FCC SAR Test Report

FCC ID: RYQEA211002

Report No.	:	BTL-FCC SAR-1-2105T090
Equipment	:	WCDMA/LTE Mobile Phone
Model Name	:	EA211002
Brand Name	:	FIH
Applicant	:	FIH CO., LTD
Address	:	No.4, Mingsheng St., Tu-Cheng Dist.,New Taipei City 23679, Taiwan
Manufacturer	:	FIH CO., LTD
Address	:	No.4, Mingsheng St., Tu-Cheng Dist.,New Taipei City 23679, Taiwan
Radio Function	:	WLAN 2.4G, WLAN 5G, Bluetooth, WCDMA Band II, IV, V and LTE Band 2, 4, 5, 12, 14, 30
Standard(s)	:	**KDB941225 D01** 3G SAR Procedures v03r01 **KDB941225 D05** SAR for LTE Devices v02r05 **KDB941225 D06** Hotspot Mode V02r01 **KDB447498 D01** General RF Exposure Guidance v06 **KDB248227 D01** 802.11 Wi-Fi SAR v02r02 **KDB865664 D01** SAR measurement 100 MHz to 6 GHz v01r04 **KDB865664 D02** SAR Reporting v01r02 **KDB648474 D04** Handset SAR v01r03 **KDB690783 D01** SAR Listings on Grants v01r03
Date of Receipt	:	2021/5/17
Date of Test	:	2021/6/16 ~ 2021/6/25
Issued Date	:	2021/7/21

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by :

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Approved by :

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Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	2021/6/28
R01	Add Simultaneous Transmission in summary, Add extremity SAR note	2021/7/21

1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

Equipment	WCDMA/LTE Mobile Phone		
Model Name	EA211002		
Series Model	EC211002 EC211003		
Model Difference	Different model distribute to different area.		
Brand Name	FIH		
Battery Information	Brand / Model: ZhongShan TianMao Battery Co.,Ltd. / HE401 Model: Rating: 3500mAh / 13.475Wh		
WIFI+BT Module	MTK / MT6631N		
WWAN Module	MTK / MT6177		
Operation Frequency	Function	Band	Frequency (MHz)
	WiFi	2.4G	TX : 2412 - 2472
		5G_UNII 1	TX : 5180 - 5240
		5G_UNII 2a	TX : 5250 - 5350
		5G_UNII 2c	TX : 5500 - 5700
		5G_UNII 3	TX : 5745 - 5825
	Bluetooth	Basic Rate (BR)	TX : 2402 - 2480
		Enhance Data Rate	TX : 2402 - 2480
		Bluetooth Low Energy	TX : 2402 - 2480
	WCDMA	UMTS Band II	TX : 1850 - 1910
		UMTS Band IV	TX : 1710 - 1755
		UMTS Band V	TX : 824 - 849
	LTE	LTE Band 2	TX : 1850 - 1910
		LTE Band 4	TX : 1710 - 1755
		LTE Band 5	TX : 824 - 849
		LTE Band 12	TX : 699 - 716
		LTE Band 14	TX : 790 - 796
		LTE Band 30	TX : 2305 - 2315
Test Model	EA211002		
Sample Status	Engineering Sample		
EUT Modification(s)	N/A		

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCC-SAR-1-2105T090) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2 SUMMARY OF SAR MEASUREMENT

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **SAR Test room** at the location of No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan.

2.2 MEASUREMENT UNCERTAINTY

Uncertainty Budget for Frequency range of 300 MHz to 3 GHz

Error Description	Uncertainty Value (± %)		Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi V_{eff}
Measurement System									
Probe Calibration	6.05		Normal	1	1	1	± 6.05 %	± 6.05 %	∞
Axial Isotropy	4.7		Rectangular	$\sqrt{3}$	0.7	0.7	± 1.9 %	± 1.9 %	∞
Hemispherical Isotropy	9.6		Rectangular	$\sqrt{3}$	0.7	0.7	± 3.9 %	± 3.9 %	∞
Boundary Effects	1		Rectangular	$\sqrt{3}$	1	1	± 0.6 %	± 0.6 %	∞
Linearity	4.7		Rectangular	$\sqrt{3}$	1	1	± 2.7 %	± 2.7 %	∞
Detection Limits	1		Rectangular	$\sqrt{3}$	1	1	± 0.6 %	± 0.6 %	∞
Modulation response	2.4		Rectangular	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	0.3		Normal	1	1	1	± 0.3 %	± 0.3 %	∞
Response Time	0.8		Rectangular	$\sqrt{3}$	1	1	± 0.5%	± 0.5 %	∞
Integration Time	2.6		Rectangular	$\sqrt{3}$	1	1	± 1.5 %	± 1.5 %	∞
RF Ambient – Noise	3		Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
RF Ambient– Reflections	3		Rectangula	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
Probe Positioner	0.4		Rectangular	$\sqrt{3}$	1	1	± 0.2 %	± 0.2 %	∞
Probe Positioning	2.9		Rectangular	$\sqrt{3}$	1	1	± 1.7 %	±1.7 %	∞
Post-processing	4		Rectangular	$\sqrt{3}$	1	1	± 2.3 %	± 2.3 %	∞
Max.SAR Evaluation	2		Rectangular	$\sqrt{3}$	1	1	± 1.15 %	± 1.15 %	∞
Test Sample Related									
Device Positioning	1.6	1.8	Normal	1	1	1	± 1.6 %	± 1.8 %	145
Device Holder	1.5	1.7	Normal	1	1	1	± 1.5 %	± 1.7 %	5
Power Drift	5.0		Rectangular	$\sqrt{3}$	1	1	± 2.9 %	± 2.9 %	∞
Phantom and Setup									
Phantom Production Tolerances	6.1		Rectangular	$\sqrt{3}$	1	1	3.52	3.52	∞
SAR correction	1.9		Rectangular	$\sqrt{3}$	1	0.84	1.10	1.10	
Liquid Conductivity (mea.)	2.4		Rectangular	$\sqrt{3}$	0.78	0.71	1.08	1.08	∞
Liquid Permittivity (mea.)	2.4		Rectangular	$\sqrt{3}$	0.26	0.26	0.36	0.36	∞
Temp. unc. - Conductivity	3.4		Rectangular	$\sqrt{3}$	0.78	0.71	1.53	1.53	∞
Temp. unc. - Permittivity	0.4		Rectangular	$\sqrt{3}$	0.23	0.26	0.05	0.05	∞
Combined Standard Uncertainty (K = 1)							± 10.42 %	± 10.48 %	361
Expanded Uncertainty (K = 2)							**± 20.84 %**	**± 20.97 %**	

Uncertainty Budget for Frequency range of 3 GHz to 6 GHz

Error Description	Uncertainty Value (± %)		Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi V_{eff}
Measurement System									
Probe Calibration	6.65		Normal	1	1	1	± 6.65 %	± 6.65 %	∞
Axial Isotropy	4.7		Rectangular	$\sqrt{3}$	0.7	0.7	± 1.9 %	± 1.9 %	∞
Hemispherical Isotropy	9.6		Rectangular	$\sqrt{3}$	0.7	0.7	± 3.9 %	± 3.9 %	∞
Boundary Effects	2		Rectangular	$\sqrt{3}$	1	1	± 1.2 %	± 1.2 %	∞
Linearity	4.7		Rectangular	$\sqrt{3}$	1	1	± 2.7 %	± 2.7 %	∞
Detection Limits	1		Rectangular	$\sqrt{3}$	1	1	± 0.6 %	± 0.6 %	∞
Modulation response	2.4		Rectangular	$\sqrt{3}$	1	1	±1.4 %	±1.4 %	∞
Readout Electronics	0.3		Normal	1	1	1	± 0.3 %	± 0.3 %	∞
Response Time	0.8		Rectangular	$\sqrt{3}$	1	1	± 0.5%	± 0.5 %	∞
Integration Time	2.6		Rectangular	$\sqrt{3}$	1	1	± 1.5 %	± 1.5 %	∞
RF Ambient – Noise	3		Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
RF Ambient– Reflections	3		Rectangular	$\sqrt{3}$	1	1	± 1.7 %	± 1.7 %	∞
Probe Positioner	0.4		Rectangular	$\sqrt{3}$	1	1	± 0.2 %	± 0.2 %	∞
Probe Positioning	6.7		Rectangular	$\sqrt{3}$	1	1	± 3.9 %	±3.9 %	∞
Post-processing	4		Rectangular	$\sqrt{3}$	1	1	± 2.3 %	± 2.3 %	∞
Max.SAR Evaluation	4		Rectangular	$\sqrt{3}$	1	1	± 2.3 %	± 2.3 %	∞
Test Sample Related									
Device Positioning	1.6	1.8	Normal	1	1	1	±1.6 %	± 1.8 %	145
Device Holder	1.5	1.7	Normal	1	1	1	± 1.5 %	± 1.7 %	5
Power Drift	5.0		Rectangular	$\sqrt{3}$	1	1	± 2.9 %	± 2.9 %	∞
Phantom and Setup									
Phantom Production Tolerances	6.6		Rectangular	$\sqrt{3}$	1	1	3.81	3.81	∞
SAR correction	1.9		Rectangular	$\sqrt{3}$	1	0.84	1.10	0.92	
Liquid Conductivity (mea.)	2.4		Rectangular	$\sqrt{3}$	0.78	0.71	1.08	0.98	∞
Liquid Permittivity (mea.)	2.4		Rectangular	$\sqrt{3}$	0.26	0.26	0.36	0.36	∞
Temp. unc. - Conductivity	3.4		Rectangular	$\sqrt{3}$	0.78	0.71	1.53	1.39	∞
Temp. unc. - Permittivity	0.4		Rectangular	$\sqrt{3}$	0.23	0.26	0.05	0.06	∞
Combined Standard Uncertainty (K = 1)							± 11.65 %	± 11.66 %	361
Expanded Uncertainty (K = 2)							**± 23.29 %**	**± 23.33 %**	

2.3 WLAN Antenna Information:

Antenna	Manufacture	Part Number	Type	Frequency Range (MHz)	Gain (dBi)
Main	INPAQ Corporation	025.901U1.0001	PIFA	2400-2500	-0.5
				5150-5350	2.6
				5470-5725	2.6
				5725-5850	2.6

2.4 WWAN Antenna Information:

Antenna	Manufacture	P/N	Type	Gain (dBi)	Note
Main	INPAQ	MEBFL01007A	PIFA	1.0	UMTS-Band II
				-1.3	UMTS-Band IV
				-4.8	UMTS-Band V
				1.0	LTE Band 2
				-1.3	LTE Band 4
				-4.8	LTE Band 5
				-2.5	LTE Band 12
				-4.3	LTE Band 14
				0.1	LTE Band 30

2.4 The Maximum SAR 1g Values

Mode	Highest Reported Head SAR-1g (W/kg)	Highest Reported Body-worn (10mm) SAR-1g (W/kg)	Highest Reported Hotspot (10mm) SAR-1g (W/kg)	Highest Reported Product Extremity (0mm) SAR-10g (W/kg)	Highest Simultaneous Transmission SAR-1g (W/kg)
UMTS B2	0.632	0.458	1.062		1.508
UMTS B4	0.254	0.467	1.053		
UMTS B5	0.091	0.285	0.334		
LTE B2	0.498	0.568	1.195		
LTE B4	0.148	0.549	1.148		
LTE B5	0.098	0.248	0.239		
LTE B12	0.088	0.316	0.282		
LTE B14	0.094	0.349	0.322		
LTE B30	0.375	0.707	0.864		
2.4G WLAN	1.016	0.311	0..615		
5.2G &5.3G WLAN	1.041	0.576	0.888		
5.6G WLAN	0.671	0.342	0.361		
5.8G WLAN	0.517	0.416	0.323		
Bluetooth	0.194	0.030	0.073		

Note:

1. The device is in compliance with Specific Absorption Rate(SAR)for general population uncontrolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1:2019/IEEE C95.1:2019, the NCRP Report Number 86 for uncontrolled environment and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013 .
2. As per FCC KDB 648474 D04, Extremity SAR testing are not required when the highest reported SAR for Body-worn & Hotspot mode 1g SAR are < 1.2W/Kg

2.5 Laboratory Environment

Temperature	Min. = 18ºC, Max. = 25ºC
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2.6 Main Test Instruments

Item	Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Interval
1	Data Acquisition Electronics	Speag	DAE4	1289	May. 07, 2021	1 Year
2	E-field Probe	Speag	ES3DV3	3253	May. 24, 2021	1 Year
3	E-field Probe	Speag	EX3DV4	7544	Oct. 29, 2020	1 Year
4	System Validation Dipole	Speag	D2450V2	973	Feb. 08, 2021	3 Year
5	System Validation Dipole	Speag	D5GHzV2	1221	Feb. 09, 2021	3 Year
6	System Validation Dipole	Speag	D750V3	1145	Jun. 12, 2019	3 Year
7	System Validation Dipole	Speag	D835V2	4d084	Apr. 13, 2021	3 Year
8	System Validation Dipole	Speag	D1800V2	2d210	Jun. 11, 2019	3 Year
9	System Validation Dipole	Speag	D1900V2	5d208	Jun. 11, 2019	3 Year
10	System Validation Dipole	Speag	D2300V2	1054	Jun. 13, 2019	3 Year
11	Twin Sam Phantom	Speag	QD 000 P40 CD	1662	N/A	N/A
12	ENA Network Analyzer	Agilent	E5071C	MY46524658	Mar. 17, 2021	1 Year
13	Signal Generator	R & S	SMB100A	MY53051229	Aug. 02, 2020	1 Year
14	Spectrum Analyzer	Keysight	N9010A	MY54200240	May. 27, 2021	1 Year
15	Power Meter	Anritsu	ML2495A	1128008	May. 26, 2021	1 Year
16	Power Sensor	Anritsu	MA2411B	1126001	May. 26, 2021	1 Year
17	Dielectric Probe Kit	Agilent	85070E	2593	N/A	N/A
18	Low pass filter	Mini-Circuits	SLP-2950+	M108294	N/A	N/A
19	Power Amplifier	Mini-Circuits	ZVE-2W-272+	N650001538	N/A	N/A
20	Power Amplifier	Mini-Circuits	ZVE-8G+	N628801631	N/A	N/A
21	Thermometer	PA	O-230PK	N/A	Mar. 10, 2021	1 Year

Remark: “N/A” denotes no model name, serial No. or calibration specified.

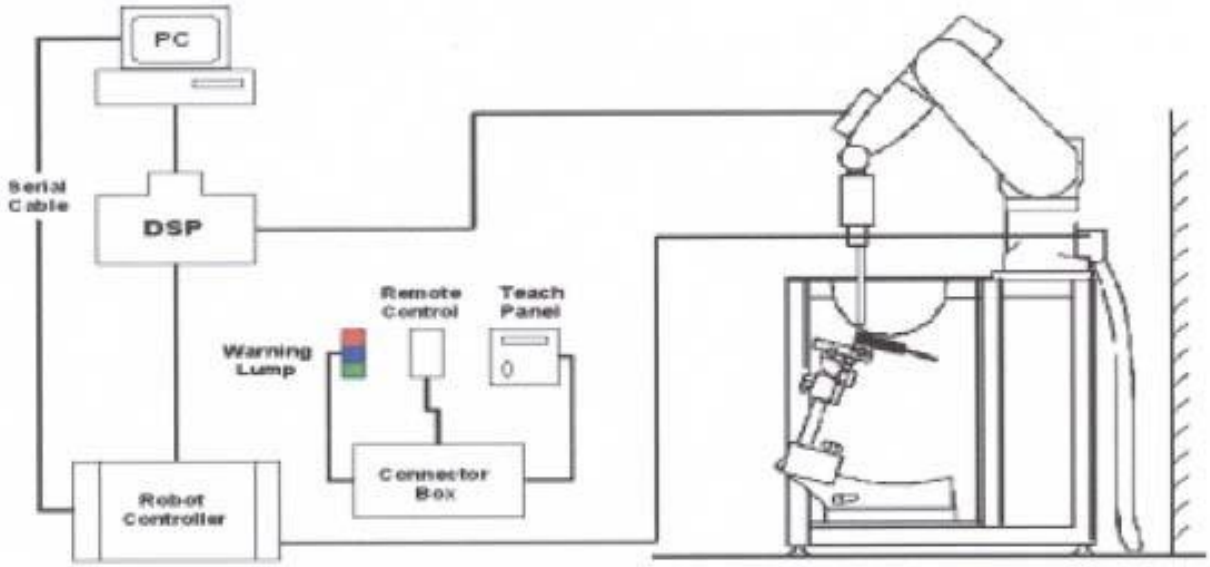
3 SAR MEASUREMENTS SYSTEM CONFIGURATION

3.1 SAR Measurement Setup

The DASY5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
4. A unit to operate the optical surface detector which is connected to the EOC.
5. The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY5 measurement server.
6. The DASY5 measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows.
7. DASY5 software and SEMCAD data evaluation software.
8. Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
9. The generic twin phantom enabling the testing of left-hand and right-hand usage.
10. The device holder for handheld mobile phones.
11. Tissue simulating liquid mixed according to the given recipes.
12. System validation dipoles allowing to validate the proper functioning of the system.

3.1.1 TEST SETUP LAYOUT

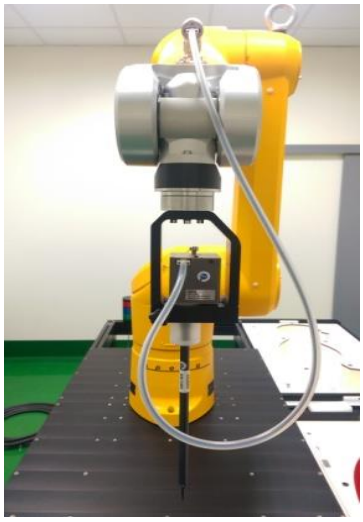


3.2 DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation.

3.2.1 EX3DV4 PROBE SPECIFICATION

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Distance from probe tip to dipole centers: 1.0 mm



EX3DV4 E-field Probe

3.2.2 E-FIELD PROBE CALIBRATION

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ±10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$\mathbf{SAR} = \mathbf{C}\frac{\Delta T}{\Delta t}$$

Where: Δt = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

ΔT = Temperature increase due to RF exposure.

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

Where: σ = Simulated tissue conductivity,

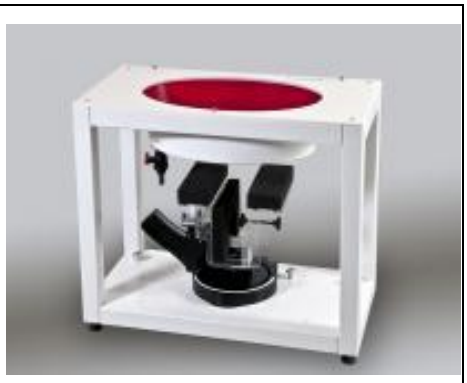
ρ = Tissue density (kg/m3).

3.2.3 OTHER TEST EQUIPMENT

3.2.3.1. DEVICE HOLDER FOR TRANSMITTERS

Construction: Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.) It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin SAM, ELI4 and SAM v6.0 Phantoms.
Material: POM, Acrylic glass, Foam

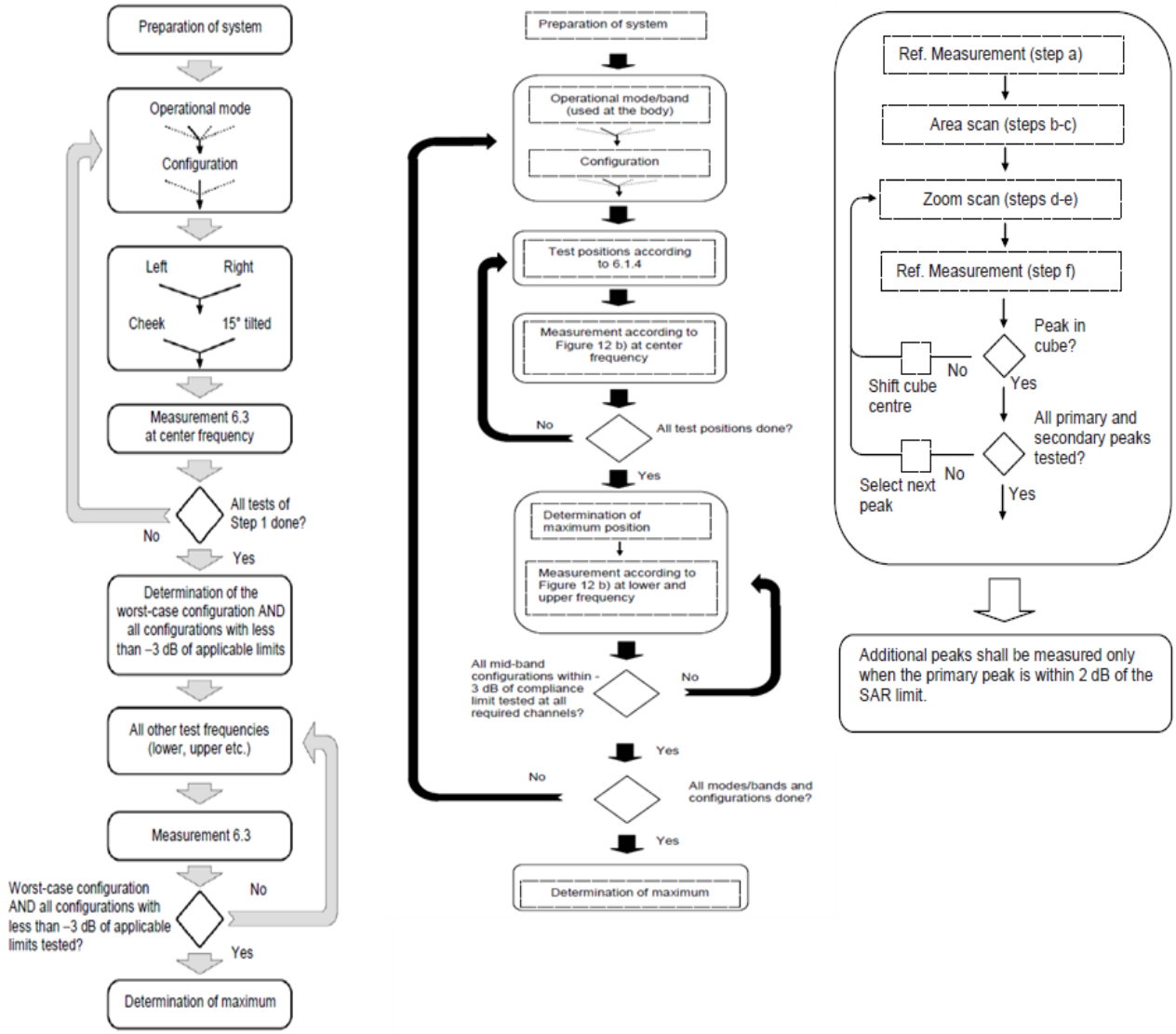
3.2.3.2 PHANTOM

Model	ELI4 Phantom	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Shell Thickness	2±0.1 mm	
Filling Volume	Approx. 30 liters	
Dimensions	Length: 600 mm ; Width: 190mm Height: adjustable feet	
Aailable	Special	

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Shell Thickness	2 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length:1000mm; Width: 500mm Height: adjustable feet	
Aailable	Special	

3.2.4 SCANNING PROCEDURE

The SAR test against the head and body-worn phantom was carried out as follow:



After an area scan has been done at a fixed distance of 1.4mm from the surface of the phantom on the source side, a 3D scan is set up around the location of the maximum spot SAR. First, a point within the scan area is visited by the probe and a SAR reading taken at the start of testing. At the end of testing, the probe is returned to the same point and a second reading is taken. Comparison between these start and end readings enables the power drift during measurement to be assessed.

Above is the scanning procedure flow chart and table from the IEEE1528 standard.

This is the procedure for which all compliant testing should be carried out to ensure that all variations of the device position and transmission behavior are tested.

3.2.5 DATA STORAGE AND EVALUATION

3.2.5.1 DATA STORAGE

The DASY5 software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension “DAE4”. The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.2.6 DATA EVALUATION BY SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	Sensitivity	Normi, a_{i0}, a_{i1}, a_{i2}
	Conversion factor	$ConvF_i$
	Diode compression point	Dcp_i
Device parameters:	Frequency	f
	Crest factor	cf
Media parameters:	Conductivity	
	Density	

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY5 components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcpi$$

With	V_i = compensated signal of channel i	(i = x, y, z)
	U_i = input signal of channel i	(i = x, y, z)
	cf = crest factor of exciting field	(DASY parameter)
	dcp_i = diode compression point	(DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1} f + a_{i2} f^2) / f$

With V_i = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)
[mV/(V/m)^2] for E-field Probes

ConvF = sensitivity enhancement in solution

aij = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_X^2 + E_Y^2 + E_Z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot})^2 \cdot \sigma / (\rho \cdot 1000)$$

With SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m
= conductivity in [mho/m] or [Siemens/m]
= equivalent tissue density in g/cm^3

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \text{ or } Ppwe = H_{tot}^2 \cdot 37.7$$

With P_{pwe} = equivalent power density of a plane wave in mW/cm^2

E_{tot} = total field strength in V/m
H_{tot} = total magnetic field strength in A/m

4 TISSUE-EQUIVALENT LIQUID

4.1 Tissue-equivalent Liquid Ingredients

The liquid is consisted of water, salt and Glycol, Sugar, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The measured conductivity and relative permittivity should be within ±5% of the target values. The below table shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEC 62209.

Composition of the Tissue Equivalent Matter

Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
Head 750	0.2	-	0.2	1.5	56.0	-	42.1	-
Head 835	0.2	-	0.2	1.5	57.0	-	41.1	-
Head 1800	-	44.5	-	0.3	-	-	55.2	-
Head 1900	-	44.5	-	0.2	-	-	55.3	-
Head 2300	-	44.9	-	0.1	-	-	55	-
Head 2450	-	45.0	-	0.1	-	-	54.9	-
Head 5G	-	-	-	-	-	17.2	65.5	17.3

4.2 Tissue-equivalent Liquid Properties

Dielectric Performance of Tissue Simulating Liquid

Tissue Verification									
Date	Tissue Type	Frequency (MHz)	Conductivity (σ)	Permittivity (εr)	Targeted Conductivity (σ)	Targeted Permittivity (εr)	Deviation Conductivity (σ) (%)	Deviation Permittivity (εr) (%)	Limit (%) ±5
2021/6/18	Head	750	0.90	41.77	0.89	41.94	1.46	-0.41	±5
2021/6/21	Head	835	0.90	43.03	0.90	41.50	0.11	3.69	±5
2021/6/22	Head	1800	1.38	41.40	1.40	40.00	-1.79	3.49	±5
2021/6/23	Head	1900	1.41	41.15	1.40	40.00	0.86	2.89	±5
2021/6/24	Head	2300	1.68	40.91	1.67	39.47	0.72	3.64	±5

Tissue Verification									
Date	Tissue Type	Frequency (MHz)	Conductivity (σ)	Permittivity (εr)	Targeted Conductivity (σ)	Targeted Permittivity (εr)	Deviation Conductivity (σ) (%)	Deviation Permittivity (εr) (%)	Limit (%) ±5
2021/6/16	Head	2402	1.79	38.56	1.76	39.29	1.82	-1.86	±5
2021/6/16	Head	2412	1.80	38.52	1.77	39.27	1.87	-1.91	±5
2021/6/16	Head	2422	1.81	38.48	1.78	39.25	1.97	-1.96	±5
2021/6/16	Head	2437	1.82	38.42	1.79	39.22	1.79	-2.04	±5
2021/6/16	Head	2441	1.83	38.40	1.79	39.21	2.12	-2.07	±5
2021/6/16	Head	2450	1.84	38.37	1.80	39.20	2.22	-2.12	±5
2021/6/16	Head	2452	1.84	38.36	1.80	39.19	2.11	-2.12	±5
2021/6/16	Head	2457	1.85	38.34	1.81	39.19	2.38	-2.17	±5
2021/6/16	Head	2462	1.85	38.32	1.81	39.18	2.10	-2.19	±5
2021/6/16	Head	2467	1.86	38.30	1.82	39.17	2.31	-2.22	±5
2021/6/16	Head	2472	1.86	38.28	1.82	39.17	2.03	-2.27	±5
2021/6/16	Head	2480	1.87	38.25	1.83	39.16	2.07	-2.32	±5
2021/6/25	Head	5180	4.71	35.64	4.64	36.02	1.53	-1.05	±5
2021/6/25	Head	5200	4.74	35.57	4.66	36.00	1.72	-1.19	±5
2021/6/25	Head	5220	4.77	35.51	4.68	35.98	1.92	-1.31	±5
2021/6/25	Head	5240	4.79	35.48	4.70	35.96	1.91	-1.33	±5
2021/6/25	Head	5260	4.82	35.45	4.72	35.94	2.12	-1.36	±5
2021/6/25	Head	5280	4.84	35.40	4.74	35.92	2.11	-1.45	±5
2021/6/25	Head	5300	4.86	35.32	4.76	35.90	2.10	-1.62	±5
2021/6/25	Head	5320	4.88	35.26	4.78	35.88	2.09	-1.73	±5
2021/6/25	Head	5500	5.09	34.83	4.96	35.60	2.62	-2.16	±5
2021/6/25	Head	5520	5.12	34.79	4.98	35.58	2.77	-2.22	±5
2021/6/25	Head	5540	5.14	34.74	5.00	35.56	2.72	-2.31	±5
2021/6/25	Head	5560	5.16	34.68	5.03	35.54	2.67	-2.42	±5
2021/6/25	Head	5580	5.19	34.63	5.05	35.52	2.81	-2.51	±5
2021/6/25	Head	5600	5.21	34.59	5.07	35.50	2.76	-2.56	±5
2021/6/25	Head	5620	5.23	34.55	5.09	35.48	2.75	-2.62	±5
2021/6/25	Head	5640	5.26	34.50	5.11	35.46	2.94	-2.71	±5
2021/6/25	Head	5660	5.27	34.47	5.13	35.44	2.73	-2.74	±5
2021/6/25	Head	5680	5.31	34.41	5.15	35.42	3.11	-2.85	±5
2021/6/25	Head	5700	5.33	34.37	5.17	35.40	3.09	-2.91	±5
2021/6/25	Head	5720	5.35	34.31	5.19	35.38	3.08	-3.02	±5
2021/6/25	Head	5745	5.38	34.23	5.22	35.35	3.16	-3.17	±5
2021/6/25	Head	5765	5.41	34.18	5.24	35.33	3.34	-3.26	±5
2021/6/25	Head	5785	5.43	34.16	5.26	35.31	3.33	-3.26	±5
2021/6/25	Head	5800	5.45	34.14	5.27	35.30	3.42	-3.29	±5
2021/6/25	Head	5805	5.45	34.13	5.28	35.29	3.32	-3.29	±5
2021/6/25	Head	5825	5.47	34.08	5.30	35.27	3.29	-3.37	±5

Note:
1)The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.
2)KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.
3)The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.
4) According to FCC TCB workshop April, 2019 RF Exposure Procedures Update(Effective February 19,2019, FCC has permitted the use of single head-tissue simulating liquid specified in IEEE 62209-1- for all SAR tests.

5 SYSTEM CHECK

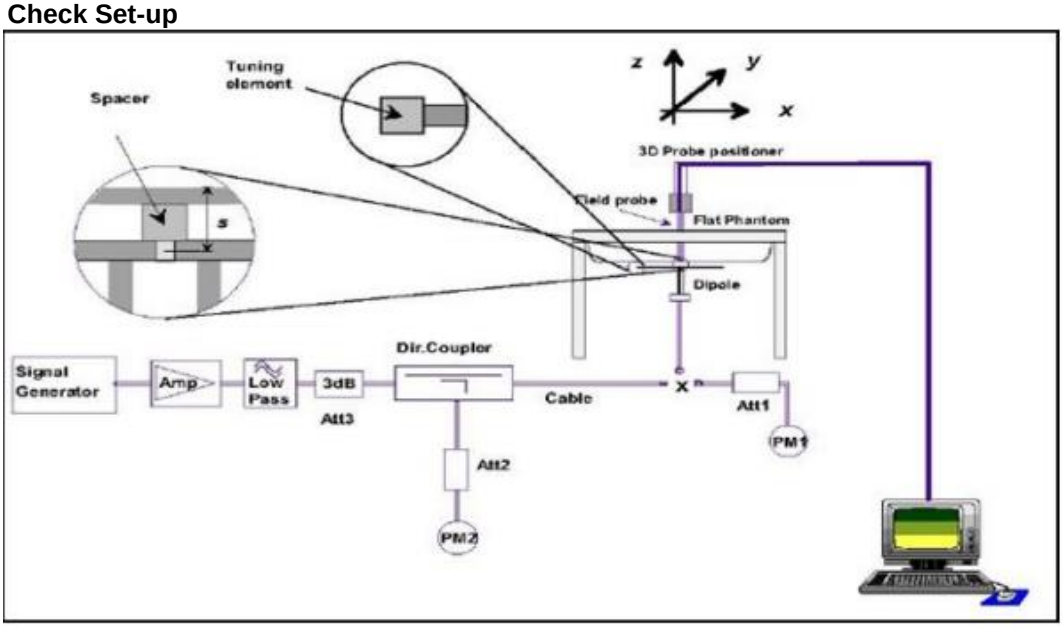
5.1 DESCRIPTION OF SYSTEM CHECK

The manufacturer calibrates the probes annually. Dielectric parameters of the tissue simulants were measured every day using the dielectric probe kit and the network analyzer. A system check measurement was made following the determination of the dielectric parameters of the simulant, using the dipole validation kit. A power level of 250 mW(below 3GHz) or 100mW(3-6GHz), which was placed under the flat section of the twin SAM phantom. The system check results (dielectric parameters and SAR values) are given in the 6.2.

System check results have to be equal or near the values determined during dipole calibration with the relevant liquids and test system (±10 %).

System check is performed regularly on all frequency bands where tests are performed with the DASY5 system.

System Check Set-up



5.2 DESCRIPTION OF SYSTEM CHECK

System Check in Tissue Simulating Liquid

The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE P1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests.

Date	System Dipole			Parameters	Target [W/kg]	Measured [W/kg]	Deviation [%]	Limited [%]
	Type	Serial No.	Liquid					
2021/6/18	D750V3	1145	Head	1g SAR	8.65	8.80	1.73	± 10
			Head	10g SAR	5.82	5.96	2.41	± 10
2021/6/21	D835V2	4d084	Head	1g SAR	9.53	9.36	-1.78	± 10
			Head	10g SAR	6.29	6.24	-0.79	± 10
2021/6/22	D1800V2	2d210	Head	1g SAR	38.30	39.44	2.98	± 10
			Head	10g SAR	20.10	20.72	3.08	± 10
2021/6/23	D1900V2	5d208	Head	1g SAR	40.50	38.60	-4.69	± 10
			Head	10g SAR	21.00	20.40	-2.86	± 10
2021/6/24	D2300V2	1054	Head	1g SAR	47.00	45.20	-3.83	± 10
			Head	10g SAR	22.50	21.32	-5.24	± 10
2021/6/16	D2450V2	973	Head	1g SAR	52.50	52.80	0.57	± 10
			Head	10g SAR	24.40	24.36	-0.16	± 10
2021/6/25	D5GHzV2 (5.2GHz)	1221	Head	1g SAR	79.80	80.10	0.38	± 10
			Head	10g SAR	22.70	23.60	3.96	± 10
	D5GHzV2 (5.3GHz)		Head	1g SAR	81.90	83.60	2.08	± 10
			Head	10g SAR	23.40	24.60	5.13	± 10
	D5GHzV2 (5.6GHz)		Head	1g SAR	84.50	82.60	-2.25	± 10
			Head	10g SAR	24.00	24.10	0.42	± 10
	D5GHzV2 (5.8GHz)		Head	1g SAR	81.70	77.80	-4.77	± 10
			Head	10g SAR	23.00	22.60	-1.74	± 10

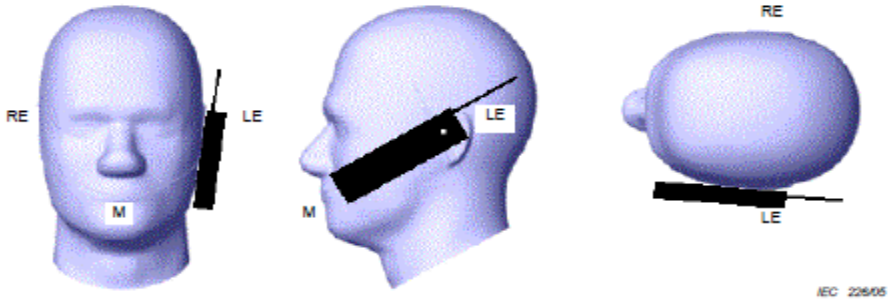
6 OPERATIONAL CONDITIONS DURING TEST

6.1 GENERAL DESCRIPTION OF TEST PROCEDURES

Connection to the EUT is established via air interface with base station An, and the EUT is Set to maximum output power by base station. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. The antenna connected to the output of the base station simulator shall be placed at least 50cm away from the EUT. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the EUT by at least 30dB.

6.2 TEST POSITION OF PORTABLE DEVICES

This DUT was tested in 4 different positions. They are left cheek, left tilted, right tilted, right cheek,

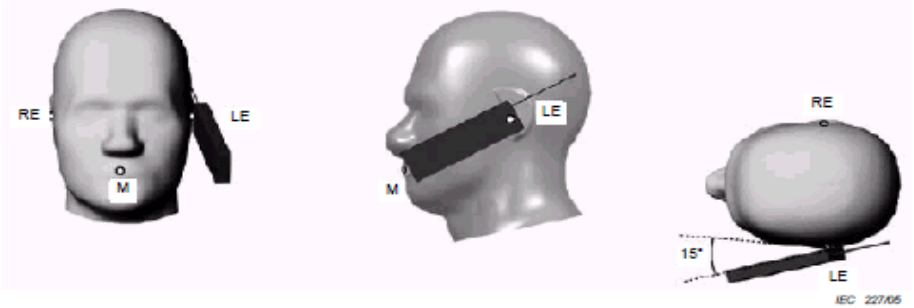


Key

M	Mouth reference point
LE	Left ear reference point (ERP)
RE	Right ear reference point (ERP)

NOTE This device position must be maintained for the phantom test set-up shown in Figure 2.

Note1: Cheek position of the wireless device on Right side of SAM also is similar to the left side represented above.



Key

M	Mouth reference point
LE	Left ear reference point (ERP)
RE	Right ear reference point (ERP)

NOTE This device position must be maintained for the phantom test set-up shown in Figure 2.

Figure 2 Tilt position of the wireless device on the left side of SAM

Note2: Tilt position of the wireless device on Right side of SAM also is similar to the left side represented above.

6.2.1 BODY-WORN TEST CONFIGURATION

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. The distance between the device and the phantom was kept 15mm.

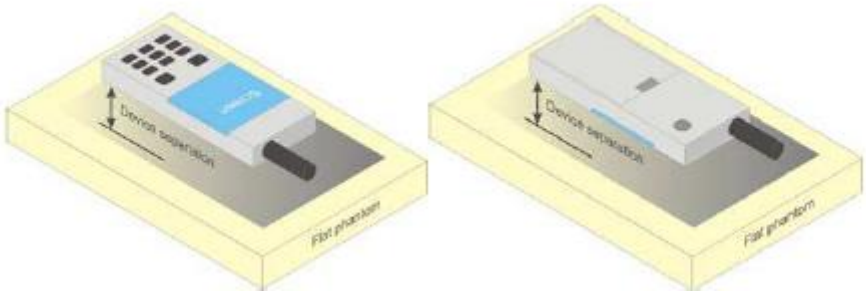


Figure 3 Test positions for body-worn device

6.2.2 HOTSPOT TEST CONFIGURATION

Per FCC KDB 941225D06, the SAR test separation distance for hotspot mode is determined according to device form factor. When the overall length and width of a device is > 9cm×5cm, a test separation distance of 10mm is required for hotspot mode SAR measurements. A test separation distance of 5mm or less is required for smaller devices. Hotspot mode SAR is measured for all edges and surfaces of the device with a transmitting antenna located within 25mm from that surface or edge; for the data modes, wireless technologies and frequency bands supporting hotspot mode. The SAR results are used to determine simultaneous transmission SAR test exclusion for hotspot mode; otherwise, simultaneous transmission SAR measurement is required.

6.2.3 EXTREMITY 10-G SAR TEST CONFIGURATION

Per KDB 648474 D04, for smart phones with a display diagonal dimension > 15.0cm or an overall diagonal dimension > 16.0cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, the device is marketed as “Phablet”.
The UMPC mini-tablets procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, Extremity 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2W/kg; when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

6.3 Test Position of Portable Devices

The size of the EUT is 170mm (length) X 77.4mm (width), the length of the diagonal is 180mm.

Per KDB 648474 D04, because the diagonal distance of this device is > 160mm, it is considered a “Phablet” device. The location of the antenna inside EUT is as below:

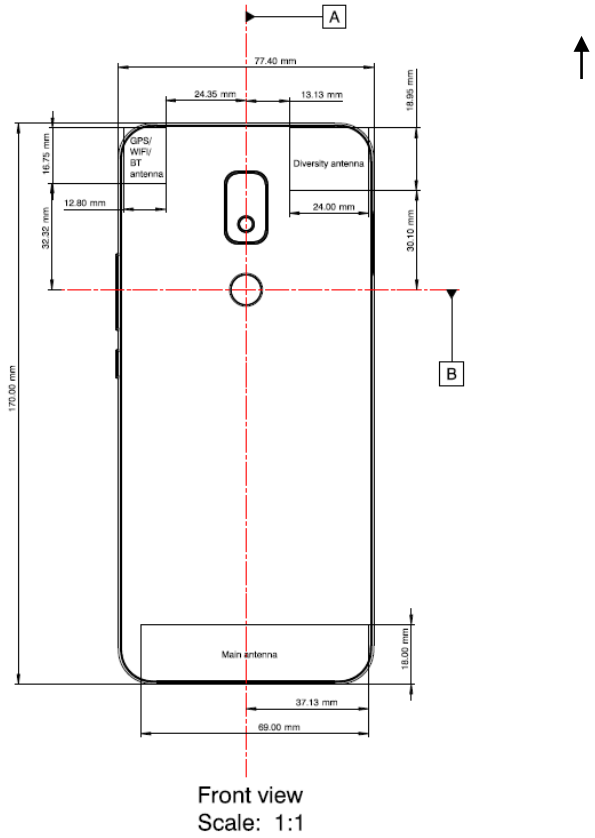


Figure: The location of the antennas

For each antenna, the EUT is tested in Hotspot and Specific 10g SAR at the following test positions:

Antenna	Front Face	Rear Face	Edge 1	Edge 2	Edge 3	Edge 4
WWAN Antenna	YES	YES	NO	YES	YES	YES
WiFi Antenna	YES	YES	YES	YES	NO	NO

Note:

1) The distance of the positions to edge which more than 25mm are not required to test.

7 SAR MEASUREMENT VARIABILITY AND UNCERTAINTY

7.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The detailed repeated measurement results are shown in Section 8.2.

7.2 WCDMA Test Configuration

1. Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the procedures description in section 5.2 of 3GPP TS 34.121,using the appropriate RMC or AMR with TPC(transmit power control) set to all “1s” for WCDMA/HSDPA or applying the required inner loop power control procedure to maintain maximum output power while HSUPA is active. Result for all applicable physical channel configurations(DPCCH,DPDCHn and spreading codes, HSDPA, HSPA)
Should be tabulated in the SAR report .All configuration that are not supported by the DUT or cannot be measured due to technical or equipment limitation should be clearly identified.

2. WCDMA

(1).Head SAR Measurements
SAR for Head exposure configurations in voice mode is measured using a 12.2 kbps RMC with TPC bits configured to all “1s”. SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than ¼ dB higher than that measured in 12.2 kbps RMC. Otherwise SAR is measured on the maximum output channel in 12.2 kbps AMR with 3.4kbps SRB(signalling radio bearer) using the exposure configuration that results in the highest SAR in12.2kbps RMC for that RF channel.

(2).Body SAR Measurements
SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits configured to all “1s”. SAR for other spreading codes and multiple DPDCHn, when supported by the EUT, are not required when the maximum average outputs of each RF channel, for each spreading code and DPDCHn configuration, are less than ¼ dB higher than those measured in 12.2 kbps RMC.

3. HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements”” procedures of 3G device. In addition, body SAR is also measured for HSDPA when the maximum average outputs of each RF channel with HSDPA active is at ¼ dB higher than that measured without HSDPA using 12.2kbps RMC or the maximum SAR 12.2kbps RMC is above 75% of the SAR limit. Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2kbps RMC configured in Test Loop Mode 1, using the highest body SAR configuration in 12.2 kbps RMC without HSDPA.
HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The β_c and β_d gain factors for DPCCH and DPDCH were set according to the values in the below table, β_{hs} for HS-DPCCH is set automatically to the correct value when ΔACK, ΔNACK, ΔCQI = 8. The variation of the β_c /β_d ratio causes a power reduction at sub-tests 2 - 4.

Sub-test	β_c	β_d	β_d (SF)	β_c /β_d	β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: ΔACK, ΔNACK and ΔCQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$
Note 2 : CM=1 for β_c/β_d= 12/15, β_{hs}/β_c = 24/15. For all other combinations of DPDCH,DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
Note 3 : For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to β_c = 11/15 and β_d = 15/15

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Settings of required H-Set 1 QPSK acc. to 3GPP 34.121

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI"s
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

HSDPA UE category

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

4. HSUPA

SAR for Body exposure configurations is measured according to the “Body SAR Measurements” procedures of 3G device. When the maximum output power is ≤¼ dB higher than the primary mode or when the SAR of the primary mode is scaled by the ratio of specified maximum output power and SAR is ≤ 75% SAR Limit, SAR measurement is not required for the secondary mode.

The 3G SAR test reduction procedures is applied to HSPA(HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSPA using the HSPA body SAR procedures for the highest reported body exposure SAR configuration in 12.2 kbps RMC.

Due to inner loop power control requirements in HSUPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSDPA should be configured according to the values indicated below as well as other applicable procedures described in the “WCDMA Handset“ and „Release 5 HSDPA Data Device” sections of 3G device.

Subtests for WCDMA Release 6 HSUPA

WCDMA General Settings	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	9/15	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	1309/225	94/75	47/15	56/75	134/15
	CM (dB)	1	3	2	3	1
	MPR (dB)	0	2	1	2	0

HSUPA UE category

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Speading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF4	11484	5.76
	4	4	2		20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF4	22996	?
	4	4	10		20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0).

5. DC-HSDPA

In DC-HSDPA implementation of this device, the uplink parameters are the same as HSDPA. No additional channels and modulations (16 QAM, and 64 QAM) are supported in uplink. The difference is only in the downlink parameters, where two carriers are supported. HSDPA settings were used on uplink.

For Rel. 8 DC-HSDPA apply the four subtests from HSDPA Release 5 except use fixed reference channel H-Set 12 for DC-HSDPA. And we can apply the same SAR test exclusion criteria used for Rel. 6 HSPA for Rel. 7 HSPA+ and Rel. 8 DC-HSDPA. That is, if the HSPA, HSPA+, or the DC-HSDPA maximum output is not more than 0.25 dB higher than WCDMA, SAR measurement for those modes is not required.
The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0
Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13
The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.
The measurements were performed with a Fixed Reference Channel (FRC) H-Set 12 with QPSK

Parameter	Value
Nominal average inf. bit rate	60 kbit/s
Inter-TTI Distance	1 TTI"s
Number of HARQ Processes	6 Processes
Information Bit Payload	120 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	960 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	3200 SMLs
Coding Rate	0.15
Number of Physical Channel Codes	1

Note:
1. The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table above.
2. Maximum number of transmission is limited to 1,i.e.,retransmission is not allowed. The redundancy and constellation version 0 shall be used.

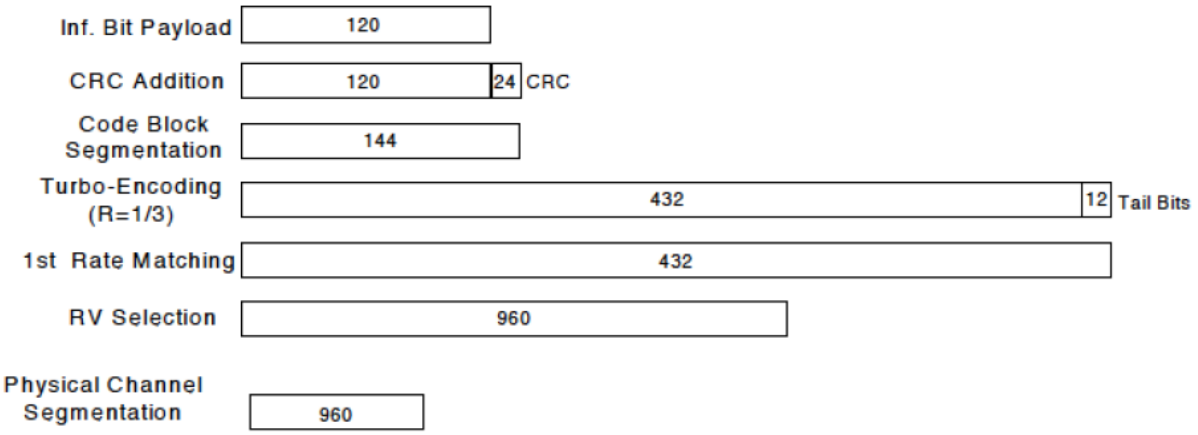


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 5 procedures. A summary of subtest settings are illustrated below:

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM(dB)(2)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2 : CM=1 for β_c/β_d=12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3 : For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to β_c = 11/15 and β_d = 15/15

Up commands are set continuously to set the UE to Max power.

Note:
1.The Dual Carriers transmission only applies to HSDPA physical channels
2.The Dual Carriers belong to the same Node and are on adjacent carriers.
3.The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation
4.The Dual Carriers operate in the same frequency band .
5.The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.
6.The device doesn’t support carrier aggregation for it just can operate in Release 8.

7.3 LTE Test Configuration

Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The RS CMW500 was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI(transmit time interval) supported by the device in each LTE configuration.

1)Spectrum Plots for RB configurations
A properly configured base station simulator was used for LTE output power measurements and SAR testing. Therefore, spectrum plots for RB configurations were not required to be included in this report.

2) MPR
MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3-6.2.5 under Table 6.2.3-1.

3)A-MPR
A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signaling Value of “NS=01”on the base station simulator.

4)SAR test requirements
The LTE SAR test is choice the max power mode and start with the max power channel.
A) Largest channel bandwidth standalone SAR test requirements
i) QPSK with 1 RB allocation
When the SAR is ≤ 1 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 10-g SAR of a required test channel is > 1.8 W/kg, SAR is required for all three RB offset configurations for that required test channel.

8 CONDUCTED POWER RESULTS

8.1 UMTS Band

For Head

Band	UMTS Band II Average Conducted Power(dBm)			
Tx Channel	Max. Tune-up power (dBm)	9262	9400	9538
Rx Channel		9662	9800	9938
Frequency		1852.4MHz	1880MHz	1907.6MHz
RMC 12.2K	25.00	24.84	24.64	24.54
HSDPA Subtest-1	24.00	23.72	23.11	23.20
HSDPA Subtest-2	24.00	23.24	23.63	23.72
HSDPA Subtest-3	24.00	22.82	23.21	23.30
HSDPA Subtest-4	24.00	23.63	23.55	23.49
HSUPA Subtest-1	24.00	23.73	23.82	23.19
HSUPA Subtest-2	24.00	23.13	23.11	23.24
HSUPA Subtest-3	24.00	23.13	23.26	23.35
HSUPA Subtest-4	24.00	22.01	22.40	22.49
HSUPA Subtest-5	24.00	23.66	23.84	23.91

Band	UMTS Band IV Average Conducted Power(dBm)			
Tx Channel	Max. Tune-up power (dBm)	1312	1413	1513
Rx Channel		1537	1652	1738
Frequency		1712.4MHz	1732.6MHz	1752.6MHz
RMC 12.2K	25.00	24.79	24.41	24.67
HSDPA Subtest-1	24.00	23.60	23.60	23.79
HSDPA Subtest-2	24.00	23.15	23.18	23.34
HSDPA Subtest-3	24.00	22.70	22.78	22.89
HSDPA Subtest-4	24.00	22.62	22.63	22.82
HSUPA Subtest-1	24.00	23.65	23.71	23.84
HSUPA Subtest-2	24.00	22.48	22.39	22.5
HSUPA Subtest-3	24.00	22.77	22.83	22.96
HSUPA Subtest-4	24.00	22.40	22.28	22.19
HSUPA Subtest-5	24.00	23.56	23.56	23.75

Band	UMTS Band V Average Conducted Power(dBm)			
Tx Channel	Max. Tune-up power (dBm)	4132	4183	4233
Rx Channel		4357	4407	4458
Frequency		826.4MHz	836.6MHz	846.6MHz
RMC 12.2K	25.00	24.95	24.83	25.00
HSDPA Subtest-1	24.00	23.68	23.62	23.44
HSDPA Subtest-2	24.00	23.63	23.87	23.95
HSDPA Subtest-3	24.00	23.13	23.67	23.45
HSDPA Subtest-4	24.00	23.18	23.72	23.50
HSUPA Subtest-1	24.00	23.34	23.66	23.44
HSUPA Subtest-2	24.00	22.24	22.78	22.56
HSUPA Subtest-3	24.00	23.24	23.78	23.56
HSUPA Subtest-4	24.00	22.26	22.80	22.58
HSUPA Subtest-5	24.00	23.28	23.57	23.35

For Body & Hotspot

Band	UMTS Band II Average Conducted Power(dBm)			
Tx Channel	Max. Tune-up power (dBm)	9262	9400	9538
Rx Channel		9662	9800	9938
Frequency		1852.4MHz	1880MHz	1907.6MHz
RMC 12.2K	19.50	19.01	18.82	18.89
HSDPA Subtest-1	18.50	18.00	18.25	18.31
HSDPA Subtest-2	18.50	18.41	18.50	18.18
HSDPA Subtest-3	18.50	18.10	18.25	18.42
HSDPA Subtest-4	18.50	18.22	18.41	18.47
HSUPA Subtest-1	18.50	18.43	18.36	18.27
HSUPA Subtest-2	18.50	18.50	18.27	18.25
HSUPA Subtest-3	18.50	18.32	18.25	18.33
HSUPA Subtest-4	18.50	18.39	18.49	18.19
HSUPA Subtest-5	18.50	18.46	18.36	18.50

Band	UMTS Band IV Average Conducted Power(dBm)			
Tx Channel	Max. Tune-up power (dBm)	1312	1413	1513
Rx Channel		1537	1652	1738
Frequency		1712.4MHz	1732.6MHz	1752.6MHz
RMC 12.2K	18.00	17.25	17.50	17.20
HSDPA Subtest-1	17.00	16.59	16.90	16.06
HSDPA Subtest-2	17.00	16.20	16.71	16.16
HSDPA Subtest-3	17.00	16.76	16.21	16.42
HSDPA Subtest-4	17.00	16.14	16.10	16.00
HSUPA Subtest-1	17.00	16.00	16.52	16.56
HSUPA Subtest-2	17.00	16.50	16.43	16.90
HSUPA Subtest-3	17.00	16.37	16.79	16.75
HSUPA Subtest-4	17.00	16.49	16.77	16.10
HSUPA Subtest-5	17.00	16.53	17.00	16.51

Band	UMTS Band V Average Conducted Power(dBm)			
Tx Channel	Max. Tune-up power (dBm)	4132	4183	4233
Rx Channel		4357	4407	4458
Frequency		826.4MHz	836.6MHz	846.6MHz
RMC 12.2K	25.00	24.95	24.83	25.00
HSDPA Subtest-1	24.00	23.68	23.62	23.44
HSDPA Subtest-2	24.00	23.63	23.87	23.95
HSDPA Subtest-3	24.00	23.13	23.67	23.45
HSDPA Subtest-4	24.00	23.18	23.72	23.50
HSUPA Subtest-1	24.00	23.34	23.66	23.44
HSUPA Subtest-2	24.00	22.24	22.78	22.56
HSUPA Subtest-3	24.00	23.24	23.78	23.56
HSUPA Subtest-4	24.00	22.26	22.80	22.58
HSUPA Subtest-5	24.00	23.28	23.57	23.35

8.2 LTE Band

For Head

LTE Band 2

LTE B2/BW=1.4M		Average Conducted Power(dBm)				LTE B2/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			18607/ 1850.7	18900/ 1880.0	19192/ 1909.2				18615/ 1851.5	18900/ 1880.0	19184/ 1908.4
QPSK	1/0	24.00	23.50	23.45	23.27	QPSK	1/0	24.00	23.54	23.49	23.31
	1/2	24.00	23.47	23.23	23.23		1/7	24.00	23.51	23.27	23.27
	1/5	24.00	23.40	23.26	23.04		1/14	24.00	23.44	23.30	23.08
	3/0	23.00	22.59	22.54	22.36		8/0	23.00	22.63	22.58	22.40
	3/1	23.00	22.52	22.28	22.28		8/4	23.00	22.56	22.32	22.32
	3/2	23.00	22.47	22.33	22.11		8/7	23.00	22.51	22.37	22.15
	6/0	23.00	22.54	22.49	22.31		15/0	23.00	22.58	22.53	22.35
16QAM	1/0	23.00	22.57	22.52	22.34	16QAM	1/0	23.00	22.61	22.56	22.38
	1/2	23.00	22.55	22.31	22.31		1/7	23.00	22.59	22.35	22.35
	1/5	23.00	22.50	22.36	22.14		1/14	23.00	22.54	22.40	22.18
	3/0	22.00	21.65	21.60	21.42		8/0	22.00	21.69	21.64	21.46
	3/1	22.00	21.55	21.31	21.31		8/4	22.00	21.59	21.35	21.35
	3/2	22.00	21.50	21.36	21.14		8/7	22.00	21.54	21.40	21.18
	6/0	22.00	21.57	21.52	21.34		15/0	22.00	21.61	21.56	21.38
LTE B2/BW=5M		Average Conducted Power(dBm)				LTE B2/BW=10M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			18625/ 1852.5	18900/ 1880	19175/ 1907.5				18650/ 1855	18900/ 1880	19150/ 1905
QPSK	1/0	24.00	23.62	23.57	23.39	QPSK	1/0	24.00	23.69	23.64	23.46
	1/12	24.00	23.59	23.35	23.35		1/12	24.00	23.66	23.42	23.42
	1/24	24.00	23.52	23.38	23.16		1/49	24.00	23.59	23.45	23.23
	12/0	23.00	22.71	22.66	22.48		25/0	23.00	22.78	22.73	22.55
	12/6	23.00	22.64	22.40	22.40		25/12	23.00	22.71	22.47	22.47
	12/11	23.00	22.59	22.45	22.23		25/24	23.00	22.66	22.52	22.30
	25/0	23.00	22.66	22.61	22.43		50/0	23.00	22.73	22.68	22.50
16QAM	1/0	23.00	22.69	22.64	22.46	16QAM	1/0	23.00	22.76	22.71	22.53
	1/12	23.00	22.67	22.43	22.43		1/24	23.00	22.74	22.50	22.50
	1/24	23.00	22.62	22.48	22.26		1/49	23.00	22.69	22.55	22.33
	12/0	22.00	21.77	21.72	21.54		25/0	22.00	21.84	21.79	21.61
	12/6	22.00	21.67	21.43	21.43		25/12	22.00	21.74	21.50	21.50
	12/11	22.00	21.62	21.48	21.26		25/24	22.00	21.69	21.55	21.33
	25/0	22.00	21.69	21.64	21.46		50/0	22.00	21.76	21.71	21.53

LTE B2/BW=15M		Average Conducted Power(dBm)				LTE B2/BW=20M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			18675/ 1857.5	18900/ 1880	19125/ 1902.5				18700/ 1860	18900/ 1880	19100/ 1900
QPSK	1/0	24.00	23.74	23.69	23.51	QPSK	1/0	24.00	23.87	23.82	23.64
	1/37	24.00	23.71	23.47	23.47		1/49	24.00	23.84	23.60	23.60
	1/74	24.00	23.64	23.50	23.28		1/99	24.00	23.77	23.63	23.41
	36/0	23.00	22.83	22.78	22.60		50/0	23.00	22.96	22.91	22.73
	36/18	23.00	22.76	22.52	22.52		50/24	23.00	22.89	22.65	22.65
	36/35	23.00	22.71	22.57	22.35		50/49	23.00	22.84	22.70	22.48
	75/0	23.00	22.78	22.73	22.55		100/0	23.00	22.91	22.86	22.68
16QAM	1/0	23.00	22.81	22.76	22.58	16QAM	1/0	23.00	22.94	22.89	22.71
	1/37	23.00	22.79	22.55	22.55		1/49	23.00	22.92	22.68	22.68
	1/74	23.00	22.74	22.60	22.38		1/99	23.00	22.87	22.73	22.51
	36/0	22.00	21.89	21.84	21.66		50/0	22.00	22.02	21.97	21.79
	36/18	22.00	21.79	21.55	21.55		50/24	22.00	21.92	21.68	21.68
	36/35	22.00	21.74	21.60	21.38		50/49	22.00	21.87	21.73	21.51
	75/0	22.00	21.81	21.76	21.58		100/0	22.00	21.94	21.89	21.71

LTE Band 4

LTE B4/BW=1.4M		Average Conducted Power(dBm)				LTE B4/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			19957/ 1710.7	20175/ 1732.5	20392/ 1754.2				19965/ 1711.5	20175/ 1732.5	20384/ 1753.4
QPSK	1/0	24.00	23.45	23.48	23.42	QPSK	1/0	24.00	23.53	23.56	23.50
	1/2	24.00	23.32	23.42	23.25		1/7	24.00	23.40	23.50	23.33
	1/5	24.00	23.10	23.38	23.10		1/14	24.00	23.18	23.46	23.18
	3/0	23.00	22.54	22.57	22.51		8/0	23.00	22.62	22.65	22.59
	3/1	23.00	22.37	22.47	22.30		8/4	23.00	22.45	22.55	22.38
	3/2	23.00	22.17	22.45	22.17		8/7	23.00	22.25	22.53	22.25
	6/0	23.00	22.49	22.52	22.46		15/0	23.00	22.57	22.60	22.54
16QAM	1/0	23.00	22.52	22.55	22.49	16QAM	1/0	23.00	22.60	22.63	22.57
	1/2	23.00	22.40	22.50	22.33		1/7	23.00	22.48	22.58	22.41
	1/5	23.00	22.20	22.48	22.20		1/14	23.00	22.28	22.56	22.28
	3/0	22.00	21.60	21.63	21.57		8/0	22.00	21.68	21.71	21.65
	3/1	22.00	21.40	21.50	21.33		8/4	22.00	21.48	21.58	21.41
	3/2	22.00	21.20	21.48	21.20		8/7	22.00	21.28	21.56	21.28
	6/0	22.00	21.52	21.55	21.49		15/0	22.00	21.60	21.63	21.57

LTE B4/BW=5M		Average Conducted Power(dBm)				LTE B4/BW=10M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			19975/ 1712.5	20175/ 1732.5	20375/ 1752.5				20000/ 1715	20175/ 1732.5	20350/ 1750
QPSK	1/0	24.00	23.58	23.61	23.55	QPSK	1/0	24.00	23.62	23.65	23.59
	1/12	24.00	23.45	23.55	23.38		1/12	24.00	23.49	23.59	23.42
	1/24	24.00	23.23	23.51	23.23		1/49	24.00	23.27	23.55	23.27
	12/0	23.00	22.67	22.70	22.64		25/0	23.00	22.71	22.74	22.68
	12/6	23.00	22.50	22.60	22.43		25/12	23.00	22.54	22.64	22.47
	12/11	23.00	22.30	22.58	22.30		25/24	23.00	22.34	22.62	22.34
	25/0	23.00	22.62	22.65	22.59		50/0	23.00	22.66	22.69	22.63
16QAM	1/0	23.00	22.65	22.68	22.62	16QAM	1/0	23.00	22.69	22.72	22.66
	1/12	23.00	22.53	22.63	22.46		1/24	23.00	22.57	22.67	22.50
	1/24	23.00	22.33	22.61	22.33		1/49	23.00	22.37	22.65	22.37
	12/0	22.00	21.73	21.76	21.70		25/0	22.00	21.77	21.80	21.74
	12/6	22.00	21.53	21.63	21.46		25/12	22.00	21.57	21.67	21.50
	12/11	22.00	21.33	21.61	21.33		25/24	22.00	21.37	21.65	21.37
	25/0	22.00	21.65	21.68	21.62		50/0	22.00	21.69	21.72	21.66

LTE B4/BW=15M		Average Conducted Power(dBm)				LTE B4/BW=20M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			20025/ 1717.5	20175/ 1732.5	20325/ 1747.5				20050/ 1720	20175/ 1732.5	20300/ 1745
QPSK	1/0	24.00	23.71	23.74	23.68	QPSK	1/0	24.00	23.84	23.87	23.81
	1/37	24.00	23.58	23.68	23.51		1/49	24.00	23.71	23.81	23.64
	1/74	24.00	23.36	23.64	23.36		1/99	24.00	23.49	23.77	23.49
	36/0	23.00	22.80	22.83	22.77		50/0	23.00	22.93	22.96	22.90
	36/18	23.00	22.63	22.73	22.56		50/24	23.00	22.76	22.86	22.69
	36/35	23.00	22.43	22.71	22.43		50/49	23.00	22.56	22.84	22.56
	75/0	23.00	22.75	22.78	22.72		100/0	23.00	22.88	22.91	22.85
16QAM	1/0	23.00	22.78	22.81	22.75	16QAM	1/0	23.00	22.91	22.94	22.88
	1/37	23.00	22.66	22.76	22.59		1/49	23.00	22.79	22.89	22.72
	1/74	23.00	22.46	22.74	22.46		1/99	23.00	22.59	22.87	22.59
	36/0	22.00	21.86	21.89	21.83		50/0	22.00	21.99	22.02	21.96
	36/18	22.00	21.66	21.76	21.59		50/24	22.00	21.79	21.89	21.72
	36/35	22.00	21.46	21.74	21.46		50/49	22.00	21.59	21.87	21.59
	75/0	22.00	21.78	21.81	21.75		100/0	22.00	21.91	21.94	21.88

LTE Band 5

LTE B5/BW=1.4M		Average Conducted Power(dBm)				LTE B5/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			20407/ 824.7	20525/ 836.5	20642/ 848.2				20415/ 825.5	20525/ 836.5	20634/ 847.4
QPSK	1/0	24.00	23.40	23.50	23.28	QPSK	1/0	24.00	23.47	23.57	23.35
	1/2	24.00	23.29	23.37	23.12		1/7	24.00	23.36	23.44	23.19
	1/5	24.00	22.98	23.28	22.97		1/14	24.00	23.05	23.35	23.04
	3/0	23.00	22.49	22.59	22.37		8/0	23.00	22.56	22.66	22.44
	3/1	23.00	22.34	22.42	22.17		8/4	23.00	22.41	22.49	22.24
	3/2	23.00	22.05	22.35	22.04		8/7	23.00	22.12	22.42	22.11
	6/0	23.00	22.44	22.54	22.32		15/0	23.00	22.51	22.61	22.39
16QAM	1/0	23.00	22.47	22.57	22.35	16QAM	1/0	23.00	22.54	22.64	22.42
	1/2	23.00	22.37	22.45	22.20		1/7	23.00	22.44	22.52	22.27
	1/5	23.00	22.08	22.38	22.07		1/14	23.00	22.15	22.45	22.14
	3/0	22.00	21.55	21.65	21.43		8/0	22.00	21.62	21.72	21.50
	3/1	22.00	21.37	21.45	21.20		8/4	22.00	21.44	21.52	21.27
	3/2	22.00	21.08	21.38	21.07		8/7	22.00	21.15	21.45	21.14
	6/0	22.00	21.47	21.57	21.35		15/0	22.00	21.54	21.64	21.42
LTE B5/BW=5M		**Average Conducted Power(dBm)**				**LTE B5/BW=10M**		**Average Conducted Power(dBm)**			
Modula-tion	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**			**Modula-tion**	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**		
			20415/ 825.5	**20525/ 836.5**	**20634/ 847.4**				**20450/ 829**	**20525/ 836.5**	**20600/ 844**
QPSK	1/0	24.00	23.56	23.66	23.44	QPSK	1/0	24.00	23.61	23.71	23.49
	1/12	24.00	23.45	23.53	23.28		1/12	24.00	23.50	23.58	23.33
	1/24	24.00	23.14	23.44	23.13		1/49	24.00	23.19	23.49	23.18
	12/0	23.00	22.65	22.75	22.53		25/0	23.00	22.70	22.80	22.58
	12/6	23.00	22.50	22.58	22.33		25/12	23.00	22.55	22.63	22.38
	12/11	23.00	22.21	22.51	22.20		25/24	23.00	22.26	22.56	22.25
	25/0	23.00	22.60	22.70	22.48		50/0	23.00	22.65	22.75	22.53
16QAM	1/0	23.00	22.63	22.73	22.51	16QAM	1/0	23.00	22.68	22.78	22.56
	1/12	23.00	22.53	22.61	22.36		1/24	23.00	22.58	22.66	22.41
	1/24	23.00	22.24	22.54	22.23		1/49	23.00	22.29	22.59	22.28
	12/0	22.00	21.71	21.81	21.59		25/0	22.00	21.76	21.86	21.64
	12/6	22.00	21.53	21.61	21.36		25/12	22.00	21.58	21.66	21.41
	12/11	22.00	21.24	21.54	21.23		25/24	22.00	21.29	21.59	21.28
	25/0	22.00	21.63	21.73	21.51		50/0	22.00	21.68	21.78	21.56

LTE Band 12

LTE B12/BW=1.4M		Average Conducted Power(dBm)				LTE B12/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			23017/ 699.7	23095/ 707.5	23173/ 715.3				23025/ 700.5	23095/ 707.5	23165/ 714.5
QPSK	1/0	24.00	23.38	23.49	23.34	QPSK	1/0	24.00	23.49	23.60	23.45
	1/2	24.00	23.32	23.20	23.23		1/7	24.00	23.43	23.31	23.34
	1/5	24.00	23.13	23.03	22.92		1/14	24.00	23.24	23.14	23.03
	3/0	23.00	22.47	22.58	22.43		8/0	23.00	22.58	22.69	22.54
	3/1	23.00	22.37	22.25	22.28		8/4	23.00	22.48	22.36	22.39
	3/2	23.00	22.20	22.10	21.99		8/7	23.00	22.31	22.21	22.10
	6/0	23.00	22.42	22.53	22.38		15/0	23.00	22.53	22.64	22.49
16QAM	1/0	23.00	22.45	22.56	22.41	16QAM	1/0	23.00	22.56	22.67	22.52
	1/2	23.00	22.40	22.28	22.31		1/7	23.00	22.51	22.39	22.42
	1/5	23.00	22.23	22.13	22.02		1/14	23.00	22.34	22.24	22.13
	3/0	22.00	21.53	21.64	21.49		8/0	22.00	21.64	21.75	21.60
	3/1	22.00	21.40	21.28	21.31		8/4	22.00	21.51	21.39	21.42
	3/2	22.00	21.23	21.13	21.02		8/7	22.00	21.34	21.24	21.13
	6/0	22.00	21.45	21.56	21.41		15/0	22.00	21.56	21.67	21.52
LTE B12/BW=5M		**Average Conducted Power(dBm)**				**LTE B12/BW=10M**		**Average Conducted Power(dBm)**			
Modula-tion	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**			**Modula-tion**	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**		
			23035/ 701.5	**23095/ 707.5**	**23155/ 713.5**				**23060/ 704**	**23095/ 707.5**	**23130/ 711**
QPSK	1/0	24.00	23.56	23.67	23.52	QPSK	1/0	24.00	23.64	23.75	23.60
	1/12	24.00	23.50	23.38	23.41		1/12	24.00	23.58	23.46	23.49
	1/24	24.00	23.31	23.21	23.10		1/49	24.00	23.39	23.29	23.18
	12/0	23.00	22.65	22.76	22.61		25/0	23.00	22.73	22.84	22.69
	12/6	23.00	22.55	22.43	22.46		25/12	23.00	22.63	22.51	22.54
	12/11	23.00	22.38	22.28	22.17		25/24	23.00	22.46	22.36	22.25
	25/0	23.00	22.60	22.71	22.56		50/0	23.00	22.68	22.79	22.64
16QAM	1/0	23.00	22.63	22.74	22.59	16QAM	1/0	23.00	22.71	22.82	22.67
	1/12	23.00	22.58	22.46	22.49		1/24	23.00	22.66	22.54	22.57
	1/24	23.00	22.41	22.31	22.20		1/49	23.00	22.49	22.39	22.28
	12/0	22.00	21.71	21.82	21.67		25/0	22.00	21.79	21.90	21.75
	12/6	22.00	21.58	21.46	21.49		25/12	22.00	21.66	21.54	21.57
	12/11	22.00	21.41	21.31	21.20		25/24	22.00	21.49	21.39	21.28
	25/0	22.00	21.63	21.74	21.59		50/0	22.00	21.71	21.82	21.67

LTE Band 14

LTE B14/BW=5M		Average Conducted Power(dBm)				LTE B14/BW=10M		Average Conducted Power(dBm)	
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)
			23305/ 790.5	23330/ 793	23355/ 795.5				23330/ 793
QPSK	1/0	24.00	23.45	23.53	23.50	QPSK	1/0	24.00	23.61
	1/12	24.00	23.39	23.47	23.44		1/12	24.00	23.55
	1/24	24.00	23.48	23.56	23.53		1/49	24.00	23.64
	12/0	23.00	22.59	22.67	22.64		25/0	23.00	22.75
	12/6	23.00	22.44	22.52	22.49		25/12	23.00	22.60
	12/11	23.00	22.55	22.63	22.60		25/24	23.00	22.71
	25/0	23.00	22.49	22.57	22.54		50/0	23.00	22.65
16QAM	1/0	23.00	22.52	22.60	22.57	16QAM	1/0	23.00	22.68
	1/12	23.00	22.47	22.55	22.52		1/24	23.00	22.63
	1/24	23.00	22.58	22.66	22.63		1/49	23.00	22.74
	12/0	22.00	21.60	21.68	21.65		25/0	22.00	21.76
	12/6	22.00	21.47	21.55	21.52		25/12	22.00	21.63
	12/11	22.00	21.58	21.66	21.63		25/24	22.00	21.74
	25/0	22.00	21.52	21.60	21.57		50/0	22.00	21.68

LTE Band 30

LTE B30/BW=5M		Average Conducted Power(dBm)				LTE B30/BW=10M		Average Conducted Power(dBm)	
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)
			27685/ 2307.5	27710/ 2310	27734/ 2312.4				27710/ 2310
QPSK	1/0	24.00	23.74	23.71	23.75	QPSK	1/0	24.00	23.82
	1/12	24.00	23.71	23.68	23.72		1/12	24.00	23.79
	1/24	24.00	23.44	23.41	23.45		1/49	24.00	23.52
	12/0	23.00	22.83	22.80	22.84		25/0	23.00	22.91
	12/6	23.00	22.76	22.73	22.77		25/12	23.00	22.84
	12/11	23.00	22.51	22.48	22.52		25/24	23.00	22.59
	25/0	23.00	22.78	22.75	22.79		50/0	23.00	22.86
16QAM	1/0	23.00	22.81	22.78	22.82	16QAM	1/0	23.00	22.89
	1/12	23.00	22.79	22.76	22.80		1/24	23.00	22.87
	1/24	23.00	22.54	22.51	22.55		1/49	23.00	22.62
	12/0	22.00	21.89	21.86	21.90		25/0	22.00	21.97
	12/6	22.00	21.79	21.76	21.80		25/12	22.00	21.87
	12/11	22.00	21.54	21.51	21.55		25/24	22.00	21.62
	25/0	22.00	21.81	21.78	21.82		50/0	22.00	21.89

For Body & Hotspot

LTE Band 2

LTE B2/BW=1.4M		Average Conducted Power(dBm)				LTE B2/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			18607/ 1850.7	18900/ 1880.0	19192/ 1909.2				18615/ 1851.5	18900/ 1880.0	19184/ 1908.4
QPSK	1/0	20.50	18.99	18.94	18.91	QPSK	1/0	20.50	19.03	18.98	18.95
	1/2	20.50	18.90	18.74	18.84		1/7	20.50	18.94	18.78	18.88
	1/5	20.50	18.83	18.70	18.80		1/14	20.50	18.87	18.74	18.84
	3/0	19.50	18.08	18.03	18.00		8/0	19.50	18.12	18.07	18.04
	3/1	19.50	17.95	17.79	17.89		8/4	19.50	17.99	17.83	17.93
	3/2	19.50	17.90	17.77	17.87		8/7	19.50	17.94	17.81	17.91
	6/0	19.50	18.03	17.98	17.95		15/0	19.50	18.07	18.02	17.99
16QAM	1/0	19.50	18.06	18.01	17.98	16QAM	1/0	19.50	18.10	18.05	18.02
	1/2	19.50	17.98	17.82	17.92		1/7	19.50	18.02	17.86	17.96
	1/5	19.50	17.93	17.80	17.90		1/14	19.50	17.97	17.84	17.94
	3/0	18.50	17.14	17.09	17.06		8/0	18.50	17.18	17.13	17.10
	3/1	18.50	16.98	16.82	16.92		8/4	18.50	17.02	16.86	16.96
	3/2	18.50	16.93	16.80	16.90		8/7	18.50	16.97	16.84	16.94
	6/0	18.50	17.06	17.01	16.98		15/0	18.50	17.10	17.05	17.02

LTE B2/BW=5M		Average Conducted Power(dBm)				LTE B2/BW=10M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			18625/ 1852.5	18900/ 1880	19175/ 1907.5				18650/ 1855	18900/ 1880	19150/ 1905
QPSK	1/0	20.50	19.11	19.06	19.03	QPSK	1/0	20.50	19.18	19.13	19.10
	1/12	20.50	19.02	18.86	18.96		1/12	20.50	19.09	18.93	19.03
	1/24	20.50	18.95	18.82	18.92		1/49	20.50	19.02	18.89	18.99
	12/0	19.50	18.20	18.15	18.12		25/0	19.50	18.27	18.22	18.19
	12/6	19.50	18.07	17.91	18.01		25/12	19.50	18.14	17.98	18.08
	12/11	19.50	18.02	17.89	17.99		25/24	19.50	18.09	17.96	18.06
	25/0	19.50	18.15	18.10	18.07		50/0	19.50	18.22	18.17	18.14
16QAM	1/0	19.50	18.18	18.13	18.10	16QAM	1/0	19.50	18.25	18.20	18.17
	1/12	19.50	18.10	17.94	18.04		1/24	19.50	18.17	18.01	18.11
	1/24	19.50	18.05	17.92	18.02		1/49	19.50	18.12	17.99	18.09
	12/0	18.50	17.26	17.21	17.18		25/0	18.50	17.33	17.28	17.25
	12/6	18.50	17.10	16.94	17.04		25/12	18.50	17.17	17.01	17.11
	12/11	18.50	17.05	16.92	17.02		25/24	18.50	17.12	16.99	17.09
	25/0	18.50	17.18	17.13	17.10		50/0	18.50	17.25	17.20	17.17

LTE B2/BW=15M		Average Conducted Power(dBm)				LTE B2/BW=20M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			18675/ 1857.5	18900/ 1880	19125/ 1902.5				18700/ 1860	18900/ 1880	19100/ 1900
QPSK	1/0	20.50	19.23	19.18	19.15	QPSK	1/0	20.50	19.36	19.31	19.28
	1/37	20.50	19.14	18.98	19.08		1/49	20.50	19.27	19.11	19.21
	1/74	20.50	19.07	18.94	19.04		1/99	20.50	19.20	19.07	19.17
	36/0	19.50	18.32	18.27	18.24		50/0	19.50	18.45	18.40	18.37
	36/18	19.50	18.19	18.03	18.13		50/24	19.50	18.32	18.16	18.26
	36/35	19.50	18.14	18.01	18.11		50/49	19.50	18.27	18.14	18.24
	75/0	19.50	18.27	18.22	18.19		100/0	19.50	18.40	18.35	18.32
16QAM	1/0	19.50	18.30	18.25	18.22	16QAM	1/0	19.50	18.43	18.38	18.35
	1/37	19.50	18.22	18.06	18.16		1/49	19.50	18.35	18.19	18.29
	1/74	19.50	18.17	18.04	18.14		1/99	19.50	18.30	18.17	18.27
	36/0	18.50	17.38	17.33	17.30		50/0	18.50	17.51	17.46	17.43
	36/18	18.50	17.22	17.06	17.16		50/24	18.50	17.35	17.19	17.29
	36/35	18.50	17.17	17.04	17.14		50/49	18.50	17.30	17.17	17.27
	75/0	18.50	17.30	17.25	17.22		100/0	18.50	17.43	17.38	17.35

LTE Band 4

LTE B4/BW=1.4M		Average Conducted Power(dBm)				LTE B4/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			19957/ 1710.7	20175/ 1732.5	20392/ 1754.2				19965/ 1711.5	20175/ 1732.5	20384/ 1753.4
QPSK	1/0	18.50	17.00	17.02	16.94	QPSK	1/0	18.50	17.08	17.10	17.02
	1/2	18.50	16.86	16.94	16.89		1/7	18.50	16.94	17.02	16.97
	1/5	18.50	16.84	16.91	16.82		1/14	18.50	16.92	16.99	16.90
	3/0	17.50	16.09	16.11	16.03		8/0	17.50	16.17	16.19	16.11
	3/1	17.50	15.91	15.99	15.94		8/4	17.50	15.99	16.07	16.02
	3/2	17.50	15.91	15.98	15.89		8/7	17.50	15.99	16.06	15.97
	6/0	17.50	16.04	16.06	15.98		15/0	17.50	16.12	16.14	16.06
16QAM	1/0	17.50	16.07	16.09	16.01	16QAM	1/0	17.50	16.15	16.17	16.09
	1/2	17.50	15.94	16.02	15.97		1/7	17.50	16.02	16.10	16.05
	1/5	17.50	15.94	16.01	15.92		1/14	17.50	16.02	16.09	16.00
	3/0	16.50	15.15	15.17	15.09		8/0	16.50	15.23	15.25	15.17
	3/1	16.50	14.94	15.02	14.97		8/4	16.50	15.02	15.10	15.05
	3/2	16.50	14.94	15.01	14.92		8/7	16.50	15.02	15.09	15.00
	6/0	16.50	15.07	15.09	15.01		15/0	16.50	15.15	15.17	15.09
LTE B4/BW=5M		Average Conducted Power(dBm)				LTE B4/BW=10M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			19975/ 1712.5	20175/ 1732.5	20375/ 1752.5				20000/ 1715	20175/ 1732.5	20350/ 1750
QPSK	1/0	18.50	17.13	17.15	17.07	QPSK	1/0	18.50	17.17	17.19	17.11
	1/12	18.50	16.99	17.07	17.02		1/12	18.50	17.03	17.11	17.06
	1/24	18.50	16.97	17.04	16.95		1/49	18.50	17.01	17.08	16.99
	12/0	17.50	16.22	16.24	16.16		25/0	17.50	16.26	16.28	16.20
	12/6	17.50	16.04	16.12	16.07		25/12	17.50	16.08	16.16	16.11
	12/11	17.50	16.04	16.11	16.02		25/24	17.50	16.08	16.15	16.06
	25/0	17.50	16.17	16.19	16.11		50/0	17.50	16.21	16.23	16.15
16QAM	1/0	17.50	16.20	16.22	16.14	16QAM	1/0	17.50	16.24	16.26	16.18
	1/12	17.50	16.07	16.15	16.10		1/24	17.50	16.11	16.19	16.14
	1/24	17.50	16.07	16.14	16.05		1/49	17.50	16.11	16.18	16.09
	12/0	16.50	15.28	15.30	15.22		25/0	16.50	15.32	15.34	15.26
	12/6	16.50	15.07	15.15	15.10		25/12	16.50	15.11	15.19	15.14
	12/11	16.50	15.07	15.14	15.05		25/24	16.50	15.11	15.18	15.09
	25/0	16.50	15.20	15.22	15.14		50/0	16.50	15.24	15.26	15.18

LTE B4/BW=15M		Average Conducted Power(dBm)				LTE B4/BW=20M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			20025/ 1717.5	20175/ 1732.5	20325/ 1747.5				20050/ 1720	20175/ 1732.5	20300/ 1745
QPSK	1/0	18.50	17.26	17.28	17.20	QPSK	1/0	18.50	17.39	17.41	17.33
	1/37	18.50	17.12	17.20	17.15		1/49	18.50	17.25	17.33	17.28
	1/74	18.50	17.10	17.17	17.08		1/99	18.50	17.23	17.30	17.21
	36/0	17.50	16.35	16.37	16.29		50/0	17.50	16.48	16.50	16.42
	36/18	17.50	16.17	16.25	16.20		50/24	17.50	16.30	16.38	16.33
	36/35	17.50	16.17	16.24	16.15		50/49	17.50	16.30	16.37	16.28
	75/0	17.50	16.30	16.32	16.24		100/0	17.50	16.43	16.45	16.37
16QAM	1/0	17.50	16.33	16.35	16.27	16QAM	1/0	17.50	16.46	16.48	16.40
	1/37	17.50	16.20	16.28	16.23		1/49	17.50	16.33	16.41	16.36
	1/74	17.50	16.20	16.27	16.18		1/99	17.50	16.33	16.40	16.31
	36/0	16.50	15.41	15.43	15.35		50/0	16.50	15.54	15.56	15.48
	36/18	16.50	15.20	15.28	15.23		50/24	16.50	15.33	15.41	15.36
	36/35	16.50	15.20	15.27	15.18		50/49	16.50	15.33	15.40	15.31
	75/0	16.50	15.33	15.35	15.27		100/0	16.50	15.46	15.48	15.40

LTE Band 5

LTE B5/BW=1.4M		Average Conducted Power(dBm)				LTE B5/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			20407/ 824.7	20525/ 836.5	20642/ 848.2				20415/ 825.5	20525/ 836.5	20634/ 847.4
QPSK	1/0	24.00	23.40	23.50	23.28	QPSK	1/0	24.00	23.47	23.57	23.35
	1/2	24.00	23.29	23.37	23.12		1/7	24.00	23.36	23.44	23.19
	1/5	24.00	22.98	23.28	22.97		1/14	24.00	23.05	23.35	23.04
	3/0	23.00	22.49	22.59	22.37		8/0	23.00	22.56	22.66	22.44
	3/1	23.00	22.34	22.42	22.17		8/4	23.00	22.41	22.49	22.24
	3/2	23.00	22.05	22.35	22.04		8/7	23.00	22.12	22.42	22.11
	6/0	23.00	22.44	22.54	22.32		15/0	23.00	22.51	22.61	22.39
16QAM	1/0	23.00	22.47	22.57	22.35	16QAM	1/0	23.00	22.54	22.64	22.42
	1/2	23.00	22.37	22.45	22.20		1/7	23.00	22.44	22.52	22.27
	1/5	23.00	22.08	22.38	22.07		1/14	23.00	22.15	22.45	22.14
	3/0	22.00	21.55	21.65	21.43		8/0	22.00	21.62	21.72	21.50
	3/1	22.00	21.37	21.45	21.20		8/4	22.00	21.44	21.52	21.27
	3/2	22.00	21.08	21.38	21.07		8/7	22.00	21.15	21.45	21.14
	6/0	22.00	21.47	21.57	21.35		15/0	22.00	21.54	21.64	21.42
LTE B5/BW=5M		**Average Conducted Power(dBm)**				**LTE B5/BW=10M**		**Average Conducted Power(dBm)**			
Modula-tion	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**			**Modula-tion**	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**		
			20415/ 825.5	**20525/ 836.5**	**20634/ 847.4**				**20450/ 829**	**20525/ 836.5**	**20600/ 844**
QPSK	1/0	24.00	23.56	23.66	23.44	QPSK	1/0	24.00	23.61	23.71	23.49
	1/12	24.00	23.45	23.53	23.28		1/12	24.00	23.50	23.58	23.33
	1/24	24.00	23.14	23.44	23.13		1/49	24.00	23.19	23.49	23.18
	12/0	23.00	22.65	22.75	22.53		25/0	23.00	22.70	22.80	22.58
	12/6	23.00	22.50	22.58	22.33		25/12	23.00	22.55	22.63	22.38
	12/11	23.00	22.21	22.51	22.20		25/24	23.00	22.26	22.56	22.25
	25/0	23.00	22.60	22.70	22.48		50/0	23.00	22.65	22.75	22.53
16QAM	1/0	23.00	22.63	22.73	22.51	16QAM	1/0	23.00	22.68	22.78	22.56
	1/12	23.00	22.53	22.61	22.36		1/24	23.00	22.58	22.66	22.41
	1/24	23.00	22.24	22.54	22.23		1/49	23.00	22.29	22.59	22.28
	12/0	22.00	21.71	21.81	21.59		25/0	22.00	21.76	21.86	21.64
	12/6	22.00	21.53	21.61	21.36		25/12	22.00	21.58	21.66	21.41
	12/11	22.00	21.24	21.54	21.23		25/24	22.00	21.29	21.59	21.28
	25/0	22.00	21.63	21.73	21.51		50/0	22.00	21.68	21.78	21.56

LTE Band 12

LTE B12/BW=1.4M		Average Conducted Power(dBm)				LTE B12/BW=3M		Average Conducted Power(dBm)			
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)		
			23017/ 699.7	23095/ 707.5	23173/ 715.3				23025/ 700.5	23095/ 707.5	23165/ 714.5
QPSK	1/0	24.00	23.38	23.49	23.34	QPSK	1/0	24.00	23.49	23.60	23.45
	1/2	24.00	23.32	23.20	23.23		1/7	24.00	23.43	23.31	23.34
	1/5	24.00	23.13	23.03	22.92		1/14	24.00	23.24	23.14	23.03
	3/0	23.00	22.47	22.58	22.43		8/0	23.00	22.58	22.69	22.54
	3/1	23.00	22.37	22.25	22.28		8/4	23.00	22.48	22.36	22.39
	3/2	23.00	22.20	22.10	21.99		8/7	23.00	22.31	22.21	22.10
	6/0	23.00	22.42	22.53	22.38		15/0	23.00	22.53	22.64	22.49
16QAM	1/0	23.00	22.45	22.56	22.41	16QAM	1/0	23.00	22.56	22.67	22.52
	1/2	23.00	22.40	22.28	22.31		1/7	23.00	22.51	22.39	22.42
	1/5	23.00	22.23	22.13	22.02		1/14	23.00	22.34	22.24	22.13
	3/0	22.00	21.53	21.64	21.49		8/0	22.00	21.64	21.75	21.60
	3/1	22.00	21.40	21.28	21.31		8/4	22.00	21.51	21.39	21.42
	3/2	22.00	21.23	21.13	21.02		8/7	22.00	21.34	21.24	21.13
	6/0	22.00	21.45	21.56	21.41		15/0	22.00	21.56	21.67	21.52
LTE B12/BW=5M		**Average Conducted Power(dBm)**				**LTE B12/BW=10M**		**Average Conducted Power(dBm)**			
Modula-tion	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**			**Modula-tion**	**RB Size/ Offset**	**Max. Tune-up (dBm)**	**Channel/Frequency(MHz)**		
			23035/ 701.5	**23095/ 707.5**	**23155/ 713.5**				**23060/ 704**	**23095/ 707.5**	**23130/ 711**
QPSK	1/0	24.00	23.56	23.67	23.52	QPSK	1/0	24.00	23.64	23.75	23.60
	1/12	24.00	23.50	23.38	23.41		1/12	24.00	23.58	23.46	23.49
	1/24	24.00	23.31	23.21	23.10		1/49	24.00	23.39	23.29	23.18
	12/0	23.00	22.65	22.76	22.61		25/0	23.00	22.73	22.84	22.69
	12/6	23.00	22.55	22.43	22.46		25/12	23.00	22.63	22.51	22.54
	12/11	23.00	22.38	22.28	22.17		25/24	23.00	22.46	22.36	22.25
	25/0	23.00	22.60	22.71	22.56		50/0	23.00	22.68	22.79	22.64
16QAM	1/0	23.00	22.63	22.74	22.59	16QAM	1/0	23.00	22.71	22.82	22.67
	1/12	23.00	22.58	22.46	22.49		1/24	23.00	22.66	22.54	22.57
	1/24	23.00	22.41	22.31	22.20		1/49	23.00	22.49	22.39	22.28
	12/0	22.00	21.71	21.82	21.67		25/0	22.00	21.79	21.90	21.75
	12/6	22.00	21.58	21.46	21.49		25/12	22.00	21.66	21.54	21.57
	12/11	22.00	21.41	21.31	21.20		25/24	22.00	21.49	21.39	21.28
	25/0	22.00	21.63	21.74	21.59		50/0	22.00	21.71	21.82	21.67

LTE Band 14

LTE B14/BW=5M		Average Conducted Power(dBm)				LTE B14/BW=10M		Average Conducted Power(dBm)	
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)
			23305/ 790.5	23330/ 793	23355/ 795.5				23330/ 793
QPSK	1/0	24.00	23.45	23.53	23.50	QPSK	1/0	24.00	23.61
	1/12	24.00	23.39	23.47	23.44		1/12	24.00	23.55
	1/24	24.00	23.48	23.56	23.53		1/49	24.00	23.64
	12/0	23.00	22.59	22.67	22.64		25/0	23.00	22.75
	12/6	23.00	22.44	22.52	22.49		25/12	23.00	22.60
	12/11	23.00	22.55	22.63	22.60		25/24	23.00	22.71
	25/0	23.00	22.49	22.57	22.54		50/0	23.00	22.65
16QAM	1/0	23.00	22.52	22.60	22.57	16QAM	1/0	23.00	22.68
	1/12	23.00	22.47	22.55	22.52		1/24	23.00	22.63
	1/24	23.00	22.58	22.66	22.63		1/49	23.00	22.74
	12/0	22.00	21.60	21.68	21.65		25/0	22.00	21.76
	12/6	22.00	21.47	21.55	21.52		25/12	22.00	21.63
	12/11	22.00	21.58	21.66	21.63		25/24	22.00	21.74
	25/0	22.00	21.52	21.60	21.57		50/0	22.00	21.68

LTE Band 30

LTE B30/BW=5M		Average Conducted Power(dBm)				LTE B30/BW=10M		Average Conducted Power(dBm)	
Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)			Modula-tion	RB Size/ Offset	Max. Tune-up (dBm)	Channel/Frequency(MHz)
			27685/ 2307.5	27710/ 2310	27734/ 2312.4				27710/ 2310
QPSK	1/0	23.00	22.77	22.74	22.78	QPSK	1/0	23.00	22.85
	1/12	23.00	22.62	22.59	22.63		1/12	23.00	22.70
	1/24	23.00	22.47	22.44	22.48		1/49	23.00	22.55
	12/0	22.00	21.86	21.83	21.87		25/0	22.00	21.94
	12/6	22.00	21.67	21.64	21.68		25/12	22.00	21.75
	12/11	22.00	21.54	21.51	21.55		25/24	22.00	21.62
	25/0	22.00	21.81	21.78	21.82		50/0	22.00	21.89
16QAM	1/0	22.00	21.84	21.81	21.85	16QAM	1/0	22.00	21.92
	1/12	22.00	21.70	21.67	21.71		1/24	22.00	21.78
	1/24	22.00	21.57	21.54	21.58		1/49	22.00	21.65
	12/0	21.00	20.92	20.89	20.93		25/0	21.00	21.00
	12/6	21.00	20.70	20.67	20.71		25/12	21.00	20.78
	12/11	21.00	20.57	20.54	20.58		25/24	21.00	20.65
	25/0	21.00	20.84	20.81	20.85		50/0	21.00	20.92

8.3 Conducted power measurement results of Bluetooth

For Head, Body & Hotspot

Band	Mode	Channel	Frequency (MHz)	Max Power (dBm)	AVG Power (dBm)
BR	DH5	0	2402	10.00	8.43
		39	2441	10.00	8.15
		78	2480	10.00	8.19
EDR	2DH5	0	2402	3.50	Not Require
		39	2441	3.50	
		78	2480	3.50	
	3DH5	0	2402	3.50	
		39	2441	3.50	
		78	2480	3.50	
BLE	1M	0	2402	-1.50	
		19	2440	-1.50	
		39	2480	-1.50	
	2M	0	2402	-1.50	
		19	2440	-1.50	
		39	2480	-1.50	

8.4 Conducted power measurements of Wi-Fi 2.4GHz Band

For Head, Body & Hotspot

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
2.4G	802.11b	1-13	2412-2462	1	16.50	Not Required
	802.11g	1	2412	6	18.00	17.62
		6	2437	6	18.00	17.75
		11	2462	6	18.00	17.90
		12	2467	6	18.00	17.60
		13	2472	6	18.00	17.73
	802.11n20	1-13	2412-2472	HT0	17.00	Not Required
	802.11n40	3-11	2422-2462	HT0	17.00	

Note:

1. As per FCC OET KDB 248227 D01, conducted output power and SAR testing are not required for 802.11b/n20/n40 channels 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 ≤ 1.2W/kg.

8.5 Conducted power measurements of 5G UNII_1

For Head

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_1	802.11a	36-48	5180-5240	6	16.00	Not Required
	802.11 n20	36-48	5180-5240	HT0	16.00	
	802.11 n40	38	5190	HT0	16.00	15.53
		46	5230	HT0	16.00	15.47
	802.11 ac80	42	5210	VHT0	13.00	Not Required

Note:
1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band (see §B.5.2 in this document).
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).

8.6 CONDUCTED POWER MEASUREMENTS OF 5G UNII_2A

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_1	802.11a	52-64	5260-5320	6	16.00	Not Required
	802.11 n20	52-64	5260-5320	HT0	16.00	
	802.11 n40	54	5270	HT0	16.00	15.68
		62	5310	HT0	16.00	15.91
	802.11 ac80	58	5290	VHT0	13.00	Not Required

Note:
1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band (see §B.5.2 in this document).
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
3. Largest channel bandwidth is worse than lowest order modulation.

8.7 CONDUCTED POWER MEASUREMENTS OF 5G UNII_2C

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_1	802.11a	100-140	5500-5700	6	16.00	Not Required
	802.11 n20	100-140	5500-5700	HT0	16.00	
	802.11 n40	102	5510	HT0	16.00	15.66
		110	5550	HT0	16.00	15.53
		118	5590	HT0	16.00	15.82
		134	5670	HT0	16.00	15.60
	802.11 ac80	106-122	5530-5610	VHT0	13.00	Not Required

Note:
1. When band gap channels between U-NII-2C and U-NII-3 band are supported channels in U-NII-2C band below 5.65 GHz are considered as one band and channels above 5.65 GHz, together with channels in 5.8 GHz U-NII-3 or §15.247 band, are considered as a separate band
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance,in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
3. Largest channel bandwidth is worse than lowest order modulation.

8.8 CONDUCTED POWER MEASUREMENTS OF 5G UNII_3

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_1	802.11a	149-165	5745-5825	6	16.00	Not Required
	802.11 n20	149-165	5745-5825	HT0	16.00	
	802.11 n40	151	5755	HT0	16.00	15.65
		159	5795	HT0	16.00	15.68
	802.11 ac80	155	5775	VHT0	13.00	Not Required

Note:
1. When band gap channels between U-NII-2C and U-NII-3 band are supported channels in U-NII-2C band below 5.65 GHz are considered as one band and channels above 5.65 GHz, together with channels in 5.8 GHz U-NII-3 or §15.247 band, are considered as a separate band
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac)
3. Largest channel bandwidth is worse than lowest order modulation.

8.9 Conducted power measurements of 5G UNII_1

For Body & Hotspot

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_1	802.11a	36	5180	6	18.00	17.55
		40	5200	6	18.00	17.58
		44	5220	6	18.00	17.49
		48	5240	6	18.00	17.52
	802.11 n20	36-48	5180-5240	HT0	17.00	Not Required
	802.11 n40	38	5190	HT0	17.00	
	802.11 ac80	42	5210	VHT0	13.00	

Note:

1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band (see §B.5.2 in this document).
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).

8.10 CONDUCTED POWER MEASUREMENTS OF 5G UNII_2A

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_2a	802.11a	52	5260	6	18.00	17.42
		56	5280	6	18.00	17.38
		60	5300	6	18.00	17.60
		64	5320	6	18.00	17.77
	802.11 n20	36-48	5180-5240	HT0	17.00	Not Required
	802.11 n40	38	5190	HT0	17.00	
	802.11 ac80	42	5210	VHT0	13.00	

Note:

1. When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band (see §B.5.2 in this document).
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
3. Largest channel bandwidth is worse than lowest order modulation.

8.11 CONDUCTED POWER MEASUREMENTS OF 5G UNII_2C

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_2c	802.11a	100	5500	6	18.00	17.66
		104	5520	6	18.00	17.70
		108	5540	6	18.00	17.63
		112	5560	6	18.00	17.77
		116	5580	6	18.00	17.82
		120	5600	6	18.00	17.62
		124	5620	6	18.00	17.58
		128	5640	6	18.00	17.65
		132	5660	6	18.00	17.62
		136	5680	6	18.00	17.48
		140	5700	6	18.00	17.35
	802.11 n20	36-48	5180-5240	HT0	17.00	Not Required
	802.11 n40	38	5190	HT0	17.00	
	802.11 ac80	42	5210	VHT0	13.00	

Note:
1. When band gap channels between U-NII-2C and U-NII-3 band are supported channels in U-NII-2C band below 5.65 GHz are considered as one band and channels above 5.65 GHz, together with channels in 5.8 GHz U-NII-3 or §15.247 band, are considered as a separate band
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance,in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac).
3. Largest channel bandwidth is worse than lowest order modulation.

8.12 CONDUCTED POWER MEASUREMENTS OF 5G UNII_3

Band	Mode	Channel	Frequency (MHz)	Data Rate	Max Tune-Up Power (dBm)	AVG Power (dBm)
UNII_3	802.11a	149	5745	6	18.00	17.80
		153	5765	6	18.00	17.69
		157	5785	6	18.00	17.86
		161	5805	6	18.00	17.75
		165	5825	6	18.00	17.74
	802.11 n20	36-48	5180-5240	HT0	17.00	Not Required
	802.11 n40	38	5190	HT0	17.00	
	802.11 ac80	42	5210	VHT0	13.00	

Note:
1. When band gap channels between U-NII-2C and U-NII-3 band are supported channels in U-NII-2C band below 5.65 GHz are considered as one band and channels above 5.65 GHz, together with channels in 5.8 GHz U-NII-3 or §15.247 band, are considered as a separate band
2. The initial test configuration for 2.4 GHz and 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected (i.e. a, g, n, ac)
3. Largest channel bandwidth is worse than lowest order modulation.

8.13 SARTEST RESULTS

General Notes:

1. Per KDB447498 D01, all measurement SAR results are scaled to the maximum tune-up tolerance limit to demonstrate compliant.

2. Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:≤0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is≤100 MHz. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

3. Per KDB865664 D01,for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg; if the deviation among the repeated measurement is ≤20%,and the measured SAR <1.45W/kg, only one repeated measurement is required.

WLAN Notes:

1. For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated(peak) SAR is used as the initial test position. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.

2. Justification for test configurations for WLAN per KDB Publication 248227 for 2.4GHz WIFI single transmission chain operations, the highest measured maximum output power Channel for DSSS was selected for SAR measurement. SAR for OFDM modes(2.4GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section7.1.4 for more information.

3. Justification for test configurations for WLAN per KDB Publication 248227 for 5GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed power. Other transmission mode was not investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than1.2W/kg. See Section 7.1.4 for more information.

9 SAR TEST RESULTS

9.1 Body SAR test results

1. SAR test results of Bluetooth

RF Exposure Condutions	Mode	channel	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	Bluetooth	0	0	Right Cheek	10.00	8.43	0.030	0.017	0.044	0.024	
		0	0	Right Tilted	10.00	8.43	0.030	0.016	0.043	0.023	
		0	0	Left Cheek	10.00	8.43	0.135	0.062	0.194	**0.088**	
		0	0	Left Tilted	10.00	8.43	0.104	0.047	0.149	0.067	
Body & Hotspot		0	10	Rear	10.00	8.43	0.021	0.010	0.030	0.014	
		0	10	Front	10.00	8.43	0.015	0.007	0.022	0.011	
Hotspot		0	10	Edge1	10.00	8.43	0.051	0.025	0.073	0.036	
		0	10	Edge2	10.00	8.43	0.050	0.022	0.072	0.032	

2. SAR test results of WiFi 2.4G

RF Exposure Condutions	Mode	channel	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	802.11g	11	0	Right Cheek	18.00	17.90	0.529	0.276	0.541	0.282	
		11	0	Right Tilted	18.00	17.90	0.485	0.253	0.496	0.259	
		11	0	Left Cheek	18.00	17.90	0.993	0.466	**1.016**	**0.477**	
		1	0	Left Cheek	18.00	17.62	0.651	0.305	0.711	0.333	1
		6	0	Left Cheek	18.00	17.75	0.936	0.432	0.991	0.458	1
		12	0	Left Cheek	18.00	17.60	0.765	0.359	0.839	0.394	
		13	0	Left Cheek	18.00	17.73	0.937	0.435	0.997	0.463	
		11	0	Left Tilted	18.00	17.90	0.801	0.373	0.820	0.382	
		11	0	Left Cheek	18.00	17.90	0.982	0.462	1.005	0.473	2
Body & Hotspot		11	10	Rear	18.00	17.90	0.304	0.147	0.311	0.150	
		11	10	Front	18.00	17.90	0.191	0.100	0.195	0.102	
Hotspot		11	10	Edge1	18.00	17.90	0.570	0.288	0.583	0.295	
		11	10	Edge2	18.00	17.90	0.601	0.269	0.615	0.275	

Note:
1.Highest reported SAR is > 0.8 W/kg. Added second highest power channel for this test position
2.Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
Original SAR = 0.993 W/kg, therefore second times repeat SAR is required.
Repeat SAR = 0.982 W/kg < 1.45W/kg
SAR variation= -1.11% < 20%

3. SAR test results of WiFi 5G

RF Exposure Condutions	Band	Mode	channel	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	5G_UNII 1 & 2a	802.11n HT40	62	0	Right Cheek	16.00	15.91	0.628	0.196	0.641	0.200	
			62	0	Right Tilted	16.00	15.91	0.710	0.241	0.725	0.246	
			62	0	Left Cheek	16.00	15.91	0.982	0.290	1.003	0.296	
			62	0	Left Tilted	16.00	15.91	1.020	0.287	**1.041**	**0.293**	
			54	0	Left Tilted	16.00	15.68	0.728	0.198	0.784	0.213	1
			62	0	Left Tilted	16.00	15.91	1.010	0.287	1.031	0.293	2
Body & Hotspot		802.11 a	64	10	Rear	18.00	17.77	0.546	0.198	0.576	0.209	
			64	10	Front	18.00	17.77	0.333	0.112	0.351	0.118	
			64	10	Edge1	18.00	17.77	0.842	0.323	0.888	0.341	
Hotspot			60	10	Edge1	18.00	17.60	0.746	0.292	0.818	0.320	1
			64	10	Edge2	18.00	17.77	0.454	0.185	0.479	0.195	
Head	5G_UNII 2c	802.11n HT40	118	0	Right Cheek	16.00	15.82	0.301	0.101	0.314	0.105	
			118	0	Right Tilted	16.00	15.82	0.419	0.138	0.437	0.144	
			118	0	Left Cheek	16.00	15.82	0.494	0.133	0.515	0.139	
			118	0	Left Tilted	16.00	15.82	0.644	0.176	**0.671**	**0.183**	
Body & Hotspot		802.11 a	116	10	Rear	18.00	17.82	0.328	0.117	0.342	0.122	
			116	10	Front	18.00	17.82	0.271	0.090	0.282	0.093	
Hotspot			116	10	Edge1	18.00	17.82	0.346	0.133	0.361	0.139	
			116	10	Edge2	18.00	17.82	0.292	0.116	0.304	0.121	
Head	5G_UNII 3	802.11n HT40	159	0	Right Cheek	16.00	15.68	0.116	0.037	0.125	0.040	
			159	0	Right Tilted	16.00	15.68	0.158	0.046	0.170	0.050	
			159	0	Left Cheek	16.00	15.68	0.402	0.108	0.433	0.116	
			159	0	Left Tilted	16.00	15.68	0.480	0.132	**0.517**	**0.142**	
Body & Hotspot		802.11 a	157	10	Rear	18.00	17.86	0.403	0.131	0.416	0.135	
			157	10	Front	18.00	17.86	0.264	0.087	0.273	0.089	
Hotspot			157	10	Edge1	18.00	17.86	0.313	0.116	0.323	0.120	
			157	10	Edge2	18.00	17.86	0.259	0.103	0.267	0.106	

Note:
1.The result used an other antenna to spot check for worst channel of the original antenna that the SAR result can be meet and compliant.
2.Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
Original SAR = 1.020 W/kg, therefore second times repeat SAR is required.
Repeat SAR = 1.010 W/kg < 1.45W/kg
SAR variation= -0.98% < 20%

4. SAR test results of WWAN-WCDMA

RF Exposure Condutions	Band	Mode	channel	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	WCDMA Band II	RMC12.2K	9262	0	Right Cheek	25.00	24.84	0.609	0.390	0.632	0.405	
			9262	0	Right Tilted	25.00	24.84	0.389	0.254	0.404	0.264	
			9262	0	Left Cheek	25.00	24.84	0.408	0.274	0.423	0.284	
			9262	0	Left Tilted	25.00	24.84	0.445	0.280	0.462	0.291	
Body & Hotspot			9262	10	Rear	19.50	19.01	0.394	0.221	0.441	0.247	
			9262	10	Front	19.50	19.01	0.409	0.231	0.458	0.259	
Hotspot			9262	10	Edge2	19.50	19.01	0.043	0.024	0.048	0.027	
			9262	10	Edge3	19.50	19.01	0.910	0.463	1.019	0.518	
			9400	10	Edge3	19.50	18.82	0.908	0.471	**1.062**	**0.551**	1
			9538	10	Edge3	19.50	18.89	0.861	0.434	0.991	0.499	1
			9262	10	Edge3	19.50	19.01	0.816	0.410	0.913	0.459	2
			9262	10	Edge4	19.50	19.01	0.008	0.005	0.009	0.006	
Head	WCDMA Band IV	RMC12.2K	1312	0	Right Cheek	25.00	24.79	0.242	0.161	0.254	0.169	
			1312	0	Right Tilted	25.00	24.79	0.119	0.082	0.125	0.086	
			1312	0	Left Cheek	25.00	24.79	0.099	0.068	0.104	0.071	
			1312	0	Left Tilted	25.00	24.79	0.127	0.081	0.133	0.084	
Body & Hotspot			1312	10	Rear	18.00	17.25	0.393	0.219	0.467	0.260	
			1312	10	Front	18.00	17.25	0.346	0.199	0.411	0.237	
Hotspot			1312	10	Edge2	18.00	17.25	0.037	0.021	0.044	0.025	
			1312	10	Edge3	18.00	17.25	0.863	0.467	1.026	0.555	
			1413	10	Edge3	18.00	17.05	0.816	0.438	1.016	0.545	1
			1513	10	Edge3	18.00	17.20	0.876	0.473	**1.053**	**0.569**	1
			1513	10	Edge3	18.00	17.20	0.873	0.472	1.050	0.567	2
			1312	10	Edge4	18.00	17.25	0.007	0.005	0.009	0.005	
Head	WCDMA Band V	RMC12.2K	4233	0	Right Cheek	25.00	25.00	0.091	0.073	0.091	0.073	
			4233	0	Right Tilted	25.00	25.00	0.055	0.044	0.055	0.044	
			4233	0	Left Cheek	25.00	25.00	0.006	0.004	0.006	0.004	
			4233	0	Left Tilted	25.00	25.00	0.032	0.025	0.032	0.025	
Body & Hotspot			4233	10	Rear	25.00	25.00	0.285	0.236	0.285	0.236	
			4233	10	Front	25.00	25.00	0.230	0.192	0.230	0.192	
Hotspot			4233	10	Edge2	25.00	25.00	0.245	0.168	0.245	0.168	
			4233	10	Edge3	25.00	25.00	0.334	0.113	**0.334**	**0.113**	
			4233	10	Edge4	25.00	25.00	0.294	0.203	0.294	0.203	

Note:

1.The result used an other antenna to spot check for worst channel of the original antenna that the SAR result can be meet and compliant.

2.Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)

Original SAR = 0.910 W/kg, therefore second times repeat SAR is required.

Repeat SAR = 0.816 W/kg < 1.45W/kg

SAR variation= -10.32% < 20%

5. SAR test results of WWAN-LTE

RF Exposure Condutions	Band	Mode	channel	RB	Offset	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	LTE Band 2	QPSK20M	18700	1	0	0	Right Cheek	24.00	23.87	0.483	0.303	0.498	0.312	
			18700	50	0	0	Right Cheek	23.00	22.96	0.368	0.233	0.371	0.235	
			18700	1	0	0	Right Tilted	24.00	23.87	0.299	0.193	0.308	0.199	
			18700	50	0	0	Right Tilted	23.00	22.96	0.246	0.158	0.248	0.159	
			18700	1	0	0	Left Cheek	24.00	23.87	0.306	0.203	0.315	0.209	
			18700	50	0	0	Left Cheek	23.00	22.96	0.253	0.168	0.255	0.170	
			18700	1	0	0	Left Tilted	24.00	23.87	0.349	0.217	0.360	0.224	
			18700	50	0	0	Left Tilted	23.00	22.96	0.292	0.181	0.295	0.183	
Body & Hotspot			18700	1	0	10	Rear	20.50	19.36	0.437	0.248	0.568	0.322	
			18700	50	0	10	Rear	19.50	18.45	0.426	0.242	0.543	0.308	
			18700	1	0	10	Front	20.50	19.36	0.414	0.236	0.538	0.307	
			18700	50	0	10	Front	19.50	18.45	0.427	0.243	0.544	0.309	
Hotspot			18700	1	0	10	Edge2	20.50	19.36	0.125	0.073	0.163	0.095	
			18700	50	0	10	Edge2	19.50	18.45	0.125	0.073	0.159	0.093	
			18700	1	0	10	Edge3	20.50	19.36	0.919	0.468	**1.195**	**0.608**	
			18900	1	0	10	Edge3	20.50	19.31	0.838	0.422	1.102	0.555	1
			19100	1	0	10	Edge3	20.50	19.28	0.847	0.429	1.122	0.568	1
			18700	50	0	10	Edge3	19.50	18.45	0.898	0.460	1.144	0.586	
			18900	50	0	10	Edge3	19.50	18.40	0.837	0.420	1.078	0.541	1
			19100	50	0	10	Edge3	19.50	18.37	0.861	0.433	1.117	0.562	1
			18700	100	0	10	Edge3	19.50	18.40	0.903	0.458	1.163	0.590	
			18700	1	0	10	Edge4	20.50	19.36	0.109	0.064	0.142	0.083	
			18700	50	0	10	Edge4	19.50	18.45	0.112	0.065	0.143	0.083	
			18700	1	0	10	Edge3	20.50	19.36	0.821	0.414	1.067	0.538	2

Note:
1.The result used an other antenna to spot check for worst channel of the original antenna that the SAR result can be meet and compliant.
2.Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
Original SAR = 0.919 W/kg, therefore second times repeat SAR is required.
Repeat SAR = 0.821 W/kg < 1.45W/kg
SAR variation= -10.66% < 20%

RF Exposure Condutions	Band	Mode	channel	RB	Offset	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	LTE Band 4	QPSK20M	20175	1	0	0	Right Cheek	24.00	23.87	0.144	0.091	0.148	0.094	
			20175	50	0	0	Right Cheek	23.00	22.93	0.069	0.052	0.070	0.053	
			20175	1	0	0	Right Tilted	24.00	23.87	0.105	0.080	0.108	0.083	
			20175	50	0	0	Right Tilted	23.00	22.93	0.067	0.044	0.068	0.044	
			20175	1	0	0	Left Cheek	24.00	23.87	0.123	0.083	0.127	0.086	
			20175	50	0	0	Left Cheek	23.00	22.93	0.103	0.069	0.105	0.070	
			20175	1	0	0	Left Tilted	24.00	23.87	0.106	0.070	0.109	0.072	
			20175	50	0	0	Left Tilted	23.00	22.93	0.096	0.063	0.097	0.064	
Body & Hotspot			20175	1	0	10	Rear	18.50	17.41	0.371	0.203	0.477	0.261	
			20175	50	0	10	Rear	17.50	16.50	0.329	0.186	0.414	0.234	
			20175	1	0	10	Front	18.50	17.41	0.427	0.243	0.549	0.312	
			20175	50	0	10	Front	17.50	16.50	0.406	0.232	0.511	0.292	
Hotspot			20175	1	0	10	Edge2	18.50	17.41	0.063	0.037	0.081	0.048	
			20175	50	0	10	Edge2	17.50	16.50	0.063	0.037	0.079	0.047	
			20050	1	0	10	Edge3	18.50	17.39	0.864	0.453	1.116	0.585	
			20175	1	0	10	Edge3	18.50	17.41	0.893	0.475	**1.148**	**0.611**	1
			20300	1	0	10	Edge3	18.50	17.33	0.801	0.433	1.049	0.567	1
			20050	50	0	10	Edge3	17.50	16.48	0.845	0.451	1.069	0.570	
			20175	50	0	10	Edge3	17.50	16.50	0.838	0.448	1.055	0.564	1
			20300	50	0	10	Edge3	17.50	16.42	0.816	0.433	1.046	0.555	1
			20175	100	0	10	Edge3	17.50	16.45	0.801	0.423	1.020	0.539	
			20175	1	0	10	Edge4	18.50	17.41	0.056	0.033	0.072	0.043	
			20175	50	0	10	Edge4	17.50	16.50	0.042	0.022	0.053	0.028	
			20050	1	0	10	Edge3	18.50	17.41	0.892	0.440	1.146	0.566	2

Note:
1.The result used an other antenna to spot -check for worst channel of the original antenna that the SAR result can be meet and compliant.
2.Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)
Original SAR = 0.893 W/kg, therefore second times repeat SAR is required.
Repeat SAR = 0.892 W/kg < 1.45W/kg
SAR variation= -0.11% < 20%

RF Exposure Condutions	Band	Mode	channel	RB	Offset	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	LTE Band 5	QPSK10M	20525	1	0	0	Right Cheek	24.00	23.71	0.086	0.070	0.092	0.074	
			20525	25	0	0	Right Cheek	23.00	22.80	0.076	0.062	0.080	0.064	
			20525	1	0	0	Right Tilted	24.00	23.71	0.039	0.031	0.042	0.033	
			20525	25	0	0	Right Tilted	23.00	22.80	0.030	0.024	0.031	0.025	
			20525	1	0	0	Left Cheek	24.00	23.71	0.092	0.072	0.098	0.077	
			20525	25	0	0	Left Cheek	23.00	22.80	0.070	0.055	0.073	0.057	
			20525	1	0	0	Left Tilted	24.00	23.71	0.053	0.043	0.057	0.046	
			20525	25	0	0	Left Tilted	23.00	22.80	0.040	0.032	0.042	0.034	
Body & Hotspot			20525	1	0	10	Rear	24.00	23.71	0.232	0.176	**0.248**	**0.188**	
			20525	25	0	10	Rear	23.00	22.80	0.182	0.138	0.191	0.145	
			20525	1	0	10	Front	24.00	23.71	0.148	0.113	0.158	0.121	
			20525	25	0	10	Front	23.00	22.80	0.190	0.146	0.199	0.153	
Hotspot			20525	1	0	10	Edge2	24.00	23.71	0.173	0.119	0.185	0.127	
			20525	25	0	10	Edge2	23.00	22.80	0.166	0.114	0.174	0.119	
			20525	1	0	10	Edge3	24.00	23.71	0.199	0.099	0.213	0.106	
			20525	25	0	10	Edge3	23.00	22.80	0.156	0.071	0.163	0.074	
			20525	1	0	10	Edge4	24.00	23.71	0.224	0.155	0.239	0.166	
			20525	25	0	10	Edge4	23.00	22.80	0.132	0.090	0.138	0.094	

RF Exposure Condutions	Band	Mode	channel	RB	Offset	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	LTE Band 12	QPSK10M	23095	1	0	0	Right Cheek	24.00	23.75	0.078	0.063	0.083	0.067	
			23095	25	0	0	Right Cheek	23.00	22.84	0.069	0.056	0.072	0.058	
			23095	1	0	0	Right Tilted	24.00	23.75	0.035	0.028	0.037	0.030	
			23095	25	0	0	Right Tilted	23.00	22.84	0.027	0.022	0.028	0.022	
			23095	1	0	0	Left Cheek	24.00	23.75	0.083	0.065	0.088	0.069	
			23095	25	0	0	Left Cheek	23.00	22.84	0.064	0.049	0.066	0.051	
			23095	1	0	0	Left Tilted	24.00	23.75	0.057	0.047	0.060	0.049	
			23095	25	0	0	Left Tilted	23.00	22.84	0.036	0.029	0.038	0.030	
Body & Hotspot			23095	1	0	10	Rear	24.00	23.75	0.298	0.236	**0.316**	**0.250**	
			23095	25	0	10	Rear	23.00	22.84	0.244	0.192	0.253	0.199	
			23095	1	0	10	Front	24.00	23.75	0.238	0.189	0.252	0.200	
			23095	25	0	10	Front	23.00	22.84	0.193	0.154	0.200	0.160	
Hotspot			23095	1	0	10	Edge2	24.00	23.75	0.243	0.173	0.257	0.183	
			23095	25	0	10	Edge2	23.00	22.84	0.220	0.155	0.228	0.161	
			23095	1	0	10	Edge3	24.00	23.75	0.204	0.071	0.216	0.075	
			23095	25	0	10	Edge3	23.00	22.84	0.166	0.058	0.172	0.060	
			23095	1	0	10	Edge4	24.00	23.75	0.266	0.190	0.282	0.201	
			23095	25	0	10	Edge4	23.00	22.84	0.207	0.146	0.215	0.151	

RF Exposure Condutions	Band	Mode	channel	RB	Offset	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	LTE Band 14	QPSK10M	23330	1	49	0	Right Cheek	24.00	23.61	0.064	0.052	0.070	0.057	
			23330	25	0	0	Right Cheek	24.00	22.75	0.050	0.040	0.066	0.054	
			23330	1	49	0	Right Tilted	24.00	23.61	0.045	0.037	0.050	0.040	
			23330	25	0	0	Right Tilted	24.00	22.75	0.034	0.028	0.046	0.037	
			23330	1	49	0	Left Cheek	24.00	23.61	0.086	0.069	0.094	0.075	
			23330	25	0	0	Left Cheek	24.00	22.75	0.055	0.045	0.073	0.060	
			23330	1	49	0	Left Tilted	24.00	23.61	0.066	0.053	0.072	0.057	
			23330	25	0	0	Left Tilted	24.00	22.75	0.042	0.034	0.056	0.046	
Body & Hotspot			23330	1	49	10	Rear	24.00	23.61	0.319	0.246	**0.349**	**0.269**	
			23330	25	0	10	Rear	24.00	22.75	0.248	0.192	0.331	0.256	
			23330	1	49	10	Front	24.00	23.61	0.245	0.190	0.268	0.208	
			23330	25	0	10	Front	24.00	22.75	0.189	0.146	0.252	0.195	
Hotspot			23330	1	49	10	Edge2	24.00	23.61	0.279	0.194	0.305	0.212	
			23330	25	0	10	Edge2	24.00	22.75	0.215	0.148	0.287	0.197	
			23330	1	49	10	Edge3	24.00	23.61	0.248	0.090	0.271	0.098	
			23330	25	0	10	Edge3	24.00	22.75	0.202	0.073	0.269	0.097	
			23330	1	49	10	Edge4	24.00	23.61	0.294	0.204	0.322	0.223	
			23330	25	0	10	Edge4	24.00	22.75	0.216	0.150	0.288	0.200	

RF Exposure Condutions	Band	Mode	channel	RB	Offset	distance (mm)	Test Position	Max Tune-up (dBm)	AVG Power (dBm)	SAR 1g	SAR 10g	Reported SAR 1g	Reported SAR 10g	Note
Head	LTE Band 30	QPSK10M	27710	1	0	0	Right Cheek	24.00	23.82	0.360	0.195	0.375	0.203	
			27710	25	0	0	Right Cheek	23.00	22.91	0.332	0.176	0.339	0.180	
			27710	1	0	0	Right Tilted	24.00	23.82	0.123	0.065	0.128	0.068	
			27710	25	0	0	Right Tilted	23.00	22.91	0.098	0.052	0.100	0.053	
			27710	1	0	0	Left Cheek	24.00	23.82	0.171	0.095	0.178	0.099	
			27710	25	0	0	Left Cheek	23.00	22.91	0.151	0.084	0.154	0.085	
			27710	1	0	0	Left Tilted	24.00	23.82	0.151	0.081	0.157	0.084	
			27710	25	0	0	Left Tilted	23.00	22.91	0.124	0.066	0.127	0.067	
Body & Hotspot			27710	1	0	10	Rear	23.00	22.85	0.586	0.322	0.607	0.333	
			27710	25	0	10	Rear	22.00	21.94	0.478	0.263	0.485	0.267	
			27710	1	0	10	Front	23.00	22.85	0.683	0.375	0.707	0.388	
			27710	25	0	10	Front	22.00	21.94	0.555	0.303	0.563	0.307	
Hotspot			27710	1	0	10	Edge2	23.00	22.85	0.397	0.217	0.411	0.225	
			27710	25	0	10	Edge2	22.00	21.94	0.321	0.176	0.325	0.178	
			27710	1	0	10	Edge3	23.00	22.85	0.835	0.340	**0.864**	**0.352**	
			27710	25	0	10	Edge3	22.00	21.94	0.823	0.337	0.834	0.342	
			27710	50	0	10	Edge3	22.00	21.92	0.779	0.327	0.793	0.333	
			27710	1	0	10	Edge4	23.00	22.85	0.182	0.093	0.188	0.096	
			27710	25	0	10	Edge4	22.00	21.94	0.158	0.081	0.160	0.082	
			27710	1	0	10	Edge3	23.00	22.85	0.798	0.327	0.826	0.338	1

Note:

1.Repeated measurements are required only when the measured SAR is ≥0.80 W/kg. If the measured SAR values are < 1.45 W/kg with ≤20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. (Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04)

Original SAR = 0.835 W/kg, therefore second times repeat SAR is required.

Repeat SAR = 0.798 W/kg < 1.45W/kg

SAR variation= -4.43% < 20%

10. MULTIPLE TRANSMITTER EVALUATION

10.1 Stand-alone SAR test exclusion

NO.	Simultaneous Tx Combination	Head	Body-worn (10mm)	Hotspot (10mm)	Extremity (0mm)
1	UMTS/LTE(Main Ant) + 2.4G WIFI	Yes	Yes	Yes	No
2	GSM/UMTS/LTE(Main Ant) + 5G WIFI	Yes	Yes	Yes	No
3	GSM/UMTS/LTE(Main Ant) + BT	Yes	Yes	Yes	No

Note:
1) 2G&3G&4G share the same Tx antenna and can't transmit simultaneously.
2) WiFi and Bluetooth share the same Tx antenna and can't transmit simultaneously.

10.2 Simultaneous transmission conditions

KDB 447498 D01 General RF Exposure Guidance v06, introduces a new formula for calculating the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

A new threshold of 0.04 is also introduced in the KDB. Thus, in order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:
$(SAR_1 + SAR_2)^{1.5} / R_i \leq 0.04$

$SPLSR = (SAR_1 + SAR_2)^{1.5} / R_i$
Where:

SAR_1 is the highest Reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest Reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

R_i is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$

10.3 About BT/WiFi and WWAN

Position	Head				Body-worn		Hotspot			
	Right Cheek	Right Tilted	Left Cheek	Left Tilted	Rear (10mm)	Front (10mm)	Edge1 (10mm)	Edge2 (10mm)	Edge3 (10mm)	Edge4 (10mm)
UMTS B2	0.632	0.404	0.423	0.462	0.441	0.458		0.048	1.062	0.009
UMTS B4	0.254	0.125	0.104	0.133	0.467	0.411		0.044	1.053	0.009
UMTS B5	0.091	0.055	0.006	0.032	0.285	0.230		0.245	0.334	0.294
LTE B2	0.498	0.308	0.315	0.360	0.568	0.538		0.163	1.195	0.143
LTE B4	0.148	0.108	0.127	0.109	0.477	0.549		0.081	1.148	0.072
LTE B5	0.092	0.042	0.098	0.057	0.248	0.199		0.185	0.213	0.239
LTE B12	0.083	0.037	0.088	0.060	0.316	0.252		0.257	0.216	0.282
LTE B14	0.070	0.050	0.094	0.072	0.349	0.268		0.305	0.271	0.322
LTE B30	0.375	0.128	0.178	0.157	0.607	0.707		0.411	0.864	0.188
2.4G	0.541	0.496	1.016	0.794	0.311	0.195	0.583	0.615		
5G UNII 1 & 2a	0.641	0.725	1.003	1.041	0.576	0.351	0.888	0.479		
5G UNII 2c	0.314	0.437	0.515	0.671	0.342	0.282	0.361	0.304		
5G UNII 3	0.125	0.170	0.433	0.517	0.416	0.273	0.323	0.267		
Bluetooth	0.044	0.043	0.194	0.149	0.030	0.022	0.073	0.072		
Max. SAR Summation	**1.273**	**1.129**	**1.439**	**1.503**	**1.183**	**1.508**	**0.888**	**1.026**	**1.195**	**0.322**

Note:
1. MAX. $\sum SAR_{1g}$= 1.508 W/Kg<1.6 W/Kg, so Peak location SAR are not required.

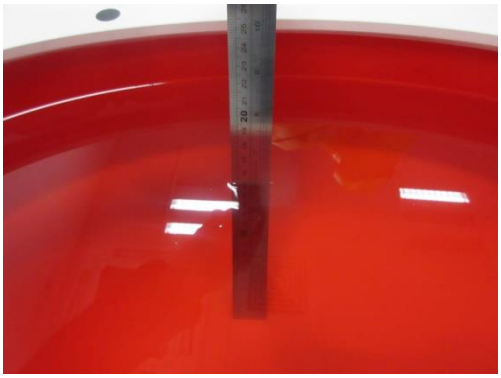
11. Test Layout

Specific Absorption Rate Test Layout

Liquid depth in the flat Phantom (≥15cm depth)

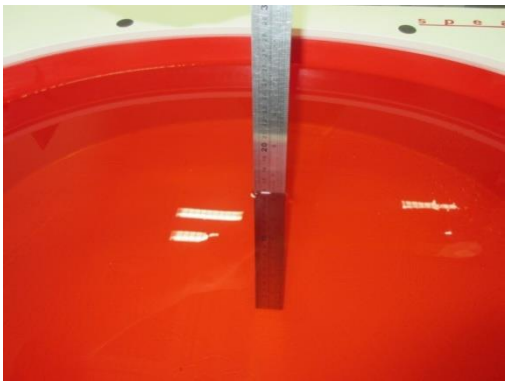
HSL(750MHz)

HSL(900MHz)



HSL(1750-2600MHz)

HSL(5GHz)



Appendix A. SAR Plots of System Verification

(Pls See BTL-FCC SAR-1-2105T090_Appendix A.)

Appendix B. SAR Plots of SAR Measurement

(Pls See BTL-FCC SAR-1-2105T090_Appendix B.)

Appendix C. Calibration Certificate

(Pls See BTL-FCC SAR-1-2105T090_Appendix C.)

Appendix D. Photographs of the Test Set-Up

(Pls See BTL-FCC SAR-1-2105T090_Appendix D.)

End of Test Report