503.5MHz	2593MHz	2682.5MHz		
			74	21.78	22.41	22.81	23.5	
			37	22.46	22.43	22.50	23.5	
				0	22.60	22.36	22.49	23.5
		36RB	38	21.68	21.40	21.71	22.5	
			19	21.65	21.44	21.55	22.5	
			0	21.59	21.52	21.71	22.5	
		75RB	0	21.71	21.47	21.76	22.5	
		16QAM	1RB	74	20.72	21.27	22.00	22.5
	37			21.59	21.25	21.54	22.5	
	0			21.71	21.43	21.69	22.5	
	36RB		38	20.74	20.49	20.68	21.5	
			19	20.61	20.56	20.60	21.5	
			0	20.71	20.66	20.93	21.5	
	75RB		0	20.78	20.62	20.74	21.5	
	64QAM		1RB	74	20.69	20.56	20.80	21.5
				37	20.77	20.45	20.57	21.5
		0		20.72	20.48	20.98	21.5	
		36RB	38	19.76	19.48	19.84	20.5	
			19	19.62	19.55	19.66	20.5	
			0	19.69	19.55	19.93	20.5	
		75RB	0	19.78	19.50	19.67	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
20 MHz	QPSK	1RB	99	21.80	22.54	22.89	23.5	
			50	22.60	22.51	22.64	23.5	
			0	22.62	22.52	22.65	23.5	
		50RB	50	21.78	21.53	21.76	22.5	
			25	21.76	21.58	21.71	22.5	
			0	21.74	21.59	21.86	22.5	
		100RB	0	21.74	21.57	21.77	22.5	
		16QAM	1RB	99	20.73	21.46	22.05	22.5
				50	21.71	21.42	21.73	22.5
	0			21.76	21.47	21.87	22.5	
	36RB		50	20.88	20.62	20.86	21.5	
			25	20.81	20.66	20.79	21.5	
			0	20.84	20.66	20.97	21.5	
	75RB		0	20.86	20.65	20.85	21.5	
	64QAM		1RB	99	20.86	20.58	20.84	21.5
				50	20.78	20.62	20.73	21.5
		0		20.83	20.66	20.98	21.5	
		36RB	50	19.88	19.61	19.88	20.5	
			25	19.75	19.67	19.74	20.5	
			0	19.82	19.63	19.94	20.5	
		75RB	0	19.88	19.62	19.85	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low-2	Middle	High-2		
5 MHz	Modulation	RB Size	RB offset	2545.8MHz	/	2640.3MHz		
	QPSK	1RB	24	21.70	/	22.35	23.5	
			12	22.48	/	22.32	23.5	
			0	22.38	/	22.33	23.5	
		12RB	13	21.59	/	21.27	22.5	
			6	21.61	/	21.40	22.5	
			0	21.59	/	21.59	22.5	
		25RB	0	21.69	/	21.34	22.5	
		16QAM	1RB	24	20.59	/	21.19	22.5
				12	21.47	/	21.37	22.5
	0			21.58	/	21.16	22.5	
	12RB		13	20.86	/	20.45	21.5	
			6	20.65	/	20.42	21.5	
			0	20.75	/	20.66	21.5	
	25RB		0	20.59	/	20.31	21.5	
	64QAM		1RB	24	20.71	/	20.52	21.5
				12	20.69	/	20.44	21.5
		0		20.80	/	20.51	21.5	
		12RB	13	19.76	/	19.41	20.5	
			6	19.67	/	19.47	20.5	
			0	19.78	/	19.58	20.5	
		25RB	0	19.75	/	19.50	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low-2	Middle	High-2		
10 MHz	Modulation	RB Size	RB offset	2547MHz	/	2639MHz		
	QPSK	1RB	49	21.82	/	22.44	23.5	
			24	22.55	/	22.19	23.5	
			0	22.48	/	22.36	23.5	
		25RB	25	21.64	/	21.30	22.5	
			12	21.57	/	21.47	22.5	
			0	21.61	/	21.42	22.5	
		50RB	0	21.65	/	21.42	22.5	
		16QAM	1RB	49	20.63	/	21.19	22.5
				24	21.58	/	21.23	22.5
	0			21.43	/	21.46	22.5	
	25RB		25	20.59	/	20.47	21.5	
			12	20.72	/	20.49	21.5	
			0	20.59	/	20.55	21.5	
	50RB		0	20.56	/	20.43	21.5	
	64QAM		1RB	49	20.64	/	20.34	21.5
				24	20.71	/	20.42	21.5
		0		20.62	/	20.62	21.5	
		25RB	25	19.78	/	19.53	20.5	
			12	19.50	/	19.46	20.5	
			0	19.63	/	19.45	20.5	
		50RB	0	19.72	/	19.52	20.5	



Full Power									
LTE-TDD Band 41				Actual output Power (dBm)			Tune up		
Band-width				Low-2	Middle	High-2			
15 MHz	Modulation	RB Size	RB offset	2548.3MHz	/	2637.8MHz			
	QPSK	1RB	74	21.81	/	22.30	23.5		
			37	22.37	/	22.43	23.5		
			0	22.53	/	22.22	23.5		
		36RB	38	21.57	/	21.31	22.5		
			19	21.61	/	21.45	22.5		
			0	21.55	/	21.57	22.5		
			75RB	0	21.59	/	21.37	22.5	
			16QAM	1RB	74	20.71	/	21.30	22.5
					37	21.58	/	21.26	22.5
	0	21.75			/	21.40	22.5		
	36RB	38		20.66	/	20.43	21.5		
		19		20.62	/	20.60	21.5		
		0		20.66	/	20.55	21.5		
		75RB		0	20.78	/	20.66	21.5	
		64QAM		1RB	74	20.69	/	20.55	21.5
					37	20.74	/	20.43	21.5
	0		20.70		/	20.47	21.5		
	36RB		38	19.74	/	19.44	20.5		
			19	19.57	/	19.50	20.5		
			0	19.64	/	19.53	20.5		
			75RB	0	19.75	/	19.45	20.5	



Full Power								
LTE-TDD Band 41				Actual output Power (dBm)			Tune up	
Band-width				Low-2	Middle	High-2		
20 MHz	Modulation	RB Size	RB offset	2549.5MHz	/	2636.5MHz		
	QPSK	1RB	99	21.83	/	22.77	23.5	
			50	22.63	/	22.67	23.5	
			0	22.57	/	22.69	23.5	
		50RB	50	21.69	/	21.75	22.5	
			25	21.73	/	21.60	22.5	
			0	21.63	/	21.73	22.5	
		100RB	0	21.70	/	21.64	22.5	
		16QAM	1RB	99	20.66	/	22.00	22.5
				50	21.70	/	21.66	22.5
	0			21.76	/	21.88	22.5	
	36RB		50	20.82	/	20.74	21.5	
			25	20.77	/	20.81	21.5	
			0	20.75	/	20.91	21.5	
	75RB		0	20.81	/	20.75	21.5	
	64QAM		1RB	99	20.83	/	20.81	21.5
				50	20.74	/	20.72	21.5
		0		20.79	/	20.93	21.5	
		36RB	50	19.85	/	19.86	20.5	
			25	19.72	/	19.70	20.5	
			0	19.79	/	19.90	20.5	
		75RB	0	19.85	/	19.81	20.5	



LTE-FDD Band 66				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
1.4 MHz	Modulation	RB Size	RB offset	1710.7MHz	1745MHz	1779.3MHz		
	QPSK	1RB	5	22.30	21.33	21.89	23.0	
			3	22.03	22.30	22.09	23.0	
			0	21.44	21.71	21.63	23.0	
		3RB	3	22.41	22.20	21.92	23.0	
			1	22.31	22.10	21.99	23.0	
			0	22.18	22.09	21.88	23.0	
		6RB	0	21.26	21.24	21.03	22.0	
		16QAM	1RB	5	21.81	20.89	21.70	22.0
				3	21.57	21.66	21.59	22.0
	0			19.97	21.48	20.18	22.0	
	3RB		3	21.53	21.16	21.14	22.0	
			1	21.53	21.25	21.11	22.0	
			0	21.25	21.23	21.18	22.0	
	6RB		0	20.37	20.36	20.06	21.0	
	64QAM		1RB	5	20.48	20.28	20.05	21.0
				3	20.34	20.33	20.11	21.0
		0		20.19	20.31	20.14	21.0	
		3RB	3	20.52	20.33	20.04	21.0	
			1	20.41	20.31	20.09	21.0	
			0	20.30	20.19	20.13	21.0	
		6RB	0	19.34	19.24	19.06	20.0	



LTE-FDD Band 66				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
3 MHz	Modulation	RB Size	RB offset	1711.5MHz	1745MHz	1778.5MHz			
	QPSK	1RB	14	22.16	21.23	21.81	23.0		
			7	21.97	22.23	22.04	23.0		
			0	21.28	21.72	21.50	23.0		
		8RB	7	21.31	21.19	21.02	22.0		
			4	21.27	21.25	20.93	22.0		
			0	21.06	21.19	21.02	22.0		
			15RB	0	21.25	21.10	20.98	22.0	
			16QAM	1RB	14	21.82	20.89	21.54	22.0
					7	21.49	21.72	21.57	22.0
	0	19.88			21.50	20.29	22.0		
	8RB	7		20.42	20.27	20.13	21.0		
		4		20.49	20.32	20.08	21.0		
		0		20.31	20.25	20.18	21.0		
		15RB		0	20.50	20.19	20.16	21.0	
		64QAM		1RB	14	20.39	20.18	20.16	21.0
					7	20.35	20.16	20.12	21.0
	0		20.16		20.24	20.07	21.0		
	8RB		7	19.53	19.32	19.02	20.0		
			4	19.36	19.25	19.02	20.0		
0			19.15	19.23	19.16	20.0			
15RB			0	19.49	19.20	19.11	20.0		



LTE-FDD Band 66				Actual output Power (dBm)			Tune up		
Band-width				Low	Middle	High			
5 MHz	Modulation	RB Size	RB offset	1712.5MHz	1745MHz	1777.5MHz			
	QPSK	1RB	24	22.31	21.25	21.88	23.0		
			12	22.08	22.13	22.09	23.0		
			0	21.39	21.71	21.59	23.0		
		12RB	13	21.24	21.15	21.03	22.0		
			6	21.34	21.18	20.89	22.0		
			0	21.23	21.13	20.91	22.0		
			25RB	0	21.35	21.14	20.97	22.0	
				1RB	24	21.75	20.82	21.55	22.0
					12	21.39	21.76	21.65	22.0
	0	19.90	21.34		20.32	22.0			
	16QAM	12RB	13	20.52	20.31	20.04	21.0		
			6	20.41	20.30	20.20	21.0		
			0	20.34	20.14	20.18	21.0		
		25RB	0	20.47	20.24	20.18	21.0		
			1RB	24	20.47	20.30	20.04	21.0	
				12	20.30	20.27	20.08	21.0	
	0	20.25		20.21	20.09	21.0			
	64QAM	12RB	13	19.40	19.33	19.12	20.0		
			6	19.42	19.26	19.16	20.0		
0			19.25	19.32	19.05	20.0			
25RB		0	19.47	19.21	19.11	20.0			



LTE-FDD Band 66				Actual output Power (dBm)			Tune up		
Band-width	Modulation	RB Size	RB offset	Low 1715MHz	Middle 1745MHz	High 1775MHz			
10 MHz	QPSK	1RB	49	22.25	21.27	21.93	23.0		
			24	22.13	22.16	22.05	23.0		
			0	21.35	21.87	21.57	23.0		
		25RB	25	21.39	21.12	20.95	22.0		
			12	21.28	21.18	20.92	22.0		
			0	21.12	21.10	20.96	22.0		
		50RB	0	21.30	21.23	21.03	22.0		
			16QAM	1RB	49	21.70	20.91	21.72	22.0
					24	21.40	21.61	21.68	22.0
	0	19.88			21.33	20.29	22.0		
	25RB	25	20.40	20.32	20.20	21.0			
		12	20.50	20.34	20.04	21.0			
		0	20.27	20.27	20.07	21.0			
	50RB	0	20.33	20.26	20.18	21.0			
		64QAM	1RB	49	20.40	20.26	20.03	21.0	
				24	20.37	20.29	20.13	21.0	
	0			20.17	20.27	19.98	21.0		
	25RB	25	19.48	19.35	19.14	20.0			
		12	19.37	19.36	19.04	20.0			
		0	19.11	19.26	19.09	20.0			
	50RB	0	19.36	19.25	19.14	20.0			



LTE-FDD Band 66				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
15 MHz	Modulation	RB Size	RB offset	1717.5MHz	1745MHz	1772.5MHz		
	QPSK	1RB	74	22.24	21.32	21.88	23.0	
			37	21.95	22.27	22.04	23.0	
			0	21.46	21.87	21.56	23.0	
		36RB	38	21.36	21.27	20.92	22.0	
			19	21.26	21.20	20.99	22.0	
			0	21.11	21.18	20.93	22.0	
		75RB	0	21.22	21.22	20.92	22.0	
		16QAM	1RB	74	21.68	20.90	21.67	22.0
				37	21.56	21.68	21.68	22.0
	0			20.02	21.38	20.24	22.0	
	36RB		38	20.48	20.29	20.18	21.0	
			19	20.37	20.32	20.08	21.0	
			0	20.33	20.31	20.16	21.0	
	75RB		0	20.32	20.18	20.16	21.0	
	64QAM		1RB	74	20.49	20.31	20.18	21.0
				37	20.40	20.33	20.15	21.0
		0		20.18	20.28	20.13	21.0	
		36RB	38	19.40	19.36	19.19	20.0	
			19	19.41	19.27	19.07	20.0	
			0	19.21	19.31	19.13	20.0	
75RB		0	19.45	19.23	19.20	20.0		



LTE-FDD Band 66				Actual output Power (dBm)			Tune up	
Band-width				Low	Middle	High		
20 MHz	Modulation	RB Size	RB offset	1720MHz	1745MHz	1770MHz		
	QPSK	1RB	99	22.32	21.38	22.00	23.0	
			50	22.15	22.31	22.15	23.0	
			0	21.47	21.89	21.69	23.0	
		50RB	50	21.44	21.31	21.08	22.0	
			25	21.37	21.27	21.04	22.0	
			0	21.26	21.25	21.05	22.0	
		100RB	0	21.41	21.26	21.04	22.0	
		16QAM	1RB	99	21.83	21.01	21.72	22.0
				50	21.58	21.79	21.72	22.0
	0			20.07	21.51	20.36	22.0	
	36RB		50	20.58	20.36	20.24	21.0	
			25	20.56	20.38	20.21	21.0	
			0	20.36	20.34	20.22	21.0	
	75RB		0	20.52	20.37	20.23	21.0	
	64QAM		1RB	99	20.57	20.31	20.23	21.0
				50	20.49	20.36	20.19	21.0
		0		20.33	20.34	20.17	21.0	
		36RB	50	19.54	19.37	19.21	20.0	
			25	19.45	19.36	19.17	20.0	
0			19.31	19.35	19.18	20.0		
75RB		0	19.49	19.32	19.24	20.0		



Hotspot								
LTE Band 7			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5 MHz	1RB_24	2567.4MHz	19.88	20.22	20.08	21.0	21.0	21.0
		2535MHz	20.11	20.48	20.29	21.0	21.0	21.0
		2502.5MHz	19.90	20.24	20.19	21.0	21.0	21.0
	1RB_12	2567.4MHz	19.87	20.27	20.06	21.0	21.0	21.0
		2535MHz	20.05	20.49	20.33	21.0	21.0	21.0
		2502.5MHz	19.78	20.10	20.10	21.0	21.0	21.0
	1RB_0	2567.4MHz	19.91	20.15	20.06	21.0	21.0	21.0
		2535MHz	20.08	20.35	20.29	21.0	21.0	21.0
		2502.5MHz	19.79	20.10	19.96	21.0	21.0	21.0
	12RB_13	2567.4MHz	19.93	20.08	20.08	21.0	21.0	21.0
		2535MHz	20.14	20.24	20.27	21.0	21.0	21.0
		2502.5MHz	19.93	20.03	20.08	21.0	21.0	21.0
	12RB_6	2567.4MHz	19.94	20.01	20.08	21.0	21.0	21.0
		2535MHz	20.11	20.30	20.34	21.0	21.0	21.0
		2502.5MHz	19.87	19.94	20.04	21.0	21.0	21.0
	12RB_0	2567.4MHz	19.91	19.98	19.99	21.0	21.0	21.0
		2535MHz	20.08	20.22	20.27	21.0	21.0	21.0
		2502.5MHz	19.78	19.86	19.96	21.0	21.0	21.0
	25RB_0	2567.4MHz	19.90	20.02	20.07	21.0	21.0	21.0
		2535MHz	20.16	20.22	20.23	21.0	21.0	21.0
		2502.5MHz	19.91	20.00	20.04	21.0	21.0	21.0



Hotspot								
LTE Band 7			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10 MHz	1RB_49	2565MHz	20.06	20.34	20.29	21.0	21.0	21.0
		2535MHz	20.19	20.65	20.58	21.0	21.0	21.0
		2505MHz	20.00	20.40	20.42	21.0	21.0	21.0
	1RB_24	2565MHz	19.94	20.32	20.29	21.0	21.0	21.0
		2535MHz	20.12	20.64	20.54	21.0	21.0	21.0
		2505MHz	19.96	20.30	20.30	21.0	21.0	21.0
	1RB_0	2565MHz	19.99	20.37	20.37	21.0	21.0	21.0
		2535MHz	19.99	20.49	20.40	21.0	21.0	21.0
		2505MHz	19.80	20.28	20.18	21.0	21.0	21.0
	25RB_25	2565MHz	20.05	20.07	20.15	21.0	21.0	21.0
		2535MHz	20.26	20.33	20.29	21.0	21.0	21.0
		2505MHz	20.00	20.13	20.17	21.0	21.0	21.0
	25RB_12	2565MHz	19.99	20.11	20.12	21.0	21.0	21.0
		2535MHz	20.19	20.29	20.31	21.0	21.0	21.0
		2505MHz	19.99	20.10	20.14	21.0	21.0	21.0
	25RB_0	2565MHz	20.07	20.13	20.12	21.0	21.0	21.0
		2535MHz	20.21	20.29	20.25	21.0	21.0	21.0
		2505MHz	19.99	20.06	20.06	21.0	21.0	21.0
	50RB_0	2565MHz	20.06	20.18	20.25	21.0	21.0	21.0
		2535MHz	20.18	20.29	20.34	21.0	21.0	21.0
		2505MHz	20.00	20.14	20.09	21.0	21.0	21.0



Hotspot								
LTE Band 7			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15 MHz	1RB_74	2562.5MHz	20.09	20.41	20.29	21.0	21.0	21.0
		2535MHz	20.15	20.60	20.59	21.0	21.0	21.0
		2507.5MHz	20.18	20.58	20.55	21.0	21.0	21.0
	1RB_37	2562.5MHz	19.88	20.27	20.39	21.0	21.0	21.0
		2535MHz	20.14	20.59	20.56	21.0	21.0	21.0
		2507.5MHz	19.96	20.39	20.30	21.0	21.0	21.0
	1RB_0	2562.5MHz	19.98	20.43	20.19	21.0	21.0	21.0
		2535MHz	20.04	20.38	20.45	21.0	21.0	21.0
		2507.5MHz	19.80	20.22	20.15	21.0	21.0	21.0
	36RB_38	2562.5MHz	20.04	20.11	20.26	21.0	21.0	21.0
		2535MHz	20.20	20.35	20.38	21.0	21.0	21.0
		2507.5MHz	20.15	20.22	20.30	21.0	21.0	21.0
	36RB_19	2562.5MHz	20.07	20.18	20.24	21.0	21.0	21.0
		2535MHz	20.25	20.33	20.38	21.0	21.0	21.0
		2507.5MHz	19.99	20.10	20.27	21.0	21.0	21.0
	36RB_0	2562.5MHz	20.07	20.13	20.15	21.0	21.0	21.0
		2535MHz	20.14	20.30	20.30	21.0	21.0	21.0
		2507.5MHz	20.00	20.05	20.10	21.0	21.0	21.0
	75RB_0	2562.5MHz	20.11	20.19	20.24	21.0	21.0	21.0
		2535MHz	20.22	20.29	20.32	21.0	21.0	21.0
		2507.5MHz	20.03	20.08	20.25	21.0	21.0	21.0



Hotspot								
LTE Band 7			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20 MHz	1RB_99	2560MHz	20.06	20.52	20.29	21.0	21.0	21.0
		2535MHz	20.09	20.60	20.59	21.0	21.0	21.0
		2510MHz	20.07	20.56	20.55	21.0	21.0	21.0
	1RB_50	2560MHz	19.95	20.49	20.39	21.0	21.0	21.0
		2535MHz	20.10	20.54	20.56	21.0	21.0	21.0
		2510MHz	19.89	20.33	20.30	21.0	21.0	21.0
	1RB_0	2560MHz	19.92	20.43	20.19	21.0	21.0	21.0
		2535MHz	20.03	20.41	20.45	21.0	21.0	21.0
		2510MHz	19.81	20.21	20.15	21.0	21.0	21.0
	50RB_50	2560MHz	20.11	20.23	20.26	21.0	21.0	21.0
		2535MHz	20.24	20.39	20.38	21.0	21.0	21.0
		2510MHz	20.11	20.24	20.30	21.0	21.0	21.0
	50RB_25	2560MHz	20.09	20.15	20.24	21.0	21.0	21.0
		2535MHz	20.22	20.30	20.38	21.0	21.0	21.0
		2510MHz	20.14	20.22	20.27	21.0	21.0	21.0
	50RB_0	2560MHz	20.02	20.14	20.15	21.0	21.0	21.0
		2535MHz	20.15	20.31	20.30	21.0	21.0	21.0
		2510MHz	19.93	20.07	20.10	21.0	21.0	21.0
	100RB_0	2560MHz	20.07	20.18	20.24	21.0	21.0	21.0
		2535MHz	20.16	20.31	20.32	21.0	21.0	21.0
		2510MHz	20.07	20.18	20.25	21.0	21.0	21.0

Hotspot								
LTE Band 41			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5 MHz	1RB_24	2687.5MHz	20.01	20.16	19.91	21.0	21.0	21.0
		2640.3MHz	19.97	20.11	19.86	21.0	21.0	21.0
		2593MHz	19.87	20.08	19.84	21.0	21.0	21.0
		2545.8MHz	19.86	20.02	19.78	21.0	21.0	21.0
		2498.5MHz	19.86	20.07	19.82	21.0	21.0	21.0
	1RB_12	2687.5MHz	20.00	20.13	19.93	21.0	21.0	21.0
		2640.3MHz	19.87	20.02	19.73	21.0	21.0	21.0
		2593MHz	19.93	20.08	19.74	21.0	21.0	21.0
		2545.8MHz	19.85	19.98	19.76	21.0	21.0	21.0
		2498.5MHz	19.82	20.08	19.85	21.0	21.0	21.0
	1RB_0	2687.5MHz	19.97	20.11	19.89	21.0	21.0	21.0
		2640.3MHz	19.82	20.01	19.75	21.0	21.0	21.0
		2593MHz	19.93	20.02	19.77	21.0	21.0	21.0
		2545.8MHz	19.85	19.98	19.72	21.0	21.0	21.0
		2498.5MHz	19.90	20.06	19.89	21.0	21.0	21.0
	12RB_13	2687.5MHz	20.03	20.10	20.16	21.0	21.0	21.0
		2640.3MHz	19.86	19.98	19.98	21.0	21.0	21.0
		2593MHz	19.95	20.07	20.09	21.0	21.0	21.0
		2545.8MHz	19.85	19.94	20.01	21.0	21.0	21.0
		2498.5MHz	19.95	19.99	20.08	21.0	21.0	21.0
	12RB_6	2687.5MHz	20.07	20.13	20.22	21.0	21.0	21.0
		2640.3MHz	19.87	19.99	19.99	21.0	21.0	21.0
		2593MHz	19.97	20.05	20.06	21.0	21.0	21.0
		2545.8MHz	19.89	19.96	20.00	21.0	21.0	21.0
		2498.5MHz	19.96	20.06	20.20	21.0	21.0	21.0
	12RB_0	2687.5MHz	20.04	20.09	20.17	21.0	21.0	21.0
		2640.3MHz	19.87	19.92	19.95	21.0	21.0	21.0
		2593MHz	19.91	20.00	20.08	21.0	21.0	21.0
		2545.8MHz	19.84	19.96	19.98	21.0	21.0	21.0
		2498.5MHz	19.89	20.02	20.05	21.0	21.0	21.0
25RB_0	2687.5MHz	20.05	20.17	20.20	21.0	21.0	21.0	
	2640.3MHz	19.89	20.01	20.02	21.0	21.0	21.0	
	2593MHz	19.91	20.05	20.08	21.0	21.0	21.0	
	2545.8MHz	19.87	19.98	20.01	21.0	21.0	21.0	
	2498.5MHz	19.92	20.06	20.14	21.0	21.0	21.0	

Hotspot								
LTE Band 41			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10 MHz	1RB_49	2685MHz	20.67	20.76	20.47	21.0	21.0	21.0
		2639MHz	20.01	20.10	19.87	21.0	21.0	21.0
		2593MHz	19.97	20.09	19.87	21.0	21.0	21.0
		2547MHz	19.97	20.12	19.85	21.0	21.0	21.0
		2501MHz	19.85	20.04	19.81	21.0	21.0	21.0
	1RB_24	2685MHz	19.97	20.14	19.90	21.0	21.0	21.0
		2639MHz	19.84	20.00	19.72	21.0	21.0	21.0
		2593MHz	19.90	20.10	19.83	21.0	21.0	21.0
		2547MHz	19.91	19.96	19.72	21.0	21.0	21.0
		2501MHz	19.84	20.07	19.72	21.0	21.0	21.0
	1RB_0	2685MHz	20.60	20.77	20.50	21.0	21.0	21.0
		2639MHz	19.83	20.02	19.71	21.0	21.0	21.0
		2593MHz	19.90	20.11	19.82	21.0	21.0	21.0
		2547MHz	19.84	19.99	19.73	21.0	21.0	21.0
		2501MHz	19.88	20.11	19.80	21.0	21.0	21.0
	25RB_25	2685MHz	20.21	20.34	20.41	21.0	21.0	21.0
		2639MHz	19.90	20.02	20.06	21.0	21.0	21.0
		2593MHz	19.95	20.09	20.10	21.0	21.0	21.0
		2547MHz	19.96	20.09	20.12	21.0	21.0	21.0
		2501MHz	19.90	20.07	20.12	21.0	21.0	21.0
	25RB_12	2685MHz	20.09	20.20	20.26	21.0	21.0	21.0
		2639MHz	19.90	20.03	20.06	21.0	21.0	21.0
		2593MHz	19.92	20.10	20.14	21.0	21.0	21.0
		2547MHz	19.87	20.05	20.06	21.0	21.0	21.0
		2501MHz	19.96	20.08	20.12	21.0	21.0	21.0
	25RB_0	2685MHz	20.22	20.34	20.38	21.0	21.0	21.0
		2639MHz	19.86	20.01	20.03	21.0	21.0	21.0
		2593MHz	19.93	20.07	20.08	21.0	21.0	21.0
		2547MHz	19.86	19.99	20.02	21.0	21.0	21.0
		2501MHz	19.89	20.07	20.08	21.0	21.0	21.0
50RB_0	2685MHz	20.24	20.36	20.39	21.0	21.0	21.0	
	2639MHz	19.87	20.04	20.02	21.0	21.0	21.0	
	2593MHz	19.94	20.10	20.07	21.0	21.0	21.0	
	2547MHz	20.00	20.12	20.14	21.0	21.0	21.0	
	2501MHz	19.91	20.06	20.09	21.0	21.0	21.0	

Hotspot								
LTE Band 41			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15 MHz	1RB_74	2682.5MHz	20.05	20.23	19.90	21.0	21.0	21.0
		2637.8MHz	20.12	20.21	19.95	21.0	21.0	21.0
		2593MHz	20.00	20.23	19.85	21.0	21.0	21.0
		2548.3MHz	20.06	20.21	19.95	21.0	21.0	21.0
		2503.5MHz	20.05	20.17	20.00	21.0	21.0	21.0
	1RB_37	2682.5MHz	20.05	20.21	19.92	21.0	21.0	21.0
		2637.8MHz	19.88	20.08	19.79	21.0	21.0	21.0
		2593MHz	19.96	20.11	19.86	21.0	21.0	21.0
		2548.3MHz	19.91	20.05	19.79	21.0	21.0	21.0
		2503.5MHz	19.97	20.23	19.86	21.0	21.0	21.0
	1RB_0	2682.5MHz	19.99	20.12	19.88	21.0	21.0	21.0
		2637.8MHz	19.92	20.10	19.79	21.0	21.0	21.0
		2593MHz	19.95	20.14	19.85	21.0	21.0	21.0
		2548.3MHz	19.94	20.10	19.81	21.0	21.0	21.0
		2503.5MHz	19.92	20.19	19.81	21.0	21.0	21.0
	36RB_38	2682.5MHz	20.07	20.17	20.22	21.0	21.0	21.0
		2637.8MHz	19.90	19.96	20.00	21.0	21.0	21.0
		2593MHz	19.95	20.07	20.10	21.0	21.0	21.0
		2548.3MHz	20.01	20.13	20.14	21.0	21.0	21.0
		2503.5MHz	19.97	20.02	20.08	21.0	21.0	21.0
	36RB_19	2682.5MHz	20.09	20.13	20.16	21.0	21.0	21.0
		2637.8MHz	19.91	20.01	20.03	21.0	21.0	21.0
		2593MHz	19.97	20.08	20.09	21.0	21.0	21.0
		2548.3MHz	20.06	20.11	20.12	21.0	21.0	21.0
		2503.5MHz	19.91	20.02	20.13	21.0	21.0	21.0
	36RB_0	2682.5MHz	20.06	20.11	20.18	21.0	21.0	21.0
		2637.8MHz	19.91	19.96	20.00	21.0	21.0	21.0
		2593MHz	19.99	20.05	20.11	21.0	21.0	21.0
		2548.3MHz	19.92	19.96	20.04	21.0	21.0	21.0
		2503.5MHz	19.91	20.03	20.10	21.0	21.0	21.0
75RB_0	2682.5MHz	20.07	20.18	20.21	21.0	21.0	21.0	
	2637.8MHz	19.92	20.04	20.06	21.0	21.0	21.0	
	2593MHz	19.94	20.08	20.05	21.0	21.0	21.0	
	2548.3MHz	19.98	20.15	20.10	21.0	21.0	21.0	
	2503.5MHz	19.91	20.11	20.07	21.0	21.0	21.0	

Hotspot								
LTE Band 41			Actual output Power (dBm)			Tune up		
Band -width	RB No. / RB offset	Frequency	Modulation			Modulation		
			QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20 MHz	1RB_99	2680MHz	20.36	20.55	20.20	21.0	21.0	21.0
		2636.5MHz	20.03	20.23	19.92	21.0	21.0	21.0
		2593MHz	20.01	20.16	19.84	21.0	21.0	21.0
		2549.5MHz	20.12	20.23	19.95	21.0	21.0	21.0
		2506MHz	19.97	20.13	19.79	21.0	21.0	21.0
	1RB_50	2680MHz	20.01	20.09	19.83	21.0	21.0	21.0
		2636.5MHz	19.82	20.04	19.70	21.0	21.0	21.0
		2593MHz	19.94	20.06	19.88	21.0	21.0	21.0
		2549.5MHz	19.90	20.03	19.78	21.0	21.0	21.0
		2506MHz	19.86	20.05	19.77	21.0	21.0	21.0
	1RB_0	2680MHz	20.34	20.47	20.23	21.0	21.0	21.0
		2636.5MHz	19.88	20.11	19.80	21.0	21.0	21.0
		2593MHz	19.94	20.10	19.97	21.0	21.0	21.0
		2549.5MHz	19.95	20.12	19.79	21.0	21.0	21.0
		2506MHz	19.92	20.29	19.65	21.0	21.0	21.0
	50RB_50	2680MHz	20.16	20.27	20.30	21.0	21.0	21.0
		2636.5MHz	19.91	20.06	20.03	21.0	21.0	21.0
		2593MHz	19.98	20.10	20.03	21.0	21.0	21.0
		2549.5MHz	20.02	20.17	20.16	21.0	21.0	21.0
		2506MHz	19.92	20.06	20.08	21.0	21.0	21.0
	50RB_25	2680MHz	20.13	20.21	20.20	21.0	21.0	21.0
		2636.5MHz	19.91	19.99	20.02	21.0	21.0	21.0
		2593MHz	19.94	20.10	20.08	21.0	21.0	21.0
		2549.5MHz	20.03	20.16	20.13	21.0	21.0	21.0
		2506MHz	19.91	20.06	20.06	21.0	21.0	21.0
	50RB_0	2680MHz	20.11	20.24	20.28	21.0	21.0	21.0
		2636.5MHz	19.87	20.05	20.00	21.0	21.0	21.0
		2593MHz	19.98	20.09	20.08	21.0	21.0	21.0
		2549.5MHz	19.93	20.03	20.05	21.0	21.0	21.0
		2506MHz	19.90	20.06	20.07	21.0	21.0	21.0
100RB_0	2680MHz	20.17	20.25	20.30	21.0	21.0	21.0	
	2636.5MHz	19.93	20.04	20.04	21.0	21.0	21.0	
	2593MHz	19.94	20.11	20.10	21.0	21.0	21.0	
	2549.5MHz	20.02	20.13	20.12	21.0	21.0	21.0	
	2506MHz	19.96	20.06	20.02	21.0	21.0	21.0	

According to November 2017 TCB workshop, Uplink CA SAR Test Guidance as follows:

- a) When the maximum output for UL CA is \leq standalone LTE mode (without CA)
 - PCC is configured according to the highest standalone SAR configuration tested
 - SCC and subsequent CCs are configured according to procedures used for power measurement and parameters (BW, RB etc.) similar to that used for the PCC
- b) When the Reported SAR for UL CA configuration, described above, is $>1.2W/kg$, UL CA SAR is also required for all required test channels (PCC based)
- c) UL CA SAR is also required for standalone SAR configurations $>1.2W/kg$ when they are scaled to the UL CA power level.

The measurement results of downlink LTE 2CA Conducted Power are as below:

CA Config.	PCC						SCC 1			DL CA Power	Tune-up
	Band	Mode	Ch.	Freq.	RB Size	RB Offset	Band	BW	Freq.		
5B	5	QPSK10M	20476	831.6	1	0	5	10	886.5	22.98	24.0
41C	41	QPSK20M	20521	2583.1	1	0	41	20	2602.9	22.48	23.5
41C	41	QPSK20M	20521	2583.1	1	49	41	20	2602.9	22.37	23.5
41C	41	QPSK20M	20521	2583.1	1	99	41	20	2602.9	22.41	23.5
2A+2A	2	QPSK20M	18700	1860.0	1	99	2	20	1980.0	22.19	23.5
2A+4A	2	QPSK20M	18900	1880.0	1	99	4	20	2132.5	22.16	23.5
2A+5A	2	QPSK20M	18900	1880.0	1	99	5	10	881.5	22.21	23.5
2A+12A	2	QPSK20M	18900	1880.0	1	99	12	10	737.5	22.20	23.5
2A+29A	2	QPSK20M	18900	1880.0	1	99	29	10	722.5	22.19	23.5
2A+30A	2	QPSK20M	18900	1880.0	1	99	30	10	2355.0	22.24	23.5
4A+5A	4	QPSK20M	132072	1720.0	1	0	5	10	874.0	22.03	23.0
4A+12A	4	QPSK20M	132072	1720.0	1	0	12	10	1480.9	22.02	23.0
4A+29A	4	QPSK20M	132072	1720.0	1	0	29	10	722.0	22.03	23.0
4A+30A	4	QPSK20M	132072	1720.0	1	0	30	10	2355.0	22.11	23.0
5A+5A	5	QPSK10M	20450	829.0	1	0	5	10	889.0	22.89	24.0
5A+30A	5	QPSK10M	20476	831.6	1	0	30	10	2355.0	22.92	24.0
5A+66A	5	QPSK10M	20476	831.6	1	0	66	20	2145.0	22.86	24.0
7A+7A	7	QPSK20M	20850	2510.0	1	50	7	20	2680.0	22.37	23.5
12A+30A	12	QPSK10M	23095	707.5	1	24	30	10	2355.0	23.01	24.0
12A+66A	12	QPSK10M	23095	707.5	1	24	66	20	2145.0	23.05	24.0
66A+66A	66	QPSK20M	20050	1720.0	1	0	66	20	2145.0	21.97	23.0
25A+25A	25	QPSK20M	26140	1860.0	1	99	25	20	1985.0	22.18	23.5
25A+26A	25	QPSK20M	26365	1882.5	1	99	26	15	831.5	22.21	23.5

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



The measurement results of downlink LTE 3CA Conducted Power are as below:

CA Config.	PCC							SCC 1			SCC 2			DL CA Power	Tune Up
	Band	Mode	Ch.	Freq.	RB Size	RB Offset	Band	BW	Freq.	Band	BW	Freq.			
2A-2A-4A	2	QPSK20M	18700	1860	1	99	2	20	1980.0	4	20	2132.5	22.26	23.5	
2A-2A-5A	2	QPSK20M	18700	1860	1	99	2	20	1980.0	5	10	881.5	22.21	23.5	
2A-4A-4A	2	QPSK20M	18900	1880	1	99	4	20	2132.5	4	20	2132.5	22.31	23.5	
2A-4A-5A	2	QPSK20M	18900	1880	1	99	4	20	2132.5	5	10	881.5	22.18	23.5	
2A-5A-66A	2	QPSK20M	18900	1880	1	99	5	10	881.5	66	20	2145.0	22.25	23.5	
2A-5B	2	QPSK20M	18900	1880	1	99	5	10	876.6	5	10	886.5	22.27	23.5	
2A-5A-30A	2	QPSK20M	18900	1880	1	99	5	10	881.5	30	10	2355.0	22.16	23.5	
2A-5A-66A	2	QPSK20M	18900	1880	1	99	5	10	881.5	66	20	2145.0	22.23	23.5	
2A-12A-30A	2	QPSK20M	18900	1880	1	99	12	10	737.5	30	10	2355.0	22.18	23.5	
2A-12A-66A	2	QPSK20M	18900	1880	1	99	12	10	737.5	66	20	2145.0	22.19	23.5	
2A-29A-30A	2	QPSK20M	18900	1880	1	99	29	10	722.5	30	10	2355.0	22.22	23.5	
4A-4A-5A	4	QPSK20M	20050	1720	1	0	4	20	2145.0	5	10	881.5	22.03	23.0	
4A-5A-30A	4	QPSK20M	132072	1720	1	0	5	10	874.0	30	10	2355.0	21.98	23.0	
4A-12A-30A	4	QPSK20M	132072	1720	1	0	12	10	1480.9	30	10	2355.0	22.12	23.0	
4A-29A-30A	4	QPSK20M	132072	1720	1	0	29	10	722.0	30	10	2355.0	22.04	23.0	
5B-66A	5	QPSK10M	20476	831.6	1	0	5	10	886.5	66	20	2145.0	22.95	24.0	
5A-66B	5	QPSK10M	20476	831.6	1	0	66	20	2150.1	66	20	2160.0	22.84	24.0	
5A-66C	5	QPSK10M	20476	831.6	1	0	66	20	2145.1	66	20	2164.9	22.79	24.0	
41D	41	QPSK20M	41094	2640.4	1	0	41	20	2660.2	41	20	2680.0	22.37	23.5	

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

The measurement results of uplink LTE CA Conducted Power are as below:

CA List	PCC						SCC						Power		Tune up
	LTE	BW	UL	Mod.	UL#	UL	LTE	BW	UL	Mod.	UL#	UL	With CA	Without CA	
	Band	(MHz)	Freq.		RB	RB Offset	Band	(MHz)	Freq.		RB	RB Offset	Tx. Power	Tx. Power	
			(MHz)						(MHz)						
Full Power															
CA_5C	Band 5	10M	836.5	QPSK	1	49	Band 5	10M	816.7	QPSK	1	0	23.25	23.31	24.0
CA_41C	Band 41	20M	2680	QPSK	1	99	Band 41	20M	2660.2	QPSK	1	99	22.76	22.89	23.5
Hotspot															
CA_41C	Band 41	20M	2680	QPSK	1	99	Band 41	20M	2660.2	QPSK	1	0	20.28	20.36	21.0

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

10.4. WLAN and Bluetooth Measurement result

Table 10.5: The conducted Power measurement results for Bluetooth

Averaged Power (dBm)				
Mode	Tune up	Ch.0 (2402MHz)	Ch39 (2441MHz)	Ch78 (2480MHz)
GFSK	8.0	7.66	6.95	7.64
EDR2M-4_DQPSK	8.0	6.86	6.17	6.77
EDR3M-8DPSK	8.0	7.29	6.53	7.21
/	/	Ch0 (2402MHz)	Ch19 (2440MHz)	Ch39 (2480MHz)
BLE	-2.5	-3.99	-4.34	-2.94

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

Averaged Power (dBm) Duty Cycle: 100%				
Mode	Tune up	Ch.1 (2412MHz)	Ch.6 (2437MHz)	Ch.11 (2462MHz)
802.11b	16.5	16.14	16.10	16.11
802.11g	14.5	13.75	13.77	13.66
802.11n(20MHz)	14.5	13.77	13.75	13.58
/	/	Ch.3 (2422MHz)	Ch.6 (2437MHz)	Ch.9 (2452MHz)
802.11n(40MHz)	15.0	14.18	14.08	14.14

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

Averaged Power (dBm) Duty Cycle: 100%								
Mode	802.11a	802.11n -20MHz	802.11ac -20MHz	Mode	802.11n -40MHz	802.11ac -40MHz	Mode	802.11ac -80MHz
Channel	6Mbps	MCS0	MCS0	Channel	MCS0	MCS0	Channel	MCS0
<U-NII-1>								
Tune up	16.0	16.0	14.0	/	16.0	14.0	/	14.0
36(5180MHz)	15.60	15.48	13.57	38(5190MHz)	15.39	13.36	42(5210MHz)	13.38
40(5200MHz)	15.40	15.32	13.45	46(5230MHz)	14.79	12.82	/	/
44(5220MHz)	15.35	15.34	13.35	/	/	/	/	/
48(5240MHz)	14.88	14.80	12.89	/	/	/	/	/
<U-NII-2A>								
Tune up	15.0	15.0	13.0	/	15.0	13.0	/	13.0
52(5260MHz)	14.47	14.44	12.77	54(5270MHz)	14.31	12.37	58(5290MHz)	12.28
56(5280MHz)	14.33	14.27	12.48	62(5310MHz)	13.93	11.85	/	/
60(5300MHz)	14.29	14.22	12.22	/	/	/	/	/
64(5320MHz)	14.33	14.21	12.50	/	/	/	/	/
<U-NII-2C>								
Tune up	16.0	16.0	14.0	/	16.0	14.0	/	14.0
100(5500MHz)	15.39	15.37	13.42	102(5510MHz)	15.22	13.12	106(5530MHz)	13.37
116(5580MHz)	15.17	15.08	13.13	110(5550MHz)	15.16	13.16	122(5610MHz)	12.71
124(5620MHz)	14.84	14.82	12.81	126(5630MHz)	14.53	12.40	138(5690MHz)	12.46
132(5660MHz)	14.67	14.66	12.75	134(5670MHz)	14.52	12.51	/	/
140(5700MHz)	14.56	14.52	12.49	142(5710MHz)	14.28	12.19	/	/
144(5720MHz)	14.56	14.53	12.46	/	/	/	/	/
< U-NII-3 >								
Tune up	15.0	15.0	13.0	/	15.0	13.0	/	13.0
149(5745MHz)	14.76	14.73	12.73	151(5755MHz)	14.50	12.46	155(5775MHz)	12.25
157(5785MHz)	14.36	14.23	12.38	159(5795MHz)	14.02	12.03	/	/
165(5825MHz)	14.08	14.01	12.09	/	/	/	/	/

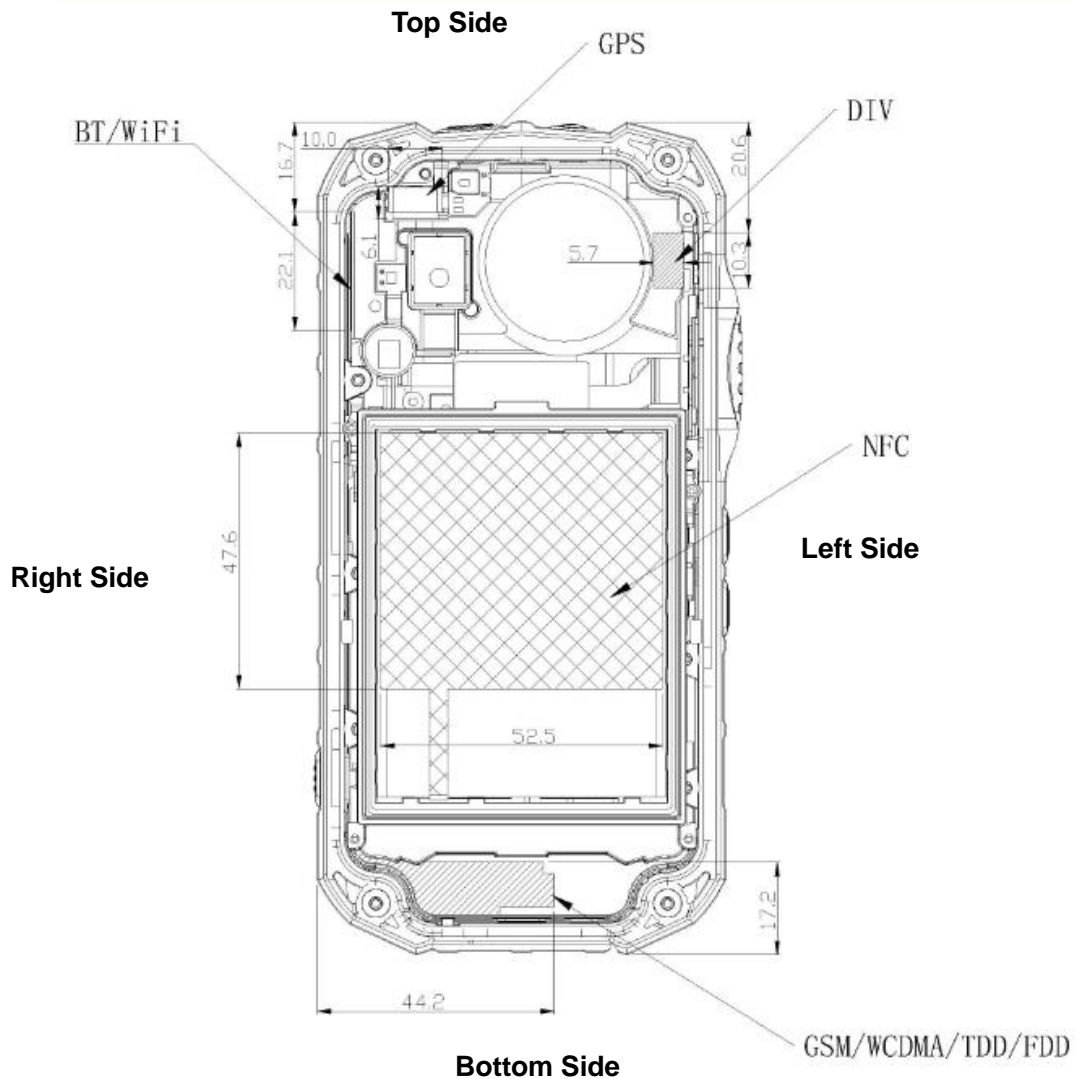
11. Simultaneous TX SAR Considerations

11.1. Introduction

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

For this device, the Bluetooth and WLAN can transmit simultaneous with other transmitters.

11.2. Transmit Antenna Separation Distances



Picture 11.1 Antenna Locations (Back View)

11.3. SAR Measurement Positions

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

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Main antenna	Yes	Yes	No	Yes	No	Yes
WLAN antenna	Yes	Yes	No	Yes	Yes	No

11.4. Standalone SAR Test Exclusion Considerations

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

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR, where}$$

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

Table 11.1: Standalone SAR test exclusion considerations

Band/Mode	f(GHz)	Position	SAR test exclusion threshold (mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.441	Head	9.60	8	6.31	Yes
		Body	19.20	8	6.31	Yes
WLAN 2.4GHz	2.45	Head	9.58	16.5	44.67	No
		Body	19.17	16.5	44.67	No
WLAN 5GHz	5.2	Head	6.58	16	39.81	No
		Body	13.16	16	39.81	No
	5.3	Head	6.52	15	31.62	No
		Body	13.03	15	31.62	No
	5.6	Head	6.34	16	39.81	No
		Body	12.68	16	39.81	No
	5.8	Head	6.23	15	31.62	No
		Body	12.46	15	31.62	No

12. Evaluation of Simultaneous

Table 12.1: The sum of reported SAR values for main antenna and WLAN

/	Position	Main Antenna (W/kg)	WLAN (W/kg)	Sum (W/kg)
Highest reported SAR value for Head	Left Touch	0.51	1.08	1.59
Highest reported SAR value for Hotspot	Front Side	0.75	0.29	1.04
Highest reported SAR value for Body-worn	Front Side	0.75	0.29	1.04

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

Table 12.2: The sum of reported SAR values for main antenna and Bluetooth

/	Position	Main Antenna (W/kg)	Bluetooth (W/kg)	Sum (W/kg)
Highest reported SAR value for Head	Right Touch	0.79	0.29	1.08
Highest reported SAR value for Hotspot	Front Side	0.75	0.15	0.90
Highest reported SAR value for Body-worn	Front Side	0.75	0.15	0.90

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

Estimated SAR for Bluetooth (see the table 12.3)

Table 12.3: Estimated SAR for Bluetooth

Position	f (GHz)	Distance (mm)	Upper limit of power *		Estimated _{1g} (W/kg)
			dBm	mW	
Head	2.441	5	8.5	7.08	0.29
Body	2.441	10	8.5	7.08	0.15

* - Maximum possible output power declared by manufacturer

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm) · [$\sqrt{f(\text{GHz})}$ / x] W/kg for test separation distances ≤ 50 mm;

Where x = 7.5 for 1-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

Conclusion:

According to the above tables, the sum of reported SAR values is 1.59W/kg. So the simultaneous transmission SAR with volume scans is not required.

13. Summary of Test Results

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

The calculated SAR is obtained by the following formula:

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

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

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

Duty Cycle

Mode	Duty Cycle
Speech for GSM	1:8.3
GPRS	1:4/1.2.67
WCDMA	1:1
FDD_LTE	1:1
TDD_LTE	1:1.58
WLAN	1:1

13.1. Testing Environment

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

13.2. SAR results

Table 13.1: SAR Values (GSM 850 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
848.8	251	GPRS	Left Cheek	/	31.17	31.5	0.469	0.51	-0.12
848.8	251	GPRS	Left Tilt	/	31.17	31.5	0.388	0.42	-0.03
848.8	251	GPRS	Right Cheek	Fig.1	31.17	31.5	0.728	0.79	-0.05
848.8	251	GPRS	Right Tilt	/	31.17	31.5	0.419	0.45	0.02

Table 13.2: SAR Values (GSM 850 - Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot / Body-Worn Test Data (10mm)									
848.8	251	GPRS	Front	Fig.2	31.17	31.5	0.554	0.60	-0.13
848.8	251	GPRS	Rear	/	31.17	31.5	0.480	0.52	-0.13
848.8	251	GPRS	Right	/	31.17	31.5	0.269	0.29	-0.09
848.8	251	GPRS	Bottom	/	31.17	31.5	0.299	0.32	-0.03

Table 13.3: SAR Values (GSM 1900 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1909.8	810	GPRS	Left Cheek	/	26.44	27.0	0.299	0.34	-0.12
1909.8	810	GPRS	Left Tilt	/	26.44	27.0	0.080	0.09	0.11
1909.8	810	GPRS	Right Cheek	Fig.3	26.44	27.0	0.498	0.57	-0.02
1909.8	810	GPRS	Right Tilt	/	26.44	27.0	0.105	0.12	0.02

Table 13.4: SAR Values (GSM 1900 - Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot / Body-Worn Test Data (10mm)									
1909.8	810	GPRS	Front	Fig.4	26.44	27.0	0.332	0.38	-0.12
1909.8	810	GPRS	Rear	/	26.44	27.0	0.278	0.32	-0.03
1909.8	810	GPRS	Right	/	26.44	27.0	0.232	0.26	-0.08
1909.8	810	GPRS	Bottom	/	26.44	27.0	0.152	0.17	-0.05

Table 13.5: SAR Values (WCDMA Band 2 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1907.6	9538	RMC	Left Cheek	/	22.91	23.5	0.286	0.33	0.06
1907.6	9538	RMC	Left Tilt	/	22.91	23.5	0.089	0.10	-0.03
1907.6	9538	RMC	Right Cheek	Fig.5	22.91	23.5	0.671	0.77	-0.09
1907.6	9538	RMC	Right Tilt	/	22.91	23.5	0.127	0.15	0.04

Table 13.6: SAR Values (WCDMA Band 2 - Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot / Body-Worn Test Data (10mm)									
1907.6	9538	RMC	Front	Fig.6	22.91	23.5	0.588	0.67	-0.06
1907.6	9538	RMC	Rear	/	22.91	23.5	0.516	0.59	-0.05
1907.6	9538	RMC	Right	/	22.91	23.5	0.494	0.57	-0.08
1907.6	9538	RMC	Bottom	/	22.91	23.5	0.280	0.32	-0.13

Table 13.7: SAR Values (WCDMA Band 4 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1712.4	1312	RMC	Left Cheek	/	22.37	23.0	0.319	0.37	0.05
1712.4	1312	RMC	Left Tilt	/	22.37	23.0	0.242	0.28	-0.02
1712.4	1312	RMC	Right Cheek	Fig.7	22.37	23.0	0.515	0.60	-0.06
1712.4	1312	RMC	Right Tilt	/	22.37	23.0	0.355	0.41	-0.05

Table 13.8: SAR Values (WCDMA Band 4 - Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot / Body-Worn Test Data (10mm)									
1712.4	1312	RMC	Front	Fig.8	22.37	23.0	0.648	0.75	-0.08
1712.4	1312	RMC	Rear	/	22.37	23.0	0.365	0.42	-0.07
1712.4	1312	RMC	Right	/	22.37	23.0	0.469	0.54	0.01
1712.4	1312	RMC	Bottom	/	22.37	23.0	0.269	0.31	-0.13

Table 13.9: SAR Values (WCDMA Band 5 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
846.6	4233	RMC	Left Cheek	/	22.98	23.5	0.407	0.46	0.03
846.6	4233	RMC	Left Tilt	/	22.98	23.5	0.227	0.26	-0.05
846.6	4233	RMC	Right Cheek	Fig.9	22.98	23.5	0.423	0.48	0.05
846.6	4233	RMC	Right Tilt	/	22.98	23.5	0.254	0.29	-0.14

Table 13.10: SAR Values (WCDMA Band 5 -Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot / Body-Worn Test Data (10mm)									
846.6	4233	846.6	Front	Fig.10	22.98	23.5	0.356	0.40	0.01
846.6	4233	846.6	Rear	/	22.98	23.5	0.303	0.34	-0.15
846.6	4233	846.6	Right	/	22.98	23.5	0.197	0.22	-0.04
846.6	4233	846.6	Bottom	/	22.98	23.5	0.226	0.25	-0.03

Table 13.11: SAR Values (LTE Band 5 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
836.5	20525	1RB_49	Left Cheek	/	23.31	24.0	0.428	0.50	0.05
836.5	20525	1RB_49	Left Tilt	/	23.31	24.0	0.278	0.33	-0.09
836.5	20525	1RB_49	Right Cheek	Fig.11	23.31	24.0	0.513	0.60	-0.05
836.5	20525	1RB_49	Right Tilt	/	23.31	24.0	0.278	0.33	-0.12
836.5	20525	25RB_12	Left Cheek	/	22.37	23.0	0.410	0.47	-0.06
836.5	20525	25RB_12	Left Tilt	/	22.37	23.0	0.222	0.26	-0.07
836.5	20525	25RB_12	Right Cheek	/	22.37	23.0	0.416	0.48	-0.03
836.5	20525	25RB_12	Right Tilt	/	22.37	23.0	0.218	0.25	-0.03
The worst case with CA									
836.5	20525	1RB_0	Right Cheek	/	23.25	24.0	0.496	0.59	0.08

Table 13.12: SAR Values (LTE Band 5 - Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot / Body-Worn Test Data (10mm)									
836.5	20525	1RB_49	Front	/	23.31	24.0	0.288	0.34	-0.03
836.5	20525	1RB_49	Rear	Fig.12	23.31	24.0	0.308	0.36	-0.11
836.5	20525	1RB_49	Right	/	23.31	24.0	0.190	0.22	0.04
836.5	20525	1RB_49	Bottom	/	23.31	24.0	0.187	0.22	-0.09
836.5	20525	25RB_12	Front	/	22.37	23.0	0.289	0.33	0.02
836.5	20525	25RB_12	Rear	/	22.37	23.0	0.259	0.30	0.03
836.5	20525	25RB_12	Right	/	22.37	23.0	0.149	0.17	0.09
836.5	20525	25RB_12	Bottom	/	22.37	23.0	0.152	0.18	-0.09
The worst case with CA									
836.5	20525	1RB_0	Rear	/	23.25	24.0	0.294	0.35	0.04

Table 13.13: SAR Values (LTE Band 7 - Head)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
2535	21100	1RB_50	Left Cheek	Fig.13	22.75	23.5	0.409	0.49	0.06
2535	21100	1RB_50	Left Tilt	/	22.75	23.5	0.190	0.23	0.02
2535	21100	1RB_50	Right Cheek	/	22.75	23.5	0.378	0.45	-0.16
2535	21100	1RB_50	Right Tilt	/	22.75	23.5	0.305	0.36	-0.04
2535	21100	50RB_50	Left Cheek	/	21.87	22.5	0.376	0.43	0.03
2535	21100	50RB_50	Left Tilt	/	21.87	22.5	0.143	0.17	0.08
2535	21100	50RB_50	Right Cheek	/	21.87	22.5	0.305	0.35	0.05
2535	21100	50RB_50	Right Tilt	/	21.87	22.5	0.234	0.27	0.10

Table 13.14: SAR Values (LTE Band 7 - Body)

Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
2535	21100	1RB_50	Front	/	20.10	21.0	0.412	0.51	-0.02
2535	21100	1RB_50	Rear	/	20.10	21.0	0.383	0.47	0.04
2535	21100	1RB_50	Right	/	20.10	21.0	0.345	0.42	0.05
2535	21100	1RB_50	Bottom	/	20.10	21.0	0.201	0.25	0.03
2535	21100	50RB_50	Front	/	20.24	21.0	0.431	0.51	0.08
2535	21100	50RB_50	Rear	/	20.24	21.0	0.403	0.48	0.03
2535	21100	50RB_50	Right	/	20.24	21.0	0.096	0.11	0.02
2535	21100	50RB_50	Bottom	/	20.24	21.0	0.222	0.26	0.10
Body-Worn Test Data (15mm)									
2535	21100	1RB_50	Front	/	22.75	23.5	0.346	0.41	0.01
2535	21100	1RB_50	Rear	Fig.14	22.75	23.5	0.481	0.57	0.07
2535	21100	50RB_50	Front	/	21.87	22.5	0.286	0.33	0.06
2535	21100	50RB_50	Rear	/	21.87	22.5	0.398	0.46	0.13