ANSI/IEEE Std. C95.1-1992

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

FCC TEST REPORT

For

Rugged Tablet PC

Trade Name: Winmate

Model: M101 Series

Issued to

WINMATE Communication INC.
9F, No. 111-6, Shing-De Rd., San-Chung Dist,
New Taipei 24158, 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: 2014/1/23

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	2014/01/23	Initial Issue	ALL	Scott Hsu
01	2014/01/29	Revise Model name	1,5,6	Scott Hsu

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1 Certificate of Compliance (SAR Evaluation)

Applicant	WINMATE Communication INC. 9F, No. 111-6, Shing-De Rd., San-Chung Dist, New Taipei 24158, Taiwan, R.O.C
Equipment Under Test:	Rugged Tablet PC
Trade Name:	Winmate
Model Number:	M101 Series
Date of Test:	January 07 ~ January 22, 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 v01r02 ● KDB 447498 D01 General RF Exposure Guidance v05r01 ● 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		Rugged Tablet PC		
Trade Name		Winmate		
Model Number		M101 Series		
Transmitters		GPRS & WCDMA & CDMA2000 & LTE		
Modulation Technique		GPRS:GMSK		
		WCDMA:BPSK		
		CDMA2000:QPSK		
		LTE:QPSK/16QAM		
Antenna Specification		WWAN	Brand name	Brito
			Parts Number	39700030000J
			Type	PIFA
FCC Rule Parts	Band	Frequency Range		Highest Reported 1-g SAR
22	GPRS 850	824 - 849 MHz		1.271 W/kg (Edge4)
24	GPRS 1900	1850 - 1910 MHz		0.782 W/kg (Edge4)
24	WCDMA Band II	1850 - 1910 MHz		1.252 W/kg (Rear)
24	WCDMA Band IV	1710 - 1755 MHz		1.505 W/kg (Rear)
22	WCDMA Band V	824 - 849 MHz		0.723 W/kg (Edge4)
22	CDMA Cellular Band	824 - 849 MHz		0.836 W/kg (Edge4)
24	CDMA PCS Band	1850 - 1910 MHz		1.378 W/kg (Edge4)
24	LTE Band 2	1850 - 1910 MHz		1.045 W/kg (Rear)
27	LTE Band 4	1710 - 1755 MHz		1.187 W/kg (Rear)
22	LTE Band 5	824 - 849 MHz		0.490 W/kg (Edge4)
24	LTE Band 13	777 - 787 MHz		0.651 W/kg (Edge4)
27	LTE Band 17	704 - 716 MHz		0.726 W/kg (Edge4)
24	LTE Band 25	1850 - 1910 MHz		1.063 W/kg (Rear)
Rechargeable Li-polymer Battery–alternate		Brand: T-GEE Model: BS101 Rating: DC7.4V/5300mAh /39.22Wh		

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

3 Requirements for Compliance Testing Defined

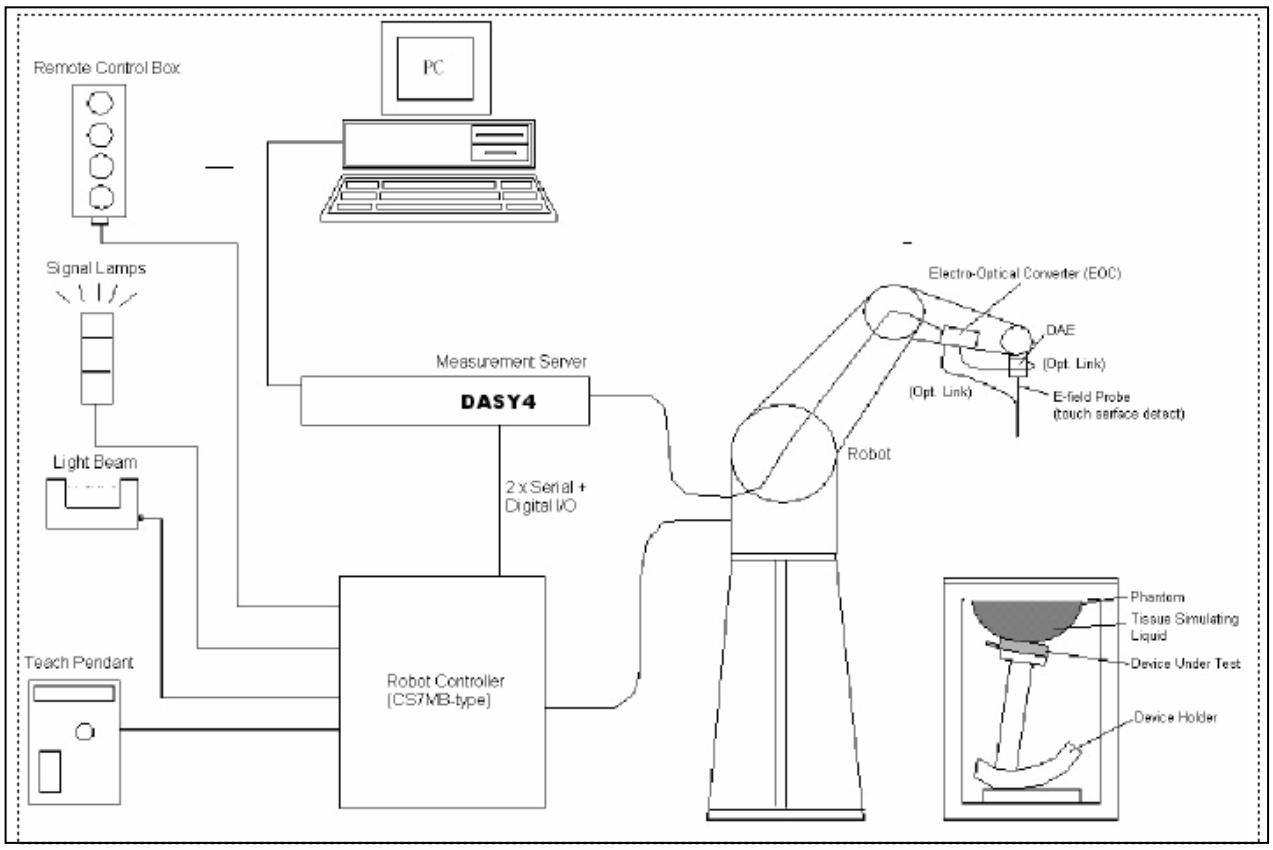
3.1 Requirements for Compliance Testing Defined by the FCC

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: 3554 (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)

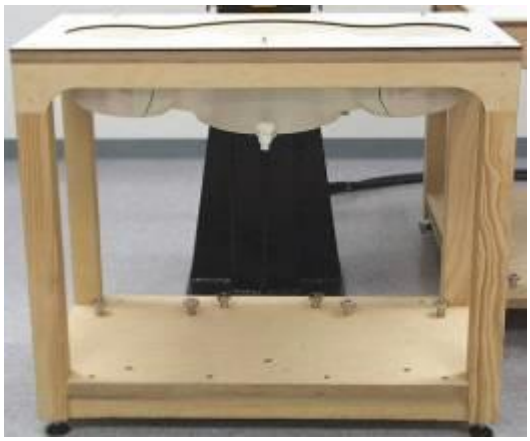
Dimensions: Overall length: 330 mm (Tip: 20 mm)
Tip diameter: 2.5 mm (Body: 12 mm)
Distance from probe tip to dipole centers: 1 mm

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 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

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 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

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

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 v01r01

<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 v01r01

<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 • CDMA Cellular Band: 824 – 849 MHz • CDMA PCS Band: 1850 – 1910 MHz • LTE Band 2: 1850 – 1910 MHz • LTE Band 4: 1710 – 1755 MHz • LTE Band 5: 824 – 849 MHz • LTE Band 13: 777 – 787 MHz • LTE Band 17: 704 – 716 MHz • LTE Band 25: 1850 – 1915 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, CAT3)

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

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	33	1995	5.6	66.6	256.6	53.5	5.6		323.42	>50mm	>50mm	>50mm	323.42	N/A
WWAN Main	GPRS1900	1850.2	30	1000	5.6	66.6	256.6	53.5	5.6		242.9	>50mm	>50mm	>50mm	242.9	N/A
WWAN Main	WCDMA Band II	1852.4	24	251	5.6	66.6	256.6	53.5	5.6		61.003	>50mm	>50mm	>50mm	61.003	N/A
WWAN Main	WCDMA Band IV	1712.4	24	251	5.6	66.6	256.6	53.5	5.6		58.653	>50mm	>50mm	>50mm	58.653	N/A
WWAN Main	WCDMA Band V	826.4	24	251	5.6	66.6	256.6	53.5	5.6		40.746	>50mm	>50mm	>50mm	40.746	N/A
WWAN Main	CDMA Cellular	824.7	25	316	5.6	66.6	256.6	53.5	5.6		51.244	>50mm	>50mm	>50mm	51.244	N/A
WWAN Main	CDMA PCS	1851.25	25	316	5.6	66.6	256.6	53.5	5.6		76.777	>50mm	>50mm	>50mm	76.777	N/A
WWAN Main	LTE Band 2	1880	24	251	5.6	66.6	256.6	53.5	5.6		61.456	>50mm	>50mm	>50mm	61.456	N/A
WWAN Main	LTE Band 4	1732.5	24	251	5.6	66.6	256.6	53.5	5.6		58.996	>50mm	>50mm	>50mm	58.996	N/A
WWAN Main	LTE Band 5	836.5	24	251	5.6	66.6	256.6	53.5	5.6		40.994	>50mm	>50mm	>50mm	40.994	N/A
WWAN Main	LTE Band 13	752	24	251	5.6	66.6	256.6	53.5	5.6		38.868	>50mm	>50mm	>50mm	38.868	N/A
WWAN Main	LTE Band 17	710	24	251	5.6	66.6	256.6	53.5	5.6		37.767	>50mm	>50mm	>50mm	37.767	N/A
WWAN Main	LTE Band 25	1882.5	24	251	5.6	66.6	256.6	53.5	5.6		61.497	>50mm	>50mm	>50mm	61.497	N/A

Note(s):

1. According to KDB 447498 v05 r01 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

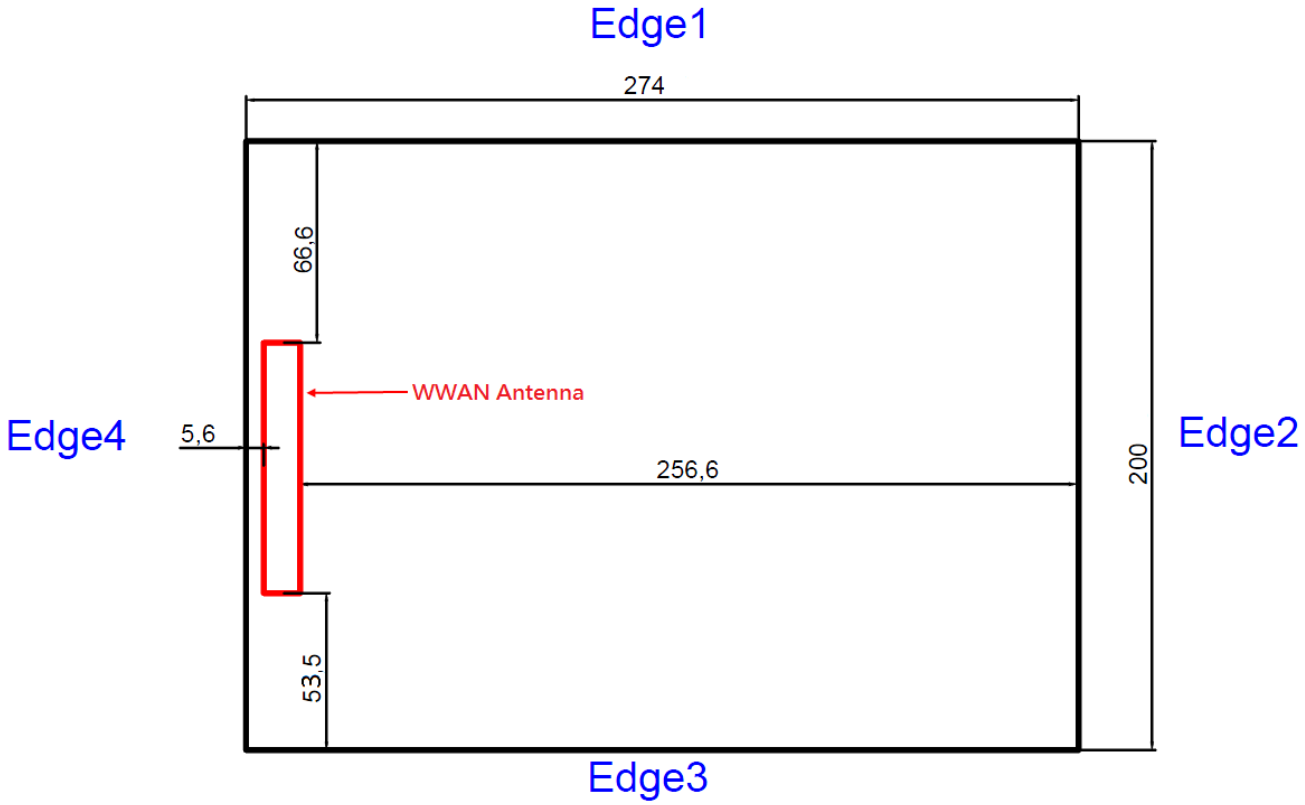
Edges and Rear

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	33	1995	5.6	66.6	256.6	53.5	5.6		<50mm	256.44	>200mm	184.46	<50mm	N/A
WWAN Main	GPRS1900	1850.2	30	1000	5.6	66.6	256.6	53.5	5.6		<50mm	276.28	>200mm	145.28	<50mm	N/A
WWAN Main	WCDMA Band II	1852.4	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	276.21	>200mm	145.21	<50mm	N/A
WWAN Main	WCDMA Band IV	1712.4	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	280.63	>200mm	149.63	<50mm	N/A
WWAN Main	WCDMA Band V	826.4	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	256.46	>200mm	184.29	<50mm	N/A
WWAN Main	CDMA Cellular	824.7	25	316	5.6	66.6	256.6	53.5	5.6		<50mm	256.44	>200mm	184.42	<50mm	N/A
WWAN Main	CDMA PCS	1851.25	25	316	5.6	66.6	256.6	53.5	5.6		<50mm	276.24	>200mm	145.24	<50mm	N/A
WWAN Main	LTE Band 2	1880	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	275.40	>200mm	144.40	<50mm	N/A
WWAN Main	LTE Band 4	1732.5	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	279.96	>200mm	148.96	<50mm	N/A
WWAN Main	LTE Band 5	836.5	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	256.58	>200mm	183.52	<50mm	N/A
WWAN Main	LTE Band 13	752	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	256.20	>200mm	190.52	<50mm	N/A
WWAN Main	LTE Band 17	710	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	256.59	>200mm	194.58	<50mm	N/A
WWAN Main	LTE Band 25	1882.5	24	251	5.6	66.6	256.6	53.5	5.6		<50mm	275.33	>200mm	144.33	<50mm	N/A

Note(s):

1. According to KDB 447498 v05 r01, if the calculated Power threshold is less than the output power then SAR testing is required.

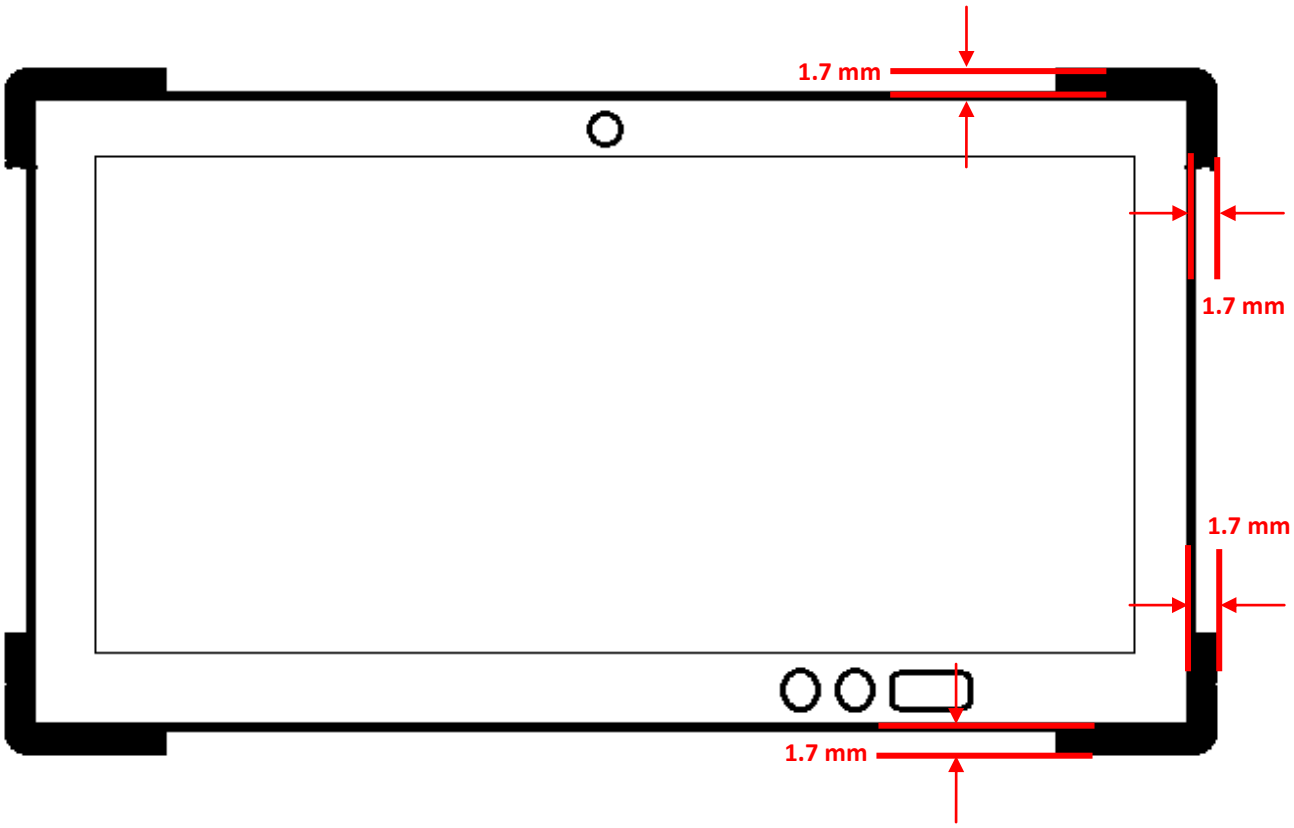
8.2 Required Test Configuration



(mm)

Separation Distance (mm)	WWAN Antenna
Top-Edge (Edge1)	66.6
Right-Edge (Edge2)	256.6
Bottom-Edge (Edge3)	53.5
Left-Edge (Edge4)	5.6
Rear Surface	5.6

Schematic of Bumpers



8.2.1 For WWAN

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

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			TX:1850 – 1910 MHz			
		Band 4						
		TX:1710 – 1755 MHz			TX:1710 – 1755 MHz			
		Band 5						
		TX:824 – 849 MHz			TX:824 – 849 MHz			
		Band 13						
		TX:777 – 787 MHz			TX:777 – 787 MHz			
		Band 17						
		TX:704 – 716 MHz			TX:704 – 716 MHz			
		Band 25						
		TX:1850 – 1915 MHz			TX:1850 – 1915 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	✓	✓	✓	✓	×	×
		Band13	×	×	✓	✓	×	×
		Band17	×	×	✓	✓	×	×
		Band25	✓	✓	✓	✓	✓	✓
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 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>
<tr><td rowspan="2">Band 25</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>26047/ 1850.7</td><td>26055/ 1851.5</td><td>26065/ 1852.5</td><td>26090/ 1855</td><td>26115/ 1857.5</td><td>26140/ 1860</td></tr>
<tr><td>Mid</td><td>26365/ 1882.5</td><td>26365/ 1882.5</td><td>26365/ 1882.5</td><td>26365/ 1882.5</td><td>26365/1 882.5</td><td>26365/ 1882.5</td></tr>
<tr><td>High</td><td>26682/ 1914.2</td><td>26674/ 1913.4</td><td>26665/1 912.5</td><td>26640/ 1910</td><td>26615/1 907.5</td><td>26590/ 1905</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 Measurement Uncertainty

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

Uncertainty Component	Uncertainty	Prob.	Div.	$c_{i\ (1g)}$	Std. Unc.(1-g)	$v_{i\ or\ Veff}$
Measurement System						
Probe Calibration (k=1)	5.90	Normal	1	1	5.9	∞
Axial Isotropy	4.70	Rectangular	$\sqrt{3}$	1	2.7	∞
Hemisphericallsotropy	9.60	Rectangular	$\sqrt{3}$	0	0.0	∞
Boundary Effect	1.00	Rectangular	$\sqrt{3}$	1	0.6	∞
Linearity	4.70	Rectangular	$\sqrt{3}$	1	2.7	∞
System Detection Limit	1.00	Rectangular	$\sqrt{3}$	1	0.6	∞
Readout Electronics	0.30	Normal	1	1	0.3	∞
Response Time	0.00	Rectangular	$\sqrt{3}$	1	0.0	∞
Integration Time	0.00	Rectangular	$\sqrt{3}$	1	0.0	∞
RFAmbientNoise	3.00	Rectangular	$\sqrt{3}$	1	1.7	∞
RF Ambient Reflections	3.00	Rectangular	$\sqrt{3}$	1	1.7	∞
Probe Positioner	0.40	Rectangular	$\sqrt{3}$	1	0.2	∞
Probe Positioning	2.90	Rectangular	$\sqrt{3}$	1	1.7	∞
Algorithms for Max. SAR Evaluation	1.00	Rectangular	$\sqrt{3}$	1	0.6	∞
Diople						
DipoleAxistoLiquidDistance	2.00	Normal	$\sqrt{3}$	1	1.2	∞
InputpowerandSARdriftmeas.	4.70	Normal	$\sqrt{3}$	1	2.7	∞
Phantom and Tissue Parameters						
Phantom Uncertainty (shape and thickness tolerances)	4.00	Rectangular	$\sqrt{3}$	1	2.3	∞
Liquid Conductivity - deviation from target values	5.00	Rectangular	$\sqrt{3}$	0.64	1.8	∞
Liquid Conductivity - measurement uncertainty	3.94	Normal	1	0.64	2.5	∞
Liquid Permittivity - deviation from target values	5.00	Rectangular	$\sqrt{3}$	0.6	1.7	∞
Liquid Permittivity - measurement uncertainty	4.02	Normal	1	0.6	2.4	∞
Temp. Unc. - Conductivity	1.70	Rectangular	$\sqrt{3}$	0.78	0.77	∞
Temp. Unc. - Permittivity	0.30	Rectangular	$\sqrt{3}$	0.23	0.04	∞
CombinedStdandardUncertainty					9.63	611
CoverageFactorfor95%		kp=2			19.26%	
Expanded Uncertainty		k=2			1.53dB	

11 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

12 Tissue Dielectric Properties

12.1 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

12.2 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

12.3 Simulating Liquids Parameter Check Results

Date	Band	Freq(MHz)	Measured			Standard		Δ		Limit
			e' (εr)	e''	σ	e' (εr)	σ	e' (εr)	σ	±5
2014/1/13	Body 900	824.2	57.46	20.59	0.94	55.24	0.97	4.02%	-2.72%	±5
		836.6	57.37	20.57	0.96	55.20	0.97	3.94%	-1.54%	±5
		848.8	57.25	20.56	0.97	55.16	0.99	3.80%	-1.67%	±5
2014/1/15	Body 1900	1850.2	54.12	14.48	1.49	53.30	1.52	1.55%	-2.11%	±5
		1880	54.05	14.59	1.52	53.30	1.52	1.41%	0.25%	±5
		1909.8	53.99	14.66	1.56	53.30	1.52	1.30%	2.34%	±5
2014/1/16	Body 1800	1712.4	52.93	15.27	1.45	53.53	1.46	-1.12%	-0.77%	±5
		1732.4	52.85	15.32	1.47	53.48	1.48	-1.18%	-0.18%	±5
		1752.6	52.77	15.39	1.50	53.43	1.49	-1.23%	0.59%	±5
2014/1/17	Body 750	779.5	56.55	22.70	0.98	55.42	0.97	2.04%	1.81%	±5
		782	56.52	22.68	0.99	55.41	0.97	2.00%	2.02%	±5
		784.5	56.49	22.67	0.99	55.40	0.97	1.97%	2.28%	±5
2014/1/20	Body 1900	1855	54.35	14.83	1.53	53.30	1.52	1.96%	0.54%	±5
		1880	54.30	14.87	1.55	53.30	1.52	1.87%	2.19%	±5
		1905	54.17	14.93	1.58	53.30	1.52	1.63%	3.94%	±5
2014/1/21	Body 1900	1855	54.17	14.71	1.52	53.30	1.52	1.64%	-0.30%	±5
		1880	54.11	14.77	1.54	53.30	1.52	1.51%	1.51%	±5
		1905	54.04	14.85	1.57	53.30	1.52	1.38%	3.36%	±5
2014/1/21	Body 900	826.5	55.27	21.09	0.97	55.24	0.97	0.06%	-0.08%	±5
		836.5	55.16	21.06	0.98	55.20	0.97	-0.07%	0.78%	±5
		846.5	55.06	21.04	0.99	55.17	0.98	-0.19%	0.60%	±5
2014/1/22	Body 1800	1715	53.16	15.09	1.44	53.52	1.47	-0.68%	-1.94%	±5
		1732.5	53.21	15.18	1.46	53.48	1.48	-0.51%	-1.07%	±5
		1750	53.28	15.19	1.48	53.43	1.49	-0.29%	-0.78%	±5

13 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-fileld probe EX3DV4 SN: 3554 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	08/26/2013	750	1g	8.48	8.75
				10g	5.52	5.75
D835V2	4d015	03/18/2013	850	1g	9.61	9.59
				10g	6.26	6.31
D1800V2	2d062	02/12/2013	1800	1g	38.7	38.5
				10g	20.3	20.3
D1900V2	5d056	02/13/2013	1900	1g	40.1	40.4
				10g	21.0	21.5

13.1 System Performance Check Results

Date	System Dipole			Parameters	Target	Measured	Deviation[%]	Limited[%]
	Type	Serial No.	Liquid					
2014/1/13	D835V2	4d015	Body	1g SAR:	9.59	9.51	-0.83	± 5
				10g SAR:	6.31	6.37	0.95	± 5
2014/1/15	D1900V2	5d056	Body	1g SAR:	40.40	40.20	-0.50	± 5
				10g SAR:	21.50	21.00	-2.33	± 5
2014/1/16	D1800V2	2d062	Body	1g SAR:	38.50	40.00	3.90	± 5
				10g SAR:	20.30	21.00	3.45	± 5
2014/1/17	D750V3	1015	Body	1g SAR:	8.75	9.04	3.31	± 5
				10g SAR:	5.75	5.95	3.48	± 5
2014/1/20	D1900V2	5d056	Body	1g SAR:	40.40	40.90	1.24	± 5
				10g SAR:	21.50	21.30	-0.93	± 5
2014/1/21	D1900V2	5d056	Body	1g SAR:	40.40	40.20	-0.50	± 5
				10g SAR:	21.50	21.10	-1.86	± 5
2014/1/21	D835V2	4d015	Body	1g SAR:	9.59	9.48	-1.15	± 5
				10g SAR:	6.31	6.29	-0.32	± 5
2014/1/22	D1800V2	2d062	Body	1g SAR:	38.50	39.80	3.38	± 5
				10g SAR:	20.30	20.90	2.96	± 5

14 RF Output Power Measurement

14.1 GPRS 850

GMSK (GPRS) Mode Coding scheme : CS-1

Target Power: 32 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	Average power(dBm)	Frame Avg Pwr
GPRS 850	1	128	824.2	32.0	23.0
		190	836.6	32.0	22.9
		251	848.8	32.0	22.9
GPRS 850	2	128	824.2	31.8	25.8
		190	836.6	31.9	25.9
		251	848.8	31.9	25.9

EGPRS 850

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

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

Band	Slot	Channel No.	Frequency (MHz)	Average power(dBm)	Frame Avg Pwr
EGPRS 850	1	128	824.2	26.6	17.5
		190	836.6	26.6	17.6
		251	848.8	26.6	17.5
EGPRS 850	2	128	824.2	26.4	20.4
		190	836.6	26.5	20.4
		251	848.8	26.5	20.5
EGPRS 850	3	128	824.2	26.2	22.0
		190	836.6	26.3	22.0
		251	848.8	26.2	21.9
EGPRS 850	4	128	824.2	26.0	23.0
		190	836.6	26.0	23.0
		251	848.8	26.1	23.1

14.2 GPRS 1900

GMSK (GPRS) Mode Coding scheme : CS-1

Target Power: 29 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	Average power(dBm)	Frame Avg Pwr
GPRS 1900	1	512	1850.2	29.2	20.2
		661	1880.0	29.4	20.4
		810	1909.8	29.4	20.3
GPRS 1900	2	512	1850.2	29.1	23.1
		661	1880.0	29.3	23.3
		810	1909.8	29.3	23.3

EGPRS 1900

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

Target Power: 26 dBm
Tolerance: +/- 1 dBm

Band	Slot	Channel No.	Frequency (MHz)	Average power(dBm)	Frame Avg Pwr
EGPRS 1900	1	512	1850.2	25.4	16.3
		661	1880.0	25.5	16.4
		810	1909.8	25.4	16.3
EGPRS 1900	2	512	1850.2	25.3	19.3
		661	1880.0	25.4	19.4
		810	1909.8	25.4	19.3
EGPRS 1900	3	512	1850.2	25.3	21.0
		661	1880.0	25.2	20.9
		810	1909.8	25.2	20.9
EGPRS 1900	4	512	1850.2	25.0	22.0
		661	1880.0	25.2	22.2
		810	1909.8	25.1	22.1

14.3 WCDMA Band II

Target Power: 23 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)	Average power(dBm)
WCDMA Band II	---	9262/9662	1852.4	22.5
		9400/9800	1880.0	22.4
		9538/9983	1907.6	22.5

HSDPA
Target Power: 23 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)	Average power(dBm)
HSDPA II	1	9262/9662	1852.4	21.3
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.3
	2	9262/9662	1852.4	21.3
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.3
	3	9262/9662	1852.4	21.2
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.3
	4	9262/9662	1852.4	21.3
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.3

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)	Average power(dBm)
HSUPA II	1	9262/9662	1852.4	21.3
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.3
	2	9262/9662	1852.4	20.7
		9400/9800	1880.0	20.8
		9538/9983	1907.6	20.7
	3	9262/9662	1852.4	21.2
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.3
	4	9262/9662	1852.4	20.5
		9400/9800	1880.0	20.6
		9538/9983	1907.6	20.5
	5	9262/9662	1852.4	21.4
		9400/9800	1880.0	21.4
		9538/9983	1907.6	21.4

14.4 WCDMA Band IV

Target Power: 23dBm
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)	Average power(dBm)
WCDMA Band IV	---	1312/1537	1712.4	22.6
		1413/1638	1732.6	22.6
		1513/1738	1752.6	22.6

HSDPA
Target Power: 23dBm
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)	Average power(dBm)
HSDPA IV	1	1312/1537	1712.4	22.5
		1413/1638	1732.6	22.4
		1513/1738	1752.6	22.5
	2	1312/1537	1712.4	22.6
		1413/1638	1732.6	22.5
		1513/1738	1752.6	22.5
	3	1312/1537	1712.4	22.0
		1413/1638	1732.6	21.9
		1513/1738	1752.6	21.9
	4	1312/1537	1712.4	21.8
		1413/1638	1732.6	22.0
		1513/1738	1752.6	22.2

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)	Average power(dBm)
HSUPA IV	1	1312/1537	1712.4	21.9
		1413/1638	1732.6	22.2
		1513/1738	1752.6	22.0
	2	1312/1537	1712.4	20.4
		1413/1638	1732.6	20.5
		1513/1738	1752.6	20.3
	3	1312/1537	1712.4	21.6
		1413/1638	1732.6	21.3
		1513/1738	1752.6	21.5
	4	1312/1537	1712.4	21.2
		1413/1638	1732.6	21.3
		1513/1738	1752.6	21.3
	5	1312/1537	1712.4	22.3
		1413/1638	1732.6	22.4
		1513/1738	1752.6	22.6

14.5 WCDMA Band V

Target Power: 23dBm
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)	Average power(dBm)
WCDMA Band V	---	4132/4157	826.4	22.2
		4182/4407	836.4	22.3
		4233/4458	846.6	22.2

HSDPA
Target Power: 23dBm
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)	Average power(dBm)
HSDPA V	1	4132/4157	826.4	21.3
		4182/4407	836.4	21.4
		4233/4458	846.6	21.3
	2	4132/4157	826.4	21.3
		4182/4407	836.4	21.4
		4233/4458	846.6	21.3
	3	4132/4157	826.4	21.2
		4182/4407	836.4	21.4
		4233/4458	846.6	21.3
	4	4132/4157	826.4	21.3
		4182/4407	836.4	21.4
		4233/4458	846.6	21.3

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)	Average power(dBm)
HSUPA V	1	4132/4157	826.4	21.3
		4182/4407	836.4	21.4
		4233/4458	846.6	21.3
	2	4132/4157	826.4	20.7
		4182/4407	836.4	20.8
		4233/4458	846.6	20.7
	3	4132/4157	826.4	21.2
		4182/4407	836.4	21.4
		4233/4458	846.6	21.3
	4	4132/4157	826.4	20.5
		4182/4407	836.4	20.6
		4233/4458	846.6	20.5
	5	4132/4157	826.4	21.4
		4182/4407	836.4	21.4
		4233/4458	846.6	21.4

14.6 CDMA Cellular Band

1xRTT

Target Power: 24dBm
Tolerance: +/- 1 dBm

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application	Rev, License
CDMA2000 Mobile Test	B.13.08, L

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 387 for BC0
  > Network ID (NID) > 65535
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
  > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

Output power table

Band	Mode	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)
Cellular	RC1 SO55 (Loopback)	1013	824.70	23.2
		384	836.52	23.4
		777	848.31	23.0
	RC3 SO55 (Loopback)	1013	824.70	23.2
		384	836.52	23.3
		777	848.31	23.0
	RC3 SO32 ((+F-SCH))	1013	824.70	23.1
		384	836.52	23.3
		777	848.31	22.9

14.7 CDMA PCS Band

1xRTT

Target Power: 24dBm、23.5dBm(channel:1175)
Tolerance: +/- 1 dBm

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

Application	Rev, License
CDMA2000 Mobile Test	B.13.08, L

- Call Setup > Shift & Preset
- Cell Info > Cell Parameters > System ID (SID) > 387 for BC1
  > Network ID (NID) > 65535
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > Please see following table or details
- FCH Service Option (SO) Setup > Please see following table or details
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps
  > R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Rvs Power Ctrl > Active bits
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

Output power table

Band	Mode	UL/DL Channel No.	Frequency(MHz)	Average power(dBm)
PCS	RC1 SO55 (Loopback)	25	1851.25	23.1
		600	1880.00	23.0
		1175	1908.75	23.0
	RC3 SO55 (Loopback)	25	1851.25	23.1
		600	1880.00	22.6
		1175	1908.75	23.0
	RC3 SO32 ((+F-SCH))	25	1851.25	23.1
		600	1880.00	22.6
		1175	1908.75	23.0

14.8 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.					

14.9 LTE Band 2

Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
2	20	18700	1860.0	QPSK	1	0	0	22.7
					1	49	0	22.8
					1	99	0	22.7
					50	0	1	21.8
					50	24	1	21.8
					50	49	1	21.8
					100	0	1	21.9
				16QAM	1	0	1	21.8
					1	49	1	21.9
					1	99	1	21.8
					50	0	2	20.8
					50	24	2	20.8
					50	49	2	20.9
					100	0	2	20.8
		18900	1880.0	QPSK	1	0	0	22.6
					1	49	0	22.7
					1	99	0	22.6
					50	0	1	21.7
					50	24	1	21.7
					50	49	1	21.8
					100	0	1	21.7
				16QAM	1	0	1	21.7
					1	49	1	21.8
					1	99	1	21.7
					50	0	2	20.7
					50	24	2	20.8
					50	49	2	20.7
					100	0	2	20.7
		19100	1900.0	QPSK	1	0	0	22.9
					1	49	0	22.8
					1	99	0	23.4
					50	0	1	22.0
					50	24	1	21.9
					50	49	1	22.4
					100	0	1	21.9
				16QAM	1	0	1	22.0
					1	49	1	21.9
					1	99	1	22.1
					50	0	2	20.9
					50	24	2	20.9
					50	49	2	21.0
					100	0	2	21.4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
2	15	18675	1857.5	QPSK	1	0	0	23.0
					1	37	0	23.1
					1	74	0	23.0
					36	0	1	22.1
					36	18	1	22.4
					36	35	1	22.3
					75	0	1	22.1
				16QAM	1	0	1	22.1
					1	37	1	22.3
					1	74	1	22.1
					36	0	2	21.1
					36	18	2	21.1
					36	35	2	21.2
					75	0	2	21.1
		18900	1880.0	QPSK	1	0	0	23.4
					1	37	0	22.9
					1	74	0	22.8
					36	0	1	22.6
					36	18	1	22.5
					36	35	1	22.5
					75	0	1	22.4
				16QAM	1	0	1	22.7
					1	37	1	22.6
					1	74	1	22.5
					36	0	2	21.5
					36	18	2	21.5
					36	35	2	21.5
					75	0	2	21.4
		19125	1902.5	QPSK	1	0	0	22.9
					1	37	0	23.2
					1	74	0	23.2
					36	0	1	22.1
					36	18	1	22.0
					36	35	1	22.0
					75	0	1	22.1
				16QAM	1	0	1	22.0
					1	37	1	22.4
					1	74	1	22.4
					36	0	2	21.1
					36	18	2	21.0
					36	35	2	21.1
					75	0	2	21.0

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
2	10	18650	1855.0	QPSK	1	0	0	23.0
					1	24	0	23.1
					1	49	0	23.1
					25	0	1	22.1
					25	12	1	22.0
					25	24	1	22.1
					50	0	1	22.0
				16QAM	1	0	1	22.0
					1	24	1	22.2
					1	49	1	22.2
					25	0	2	21.2
					25	12	2	21.1
					25	24	2	21.1
					50	0	2	21.0
		18900	1880.0	QPSK	1	0	0	23.5
					1	24	0	23.4
					1	49	0	23.4
					25	0	1	22.8
					25	12	1	22.8
					25	24	1	22.7
					50	0	1	22.7
				16QAM	1	0	1	22.8
					1	24	1	22.8
					1	49	1	22.7
					25	0	2	21.8
					25	12	2	21.9
					25	24	2	21.8
					50	0	2	21.7
		19150	1905.0	QPSK	1	0	0	23.0
					1	24	0	23.1
					1	49	0	23.2
					25	0	1	22.1
					25	12	1	22.0
					25	24	1	22.0
					50	0	1	22.0
				16QAM	1	0	1	22.1
					1	24	1	22.2
					1	49	1	22.2
					25	0	2	21.0
					25	12	2	21.1
					25	24	2	21.1
					50	0	2	21.1

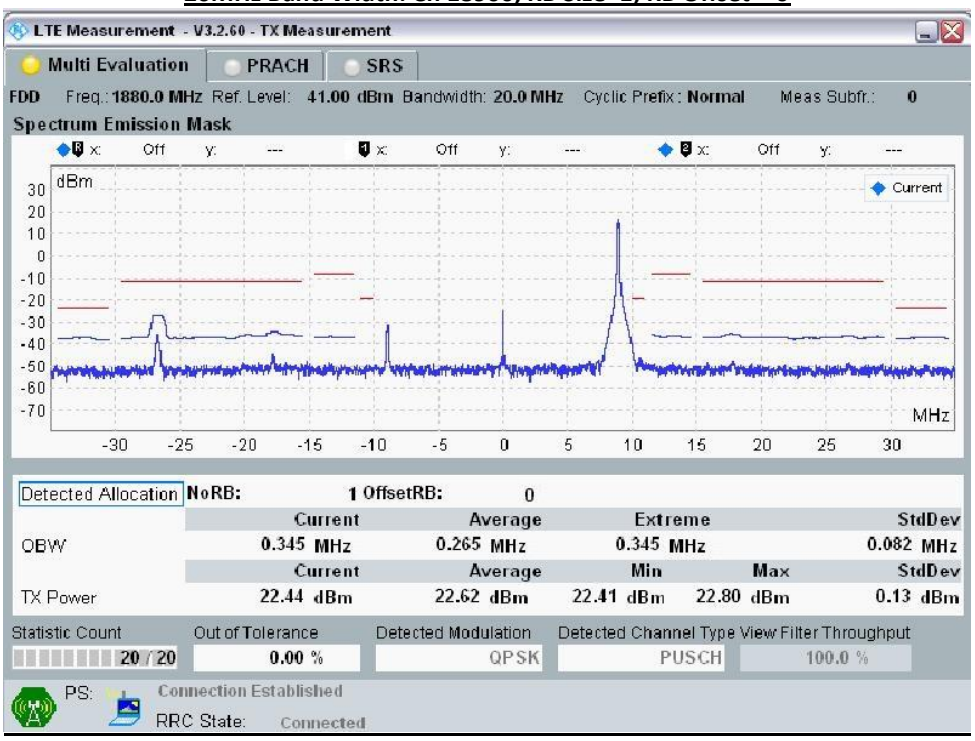
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
2	5	18625	1852.5	QPSK	1	0	0	23.1
					1	12	0	23.2
					1	24	0	23.1
					12	0	1	22.1
					12	6	1	22.1
					12	11	1	22.2
					25	0	1	22.1
				16QAM	1	0	1	22.2
					1	12	1	22.3
					1	24	1	22.2
					12	0	2	21.3
					12	6	2	21.3
					12	11	2	21.3
					25	0	2	21.2
		18900	1880.0	QPSK	1	0	0	23.6
					1	12	0	23.1
					1	24	0	22.9
					12	0	1	22.8
					12	6	1	22.7
					12	11	1	22.7
					25	0	1	22.6
				16QAM	1	0	1	22.7
					1	12	1	22.3
					1	24	1	22.1
					12	0	2	21.7
					12	6	2	21.7
					12	11	2	21.6
					25	0	2	21.6
		19175	1907.5	QPSK	1	0	0	23.1
					1	12	0	23.1
					1	24	0	23.2
					12	0	1	22.2
					12	6	1	22.2
					12	11	1	22.2
					25	0	1	22.1
				16QAM	1	0	1	22.0
					1	12	1	22.4
					1	24	1	22.3
					12	0	2	21.2
					12	6	2	21.2
					12	11	2	21.2
					25	0	2	21.1

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
2	3	18615	1851.5	QPSK	1	0	0	23.0
					1	7	0	23.1
					1	14	0	23.0
					8	0	1	22.1
					8	4	1	22.0
					8	7	1	22.1
					15	0	1	22.0
				16QAM	1	0	1	22.1
					1	7	1	22.2
					1	14	1	22.1
					8	0	2	21.1
					8	4	2	21.1
					8	7	2	21.1
					15	0	2	21.1
		18900	1880.0	QPSK	1	0	0	23.2
					1	7	0	23.1
					1	14	0	22.9
					8	0	1	22.5
					8	4	1	22.4
					8	7	1	22.4
					15	0	1	22.3
				16QAM	1	0	1	22.3
					1	7	1	22.3
					1	14	1	22.2
					8	0	2	21.2
					8	4	2	21.4
					8	7	2	21.3
					15	0	2	21.3
		19184	1908.4	QPSK	1	0	0	23.1
					1	7	0	23.2
					1	14	0	23.2
					8	0	1	22.1
					8	4	1	22.2
					8	7	1	22.3
					15	0	1	22.2
				16QAM	1	0	1	22.2
					1	7	1	22.3
					1	14	1	22.3
					8	0	2	21.2
					8	4	2	21.2
					8	7	2	21.3
					15	0	2	21.2

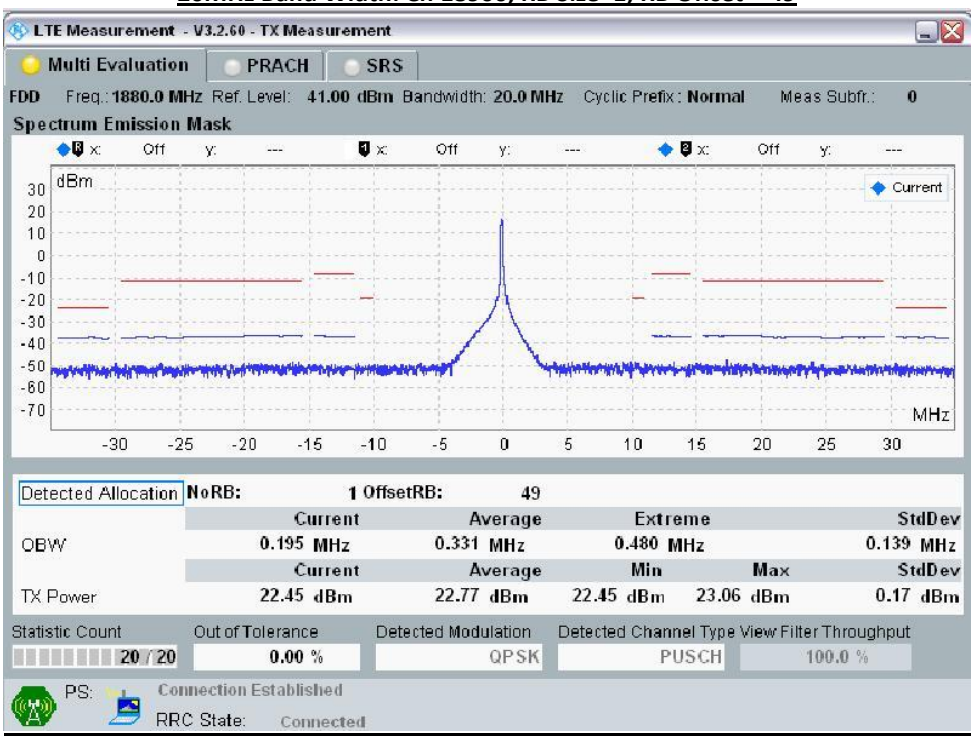
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
2	1.4	18607	1850.7	QPSK	1	0	0	22.7
					1	2	0	22.7
					1	5	0	22.8
					3	0	1	22.7
					3	1	1	22.7
					3	2	1	22.7
					6	0	1	21.7
				16QAM	1	0	1	21.9
					1	2	1	21.8
					1	5	1	21.8
					3	0	2	21.8
					3	1	2	21.7
					3	2	2	21.7
					6	0	2	20.8
		18900	1880.0	QPSK	1	0	0	22.7
					1	2	0	22.7
					1	5	0	22.8
					3	0	1	22.7
					3	1	1	22.6
					3	2	1	22.6
					6	0	1	21.7
				16QAM	1	0	1	21.9
					1	2	1	21.8
					1	5	1	21.9
					3	0	2	21.7
					3	1	2	21.7
					3	2	2	21.7
					6	0	2	20.7
		19192	1909.2	QPSK	1	0	0	22.9
					1	2	0	23.0
					1	5	0	23.1
					3	0	1	22.8
					3	1	1	22.9
					3	2	1	22.9
					6	0	1	22.0
				16QAM	1	0	1	21.9
					1	2	1	22.0
					1	5	1	22.0
					3	0	2	21.8
					3	1	2	21.8
					3	2	2	21.8
					6	0	2	21.0

14.9.1 Spectrum Plots for the Test RB allocations

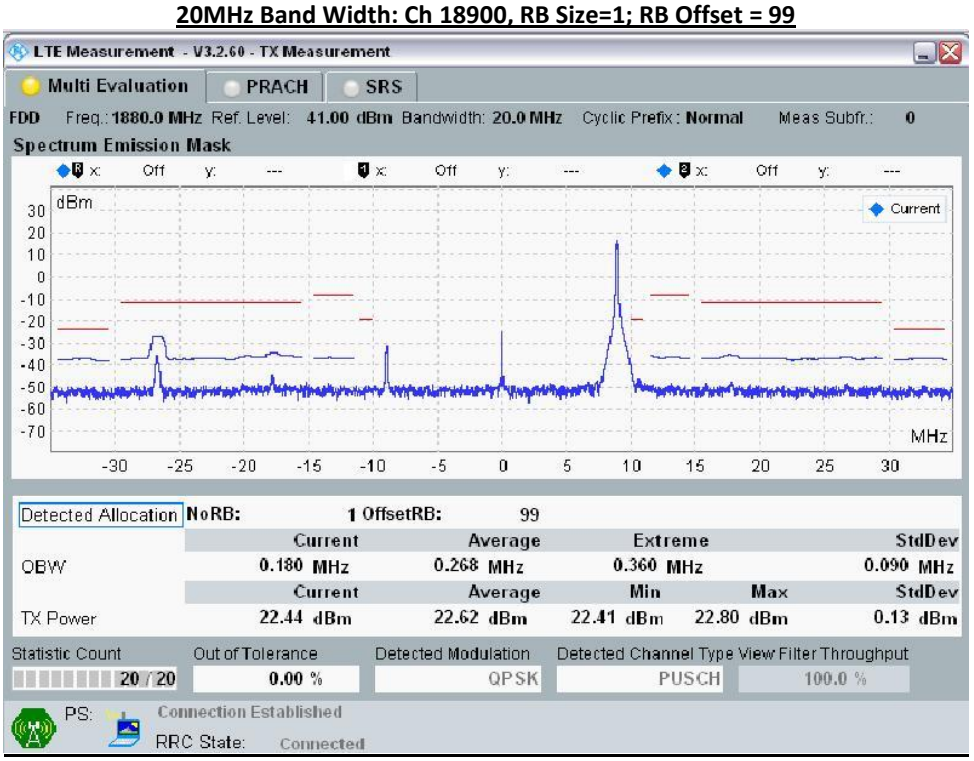
20MHz Band Width: Ch 18900, RB Size=1; RB Offset = 0



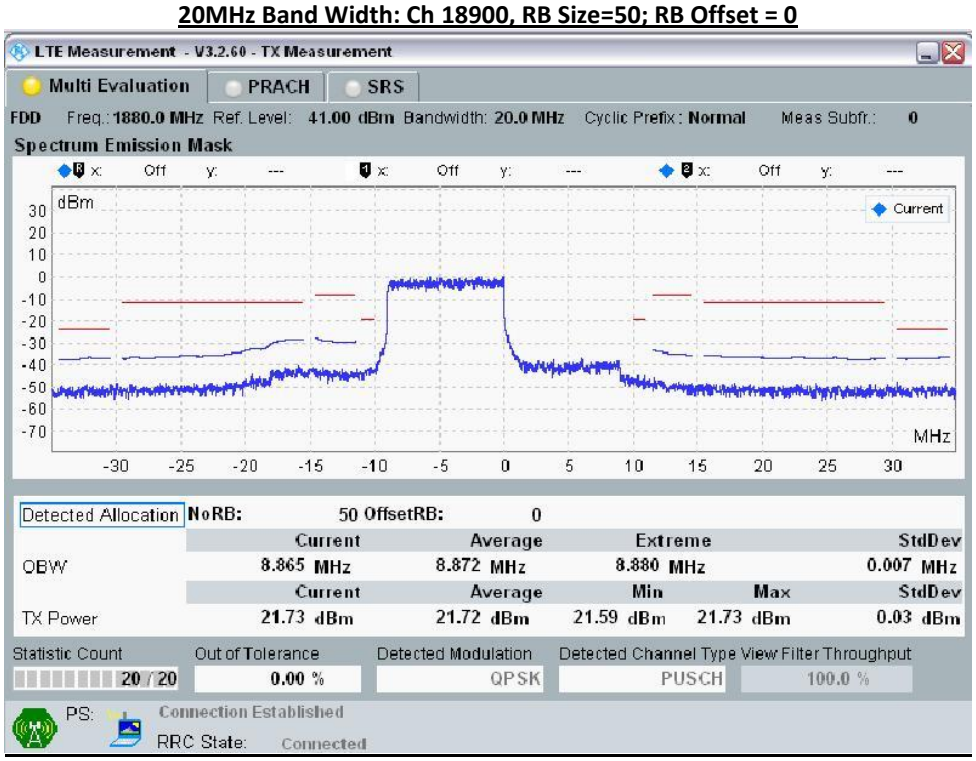
20MHz Band Width: Ch 18900, RB Size=1; RB Offset = 49



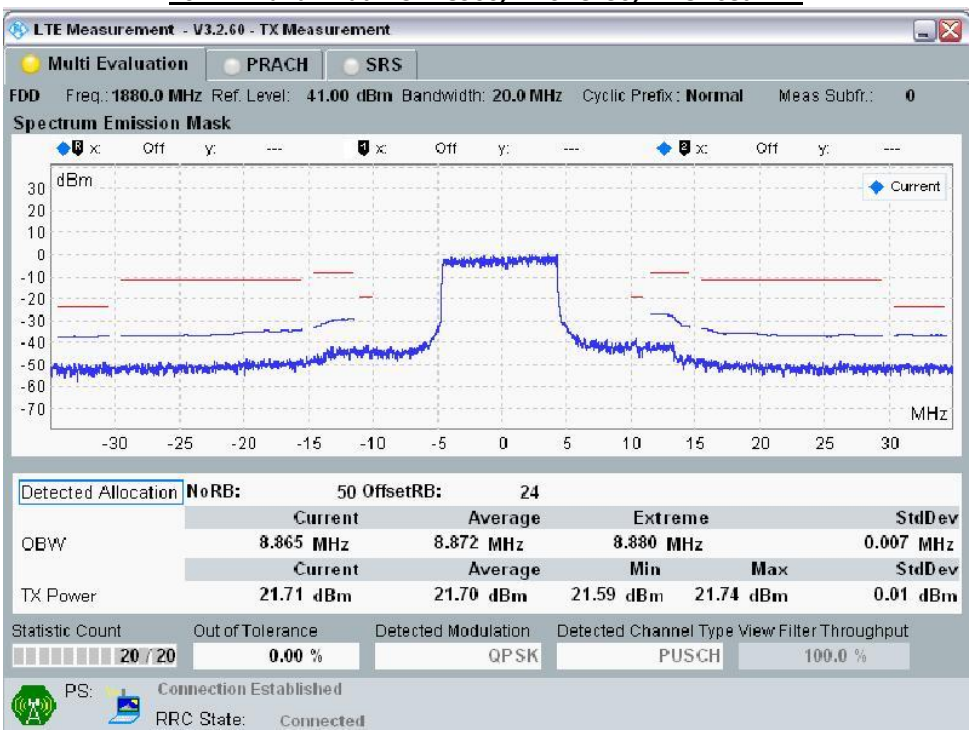
20MHz Band Width: Ch 18900, RB Size=1; RB Offset = 99



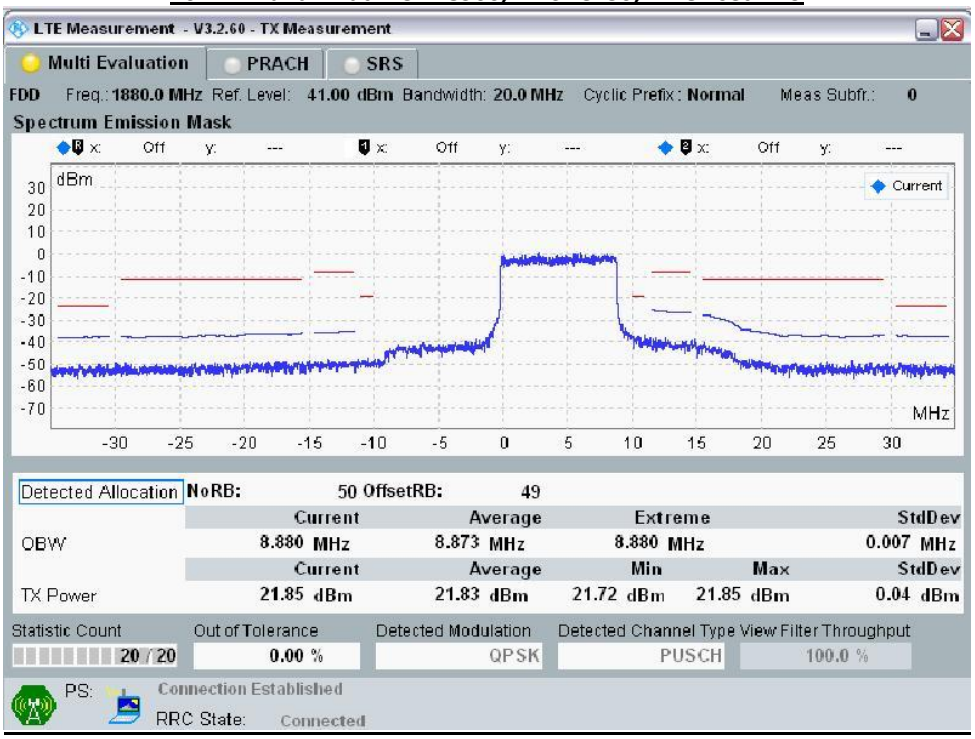
20MHz Band Width: Ch 18900, RB Size=50; RB Offset = 0



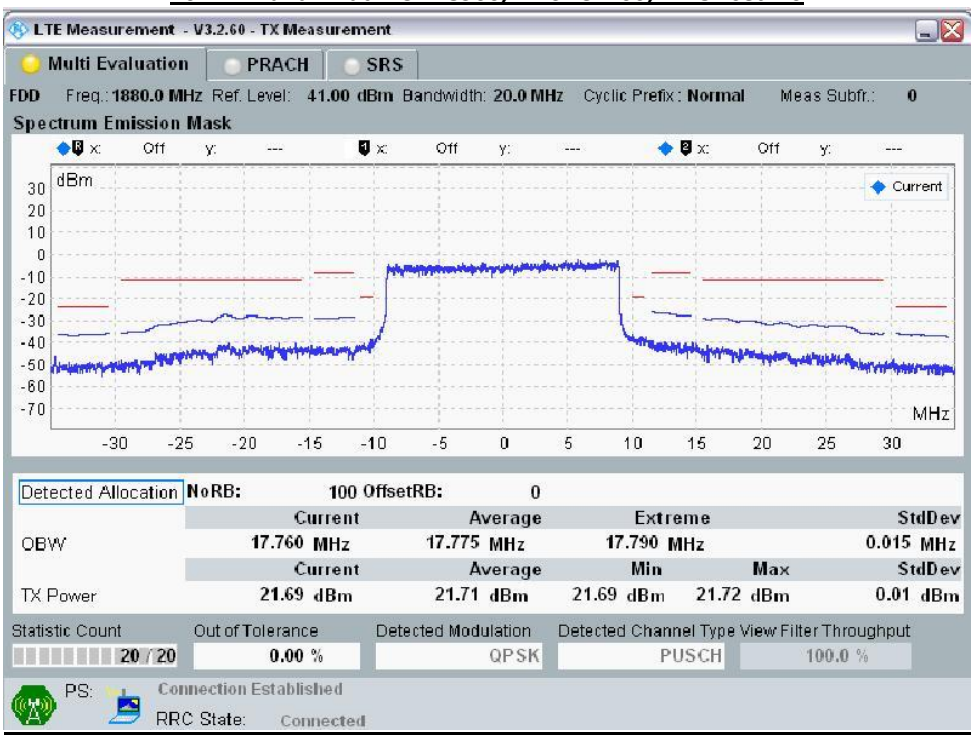
20MHz Band Width: Ch 18900, RB Size=50; RB Offset = 24



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



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



14.10 LTE Band 4

Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
4	20	20050	1720.0	QPSK	1	0	0	23.0
					1	49	0	23.2
					1	99	0	23.1
					50	0	1	22.1
					50	24	1	22.1
					50	49	1	22.1
					100	0	1	22.0
				16QAM	1	0	1	22.0
					1	49	1	22.2
					1	99	1	22.2
					50	0	2	21.1
					50	24	2	21.2
					50	49	2	21.2
					100	0	2	21.1
		20175	1732.5	QPSK	1	0	0	23.5
					1	49	0	23.7
					1	99	0	23.4
					50	0	1	22.6
					50	24	1	22.5
					50	49	1	22.5
					100	0	1	22.5
				16QAM	1	0	1	22.2
					1	49	1	22.2
					1	99	1	22.2
					50	0	2	21.5
					50	24	2	21.5
					50	49	2	21.6
					100	0	2	21.5
		20300	1745.0	QPSK	1	0	0	23.2
					1	49	0	23.4
					1	99	0	23.0
					50	0	1	22.2
					50	24	1	22.3
					50	49	1	22.2
					100	0	1	22.2
				16QAM	1	0	1	22.3
					1	49	1	22.3
					1	99	1	21.9
					50	0	2	21.2
					50	24	2	21.2
					50	49	2	21.3
					100	0	2	21.3

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
4	15	20025	1717.5	QPSK	1	0	0	23.4
					1	37	0	23.6
					1	74	0	23.4
					36	0	1	22.5
					36	18	1	22.6
					36	35	1	22.5
					75	0	1	22.5
				16QAM	1	0	1	22.6
					1	37	1	22.5
					1	74	1	22.5
					36	0	2	21.5
					36	18	2	21.6
					36	35	2	21.5
					75	0	2	21.5
		20175	1732.5	QPSK	1	0	0	23.7
					1	37	0	23.8
					1	74	0	23.7
					36	0	1	22.7
					36	18	1	22.7
					36	35	1	22.7
					75	0	1	22.7
				16QAM	1	0	1	22.6
					1	37	1	22.7
					1	74	1	22.8
					36	0	2	21.8
					36	18	2	21.7
					36	35	2	21.7
					75	0	2	21.7
		20325	1747.5	QPSK	1	0	0	23.8
					1	37	0	23.7
					1	74	0	23.6
					36	0	1	22.9
					36	18	1	22.8
					36	35	1	22.8
					75	0	1	22.8
				16QAM	1	0	1	22.9
					1	37	1	23.9
					1	74	1	22.8
					36	0	2	21.9
					36	18	2	21.8
					36	35	2	21.8
					75	0	2	21.8

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
4	10	20000	1715.0	QPSK	1	0	0	23.4
					1	24	0	23.5
					1	49	0	23.5
					25	0	1	22.5
					25	12	1	22.5
					25	24	1	22.5
					50	0	1	22.4
				16QAM	1	0	1	22.6
					1	24	1	22.6
					1	49	1	22.5
					25	0	2	21.5
					25	12	2	21.5
					25	24	2	21.5
					50	0	2	21.4
		20175	1732.5	QPSK	1	0	0	23.6
					1	24	0	23.7
					1	49	0	23.6
					25	0	1	22.7
					25	12	1	22.7
					25	24	1	22.6
					50	0	1	22.6
				16QAM	1	0	1	22.8
					1	24	1	22.8
					1	49	1	22.8
					25	0	2	21.6
					25	12	2	21.7
					25	24	2	21.7
					50	0	2	21.6
		20350	1750.0	QPSK	1	0	0	23.6
					1	24	0	23.7
					1	49	0	23.5
					25	0	1	22.7
					25	12	1	22.7
					25	24	1	22.7
					50	0	1	22.7
				16QAM	1	0	1	22.9
					1	24	1	22.8
					1	49	1	22.6
					25	0	2	21.7
					25	12	2	21.7
					25	24	2	21.8
					50	0	2	21.7

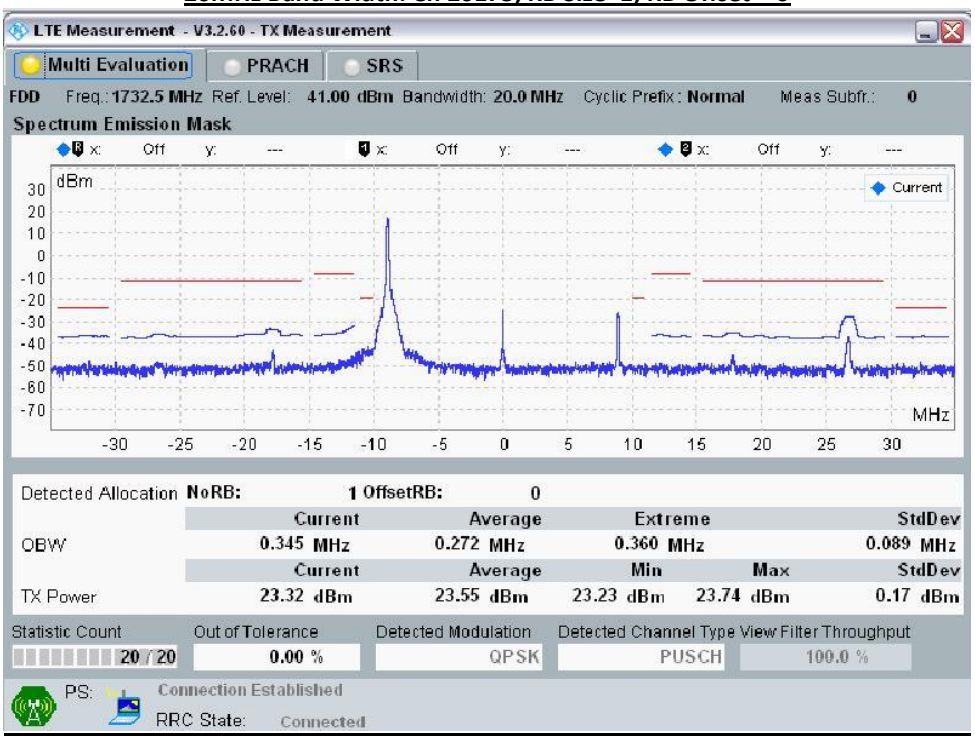
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
4	5	19975	1712.5	QPSK	1	0	0	23.6
					1	12	0	23.6
					1	24	0	23.6
					12	0	1	22.6
					12	6	1	22.6
					12	11	1	22.7
					25	0	1	22.6
				16QAM	1	0	1	22.7
					1	12	1	22.7
					1	24	1	22.7
					12	0	2	21.6
					12	6	2	22.6
					12	11	2	22.6
					25	0	2	22.6
		20175	1732.5	QPSK	1	0	0	23.6
					1	12	0	23.7
					1	24	0	23.7
					12	0	1	22.7
					12	6	1	22.7
					12	11	1	22.6
					25	0	1	22.6
				16QAM	1	0	1	22.7
					1	12	1	22.7
					1	24	1	22.8
					12	0	2	21.8
					12	6	2	21.8
					12	11	2	21.8
					25	0	2	21.7
		20375	1752.5	QPSK	1	0	0	23.7
					1	12	0	23.8
					1	24	0	23.6
					12	0	1	22.8
					12	6	1	22.9
					12	11	1	22.8
					25	0	1	22.7
				16QAM	1	0	1	22.8
					1	12	1	22.8
					1	24	1	22.7
					12	0	2	21.7
					12	6	2	21.7
					12	11	2	21.7
					25	0	2	21.7

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
4	3	19965	1711.5	QPSK	1	0	0	23.6
					1	7	0	23.6
					1	14	0	23.6
					8	0	1	22.7
					8	4	1	22.7
					8	7	1	22.7
					15	0	1	22.6
				16QAM	1	0	1	22.6
					1	7	1	22.8
					1	14	1	22.7
					8	0	2	21.8
					8	4	2	21.7
					8	7	2	21.6
					15	0	2	21.6
		20175	1732.5	QPSK	1	0	0	23.6
					1	7	0	23.8
					1	14	0	23.8
					8	0	1	22.8
					8	4	1	22.8
					8	7	1	22.8
					15	0	1	22.7
				16QAM	1	0	1	22.7
					1	7	1	22.8
					1	14	1	22.8
					8	0	2	21.7
					8	4	2	21.7
					8	7	2	21.8
					15	0	2	21.8
		20384	1753.4	QPSK	1	0	0	23.7
					1	7	0	23.7
					1	14	0	23.7
					8	0	1	22.8
					8	4	1	22.8
					8	7	1	22.8
					15	0	1	22.7
				16QAM	1	0	1	22.6
					1	7	1	22.6
					1	14	1	22.5
					8	0	2	21.8
					8	4	2	21.7
					8	7	2	21.8
					15	0	2	21.8

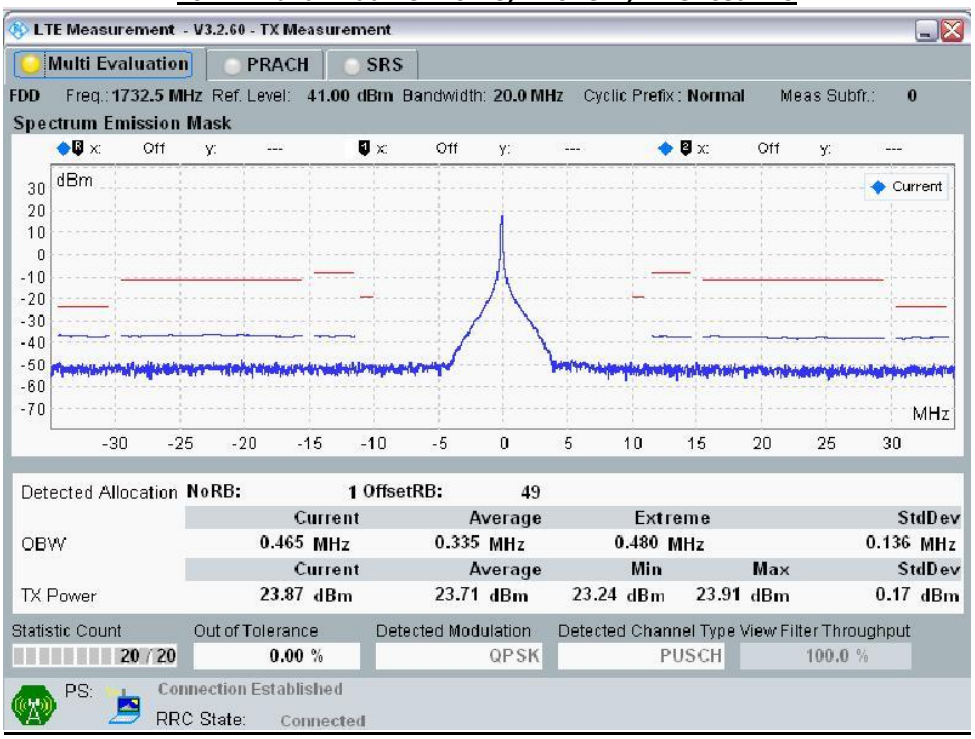
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
4	1.4	19957	1710.7	QPSK	1	0	0	23.5
					1	2	0	23.5
					1	5	0	23.5
					3	0	1	23.3
					3	1	1	23.3
					3	2	1	23.4
					6	0	1	22.5
				16QAM	1	0	1	22.6
					1	2	1	22.6
					1	5	1	22.7
					3	0	2	22.4
					3	1	2	22.2
					3	2	2	22.4
					6	0	2	21.6
		20175	1732.5	QPSK	1	0	0	23.6
					1	2	0	23.6
					1	5	0	23.7
					3	0	1	23.3
					3	1	1	23.4
					3	2	1	23.4
					6	0	1	22.7
				16QAM	1	0	1	22.8
					1	2	1	22.8
					1	5	1	22.7
					3	0	2	22.3
					3	1	2	22.4
					3	2	2	22.4
					6	0	2	21.9
		20392	1754.2	QPSK	1	0	0	23.5
					1	2	0	23.4
					1	5	0	23.4
					3	0	1	23.3
					3	1	1	23.3
					3	2	1	23.3
					6	0	1	22.6
				16QAM	1	0	1	22.5
					1	2	1	22.5
					1	5	1	22.5
					3	0	2	22.4
					3	1	2	22.4
					3	2	2	22.2
					6	0	2	21.6

14.10.1 Spectrum Plots for the Test RB allocations

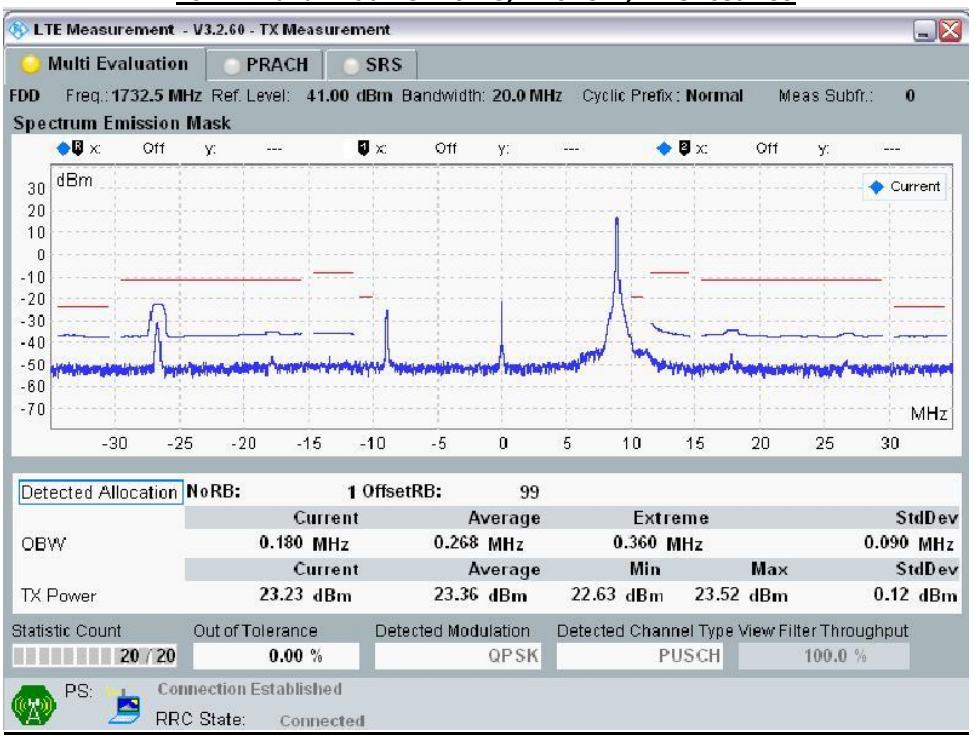
20MHz Band Width: Ch 20175, RB Size=1; RB Offset = 0



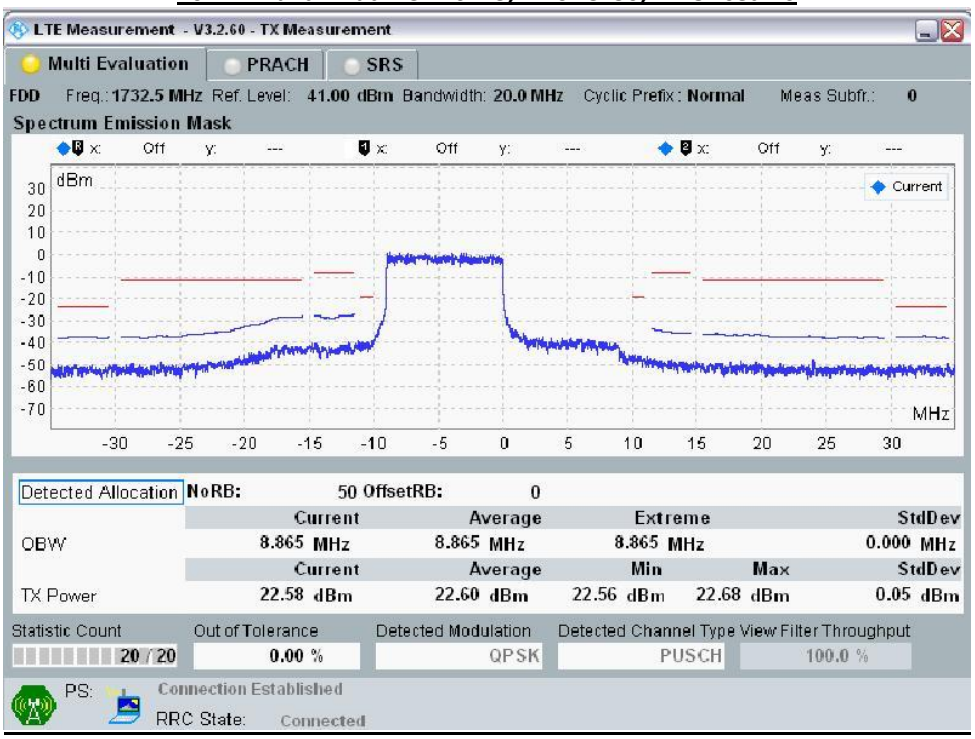
20MHz Band Width: Ch 20175, RB Size=1; RB Offset = 49



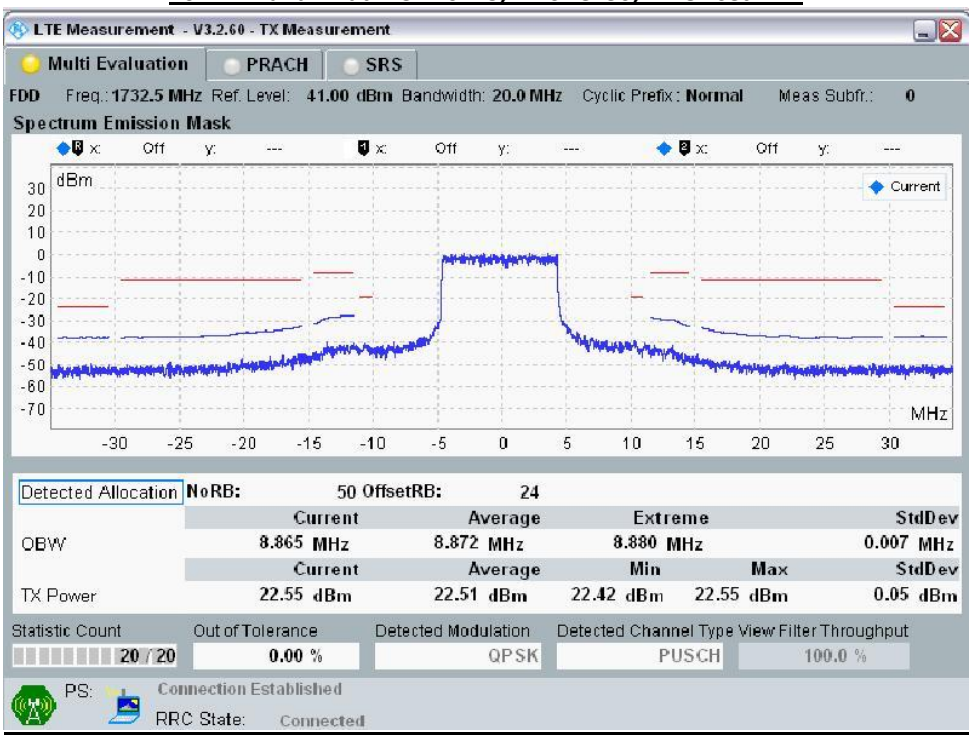
20MHz Band Width: Ch 20175, RB Size=1; RB Offset = 99



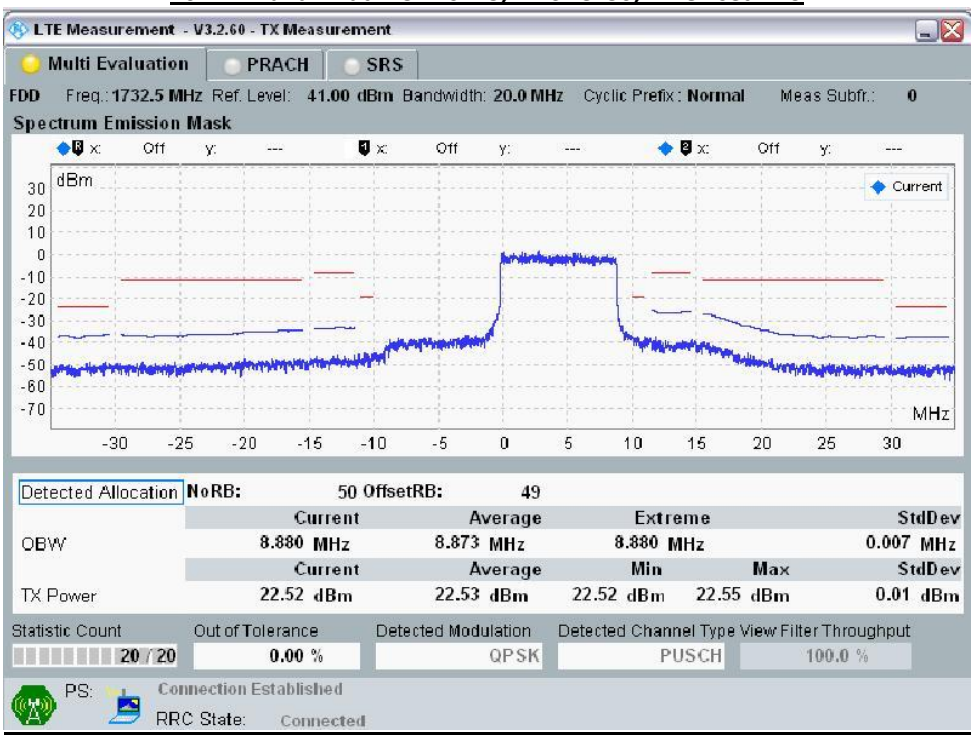
20MHz Band Width: Ch 20175, RB Size=50; RB Offset = 0



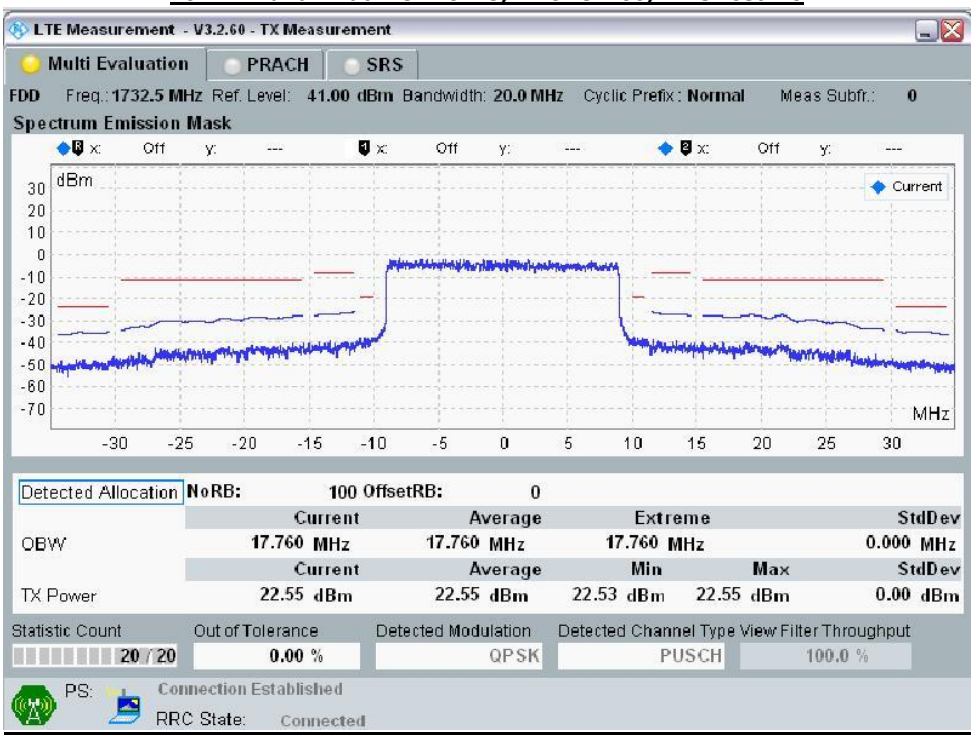
20MHz Band Width: Ch 20175, RB Size=50; RB Offset = 24



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



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



14.11 LTE Band 5

Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	10	20450	829.0	QPSK	1	0	0	23.5
					1	24	0	23.5
					1	49	0	23.4
					25	0	1	22.6
					25	12	1	22.6
					25	24	1	22.6
					50	0	1	22.5
				16QAM	1	0	1	22.6
					1	24	1	22.6
					1	49	1	22.6
					25	0	2	21.7
					25	12	2	21.7
					25	24	2	21.7
					50	0	2	21.7
		20525	836.5	QPSK	1	0	0	23.7
					1	24	0	23.6
					1	49	0	23.6
					25	0	1	22.8
					25	12	1	22.7
					25	24	1	22.6
					50	0	1	22.7
				16QAM	1	0	1	22.7
					1	24	1	22.8
					1	49	1	22.7
					25	0	2	21.9
					25	12	2	21.7
					25	24	2	21.7
					50	0	2	21.7
		20600	844.0	QPSK	1	0	0	23.2
					1	24	0	23.3
					1	49	0	23.3
					25	0	1	22.4
					25	12	1	22.3
					25	24	1	22.5
					50	0	1	22.5
				16QAM	1	0	1	22.5
					1	24	1	22.7
					1	49	1	22.6
					25	0	2	21.6
					25	12	2	21.5
					25	24	2	21.6
					50	0	2	21.5

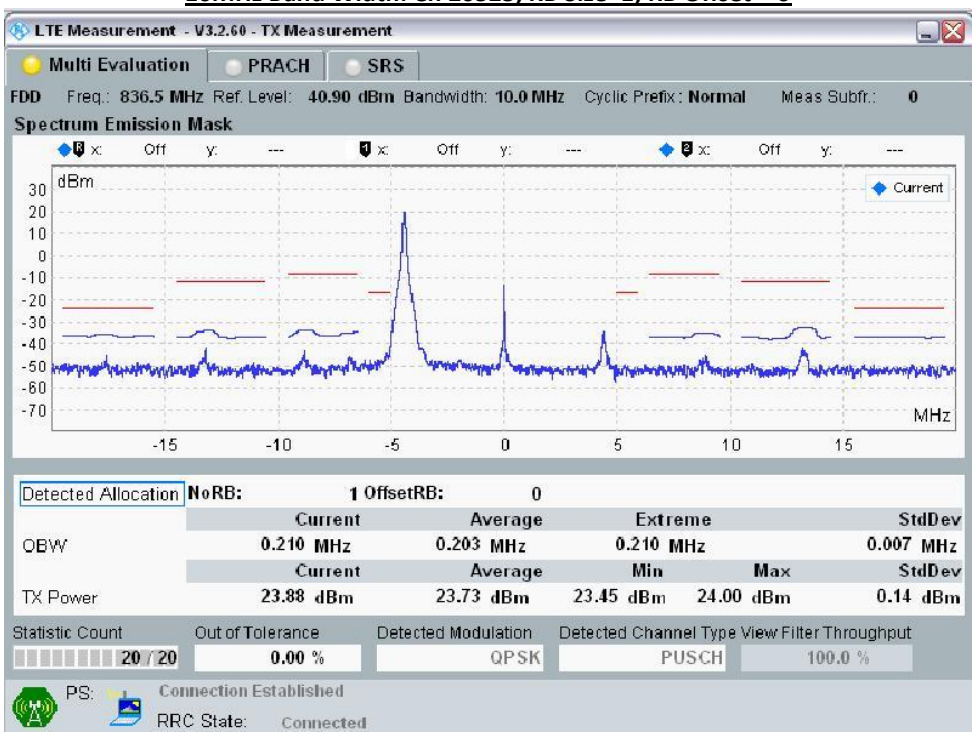
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	5	20425	826.5	QPSK	1	0	0	23.6
					1	12	0	23.5
					1	24	0	23.4
					12	0	1	22.7
					12	6	1	22.7
					12	11	1	22.7
					25	0	1	22.6
				16QAM	1	0	1	22.8
					1	12	1	22.7
					1	24	1	22.7
					12	0	2	21.7
					12	6	2	21.7
					12	11	2	21.7
					25	0	2	21.7
		20525	836.5	QPSK	1	0	0	23.7
					1	12	0	23.7
					1	24	0	23.6
					12	0	1	22.7
					12	6	1	22.7
					12	11	1	22.7
					25	0	1	22.7
				16QAM	1	0	1	22.8
					1	12	1	22.9
					1	24	1	22.7
					12	0	2	21.9
					12	6	2	21.7
					12	11	2	21.7
					25	0	2	21.7
		20625	846.5	QPSK	1	0	0	23.2
					1	12	0	23.4
					1	24	0	23.3
					12	0	1	22.4
					12	6	1	22.4
					12	11	1	22.5
					25	0	1	22.4
				16QAM	1	0	1	22.5
					1	12	1	22.7
					1	24	1	22.6
					12	0	2	21.5
					12	6	2	21.5
					12	11	2	21.5
					25	0	2	21.5

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	3	20415	825.5	QPSK	1	0	0	23.6
					1	7	0	23.7
					1	14	0	23.4
					8	0	1	22.8
					8	4	1	22.7
					8	7	1	22.7
					15	0	1	22.7
				16QAM	1	0	1	22.8
					1	7	1	22.8
					1	14	1	22.7
					8	0	2	21.8
					8	4	2	21.7
					8	7	2	21.7
					15	0	2	21.8
		20525	836.5	QPSK	1	0	0	23.6
					1	7	0	23.7
					1	14	0	23.5
					8	0	1	22.8
					8	4	1	22.7
					8	7	1	22.6
					15	0	1	22.6
				16QAM	1	0	1	22.8
					1	7	1	22.8
					1	14	1	22.7
					8	0	2	22.8
					8	4	2	21.6
					8	7	2	21.7
					15	0	2	21.6
		20634	847.4	QPSK	1	0	0	23.3
					1	7	0	23.4
					1	14	0	23.2
					8	0	1	22.5
					8	4	1	22.5
					8	7	1	22.5
					15	0	1	22.5
				16QAM	1	0	1	22.5
					1	7	1	22.7
					1	14	1	22.4
					8	0	2	21.6
					8	4	2	21.5
					8	7	2	21.5
					15	0	2	21.4

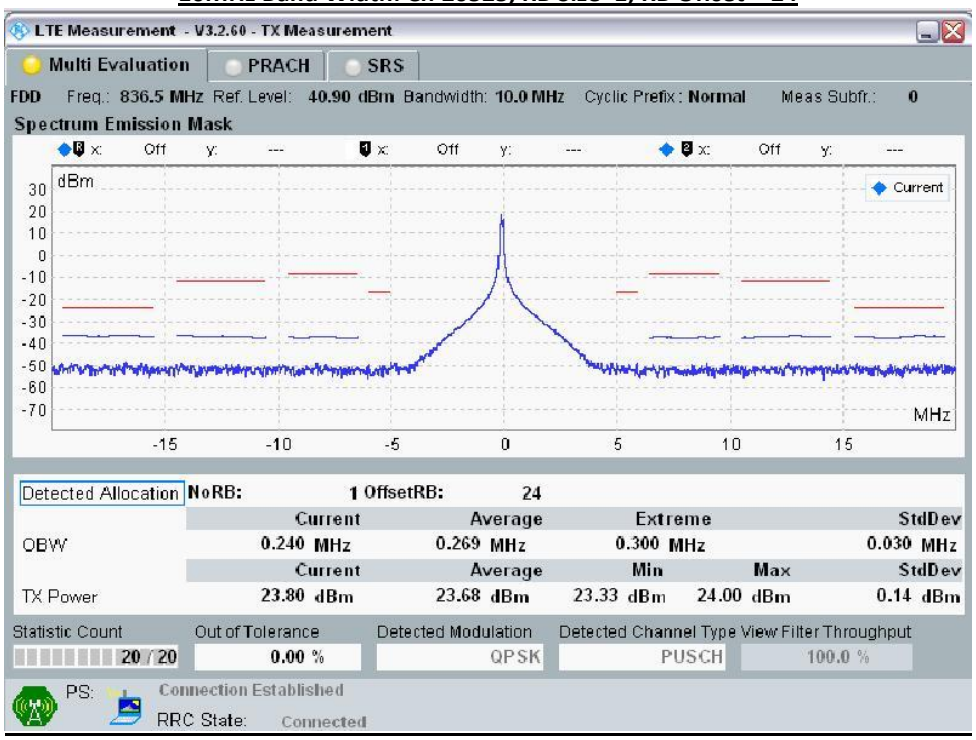
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
5	1.4	20407	824.7	QPSK	1	0	0	23.5
					1	2	0	23.5
					1	5	0	23.6
					3	0	1	23.5
					3	1	1	23.5
					3	2	1	23.5
					6	0	1	22.6
				16QAM	1	0	1	22.8
					1	2	1	22.9
					1	5	1	22.9
					3	0	2	22.7
					3	1	2	22.6
					3	2	2	22.7
					6	0	2	21.6
		20525	836.5	QPSK	1	0	0	23.4
					1	2	0	23.4
					1	5	0	23.4
					3	0	1	23.3
					3	1	1	23.3
					3	2	1	23.3
					6	0	1	22.4
				16QAM	1	0	1	22.6
					1	2	1	22.5
					1	5	1	22.4
					3	0	2	22.4
					3	1	2	22.4
					3	2	2	22.5
					6	0	2	21.4
		20642	848.2	QPSK	1	0	0	23.2
					1	2	0	23.2
					1	5	0	23.1
					3	0	1	22.8
					3	1	1	22.8
					3	2	1	22.8
					6	0	1	22.3
				16QAM	1	0	1	22.3
					1	2	1	22.2
					1	5	1	22.2
					3	0	2	22.1
					3	1	2	22.1
					3	2	2	22.2
					6	0	2	22.1

14.11.1 Spectrum Plots for the Test RB allocations

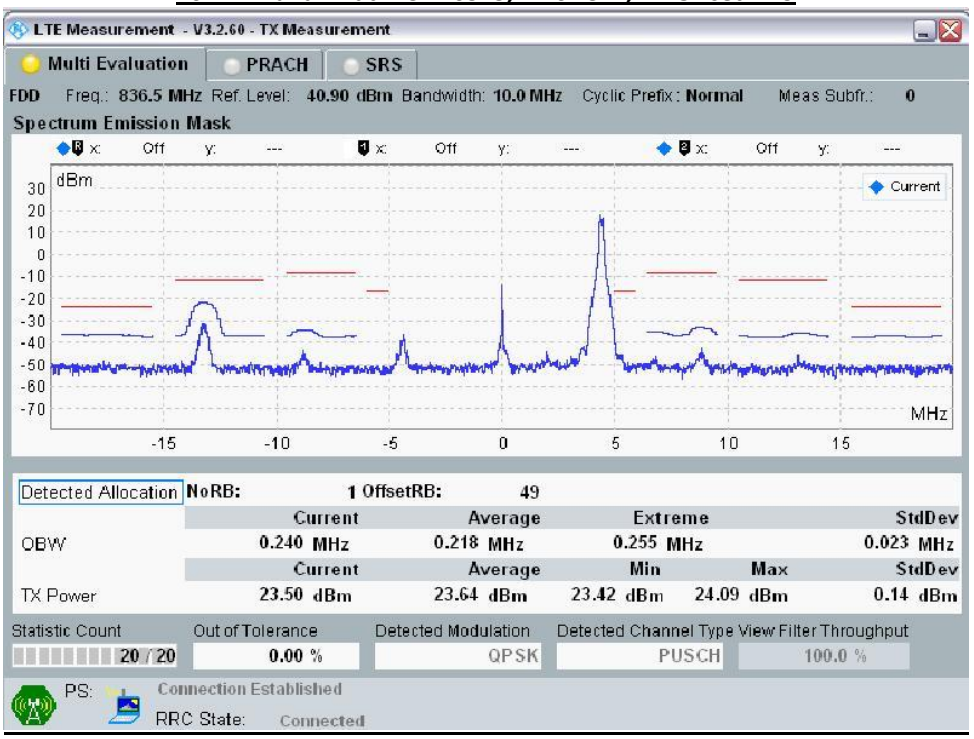
10MHz Band Width: Ch 20525, RB Size=1; RB Offset = 0



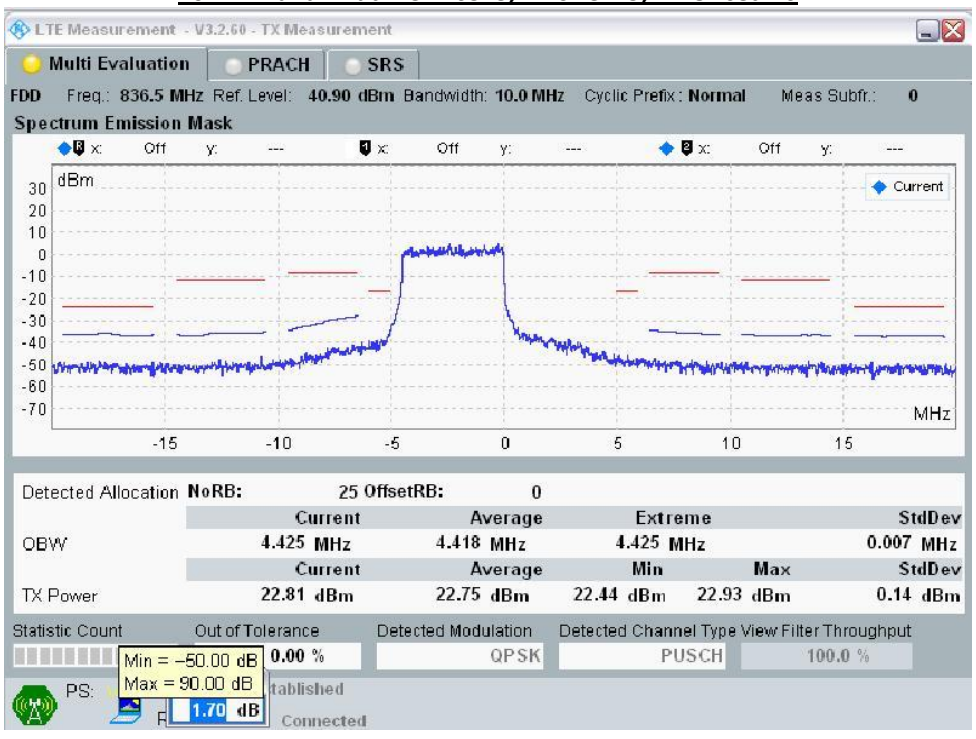
10MHz Band Width: Ch 20525, RB Size=1; RB Offset = 24



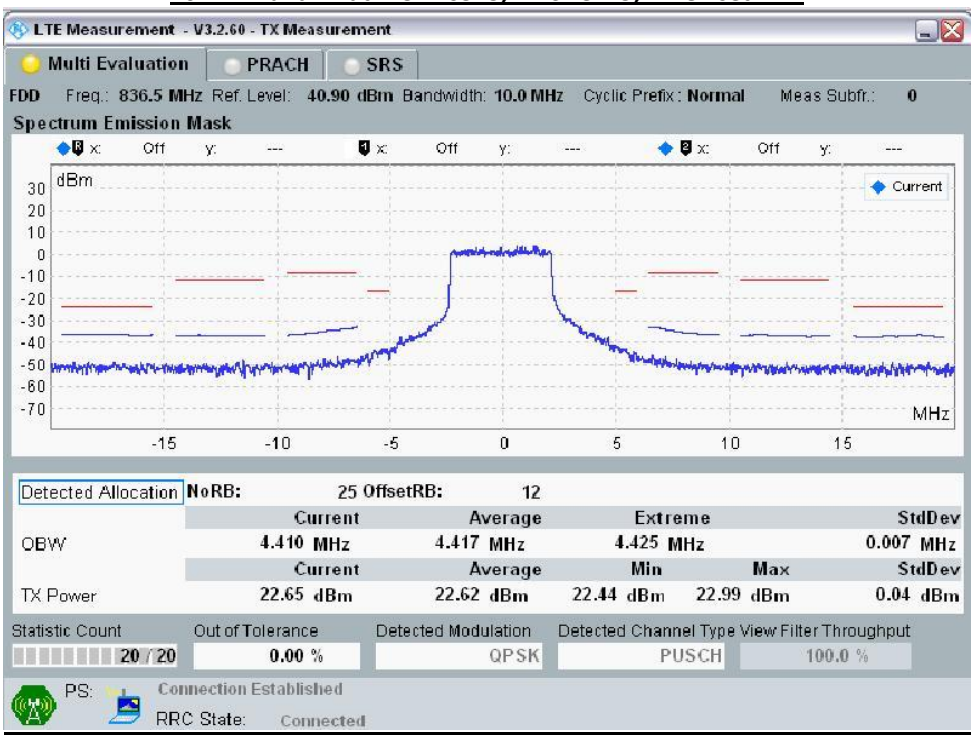
10MHz Band Width: Ch 20525, RB Size=1; RB Offset = 49



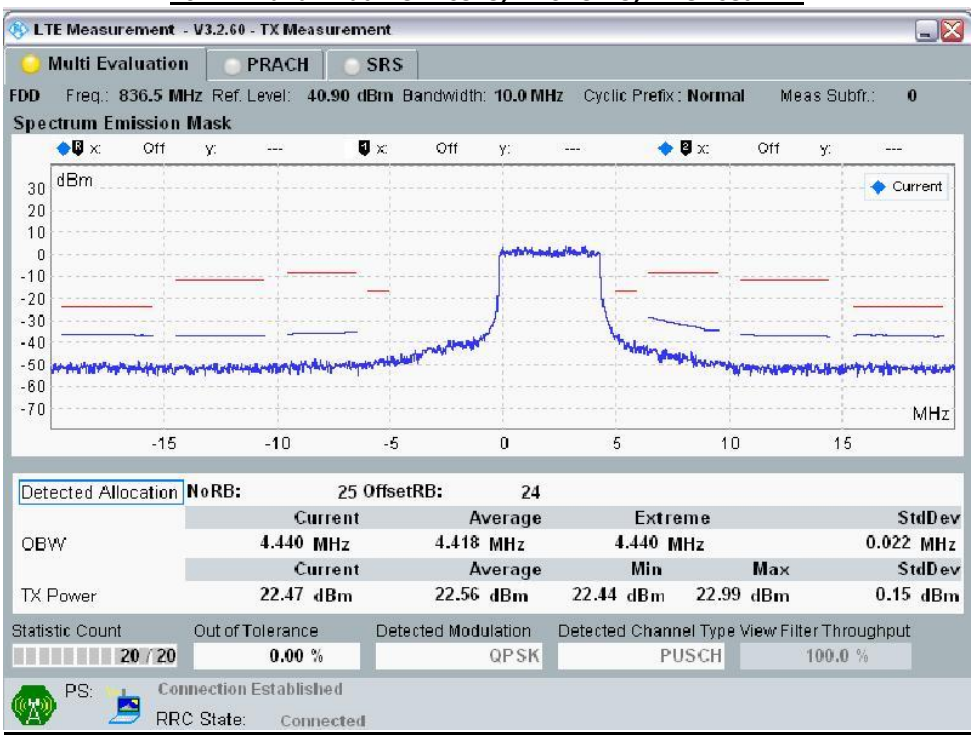
10MHz Band Width: Ch 20525, RB Size=25; RB Offset = 0



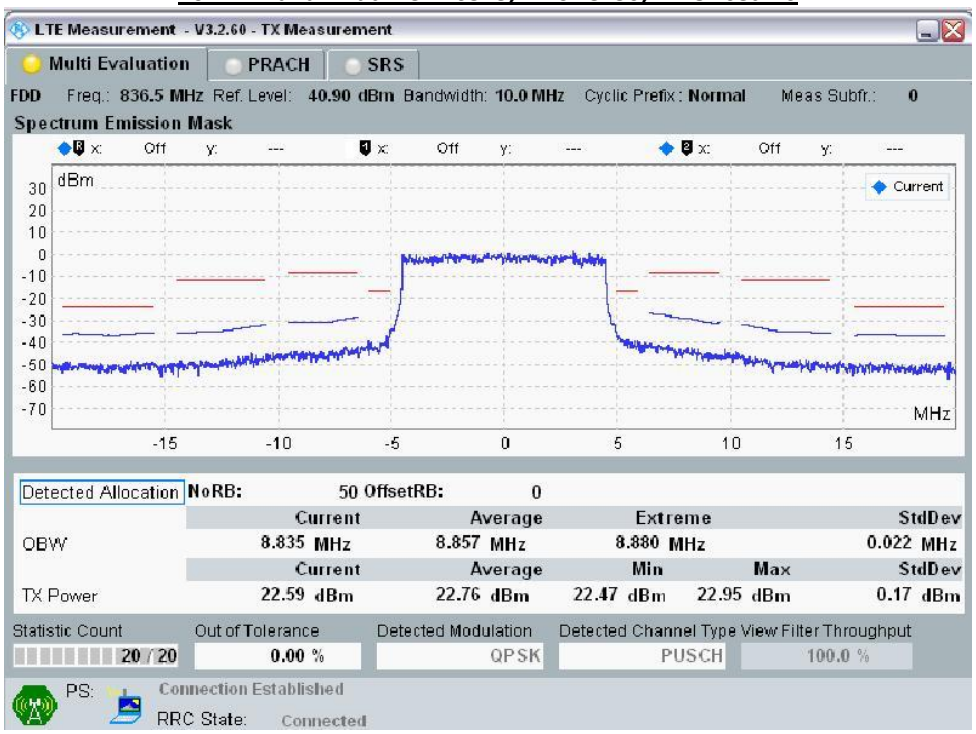
10MHz Band Width: Ch 20525, RB Size=25; RB Offset = 12



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



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



14.12 LTE Band 13

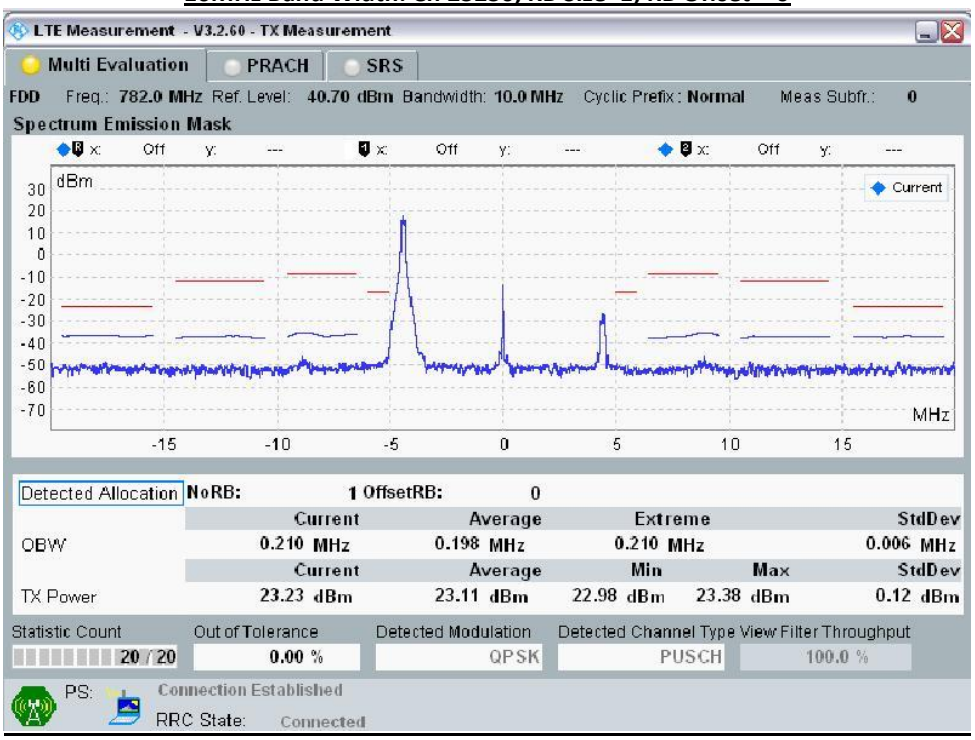
Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
13	10	23230	782.0	QPSK	1	0	0	23.1
					1	24	0	23.6
					1	49	0	23.2
					25	0	1	22.2
					25	12	1	22.4
					25	24	1	22.2
					50	0	1	22.3
				16QAM	1	0	1	22.2
					1	24	1	22.3
					1	49	1	22.2
					25	0	2	21.2
					25	12	2	21.2
					25	24	2	21.2
					50	0	2	21.2

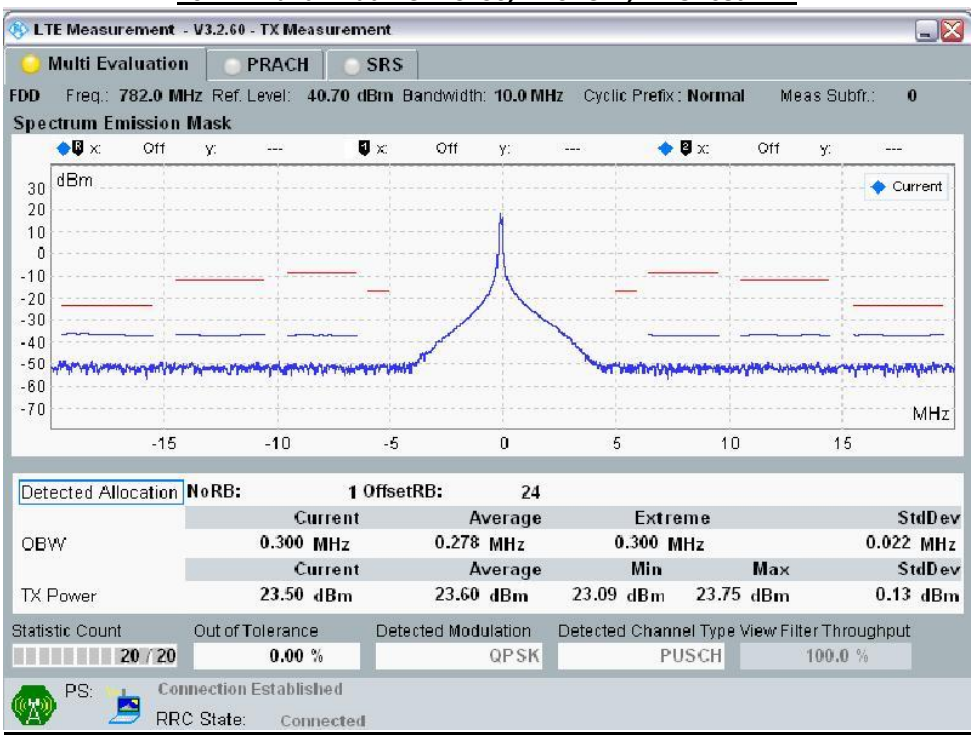
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
13	5	23205	779.5	QPSK	1	0	0	23.2
					1	12	0	23.3
					1	24	0	23.4
					12	0	1	22.3
					12	6	1	22.3
					12	11	1	22.4
					25	0	1	22.3
				16QAM	1	0	1	22.3
					1	12	1	22.5
					1	24	1	22.4
					12	0	2	21.3
					12	6	2	21.3
					12	11	2	21.3
					25	0	2	21.3
		23230	752.0	QPSK	1	0	0	23.2
					1	12	0	23.4
					1	24	0	23.4
					12	0	1	22.4
					12	6	1	22.5
					12	11	1	22.5
					25	0	1	22.3
				16QAM	1	0	1	22.1
					1	12	1	22.4
					1	24	1	22.5
					12	0	2	21.5
					12	6	2	21.5
					12	11	2	21.7
					25	0	2	21.5
		23255	784.5	QPSK	1	0	0	23.4
					1	12	0	23.6
					1	24	0	23.2
					12	0	1	22.5
					12	6	1	22.4
					12	11	1	22.6
					25	0	1	22.5
				16QAM	1	0	1	22.5
					1	12	1	22.8
					1	24	1	22.3
					12	0	2	21.5
					12	6	2	21.5
					12	11	2	21.6
					25	0	2	21.5

14.12.1 Spectrum Plots for the Test RB allocations

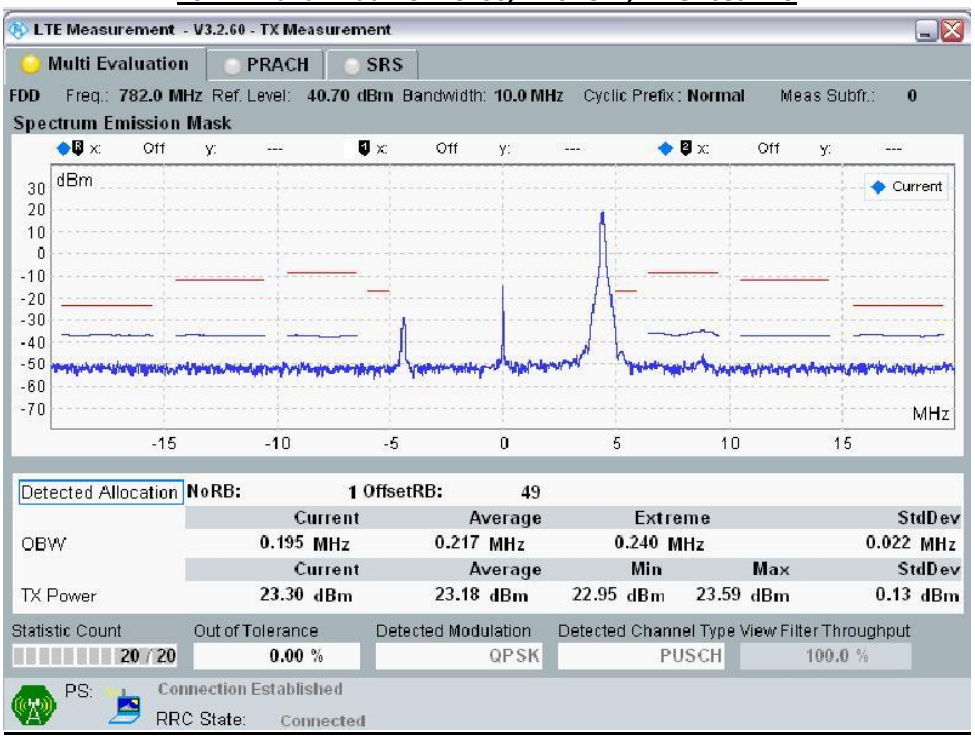
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 0



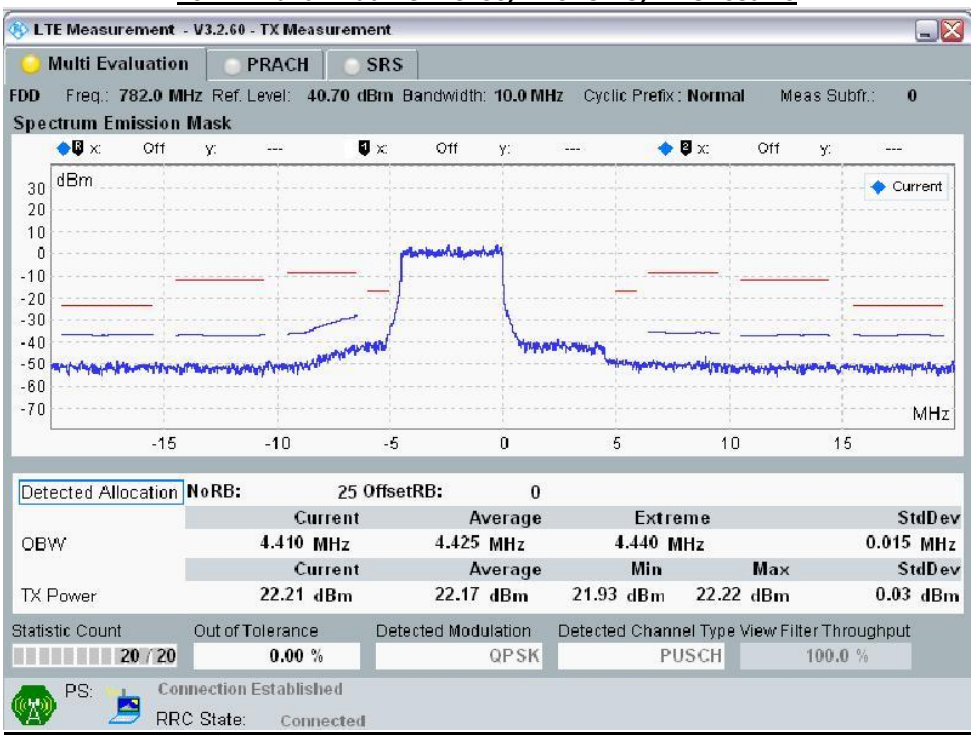
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 24



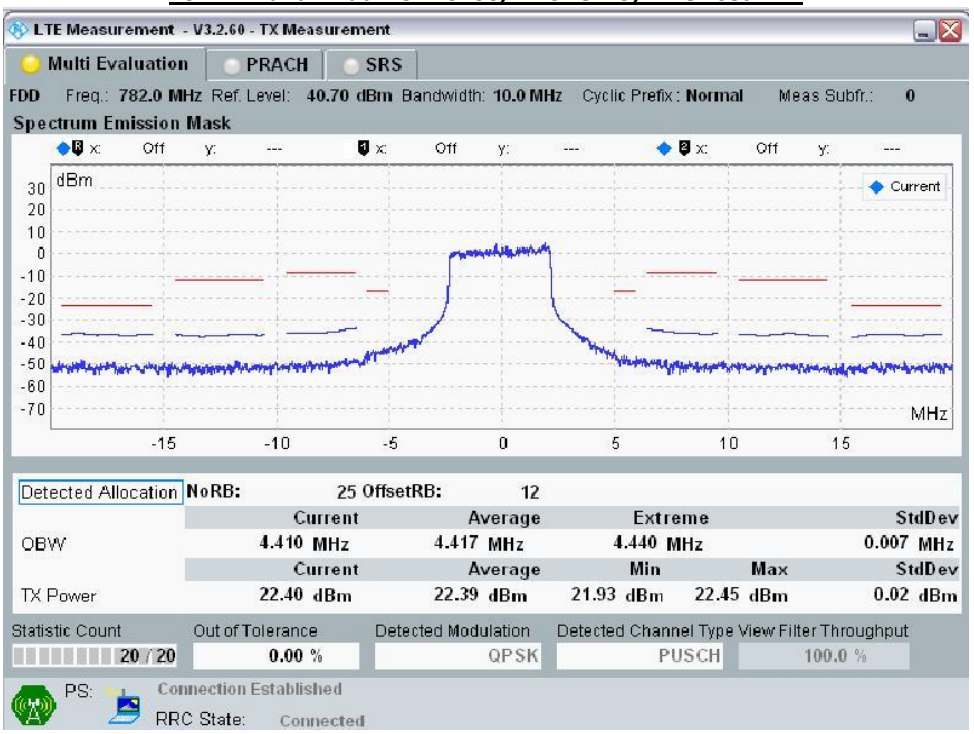
10MHz Band Width: Ch 23230, RB Size=1; RB Offset = 49



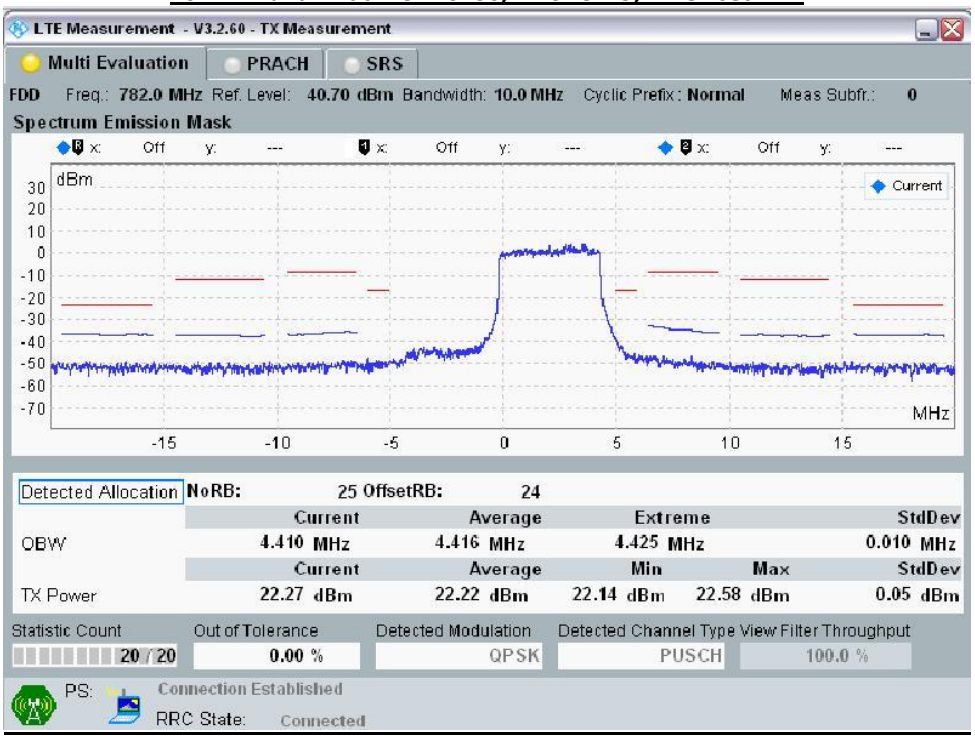
10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 0



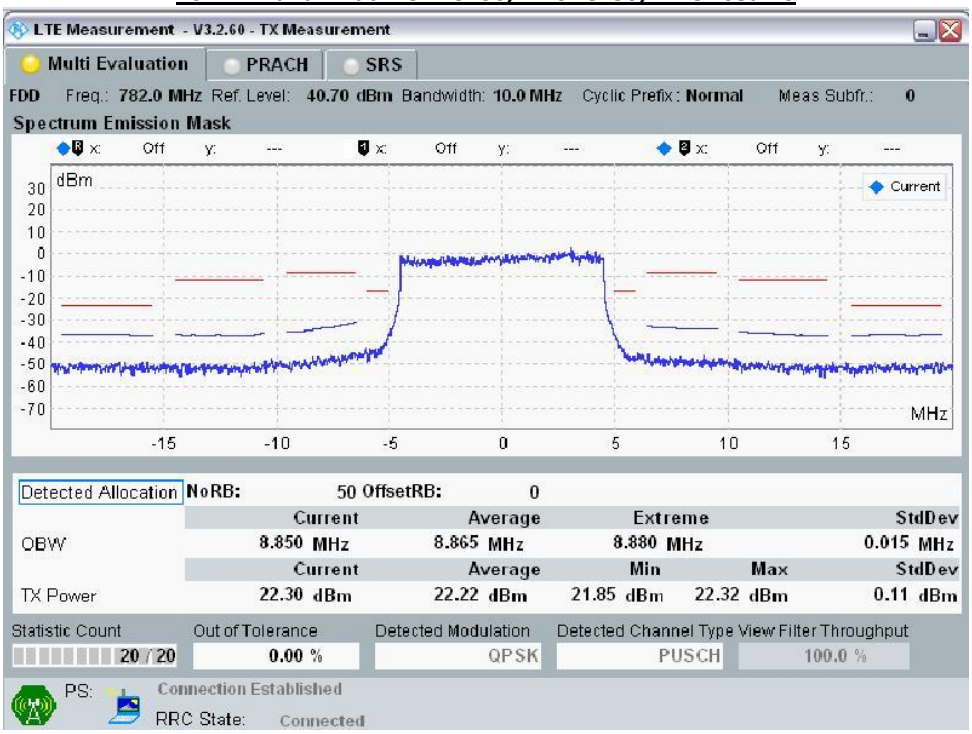
10MHz Band Width: Ch 23230, RB Size=25; RB Offset = 12



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



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



14.13 LTE Band 17

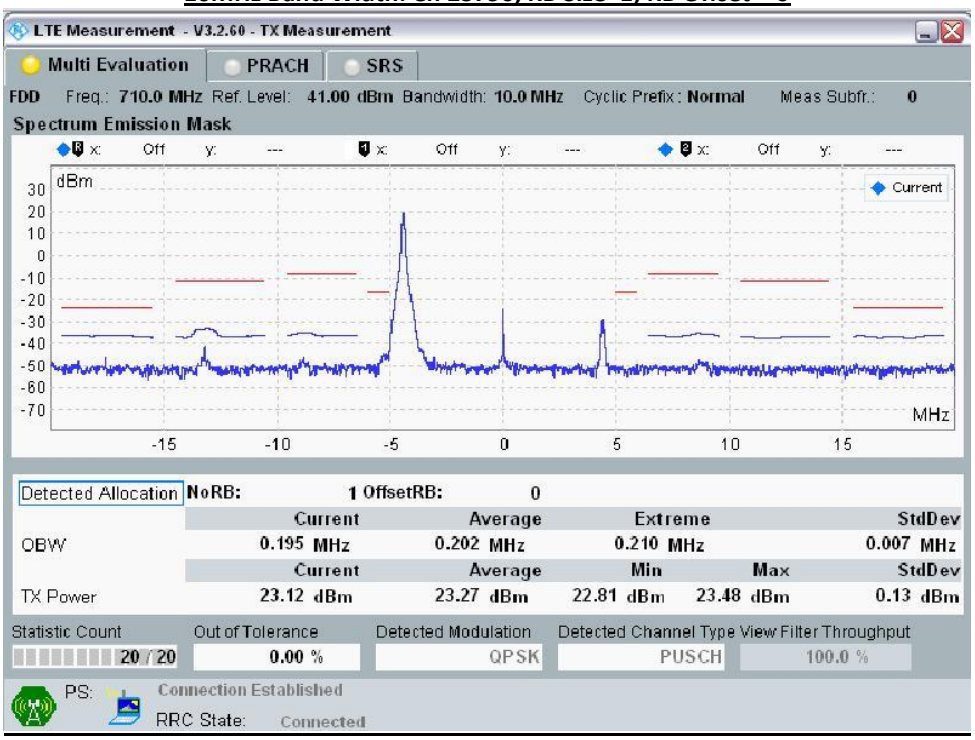
Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
17	10	23790	710.0	QPSK	1	0	0	23.2
					1	24	0	23.6
					1	49	0	22.9
					25	0	1	22.5
					25	12	1	22.3
					25	24	1	22.4
					50	0	1	22.2
				16QAM	1	0	1	22.2
					1	24	1	22.4
					1	49	1	22.3
					25	0	2	21.2
					25	12	2	21.4
					25	24	2	21.3
					50	0	2	21.3

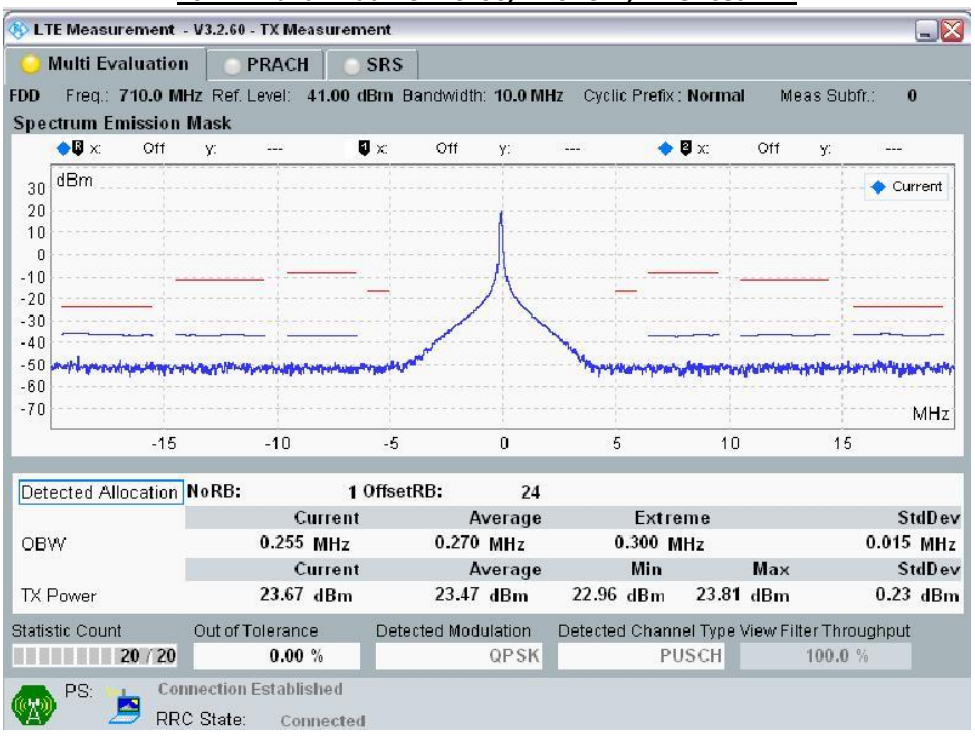
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
17	5	23755	706.5	QPSK	1	0	0	23.4
					1	12	0	23.5
					1	24	0	23.3
					12	0	1	22.5
					12	6	1	22.5
					12	11	1	22.6
					25	0	1	22.4
				16QAM	1	0	1	22.5
					1	12	1	22.6
					1	24	1	22.5
					12	0	2	21.5
					12	6	2	21.6
					12	11	2	21.6
					25	0	2	21.5
		23790	710.0	QPSK	1	0	0	23.4
					1	12	0	23.6
					1	24	0	23.0
					12	0	1	22.5
					12	6	1	22.6
					12	11	1	22.5
					25	0	1	22.6
				16QAM	1	0	1	22.8
					1	12	1	22.8
					1	24	1	22.4
					12	0	2	21.5
					12	6	2	21.6
					12	11	2	21.5
					25	0	2	21.4
		23825	713.5	QPSK	1	0	0	23.1
					1	12	0	23.2
					1	24	0	22.9
					12	0	1	22.3
					12	6	1	22.4
					12	11	1	22.3
					25	0	1	22.2
				16QAM	1	0	1	22.1
					1	12	1	22.0
					1	24	1	21.9
					12	0	2	21.2
					12	6	2	21.1
					12	11	2	21.2
					25	0	2	21.1

14.13.1 Spectrum Plots for the Test RB allocations

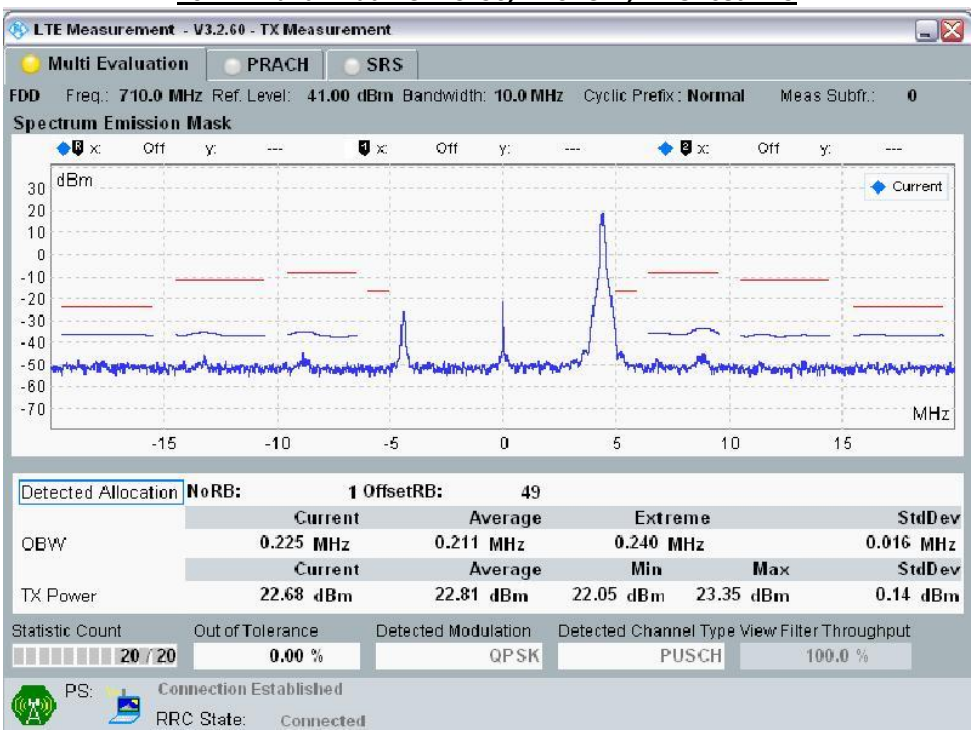
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 0



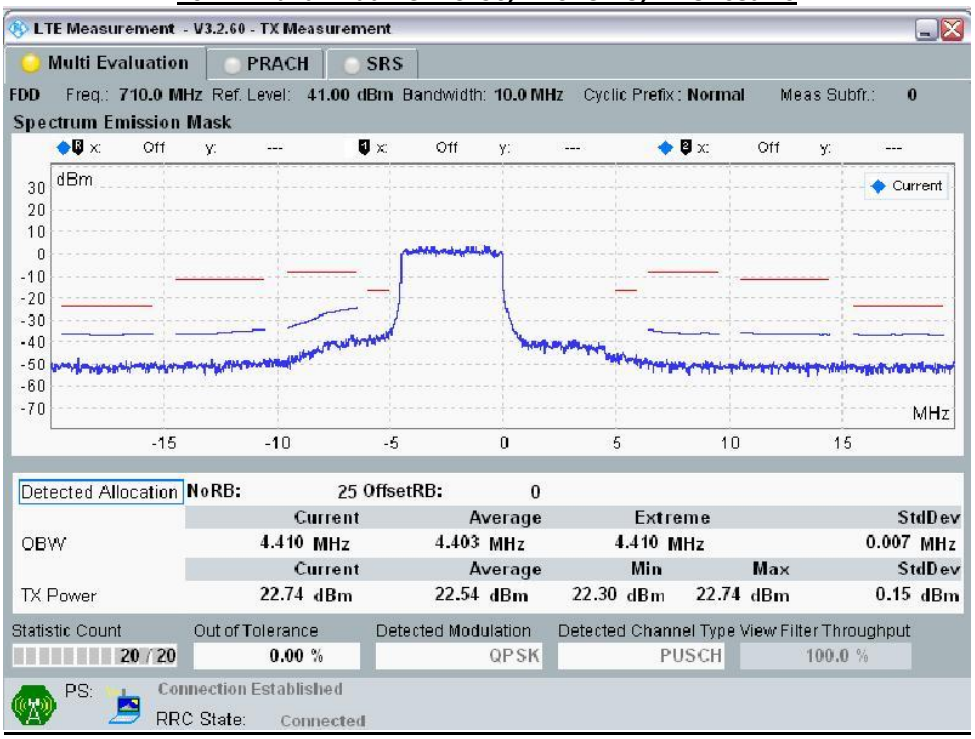
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 24



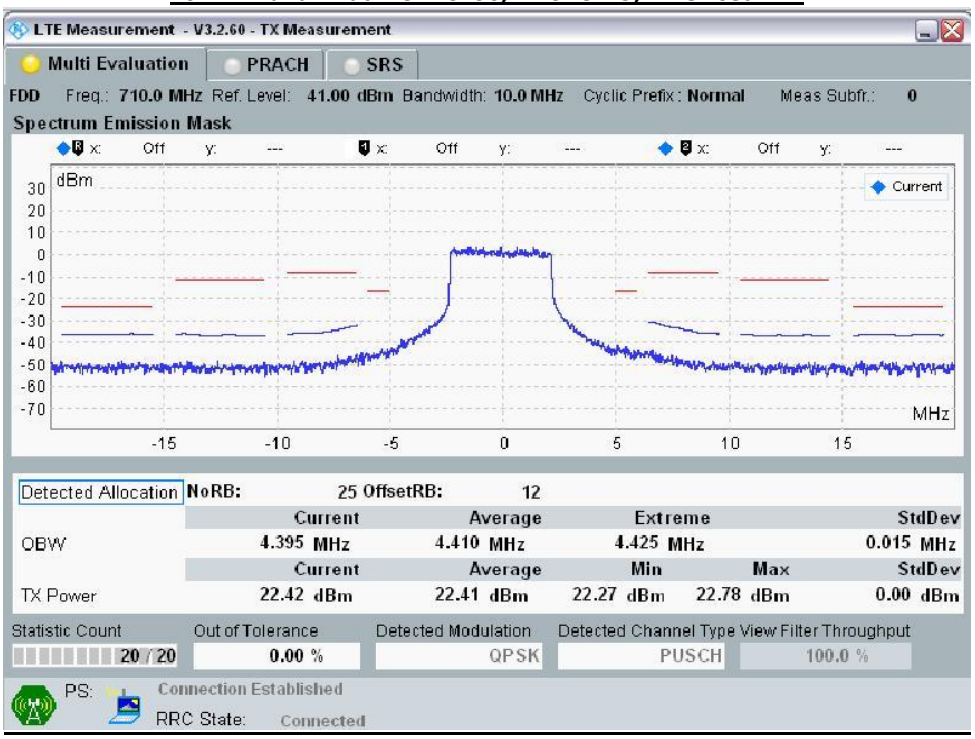
10MHz Band Width: Ch 23790, RB Size=1; RB Offset = 49



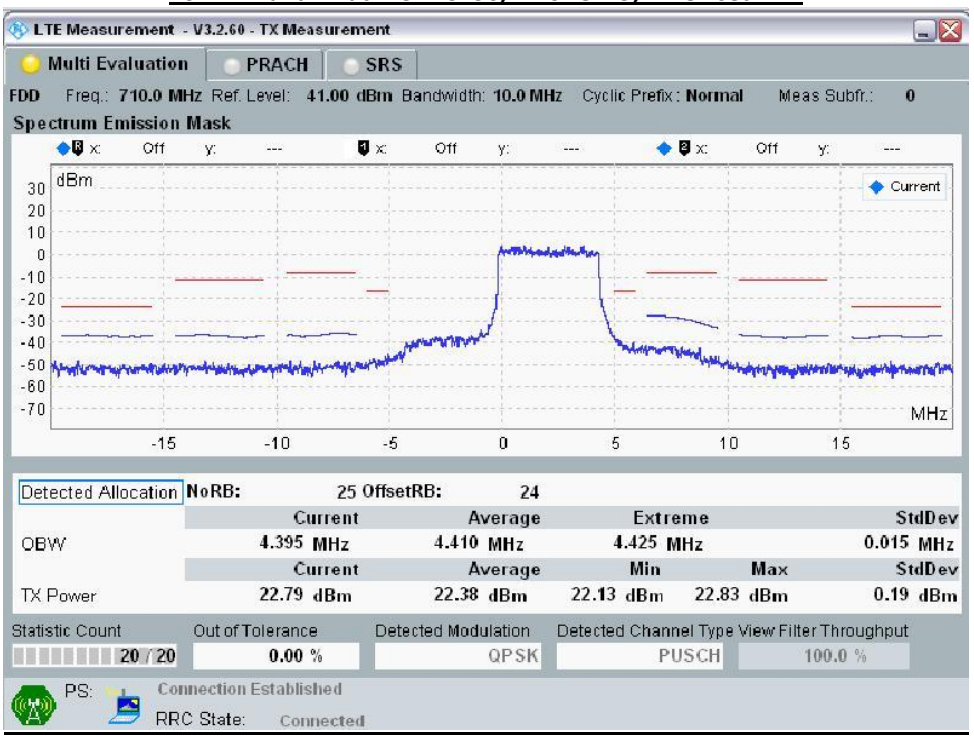
10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 0



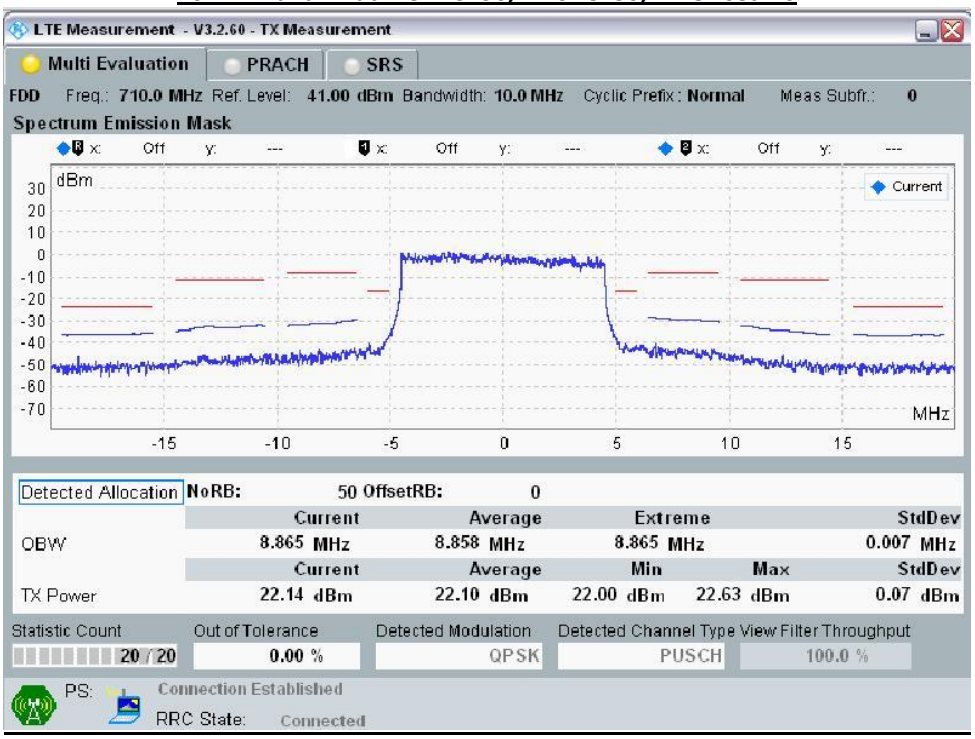
10MHz Band Width: Ch 23790, RB Size=25; RB Offset = 12



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



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



14.14 LTE Band 25

Output power table

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
25	20	26140	1860.0	QPSK	1	0	0	23.0
					1	49	0	22.8
					1	99	0	22.7
					50	0	1	22.2
					50	24	1	22.0
					50	49	1	22.0
					100	0	1	22.0
				16QAM	1	0	1	22.1
					1	49	1	22.0
					1	99	1	22.0
					50	0	2	21.3
					50	24	2	21.0
					50	49	2	21.0
					100	0	2	21.0
		26365	1882.5	QPSK	1	0	0	22.7
					1	49	0	22.3
					1	99	0	22.5
					50	0	1	21.7
					50	24	1	21.5
					50	49	1	21.5
					100	0	1	21.5
				16QAM	1	0	1	21.4
					1	49	1	21.3
					1	99	1	21.3
					50	0	2	21.4
					50	24	2	21.3
					50	49	2	21.3
					100	0	2	21.4
		26590	1905.0	QPSK	1	0	0	22.1
					1	49	0	22.3
					1	99	0	22.3
					50	0	1	21.2
					50	25	1	21.1
					50	49	1	21.2
					100	0	1	21.2
				16QAM	1	0	1	21.2
					1	49	1	21.4
					1	99	1	21.3
					50	0	2	20.2
					50	24	2	20.1
					50	49	2	20.1
					100	0	2	20.2

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
25	15	26115	1857.5	QPSK	1	0	0	22.9
					1	37	0	22.9
					1	74	0	22.8
					36	0	1	22.0
					36	18	1	22.0
					36	35	1	21.9
					75	0	1	21.9
				16QAM	1	0	1	22.1
					1	37	1	22.2
					1	74	1	22.0
					36	0	2	21.0
					36	18	2	21.0
					36	35	2	20.9
					75	0	2	20.9
		26365	1882.5	QPSK	1	0	0	22.9
					1	37	0	22.9
					1	74	0	22.5
					36	0	1	22.1
					36	18	1	22.1
					36	35	1	22.1
					75	0	1	22.0
				16QAM	1	0	1	22.0
					1	37	1	21.9
					1	74	1	21.7
					36	0	2	21.0
					36	18	2	21.0
					36	35	2	21.0
					75	0	2	20.9
		26615	1907.5	QPSK	1	0	0	22.7
					1	37	0	22.9
					1	74	0	22.9
					36	0	1	21.8
					36	18	1	21.9
					36	35	1	21.8
					75	0	1	21.7
				16QAM	1	0	1	21.9
					1	37	1	22.3
					1	74	1	22.1
					36	0	2	20.8
					36	18	2	20.8
					36	35	2	20.8
					75	0	2	20.7

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
25	10	26090	1855.0	QPSK	1	0	0	23.0
					1	24	0	22.9
					1	49	0	22.8
					25	0	1	22.2
					25	12	1	22.1
					25	24	1	22.1
					50	0	1	22.1
				16QAM	1	0	1	22.1
					1	24	1	22.0
					1	49	1	22.1
					25	0	2	21.2
					25	12	2	21.1
					25	24	2	21.0
					50	0	2	21.0
		26365	1882.5	QPSK	1	0	0	22.9
					1	24	0	23.0
					1	49	0	22.6
					25	0	1	22.0
					25	12	1	22.1
					25	24	1	22.1
					50	0	1	22.0
				16QAM	1	0	1	22.0
					1	24	1	22.1
					1	49	1	21.7
					25	0	2	21.1
					25	12	2	21.2
					25	24	2	21.1
					50	0	2	21.0
		26640	1910.0	QPSK	1	0	0	22.9
					1	24	0	22.9
					1	49	0	22.8
					25	0	1	22.0
					25	12	1	21.9
					25	24	1	22.0
					50	0	1	21.9
				16QAM	1	0	1	22.0
					1	24	1	22.0
					1	49	1	21.9
					25	0	2	21.1
					25	12	2	21.0
					25	24	2	21.0
					50	0	2	20.9

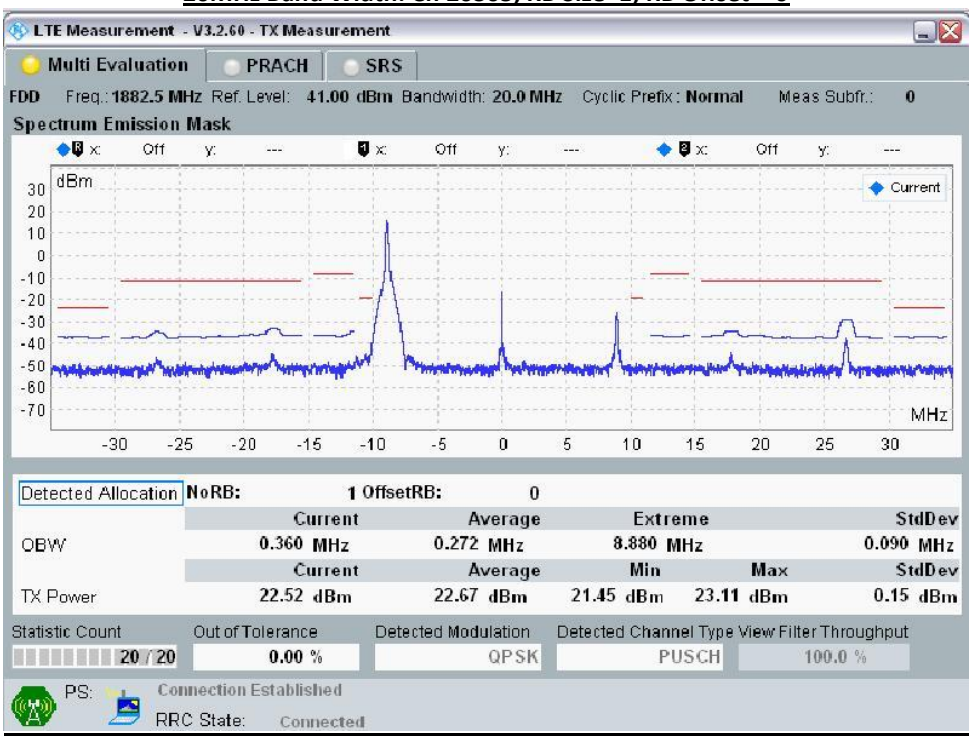
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
25	5	26065	1852.5	QPSK	1	0	0	23.1
					1	12	0	23.1
					1	24	0	22.9
					12	0	1	22.2
					12	6	1	22.3
					12	11	1	22.2
					25	0	1	22.2
				16QAM	1	0	1	22.3
					1	12	1	22.4
					1	24	1	22.1
					12	0	2	21.3
					12	6	2	21.1
					12	11	2	21.2
					25	0	2	21.1
		26365	1882.5	QPSK	1	0	0	23.0
					1	12	0	23.1
					1	24	0	22.9
					12	0	1	22.2
					12	6	1	22.1
					12	11	1	22.2
					25	0	1	22.1
				16QAM	1	0	1	22.1
					1	12	1	22.2
					1	24	1	22.1
					12	0	2	21.0
					12	6	2	21.1
					12	11	2	21.2
					25	0	2	21.0
		26665	1912.5	QPSK	1	0	0	22.8
					1	12	0	22.9
					1	24	0	22.8
					12	0	1	22.9
					12	6	1	21.8
					12	11	1	22.0
					25	0	1	21.8
				16QAM	1	0	1	22.0
					1	12	1	22.1
					1	24	1	21.9
					12	0	2	21.0
					12	6	2	21.0
					12	11	2	21.0
					25	0	2	20.9

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
25	3	26055	1851.5	QPSK	1	0	0	23.2
					1	7	0	23.2
					1	14	0	23.0
					8	0	1	22.3
					8	4	1	22.3
					8	7	1	22.3
					15	0	1	22.2
				16QAM	1	0	1	22.4
					1	7	1	22.3
					1	14	1	22.2
					8	0	2	21.2
					8	4	2	21.3
					8	7	2	21.3
					15	0	2	21.2
		26365	1882.5	QPSK	1	0	0	23.1
					1	7	0	23.0
					1	14	0	22.9
					8	0	1	22.3
					8	4	1	22.2
					8	7	1	22.2
					15	0	1	22.1
				16QAM	1	0	1	22.0
					1	7	1	22.2
					1	14	1	22.1
					8	0	2	21.1
					8	4	2	21.1
					8	7	2	21.1
					15	0	2	21.1
		26675	1913.4	QPSK	1	0	0	22.8
					1	7	0	23.0
					1	14	0	22.7
					8	0	1	22.0
					8	4	1	22.1
					8	7	1	22.0
					15	0	1	22.0
				16QAM	1	0	1	22.0
					1	7	1	22.1
					1	14	1	22.0
					8	0	2	21.0
					8	4	2	21.0
					8	7	2	21.1
					15	0	2	21.0

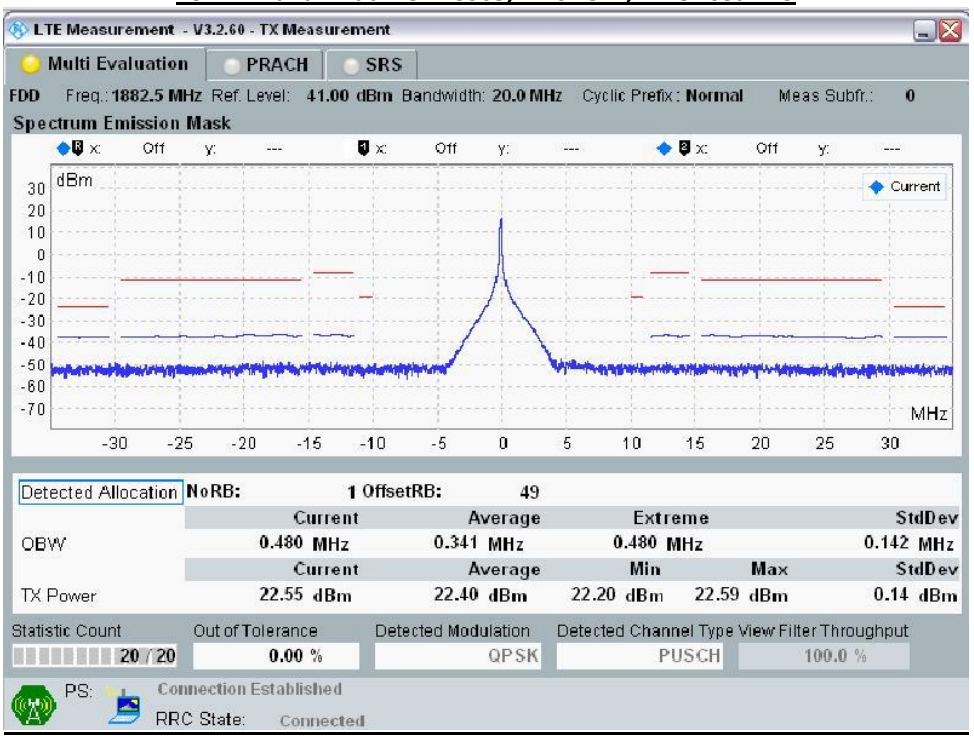
Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)
25	1.4	26047	1850.7	QPSK	1	0	0	22.9
					1	2	0	22.9
					1	5	0	22.8
					3	0	1	22.9
					3	1	1	22.9
					3	2	1	22.8
					6	0	1	21.9
				16QAM	1	0	1	21.9
					1	2	1	21.9
					1	5	1	21.9
					3	0	2	21.9
					3	1	2	21.9
					3	2	2	21.8
					6	0	2	21.0
		26365	1882.5	QPSK	1	0	0	22.7
					1	2	0	22.7
					1	5	0	22.6
					3	0	1	22.6
					3	1	1	22.7
					3	2	1	22.6
					6	0	1	21.8
				16QAM	1	0	1	22.0
					1	2	1	21.9
					1	5	1	22.0
					3	0	2	21.9
					3	1	2	21.9
					3	2	2	21.8
					6	0	2	20.8
		26682	1914.2	QPSK	1	0	0	22.8
					1	2	0	22.8
					1	5	0	22.7
					3	0	1	22.8
					3	1	1	22.8
					3	2	1	22.7
					6	0	1	21.8
				16QAM	1	0	1	22.0
					1	2	1	22.0
					1	5	1	22.0
					3	0	2	22.0
					3	1	2	22.1
					3	2	2	21.9
					6	0	2	20.8

14.14.1 Spectrum Plots for the Test RB allocations

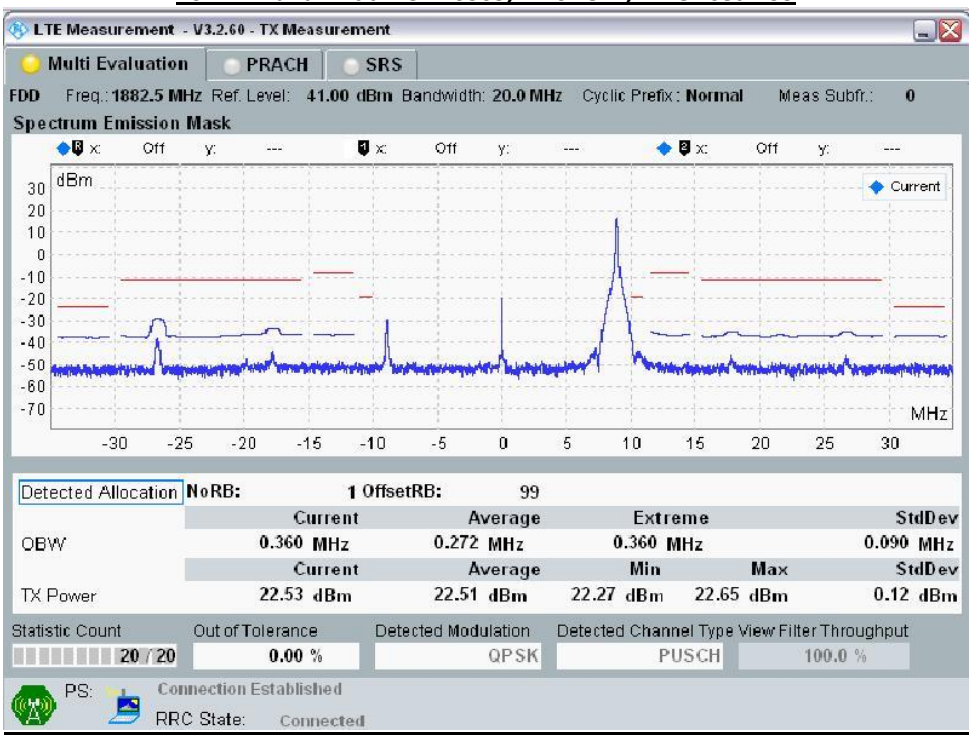
20MHz Band Width: Ch 26365, RB Size=1; RB Offset = 0



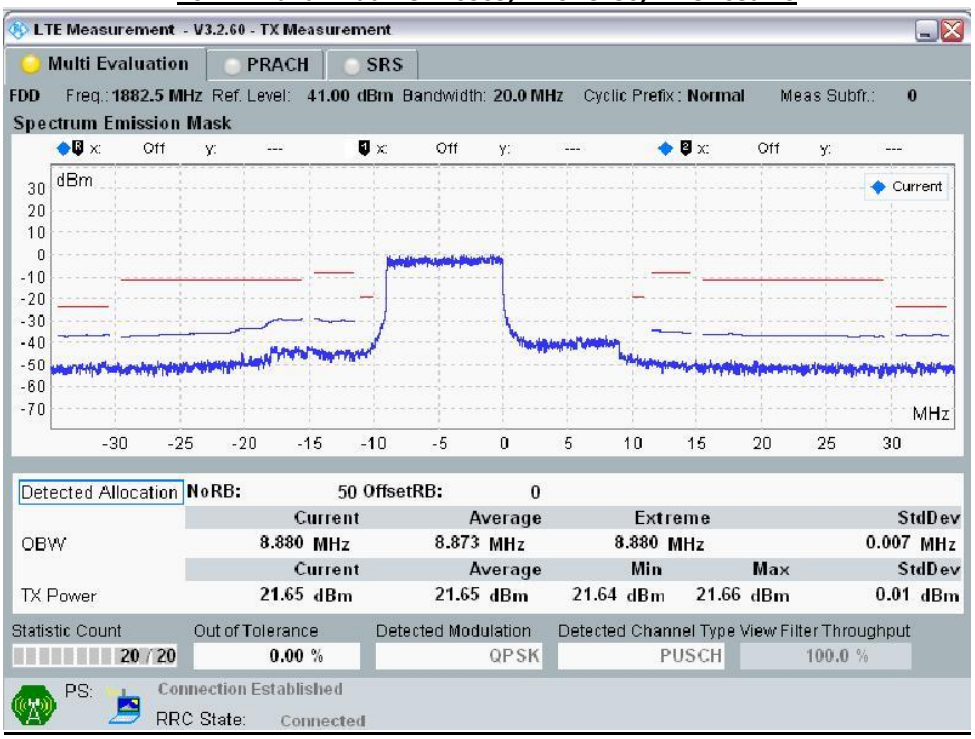
20MHz Band Width: Ch 26365, RB Size=1; RB Offset = 49



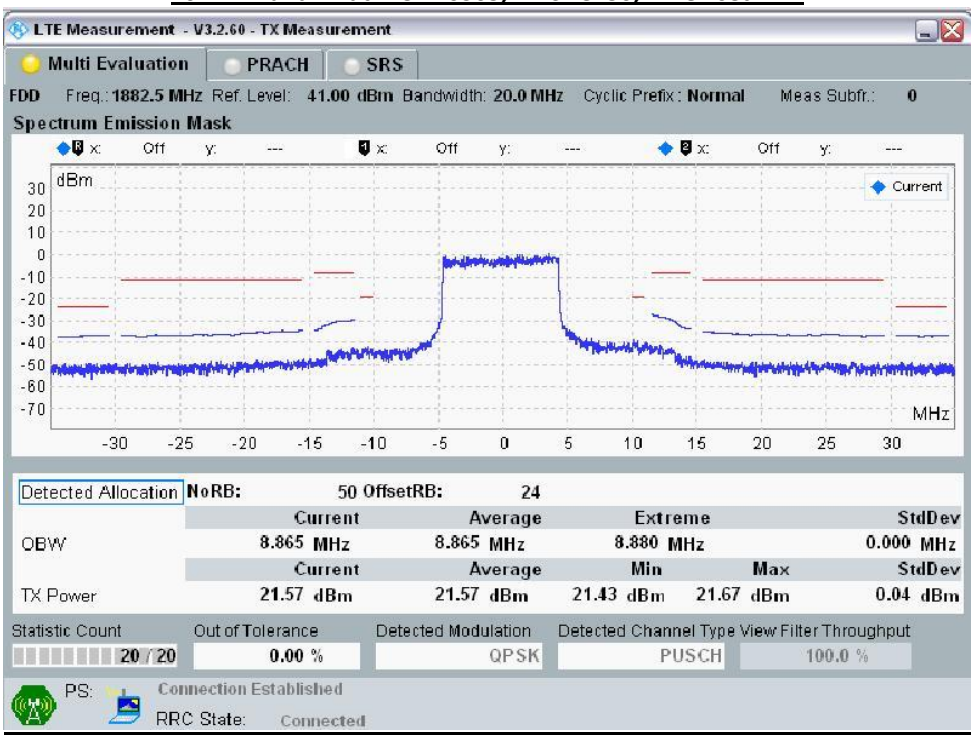
20MHz Band Width: Ch 26365, RB Size=1; RB Offset = 99



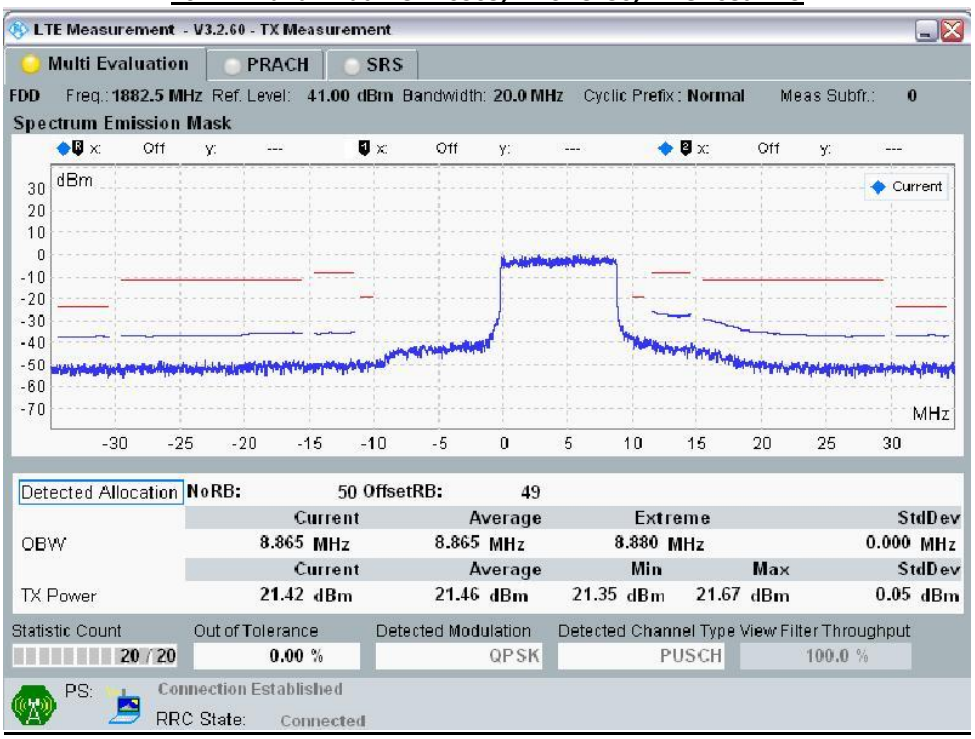
20MHz Band Width: Ch 26365, RB Size=50, RB Offset = 0



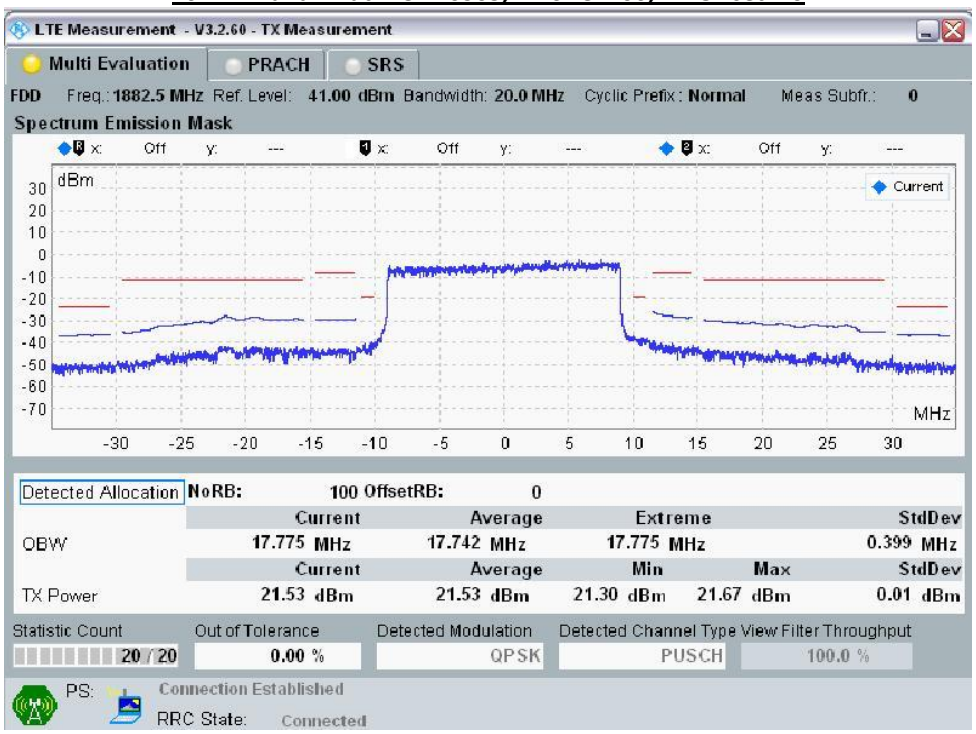
20MHz Band Width: Ch 26365, RB Size=50, RB Offset = 24



20MHz Band Width: Ch 26365, RB Size=50, RB Offset = 49



20MHz Band Width: Ch 26365, RB Size=100, RB Offset = 0



15 SAR Measurements Results

GPRS850:

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			
GPRS 850	2	Edge 1	190	836.6	0	33.0	31.9	0.011	0.014	
		Edge 3	190	836.6	0	33.0	31.9	0.013	0.017	
		Edge 4	190	836.6	0	33.0	31.9	0.825	1.068	
		Edge 4	128	836.6	0	33.0	31.8	0.956	1.249	1
		Edge 4	251	836.6	0	33.0	31.9	0.786	1.017	1
		Edge 4	128	836.6	0	33.0	31.8	0.973	1.271	2
		Rear	190	836.6	0	33.0	31.9	0.506	0.655	

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 v05r01 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 v01r01)
   2.1 Original SAR = 0.956 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.973 W/kg < 1.45W/kg
   2.3 SAR variation= 1.7% < 20%

GPRS1900:

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			
GPRS 1900	2	Edge 1	661	1909.8	0	30.0	29.3	0.018	0.021	
		Edge 3	661	1909.8	0	30.0	29.3	0.067	0.078	
		Edge 4	661	1909.8	0	30.0	29.3	0.666	0.782	
		Rear	661	1909.8	0	30.0	29.3	0.642	0.754	

WCDMA Band II:

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
					Tune up limit	Measured			
Rel 99 RMC 12.2Kbps	Edge 3	9262	1852.4	0	24.0	22.5	0.070	0.098	
	Edge 4	9262	1852.4	0	24.0	22.5	0.789	1.109	
	Edge 4	9400	1880.0	0	24.0	22.4	0.810	1.165	1
	Edge 4	9538	1907.0	0	24.0	22.5	0.836	1.192	1
	Rear	9262	1852.4	0	24.0	22.5	0.695	0.977	
	Rear	9400	1880.0	0	24.0	22.4	0.748	1.076	1
	Rear	9538	1907.0	0	24.0	22.5	0.878	1.252	1
	Rear	9538	1907.0	0	24.0	22.5	0.871	1.242	2

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 v05r01 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 v01r01)
   2.1 Original SAR = 0.878 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 0.871 W/kg < 1.45W/kg
   2.3 SAR variation= 0.8% < 20%

WCDMA Band IV:

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
					Tune up limit	Measured			
Rel 99 RMC 12.2Kbps	Edge 3	1413	1732.6	0	24.0	22.6	0.168	0.233	
	Edge 4	1413	1732.6	0	24.0	22.6	1.010	1.394	
	Edge 4	1312	1712.4	0	24.0	22.6	1.060	1.463	1
	Edge 4	1513	1752.6	0	24.0	22.6	0.958	1.322	1
	Rear	1413	1732.6	0	24.0	22.6	1.080	1.491	
	Rear	1312	1712.4	0	24.0	22.6	1.000	1.380	1
	Rear	1513	1752.6	0	24.0	22.6	0.997	1.376	1
	Rear	1413	1732.6	0	24.0	22.6	1.090	1.505	2

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 v05r01 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 v01r01)
   2.1 Original SAR = 1.08 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 1.09 W/kg < 1.45W/kg
   2.3 SAR variation= 0.9% < 20%

WCDMA Band V:

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
					Tune up limit	Measured			
Rel 99 RMC 12.2Kbps	Edge 3	4182	836.4	0	24.0	22.3	0.014	0.021	
	Edge 4	4182	836.4	0	24.0	22.3	0.490	0.723	
	Rear	4182	836.4	0	24.0	22.3	0.339	0.500	

CDMA Cellular Band:

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
					Tune up limit	Measured			
CDMA Cellular	Edge 1	384	836.5	0	25.0	23.7	0.007	0.009	
	Edge 3	384	836.5	0	25.0	23.7	0.012	0.016	
	Edge 4	384	836.5	0	25.0	23.7	0.575	0.776	
	Edge 4	1013	824.7	0	25.0	23.5	0.544	0.776	1
	Edge 4	777	848.3	0	25.0	23.3	0.564	0.836	1
	Rear	384	836.5	0	25.0	23.7	0.395	0.533	

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 v05r01 section 4.3.3)

CDMA PCS Band:

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
					Tune up limit	Measured			
CDMA PCS	Edge 1	25	1851.3	0	25.0	23.8	0.023	0.030	
	Edge 3	25	1851.3	0	25.0	23.8	0.097	0.127	
	Edge 4	25	1851.3	0	25.0	23.8	1.050	1.378	
	Edge 4	1175	1908.8	0	24.5	23.7	0.974	1.182	1
	Edge 4	600	1880.0	0	25.0	23.7	0.958	1.307	1
	Edge 4	25	1851.3	0	25.0	23.8	1.030	1.352	2
	Rear	25	1851.3	0	25.0	23.8	0.922	1.210	
	Rear	1175	1851.3	0	25.0	23.8	1.000	1.312	1
	Rear	600	1851.3	0	25.0	23.8	0.918	1.205	1

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 v05r01 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 v01r01)
   2.1 Original SAR = 1.05 W/kg, therefore two times repeat SAR is required.
   2.2 Repeat SAR = 1.03 W/kg < 1.45W/kg
   2.3 SAR variation= 1.9 % < 20%

LTE Band 2 (20MHz Bandwidth):

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	MPR	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
QPSK	Edge3	19100	1900.0	0	1	99	0	24	23.4	0.088	0.101	
		19100	1900.0	0	50	49	1	24	22.4	0.060	0.087	
QPSK	Edge4	19100	1900.0	0	1	99	0	24.0	23.4	0.769	0.883	
		18700	1860.0	0	1	99	0	24.0	22.7	0.654	0.882	1
		18900	1880.0	0	1	99	0	24.0	22.6	0.658	0.908	1
		19100	1900.0	0	50	49	1	24.0	22.4	0.532	0.769	
		18700	1860.0	0	100	0	2	24.0	21.9	0.511	0.829	2
		18900	1880.0	0	100	0	2	24.0	21.7	0.509	0.864	2
		19100	1900.0	0	100	0	2	24.0	21.9	0.527	0.855	2
QPSK	Rear	19100	1900.0	0	1	99	0	24.0	23.4	0.875	1.005	
		18700	1860.0	0	1	99	0	24.0	22.7	0.736	0.993	1
		18900	1880.0	0	1	99	0	24.0	22.6	0.750	1.035	1
		19100	1900.0	0	1	99	0	24.0	23.4	0.910	1.045	3
		19100	1900.0	0	50	49	1	24.0	22.4	0.625	0.903	
		18700	1860.0	0	50	49	1	24.0	21.8	0.574	0.953	1
		18900	1880.0	0	50	49	1	24.0	21.8	0.575	0.954	1
		18700	1860.0	0	100	0	2	24.0	21.9	0.510	0.827	2
		18900	1880.0	0	100	0	2	24.0	21.7	0.520	0.883	2
		19100	1900.0	0	100	0	2	24.0	21.9	0.525	0.851	2

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 v01r01)Original SAR = 0.875 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 0.910 W/kg < 1.45W/kg
   3.3 SAR variation= 3.8 % < 20%

LTE Band 4 (20MHz Bandwidth):

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	MPR	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
QPSK	Edge3	20175	1732.5	0	1	49	0	24.0	23.7	0.105	0.113	
		20175	1732.5	0	50	0	1	24.0	22.6	0.076	0.105	
QPSK	Edge4	20175	1732.5	0	1	49	0	24.0	23.7	0.874	0.937	
		20050	1720.0	0	1	49	0	24.0	23.2	0.880	1.058	1
		20300	1745.0	0	1	49	0	24.0	23.4	0.858	0.985	1
		20175	1732.5	0	50	0	1	24.0	22.1	0.679	1.052	
		20050	1720.0	0	50	0	1	24.0	22.6	0.696	0.961	1
		20300	1745.0	0	50	0	1	24.0	22.2	0.740	1.120	1
		20050	1732.5	0	100	0	1	24.0	22.0	0.697	1.105	2
		20175	1720.0	0	100	0	1	24.0	22.5	0.722	1.020	2
		20300	1745.0	0	100	0	1	24.0	22.2	0.722	1.093	2
QPSK	Rear	20175	1732.5	0	1	49	0	24.0	23.7	0.959	1.028	
		20050	1720.0	0	1	49	0	24.0	23.2	0.957	1.151	1
		20300	1745.0	0	1	49	0	24.0	23.4	0.999	1.147	1
		20175	1732.5	0	50	0	1	24.0	22.1	0.723	1.120	
		20050	1720.0	0	50	0	1	24.0	22.6	0.697	0.962	1
		20300	1745.0	0	50	0	1	24.0	22.2	0.784	1.187	1
		20050	1732.5	0	100	0	1	24.0	22.0	0.721	1.143	2
		20175	1720.0	0	100	0	1	24.0	22.5	0.758	1.071	2
		20300	1745.0	0	100	0	1	24.0	22.2	0.777	1.176	2
		20300	1745.0	0	50	0	1	24.0	22.2	0.783	1.185	3

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 v01r01)
   3.1 Original SAR = 0.784 W/kg, therefore two times repeat SAR is required.
   3.2 Repeat SAR = 0.783 W/kg < 1.45W/kg
   3.3 SAR variation= 0.1 % < 20%

LTE Band 5 (10MHz Bandwidth):

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	MPR	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
QPSK	Edge3	20525	836.5	0	1	0	0	24.0	23.7	0.015	0.016	
		20525	836.5	0	25	0	0	24.0	22.8	0.011	0.015	
QPSK	Edge4	20525	836.5	0	1	0	0	24.0	23.7	0.457	0.490	
		20525	836.5	0	25	0	0	24.0	22.8	0.360	0.475	
QPSK	Rear	20525	836.5	0	1	0	0	24.0	23.7	0.292	0.313	
		20525	836.5	0	25	0	0	24.0	22.8	0.229	0.302	

LTE Band 13 (10MHz Bandwidth):

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	MPR	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
QPSK	Edge3	23230	782.0	0	1	24	0	24.0	23.3	0.009	0.010	
		23230	782.0	0	25	12	1	24.0	22.1	0.008	0.012	
QPSK	Edge4	23230	782.0	0	1	24	0	24.0	23.3	0.545	0.640	
		23230	782.0	0	25	12	1	24.0	22.1	0.420	0.651	
QPSK	Rear	23230	782.0	0	1	24	0	24.0	23.3	0.334	0.392	
		23230	782.0	0	25	12	1	24.0	22.1	0.253	0.392	

LTE Band 17 (10MHz Bandwidth):

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	MPR	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
QPSK	Edge3	23790	710.0	0	1	24	0	24.0	23.3	0.015	0.018	
		23790	710.0	0	25	0	1	24.0	22.3	0.011	0.016	
QPSK	Edge4	23790	710.0	0	1	24	0	24.0	23.3	0.618	0.726	
		23790	710.0	0	25	0	1	24.0	22.3	0.474	0.701	
QPSK	Rear	23790	710.0	0	1	24	0	24.0	23.3	0.360	0.423	
		23790	710.0	0	25	0	1	24.0	22.3	0.275	0.407	

LTE Band 25 (20MHz Bandwidth):

Mode	Test Position	Channel	Freq. (MHz)	Dist. (mm)	UL RB Allocation	UL RB Start	MPR	Power (dBm)		Measured 1g SAR (W/kg)	Reported SAR(W/kg)	Note
								Tune up limit	Measured			
QPSK	Edge3	26365	1882.5	0	1	0	0	24.0	22.7	0.094	0.127	
		26365	1882.5	0	50	0	1	24.0	21.7	0.084	0.143	
	Edge4	26365	1882.5	0	1	0	0	24.0	22.7	0.576	0.777	
		26140	1860.0	0	1	0	0	24.0	23.0	0.661	0.832	1
		26590	1905.0	0	1	0	0	24.0	22.1	0.652	1.010	1
		26365	1882.5	0	50	0	1	24.0	21.7	0.526	0.893	
		26140	1860.0	0	50	0	1	24.0	22.2	0.507	0.767	1
		26590	1905.0	0	50	0	1	24.0	21.2	0.501	0.955	1
		26365	1882.5	0	100	0	2	24.0	21.4	0.497	0.904	2
		26140	1860.0	0	100	0	2	24.0	22.0	0.509	0.807	2
		26590	1905.0	0	100	0	2	24.0	21.2	0.528	1.006	2
QPSK	Rear	26365	1882.5	0	1	0	0	24.0	22.7	0.582	0.785	
		26140	1860.0	0	1	0	0	24.0	23.0	0.672	0.846	1
		26590	1905.0	0	1	0	0	24.0	22.1	0.661	1.024	1
		26365	1882.5	0	50	0	1	24.0	21.7	0.518	0.880	
		26140	1860.0	0	50	0	1	24.0	22.2	0.523	0.792	1
		26590	1905.0	0	50	0	1	24.0	21.2	0.526	1.002	1
		26365	1882.5	0	100	0	2	24.0	21.4	0.533	0.970	2
		26140	1860.0	0	100	0	2	24.0	22.0	0.525	0.832	2
		26590	1905.0	0	100	0	2	24.0	21.2	0.558	1.063	2

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	Edge4	GPRS 2slot	1.271
GPRS1900	Edge4	GPRS 2slot	0.782
WCDMA Band II	Rear	12.2 Kbps	1.252
WCDMA band IV	Rear	12.2 Kbps	1.505
WCDMA band V	Edge4	12.2 Kbps	0.723
CDMA Cellular Band	Edge4	RC1 SO55	0.836
CDMA PCS Band	Edge4	RC1 SO55	1.378
LTE band 2	Rear	QPSK BW20	1.045
LTE band 4	Rear	QPSK BW20	1.187
LTE band 5	Edge4	QPSK BW10	0.490
LTE band 13	Edge4	QPSK BW10	0.651
LTE band 17	Edge4	QPSK BW10	0.726
LTE band 25	Rear	QPSK BW20	1.063

16 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	6/3/2014
Electronic Probe kit	Hewlett Packard	85070D	N/A	N/A	N/A
Power Meter	Agilent	4416	GB41291611	1	9/10/2014
Power Sensor	Agilent	8481H	MY41091956	1	9/11/2014
Wireless Communication Test Set	Agilent	E5515C 8960	MY48363204	1	9/6/2014
Radio Communication Analyzer	Anritsu	MT8820C	6200938900	1	5/30/2014
Data Acquisition Electronics (DAE)	SPEAG	DAE4	558	1	7/24/2014
Dosimetric E-Field Probe	SPEAG	EX3DV4	3554	1	9/25/2014
750 MHz System Validation Dipole	SPEAG	D750V3	1015	1	8/25/2014
835 MHz System Validation Dipole	SPEAG	D835V2	4d015	1	3/17/2014
1800 MHz System Validation Dipole	SPEAG	D1800V2	2d062	1	2/11/2014
1900 MHz System Validation Dipole	SPEAG	D1900V2	5d056	1	2/12/2014
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

17 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.

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19 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 CDMA Cellular Band
8	SAR test plots for CDMA PCS Band
9	SAR test plots for LTE Band 2
10	SAR test plots for LTE Band 4
11	SAR test plots for LTE Band 5
12	SAR test plots for LTE Band 13
13	SAR test plots for LTE Band 17
14	SAR test plots for LTE Band 25
15	SAR_Probe_EX3DV4_sn3554
16	SAR_DAE4_sn558
17	SAR_Dipole_D750v3_sn1015
18	SAR_Dipole_D835v2_sn4d015
19	SAR_Dipole_D1800v2_sn2d062
20	SAR_Dipole_D1900v2_sn5d056
21	T131212W02-SF PHOTOs

END OF REPORT