ANSI/IEEE Std. C95.1-1992

in accordance with the requirements of FCC Report and Order: ET Docket 93-62

FCC TEST REPORT

For

Tablet Computer

Trade Name: Lenovo

Model: TP00064A

Issued to

COMPAL ELECTRONICS, INC.
No.581, Ruiguang Rd., Neihu District,
Taipei City 11492, Taiwan (R.O.C)

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891,
Taiwan. (R.O.C.)
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Issued Date: 2014/05/05

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2014/05/05	Initial Issue	ALL	Scott Hsu

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1 Certificate of Compliance (SAR Evaluation)

Applicant	COMPAL ELECTRONICS, INC. No.581, Ruiguang Rd., Neihu District, Taipei City 11492, Taiwan
Equipment Under Test:	Tablet Computer
Trade Name:	Lenovo
Model Number:	TP00064A
Date of Test:	April 14 ~ April 25, 2014
Device Category:	PORTABLE DEVICES
Exposure Category:	GENERAL POPULATION/UNCONTROLLED EXPOSURE

Applicable Standards	
FCC	● IEEE 1528 2003 ● KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03 ● KDB 447498 D01 General RF Exposure Guidance v05r02 ● KDB 616217 D04 SAR for laptop and tablets v01r01 ● KDB 941225 D05 SAR for LTE Devices v02r03 ● KDB 941225 D02 HSPA and 1x Advanced v02r02
Limit	
1.6 W/kg	
Test Result	
Pass	

The test results in this report apply only to the tested sample of the stated device/equipment. Other similar device/equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Alex Wu
Section Manager
Compliance Certification Services Inc.

Tested by:

Scott Hsu
SAR Engineer
Compliance Certification Services Inc.

2 Description of Equipment Under Test

Product		Tablet Computer		
Trade Name		Lenovo		
Model Number		TP00064A		
Transmitters		GPRS & WCDMA & CDMA2000 & LTE		
Modulation Technique		GPRS:GMSK		
		WCDMA:BPSK		
		LTE:QPSK/16QAM		
Antenna Specification		WWAN	Brand name	TE Connectivity
			Parts Number	Main:DC33001GYD0
				Aux:DC33001GYE0 (RX Only)
			Type	PIFA
FCC Rule Parts	Band	Frequency Range		Highest Reported 1-g SAR
22	GPRS 850	824 - 849 MHz		1.279 W/kg (Rear)
24	GPRS 1900	1850 - 1910 MHz		1.144 W/kg (Edge1)
24	WCDMA Band II	1850 - 1910 MHz		1.264 W/kg (Edge1)
24	WCDMA Band IV	1710 - 1755 MHz		1.206 W/kg (Edge1)
22	WCDMA Band V	824 - 849 MHz		1.051 W/kg (Edge1)
24	LTE Band 2	1850 - 1910 MHz		1.135 W/kg (Edge1)
27	LTE Band 4	1710 - 1755 MHz		1.325 W/kg (Edge1)
22	LTE Band 5	824 - 849 MHz		0.781 W/kg (Edge1)
24	LTE Band 7	2500 - 2570 MHz		1.201 W/kg (Edge1)
27	LTE Band 13	777 - 787 MHz		1.042 W/kg (Edge1)
24	LTE Band 17	704 - 716 MHz		0.974 W/kg (Edge1)
Rechargeable Li-polymer Battery–alternate		Brand: SIMPLO TECHNOLOGY (CHANGSHU) INC, SIMPLO TECHNOLOGY (CHONG QING) INC Model: 45N1728 Rating: 8800mAh, 33Wh, 3.75V Brand:SIMPLO TECHNOLOGY (CHANGSHU) INC, SIMPLO TECHNOLOGY (CHONG QING) INC Model:45N1732 (for NEC) Rating:8800mAh, 33Wh, 3.75V Brand:LG Chem (Nanjing) Model:45N1730 (for NEC) Rating: 89200mAh, 33Wh, 3.7V Brand:LG Chem (Nanjing) Model: 45N1726 Rating: 89200mAh, 33Wh, 3.7V		

Remark: The sample selected for test was prototype that approximated to production product and was provided by manufacturer

3 Requirements for Compliance Testing Defined

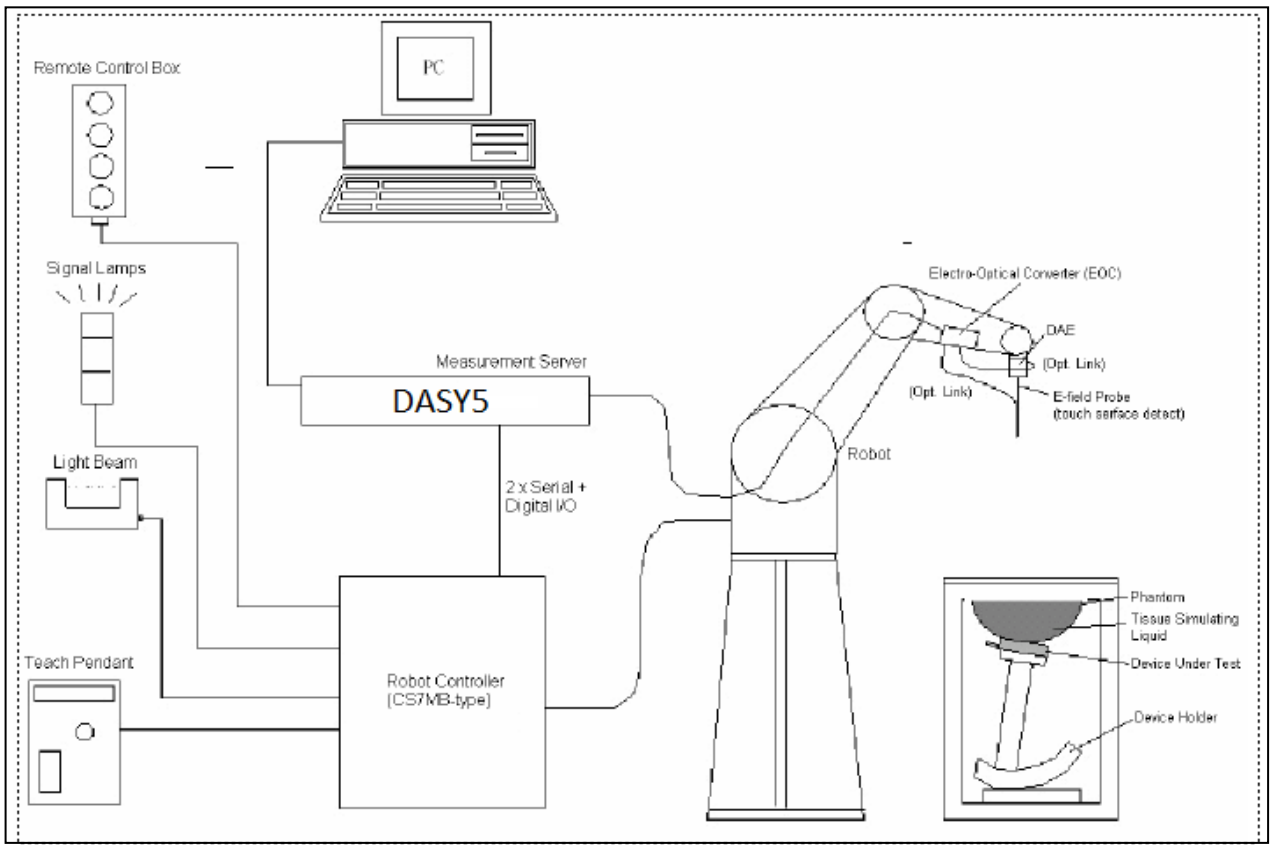
3.1 Requirements for Compliance Testing Defined by the FCC

The US Federal Communications Commission has released the report and order “Guidelines for Evaluating the Environmental Effects of RF Radiation", ET Docket No. 93-62 in August 1996 [1]. The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 W/kg for an uncontrolled environment and 8.0 mW/g for an occupational/controlled environment as recommended by the ANSI/IEEE standard C95.1-1992 [6].

4 Dosimetric Assessment System

These measurements were performed with the automated near-field scanning system DASY4/DAST5 from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9 m) which positions the probes with a positional repeatability of better than ± 0.02 mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines to the data acquisition unit. The SAR measurements were conducted with the dosimetric probe EX3DV4-SN: 3665 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the procedure with accuracy of better than ±10%. The spherical isotropy was evaluated with the procedure and found to be better than ±0.25 dB. The phantom used was the SAM Twin Phantom as described in FCC supplement C, IEEE 1528 2013.

4.1 Measurement System Diagram



The DASY4/DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (St¨aubli RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- 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.
- A data acquisition electronics (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.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4/DASY5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing validating the proper functioning of the system.

4.2 System Components

DASY4/DASY5 Measurement Server

The DASY4/DASY5 measurement server is based on a PC/104 CPU board with a 166MHz low-power Pentium, 32MB chip disk and 64MB RAM. The necessary circuits for communication with either the DAE3 electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY4/DASY5 I/O-board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation.

The PC-operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with two expansion slots which are reserved for future applications. Please note that the expansion slots do not have a standardized pinout and therefore only the expansion cards provided by SPEAG can be inserted. Expansion cards from any other supplier could seriously damage the measurement server. Calibration: No calibration required.

Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE4) consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE4 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 Isotropic E-Field Probe for Dosimetric Measurements

Construction:	Symmetrical design with triangular core
	Built-in shielding against static charges
	PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration:	Basic Broad Band Calibration in air: 10-3000 MHz. Conversion Factors (CF) for HSL 900 and HSL 1800 CF-Calibration for other liquids and frequencies upon request.
Frequency:	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity:	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in HSL (rotation normal to probe axis)
Dynamic Range:	10 µW/g to > 100 mW/g; Linearity: ± 0.2 dB (noise: typically < 1 µW/g)

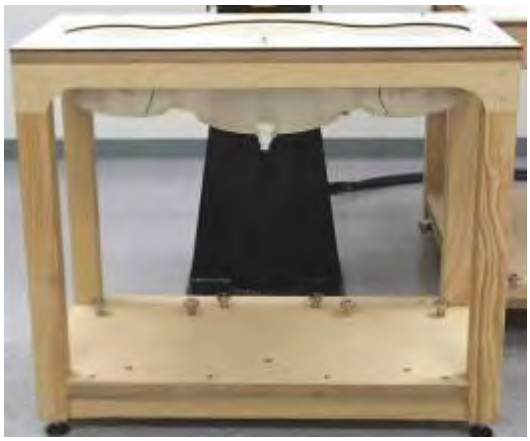
Dimensions: Overall length: 330 mm (Tip: 20 mm)
Tip diameter: 2.5 mm (Body: 12 mm)
Distance from probe tip to dipole centers: 1 mm

Application: High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

Interior of probe

SAM Phantom (V4.0)

Construction: The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528-2003, CENELEC 50361 and IEC 62209. 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 manually teaching three points with the robot.



Shell Thickness: 2 ±0.2 mm

Filling Volume: Approx. 25 liters

Dimensions: Height: 810mm; Length: 1000mm; Width: 500mm

SAM Phantom (ELI4)

Construction: Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209 Part II and all known tissue simulating liquids. ELI4 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 supported by software version DASY4/DASY5 and higher and is compatible with all SPEAG dosimetric probes and dipoles

Shell Thickness: 2.0 ± 0.2 mm (sagging: <1%)

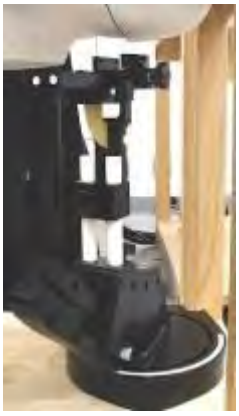
Filling Volume: Approx. 25 liters

Dimensions: Major ellipse axis: 600 mm

Minor axis: 400 mm 500mm

Device Holder for SAM Twin Phantom

Construction: In combination with the Twin SAM Phantom V4.0 or Twin SAM, the Mounting Device (made from POM) enables the rotation of the mounted transmitter in spherical coordinates, whereby the rotation point is the ear opening. The devices can be easily and accurately positioned according to IEC, IEEE, CENELEC, FCC or other specifications. The device holder can be locked at different phantom locations (left head, right head, and flat phantom).



System Validation Kits for SAM Phantom (V4.0)

Construction: Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor.

Frequency: 750, 850, 1800, 1900,2450 MHz

Return loss: > 20 dB at specified validation position

Power capability: > 100 W (f < 1GHz); > 40 W (f > 1GHz)

Dimensions: D750V3: dipole length: 178 mm; overall height: 330 mm
D835V2: dipole length: 161 mm; overall height: 340 mm
D1800V2: dipole length: 72.5 mm; overall height: 300 mm
D1900V2: dipole length: 67.7 mm; overall height: 300 mm
D2450V2: dipole length: 51.5 mm; overall height: 290 mm

System Validation Kits for ELI4 phantom

Construction: Symmetrical dipole with l/4 balun Enables measurement of feedpoint impedance with NWA Matched for use near flat phantoms filled with brain simulating solutions Includes distance holder and tripod adaptor.

Frequency: 750, 850, 1800,1900,2450 MHz

Return loss: > 20 dB at specified validation position

Power capability: > 100 W (f < 1GHz); > 40 W (f > 1GHz)

Dimensions: D750V3: dipole length: 178 mm; overall height: 330 mm
D835V2: dipole length: 161 mm; overall height: 340 mm
D1800V2: dipole length: 72.5 mm; overall height: 300 mm
D1900V2: dipole length: 67.7 mm; overall height: 300 mm
D2450V2: dipole length: 51.5 mm; overall height: 290 mm

5 Evaluation Procedures

Data Evaluation

The DASY4/DASY5 post processing software (SEMCAD) 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	$Norm_i$, 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	σ
	- Density	ρ

These parameters must be set correctly in the software. They can be found in the component documents or be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multi-meter 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:

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

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:
$$E_i = \sqrt{\frac{V_i}{Norm_i \bullet ConvF}}$$

H-field probes:
$$H_i = \sqrt{Vi} \cdot \frac{a_{i10} + a_{i11} f + a_{i12} f^2}{f}$$

with
V_i = Compensated signal of channel i (i = x, y, z)
$Norm_i$ = Sensor sensitivity of channel i (i = x, y, z)

$\mu V/(V/m)^2$ for E0field Probes

$ConvF$ = Sensitivity enhancement in solution
aij = Sensor sensitivity factors for H-field probes
f = Carrier frequency (GHz)
Ei = Electric field strength of channel i in V/m
Hi = Magnetic field strength of channel i in A/m

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

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

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

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with *SAR* = local specific absorption rate in W/kg
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = 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 as a free space field.

$$P_{pwe} = \frac{E_{tot}^2}{377} \quad \text{or} \quad P_{pwe} = H_{tot}^2 \cdot 37.7$$

with P_{pwe} = Equivalent power density of a plane wave in mW/cm^2
E_{tot} = total electric field strength in V/m
H_{tot} = total magnetic field strength in A/m

6 SAR Measurement Procedures

6.1 Normal SAR Test Procedure

- **Power Reference Measurement**

The reference and drift jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.

- **Area Scan**

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines implemented in DASY4/DASY5 software can find the maximum locations even in relatively coarse grids. The scan area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the area scan's property sheet is brought-up, the grid resolution has to less than 15 mm by 15 mm at frequency ≤2GHz; the grid resolution has to less than 12mm by 12 mm at frequency between 2GHz to 4GHz; grid resolution has to less than 10 mm by 10 mm at frequency between 4GHz to 6GHz.

According to KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03

<table>
<tr><td></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td>Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td>Maximum probe abgle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td rowspan="2">Maximum area scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
</table>

- **Zoom Scan**

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default zoom scan measures points in accordance with the frequency can be divided into three parts. (1)The zoom scan volume was set to 5x5x7 points at frequency ≤ 2GHz. (2) The zoom scan volume was set to 7x7x7 points at frequency between 2GHz to 4GHz (3) The zoom scan volume was set to 7x7x12 points at frequency between 4GHz to 6GHz. The measures points within a cube whose base faces are centered around the maximum found in a preceding area scan job within the same procedure. If the preceding Area Scan job indicates more then one maximum, the number of Zoom Scans has to be enlarged accordingly.

According to KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm</td><td>3 – 4 GHz: ≤ 5 mm
4 – 6 GHz: ≤ 4 mm</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">Uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$:between 1st two points losest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Maximum zoom scan volume</td><td>x, y, z</td><td>≥ 30 mm</td><td colspan="2">3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
</table>

- **Power Drift Measurement**

The drift job measures the field at the same location as the most recent reference job within the same procedure, and with the same settings. The drift measurement gives the field difference in dB from the reading conducted within the last reference measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test within a batch process. In the properties of the Drift job, the user can specify a limit for the drift and have DASY4/DASY5 software stop the measurements if this limit is exceeded.

- **Z-Scan**

The Z Scan job measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. A user can anchor the grid to the current probe location. As with any other grids, the local Z-axis of the anchor location establishes the Z-axis of the grid.

7 Device Under Test

7.1 Band Interface

Tx Frequency Bands	• GPRS850: 824 - 849 MHz • GPRS1900: 1850 - 1910 MHz • WCDMA Band II: 1850 - 1910 MHz • WCDMA Band IV: 1710 - 1755 MHz • WCDMA Band V: 824 - 849 MHz • LTE Band 2: 1850 – 1910 MHz • LTE Band 4: 1710 – 1755 MHz • LTE Band 5: 824 – 849 MHz • LTE Band 7: 2500 – 2570 MHz • LTE Band 13: 777 – 787 MHz • LTE Band 17: 704 – 716 MHz
Mode	• GPRS/EGPRS • WCDMA Rel 99 • HSDPA (Rel 5, CAT 24) • HSUPA (Rel 6, CAT 7) • HSPA+ (Rel 7, CAT 7) • LTE (Rel 8, CAT 3)

8 Summary of SAR Test Exclusion Configurations

8.1 Standalone SAR Test Exclusion Calculations

Since the Dedicated Host Approach is applied, the standalone SAR test exclusion procedure in KDB 447498 section4.3.1 is applied in conjunction with KDB 616217 section 4.3 to determine the minimum test separation distance:

1. According to KDB 447498 Section 4.1 5) if the antenna is at close proximity to user then the outer surface of the DUT should be treated as the radiating surface. The test separation distance is then determined by the smallest distance between the outer surface of the device and the user. For the purposes of this report close proximity has been defined as closer than 50 mm. For antennas <50 mm from the rear or edge the separation distance used for the estimated SAR calculations is 0 mm.
2. When the minimum test separation distance is < 5mm, a distance of 5mm is applied to determine SAR test exclusion.
3. When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.
4. If the antenna to DUT adjacent edge or bottom separation distance >50mm the actual antenna to user separation distance is used to determine SAR exclusion and estimated SAR value.

Refer to Appendix for the specific details on the antenna-to-antenna and antenna-to-edge distances used for test exclusion calculations.

8.1.1 SAR Exclusion Calculations for WWAN Antenna < 50mm from the User

Edges and Rear(Without Power Back off)

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Front	Rear	Edge1	Edge2	Edge3	Edge4	Front
WWAN Main	GPRS850	824.2	32.5	1778	19.2	13.43	53.05	162.8	138.5		84.071	23.867	>50mm	>50mm	>50mm	N/A
WWAN Main	GPRS1900	1850.2	30	1000	19.2	13.43	53.05	162.8	138.5		70.845	12.897	>50mm	>50mm	>50mm	N/A
WWAN Main	WCDMA Band II	1852.4	24.5	282	19.2	13.43	53.05	162.8	138.5		19.99	3.2867	>50mm	>50mm	>50mm	N/A
WWAN Main	WCDMA Band IV	1712.4	24.5	282	19.2	13.43	53.05	162.8	138.5		19.22	3.2867	>50mm	>50mm	>50mm	N/A
WWAN Main	WCDMA Band V	826.4	24.5	282	19.2	13.43	53.05	162.8	138.5		13.352	3.2867	>50mm	>50mm	>50mm	N/A
WWAN Main	LTE Band 2	1880	23.5	224	19.2	13.43	53.05	162.8	138.5		15.997	2.5569	>50mm	>50mm	>50mm	N/A
WWAN Main	LTE Band 4	1732.5	23.5	224	19.2	13.43	53.05	162.8	138.5		15.356	2.5569	>50mm	>50mm	>50mm	N/A
WWAN Main	LTE Band 5	836.5	23.5	224	19.2	13.43	53.05	162.8	138.5		10.67	2.5569	>50mm	>50mm	>50mm	N/A
WWAN Main	LTE Band 7	2500	23.5	224	19.2	13.43	53.05	162.8	138.5		18.447	2.5569	>50mm	>50mm	>50mm	N/A
WWAN Main	LTE Band 13	710	23.5	224	19.2	13.43	53.05	162.8	138.5		9.8305	2.5569	>50mm	>50mm	>50mm	N/A
WWAN Main	LTE Band 17	1882.5	23.5	224	19.2	13.43	53.05	162.8	138.5		16.007	2.5569	>50mm	>50mm	>50mm	N/A

Note(s):

1. According to KDB 447498 v05 r02 in section 4.3.1, if the calculated threshold value is > 3 then SAR testing required.

Edges and Rear(With Power Back off)

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Front	Rear	Edge1	Edge2	Edge3	Edge4	Front
WWAN Main	GPRS850	824.2	21.5	141	6.2	2.43					20.646	8.5081				N/A
WWAN Main	GPRS1900	1850.2	17.5	56	6.2	2.43					12.286	3.0486				N/A
WWAN Main	WCDMA Band II	1852.4	17.5	56	6.2	2.43					12.293	3.0486				N/A
WWAN Main	WCDMA Band IV	1712.4	17.5	56	6.2	2.43					11.819	3.0486				N/A
WWAN Main	WCDMA Band V	826.4	21.5	141	6.2	2.43					20.674	8.5081				N/A
WWAN Main	LTE Band 2	1880	16	40	6.2	2.43					8.846	2.0822				N/A
WWAN Main	LTE Band 4	1732.5	16	40	6.2	2.43					8.4919	2.0822				N/A
WWAN Main	LTE Band 5	836.5	20	100	6.2	2.43					14.752	5.8198				N/A
WWAN Main	LTE Band 7	2500	19	79	6.2	2.43					20.147	4.4812				N/A
WWAN Main	LTE Band 13	710	20	100	6.2	2.43					13.591	5.8198				N/A
WWAN Main	LTE Band 17	1882.5	20	100	6.2	2.43					22.13	5.8198				N/A

Note(s):

1. According to KDB 447498 v05 r02 in section 4.3.1, if the calculated threshold value is > 3 then SAR testing required.

8.1.2 SAR Exclusion Calculations for WWAN Antenna > 50mm from the User

Edges and Rear(Without Power Back off)

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Front	Rear	Edge1	Edge2	Edge3	Edge4	Front
WWAN Main	GPRS850	824.2	29.5	891	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	195.72	1293.22	1049.72	N/A
WWAN Main	GPRS1900	1850.2	25.5	355	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	140.78	1238.28	994.78	N/A
WWAN Main	WCDMA Band II	1852.4	24.5	282	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	140.71	1238.21	994.71	N/A
WWAN Main	WCDMA Band IV	1712.4	24.5	282	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	145.13	1242.63	999.13	N/A
WWAN Main	WCDMA Band V	826.4	24.5	282	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	195.50	1293.00	1049.50	N/A
WWAN Main	LTE Band 2	1880	23.5	224	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	139.90	1237.40	993.90	N/A
WWAN Main	LTE Band 4	1732.5	23.5	224	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	144.46	1241.96	998.46	N/A
WWAN Main	LTE Band 5	836.5	23.5	224	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	194.51	1292.01	1048.51	N/A
WWAN Main	LTE Band 7	2500	23.5	224	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	125.37	1222.87	979.37	N/A
WWAN Main	LTE Band 13	710	23.5	224	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	208.52	1306.02	1062.52	N/A
WWAN Main	LTE Band 17	1882.5	23.5	224	19.2	13.43	53.05	162.8	138.5		<50mm	<50mm	139.83	1237.33	993.83	N/A

Note(s):

1. According to KDB 447498 v05 r02, if the calculated Power threshold is less than the output power then SAR testing is required.

Edges and Rear(With Power Back off)

Antenna	Band	Frequency (MHz)	Output Power		Separation Distances(mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge1	Edge2	Edge3	Edge4	Front	Rear	Edge1	Edge2	Edge3	Edge4	Front
WWAN Main	GPRS850	824.2	21.5	141	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	GPRS1900	1850.2	17.5	56	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	WCDMA Band II	1852.4	17.5	56	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	WCDMA Band IV	1712.4	17.5	56	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	WCDMA Band V	826.4	21.5	141	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	LTE Band 2	1880	16	40	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	LTE Band 4	1732.5	16	40	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	LTE Band 5	836.5	20	100	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	LTE Band 7	2500	19	79	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	LTE Band 13	710	20	100	6.2	2.43					<50mm	<50mm				N/A
WWAN Main	LTE Band 17	1882.5	20	100	6.2	2.43					<50mm	<50mm				N/A

Note(s):

1. According to KDB 447498 v05 r02, if the calculated Power threshold is less than the output power then SAR testing is required.

8.2 For WWAN

Without Power Back off

Test Configurations	Rear	Edge1	Edge2	Edge3	Edge4
GPRS850	Yes	Yes	Yes	No	No
GPRS1900	Yes	Yes	Yes	No	No
WCDMA Band II	Yes	Yes	Yes	No	No
WCDMA Band IV	Yes	Yes	Yes	No	No
WCDMA Band V	Yes	Yes	Yes	No	No
CDMA Celullar	Yes	Yes	Yes	No	No
CDMA PCS	Yes	Yes	Yes	No	No
LTE Band 2	Yes	Yes	Yes	No	No
LTE Band 4	Yes	Yes	Yes	No	No
LTE Band 5	Yes	Yes	Yes	No	No
LTE Band 13	Yes	Yes	Yes	No	No
LTE Band 17	Yes	Yes	Yes	No	No
LTE Band 25	Yes	Yes	Yes	No	No

Note(s):

1. Yes = Testing is Required.
2. No = Testing is not Required.

With Power Back off

Test Configurations	Rear	Edge1	Edge2	Edge3	Edge4
GPRS850	Yes	Yes	No	No	No
GPRS1900	Yes	Yes	No	No	No
WCDMA Band II	Yes	Yes	No	No	No
WCDMA Band IV	Yes	Yes	No	No	No
WCDMA Band V	Yes	Yes	No	No	No
CDMA Celullar	Yes	Yes	No	No	No
CDMA PCS	Yes	Yes	No	No	No
LTE Band 2	Yes	Yes	No	No	No
LTE Band 4	Yes	Yes	No	No	No
LTE Band 5	Yes	Yes	No	No	No
LTE Band 13	Yes	Yes	No	No	No
LTE Band 17	Yes	Yes	No	No	No
LTE Band 25	Yes	Yes	No	No	No

Note(s):

1. Yes = Testing is Required.
2. No = Testing is not Required.

9 General LTE SAR Test and Reporting Considerations

Item	Description	Information
1	Identify the operating frequency range of each LTE transmission band used by the device	Band 2 TX:1850 – 1910 MHz Band 4 TX:1710 – 1755 MHz Band 5 TX:824 – 849 MHz Band 7 TX:2500 – 2570 MHz Band 13 TX:777 – 787 MHz Band 17 TX:704 – 716 MHz

2	Identify the channel bandwidths used in each LTE band; 1.4, 3, 5, 10, 15, 20 MHz etc.	Band	1.4MHz	3 MHz	5 MHz	10 MHz	15MHz	20 MHz
		Band2	✓	✓	✓	✓	✓	✓
		Band4	✓	✓	✓	✓	✓	✓
		Band5	✓	✓	✓	✓	×	×
		Band7	×	×	✓	✓	✓	✓
		Band13	×	×	✓	✓	×	×
		Band17	×	×	✓	✓	×	×

3	Identify the high, middle and low (H, M, L) channel numbers and channel frequencies for each LTE bandwidth and frequency band	Band 2	Channel Bandwidth					
			1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
		Low	18607/ 1850.7	18615/ 1851.5	18625/ 1852.5	18650/ 1855	18675/ 1857.5	18700/ 1860
		Mid	18900/1 1880	18900/1 880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
		High	19192/ 1909.2	19184/ 1908.4	19175/1 907.5	19150/1 905	19125/ 1902.5	19100/ 1900
		Band 4	Channel Bandwidth					
			1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
		Low	19957/ 1710.7	19965/1 711.5	19975/1 712.5	20000/ 1715	20025/ 1717.5	20050/ 1720
		Mid	20175/ 1732.5	20175/ 1732.5	20175/1 732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
		High	20392/ 1754.2	20384/ 1753.4	20375/ 1752.5	20350/1 750	20325/ 1747.5	20300/ 1745
		Band 5	Channel Bandwidth					
			1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
		Low	20407/ 824.7	20415/ 825.5	20425/ 826.5	20450/8 29		
		Mid	20525/ 836.5	20525/ 836.5	20525/8 36.5	20525/ 836.5		
		High	20642/ 848.2	20643/ 847.4	20625/ 846.5	20600/8 44		

KDB 941225 D05 SAR for LTE Devices V02 (Continued)

<table>
<tr><th>Item</th><th>Description</th><th>Information</th></tr>
<tr><td>3</td><td>Identify the high, middle and low (H, M, L) channel numbers and channel frequencies for each LTE bandwidth and frequency band</td><td>
<table>
<tr><td rowspan="2">Band 7</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>1.4MHz</td><td>3MHz</td><td>5MHz</td><td>10MHz</td><td>15MHz</td><td>20MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td>20775/ 2502.5</td><td>20800/ 2505.5</td><td>20825/ 2507.5</td><td>20850/ 2510.0</td></tr>
<tr><td>Mid</td><td></td><td></td><td>21100/ 2535.0</td><td>21100/ 2535.0</td><td>21100/ 2535.0</td><td>21100/ 2535.0</td></tr>
<tr><td>High</td><td></td><td></td><td>21425/ 2567.5</td><td>21400/ 2565.0</td><td>21375/ 2562.5</td><td>21350/ 2560.0</td></tr>
<tr><td rowspan="2">Band 13</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>1.4MHz</td><td>3MHz</td><td>5MHz</td><td>10MHz</td><td>15MHz</td><td>20MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td>23205/ 779.5</td><td></td><td></td><td></td></tr>
<tr><td>Mid</td><td></td><td></td><td>23230/ 782</td><td>23230/ 782</td><td></td><td></td></tr>
<tr><td>High</td><td></td><td></td><td>23255/ 784.5</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Band 17</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>1.4MHz</td><td>3MHz</td><td>5MHz</td><td>10MHz</td><td>15MHz</td><td>20MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td>23755/ 706.5</td><td>23780/ 709</td><td></td><td></td></tr>
<tr><td>Mid</td><td></td><td></td><td>23790/ 710</td><td>23790/ 710</td><td></td><td></td></tr>
<tr><td>High</td><td></td><td></td><td>23825/ 713.5</td><td>23800/ 711</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>4</td><td>Specify the UE category and uplink modulations used</td><td>UE Category: 3
Uplink Modulations: QPSK, 16QAM</td></tr>
<tr><td>5</td><td>Descriptions of the LTE transmitter and antenna implementation; and also identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc</td><td>● The Main antenna is used for LTE and other wireless modes (GPRS/EGPRS/WCDMA/CDMA) for both Transmit and Receive.</td></tr>
<tr><td>6</td><td>identify the LTE voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions etc.</td><td>Data only device.
Exposure Conditions:
• Body – Rear side, Edge 1, Edge 2, Edge 3, Edge 4 of DUT at separation distance of 0 cm from the flat phantom</td></tr>
</table>

KDB 941225 D05 SAR for LTE Devices V02 (Continued)

<table>
<tr><th>Item</th><th>Description</th><th>Information</th></tr>
<tr><td>7</td><td>Identify if Maximum Power Reduction(MPR) is implemented as an optional or permanent feature, i.e., built-in by design:
1. MPR may be considered during SAR testing only when the maximum output power is permanently limited by the MPR implemented within the device, according to the RB (resource block) configurations specified in 3GPP/LTE standards.
2. Regardless of network requirements, only those RB configurations allowed (see 3GPP standards) for the channel bandwidth and modulation combinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.
3. A-MPR (additional MPR) must be disabled during SAR testing.</td><td>As per 3GPP 36.101 v9.11.0 (2012-03), Release 9
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr></table>
MPR is permanently built-in by design
A-MPR was disabled</td></tr>
<tr><td>8</td><td>When power reduction is required for one or more LTE modes to satisfy SAR compliance for simultaneous transmission or other equipment certification and operating requirements, maximum average conducted output power measurement results for each power reduction mode applicable to the simultaneous voice/data transmission configurations for such wireless configurations and frequency bands are required.</td><td>No.</td></tr>
</table>

KDB 941225 D05 SAR for LTE Devices V02 (Continued)

Item	Description	Information
9	Based on the design specifications and other information available to the manufacturer, through measurement and analysis during product development, when the maximum output power for different RB allocations and RB offset conditions within a channel bandwidth, modulation, or across the channels in a frequency band varies by more than 1 dB.	Refer to Section 14.
10	The maximum average conducted output power should be measured for the required test channels, for each channel bandwidth and uplink modulation, in each frequency band, using the following configurations to support the SAR test reduction and exclusion applied in the evaluation: 1. 100% RB allocation 2. 1 RB and also 50% RB allocation, offset to the upper and lower edges of each required test channel and also to the middle of the channel bandwidth	Refer to Section 14.
11	Spectrum plots should be included in SAR reports to demonstrate the tested RB allocations have been established correctly at the maximum output power conditions.	Refer to Section 14.

10 Power Reduction by Proximity Sensing

A proximity sensor for power reduction is implemented in this device to address RF exposure compliance when the cellular antenna is positioned close to the user's body. The sensor's mechanical structure is designed to fit within the enclosure design used in this device and also extended around the edge and top of the antenna element in order to optimize sensitivity in these orientations. This design combines the antenna printed directly on a plastic part and proximity sensor FPC (Flexible Printed Circuit) bonded together into one piece. According to KDB 616217 D04 SAR for laptop and tablets v01r01 6)

10.1 Procedures for determining proximity sensor triggering distances

The following procedures should be applied to determine proximity sensor triggering distances for the back surface and individual edges of a tablet. Conducted power is monitored qualitatively to identify the general triggering characteristics and recorded quantitatively, versus spacing, as required by the procedures. Unless there is built-in test software that reports the triggering conditions and enables the power levels to be confirmed separately, monitoring of conducted power during the triggering tests typically requires internal access to the antenna ports inside the tablet, which may interfere with the triggering tests.

(1) The relevant transmitter should be set to operate at its normal maximum output power.

(2) The entire back surface or edge of the tablet is positioned below a flat phantom filled with the required tissue-equivalent medium, and positioned at least 20 mm further than the distance that triggers power reduction.

(3) It should be ensured that the cables required for power measurements are not interfering with the proximity sensor. Cable losses should be properly compensated to report the measured power results.

(4) The back surface or edge is moved toward the phantom in 3 mm steps until the sensor triggers.

(5) The back surface or edge is then moved back (further away) from the phantom by at least 5 mm or until maximum output power is returned to the normal maximum level.

(6) The back surface or edge is again moved toward the phantom, but in 1 mm steps, until it is at least 5 mm past the triggering point or touching the phantom. If 1 mm resolution is not suitable for the sensor triggering sensitivity, a KDB inquiry should be submitted to determine alternative test configurations.

(7) If the tablet is not touching the phantom, it is moved in 3 mm steps until it touches the phantom to confirm that the sensor remains triggered and the maximum power stays reduced.

(8) The process is then reversed by moving the tablet away from the phantom according to steps 4) to 7), to determine triggering release, until it is at least 10 mm beyond the point that triggers the return of normal maximum power.

(9) The measured output power within ± 5 mm of the triggering points, or until the tablet is touching the phantom, for movements to and from the phantom should be tabulated in the SAR report.

(10) If the sensor design and implementation allow additional variations for triggering distance tolerances, multiple samples should be tested to determine the most conservative distance required for SAR evaluation.

(11) To ensure all production units are compliant, it is generally necessary to reduce the triggering distance determined from the triggering tests by 1 mm, or more if it is necessary, and use the smallest distance for movements to and from the phantom, minus 1 mm, as the sensor triggering distance for determining the SAR measurement distance.

10.2 Procedures for determining antenna and proximity sensor coverage

The sensing regions are usually limited to areas near the sensor element. If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. The following are used to determine if additional SAR measurements may be necessary due to sensor and antenna offset. 25 These procedures do not apply and are not required for configurations where the antenna and sensor are collocated and the peak SAR location is overlapping with the sensor.

(1) The back surface or edge of the tablet is positioned at a test separation distance less than or equal to the distance required for back surface or edge triggering, with both the antenna and sensor pad located at least 20 mm laterally outside the edge (boundary) of the phantom, along the direction of maximum antenna and sensor offset. For the back surface, if the direction of maximum offset is not aligned with the tablet coordinates (physical edges) the tablet test position would not be aligned with the phantom coordinates (orientations). Each applicable tablet edge should be positioned perpendicularly to the phantom to determine sensor coverage. For antennas and/or sensors located near the corner of a tablet, both adjacent edges must be considered.

(2) The similar sequence of steps applied to determine sensor triggering distance in section 6.2 are used to verify back surface and edge sensor coverage by moving the tablet (sensor and antenna) horizontally toward the phantom while maintaining the same vertical separation between the back surface or edge and the phantom.

(3) After the exact location where triggering of power reduction is determined, with respect to the sensor and antenna, the tablet movement should be continued, in 3 mm increments, until both the sensor and antenna(s) are fully under the phantom and at least 20 mm inside the phantom edge.

(4) The process is then repeated from the opposite direction, starting at the other end of the maximum antenna and sensor offset, by rotating the tablet 180° along the vertical axis.

(5) The triggering points should be documented graphically, with the antenna and sensor clearly identified, along with all relevant dimensions.

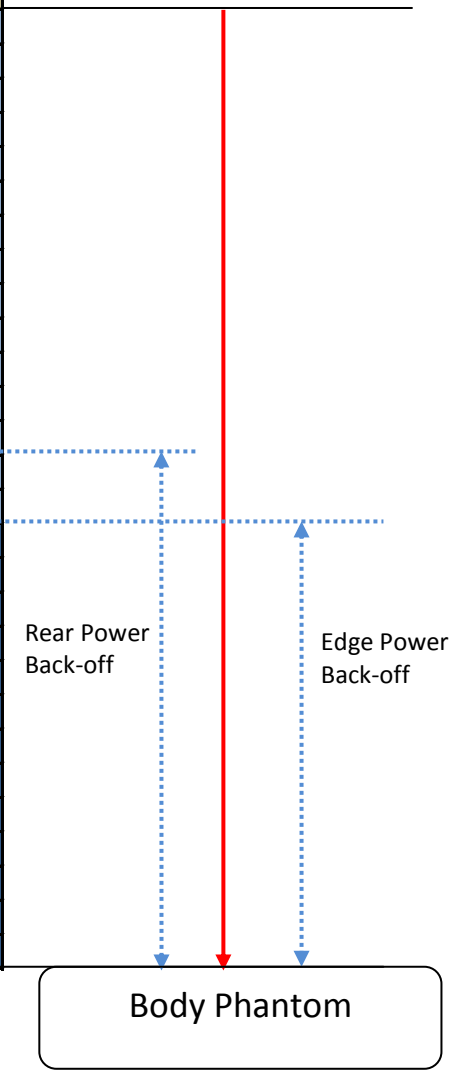
(6) If the subsequently measured peak SAR location for the antenna is not between the triggering points, established by the sensor coverage tests from opposite ends of the antenna and sensor, additional SAR tests may be required for conditions where only part of the back surface or edge of a tablet corresponding to the antenna is in proximity to the user and the sensor may not be triggering as desired. A KDB inquiry must be submitted by the test lab to determine if additional tests are required and the proper test configurations to use for testing. This may include situations where the sensor coverage region is too small for the antenna, the sensor is located too far away from the antenna, the sensor location is insufficient to cover multiple antennas or the antenna is at the corner of a tablet etc.

10.3 Proximity Sensor Status Table of trigger distance

As per the KDB 616217 D04 SAR for laptop and tablets v01r0, section 6.2, the following procedure is used to determine the triggering distances.

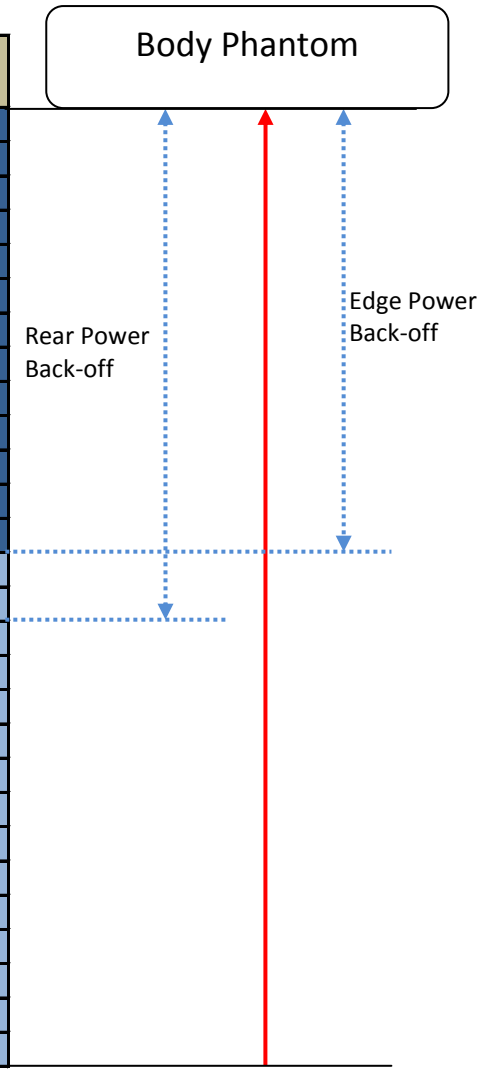
Proximity Sensor Status Table when DUT is moving towards the phantom

Distance to the DUT (mm)	Proximity Sensor Status – Rear Surface	Proximity Sensor Status – Top-Edge
30	OFF	OFF
27	OFF	OFF
25	OFF	OFF
24	OFF	OFF
23	OFF	OFF
22	OFF	OFF
21	OFF	OFF
20	OFF	OFF
19	OFF	OFF
18	OFF	OFF
17	OFF	OFF
16	OFF	OFF
15	OFF	OFF
14	ON	OFF
13	ON	OFF
12	ON	ON
11	ON	ON
10	ON	ON
9	ON	ON
8	ON	ON
7	ON	ON
6	ON	ON
5	ON	ON
4	ON	ON
3	ON	ON
2	ON	ON
1	ON	ON
0	ON	ON



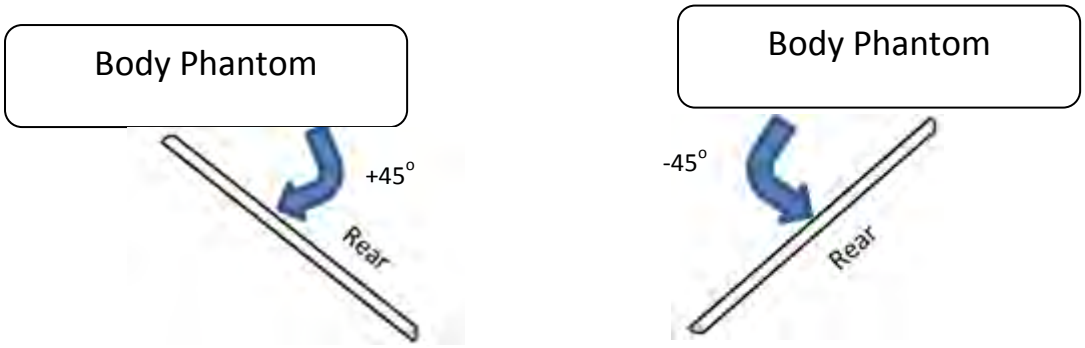
Proximity Sensor Status Table when DUT is moving away the phantom

Distance to the DUT (mm)	Proximity Sensor Status – Rear Surface	Proximity Sensor Status – Top-Edge
0	ON	ON
1	ON	ON
2	ON	ON
3	ON	ON
4	ON	ON
5	ON	ON
6	ON	ON
7	ON	ON
8	ON	ON
9	ON	ON
10	ON	ON
11	ON	ON
12	ON	ON
13	ON	OFF
14	ON	OFF
15	OFF	OFF
16	OFF	OFF
17	OFF	OFF
18	OFF	OFF
19	OFF	OFF
20	OFF	OFF
21	OFF	OFF
22	OFF	OFF
23	OFF	OFF
24	OFF	OFF
25	OFF	OFF
27	OFF	OFF
30	OFF	OFF



10.4 Tilt angle influences to proximity sensor triggering

As per the KDB 616217 D04 SAR for laptop and tablets v01r0, section 6.4, the following procedure is used to determine the tilt angle influences to proximity sensor triggering.

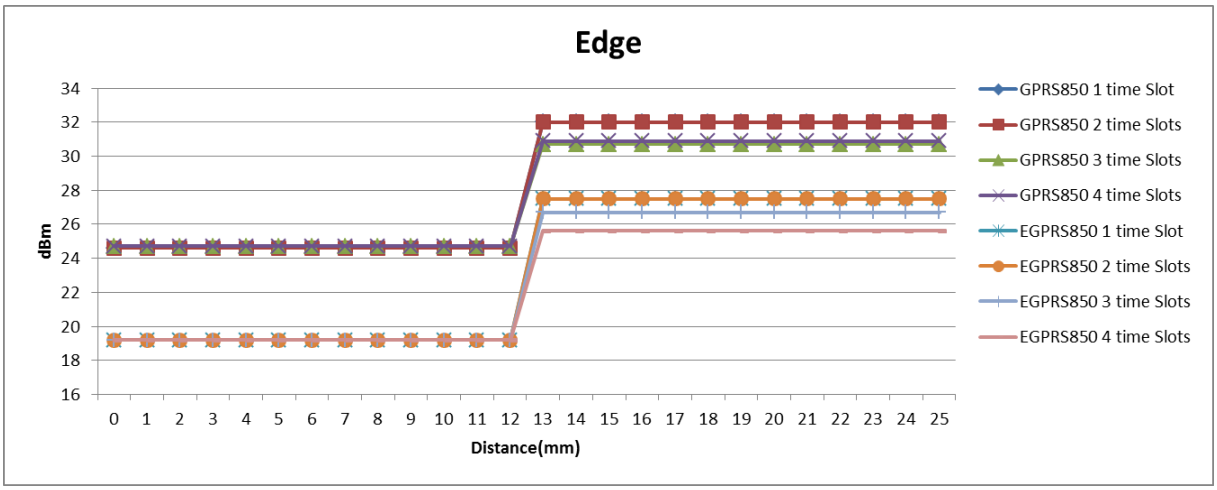


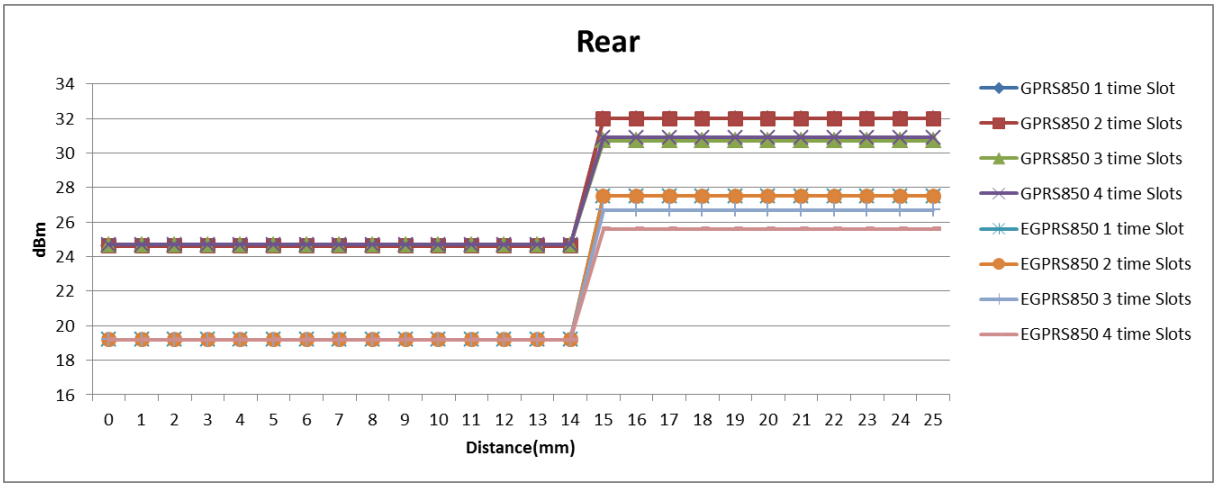
Distance to the DUT (mm)	Proximity Sensor Status 0° to +45°	Proximity Sensor Status 0° to -45°
15	ON	ON
14	ON	ON
13	ON	ON
12	ON	ON
11	ON	ON
10	ON	ON
9	ON	ON
8	ON	ON
7	ON	ON
6	ON	ON
5	ON	ON
4	ON	ON
3	ON	ON

10.5 Power Reduction per Air-interface

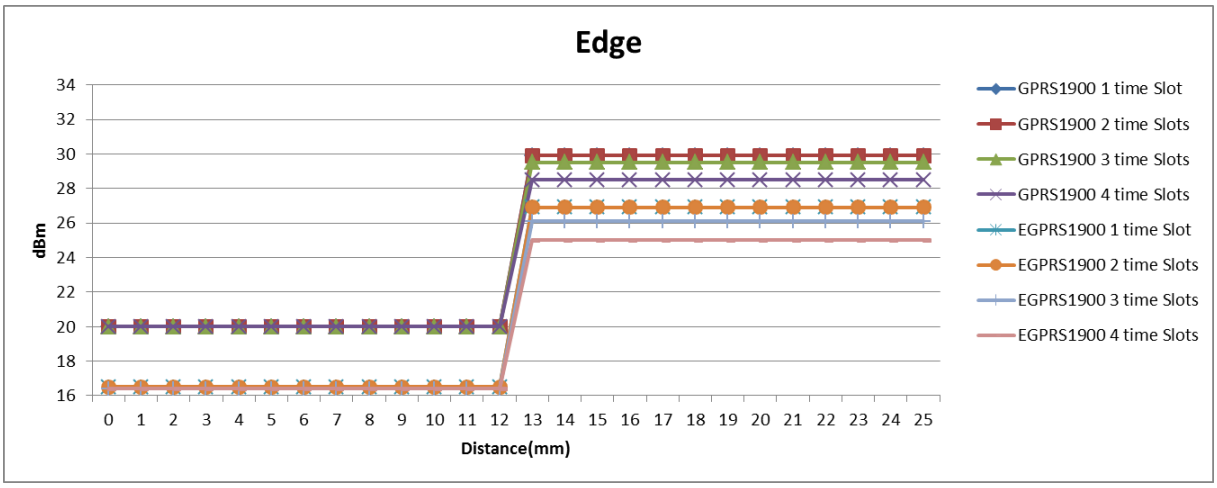
The following graphs show the power level and the distance from the DUT to the flat phantom for the Top-Edge and Rear Surface.

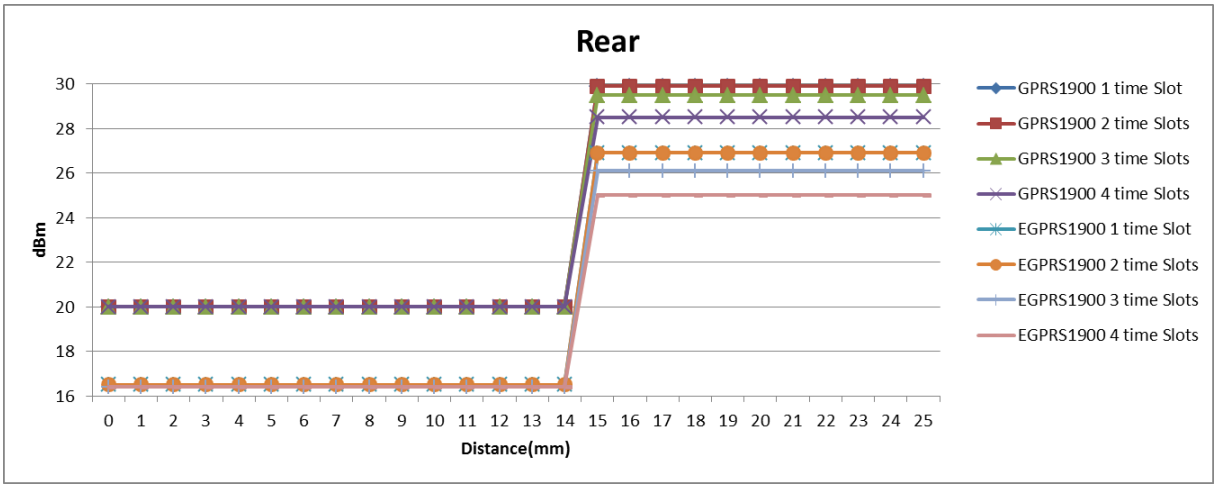
GSM850 Band



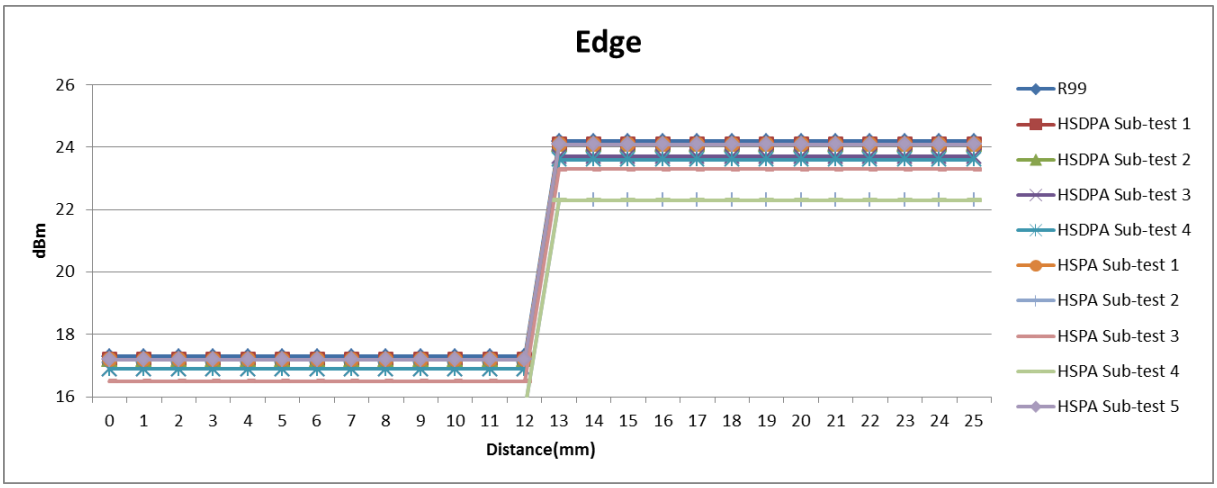


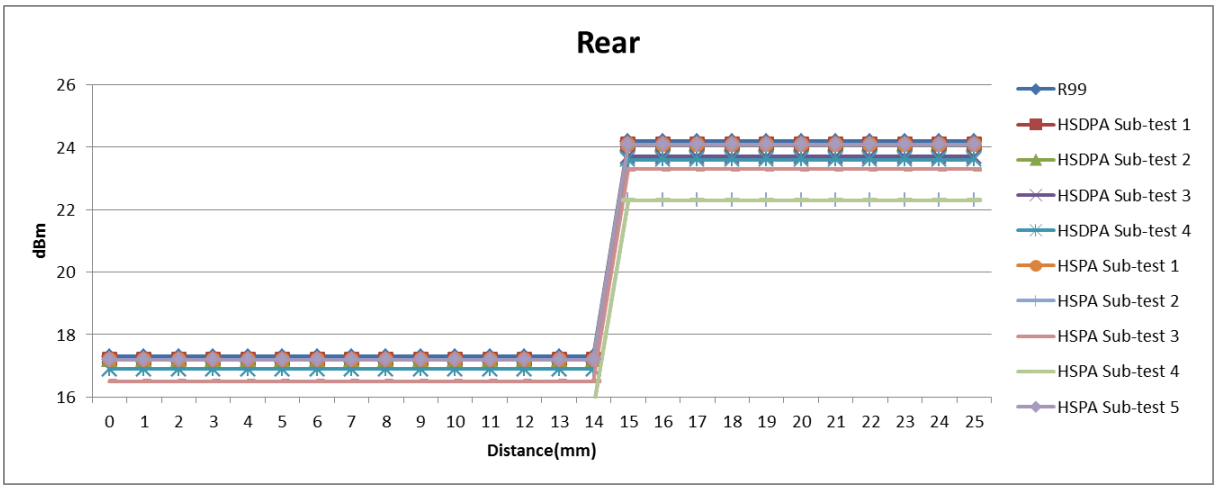
GSM1900 Band



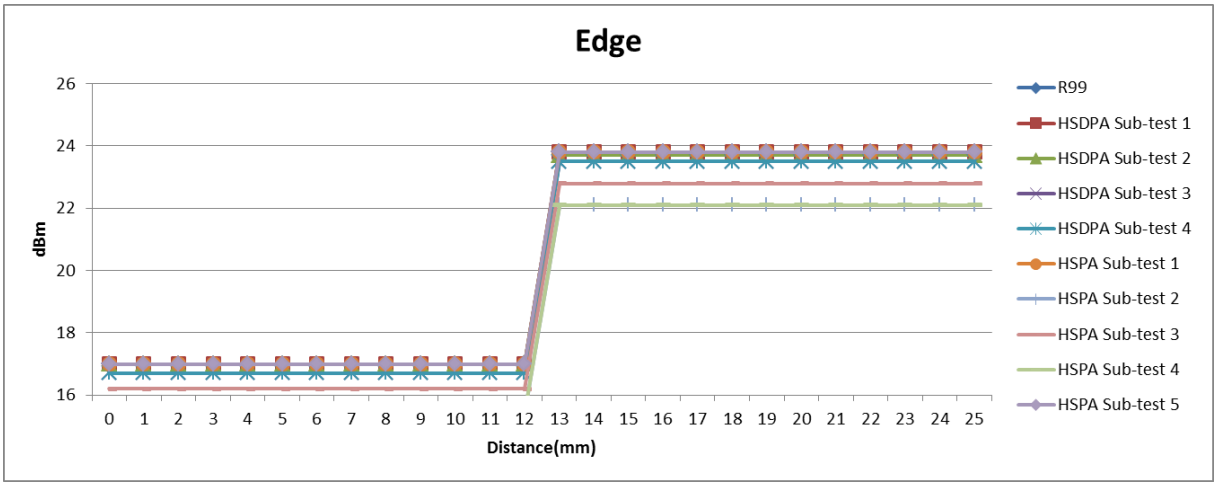


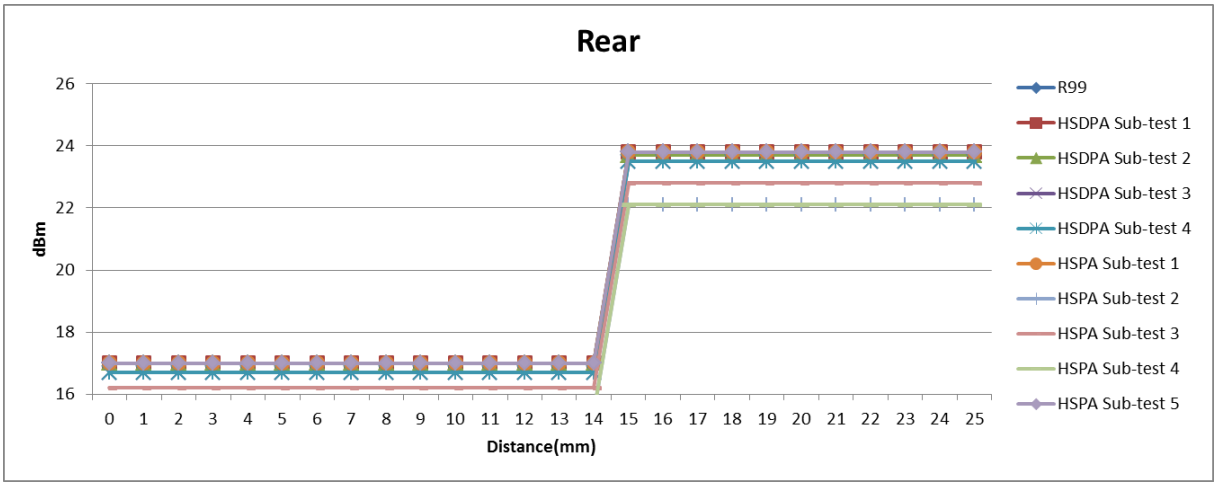
WCDMA Band II



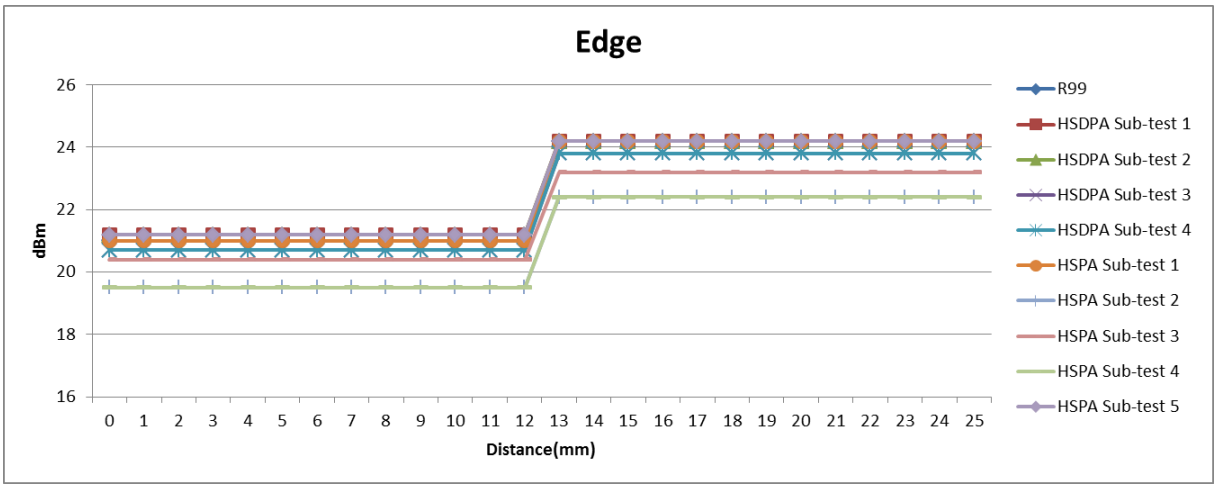


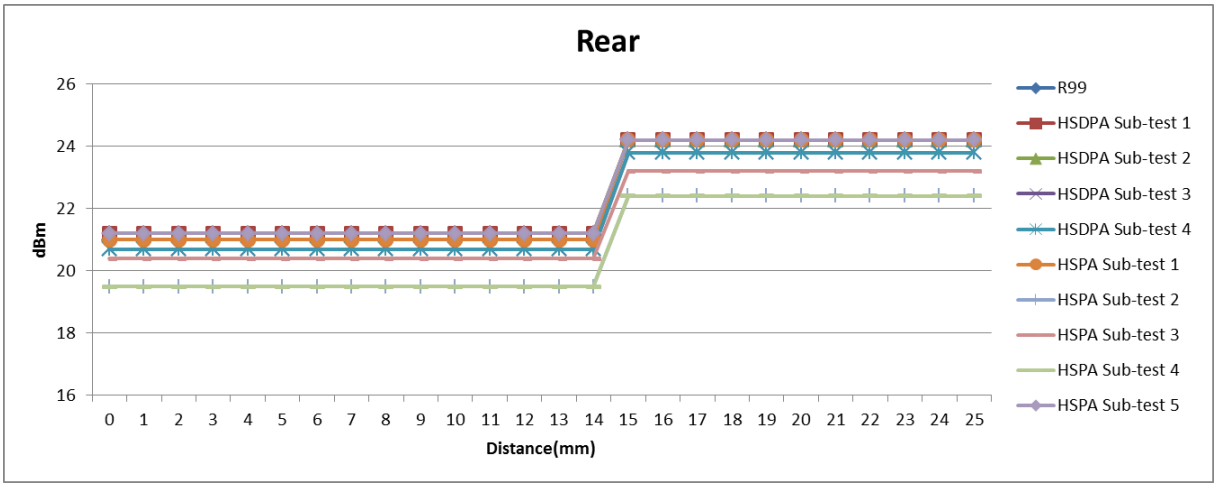
WCDMA Band IV



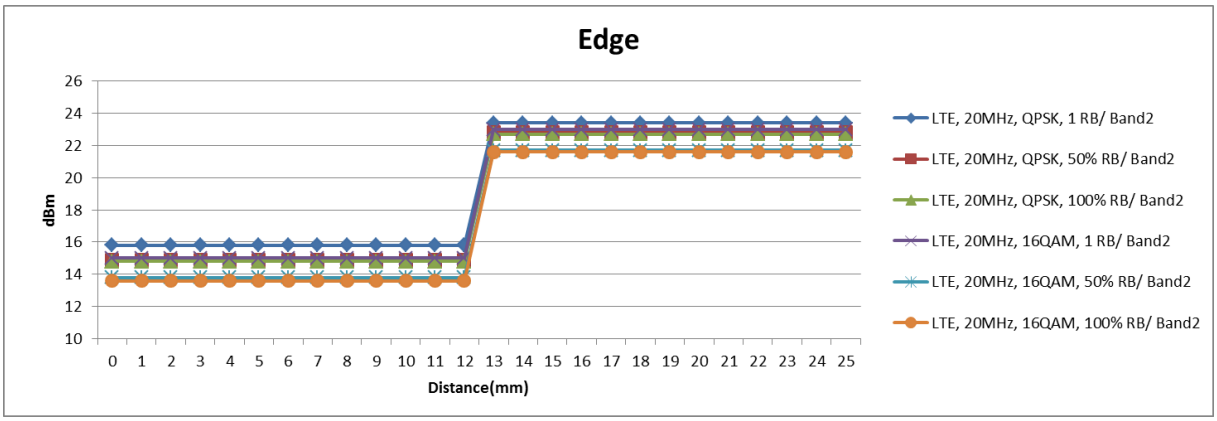


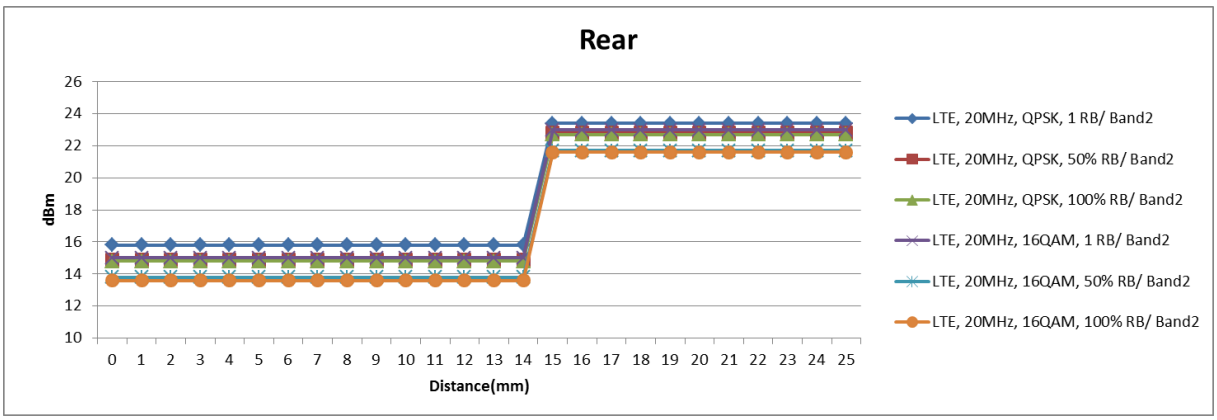
WCDMA Band V

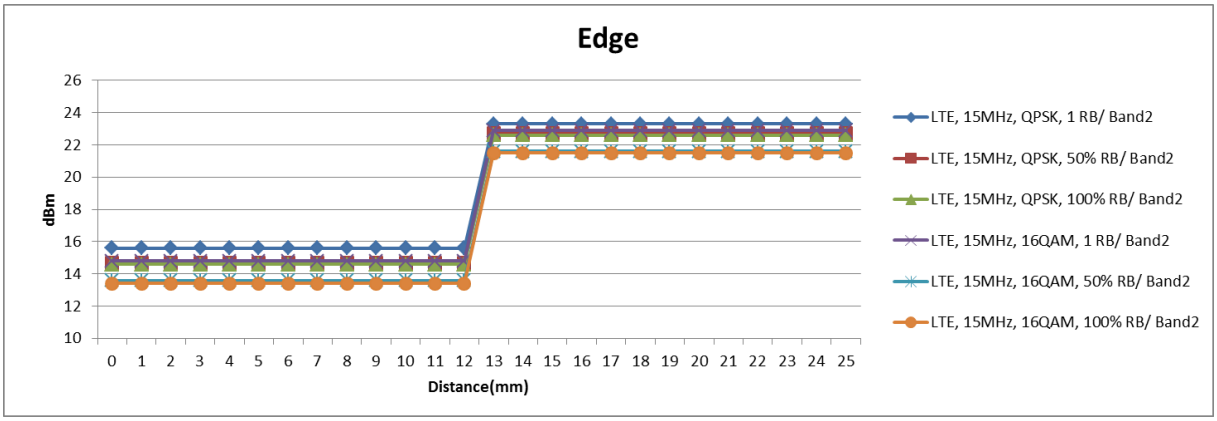

Edge
dBm
26
24
22
20
18
16
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Distance(mm)
R99
HSDPA Sub-test 1
HSDPA Sub-test 2
HSDPA Sub-test 3
HSDPA Sub-test 4
HSPA Sub-test 1
HSPA Sub-test 2
HSPA Sub-test 3
HSPA Sub-test 4
HSPA Sub-test 5

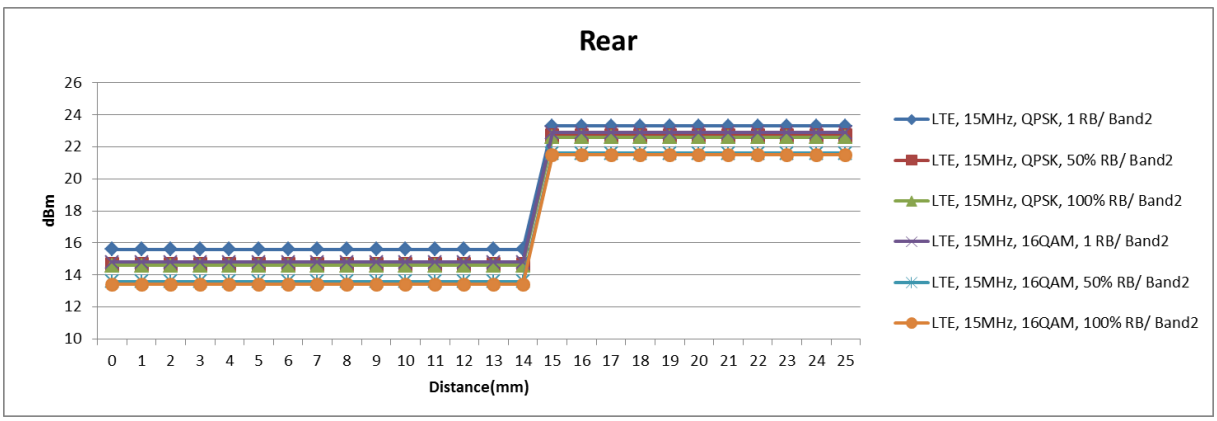

Rear
dBm
26
24
22
20
18
16
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Distance(mm)
R99
HSDPA Sub-test 1
HSDPA Sub-test 2
HSDPA Sub-test 3
HSDPA Sub-test 4
HSPA Sub-test 1
HSPA Sub-test 2
HSPA Sub-test 3
HSPA Sub-test 4
HSPA Sub-test 5

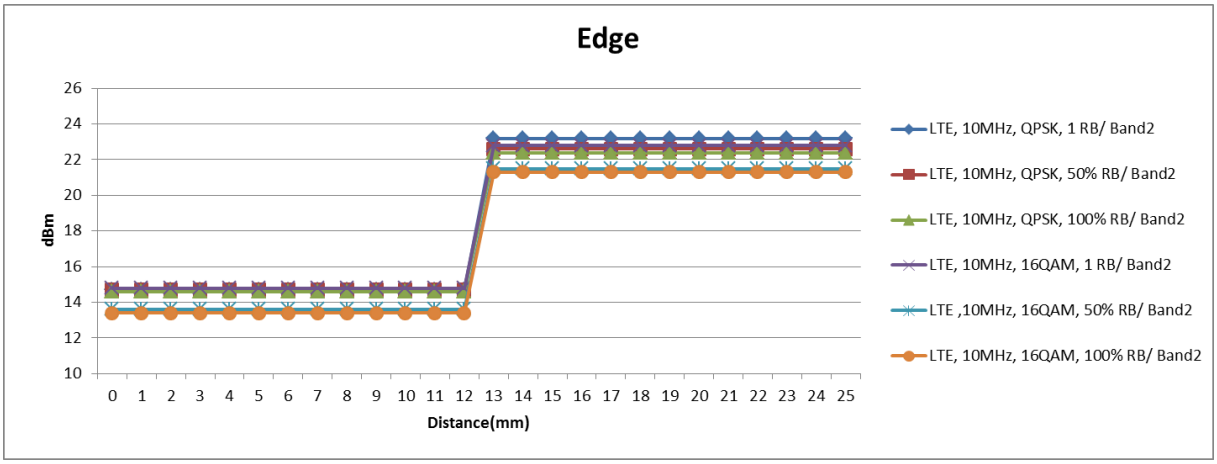
LTE Band 2

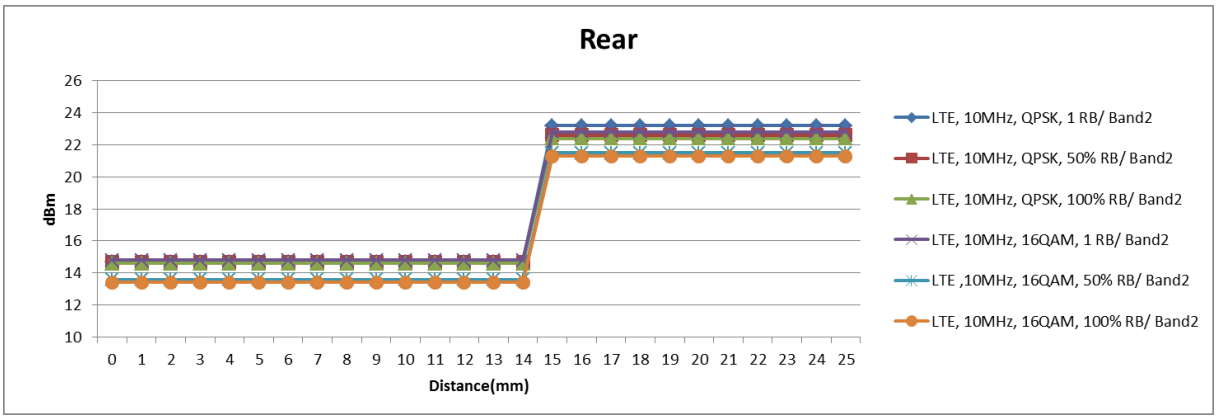

Edge
dBm
Distance(mm)
LTE, 20MHz, QPSK, 1 RB/ Band2
LTE, 20MHz, QPSK, 50% RB/ Band2
LTE, 20MHz, QPSK, 100% RB/ Band2
LTE, 20MHz, 16QAM, 1 RB/ Band2
LTE, 20MHz, 16QAM, 50% RB/ Band2
LTE, 20MHz, 16QAM, 100% RB/ Band2

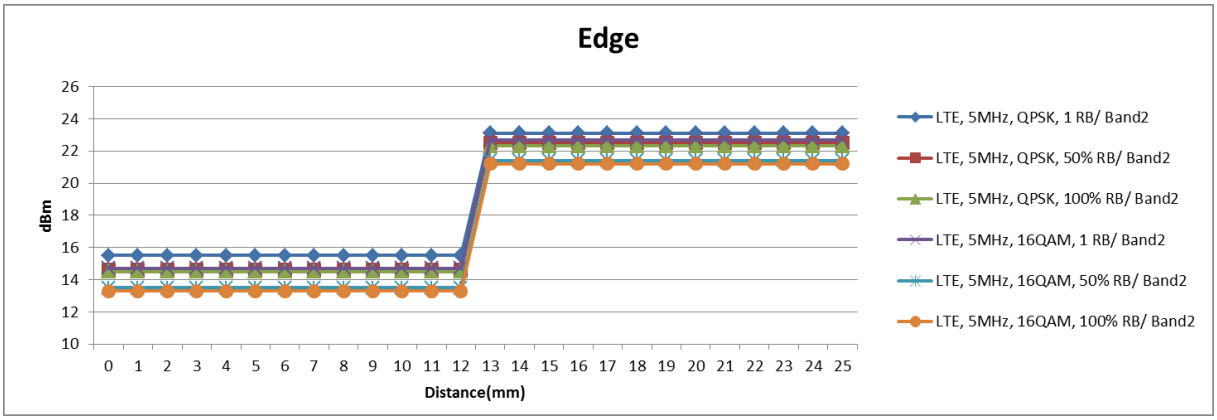

Rear
dBm
Distance(mm)
LTE, 20MHz, QPSK, 1 RB/ Band2
LTE, 20MHz, QPSK, 50% RB/ Band2
LTE, 20MHz, QPSK, 100% RB/ Band2
LTE, 20MHz, 16QAM, 1 RB/ Band2
LTE, 20MHz, 16QAM, 50% RB/ Band2
LTE, 20MHz, 16QAM, 100% RB/ Band2

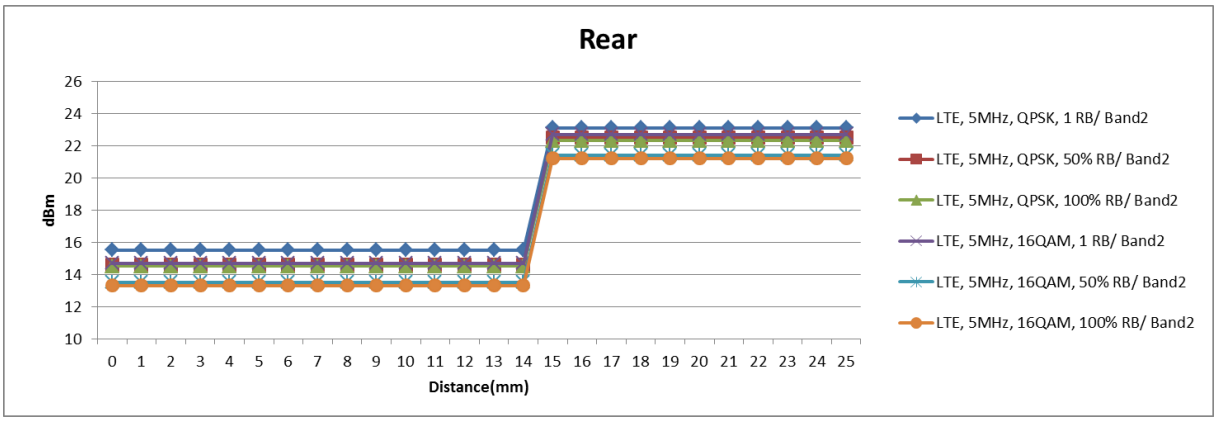

Edge
dBm
Distance(mm)
LTE, 15MHz, QPSK, 1 RB/ Band2
LTE, 15MHz, QPSK, 50% RB/ Band2
LTE, 15MHz, QPSK, 100% RB/ Band2
LTE, 15MHz, 16QAM, 1 RB/ Band2
LTE, 15MHz, 16QAM, 50% RB/ Band2
LTE, 15MHz, 16QAM, 100% RB/ Band2

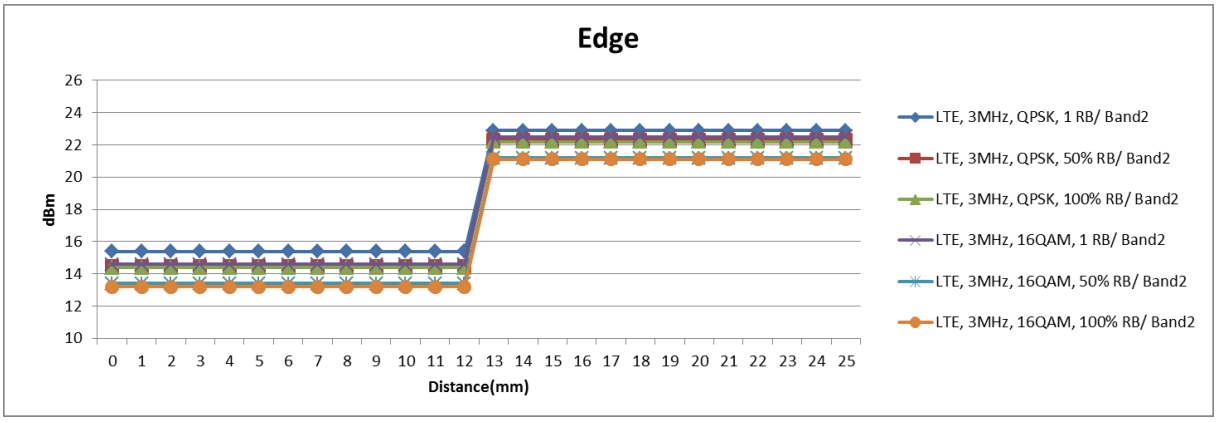

Rear
dBm
Distance(mm)
LTE, 15MHz, QPSK, 1 RB/ Band2
LTE, 15MHz, QPSK, 50% RB/ Band2
LTE, 15MHz, QPSK, 100% RB/ Band2
LTE, 15MHz, 16QAM, 1 RB/ Band2
LTE, 15MHz, 16QAM, 50% RB/ Band2
LTE, 15MHz, 16QAM, 100% RB/ Band2

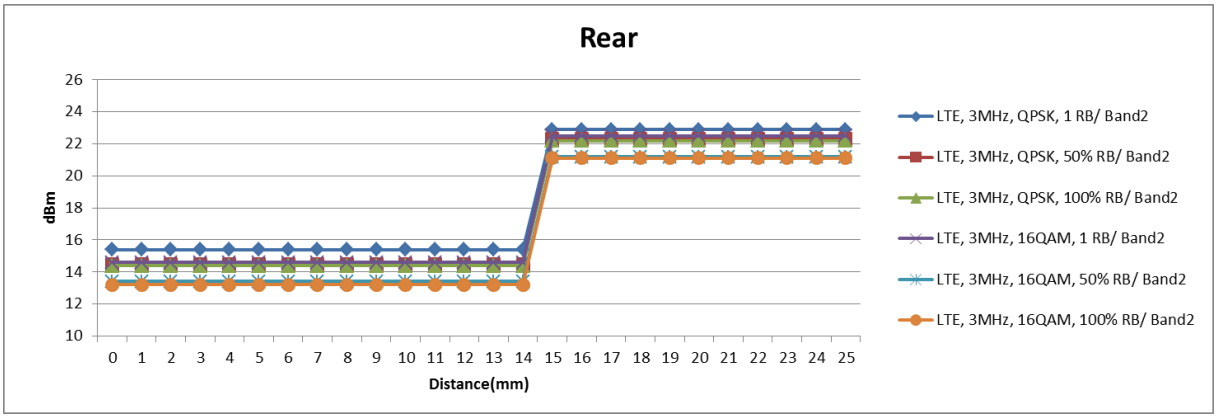

Edge
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band2
LTE, 10MHz, QPSK, 50% RB/ Band2
LTE, 10MHz, QPSK, 100% RB/ Band2
LTE, 10MHz, 16QAM, 1 RB/ Band2
LTE ,10MHz, 16QAM, 50% RB/ Band2
LTE, 10MHz, 16QAM, 100% RB/ Band2

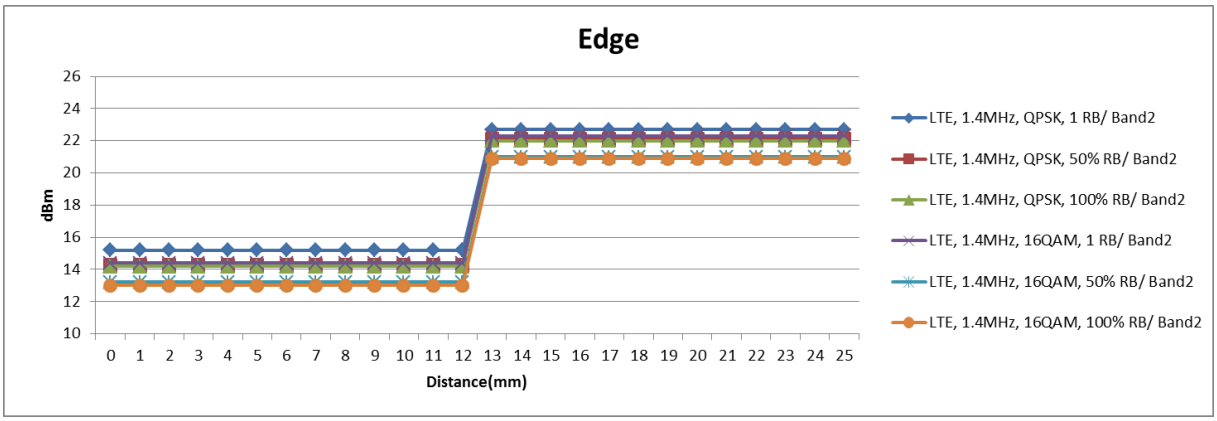

Rear
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band2
LTE, 10MHz, QPSK, 50% RB/ Band2
LTE, 10MHz, QPSK, 100% RB/ Band2
LTE, 10MHz, 16QAM, 1 RB/ Band2
LTE ,10MHz, 16QAM, 50% RB/ Band2
LTE, 10MHz, 16QAM, 100% RB/ Band2

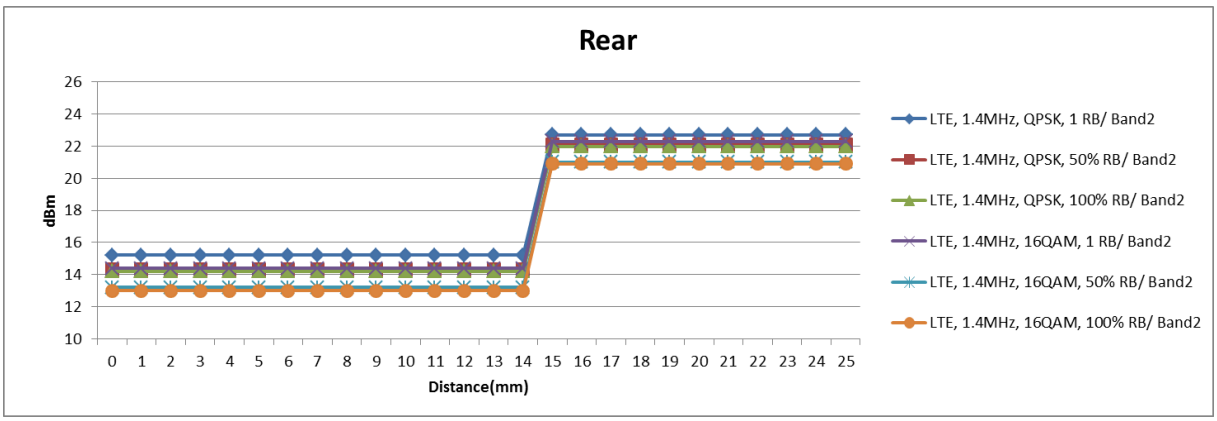

Edge
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band2
LTE, 5MHz, QPSK, 50% RB/ Band2
LTE, 5MHz, QPSK, 100% RB/ Band2
LTE, 5MHz, 16QAM, 1 RB/ Band2
LTE, 5MHz, 16QAM, 50% RB/ Band2
LTE, 5MHz, 16QAM, 100% RB/ Band2


Rear
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band2
LTE, 5MHz, QPSK, 50% RB/ Band2
LTE, 5MHz, QPSK, 100% RB/ Band2
LTE, 5MHz, 16QAM, 1 RB/ Band2
LTE, 5MHz, 16QAM, 50% RB/ Band2
LTE, 5MHz, 16QAM, 100% RB/ Band2

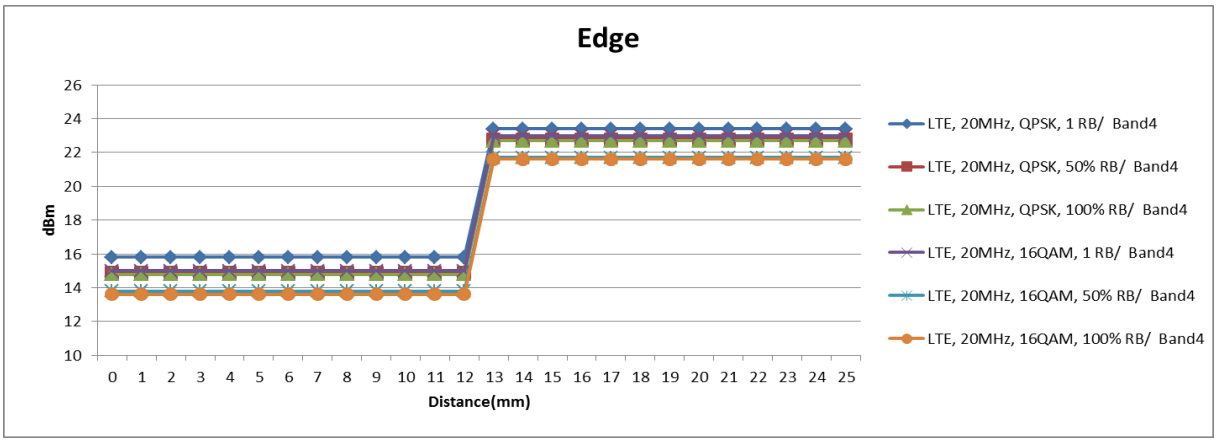

Edge
dBm
Distance(mm)
LTE, 3MHz, QPSK, 1 RB/ Band2
LTE, 3MHz, QPSK, 50% RB/ Band2
LTE, 3MHz, QPSK, 100% RB/ Band2
LTE, 3MHz, 16QAM, 1 RB/ Band2
LTE, 3MHz, 16QAM, 50% RB/ Band2
LTE, 3MHz, 16QAM, 100% RB/ Band2

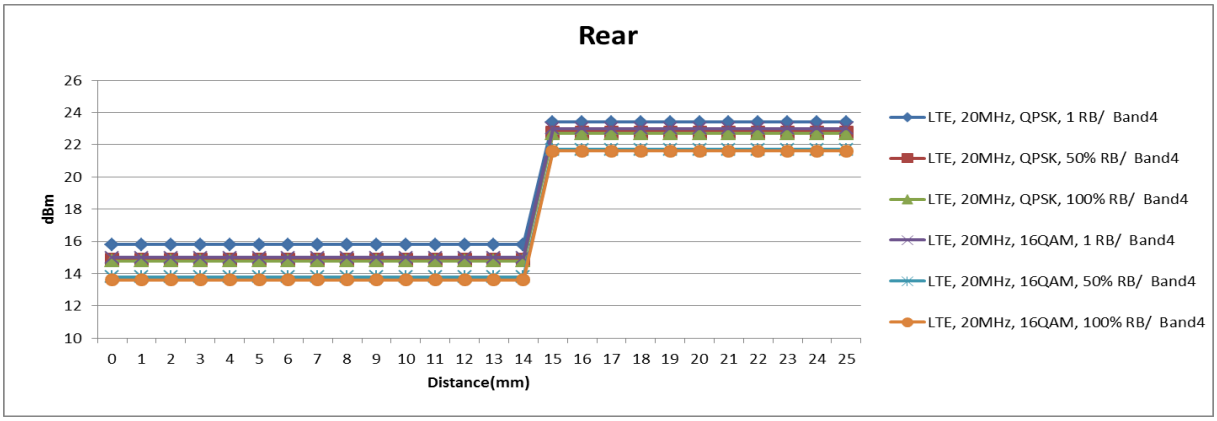

Rear
dBm
Distance(mm)
LTE, 3MHz, QPSK, 1 RB/ Band2
LTE, 3MHz, QPSK, 50% RB/ Band2
LTE, 3MHz, QPSK, 100% RB/ Band2
LTE, 3MHz, 16QAM, 1 RB/ Band2
LTE, 3MHz, 16QAM, 50% RB/ Band2
LTE, 3MHz, 16QAM, 100% RB/ Band2

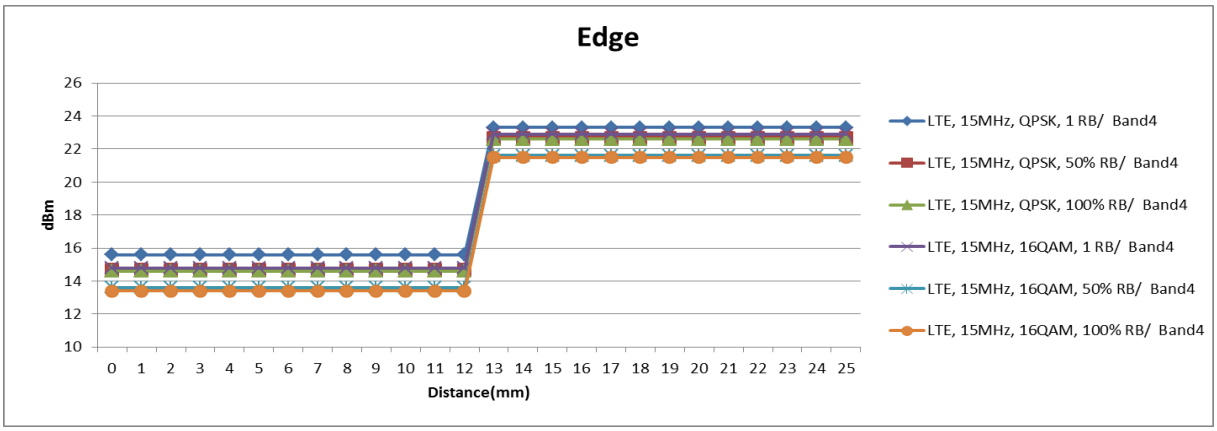

Edge
dBm
Distance(mm)
LTE, 1.4MHz, QPSK, 1 RB/ Band2
LTE, 1.4MHz, QPSK, 50% RB/ Band2
LTE, 1.4MHz, QPSK, 100% RB/ Band2
LTE, 1.4MHz, 16QAM, 1 RB/ Band2
LTE, 1.4MHz, 16QAM, 50% RB/ Band2
LTE, 1.4MHz, 16QAM, 100% RB/ Band2

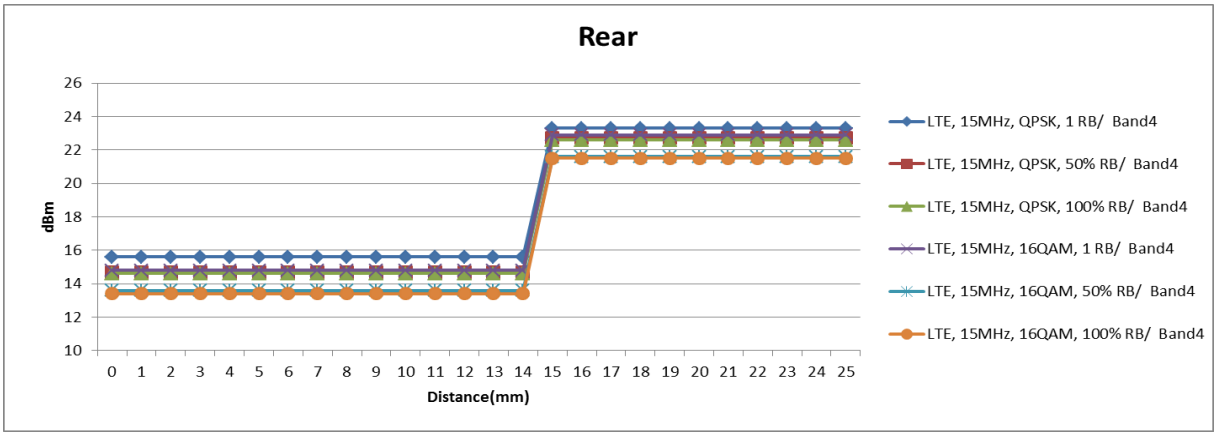

Rear
dBm
Distance(mm)
LTE, 1.4MHz, QPSK, 1 RB/ Band2
LTE, 1.4MHz, QPSK, 50% RB/ Band2
LTE, 1.4MHz, QPSK, 100% RB/ Band2
LTE, 1.4MHz, 16QAM, 1 RB/ Band2
LTE, 1.4MHz, 16QAM, 50% RB/ Band2
LTE, 1.4MHz, 16QAM, 100% RB/ Band2

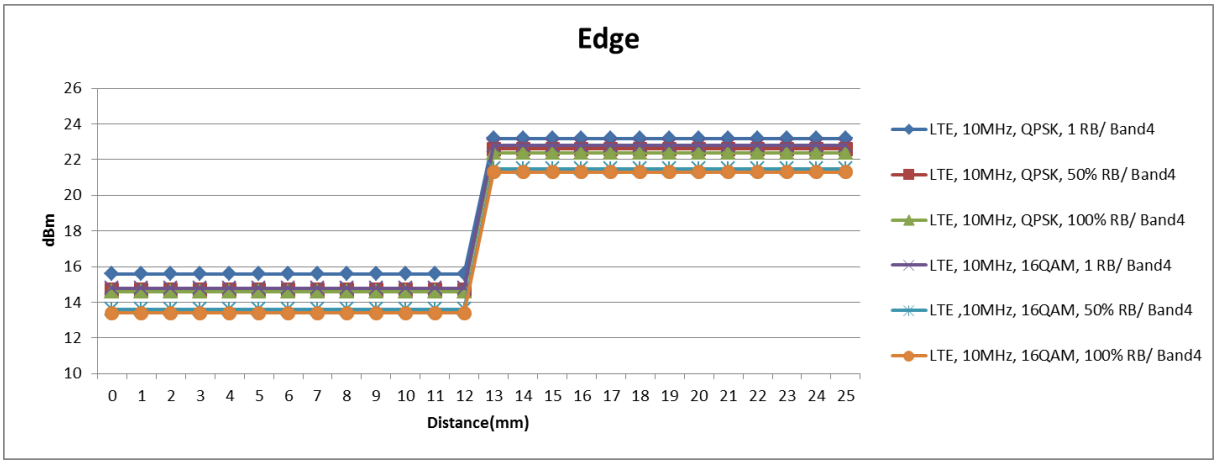
LTE Band 4

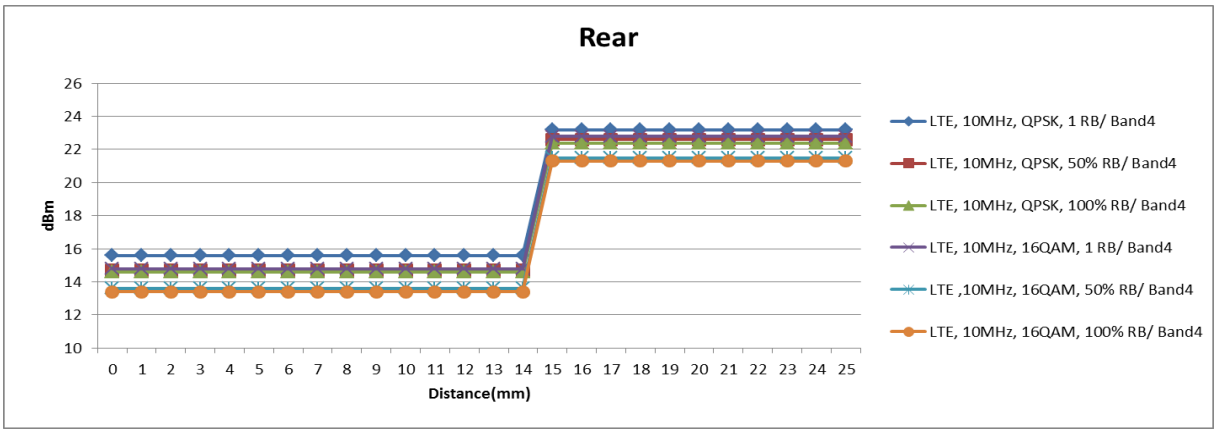

Edge
dBm
Distance(mm)
LTE, 20MHz, QPSK, 1 RB/ Band4
LTE, 20MHz, QPSK, 50% RB/ Band4
LTE, 20MHz, QPSK, 100% RB/ Band4
LTE, 20MHz, 16QAM, 1 RB/ Band4
LTE, 20MHz, 16QAM, 50% RB/ Band4
LTE, 20MHz, 16QAM, 100% RB/ Band4

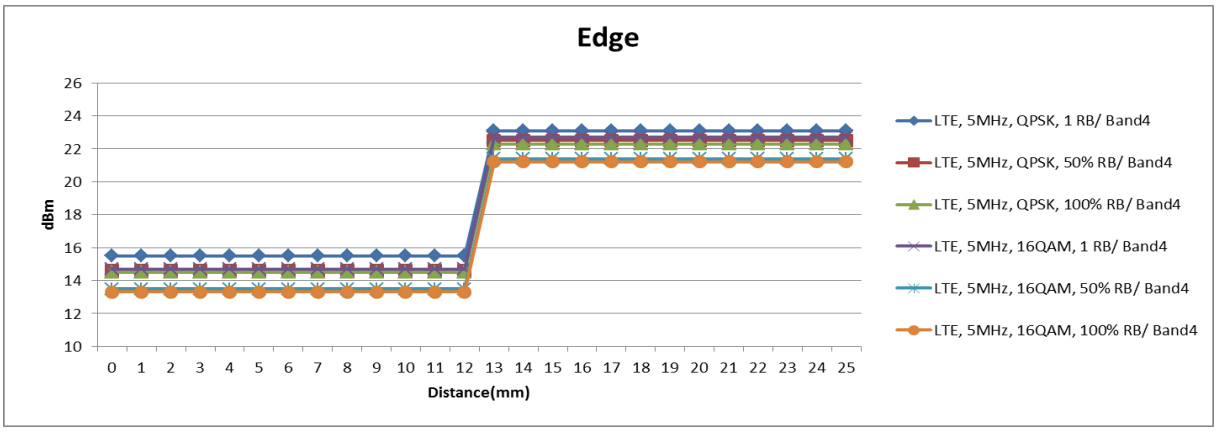

Rear
dBm
Distance(mm)
LTE, 20MHz, QPSK, 1 RB/ Band4
LTE, 20MHz, QPSK, 50% RB/ Band4
LTE, 20MHz, QPSK, 100% RB/ Band4
LTE, 20MHz, 16QAM, 1 RB/ Band4
LTE, 20MHz, 16QAM, 50% RB/ Band4
LTE, 20MHz, 16QAM, 100% RB/ Band4

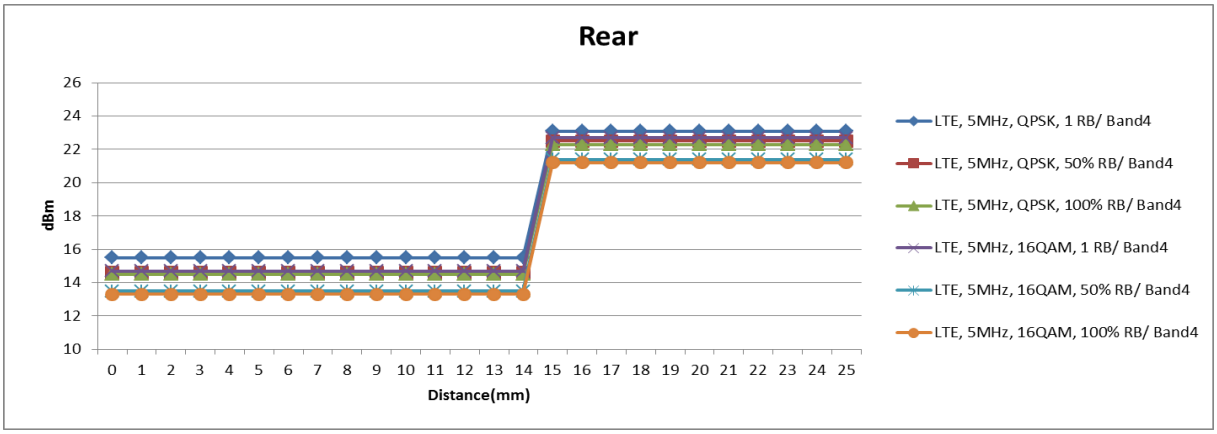

Edge
dBm
Distance(mm)
LTE, 15MHz, QPSK, 1 RB/ Band4
LTE, 15MHz, QPSK, 50% RB/ Band4
LTE, 15MHz, QPSK, 100% RB/ Band4
LTE, 15MHz, 16QAM, 1 RB/ Band4
LTE, 15MHz, 16QAM, 50% RB/ Band4
LTE, 15MHz, 16QAM, 100% RB/ Band4

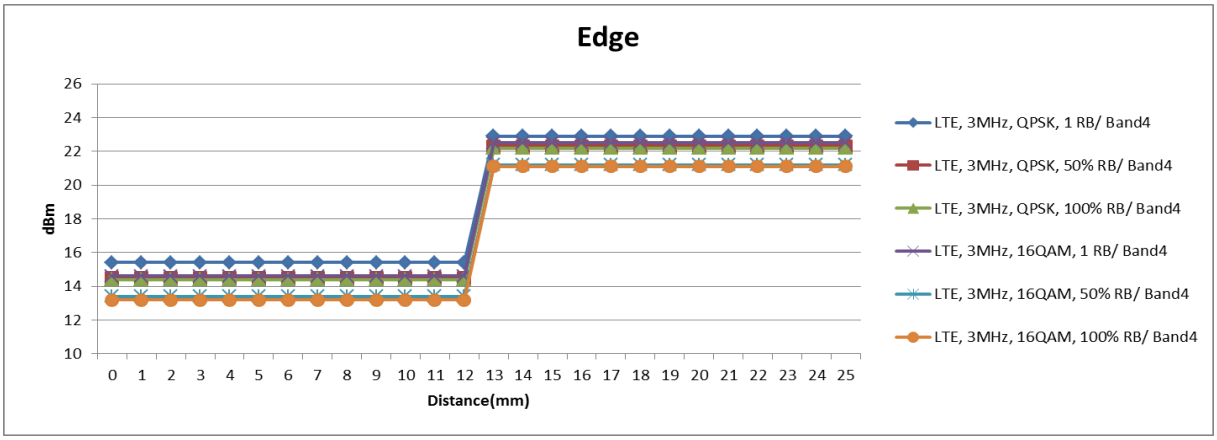

Rear
dBm
Distance(mm)
LTE, 15MHz, QPSK, 1 RB/ Band4
LTE, 15MHz, QPSK, 50% RB/ Band4
LTE, 15MHz, QPSK, 100% RB/ Band4
LTE, 15MHz, 16QAM, 1 RB/ Band4
LTE, 15MHz, 16QAM, 50% RB/ Band4
LTE, 15MHz, 16QAM, 100% RB/ Band4

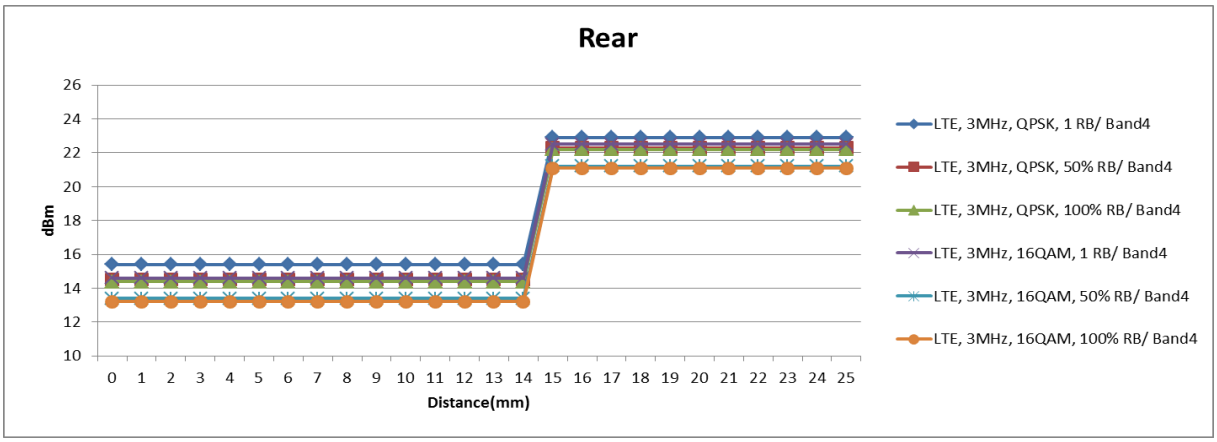

Edge
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band4
LTE, 10MHz, QPSK, 50% RB/ Band4
LTE, 10MHz, QPSK, 100% RB/ Band4
LTE, 10MHz, 16QAM, 1 RB/ Band4
LTE ,10MHz, 16QAM, 50% RB/ Band4
LTE, 10MHz, 16QAM, 100% RB/ Band4

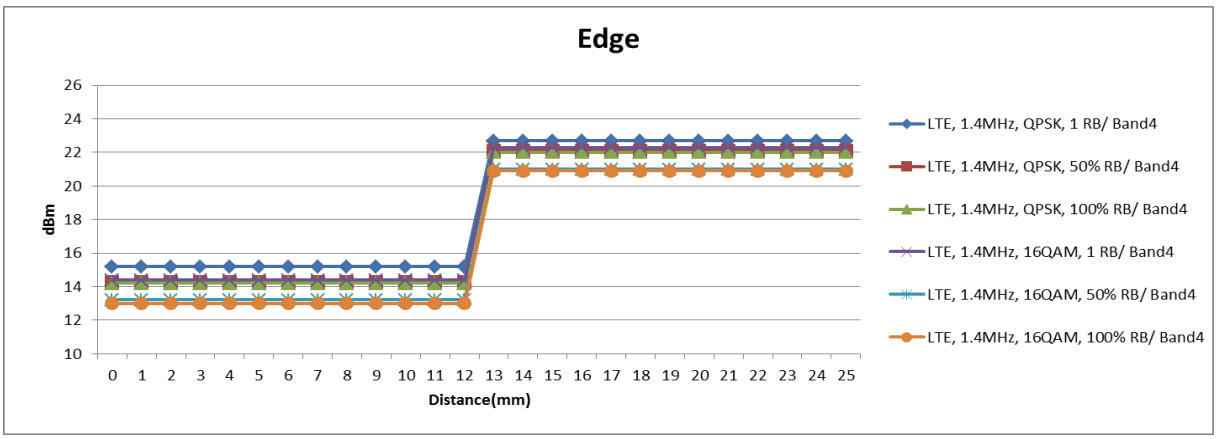

Rear
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band4
LTE, 10MHz, QPSK, 50% RB/ Band4
LTE, 10MHz, QPSK, 100% RB/ Band4
LTE, 10MHz, 16QAM, 1 RB/ Band4
LTE ,10MHz, 16QAM, 50% RB/ Band4
LTE, 10MHz, 16QAM, 100% RB/ Band4

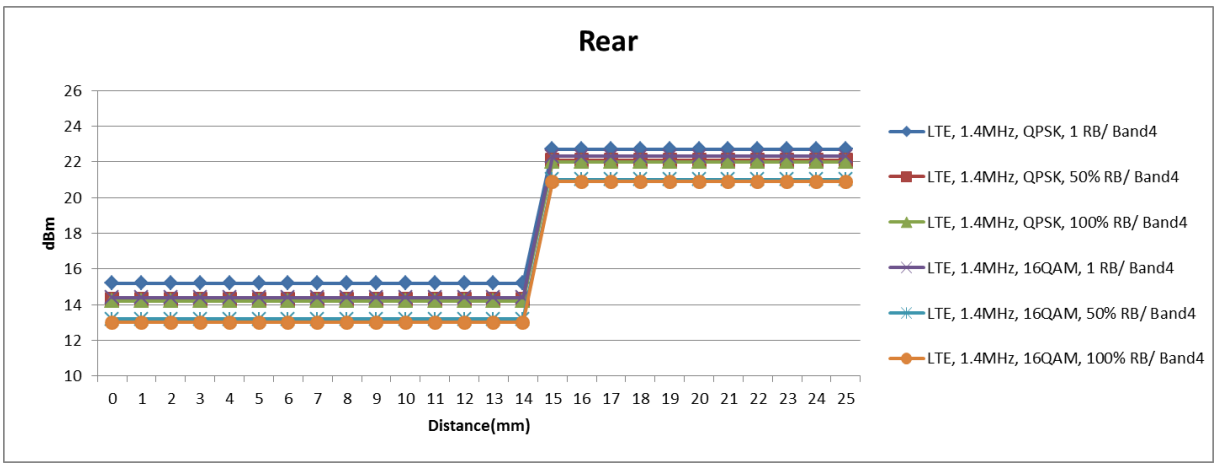

Edge
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band4
LTE, 5MHz, QPSK, 50% RB/ Band4
LTE, 5MHz, QPSK, 100% RB/ Band4
LTE, 5MHz, 16QAM, 1 RB/ Band4
LTE, 5MHz, 16QAM, 50% RB/ Band4
LTE, 5MHz, 16QAM, 100% RB/ Band4


Rear
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band4
LTE, 5MHz, QPSK, 50% RB/ Band4
LTE, 5MHz, QPSK, 100% RB/ Band4
LTE, 5MHz, 16QAM, 1 RB/ Band4
LTE, 5MHz, 16QAM, 50% RB/ Band4
LTE, 5MHz, 16QAM, 100% RB/ Band4

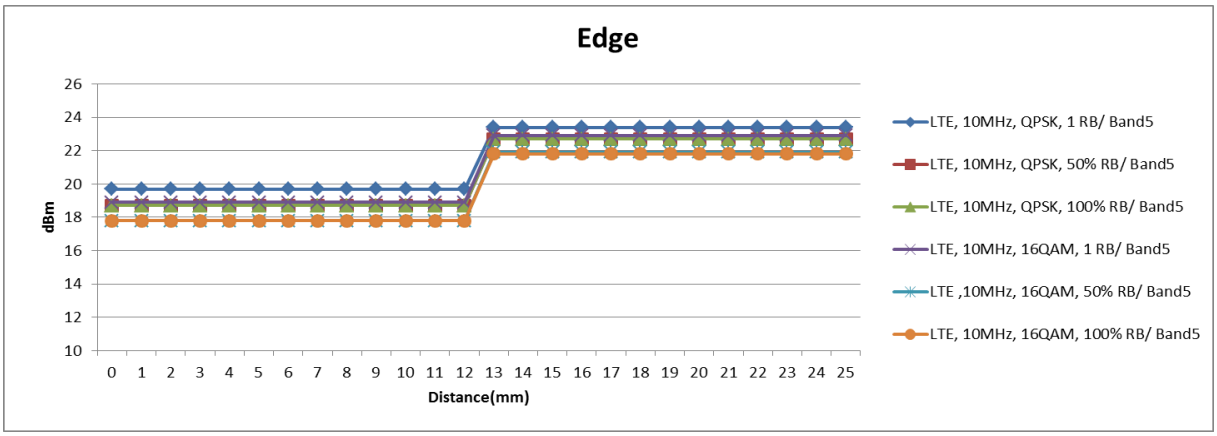

Edge
dBm
Distance(mm)
LTE, 3MHz, QPSK, 1 RB/ Band4
LTE, 3MHz, QPSK, 50% RB/ Band4
LTE, 3MHz, QPSK, 100% RB/ Band4
LTE, 3MHz, 16QAM, 1 RB/ Band4
LTE, 3MHz, 16QAM, 50% RB/ Band4
LTE, 3MHz, 16QAM, 100% RB/ Band4

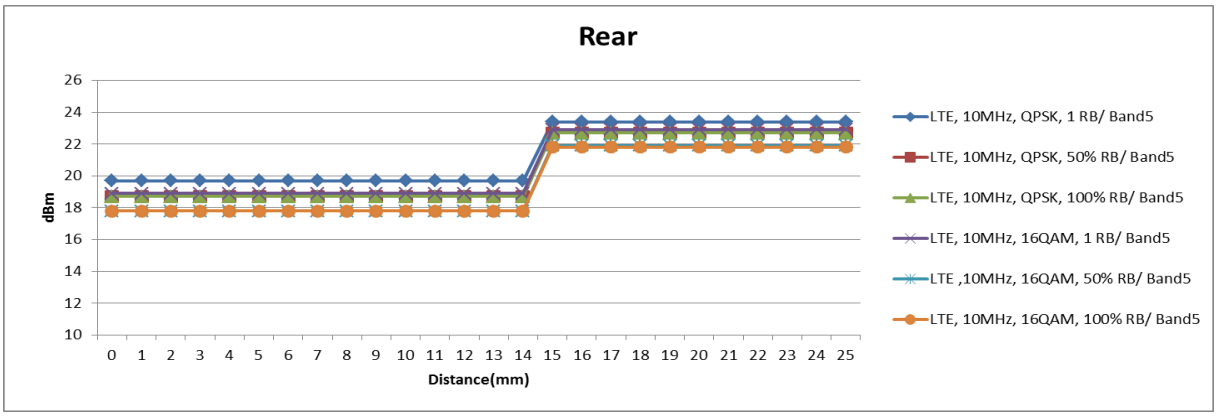

Rear
dBm
Distance(mm)
LTE, 3MHz, QPSK, 1 RB/ Band4
LTE, 3MHz, QPSK, 50% RB/ Band4
LTE, 3MHz, QPSK, 100% RB/ Band4
LTE, 3MHz, 16QAM, 1 RB/ Band4
LTE, 3MHz, 16QAM, 50% RB/ Band4
LTE, 3MHz, 16QAM, 100% RB/ Band4

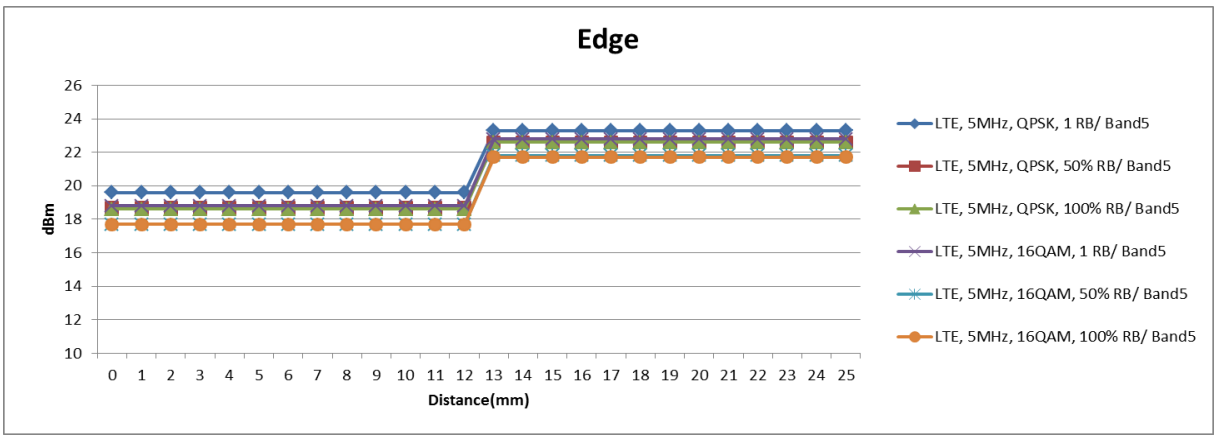

Edge
dBm
Distance(mm)
LTE, 1.4MHz, QPSK, 1 RB/ Band4
LTE, 1.4MHz, QPSK, 50% RB/ Band4
LTE, 1.4MHz, QPSK, 100% RB/ Band4
LTE, 1.4MHz, 16QAM, 1 RB/ Band4
LTE, 1.4MHz, 16QAM, 50% RB/ Band4
LTE, 1.4MHz, 16QAM, 100% RB/ Band4

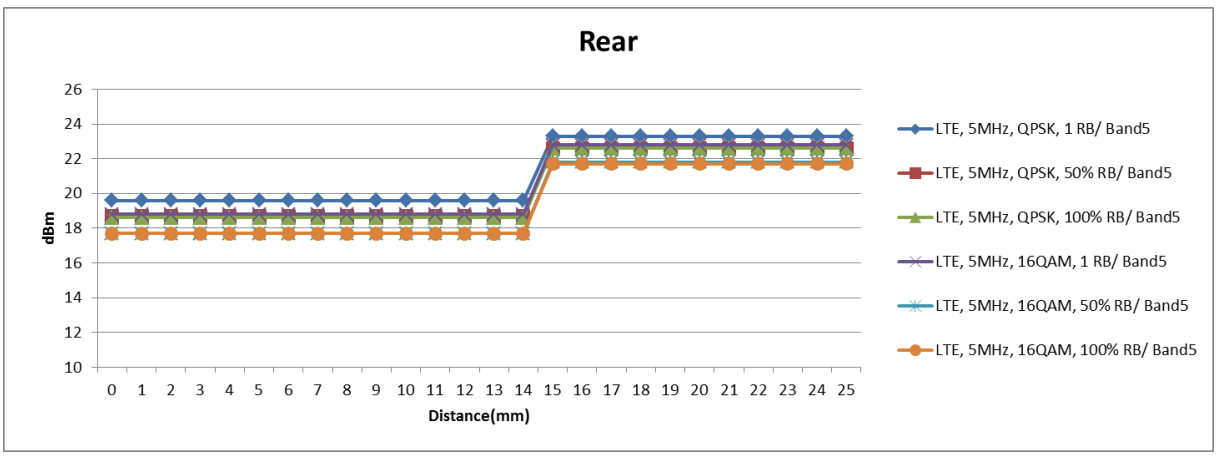

Rear
dBm
Distance(mm)
LTE, 1.4MHz, QPSK, 1 RB/ Band4
LTE, 1.4MHz, QPSK, 50% RB/ Band4
LTE, 1.4MHz, QPSK, 100% RB/ Band4
LTE, 1.4MHz, 16QAM, 1 RB/ Band4
LTE, 1.4MHz, 16QAM, 50% RB/ Band4
LTE, 1.4MHz, 16QAM, 100% RB/ Band4

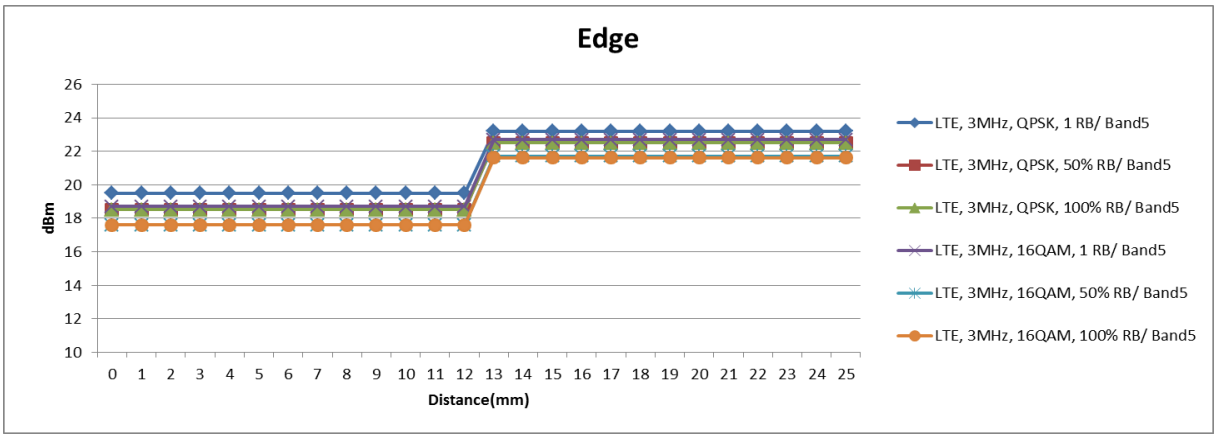
LTE Band 5

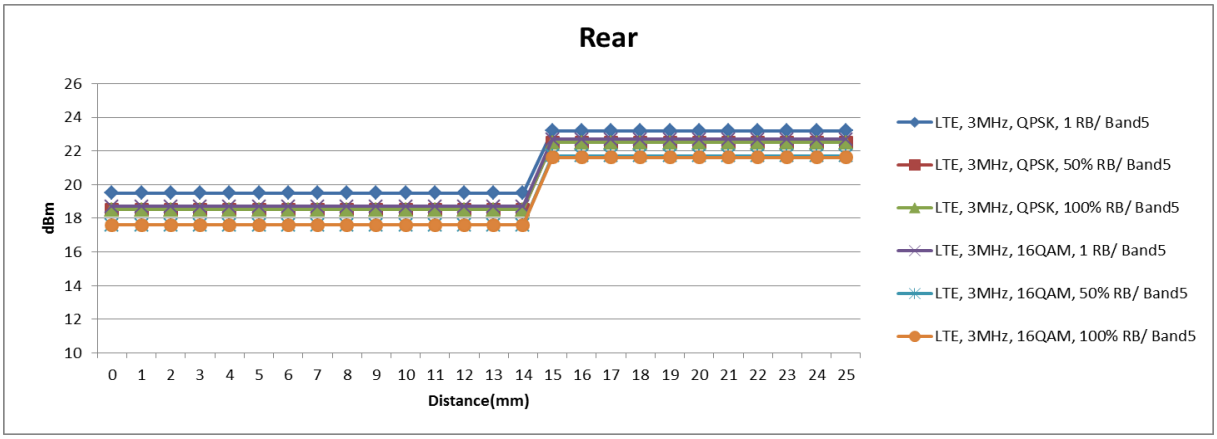

Edge
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band5
LTE, 10MHz, QPSK, 50% RB/ Band5
LTE, 10MHz, QPSK, 100% RB/ Band5
LTE, 10MHz, 16QAM, 1 RB/ Band5
LTE ,10MHz, 16QAM, 50% RB/ Band5
LTE, 10MHz, 16QAM, 100% RB/ Band5

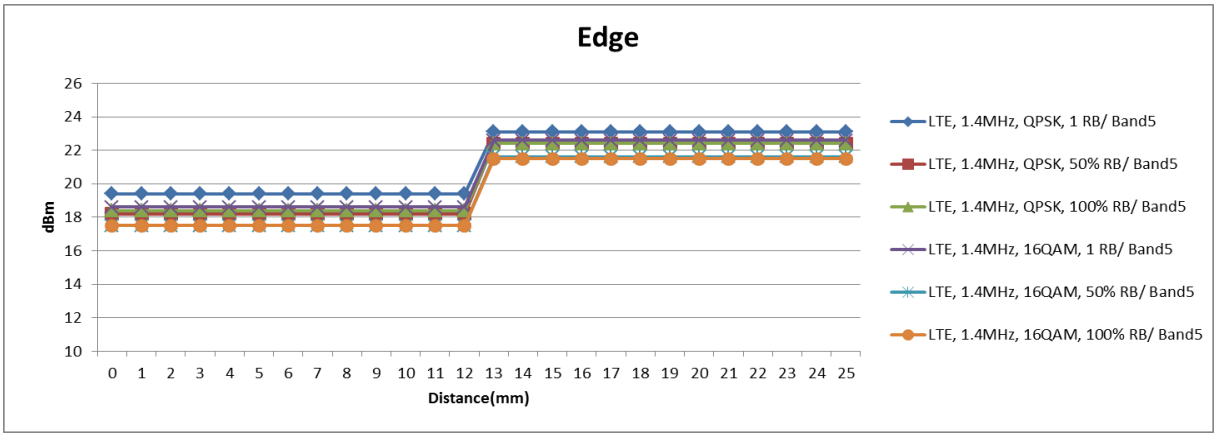

Rear
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band5
LTE, 10MHz, QPSK, 50% RB/ Band5
LTE, 10MHz, QPSK, 100% RB/ Band5
LTE, 10MHz, 16QAM, 1 RB/ Band5
LTE ,10MHz, 16QAM, 50% RB/ Band5
LTE, 10MHz, 16QAM, 100% RB/ Band5

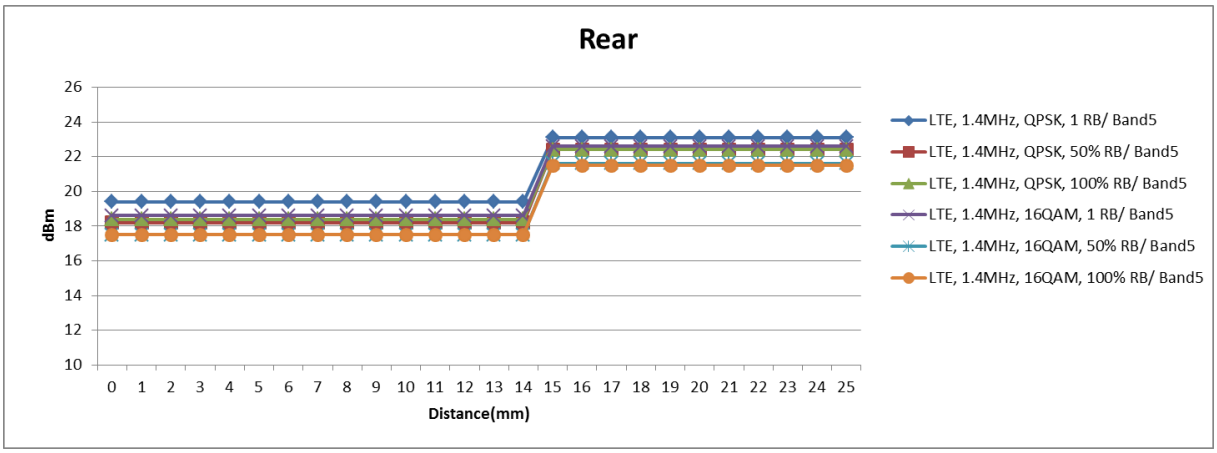

Edge
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band5
LTE, 5MHz, QPSK, 50% RB/ Band5
LTE, 5MHz, QPSK, 100% RB/ Band5
LTE, 5MHz, 16QAM, 1 RB/ Band5
LTE, 5MHz, 16QAM, 50% RB/ Band5
LTE, 5MHz, 16QAM, 100% RB/ Band5


Rear
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band5
LTE, 5MHz, QPSK, 50% RB/ Band5
LTE, 5MHz, QPSK, 100% RB/ Band5
LTE, 5MHz, 16QAM, 1 RB/ Band5
LTE, 5MHz, 16QAM, 50% RB/ Band5
LTE, 5MHz, 16QAM, 100% RB/ Band5

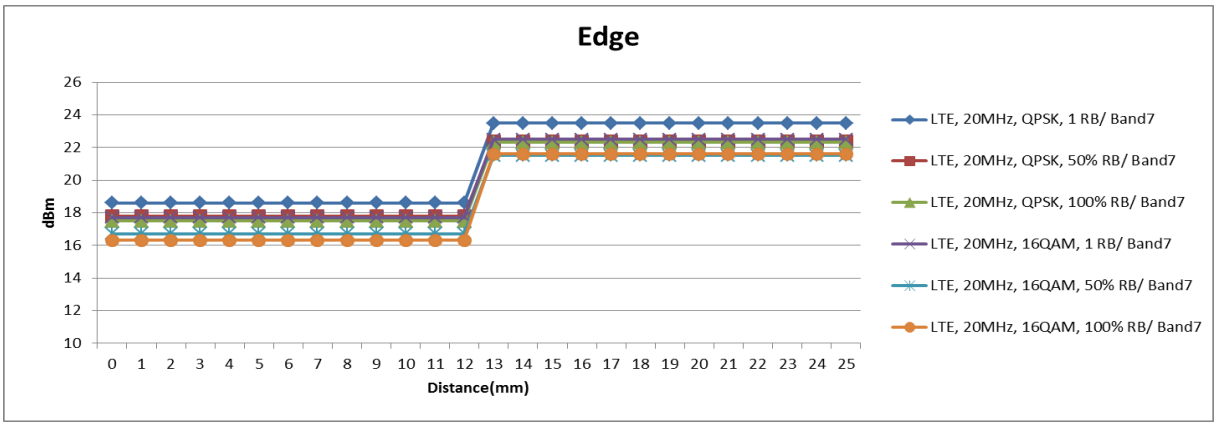

Edge
dBm
Distance(mm)
LTE, 3MHz, QPSK, 1 RB/ Band5
LTE, 3MHz, QPSK, 50% RB/ Band5
LTE, 3MHz, QPSK, 100% RB/ Band5
LTE, 3MHz, 16QAM, 1 RB/ Band5
LTE, 3MHz, 16QAM, 50% RB/ Band5
LTE, 3MHz, 16QAM, 100% RB/ Band5

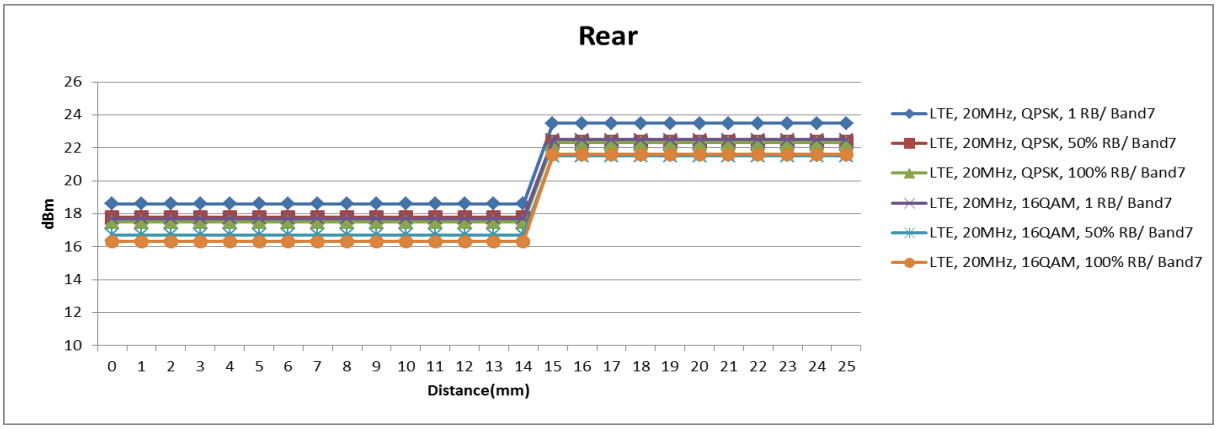

Rear
dBm
Distance(mm)
LTE, 3MHz, QPSK, 1 RB/ Band5
LTE, 3MHz, QPSK, 50% RB/ Band5
LTE, 3MHz, QPSK, 100% RB/ Band5
LTE, 3MHz, 16QAM, 1 RB/ Band5
LTE, 3MHz, 16QAM, 50% RB/ Band5
LTE, 3MHz, 16QAM, 100% RB/ Band5

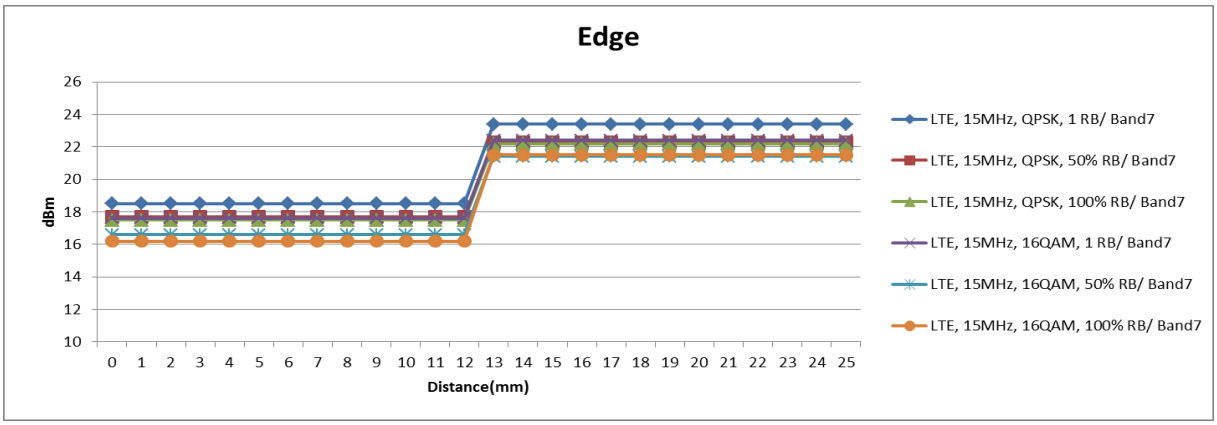

Edge
dBm
Distance(mm)
LTE, 1.4MHz, QPSK, 1 RB/ Band5
LTE, 1.4MHz, QPSK, 50% RB/ Band5
LTE, 1.4MHz, QPSK, 100% RB/ Band5
LTE, 1.4MHz, 16QAM, 1 RB/ Band5
LTE, 1.4MHz, 16QAM, 50% RB/ Band5
LTE, 1.4MHz, 16QAM, 100% RB/ Band5

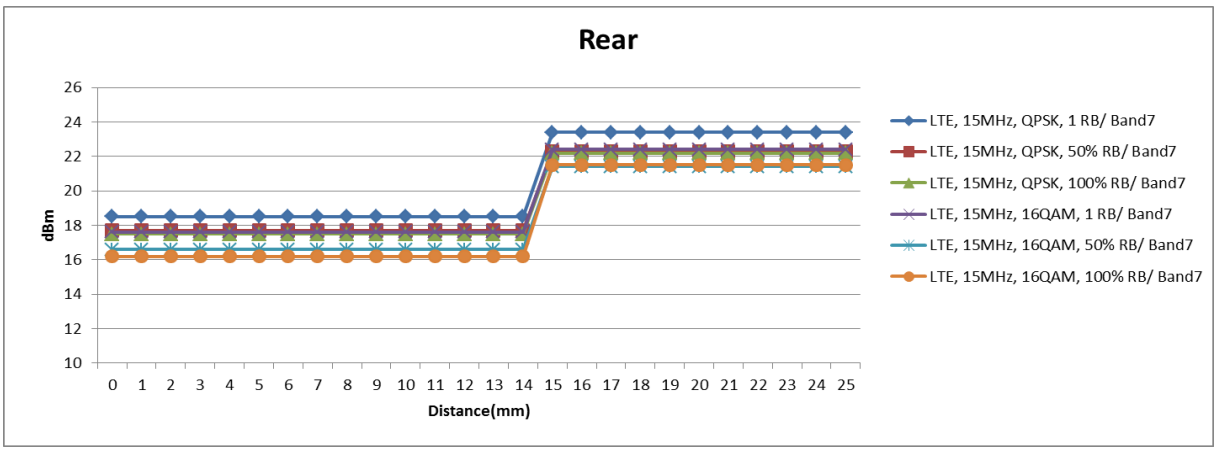

Rear
dBm
Distance(mm)
LTE, 1.4MHz, QPSK, 1 RB/ Band5
LTE, 1.4MHz, QPSK, 50% RB/ Band5
LTE, 1.4MHz, QPSK, 100% RB/ Band5
LTE, 1.4MHz, 16QAM, 1 RB/ Band5
LTE, 1.4MHz, 16QAM, 50% RB/ Band5
LTE, 1.4MHz, 16QAM, 100% RB/ Band5

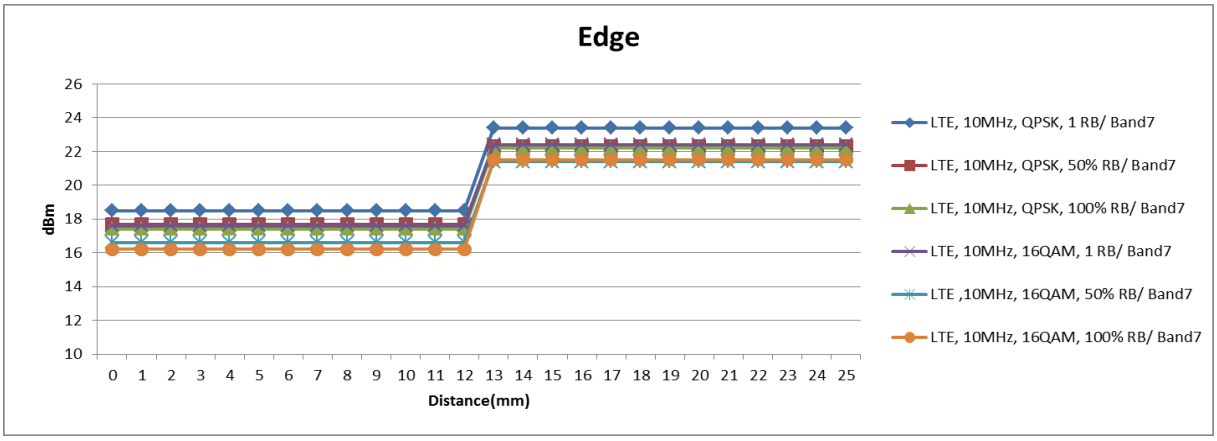
LTE Band 7

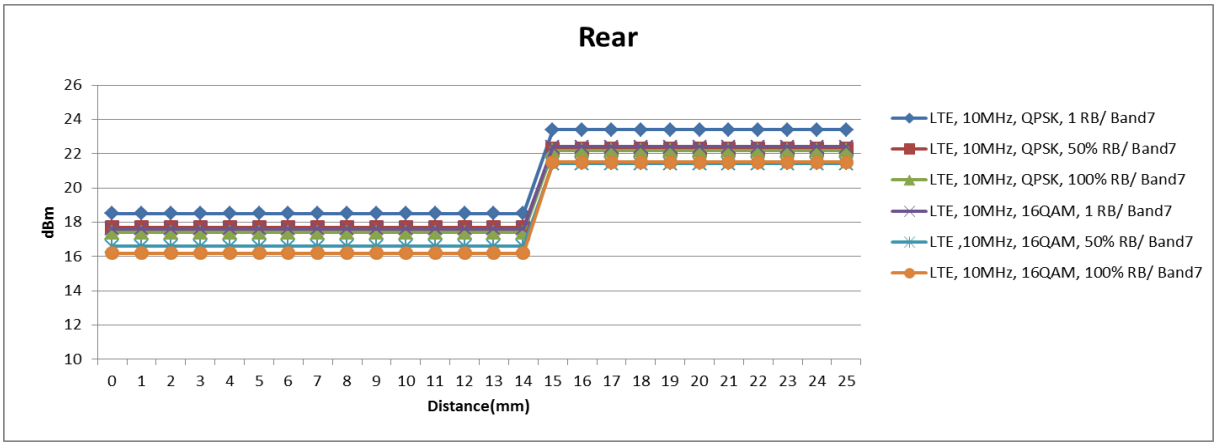

Edge
dBm
Distance(mm)
LTE, 20MHz, QPSK, 1 RB/ Band7
LTE, 20MHz, QPSK, 50% RB/ Band7
LTE, 20MHz, QPSK, 100% RB/ Band7
LTE, 20MHz, 16QAM, 1 RB/ Band7
LTE, 20MHz, 16QAM, 50% RB/ Band7
LTE, 20MHz, 16QAM, 100% RB/ Band7

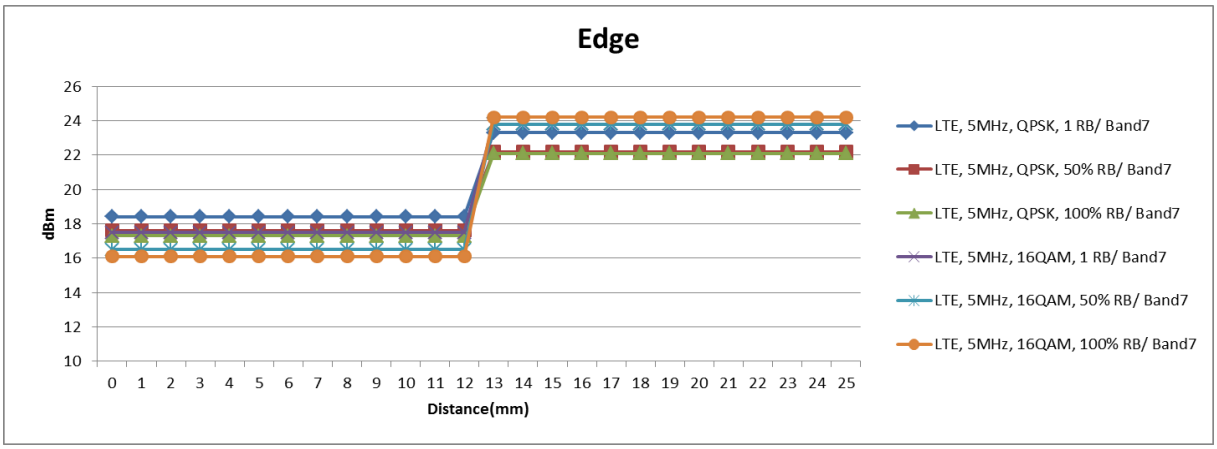

Rear
dBm
Distance(mm)
LTE, 20MHz, QPSK, 1 RB/ Band7
LTE, 20MHz, QPSK, 50% RB/ Band7
LTE, 20MHz, QPSK, 100% RB/ Band7
LTE, 20MHz, 16QAM, 1 RB/ Band7
LTE, 20MHz, 16QAM, 50% RB/ Band7
LTE, 20MHz, 16QAM, 100% RB/ Band7

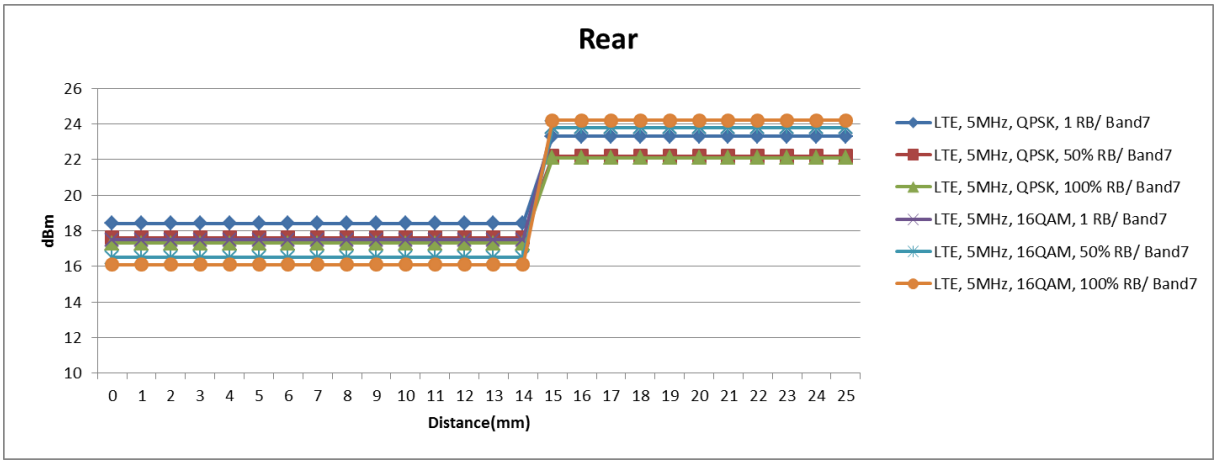

Edge
dBm
Distance(mm)
LTE, 15MHz, QPSK, 1 RB/ Band7
LTE, 15MHz, QPSK, 50% RB/ Band7
LTE, 15MHz, QPSK, 100% RB/ Band7
LTE, 15MHz, 16QAM, 1 RB/ Band7
LTE, 15MHz, 16QAM, 50% RB/ Band7
LTE, 15MHz, 16QAM, 100% RB/ Band7


Rear
dBm
Distance(mm)
LTE, 15MHz, QPSK, 1 RB/ Band7
LTE, 15MHz, QPSK, 50% RB/ Band7
LTE, 15MHz, QPSK, 100% RB/ Band7
LTE, 15MHz, 16QAM, 1 RB/ Band7
LTE, 15MHz, 16QAM, 50% RB/ Band7
LTE, 15MHz, 16QAM, 100% RB/ Band7

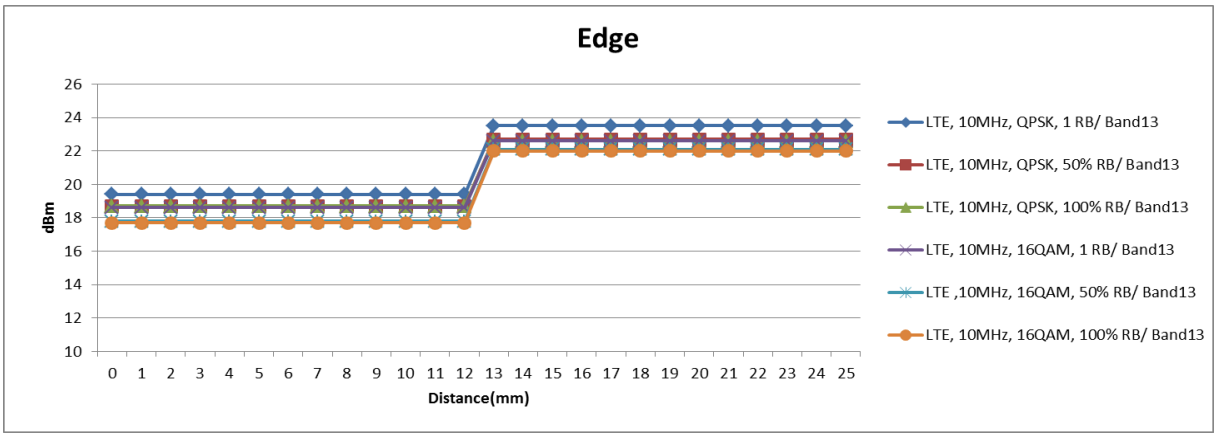

Edge
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band7
LTE, 10MHz, QPSK, 50% RB/ Band7
LTE, 10MHz, QPSK, 100% RB/ Band7
LTE, 10MHz, 16QAM, 1 RB/ Band7
LTE ,10MHz, 16QAM, 50% RB/ Band7
LTE, 10MHz, 16QAM, 100% RB/ Band7

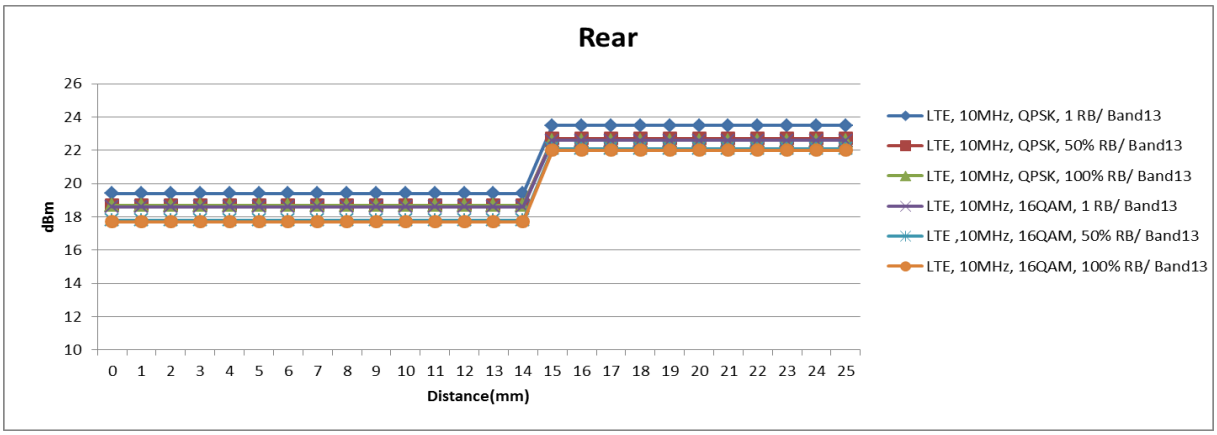

Rear
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band7
LTE, 10MHz, QPSK, 50% RB/ Band7
LTE, 10MHz, QPSK, 100% RB/ Band7
LTE, 10MHz, 16QAM, 1 RB/ Band7
LTE ,10MHz, 16QAM, 50% RB/ Band7
LTE, 10MHz, 16QAM, 100% RB/ Band7

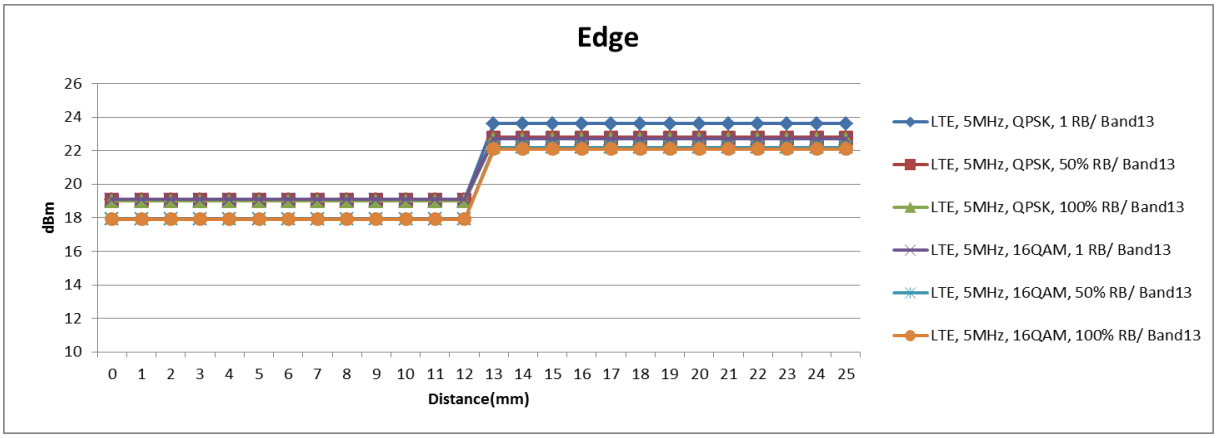

Edge
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band7
LTE, 5MHz, QPSK, 50% RB/ Band7
LTE, 5MHz, QPSK, 100% RB/ Band7
LTE, 5MHz, 16QAM, 1 RB/ Band7
LTE, 5MHz, 16QAM, 50% RB/ Band7
LTE, 5MHz, 16QAM, 100% RB/ Band7

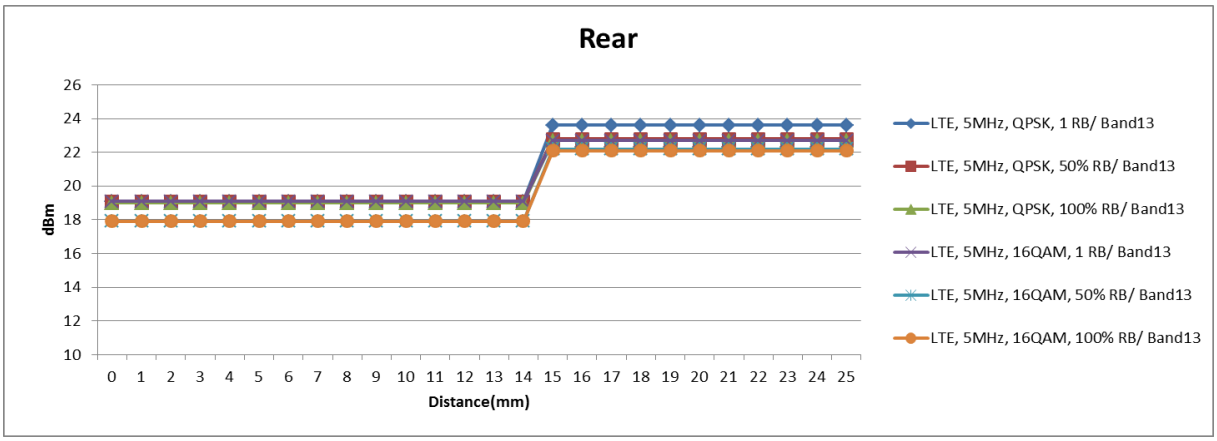

Rear
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band7
LTE, 5MHz, QPSK, 50% RB/ Band7
LTE, 5MHz, QPSK, 100% RB/ Band7
LTE, 5MHz, 16QAM, 1 RB/ Band7
LTE, 5MHz, 16QAM, 50% RB/ Band7
LTE, 5MHz, 16QAM, 100% RB/ Band7

LTE Band 13

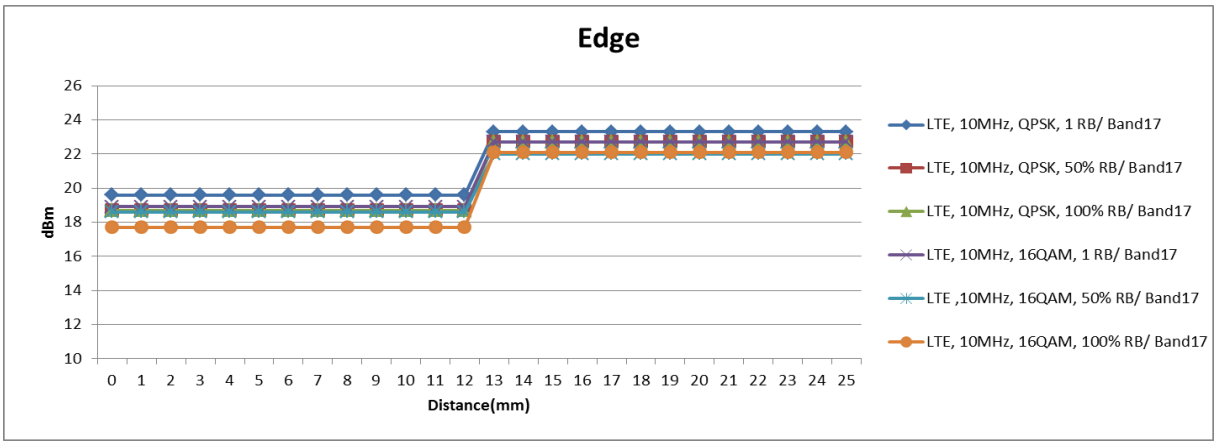

Edge
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band13
LTE, 10MHz, QPSK, 50% RB/ Band13
LTE, 10MHz, QPSK, 100% RB/ Band13
LTE, 10MHz, 16QAM, 1 RB/ Band13
LTE ,10MHz, 16QAM, 50% RB/ Band13
LTE, 10MHz, 16QAM, 100% RB/ Band13

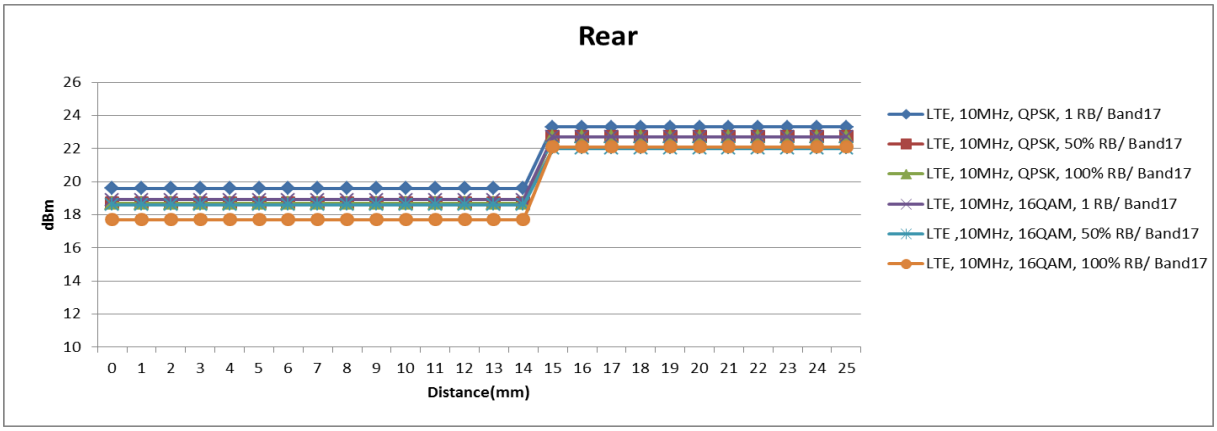

Rear
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band13
LTE, 10MHz, QPSK, 50% RB/ Band13
LTE, 10MHz, QPSK, 100% RB/ Band13
LTE, 10MHz, 16QAM, 1 RB/ Band13
LTE ,10MHz, 16QAM, 50% RB/ Band13
LTE, 10MHz, 16QAM, 100% RB/ Band13

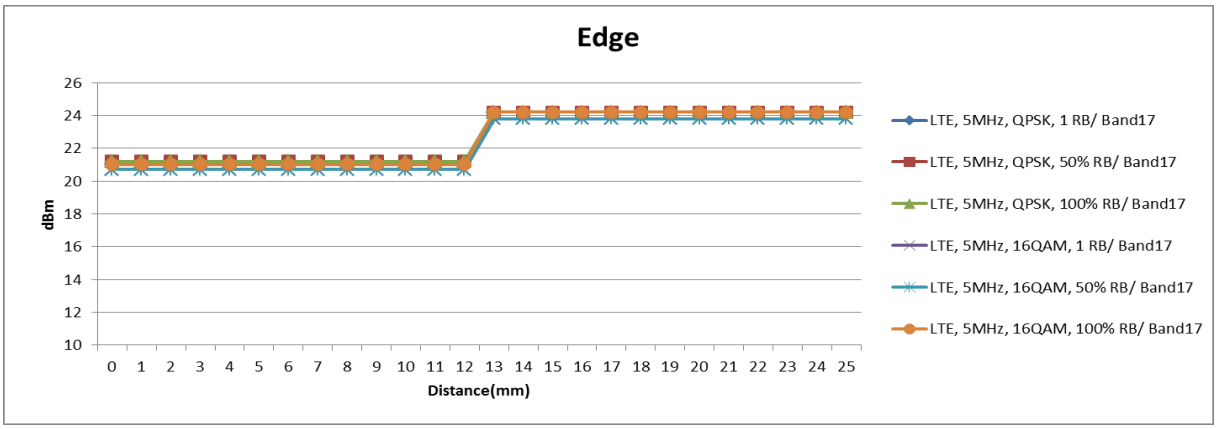

Edge
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band13
LTE, 5MHz, QPSK, 50% RB/ Band13
LTE, 5MHz, QPSK, 100% RB/ Band13
LTE, 5MHz, 16QAM, 1 RB/ Band13
LTE, 5MHz, 16QAM, 50% RB/ Band13
LTE, 5MHz, 16QAM, 100% RB/ Band13

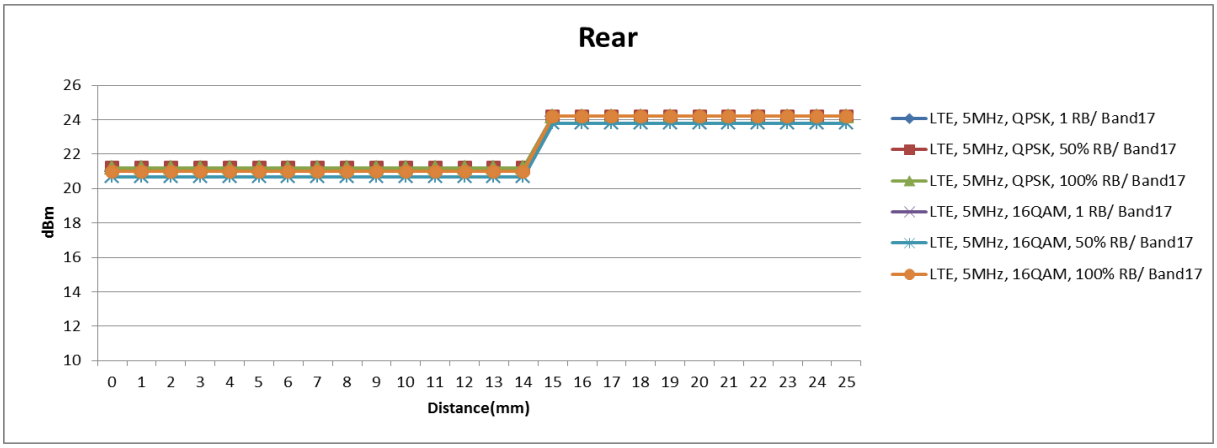

Rear
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band13
LTE, 5MHz, QPSK, 50% RB/ Band13
LTE, 5MHz, QPSK, 100% RB/ Band13
LTE, 5MHz, 16QAM, 1 RB/ Band13
LTE, 5MHz, 16QAM, 50% RB/ Band13
LTE, 5MHz, 16QAM, 100% RB/ Band13

LTE Band 17


Edge
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band17
LTE, 10MHz, QPSK, 50% RB/ Band17
LTE, 10MHz, QPSK, 100% RB/ Band17
LTE, 10MHz, 16QAM, 1 RB/ Band17
LTE ,10MHz, 16QAM, 50% RB/ Band17
LTE, 10MHz, 16QAM, 100% RB/ Band17

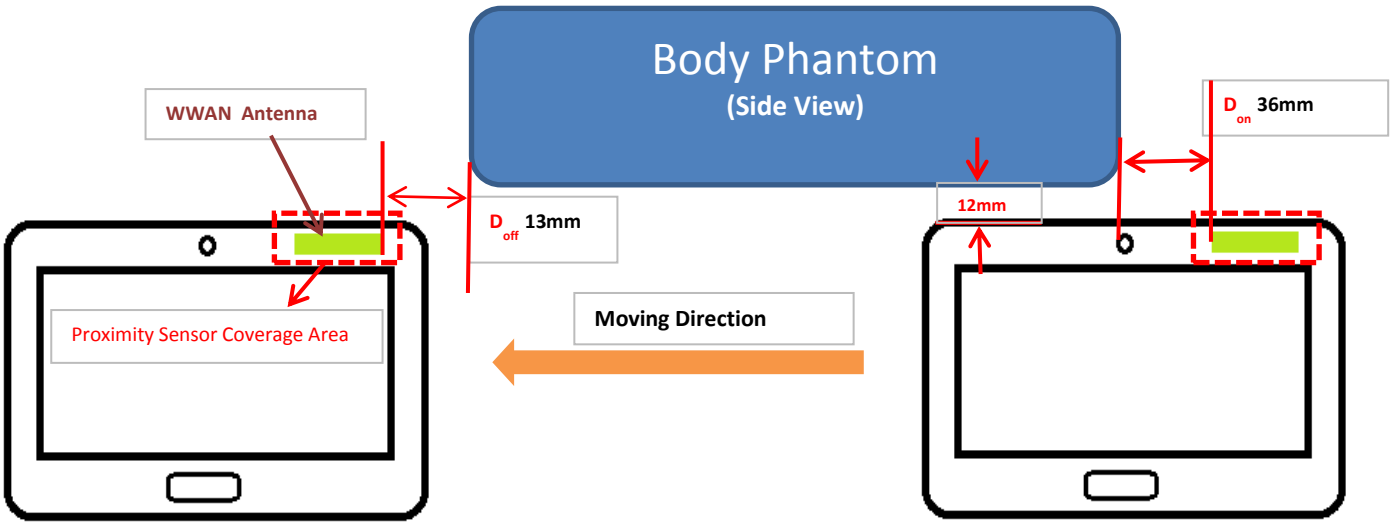

Rear
dBm
Distance(mm)
LTE, 10MHz, QPSK, 1 RB/ Band17
LTE, 10MHz, QPSK, 50% RB/ Band17
LTE, 10MHz, QPSK, 100% RB/ Band17
LTE, 10MHz, 16QAM, 1 RB/ Band17
LTE ,10MHz, 16QAM, 50% RB/ Band17
LTE, 10MHz, 16QAM, 100% RB/ Band17


Edge
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band17
LTE, 5MHz, QPSK, 50% RB/ Band17
LTE, 5MHz, QPSK, 100% RB/ Band17
LTE, 5MHz, 16QAM, 1 RB/ Band17
LTE, 5MHz, 16QAM, 50% RB/ Band17
LTE, 5MHz, 16QAM, 100% RB/ Band17


Rear
dBm
Distance(mm)
LTE, 5MHz, QPSK, 1 RB/ Band17
LTE, 5MHz, QPSK, 50% RB/ Band17
LTE, 5MHz, QPSK, 100% RB/ Band17
LTE, 5MHz, 16QAM, 1 RB/ Band17
LTE, 5MHz, 16QAM, 50% RB/ Band17
LTE, 5MHz, 16QAM, 100% RB/ Band17

10.6 Proximity Sensor Coverage Area

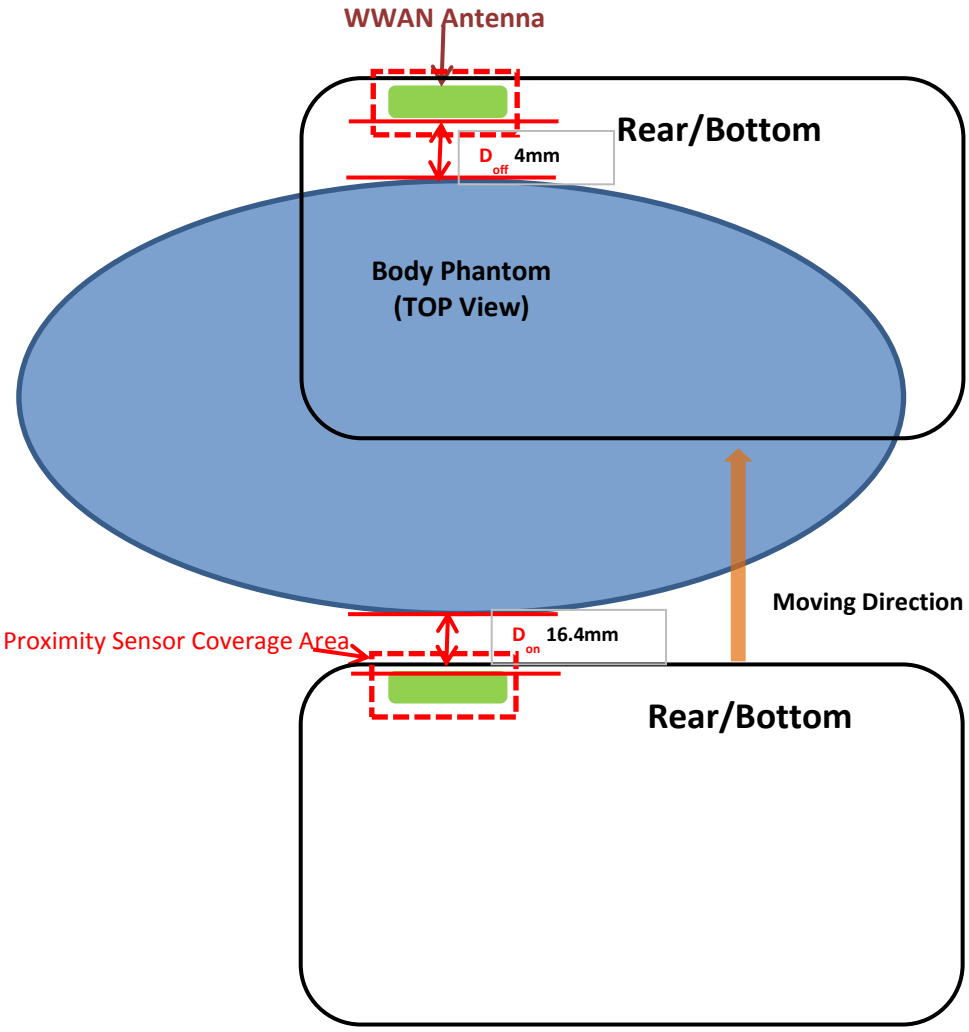
- **Edge Coverage**



The DUT is positioned perpendicular to the phantom with the test separation distance, 14 mm, away from the phantom. The DUT is moved laterally to find the distance of triggering sensor on and off

- The minimum distance from the WWAN Antenna to the edge of body phantom to trigger proximity sensor on, Don, is 30 mm.
- The minimum distance from the WWAN Antenna to the edge of body phantom to trigger proximity sensor off, Doff, is 15 mm.

- **Rear Coverage**



The DUT is positioned under the phantom with the test separation distance, 10 mm, away from the phantom. The DUT is moved laterally to find the distance of triggering sensor on and off

- The minimum distance from the WWAN Antenna to the edge of body phantom to trigger proximity sensor on, D_{on}, is 14 mm.
- The minimum distance from the WWAN Antenna to the edge of body phantom to trigger proximity sensor off, D_{off}, is 14 mm

11 Measurement Uncertainty

Measurement uncertainty for 300 MHz to 3 GHz averaged over 1 gram

Uncertainty Component	Uncertainty	Prob.	Div.	$c_{i\ (10g)}$	Std. Unc.(1-g)	$v_{i\ or\ Veff}$
Measurement System						
Probe Calibration (k=1)	6.00	Normal	1	1	6.00	∞
Probe Isotropy	7.60	Rectangular	$\sqrt{3}$	0.7	3.07	∞
Boundary Effect	0.65	Rectangular	$\sqrt{3}$	1	0.38	∞
Linearity	4.70	Rectangular	$\sqrt{3}$	1	2.71	∞
System Detection Limit	1.00	Rectangular	$\sqrt{3}$	1	0.58	∞
Readout Electronics	0.30	Normal	1	1	0.30	∞
Response Time	0.80	Rectangular	$\sqrt{3}$	1	0.46	∞
Integration Time	2.60	Rectangular	$\sqrt{3}$	1	1.50	∞
RF Ambient Conditions	3.00	Rectangular	$\sqrt{3}$	1	1.73	∞
RF Ambient Reflections	3.00	Rectangular	$\sqrt{3}$	1	1.73	∞
Probe Positioner Mechanical Tolerance	0.40	Rectangular	$\sqrt{3}$	1	0.23	∞
Probe Positioning with respect to Phantom Shell	2.90	Rectangular	$\sqrt{3}$	1	1.67	∞
Extrapolation, interpolation and integration Algorithms for Max. SAR Evaluation	2.00	Rectangular	$\sqrt{3}$	1	1.15	∞
Test sample Related						
Test sample Positioning	3.70	Normal	1	1	3.7	89
Device Holder Uncertainty	3.40	Normal	1	1	3.4	5
Output Power Variation - SAR drift measurement	5.00	Rectangular	$\sqrt{3}$	1	2.89	∞
Phantom and Tissue Parameters						
Phantom Uncertainty (shape and thickness tolerances)	7.50	Rectangular	$\sqrt{3}$	1	4.33	∞
Liquid Conductivity - deviation from target values	4.14	Rectangular	$\sqrt{3}$	0.64	1.53	∞
Liquid Conductivity - measurement uncertainty	-4.27	Normal	1	0.64	-2.73	39
Liquid Permittivity - deviation from target values	3.92	Rectangular	$\sqrt{3}$	0.6	1.36	∞
Liquid Permittivity - measurement uncertainty	3.76	Normal	1	0.6	2.26	39
		RSS			11.62	611
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =		k=2			23.25%	
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =		k=2			1.82dB	

12 Exposure Limit

(A). Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	2.0

(B). Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

NOTE: **Whole-Body SAR** is averaged over the entire body, **partial-body SAR** is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. **SAR for hands, wrists, feet and ankles** is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:

are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled Environments:

are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
1.6 W/kg

13 Tissue Dielectric Properties

13.1 Test Liquid Confirmation

Simulating Liquids Parameter Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectric parameters are within the tolerances of the specified target values

The relative permittivity and conductivity of the tissue material should be within ± 5% of the values given in the table below 5% may not be easily achieved at certain frequencies.

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in IEEE 1528 2003 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in IEEE 1528 2003 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in IEEE 1528 2003

Target Frequency (MHz)	Head		Body	
	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

13.2 Typical Composition of Ingredients for Liquid Tissue Phantoms

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Ingredients (% by weight)	Frequency (MHz)									
	450		835		915		1900		2450	
Tissue Type	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

alt: 99^{+}% Pure Sodium Chloride Sugar: 98^{+}% Pure Sucrose
Water: De-ionized, 16 MΩ^{+} resistivity HEC: Hydroxy thyl Cellulose
DGBE: 99^{+}% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra-pure): Polyethylene glycol mono [4-(1, 1, 3, 3-tetramethylbutyl)phenyl]ether

13.3 Simulating Liquids Parameter Check Results

Date	Band	Freq(MHz)	Measured			Standard		Δ		Limit
			e' (εr)	e''	σ	e' (εr)	σ	e' (εr)	σ	±5
2014/4/14	Body 900	824.2	57.32	20.92	0.96	55.24	0.97	3.76%	-1.17%	±5
		836.6	57.23	20.90	0.97	55.20	0.97	3.68%	0.04%	±5
		848.8	57.12	20.88	0.98	55.16	0.99	3.55%	-0.15%	±5
2014/4/16	Body 900	826.4	57.21	20.45	0.94	55.24	0.97	3.57%	-3.14%	±5
		836.6	57.11	20.45	0.95	55.20	0.97	3.47%	-2.13%	±5
		846.6	57.03	20.44	0.96	55.17	0.98	3.37%	-2.23%	±5
2014/4/17	Body 1900	1850.2	53.53	14.83	1.52	53.30	1.52	0.43%	0.31%	±5
		1880	53.50	14.70	1.54	53.30	1.52	0.38%	1.02%	±5
		1909.8	53.23	14.81	1.57	53.30	1.52	-0.12%	3.38%	±5
2014/4/18	Body 1800	1710.2	52.33	15.35	1.46	53.54	1.46	-2.25%	-0.30%	±5
		1747.6	52.51	15.41	1.50	53.44	1.49	-1.74%	0.63%	±5
		1784.8	52.33	15.22	1.51	53.34	1.51	-1.90%	-0.04%	±5
2014/4/20	Body 750	779.5	56.73	22.83	0.99	55.42	0.97	2.37%	2.38%	±5
		782	56.71	22.83	0.99	55.41	0.97	2.35%	2.67%	±5
		784.5	56.67	22.81	0.99	55.40	0.97	2.30%	2.90%	±5
2014/4/20	Body 750	709	57.34	23.34	0.92	55.69	0.96	2.96%	-4.27%	±5
		710	57.34	23.34	0.92	55.69	0.96	2.97%	-4.15%	±5
		711	57.34	23.34	0.92	55.68	0.96	2.97%	-4.02%	±5
2014/4/21	Body 900	829	56.45	20.23	0.93	55.22	0.97	2.22%	-3.90%	±5
		836.5	56.39	20.21	0.94	55.20	0.97	2.17%	-3.28%	±5
		844	56.30	20.19	0.95	55.17	0.98	2.05%	-3.49%	±5
2014/4/22	Body 1900	1855	53.26	14.76	1.52	53.30	1.52	-0.07%	0.06%	±5
		1880	53.18	14.85	1.55	53.30	1.52	-0.23%	2.06%	±5
		1905	53.14	14.92	1.58	53.30	1.52	-0.29%	3.88%	±5
2014/4/23	Body 1800	1715	52.15	15.21	1.45	53.52	1.47	-2.56%	-1.19%	±5
		1732.5	52.15	15.23	1.47	53.48	1.48	-2.49%	-0.76%	±5
		1750	52.13	15.24	1.48	53.43	1.49	-2.44%	-0.47%	±5
2014/4/24	Body 2450	2505	53.76	14.86	2.07	52.63	2.03	2.15%	1.95%	±5
		2535	53.62	14.98	2.11	52.59	2.07	1.95%	1.88%	±5
		2565	53.54	15.15	2.16	52.55	2.11	1.88%	2.20%	±5

14 System Performance Check

The system performance check is performed prior to any usage of the system in order to guarantee reproducible results. The system performance check verifies that the system operates within its specifications. The system performance check results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the SAM twin phantom filled with Body simulating liquid of the following parameters.
- The DASY4/DASY5 system with an E-field probe EX3DV4 SN:3665 was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 15 mm (below 1 GHz) and 10 mm (above 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 10mm was aligned with the dipole.
- Special 7x7x7 fine cube was chosen for cube integration (dx=dy= 5 mm, dz= 5 mm).
- Distance between probe sensors and phantom surface was set to 3.0 mm.
- The dipole input power (forward power) was 100 mW±3%.
- The results are normalized to 1 W input power.

Reference SAR Values for System Performance Check

The reference SAR values can be obtained from the calibration certificate of system validation dipoles

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)		
				1g/10g	Head	Body
D750V3	1015	2014/01/28	750	1g	8.37	8.61
				10g	5.46	5.66
D835V2	4d015	2014/03/24	850	1g	9.16	9.42
				10g	5.94	6.13
D1800V2	2d062	2014/03/04	1800	1g	39.1	37.9
				10g	20.4	20.1
D1900V2	5d056	2014/02/27	1900	1g	40.7	40.4
				10g	21.3	21.4
D2450V2	728	2013/05/02	2450	1g	53.5	51.1
				10g	25.0	23.9

14.1 System Performance Check Results

Date	System Dipole			Parameters	Target	Measured	Deviation[%]	Limited[%]
	Type	Serial No.	Liquid					
2014/4/14	D835V2	4d015	Body	1g SAR:	9.42	9.58	1.70	± 5
				10g SAR:	6.13	6.39	4.24	± 5
2014/4/16	D835V2	4d015	Body	1g SAR:	9.42	9.39	-0.32	± 5
				10g SAR:	6.13	6.26	2.12	± 5
2014/4/17	D1900V2	5d056	Body	1g SAR:	40.40	39.40	-2.48	± 5
				10g SAR:	21.40	20.60	-3.74	± 5
2014/4/18	D1800V2	2d062	Body	1g SAR:	37.90	37.80	-0.26	± 5
				10g SAR:	20.10	19.90	-1.00	± 5
2014/4/20	D750V3	1015	Body	1g SAR:	8.61	8.75	1.63	± 5
				10g SAR:	5.66	5.79	2.30	± 5
2014/4/21	D835V2	4d015	Body	1g SAR:	9.42	9.49	0.74	± 5
				10g SAR:	6.13	6.30	2.77	± 5
2014/4/22	D1900V2	5d056	Body	1g SAR:	40.40	42.20	4.46	± 5
				10g SAR:	21.40	22.10	3.27	± 5
2014/4/23	D1800V2	2d062	Body	1g SAR:	37.90	36.90	-2.64	± 5
				10g SAR:	20.10	19.30	-3.98	± 5
2014/4/24	D2450V2	sn728	Body	1g SAR:	51.10	50.60	-0.98	± 5
				10g SAR:	23.90	24.10	0.84	± 5

15 RF Output Power Measurement

15.1 GPRS 850

GMSK (GPRS) Mode Coding scheme : CS-1

Target Power: 32.5 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	W/o Power back-off		W/ Power back-off	
				Average power(dBm)	Frame Avg Pwr	Average power(dBm)	Frame Avg Pwr
GPRS 850	1	128	824.2	31.9	22.9	24.6	15.6
		190	836.6	32.0	23.0	24.6	15.6
		251	848.8	32.2	23.2	24.6	15.6
GPRS 850	2	128	824.2	31.8	25.8	24.6	18.6
		190	836.6	32.0	26.0	24.6	18.6
		251	848.8	32.2	26.2	24.6	18.6
GPRS 850	3	128	824.2	31.7	27.4	24.6	20.3
		190	836.6	31.8	27.5	24.7	20.4
		251	848.8	32.0	27.7	24.4	20.1
GPRS 850	4	128	824.2	31.5	28.5	24.4	21.4
		190	836.6	31.6	28.6	24.4	21.4
		251	848.8	31.6	28.6	24.5	21.5

EGPRS 850

8PSK (EGPRS) Mode Coding scheme : MCS-5

Target Power: 27 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	W/o Power back-off		W/ Power back-off	
				Average power(dBm)	Frame Avg Pwr	Average power(dBm)	Frame Avg Pwr
EGPRS 850	1	128	824.2	27.5	18.5	20.2	11.2
		190	836.6	27.5	18.5	20.1	11.1
		251	848.8	27.4	18.4	19.8	10.8
EGPRS 850	2	128	824.2	27.5	21.5	20.3	14.3
		190	836.6	27.5	21.5	20.1	14.1
		251	848.8	27.4	21.4	19.8	13.8
EGPRS 850	3	128	824.2	26.7	22.4	19.8	15.5
		190	836.6	26.7	22.4	19.7	15.4
		251	848.8	26.6	22.3	19.3	15.0
EGPRS 850	4	128	824.2	25.6	22.6	18.7	15.7
		190	836.6	25.6	22.6	18.6	15.6
		251	848.8	25.5	22.5	18.6	15.6

15.2 GPRS 1900

GMSK (GPRS) Mode Coding scheme : CS-1

Target Power: 29.5 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	W/o Power back-off		W/ Power back-off	
				Average power(dBm)	Frame Avg Pwr	Average power(dBm)	Frame Avg Pwr
GPRS 1900	1	512	1850.2	29.9	20.9	19.9	10.9
		661	1880.0	29.9	20.9	20.0	11.0
		810	1909.8	29.8	20.8	20.0	11.0
GPRS 1900	2	512	1850.2	29.9	23.9	19.9	13.9
		661	1880.0	29.9	23.9	20.0	14.0
		810	1909.8	29.8	23.8	20.0	14.0
GPRS 1900	3	512	1850.2	29.5	25.2	19.9	15.6
		661	1880.0	29.5	25.2	20.0	15.7
		810	1909.8	29.4	25.1	20.0	15.7
GPRS 1900	4	512	1850.2	28.5	25.5	19.9	16.9
		661	1880.0	28.5	25.5	20.0	17.0
		810	1909.8	28.4	25.4	20.0	17.0

EGPRS 1900

8PSK (EGPRS) Mode Coding scheme : MCS-5

Target Power: 27.5 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	W/o Power back-off		W/ Power back-off	
				Average power(dBm)	Frame Avg Pwr	Average power(dBm)	Frame Avg Pwr
EGPRS 1900	1	512	1850.2	26.9	17.9	16.5	7.5
		661	1880.0	26.9	17.9	16.4	7.4
		810	1909.8	26.9	17.9	16.3	7.3
EGPRS 1900	2	512	1850.2	26.9	20.9	16.5	10.5
		661	1880.0	26.9	20.9	16.4	10.4
		810	1909.8	26.8	20.8	16.3	10.3
EGPRS 1900	3	512	1850.2	26.1	21.8	16.4	12.1
		661	1880.0	26.1	21.8	16.4	12.1
		810	1909.8	26.0	21.7	16.4	12.1
EGPRS 1900	4	512	1850.2	25.0	22.0	16.4	13.4
		661	1880.0	24.9	21.9	16.4	13.4
		810	1909.8	24.8	21.8	16.3	13.3

15.3 WCDMA Band II

Target Power: 23.5 dBm
Tolerance: +/- 1 dBm

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.5.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7) 12.2kps RMC is used for this testing. Power control set to All bits up. A summary of these settings are illustrated below:

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
WCDMA Band II	---	9262/9662	1852.4	24.0	17.2
		9400/9800	1880.0	24.2	17.3
		9538/9983	1907.6	24.0	17.3

HSDPA
Target Power: 23.5 dBm
Tolerance: +/- 1 dBm

The following 4 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	8/15	4/15
	βhs	4/15	24/15	30/15	30/15
	CM (dB)	0	1	1.5	1.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off	W/ Power back-off
				Average power(dBm)	Average power(dBm)
HSDPA II	1	9262/9662	1852.4	24.0	17.2
		9400/9800	1880.0	24.1	17.2
		9538/9983	1907.6	24.0	17.2
	2	9262/9662	1852.4	24.0	17.2
		9400/9800	1880.0	24.1	17.2
		9538/9983	1907.6	24.0	17.2
	3	9262/9662	1852.4	23.6	16.8
		9400/9800	1880.0	23.7	16.9
		9538/9983	1907.6	23.6	16.8
	4	9262/9662	1852.4	23.5	16.8
		9400/9800	1880.0	23.6	16.9
		9538/9983	1907.6	23.5	16.8

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. **A** summary of these settings are illustrated below:

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	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
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11		E-TFCI 11	E-TFCI 11	
		E-TFCI PO 4		E-TFCI PO 4	E-TFCI PO 4	
		E-TFCI 67		E-TFCI 92	E-TFCI 67	
		E-TFCI PO 18		E-TFCI PO 18	E-TFCI PO 18	
		E-TFCI 71			E-TFCI 71	
		E-TFCI PO 23			E-TFCI PO 23	
		E-TFCI 75			E-TFCI 75	
		E-TFCI PO 26			E-TFCI PO 26	
		E-TFCI 81			E-TFCI 81	
		E-TFCI PO 27			E-TFCI PO 27	

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
HSUPA II	1	9262/9662	1852.4	24.0	17.2
		9400/9800	1880.0	24.1	17.2
		9538/9983	1907.6	24.0	17.2
	2	9262/9662	1852.4	22.2	15.5
		9400/9800	1880.0	22.3	15.6
		9538/9983	1907.6	22.2	15.5
	3	9262/9662	1852.4	23.2	16.4
		9400/9800	1880.0	23.3	16.5
		9538/9983	1907.6	23.2	16.4
	4	9262/9662	1852.4	22.2	15.5
		9400/9800	1880.0	22.3	15.6
		9538/9983	1907.6	22.2	15.5
	5	9262/9662	1852.4	24.0	17.2
		9400/9800	1880.0	24.1	17.2
		9538/9983	1907.6	24.0	17.2

15.4 WCDMA Band IV

Target Power: 23.5dBm
Tolerance: +/- 1 dBm

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.5.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7) 12.2kps RMC is used for this testing. Power control set to All bits up. A summary of these settings are illustrated below:

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
WCDMA Band IV	---	1312/1537	1712.4	23.7	16.9
		1413/1638	1732.6	23.8	17.0
		1513/1738	1752.6	23.7	16.9

HSDPA
Target Power: 23.5dBm
Tolerance: +/- 1 dBm

The following 4 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	8/15	4/15
	βhs	4/15	24/15	30/15	30/15
	CM (dB)	0	1	1.5	1.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off	W/ Power back-off
				Average power(dBm)	Average power(dBm)
HSDPA IV	1	1312/1537	1712.4	23.7	16.9
		1413/1638	1732.6	23.8	17.0
		1513/1738	1752.6	23.7	16.9
	2	1312/1537	1712.4	23.6	16.9
		1413/1638	1732.6	23.7	17.0
		1513/1738	1752.6	23.6	16.9
	3	1312/1537	1712.4	23.4	16.6
		1413/1638	1732.6	23.5	16.7
		1513/1738	1752.6	23.4	16.6
	4	1312/1537	1712.4	23.4	16.6
		1413/1638	1732.6	23.5	16.7
		1513/1738	1752.6	23.4	16.6

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. **A** summary of these settings are illustrated below:

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	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
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11		E-TFCI 11	E-TFCI 11	
		E-TFCI PO 4		E-TFCI PO 4	E-TFCI PO 4	
		E-TFCI 67		E-TFCI 92	E-TFCI 67	
		E-TFCI PO 18		E-TFCI PO 18	E-TFCI PO 18	
		E-TFCI 71			E-TFCI 71	
		E-TFCI PO 23			E-TFCI PO 23	
		E-TFCI 75			E-TFCI 75	
		E-TFCI PO 26			E-TFCI PO 26	
		E-TFCI 81			E-TFCI 81	
		E-TFCI PO 27			E-TFCI PO 27	

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
HSUPA IV	1	1312/1537	1712.4	23.7	16.9
		1413/1638	1732.6	23.8	17.0
		1513/1738	1752.6	23.7	16.9
	2	1312/1537	1712.4	22.0	15.3
		1413/1638	1732.6	22.1	15.4
		1513/1738	1752.6	22.0	15.3
	3	1312/1537	1712.4	22.7	16.0
		1413/1638	1732.6	22.8	16.2
		1513/1738	1752.6	22.7	16.0
	4	1312/1537	1712.4	22.0	15.3
		1413/1638	1732.6	22.1	15.4
		1513/1738	1752.6	22.0	15.3
	5	1312/1537	1712.4	23.7	16.9
		1413/1638	1732.6	23.8	17.0
		1513/1738	1752.6	23.7	16.9

15.5 WCDMA Band V

Target Power: 23.5dBm
Tolerance: +/- 1 dBm

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.5.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7) 12.2kps RMC is used for this testing. Power control set to All bits up. A summary of these settings are illustrated below:

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
WCDMA Band V	---	4132/4157	826.4	24.0	21.0
		4182/4407	836.4	24.0	21.0
		4233/4458	846.6	24.2	21.2

HSDPA
Target Power: 23.5dBm
Tolerance: +/- 1 dBm

The following 4 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	8/15	4/15
	βhs	4/15	24/15	30/15	30/15
	CM (dB)	0	1	1.5	1.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs =βhs/βc	30/15			

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off	W/ Power back-off
				Average power(dBm)	Average power(dBm)
HSDPA V	1	4132/4157	826.4	24.0	21.0
		4182/4407	836.4	24.0	21.0
		4233/4458	846.6	24.2	21.2
	2	4132/4157	826.4	24.0	21.0
		4182/4407	836.4	24.0	21.0
		4233/4458	846.6	24.2	21.2
	3	4132/4157	826.4	23.6	20.7
		4182/4407	836.4	23.5	20.6
		4233/4458	846.6	23.8	20.7
	4	4132/4157	826.4	23.6	20.7
		4182/4407	836.4	23.5	20.6
		4233/4458	846.6	23.8	20.7

HSPA (HSDPA & HSUPA)

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. **A** summary of these settings are illustrated below:

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	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
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11		E-TFCI 11	E-TFCI 11	
		E-TFCI PO 4		E-TFCI PO 4	E-TFCI PO 4	
		E-TFCI 67		E-TFCI 92	E-TFCI 67	
		E-TFCI PO 18		E-TFCI PO 18	E-TFCI PO 18	
		E-TFCI 71			E-TFCI 71	
		E-TFCI PO 23			E-TFCI PO 23	
		E-TFCI 75			E-TFCI 75	
		E-TFCI PO 26			E-TFCI PO 26	
		E-TFCI 81			E-TFCI 81	
		E-TFCI PO 27			E-TFCI PO 27	

Output power table

Band	Data Rate or Sub-test	UL/DL Channel No.	Frequency(MHz)	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
HSUPA V	1	4132/4157	826.4	24.0	21.0
		4182/4407	836.4	24.0	21.0
		4233/4458	846.6	24.2	21.2
	2	4132/4157	826.4	22.2	19.3
		4182/4407	836.4	22.1	19.2
		4233/4458	846.6	22.4	19.5
	3	4132/4157	826.4	23.1	20.2
		4182/4407	836.4	23.0	20.1
		4233/4458	846.6	23.2	20.4
	4	4132/4157	826.4	22.2	19.3
		4182/4407	836.4	22.1	19.2
		4233/4458	846.6	22.4	19.5
	5	4132/4157	826.4	24.0	21.0
		4182/4407	836.4	24.0	21.0
		4233/4458	846.6	24.2	21.2

15.6 LTE Transmit Power

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 1dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-
Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.					

15.7 LTE Band 2

Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
2	20	18700	1860.0	QPSK	1	0	0	23.0	15.7
					1	49	0	22.7	15.5
					1	99	0	22.4	15.1
					50	0	1	22.5	14.7
					50	24	1	22.3	14.5
					50	49	1	22.3	14.3
					100	0	1	22.4	14.4
				16QAM	1	0	1	22.5	14.7
					1	49	1	22.3	14.6
					1	99	1	22.1	14.1
					50	0	2	21.4	13.7
					50	24	2	21.3	13.5
					50	49	2	21.2	13.1
					100	0	2	21.3	13.2
		18900	1880.0	QPSK	1	0	0	23.4	15.8
					1	49	0	22.8	15.5
					1	99	0	22.7	15.3
					50	0	1	22.8	14.9
					50	24	1	22.5	14.7
					50	49	1	22.5	14.7
					100	0	1	22.7	14.8
				16QAM	1	0	1	23.0	15.0
					1	49	1	22.4	14.7
					1	99	1	22.2	14.4
					50	0	2	21.7	13.8
					50	24	2	21.4	13.5
					50	49	2	21.4	13.5
					100	0	2	21.6	13.6
		19100	1900.0	QPSK	1	0	0	23.3	15.5
					1	49	0	22.7	15.2
					1	99	0	22.5	14.8
					50	0	1	22.8	14.7
					50	24	1	22.4	14.4
					50	49	1	22.3	14.3
					100	0	1	22.6	14.5
				16QAM	1	0	1	22.7	14.6
					1	49	1	22.3	14.4
					1	99	1	22.0	13.9
					50	0	2	21.7	13.5
					50	24	2	21.4	13.3
					50	49	2	21.2	13.1
					100	0	2	21.5	13.3

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
2	15	18675	1857.5	QPSK	1	0	0	22.9	15.5
					1	37	0	22.6	15.3
					1	74	0	22.3	14.9
					36	0	1	22.4	14.5
					36	18	1	22.2	14.3
					36	35	1	22.2	14.1
					75	0	1	22.3	14.2
				16QAM	1	0	1	22.4	14.5
					1	37	1	22.2	14.4
					1	74	1	22.0	13.9
					36	0	2	21.3	13.5
					36	18	2	21.2	13.3
					36	35	2	21.1	12.9
					75	0	2	21.2	13.0
		18900	1880.0	QPSK	1	0	0	23.3	15.6
					1	37	0	22.7	15.3
					1	74	0	22.6	15.1
					36	0	1	22.7	14.7
					36	18	1	22.4	14.5
					36	35	1	22.4	14.5
					75	0	1	22.6	14.6
				16QAM	1	0	1	22.9	14.8
					1	37	1	22.3	14.5
					1	74	1	22.1	14.2
					36	0	2	21.6	13.6
					36	18	2	21.3	13.3
					36	35	2	21.3	13.3
					75	0	2	21.5	13.4
		19125	1902.5	QPSK	1	0	0	23.2	15.3
					1	37	0	22.6	15.0
					1	74	0	22.4	14.6
					36	0	1	22.7	14.5
					36	18	1	22.3	14.2
					36	35	1	22.2	14.1
					75	0	1	22.5	14.3
				16QAM	1	0	1	22.6	14.4
					1	37	1	22.2	14.2
					1	74	1	21.9	13.7
					36	0	2	21.6	13.3
					36	18	2	21.3	13.1
					36	35	2	21.1	12.9
					75	0	2	21.4	13.1

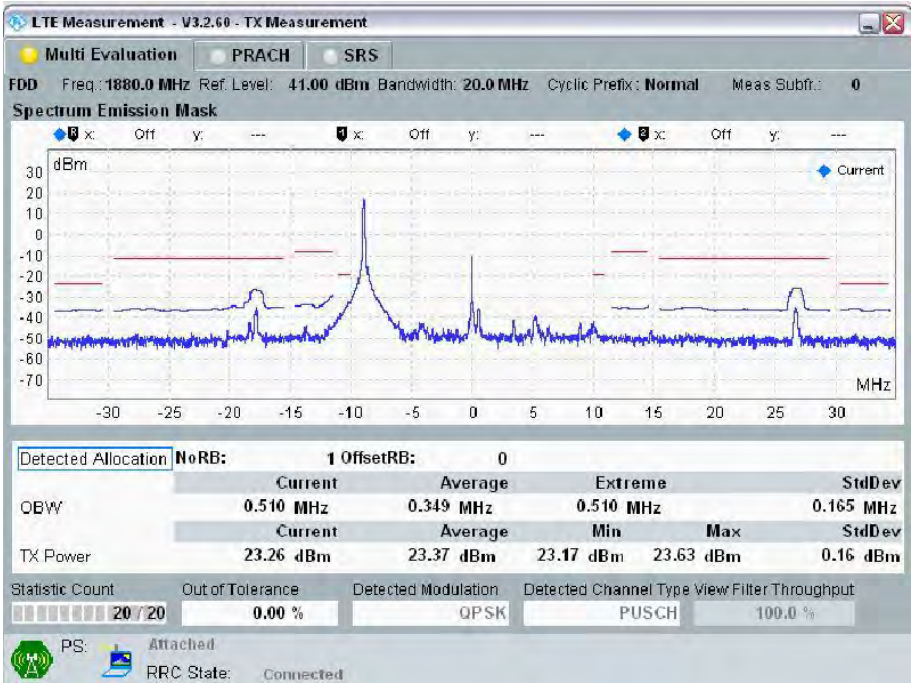
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
2	10	18650	1855.0	QPSK	1	0	0	22.8	15.5
					1	24	0	22.5	15.3
					1	49	0	22.2	14.9
					25	0	1	22.2	14.5
					25	12	1	22.0	14.3
					25	24	1	22.0	14.1
					50	0	1	22.2	14.2
				16QAM	1	0	1	22.3	14.5
					1	24	1	22.1	14.4
					1	49	1	21.8	13.9
					25	0	2	21.2	13.5
					25	12	2	21.0	13.3
					25	24	2	21.0	12.9
					50	0	2	21.1	13.0
		18900	1880.0	QPSK	1	0	0	23.2	15.6
					1	24	0	22.6	15.3
					1	49	0	22.5	15.1
					25	0	1	22.6	14.7
					25	12	1	22.3	14.5
					25	24	1	22.2	14.5
					50	0	1	22.4	14.6
				16QAM	1	0	1	22.8	14.8
					1	24	1	22.2	14.5
					1	49	1	22.0	14.2
					25	0	2	21.5	13.6
					25	12	2	21.2	13.3
					25	24	2	21.1	13.3
					50	0	2	21.3	13.4
		19150	1905.0	QPSK	1	0	0	23.1	15.3
					1	24	0	22.5	15.0
					1	49	0	22.3	14.6
					25	0	1	22.5	14.5
					25	12	1	22.2	14.2
					25	24	1	22.1	14.1
					50	0	1	22.3	14.3
				16QAM	1	0	1	22.5	14.4
					1	24	1	22.1	14.2
					1	49	1	21.8	13.7
					25	0	2	21.5	13.3
					25	12	2	21.1	13.1
					25	24	2	21.0	12.9
					50	0	2	21.3	13.1

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
2	5	18625	1852.5	QPSK	1	0	0	22.7	15.4
					1	12	0	22.4	15.2
					1	24	0	22.1	14.8
					12	0	1	22.1	14.4
					12	6	1	21.9	14.2
					12	11	1	21.9	14.0
					25	0	1	22.1	14.1
				16QAM	1	0	1	22.2	14.4
					1	12	1	22.0	14.3
					1	24	1	21.7	13.8
					12	0	2	21.1	13.4
					12	6	2	20.9	13.2
					12	11	2	20.9	12.8
					25	0	2	21.0	12.9
		18900	1880.0	QPSK	1	0	0	23.1	15.5
					1	12	0	22.5	15.2
					1	24	0	22.4	15.0
					12	0	1	22.5	14.6
					12	6	1	22.2	14.4
					12	11	1	22.1	14.4
					25	0	1	22.3	14.5
				16QAM	1	0	1	22.7	14.7
					1	12	1	22.1	14.4
					1	24	1	21.9	14.1
					12	0	2	21.4	13.5
					12	6	2	21.1	13.2
					12	11	2	21.0	13.2
					25	0	2	21.2	13.3
		19175	1907.5	QPSK	1	0	0	23.0	15.2
					1	12	0	22.4	14.9
					1	24	0	22.2	14.5
					12	0	1	22.4	14.4
					12	6	1	22.1	14.1
					12	11	1	22.0	14.0
					25	0	1	22.2	14.2
				16QAM	1	0	1	22.4	14.3
					1	12	1	22.0	14.1
					1	24	1	21.7	13.6
					12	0	2	21.4	13.2
					12	6	2	21.0	13.0
					12	11	2	20.9	12.8
					25	0	2	21.2	13.0

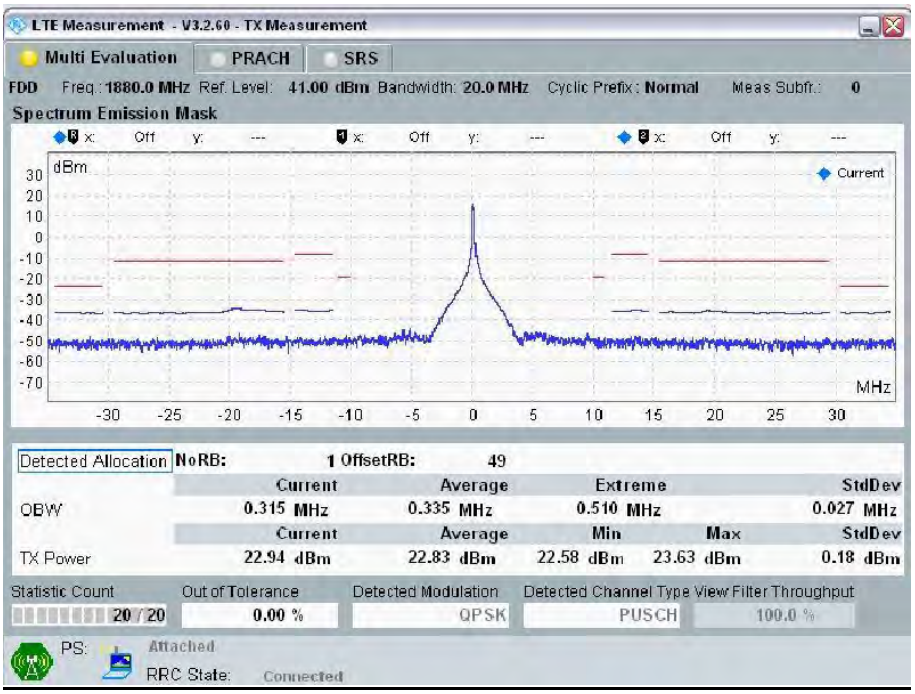
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
2	3	18615	1851.5	QPSK	1	0	0	22.5	15.3
					1	7	0	22.2	15.1
					1	14	0	21.9	14.7
					8	0	1	22.0	14.3
					8	4	1	21.8	14.1
					8	7	1	21.8	13.9
					15	0	1	21.9	14.0
				16QAM	1	0	1	22.0	14.3
					1	7	1	21.8	14.2
					1	14	1	21.6	13.7
					8	0	2	20.9	13.3
					8	4	2	20.8	13.1
					8	7	2	20.7	12.7
					15	0	2	20.8	12.8
		18900	1880.0	QPSK	1	0	0	22.9	15.4
					1	7	0	22.3	15.1
					1	14	0	22.2	14.8
					8	0	1	22.3	14.5
					8	4	1	22.0	14.2
					8	7	1	22.0	14.2
					15	0	1	22.2	14.4
				16QAM	1	0	1	22.5	14.6
					1	7	1	21.9	14.3
					1	14	1	21.7	13.9
					8	0	2	21.2	13.4
					8	4	2	20.9	13.1
					8	7	2	20.9	13.1
					15	0	2	21.1	13.2
		19184	1908.4	QPSK	1	0	0	22.8	15.0
					1	7	0	22.2	14.8
					1	14	0	22.0	14.3
					8	0	1	22.3	14.3
					8	4	1	21.9	14.0
					8	7	1	21.8	13.9
					15	0	1	22.1	14.1
				16QAM	1	0	1	22.2	14.2
					1	7	1	21.8	14.0
					1	14	1	21.5	13.5
					8	0	2	21.2	13.1
					8	4	2	20.9	12.9
					8	7	2	20.7	12.6
					15	0	2	21.0	12.8

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
2	1.4	18607	1850.7	QPSK	1	0	0	22.3	15.1
					1	2	0	22.0	14.9
					1	5	0	21.7	14.5
					3	0	1	21.8	14.1
					3	1	1	21.6	13.9
					3	2	1	21.6	13.7
					6	0	1	21.7	13.8
				16QAM	1	0	1	21.8	14.1
					1	2	1	21.6	14.0
					1	5	1	21.4	13.5
					3	0	2	20.7	13.1
					3	1	2	20.6	12.9
					3	2	2	20.5	12.5
					6	0	2	20.6	12.6
		18900	1880.0	QPSK	1	0	0	22.7	15.2
					1	2	0	22.1	14.9
					1	5	0	22.0	14.6
					3	0	1	22.1	14.3
					3	1	1	21.8	14.0
					3	2	1	21.8	14.0
					6	0	1	22.0	14.2
				16QAM	1	0	1	22.3	14.4
					1	2	1	21.7	14.1
					1	5	1	21.5	13.7
					3	0	2	21.0	13.2
					3	1	2	20.7	12.9
					3	2	2	20.7	12.9
					6	0	2	20.9	13.0
		19192	1909.2	QPSK	1	0	0	22.6	14.8
					1	2	0	22.0	14.6
					1	5	0	21.8	14.1
					3	0	1	22.1	14.1
					3	1	1	21.7	13.8
					3	2	1	21.6	13.7
					6	0	1	21.9	13.9
				16QAM	1	0	1	22.0	14.0
					1	2	1	21.6	13.8
					1	5	1	21.3	13.3
					3	0	2	21.0	12.9
					3	1	2	20.7	12.7
					3	2	2	20.5	12.4
					6	0	2	20.8	12.6

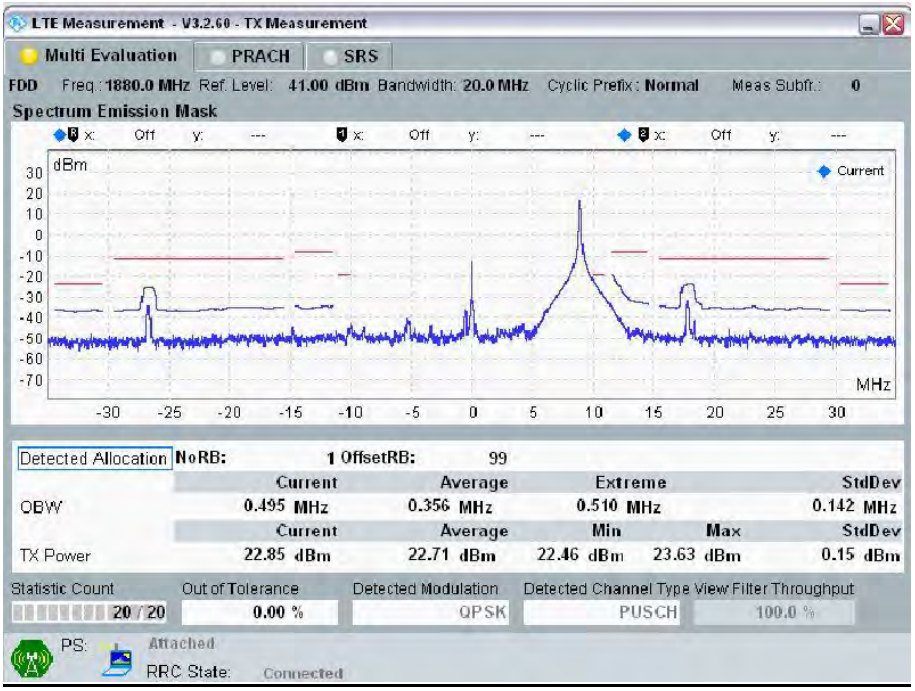
15.7.1 Spectrum Plots for the Test RB allocations



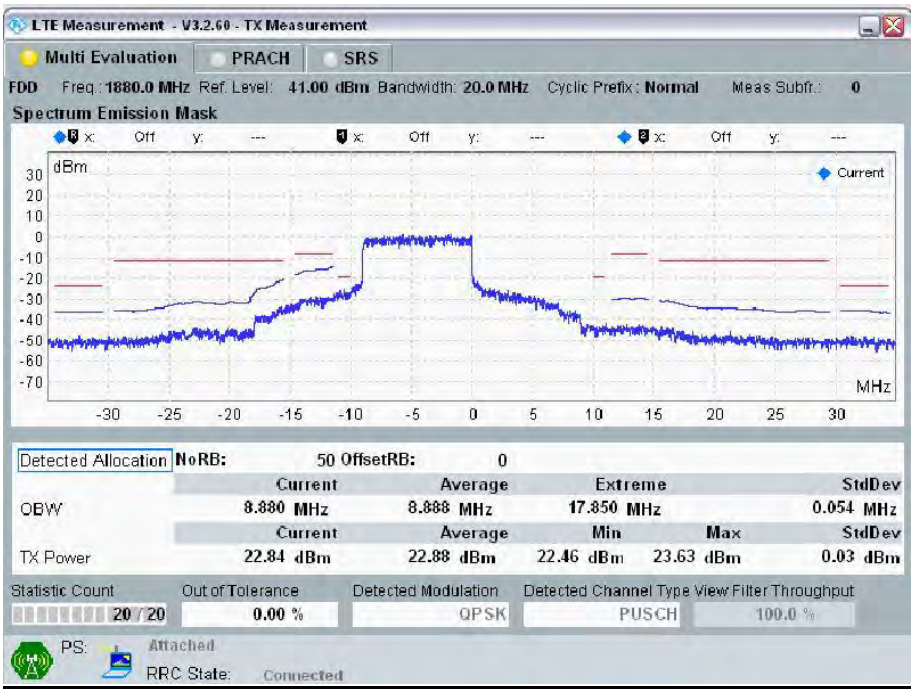
20MHz Band Width: Ch 18900, RB Size=1; RB Offset = 0



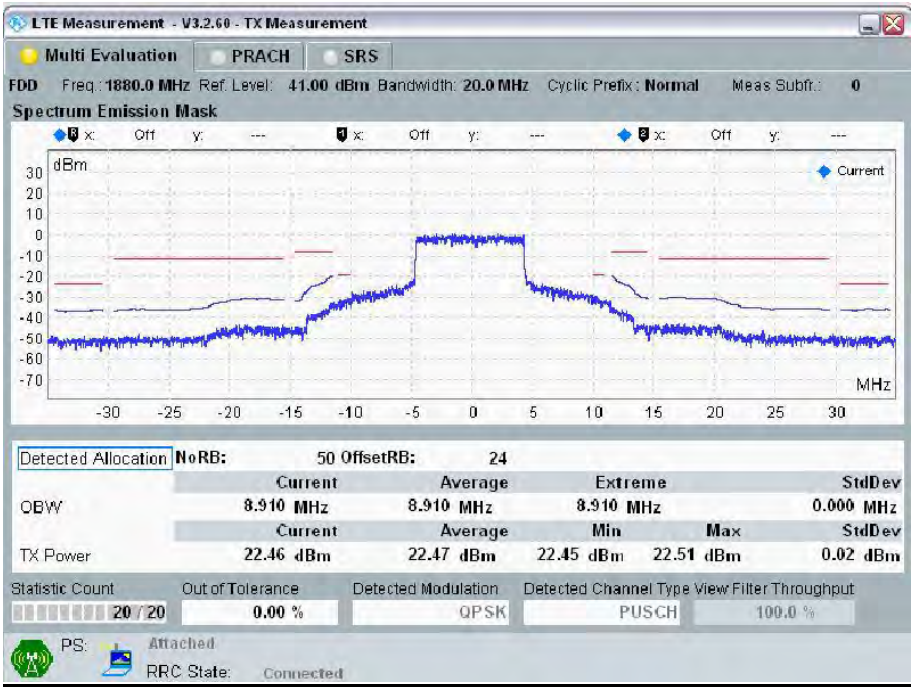
20MHz Band Width: Ch 18900, RB Size=1; RB Offset = 49



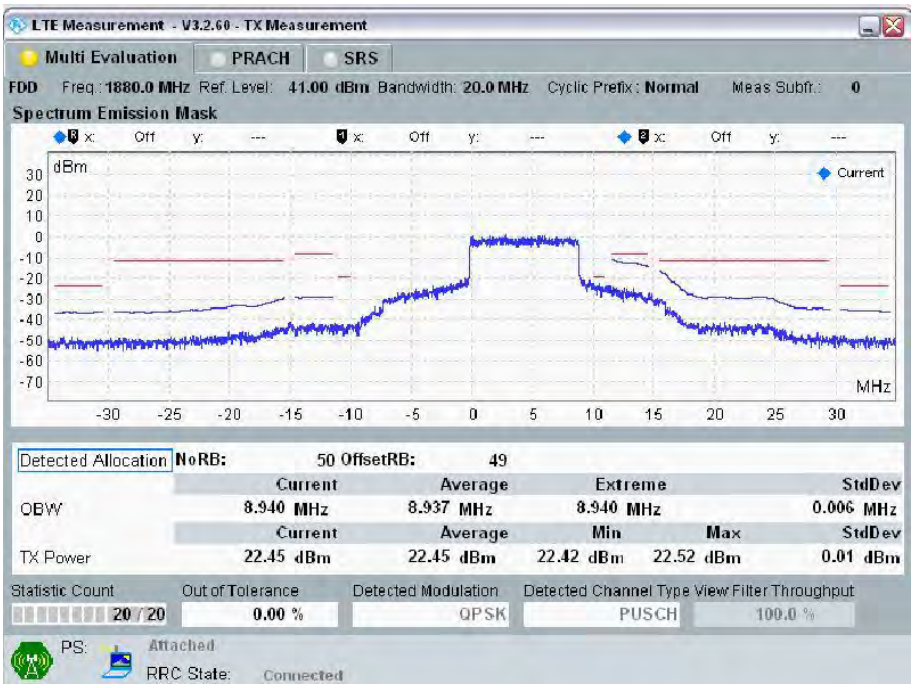
20MHz Band Width: Ch 18900, RB Size=1; RB Offset = 99



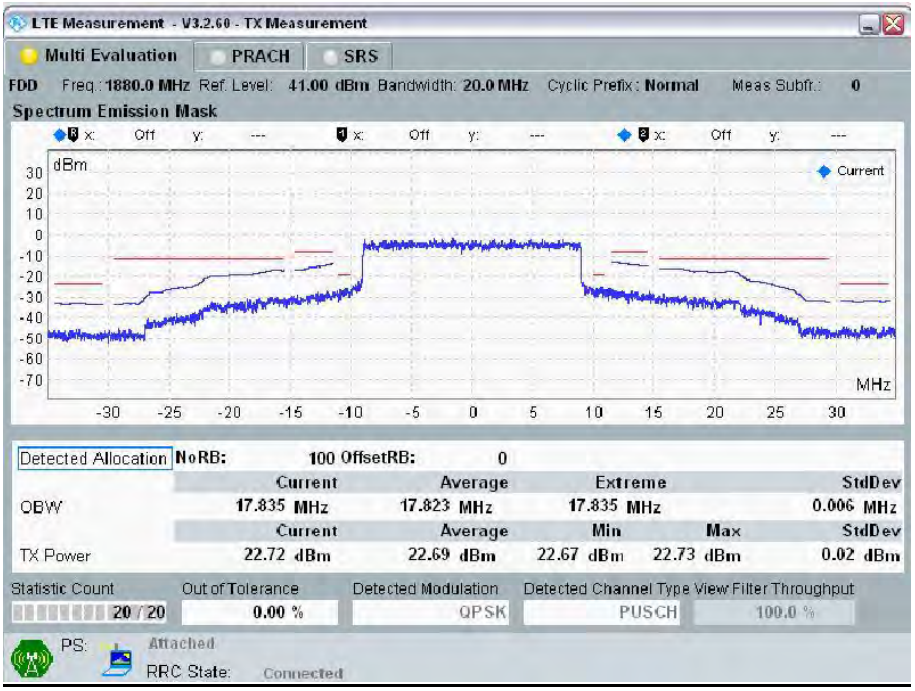
20MHz Band Width: Ch 18900, RB Size=50; RB Offset = 0



20MHz Band Width: Ch 18900, RB Size=50; RB Offset = 24



20MHz Band Width: Ch 18900, RB Size=50; RB Offset = 49



20MHz Band Width: Ch 18900, RB Size=100; RB Offset = 0

15.8 LTE Band 4

Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
4	20	20050	1720.0	QPSK	1	0	0	23.0	15.7
					1	49	0	22.7	15.5
					1	99	0	22.4	15.1
					50	0	1	22.5	14.7
					50	24	1	22.3	14.5
					50	49	1	22.3	14.3
					100	0	1	22.4	14.4
				16QAM	1	0	1	22.5	14.7
					1	49	1	22.3	14.6
					1	99	1	22.1	14.1
					50	0	2	21.4	13.7
					50	24	2	21.3	13.5
					50	49	2	21.2	13.1
					100	0	2	21.3	13.2
		20175	1732.5	QPSK	1	0	0	23.4	15.7
					1	49	0	22.8	15.5
					1	99	0	22.7	15.3
					50	0	1	22.8	14.9
					50	24	1	22.5	14.7
					50	49	1	22.5	14.7
					100	0	1	22.7	14.8
				16QAM	1	0	1	23.0	15.0
					1	49	1	22.4	14.7
					1	99	1	22.2	14.4
					50	0	2	21.7	13.8
					50	24	2	21.4	13.5
					50	49	2	21.4	13.5
					100	0	2	21.6	13.6
		20300	1745.0	QPSK	1	0	0	23.3	15.8
					1	49	0	22.7	15.2
					1	99	0	22.5	14.8
					50	0	1	22.8	14.7
					50	24	1	22.4	14.4
					50	49	1	22.3	14.3
					100	0	1	22.6	14.5
				16QAM	1	0	1	22.7	14.6
					1	49	1	22.3	14.4
					1	99	1	22.0	13.9
					50	0	2	21.7	13.5
					50	24	2	21.4	13.3
					50	49	2	21.2	13.1
					100	0	2	21.5	13.3

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
4	15	20025	1717.5	QPSK	1	0	0	22.9	15.5
					1	37	0	22.6	15.3
					1	74	0	22.3	14.9
					36	0	1	22.4	14.5
					36	18	1	22.2	14.3
					36	35	1	22.2	14.1
					75	0	1	22.3	14.2
				16QAM	1	0	1	22.4	14.5
					1	37	1	22.2	14.4
					1	74	1	22.0	13.9
					36	0	2	21.3	13.5
					36	18	2	21.2	13.3
					36	35	2	21.1	12.9
					75	0	2	21.2	13.0
		20175	1732.5	QPSK	1	0	0	23.3	15.6
					1	37	0	22.7	15.3
					1	74	0	22.6	15.1
					36	0	1	22.7	14.7
					36	18	1	22.4	14.5
					36	35	1	22.4	14.5
					75	0	1	22.6	14.6
				16QAM	1	0	1	22.9	14.8
					1	37	1	22.3	14.5
					1	74	1	22.1	14.2
					36	0	2	21.6	13.6
					36	18	2	21.3	13.3
					36	35	2	21.3	13.3
					75	0	2	21.5	13.4
		20325	1747.5	QPSK	1	0	0	23.2	15.3
					1	37	0	22.6	15.0
					1	74	0	22.4	14.6
					36	0	1	22.7	14.5
					36	18	1	22.3	14.2
					36	35	1	22.2	14.1
					75	0	1	22.5	14.3
				16QAM	1	0	1	22.6	14.4
					1	37	1	22.2	14.2
					1	74	1	21.9	13.7
					36	0	2	21.6	13.3
					36	18	2	21.3	13.1
					36	35	2	21.1	12.9
					75	0	2	21.4	13.1

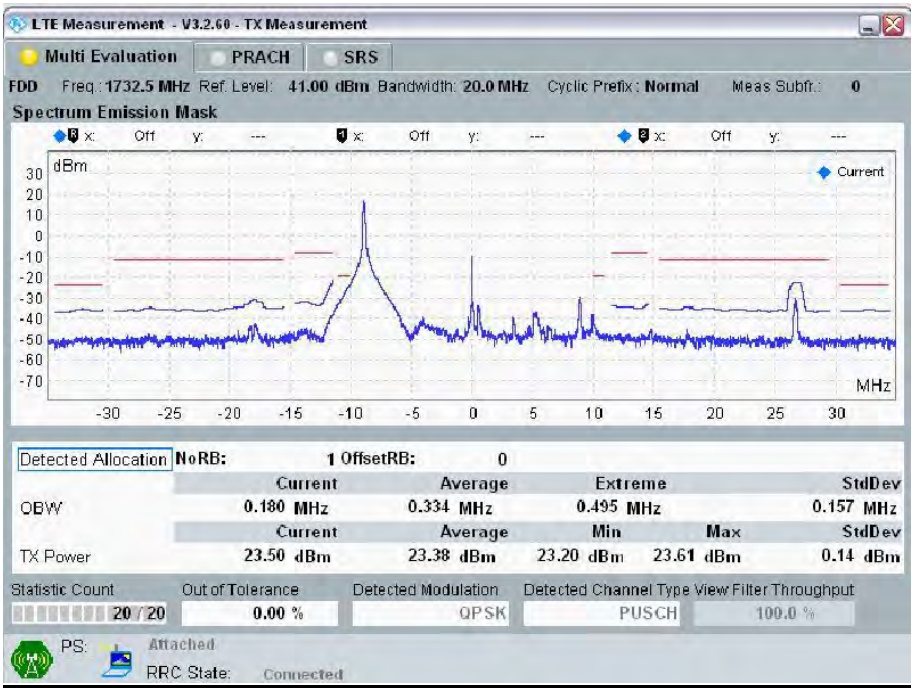
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
4	10	20000	1715.0	QPSK	1	0	0	22.8	15.5
					1	24	0	22.5	15.3
					1	49	0	22.2	14.9
					25	0	1	22.2	14.5
					25	12	1	22.0	14.3
					25	24	1	22.0	14.1
					50	0	1	22.2	14.2
				16QAM	1	0	1	22.3	14.5
					1	24	1	22.1	14.4
					1	49	1	21.8	13.9
					25	0	2	21.2	13.5
					25	12	2	21.0	13.3
					25	24	2	21.0	12.9
					50	0	2	21.1	13.0
		20175	1732.5	QPSK	1	0	0	23.2	15.6
					1	24	0	22.6	15.3
					1	49	0	22.5	15.1
					25	0	1	22.6	14.7
					25	12	1	22.3	14.5
					25	24	1	22.2	14.5
					50	0	1	22.4	14.6
				16QAM	1	0	1	22.8	14.8
					1	24	1	22.2	14.5
					1	49	1	22.0	14.2
					25	0	2	21.5	13.6
					25	12	2	21.2	13.3
					25	24	2	21.1	13.3
					50	0	2	21.3	13.4
		20350	1750.0	QPSK	1	0	0	23.1	15.3
					1	24	0	22.5	15.0
					1	49	0	22.3	14.6
					25	0	1	22.5	14.5
					25	12	1	22.2	14.2
					25	24	1	22.1	14.1
					50	0	1	22.3	14.3
				16QAM	1	0	1	22.5	14.4
					1	24	1	22.1	14.2
					1	49	1	21.8	13.7
					25	0	2	21.5	13.3
					25	12	2	21.1	13.1
					25	24	2	21.0	12.9
					50	0	2	21.3	13.1

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
4	5	19975	1712.5	QPSK	1	0	0	22.7	15.4
					1	12	0	22.4	15.2
					1	24	0	22.1	14.8
					12	0	1	22.1	14.4
					12	6	1	21.9	14.2
					12	11	1	21.9	14.0
					25	0	1	22.1	14.1
				16QAM	1	0	1	22.2	14.4
					1	12	1	22.0	14.3
					1	24	1	21.7	13.8
					12	0	2	21.1	13.4
					12	6	2	20.9	13.2
					12	11	2	20.9	12.8
					25	0	2	21.0	12.9
		20175	1732.5	QPSK	1	0	0	23.1	15.5
					1	12	0	22.5	15.2
					1	24	0	22.4	15.0
					12	0	1	22.5	14.6
					12	6	1	22.2	14.4
					12	11	1	22.1	14.4
					25	0	1	22.3	14.5
				16QAM	1	0	1	22.7	14.7
					1	12	1	22.1	14.4
					1	24	1	21.9	14.1
					12	0	2	21.4	13.5
					12	6	2	21.1	13.2
					12	11	2	21.0	13.2
					25	0	2	21.2	13.3
		20375	1752.5	QPSK	1	0	0	23.0	15.2
					1	12	0	22.4	14.9
					1	24	0	22.2	14.5
					12	0	1	22.4	14.4
					12	6	1	22.1	14.1
					12	11	1	22.0	14.0
					25	0	1	22.2	14.2
				16QAM	1	0	1	22.4	14.3
					1	12	1	22.0	14.1
					1	24	1	21.7	13.6
					12	0	2	21.4	13.2
					12	6	2	21.0	13.0
					12	11	2	20.9	12.8
					25	0	2	21.2	13.0

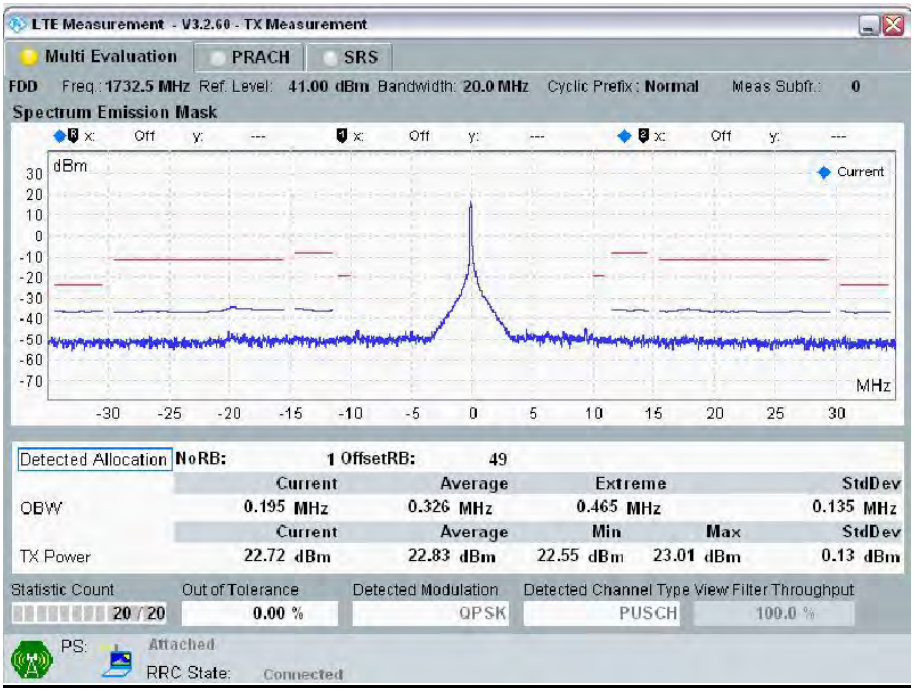
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
4	3	19965	1711.5	QPSK	1	0	0	22.5	15.3
					1	7	0	22.2	15.1
					1	14	0	21.9	14.7
					8	0	1	22.0	14.3
					8	4	1	21.8	14.1
					8	7	1	21.8	13.9
					15	0	1	21.9	14.0
				16QAM	1	0	1	22.0	14.3
					1	7	1	21.8	14.2
					1	14	1	21.6	13.7
					8	0	2	20.9	13.3
					8	4	2	20.8	13.1
					8	7	2	20.7	12.7
					15	0	2	20.8	12.8
		20175	1732.5	QPSK	1	0	0	22.9	15.4
					1	7	0	22.3	15.1
					1	14	0	22.2	14.8
					8	0	1	22.3	14.5
					8	4	1	22.0	14.2
					8	7	1	22.0	14.2
					15	0	1	22.2	14.4
				16QAM	1	0	1	22.5	14.6
					1	7	1	21.9	14.3
					1	14	1	21.7	13.9
					8	0	2	21.2	13.4
					8	4	2	20.9	13.1
					8	7	2	20.9	13.1
					15	0	2	21.1	13.2
		20384	1753.4	QPSK	1	0	0	22.8	15.0
					1	7	0	22.2	14.8
					1	14	0	22.0	14.3
					8	0	1	22.3	14.3
					8	4	1	21.9	14.0
					8	7	1	21.8	13.9
					15	0	1	22.1	14.1
				16QAM	1	0	1	22.2	14.2
					1	7	1	21.8	14.0
					1	14	1	21.5	13.5
					8	0	2	21.2	13.1
					8	4	2	20.9	12.9
					8	7	2	20.7	12.6
					15	0	2	21.0	12.8

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
4	1.4	19957	1710.7	QPSK	1	0	0	22.3	15.1
					1	2	0	22.0	14.9
					1	5	0	21.7	14.5
					3	0	1	21.8	14.1
					3	1	1	21.6	13.9
					3	2	1	21.6	13.7
					6	0	1	21.7	13.8
				16QAM	1	0	1	21.8	14.1
					1	2	1	21.6	14.0
					1	5	1	21.4	13.5
					3	0	2	20.7	13.1
					3	1	2	20.6	12.9
					3	2	2	20.5	12.5
					6	0	2	20.6	12.6
		20175	1732.5	QPSK	1	0	0	22.7	15.2
					1	2	0	22.1	14.9
					1	5	0	22.0	14.6
					3	0	1	22.1	14.3
					3	1	1	21.8	14.0
					3	2	1	21.8	14.0
					6	0	1	22.0	14.2
				16QAM	1	0	1	22.3	14.4
					1	2	1	21.7	14.1
					1	5	1	21.5	13.7
					3	0	2	21.0	13.2
					3	1	2	20.7	12.9
					3	2	2	20.7	12.9
					6	0	2	20.9	13.0
		20392	1754.2	QPSK	1	0	0	22.6	14.8
					1	2	0	22.0	14.6
					1	5	0	21.8	14.1
					3	0	1	22.1	14.1
					3	1	1	21.7	13.8
					3	2	1	21.6	13.7
					6	0	1	21.9	13.9
				16QAM	1	0	1	22.0	14.0
					1	2	1	21.6	13.8
					1	5	1	21.3	13.3
					3	0	2	21.0	12.9
					3	1	2	20.7	12.7
					3	2	2	20.5	12.4
					6	0	2	20.8	12.6

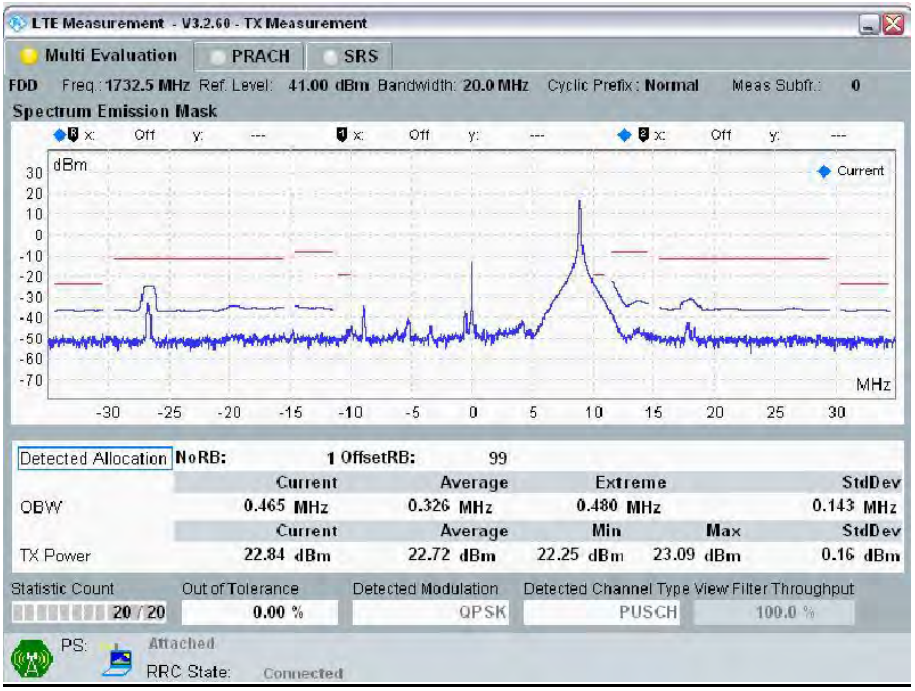
15.8.1 Spectrum Plots for the Test RB allocations



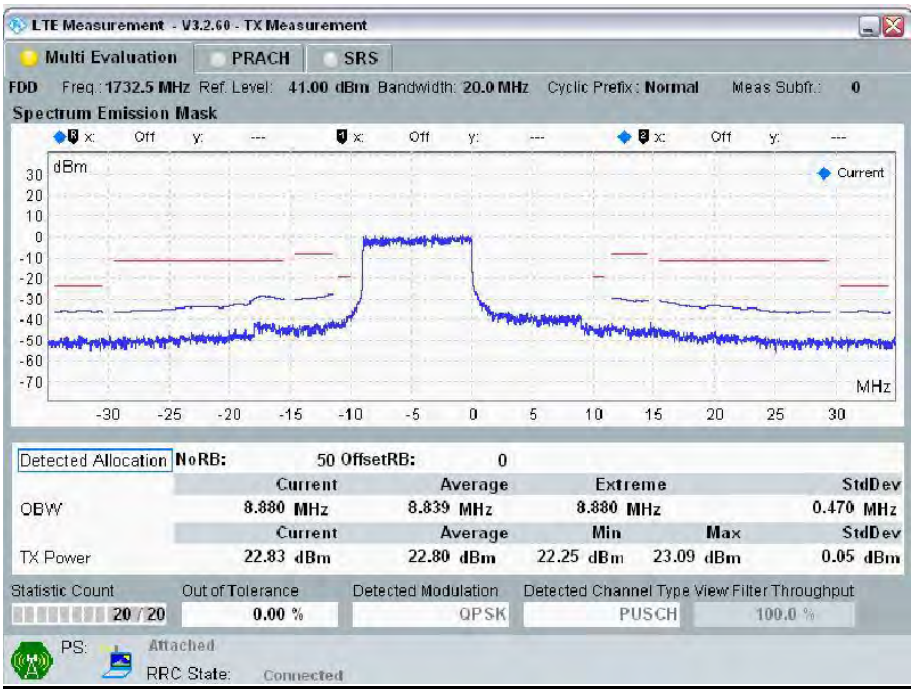
20MHz Band Width: Ch 20175, RB Size=1; RB Offset = 0



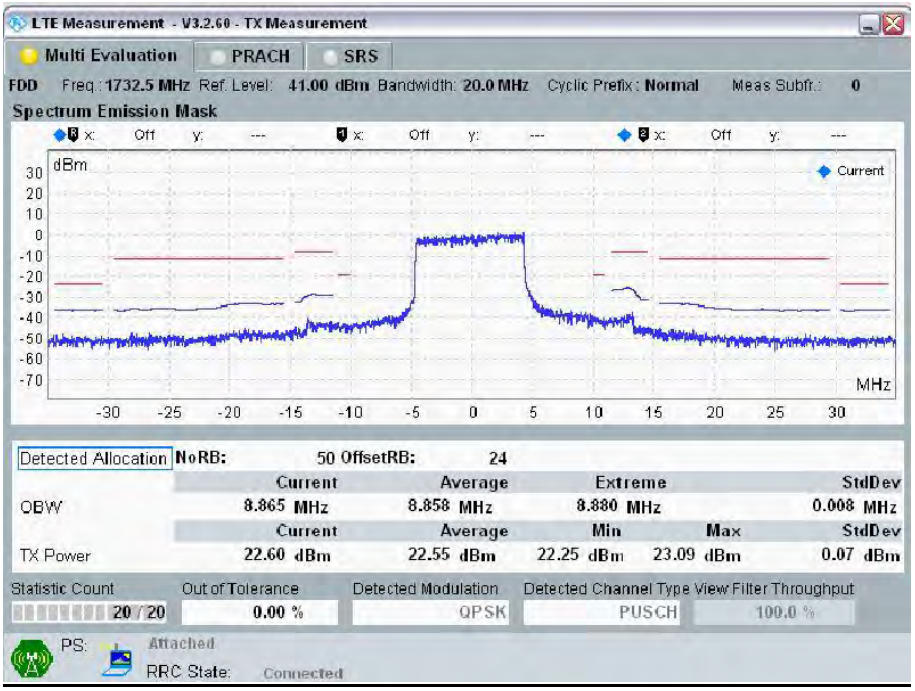
20MHz Band Width: Ch 20175, RB Size=1; RB Offset = 49



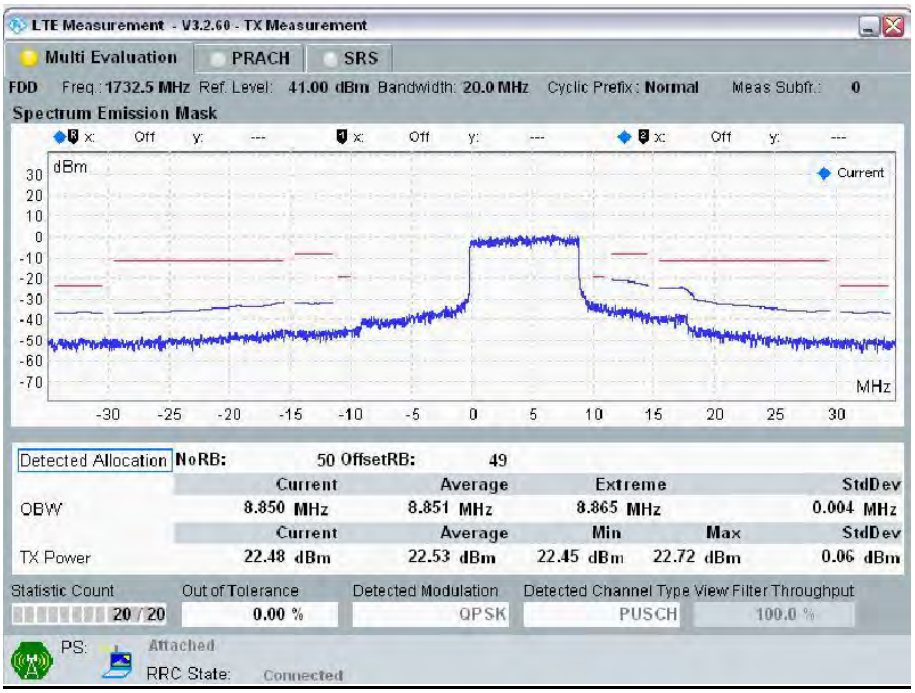
20MHz Band Width: Ch 20175, RB Size=1; RB Offset = 99



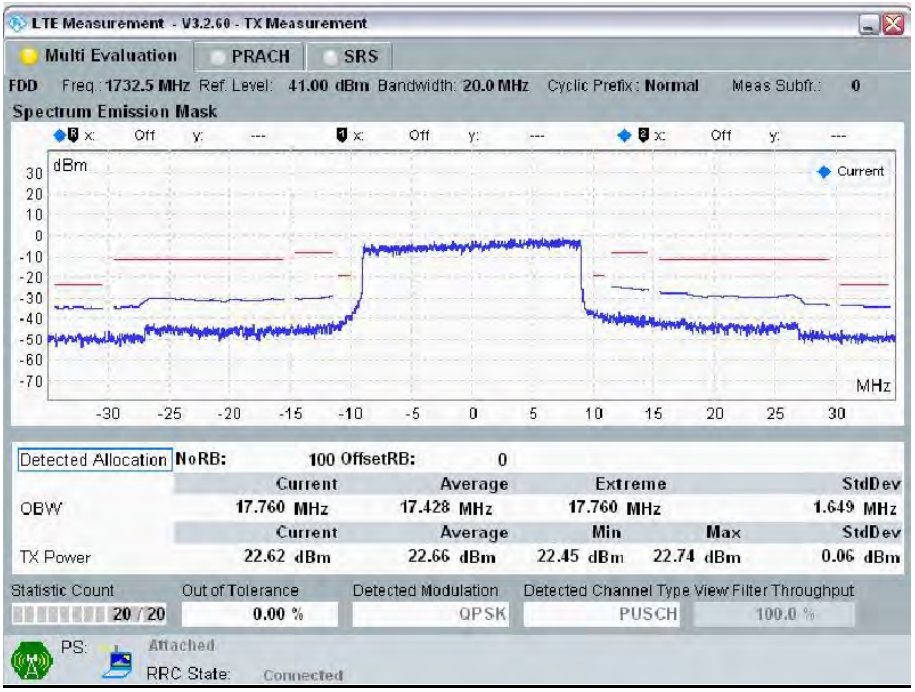
20MHz Band Width: Ch 20175, RB Size=50; RB Offset = 0



20MHz Band Width: Ch 20175, RB Size=50; RB Offset = 24



20MHz Band Width: Ch 20175, RB Size=50; RB Offset = 49



20MHz Band Width: Ch 20175, RB Size=100; RB Offset = 0

15.9 LTE Band 5

Output power table

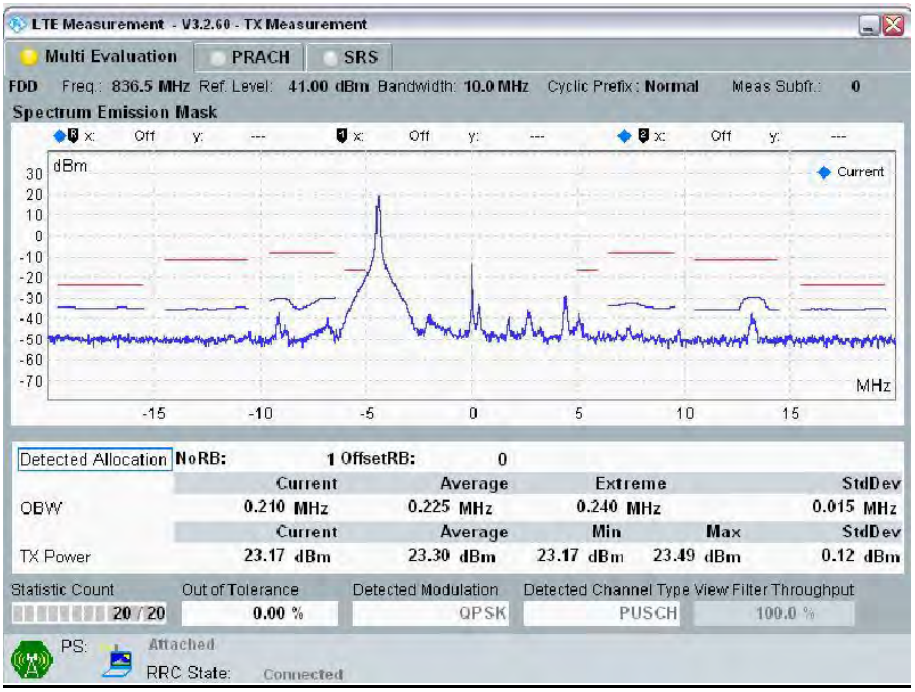
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
5	10	20450	829.0	QPSK	1	0	0	23.2	19.6
					1	24	0	23.3	19.7
					1	49	0	23.0	19.4
					25	0	1	22.7	18.8
					25	12	1	22.6	18.7
					25	24	1	22.6	18.7
					50	0	1	22.7	18.7
				16QAM	1	0	1	22.9	18.8
					1	24	1	22.8	18.9
					1	49	1	22.6	18.6
					25	0	2	21.8	17.8
					25	12	2	21.8	17.8
					25	24	2	21.7	17.7
					50	0	2	21.8	17.8
		20525	836.5	QPSK	1	0	0	23.3	19.6
					1	24	0	23.2	19.6
					1	49	0	23.1	19.4
					25	0	1	22.6	18.7
					25	12	1	22.5	18.7
					25	24	1	22.5	18.6
					50	0	1	22.5	18.7
				16QAM	1	0	1	22.8	18.9
					1	24	1	22.7	18.8
					1	49	1	22.6	18.6
					25	0	2	21.8	17.8
					25	12	2	21.6	17.7
					25	24	2	21.7	17.7
					50	0	2	21.6	17.7
		20600	844.0	QPSK	1	0	0	23.4	19.8
					1	24	0	23.2	19.6
					1	49	0	23.2	19.4
					25	0	1	22.7	18.8
					25	12	1	22.6	18.8
					25	24	1	22.7	18.8
					50	0	1	22.6	18.5
				16QAM	1	0	1	22.9	18.6
					1	24	1	22.7	18.7
					1	49	1	22.7	18.4
					25	0	2	21.9	17.6
					25	12	2	21.8	17.5
					25	24	2	21.8	17.5
					50	0	2	21.8	17.5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
5	5	20425	826.5	QPSK	1	0	0	23.1	19.5
					1	12	0	23.2	19.6
					1	24	0	22.9	19.3
					12	0	1	22.6	18.7
					12	6	1	22.5	18.6
					12	11	1	22.5	18.6
					25	0	1	22.6	18.6
				16QAM	1	0	1	22.8	18.7
					1	12	1	22.7	18.8
					1	24	1	22.5	18.5
					12	0	2	21.7	17.7
					12	6	2	21.7	17.7
					12	11	2	21.6	17.6
					25	0	2	21.7	17.7
		20525	836.5	QPSK	1	0	0	23.2	19.5
					1	12	0	23.1	19.5
					1	24	0	23.0	19.3
					12	0	1	22.5	18.6
					12	6	1	22.4	18.6
					12	11	1	22.4	18.5
					25	0	1	22.4	18.6
				16QAM	1	0	1	22.7	18.8
					1	12	1	22.6	18.7
					1	24	1	22.5	18.5
					12	0	2	21.7	17.7
					12	6	2	21.5	17.6
					12	11	2	21.6	17.6
					25	0	2	21.5	17.6
		20625	846.5	QPSK	1	0	0	23.3	19.2
					1	12	0	23.1	19.3
					1	24	0	23.1	19.1
					12	0	1	22.6	18.4
					12	6	1	22.5	18.4
					12	11	1	22.6	18.4
					25	0	1	22.5	18.4
				16QAM	1	0	1	22.8	18.5
					1	12	1	22.6	18.6
					1	24	1	22.6	18.3
					12	0	2	21.8	17.5
					12	6	2	21.7	17.4
					12	11	2	21.7	17.4
					25	0	2	21.7	17.4

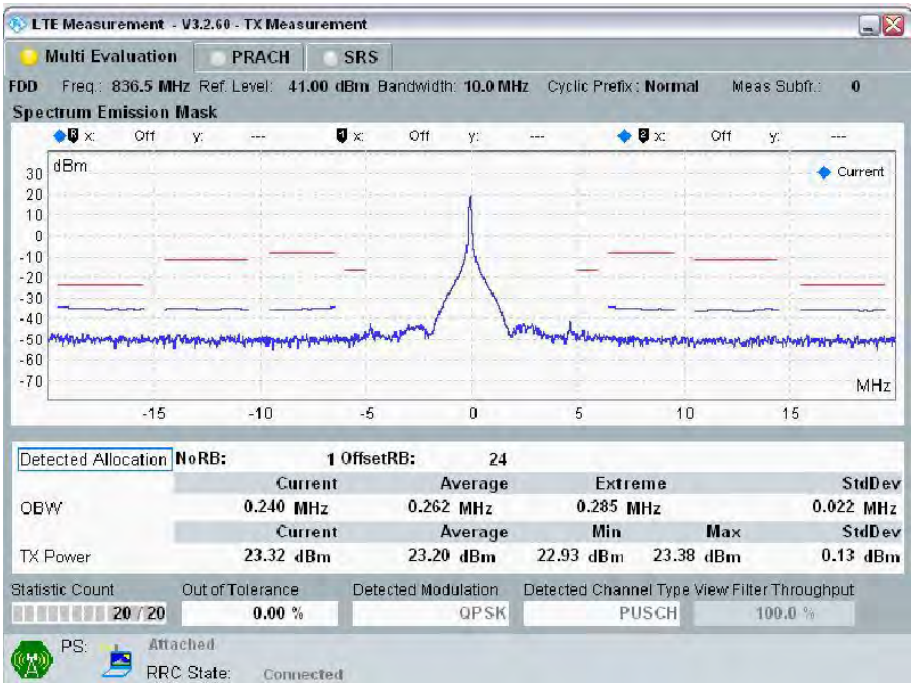
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
5	3	20415	825.5	QPSK	1	0	0	23.0	19.4
					1	7	0	23.1	19.5
					1	14	0	22.8	19.2
					8	0	1	22.5	18.6
					8	4	1	22.4	18.5
					8	7	1	22.4	18.5
					15	0	1	22.5	18.5
				16QAM	1	0	1	22.7	18.6
					1	7	1	22.6	18.7
					1	14	1	22.4	18.4
					8	0	2	21.6	17.6
					8	4	2	21.6	17.6
					8	7	2	21.5	17.5
					15	0	2	21.6	17.6
		20525	836.5	QPSK	1	0	0	23.1	19.4
					1	7	0	23.0	19.4
					1	14	0	22.9	19.2
					8	0	1	22.4	18.5
					8	4	1	22.3	18.5
					8	7	1	22.3	18.4
					15	0	1	22.3	18.5
				16QAM	1	0	1	22.6	18.7
					1	7	1	22.5	18.6
					1	14	1	22.4	18.4
					8	0	2	21.6	17.6
					8	4	2	21.4	17.5
					8	7	2	21.5	17.5
					15	0	2	21.4	17.5
		20634	847.4	QPSK	1	0	0	23.2	19.1
					1	7	0	23.0	19.2
					1	14	0	23.0	19.0
					8	0	1	22.5	18.3
					8	4	1	22.4	18.3
					8	7	1	22.5	18.3
					15	0	1	22.4	18.3
				16QAM	1	0	1	22.7	18.4
					1	7	1	22.5	18.5
					1	14	1	22.5	18.2
					8	0	2	21.7	17.4
					8	4	2	21.6	17.3
					8	7	2	21.6	17.3
					15	0	2	21.6	17.3

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
5	1.4	20407	824.7	QPSK	1	0	0	22.9	19.3
					1	2	0	23.0	19.4
					1	5	0	22.7	19.1
					3	0	1	22.4	18.5
					3	1	1	22.3	18.4
					3	2	1	22.3	18.4
					6	0	1	22.4	18.4
				16QAM	1	0	1	22.6	18.5
					1	2	1	22.5	18.6
					1	5	1	22.3	18.3
					3	0	2	21.5	17.5
					3	1	2	21.5	17.5
					3	2	2	21.4	17.4
					6	0	2	21.5	17.5
		20525	836.5	QPSK	1	0	0	23.0	19.3
					1	2	0	22.9	19.3
					1	5	0	22.8	19.1
					3	0	1	22.3	18.4
					3	1	1	22.2	18.4
					3	2	1	22.2	18.3
					6	0	1	22.2	18.4
				16QAM	1	0	1	22.5	18.6
					1	2	1	22.4	18.5
					1	5	1	22.3	18.3
					3	0	2	21.5	17.5
					3	1	2	21.3	17.4
					3	2	2	21.4	17.4
					6	0	2	21.3	17.4
		20642	848.2	QPSK	1	0	0	23.1	19.0
					1	2	0	22.9	19.1
					1	5	0	22.9	18.9
					3	0	1	22.4	18.2
					3	1	1	22.3	18.2
					3	2	1	22.4	18.2
					6	0	1	22.3	18.2
				16QAM	1	0	1	22.6	18.3
					1	2	1	22.4	18.4
					1	5	1	22.4	18.1
					3	0	2	21.6	17.3
					3	1	2	21.5	17.2
					3	2	2	21.5	17.2
					6	0	2	21.5	17.2

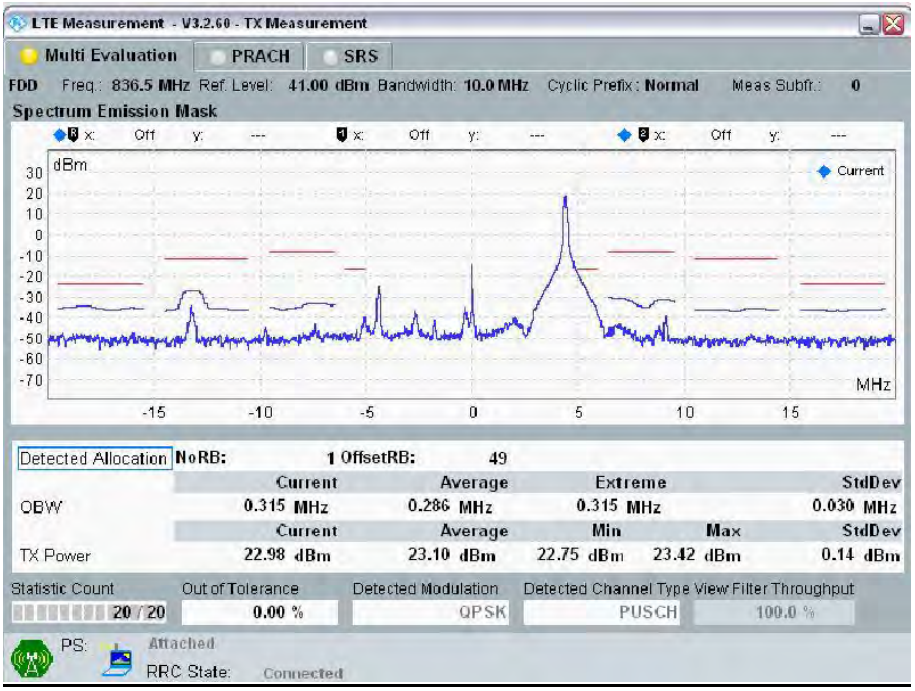
15.9.1 Spectrum Plots for the Test RB allocations



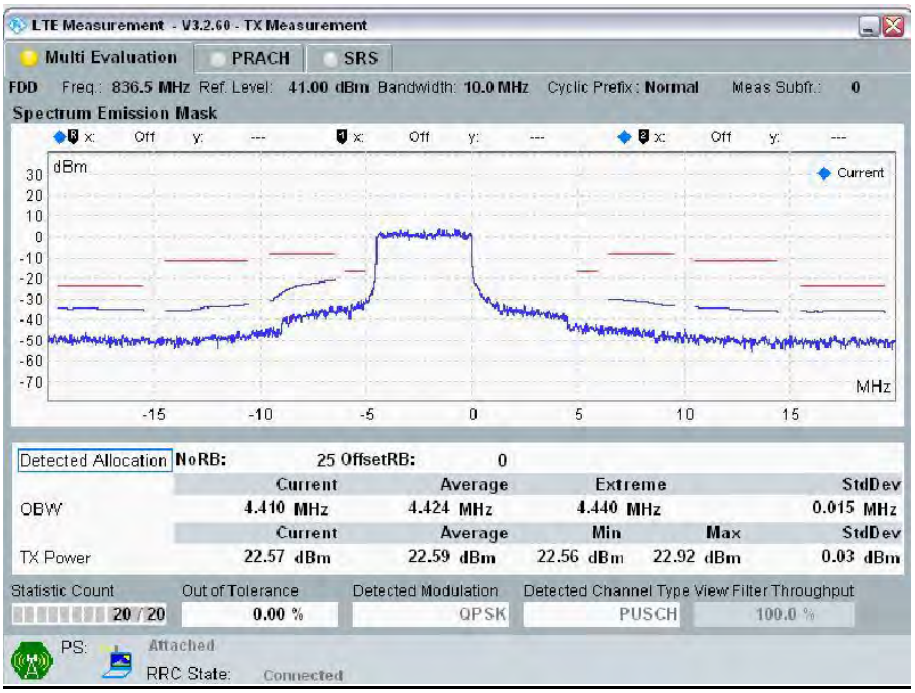
10MHz Band Width: Ch 20525, RB Size=1; RB Offset = 0



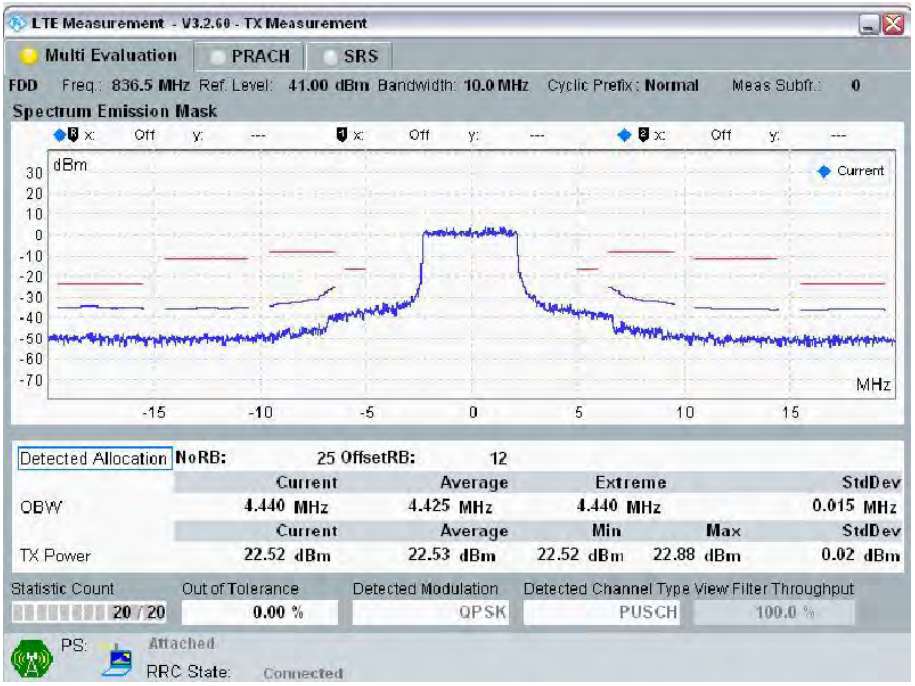
10MHz Band Width: Ch 20525, RB Size=1; RB Offset = 24



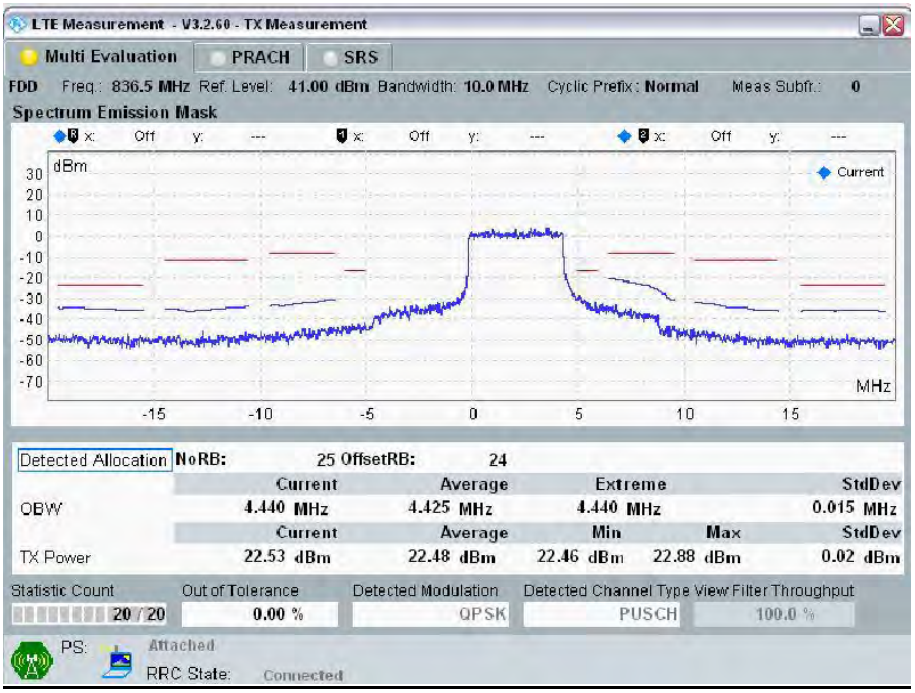
10MHz Band Width: Ch 20525, RB Size=1; RB Offset = 49



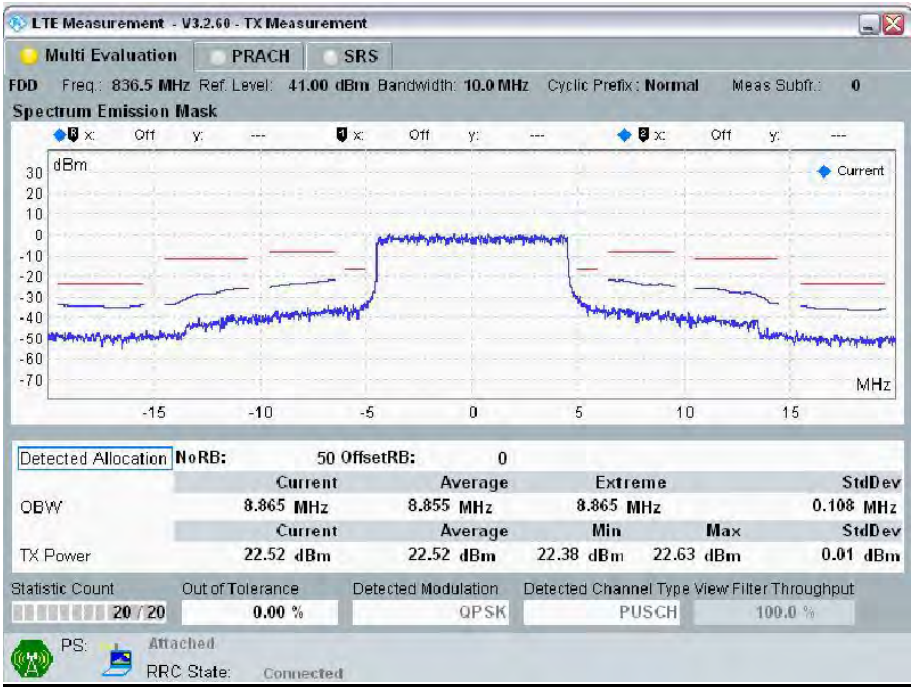
10MHz Band Width: Ch 20525, RB Size=25; RB Offset = 0



10MHz Band Width: Ch 20525, RB Size=25; RB Offset = 12



10MHz Band Width: Ch 20525, RB Size=25; RB Offset = 24



10MHz Band Width: Ch 20525, RB Size=50; RB Offset = 0

15.10LTE Band 7

Output power table

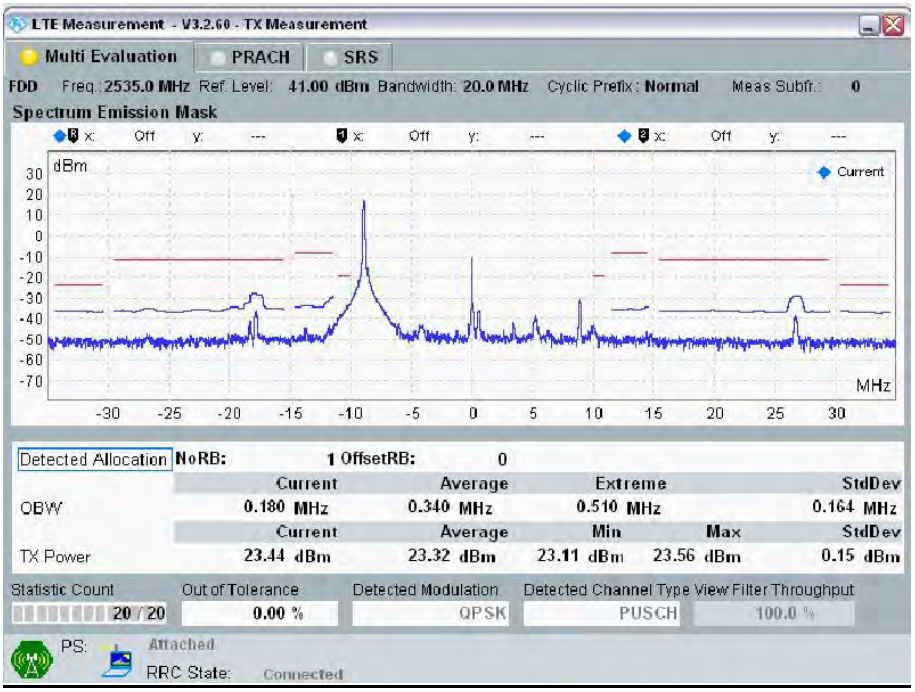
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	20	20850	2510.0	QPSK	1	0	0	23.5	18.7
					1	49	0	22.8	18.5
					1	99	0	22.6	18.1
					50	0	1	22.5	17.7
					50	24	1	22.0	17.7
					50	49	1	22.0	17.4
					100	0	1	22.1	17.5
				16QAM	1	0	1	22.5	17.7
					1	49	1	22.0	17.4
					1	99	1	21.7	17.2
					50	0	2	21.5	16.7
					50	24	2	21.0	16.4
					50	49	2	20.9	16.2
					100	0	2	21.6	16.3
		21100	2535.0	QPSK	1	0	0	23.3	18.6
					1	49	0	22.9	18.3
					1	99	0	22.8	18.1
					50	0	1	22.4	17.8
					50	24	1	22.1	17.4
					50	49	1	22.0	17.4
					100	0	1	22.3	17.5
				16QAM	1	0	1	22.5	17.9
					1	49	1	22.1	17.4
					1	99	1	21.9	17.3
					50	0	2	21.4	16.8
					50	24	2	21.1	16.3
					50	49	2	21.0	16.2
					100	0	2	21.1	16.3
		21350	2560.0	QPSK	1	0	0	23.3	18.5
					1	49	0	22.7	18.1
					1	99	0	22.7	17.9
					50	0	1	22.3	17.6
					50	24	1	21.8	17.1
					50	49	1	21.9	17.2
					100	0	1	22.1	17.3
				16QAM	1	0	1	22.4	17.6
					1	49	1	21.8	17.2
					1	99	1	21.8	17.0
					50	0	2	21.3	16.6
					50	24	2	20.7	16.1
					50	49	2	20.8	16.0
					100	0	2	20.9	16.1

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	15	20825	2507.5	QPSK	1	0	0	23.4	18.5
					1	37	0	22.8	18.3
					1	74	0	22.5	18.0
					36	0	1	22.4	17.6
					36	18	1	21.9	17.6
					36	35	1	21.9	17.3
					75	0	1	22.1	17.4
				16QAM	1	0	1	22.4	17.6
					1	37	1	21.9	17.4
					1	74	1	21.6	17.1
					36	0	2	21.4	16.6
					36	18	2	20.9	16.3
					36	35	2	20.9	16.1
					75	0	2	21.5	16.2
		21100	2535.0	QPSK	1	0	0	23.2	18.7
					1	37	0	22.8	18.2
					1	74	0	22.7	18.0
					36	0	1	22.3	17.7
					36	18	1	22.0	17.3
					36	35	1	22.0	17.3
					75	0	1	22.2	17.5
				16QAM	1	0	1	22.4	17.8
					1	37	1	22.0	17.4
					1	74	1	21.8	17.2
					36	0	2	21.3	16.7
					36	18	2	21.0	16.2
					36	35	2	20.9	16.1
					75	0	2	21.0	16.2
		21375	2562.5	QPSK	1	0	0	23.2	18.4
					1	37	0	22.6	18.0
					1	74	0	22.6	17.9
					36	0	1	22.2	17.5
					36	18	1	21.7	17.0
					36	35	1	21.8	17.1
					75	0	1	22.0	17.3
				16QAM	1	0	1	22.3	17.5
					1	37	1	21.7	17.1
					1	74	1	21.7	16.9
					36	0	2	21.2	16.5
					36	18	2	20.7	16.0
					36	35	2	20.7	15.9
					75	0	2	20.8	16.0

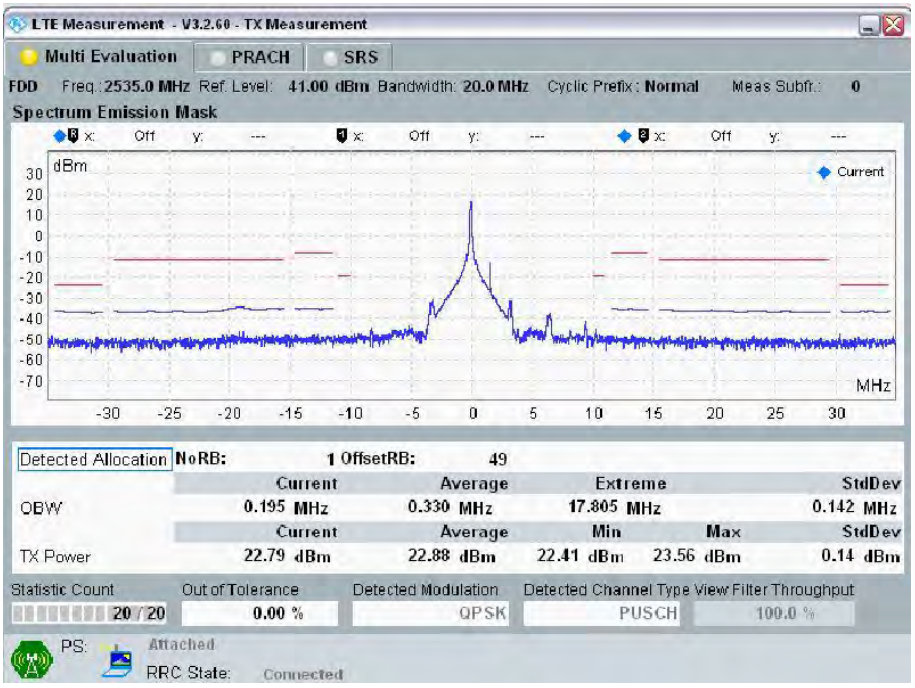
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	10	20800	2505.0	QPSK	1	0	0	23.4	18.5
					1	24	0	22.7	18.3
					1	49	0	22.5	18.0
					25	0	1	22.4	17.6
					25	12	1	21.9	17.6
					25	24	1	21.9	17.3
					50	0	1	22.0	17.4
				16QAM	1	0	1	22.4	17.6
					1	24	1	21.9	17.3
					1	49	1	21.6	17.1
					25	0	2	21.4	16.6
					25	12	2	20.9	16.3
					25	24	2	20.8	16.1
					50	0	2	21.5	16.2
		21100	2535.0	QPSK	1	0	0	23.2	18.7
					1	24	0	22.8	18.2
					1	49	0	22.7	18.0
					25	0	1	22.3	17.7
					25	12	1	22.0	17.3
					25	24	1	21.9	17.3
					50	0	1	22.2	17.4
				16QAM	1	0	1	22.4	17.8
					1	24	1	22.0	17.3
					1	49	1	21.8	17.2
					25	0	2	21.3	16.7
					25	12	2	21.0	16.2
					25	24	2	20.9	16.1
					50	0	2	21.0	16.2
		21400	2565.0	QPSK	1	0	0	23.2	18.4
					1	24	0	22.6	18.0
					1	49	0	22.6	17.8
					25	0	1	22.2	17.5
					25	12	1	21.7	17.0
					25	24	1	21.8	17.1
					50	0	1	22.0	17.2
				16QAM	1	0	1	22.3	17.5
					1	24	1	21.7	17.1
					1	49	1	21.7	16.9
					25	0	2	21.2	16.5
					25	12	2	20.6	16.0
					25	24	2	20.7	15.9
					50	0	2	20.8	16.0

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
7	5	20775	2502.5	QPSK	1	0	0	23.3	18.4
					1	12	0	22.6	18.2
					1	24	0	22.4	17.9
					12	0	1	22.3	17.5
					12	6	1	21.8	17.5
					12	11	1	21.8	17.2
					25	0	1	21.9	17.3
				16QAM	1	0	1	22.3	17.5
					1	12	1	21.8	17.2
					1	24	1	21.5	17.0
					12	0	2	21.3	16.5
					12	6	2	20.8	16.2
					12	11	2	20.7	16.0
					25	0	2	21.4	16.1
		21100	2535.0	QPSK	1	0	0	23.1	18.6
					1	12	0	22.7	18.1
					1	24	0	22.6	17.9
					12	0	1	22.2	17.6
					12	6	1	21.9	17.2
					12	11	1	21.8	17.2
					25	0	1	22.1	17.3
				16QAM	1	0	1	22.3	17.7
					1	12	1	21.9	17.2
					1	24	1	21.7	17.1
					12	0	2	21.2	16.6
					12	6	2	20.9	16.1
					12	11	2	20.8	16.0
					25	0	2	20.9	16.1
		21425	2567.5	QPSK	1	0	0	23.1	18.3
					1	12	0	22.5	17.9
					1	24	0	22.5	17.7
					12	0	1	22.1	17.4
					12	6	1	21.6	16.9
					12	11	1	21.7	17.0
					25	0	1	21.9	17.1
				16QAM	1	0	1	22.2	17.4
					1	12	1	21.6	17.0
					1	24	1	21.6	16.8
					12	0	2	21.1	16.4
					12	6	2	20.5	15.9
					12	11	2	20.6	15.8
					25	0	2	20.7	15.9

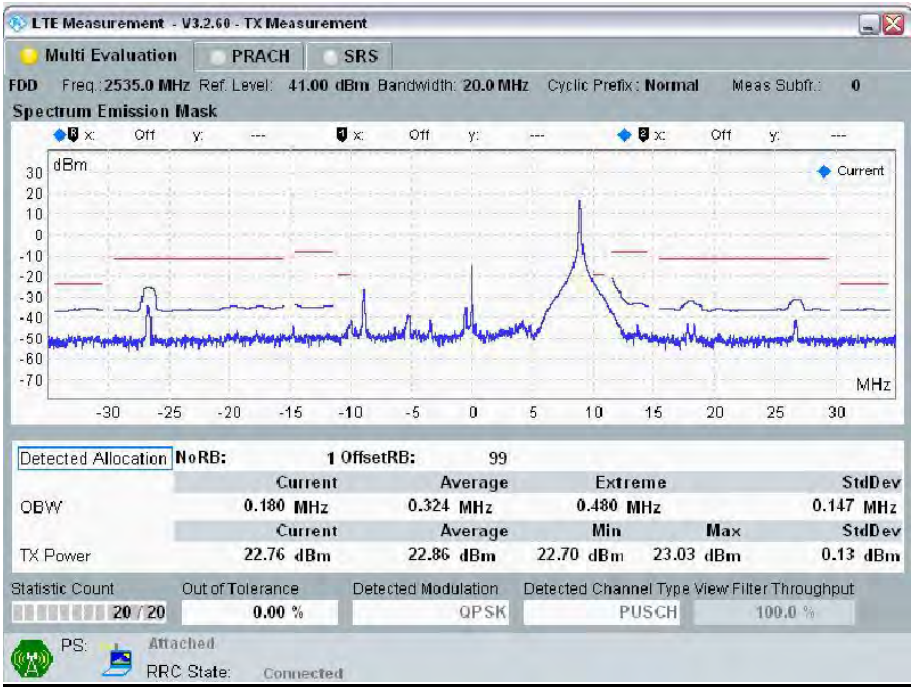
15.10.1 Spectrum Plots for the Test RB allocations



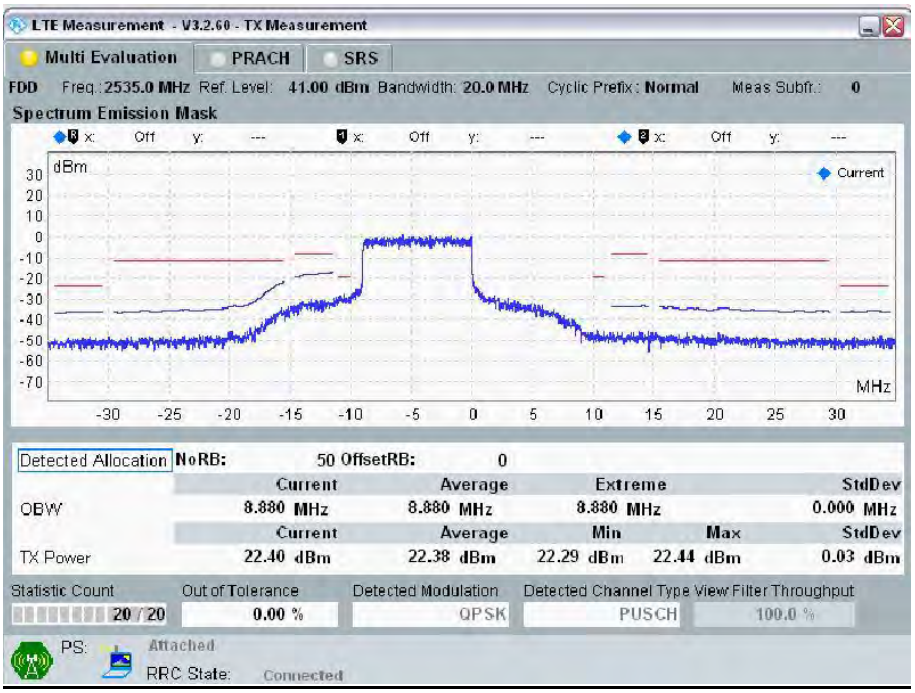
20MHz Band Width: Ch 21100, RB Size=1; RB Offset = 0



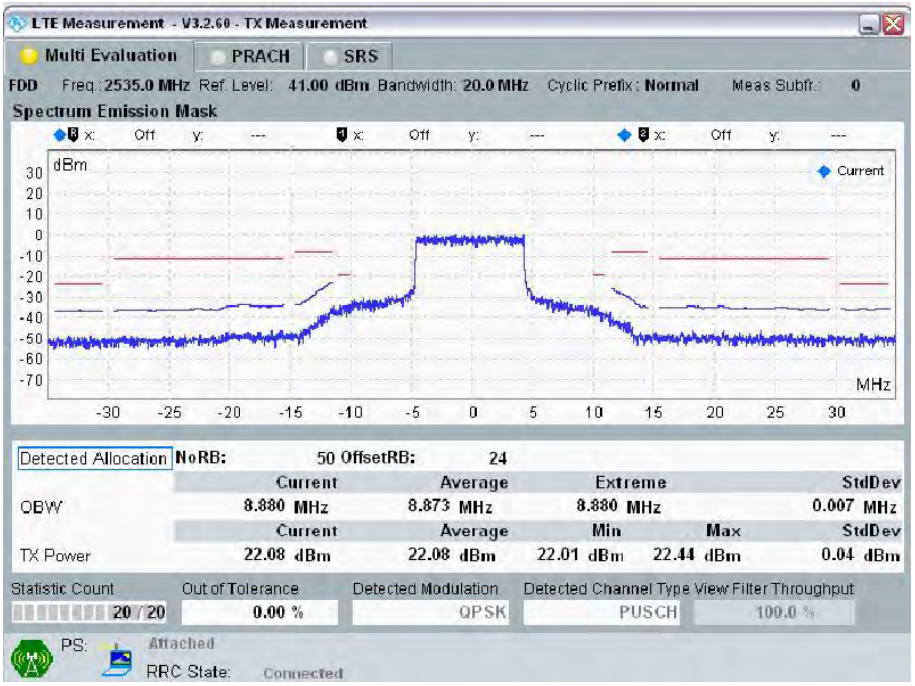
20MHz Band Width: Ch 21100, RB Size=1; RB Offset = 49



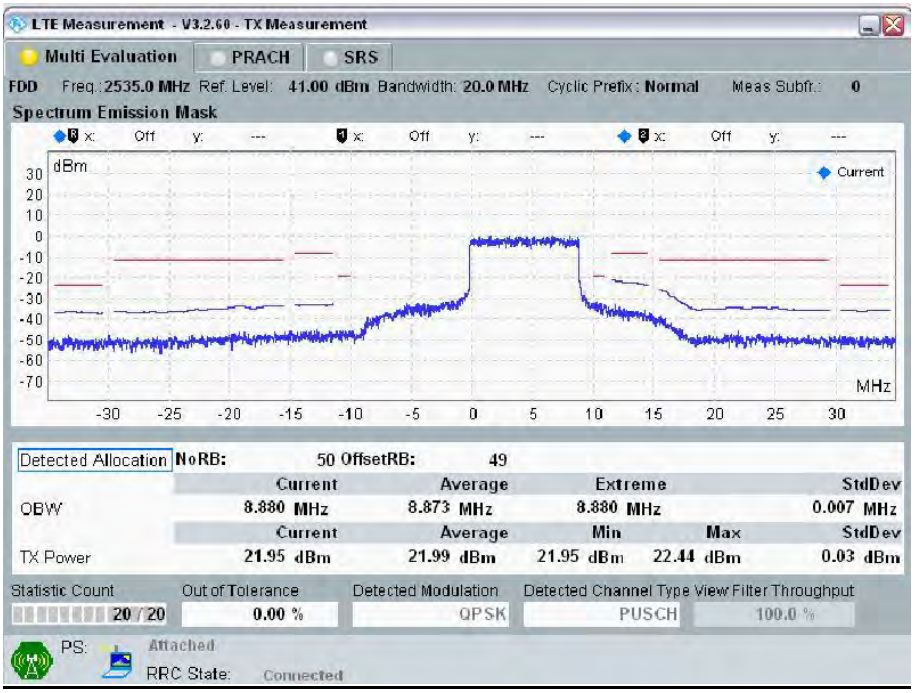
20MHz Band Width: Ch 21100, RB Size=1; RB Offset = 99



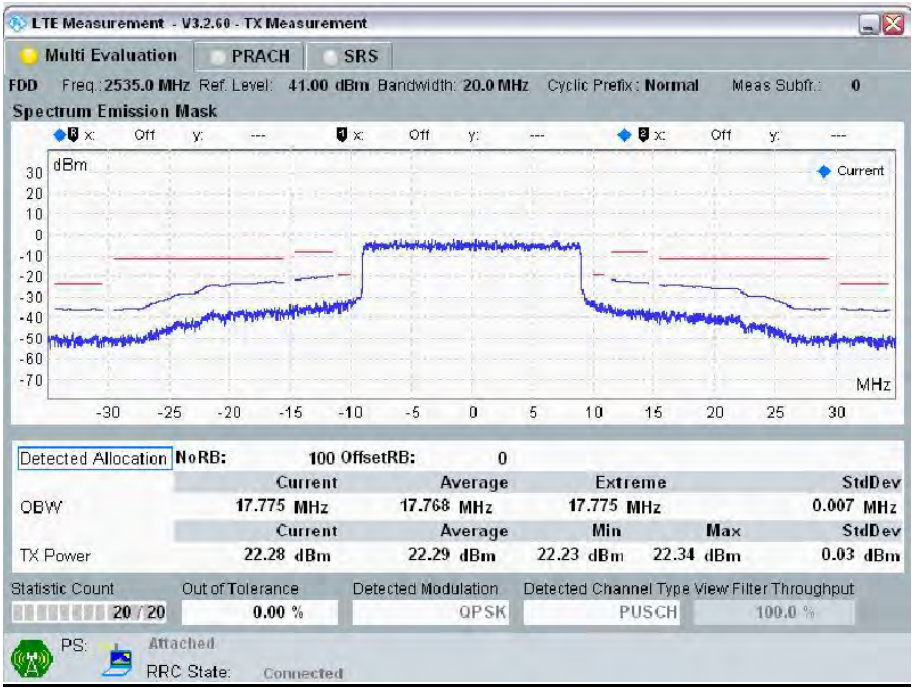
20MHz Band Width: Ch 21100, RB Size=50; RB Offset = 0



20MHz Band Width: Ch 21100, RB Size=50; RB Offset = 24



20MHz Band Width: Ch 21100, RB Size=50; RB Offset = 49



20MHz Band Width: Ch 21100, RB Size=100; RB Offset = 0

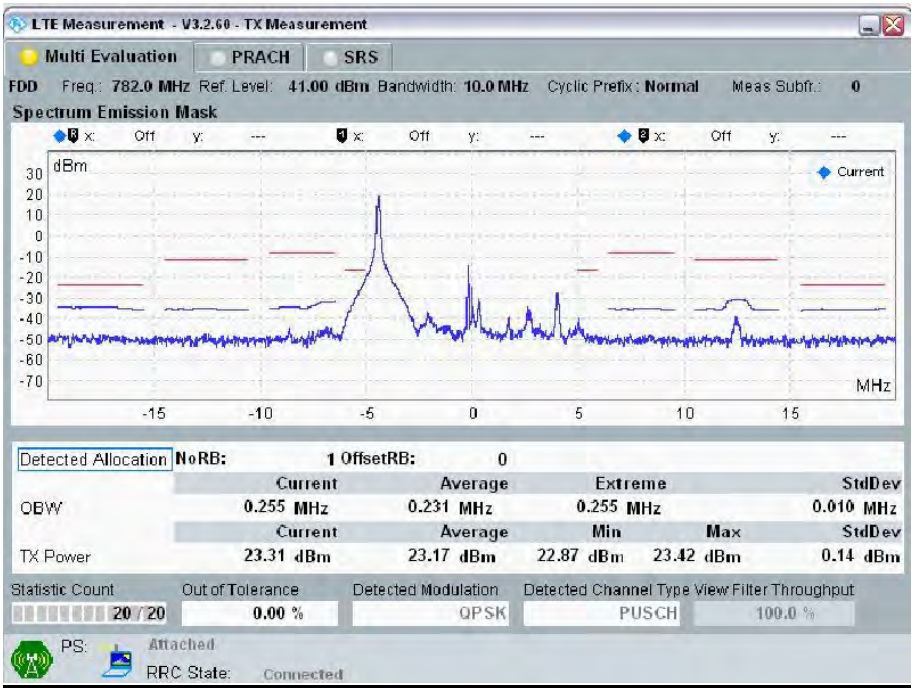
15.11 LTE Band 13

Output power table

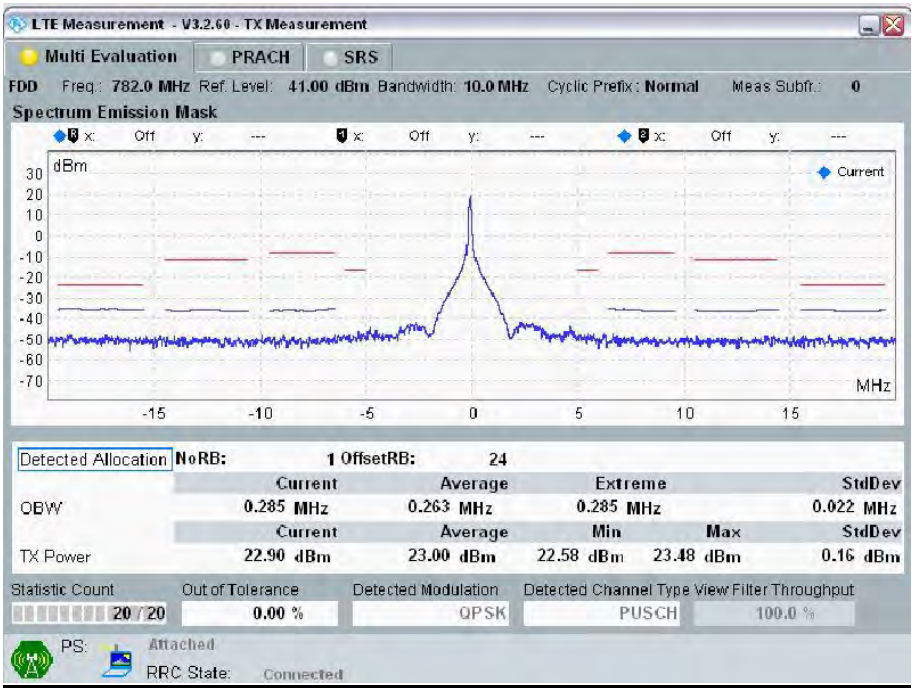
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
13	10	23230	782.0	QPSK	1	0	0	23.2	19.4
					1	24	0	23.0	19.1
					1	49	0	23.5	19.7
					25	0	1	22.8	19.1
					25	12	1	22.7	19.0
					25	24	1	22.7	19.0
					50	0	1	22.7	19.0
				16QAM	1	0	1	22.4	18.6
					1	24	1	22.6	19.1
					1	49	1	22.7	18.4
					25	0	2	22.2	17.9
					25	12	2	22.1	17.9
					25	24	2	22.1	17.9
					50	0	2	22.1	17.9

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
13	5	23205	779.5	QPSK	1	0	0	23.0	19.6
					1	12	0	22.9	19.7
					1	24	0	23.5	19.4
					12	0	1	22.6	18.8
					12	6	1	22.5	18.7
					12	11	1	22.5	18.7
					25	0	1	22.6	18.7
				16QAM	1	0	1	22.3	18.8
					1	12	1	22.5	18.9
					1	24	1	22.6	18.6
					12	0	2	22.0	17.8
					12	6	2	21.9	17.8
					12	11	2	22.0	17.7
					25	0	2	22.0	17.8
		23230	752.0	QPSK	1	0	0	23.1	19.6
					1	12	0	22.9	19.6
					1	24	0	23.5	19.4
					12	0	1	22.7	18.7
					12	6	1	22.6	18.7
					12	11	1	22.6	18.6
					25	0	1	22.6	18.7
				16QAM	1	0	1	22.3	18.9
					1	12	1	22.5	18.8
					1	24	1	22.6	18.6
					12	0	2	22.1	17.8
					12	6	2	22.0	17.7
					12	11	2	22.0	17.7
					25	0	2	22.0	17.7
		23255	784.5	QPSK	1	0	0	22.0	19.3
					1	12	0	21.8	19.4
					1	24	0	22.4	19.2
					12	0	1	21.6	18.5
					12	6	1	21.5	18.5
					12	11	1	21.5	18.5
					25	0	1	21.5	18.5
				16QAM	1	0	1	21.2	18.6
					1	12	1	21.4	18.7
					1	24	1	21.5	18.4
					12	0	2	21.0	17.6
					12	6	2	20.9	17.5
					12	11	2	20.9	17.5
					25	0	2	20.9	17.5

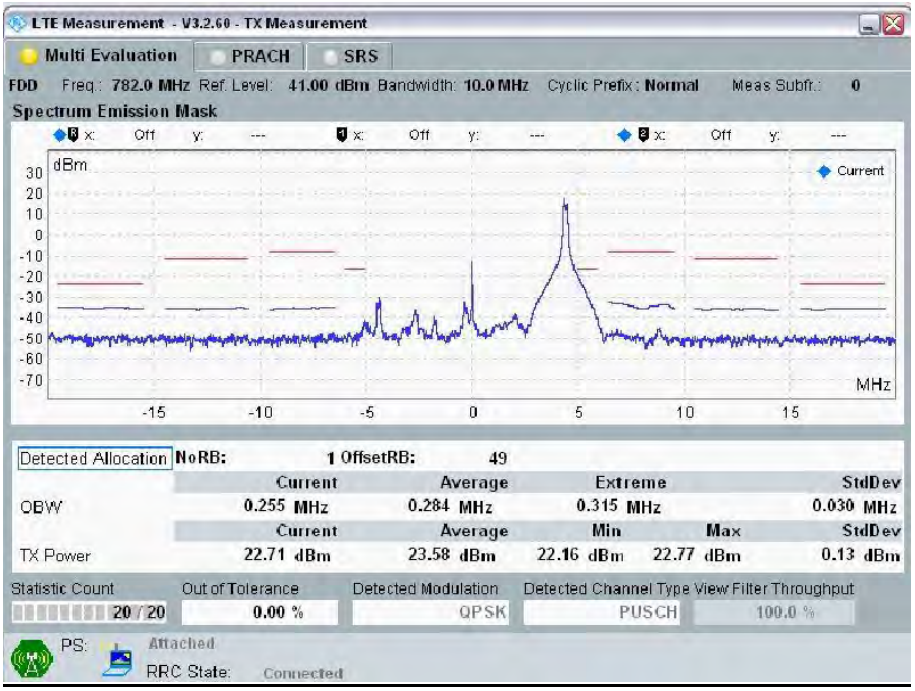
15.11.1 Spectrum Plots for the Test RB allocations



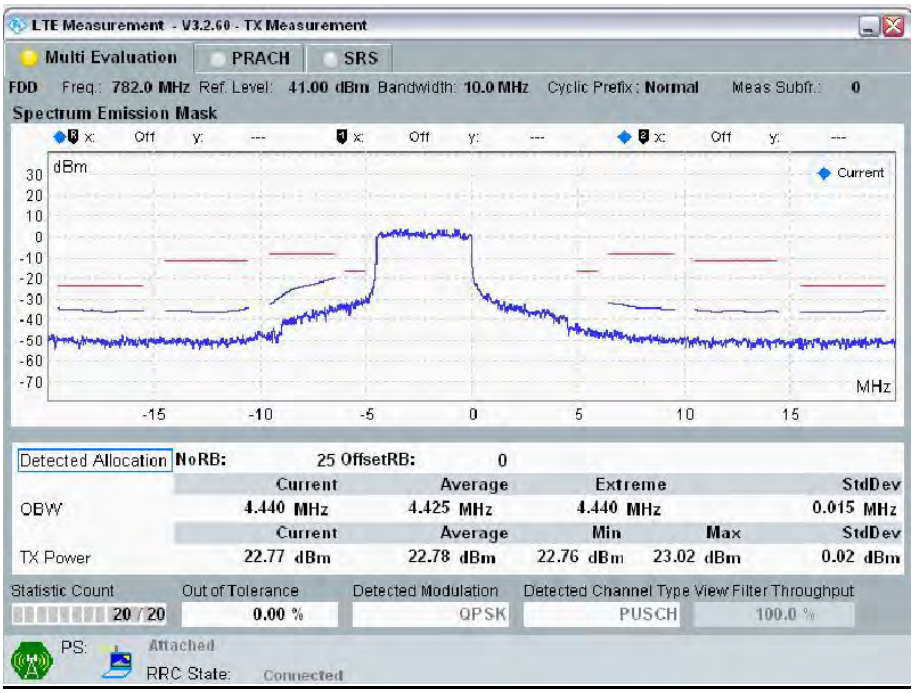
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 0



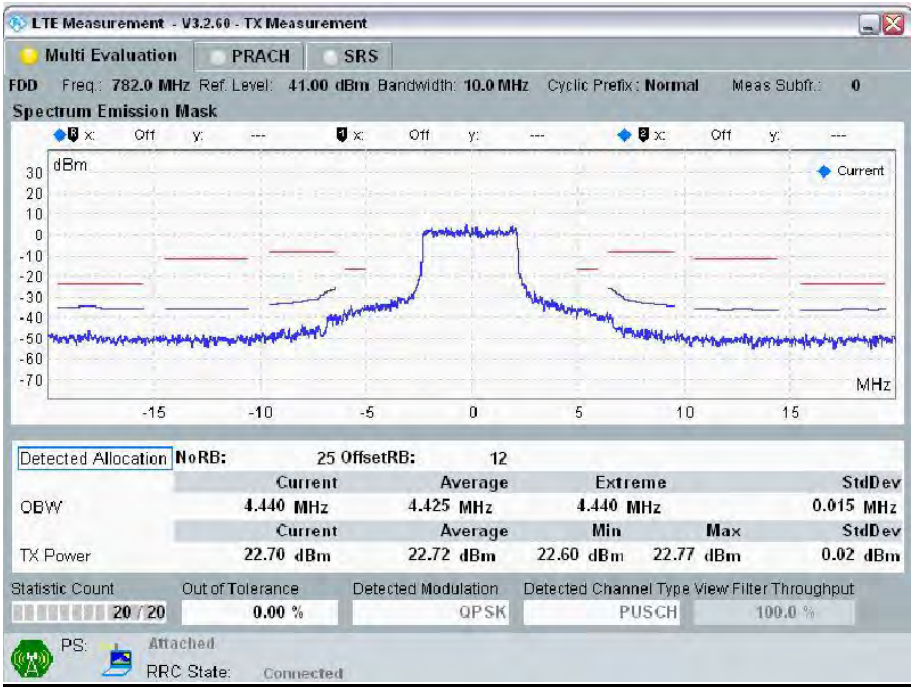
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 24



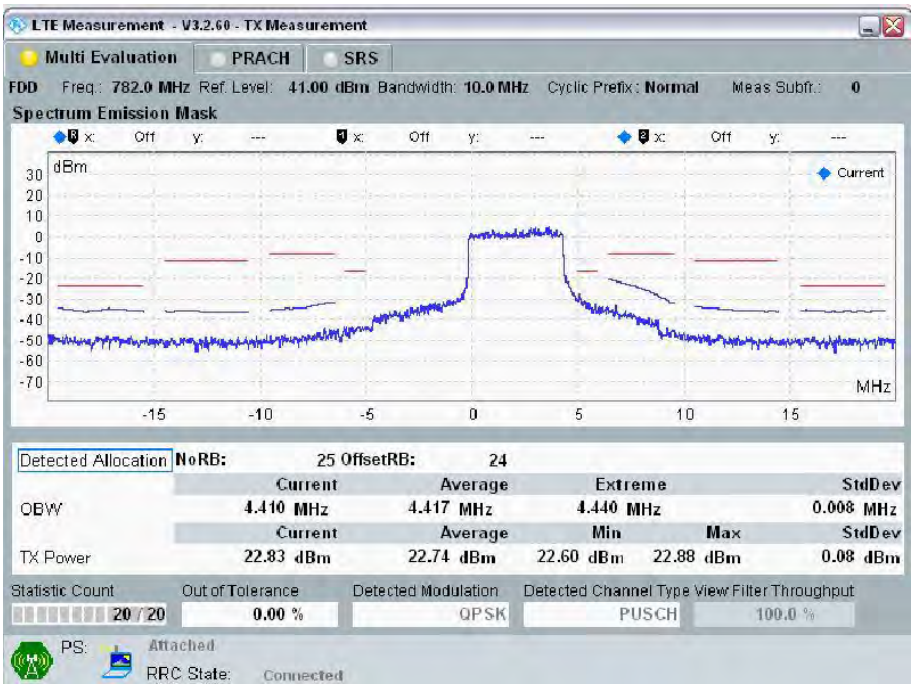
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 49



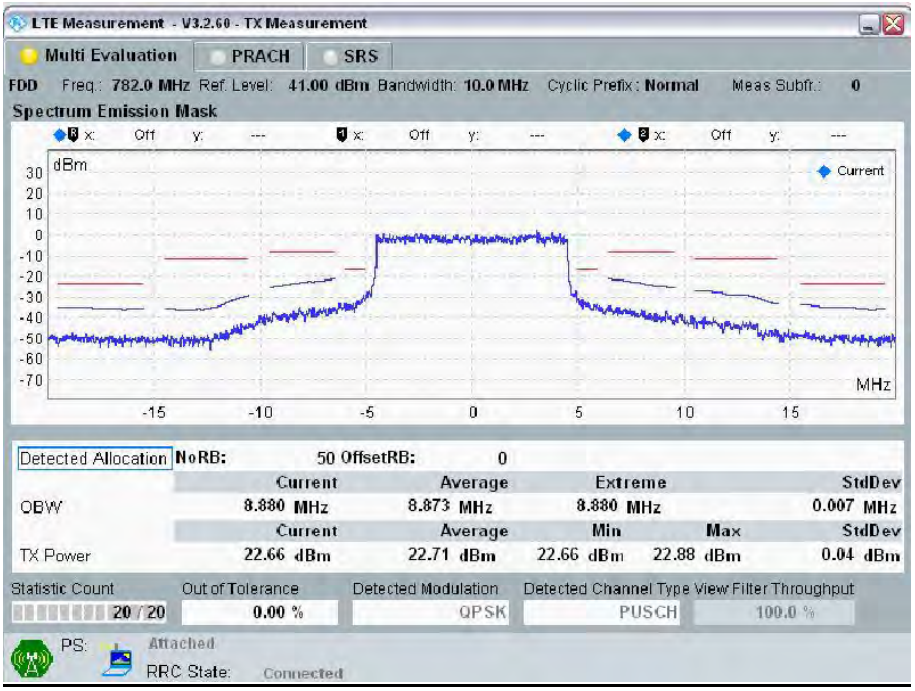
10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 0



10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 12



10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 24



10MHz Band Width: Ch 23230, RB Size=50; RB Offset = 0

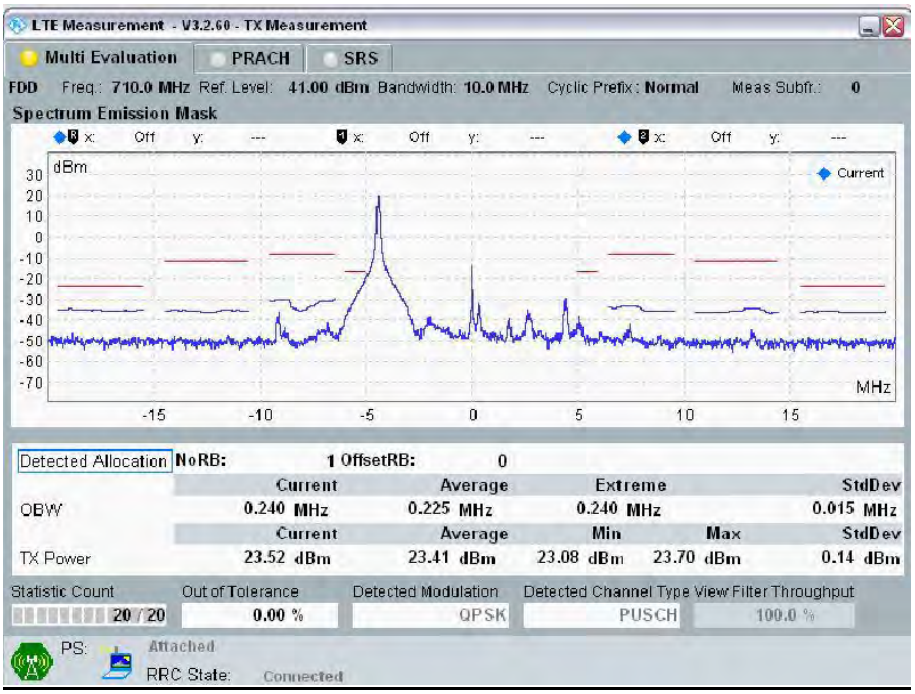
15.12 LTE Band 17

Output power table

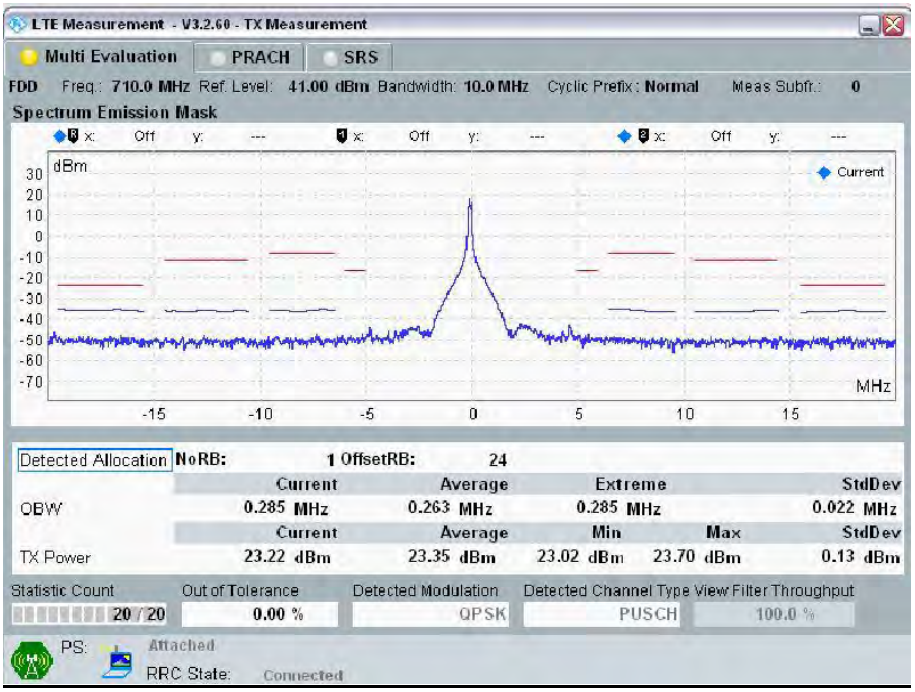
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
17	10	23790	710.0	QPSK	1	0	0	23.5	19.5
					1	24	0	23.4	19.4
					1	49	0	23.4	19.2
					25	0	1	22.8	18.6
					25	12	1	22.7	18.5
					25	24	1	22.8	18.5
					50	0	1	22.8	18.5
				16QAM	1	0	1	22.8	18.5
					1	24	1	22.8	18.7
					1	49	1	22.8	18.4
					25	0	2	22.2	17.5
					25	12	2	22.1	17.5
					25	24	2	22.1	17.5
					50	0	2	22.2	17.5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	W/o Power back-off Average power(dBm)	W/ Power back-off Average power(dBm)
17	5	23755	706.5	QPSK	1	0	0	23.4	19.6
					1	12	0	23.3	19.7
					1	24	0	23.3	19.4
					12	0	1	22.6	18.8
					12	6	1	22.6	18.7
					12	11	1	22.6	18.7
					25	0	1	22.7	18.7
				16QAM	1	0	1	22.7	18.8
					1	12	1	22.6	18.9
					1	24	1	22.6	18.6
					12	0	2	22.0	17.8
					12	6	2	22.0	17.8
					12	11	2	22.0	17.7
					25	0	2	22.0	17.8
		23790	710.0	QPSK	1	0	0	23.4	19.6
					1	12	0	23.3	19.6
					1	24	0	23.3	19.4
					12	0	1	22.7	18.7
					12	6	1	22.6	18.7
					12	11	1	22.7	18.6
					25	0	1	22.7	18.7
				16QAM	1	0	1	22.7	18.9
					1	12	1	22.7	18.8
					1	24	1	22.7	18.6
					12	0	2	22.1	17.8
					12	6	2	22.0	17.7
					12	11	2	22.0	17.7
					25	0	2	22.1	17.7
		23825	713.5	QPSK	1	0	0	22.3	19.3
					1	12	0	22.2	19.4
					1	24	0	22.2	19.2
					12	0	1	21.6	18.5
					12	6	1	21.5	18.5
					12	11	1	21.6	18.5
					25	0	1	21.6	18.5
				16QAM	1	0	1	21.6	18.6
					1	12	1	21.6	18.7
					1	24	1	21.6	18.4
					12	0	2	21.0	17.6
					12	6	2	20.9	17.5
					12	11	2	20.9	17.5
					25	0	2	21.0	17.5

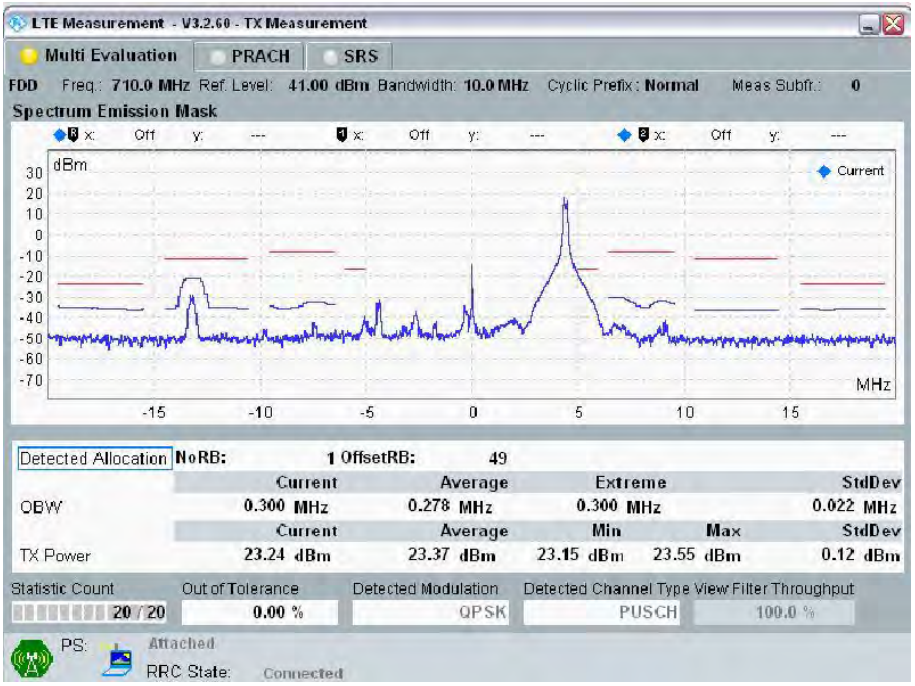
15.12.1 Spectrum Plots for the Test RB allocations



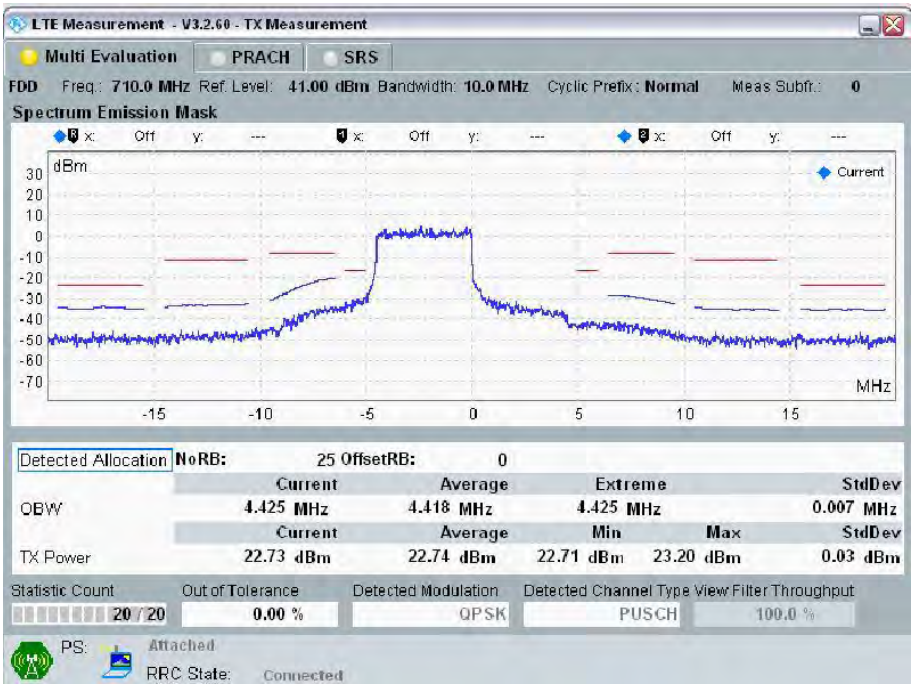
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 0



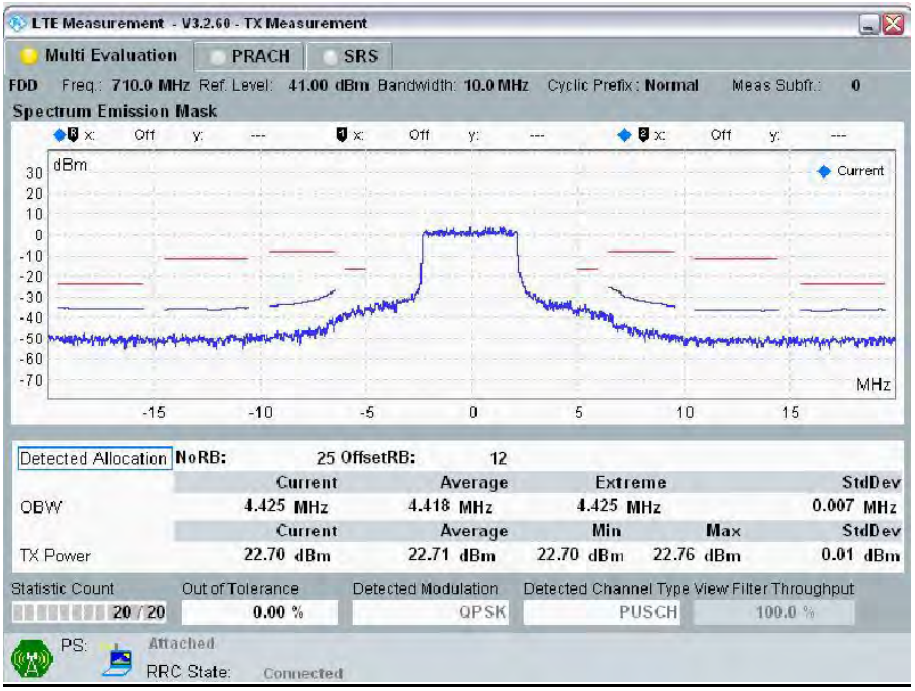
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 24



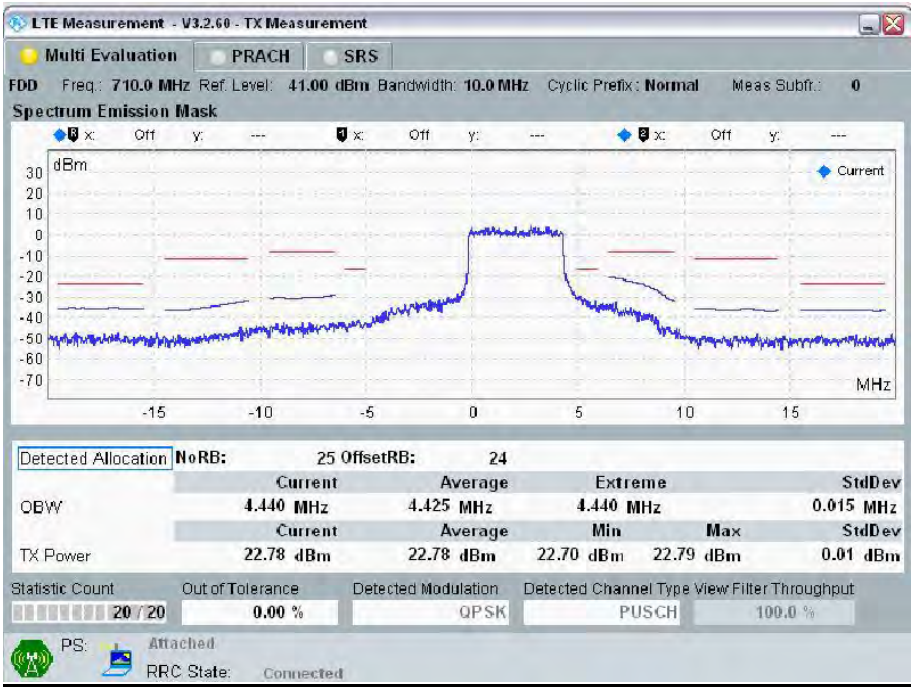
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 49



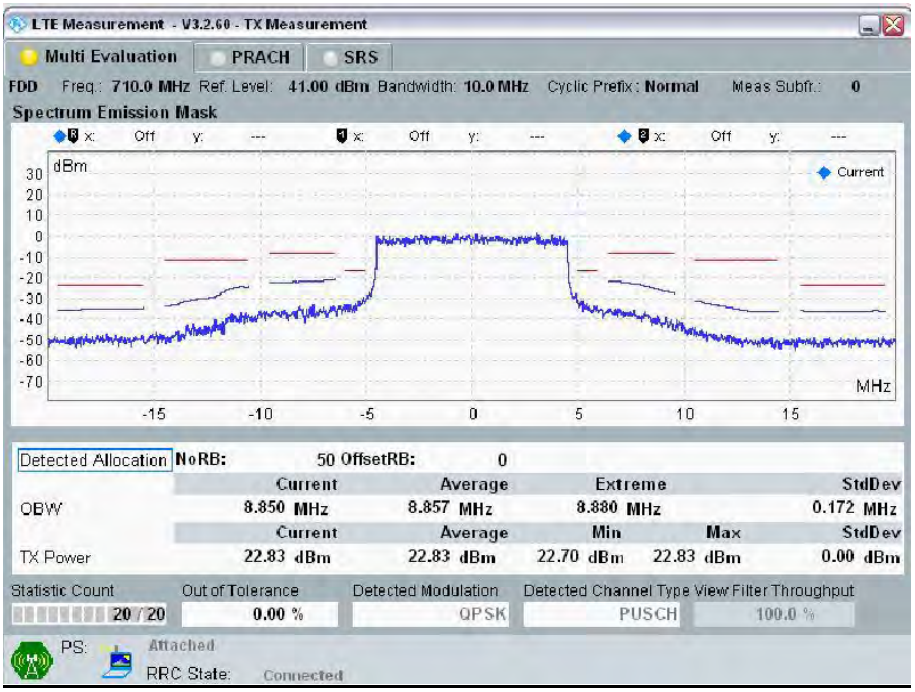
10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 0



10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 12



10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 24



10MHz Band Width: Ch 23790, RB Size=50; RB Offset = 0

16 SAR Measurements Results

GPRS850:

Power back off (On/Off)	Mode	Slot	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
							Tune up limit	Measured			
On	GPRS 850	4	Edge 1	251	848.8	0	24.5	24.5	0.958	0.958	
			Edge 1	128	824.2	0	24.5	24.4	0.971	0.994	1
			Edge 1	190	836.6	0	24.5	24.4	0.965	0.987	1
			Rear	251	848.8	0	24.5	24.5	0.930	0.930	
			Rear	128	824.2	0	24.5	24.4	0.986	1.009	1
			Rear	190	836.6	0	24.5	24.4	0.979	1.002	1
			Rear	128	824.2	0	24.5	24.4	0.996	1.019	2
Off	GPRS 850	4	Edge 1	251	848.8	11	32.5	31.6	0.872	1.073	
			Edge 1	128	824.2	11	32.5	31.5	0.911	1.147	1
			Edge 1	190	836.6	11	32.5	31.6	0.890	1.095	1
			Rear	251	848.8	13	32.5	31.6	0.971	1.195	
			Rear	128	824.2	13	32.5	31.5	0.973	1.225	1
			Rear	190	836.6	13	32.5	31.6	1.040	1.279	1
			Rear	190	836.6	13	32.5	31.6	1.030	1.267	3
			Edge 2	251	848.8	0	32.5	31.6	0.183	0.225	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
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 v01r03)
   2.1 Original SAR = 0.986 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.993 W/kg < 1.45W/kg
   2.3 SAR variation= 1.0% < 20%
3. 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 v01r03)
   3.1 Original SAR = 1.04 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.03 W/kg < 1.45W/kg
   3.3 SAR variation= 0.9% < 20%

GPRS1900:

Power back off (On/Off)	Mode	Slot	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
							Tune up limit	Measured			
On	GPRS 1900	4	Edge 1	661	1880	0	20.5	20.0	1.000	1.122	
			Edge 1	512	1850.2	0	20.5	19.9	0.952	1.093	1
			Edge 1	810	1909.8	0	20.5	20.0	0.993	1.114	1
			Rear	661	1880	0	20.5	20.0	0.567	0.636	
			Edge 1	661	1880	0	20.5	20.0	1.020	1.144	2
Off	GPRS 1900	4	Edge 1	661	1880	11	28.5	28.5	0.939	0.939	
			Edge 1	512	1850.2	11	28.5	28.5	0.926	0.926	1
			Edge 1	810	1909.8	11	28.5	28.4	1.020	1.044	1
			Rear	661	1880	13	28.5	28.5	0.574	0.574	
			Edge 1	810	1909.8	11	28.5	28.4	1.020	1.044	3
			Edge 2	661	1880	0	28.5	28.5	0.594	0.594	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
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 v01r03)
   2.1 Original SAR = 1.000 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 1.020 W/kg < 1.45W/kg
   2.3 SAR variation= 1.9% < 20%
3 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 v01r03)
   3.1 Original SAR = 1.02 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.02 W/kg < 1.45W/kg
   3.3 SAR variation= 0.0% < 20%

WCDMA Band II:

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
						Tune up limit	Measured			
On	Rel 99 RMC 12.2Kbps	Edge 1	9400	1880.0	0	17.5	17.3	1.120	1.173	
		Edge 1	9262	1852.4	0	17.5	17.2	1.150	1.232	1
		Edge 1	9538	1907.0	0	17.5	17.3	1.110	1.162	1
		Rear	9400	1880.0	0	17.5	17.3	0.761	0.797	
		Edge 1	9262	1852.4	0	17.5	17.2	1.180	1.264	2
Off	Rel 99 RMC 12.2Kbps	Edge 1	9400	1880.0	11	24.5	24.2	1.110	1.189	
		Edge 1	9262	1852.4	11	24.5	24.0	1.060	1.189	1
		Edge 1	9538	1907.0	11	24.5	24.0	1.100	1.234	1
		Rear	9400	1880.0	13	24.5	24.2	0.513	0.550	
		Edge 1	9538	1907.0	11	24.5	24.0	1.090	1.223	3
		Edge 2	9400	1880.0	0	24.5	24.2	0.481	0.515	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
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 v01r03)
   2.1 Original SAR = 1.150 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 1.180 W/kg < 1.45W/kg
   2.3 SAR variation= 2.5% < 20%
3 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 v01r03)
   3.1 Original SAR = 1.100 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.090 W/kg < 1.45W/kg
   3.3 SAR variation= 0.9% < 20%

WCDMA Band IV:

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
						Tune up limit	Measured			
On	Rel 99 RMC 12.2Kbps	Edge 1	1413	1732.6	0	17.5	16.9	1.050	1.206	
		Edge 1	1312	1712.4	0	17.5	17.0	1.010	1.133	1
		Edge 1	1513	1752.6	0	17.5	16.9	0.969	1.113	1
		Rear	1413	1732.6	0	17.5	16.9	0.852	0.978	
		Rear	1312	1712.4	0	17.5	16.9	0.861	0.989	1
		Rear	1513	1752.6	0	17.5	16.9	0.859	0.986	1
		Edge 1	1413	1732.6	0	17.5	17.0	1.060	1.189	2
Off	Rel 99 RMC 12.2Kbps	Edge 1	1413	1732.6	11	24.5	23.7	0.777	0.938	
		Edge 1	1312	1712.4	11	24.5	23.8	0.712	0.837	1
		Edge 1	1513	1752.6	11	24.5	23.7	0.775	0.932	1
		Rear	1413	1732.6	13	24.5	23.7	0.782	0.940	
		Rear	1312	1712.4	13	24.5	23.8	0.720	0.846	1
		Rear	1513	1752.6	13	24.5	23.7	0.772	0.928	1
		Edge 2	1413	1732.6	0	24.5	23.7	0.440	0.531	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
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 v01r03)
   2.1 Original SAR = 1.050 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 1.060 W/kg < 1.45W/kg
   2.3 SAR variation= 0.9% < 20%

WCDMA Band V:

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
						Tune up limit	Measured			
On	Rel 99 RMC 12.2Kbps	Edge 1	4233	846.4	0	24.5	24.2	0.945	1.013	
		Edge 1	4132	826.4	0	24.5	24.0	0.936	1.050	1
		Edge 1	4182	836.4	0	24.5	24.0	0.930	1.051	1
		Rear	4233	846.4	0	24.5	24.2	0.802	0.859	
		Rear	4132	826.4	0	24.5	24.0	0.816	0.916	1
		Rear	4182	836.4	0	24.5	24.0	0.792	0.895	1
		Edge 1	4233	846.4	0	24.5	24.2	0.961	1.030	2
Off	Rel 99 RMC 12.2Kbps	Edge 1	4233	846.4	11	21.5	21.2	0.623	0.668	
		Rear	4233	846.4	13	21.5	21.2	0.524	0.561	
		Edge 2	4233	846.4	0	21.5	21.2	0.108	0.116	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is required when the reported 1-g SAR for the mid-band or highest output power channel. ≥0.8 W/kg and transmission band ≤ 100 MHz (Per KDB 447498 D01 v05r02 section 4.3.3)
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 v01r03)
   2.1 Original SAR = 0.945 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.961 W/kg < 1.45W/kg
   2.3 SAR variation= 1.6% < 20%

LTE Band 2 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	18900	1880.0	0	1	0	16.0	15.8	0.793	0.830	
			18900	1880.0	0	1	49	16.0	15.5	0.749	0.840	
			18900	1880.0	0	1	99	16.0	15.3	0.717	0.837	
			18900	1880.0	0	50	0	16.0	14.9	0.631	0.813	
			18900	1880.0	0	50	24	16.0	14.7	0.613	0.827	
			18900	1880.0	0	50	49	16.0	14.7	0.613	0.827	
			18900	1880.0	0	100	0	16.0	14.8	0.615	0.811	
			18700	1860.0	0	1	0	16.0	15.7	0.750	0.804	
			19100	1900.0	0	1	0	16.0	15.5	0.758	0.850	
		Rear	18900	1880.0	0	1	0	16.0	15.8	0.553	0.579	
			18900	1880.0	0	1	49	16.0	15.5	0.492	0.552	
			18900	1880.0	0	1	99	16.0	15.3	0.480	0.560	
			18900	1880.0	0	50	0	16.0	14.9	0.441	0.568	
			18900	1880.0	0	50	24	16.0	14.7	0.443	0.598	
			18900	1880.0	0	50	49	16.0	14.7	0.434	0.585	
			18900	1880.0	0	100	0	16.0	14.8	0.443	0.584	
Off	QPSK	Edge1	18900	1880.0	11	1	0	23.5	23.4	1.070	1.092	
			18900	1880.0	11	1	49	23.5	22.8	0.975	1.135	
			18900	1880.0	11	1	99	23.5	22.7	0.838	1.007	
			18900	1880.0	11	50	0	23.5	22.8	0.965	1.134	
			18900	1880.0	11	50	24	23.5	22.5	0.896	1.125	
			18900	1880.0	11	50	49	23.5	22.5	0.862	1.093	
			18900	1880.0	11	100	0	23.5	22.7	0.905	1.093	
			18700	1860.0	11	1	0	23.5	23.4	1.070	1.095	
			19100	1900.0	11	1	0	23.5	23.4	0.951	0.973	
			18900	1880.0	11	1	0	23.5	23.4	1.040	1.062	3
		Rear	18900	1880.0	13	1	0	23.5	23.4	0.429	0.438	
			18900	1880.0	13	1	49	23.5	22.8	0.401	0.467	
			18900	1880.0	13	1	99	23.5	22.7	0.369	0.444	
			18900	1880.0	13	50	0	23.5	22.8	0.386	0.454	
			18900	1880.0	13	50	24	23.5	22.5	0.362	0.455	
			18900	1880.0	13	50	49	23.5	22.5	0.359	0.455	
			18900	1880.0	13	100	0	23.5	22.7	0.379	0.458	
		Edge2	18900	1880.0	0	1	0	23.5	23.4	0.388	0.396	
			18900	1880.0	0	50	0	23.5	22.8	0.362	0.425	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r02 section 5.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. (Per KDB 941225 D05 v02r02 section 5.2.3)
3. 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 v01r03)
   3.1 Original SAR = 1.070 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.040 W/kg < 1.45W/kg
   3.3 SAR variation= 2.8 % < 20%

LTE Band 4 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	20300	1745.0	0	1	0	16.0	15.8	0.753	0.788	
			20300	1745.0	0	1	49	16.0	15.2	0.699	0.840	
			20300	1745.0	0	1	99	16.0	14.8	0.656	0.865	
			20050	1720.0	0	50	0	16.0	14.7	0.662	0.893	
			20050	1720.0	0	50	24	16.0	14.5	0.627	0.886	
			20050	1720.0	0	50	49	16.0	14.3	0.594	0.879	
			20300	1745.0	0	100	0	16.0	14.4	0.621	0.898	
			20050	1720.0	0	1	0	16.0	15.7	0.775	0.830	
			20175	1732.5	0	1	0	16.0	15.7	0.797	0.854	
		Rear	20300	1745.0	0	1	0	16.0	15.8	0.595	0.623	
			20300	1745.0	0	1	49	16.0	15.2	0.540	0.649	
			20300	1745.0	0	1	99	16.0	14.8	0.507	0.668	
			20050	1720.0	0	50	0	16.0	14.7	0.513	0.692	
			20050	1720.0	0	50	24	16.0	14.5	0.489	0.691	
			20050	1720.0	0	50	49	16.0	14.3	0.511	0.756	
			20300	1745.0	0	100	0	16.0	14.4	0.500	0.723	
Off	QPSK	Edge1	20300	1745.0	11	1	0	23.5	23.1	0.975	1.059	
			20300	1745.0	11	1	49	23.5	22.3	1.010	1.325	
			20300	1745.0	11	1	99	23.5	22.2	0.855	1.167	
			20050	1720.0	11	50	0	23.5	22.5	0.904	1.138	
			20050	1720.0	11	50	24	23.5	22.2	0.833	1.124	
			20050	1720.0	11	50	49	23.5	22.0	0.838	1.184	
			20300	1745.0	11	100	0	23.5	22.1	0.904	1.248	
			20050	1720.0	11	1	0	23.5	23.1	1.020	1.118	
			20175	1732.5	11	1	0	23.5	23.1	0.895	0.981	
			20050	1745.0	11	1	0	23.5	23.1	1.020	1.108	3
		Rear	20300	1745.0	13	1	0	23.5	23.1	0.564	0.613	
			20300	1745.0	13	1	49	23.5	22.3	0.560	0.735	
			20300	1745.0	13	1	99	23.5	22.2	0.491	0.670	
			20050	1720.0	13	50	0	23.5	22.5	0.501	0.631	
			20050	1720.0	13	50	24	23.5	22.2	0.478	0.645	
			20050	1720.0	13	50	49	23.5	22.0	0.465	0.657	
			20300	1745.0	13	100	0	23.5	22.1	0.509	0.703	
		Edge2	20300	1745.0	0	1	0	23.5	23.1	0.212	0.230	
			20050	1720.0	0	50	0	23.5	22.5	0.196	0.247	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r02 section 5.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. (Per KDB 941225 D05 v02r02 section 5.2.3)
3. 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 v01r03)
   3.1 Original SAR = 1.020 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 1.020 W/kg < 1.45W/kg
   3.3 SAR variation= 0.0 % < 20%

LTE Band 5 (10MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	20600	884.0	0	1	0	20.0	19.8	0.680	0.712	
			20600	884.0	0	1	24	20.0	19.6	0.676	0.741	
			20600	884.0	0	1	49	20.0	19.4	0.630	0.723	
			20600	884.0	0	25	0	20.0	18.8	0.551	0.726	
			20600	884.0	0	25	12	20.0	18.8	0.536	0.707	
			20600	884.0	0	25	24	20.0	18.8	0.535	0.705	
			20600	884.0	0	50	0	20.0	18.5	0.553	0.781	
		Rear	20600	884.0	0	1	0	20.0	19.8	0.644	0.674	
			20600	884.0	0	1	24	20.0	19.6	0.628	0.689	
			20600	884.0	0	1	49	20.0	19.4	0.586	0.673	
			20600	884.0	0	25	0	20.0	18.8	0.528	0.696	
			20600	884.0	0	25	12	20.0	18.8	0.530	0.699	
			20600	884.0	0	25	24	20.0	18.8	0.501	0.660	
			20600	884.0	0	50	0	20.0	18.5	0.511	0.722	
Off	QPSK	Edge1	20600	884.0	11	1	0	23.5	23.4	0.577	0.590	
			20600	884.0	11	1	24	23.5	23.2	0.530	0.568	
			20600	884.0	11	1	49	23.5	23.2	0.504	0.540	
			20600	884.0	11	25	0	23.5	22.7	0.466	0.560	
			20600	884.0	11	25	12	23.5	22.6	0.450	0.554	
			20600	884.0	11	25	24	23.5	22.7	0.443	0.533	
			20600	884.0	11	50	0	23.5	22.6	0.467	0.575	
		Rear	20600	884.0	13	1	0	23.5	23.5	0.481	0.481	
			20600	884.0	13	1	24	23.5	23.2	0.469	0.503	
			20600	884.0	13	1	49	23.5	23.0	0.445	0.499	
			20600	884.0	13	25	0	23.5	22.8	0.418	0.491	
			20600	884.0	13	25	12	23.5	22.7	0.413	0.497	
			20600	884.0	13	25	24	23.5	22.7	0.399	0.480	
			20600	884.0	13	50	0	23.5	23.6	0.413	0.404	
		Edge2	20600	884.0	11	1	0	23.5	23.4	0.065	0.067	
			20600	884.0	11	25	0	23.5	22.7	0.057	0.069	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r02 section 5.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. (Per KDB 941225 D05 v02r02 section 5.2.3)

LTE Band 7 (20MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	20850	2510.0	0	1	0	19.0	18.7	0.832	0.892	
			20850	2510.0	0	1	49	19.0	18.5	0.740	0.830	
			20850	2510.0	0	1	99	19.0	18.1	0.722	0.888	
			21100	2535.0	0	50	0	19.0	17.8	0.653	0.861	
			21100	2535.0	0	50	24	19.0	17.4	0.699	1.010	
			21100	2335.0	0	50	49	19.0	17.4	0.709	1.025	
			20850	2510.0	0	100	0	19.0	17.5	0.614	0.867	
			21100	2535.0	0	1	0	19.0	18.6	0.887	0.973	
			21350	2560.0	0	1	0	19.0	18.5	1.070	1.201	
			21350	2560.0	0	1	0	19.0	18.5	1.090	1.223	3
		Rear	20850	2510.0	0	1	0	19.0	18.7	0.460	0.493	
			20850	2510.0	0	1	49	19.0	18.5	0.438	0.491	
			20850	2510.0	0	1	99	19.0	18.1	0.420	0.517	
			21100	2535.0	0	50	0	19.0	17.8	0.408	0.538	
			21100	2535.0	0	50	24	19.0	17.4	0.362	0.523	
			21100	2335.0	0	50	49	19.0	17.4	0.359	0.519	
			20850	2510.0	0	100	0	19.0	17.5	0.378	0.534	
Off	QPSK	Edge1	20850	2510.0	11	1	0	23.5	23.4	0.357	0.365	
			20850	2510.0	11	1	49	23.5	22.8	0.294	0.345	
			20850	2510.0	11	1	99	23.5	22.6	0.200	0.246	
			21100	2535.0	11	50	0	23.5	22.4	0.186	0.240	
			21100	2535.0	11	50	24	23.5	22.1	0.176	0.243	
			21100	2335.0	11	50	49	23.5	22.0	0.175	0.247	
			20850	2510.0	11	100	0	23.5	22.1	0.184	0.254	
		Rear	20850	2510.0	13	1	0	23.5	23.4	0.179	0.183	
			20850	2510.0	13	1	49	23.5	22.8	0.150	0.176	
			20850	2510.0	13	1	99	23.5	22.6	0.145	0.178	
			21100	2535.0	13	50	0	23.5	22.4	0.144	0.186	
			21100	2535.0	13	50	24	23.5	22.1	0.132	0.182	
			21100	2335.0	13	50	49	23.5	22.0	0.132	0.186	
		Edge2	20850	2510.0	0	1	0	23.5	23.4	0.078	0.080	
			21100	2535.0	0	50	0	23.5	22.4	0.052	0.067	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r02 section 5.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. (Per KDB 941225 D05 v02r02 section 5.2.3)
3. 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 v01r03)
   3.4 Original SAR = 1.070 W/kg, therefore two times repeat SAR is required.
   3.5 Repeat SAR = 1.090 W/kg < 1.45W/kg
   3.6 SAR variation= 1.8 % < 20%

LTE Band 13 (10MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	23230	782.0	0	1	49	20.0	19.7	0.733	0.785	
			23230	782.0	0	1	0	20.0	19.4	0.832	0.955	
			23230	782.0	0	1	25	20.0	19.1	0.847	1.042	
			23230	782.0	0	25	0	20.0	19.1	0.740	0.910	
			23230	782.0	0	25	12	20.0	19.0	0.715	0.900	
			23230	782.0	0	25	24	20.0	19.0	0.710	0.894	
			23230	782.0	0	50	0	20.0	19.0	0.733	0.923	
		Rear	23230	782.0	0	1	49	20.0	19.7	0.707	0.758	
			23230	782.0	0	1	0	20.0	19.4	0.791	0.908	
			23230	782.0	0	1	25	20.0	19.1	0.805	0.990	
			23230	782.0	0	25	0	20.0	19.1	0.713	0.877	
			23230	782.0	0	25	12	20.0	19.0	0.682	0.859	
			23230	782.0	0	25	24	20.0	19.0	0.669	0.842	
			23230	782.0	0	50	0	20.0	19.0	0.690	0.869	
Off	QPSK	Edge1	23230	782.0	11	1	49	23.5	23.5	0.618	0.618	
			23230	782.0	11	1	0	23.5	23.2	0.652	0.699	
			23230	782.0	11	1	25	23.5	23.0	0.660	0.741	
			23230	782.0	11	25	0	23.5	22.8	0.643	0.755	
			23230	782.0	11	25	12	23.5	22.7	0.616	0.741	
			23230	782.0	11	25	24	23.5	22.7	0.601	0.723	
			23230	782.0	11	50	0	23.5	22.7	0.623	0.749	
		Rear	23230	782.0	13	1	49	23.5	23.5	0.441	0.441	
			23230	782.0	13	1	0	23.5	23.2	0.498	0.534	
			23230	782.0	13	1	25	23.5	23.0	0.500	0.561	
			23230	782.0	13	25	0	23.5	22.8	0.498	0.585	
			23230	782.0	13	25	12	23.5	22.7	0.481	0.578	
			23230	782.0	13	25	24	23.5	22.7	0.467	0.561	
			23230	782.0	13	50	0	23.5	22.7	0.488	0.587	
		Edge2	23230	782.0	0	1	49	23.5	23.5	0.124	0.124	
			23230	782.0	0	25	0	23.5	22.8	0.133	0.156	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r02 section 5.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. (Per KDB 941225 D05 v02r02 section 5.2.3)

LTE Band 17 (10MHz Bandwidth):

Power back off (On/Off)	Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
On	QPSK	Edge1	23790	710.0	0	1	0	20.0	19.5	0.853	0.957	
			23790	710.0	0	1	25	20.0	19.4	0.835	0.959	
			23790	710.0	0	1	49	20.0	19.2	0.810	0.974	
			23790	710.0	0	25	0	20.0	18.6	0.693	0.957	
			23790	710.0	0	25	12	20.0	18.5	0.687	0.970	
			23790	710.0	0	25	24	20.0	18.5	0.674	0.952	
			23790	710.0	0	50	0	20.0	18.5	0.670	0.946	
		Rear	23790	710.0	0	1	0	20.0	19.5	0.701	0.787	
			23790	710.0	0	1	25	20.0	19.4	0.702	0.806	
			23790	710.0	0	1	49	20.0	19.2	0.697	0.838	
			23790	710.0	0	25	0	20.0	18.6	0.574	0.792	
			23790	710.0	0	25	12	20.0	18.5	0.585	0.826	
			23790	710.0	0	25	24	20.0	18.5	0.592	0.836	
			23790	710.0	0	50	0	20.0	18.5	0.580	0.819	
Off	QPSK	Edge1	23790	710.0	11	1	0	23.5	23.5	0.447	0.447	
			23790	710.0	11	1	25	23.5	23.4	0.468	0.479	
			23790	710.0	11	1	49	23.5	23.4	0.464	0.475	
			23790	710.0	11	25	0	23.5	22.8	0.399	0.469	
			23790	710.0	11	25	12	23.5	22.7	0.402	0.483	
			23790	710.0	11	25	24	23.5	22.8	0.410	0.482	
		Rear	23790	710.0	13	1	0	23.5	22.8	0.439	0.516	
			23790	710.0	13	1	25	23.5	23.5	0.466	0.466	
			23790	710.0	13	1	49	23.5	23.2	0.455	0.488	
			23790	710.0	13	25	0	23.5	23.0	0.401	0.450	
			23790	710.0	13	25	12	23.5	22.8	0.399	0.469	
			23790	710.0	13	25	24	23.5	22.7	0.412	0.495	
		Edge2	23790	710.0	0	1	0	23.5	23.5	0.145	0.145	
			23790	710.0	0	25	0	23.5	22.8	0.139	0.163	

Note(s):

1. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. (Per KDB 941225 D05 v02r02 section 5.2.1)
2. The highest reported SAR for 1 RB and 50% RB allocation are ≥ 0.8 W/kg, SAR is required of 100% RB. (Per KDB 941225 D05 v02r02 section 5.2.3)

Summary of Highest SAR Values

Results for highest reported SAR values for each frequency band and mode

Technology/Band	Test configuration	Mode	Highest Reported 1g-SAR (W/kg)
GPRS850	Rear	GPRS 4slot	1.279
GPRS1900	Edge1	GPRS 4slot	1.144
WCDMA Band II	Edge1	12.2 Kbps	1.264
WCDMA band IV	Edge1	12.2 Kbps	1.206
WCDMA band V	Edge1	12.2 Kbps	1.051
LTE band 2	Edge1	QPSK BW20	1.135
LTE band 4	Edge1	QPSK BW20	1.325
LTE band 5	Edge1	QPSK BW10	0.781
LTE band 7	Edge1	QPSK BW20	1.201
LTE band 13	Edge1	QPSK BW10	1.042
LTE band 17	Edge1	QPSK BW10	0.974

17 Simultaneous Transmission SAR Analysis

For battery operated standalone wireless routers that use external or peripheral transmitter(s), such as an approved USB dongle or ExpressCard, to provide hotspot mode support, a 1-g SAR of 1.6 W/kg must be assumed for such transmitters to determine simultaneous transmission SAR test exclusion. The simultaneous transmission SAR test exclusion procedures in KDB 447498 are applied to determine SAR test exclusion, according to the SAR to peak location separation ratio procedures. For USB dongles, the analysis must assume the peak SAR location is at 1 cm or less from the USB connector. For transmitter cards, the analysis must assume the peak SAR location is at the edge of the host device, centered along the width of the plug-in card slot.

KDB 447498 D01 General RF Exposure Guidance v05, introduces a new formula for calculating the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

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

$\boldsymbol{SAR_1}$ and $\boldsymbol{SAR_2}$ are the highest reported or estimated SAR for the each antenna in the pair.

$\boldsymbol{R_i}$ 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. In this case, the SAR is considered to be in the exact middle of the USB port and on the same z-level as the other antennas, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, This SAR is considered to be in the exact middle of the USB port and on the same z-level as the other 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:
$(SAR_1 + SAR_2)^{1.5} / R_i < 0.04$

17.1 Sum of the SAR for Simultaneous Transmission Analysis

17.1.1 Sum of the 1g SAR for Body Exposure Condition

GPRS850 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 850	WiFi 2.4 GHz Band		
Rear	802.11b	6	1.279	0.242	1.521	NO
	802.11g	6	1.279	0.106	1.385	NO
	802.11n HT20	6	1.279	0.132	1.411	NO
Edge 1	802.11g	6	1.147	0.023	1.170	NO

GPRS850 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 850	WiFi 5 GHz Band		
Rear	802.11a	48	1.279	0.261	1.540	NO
	802.11n HT40	159	1.279	0.171	1.450	NO

GPRS1900 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 1900	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.636	0.242	0.878	NO
	802.11g	6	0.636	0.106	0.742	NO
	802.11n HT20	6	0.636	0.132	0.768	NO
Edge 1	802.11g	6	1.144	0.023	1.167	NO

GPRS1900 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			GPRS 1900	WiFi 5 GHz Band		
Rear	802.11a	48	0.636	0.261	0.897	NO
	802.11n HT40	159	0.636	0.171	0.807	NO

WCDMA Band II + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band II	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.797	0.242	1.039	NO
	802.11g	6	0.797	0.106	0.903	NO
	802.11n HT20	6	0.797	0.132	0.929	NO
Edge 1	802.11g	6	1.264	0.023	1.287	NO

WCDMA Band II + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band II	WiFi 5 GHz Band		
Rear	802.11a	48	0.797	0.261	1.058	NO
	802.11n HT40	159	0.797	0.171	0.968	NO

WCDMA Band IV + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band IV	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.989	0.242	1.231	NO
	802.11g	6	0.989	0.106	1.095	NO
	802.11n HT20	6	0.989	0.132	1.121	NO
Edge 1	802.11g	6	1.206	0.023	1.229	NO

WCDMA Band IV + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band IV	WiFi 5 GHz Band		
Rear	802.11a	48	0.989	0.261	1.250	NO
	802.11n HT40	159	0.989	0.171	1.160	NO

WCDMA Band V + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band V	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.916	0.242	1.158	NO
	802.11g	6	0.916	0.106	1.022	NO
	802.11n HT20	6	0.916	0.132	1.048	NO
Edge 1	802.11g	6	1.051	0.023	1.074	NO

WCDMA Band V + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			WCDMA Band V	WiFi 5 GHz Band		
Rear	802.11a	48	0.916	0.261	1.177	NO
	802.11n HT40	159	0.916	0.171	1.087	NO

LTE Band 2 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 2	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.598	0.242	0.840	NO
	802.11g	6	0.598	0.106	0.704	NO
	802.11n HT20	6	0.598	0.132	0.730	NO
Edge 1	802.11g	6	1.135	0.023	1.158	NO

LTE Band 2 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 2	WiFi 5 GHz Band		
Rear	802.11a	48	0.598	0.261	0.859	NO
	802.11n HT40	159	0.598	0.171	0.769	NO

LTE Band 4 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 4	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.756	0.242	0.998	NO
	802.11g	6	0.756	0.106	0.862	NO
	802.11n HT20	6	0.756	0.132	0.888	NO
Edge 1	802.11g	6	1.325	0.023	1.348	NO

LTE Band 4 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 4	WiFi 5 GHz Band		
Rear	802.11a	48	0.756	0.261	1.017	NO
	802.11n HT40	159	0.756	0.171	0.927	NO

LTE Band 5 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 5	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.722	0.242	0.964	NO
	802.11g	6	0.722	0.106	0.828	NO
	802.11n HT20	6	0.722	0.132	0.854	NO
Edge 1	802.11g	6	0.781	0.023	0.804	NO

LTE Band 5 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 5	WiFi 5 GHz Band		
Rear	802.11a	48	0.722	0.261	0.983	NO
	802.11n HT40	159	0.722	0.171	0.893	NO

LTE Band 7 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 7	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.538	0.242	0.780	NO
	802.11g	6	0.538	0.106	0.644	NO
	802.11n HT20	6	0.538	0.132	0.670	NO
Edge 1	802.11g	6	1.201	0.023	1.224	NO

LTE Band 7 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 7	WiFi 5 GHz Band		
Rear	802.11a	48	0.538	0.261	0.799	NO
	802.11n HT40	159	0.538	0.171	0.709	NO

LTE Band 13 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 13	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.990	0.242	1.232	NO
	802.11g	6	0.990	0.106	1.096	NO
	802.11n HT20	6	0.990	0.132	1.122	NO
Edge 1	802.11g	6	1.042	0.023	1.065	NO

LTE Band 13 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 13	WiFi 5 GHz Band		
Rear	802.11a	48	0.990	0.261	1.251	NO
	802.11n HT40	159	0.990	0.171	1.161	NO

LTE Band 17 + 2.4GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 17	WiFi 2.4 GHz Band		
Rear	802.11b	6	0.838	0.242	1.080	NO
	802.11g	6	0.838	0.106	0.944	NO
	802.11n HT20	6	0.838	0.132	0.970	NO
Edge 1	802.11g	6	0.970	0.023	0.993	NO

LTE Band 17 + 5GHz Band

Test Position	Mode	Channel	Simulataneous Transmission Scenario		∑ 1-g SAR (W/kg)	SPLSR (Yes/No)
			LTE Band 17	WiFi 5 GHz Band		
Rear	802.11a	48	0.838	0.261	1.099	NO
	802.11n HT40	159	0.838	0.171	1.009	NO

18 Equipment List & Calibration Status

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Cycle(year)	Calibration Due
S-Parameter Network Analyzer	Agilent	E8358A	MY46213916	1	2014/6/3
Electronic Probe kit	Hewlett Packard	85070D	N/A	N/A	N/A
Power Meter	Agilent	4416	GB41291611	1	2014/9/10
Power Sensor	Agilent	8481H	MY41091956	1	2014/9/11
Wireless Communication Test Set	Agilent	E5515C 8960	MY48363204	1	2014/9/6
Radio Communication Analyzer	Anritsu	MT8820C	6200938900	1	2014/5/30
Data Acquisition Electronics (DAE)	SPEAG	DAE4	558	1	2014/7/24
Dosimetric E-Field Probe	SPEAG	EX3DV4	3554	1	2014/9/25
750 MHz System Validation Dipole	SPEAG	D750V3	1015	1	2014/8/25
835 MHz System Validation Dipole	SPEAG	D835V2	4d015	1	2014/3/17
1800 MHz System Validation Dipole	SPEAG	D1800V2	2d062	1	2014/2/11
1900 MHz System Validation Dipole	SPEAG	D1900V2	5d056	1	2014/2/12
Robot	Staubli	RX60L	F02/5T69A1/A/01	N/A	N/A
Amplifier	Mini-Circuit	ZVE-8G	665500309	N/A	N/A
Amplifier	Mini-Circuit	ZHL-1724HLN	D072602#2	N/A	N/A

19 Facilities

All measurement facilities used to collect the measurement data are located at

☐ No. 81-1, Lane 210, Bade Rd. 2, Luchu Hsiang, Taoyuan Hsien, Taiwan, R.O.C.

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

☐ No. 199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

20 Reference

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21 Attachments

Exhibit	Content
1	System Performance Check Plots
2	SAR test plots for GPRS 850
3	SAR test plots for GPRS 1900
4	SAR test plots for WCDMA Band II
5	SAR test plots for WCDMA Band IV
6	SAR test plots for WCDMA Band V
7	SAR test plots for LTE Band 2
8	SAR test plots for LTE Band 4
9	SAR test plots for LTE Band 5
10	SAR test plots for LTE Band 7
11	SAR test plots for LTE Band 13
12	SAR test plots for LTE Band 17
13	SAR_Probe_EX3DV4_sn3665
14	SAR_DAE4_sn877
15	SAR_Dipole_D750v3_sn1015
16	SAR_Dipole_D835v2_sn4d015
17	SAR_Dipole_D1800v2_sn2d062
18	SAR_Dipole_D1900v2_sn5d056
19	SAR_Dipole_D2450v2_sn728
20	T140331W01-SF PHOTOs

END OF REPORT