TEST REPORT

No. I18D00022-SAR01

For

Client: **Datalogic S.r.l.**

Production: **Smartphone**

Model Name: **MEMOR 10**

FCC ID: **U4GDL35US**

Hardware Version: **V00 (US)**

Software Version: **0.02.06D.20180716-userdebug-customer1**

Issued date: **2018-11-15**

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

Tel: (+86)-021-63843300, E-Mail: welcome@ecit.org.cn

Revision Version

Report Number	Revision	Date	Memo
I18D00022-SAR01	00	2018-11-7	Initial creation of test report
I18D00022-SAR01	01	2018-11-13	Second creation of test report
I18D00022-SAR01	02	2018-11-15	Third creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area,No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301
FCC registration No:	958356

1.2. Testing Environment

Normal Temperature:	18-25℃
Relative Humidity:	25-75%
Ambient noise & Reflection:	< 0.012 W/kg

1.3. Project Data

Project Leader:	Yu Anlu
Testing Start Date:	2018-7-14
Testing End Date:	2018-10-18

1.4. Signature

Yan Hang
(Prepared this test report)

Fu Erliang
(Reviewed this test report)

Zheng Zhongbin
(Approved this test report)

2. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **MEMOR 10** are as follows .

Table 2.1: Max. Reported SAR (1g)

Band	SAR 1g(W/Kg)		
	Head	Body worn(10mm)	Hotspot(10mm)
GSM 850	0.248	0.465	0.465
GSM 1900	0.509	0.563	1.106
WCDMA Band2	0.313	0.478	0.526
WCDMA Band4	0.454	0.663	0.663
WCDMA Band5	0.210	0.192	0.192
CDMA BC0	0.278	0.441	0.441
CDMA BC1	0.412	0.715	1.250
LTE Band4	0.801	1.172	1.172
LTE Band5	0.226	0.324	0.324
LTE Band7	0.029	0.311	0.765
LTE Band12	0.165	0.225	0.225
LTE Band13	0.216	0.324	0.324
LTE Band25	0.507	0.787	1.283
LTE Band26	0.189	0.207	0.207
2.4G WiFi	0.357	0.340	0.491
5G WiFi	0.747	0.762	--

Table 2.2: Max. Reported SAR (10g)

Band	Position/Distance	SAR 10g (W/Kg)
GSM 850	Limb	1.094
GSM 1900	Limb	0.682
WCDMA Band2	Limb	1.062
WCDMA Band4	Limb	1.26
WCDMA Band5	Limb	0.645
CDMA BC0	Limb	1.187
CDMA BC1	Limb	1.442
LTE Band4	Limb	**2.052**
LTE Band5	Limb	0.696
LTE Band7	Limb	0.626
LTE Band12	Limb	0.392
LTE Band13	Limb	0.528
LTE Band25	Limb	1.647

LTE Band26	Limb	0.607
2.4G WiFi	Limb	0.964
5G WiFi	Limb	0.901

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, 4.0 W/Kg as averaged over any 10g tissue according to the ANSI C95.1-1999.

For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

Note: Original 5G test results are obtained from the **TA Technology (Shanghai) Co., Ltd.** Report and report No. is **R1807A0326-S1V6**.

Table 2.3: Simultaneous SAR

Simultaneous multi-band transmission										
Test Position			2G	3G	4G	2.4GHz		5GHz	SUM	
						BT	WiFi	WiFi	2.4GHz	5GHz
Head(1g)	Left	Cheek	0.509	0.454	0.801	0.133	0.357	0.747	1.158	1.548
		Tilt 15°	0.141	0.192	0.277	0.133	0.251	0.58	0.528	0.857
	Right	Cheek	0.248	0.412	0.509	0.133	0.155	0.737	0.664	1.246
		Tilt 15°	0.151	0.191	0.205	0.133	0.126	0.617	0.331	0.822
Hotspot &Body-worn 10 mm(1g)	Phantom Side		0.563	0.714	1.172	0.066	0.105	0.396	1.277	1.568
	Ground Side		0.526	0.715	0.854	0.066	0.340	0.737	1.194	1.591
Hotspot 10 mm(1g)	Left Side		0.306	0.418	0.599	0.066	0.007	--	0.606	0.599
	Right Side		0.391	0.441	0.363	0.066	0.491	0.762	0.932	1.203
	Top Side		--	--		0.066	0.141	0.491	0.141	0.491
	Bottom Side		1.106	1.250	1.283	0.066	--	--	1.349	1.283
Limb (10g)	--		1.094	1.442	2.052	0.027	0.964	0.901	3.016	2.953

According to the above table, the maximum sum of reported SAR values for GSM/WCDMA/LTE/CDMA and BT/WiFi is **1.591 W/kg** (1g). GSM/WCDMA/LTE/CDMA and BT/WiFi is **3.016 W/kg** (10g)

3. Client Information

3.1. Applicant Information

Company Name:	Datalogic S.r.l.
Address:	Via San Vitalino no. 13, Calderara di Reno – 40012 (BO) - Italy
Telephone:	+39 051 314 72 16
Postcode:	/

3.2. Manufacturer Information

Company Name:	Datalogic S.r.l.
Address:	Via San Vitalino no. 13, Calderara di Reno – 40012 (BO) - Italy
Telephone:	+39 051 314 72 16
Postcode:	/

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

4.1. About EUT

Description:	Smartphone
Model name:	MEMOR 10
Operation Model(s):	GSM850/GSM900/GSM1800/GSM1900 WCDMA Band I/Band II/Band IV/Band V/BandVIII LTE 2/4/5/7/12/13/17/25/26;CDMA BC0/BC1 BT4.2,BLE;WiFi 802.11a,b,g,n,ac GPS;GLONASS;Beidou;WLC
Tx Frequency:	824.2-848.8MHz(GSM850) 1850.2-1909.8MHz（GSM1900） 1852.4-1907.6 MHz (WCDMA Band II) 1712.4-1752.6 MHz (WCDMA Band IV) 826.4-846.6MHz (WCDMA Band V) 1850.7 -1909.3 MHz (LTE Band 2) 1710.7 -1754.3 MHz (LTE Band 4) 824.7 -848.3 MHz (LTE Band 5) 2502.5 – 2567.5 MHz (LTE Band 7) 699.7 -715.3 MHz (LTE Band 12) 779.7 -784.5 MHz (LTE Band 13) 706.5 -713.5 MHz (LTE Band 17) 1850.7 -1914.3 MHz (LTE Band 25) 814.7 -848.3 MHz (LTE Band 26) 824.7-848.31MHz(CDMA BC0) 1851.25-1908.75MHz(CDMA BC1) 2412- 2462 MHz (WiFi) 5150~5250 MHz(U-NII-1) 5250~5350 MHz(U-NII-2A) 5470~5725 MHz(U-NII-2C) 5745~5825 MHz(U-NII-3) 2402 – 2480 MHz (BT)
Test device Production information: GPRS/EGPRS Class Mode: GPRS/ EGPRS Multislot Class:	Production unit B 12
Device type:	Portable device
UE category:	3
Antenna type:	Inner antenna
Accessories/Body-worn	Battery

configurations:	
Dimensions: Hotspot Mode:	155x78x18.7mm Support
FCC ID:	U4GDL35US
The EUT SAR Test without the charging battery cover is not applicable since no way to have this battery cover removed and replaced by normal battery cover.	

4.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Receive Date
N09	359737090203176	V00 (US)	0.02.06D.20180716-userdebug-customer1	2018-7-4

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

4.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN	Manufacturer
BA01	Battery	N/A	N/A	N/A

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

Battery using wireless charging battery cover.

5. TEST METHODOLOGY

5.1. Applicable Limit Regulations

ANSI C95.1–1999: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 and **4.0 W/kg** as averaged over any 10 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 Body Due to Wireless Communications Devices:
Experimental Techniques.

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

KDB248227 D01 802 11 WiFi SAR v02r02: SAR measurement procedures for 802.112abg transmitters.

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

KDB865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04:SAR Measurement Requirements for 100 MHz to 6 GHz

KDB865664 D02 RF Exposure Reporting v01r02:provides general reporting requirements as well as certain specific information required to support MPE and SAR compliance.

KDB941225 D01 3G SAR Procedures v03r01: 3G SAR Measurement Procedures.

KDB 941225 D05 SAR for LTE Devices v02r04：SAR Evaluation Considerations for LTE Devices

KDB 648474 D03 Wireless Chargers Battery Cover v01r04: Evaluation and approval considerations for handsets with specific wireless charging battery covers

KDB941225 D06 hotspot SAR v02r01:SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities.

NOTE: KDB is not in A2LA Scope List.

6. Specific Absorption Rate (SAR)

6.1. Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2. SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dv}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$SAR = c\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

7. Tissue Simulating Liquids

7.1. Targets for tissue simulating liquid

Table 7.1: Targets for tissue simulating liquid

Frequency(MHz)	Liquid Type	Conductivity(σ)	± 5% Range	Permittivity(ε)	± 5% Range
835	Head	0.90	0.86～0.95	41.5	39.4～43.6
835	Body	0.97	0.92～1.02	55.2	52.4～58.0
1800	Head	1.40	1.33～1.47	40.0	38.0～42.0
1800	Body	1.52	1.44～1.60	53.3	50.6～56.0
1900	Head	1.40	1.33～1.47	40.0	38.0～42.0
1900	Body	1.52	1.44～1.60	53.3	50.6～56.0
2450	Head	1.80	1.71～1.89	39.2	37.2～41.2
2450	Body	1.95	1.85～2.05	52.7	50.1～55.3
2600	Head	1.96	1.86~2.06	39.0	37.1~40.9
2600	Body	2.16	2.05~2.27	52.5	59.9~55.1
5200	Head	4.66	4.43~4.89	36.0	34.2~37.8
5200	Body	5.30	5.04~5.57	49.0	46.6~51.5
5800	Head	5.27	5.01~5.53	35.3	33.5~37.1
5800	Body	6.00	5.70~6.30	48.2	45.8~50.6

7.2. Dielectric Performance

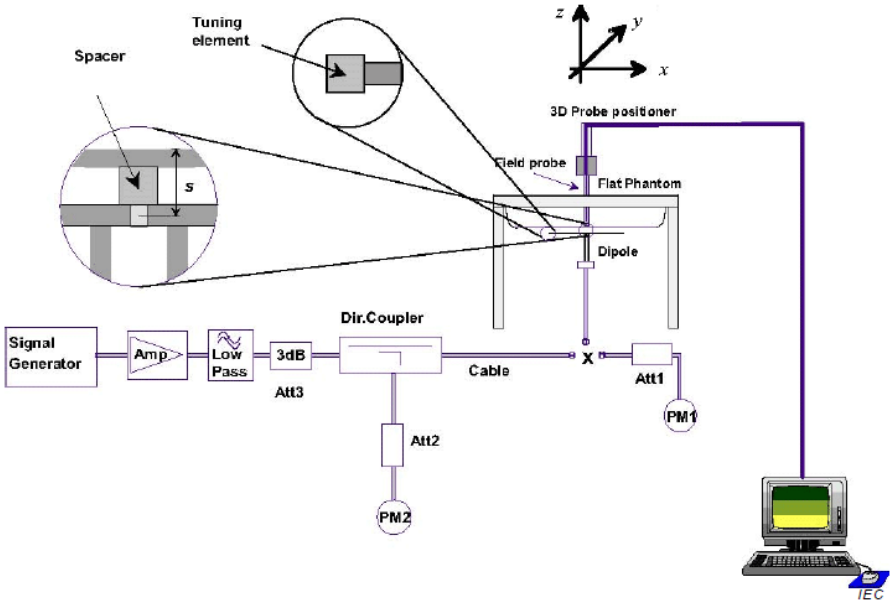
Table 7.2: Dielectric Performance of Tissue Simulating Liquid

Measurement Value						
Liquid Temperature: 22.5 ℃						
Type	**Frequency**	**Permittivity ε**	**Drift (%)**	**Conductivity σ**	**Drift (%)**	Test Date
Head	750 MHz	43.156	3.00%	0.888	-0.60%	2018/7/14
Head	835 MHz	42.584	2.61%	0.931	3.44%	2018/7/24
Head	1800 MHz	40.544	1.36%	1.375	-1.79%	2018/8/16
Head	1900 MHz	41.450	3.63%	1.386	-1.00%	2018/8/10
Head	2450 MHz	39.511	0.79%	1.771	-1.61%	2018/7/16
Head	2600 MHz	38.949	-0.13%	1.942	-0.92%	2018/7/16
Body	750 MHz	57.721	4.00%	0.958	-0.52%	2018/7/15
Body	835 MHz	56.705	2.73%	0.998	2.89%	2018/7/26
Body	1800 MHz	54.975	3.14%	1.472	-3.16%	2018/8/18
Body	1900 MHz	54.861	2.93%	1.523	0.20%	2018/8/14
Body	2450 MHz	53.369	1.27%	1.907	-2.21%	2018/7/18
Body	2600 MHz	52.858	0.68%	2.083	-3.56%	2018/7/18
Body	1900 MHz	54.151	1.60%	1.549	1.91%	2018/10/18

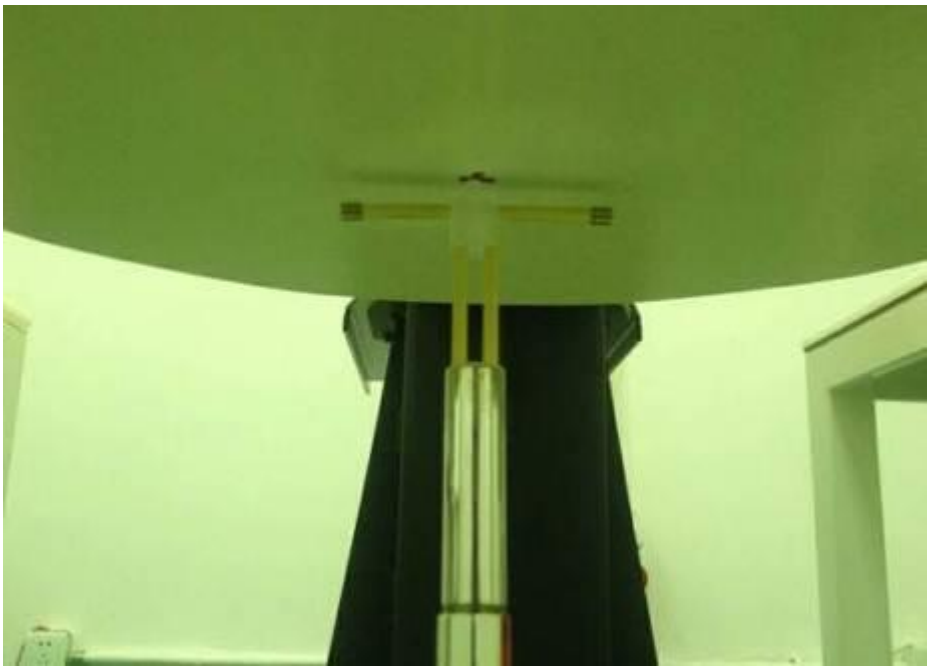
8. System verification

8.1. System Setup

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



Picture 8.1 System Setup for System Evaluation



Picture 8.2 Photo of Dipole Setup

8.2. System Verification

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of 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

Verification Results							
Input power level: 1W							
Frequency	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**		**Test date**
	10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**	
750 MHz	5.29	8.07	5.48	8.04	3.59%	-0.37%	2018/7/14
835 MHz	6.03	9.22	6.28	9.4	4.15%	1.95%	2018/7/24
1750 MHz	20.1	37.3	20.32	36.8	1.09%	-1.34%	2018/8/16
1900 MHz	21.1	40.5	21.92	41.6	3.89%	2.72%	2018/8/10
2450 MHz	24.3	52.9	24.52	54	0.91%	2.08%	2018/7/16
2600 MHz	25.5	58	25.52	57.6	0.08%	-0.69%	2018/7/16

Table 8.2: System Verification of Body

Verification Results							
Input power level: 1W							
Frequency	Target value (W/kg)		Measured value (W/kg)		Deviation		Test date
	10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average	
750 MHz	5.71	8.6	5.8	8.56	1.58%	-0.47%	2018/7/15
835 MHz	6.29	9.57	6.6	9.88	4.93%	3.24%	2018/7/26
1750 MHz	20.2	37.6	19.92	37.28	-1.39%	-0.85%	2018/8/18
1900 MHz	21.2	40.4	20.28	39.44	-4.34%	-2.37%	2018/8/14
2450 MHz	24.7	53.1	24.28	53.6	-1.70%	0.94%	2018/7/18
2600 MHz	25.4	57.1	23.6	54.8	-7.09%	-4.03%	2018/7/18
1900 MHz	21.2	40.4	21.08	41.6	-0.57%	2.97%	2018/10/18

9. Measurement Procedures

9.1. Tests to be performed

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:
(a) Make EUT to transm it maximum output power
(b) Measure conducted output power through RF cable
(c) Place the EUT in the specific position of phantom as Appendix D demonstrates.
(d) Measure SAR results for Middle channel or the highest power channel on each testing position.
(e) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg
(f) Record the SAR value

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 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{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 ≤ 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: Δx_{Zoom}, Δy_{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 1st 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	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 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.

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	MPR (dB)
1	2/15	15/15	64	2/15	4/15	1.5	0.5
2	12/15	15/15	64	12/15	24/25	2.0	1
3	15/15	8/15	64	15/8	30/15	2.0	1
4	15/15	4/15	64	15/4	30/15	2.0	1

For Release 6 HSUPA 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	2.0	1.0	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	β_{ed1}:47/15 β_{ed2}:47/15	4	2	3.0	2.0	15	92
4	2/15	15/15	64	2/15	4/15	4/15	56/75	4	1	2.0	1.0	17	71
5	15/15	15/15	64	15/15	24/15	30/15	134/15	4	1	2.0	1.0	21	81

9.4. Bluetooth & WiFi 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. Power Drift

To control the output power stability during the SAR test, DASY4 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 13 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

10. Area Scan Based 1-g SAR

10.1 Requirement of KDB

According to the KDB447498 D01 v06, when the implementation is based the specific polynomial fit algorithm as presented at the 29th Bioelectromagnetics Society meeting (2007) and the estimated 1-g SAR is ≤ 1.2 W/kg, a zoom scan measurement is not required provided it is also not needed for any other purpose; for example, if the peak SAR location required fo simultaneous transmission SAR test exclusion can be determined accurately by the SAR system or manually to discriminate between distinctive peaks and scattered noisy SAR distributions from area scans.

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

10.2 Fast SAR Algorithms

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

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

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

Both algorithms are implemented in DASY software.

11. Conducted Output Power

Manufacturing tolerance

Table 11.1: GSM Speech

GSM 850			
Channel	Channel 128	Channel 190	Channel 251
Maximum Target Value (dBm)	34.0	34.0	34.0
GSM1900			
Channel	Channel 512	Channel 661	Channel 810
Maximum Target Value (dBm)	31.5	31.5	31.5

Table 11.2: GPRS (GMSK Modulation)

GSM 850				
Channel		**128**	**190**	**251**
1 Txslots	Maximum Target Value (dBm)	34.0	34.0	34.0
2 Txslots	Maximum Target Value (dBm)	33.5	33.5	33.5
3 Txslots	Maximum Target Value (dBm)	31.5	31.5	31.5
4 Txslots	Maximum Target Value (dBm)	30.5	30.5	30.5
GSM 1900				
Channel		**512**	**661**	**810**
1 Txslots	Maximum Target Value (dBm)	31.5	31.5	31.5
2 Txslots	Maximum Target Value (dBm)	30.5	30.5	30.5
3 Txslots	Maximum Target Value (dBm)	29.0	29.0	29.0
4 Txslots	Maximum Target Value (dBm)	27.5	27.5	27.5

Table 11.3: EGPRS (8-PSK Modulation)

GSM 850				
Channel		**128**	**190**	**251**
1 Txslots	Maximum Target Value (dBm)	28.0	28.0	28.0
2 Txslots	Maximum Target Value (dBm)	27.0	27.0	27.0
3 Txslots	Maximum Target Value (dBm)	25.0	25.0	25.0
4 Txslots	Maximum Target Value (dBm)	24.0	24.0	24.0
GSM 1900				
Channel		**512**	**661**	**810**
1 Txslots	Maximum Target Value (dBm)	27.5	27.5	27.5
2 Txslots	Maximum Target Value (dBm)	26.5	26.5	26.5
3 Txslots	Maximum Target Value (dBm)	24.0	24.0	24.0
4 Txslots	Maximum Target Value (dBm)	23.5	23.5	23.5

Table 11.4: WCDMA

WCDMA Band II			
Channel	Channel 9262	Channel 9400	Channel 9538
Maximum Target Value (dBm)	24	24	24

WCDMA Band II **HSDPA**					MPR (dB)
Channel		9262	9400	9538	
1	Maximum Target Value (dBm)	23	23	23	0
2	Maximum Target Value (dBm)	23	23	23	1
3	Maximum Target Value (dBm)	23	23	23	1
4	Maximum Target Value (dBm)	23	23	23	1
WCDMA Band II **HSUPA**					MPR (dB)
Channel		9262	9400	9538	
1	Maximum Target Value (dBm)	22.5	22.5	22.5	1
2	Maximum Target Value (dBm)	22.5	22.5	22.5	0
3	Maximum Target Value (dBm)	22.5	22.5	22.5	1
4	Maximum Target Value (dBm)	22.5	22.5	22.5	1
5	Maximum Target Value (dBm)	22.5	22.5	22.5	1

Table 11.5: WCDMA

WCDMA Band IV			
Channel	1312	1413	1513
Maximum Target Value (dBm)	24	24	24

WCDMA Band IV **HSDPA**					MPR (dB)
Channel		1312	1413	1513	
1	Maximum Target Value (dBm)	23.5	23.5	23.5	1
2	Maximum Target Value (dBm)	23.5	23.5	23.5	1
3	Maximum Target Value (dBm)	23	23	23	1
4	Maximum Target Value (dBm)	23	23	23	1
WCDMA Band IV **HSUPA**					MPR (dB)
Channel		1312	1413	1513	
1	Maximum Target Value (dBm)	23	23	23	1
2	Maximum Target Value (dBm)	22	22	22	1
3	Maximum Target Value (dBm)	22	22	22	1
4	Maximum Target Value (dBm)	23	23	23	1
5	Maximum Target Value (dBm)	22.5	22.5	22.5	1

Table 11.6: WCDMA

WCDMA Band V			
Channel	4132	4183	4233
Maximum Target Value (dBm)	24.0	24.0	24.0

WCDMA Band V **HSDPA**					MPR (dB)
Channel		4132	4183	4233	
1	Maximum Target Value (dBm)	23	23	23	1
2	Maximum Target Value (dBm)	23	23	23	1
3	Maximum Target Value (dBm)	23	23	23	1
4	Maximum Target Value (dBm)	23	23	23	1
WCDMA Band V **HSUPA**					MPR (dB)
Channel		4132	4183	4233	
1	Maximum Target Value (dBm)	23	23	23	1
2	Maximum Target Value (dBm)	22	22	22	1
3	Maximum Target Value (dBm)	22	22	22	1
4	Maximum Target Value (dBm)	23	23	23	1
5	Maximum Target Value (dBm)	22.5	22.5	22.5	1

Table 11.7: LTE

LTE Band2			
RB Size	1	50%	100%
Maximum Target Value (dBm)	24	24	23.5
LTE Band4			
RB Size	1	50%	100%
Maximum Target Value (dBm)	23.5	23	22.5
LTE Band5			
RB Size	1	50%	100%
Maximum Target Value (dBm)	24.5	24	23.5
LTE Band7			
RB Size	1	50%	100%
Maximum Target Value (dBm)	23.5	23.0	22.5
LTE Band12			
RB Size	1	50%	100%
Maximum Target Value (dBm)	24	23.5	23
LTE Band13			
RB Size	1	50%	100%
Maximum Target Value (dBm)	23.5	23.0	22.5
LTE Band17			
RB Size	1	50%	100%
Maximum Target Value (dBm)	23.5	22.5	22.5
LTE Band25			
RB Size	1	50%	100%
Maximum Target Value (dBm)	24	23.5	23.5
LTE Band26			
RB Size	1	50%	100%
Maximum Target Value (dBm)	24.0	24.0	24.0

Table 11.8: WiFi

WiFi 802.11b 2.4G			
Channel	Channel 1	Channel 6	Channel 11
Maximum Target Value (dBm)	16.5	17.0	17.5
WiFi 802.11g 2.4G			
Channel	Channel 1	Channel 6	Channel 11
Maximum Target Value (dBm)	14.0	14.0	14.0
WiFi 802.11n 20M 2.4G			
Channel	Channel 1	Channel 6	Channel 11
Maximum Target Value (dBm)	14.0	14.0	14.0
WiFi 802.11n 40M 2.4G			
Channel	Channel 3	Channel 6	Channel 9
Maximum Target Value (dBm)	12.0	12.0	12.0

Table 11.9: Bluetooth

Bluetooth			
Channel	Channel 0	Channel 39	Channel 78
Maximum Target Value (dBm)	6.0	6.0	6.0

Table 11.10: BLE

Bluetooth			
Channel	Channel 0	Channel 19	Channel 39
Maximum Target Value (dBm)	2.5	2.5	2.5

Table 11.11: CDMA

Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency (MHz)	824.7	836.52	848.31	1851.25	1880.00	1908.75
1xRTT RC1 SO55	25	25	25	24.5	24.5	24.5
1xRTT RC3 SO55	25	25	25	24.5	24.5	24.5
1xRTT RC3 SO32(+ F-SCH)	25	25	25	24.5	24.5	24.5
1xRTT RC3 SO32(+SCH)	25	25	25	24.5	24.5	24.5
1xEVDO RTAP 153.6Kbps	25	25	25	24.5	24.5	24.5
1xEVDO RETAP 4096Bits	24	24	24	24.5	24.5	24.5

11.1. GSM Measurement result

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

Table 11.12: The conducted power measurement results for GSM

GSM 850MHZ	**Conducted Power (dBm)**		
	Channel 128(824.2MHz)	**Channel 190(826.6MHz)**	**Channel 251(848.8MHz)**
	33.66	33.73	33.78
GSM 1900MHZ	**Conducted Power(dBm)**		
	Channel 512(1850.2MHz)	**Channel 661(1880 MHz)**	**Channel 810(1909.8MHz)**
	31.04	31.15	31.02

Table 11.13: The conducted power measurement results for GPRS/EGPRS

GSM 850 GMSK	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	128	**190**	**251**		**128**	**190**	**251**
1 Txslot	33.65	33.7	33.78	-9.03dB	24.62	24.67	24.75
2 Txslots	32.91	33.17	33.07	-6.02dB	26.89	27.15	27.05
3 Txslots	31.08	31.38	31.31	-4.26dB	26.82	27.12	27.05
4 Txslots	30.14	30.28	30.21	-3.01dB	27.13	27.27	27.2
GSM 1900 GMSK	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	512	**661**	**810**		**512**	**661**	**810**
1 Txslot	31.04	31.15	31.02	-9.03dB	22.01	22.12	21.99
2 Txslots	30.22	30.15	29.71	-6.02dB	24.2	24.13	23.69
3 Txslots	28.37	28.18	27.74	-4.26dB	24.11	23.92	23.48
4 Txslots	27.23	27.02	26.56	-3.01dB	24.22	24.01	23.55

Table 11.14: The conducted power measurement results for E-GPRS

GSM 850 8-PSK	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	128	**190**	**251**		**128**	**190**	**251**
1 Txslot	27.42	27.3	27.68	-9.03dB	18.39	18.27	18.65
2 Txslots	26.4	26.42	26.49	-6.02dB	20.38	20.4	20.47
3 Txslots	24.63	24.83	24.85	-4.26dB	20.37	20.57	20.59
4 Txslots	23.25	23.41	23.44	-3.01dB	20.24	20.4	20.43
GSM 1900 8-PSK	Measured Power (dBm)			calculation	Averaged Power (dBm)		
	512	**661**	**810**		**512**	**661**	**810**
1 Txslot	27.13	26.88	26.44	-9.03dB	18.1	17.85	17.41
2 Txslots	26.11	25.46	25.37	-6.02dB	20.09	19.44	19.35
3 Txslots	23.92	23.29	23.4	-4.26dB	19.66	19.03	19.14
4 Txslots	23.03	22.54	22.64	-3.01dB	20.02	19.53	19.63

NOTES:

1) Division Factors

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

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

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

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

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

According to the conducted power as above, the body measurements are performed with 4Txslots for 850MHz ; 4Txslots for1900MHz;

11.2. WCDMA Measurement result

Table 11.15: The conducted Power for WCDMA

Item	band	WCDMA BAND II result(dBm)		
	ARFCN	9262 (1852.4MHz)	9400 (1880.0MHz)	9538 (1907.6MHz)
WCDMA	\	23.38	23.4	23.42
HSDPA	1	22.66	22.67	22.78
	2	22.44	22.47	22.6
	3	22.11	22.17	22.31
	4	22.03	22.07	22.18
HSUPA	1	22.01	22.07	22.17
	2	21.06	21.01	21.21
	3	21.05	21.15	21.14
	4	21.86	21.85	22.05
	5	21.66	21.75	21.94
Item	band	WCDMA BAND V result(dBm)		
	ARFCN	Channel 4132 (826.4MHz)	Channel 4183 (836.6MHz)	Channel 4233 (846.6MHz)
WCDMA	\	23.71	23.59	23.24
HSDPA	1	22.96	22.85	22.52
	2	22.76	22.67	22.28
	3	22.49	22.36	22.03
	4	22.39	22.29	21.93
HSUPA	1	22.39	22.26	21.86
	2	21.36	21.27	20.87
	3	21.36	21.32	20.91
	4	22.29	22.09	21.79
	5	22	21.92	21.62
Item	band	WCDMA BAND IV result(dBm)		
	ARFCN	Channel 1312 (1712.4MHz)	Channel 1413 (1732.6MHz)	Channel 1513 (1752.6MHz)
WCDMA	\	23.7	23.6	23.94
HSDPA	1	22.98	22.87	23.2
	2	22.76	22.67	23.02
	3	22.43	22.37	22.73
	4	22.35	22.27	22.6
HSUPA	1	22.33	22.27	22.59
	2	21.38	21.21	21.63
	3	21.37	21.35	21.56
	4	22.18	22.05	22.47
	5	21.98	21.95	22.36

11.3. LTE Measurement result

Table 11.16: The conducted Power for LTE BAND 2/4/5/7/12/13/17/25/26

Band2						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18625 1852.5MHz	Channel 18900 1880MHz	Channel 19175 1907.5MHz
5MHz	QPSK	1	0	22.81	22.71	22.55
		1	13	22.88	22.85	22.69
		1	24	22.75	22.70	22.55
		12	0	21.96	21.84	21.69
		12	6	21.99	21.89	21.74
		12	13	21.90	21.79	21.68
		25	0	21.98	21.87	21.72
	16QAM	1	0	21.98	21.94	21.82
		1	13	22.10	22.07	21.94
		1	24	21.98	21.93	21.77
		12	0	20.90	20.84	20.70
		12	6	20.93	20.86	20.75
		12	13	20.85	20.78	20.68
		25	0	20.91	20.80	20.69
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18650 1855MHz	Channel 18900 1880MHz	Channel 19150 1905MHz
10MHz	QPSK	1	0	22.95	22.87	22.72
		1	25	22.92	22.94	22.79
		1	49	22.84	22.80	22.66
		25	0	22.09	21.99	21.81
		25	13	22.05	21.93	21.81
		25	25	22.03	21.88	21.78
		50	0	22.06	21.96	21.84
	16QAM	1	0	22.05	22.00	21.89
		1	25	22.11	22.10	21.98
		1	49	22.00	21.96	21.90
		25	0	20.96	20.92	20.80
		25	13	20.89	20.86	20.72

		25	25	20.91	20.79	20.74
		50	0	20.95	20.86	20.76
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18675 1857.5MHz	Channel 18900 1880MHz	Channel 19125 1902.5MHz
15MHz	QPSK	1	0	22.95	22.90	22.72
		1	37	22.93	22.90	22.75
		1	74	22.77	22.76	22.65
		36	0	22.07	21.98	21.80
		36	19	22.01	21.94	21.79
		36	38	21.98	21.86	21.75
		75	0	22.06	21.96	21.82
	16QAM	1	0	22.09	22.07	21.94
		1	37	22.17	22.07	21.94
		1	74	21.98	21.96	21.86
		36	0	20.98	20.93	20.78
		36	19	20.94	20.87	20.77
		36	38	20.91	20.80	20.72
		75	0	20.96	20.86	20.75
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18700 1860MHz	Channel 18900 1880MHz	Channel 19100 1900MHz
20MHz	QPSK	1	0	22.93	22.88	22.75
		1	50	22.96	**22.98**	22.84
		1	99	22.70	22.66	22.59
		50	0	22.05	**22.10**	21.84
		50	25	22.02	21.98	21.85
		50	50	22.03	21.79	21.75
		100	0	22.02	21.96	21.79
	16QAM	1	0	22.10	22.09	21.99
		1	50	22.24	22.16	22.06
		1	99	21.94	21.92	21.86
		50	0	20.99	21.02	20.81
		50	25	20.95	20.92	20.79
		50	50	20.96	20.74	20.70
		100	0	20.96	20.88	20.77
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18615 1851.5MHz	Channel 18900 1880MHz	Channel 19185 1908.5MHz

3MHz	QPSK	1	0	22.92	22.81	22.66
		1	7	22.91	22.84	22.68
		1	14	22.87	22.83	22.66
		8	0	21.98	21.86	21.69
		8	4	21.98	21.87	21.72
		8	7	21.96	21.85	21.69
		15	0	21.97	21.83	21.70
	16QAM	1	0	22.02	22.02	21.89
		1	7	22.09	22.02	21.88
		1	14	22.04	22.00	21.85
		8	0	20.91	20.87	20.74
		8	4	20.97	20.88	20.78
		8	7	20.91	20.85	20.75
		15	0	20.88	20.82	20.70

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 18607 1850.7MHz	Channel 18900 1880MHz	Channel 19193 1909.3MHz
1.4MHz	QPSK	1	0	22.87	22.79	22.61
		1	3	23.00	22.89	22.73
		1	5	22.86	22.80	22.62
		3	0	22.93	22.87	22.70
		3	1	23.01	22.92	22.76
		3	3	22.99	22.92	22.75
		6	0	21.99	21.89	21.72
	16QAM	1	0	21.99	21.99	21.86
		1	3	22.13	22.11	22.01
		1	5	22.03	22.01	21.84
		3	0	21.87	21.84	21.67
		3	1	21.95	21.88	21.74
		3	3	21.92	21.85	21.71
		6	0	20.96	20.92	20.78

Band4						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 19975 1712.5MHz	Channel 20175 1732.5MHz	Channel 20375 1752.5MHz

5MHz	QPSK	1	0	22.29	22.22	22.23
		1	13	22.35	22.31	22.32
		1	24	22.26	22.19	22.17
		12	0	21.39	21.31	21.29
		12	6	21.44	21.35	21.36
		12	13	21.35	21.28	21.30
		25	0	21.42	21.34	21.35
	16QAM	1	0	21.55	21.45	21.46
		1	13	21.57	21.54	21.51
		1	24	21.48	21.42	21.38
		12	0	20.36	20.32	20.27
		12	6	20.42	20.35	20.35
		12	13	20.36	20.27	20.29
		25	0	20.39	20.31	20.28
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20000 1715MHz	Channel 20175 1732.5MHz	Channel 20350 1750MHz
10MHz	QPSK	1	0	22.43	22.37	22.39
		1	25	22.49	22.47	22.45
		1	49	22.35	22.30	22.29
		25	0	21.48	21.44	21.40
		25	13	21.48	21.43	21.42
		25	25	21.49	21.38	21.45
		50	0	21.47	21.44	21.46
	16QAM	1	0	21.63	21.56	21.55
		1	25	21.65	21.62	21.62
		1	49	21.54	21.48	21.43
		25	0	20.38	20.37	20.32
		25	13	20.37	20.32	20.33
		25	25	20.38	20.30	20.34
		50	0	20.37	20.32	20.34
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20025 1717.5MHz	Channel 20175 1732.5MHz	Channel 20325 1747.5MHz
15MHz	QPSK	1	0	22.47	22.47	22.44
		1	38	22.50	22.46	22.47
		1	74	22.35	22.31	22.29
		36	0	21.50	21.54	21.48
		36	18	21.54	21.48	21.49
		36	39	21.51	21.43	21.48

		75	0	21.53	21.50	21.50
	16QAM	1	0	21.68	21.62	21.61
		1	38	21.70	21.65	21.64
		1	74	21.50	21.51	21.45
		36	0	20.45	20.48	20.41
		36	18	20.49	20.42	20.44
		36	39	20.43	20.37	20.40
		75	0	20.42	20.42	20.41
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20050 1720MHz	Channel 20175 1732.5MHz	Channel 20300 1745MHz
20MHz	QPSK	1	0	22.46	22.43	22.39
		1	50	22.55	**22.58**	22.50
		1	99	22.23	22.25	22.23
		50	0	21.50	**21.60**	21.55
		50	25	21.57	21.53	21.54
		50	50	21.45	21.45	21.51
		100	0	21.49	21.48	21.50
	16QAM	1	0	21.68	21.64	21.65
		1	50	21.81	21.75	21.76
		1	99	21.46	21.50	21.42
		50	0	20.46	20.54	20.46
		50	25	20.50	20.47	20.46
		50	50	20.40	20.39	20.45
		100	0	20.44	20.46	20.44
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 19965 1711.5MHz	Channel 20175 1732.5MHz	Channel 20385 1753.5MHz
3MHz	QPSK	1	0	22.38	22.32	22.30
		1	8	22.35	22.29	22.29
		1	14	22.33	22.29	22.28
		8	0	21.41	21.32	21.31
		8	4	21.45	21.37	21.36
		8	7	21.41	21.30	21.29
		15	0	21.41	21.31	21.31
	16QAM	1	0	21.58	21.53	21.46
		1	8	21.55	21.52	21.47
		1	15	21.57	21.52	21.42
		8	0	20.44	20.34	20.32
		8	4	20.44	20.36	20.34

		8	7	20.42	20.35	20.32
		15	0	20.41	20.28	20.28
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 19957 1710.7MHz	Channel 20175 1732.5MHz	Channel 20393 1754.3MHz
1.4MHz	QPSK	1	0	22.35	22.28	22.26
		1	2	22.48	22.41	22.41
		1	5	22.34	22.28	22.26
		3	0	22.43	22.36	22.37
		3	1	22.49	22.41	22.42
		3	2	22.47	22.42	22.39
		6	0	21.44	21.36	21.39
	16QAM	1	0	21.61	21.50	21.46
		1	2	21.72	21.64	21.58
		1	5	21.59	21.48	21.44
		3	0	21.41	21.34	21.32
		3	1	21.47	21.42	21.39
		3	2	21.47	21.41	21.34
		6	0	20.49	20.40	20.39

Band5						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20425 826.5MHz	Channel 20525 836.5MHz	Channel 20625 846.5MHz
5MHz	QPSK	1	0	23.33	23.45	23.48
		1	12	23.50	23.62	23.65
		1	24	23.35	23.49	23.58
		12	0	22.42	22.60	22.75
		12	6	22.50	22.64	22.74
		12	13	22.49	22.58	22.69
		25	0	22.45	22.60	22.75
	16QAM	1	0	22.67	22.79	22.88
		1	12	22.83	22.96	23.08
		1	24	22.71	22.87	22.98
		12	0	21.44	21.62	21.77
		12	6	21.54	21.68	21.81
		12	13	21.49	21.61	21.73
		25	0	21.46	21.60	21.74
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20450 829MHz	Channel 20525 836.5MHz	Channel 20600 844MHz
10MHz	QPSK	1	0	23.40	23.52	23.62
		1	25	23.58	**23.67**	23.66
		1	49	23.50	23.54	23.66
		25	0	22.43	**22.69**	22.67
		25	13	22.55	22.64	22.67
		25	25	22.52	22.64	22.57
		50	0	22.50	22.68	22.64
	16QAM	1	0	22.77	22.87	22.99
		1	25	22.88	23.03	23.10
		1	49	22.84	22.95	23.09
		25	0	21.45	21.65	21.70
		25	13	21.52	21.62	21.71
		25	25	21.51	21.65	21.59
		50	0	21.49	21.64	21.68
Bandwidth	Mode	RB Size	RB Offset	Channel 20415 825.5MHz		
				Channel 20415 825.5MHz	Channel 20525 836.5MHz	Channel 20635 847.5MHz

3MHz	QPSK	1	0	23.45	23.56	23.59
		1	7	23.45	23.63	23.65
		1	14	23.47	23.60	23.67
		8	0	22.44	22.60	22.63
		8	4	22.53	22.67	22.69
		8	7	22.47	22.65	22.68
		15	0	22.43	22.60	22.64
	16QAM	1	0	22.75	22.82	22.96
		1	7	22.81	22.89	23.00
		1	14	22.77	22.93	23.03
		8	0	21.50	21.65	21.82
		8	4	21.58	21.74	21.88
		8	7	21.55	21.71	21.84
		15	0	21.43	21.62	21.79
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20407 824.7MHz	Channel 20525 836.5MHz	Channel 20643 848.3MHz
1.4MHz	QPSK	1	0	23.36	23.50	23.56
		1	2	23.47	23.61	23.60
		1	5	23.38	23.49	23.63
		3	0	23.41	23.55	23.67
		3	2	23.46	23.61	23.70
		3	3	23.45	23.58	23.71
		6	0	22.43	22.57	22.74
	16QAM	1	0	22.72	22.81	22.97
		1	2	22.84	22.95	23.12
		1	5	22.72	22.82	23.00
		3	0	22.50	22.62	22.80
		3	2	22.55	22.71	22.83
		3	3	22.52	22.66	22.87
		6	0	21.50	21.66	21.86

Band7						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20775 2502.5MHz	Channel 21100 2535MHz	Channel 21425 2567.5MHz
5MHz	QPSK	1	0	22.41	22.55	22.63

		1	13	22.55	22.68	22.81
		1	24	22.45	22.58	22.68
		12	0	21.51	21.67	21.79
		12	6	21.59	21.74	21.86
		12	13	21.56	21.67	21.79
		25	0	21.58	21.73	21.84
	16QAM	1	0	21.56	21.70	21.84
		1	13	21.71	21.88	22.01
		1	24	21.61	21.74	21.87
		12	0	20.46	20.63	20.76
		12	6	20.55	20.67	20.82
		12	13	20.52	20.63	20.77
		25	0	20.51	20.63	20.77
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20800 2505MHz	Channel 21100 2535MHz	Channel 21400 2565MHz
10MHz	QPSK	1	0	22.48	22.62	22.73
		1	25	22.60	22.76	22.84
		1	49	22.58	22.69	22.78
		25	0	21.58	21.75	21.89
		25	13	21.64	21.75	21.85
		25	25	21.67	21.79	21.85
		50	0	21.65	21.79	21.88
	16QAM	1	0	21.63	21.77	21.90
		1	25	21.79	21.92	22.03
		1	49	21.72	21.87	21.96
		25	0	20.49	20.68	20.81
		25	13	20.54	20.66	20.76
		25	25	20.58	20.72	20.77
		50	0	20.55	20.71	20.80
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20825 2507.5MHz	Channel 21100 2535MHz	Channel 21375 2562.5MHz
15MHz	QPSK	1	0	22.49	22.62	22.73
		1	38	22.67	22.76	22.84
		1	74	22.63	22.75	22.81
		36	0	21.61	21.75	21.88
		36	18	21.68	21.77	21.91
		36	39	21.74	21.82	21.88
		75	0	21.68	21.82	21.92

	16QAM	1	0	21.61	21.73	21.88
		1	38	21.78	21.87	22.00
		1	74	21.75	21.85	21.96
		36	0	20.50	20.67	20.79
		36	18	20.56	20.68	20.81
		36	39	20.64	20.73	20.79
		75	0	20.56	20.70	20.80
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 20850 2510MHz	Channel 21100 2535MHz	Channel 21350 2560MHz
20MHz	QPSK	1	0	22.44	22.54	22.69
		1	50	22.72	22.80	**22.93**
		1	99	22.59	22.74	22.80
		50	0	21.63	21.78	21.91
		50	25	21.72	21.85	**21.94**
		50	50	21.76	21.84	21.89
		100	0	21.66	21.81	21.88
	16QAM	1	0	21.60	21.73	21.89
		1	50	21.92	22.00	22.10
		1	99	21.79	21.92	21.99
		50	0	20.51	20.69	20.82
		50	25	20.61	20.76	20.85
		50	50	20.69	20.75	20.81
		100	0	20.56	20.74	20.80

Band12						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23035 701.5MHz	Channel 23095 707.5MHz	Channel 23155 713.5MHz
5MHz	QPSK	1	0	22.97	22.90	22.85
		1	12	23.11	23.07	22.96
		1	24	22.94	22.95	22.83
		12	0	22.01	22.05	21.84
		12	6	22.13	22.08	21.99
		12	13	22.00	22.03	21.90
		25	0	22.02	22.04	21.91
	16QAM	1	0	22.27	22.19	22.16
		1	12	22.41	22.38	22.26

		1	24	22.21	22.22	22.09
		12	0	21.10	21.12	20.90
		12	6	21.19	21.15	21.07
		12	13	21.10	21.09	20.97
		25	0	21.05	21.08	20.93
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23060 704MHz	Channel 23095 707.5MHz	Channel 23130 711MHz
10MHz	QPSK	1	0	23.04	22.99	22.99
		1	25	23.14	**23.17**	23.11
		1	49	23.03	23.03	22.93
		25	0	22.06	**22.14**	22.03
		25	13	22.12	22.10	22.11
		25	25	22.08	22.12	22.12
		50	0	22.05	22.16	22.12
	16QAM	1	0	22.35	22.28	22.29
		1	25	22.43	22.45	22.38
		1	49	22.33	22.30	22.22
		25	0	21.08	21.16	21.07
		25	13	21.15	21.13	21.11
		25	25	21.07	21.21	21.17
		50	0	21.09	21.18	21.16
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23025 700.5MHz	Channel 23095 707.5MHz	Channel 23165 714.5MHz
3MHz	QPSK	1	0	23.10	23.03	22.94
		1	7	23.12	23.08	22.99
		1	14	23.11	23.05	22.94
		8	0	22.10	22.06	21.95
		8	4	22.12	22.08	21.99
		8	7	22.15	22.06	21.96
		15	0	22.09	22.03	21.94
	16QAM	1	0	22.39	22.31	22.17
		1	7	22.40	22.36	22.22
		1	14	22.35	22.29	22.17
		8	0	21.23	21.17	21.03
		8	4	21.29	21.17	21.09
		8	7	21.27	21.14	21.02
		15	0	21.17	21.08	20.97
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		

				Channel 23017 699.7MHz	Channel 23095 707.5MHz	Channel 23173 715.3MHz
1.4MHz	QPSK	1	0	23.06	22.99	22.90
		1	2	23.16	23.11	22.98
		1	5	23.04	22.95	22.87
		3	0	22.35	22.25	22.13
		3	2	22.48	22.40	22.26
		3	3	22.35	22.23	22.14
		6	0	22.14	22.05	21.95
	16QAM	1	0	22.35	22.25	22.13
		1	2	22.48	22.40	22.26
		1	5	22.35	22.23	22.14
		3	0	22.16	22.09	21.94
		3	2	22.21	22.16	21.97
		3	3	22.17	22.13	21.98
		6	0	21.26	21.13	21.04

Band13						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23205 779.5 MHz	Channel 23230 782 MHz	Channel 23255 784.5MHz
5MHz	QPSK	1	0	22.57	22.51	22.58
		1	12	22.64	22.68	22.71
		1	24	22.62	22.61	22.64
		12	0	21.62	21.64	21.65
		12	6	21.69	21.74	21.73
		12	13	21.70	21.77	21.69
		25	0	21.66	21.70	21.68
	16QAM	1	0	21.84	21.84	21.86
		1	12	21.91	21.98	21.95
		1	24	21.88	21.89	21.89
		12	0	20.69	20.67	20.70
		12	6	20.75	20.79	20.79
		12	13	20.76	20.81	20.74
		25	0	20.70	20.73	20.70
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23230 782MHz	Channel 23230 782 MHz	Channel 23230 782 MHz

10MHz	QPSK	1	0	22.64	22.65	22.64
		1	25	22.80	22.79	**22.80**
		1	49	22.75	22.74	22.73
		25	0	21.67	21.65	21.67
		25	13	21.77	21.77	21.78
		25	25	21.81	21.82	**21.84**
		50	0	21.75	21.77	21.78
	16QAM	1	0	21.93	21.90	21.93
		1	25	22.12	22.10	22.08
		1	49	22.01	22.00	22.01
		25	0	20.68	20.69	20.69
		25	13	20.80	20.78	20.79
		25	25	20.83	20.81	20.83
		50	0	20.79	20.79	20.77

Band17						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23755 706.5 MHz	Channel 23790 710 MHz	Channel 23825 713.5MHz
5MHz	QPSK	1	0	23.02	22.96	22.91
		1	12	23.10	23.08	23.02
		1	24	23.02	22.99	22.94
		12	0	22.10	22.04	21.91
		12	6	22.14	22.12	22.06
		12	13	22.07	22.12	21.94
		25	0	22.12	22.12	21.97
	16QAM	1	0	22.30	22.22	22.18
		1	12	22.35	22.32	22.26
		1	24	22.25	22.21	22.16
		12	0	21.17	21.10	20.94
		12	6	21.19	21.18	21.09
		12	13	21.12	21.15	20.99
		25	0	21.14	21.14	20.99
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 23780 709MHz	Channel 23790 710 MHz	Channel 23800 711 MHz
10MHz	QPSK	1	0	23.06	23.02	23.03
		1	25	23.16	**23.17**	23.12
		1	49	23.04	23.03	23.00

		25	0	22.18	22.15	22.10
		25	13	22.15	22.15	22.10
		25	25	22.28	**22.30**	22.22
		50	0	22.26	22.24	22.16
	16QAM	1	0	22.32	22.29	22.27
		1	25	22.44	22.42	22.36
		1	49	22.30	22.26	22.23
		25	0	21.20	21.16	21.10
		25	13	21.17	21.16	21.12
		25	25	21.30	21.30	21.23
		50	0	21.27	21.25	21.17

Band25						
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26065 1852.5MHz	Channel 26365 1882.5MHz	Channel 26665 1912.5MHz
5MHz	QPSK	1	0	22.89	22.77	22.69
		1	13	23.01	22.91	22.82
		1	24	22.86	22.77	22.66
		12	0	22.07	21.95	21.83
		12	6	22.09	21.99	21.86
		12	13	22.03	21.90	21.74
		25	0	22.07	21.97	21.84
	16QAM	1	0	22.06	22.04	21.94
		1	13	22.22	22.15	21.99
		1	24	22.08	22.02	21.80
		12	0	20.99	20.92	20.83
		12	6	21.03	20.96	20.85
		12	13	20.97	20.89	20.71
		25	0	21.00	20.92	20.80
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26090 1855MHz	Channel 26365 1882.5MHz	Channel 26640 1910MHz
10MHz	QPSK	1	0	22.99	22.87	22.74
		1	25	23.08	22.99	22.86
		1	49	22.90	22.78	22.69
		25	0	22.15	22.05	21.86
		25	13	22.14	22.02	21.85

		25	25	22.12	21.92	21.79
		50	0	22.16	22.03	21.85
	16QAM	1	0	22.11	22.08	21.95
		1	25	22.26	22.18	22.04
		1	49	22.13	22.01	21.83
		25	0	21.05	21.01	20.83
		25	13	21.03	20.93	20.80
		25	25	21.04	20.84	20.74
		50	0	21.07	20.95	20.80
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26115 1857.5MHz	Channel 26365 1882.5MHz	Channel 26615 1907.5MHz
15MHz	QPSK	1	0	23.05	22.96	22.82
		1	38	23.05	22.96	22.85
		1	74	22.89	22.82	22.73
		36	0	22.16	22.11	21.92
		36	18	22.13	22.06	21.86
		36	39	22.13	21.95	21.82
		75	0	22.16	22.06	21.90
	16QAM	1	0	22.20	22.14	22.03
		1	38	22.28	22.17	22.06
		1	74	22.12	22.07	21.87
		36	0	21.08	21.04	20.89
		36	18	21.08	20.96	20.86
		36	39	21.05	20.91	20.80
		75	0	21.05	20.99	20.84
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26140 1860MHz	Channel 26365 1882.5MHz	Channel 26590 1905MHz
20MHz	QPSK	1	0	23.02	22.94	22.84
		1	50	23.05	**23.13**	22.93
		1	99	22.80	22.75	22.71
		50	0	22.19	**22.21**	22.03
		50	25	22.16	22.08	21.94
		50	50	22.15	21.96	21.83
		100	0	22.16	22.08	21.92
	16QAM	1	0	22.22	22.18	22.02
		1	50	22.39	22.28	22.13
		1	99	22.05	22.04	21.84
		50	0	21.10	21.14	20.97

		50	25	21.10	21.01	20.90
		50	50	21.09	20.94	20.81
		100	0	21.08	21.02	20.87
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26055 1851.5MHz	Channel 26365 1882.5MHz	Channel 26675 1913.5MHz
3MHz	QPSK	1	0	23.01	22.90	22.81
		1	8	23.00	22.89	22.83
		1	14	23.00	22.90	22.78
		8	0	22.09	21.96	21.83
		8	4	22.11	22.01	21.86
		8	7	22.07	21.94	21.81
		15	0	22.06	21.97	21.84
	16QAM	1	0	22.14	22.09	22.00
		1	8	22.16	22.14	21.93
		1	15	22.16	22.13	21.88
		8	0	21.03	20.98	20.84
		8	4	21.05	20.99	20.86
		8	7	21.01	20.97	20.81
		15	0	20.99	20.93	20.79
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26047 1850.7MHz	Channel 26365 1882.5MHz	Channel 26683 1914.3MHz
1.4MHz	QPSK	1	0	22.99	22.87	22.77
		1	2	23.11	23.03	22.90
		1	5	22.99	22.89	22.77
		3	0	22.09	21.96	21.83
		3	1	22.11	22.01	21.86
		3	2	22.07	21.94	21.81
		6	0	22.06	21.97	21.84
	16QAM	1	0	22.15	22.13	21.95
		1	2	22.32	22.29	22.08
		1	5	22.17	22.13	21.89
		3	0	21.13	20.92	20.83
		3	1	21.01	20.92	20.82
		3	2	21.03	20.92	20.80
		6	0	20.92	20.91	20.72

Band26

Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26715 816.5MHz	Channel 26865 831.5MHz	Channel 27015 846.5MHz
5MHz	QPSK	1	0	23.25	23.43	23.56
		1	13	23.43	23.65	23.71
		1	24	23.38	23.51	23.66
		12	0	22.36	22.56	22.82
		12	6	22.46	22.65	22.82
		12	13	22.40	22.61	22.75
		25	0	22.43	22.61	22.85
	16QAM	1	0	22.52	22.73	22.91
		1	13	22.74	22.93	23.09
		1	24	22.71	22.79	23.00
		12	0	21.42	21.59	21.90
		12	6	21.50	21.68	21.86
		12	13	21.44	21.65	21.82
		25	0	21.40	21.60	21.85
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26740 819MHz	Channel 26865 831.5MHz	Channel 26990 844MHz
10MHz	QPSK	1	0	23.33	23.52	23.63
		1	25	23.57	23.70	23.70
		1	49	23.53	23.60	23.69
		25	0	22.52	22.60	22.80
		25	13	22.51	22.66	22.82
		25	25	22.56	22.65	22.66
		50	0	22.56	22.64	22.76
	16QAM	1	0	22.60	22.87	23.08
		1	25	22.90	23.04	23.14
		1	49	22.89	23.00	23.10
		25	0	21.50	21.60	21.83
		25	13	21.52	21.64	21.83
		25	25	21.57	21.64	21.68
		50	0	21.56	21.62	21.76
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26765 821.5MHz	Channel 26865 831.5MHz	Channel 26965 841.5MHz
15MHz	QPSK	1	0	23.33	23.53	23.61
		1	38	23.67	23.77	**23.82**

		1	74	23.52	23.64	23.70
		36	0	22.51	22.56	**22.87**
		36	18	22.57	22.65	22.79
		36	39	22.63	22.66	22.70
		75	0	22.60	22.63	22.80
	16QAM	1	0	22.20	22.14	22.03
		1	38	22.28	22.17	22.06
		1	74	22.12	22.07	21.87
		36	0	21.08	21.04	20.89
		36	18	21.08	20.96	20.86
		36	39	21.05	20.91	20.80
		75	0	21.05	20.99	20.84
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26705 815.5MHz	Channel 26865 831.5MHz	Channel 27025 847.5MHz
3MHz	QPSK	1	0	23.35	23.61	23.66
		1	8	23.38	23.65	23.74
		1	14	23.40	23.62	23.75
		8	0	22.37	22.64	22.81
		8	4	22.44	22.70	22.85
		8	7	22.38	22.63	22.84
		15	0	22.38	22.65	22.83
	16QAM	1	0	22.61	22.91	22.99
		1	8	22.67	22.90	23.08
		1	15	22.71	22.91	23.09
		8	0	21.44	21.68	21.89
		8	4	21.47	21.75	21.96
		8	7	21.46	21.70	21.92
		15	0	21.37	21.66	21.84
Bandwidth	Mode	RB Size	RB Offset	Actual output power(dBm)		
				Channel 26697 814.7MHz	Channel 26865 831.5MHz	Channel 27033 848.3MHz
1.4MHz	QPSK	1	0	23.31	23.55	23.67
		1	2	23.42	23.71	23.82
		1	5	23.34	23.57	23.72
		3	0	22.37	22.64	22.81
		3	1	22.44	22.70	22.85
		3	2	22.38	22.63	22.84
		6	0	22.40	22.64	22.87
	16QAM	1	0	22.60	22.86	23.07

		1	2	22.75	23.03	23.23
		1	5	22.66	22.92	23.09
		3	0	22.39	22.65	22.88
		3	1	22.47	22.73	22.93
		3	2	22.43	22.71	22.95
		6	0	21.45	21.70	21.98

11.4. WiFi and BT Measurement result

Table 11.17: The conducted power for Bluetooth

GFSK			
Channel	Ch0 (2402 MHz)	Ch39 (2441MHz)	CH78 (2480MHz)
Conducted Output Power (dBm)	3.5	3.1	3.7
π /4 DQPSK			
Channel	Ch0 (2402 MHz)	Ch39 (2441MHz)	CH78 (2480MHz)
Conducted Output Power (dBm)	2.7	2.4	2.9
8DPSK			
Channel	Ch0 (2402 MHz)	Ch39 (2441MHz)	CH78 (2480MHz)
Conducted Output Power (dBm)	2.6	2.4	3.0

Table 11.18: The conducted power for BLE

GFSK			
Channel	Ch0 (2402 MHz)	Ch19 (2440MHz)	CH39 (2480MHz)
Conducted Output Power (dBm)	0.92	0.45	-0.79

NOTE: According to KDB447498 D01 BT standalone SAR are not required, because maximum average output power is less than 10mW.

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

(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;
where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

SAR head value of BT is 0.133 W/Kg. SAR body value of BT is 0.066 W/Kg for 1g.
SAR body value of BT is 0.053 W/Kg for 10g

The default power measurement procedures are:

a) Power must be measured at each transmit antenna port according to the DSSS and OFDM transmission configurations in each standalone and aggregated frequency band.

b) Power measurement is required for the transmission mode configuration with the highest maximum output power specified for production units.

1) When the same highest maximum output power specification applies to multiple transmission modes, the largest channel bandwidth configuration with the lowest order modulation and lowest data rate is measured.

2) When the same highest maximum output power is specified for multiple largest channel bandwidth configurations with the same lowest order modulation or lowest order modulation and lowest data rate, power measurement is required for all equivalent 802.11 configurations with the same maximum output power.

c) For each transmission mode configuration, power must be measured for the highest and lowest channels; and at the mid-band channel(s) when there are at least 3 channels. For configurations with multiple mid-band channels, due to an even number of channels, both channels should be measured.

During WLAN SAR testing EUT is configured with the WLAN continuous TX tool, and the transmission duty factor was monitored on the spectrum analyzer with zero-span setting，the duty cycle is 100%.

Duty Cycle 802.11b mode

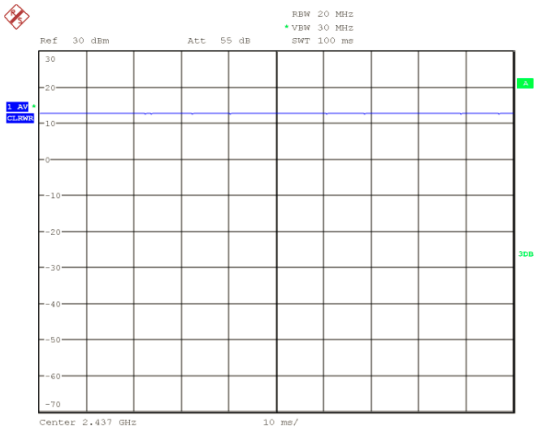


Table 11.19: The average conducted power for WiFi

Mode	Channel	Frequence	Average power(dBm)
802.11 b	1	2412 MHZ	16.37
	6	2437 MHZ	16.58
	11	2462 MHZ	17.14
802.11 g	1	2412 MHZ	12.81
	6	2437 MHZ	13.03
	11	2462 MHZ	13.70
802.11 n	1	2412 MHZ	12,75

20M	6	2437 MHZ	12.96
	11	2462 MHZ	13.62
802.11 n 40M	3	2422 MHZ	11.44
	6	2437 MHZ	11.49
	9	2452 MHZ	11.67

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.

b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

11.5. CDMA Measurement result

Table 11.20: The conducted Power for CDMA

Band	CDMA2000 BC0			CDMA2000 BC1		
Channel	1013	384	777	25	600	1175
Frequency (MHz)	824.7	836.52	848.31	1851.25	1880.00	1908.75
1xRTT RC1 SO55	24.31	24.32	24.36	23.64	23.67	23.63
1xRTT RC3 SO55	24.35	24.35	24.39	23.62	23.69	23.67
1xRTT RC3 SO32(+ F-SCH)	24.28	24.31	24.32	23.57	23.53	23.54
1xRTT RC3 SO32(+SCH)	24.24	24.25	24.27	23.58	23.55	23.51
1xEVDO RTAP 153.6Kbps	24.51	24.55	24.51	23.79	23.81	23.78
1xEVDO RETAP 4096Bits	23.39	23.43	23.21	23.69	23.61	23.68

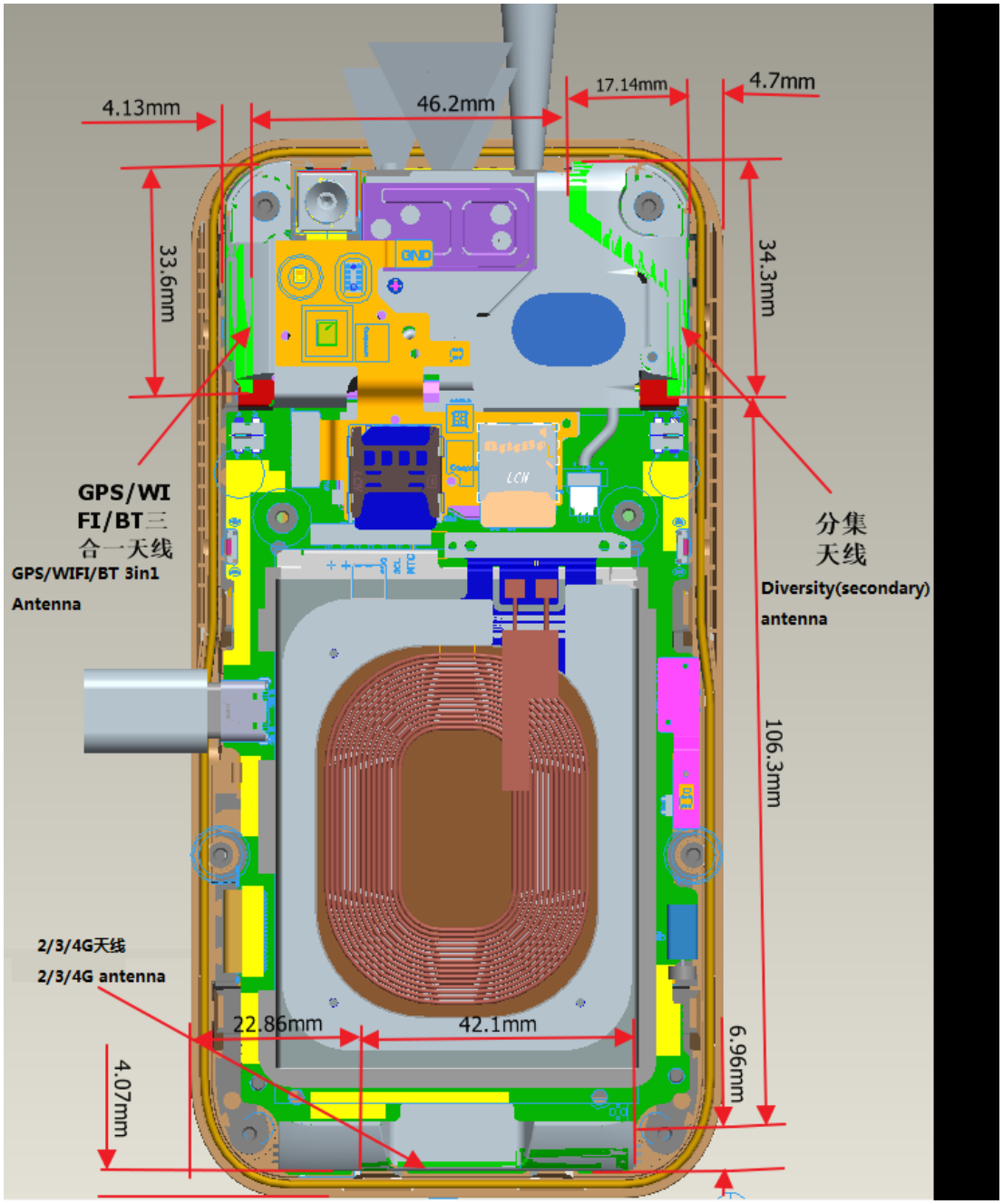
12. Simultaneous TX SAR Considerations

12.1. Introduction

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

For this device, the BT and WiFi can transmit simultaneous with other transmitters.

12.2. Transmit Antenna Separation Distances



Picture 12.1 Antenna Locations

12.3. Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] ·

[√f(GHz)] ≤ 3.0 for 1-g SAR, where

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

According to the KDB447498 appendix A, the SAR test exclusion threshold for 2450MHz at 5mm test separation distances is 10mW.

$$\frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} * \sqrt{\text{Frequency (GHz)}} \leqslant 3.0$$

Based on the above equation, Bluetooth SAR was not required:

Evaluation=1.254＜3.0

12.4. SAR Measurement Positions

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

SAR Measurement Positions						
Antenna Mode	Phantom	Ground	Left	Right	Top	Bottom
WWAN	Yes	Yes	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	Yes	No

13. SAR Test Result

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

Frequency		Mode /Band	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
836.6	190	GSM850	Left	Touch	/	33.73	34	1.064	0.193	0.205	-0.09
836.6	190	GSM850	Left	Tilt	/	33.73	34	1.064	0.128	0.136	0.10
836.6	190	GSM850	Right	Touch	1	33.73	34	1.064	0.233	0.248	0.17
836.6	190	GSM850	Right	Tilt	/	33.73	34	1.064	0.142	0.151	0.13

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

Frequency		Mode /Band	Service /Headset	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
Hotspot & Body worn												
836.6	190	GPRS 4TS	Class12	Toward Phantom	10	2	30.28	30.5	1.052	0.442	0.465	-0.03
836.6	190	GPRS 4TS	Class12	Toward Ground	10	/	30.28	30.5	1.052	0.441	0.464	-0.06
Hotspot												
836.6	190	GPRS 4TS	Class12	Toward Left	10	/	30.28	30.5	1.052	0.193	0.203	-0.16
836.6	190	GPRS 4TS	Class12	Toward Right	10	/	30.28	30.5	1.052	0.372	0.391	0.04
836.6	190	GPRS 4TS	Class12	Toward Bottom	10	/	30.28	30.5	1.052	0.321	0.338	0.05

Table 13.3: SAR Values(GSM 1900 MHz Band-Head)

Frequency		Mode /Band	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1880	661	GSM1900	Left	Touch	3	31.15	31.5	1.084	0.47	0.509	-0.04
1880	661	GSM1900	Left	Tilt	/	31.15	31.5	1.084	0.13	0.141	-0.07
1880	661	GSM1900	Right	Touch	/	31.15	31.5	1.084	0.17	0.184	0.04
1880	661	GSM1900	Right	Tilt	/	31.15	31.5	1.084	0.0858	0.093	0.12

Table 13.4: SAR Values (GSM 1900 MHz Band-Body)

Frequency		Mode /Band	Service /Headset	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
Hotspot & Body worn												
1880	661	GPRS 4TS	Class12	Toward Phantom	10	/	27.02	27.5	1.117	0.504	0.563	-0.03
1880	661	GPRS 4TS	Class12	Toward Ground	10	/	27.02	27.5	1.117	0.471	0.526	0.19
Hotspot												
1880	661	GPRS 4TS	Class12	Toward Left	10	/	27.02	27.5	1.117	0.274	0.306	0.08
1880	661	GPRS 4TS	Class12	Toward Right	10	/	27.02	27.5	1.117	0.136	0.152	0.12
1880	661	GPRS 4TS	Class12	Toward Bottom	10	/	27.02	27.5	1.117	0.806	0.900	0.05
1850.2	512	GPRS 4TS	Class12	Toward Bottom	10	/	27.23	27.5	1.064	0.839	0.893	-0.04
1909.8	810	GPRS 4TS	Class12	Toward Bottom	10	4	26.56	27.5	1.242	0.891	1.106	0.06
Repeated												
1909.8	810	GPRS 4TS	Class12	Toward Bottom	10	/	26.56	27.5	1.242	0.89	1.105	-0.03

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

Frequency		Mode /Band	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1880	9400	Band II	Left	Touch	5	23.4	24	1.148	0.273	0.313	0.09
1880	9400	Band II	Left	Tilt	/	23.4	24	1.148	0.0484	0.056	-0.06
1880	9400	Band II	Right	Touch	/	23.4	24	1.148	0.116	0.133	0.02
1880	9400	Band II	Right	Tilt	/	23.4	24	1.148	0.0473	0.054	0.02

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

Frequency		Mode /Band	Service /Headset	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
Hotspot & Body worn												
1880	9400	Band II	12.2kbps RMC	Toward Phantom	10	/	23.4	24	1.148	0.416	0.478	-0.12
1880	9400	Band II	12.2kbps RMC	Toward Ground	10	/	23.4	24	1.148	0.314	0.361	0.01
Hotspot												
1880	9400	Band II	12.2kbps RMC	Toward Left	10	/	23.4	24	1.148	0.189	0.217	0.03
1880	9400	Band II	12.2kbps RMC	Toward Right	10	/	23.4	24	1.148	0.0909	0.104	0.11
1880	9400	Band II	12.2kbps RMC	Toward Bottom	10	6	23.4	24	1.148	0.458	0.526	0.04

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

Frequency		Mode /Band	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1732.6	1413	Band IV	Left	Touch	7	23.6	24	1.096	0.414	0.454	-0.01
1732.6	1413	Band IV	Left	Tilt	/	23.6	24	1.096	0.175	0.192	-0.06
1732.6	1413	Band IV	Right	Touch	/	23.6	24	1.096	0.238	0.261	0.02
1732.6	1413	Band IV	Right	Tilt	/	23.6	24	1.096	0.126	0.138	0.02

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

Frequency		Mode /Band	Service /Headset	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
Hotspot & Body worn												
1732.6	1413	Band IV	12.2kbps RMC	Toward Phantom	10	8	23.6	24	1.096	0.605	0.663	-0.19
1732.6	1413	Band IV	12.2kbps RMC	Toward Ground	10	/	23.6	24	1.096	0.414	0.454	0.01
Hotspot												
1732.6	1413	Band IV	12.2kbps RMC	Toward Left	10	/	23.6	24	1.096	0.381	0.418	0.03
1732.6	1413	Band IV	12.2kbps RMC	Toward Right	10	/	23.6	24	1.096	0.201	0.220	0.11
1732.6	1413	Band IV	12.2kbps RMC	Toward Bottom	10	/	23.6	24	1.096	0.338	0.371	0.04

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

Frequency		Mode /Band	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
836.6	4183	Band V	Left	Touch	/	23.59	24	1.099	0.15	0.165	0.01
836.6	4183	Band V	Left	Tilt	/	23.59	24	1.099	0.104	0.114	-0.03
836.6	4183	Band V	Right	Touch	9	23.59	24	1.099	0.191	0.210	0.11
836.6	4183	Band V	Right	Tilt	/	23.59	24	1.099	0.104	0.114	0.11

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

Frequency		Mode /Band	Service /Headset	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.											
Hotspot & Body worn												
836.6	4183	Band V	12.2kbps RMC	Toward Phantom	10	10	23.59	24	1.099	0.175	0.192	0.09
836.6	4183	Band V	12.2kbps RMC	Toward Ground	10	/	23.59	24	1.099	0.155	0.170	0.09
Hotspot												
836.6	4183	Band V	12.2kbps RMC	Toward Left	10	/	23.59	24	1.099	0.0792	0.087	0.07
836.6	4183	Band V	12.2kbps RMC	Toward Right	10	/	23.59	24	1.099	0.171	0.188	0.17
836.6	4183	Band V	12.2kbps RMC	Toward Bottom	10	/	23.59	24	1.099	0.123	0.135	0.01

Table 13.11: SAR Values(LTE Band 4-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Left	Touch	11	22.58	23.5	1.236	0.648	0.801	0.19
1720	20050	QPSK_20MHz_1RB_ 50 offset Low	Left	Touch	/	22.55	23.5	1.245	0.534	0.665	0.12
1745	20300	QPSK_20MHz_1RB_ 50 offset High	Left	Touch	/	22.50	23.5	1.259	0.525	0.661	0.02
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Left	Tilt	/	22.58	23.5	1.236	0.224	0.277	0.13
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Right	Touch	/	22.58	23.5	1.236	0.412	0.509	0.13
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Right	Tilt	/	22.58	23.5	1.236	0.166	0.205	0.03
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Left	Touch	/	21.60	23	1.380	0.505	0.697	0.03
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Left	Tilt	/	21.60	23	1.380	0.182	0.251	-0.16
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Right	Touch	/	21.60	23	1.380	0.299	0.413	0.17
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Right	Tilt	/	21.60	23	1.380	0.13	0.179	0.13
1732.5	20175	QPSK_20MHz_100RB_ 0 offset Middle	Left	Touch	/	21.48	22.5	1.265	0.567	0.717	0.12

Table 13.12: SAR Values (LTE Band 4-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Toward Phantom	10	/	22.58	23.5	1.236	0.929	1.148	-0.14
1720	20050	QPSK_20MHz_1RB_ 50 offset Low	Toward Phantom	10	/	22.55	23.5	1.245	0.911	1.134	0.04
1745	20300	QPSK_20MHz_1RB_ 50 offset High	Toward Phantom	10	/	22.50	23.5	1.259	0.834	1.050	0.19
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Toward Ground	10	/	22.58	23.5	1.236	0.691	0.854	0.15
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Toward Phantom	10	/	21.60	23	1.380	0.747	1.031	0.08
1720	20050	QPSK_20MHz_50RB_ 0 offset Low	Toward Phantom	10	/	21.50	23	1.413	0.715	1.010	0.09
1745	20300	QPSK_20MHz_50RB_ 0 offset High	Toward Phantom	10	/	21.55	23	1.396	0.728	1.017	0.01
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Toward Ground	10	/	21.60	23	1.380	0.548	0.756	-0.04
1732.5	20175	QPSK_20MHz_100RB_ 0 offset Middle	Toward Phantom	10	/	21.48	22.5	1.265	0.812	1.027	-0.15
Hotspot											
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Toward Left	10	/	22.58	23.5	1.236	0.485	0.599	-0.14
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Toward Right	10	/	22.58	23.5	1.236	0.294	0.363	-0.07
1732.5	20175	QPSK_20MHz_1RB_ 50 offset Middle	Toward Bottom	10	/	22.58	23.5	1.236	0.722	0.892	0.01
1720	20050	QPSK_20MHz_1RB_ 50 offset Low	Toward Bottom	10	/	22.55	23.5	1.245	0.712	0.886	-0.07
1745	20300	QPSK_20MHz_1RB_ 50 offset High	Toward Bottom	10	/	22.50	23.5	1.259	0.702	0.884	0.01
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Toward Left	10	/	21.60	23	1.380	0.384	0.530	-0.15
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Toward Right	10	/	21.60	23	1.380	0.24	0.331	-0.11
1732.5	20175	QPSK_20MHz_50RB_ 0 offset Middle	Toward Bottom	10	/	21.60	23	1.380	0.577	0.796	-0.04

Repeated											
1732.5	**20175**	**QPSK_20MHz_1RB_ 50 offset Middle**	**Toward Phantom**	**10**	**12**	**22.98**	**23.5**	**1.127**	**1.040**	**1.172**	**-0.17**

Table 13.13: SAR Values(LTE Band 5-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Left	Touch	/	23.67	24.5	1.211	0.138	0.167	0.13
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Left	Tilt	/	23.67	24.5	1.211	0.126	0.153	0.04
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Right	Touch	13	23.67	24.5	1.211	0.187	0.226	-0.19
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Right	Tilt	/	23.67	24.5	1.211	0.12	0.145	-0.05
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Left	Touch	/	22.69	24	1.352	0.11	0.149	0.17
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Left	Tilt	/	22.69	24	1.352	0.1	0.135	0.04
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Right	Touch	/	22.69	24	1.352	0.152	0.206	-0.18
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Right	Tilt	/	22.69	24	1.352	0.096	0.130	0.08

Table 13.14: SAR Values (LTE Band 5-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Toward Phantom	10	14	23.67	24.5	1.211	0.268	0.324	0.05
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Toward Ground	10	/	23.67	24.5	1.211	0.263	0.318	-0.03
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Toward Phantom	10	/	22.69	24	1.352	0.214	0.289	0.06
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Toward Ground	10	/	22.69	24	1.352	0.205	0.277	-0.02
Hotspot											
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Toward Left	10	/	23.67	24.5	1.211	0.13	0.157	0.13

836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Toward Right	10	/	23.67	24.5	1.211	0.222	0.269	0.06
836.5	20525	QPSK_10MHz_1RB_ 25 offset Middle	Toward Bottom	10	/	23.67	24.5	1.211	0.177	0.214	0.16
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Toward Left	10	/	22.69	24	1.352	0.105	0.142	0.18
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Toward Right	10	/	22.69	24	1.352	0.177	0.239	0.16
836.5	20525	QPSK_10MHz_25RB_ 0 offset Middle	Toward Bottom	10	/	22.69	24	1.352	0.137	0.185	0.12

Table 13.15: SAR Values(LTE Band 7-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Left	Touch	15	22.93	23.5	1.140	0.025	0.029	-0.04
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Left	Tilt	/	22.93	23.5	1.140	0.0114	0.013	0.09
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Right	Touch	/	22.93	23.5	1.140	0.022	0.025	0.03
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Right	Tilt	/	22.93	23.5	1.140	0.0134	0.015	0.01
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Left	Touch	/	21.94	23	1.276	0.0231	0.029	0.13
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Left	Tilt	/	21.94	23	1.276	0.0095	0.012	0.16
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Right	Touch	/	21.94	23	1.276	0.016	0.020	0.04
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Right	Tilt	/	21.94	23	1.276	0.006	0.008	0.03

Table 13.16: SAR Values (LTE Band 7-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Toward Phantom	10	/	22.93	23.5	1.140	0.113	0.129	0.08
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Toward Ground	10	/	22.93	23.5	1.140	0.273	0.311	0.11
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Toward Phantom	10	/	21.94	23	1.276	0.0902	0.115	-0.04
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Toward Ground	10	/	21.94	23	1.276	0.203	0.259	0.08
Hotspot											
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Toward Left	10	/	22.93	23.5	1.140	0.0194	0.022	0.05
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Toward Right	10	/	22.93	23.5	1.140	0.0103	0.012	0.13
2560	21350	QPSK_20MHz_1RB_ 50 offset High	Toward Bottom	10	16	22.93	23.5	1.140	0.671	0.765	0.04
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Toward Left	10	/	21.94	23	1.276	0.0106	0.014	0.08
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Toward Right	10	/	21.94	23	1.276	0.008	0.010	-0.04
2560	21350	QPSK_20MHz_50RB_ 25 offset High	Toward Bottom	10	/	21.94	23	1.276	0.328	0.419	0.08

Table 13.17: SAR Values(LTE Band 12-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Left	Touch	17	23.17	24	1.211	0.136	0.165	0.12
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Left	Tilt	/	23.17	24	1.211	0.0979	0.119	0.04
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Right	Touch	/	23.17	24	1.211	0.129	0.156	0.13
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Right	Tilt	/	23.17	24	1.211	0.0874	0.106	0.02
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Left	Touch	/	22.14	23.5	1.368	0.111	0.152	0.18
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Left	Tilt	/	22.14	23.5	1.368	0.0807	0.110	0.03
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Right	Touch	/	22.14	23.5	1.368	0.105	0.144	0.15
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Right	Tilt	/	22.14	23.5	1.368	0.0719	0.098	0.06

Table 13.18: SAR Values (LTE Band 12-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Toward Phantom	10	/	23.17	24	1.211	0.163	0.197	0.02
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Toward Ground	10	18	23.17	24	1.211	0.186	0.225	0.02
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Toward Phantom	10	/	22.14	23.5	1.368	0.133	0.182	0.01
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Toward Ground	10	/	22.14	23.5	1.368	0.152	0.208	0.03
Hotspot											
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Toward Left	10	/	23.17	24	1.211	0.133	0.161	-0.16
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Toward Right	10	/	23.17	24	1.211	0.148	0.179	0.01
707.5	23095	QPSK_10MHz_1RB_ 25 offset Middle	Toward Bottom	10	/	23.17	24	1.211	0.0354	0.043	0.06
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Toward Left	10	/	22.14	23.5	1.368	0.11	0.150	-0.12
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Toward Right	10	/	22.14	23.5	1.368	0.123	0.168	0.01
707.5	23095	QPSK_10MHz_25RB_ 0 offset Middle	Toward Bottom	10	/	22.14	23.5	1.368	0.0287	0.039	0.08

Table 13.19: SAR Values(LTE Band 13-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Left	Touch	/	22.80	23.5	1.175	0.16	0.188	0.10
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Left	Tilt	/	22.80	23.5	1.175	0.138	0.162	0.07
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Right	Touch	19	22.80	23.5	1.175	0.184	0.216	0.14
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Right	Tilt	/	22.80	23.5	1.175	0.133	0.156	0.02
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Left	Touch	/	21.84	23	1.306	0.124	0.162	0.00
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Left	Tilt	/	21.84	23	1.306	0.108	0.141	0.07
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Right	Touch	/	21.84	23	1.306	0.143	0.187	0.18
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Right	Tilt	/	21.84	23	1.306	0.103	0.135	0.02

Table 13.20: SAR Values (LTE Band 13-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Toward Phantom	10	/	22.80	23.5	1.175	0.269	0.316	0.04
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Toward Ground	10	20	22.80	23.5	1.175	0.276	0.324	-0.01
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Toward Phantom	10	/	21.84	23	1.306	0.214	0.280	0.03
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Toward Ground	10	/	21.84	23	1.306	0.219	0.286	-0.00
Hotspot											
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Toward Left	10	/	22.80	23.5	1.175	0.139	0.163	0.09
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Toward Right	10	/	22.80	23.5	1.175	0.267	0.314	-0.02
782	23230	QPSK_10MHz_1RB_ 25 offset Middle	Toward Bottom	10	/	22.80	23.5	1.175	0.0845	0.099	0.12
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Toward Left	10	/	21.84	23	1.306	0.132	0.172	0.04
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Toward Right	10	/	21.84	23	1.306	0.208	0.272	0.02
782	23230	QPSK_10MHz_25RB_ 25 offset Middle	Toward Bottom	10	/	21.84	23	1.306	0.066	0.086	0.15

Table 13.21: SAR Values(LTE Band 25-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Left	Touch	21	23.17	24	1.211	0.419	0.507	0.15
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Left	Tilt	/	23.17	24	1.211	0.0861	0.104	0.19
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Right	Touch	/	23.17	24	1.211	0.176	0.213	0.19
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Right	Tilt	/	23.17	24	1.211	0.0788	0.095	0.10
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Left	Touch	/	22.30	23.5	1.318	0.344	0.453	0.18
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Left	Tilt	/	22.30	23.5	1.318	0.0897	0.118	0.10
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Right	Touch	/	22.30	23.5	1.318	0.144	0.190	0.15
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Right	Tilt	/	22.30	23.5	1.318	0.0644	0.085	0.13

Table 13.22: SAR Values (LTE Band 25-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Toward Phantom	10	/	23.17	24	1.211	0.526	0.637	0.12
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Toward Ground	10	/	23.17	24	1.211	0.625	0.757	0.02
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Toward Phantom	10	/	22.30	23.5	1.318	0.597	0.787	-0.12
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Toward Ground	10	/	22.30	23.5	1.318	0.513	0.676	0.15
Hotspot											
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Toward Left	10	/	23.17	24	1.211	0.246	0.298	-0.01

1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Toward Right	10	/	23.17	24	1.211	0.112	0.136	-0.13
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Toward Bottom	10	22	23.17	24	1.211	1.06	1.283	-0.19
1860	26140	QPSK_20MHz_1RB_ 50 offset Low	Toward Bottom	10	/	23.16	24	1.213	0.907	1.101	0.08
1905	26590	QPSK_20MHz_1RB_ 50 offset High	Toward Bottom	10	/	23.12	24	1.225	1.03	1.261	0.07
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Toward Left	10	/	22.30	23.5	1.318	0.206	0.272	-0.04
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Toward Right	10	/	22.30	23.5	1.318	0.0935	0.123	0.13
1882.5	26365	QPSK_20MHz_50RB_ 0 offset Middle	Toward Bottom	10	/	22.30	23.5	1.318	0.917	1.209	0.07
1860	26140	QPSK_20MHz_50RB_ 0 offset Low	Toward Bottom	10	/	22.28	23.5	1.324	0.94	1.245	0.00
1905	26590	QPSK_20MHz_50RB_ 0 offset High	Toward Bottom	10	/	22.22	23.5	1.343	0.808	1.085	0.03
1882.5	26365	QPSK_20MHz_100RB_ 0 offset Middle	Toward Bottom	10	/	22.24	23.5	1.337	0.759	1.014	-0.01
Repeated											
1882.5	26365	QPSK_20MHz_1RB_ 50 offset Middle	Toward Bottom	10	/	23.17	24	1.211	0.953	1.154	0.07

Table 13.23: SAR Values(LTE Band 26-Head)

Frequency		Configuration	Side	Test Position	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Left	Touch	/	23.82	24	1.042	0.145	0.151	-0.03
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Left	Tilt	/	23.82	24	1.042	0.114	0.119	0.05
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Right	Touch	23	23.82	24	1.042	0.181	0.189	0.13
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Right	Tilt	/	23.82	24	1.042	0.101	0.105	0.08
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Left	Touch	/	22.87	24	1.297	0.113	0.147	0.12
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Left	Tilt	/	22.87	24	1.297	0.0883	0.115	0.07
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Right	Touch	/	22.87	24	1.297	0.135	0.175	0.13

841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Right	Tilt	/	22.87	24	1.297	0.0772	0.100	0.06

Table 13.24: SAR Values (LTE Band 26-Body)

Frequency		Configuration	Test Position	Spacing (mm)	Figure No.	Measured average power (dBm)	Maximum allowed Power (dBm)	Scaling factor	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
Hotspot & Body worn											
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Toward Phantom	10	/	23.82	24	1.042	0.195	0.203	0.06
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Toward Ground	10	24	23.82	24	1.042	0.199	0.207	-0.04
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Toward Phantom	10	/	22.87	24	1.297	0.146	0.189	0.04
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Toward Ground	10	/	22.87	24	1.297	0.147	0.191	-0.03
Hotspot											
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Toward Left	10	/	23.82	24	1.042	0.113	0.118	0.11
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Toward Right	10	/	23.82	24	1.042	0.159	0.166	0.10
841.5	26965	QPSK_15MHz_1RB_ 38 offset High	Toward Bottom	10	/	23.82	24	1.042	0.148	0.154	0.19
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Toward Left	10	/	22.87	24	1.297	0.0878	0.114	0.14
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Toward Right	10	/	22.87	24	1.297	0.123	0.160	0.08
841.5	26965	QPSK_15MHz_36RB_ 0 offset High	Toward Bottom	10	/	22.87	24	1.297	0.109	0.141	0.14