



**FCC OET BULLETIN 65 SUPPLEMENT C 01-01
IEEE Std 1528-2003 and IEEE Std 1528a-2005**

SAR EVALUATION REPORT

For
Modem
(Tested inside of Panasonic Laptop PC CF-C2)

Model: WW12C
FCC ID: ACJ9TGWW12C

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1. Attestation of Test Results

Applicant	Panasonic Corporation of North America		
DUT description	Modem (Tested inside of Panasonic Laptop PC CF-C2)		
Model	WW12C		
Test device is	An identical prototype		
Device category	Portable		
Exposure category	General Population/Uncontrolled Exposure		
Date tested	8/29/2012 – 11/15/2012		
RF Exposure Rule	Freq. Range	Highest 1-g SAR	Limit
22	824-849 MHz	1.08 W/kg (Body Edge 1 w/ 0 mm distance)	1.6 W/kg
24	1850-1910 MHz	1.3 W/kg (Body Edge 1 w/ 0 mm distance)	
27 (LTE Band 4)	1710–1755 MHz	1.07 W/kg (Body Edge 1 w/ 0 mm distance)	
27 (LTE Band 17)	704–716 MHz	1.22 W/kg (Body Edge 1 w/ 0 mm distance)	
Simultaneous Transmission Condition:		1.57 W/kg (The highest SAR across exposure conditions)	
Applicable Standards			Test Results
Published RF exposure KDB procedures, TCB workshop updates and OET Bulletin 65 Supplement C, IEEE Std 1528-2003 and IEEE Std 1528a-2005			Pass
UL CCS tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report. Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.			
Approved & Released For UL CCS By:		Tested By:	
			
Dave Weaver Program Manager UL CCS		Ray Su SAR Engineer UL CCS	

2. Test Methodology

The tests documented in this report were performed in accordance with FCC OET Bulletin 65 Supplement C Edition 01-01, IEEE STD 1528-2003, IEEE Std 1528a-2005 and the following KDB Procedures:

- 447498 D01 General RF Exposure Guidance v05
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01
- 616217 D04 SAR for laptop and tablets v01
- 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- 941225 D01 SAR test for 3G devices v02
- 941225 D05 SAR for LTE Devices v02

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. Calibration and Uncertainty

4.1. Measuring Instrument Calibration

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due date		
				MM	DD	Year
Dielectronic Probe kit	HP	85070C	N/A	N/A		
Thermometer	ERTCO	639-1S	8350	7	30	2013
Base Station Simulator	Agilent	8960	GB46160222	6	20	2013
Base Station Simulator	R & S	CMU200	106301	6	6	2013
Base Station Simulator	R & S	CMW500	10-300233773	12	14	2012
ESA Series Network Analyzer	Agilent	E5071B	MY42100131	2	11	2013
Synthesized Signal Generator	HP	8665B	3438A00633	2	22	2013
Power Meter	HP	438A	3513U04320	9	17	2013
Power Sensor A	HP	8481A	2237A31744	8	17	2013
Power Sensor B	HP	8481A	3318A95392	8	17	2013
Amplifier	MITEQ	4D00400600-50-30P	1622052	N/A		
Directional coupler	Werlatone	C8060-102	2149	N/A		
E-Field Probe	SPEAG	EX3DV4	3749	1	27	2013
E-Field Probe	SPEAG	EX3DV4	3772	2	16	2013
E-Field Probe	SPEAG	EX3DV4	3773	3	14	2013
Data Acquisition Electronics	SPEAG	DAE3	500	6	13	2013
Data Acquisition Electronics	SPEAG	DAE4	1258	3	8	2013
Data Acquisition Electronics	SPEAG	DAE4	1239	6	6	2013
System Validation Dipole	SPEAG	D750V3	1024	4	4	2013
System Validation Dipole	SPEAG	D835V2	4d117	4	10	2013
System Validation Dipole	SPEAG	D1750V2	1050	4	19	2013
System Validation Dipole	SPEAG	D1900V2	5d140	4	18	2013

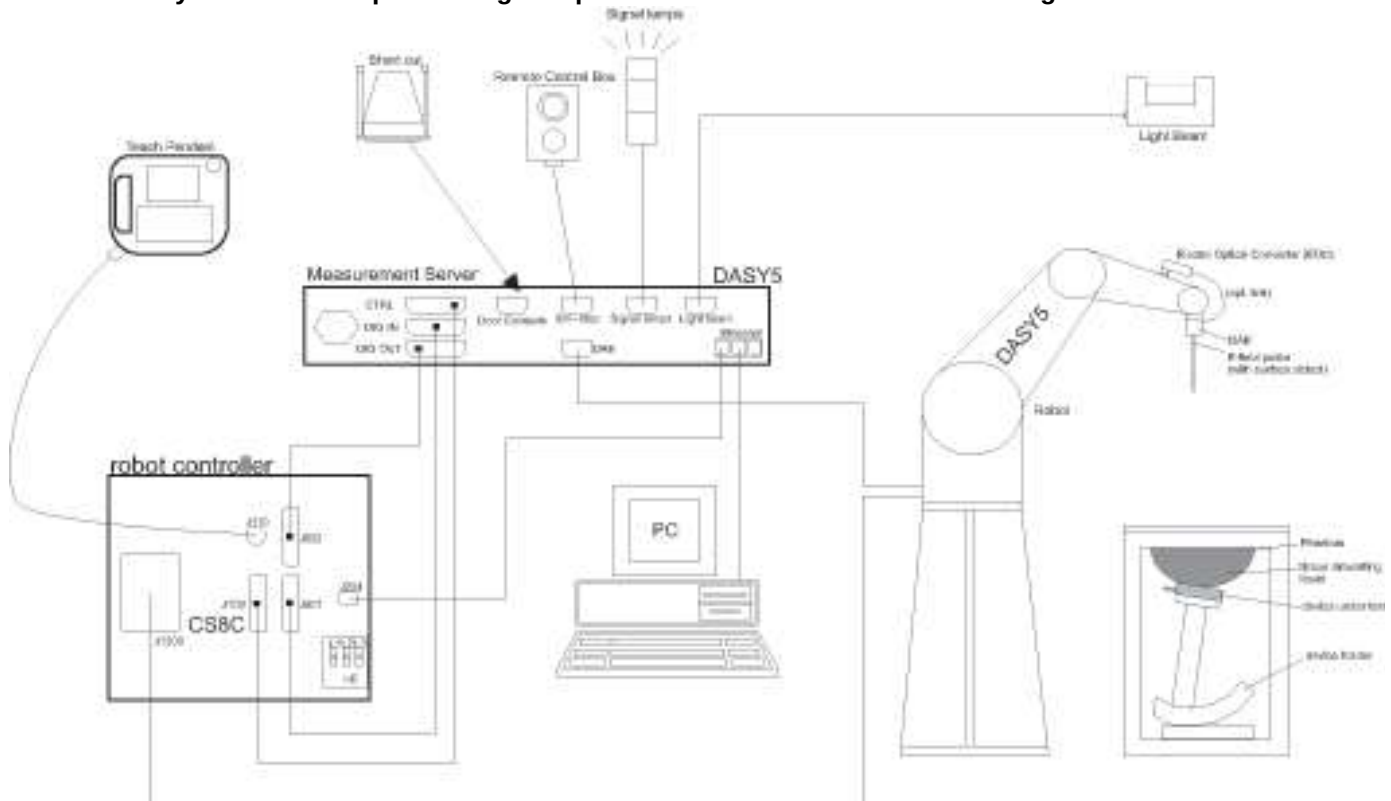
4.2. Measurement Uncertainty

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

Component	Error, %	Distribution	Divisor	Sensitivity	U (X), %
Measurement System					
Probe Calibration (k=1)	6.00	Normal	1	1	6.00
Axial Isotropy	1.15	Rectangular	1.732	0.7071	0.47
Hemispherical Isotropy	2.30	Rectangular	1.732	0.7071	0.94
Boundary Effect	0.90	Rectangular	1.732	1	0.52
Probe Linearity	3.45	Rectangular	1.732	1	1.99
System Detection Limits	1.00	Rectangular	1.732	1	0.58
Readout Electronics	0.30	Normal	1	1	0.30
Response Time	0.80	Rectangular	1.732	1	0.46
Integration Time	2.60	Rectangular	1.732	1	1.50
RF Ambient Conditions - Noise	3.00	Rectangular	1.732	1	1.73
RF Ambient Conditions - Reflections	3.00	Rectangular	1.732	1	1.73
Probe Positioner Mechanical Tolerance	0.40	Rectangular	1.732	1	0.23
Probe Positioning with respect to Phantom	2.90	Rectangular	1.732	1	1.67
Extrapolation, Interpolation and Integration	1.00	Rectangular	1.732	1	0.58
Test Sample Related					
Test Sample Positioning	2.90	Normal	1	1	2.90
Device Holder Uncertainty	3.60	Normal	1	1	3.60
Output Power Variation - SAR Drift	5.00	Rectangular	1.732	1	2.89
Phantom and Tissue Parameters					
Phantom Uncertainty (shape and thickness)	4.00	Rectangular	1.732	1	2.31
Liquid Conductivity - deviation from target	5.00	Rectangular	1.732	0.64	1.85
Liquid Conductivity - measurement	4.90	Normal	1	0.64	3.14
Liquid Permittivity - deviation from target	5.00	Rectangular	1.732	0.6	1.73
Liquid Permittivity - measurement uncertainty	-4.46	Normal	1	0.6	-2.68
Combined Standard Uncertainty Uc(y) =					10.58
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				21.15 %	
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =				1.67 dB	

5. Measurement System Description and Setup

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- 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 from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

6. SAR Measurement Procedure

6.1. Normal SAR Measurement Procedure

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: 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 fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm $2 - 3$ GHz: ≤ 12 mm	$3 - 4$ GHz: ≤ 12 mm $4 - 6$ GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: 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 Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01 (Draft)

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the <i>reported</i> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

6.2. Volume Scan Procedures

Step 1: Repeat Step 1-4 in Section 6.1

Step 2: Volume Scan

Volume Scans are used to assess peak SAR and averaged SAR measurements in largely extended 3-dimensional volumes within any phantom. This measurement does not need any previous area scan. The grid can be anchored to a user specific point or to the current probe location.

Step 3: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

7. Device Under Test

Modem (Tested inside of Panasonic Laptop PC CF-C2) Model: WW12C	
Operating Configuration(s)	- Laptop Mode - Tablet Mode
Exposure Condition(s)	- The device is used in close proximity to the body. Specific details of the required test positions are provided in Section 8 "Summary of Test Configurations"
Accessory	None

7.1. Wireless Technologies

Wireless Mode and Frequency Bands	- GSM850: 824 - 849 MHz - GSM1900: 1850 - 1910 MHz - W-CDMA Band V: 824 - 849 MHz - W-CDMA Band II: 1850 - 1910 MHz - LTE Band 4: 1710 - 1755 MHz - LTE Band 17: 704 - 716 MHz - 802.11ab/g/n: 2412 - 2462 MHz, b / g / HT20 / HT40 5150 - 5250 MHz, a / HT20 / HT40 5250 - 5350 MHz, a / HT20 / HT40 5500 - 5700 MHz, a / HT20 / HT40 5725 - 5850 MHz, a / HT20 / HT40 - Bluetooth: 2402 - 2480 MHz
GPRS Multi-Slot Class:	10 (12 for EGPRS)
GPRS Class:	B
Duty Cycle	- GPRS 2 Slots: 25% - EGPRS 3 Slots: 37.5% - W-CDMA: 100% - LTE: 100%

7.2. Hotspot (Wireless Router) Exposure Condition

N/A

7.3. Simultaneous Transmission

Usage Scenario	Modes	Mode of Operation	BAND	GPRS/EDGE	WCDMA	HSDPA	HSUPA	HSPA+	DC-HSPA	LTE	WiFi 2.4GHz Main	WiFi 2.4GHz Aux	WiFi 5 GHz Bands Main	WiFi 5 GHz Bands Aux	BT 2.4 GHz
Body SAR	WWAN + 2.4GHz WLAN	EDGE	850	YES	No	No	No	No	No	No	YES	No	No	No	No
		EDGE	1900	YES	No	No	No	No	No	No	YES	No	No	No	No
		W-CDMA	850	No	YES	No	No	No	No	No	YES	No	No	No	No
		W-CDMA	1900	No	YES	YES	No	No	No	No	YES	No	No	No	No
		HSDPA	850	No	No	YES	No	No	No	No	YES	No	No	No	No
		HSDPA	1900	No	No	No	YES	No	No	No	YES	No	No	No	No
		HSUPA	850	No	No	No	YES	No	No	No	YES	No	No	No	No
		HSUPA	1900	No	No	No	No	No	No	No	YES	No	No	No	No
		HSPA+	850	No	No	No	No	YES	No	No	YES	No	No	No	No
		HSPA+	1900	No	No	No	No	YES	No	No	YES	No	No	No	No
		DC-HSDPA	850	No	No	No	No	No	YES	No	YES	No	No	No	No
		DC-HSDPA	1900	No	No	No	No	No	YES	No	YES	No	No	No	No
		LTE	4	No	No	No	No	No	No	YES	YES	No	No	No	No
		LTE	17	No	No	No	No	No	No	YES	YES	No	No	No	No
		EDGE	850	YES	No	No	No	No	No	No	No	YES	No	No	No
		EDGE	1900	YES	No	No	No	No	No	No	No	YES	No	No	No
		W-CDMA	850	No	YES	No	No	No	No	No	No	YES	No	No	No
		W-CDMA	1900	No	YES	YES	No	No	No	No	No	YES	No	No	No
		HSDPA	850	No	No	YES	No	No	No	No	No	YES	No	No	No
		HSDPA	1900	No	No	No	YES	No	No	No	No	YES	No	No	No
		HSUPA	850	No	No	No	YES	No	No	No	No	YES	No	No	No
		HSUPA	1900	No	No	No	No	No	No	No	No	YES	No	No	No
		HSPA+	850	No	No	No	No	YES	No	No	No	YES	No	No	No
		HSPA+	1900	No	No	No	No	YES	No	No	No	YES	No	No	No
		DC-HSDPA	850	No	No	No	No	No	YES	No	No	YES	No	No	No
		DC-HSDPA	1900	No	No	No	No	No	YES	No	No	YES	No	No	No
	WWAN + 5 GHz Bands WLAN	LTE	4	No	No	No	No	No	No	YES	No	YES	No	No	No
		LTE	17	No	No	No	No	No	No	YES	No	YES	No	No	No
		EDGE	850	YES	No	No	No	No	No	No	No	No	YES	No	No
		EDGE	1900	YES	No	No	No	No	No	No	No	No	YES	No	No
		W-CDMA	850	No	YES	No	No	No	No	No	No	No	YES	No	No
		W-CDMA	1900	No	YES	No	No	No	No	No	No	No	YES	No	No
		HSDPA	850	No	No	YES	No	No	No	No	No	No	YES	No	No
		HSDPA	1900	No	No	YES	No	No	No	No	No	No	YES	No	No
		HSUPA	850	No	No	No	YES	No	No	No	No	No	YES	No	No
		HSUPA	1900	No	No	No	YES	No	No	No	No	No	YES	No	No
		HSPA+	850	No	No	No	No	YES	No	No	No	No	YES	No	No
		HSPA+	1900	No	No	No	No	YES	No	No	No	No	YES	No	No
		DC-HSDPA	850	No	No	No	No	No	YES	No	No	No	YES	No	No
		DC-HSDPA	1900	No	No	No	No	No	YES	No	No	No	YES	No	No
		LTE	4	No	No	No	No	No	No	YES	No	No	No	YES	No
		LTE	17	No	No	No	No	No	No	YES	No	No	No	YES	No
		EDGE	850	YES	No	No	No	No	No	No	No	No	No	YES	No
		EDGE	1900	YES	No	No	No	No	No	No	No	No	No	YES	No
		W-CDMA	850	No	YES	No	No	No	No	No	No	No	No	YES	No
		W-CDMA	1900	No	YES	No	No	No	No	No	No	No	No	YES	No
		HSDPA	850	No	No	YES	No	No	No	No	No	No	No	YES	No
		HSDPA	1900	No	No	YES	No	No	No	No	No	No	No	YES	No
		HSUPA	850	No	No	No	YES	No	No	No	No	No	No	YES	No
		HSUPA	1900	No	No	No	YES	No	No	No	No	No	No	YES	No
		HSPA+	850	No	No	No	No	YES	No	No	No	No	No	YES	No
		HSPA+	1900	No	No	No	No	YES	No	No	No	No	No	YES	No
		DC-HSDPA	850	No	No	No	No	No	YES	No	No	No	No	YES	No
		DC-HSDPA	1900	No	No	No	No	No	YES	No	No	No	No	YES	No
WWAN + BT	WWAN + BT	LTE	4	No	No	No	No	No	No	YES	No	No	No	No	YES
		LTE	17	No	No	No	No	No	No	YES	No	No	No	No	YES
		EDGE	850	YES	No	No	No	No	No	No	No	No	No	No	YES
		EDGE	1900	YES	No	No	No	No	No	No	No	No	No	No	YES
		W-CDMA	850	No	YES	No	No	No	No	No	No	No	No	No	YES
		W-CDMA	1900	No	YES	No	No	No	No	No	No	No	No	No	YES
		HSDPA	850	No	No	YES	No	No	No	No	No	No	No	No	YES
		HSDPA	1900	No	No	YES	No	No	No	No	No	No	No	No	YES
		HSUPA	850	No	No	No	YES	No	No	No	No	No	No	No	YES
		HSUPA	1900	No	No	No	YES	No	No	No	No	No	No	No	YES
		HSPA+	850	No	No	No	No	YES	No	No	No	No	No	No	YES
		HSPA+	1900	No	No	No	No	YES	No	No	No	No	No	No	YES

Simultaneous Transmission continued

Usage Scenario	Modes	Mode of Operation	BAND	GPRS/EDGE	WCDMA	HSDPA	HSUPA	HSPA+	DC-HSPA	LTE	WiFi 2.4GHz Main	WiFi 2.4GHz Aux	WiFi 5 GHz Bands Main	WiFi 5 GHz Bands Aux	BT 2.4 GHz
Body SAR	WWAN + 2.4GHz WLAN + BT	EDGE	850	YES	No	No	No	No	No	No	YES	No	No	No	YES
		EDGE	1900	YES	No	No	No	No	No	No	YES	No	No	No	YES
		W-CDMA	850	No	YES	No	No	No	No	No	YES	No	No	No	YES
		W-CDMA	1900	No	YES	YES	No	No	No	No	YES	No	No	No	YES
		HSDPA	850	No	No	YES	No	No	No	No	YES	No	No	No	YES
		HSDPA	1900	No	No	No	YES	No	No	No	YES	No	No	No	YES
		HSUPA	850	No	No	No	YES	No	No	No	YES	No	No	No	YES
		HSUPA	1900	No	No	No	No	No	No	No	YES	No	No	No	YES
		HSPA+	850	No	No	No	No	YES	No	No	YES	No	No	No	YES
		HSPA+	1900	No	No	No	No	YES	No	No	YES	No	No	No	YES
		DC-HSDPA	850	No	No	No	No	No	YES	No	YES	No	No	No	YES
		DC-HSDPA	1900	No	No	No	No	No	YES	No	YES	No	No	No	YES
	WWAN + 5 GHz Bands WLAN + BT	LTE	4	No	No	No	No	No	No	YES	YES	No	No	No	YES
		LTE	17	No	No	No	No	No	No	YES	YES	No	No	No	YES
		EDGE	850	YES	No	No	No	No	No	No	No	No	YES	No	YES
		EDGE	1900	YES	No	No	No	No	No	No	No	No	YES	No	YES
		W-CDMA	850	No	YES	No	No	No	No	No	No	No	YES	No	YES
		W-CDMA	1900	No	YES	No	No	No	No	No	No	No	YES	No	YES
		HSDPA	850	No	No	YES	No	No	No	No	No	No	YES	No	YES
		HSDPA	1900	No	No	YES	No	No	No	No	No	No	YES	No	YES
		HSUPA	850	No	No	No	YES	No	No	No	No	No	YES	No	YES
		HSUPA	1900	No	No	No	YES	No	No	No	No	No	YES	No	YES
		HSPA+	850	No	No	No	No	YES	No	No	No	No	YES	No	YES
		HSPA+	1900	No	No	No	No	YES	No	No	No	No	YES	No	YES
	WWAN + 2.4GHz WLAN MIMO (2 Tx on WLAN)	DC-HSDPA	850	No	No	No	No	No	YES	No	No	No	YES	No	YES
		DC-HSDPA	1900	No	No	No	No	No	YES	No	No	No	YES	No	YES
		LTE	4	No	No	No	No	No	No	YES	No	No	YES	No	YES
		LTE	17	No	No	No	No	No	No	YES	No	No	YES	No	YES
		EDGE	850	YES	No	No	No	No	No	No	YES	YES	No	No	No
		EDGE	1900	YES	No	No	No	No	No	No	YES	YES	No	No	No
		W-CDMA	850	No	YES	No	No	No	No	No	YES	YES	No	No	No
		W-CDMA	1900	No	YES	No	No	No	No	No	YES	YES	No	No	No
		HSDPA	850	No	No	YES	No	No	No	No	YES	YES	No	No	No
		HSDPA	1900	No	No	YES	No	No	No	No	YES	YES	No	No	No
		HSUPA	850	No	No	No	YES	No	No	No	YES	YES	No	No	No
		HSUPA	1900	No	No	No	YES	No	No	No	YES	YES	No	No	No
	WWAN + 5 GHz Bands WLAN MIMO (2 Tx on WLAN)	HSPA+	850	No	No	No	No	YES	No	No	YES	YES	No	No	No
		HSPA+	1900	No	No	No	No	YES	No	No	YES	YES	No	No	No
		DC-HSDPA	850	No	No	No	No	No	YES	No	YES	YES	No	No	No
		DC-HSDPA	1900	No	No	No	No	No	YES	No	YES	YES	No	No	No
		LTE	4	No	No	No	No	No	No	YES	YES	YES	No	No	No
		LTE	17	No	No	No	No	No	No	YES	YES	YES	No	No	No
		EDGE	850	YES	No	No	No	No	No	No	No	No	YES	YES	No
		EDGE	1900	YES	No	No	No	No	No	No	No	No	YES	YES	No
		W-CDMA	850	No	YES	No	No	No	No	No	No	No	YES	YES	No
		W-CDMA	1900	No	YES	No	No	No	No	No	No	No	YES	YES	No
		HSDPA	850	No	No	YES	No	No	No	No	No	No	YES	YES	No
		HSDPA	1900	No	No	YES	No	No	No	No	No	No	YES	YES	No
		HSUPA	850	No	No	No	YES	No	No	No	No	No	YES	YES	No
		HSUPA	1900	No	No	No	YES	No	No	No	No	No	YES	YES	No
		HSPA+	850	No	No	No	No	YES	No	No	No	No	YES	YES	No
		HSPA+	1900	No	No	No	No	YES	No	No	No	No	YES	YES	No
		DC-HSDPA	850	No	No	No	No	No	YES	No	No	No	YES	YES	No
		DC-HSDPA	1900	No	No	No	No	No	YES	No	No	No	YES	YES	No
		LTE	4	No	No	No	No	No	No	YES	No	No	YES	YES	No
		LTE	17	No	No	No	No	No	No	YES	No	No	YES	YES	No

Notes:

- Bluetooth transmits using the WLAN Aux Antenna
- Bluetooth can transmit simultaneously with the WLAN Main Antenna, in either of the WLAN bands.
- Bluetooth cannot transmit simultaneously with the WLAN Aux Antenna, in either of the WLAN bands; this also precludes the transmission of Bluetooth when WLAN is in MIMO mode.
- With a maximum output power of 4.47 mW, Bluetooth qualifies for Standalone SAR test exclusion based on the formula for Standalone SAR test exclusion considerations outlined in KDB 447498 D01 . For the exact value that this formula yields, please refer to **Section 14 “Simultaneous Transmission SAR Analysis”** of this report.

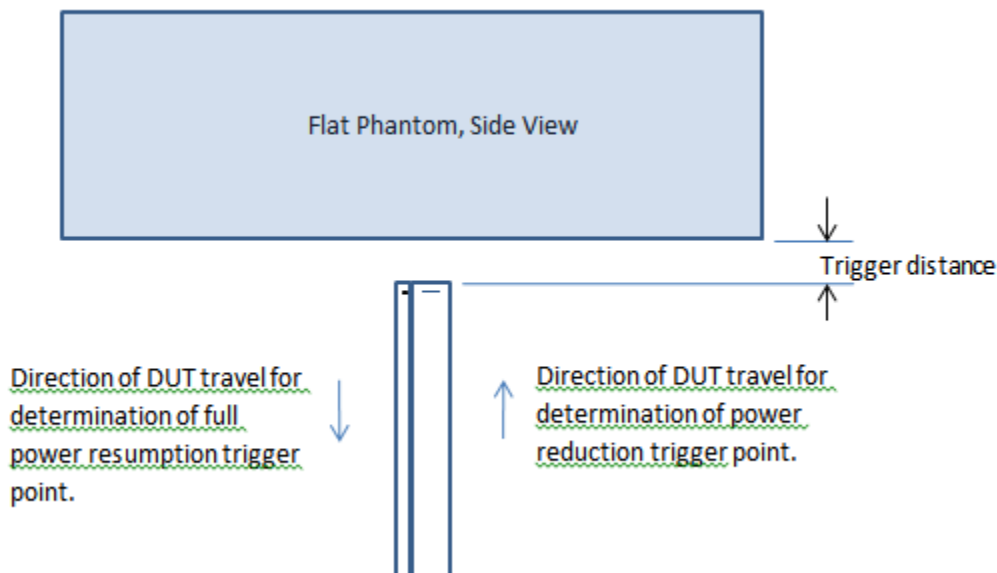
7.4. LTE Parameters

#	Description	Information
A	List the frequency range and channel bandwidths used in each LTE band; 1.4, 3, 5, 10, 15, 20 MHz, etc.	Band 4
		Tx: 1710 – 1755 MHz Rx: 2100 – 2155 MHz
		Band 17
		Tx: 704 – 716 MHz Rx: 734 – 746 MHz
		Channel Bandwidths: 5 MHz, 10 MHz
B	Identify the high, middle and low (H, M, L) channel numbers and channel frequencies for each LTE bandwidth and frequency band	Band 4
		Channel Bandwidth
		20 MHz 15 MHz 10 MHz 5 MHz 3 MHz 1.4 MHz
		Low
		Mid
		High
		Band 17
		Channel Bandwidth
		20 MHz 15 MHz 10 MHz 5 MHz 3 MHz 1.4 MHz
		Low
C	Descriptions of the LTE transmitter and antenna implementation, and identify if the transmitter operates independently of the other wireless transmitters in the device; i.e., whether the LTE hardware, components and/or antenna(s) are shared with other transmitters.	A single antenna (Main) is used for LTE and other wireless modes (GPRS/EGPRS/W-CDMA/CDMA) for both transmit and receive. A second antenna (Auxiliary) is used for LTE and other wireless modes (GPRS/EGPRS/W-CDMA/CDMA) for receive Only. This device does not support DTM.
D	Identify the voice and data transmission requirements for all LTE operating modes and exposure conditions, for standalone and simultaneous transmission, with respect to the required head and body test configurations, antenna locations, handset flip or slide cover positions, antenna diversity requirements, etc.	Data Only Device Exposure Conditions:
		▪ Tablet Mode, with Proximity Sensor disabled (Full Power) ○ Rear and Left-edge of the DUT at 0 mm from the phantom; Top-edge tilting 28° from the top left corner (28° Vertex), and Top-edge of the DUT at 16 mm from the flat phantom ▪ Tablet Mode, with Proximity Sensor enabled (Reduced Power) ○ Top-edge of the DUT at 0 mm from the phantom

E	Identify if Maximum Power Reduction (MPR) is implemented as an optional or permanent feature, i.e., built-in by design: - 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. - 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. - A-MPR (additional MPR) must be disabled during SAR testing.	As per 3GPP TS 36.101 v11.0.0 (2012-03) 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 (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>64 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 supported by design and is mandatory. A-MPR is supported by design, but is disabled for SAR testing. A-MPR is disabled, by using Network Setting value of NS_01.	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	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
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																																	
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																	
F	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.	Yes. A proximity sensor for WWAN power reduction is implemented in the device to address RF exposure compliance when the cellular antenna is positioned close to the user's body or other objects.																																						

7.5. Proximity Sensor Triggering distance (KDB 616217 §6.2)

Edge 1 of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 §6.2 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.



Proximity sensor trigger distance assessment (Edge 4) KDB 616217 §6.2

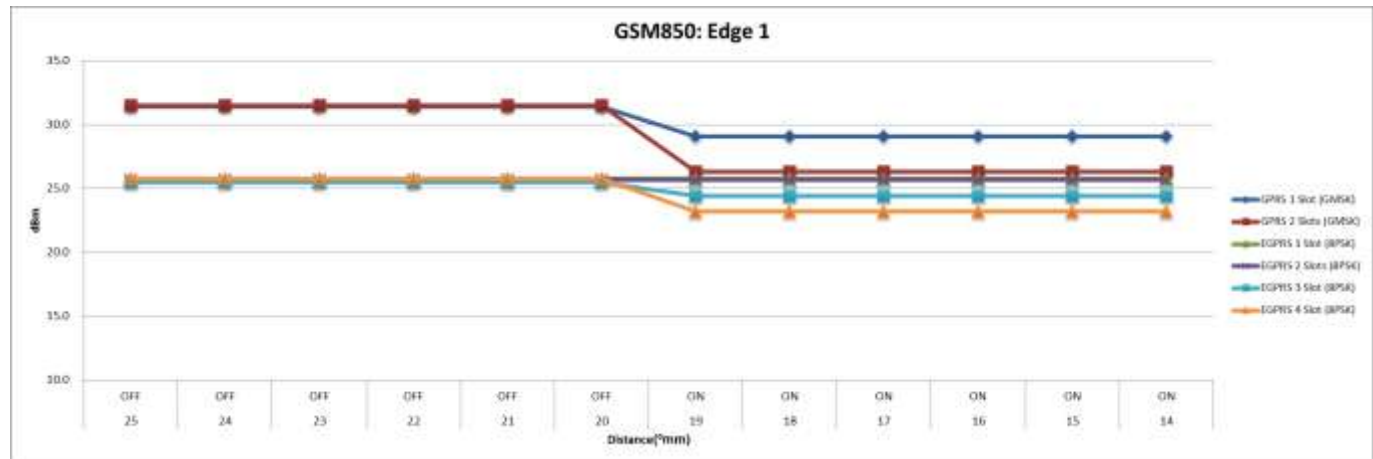
Summary of triggering distances.

Tissue simulating liquid	Trigger distance - edge 1	
	Moving toward phantom	Moving from phantom
750 muscle	19mm	25mm
850 muscle	19mm	25mm
1750 muscle	19mm	24mm
1900 muscle	17mm	24mm

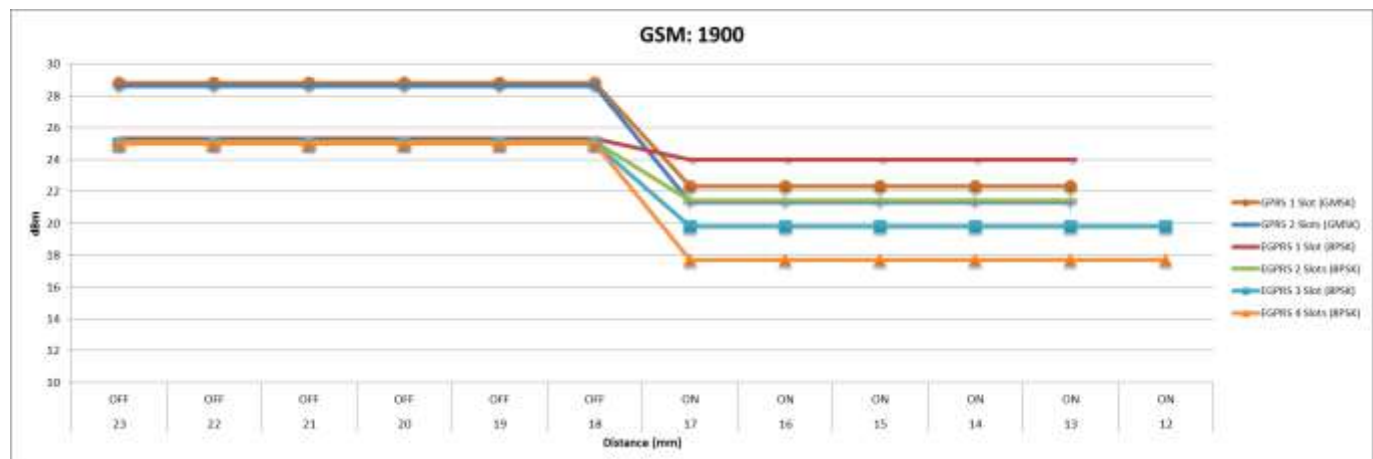
7.6. Triggering distances and power levels

7.6.1. DUT moving toward the phantom

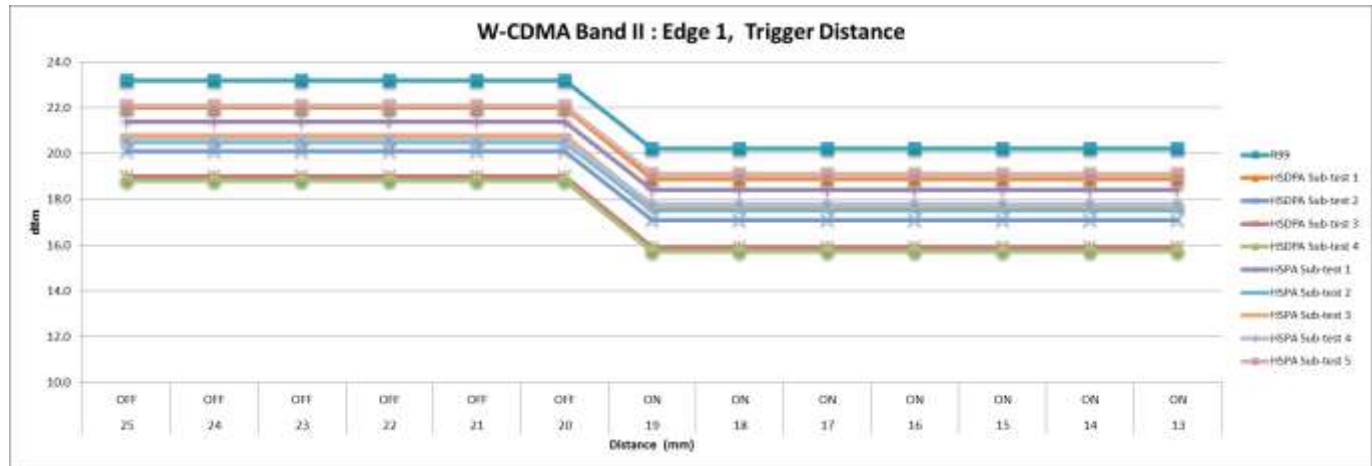
Edge 1, (GSM850)												
Distance (mm):	25	24	23	22	21	20	19	18	17	16	15	14
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	31.4	31.4	31.4	31.4	31.4	31.4	29.1	29.1	29.1	29.1	29.1	29.1
GPRS 2 Slots (GMSK)	31.5	31.5	31.5	31.5	31.5	31.5	26.3	26.3	26.3	26.3	26.3	26.3
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	25.5	25.5	25.5	25.5	25.5	25.5	24.4	24.4	24.4	24.4	24.4	24.4
EGPRS 4 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	23.2	23.2	23.2	23.2	23.2	23.2



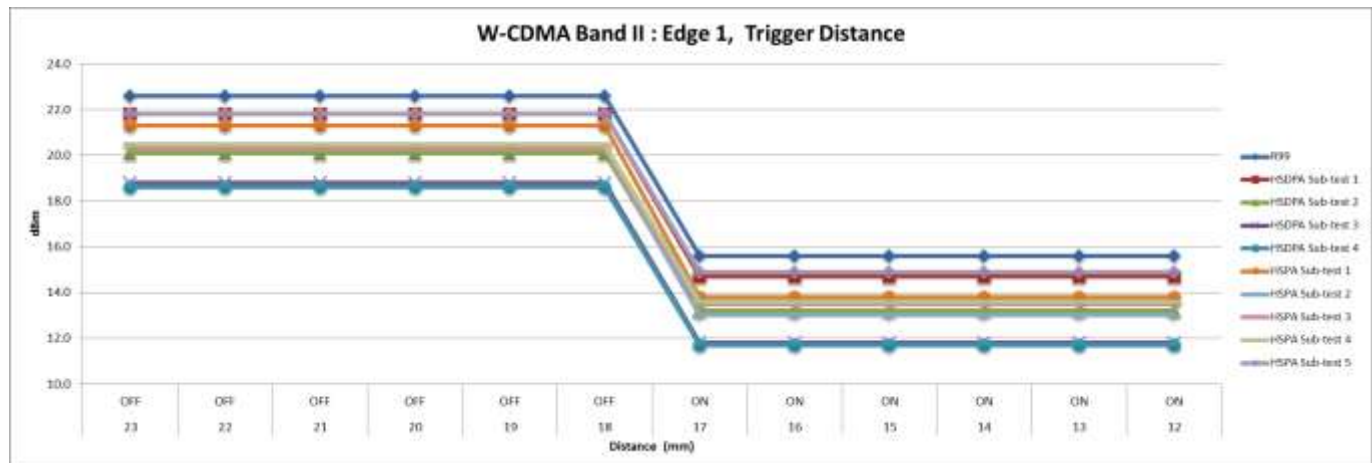
Edge 1, (GSM1900)												
Distance (mm):	23	22	21	20	19	18	17	16	15	14	13	12
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	28.80	28.80	28.80	28.80	28.80	28.80	22.30	22.30	22.30	22.30	22.30	22.30
GPRS 2 Slots (GMSK)	28.60	28.60	28.60	28.60	28.60	28.60	21.30	21.30	21.30	21.30	21.30	21.30
EGPRS 1 Slot (8PSK)	25.30	25.30	25.30	25.30	25.30	25.30	24.00	24.00	24.00	24.00	24.00	24.00
EGPRS 2 Slots (8PSK)	25.10	25.10	25.10	25.10	25.10	25.10	21.40	21.40	21.40	21.40	21.40	21.40
EGPRS 3 Slot (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	19.80	19.80	19.80	19.80	19.80	19.80
EGPRS 4 Slots (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	17.70	17.70	17.70	17.70	17.70	17.70



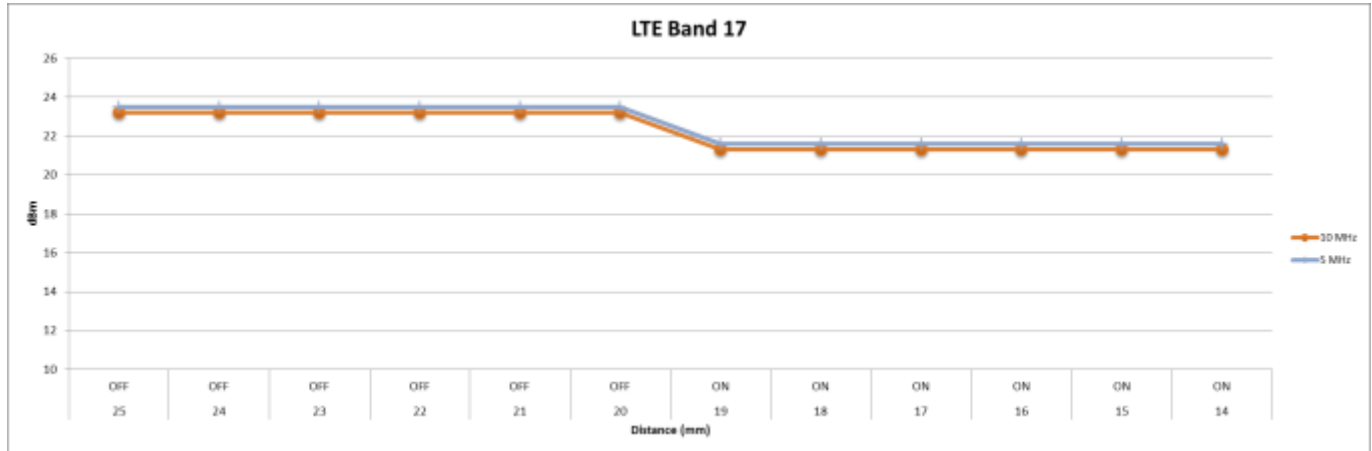
Edge 1, W-CDMA Band V													
Distance (mm):	25	24	23	22	21	20	19	18	17	16	15	14	13
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
R99	23.2	23.2	23.2	23.2	23.2	23.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
HSDPA Sub-test 1	22.0	22.0	22.0	22.0	22.0	22.0	18.9	18.9	18.9	18.9	18.9	18.9	18.9
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
HSDPA Sub-test 3	19.0	19.0	19.0	19.0	19.0	19.0	15.9	15.9	15.9	15.9	15.9	15.9	15.9
HSDPA Sub-test 4	18.8	18.8	18.8	18.8	18.8	18.8	15.7	15.7	15.7	15.7	15.7	15.7	15.7
HSPA Sub-test 1	21.4	21.4	21.4	21.4	21.4	21.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
HSPA Sub-test 2	20.5	20.5	20.5	20.5	20.5	20.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
HSPA Sub-test 3	20.8	20.8	20.8	20.8	20.8	20.8	17.7	17.7	17.7	17.7	17.7	17.7	17.7
HSPA Sub-test 4	20.6	20.6	20.6	20.6	20.6	20.6	17.8	17.8	17.8	17.8	17.8	17.8	17.8
HSPA Sub-test 5	22.1	22.1	22.1	22.1	22.1	22.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1



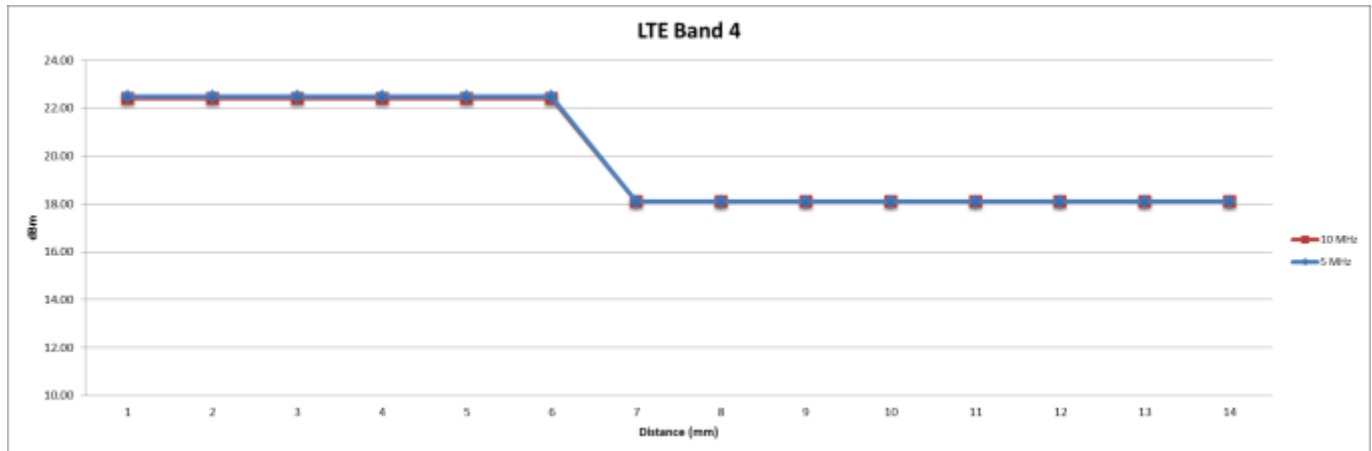
Edge 1, W-CDMA Band II													
Distance (mm):	23	22	21	20	19	18	17	16	15	14	13	12	
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	
R99	22.6	22.6	22.6	22.6	22.6	22.6	15.6	15.6	15.6	15.6	15.6	15.6	
HSDPA Sub-test 1	21.8	21.8	21.8	21.8	21.8	21.8	14.7	14.7	14.7	14.7	14.7	14.7	
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	13.2	13.2	13.2	13.2	13.2	13.2	
HSDPA Sub-test 3	18.8	18.8	18.8	18.8	18.8	18.8	11.8	11.8	11.8	11.8	11.8	11.8	
HSDPA Sub-test 4	18.6	18.6	18.6	18.6	18.6	18.6	11.7	11.7	11.7	11.7	11.7	11.7	
HSPA Sub-test 1	21.3	21.3	21.3	21.3	21.3	21.3	13.8	13.8	13.8	13.8	13.8	13.8	
HSPA Sub-test 2	20.3	20.3	20.3	20.3	20.3	20.3	13.0	13.0	13.0	13.0	13.0	13.0	
HSPA Sub-test 3	20.3	20.3	20.3	20.3	20.3	20.3	13.5	13.5	13.5	13.5	13.5	13.5	
HSPA Sub-test 4	20.5	20.5	20.5	20.5	20.5	20.5	13.6	13.6	13.6	13.6	13.6	13.6	
HSPA Sub-test 5	21.8	21.8	21.8	21.8	21.8	21.8	14.9	14.9	14.9	14.9	14.9	14.9	



Edge 1, LTE Band 17												
Distance (mm):	25	24	23	22	21	20	19	18	17	16	15	14
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
10 MHz	23.2	23.2	23.2	23.2	23.2	23.2	21.3	21.3	21.3	21.3	21.3	21.3
5 MHz	23.5	23.5	23.5	23.5	23.5	23.5	21.6	21.6	21.6	21.6	21.6	21.6

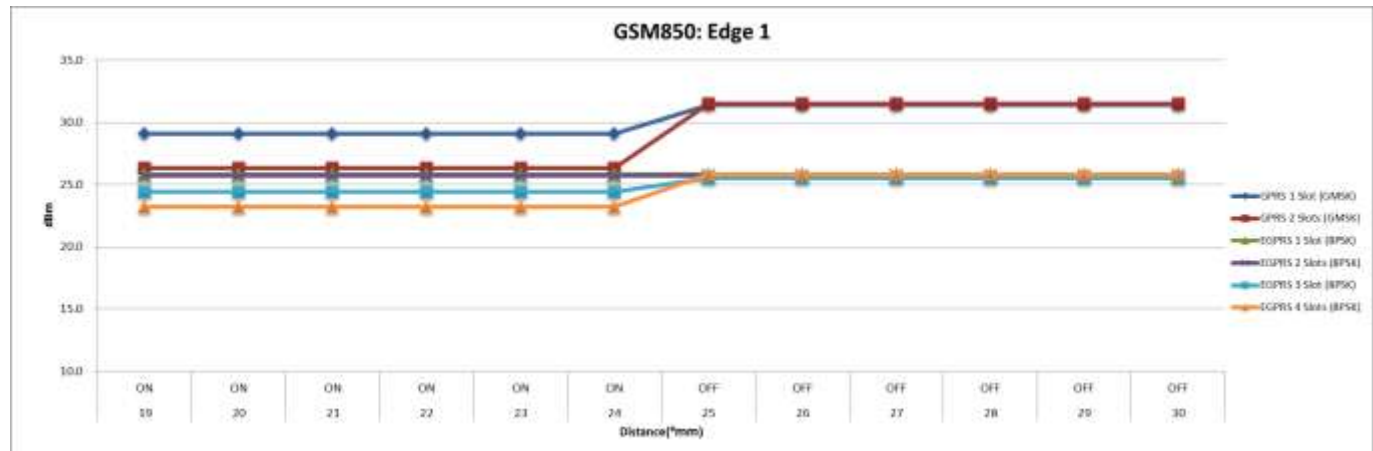


Edge 1, LTE Band 4														
Distance (mm):	25	24	23	22	21	20	19	18	17	16	15	14	13	12
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON
10 MHz	22.40	22.40	22.40	22.40	22.40	22.40	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10
5 MHz	22.50	22.50	22.50	22.50	22.50	22.50	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10

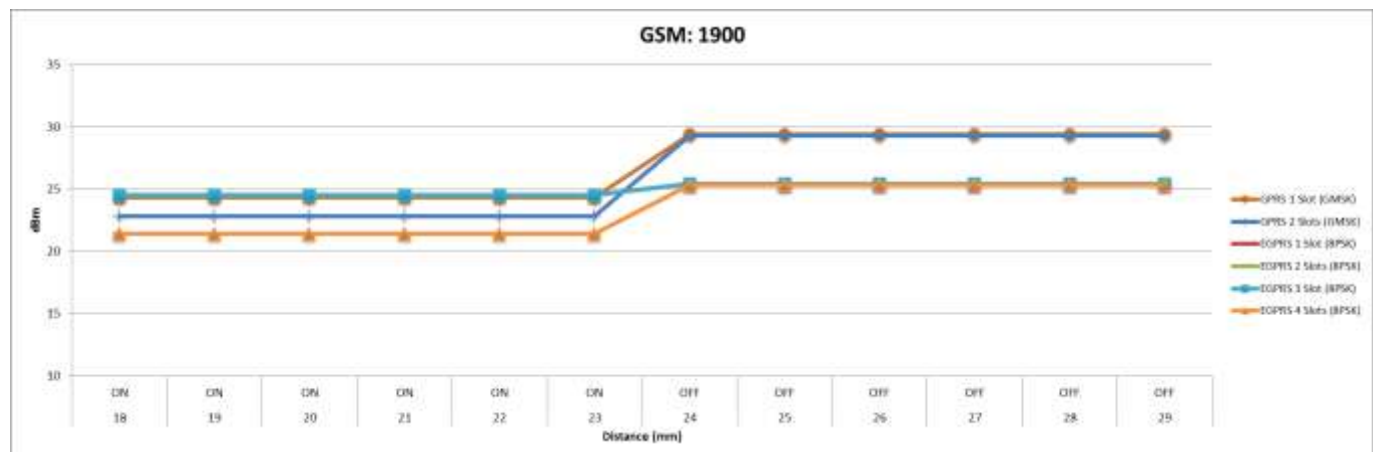


7.6.2. DUT moving away from the phantom

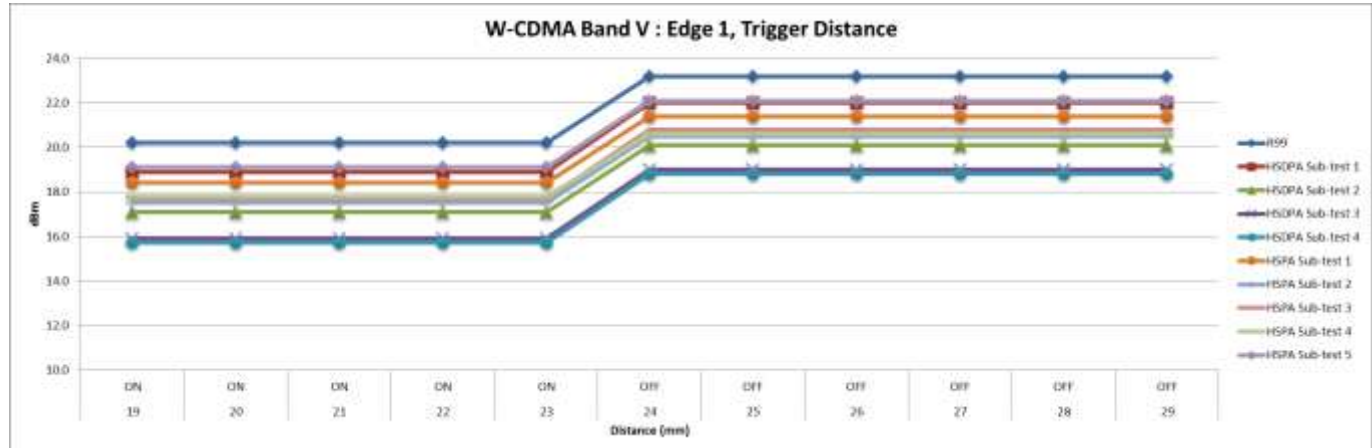
Edge 1,GSM850)												
Distance (mm):	19	20	21	22	23	24	25	26	27	28	29	30
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	29.1	29.1	29.1	29.1	29.1	29.1	31.4	31.4	31.4	31.4	31.4	31.4
GPRS 2 Slots (GMSK)	26.3	26.3	26.3	26.3	26.3	26.3	31.5	31.5	31.5	31.5	31.5	31.5
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	24.4	24.4	24.4	24.4	24.4	24.4	25.5	25.5	25.5	25.5	25.5	25.5
EGPRS 4 Slots (8PSK)	23.2	23.2	23.2	23.2	23.2	23.2	25.8	25.8	25.8	25.8	25.8	25.8



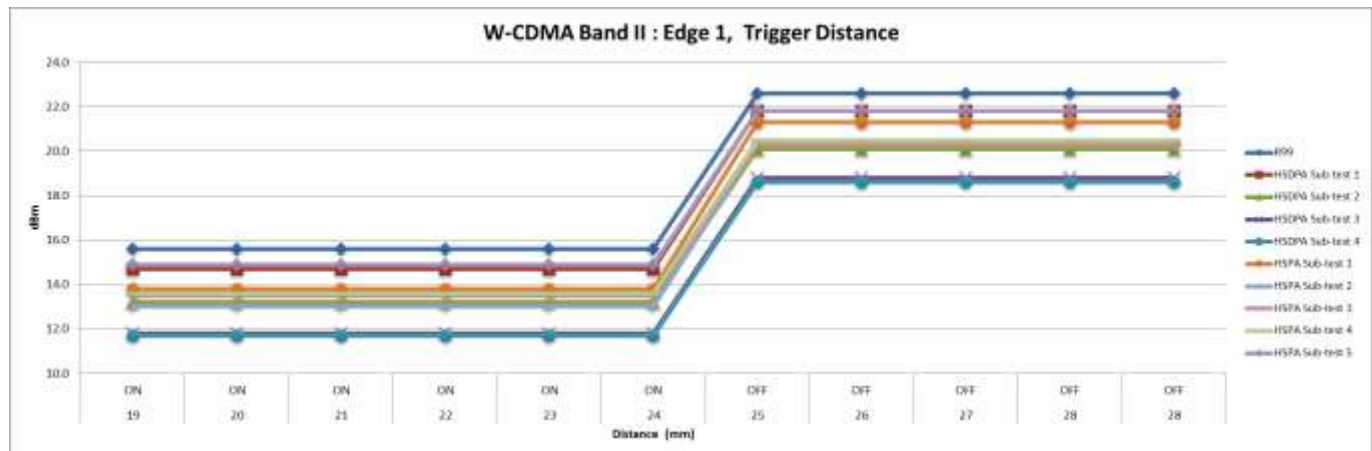
Edge 1 (GSM1900)												
Distance (mm):	18	19	20	21	22	23	24	25	26	27	28	29
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	24.3	24.3	24.3	24.3	24.3	24.3	29.4	29.4	29.4	29.4	29.4	29.4
GPRS 2 Slots (GMSK)	22.8	22.8	22.8	22.8	22.8	22.8	29.3	29.3	29.3	29.3	29.3	29.3
EGPRS 1 Slot (8PSK)	24.5	24.5	24.5	24.5	24.5	24.5	25.4	25.4	25.4	25.4	25.4	25.4
EGPRS 2 Slots (8PSK)	21.4	21.4	21.4	21.4	21.4	21.4	25.3	25.3	25.3	25.3	25.3	25.3
EGPRS 3 Slot (8PSK)	24.5	24.5	24.5	24.5	24.5	24.5	25.4	25.4	25.4	25.4	25.4	25.4
EGPRS 4 Slots (8PSK)	21.4	21.4	21.4	21.4	21.4	21.4	25.3	25.3	25.3	25.3	25.3	25.3



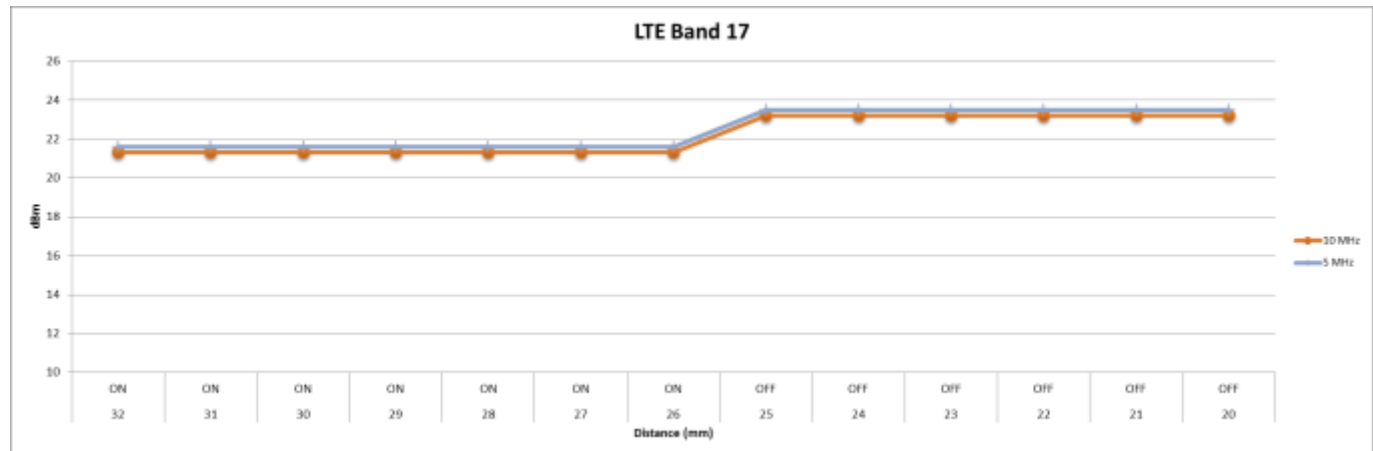
Edge 1, W-CDMA Band V											
Distance (mm):	19	20	21	22	23	24	25	26	27	28	29
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
R99	20.2	20.2	20.2	20.2	20.2	23.2	23.2	23.2	23.2	23.2	23.2
HSDPA Sub-test 1	18.9	18.9	18.9	18.9	18.9	22.0	22.0	22.0	22.0	22.0	22.0
HSDPA Sub-test 2	17.1	17.1	17.1	17.1	17.1	20.1	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	15.9	15.9	15.9	15.9	15.9	19.0	19.0	19.0	19.0	19.0	19.0
HSDPA Sub-test 4	15.7	15.7	15.7	15.7	15.7	18.8	18.8	18.8	18.8	18.8	18.8
HSPA Sub-test 1	18.4	18.4	18.4	18.4	18.4	21.4	21.4	21.4	21.4	21.4	21.4
HSPA Sub-test 2	17.5	17.5	17.5	17.5	17.5	20.5	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 3	17.7	17.7	17.7	17.7	17.7	20.8	20.8	20.8	20.8	20.8	20.8
HSPA Sub-test 4	17.8	17.8	17.8	17.8	17.8	20.6	20.6	20.6	20.6	20.6	20.6
HSPA Sub-test 5	19.1	19.1	19.1	19.1	19.1	22.1	22.1	22.1	22.1	22.1	22.1



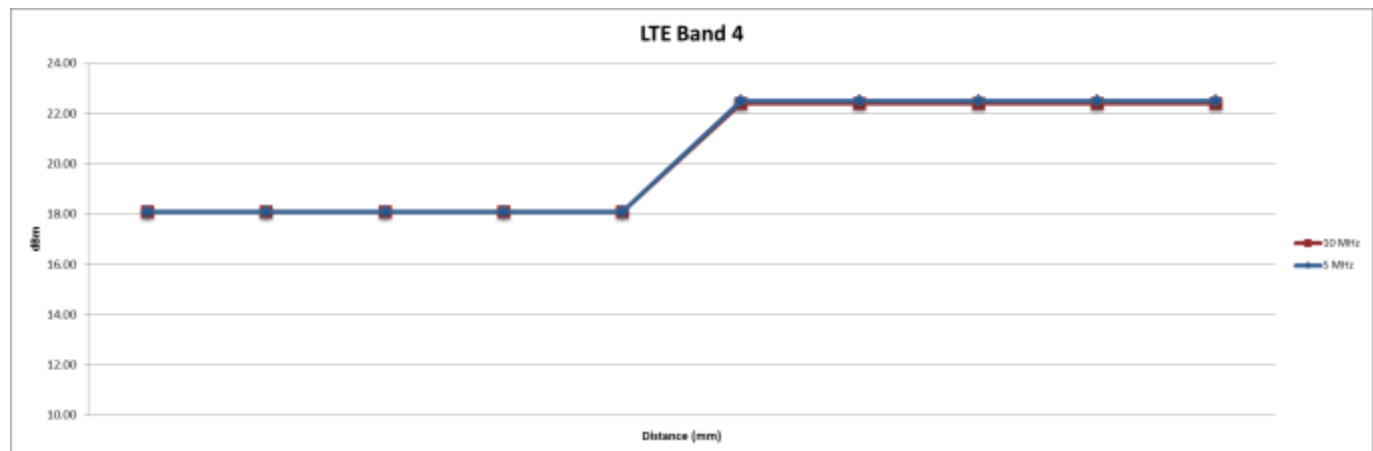
Edge 1, W-CDMA Band II											
Distance (mm):	19	20	21	22	23	24	25	26	27	28	28
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
R99	15.6	15.6	15.6	15.6	15.6	15.6	22.6	22.6	22.6	22.6	22.6
HSDPA Sub-test 1	14.7	14.7	14.7	14.7	14.7	14.7	21.8	21.8	21.8	21.8	21.8
HSDPA Sub-test 2	13.2	13.2	13.2	13.2	13.2	13.2	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	11.8	11.8	11.8	11.8	11.8	11.8	18.8	18.8	18.8	18.8	18.8
HSDPA Sub-test 4	11.7	11.7	11.7	11.7	11.7	11.7	18.6	18.6	18.6	18.6	18.6
HSPA Sub-test 1	13.8	13.8	13.8	13.8	13.8	13.8	21.3	21.3	21.3	21.3	21.3
HSPA Sub-test 2	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 3	13.5	13.5	13.5	13.5	13.5	13.5	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 4	13.6	13.6	13.6	13.6	13.6	13.6	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 5	14.9	14.9	14.9	14.9	14.9	14.9	21.8	21.8	21.8	21.8	21.8



Edge 1, LTE Band 17													
Distance (mm):	32	31	30	29	28	27	26	25	24	23	22	21	20
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
10 MHz	21.3	21.3	21.3	21.3	21.3	21.3	21.3	23.2	23.2	23.2	23.2	23.2	23.2
5 MHz	21.6	21.6	21.6	21.6	21.6	21.6	21.6	23.5	23.5	23.5	23.5	23.5	23.5



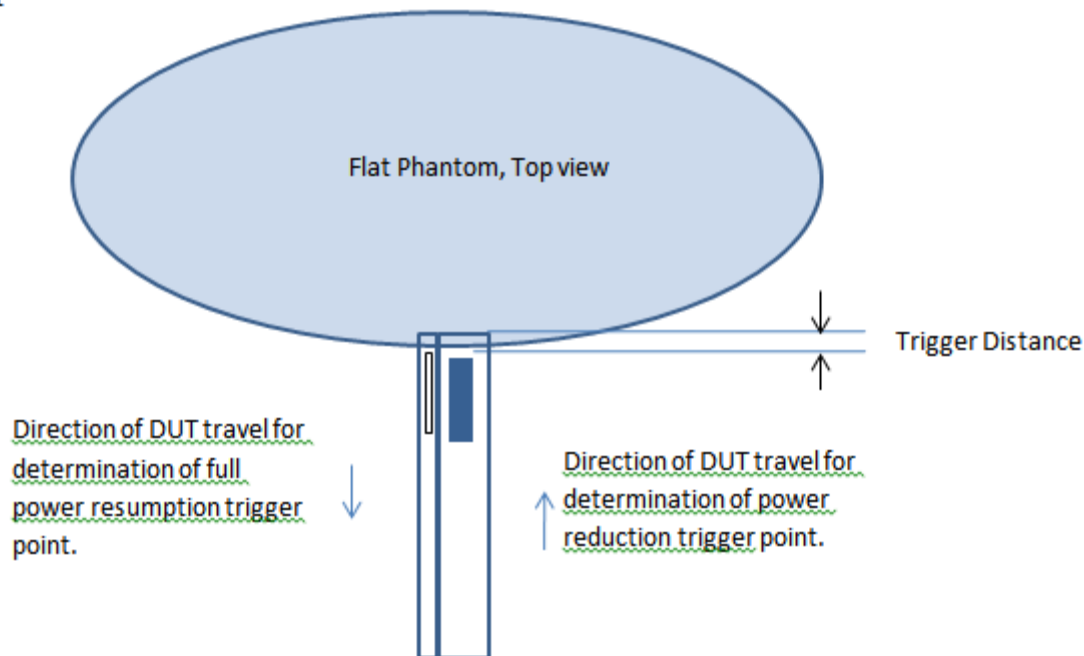
Edge 1, LTE Band 4											
Distance (mm):	20	21	22	23	24	25	26	27	28	29	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
10 MHz	18.10	18.10	18.10	18.10	18.10	22.40	22.40	22.40	22.40	22.40	
5 MHz	18.10	18.10	18.10	18.10	18.10	22.50	22.50	22.50	22.50	22.50	



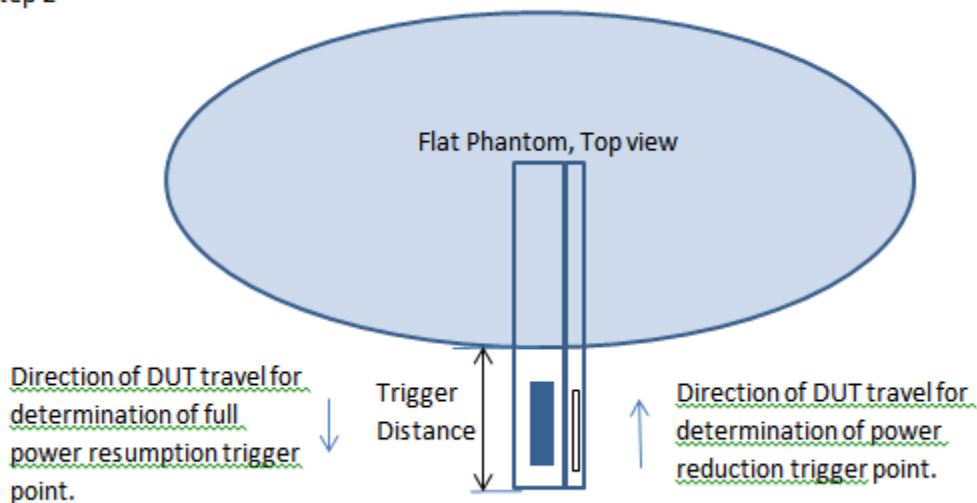
7.7. Proximity Sensor Coverage (KDB 616217 §6.3)

The DUT was positioned at a distance less than 17mm (smallest measured trigger distance) below the phantom. The DUT was held perpendicular to the phantom with edge 4 parallel to the phantom's bottom surface. From a starting position with the DUT >20mm laterally outside the phantom the DUT was moved horizontally toward the phantom as described in KDB 616217 §6.3 to determine the coverage trigger distance. The process was repeated with the DUT positioned directly below the phantom and then moved horizontally away from the phantom. Each edge and face adjacent to edge 1 of the DUT was assessed.

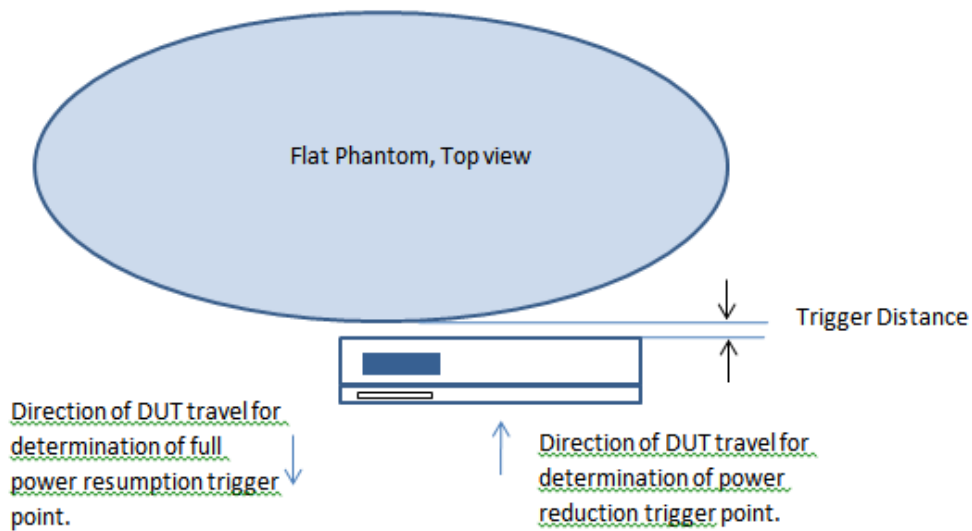
Step 1



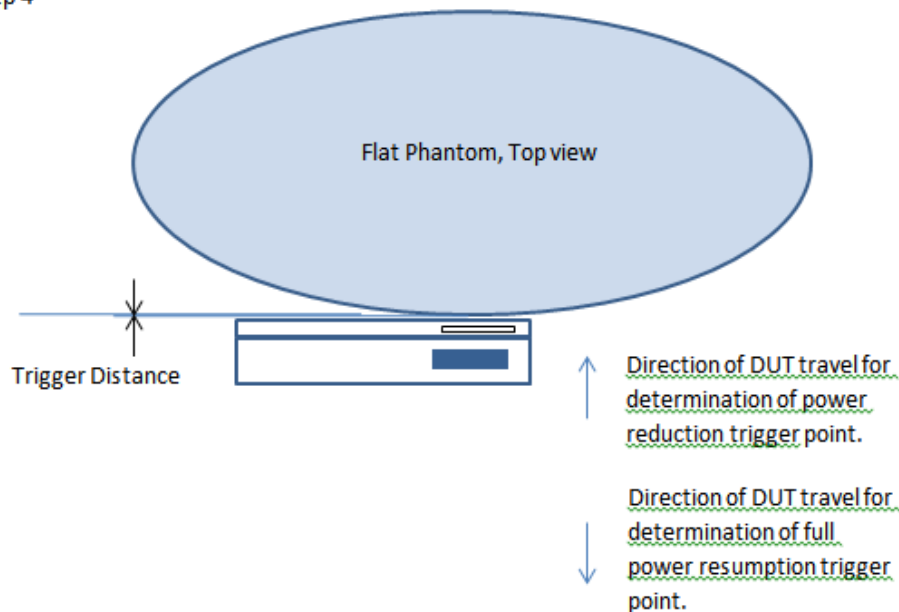
Step 2



Step 3



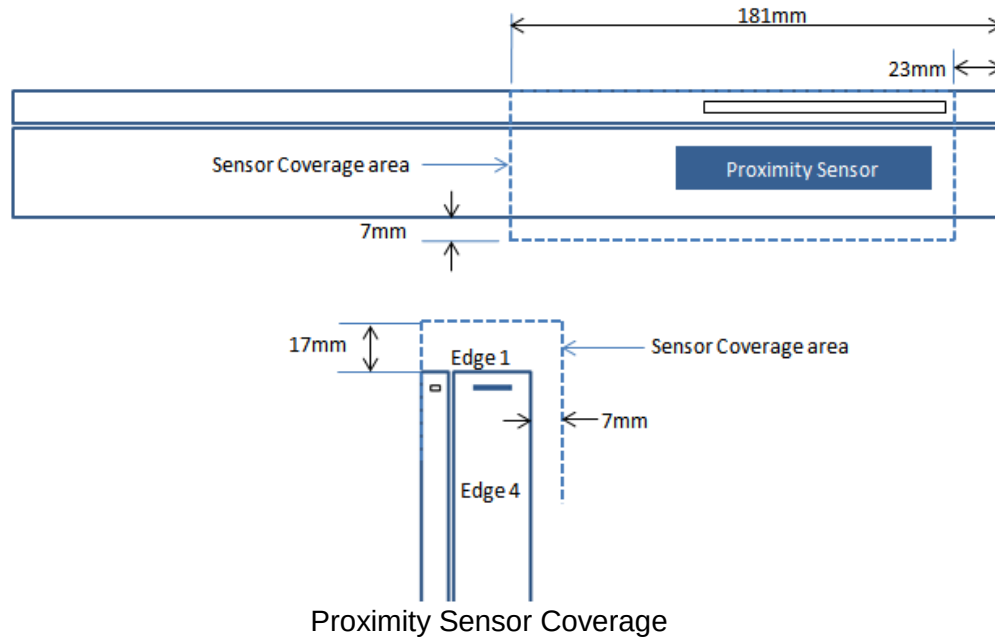
Step 4



Summary of proximity sensor coverage distances.

Tissue simulating liquid	Trigger distance Step 1		Trigger distance Step 2		Trigger distance Step 3		Trigger distance Step 4	
	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
750 muscle	-19mm	-15mm	181mm	189mm	7mm	8mm	0mm	4mm
850 muscle	-19mm	-15mm	181mm	189mm	7mm	8mm	0mm	4mm
1750 muscle	-22mm	-17mm	189mm	191mm	9mm	10mm	1mm	4mm
1900 muscle	-23mm	-17mm	190mm	195mm	10mm	12mm	0mm	3mm

Note - A negative distance indicates that the DUT's edge had passed under the edge of the phantom

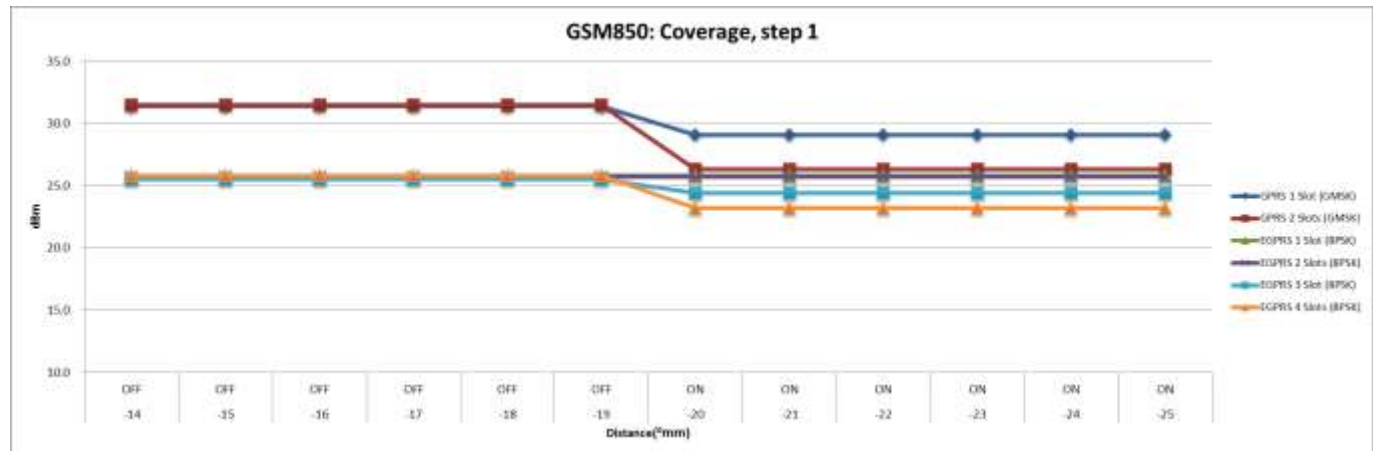


All of the edge 1 WWAN SAR peaks were situated within the boundaries of the proximity sensor coverage area.

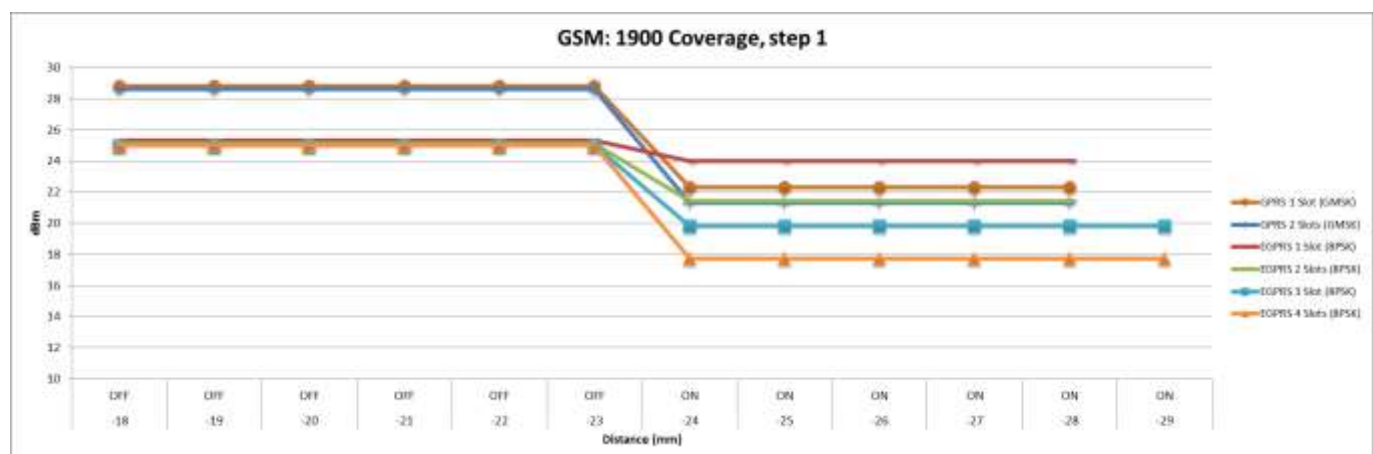
7.8. Proximity Sensor Coverage Measurement Results

7.8.1. DUT Moving Toward the Phantom

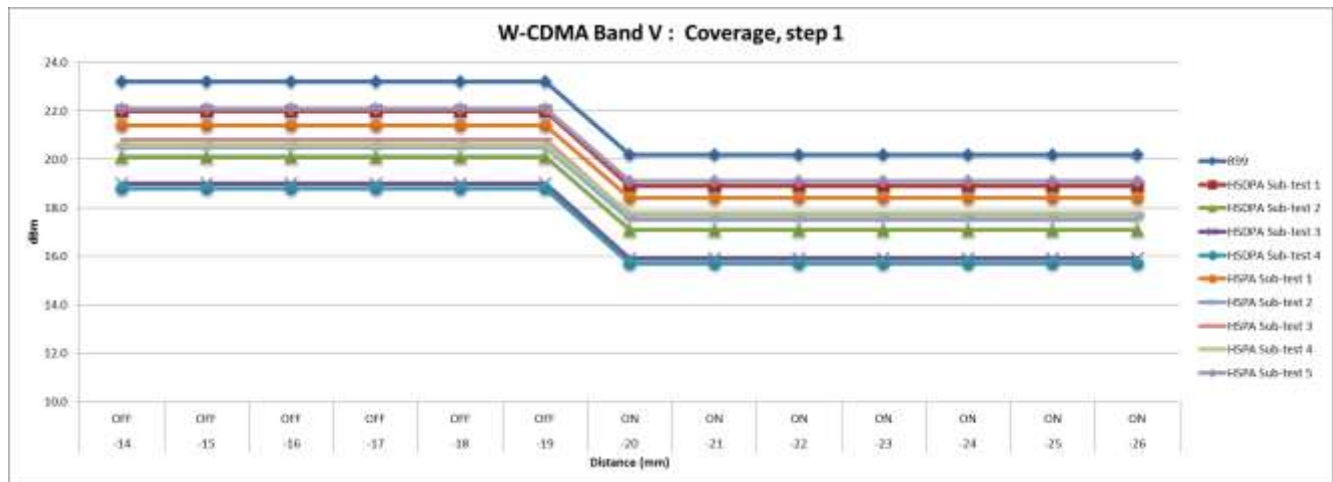
Coverage step 1,GSM850)												
Distance (mm):	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	31.4	31.4	31.4	31.4	31.4	31.4	29.1	29.1	29.1	29.1	29.1	29.1
GPRS 2 Slots (GMSK)	31.5	31.5	31.5	31.5	31.5	31.5	26.3	26.3	26.3	26.3	26.3	26.3
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	25.5	25.5	25.5	25.5	25.5	25.5	24.4	24.4	24.4	24.4	24.4	24.4
EGPRS 4 Slots (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	23.2	23.2	23.2	23.2	23.2	23.2



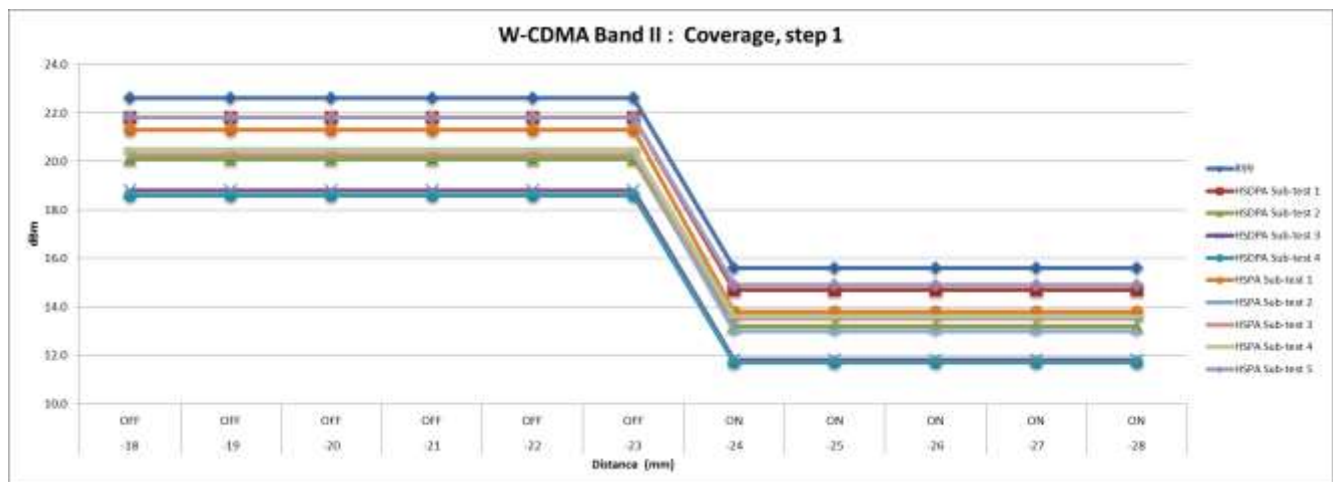
Coverage step 1, Edge 4 and Rear/Bottom (UMTS Band V)												
Distance (mm):	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	28.80	28.80	28.80	28.80	28.80	28.80	22.30	22.30	22.30	22.30	22.30	22.30
GPRS 2 Slots (GMSK)	28.60	28.60	28.60	28.60	28.60	28.60	21.30	21.30	21.30	21.30	21.30	21.30
EGPRS 1 Slot (8PSK)	25.30	25.30	25.30	25.30	25.30	25.30	24.00	24.00	24.00	24.00	24.00	24.00
EGPRS 2 Slots (8PSK)	25.10	25.10	25.10	25.10	25.10	25.10	21.40	21.40	21.40	21.40	21.40	21.40
EGPRS 3 Slot (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	19.80	19.80	19.80	19.80	19.80	19.80
EGPRS 4 Slots (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	17.70	17.70	17.70	17.70	17.70	17.70



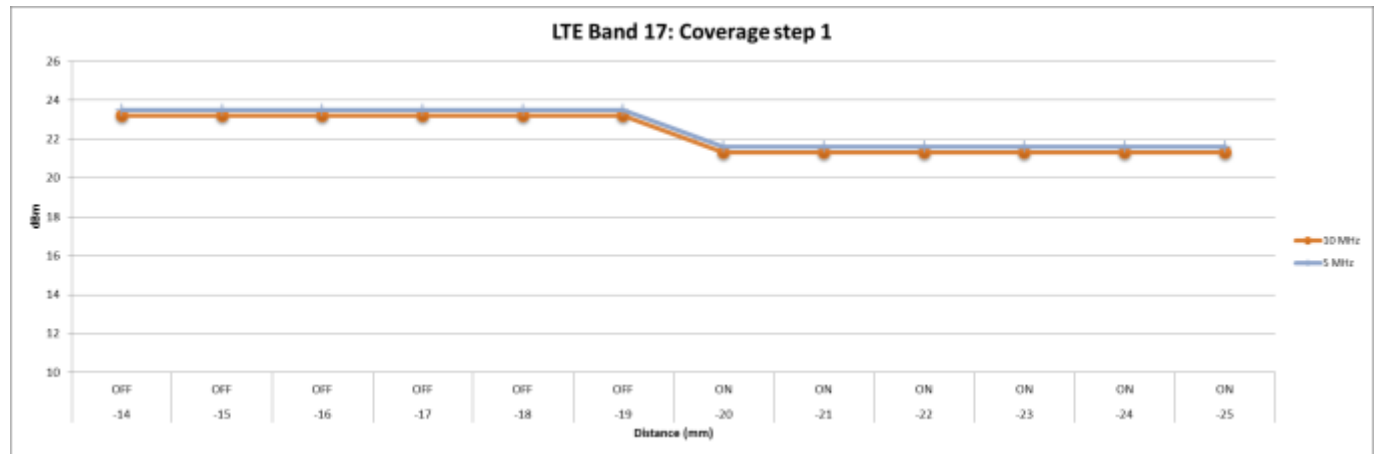
Coverage step 1 W-CDMA Band V													
Distance (mm):	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
R99	23.2	23.2	23.2	23.2	23.2	23.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
HSDPA Sub-test 1	22.0	22.0	22.0	22.0	22.0	22.0	18.9	18.9	18.9	18.9	18.9	18.9	18.9
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
HSDPA Sub-test 3	19.0	19.0	19.0	19.0	19.0	19.0	15.9	15.9	15.9	15.9	15.9	15.9	15.9
HSDPA Sub-test 4	18.8	18.8	18.8	18.8	18.8	18.8	15.7	15.7	15.7	15.7	15.7	15.7	15.7
HSPA Sub-test 1	21.4	21.4	21.4	21.4	21.4	21.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
HSPA Sub-test 2	20.5	20.5	20.5	20.5	20.5	20.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
HSPA Sub-test 3	20.8	20.8	20.8	20.8	20.8	20.8	17.7	17.7	17.7	17.7	17.7	17.7	17.7
HSPA Sub-test 4	20.6	20.6	20.6	20.6	20.6	20.6	17.8	17.8	17.8	17.8	17.8	17.8	17.8
HSPA Sub-test 5	22.1	22.1	22.1	22.1	22.1	22.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1



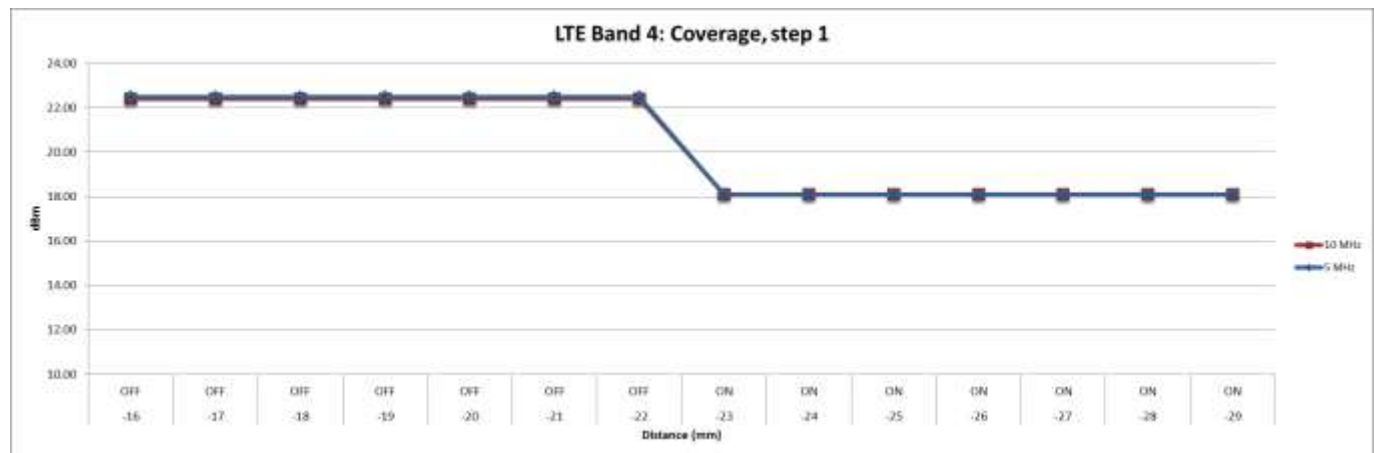
Coverage step 1 W-CDMA Band II											
Distance (mm):	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27	-28
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON
R99	22.6	22.6	22.6	22.6	22.6	22.6	15.6	15.6	15.6	15.6	15.6
HSDPA Sub-test 1	21.8	21.8	21.8	21.8	21.8	21.8	14.7	14.7	14.7	14.7	14.7
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	13.2	13.2	13.2	13.2	13.2
HSDPA Sub-test 3	18.8	18.8	18.8	18.8	18.8	18.8	11.8	11.8	11.8	11.8	11.8
HSDPA Sub-test 4	18.6	18.6	18.6	18.6	18.6	18.6	11.7	11.7	11.7	11.7	11.7
HSPA Sub-test 1	21.3	21.3	21.3	21.3	21.3	21.3	13.8	13.8	13.8	13.8	13.8
HSPA Sub-test 2	20.3	20.3	20.3	20.3	20.3	20.3	13.0	13.0	13.0	13.0	13.0
HSPA Sub-test 3	20.3	20.3	20.3	20.3	20.3	20.3	13.5	13.5	13.5	13.5	13.5
HSPA Sub-test 4	20.5	20.5	20.5	20.5	20.5	20.5	13.6	13.6	13.6	13.6	13.6
HSPA Sub-test 5	21.8	21.8	21.8	21.8	21.8	21.8	14.9	14.9	14.9	14.9	14.9



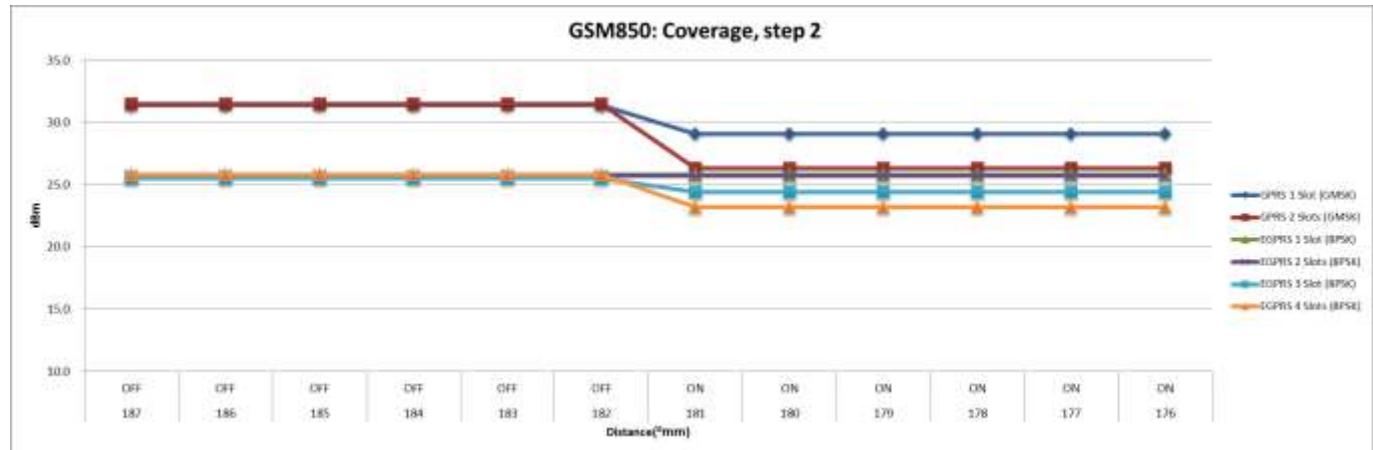
Coverage step 1, LTE Band 17												
Distance (mm):	-14	-15	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
10 MHz	23.2	23.2	23.2	23.2	23.2	23.2	21.3	21.3	21.3	21.3	21.3	21.3
5 MHz	23.5	23.5	23.5	23.5	23.5	23.5	21.6	21.6	21.6	21.6	21.6	21.6



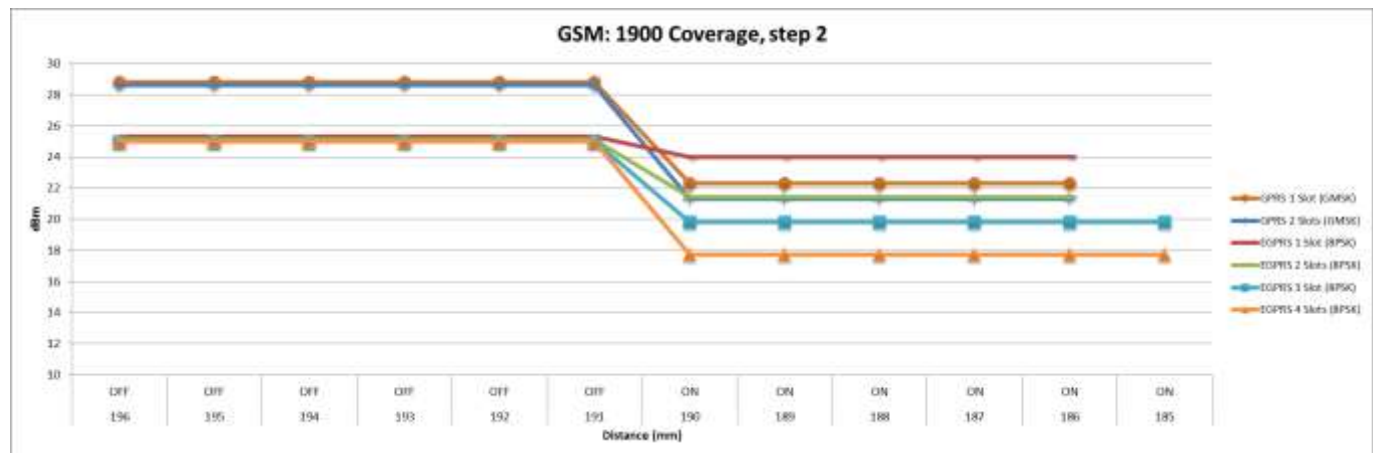
Coverage step 1, LTE Band 4												
Distance (mm):	-16	-17	-18	-19	-20	-21	-22	-23	-24	-25	-26	-27
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON
10 MHz	22.40	22.40	22.40	22.40	22.40	22.40	22.40	18.10	18.10	18.10	18.10	18.10
5 MHz	22.50	22.50	22.50	22.50	22.50	22.50	22.50	18.10	18.10	18.10	18.10	18.10



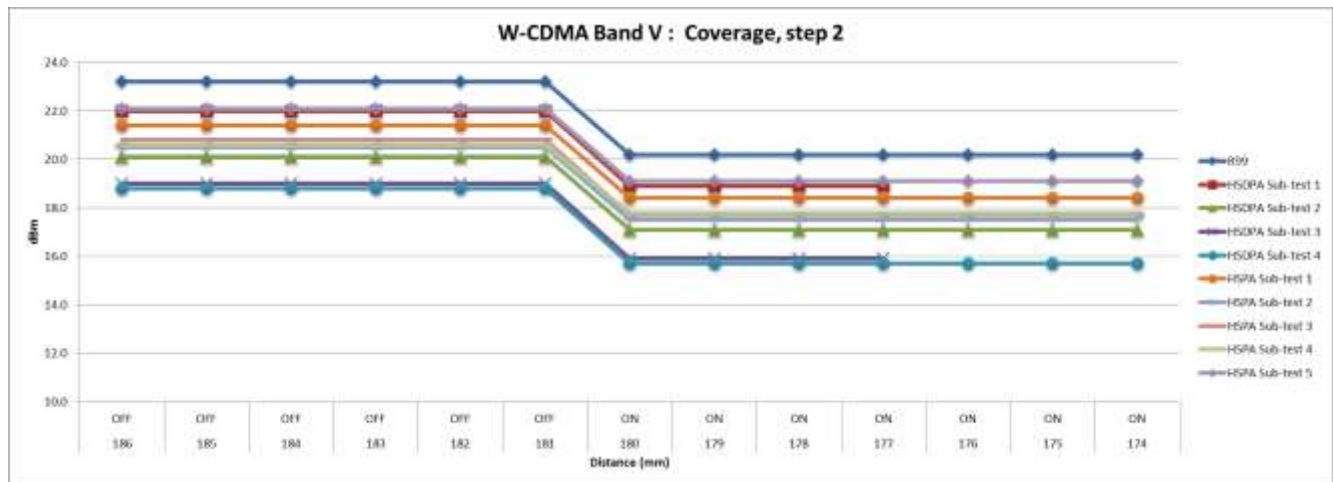
Coverage step 2 (GSM850)												
Distance (mm):	187	186	185	184	183	182	181	180	179	178	177	176
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	31.4	31.4	31.4	31.4	31.4	31.4	29.1	29.1	29.1	29.1	29.1	29.1
GPRS 2 Slots (GMSK)	31.5	31.5	31.5	31.5	31.5	31.5	26.3	26.3	26.3	26.3	26.3	26.3
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	25.5	25.5	25.5	25.5	25.5	25.5	24.4	24.4	24.4	24.4	24.4	24.4
EGPRS 4 Slots (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	23.2	23.2	23.2	23.2	23.2	23.2



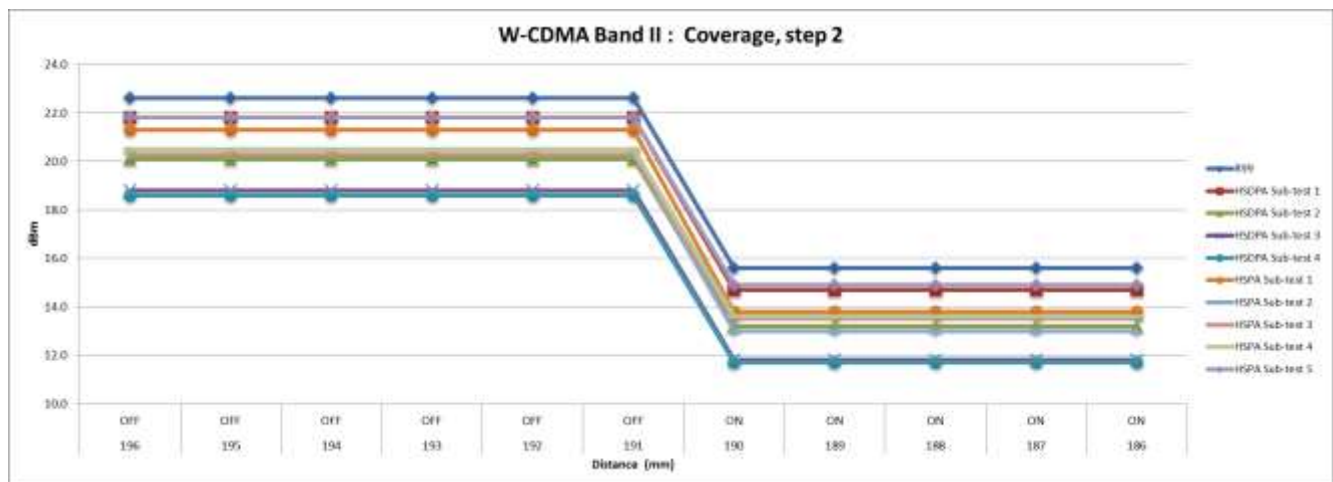
Coverage step 2 (GSM 1900)												
Distance (mm):	196	195	194	193	192	191	190	189	188	187	186	185
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	28.80	28.80	28.80	28.80	28.80	28.80	22.30	22.30	22.30	22.30	22.30	22.30
GPRS 2 Slots (GMSK)	28.60	28.60	28.60	28.60	28.60	28.60	21.30	21.30	21.30	21.30	21.30	21.30
EGPRS 1 Slot (8PSK)	25.30	25.30	25.30	25.30	25.30	25.30	24.00	24.00	24.00	24.00	24.00	24.00
EGPRS 2 Slots (8PSK)	25.10	25.10	25.10	25.10	25.10	25.10	21.40	21.40	21.40	21.40	21.40	21.40
EGPRS 3 Slot (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	19.80	19.80	19.80	19.80	19.80	19.80
EGPRS 4 Slots (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	17.70	17.70	17.70	17.70	17.70	17.70



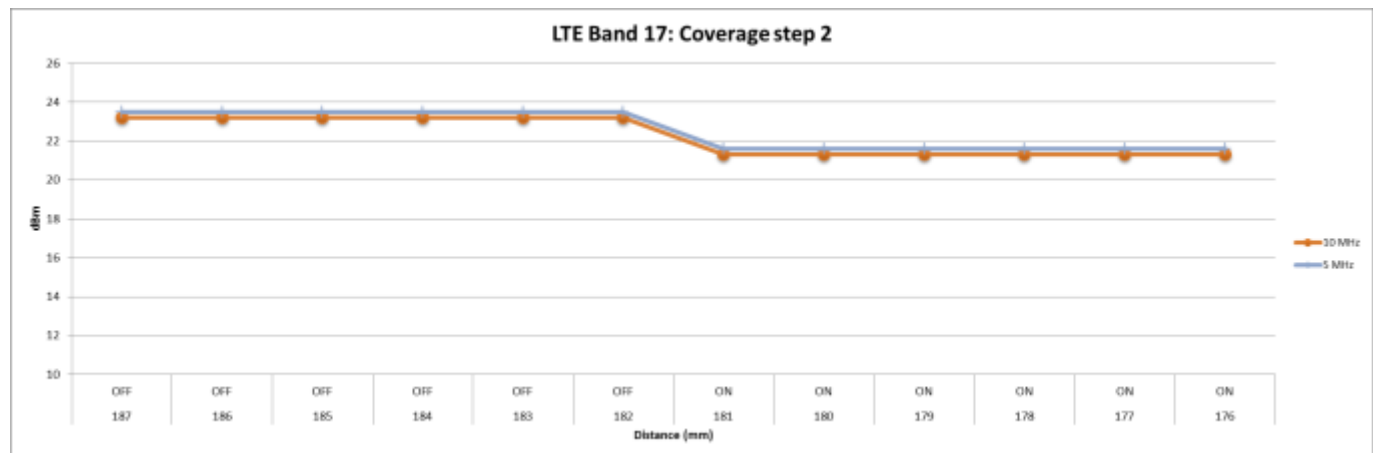
Coverage step 2 W-CDMA Band V													
Distance (mm):	186	185	184	183	182	181	180	179	178	177	176	175	174
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
R99	23.2	23.2	23.2	23.2	23.2	23.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
HSDPA Sub-test 1	22.0	22.0	22.0	22.0	22.0	22.0	18.9	18.9	18.9	18.9	18.9	18.9	18.9
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
HSDPA Sub-test 3	19.0	19.0	19.0	19.0	19.0	19.0	15.9	15.9	15.9	15.9	15.9	15.9	15.9
HSDPA Sub-test 4	18.8	18.8	18.8	18.8	18.8	18.8	15.7	15.7	15.7	15.7	15.7	15.7	15.7
HSPA Sub-test 1	21.4	21.4	21.4	21.4	21.4	21.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
HSPA Sub-test 2	20.5	20.5	20.5	20.5	20.5	20.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
HSPA Sub-test 3	20.8	20.8	20.8	20.8	20.8	20.8	17.7	17.7	17.7	17.7	17.7	17.7	17.7
HSPA Sub-test 4	20.6	20.6	20.6	20.6	20.6	20.6	17.8	17.8	17.8	17.8	17.8	17.8	17.8
HSPA Sub-test 5	22.1	22.1	22.1	22.1	22.1	22.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1



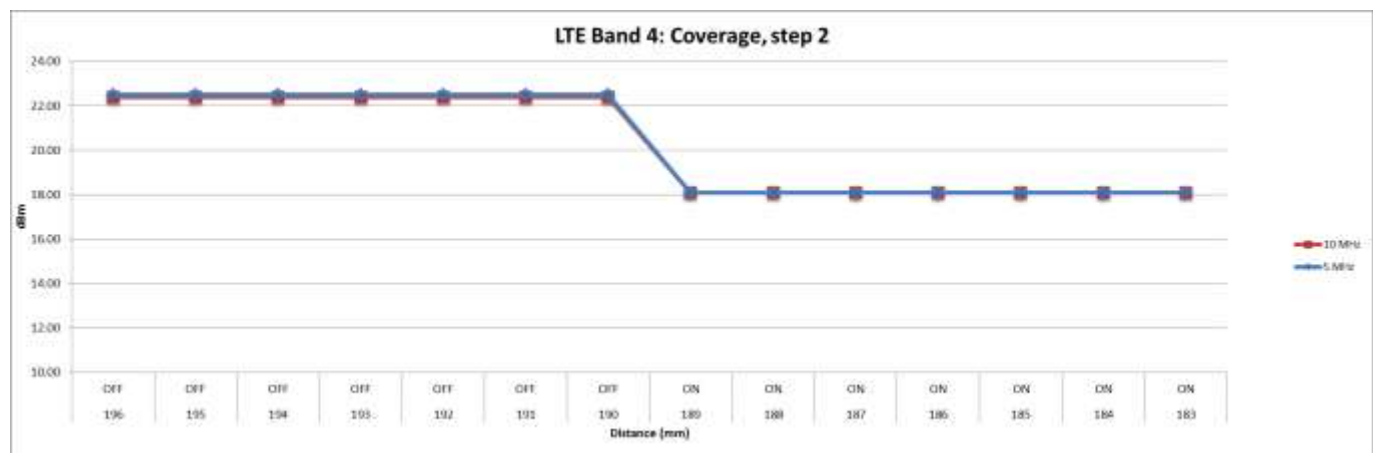
Coverage step 2 W-CDMA Band II											
Distance (mm):	196	195	194	193	192	191	190	189	188	187	186
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON
R99	22.6	22.6	22.6	22.6	22.6	22.6	15.6	15.6	15.6	15.6	15.6
HSDPA Sub-test 1	21.8	21.8	21.8	21.8	21.8	21.8	14.7	14.7	14.7	14.7	14.7
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	13.2	13.2	13.2	13.2	13.2
HSDPA Sub-test 3	18.8	18.8	18.8	18.8	18.8	18.8	11.8	11.8	11.8	11.8	11.8
HSDPA Sub-test 4	18.6	18.6	18.6	18.6	18.6	18.6	11.7	11.7	11.7	11.7	11.7
HSPA Sub-test 1	21.3	21.3	21.3	21.3	21.3	21.3	13.8	13.8	13.8	13.8	13.8
HSPA Sub-test 2	20.3	20.3	20.3	20.3	20.3	20.3	13.0	13.0	13.0	13.0	13.0
HSPA Sub-test 3	20.3	20.3	20.3	20.3	20.3	20.3	13.5	13.5	13.5	13.5	13.5
HSPA Sub-test 4	20.5	20.5	20.5	20.5	20.5	20.5	13.6	13.6	13.6	13.6	13.6
HSPA Sub-test 5	21.8	21.8	21.8	21.8	21.8	21.8	14.9	14.9	14.9	14.9	14.9



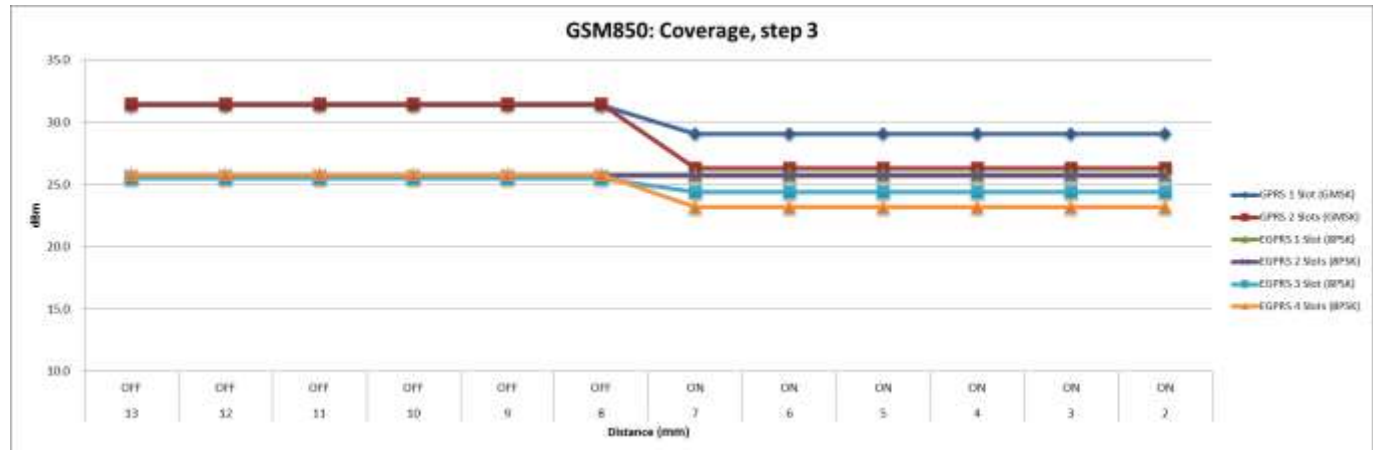
Coverage step 2, LTE Band 17													
Distance (mm):	187	186	185	184	183	182	181	180	179	178	177	176	
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	
10 MHz	23.2	23.2	23.2	23.2	23.2	23.2	21.3	21.3	21.3	21.3	21.3	21.3	
5 MHz	23.5	23.5	23.5	23.5	23.5	23.5	21.6	21.6	21.6	21.6	21.6	21.6	



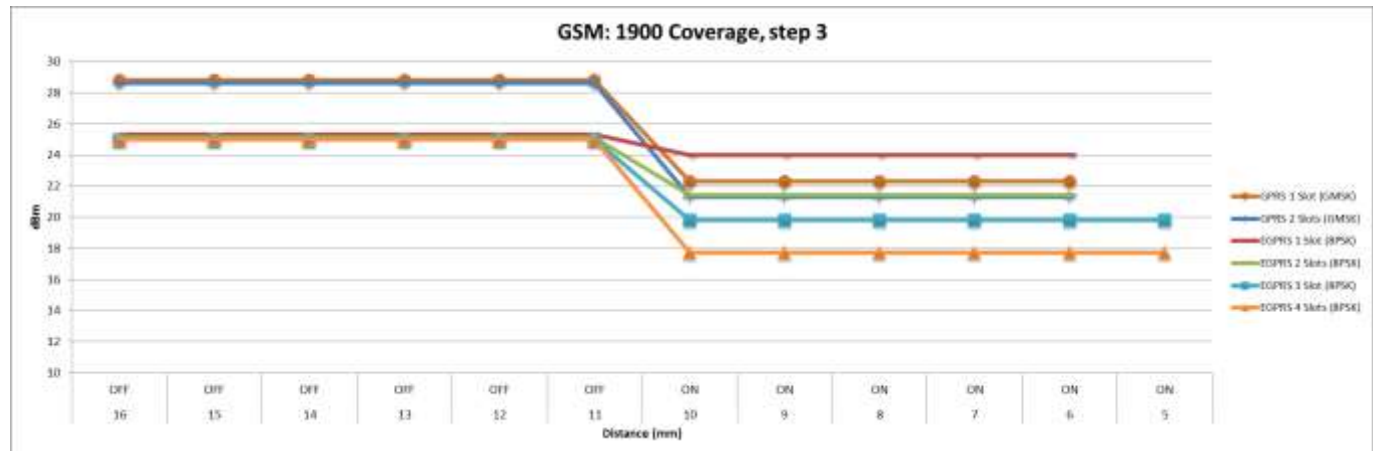
Coverage step 2, LTE Band 4														
Distance (mm):	196	195	194	193	192	191	190	189	188	187	186	185	184	183
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
10 MHz	22.40	22.40	22.40	22.40	22.40	22.40	22.40	18.10	18.10	18.10	18.10	18.10	18.10	18.10
5 MHz	22.50	22.50	22.50	22.50	22.50	22.50	22.50	18.10	18.10	18.10	18.10	18.10	18.10	18.10



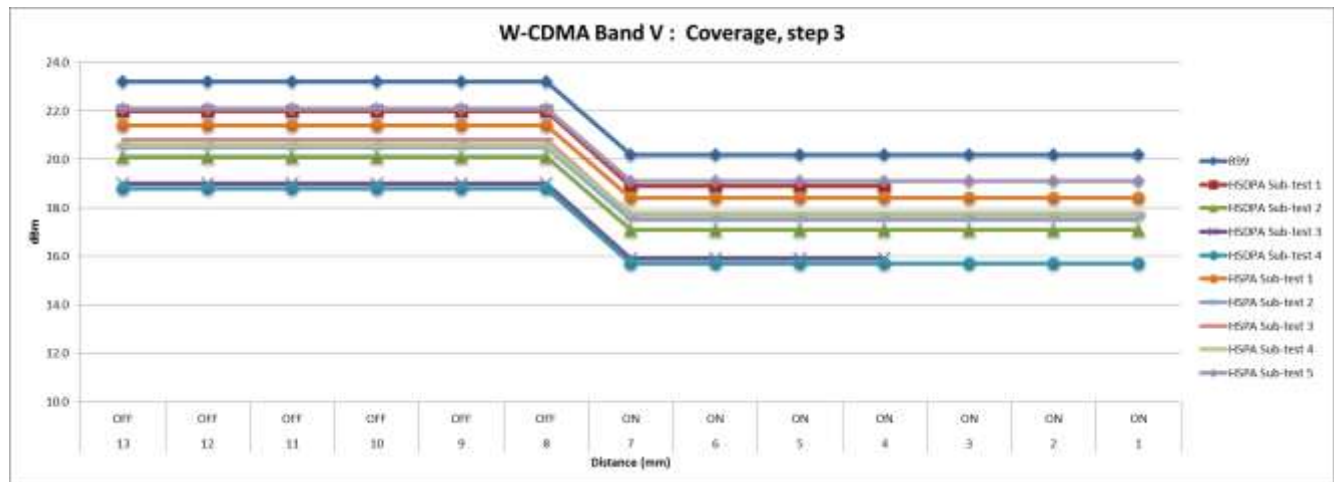
Coverage step 3 (GSM850)												
Distance (mm):	13	12	11	10	9	8	7	6	5	4	3	2
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	31.4	31.4	31.4	31.4	31.4	31.4	29.1	29.1	29.1	29.1	29.1	29.1
GPRS 2 Slots (GMSK)	31.5	31.5	31.5	31.5	31.5	31.5	26.3	26.3	26.3	26.3	26.3	26.3
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	25.5	25.5	25.5	25.5	25.5	25.5	24.4	24.4	24.4	24.4	24.4	24.4
EGPRS 4 Slots (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	23.2	23.2	23.2	23.2	23.2	23.2



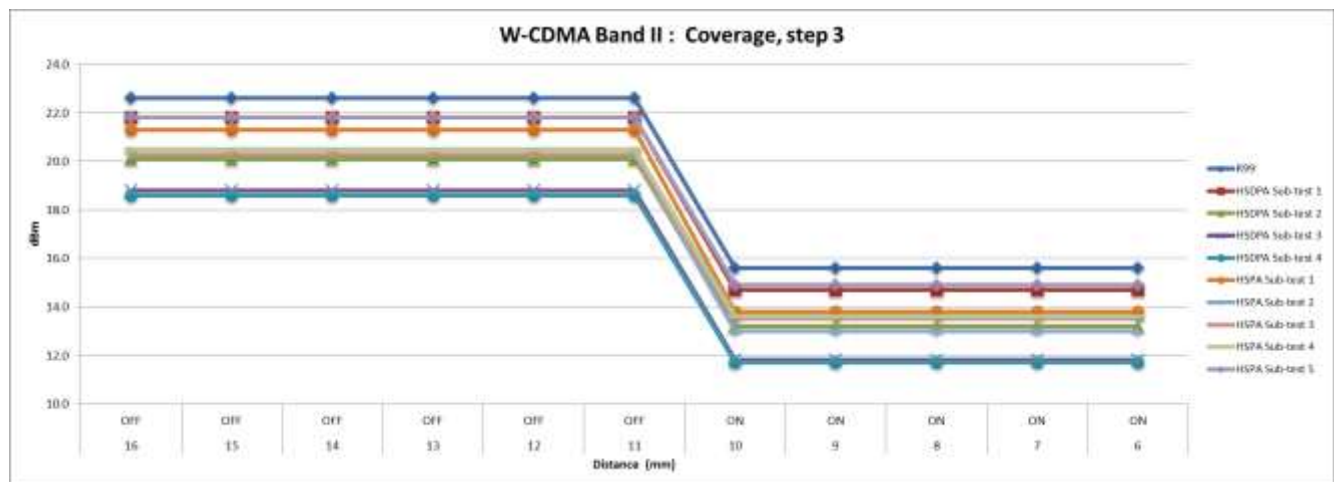
Coverage step 3 (GSM1900)												
Distance (mm):	16	15	14	13	12	11	10	9	8	7	6	5
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	28.80	28.80	28.80	28.80	28.80	28.80	22.30	22.30	22.30	22.30	22.30	22.30
GPRS 2 Slots (GMSK)	28.60	28.60	28.60	28.60	28.60	28.60	21.30	21.30	21.30	21.30	21.30	21.30
EGPRS 1 Slot (8PSK)	25.30	25.30	25.30	25.30	25.30	25.30	24.00	24.00	24.00	24.00	24.00	24.00
EGPRS 2 Slots (8PSK)	25.10	25.10	25.10	25.10	25.10	25.10	21.40	21.40	21.40	21.40	21.40	21.40
EGPRS 3 Slot (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	19.80	19.80	19.80	19.80	19.80	19.80
EGPRS 4 Slots (8PSK)	25.00	25.00	25.00	25.00	25.00	25.00	17.70	17.70	17.70	17.70	17.70	17.70



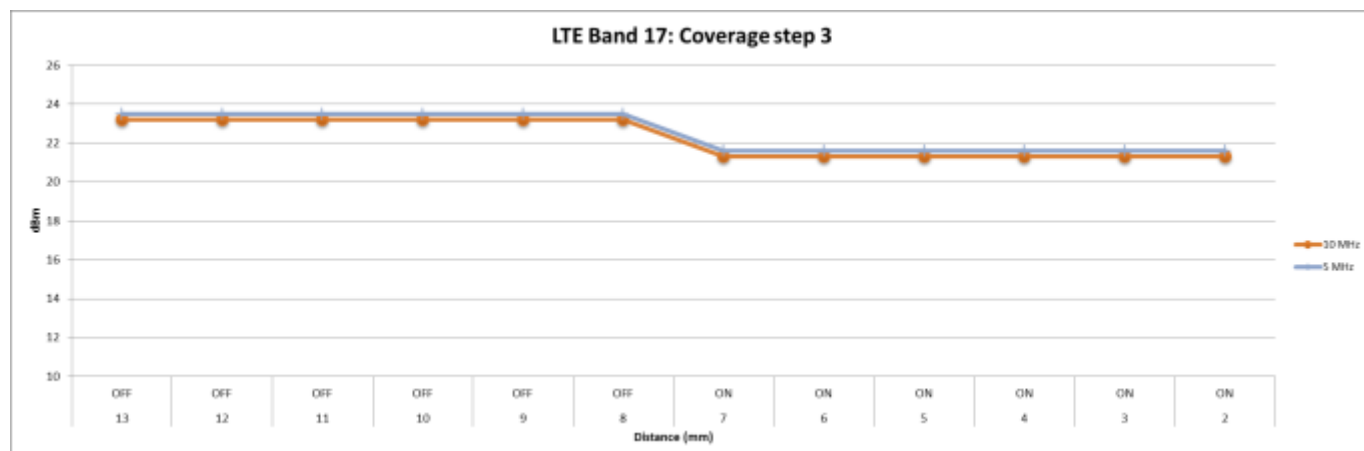
Coverage step 3 W-CDMA Band V													
Distance (mm):	13	12	11	10	9	8	7	6	5	4	3	2	1
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
R99	23.2	23.2	23.2	23.2	23.2	23.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
HSDPA Sub-test 1	22.0	22.0	22.0	22.0	22.0	22.0	18.9	18.9	18.9	18.9	18.9	18.9	18.9
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1
HSDPA Sub-test 3	19.0	19.0	19.0	19.0	19.0	19.0	15.9	15.9	15.9	15.9	15.9	15.9	15.9
HSDPA Sub-test 4	18.8	18.8	18.8	18.8	18.8	18.8	15.7	15.7	15.7	15.7	15.7	15.7	15.7
HSPA Sub-test 1	21.4	21.4	21.4	21.4	21.4	21.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
HSPA Sub-test 2	20.5	20.5	20.5	20.5	20.5	20.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
HSPA Sub-test 3	20.8	20.8	20.8	20.8	20.8	20.8	17.7	17.7	17.7	17.7	17.7	17.7	17.7
HSPA Sub-test 4	20.6	20.6	20.6	20.6	20.6	20.6	17.8	17.8	17.8	17.8	17.8	17.8	17.8
HSPA Sub-test 5	22.1	22.1	22.1	22.1	22.1	22.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1



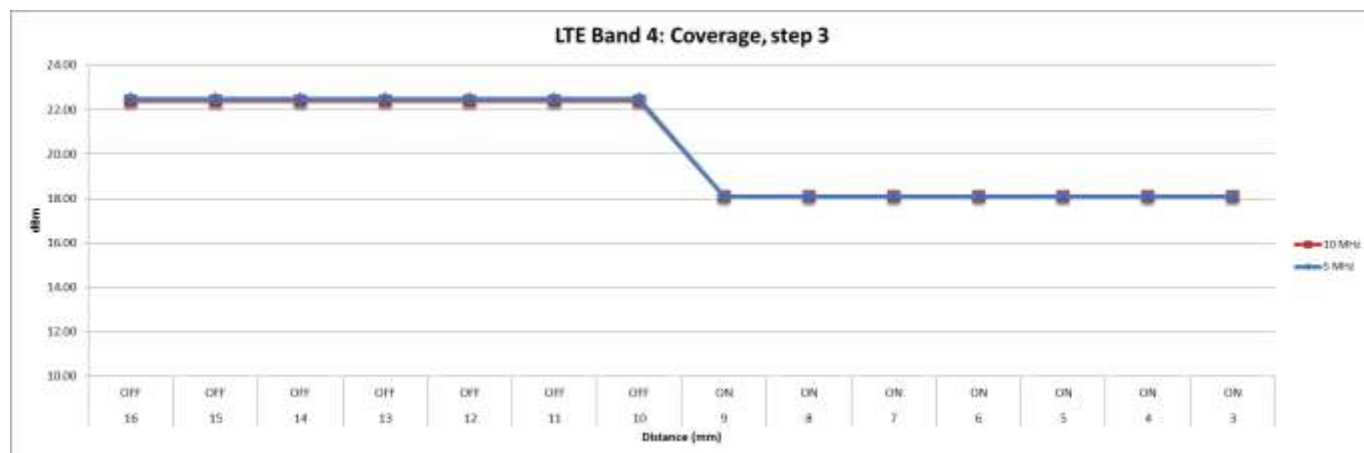
Coverage step 3 W-CDMA Band II											
Distance (mm):	16	15	14	13	12	11	10	9	8	7	6
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON
R99	22.6	22.6	22.6	22.6	22.6	22.6	15.6	15.6	15.6	15.6	15.6
HSDPA Sub-test 1	21.8	21.8	21.8	21.8	21.8	21.8	14.7	14.7	14.7	14.7	14.7
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	20.1	13.2	13.2	13.2	13.2	13.2
HSDPA Sub-test 3	18.8	18.8	18.8	18.8	18.8	18.8	11.8	11.8	11.8	11.8	11.8
HSDPA Sub-test 4	18.6	18.6	18.6	18.6	18.6	18.6	11.7	11.7	11.7	11.7	11.7
HSPA Sub-test 1	21.3	21.3	21.3	21.3	21.3	21.3	13.8	13.8	13.8	13.8	13.8
HSPA Sub-test 2	20.3	20.3	20.3	20.3	20.3	20.3	13.0	13.0	13.0	13.0	13.0
HSPA Sub-test 3	20.3	20.3	20.3	20.3	20.3	20.3	13.5	13.5	13.5	13.5	13.5
HSPA Sub-test 4	20.5	20.5	20.5	20.5	20.5	20.5	13.6	13.6	13.6	13.6	13.6
HSPA Sub-test 5	21.8	21.8	21.8	21.8	21.8	21.8	14.9	14.9	14.9	14.9	14.9



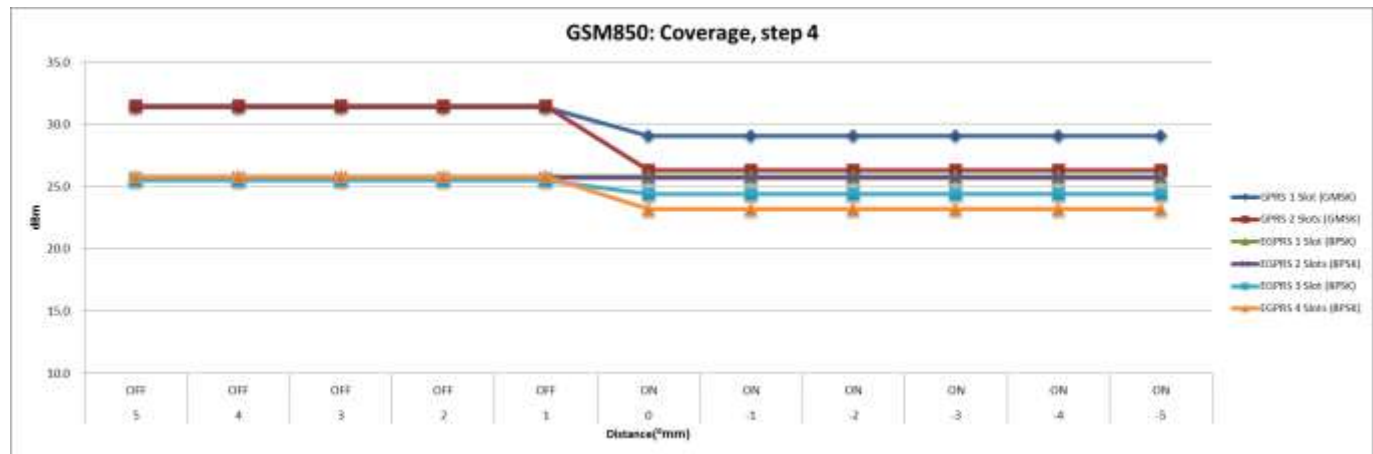
Coverage step 3, LTE Band 17												
Distance (mm):	13	12	11	10	9	8	7	6	5	4	3	2
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
10 MHz	23.2	23.2	23.2	23.2	23.2	23.2	21.3	21.3	21.3	21.3	21.3	21.3
5 MHz	23.5	23.5	23.5	23.5	23.5	23.5	21.6	21.6	21.6	21.6	21.6	21.6



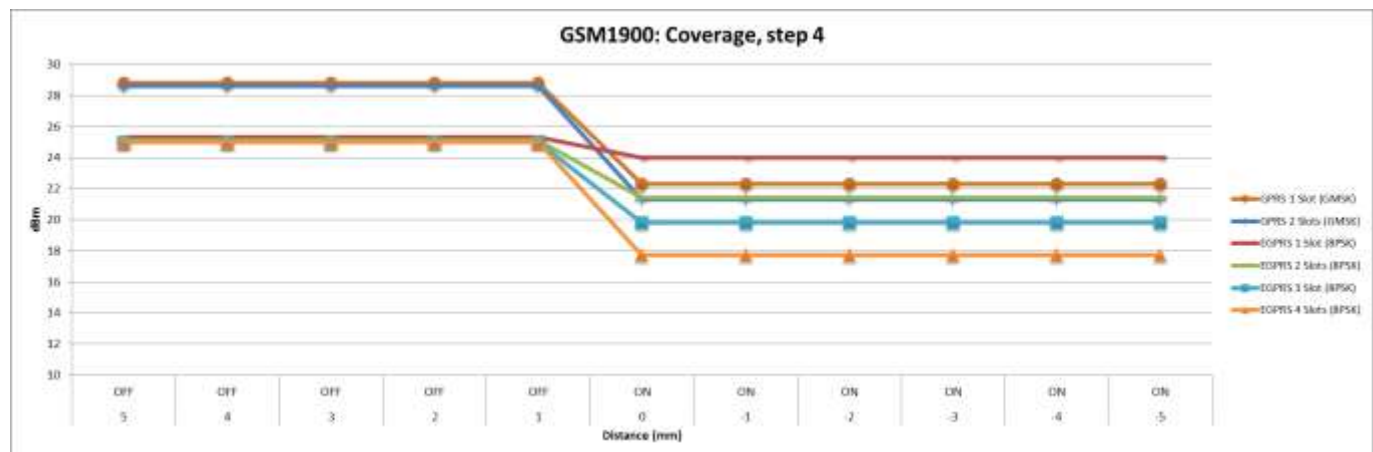
Coverage step 3, LTE Band 4														
Distance (mm):	16	15	14	13	12	11	10	9	8	7	6	5	4	3
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
10 MHz	22.40	22.40	22.40	22.40	22.40	22.40	22.40	18.10	18.10	18.10	18.10	18.10	18.10	18.10
5 MHz	22.50	22.50	22.50	22.50	22.50	22.50	22.50	18.10	18.10	18.10	18.10	18.10	18.10	18.10



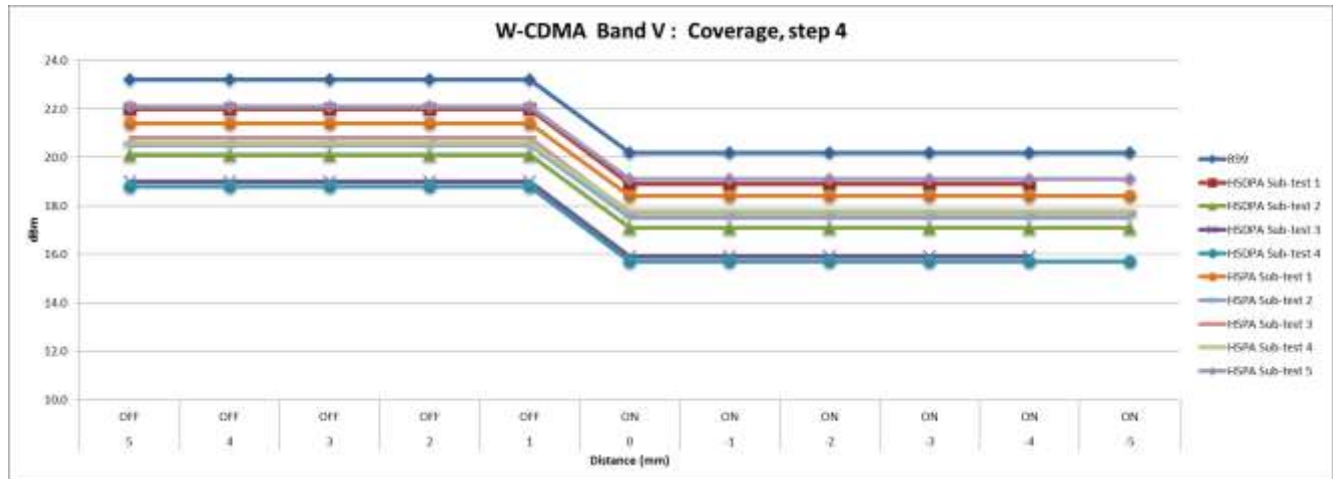
Coverage step 4 GSM850											
Distance (mm):	5	4	3	2	1	0	-1	-2	-3	-4	-5
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	31.4	31.4	31.4	31.4	31.4	29.1	29.1	29.1	29.1	29.1	29.1
GPRS 2 Slots (GMSK)	31.5	31.5	31.5	31.5	31.5	26.3	26.3	26.3	26.3	26.3	26.3
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	25.5	25.5	25.5	25.5	25.5	24.4	24.4	24.4	24.4	24.4	24.4
EGPRS 4 Slots (8PSK)	25.8	25.8	25.8	25.8	25.8	23.2	23.2	23.2	23.2	23.2	23.2



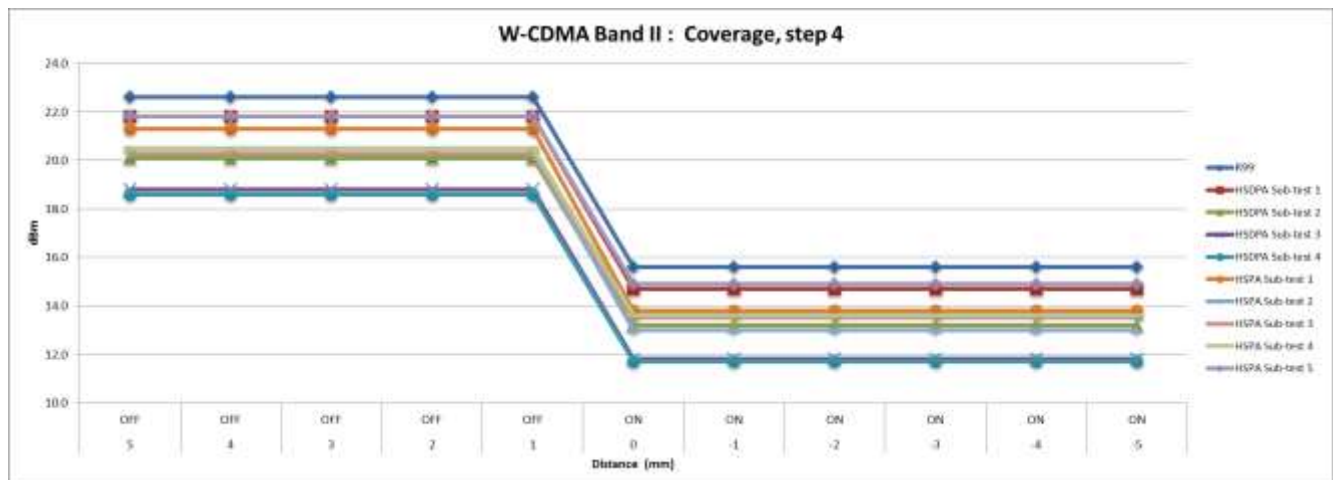
Coverage step 4 GSM1900											
Distance (mm):	5	4	3	2	1	0	-1	-2	-3	-4	-5
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
GPRS 1 Slot (GMSK)	28.80	28.80	28.80	28.80	28.80	22.30	22.30	22.30	22.30	22.30	22.30
GPRS 2 Slots (GMSK)	28.60	28.60	28.60	28.60	28.60	21.30	21.30	21.30	21.30	21.30	21.30
EGPRS 1 Slot (8PSK)	25.30	25.30	25.30	25.30	25.30	24.00	24.00	24.00	24.00	24.00	24.00
EGPRS 2 Slots (8PSK)	25.10	25.10	25.10	25.10	25.10	21.40	21.40	21.40	21.40	21.40	21.40
EGPRS 3 Slot (8PSK)	25.00	25.00	25.00	25.00	25.00	19.80	19.80	19.80	19.80	19.80	19.80
EGPRS 4 Slots (8PSK)	25.00	25.00	25.00	25.00	25.00	17.70	17.70	17.70	17.70	17.70	17.70



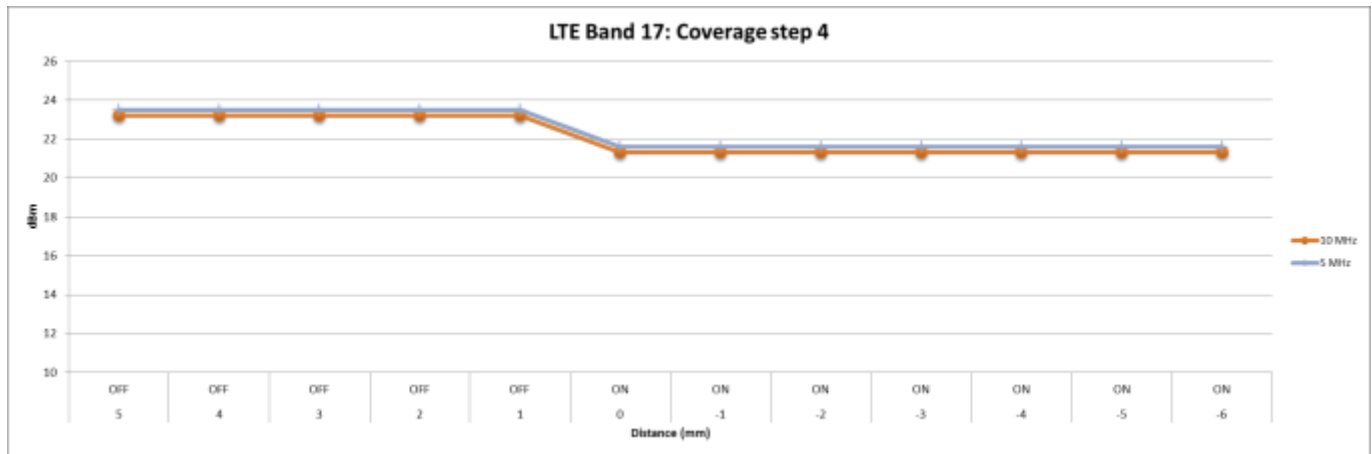
Coverage step 4 , W-CDMA Band V											
Distance (mm):	5	4	3	2	1	0	-1	-2	-3	-4	-5
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
R99	23.2	23.2	23.2	23.2	23.2	20.2	20.2	20.2	20.2	20.2	20.2
HSDPA Sub-test 1	22.0	22.0	22.0	22.0	22.0	18.9	18.9	18.9	18.9	18.9	18.9
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	17.1	17.1	17.1	17.1	17.1	17.1
HSDPA Sub-test 3	19.0	19.0	19.0	19.0	19.0	15.9	15.9	15.9	15.9	15.9	15.9
HSDPA Sub-test 4	18.8	18.8	18.8	18.8	18.8	15.7	15.7	15.7	15.7	15.7	15.7
HSPA Sub-test 1	21.4	21.4	21.4	21.4	21.4	18.4	18.4	18.4	18.4	18.4	18.4
HSPA Sub-test 2	20.5	20.5	20.5	20.5	20.5	17.5	17.5	17.5	17.5	17.5	17.5
HSPA Sub-test 3	20.8	20.8	20.8	20.8	20.8	17.7	17.7	17.7	17.7	17.7	17.7
HSPA Sub-test 4	20.6	20.6	20.6	20.6	20.6	17.8	17.8	17.8	17.8	17.8	17.8
HSPA Sub-test 5	22.1	22.1	22.1	22.1	22.1	19.1	19.1	19.1	19.1	19.1	19.1



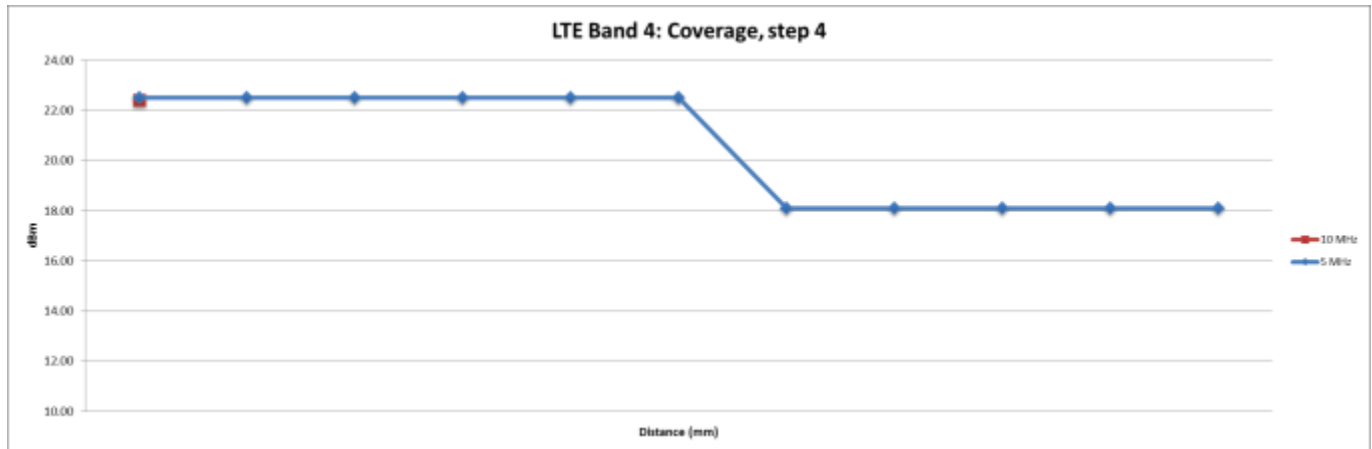
Coverage step 4 , W-CDMA Band II											
Distance (mm):	5	4	3	2	1	0	-1	-2	-3	-4	-5
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
R99	22.6	22.6	22.6	22.6	22.6	15.6	15.6	15.6	15.6	15.6	15.6
HSDPA Sub-test 1	21.8	21.8	21.8	21.8	21.8	14.7	14.7	14.7	14.7	14.7	14.7
HSDPA Sub-test 2	20.1	20.1	20.1	20.1	20.1	13.2	13.2	13.2	13.2	13.2	13.2
HSDPA Sub-test 3	18.8	18.8	18.8	18.8	18.8	11.8	11.8	11.8	11.8	11.8	11.8
HSDPA Sub-test 4	18.6	18.6	18.6	18.6	18.6	11.7	11.7	11.7	11.7	11.7	11.7
HSPA Sub-test 1	21.3	21.3	21.3	21.3	21.3	13.8	13.8	13.8	13.8	13.8	13.8
HSPA Sub-test 2	20.3	20.3	20.3	20.3	20.3	13.0	13.0	13.0	13.0	13.0	13.0
HSPA Sub-test 3	20.3	20.3	20.3	20.3	20.3	13.5	13.5	13.5	13.5	13.5	13.5
HSPA Sub-test 4	20.5	20.5	20.5	20.5	20.5	13.6	13.6	13.6	13.6	13.6	13.6
HSPA Sub-test 5	21.8	21.8	21.8	21.8	21.8	14.9	14.9	14.9	14.9	14.9	14.9



Coverage step 4, LTE Band 17												
Distance (mm):	5	4	3	2	1	0	-1	-2	-3	-4	-5	-6
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON
10 MHz	23.2	23.2	23.2	23.2	23.2	21.3	21.3	21.3	21.3	21.3	21.3	21.3
5 MHz	23.5	23.5	23.5	23.5	23.5	21.6	21.6	21.6	21.6	21.6	21.6	21.6

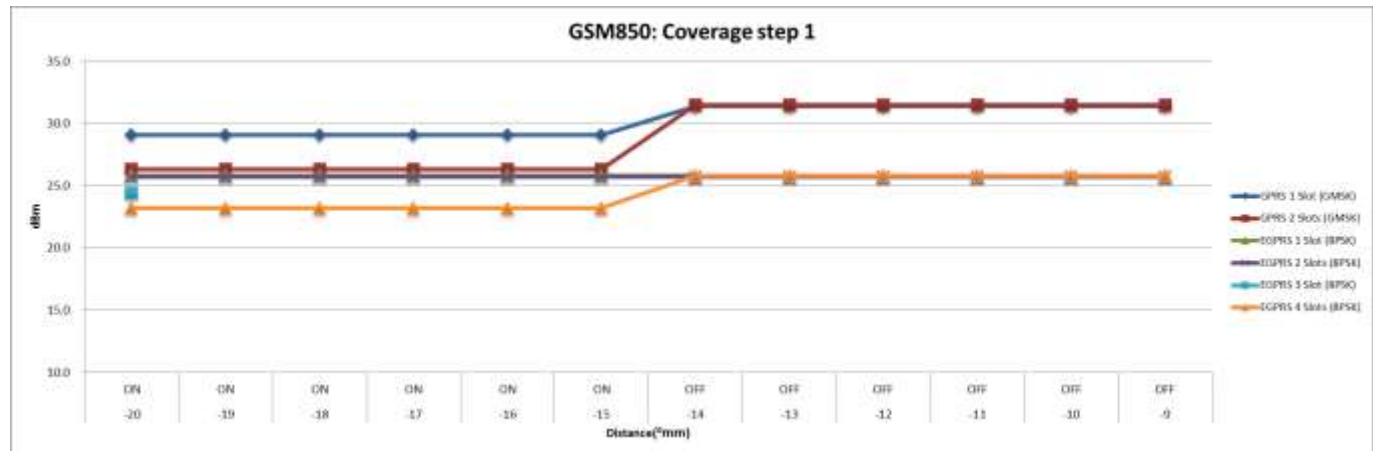


Coverage step 4, LTE Band 4											
Distance (mm):	7	6	5	4	3	2	1	0	-1	-2	-3
Proximity sensor with reduced power activation:	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON
10 MHz	22.40	22.40	22.40	22.40	22.40	22.40	18.10	18.10	18.10	18.10	18.10
5 MHz	22.50	22.50	22.50	22.50	22.50	22.50	18.10	18.10	18.10	18.10	18.10

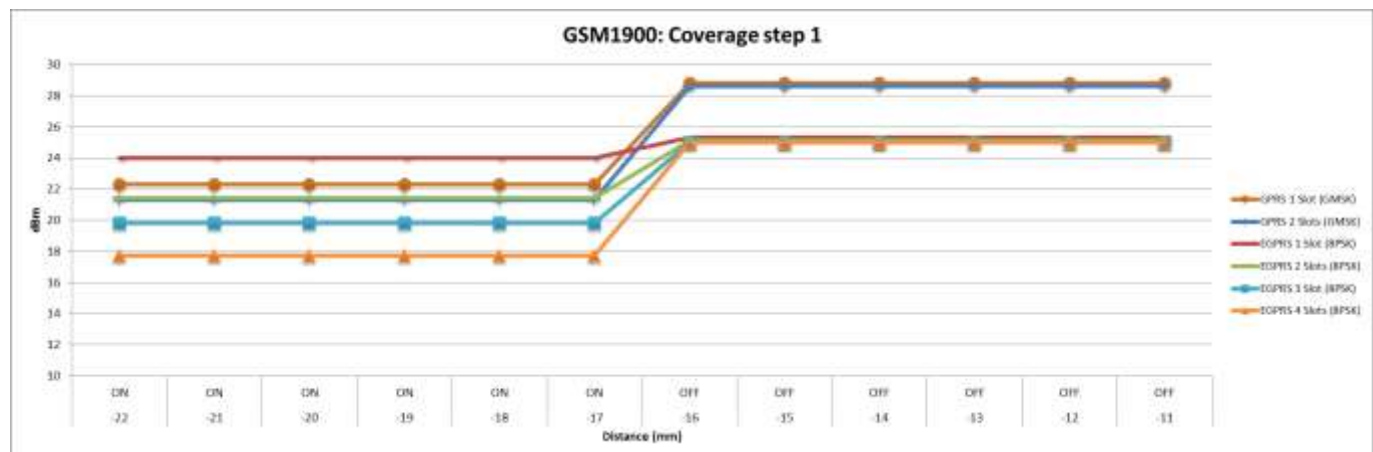


7.8.2. DUT moving away from the Phantom

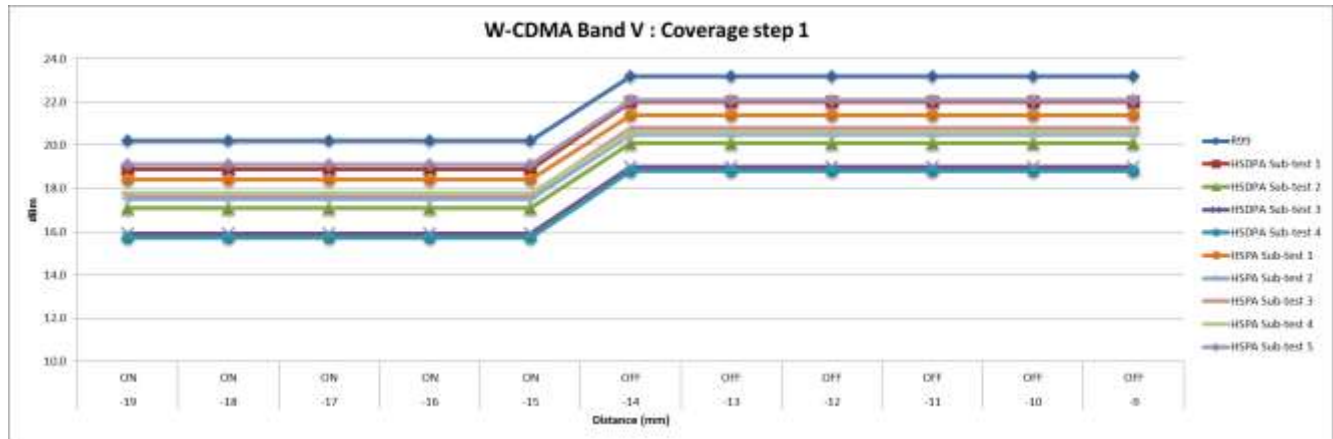
Coverage step 1 (GSM850)												
Distance (mm):	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	29.1	29.1	29.1	29.1	29.1	29.1	31.4	31.4	31.4	31.4	31.4	31.4
GPRS 2 Slots (GMSK)	26.3	26.3	26.3	26.3	26.3	26.3	31.5	31.5	31.5	31.5	31.5	31.5
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	24.4	24.4	24.4	24.4	24.4	24.4	25.5	25.5	25.5	25.5	25.5	25.5
EGPRS 4 Slots (8PSK)	23.2	23.2	23.2	23.2	23.2	23.2	25.8	25.8	25.8	25.8	25.8	25.8



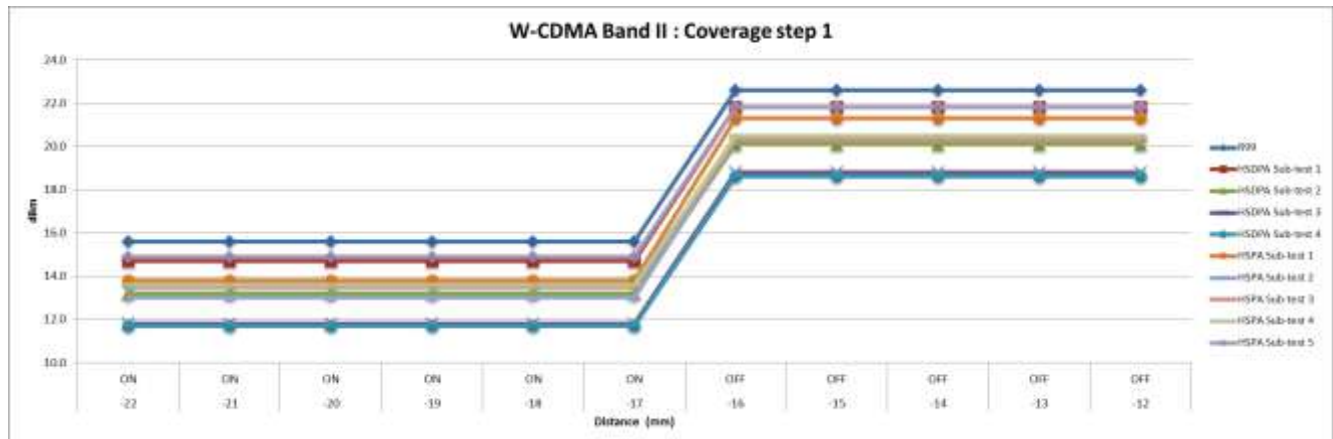
Coverage step 1, GSM 1900												
Distance (mm):	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	22.30	22.30	22.30	22.30	22.30	22.30	28.80	28.80	28.80	28.80	28.80	28.80
GPRS 2 Slots (GMSK)	21.30	21.30	21.30	21.30	21.30	21.30	28.60	28.60	28.60	28.60	28.60	28.60
EGPRS 1 Slot (8PSK)	24.00	24.00	24.00	24.00	24.00	24.00	25.30	25.30	25.30	25.30	25.30	25.30
EGPRS 2 Slots (8PSK)	21.40	21.40	21.40	21.40	21.40	21.40	25.10	25.10	25.10	25.10	25.10	25.10
EGPRS 3 Slot (8PSK)	19.80	19.80	19.80	19.80	19.80	19.80	25.00	25.00	25.00	25.00	25.00	25.00
EGPRS 4 Slots (8PSK)	17.70	17.70	17.70	17.70	17.70	17.70	25.00	25.00	25.00	25.00	25.00	25.00



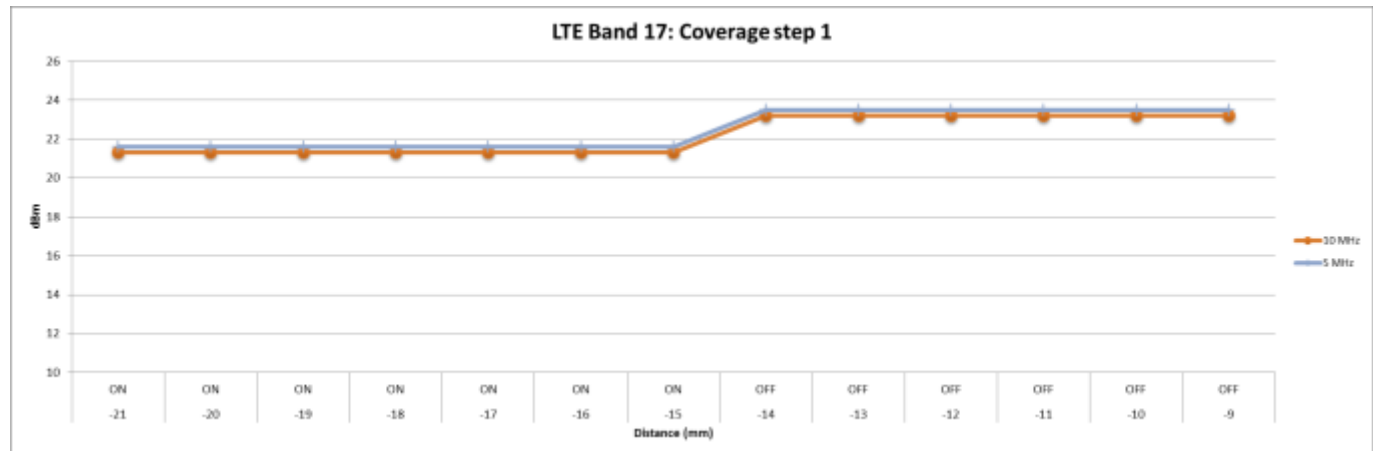
Coverage step 1, W-CDMA Band V											
Distance (mm):	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
R99	20.2	20.2	20.2	20.2	20.2	23.2	23.2	23.2	23.2	23.2	23.2
HSDPA Sub-test 1	18.9	18.9	18.9	18.9	18.9	22.0	22.0	22.0	22.0	22.0	22.0
HSDPA Sub-test 2	17.1	17.1	17.1	17.1	17.1	20.1	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	15.9	15.9	15.9	15.9	15.9	19.0	19.0	19.0	19.0	19.0	19.0
HSDPA Sub-test 4	15.7	15.7	15.7	15.7	15.7	18.8	18.8	18.8	18.8	18.8	18.8
HSPA Sub-test 1	18.4	18.4	18.4	18.4	18.4	21.4	21.4	21.4	21.4	21.4	21.4
HSPA Sub-test 2	17.5	17.5	17.5	17.5	17.5	20.5	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 3	17.7	17.7	17.7	17.7	17.7	20.8	20.8	20.8	20.8	20.8	20.8
HSPA Sub-test 4	17.8	17.8	17.8	17.8	17.8	20.6	20.6	20.6	20.6	20.6	20.6
HSPA Sub-test 5	19.1	19.1	19.1	19.1	19.1	22.1	22.1	22.1	22.1	22.1	22.1



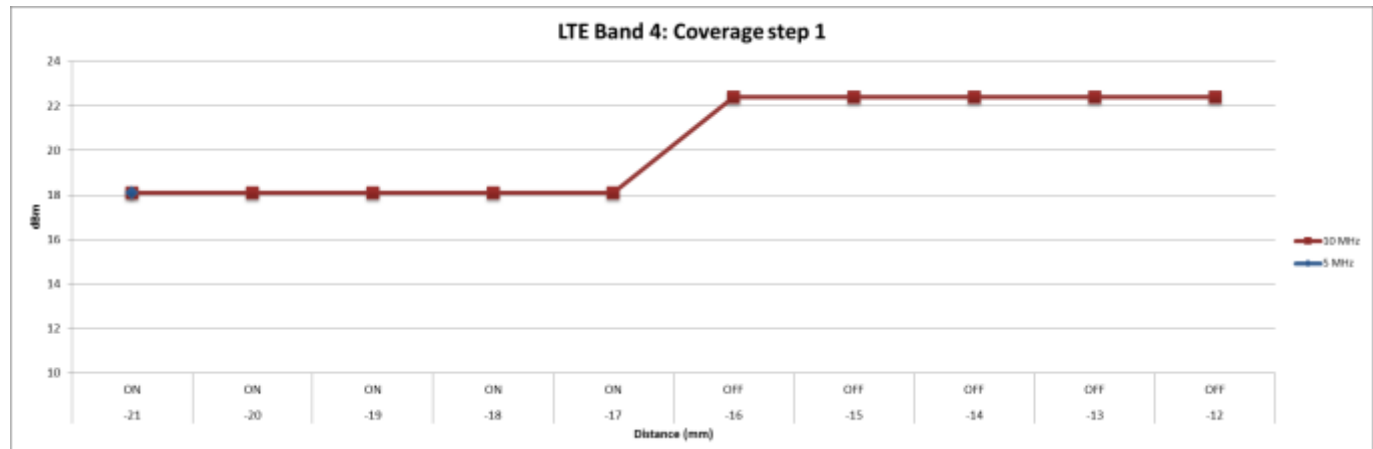
Coverage step 1, W-CDMA Band II											
Distance (mm):	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
R99	15.6	15.6	15.6	15.6	15.6	15.6	22.6	22.6	22.6	22.6	22.6
HSDPA Sub-test 1	14.7	14.7	14.7	14.7	14.7	14.7	21.8	21.8	21.8	21.8	21.8
HSDPA Sub-test 2	13.2	13.2	13.2	13.2	13.2	13.2	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	11.8	11.8	11.8	11.8	11.8	11.8	18.8	18.8	18.8	18.8	18.8
HSDPA Sub-test 4	11.7	11.7	11.7	11.7	11.7	11.7	18.6	18.6	18.6	18.6	18.6
HSPA Sub-test 1	13.8	13.8	13.8	13.8	13.8	13.8	21.3	21.3	21.3	21.3	21.3
HSPA Sub-test 2	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 3	13.5	13.5	13.5	13.5	13.5	13.5	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 4	13.6	13.6	13.6	13.6	13.6	13.6	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 5	14.9	14.9	14.9	14.9	14.9	14.9	21.8	21.8	21.8	21.8	21.8



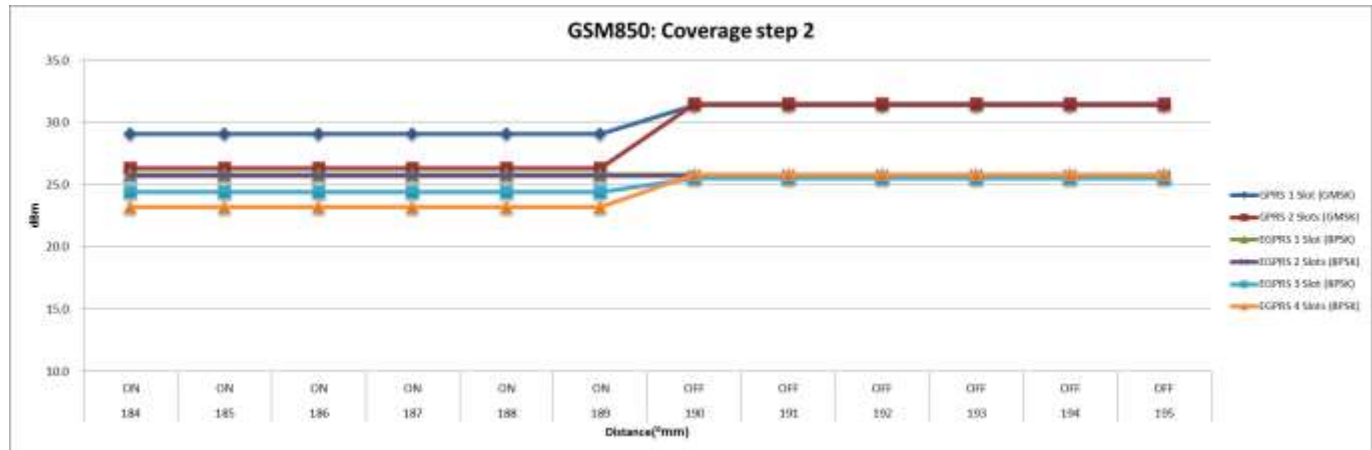
Coverage step 1, LTE Band 17													
Distance (mm):	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
10 MHz	21.3	21.3	21.3	21.3	21.3	21.3	21.3	23.2	23.2	23.2	23.2	23.2	23.2
5 MHz	21.6	21.6	21.6	21.6	21.6	21.6	21.6	23.5	23.5	23.5	23.5	23.5	23.5



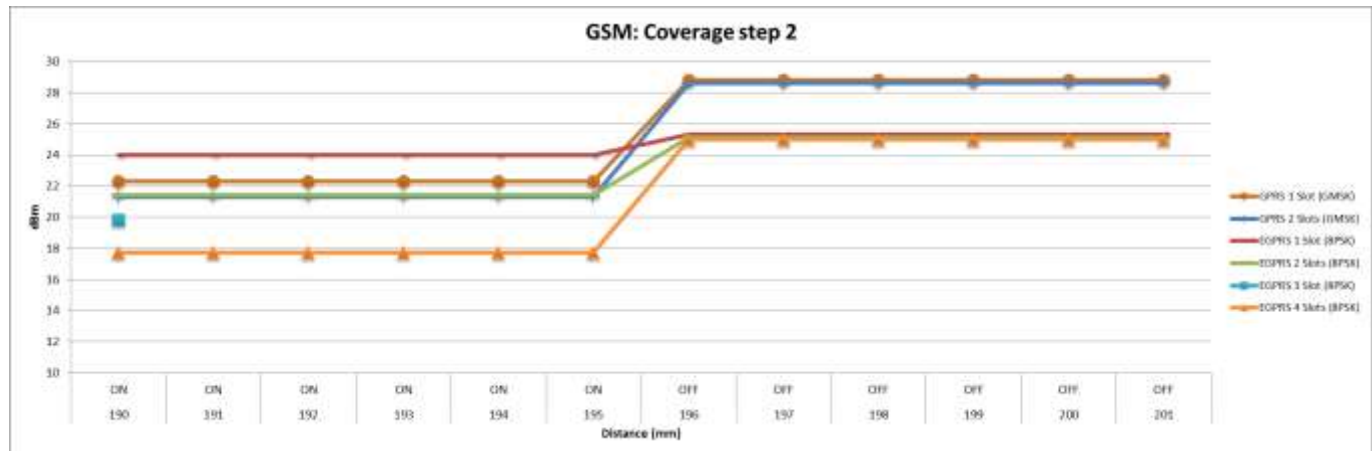
Coverage step 1, LTE Band 4											
Distance (mm):	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
10 MHz	18.10	18.10	18.10	18.10	18.10	22.40	22.40	22.40	22.40	22.40	
5 MHz	18.10	18.10	18.10	18.10	18.10	22.50	22.50	22.50	22.50	22.50	



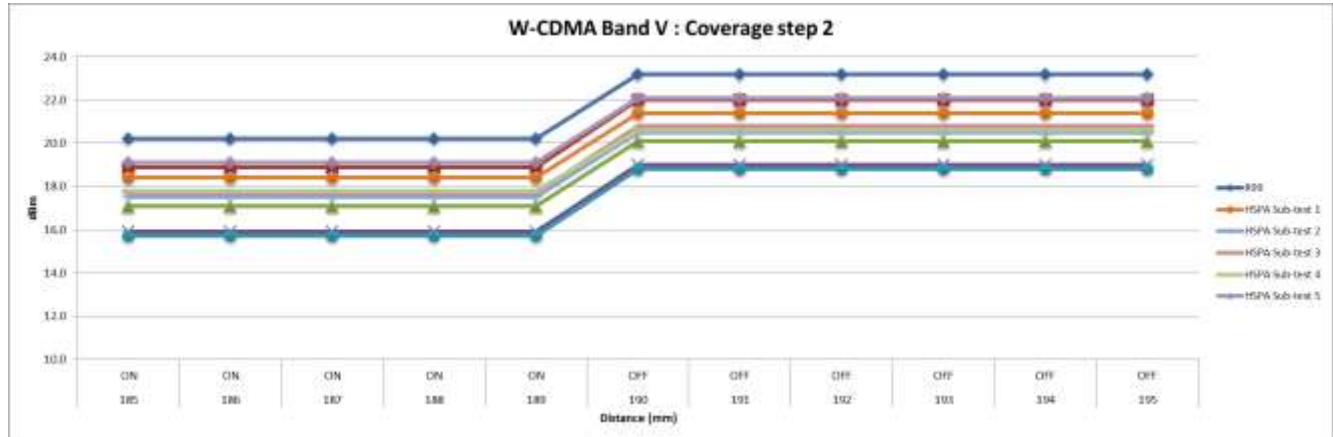
Coverage step 2(GSM850)												
Distance (mm):	184	185	186	187	188	189	190	191	192	193	194	195
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	29.1	29.1	29.1	29.1	29.1	29.1	31.4	31.4	31.4	31.4	31.4	31.4
GPRS 2 Slots (GMSK)	26.3	26.3	26.3	26.3	26.3	26.3	31.5	31.5	31.5	31.5	31.5	31.5
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	24.4	24.4	24.4	24.4	24.4	24.4	25.5	25.5	25.5	25.5	25.5	25.5
EGPRS 4 Slots (8PSK)	23.2	23.2	23.2	23.2	23.2	23.2	25.8	25.8	25.8	25.8	25.8	25.8



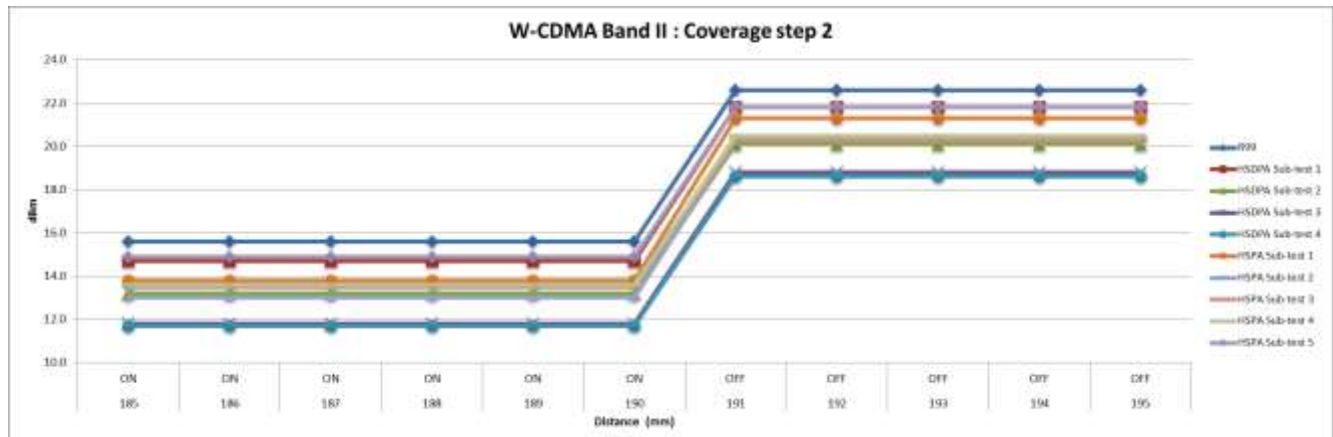
Coverage step 2 GSM 1900												
Distance (mm):	190	191	192	193	194	195	196	197	198	199	200	201
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	22.30	22.30	22.30	22.30	22.30	22.30	28.80	28.80	28.80	28.80	28.80	28.80
GPRS 2 Slots (GMSK)	21.30	21.30	21.30	21.30	21.30	21.30	28.60	28.60	28.60	28.60	28.60	28.60
EGPRS 1 Slot (8PSK)	24.00	24.00	24.00	24.00	24.00	24.00	25.30	25.30	25.30	25.30	25.30	25.30
EGPRS 2 Slots (8PSK)	21.40	21.40	21.40	21.40	21.40	21.40	25.10	25.10	25.10	25.10	25.10	25.10
EGPRS 3 Slot (8PSK)	19.80	19.80	19.80	19.80	19.80	19.80	25.00	25.00	25.00	25.00	25.00	25.00
EGPRS 4 Slots (8PSK)	17.70	17.70	17.70	17.70	17.70	17.70	25.00	25.00	25.00	25.00	25.00	25.00



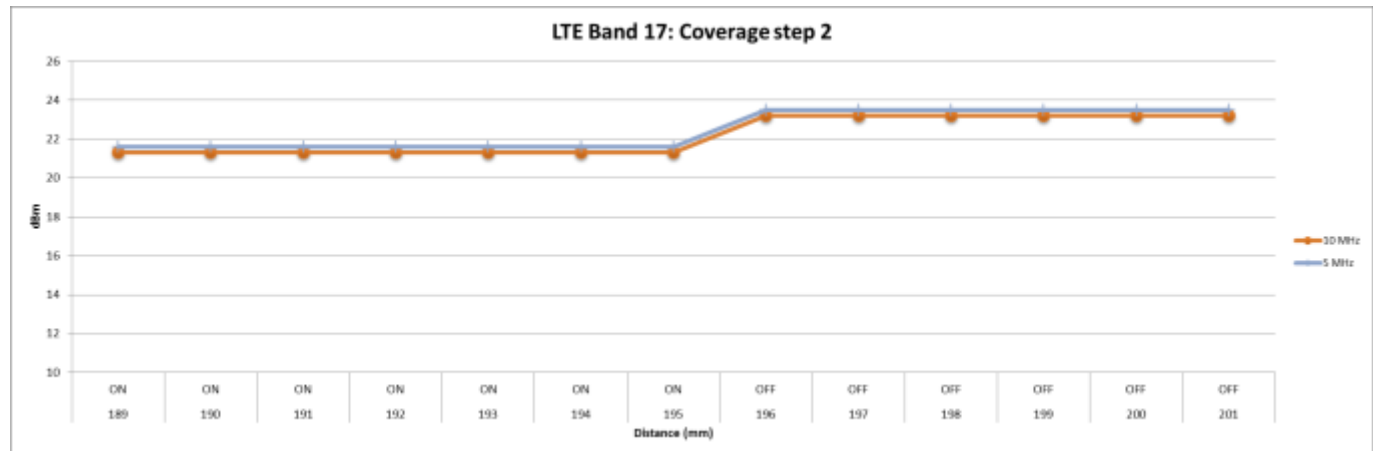
Coverage step 2, W-CDMA Band V											
Distance (mm):	185	186	187	188	189	190	191	192	193	194	195
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
R99	20.2	20.2	20.2	20.2	20.2	23.2	23.2	23.2	23.2	23.2	23.2
HSDPA Sub-test 1	18.9	18.9	18.9	18.9	18.9	22.0	22.0	22.0	22.0	22.0	22.0
HSDPA Sub-test 2	17.1	17.1	17.1	17.1	17.1	20.1	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	15.9	15.9	15.9	15.9	15.9	19.0	19.0	19.0	19.0	19.0	19.0
HSDPA Sub-test 4	15.7	15.7	15.7	15.7	15.7	18.8	18.8	18.8	18.8	18.8	18.8
HSPA Sub-test 1	18.4	18.4	18.4	18.4	18.4	21.4	21.4	21.4	21.4	21.4	21.4
HSPA Sub-test 2	17.5	17.5	17.5	17.5	17.5	20.5	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 3	17.7	17.7	17.7	17.7	17.7	20.8	20.8	20.8	20.8	20.8	20.8
HSPA Sub-test 4	17.8	17.8	17.8	17.8	17.8	20.6	20.6	20.6	20.6	20.6	20.6
HSPA Sub-test 5	19.1	19.1	19.1	19.1	19.1	22.1	22.1	22.1	22.1	22.1	22.1



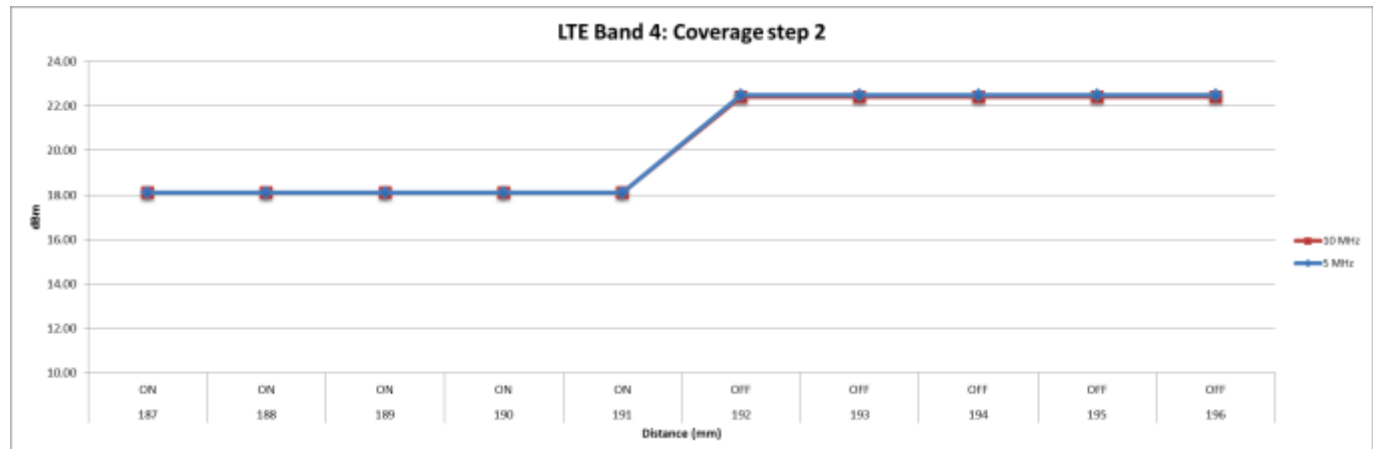
Coverage step 2, W-CDMA Band II											
Distance (mm):	185	186	187	188	189	190	191	192	193	194	195
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
R99	15.6	15.6	15.6	15.6	15.6	15.6	22.6	22.6	22.6	22.6	22.6
HSDPA Sub-test 1	14.7	14.7	14.7	14.7	14.7	14.7	21.8	21.8	21.8	21.8	21.8
HSDPA Sub-test 2	13.2	13.2	13.2	13.2	13.2	13.2	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	11.8	11.8	11.8	11.8	11.8	11.8	18.8	18.8	18.8	18.8	18.8
HSDPA Sub-test 4	11.7	11.7	11.7	11.7	11.7	11.7	18.6	18.6	18.6	18.6	18.6
HSPA Sub-test 1	13.8	13.8	13.8	13.8	13.8	13.8	21.3	21.3	21.3	21.3	21.3
HSPA Sub-test 2	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 3	13.5	13.5	13.5	13.5	13.5	13.5	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 4	13.6	13.6	13.6	13.6	13.6	13.6	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 5	14.9	14.9	14.9	14.9	14.9	14.9	21.8	21.8	21.8	21.8	21.8



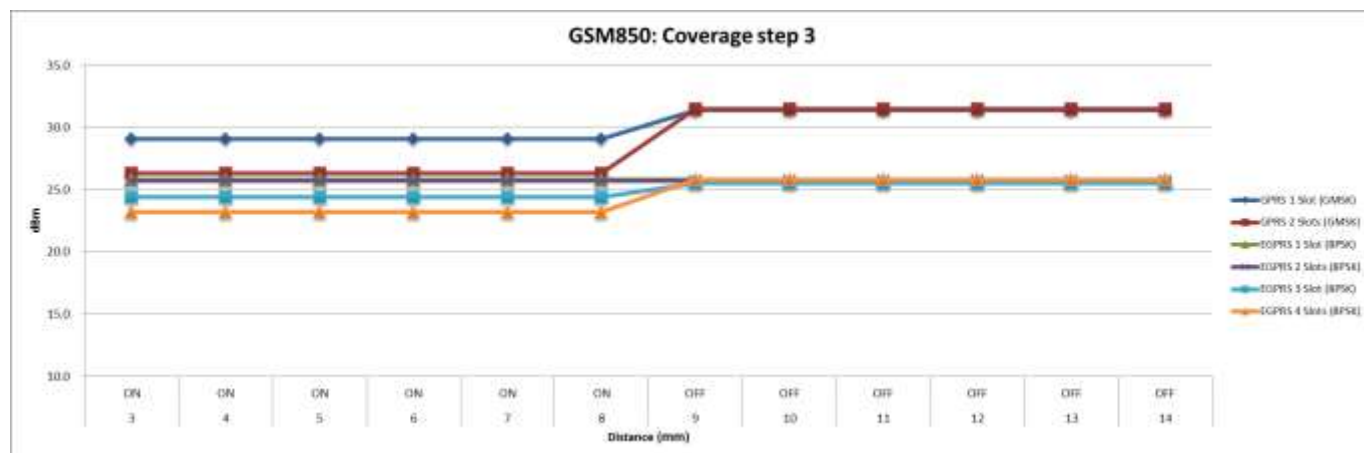
Coverage step 2, LTE Band 17													
Distance (mm):	189	190	191	192	193	194	195	196	197	198	199	200	201
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
10 MHz	21.3	21.3	21.3	21.3	21.3	21.3	21.3	23.2	23.2	23.2	23.2	23.2	23.2
5 MHz	21.6	21.6	21.6	21.6	21.6	21.6	21.6	23.5	23.5	23.5	23.5	23.5	23.5



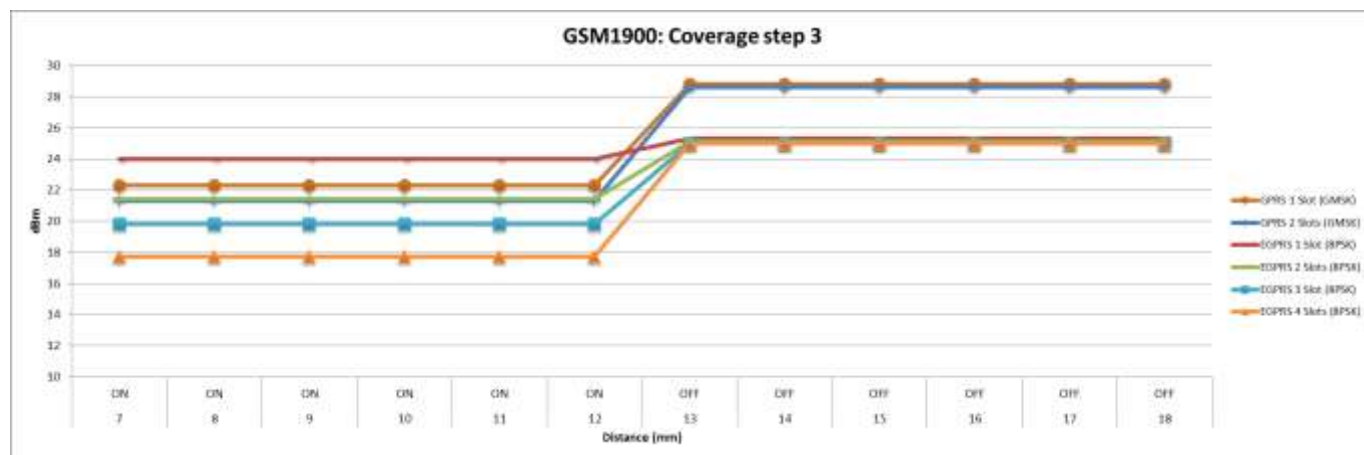
Coverage step 2, LTE Band 4											
Distance (mm):	187	188	189	190	191	192	193	194	195	196	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
10 MHz	18.10	18.10	18.10	18.10	18.10	22.40	22.40	22.40	22.40	22.40	
5 MHz	18.10	18.10	18.10	18.10	18.10	22.50	22.50	22.50	22.50	22.50	



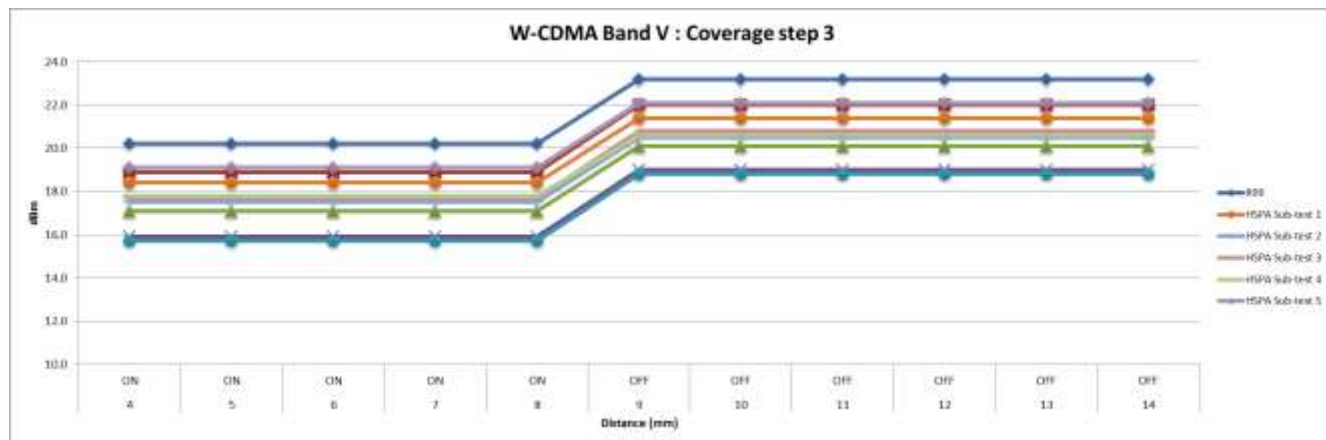
Coverage step 3 (GSM850)													
Distance (mm):	3	4	5	6	7	8	9	10	11	12	13	14	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
GPRS 1 Slot (GMSK)	29.1	29.1	29.1	29.1	29.1	29.1	31.4	31.4	31.4	31.4	31.4	31.4	
GPRS 2 Slots (GMSK)	26.3	26.3	26.3	26.3	26.3	26.3	31.5	31.5	31.5	31.5	31.5	31.5	
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	
EGPRS 3 Slot (8PSK)	24.4	24.4	24.4	24.4	24.4	24.4	25.5	25.5	25.5	25.5	25.5	25.5	
EGPRS 4 Slots (8PSK)	23.2	23.2	23.2	23.2	23.2	23.2	25.8	25.8	25.8	25.8	25.8	25.8	



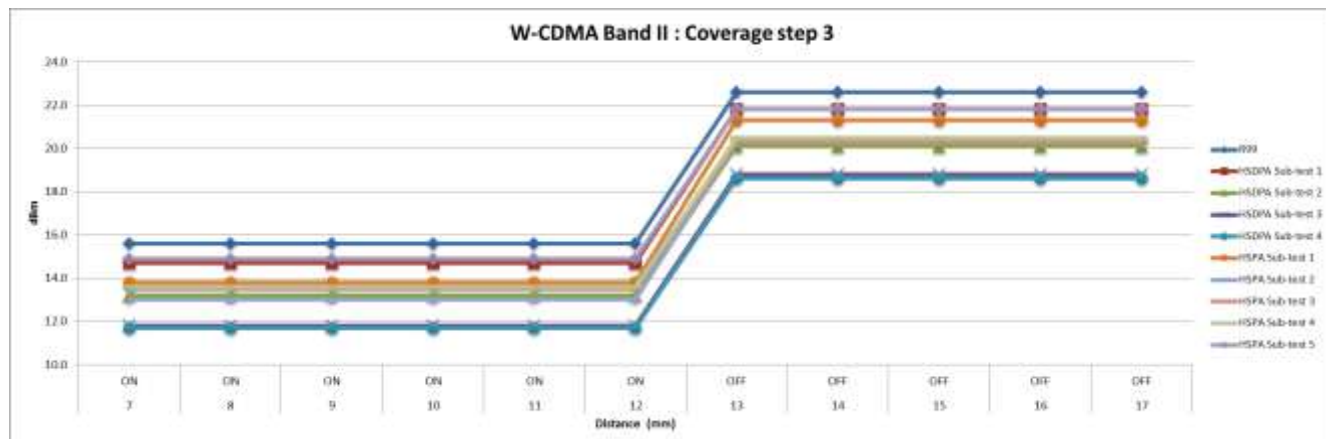
Coverage step 3 (GSM 1900)													
Distance (mm):	7	8	9	10	11	12	13	14	15	16	17	18	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
GPRS 1 Slot (GMSK)	22.30	22.30	22.30	22.30	22.30	22.30	28.80	28.80	28.80	28.80	28.80	28.80	
GPRS 2 Slots (GMSK)	21.30	21.30	21.30	21.30	21.30	21.30	28.60	28.60	28.60	28.60	28.60	28.60	
EGPRS 1 Slot (8PSK)	24.00	24.00	24.00	24.00	24.00	24.00	25.30	25.30	25.30	25.30	25.30	25.30	
EGPRS 2 Slots (8PSK)	21.40	21.40	21.40	21.40	21.40	21.40	25.10	25.10	25.10	25.10	25.10	25.10	
EGPRS 3 Slot (8PSK)	19.80	19.80	19.80	19.80	19.80	19.80	25.00	25.00	25.00	25.00	25.00	25.00	
EGPRS 4 Slots (8PSK)	17.70	17.70	17.70	17.70	17.70	17.70	25.00	25.00	25.00	25.00	25.00	25.00	



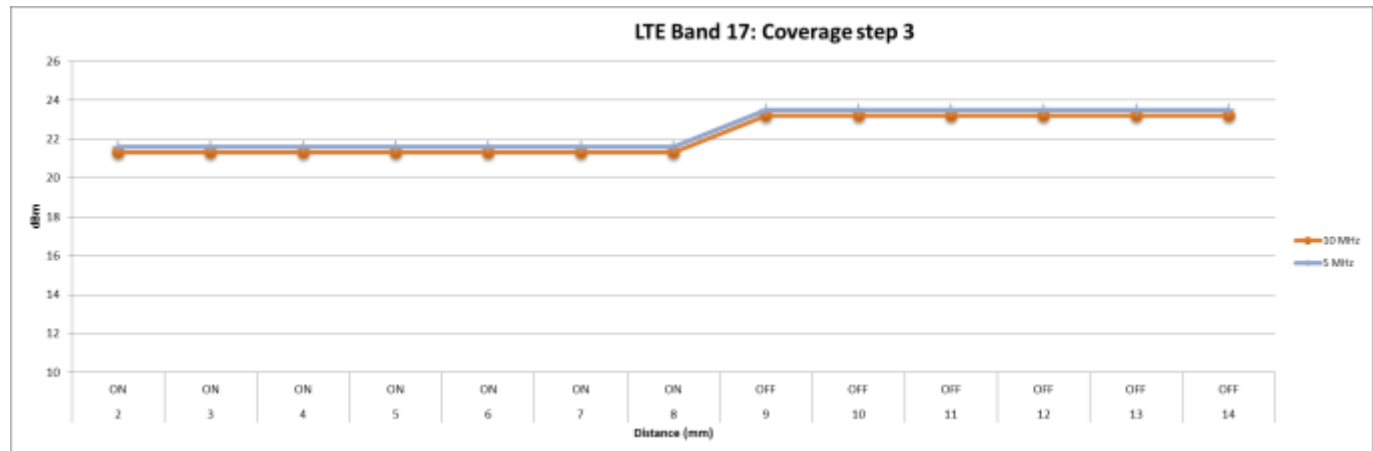
Coverage step 3 W-CDMA Band V											
Distance (mm):	4	5	6	7	8	9	10	11	12	13	14
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
R99	20.2	20.2	20.2	20.2	20.2	23.2	23.2	23.2	23.2	23.2	23.2
HSDPA Sub-test 1	18.9	18.9	18.9	18.9	18.9	22.0	22.0	22.0	22.0	22.0	22.0
HSDPA Sub-test 2	17.1	17.1	17.1	17.1	17.1	20.1	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	15.9	15.9	15.9	15.9	15.9	19.0	19.0	19.0	19.0	19.0	19.0
HSDPA Sub-test 4	15.7	15.7	15.7	15.7	15.7	18.8	18.8	18.8	18.8	18.8	18.8
HSPA Sub-test 1	18.4	18.4	18.4	18.4	18.4	21.4	21.4	21.4	21.4	21.4	21.4
HSPA Sub-test 2	17.5	17.5	17.5	17.5	17.5	20.5	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 3	17.7	17.7	17.7	17.7	17.7	20.8	20.8	20.8	20.8	20.8	20.8
HSPA Sub-test 4	17.8	17.8	17.8	17.8	17.8	20.6	20.6	20.6	20.6	20.6	20.6
HSPA Sub-test 5	19.1	19.1	19.1	19.1	19.1	22.1	22.1	22.1	22.1	22.1	22.1



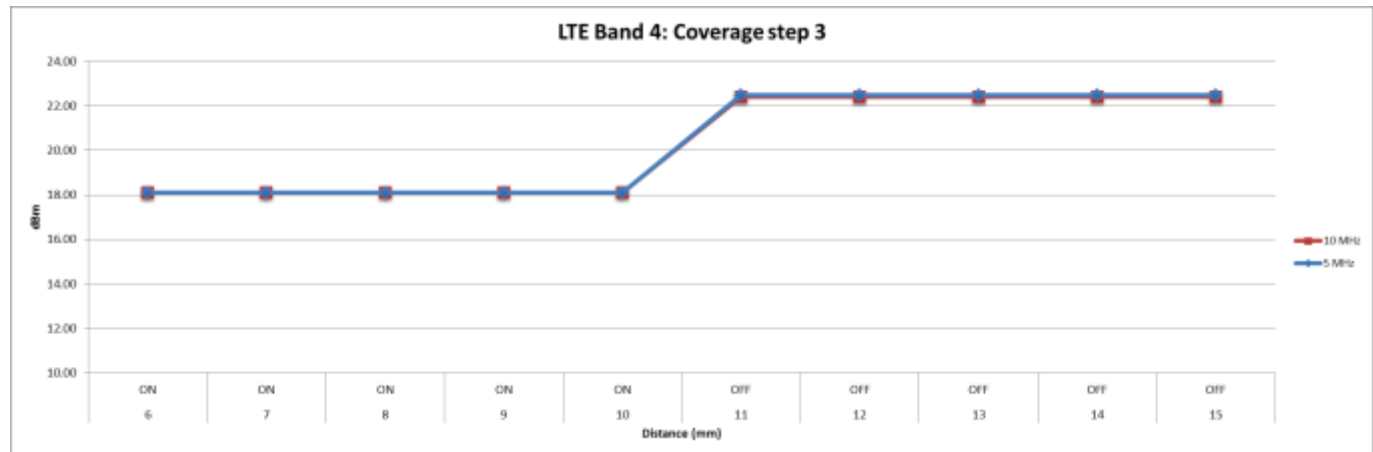
Coverage step 3 W-CDMA Band II											
Distance (mm):	7	8	9	10	11	12	13	14	15	16	17
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
R99	15.6	15.6	15.6	15.6	15.6	15.6	22.6	22.6	22.6	22.6	22.6
HSDPA Sub-test 1	14.7	14.7	14.7	14.7	14.7	14.7	21.8	21.8	21.8	21.8	21.8
HSDPA Sub-test 2	13.2	13.2	13.2	13.2	13.2	13.2	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	11.8	11.8	11.8	11.8	11.8	11.8	18.8	18.8	18.8	18.8	18.8
HSDPA Sub-test 4	11.7	11.7	11.7	11.7	11.7	11.7	18.6	18.6	18.6	18.6	18.6
HSPA Sub-test 1	13.8	13.8	13.8	13.8	13.8	13.8	21.3	21.3	21.3	21.3	21.3
HSPA Sub-test 2	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 3	13.5	13.5	13.5	13.5	13.5	13.5	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 4	13.6	13.6	13.6	13.6	13.6	13.6	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 5	14.9	14.9	14.9	14.9	14.9	14.9	21.8	21.8	21.8	21.8	21.8



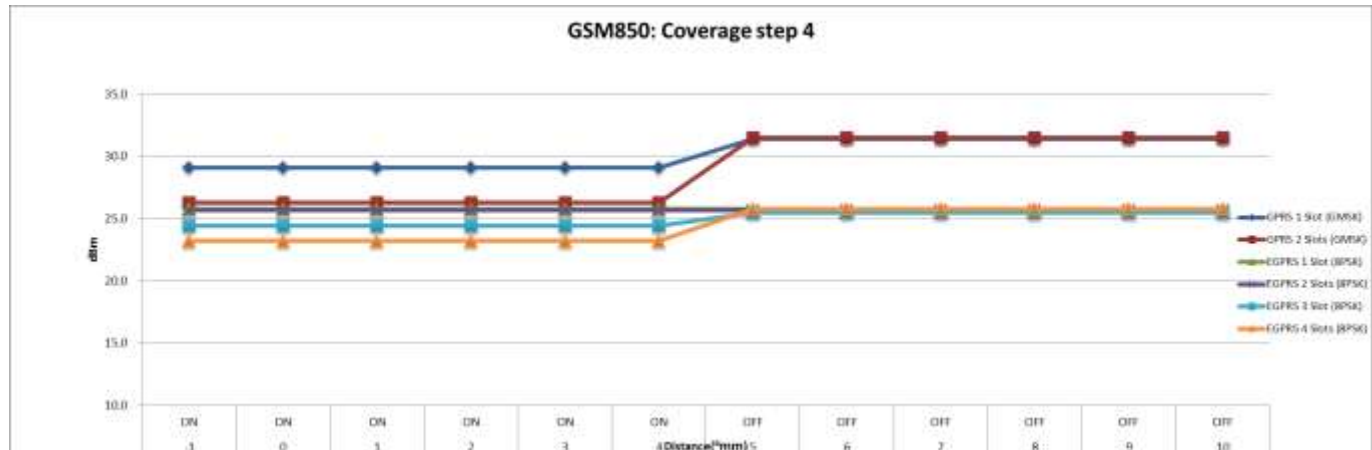
Coverage step 3, LTE Band 17													
Distance (mm):	2	3	4	5	6	7	8	9	10	11	12	13	14
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
10 MHz	21.3	21.3	21.3	21.3	21.3	21.3	21.3	23.2	23.2	23.2	23.2	23.2	23.2
5 MHz	21.6	21.6	21.6	21.6	21.6	21.6	21.6	23.5	23.5	23.5	23.5	23.5	23.5



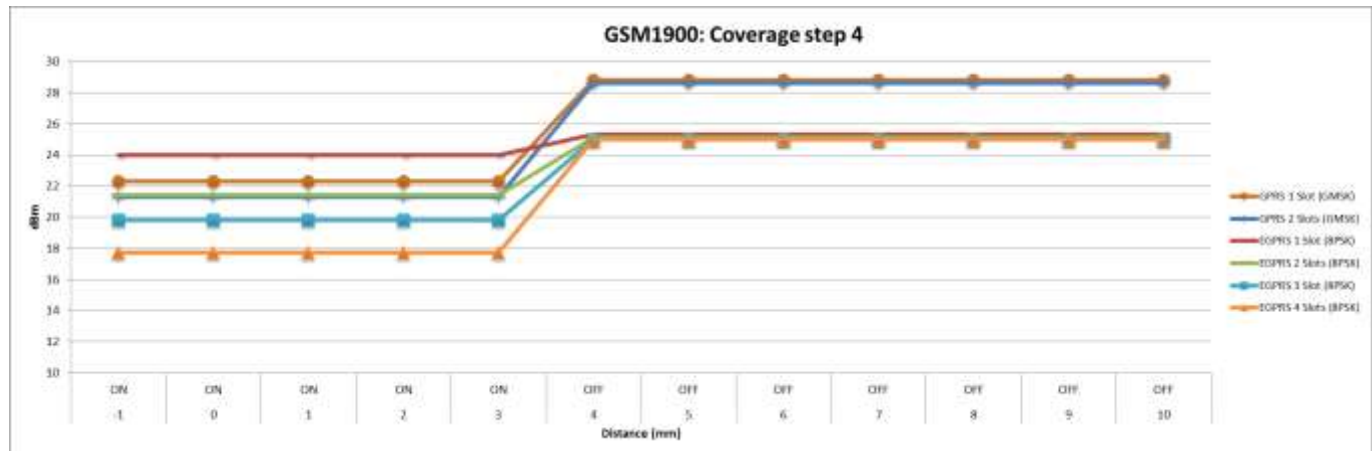
Coverage step 3, LTE Band 4											
Distance (mm):	6	7	8	9	10	11	12	13	14	15	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
10 MHz	18.10	18.10	18.10	18.10	18.10	22.40	22.40	22.40	22.40	22.40	
5 MHz	18.10	18.10	18.10	18.10	18.10	22.50	22.50	22.50	22.50	22.50	



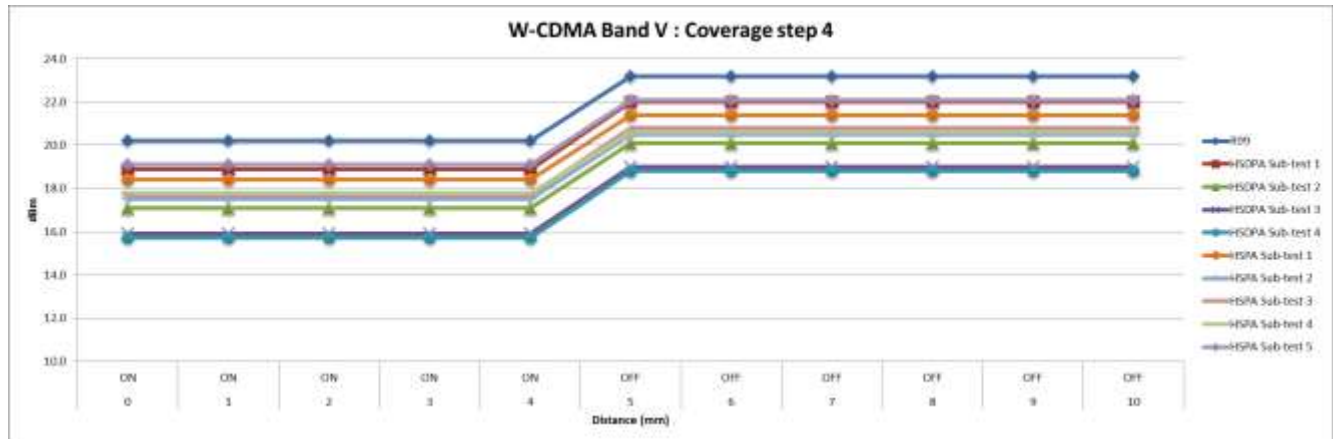
Coverage (GSM850)												
Distance (mm):	-1	0	1	2	3	4	5	6	7	8	9	10
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	29.1	29.1	29.1	29.1	29.1	29.1	31.4	31.4	31.4	31.4	31.4	31.4
GPRS 2 Slots (GMSK)	26.3	26.3	26.3	26.3	26.3	26.3	31.5	31.5	31.5	31.5	31.5	31.5
EGPRS 1 Slot (8PSK)	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8
EGPRS 2 Slots (8PSK)	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7
EGPRS 3 Slot (8PSK)	24.4	24.4	24.4	24.4	24.4	24.4	25.5	25.5	25.5	25.5	25.5	25.5
EGPRS 4 Slots (8PSK)	23.2	23.2	23.2	23.2	23.2	23.2	25.8	25.8	25.8	25.8	25.8	25.8



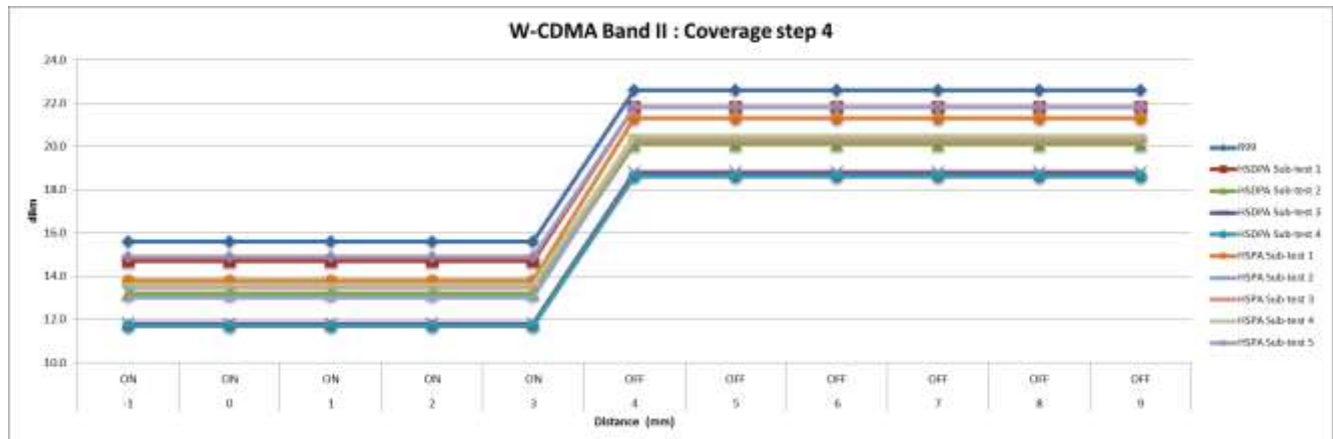
Edge 1, GSM1900												
Distance (mm):	-1	0	1	2	3	4	5	6	7	8	9	10
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
GPRS 1 Slot (GMSK)	22.30	22.30	22.30	22.30	22.30	28.80	28.80	28.80	28.80	28.80	28.80	28.80
GPRS 2 Slots (GMSK)	21.30	21.30	21.30	21.30	21.30	28.60	28.60	28.60	28.60	28.60	28.60	28.60
EGPRS 1 Slot (8PSK)	24.00	24.00	24.00	24.00	24.00	25.30	25.30	25.30	25.30	25.30	25.30	25.30
EGPRS 2 Slots (8PSK)	21.40	21.40	21.40	21.40	21.40	25.10	25.10	25.10	25.10	25.10	25.10	25.10
EGPRS 3 Slot (8PSK)	19.80	19.80	19.80	19.80	19.80	25.00	25.00	25.00	25.00	25.00	25.00	25.00
EGPRS 4 Slots (8PSK)	17.70	17.70	17.70	17.70	17.70	25.00	25.00	25.00	25.00	25.00	25.00	25.00



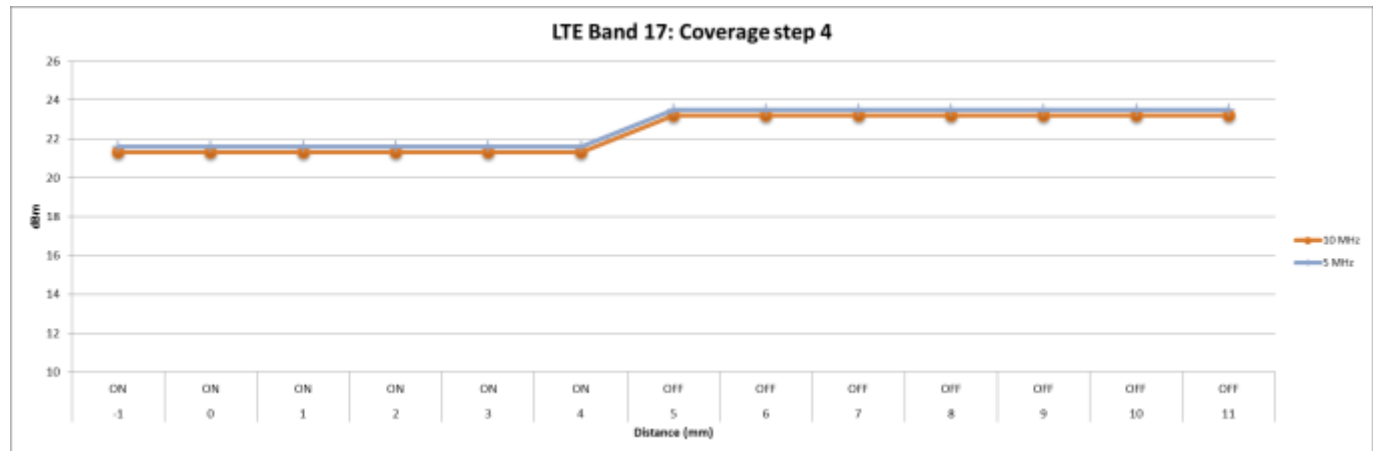
Coverage step 4 , W-CDMA Band V											
Distance (mm):	0	1	2	3	4	5	6	7	8	9	10
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
R99	20.2	20.2	20.2	20.2	20.2	23.2	23.2	23.2	23.2	23.2	23.2
HSDPA Sub-test 1	18.9	18.9	18.9	18.9	18.9	22.0	22.0	22.0	22.0	22.0	22.0
HSDPA Sub-test 2	17.1	17.1	17.1	17.1	17.1	20.1	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	15.9	15.9	15.9	15.9	15.9	19.0	19.0	19.0	19.0	19.0	19.0
HSDPA Sub-test 4	15.7	15.7	15.7	15.7	15.7	18.8	18.8	18.8	18.8	18.8	18.8
HSPA Sub-test 1	18.4	18.4	18.4	18.4	18.4	21.4	21.4	21.4	21.4	21.4	21.4
HSPA Sub-test 2	17.5	17.5	17.5	17.5	17.5	20.5	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 3	17.7	17.7	17.7	17.7	17.7	20.8	20.8	20.8	20.8	20.8	20.8
HSPA Sub-test 4	17.8	17.8	17.8	17.8	17.8	20.6	20.6	20.6	20.6	20.6	20.6
HSPA Sub-test 5	19.1	19.1	19.1	19.1	19.1	22.1	22.1	22.1	22.1	22.1	22.1



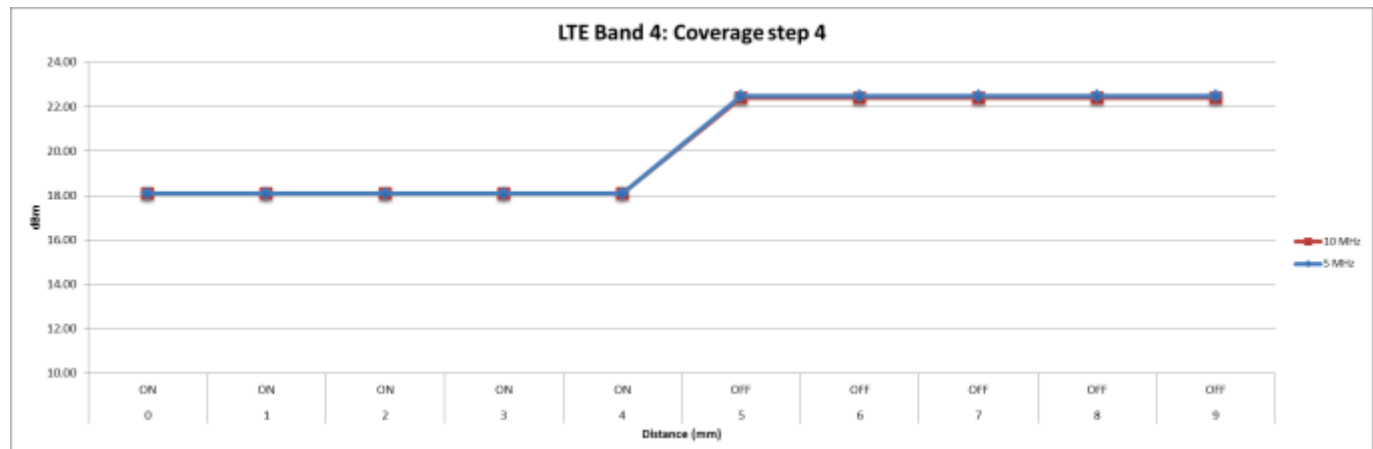
Coverage step 4 , W-CDMA Band II											
Distance (mm):	-1	0	1	2	3	4	5	6	7	8	9
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
R99	15.6	15.6	15.6	15.6	15.6	22.6	22.6	22.6	22.6	22.6	22.6
HSDPA Sub-test 1	14.7	14.7	14.7	14.7	14.7	21.8	21.8	21.8	21.8	21.8	21.8
HSDPA Sub-test 2	13.2	13.2	13.2	13.2	13.2	20.1	20.1	20.1	20.1	20.1	20.1
HSDPA Sub-test 3	11.8	11.8	11.8	11.8	11.8	18.8	18.8	18.8	18.8	18.8	18.8
HSDPA Sub-test 4	11.7	11.7	11.7	11.7	11.7	18.6	18.6	18.6	18.6	18.6	18.6
HSPA Sub-test 1	13.8	13.8	13.8	13.8	13.8	21.3	21.3	21.3	21.3	21.3	21.3
HSPA Sub-test 2	13.0	13.0	13.0	13.0	13.0	20.3	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 3	13.5	13.5	13.5	13.5	13.5	20.3	20.3	20.3	20.3	20.3	20.3
HSPA Sub-test 4	13.6	13.6	13.6	13.6	13.6	20.5	20.5	20.5	20.5	20.5	20.5
HSPA Sub-test 5	14.9	14.9	14.9	14.9	14.9	21.8	21.8	21.8	21.8	21.8	21.8



Coverage step 4, LTE Band 17													
Distance (mm):	-1	0	1	2	3	4	5	6	7	8	9	10	11
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
10 MHz	21.3	21.3	21.3	21.3	21.3	21.3	23.2	23.2	23.2	23.2	23.2	23.2	23.2
5 MHz	21.6	21.6	21.6	21.6	21.6	21.6	23.5	23.5	23.5	23.5	23.5	23.5	23.5



Coverage step 4, LTE Band 4											
Distance (mm):	0	1	2	3	4	5	6	7	8	9	
Proximity sensor with reduced power activation:	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
10 MHz	18.10	18.10	18.10	18.10	18.10	22.40	22.40	22.40	22.40	22.40	
5 MHz	18.10	18.10	18.10	18.10	18.10	22.50	22.50	22.50	22.50	22.50	



8. Summary of Test Configurations

Refer to Section 17 “Antenna Dimensions and Separation Distances” for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

8.1. Body Exposure Test Configurations for WWAN

Laptop Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	18 mm	No	The Main Antenna does not require testing in this position when operating in Laptop Mode as the same test position for Tablet Mode is far more conservative.
Top Edge of Display Screen against Phantom	2.3 mm	No	The Main Antenna does not require testing in this position as it is accounted for by the Edge 1 test position for Tablet Mode.

Tablet Mode

Test Configurations	Antenna-to-edge/surface	SAR Required	Note
Rear	18 mm	Yes	
Edge 1	2.3 mm	Yes	A proximity sensor is incorporated at this edge that, when triggered, will reduce the transmit power of the WWAN transmitter. As such, two separate sets of evaluations are required for this test position: one with the device operating at a reduced power level and in contact with the phantom, and one with the device operating at full power level and at 16 mm- 1 mm less than the closest distance away from an object the device will operate at full power- away from the phantom
Edge 2	200.6 mm	No	This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2)
Edge 3	210.9 mm	No	This is not the most conservative antenna-to-user distance at edge mode. According to KDB 447498 4) b) ii) (2)
Edge 4	24 mm	Yes	

Notes:

- Edge 1= Top Edge
- Edge 2= Right Edge
- Edge 3= Bottom Edge
- Edge 4= Left Edge

9. RF Output Power Measurement

As this device implements proximity sensor-triggered power reduction for SAR compliance, conducted output power was measured for the two different operating power levels. The following serves to clarify and establish the relation between power level and proximity sensor status:

- Full Power = Proximity Sensor Off
- Reduced Power = Proximity Sensor On

Each operating power level has its own set of target power and tune-up limit, and the scaling of SAR values is applied according to the corresponding target for the given operating power level

9.1. GSM850

Target Power for GSM850

GSM850	Full Power	Reduced Power
GPRS 1 Slot (GMSK)	32.0 dBm	28.3 dBm
GPRS 2 Slots (GMSK)	32.0 dBm	25.3 dBm
EGPRS 1 Slot (8PSK)	26.0 dBm	24.8 dBm
EGPRS 2 Slots (8PSK)	26.0 dBm	24.8 dBm
EGPRS 3 Slots (8PSK)	26.0 dBm	23.8 dBm
EGPRS 4 Slots (8PSK)	26.0 dBm	22.8 dBm

Tune-Up Tolerance: +1.0 dB/- 1.0 dB

Full Power

GPRS (GMSK) - Coding Scheme: CS1										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
850	128	824.2	31.1	22.1	31.2	25.2				
	190	836.6	31.1	22.1	31.2	25.1				
	251	848.8	31.4	22.4	31.5	25.4				
EGPRS (8PSK) - Coding Scheme: MCS5										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
850	128	824.2	25.7	16.7	25.6	19.6	25.3	21.0	25.6	22.6
	190	836.6	25.7	16.7	25.6	19.6	25.5	21.2	25.8	22.8
	251	848.8	25.8	16.7	25.7	19.7	25.5	21.2	25.8	22.8

Reduced Power

GPRS (GMSK) - Coding Scheme: CS1										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
850	128	824.2	29.1	20.0	26.3	20.2				
	190	836.6	29.0	20.0	26.3	20.3				
	251	848.8	29.0	20.0	26.2	20.2				
EGPRS (8PSK) - Coding Scheme: MCS5										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
850	128	824.2	25.7	16.7	25.6	19.6	24.4	20.1	22.9	19.9
	190	836.6	25.7	16.7	25.6	19.6	24.0	19.8	23.2	20.2
	251	848.8	25.8	16.7	25.7	19.7	24.2	19.9	23.1	20.1

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Body: GMSK (GPRS) mode with 2 time slots, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) Mode at full power or reduced power because its output power is less than that of GPRS Mode at either full power or reduced power

9.2. GSM1900

Target Power for GSM850

GSM850	Full Power	Reduced Power
GPRS 1 Slot (GMSK)	29.0 dBm	21.3 dBm
GPRS 2 Slots (GMSK)	29.0 dBm	Low Channel: 20.3 dBm Mid Channel: 20.0 High Channel: 20.0
EGPRS 1 Slot (8PSK)	25.0 dBm	23.0 dBm
EGPRS 2 Slots (8PSK)	25.0 dBm	20.4 dBm
EGPRS 3 Slots (8PSK)	25.0 dBm	18.8 dBm
EGPRS 4 Slots (8PSK)	25.0 dBm	16.8 dBm

Tune-Up Tolerance: +1.0 dB/- 1.0 dB

Full Power

GPRS (GMSK) - Coding Scheme: CS1										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
1900	512	1850.2	28.8	19.8	28.6	22.6				
	661	1880.0	28.8	19.8	28.5	22.5				
	810	1909.8	28.8	19.8	28.5	22.5				
EGPRS (8PSK) - Coding Scheme: MCS5										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
1900	512	1850.2	25.3	16.3	25.1	19.1	25.0	20.7	25.0	22.0
	661	1880.0	25.1	16.1	25.0	19.0	24.7	20.4	24.7	21.7
	810	1909.8	25.1	16.1	25.0	19.0	24.7	20.4	24.8	21.8

Reduced Power

GPRS (GMSK) - Coding Scheme: CS1										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
1900	512	1850.2	22.3	13.3	21.3	15.3				
	661	1880.0	21.9	12.9	21.0	14.9				
	810	1909.8	22.0	12.9	21.0	15.0				
EGPRS (8PSK) - Coding Scheme: MCS5										
Band	Ch No.	f (MHz)	Avg burst Pwr (dBm)				Avg burst Pwr (dBm)			
			1 slot	Frame Avg Pwr	2 slots	Frame Avg Pwr	3 slots	Frame Avg Pwr	4 slots	Frame Avg Pwr
1900	512	1850.2	24.0	14.9	21.4	15.4	19.3	15.0	17.6	14.6
	661	1880.0	23.7	14.7	21.1	15.1	19.7	15.4	17.5	14.5
	810	1909.8	23.9	14.8	21.2	15.2	19.8	15.6	17.7	14.7

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- Body: GMSK (GPRS) mode with 2 time slots, based on the output power measurements above
- SAR is not required for EGPRS (8PSK) Mode at full power because its output power is less than that of GPRS Mode at full power
- SAR is required for EGPRS (8PSK) Mode with 3 time slots at reduced power because its output power is greater than that of GPRS Mode at reduced power

9.3. W-CDMA Band V

Target Power for W-CDMA Band V

W-CDMA Band V	Full Power	Reduced Power
Release 99 RMC	23.0 dBm	19.2 dBm
HSDPA	22.0 dBm	19.1 dBm
HSUPA	22.0 dBm	19.1 dBm

Tune-Up Tolerance: +1.0 dB/- 1.0 dB

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

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

Measurement Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Full Power	Reduced Power
W-CDMA (UMTS) Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.2	20.2
		4183	836.6	23.1	20.1
		4233	846.6	22.9	19.9

HSDPA

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
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
HSDPA Specific Settings	CM (dB)	0	1	1.5	1.5
	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			
	A _{hs} = β_{hs}/β_c	30/15			

Measurement Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Full Power	Reduced Power
W-CDMA (UMTS) Band V	Subtest 1	4132	826.4	22.0	18.9
		4183	836.6	21.8	18.7
		4233	846.6	21.7	18.7
	Subtest 2	4132	826.4	20.1	17.1
		4183	836.6	20.1	16.9
		4233	846.6	20.1	17.0
	Subtest 3	4132	826.4	19.0	15.9
		4183	836.6	18.8	15.8
		4233	846.6	18.9	15.6
	Subtest 4	4132	826.4	18.8	15.7
		4183	836.6	18.6	15.5
		4233	846.6	18.6	15.6

HSPA (HSDPA & HSUPA)

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

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA	
	Subtest	1	2	3	4	5	
WCDMA General Settings	Loopback Mode	Test Mode 1					
	Rel99 RMC	12.2kbps RMC					
	HSDPA FRC	H-Set1					
	HSUPA Test	HSUPA Loopback					
	Power Control Algorithm	Algorithm2					
	β_c	11/15	6/15	15/15	2/15	15/15	
	β_d	15/15	15/15	9/15	15/15	15/15	
	β_{ec}	209/225	12/15	30/15	2/15	24/15	
	β_c/β_d	11/15	6/15	15/9	2/15	15/15	
	β_{hs}	22/15	12/15	30/15	4/15	30/15	
	β_{ed}	1309/225	94/75	47/15 47/15	56/75	134/15	
CM (dB)	1.0	3.0	2.0	3.0	1.0		
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 = β_{hs}/β_c	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 PO 4			E-TFCI PO 4		
		E-TFCI 67			E-TFCI 67		
		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						

Measurement Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Full Power	w/ Power Reduction
WCDMA (UMTS) Band V	Subtest 1	4132	826.4	21.4	18.2
		4183	836.6	21.4	18.4
		4233	846.6	21.4	18.4
	Subtest 2	4132	826.4	20.5	17.5
		4183	836.6	20.3	17.1
		4233	846.6	20.3	17.1
	Subtest 3	4132	826.4	20.5	17.7
		4183	836.6	20.4	17.3
		4233	846.6	20.8	17.4
	Subtest 4	4132	826.4	20.6	17.8
		4183	836.6	20.6	17.6
		4233	846.6	20.3	17.6
	Subtest 5	4132	826.4	22.1	19.1
		4183	836.6	21.8	18.8
		4233	846.6	21.8	18.8

Note(s):

- KDB 941225 D01 – Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit.

9.4. W-CDMA Band II

Target Power for W-CDMA Band II

W-CDMA Band II	Full Power	Reduced Power
Release 99 RMC	23.0 dBm	14.6 dBm
HSDPA	22.0 dBm	14.5 dBm
HSUPA	22.0 dBm	14.5 dBm

Tune-Up Tolerance: +1.0 dB/- 1.0 dB

Release 99

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

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

Measurement Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Full Power	Reduced Power
W-CDMA (UMTS) Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	22.5	15.5
		9400	1880.0	22.6	15.6
		9538	1907.6	22.3	15.4

HSDPA

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
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm 2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
HSDPA Specific Settings	CM (dB)	0	1	1.5	1.5
	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			
	A _{hs} = β_{hs}/β_c	30/15			

Measurement Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Full Power	w/ Power Reductoin
W-CDMA (UMTS) Band II	Subtest 1	9262	1852.4	21.8	14.7
		9400	1880.0	21.8	14.7
		9538	1907.6	21.3	14.4
	Subtest 2	9262	1852.4	20.1	13.2
		9400	1880.0	20.0	13.2
		9538	1907.6	19.7	12.8
	Subtest 3	9262	1852.4	18.8	11.7
		9400	1880.0	18.7	11.8
		9538	1907.6	18.5	11.6
	Subtest 4	9262	1852.4	18.6	11.7
		9400	1880.0	18.5	11.6
		9538	1907.6	18.3	11.4

Note(s):

KDB 941225 D01 – Body SAR is not required for HSDPA when the maximum average output of each RF channel with HSDPA active is less than ¼ dB higher than that measured without HSDPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is < 75% of the SAR limit.

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					
	β_c	11/15	6/15	15/15	2/15	15/15	
	β_d	15/15	15/15	9/15	15/15	15/15	
	β_{ec}	209/225	12/15	30/15	2/15	24/15	
	β_c/β_d	11/15	6/15	15/9	2/15	15/15	
	β_{hs}	22/15	12/15	30/15	4/15	30/15	
	β_{ed}	1309/225	94/75	47/15 47/15	56/75	134/15	
	CM (dB)	1.0	3.0	2.0	3.0	1.0	
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 = β_{hs}/β_c	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 PO 4			E-TFCI PO 4		
		E-TFCI 67			E-TFCI 67		
		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 11	E-TFCI 75					
E-TFCI PO 26	E-TFCI PO 4	E-TFCI PO 26					
E-TFCI 81	E-TFCI 92	E-TFCI 81					
E-TFCI PO 27	E-TFCI PO 18	E-TFCI PO 27					

Measurement Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Full Power	Reduced Power
WCDMA (UMTS) Band II	Subtest 1	9262	1852.4	21.3	13.8
		9400	1880.0	21.2	13.7
		9538	1907.6	21.1	13.5
	Subtest 2	9262	1852.4	20.3	13.0
		9400	1880.0	20.2	13.0
		9538	1907.6	19.9	13.0
	Subtest 3	9262	1852.4	20.3	13.5
		9400	1880.0	20.3	13.4
		9538	1907.6	19.9	13.0
	Subtest 4	9262	1852.4	20.5	13.6
		9400	1880.0	20.5	13.6
		9538	1907.6	20.1	13.4
	Subtest 5	9262	1852.4	21.8	14.9
		9400	1880.0	21.7	14.8
		9538	1907.6	21.3	14.5

Note(s):

- KDB 941225 D01 – Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit.

9.5. LTE Band 4

Target Power for LTE Band 4, QPSK and 16QAM modulations

LTE Band 4	Full Power	Reduced Power
10 MHz Bandwidth	23.0 dBm	17.1 dBm
5 MHz Bandwidth	23.0 dBm	17.1 dBm

Tune-Up Tolerance: +1.0 dB/- 1.0 dB

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 +/- 2dBm). 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	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
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.

LTE Band 4, 10 MHz Bandwidth

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)	
								Full Power	Reduced Power
10	20000	1715	QPSK	1	0	0	0	22.3	17.8
				1	24	0	0	22.4	17.8
				1	49	0	0	22.2	17.8
				25	0	1	1	21.3	17.8
				25	12	1	1	21.2	17.7
				25	24	1	1	21.3	17.7
				50	0	1	1	21.2	17.8
			16QAM	1	0	1	1	21.1	17.4
				1	24	1	1	21.1	17.3
				1	49	1	1	21.1	17.3
				25	0	2	2	20.4	17.9
				25	12	2	2	20.4	17.9
				25	24	2	2	20.4	17.9
				50	0	2	2	20.4	17.9
	20175	1732.5	QPSK	1	0	0	0	22.2	17.8
				1	24	0	0	22.1	17.8
				1	49	0	0	22.2	17.9
				25	0	1	1	21.2	17.7
				25	12	1	1	21.2	17.7
				25	24	1	1	21.2	17.7
				50	0	1	1	21.2	17.7
			16QAM	1	0	1	1	21.5	18.1
				1	24	1	1	21.6	18.1
				1	49	1	1	21.5	18.1
				25	0	2	2	20.3	17.8
				25	12	2	2	20.2	17.7
				25	24	2	2	20.2	17.7
				50	0	2	2	20.4	17.9
	20350	1750	QPSK	1	0	0	0	22.4	18.0
				1	24	0	0	22.4	17.9
				1	49	0	0	22.2	17.8
				25	0	1	1	21.4	17.8
				25	12	1	1	21.4	17.8
				25	24	1	1	21.4	17.9
				50	0	1	1	21.2	17.7
			16QAM	1	0	1	1	21.3	17.3
				1	24	1	1	21.4	17.3
				1	49	1	1	21.4	17.1
				25	0	2	2	20.8	17.9
				25	12	2	2	20.8	18.0
				25	24	2	2	20.7	17.9
				50	0	2	2	20.4	17.9

LTE Band 4, 5 MHz Bandwidth

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)	
								Full Power	Reduced Power
5	19975	1712.5	QPSK	1	0	0	0	22.4	17.9
				1	12	0	0	22.4	17.9
				1	24	0	0	22.3	17.9
				12	0	1	1	21.4	17.9
				12	6	1	1	21.3	17.8
				12	11	1	1	21.3	17.7
				25	0	1	1	21.3	17.8
			16QAM	1	0	1	1	21.2	17.8
				1	12	1	1	21.2	17.6
				1	24	1	1	21.1	17.7
				12	0	2	2	20.3	17.8
				12	6	2	2	20.3	17.8
				12	11	2	2	20.2	17.7
				25	0	2	2	20.7	18.1
	20175	1733.8	QPSK	1	0	0	0	22.4	17.9
				1	12	0	0	22.4	17.9
				1	24	0	0	22.4	17.8
				12	0	1	1	21.3	17.7
				12	6	1	1	21.2	17.8
				12	11	1	1	21.2	17.7
				25	0	1	1	21.2	17.7
			16QAM	1	0	1	1	21.2	17.1
				1	12	1	1	21.0	17.2
				1	24	1	1	21.0	17.1
				12	0	2	2	20.2	17.4
				12	6	2	2	20.1	17.4
				12	11	2	2	20.2	17.4
				25	0	2	2	20.6	18.0
	20375	1755	QPSK	1	0	0	0	22.5	18.0
				1	12	0	0	22.4	17.9
				1	24	0	0	22.4	17.9
				12	0	1	1	21.2	17.8
				12	6	1	1	21.3	17.8
				12	11	1	1	21.2	17.8
				25	0	1	1	21.3	17.7
			16QAM	1	0	1	1	21.4	18.1
				1	12	1	1	21.3	18.1
				1	24	1	1	21.3	18.0
				12	0	2	2	20.5	17.9
				12	6	2	2	20.4	17.9
				12	11	2	2	20.4	17.9
				25	0	2	2	20.4	17.5

9.6. LTE Band 17

Target Power for LTE Band 17, QPSK and 16QAM modulations

LTE Band 4	Full Power	Reduced Power
10 MHz Bandwidth	23.0 dBm	20.6 dBm
5 MHz Bandwidth	23.0 dBm	20.6 dBm

Tune-Up Tolerance: +1.0 dB/- 1.0 dB

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 +/- 2dBm). 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	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
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.

LTE Band 17, 10 MHz Bandwidth

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)	
								Full Power	Reduced Power
10	23780	709	QPSK	1	0	0	0	23.0	21.1
				1	24	0	0	23.0	21.1
				1	49	0	0	23.1	21.2
				25	0	1	1	22.0	21.2
				25	12	1	1	22.0	21.1
				25	24	1	1	21.9	21.1
				50	0	1	1	21.8	21.0
			16QAM	1	0	1	1	21.9	20.9
				1	24	1	1	21.8	20.8
				1	49	1	1	21.9	20.9
				25	0	2	2	21.3	21.2
				25	12	2	2	21.3	21.2
				25	24	2	2	21.3	21.2
				50	0	2	2	21.2	21.1
	23790	710	QPSK	1	0	0	0	23.0	21.1
				1	24	0	0	23.0	21.1
				1	49	0	0	23.1	21.2
				25	0	1	1	22.1	21.2
				25	12	1	1	22.0	21.1
				25	24	1	1	21.9	21.1
				50	0	1	1	21.9	21.0
			16QAM	1	0	1	1	21.9	20.9
				1	24	1	1	21.8	20.8
				1	49	1	1	21.9	20.9
				25	0	2	2	21.2	21.2
				25	12	2	2	21.2	21.2
				25	24	2	2	21.2	21.2
				50	0	2	2	21.2	21.1
	23800	711	QPSK	1	0	0	0	23.0	21.1
				1	24	0	0	23.2	21.2
				1	49	0	0	23.1	21.1
				25	0	1	1	22.2	21.1
				25	12	1	1	22.2	21.3
				25	24	1	1	22.2	21.2
				50	0	1	1	22.1	21.1
			16QAM	1	0	1	1	21.9	21.0
				1	24	1	1	22.0	21.2
				1	49	1	1	22.1	21.1
				25	0	2	2	21.0	21.0
				25	12	2	2	21.1	21.1
				25	24	2	2	21.0	21.0
				50	0	2	2	21.3	21.3

LTE Band 17, 5 MHz Bandwidth

BW	Ch	Freq. (MHz)	Mode	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Avg Pwr (dBm)	
								Full Power	Reduced Power
5	23755	706.5	QPSK	1	0	0	0	23.5	21.6
				1	12	0	0	23.1	21.3
				1	24	0	0	23.3	21.4
				12	0	1	1	22.2	21.2
				12	6	1	1	22.1	21.1
				12	11	1	1	22.2	21.3
				25	0	1	1	22.2	21.1
			16QAM	1	0	1	2	21.8	20.9
				1	12	1	2	21.6	20.6
				1	24	1	2	21.7	20.6
				12	0	2	3	20.9	20.8
				12	6	2	3	20.9	20.7
				12	11	2	3	20.8	20.8
				25	0	2	2	21.3	21.3
	23790	710	QPSK	1	0	0	0	23.3	21.4
				1	12	0	0	23.2	21.2
				1	24	0	0	23.3	21.3
				12	0	1	1	22.1	21.1
				12	6	1	1	22.1	21.1
				12	11	1	1	22.1	21.1
				25	0	1	1	22.1	21.1
			16QAM	1	0	1	1	22.6	21.5
				1	12	1	1	22.6	21.5
				1	24	1	1	22.5	21.5
				12	0	2	2	21.3	21.3
				12	6	2	2	21.3	21.3
				12	11	2	2	21.3	21.3
				25	0	2	3	20.7	20.7
	23825	713.5	QPSK	1	0	0	1	22.8	20.9
				1	12	0	1	22.8	21.0
				1	24	0	1	22.7	20.8
				12	0	1	1	22.1	21.2
				12	6	1	1	22.2	21.2
				12	11	1	1	22.1	21.1
				25	0	1	1	22.1	21.2
			16QAM	1	0	1	2	22.0	21.1
				1	12	1	2	22.0	21.1
				1	24	1	2	21.9	20.9
				12	0	2	2	21.2	21.2
				12	6	2	2	21.3	21.3
				12	11	2	2	21.2	21.2
				25	0	2	3	20.9	20.9

10. Tissue Dielectric Properties

IEEE Std 1528-2003 Table 2

Target Frequency (MHz)	Head	
	ϵ_r	σ (S/m)
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800 – 2000	40.0	1.40
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40

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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

10.1. Composition of Ingredients for the Tissue Material Used in the SAR Tests

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

Salt: 99+% Pure Sodium Chloride

Sugar: 98+% Pure Sucrose

Water: De-ionized, 16 MΩ+ resistivity

HEC: Hydroxyethyl 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

MSL/HSL750 (Body and Head liquids for 700 – 800 MHz)

Item	Head Tissue Simulation Liquids HSL750 Muscle (body) Tissue Simulation Liquids MSL750
Type No	SL AAH 075
Manufacturer	SPEAG
The item is composed of the following ingredients:	
H ₂ O	Water, 35 – 58%
Sucrose	Sugar, white, refined, 40-60%
NaCl	Sodium Chloride, 0-6%
Hydroxyethyl-cellulose	Medium Viscosity (CAS# 9004-62-0), <0.3%
Preventol-D7	Preservative: aqueous preparation, (CAS# 55965-84-9), containing 5-chloro-2-methyl-3(2H)-isothiazolone and 2-methyl-3(2H)-isothiazolone, 0.1-0.7%

Simulating Liquids for 5 GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

10.2. Tissue Dielectric Parameter Check Results

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
8/29/2012	Body 1900	e'	50.9538	Relative Permittivity (ϵ_r):	50.95	53.30	-4.40	5
		e''	14.5182	Conductivity (σ):	1.53	1.52	0.91	5
	Body 1850	e'	51.1274	Relative Permittivity (ϵ_r):	51.13	53.30	-4.08	5
		e''	14.3717	Conductivity (σ):	1.48	1.52	-2.74	5
	Body 1880	e'	51.0226	Relative Permittivity (ϵ_r):	51.02	53.30	-4.27	5
		e''	14.4591	Conductivity (σ):	1.51	1.52	-0.56	5
	Body 1910	e'	50.9214	Relative Permittivity (ϵ_r):	50.92	53.30	-4.46	5
		e''	14.5491	Conductivity (σ):	1.55	1.52	1.65	5
8/30/2012	Body 1900	e'	52.4174	Relative Permittivity (ϵ_r):	52.42	53.30	-1.66	5
		e''	14.2503	Conductivity (σ):	1.51	1.52	-0.95	5
	Body 1850	e'	52.5806	Relative Permittivity (ϵ_r):	52.58	53.30	-1.35	5
		e''	14.1076	Conductivity (σ):	1.45	1.52	-4.53	5
	Body 1880	e'	52.4879	Relative Permittivity (ϵ_r):	52.49	53.30	-1.52	5
		e''	14.1911	Conductivity (σ):	1.48	1.52	-2.40	5
	Body 1910	e'	52.3839	Relative Permittivity (ϵ_r):	52.38	53.30	-1.72	5
		e''	14.2814	Conductivity (σ):	1.52	1.52	-0.22	5
10/3/2012	Body 1750	e'	51.3184	Relative Permittivity (ϵ_r):	51.32	53.44	-3.97	5
		e''	15.1469	Conductivity (σ):	1.47	1.49	-0.83	5
	Body 1710	e'	51.4134	Relative Permittivity (ϵ_r):	51.41	53.54	-3.98	5
		e''	15.0503	Conductivity (σ):	1.43	1.46	-2.09	5
	Body 1735	e'	51.3733	Relative Permittivity (ϵ_r):	51.37	53.48	-3.94	5
		e''	15.0496	Conductivity (σ):	1.45	1.48	-1.70	5
	Body 1755	e'	51.2992	Relative Permittivity (ϵ_r):	51.30	53.43	-3.98	5
		e''	15.0651	Conductivity (σ):	1.47	1.49	-1.28	5
10/4/2012	Body 1750	e'	52.6443	Relative Permittivity (ϵ_r):	52.64	53.44	-1.49	5
		e''	15.1423	Conductivity (σ):	1.47	1.49	-0.86	5
	Body 1710	e'	52.6368	Relative Permittivity (ϵ_r):	52.64	53.54	-1.69	5
		e''	15.0297	Conductivity (σ):	1.43	1.46	-2.22	5
	Body 1735	e'	52.6692	Relative Permittivity (ϵ_r):	52.67	53.48	-1.52	5
		e''	15.0061	Conductivity (σ):	1.45	1.48	-1.98	5
	Body 1755	e'	52.4783	Relative Permittivity (ϵ_r):	52.48	53.43	-1.78	5
		e''	15.0804	Conductivity (σ):	1.47	1.49	-1.18	5
10/5/2012	Body 750	e'	54.7265	Relative Permittivity (ϵ_r):	54.73	55.55	-1.48	5
		e''	22.6250	Conductivity (σ):	0.94	0.96	-2.03	5
	Body 775	e'	54.4228	Relative Permittivity (ϵ_r):	54.42	55.45	-1.85	5
		e''	22.7674	Conductivity (σ):	0.98	0.97	1.67	5
	Body 780	e'	54.3458	Relative Permittivity (ϵ_r):	54.35	55.43	-1.96	5
		e''	22.6151	Conductivity (σ):	0.98	0.97	1.60	5
	Body 790	e'	54.3154	Relative Permittivity (ϵ_r):	54.32	55.39	-1.94	5
		e''	22.5450	Conductivity (σ):	0.99	0.97	2.50	5

Tissue Dielectric Parameter Check Results continued

Date	Freq. (MHz)	Liquid Parameters		Measured	Target	Delta (%)	Limit ±(%)	
10/8/2012	Body 835	e'	53.9323	Relative Permittivity (ϵ_r):	53.93	55.20	-2.30	5
		e"	21.0178	Conductivity (σ):	0.98	0.97	0.60	5
	Body 815	e'	54.1948	Relative Permittivity (ϵ_r):	54.19	55.30	-1.99	5
		e"	21.2578	Conductivity (σ):	0.96	0.97	-0.49	5
	Body 820	e'	54.0402	Relative Permittivity (ϵ_r):	54.04	55.28	-2.24	5
		e"	21.0750	Conductivity (σ):	0.96	0.97	-0.78	5
	Body 850	e'	53.6320	Relative Permittivity (ϵ_r):	53.63	55.16	-2.77	5
		e"	21.1528	Conductivity (σ):	1.00	0.99	1.28	5
10/9/2012	Body 1900	e'	51.9004	Relative Permittivity (ϵ_r):	51.90	53.30	-2.63	5
		e"	14.6308	Conductivity (σ):	1.55	1.52	1.69	5
	Body 1850	e'	52.2204	Relative Permittivity (ϵ_r):	52.22	53.30	-2.03	5
		e"	14.3675	Conductivity (σ):	1.48	1.52	-2.77	5
	Body 1880	e'	52.0052	Relative Permittivity (ϵ_r):	52.01	53.30	-2.43	5
		e"	14.5736	Conductivity (σ):	1.52	1.52	0.23	5
	Body 1910	e'	51.9009	Relative Permittivity (ϵ_r):	51.90	53.30	-2.62	5
		e"	14.6308	Conductivity (σ):	1.55	1.52	2.22	5
10/30/2012	Body 1900	e'	51.5110	Relative Permittivity (ϵ_r):	51.51	53.30	-3.36	5
		e"	14.5311	Conductivity (σ):	1.54	1.52	1.00	5
	Body 1850	e'	51.7538	Relative Permittivity (ϵ_r):	51.75	53.30	-2.90	5
		e"	14.3782	Conductivity (σ):	1.48	1.52	-2.70	5
	Body 1880	e'	51.5869	Relative Permittivity (ϵ_r):	51.59	53.30	-3.21	5
		e"	14.3914	Conductivity (σ):	1.50	1.52	-1.03	5
	Body 1910	e'	51.5412	Relative Permittivity (ϵ_r):	51.54	53.30	-3.30	5
		e"	14.4123	Conductivity (σ):	1.53	1.52	0.70	5
10/31/2012	Body 1750	e'	51.5327	Relative Permittivity (ϵ_r):	51.53	53.44	-3.57	5
		e"	14.9316	Conductivity (σ):	1.45	1.49	-2.24	5
	Body 1710	e'	51.6123	Relative Permittivity (ϵ_r):	51.61	53.54	-3.61	5
		e"	14.8504	Conductivity (σ):	1.41	1.46	-3.39	5
	Body 1735	e'	51.4714	Relative Permittivity (ϵ_r):	51.47	53.48	-3.75	5
		e"	15.0230	Conductivity (σ):	1.45	1.48	-1.87	5
	Body 1755	e'	51.5142	Relative Permittivity (ϵ_r):	51.51	53.43	-3.58	5
		e"	14.9801	Conductivity (σ):	1.46	1.49	-1.84	5
11/1/2012	Body 750	e'	56.5429	Relative Permittivity (ϵ_r):	56.54	55.55	1.79	5
		e"	23.2741	Conductivity (σ):	0.97	0.96	0.78	5
	Body 775	e'	56.2668	Relative Permittivity (ϵ_r):	56.27	55.45	1.47	5
		e"	23.0639	Conductivity (σ):	0.99	0.97	2.99	5
	Body 780	e'	56.2156	Relative Permittivity (ϵ_r):	56.22	55.43	1.42	5
		e"	23.0147	Conductivity (σ):	1.00	0.97	3.39	5
	Body 790	e'	56.1063	Relative Permittivity (ϵ_r):	56.11	55.39	1.29	5
		e"	22.9350	Conductivity (σ):	1.01	0.97	4.27	5

Tissue Dielectric Parameter Check Results continued

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
11/1/2012	Body 835	e'	53.4600	Relative Permittivity (ϵ_r):	53.46	55.20	-3.15	5
		e''	21.9000	Conductivity (σ):	1.02	0.97	4.82	5
	Body 820	e'	53.5300	Relative Permittivity (ϵ_r):	53.53	55.28	-3.16	5
		e''	22.0400	Conductivity (σ):	1.00	0.97	3.76	5
	Body 830	e'	53.4900	Relative Permittivity (ϵ_r):	53.49	55.24	-3.17	5
		e''	21.9500	Conductivity (σ):	1.01	0.97	4.52	5
	Body 850	e'	53.3600	Relative Permittivity (ϵ_r):	53.36	55.16	-3.26	5
		e''	21.9100	Conductivity (σ):	1.04	0.99	4.90	5
11/5/2012	Body 835	e'	53.1041	Relative Permittivity (ϵ_r):	53.10	55.20	-3.80	5
		e''	21.7466	Conductivity (σ):	1.01	0.97	4.09	5
	Body 820	e'	53.2697	Relative Permittivity (ϵ_r):	53.27	55.28	-3.63	5
		e''	21.8018	Conductivity (σ):	0.99	0.97	2.64	5
	Body 830	e'	53.1640	Relative Permittivity (ϵ_r):	53.16	55.24	-3.76	5
		e''	21.7482	Conductivity (σ):	1.00	0.97	3.56	5
	Body 850	e'	52.9695	Relative Permittivity (ϵ_r):	52.97	55.16	-3.97	5
		e''	21.7064	Conductivity (σ):	1.03	0.99	3.93	5
11/7/2012	Body 1900	e'	52.7518	Relative Permittivity (ϵ_r):	52.75	53.30	-1.03	5
		e''	14.3452	Conductivity (σ):	1.52	1.52	-0.30	5
	Body 1850	e'	52.9658	Relative Permittivity (ϵ_r):	52.97	53.30	-0.63	5
		e''	14.1495	Conductivity (σ):	1.46	1.52	-4.24	5
	Body 1880	e'	52.8270	Relative Permittivity (ϵ_r):	52.83	53.30	-0.89	5
		e''	14.2587	Conductivity (σ):	1.49	1.52	-1.94	5
	Body 1910	e'	52.7529	Relative Permittivity (ϵ_r):	52.75	53.30	-1.03	5
		e''	14.3631	Conductivity (σ):	1.53	1.52	0.35	5
11/8/2012	Body 1750	e'	51.8000	Relative Permittivity (ϵ_r):	51.80	53.44	-3.07	5
		e''	14.9800	Conductivity (σ):	1.46	1.49	-1.92	5
	Body 1710	e'	51.9400	Relative Permittivity (ϵ_r):	51.94	53.54	-2.99	5
		e''	14.9000	Conductivity (σ):	1.42	1.46	-3.07	5
	Body 1755	e'	51.7700	Relative Permittivity (ϵ_r):	51.77	53.43	-3.10	5
		e''	15.0000	Conductivity (σ):	1.46	1.49	-1.71	5
11/8/2012	Body 750	e'	55.2936	Relative Permittivity (ϵ_r):	55.29	55.55	-0.45	5
		e''	22.9997	Conductivity (σ):	0.96	0.96	-0.41	5
	Body 775	e'	54.9603	Relative Permittivity (ϵ_r):	54.96	55.45	-0.88	5
		e''	22.8057	Conductivity (σ):	0.98	0.97	1.84	5
	Body 780	e'	54.8821	Relative Permittivity (ϵ_r):	54.88	55.43	-0.99	5
		e''	22.7649	Conductivity (σ):	0.99	0.97	2.27	5
	Body 790	e'	54.7210	Relative Permittivity (ϵ_r):	54.72	55.39	-1.21	5
		e''	22.6918	Conductivity (σ):	1.00	0.97	3.17	5
11/15/2012	Body 1900	e'	52.8278	Relative Permittivity (ϵ_r):	52.83	53.30	-0.89	5
		e''	14.3779	Conductivity (σ):	1.52	1.52	-0.07	5
	Body 1850	e'	53.0478	Relative Permittivity (ϵ_r):	53.05	53.30	-0.47	5
		e''	14.1751	Conductivity (σ):	1.46	1.52	-4.07	5
	Body 1910	e'	52.8206	Relative Permittivity (ϵ_r):	52.82	53.30	-0.90	5
		e''	14.4077	Conductivity (σ):	1.53	1.52	0.67	5

11. System Performance Check

The system performance check is performed prior to any usage of the system in order to verify SAR system measurement accuracy. The system performance check verifies that the system operates within its specifications of $\pm 10\%$.

11.1. System Performance Check Measurement Conditions

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ± 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The DASY system with an E-Field Probe 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 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

11.2. 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 (mW/g)		
				1g/10g	Head	Body
D750V3	1019	2/9/12	750	1g	8.44	8.84
				10g	5.53	5.84
D835V2	4d117	4/10/12	835	1g	9.38	9.52
				10g	6.15	6.31
D1750V2	1050	4/19/12	1750	1g	35.9	36.9
				10g	19.1	19.9
D1900V2	5d140	4/12/12	1900	1g	39.8	40.2
				10g	20.8	21.3

11.3. System Performance Check Results

Date Tested	System Dipole		T.S. Liquid	SAR Measured (Normalized to 1 W)		Target (Ref. Value)	Delta (%)	Tolerance (%)
	Type	Serial No.						
8/29/2012	D1900V2	5d140	Body	1g	42.5	40.2	5.72	±10
				10g	22.4	21.3	5.16	
8/30/2012	D1900V2	5d140	Body	1g	41.7	40.2	3.73	±10
				10g	21.9	21.3	2.82	
10/3/2012	D1750v2	1050	Body	1g	38.1	36.9	3.25	±10
				10g	20.3	19.9	2.01	
10/4/2012	D1750v2	1050	Body	1g	36.9	36.9	0.00	±10
				10g	19.8	19.9	-0.50	
10/5/2012	D750v3	1019	Body	1g	8.62	8.84	-2.49	±10
				10g	5.73	5.84	-1.88	
10/8/2012	D835V2	4d117	Body	1g	8.92	9.52	-6.30	±10
				10g	5.86	6.31	-7.13	
10/9/2012	D1900V2	5d140	Body	1g	42.4	40.2	5.47	±10
				10g	22.4	21.3	5.16	
10/30/2012	D1900V2	5d140	Body	1g	41.5	40.2	3.23	±10
				10g	21.8	21.3	2.35	
10/31/2012	D1750v2	1050	Body	1g	37.2	36.9	0.81	±10
				10g	19.9	19.9	0.00	
11/1/2012	D750v3	1019	Body	1g	8.95	8.84	1.24	±10
				10g	5.96	5.84	2.05	
11/1/2012	D835V2	4d117	Body	1g	10.00	9.52	5.04	±10
				10g	6.60	6.31	4.60	
11/5/2012	D835V2	4d117	Body	1g	9.70	9.52	1.89	±10
				10g	6.38	6.31	1.11	
11/7/2012	D1900V2	5d140	Body	1g	42.4	40.2	5.47	±10
				10g	22.5	21.3	5.63	
11/8/2012	D1750v2	1050	Body	1g	38.0	36.9	2.98	±10
				10g	20.2	19.9	1.51	
11/8/2012	D750v3	1019	Body	1g	8.72	8.84	-1.36	±10
				10g	5.80	5.84	-0.68	
11/15/2012	D1900V2	5d140	Body	1g	43.0	40.2	6.97	±10
				10g	22.6	21.3	6.10	

12. SAR Test Results

As its max average power is 4.47 mW [$<60/f$ (GHz) mW], standalone SAR is not required for Bluetooth. Therefore, Bluetooth need not be considered in the simultaneous transmission SAR evaluation of other transmitters

12.1. GSM850

Test Position	Dist. (mm)	Prox. Sensor Status	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-Up Limit	Meas.	Meas.	Scaled		
Rear	0	Off	GPRS 2 slots	128	824.2	33.0	31.2				1
				190	836.6	33.0	31.2	0.205	0.314	1	
				251	848.8	33.0	31.5				1
Edge 1	16	Off	GPRS 2 slots	128	824.2	33.0	31.2				1
				190	836.6	33.0	31.2	0.207	0.317	2	
				251	848.8	33.0	31.5				1
Edge 1	0	ON	GPRS 2 slots	128	824.2	26.3	26.3	0.858	0.866	3	
				190	836.6	26.3	26.3	0.869	0.865	4	
				251	848.8	26.3	26.2	0.888	0.902	5	
Edge 4	0	Off	GPRS 2 slots	128	824.2	33.0	31.2				1
				190	836.6	33.0	31.2	0.175	0.268	6	
				251	848.8	33.0	31.5				1

Note(s):

According to KDB 447498 D01 General RF Exposure Guidance v05, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is.

1. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
2. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
3. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

12.2. GSM1900

Test Position	Dist. (mm)	Prox. Sensor Status	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-Up Limit	Meas.	Meas.	Scaled		
Rear	0	Off	GPRS 2 slots	512	1850.2	30.0	28.6				
				661	1880	30.0	28.5	0.057	0.081	1	
				810	1909.8	30.0	28.5				
Edge 1	16	Off	GPRS 2 slots	512	1850.2	30.0	28.6				
				661	1880	30.0	28.5	0.371	0.524	2	
				810	1909.8	30.0	28.5				
Edge 1	0	ON	GPRS 2 slots	512	1850.2	21.3	21.3	1.170	1.170	3	
				661	1880	21.0	21.0	1.300	1.300	4	
				810	1909.8	21.0	21.0	1.120	1.110	5	
	0	ON	EGPRS 3 slots	512	1850.2	19.8	19.3	1.020	1.144	6	
				661	1880	19.8	19.7	1.270	1.300	7	
				810	1909.8	19.8	19.8	1.090	1.090	8	
Edge 4	0	Off	GPRS 2 slots	512	1850.2	30.0	28.6				1
				661	1880	30.0	28.5	0.172	0.243	9	
				810	1909.8	30.0	28.5				1

Note(s):

According to KDB 447498 D01 General RF Exposure Guidance v05, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is.

1. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
2. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
3. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

12.3. W-CDMA Band V

Test mode reduction considerations

Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit as per KDB 941225 D01

Test Position	Dist. (mm)	Prox. Sensor Status	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-Up Limit	Meas.	Meas.	Scaled		
Rear	0	Off	Rel 99 RMC 12.2kbps	4132	826.4	24.0	23.2				
				4183	836.6	24.0	23.1	0.190	0.232	1	
				4233	846.6	24.0	22.9				
Edge 1	16	Off	Rel 99 RMC 12.2kbps	4132	826.4	24.0	23.2				
				4183	836.6	24.0	23.1	0.129	0.157	2	
				4233	846.6	24.0	22.9				
Edge 1	0	ON	Rel 99 RMC 12.2kbps	4132	826.4	20.2	20.2	0.850	0.850	3	
				4183	836.6	20.2	20.1	0.945	0.969	4	
				4233	846.6	20.2	19.9	1.010	1.077	5	
Edge 4	0	Off	Rel 99 RMC 12.2kbps	4132	826.4	24.0	23.2				
				4183	836.6	24.0	23.1	0.191	0.233	6	
				4233	846.6	24.0	22.9				

Note(s):

According to KDB 447498 D01 General RF Exposure Guidance v05, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is.

1. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
2. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
3. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

12.4. W-CDMA Band II

Test mode reduction considerations

Body SAR is not required for handsets with HSPA capabilities when the maximum average output of each RF channel with HSUPA/HSDPA active is less than ¼ dB higher than that measured without HSUPA/HSDPA using 12.2 kbps RMC and the maximum SAR for 12.2kbps RMC is ≤ 75% of the SAR limit as per KDB 941225 D01

Test Position	Dist. (mm)	Prox. Sensor Status	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
						Tune-Up Limit	Meas.	Meas.	Scaled		
Rear	0	Off	Rel 99 RMC 12.2kbps	9262	1852.4	24.0	22.5				1
				9400	1880	24.0	22.6	0.039	0.054	1	
				9538	1907.6	24.0	22.3				1
Edge 1	16	Off	Rel 99 RMC 12.2kbps	9262	1852.4	24.0	22.5				1
				9400	1880	24.0	22.6	0.321	0.445	2	
				9538	1907.6	24.0	22.3				1
Edge 1	0	ON	Rel 99 RMC 12.2kbps	9262	1852.4	15.6	15.5	0.922	0.937	3	
				9400	1880	15.6	15.6	0.973	0.966	4	
				9538	1907.6	15.6	15.4	1.010	1.070	5	
Edge 4	0	Off	Rel 99 RMC 12.2kbps	9262	1852.4	24.0	22.5				1
				9400	1880	24.0	22.6	0.175	0.243	6	
				9538	1907.6	24.0	22.3				1

Note(s):

According to KDB 447498 D01 General RF Exposure Guidance v05, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is.

1. ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
2. ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
3. ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

12.5. LTE Band 4

Test Position	Dist. (mm)	Prox. Sensor Status	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
								Tune-Up Limit	Meas.	Meas.	Scaled		
Rear	0	Off	QPSK	20350	1750.0	1	24	24.0	22.4	0.052	0.075	1	
			QPSK	20350	1750.0	25	12	24.0	21.4	0.053	0.096	2	
Edge 1	16	Off	QPSK	20350	1750.0	1	24	24.0	22.4	0.177	0.256	3	
			QPSK	20350	1750.0	25	12	24.0	21.4	0.141	0.257	4	
Edge 1	0	ON	QPSK	20000	1715.0	1	24	18.1	17.8	0.990	1.061	5	
			QPSK	20175	1732.5	1	49	18.1	17.9	0.867	0.918	6	
			QPSK	20350	1750.0	1	0	18.1	18.0	0.866	0.886	7	
			QPSK	20000	1715.0	25	0	18.1	17.8	0.961	1.030	8	
			QPSK	20175	1732.5	25	12	18.1	17.7	0.947	1.034	9	
			QPSK	20350	1750.0	25	24	18.1	17.9	0.881	0.923	10	
Edge 4	0	Off	QPSK	20000	1715.0	50	0	18.1	17.8	0.995	1.066	11	
			QPSK	20350	1750.0	1	24	24.0	22.4	0.186	0.269	12	
			QPSK	20350	1750.0	25	12	24.0	21.4	0.151	0.275	13	

Note(s):

Per KDB 941225 D05 SAR for LTE Devices v02, SAR test reduction is applied using the following criteria:

- Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

12.6. LTE Band 17

Test Position	Dist. (mm)	Prox. Sensor Status	Mode	UL Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm)		1-g SAR (W/kg)		Plot No.	Note
								Tune-Up Limit	Meas.	Meas.	Scaled		
Rear	0	Off	QPSK	23800	711.0	1	24	24.0	23.2	0.212	0.255	1	
			QPSK	23800	711.0	25	12	24.0	22.2	0.171	0.259	2	
Edge 1	16	Off	QPSK	23800	711.0	1	24	24.0	23.2	0.163	0.196	3	
			QPSK	23800	711.0	25	12	24.0	22.2	0.126	0.191	4	
Edge 1	0	ON	QPSK	23780	709.0	1	49	21.6	21.2	1.060	1.162	5	
			QPSK	23790	710.0	1	49	21.6	21.2	1.060	1.162	6	
			QPSK	23800	711.0	1	24	21.6	21.2	1.110	1.217	7	
			QPSK	23780	709.0	25	0	21.6	21.2	1.050	1.151	8	
			QPSK	23790	710.0	25	0	21.6	21.2	1.050	1.151	9	
			QPSK	23800	711.0	25	12	21.6	21.3	1.050	1.125	10	
Edge 4	0	Off	QPSK	23800	711.0	50	0	21.6	21.1	1.010	1.133	11	
			QPSK	23800	711.0	1	24	24.0	23.2	0.160	0.192	12	
			QPSK	23800	711.0	25	12	24.0	22.2	0.125	0.189	13	

Note(s):

Per KDB 941225 D05 SAR for LTE Devices v02, SAR test reduction is applied using the following criteria:

- Testing for Low and High Channel is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are ≥ 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

13. Summary of Highest Measured SAR Values

Results of highest SAR values for each frequency band and mode

Technology/Band	Test configuration		Mode	Highest 1g SAR (W/kg)
GPRS 850	Body Tablet Mode	Edge 1, 0 mm w/ Power Reduction	GPRS 2 slot	0.888
GPRS 1900	Body Tablet Mode	Edge 1, 0 mm w/ Power Reduction	GPRS 2 slot	1.3
W-CDMA Band V	Body Tablet Mode	Edge 1, 0 mm w/ Power Reduction	Rel 99 RMC 12.2kbps	1.01
W-CDMA Band II	Body Tablet Mode	Edge 1, 0 mm w/ Power Reduction	Rel 99 RMC 12.2kbps	1.01
LTE band 4	Body Tablet Mode	Edge 1, 0 mm w/ Power Reduction	10 MHz (QPSK) RB 50/0	0.995
LTE band 17	Body Tablet Mode	Edge 1, 0 mm w/ Power Reduction	10 MHz (QPSK) RB 1/24	1.11

13.1. SAR Measurement Variability and Uncertainty

In accordance with published RF Exposure KDB procedure 865664 D01 SAR measurement 100 MHz to 6 GHz v01. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

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

Technology/ Band	Test Configuration		Mode	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)	SAR (W/kg)
	Exposure	Position						
LTE Band 17	Body	Edge 1, w/ Power Reduction	10 MHz QPSK RB 1/24	0	23800	711	21.2	1.100
W-CDMA Band V	Body	Edge 1, w/ Power Reduction	Rel. 99 RMC 12.2 kbps	0	4233	846.6	19.9	1.080
LTE Band 4	Body	Edge 1, w/ Power Reduction	10 MHz QPSK RB 50/0	0	20000	1715.0	17.8	0.998
GPRS 1900	Body	Edge 1, w/ Power Reduction	GPRS 2 Slots	0	661	1880	21.0	1.140

13.2. SAR Plots (from Summary of Highest Measured SAR Values)

Test Laboratory: UL CCS SAR Lab C

Date: 10/8/2012

GPRS 850

Frequency: 848.8 MHz; Duty Cycle: 1:4; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 53.692$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1239; Calibrated: 6/6/2012
- Probe: EX3DV4 - SN3773; ConvF(8.74, 8.74, 8.74); Calibrated: 3/14/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1117

Edge 1/GPRS 2 slots_Ch 251 w/ Pwr back-off (0 mm)/Area Scan (6x21x1): Measurement grid:

dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.095 mW/g

Edge 1/GPRS 2 slots_Ch 251 w/ Pwr back-off (0 mm)/Zoom Scan (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

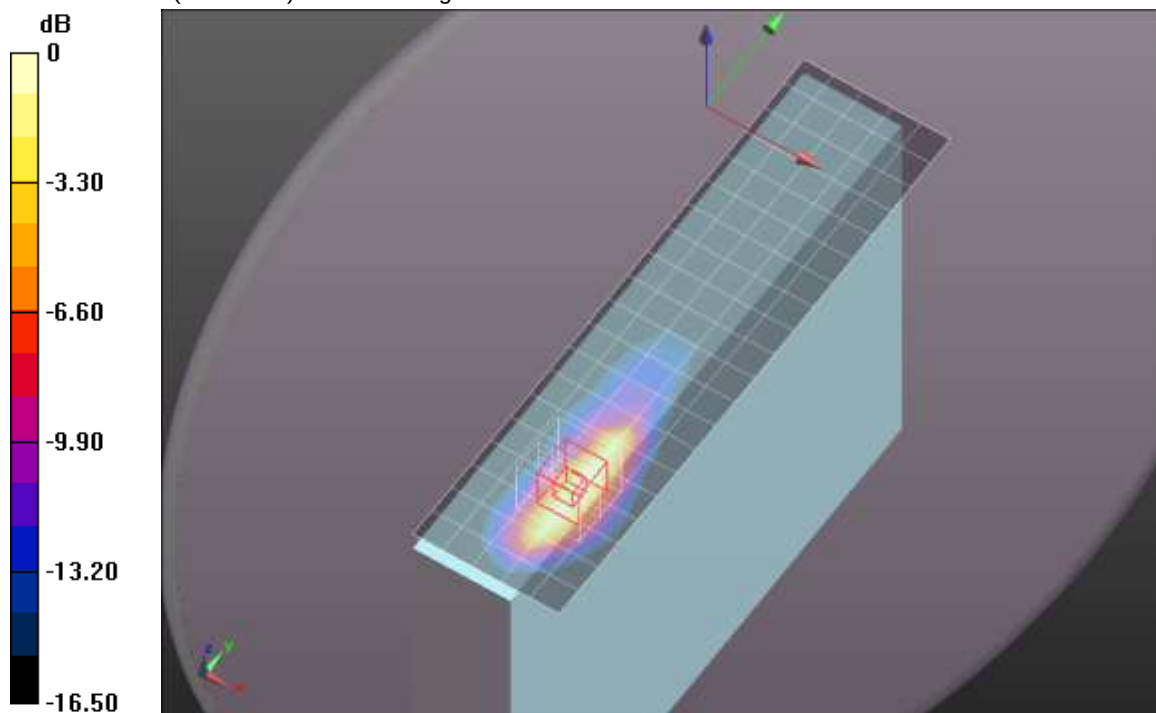
Reference Value = 32.446 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.9210

SAR(1 g) = 0.888 mW/g; SAR(10 g) = 0.433 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.052 mW/g



0 dB = 1.050mW/g = 0.42 dB mW/g

GSM1900

Frequency: 1880 MHz; Duty Cycle: 1:4.00037; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.492$ mho/m; $\epsilon_r = 52.908$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1239; Calibrated: 6/6/2012
- Probe: EX3DV4 - SN3773; ConvF(7.11, 7.11, 7.11); Calibrated: 3/14/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (B); Type: QDOVA001BB; Serial: 1099

Edge 1 Prox On/GPRS 2 Slots_Ch 661/Area Scan (6x21x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.33 W/kg

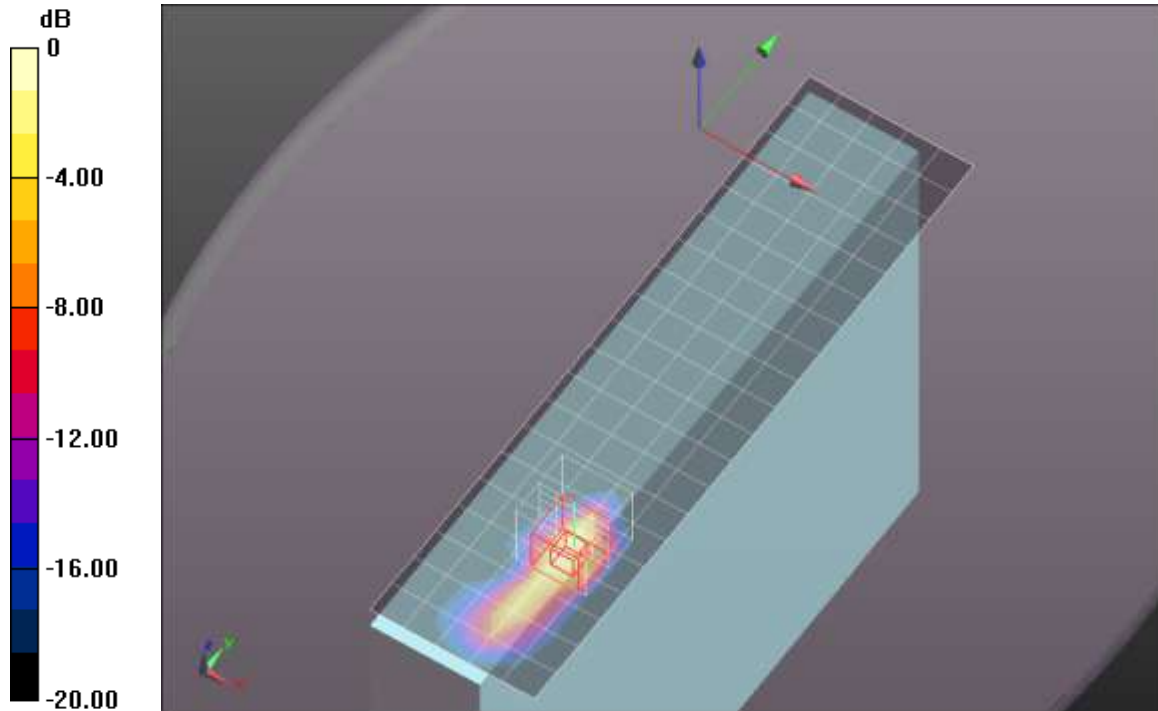
Edge 1 Prox On/GPRS 2 Slots_Ch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.035 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 3.01 W/kg

SAR(1 g) = 1.3 W/kg; SAR(10 g) = 0.556 W/kg

Maximum value of SAR (measured) = 1.89 W/kg



0 dB = 1.89 W/kg = 2.76 dBW/kg

WCDMA BAND V

Frequency: 846.6 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 846.6$ MHz; $\sigma = 0.999$ mho/m; $\epsilon_r = 53.801$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1239; Calibrated: 6/6/2012
- Probe: EX3DV4 - SN3773; ConvF(8.74, 8.74, 8.74); Calibrated: 3/14/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1117

Edge 1 Prox On/RMC Rel. 99_Ch 4233/Area Scan (6x21x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.318 mW/g

Edge 1 Prox On/RMC Rel. 99_Ch 4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

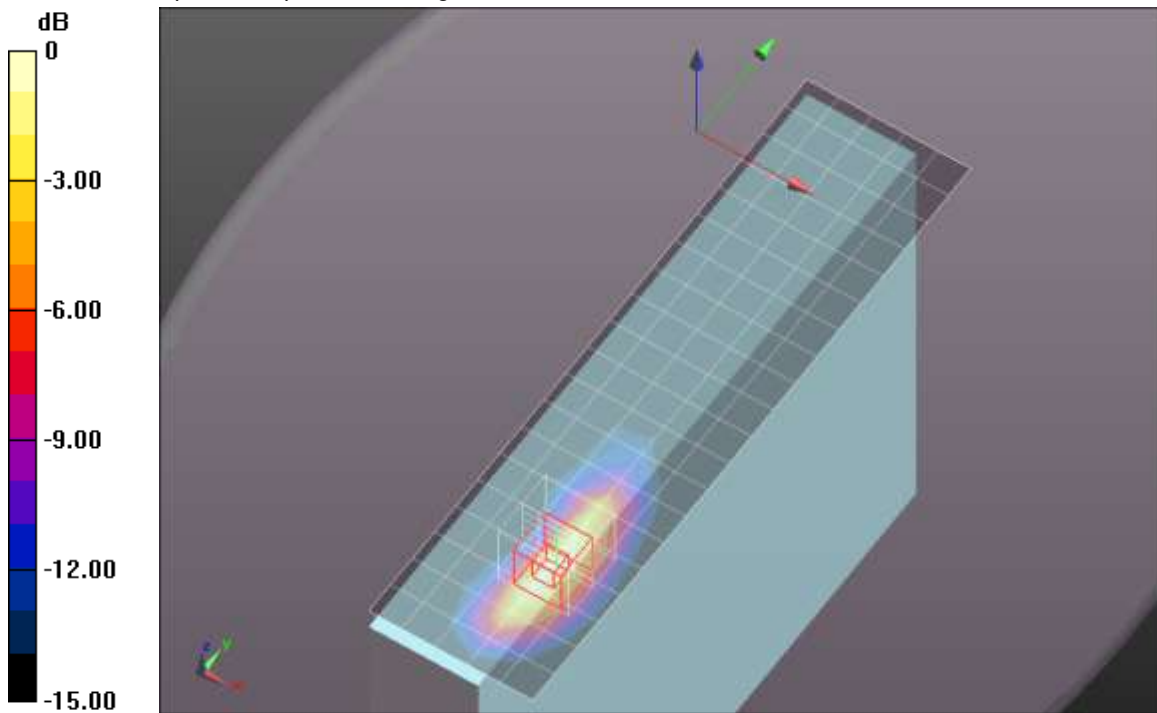
Reference Value = 38.321 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 2.0460

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.515 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.296 mW/g



0 dB = 1.300mW/g = 2.28 dB mW/g

W-CDMA Band II

Frequency: 1907.6 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 1907.6$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 50.9$; $\rho = 1000$ kg/m³;

DASY4 Configuration:

- Area Scan setting - Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE3 Sn500; Calibrated: 6/13/2012
- Probe: EX3DV4 - SN3749; ConvF(6.97, 6.97, 6.97); Calibrated: 1/27/2012
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: Flat Phantom ELI4.0; Type: QDOVA001BB; Serial: SN:1017

Edge 1 Prox On/Rel 99 RMC 12.2kbps_Ch9538/Area Scan (6x21x1): Measurement grid:

dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.10 mW/g

Edge 1 Prox On/Rel 99 RMC 12.2kbps_Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement

grid: dx=8mm, dy=8mm, dz=5mm

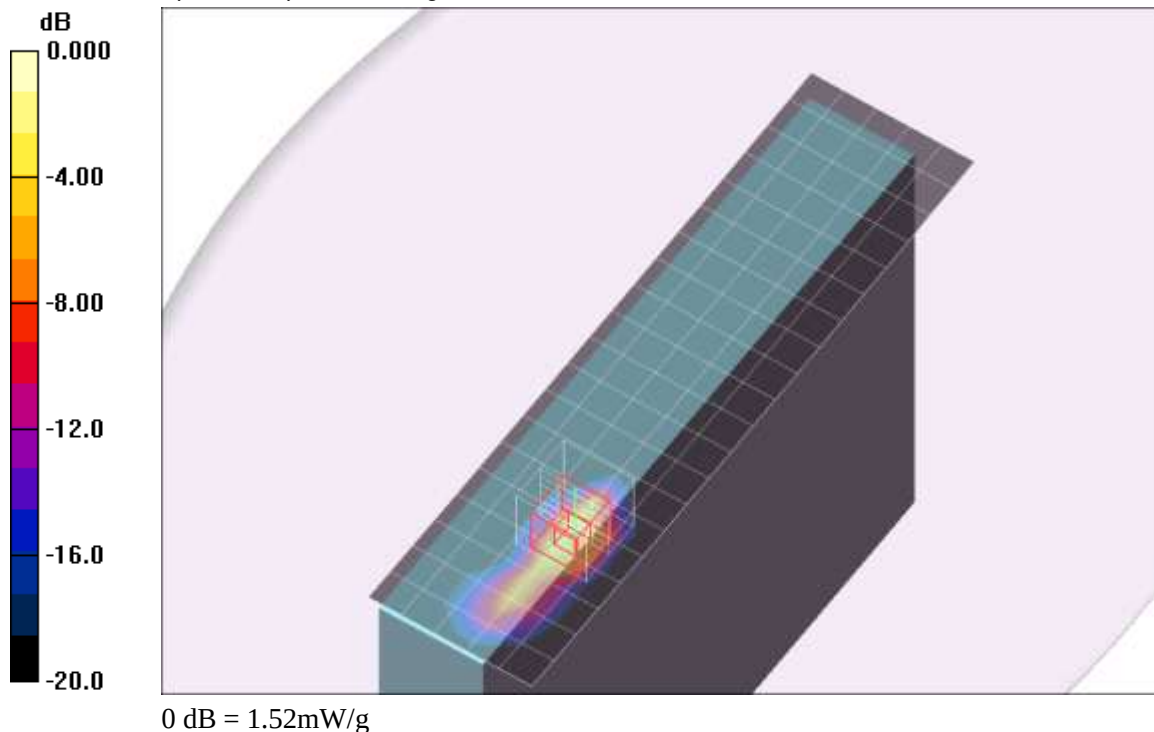
Reference Value = 29.0 V/m; Power Drift = -0.078 dB

Peak SAR (extrapolated) = 2.34 W/kg

SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.431 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.52 mW/g



Test Laboratory: UL CCS SAR Lab B Date: 10/4/2012

LTE Band 4

Frequency: 1715 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C

Medium parameters used: $f = 1715$ MHz; $\sigma = 1.436$ mho/m; $\epsilon_r = 51.425$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 3/8/2012
- Probe: EX3DV4 - SN3772; ConvF(7.55, 7.55, 7.55); Calibrated: 2/16/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1119

Edge 1 Prox. On/QPSK_RB 50/0 _ Ch 20000/Area Scan (6x21x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.49 W/kg

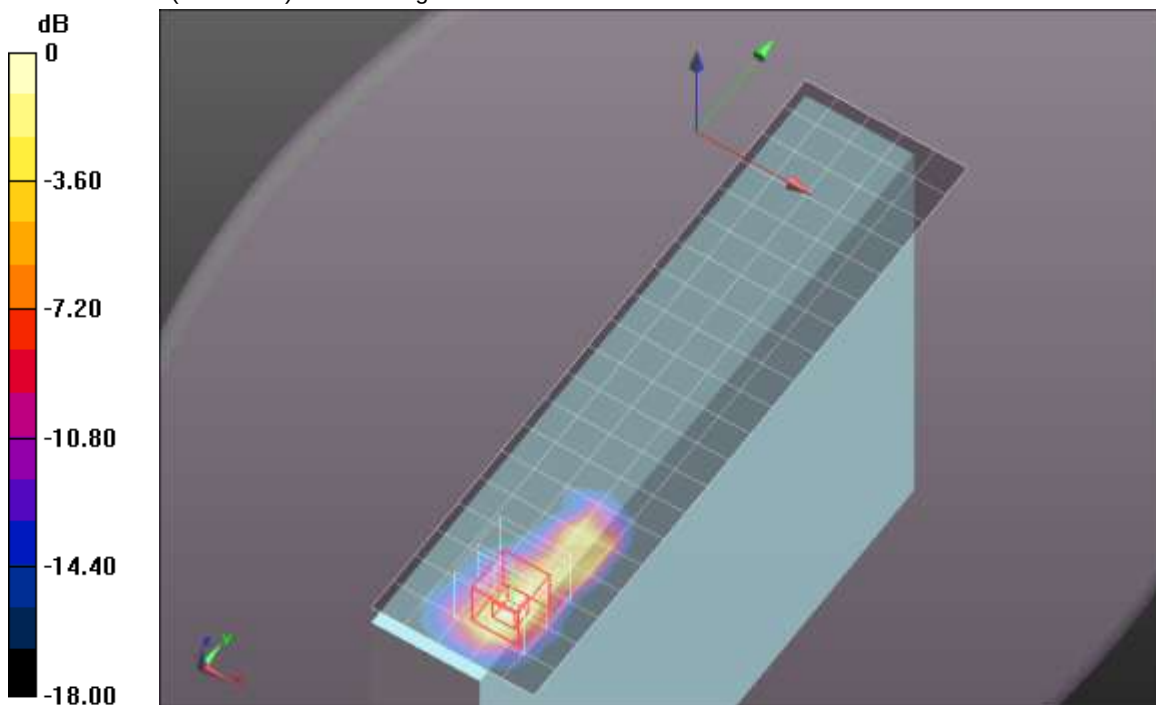
Edge 1 Prox. On/QPSK_RB 50/0 _ Ch 20000/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 31.752 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 0.995 W/kg; SAR(10 g) = 0.456 W/kg

Maximum value of SAR (measured) = 1.41 W/kg



0 dB = 1.41 W/kg = 1.49 dBW/kg

Test Laboratory: UL CCS SAR Lab B Date: 10/5/2012

LTE Band 17

Frequency: 711 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C
Medium parameters used (interpolated): $f = 711$ MHz; $\sigma = 0.915$ mho/m; $\epsilon_r = 55.169$; $\rho = 1000$ kg/m³

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 3/8/2012
- Probe: EX3DV4 - SN3772; ConvF(8.94, 8.94, 8.94); Calibrated: 2/16/2012;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2.5mm (Mechanical Surface Detection)
- Phantom: ELI v5.0 (A); Type: QDOVA001BB; Serial: 1119

Edge 1 Prox. On/QPSK_RB 1/24_ Ch 23800/Area Scan (6x21x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.12 W/kg

Edge 1 Prox. On/QPSK_RB 1/24_ Ch 23800/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm

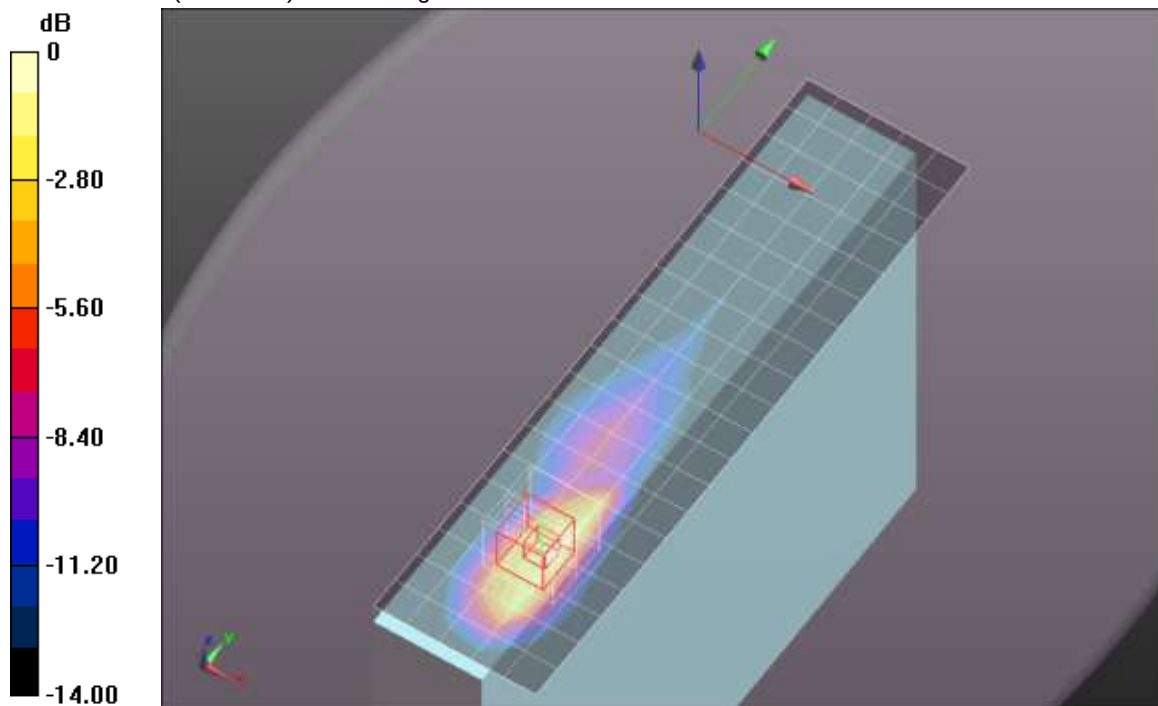
Reference Value = 34.558 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 2.17 W/kg

SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.609 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.54 W/kg = 1.88 dBW/kg

14. Simultaneous Transmission SAR Analysis

- The only test positions included for simultaneous transmission analysis are those that are shared between WWAN and Wi-Fi.
- All Wi-Fi 1-g SAR values were taken from measurement results recorded in SAR report 12J14611-1A, submitted under FCC ID ACJ9TGWL12A
- All Simultaneous Transmission SAR analysis applies scaling in accordance with the scaled values documented in this report (for the WWAN radios) and the aforementioned SAR report (12J14611-1A) with scaling applied (for the WLAN radios).

14.1. Bluetooth SAR in Simultaneous Transmission SAR Analysis

Standalone SAR Test Exclusion

Based on the criteria for Standalone SAR test exclusion listed in Section 4.3.1. of KDB 447498 D01 General RF Exposure Guidance v05:

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

An assessment was made using the above-stated formula to determine Bluetooth's eligibility for SAR test exclusion, using the following values:

- Power of Channel: 4.47 mW (rounded to 4 for the calculation)
- Min. Test Separation Distance: 2.3 mm (5mm is used for the calculation)
- Frequency: 2.441 GHz

Hence the equation:

$$[(4\text{mW})/(5 \text{ mm})] [\sqrt{2.441(\text{GHz})}] = 1.2$$

The computed value of 1.2 is < 3.0, and so Bluetooth qualifies for Standalone SAR test exclusion.

Estimated SAR for Simultaneous Transmission SAR Analysis

As SAR was not measured for Bluetooth, estimated Standalone SAR values were computed for Bluetooth for the purpose of Simultaneous Transmission SAR Analysis using the following formula:

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

With x = 7.5 for 1-g SAR

This standalone SAR estimation was performed in accordance with the separation distances listed in Section 17.1 "Antenna Locations" and only at the applicable simultaneous transmission test positions. The estimated SAR results are as follow:

Test Position	Power of Channel, with Tune-Up Tolerance, mW	Minimum. Test Separation Distance, mm	Estimated 1-g SAR Values, W/kg
Rear	4.47	8.2	0.114
Edge 4	4.47	2.3	0.405

14.2. Sum of the SAR for GSM & Wi-Fi 2.4 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	GPRS 850	GPRS 1900	WiFi 2.4 GHz Main	WiFi 2.4 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.314		0.01094		0.114	0.439
	0.314			0.093		0.407
		0.057	0.01094		0.114	0.182
		0.057		0.093		0.150
Rear, Wi-Fi 2 Tx (MIMO)	0.314		0.00319	0.017		0.334
		0.057	0.00319	0.017		0.077
Edge 1, 0 mm, w/ WWAN Power Reduction	0.902		1.425			2.327
		1.3	1.425			2.725
Edge 4	0.268			1.29		1.558
	0.268				0.405	0.673
		0.243		1.29		1.533
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		GSM 850	GSM 1900	WiFi 2.4 GHz Main				
1	Edge 1, 0 mm, w/ WWAN Pwr Reduction	0.902		1.425	2.327	131.60	0.027	1
2			1.300	1.425	2.725	127.48	0.035	2

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.3. Sum of the SAR for W-CDMA & Wi-Fi 2.4 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	W-CDMA Band V	W-CDMA Band II	WiFi 2.4 GHz Main	WiFi 2.4 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.232		0.01094		0.114	0.357
	0.232			0.093		0.325
		0.054	0.01094		0.114	0.179
		0.054		0.093		0.147
Rear, Wi-Fi 2 Tx (MIMO)	0.232		0.00319	0.017		0.252
		0.054	0.00319	0.017		0.074
Edge 1, 0 mm, w/ WWAN Power Reduction	1.077		1.425			2.502
		1.07	1.425			2.495
Edge 4	0.233			1.29		1.523
	0.233				0.405	0.638
		0.243		1.29		1.533
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		W-CDMA Band V	W-CDMA Band II	WiFi 2.4 GHz Main				
3	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.077		1.425	2.502	130.00	0.030	3
4			1.070	1.425	2.495	122.68	0.032	4

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.4. Sum of the SAR for LTE & Wi-Fi 2.4 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	LTE Band 4	LTE Band 17	WiFi 2.4 GHz Main	WiFi 2.4 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.096		0.01094		0.114	0.221
	0.096			0.093		0.189
		0.259	0.01094		0.114	0.384
		0.259		0.093		0.352
Rear, Wi-Fi 2 Tx (MIMO)	0.096		0.00319	0.017		0.116
		0.259	0.00319	0.017		0.279
Edge 1, 0 mm, w/ WWAN Power Reduction	1.066		1.425			2.491
		1.217	1.425			2.642
Edge 4	0.275			1.29		1.565
	0.275				0.405	0.680
		0.192		1.29		1.482
		0.192			0.405	0.597

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		LTE Band 4	LTE Band 17	WiFi 2.4 GHz Main				
5	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.066		1.425	2.491	160.04	0.025	5
6			1.217	1.425	2.642	128.89	0.033	6

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.5. Sum of the SAR for GSM & Wi-Fi 5.2 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	GPRS 850	GPRS 1900	WiFi 5.2 GHz Main	WiFi 5.2 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.314		0.027		0.114	0.455
	0.314			0.134		0.448
		0.057	0.027		0.114	0.198
		0.057		0.134		0.191
Rear, Wi-Fi 2 Tx (MIMO)	0.314		0.004	0.100		0.418
		0.057	0.004	0.100		0.161
Edge 1, 0 mm, w/ WWAN Power Reduction	0.902		1.11			2.012
		1.3	1.11			2.410
Edge 4	0.268			0.721		0.989
	0.268				0.405	0.673
		0.243		0.721		0.964
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		GSM 850	GSM 1900	WiFi 5.2 GHz Main				
7	Edge 1, 0 mm, w/ WWAN Pwr Reduction	0.902		1.11	2.012	126.77	0.023	7
8			1.300	1.11	2.410	122.34	0.031	8

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.6. Sum of the SAR for W-CDMA & Wi-Fi 5.2 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	W-CDMA Band V	W-CDMA Band II	WiFi 5.2 GHz Main	WiFi 5.2 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.232		0.027		0.114	0.373
	0.232			0.134		0.366
		0.054	0.027		0.114	0.195
		0.054		0.134		0.188
Rear, Wi-Fi 2 Tx (MIMO)	0.232		0.004	0.100		0.336
		0.054	0.004	0.100		0.158
Edge 1, 0 mm, w/ WWAN Power Reduction	1.077		1.11			2.187
		1.07	1.11			2.180
Edge 4	0.233			0.721		0.954
	0.233				0.405	0.638
		0.243		0.721		0.964
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		W-CDMA Band V	W-CDMA Band II	WiFi 5.2 GHz Main				
9	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.077		1.11	2.187	125.17	0.026	9
10			1.07	1.11	2.180	117.62	0.027	10

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.7. Sum of the SAR for LTE & Wi-Fi 5.2 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	LTE Band 4	LTE Band 17	WiFi 5.2 GHz Main	WiFi 5.2 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.096		0.027		0.114	0.237
	0.096			0.134		0.230
		0.259	0.027		0.114	0.400
		0.259		0.134		0.393
Rear, Wi-Fi 2 Tx (MIMO)	0.096		0.004	0.100		0.200
		0.259	0.004	0.100		0.363
Edge 1, 0 mm, w/ WWAN Power Reduction	1.066		1.11			2.176
		1.217	1.11			2.327
Edge 4	0.275			0.721		0.996
	0.275				0.405	0.680
		0.192		0.721		0.913
		0.192			0.405	0.597

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		LTE Band 4	LTE Band 17	WiFi 5.2 GHz Main				
11	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.066		1.11	2.176	155.05	0.021	11
12			1.217	1.11	2.327	124.29	0.029	12

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.8. Sum of the SAR for GSM & Wi-Fi 5.3 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	GPRS 850	GPRS 1900	WiFi 5.3 GHz Main	WiFi 5.3 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.314		0.024		0.114	0.452
	0.314			0.132		0.446
		0.057	0.024		0.114	0.195
		0.057		0.132		0.189
Rear, Wi-Fi 2 Tx (MIMO)	0.314		0.012	0.108		0.434
		0.057	0.012	0.108		0.177
Edge 1, 0 mm, w/ WWAN Power Reduction	0.902		1.307			2.209
		1.3	1.307			2.607
Edge 4	0.268			0.724		0.992
	0.268				0.405	0.673
		0.243		0.724		0.967
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		GSM 850	GSM 1900	WiFi 5.3 GHz Main				
13	Edge 1, 0 mm, w/ WWAN Pwr Reduction	0.902		1.307	2.209	127.95	0.026	13
14			1.300	1.307	2.607	123.37	0.034	14

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.9. Sum of the SAR for W-CDMA & Wi-Fi 5.3 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	W-CDMA Band V	W-CDMA Band II	WiFi 5.3 GHz Main	WiFi 5.3 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.232		0.024		0.114	0.370
	0.232			0.132		0.364
		0.054	0.024		0.114	0.192
		0.054		0.132		0.186
Rear, Wi-Fi 2 Tx (MIMO)	0.232		0.012	0.108		0.352
		0.054	0.012	0.108		0.174
Edge 1, 0 mm, w/ WWAN Power Reduction	1.077		1.307			2.384
		1.07	1.307			2.377
Edge 4	0.233			0.724		0.957
	0.233				0.405	0.638
		0.243		0.724		0.967
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		W-CDMA Band V	W-CDMA Band II	WiFi 5.3 GHz Main				
15	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.077		1.307	2.384	126.35	0.029	15
16			1.070	1.307	2.377	118.69	0.031	16

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.10. Sum of the SAR for LTE & Wi-Fi 5.3 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	LTE Band 4	LTE Band 17	WiFi 5.3 GHz Main	WiFi 5.3 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.096		0.024		0.114	0.234
	0.096			0.132		0.228
		0.259	0.024		0.114	0.397
		0.259		0.132		0.391
Rear, Wi-Fi 2 Tx (MIMO)	0.096		0.012	0.108		0.216
		0.259	0.012	0.108		0.379
Edge 1, 0 mm, w/ WWAN Power Reduction	1.066		1.307			2.373
		1.217	1.307			2.524
Edge 4	0.275			0.724		0.999
	0.275				0.405	0.680
		0.192		0.724		0.916
		0.192			0.405	0.597

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		LTE Band 4	LTE Band 17	WiFi 5.3 GHz Main				
17	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.066		1.307	2.373	156.13	0.023	17
18			1.217	1.307	2.524	125.56	0.032	18

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.11. Sum of the SAR for GSM & Wi-Fi 5.5 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	GPRS 850	GPRS 1900	WiFi 5.5 GHz Main	WiFi 5.5 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.314		0.031		0.114	0.459
	0.314			0.206		0.520
		0.057	0.031		0.114	0.202
		0.057		0.206		0.263
Rear, Wi-Fi 2 Tx (MIMO)	0.314		0.013	0.126		0.453
		0.057	0.013	0.126		0.196
Edge 1, 0 mm, w/ WWAN Power Reduction	0.902		1.3			2.202
		1.3	1.3			2.600
Edge 4	0.268			1.01		1.278
	0.268				0.405	0.673
		0.243		1.01		1.253
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		GSM 850	GSM 1900	WiFi 5.5 GHz Main				
19	Edge 1, 0 mm, w/ WWAN Pwr Reduction	0.902		1.30	2.202	129.12	0.025	19
20			1.300	1.30	2.600	124.74	0.034	20

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.12. Sum of the SAR for W-CDMA & Wi-Fi 5.5 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	W-CDMA Band V	W-CDMA Band II	WiFi 5.5 GHz Main	WiFi 5.5 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.232		0.031		0.114	0.377
	0.232			0.206		0.438
		0.054	0.031		0.114	0.199
		0.054		0.206		0.260
Rear, Wi-Fi 2 Tx (MIMO)	0.232		0.013	0.126		0.371
		0.054	0.013	0.126		0.193
Edge 1, 0 mm, w/ WWAN Power Reduction	1.077		1.3			2.377
		1.07	1.3			2.370
Edge 4	0.233			1.01		1.243
	0.233				0.405	0.638
		0.243		1.01		1.253
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		W-CDMA Band V	W-CDMA Band II	WiFi 5.5 GHz Main				
21	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.077		1.30	2.377	127.52	0.029	21
22			1.070	1.30	2.370	120.01	0.030	22

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.13. Sum of the SAR for LTE & Wi-Fi 5.5 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	LTE Band 4	LTE Band 17	WiFi 5.5 GHz Main	WiFi 5.5 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.096		0.031		0.114	0.241
	0.096			0.206		0.302
		0.259	0.031		0.114	0.404
		0.259		0.206		0.465
Rear, Wi-Fi 2 Tx (MIMO)	0.096		0.013	0.126		0.235
		0.259	0.013	0.126		0.398
Edge 1, 0 mm, w/ WWAN Power Reduction	1.066		1.3			2.366
		1.217	1.3			2.517
Edge 4	0.275			1.01		1.285
	0.275				0.405	0.680
		0.192		1.01		1.202
		0.192			0.405	0.597

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		LTE Band 4	LTE Band 17	WiFi 5.5 GHz Main				
23	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.066		1.30	2.366	157.43	0.023	23
24			1.217	1.30	2.517	126.60	0.032	24

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.14. Sum of the SAR for GSM & Wi-Fi 5.8 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	GPRS 850	GPRS 1900	WiFi 5.8 GHz Main	WiFi 5.8 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.314		0.031		0.114	0.459
	0.314			0.189		0.503
		0.057	0.031		0.114	0.202
		0.057		0.189		0.246
Rear, Wi-Fi 2 Tx (MIMO)	0.314		0.013	0.129		0.456
		0.057	0.013	0.129		0.199
Edge 1, 0 mm, w/ WWAN Power Reduction	0.902		1.231			2.133
		1.3	1.231			2.531
Edge 4	0.268			1.152		1.420
	0.268				0.405	0.673
		0.243		1.152		1.395
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		GSM 850	GSM 1900	WiFi 5.8 GHz Main				
25	Edge 1, 0 mm, w/ WWAN Pwr Reduction	0.902		1.231	2.133	127.77	0.024	25
26			1.300	1.231	2.531	123.34	0.033	26

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.15. Sum of the SAR for W-CDMA & Wi-Fi 5.8 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	W-CDMA Band V	W-CDMA Band II	WiFi 5.8 GHz Main	WiFi 5.8 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.232		0.031		0.114	0.377
	0.232			0.189		0.421
		0.054	0.031		0.114	0.199
		0.054		0.189		0.243
Rear, Wi-Fi 2 Tx (MIMO)	0.232		0.013	0.129		0.374
		0.054	0.013	0.129		0.196
Edge 1, 0 mm, w/ WWAN Power Reduction	1.077		1.231			2.308
		1.07	1.231			2.301
Edge 4	0.233			1.152		1.385
	0.233				0.405	0.638
		0.243		1.152		1.395
		0.243			0.405	0.648

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is < 0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		W-CDMA Band V	W-CDMA Band II	WiFi 5.8 GHz Main				
27	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.077		1.231	2.308	126.17	0.028	27
28			1.070	1.231	2.301	118.62	0.029	28

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.16. Sum of the SAR LTE & Wi-Fi 5.8 GHz Band

Test Position	Data					Σ 1-g SAR (mW/g)
	LTE Band 4	LTE Band 17	WiFi 5.8 GHz Main	WiFi 5.8 GHz Aux	Bluetooth	
Rear, Wi-Fi 1 Tx	0.096		0.031		0.114	0.241
	0.096			0.189		0.285
		0.259	0.031		0.114	0.404
		0.259		0.189		0.448
Rear, Wi-Fi 2 Tx (MIMO)	0.096		0.013	0.129		0.238
		0.259	0.013	0.129		0.401
Edge 1, 0 mm, w/ WWAN Power Reduction	1.066		1.231			2.297
		1.217	1.231			2.448
Edge 4	0.275			1.152		1.427
	0.275				0.405	0.680
		0.192		1.152		1.344
		0.192			0.405	0.597

Notes:

1. Simultaneous transmission SAR measurement (Volume Scan) is not required when the sum of the 1-g SAR is < 1.6 W/kg
2. If the sum of the SAR is > 1.6 W/kg an SPLSR calculation is performed. If SPLSR is <0.04 then Simultaneous transmission SAR measurement (Volume Scan) is not required

SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Worst-case combination			Σ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR	Figure
		LTE Band 4	LTE Band 17	WiFi 5.8 GHz Main				
29	Edge 1, 0 mm, w/ WWAN Pwr Reduction	1.066		1.231	2.297	156.05	0.022	29
30			1.217	1.231	2.448	125.28	0.031	30

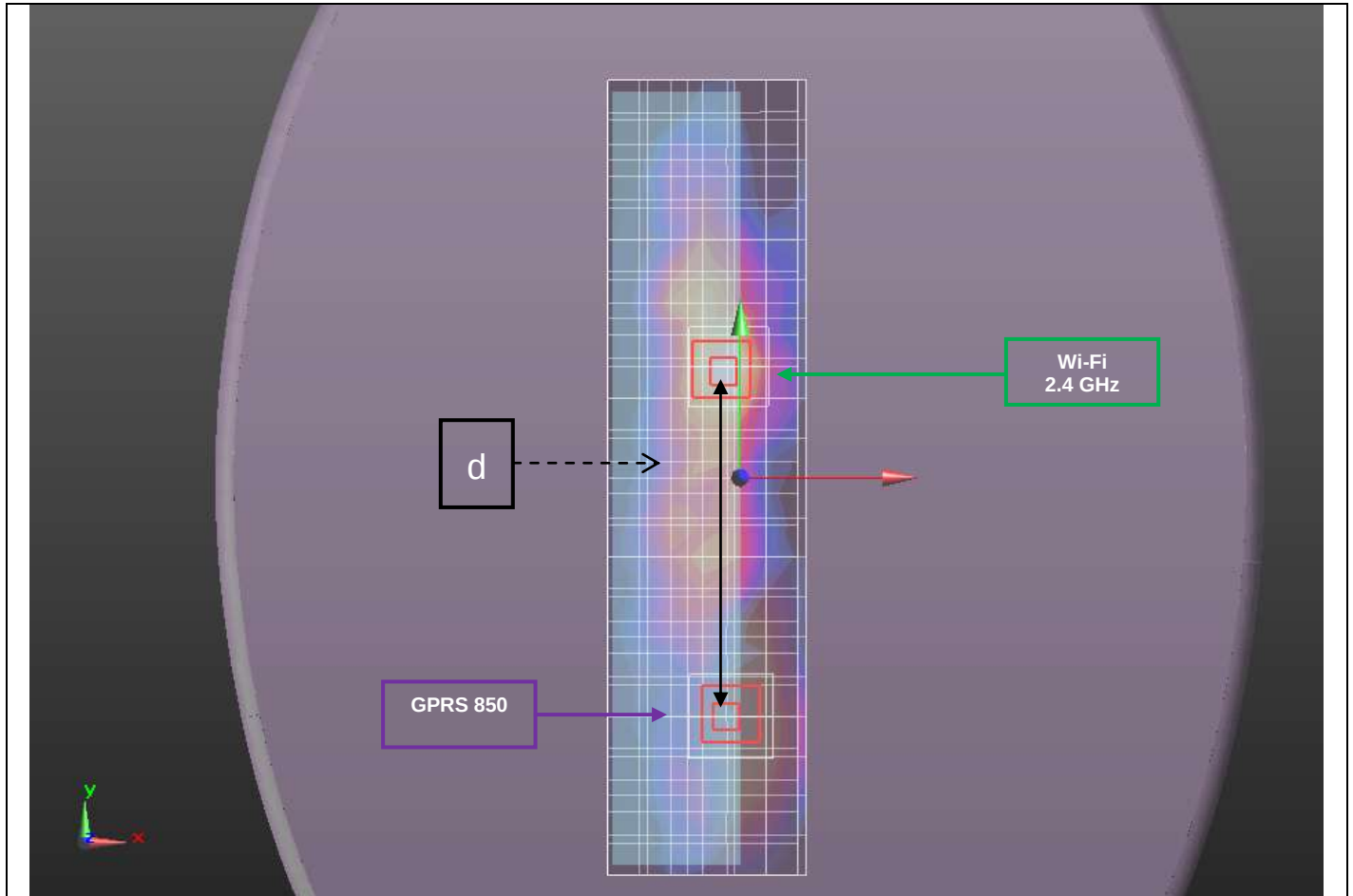
Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

14.17. SAR Peak Location Separation Distance Calculations and Figures

14.17.1. Wi-Fi 2.4 GHz and WWAN

Figure (1)



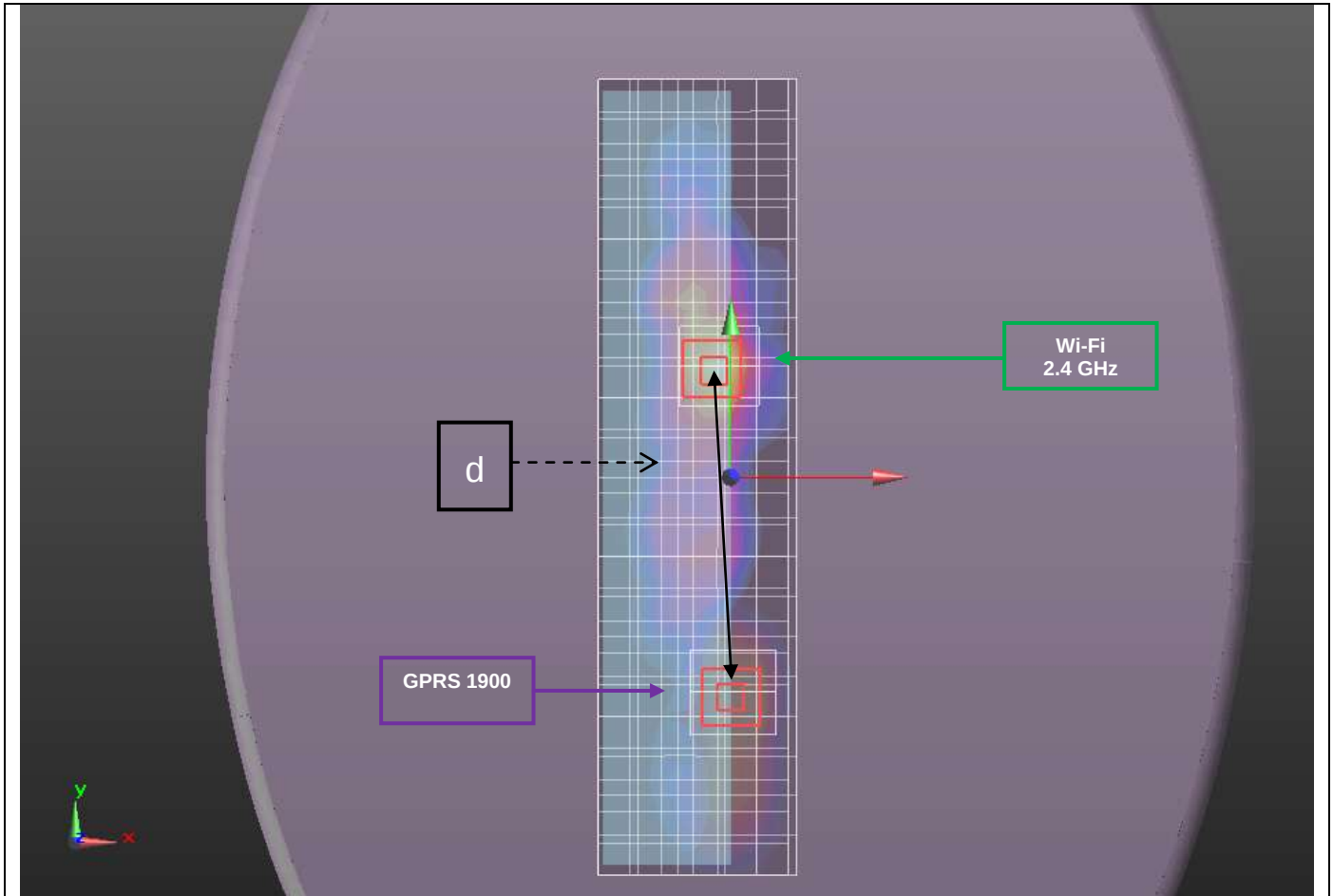
Mode	Peak SAR mW/g	X m	Y m	Z m
GPRS 850	1.43	-0.00668	-0.0916	-0.181
WiFi 2.4 GHz	3.66	-0.00638	0.04	-0.182

d: Calculated distance (mm)

131.60

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (2)

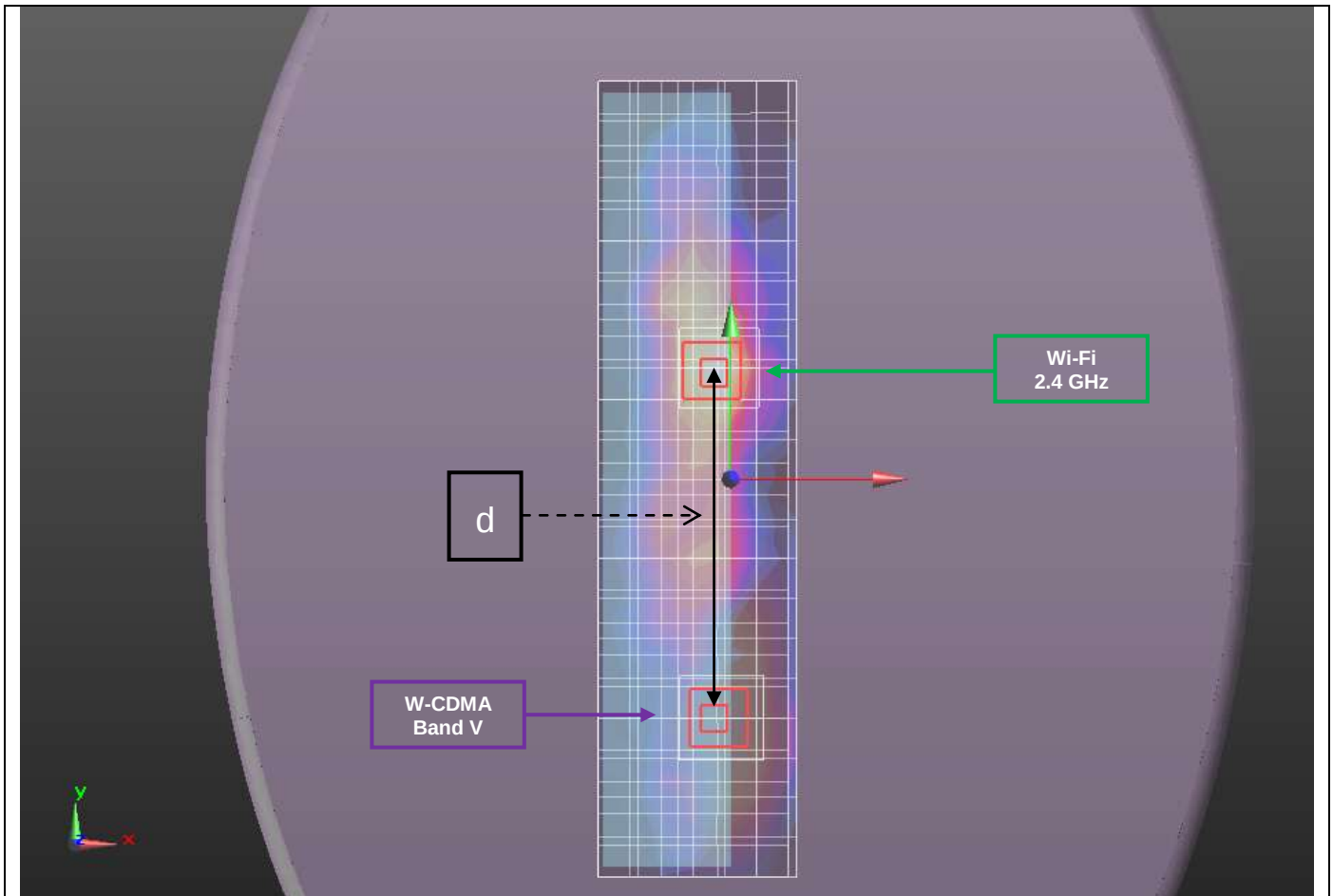


Mode	Peak SAR mW/g	X m	Y m	Z m
GPRS 1900	3.01	-0.0004	-0.0873	-0.185
WiFi 2.4 GHz	3.66	-0.00638	0.04	-0.182

d: Calculated distance (mm)
127.48

Note: $d = \text{SQRT}((X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2)$

Figure (3)

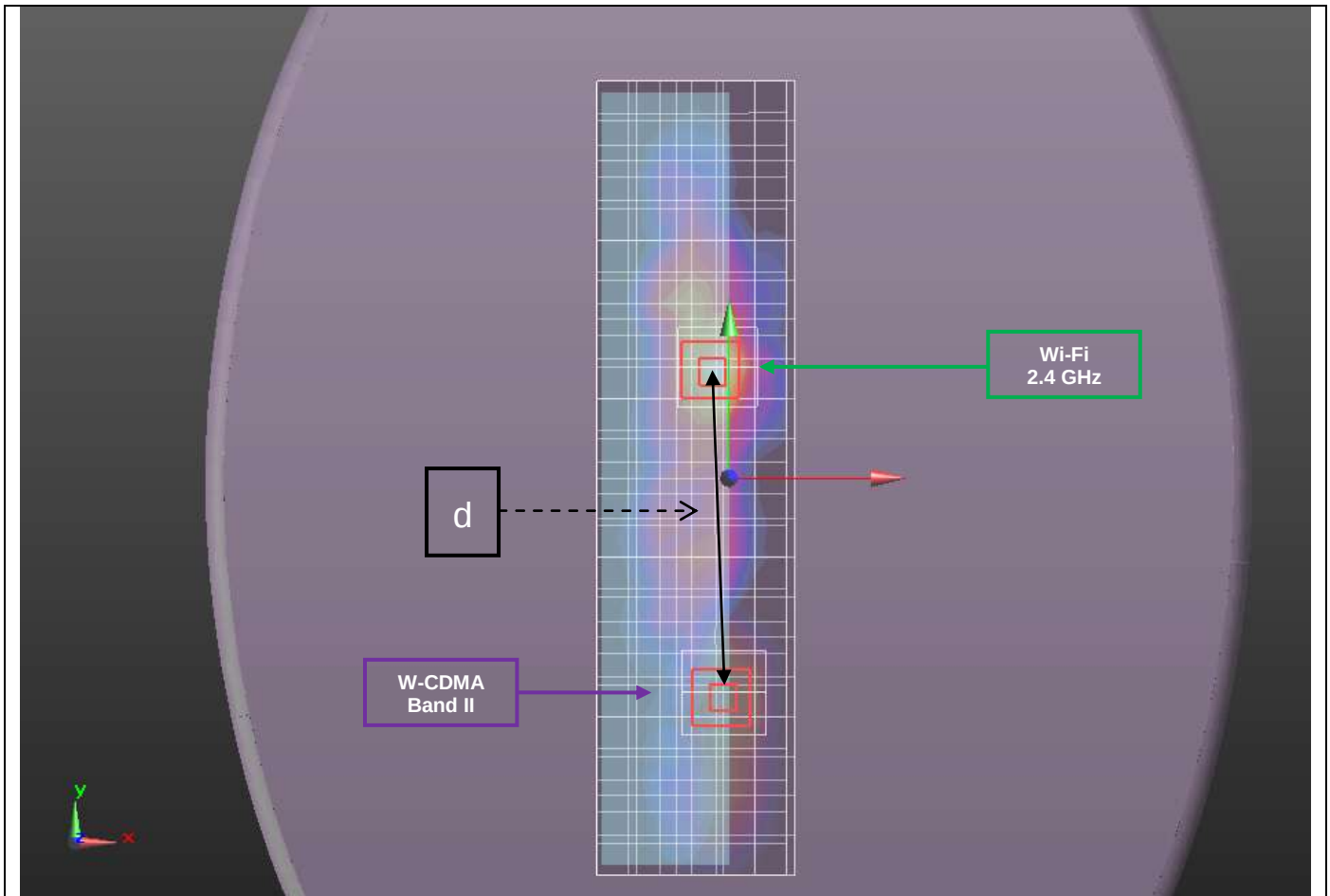


Mode	Peak SAR mW/g	X m	Y m	Z m
W-CDMA Band V	1.62	-0.00666	-0.09	-0.181
WiFi 2.4 GHz	3.66	-0.00638	0.04	-0.182

d: Calculated distance (mm)
130.00

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (4)

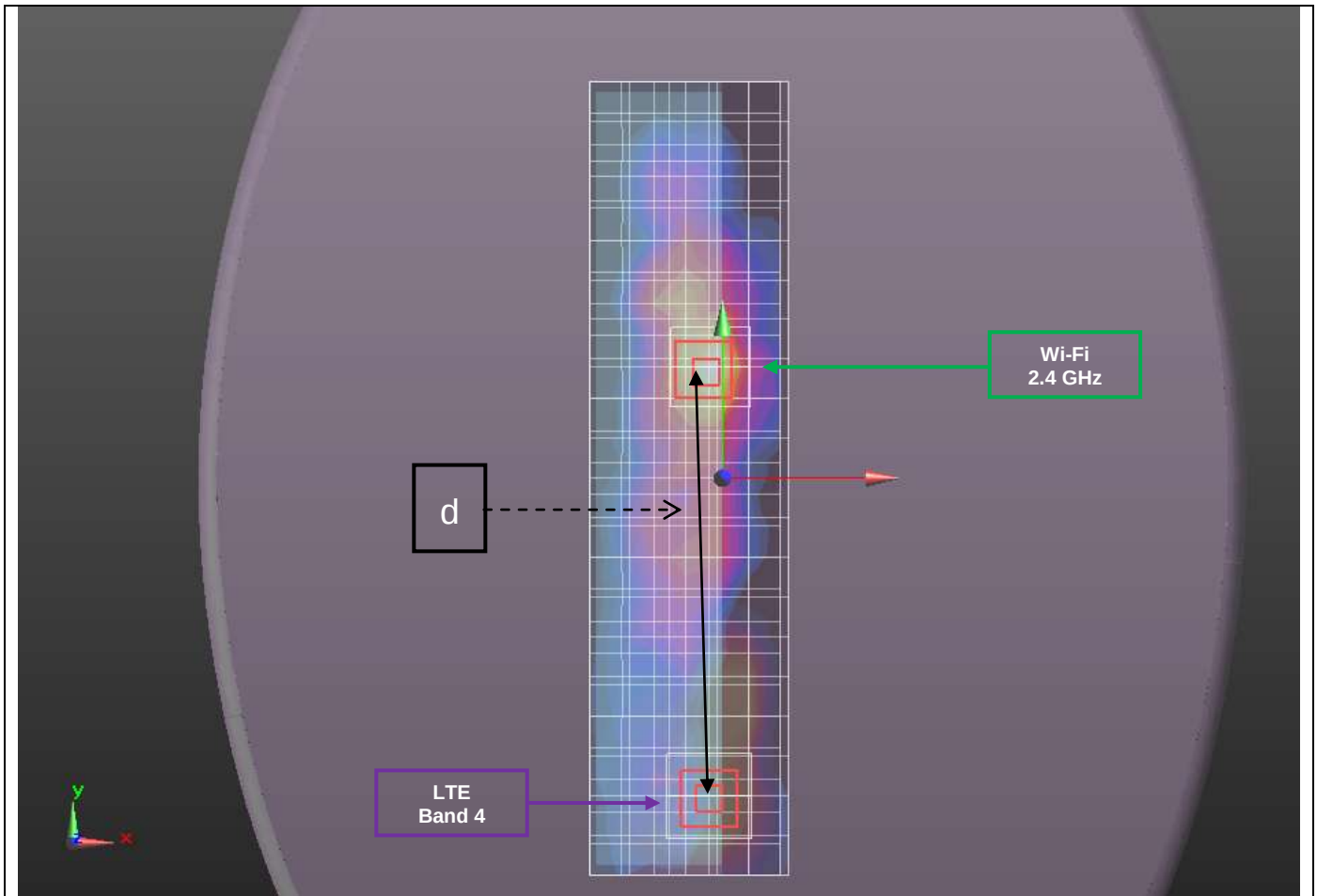


Mode	Peak SAR mW/g	X m	Y m	Z m
W-CDMA Band II	2.34	-0.00196	-0.0826	-0.181
WiFi 2.4 GHz	3.66	-0.00638	0.04	-0.182

d: Calculated distance (mm)
122.68

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (5)

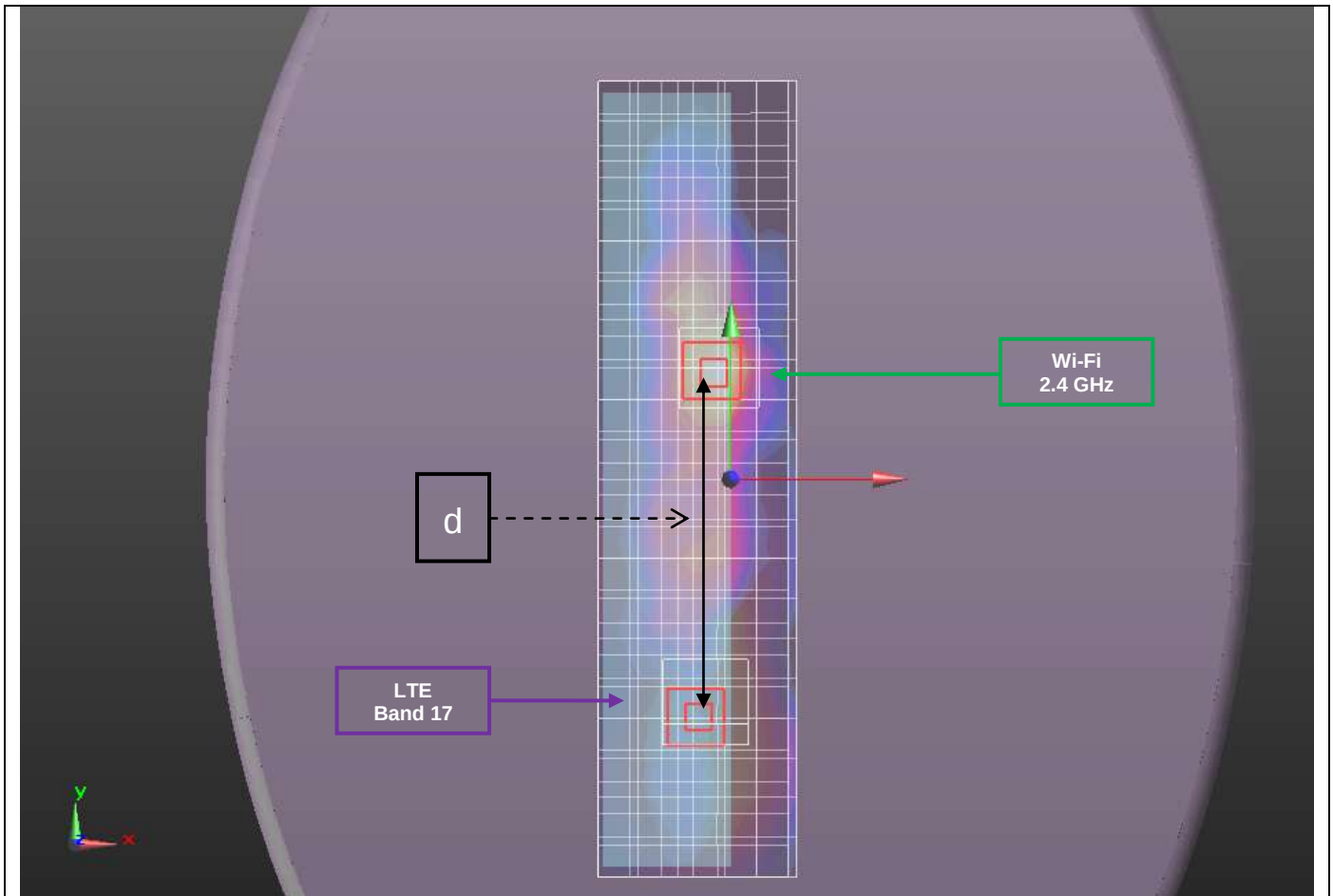


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.94	-0.0034	-0.12	-0.184
WiFi 2.4 GHz	3.66	-0.00638	0.04	-0.182

d: Calculated distance (mm)
160.04

Note: $d = \text{SQRT}((X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2)$

Figure (6)



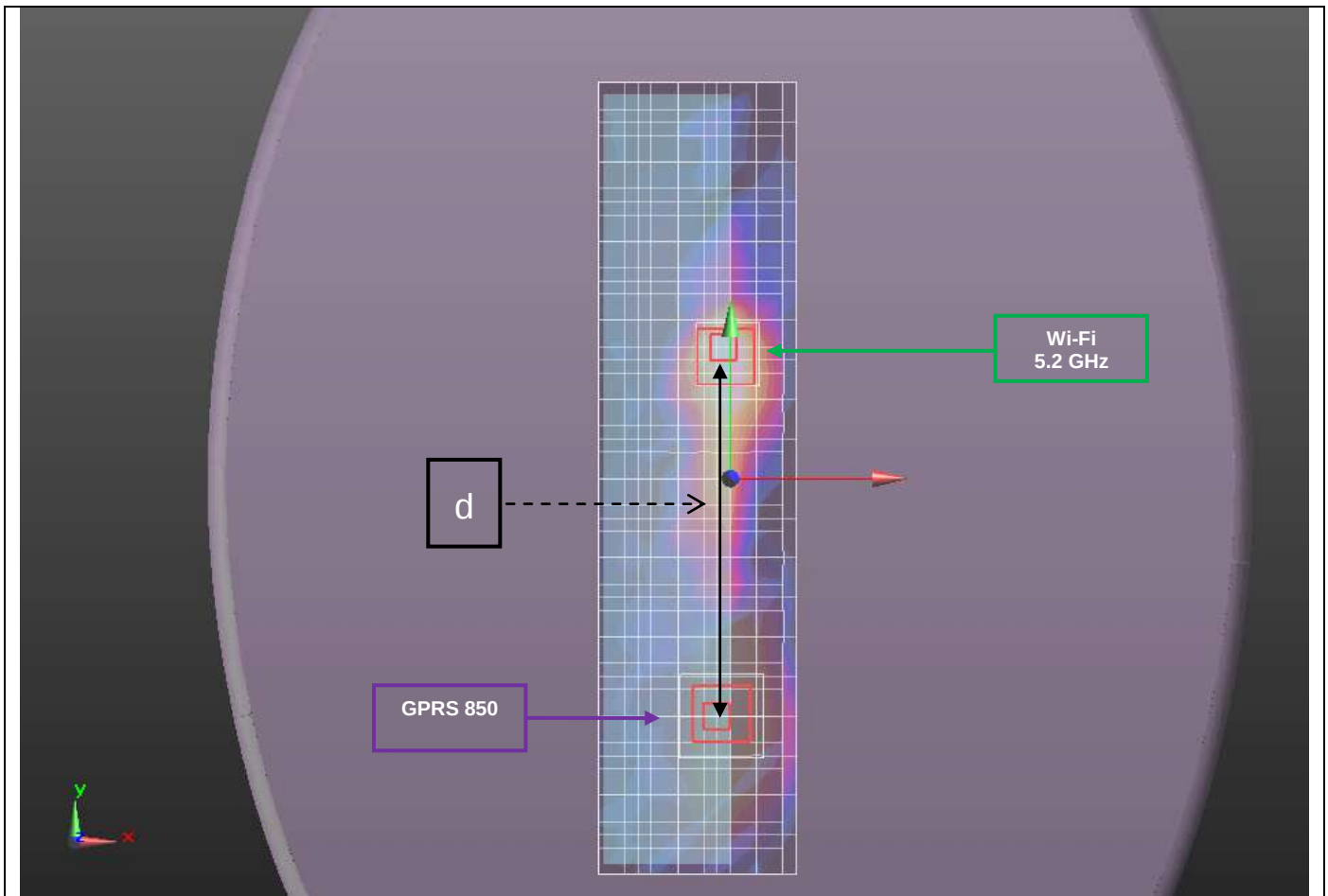
Mode	Peak SAR mW/g	X m	Y m	Z m
LTE Band 17	2.07	-0.0111	-0.0888	-0.181
WiFi 2.4 GHz	3.66	-0.00638	0.04	-0.182

d: Calculated distance (mm)
128.89

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

14.17.2. Wi-Fi 5.2 GHz and WWAN

Figure (7)

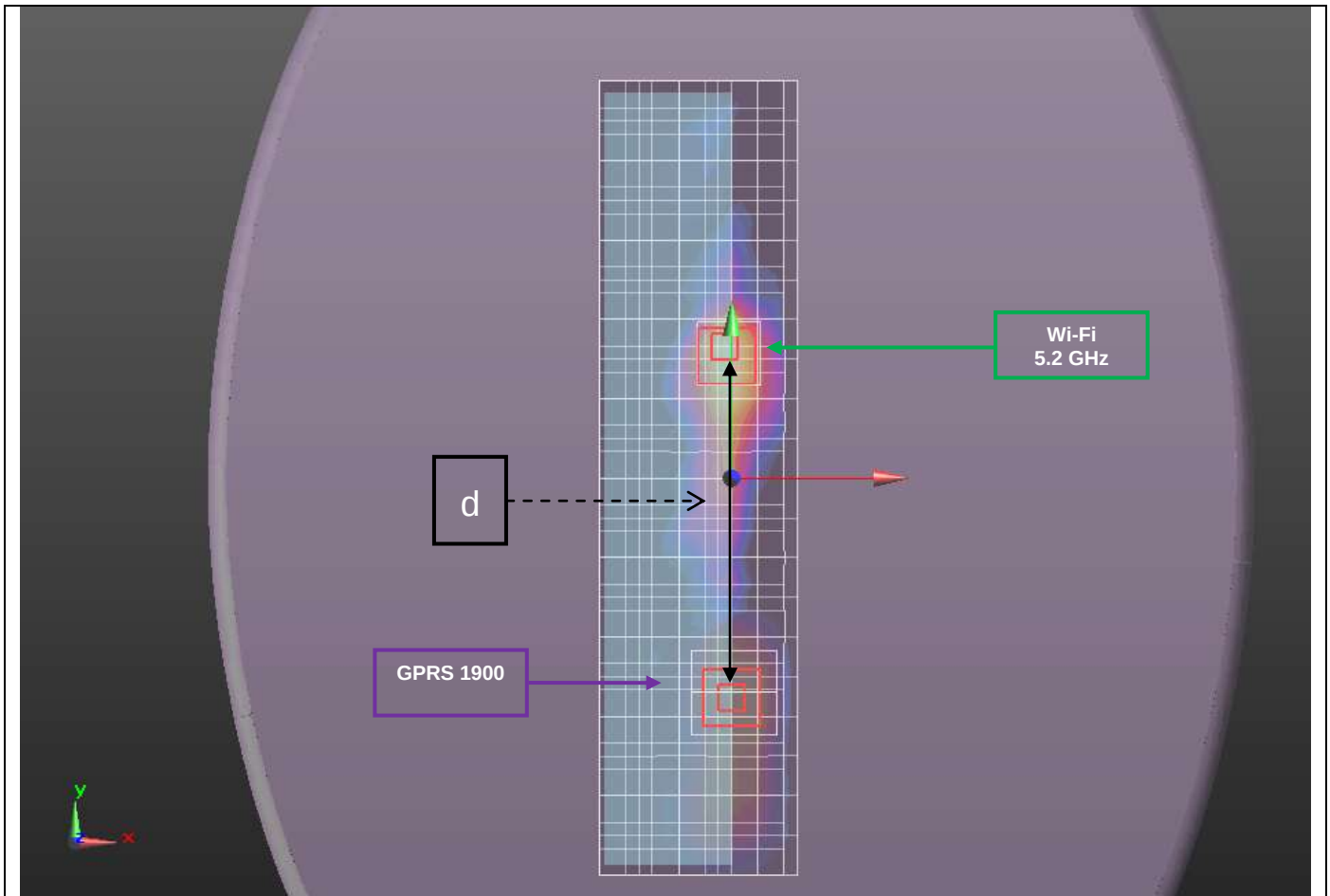


Mode	Peak SAR mW/g	X m	Y m	Z m
GPRS 850	1.43	-0.00668	-0.0916	-0.181
WiFi 5.2 GHz	7.24	-0.000154	0.035	-0.182

d: Calculated distance (mm)
126.77

Note: $d = \sqrt{(X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2}$

Figure (8)

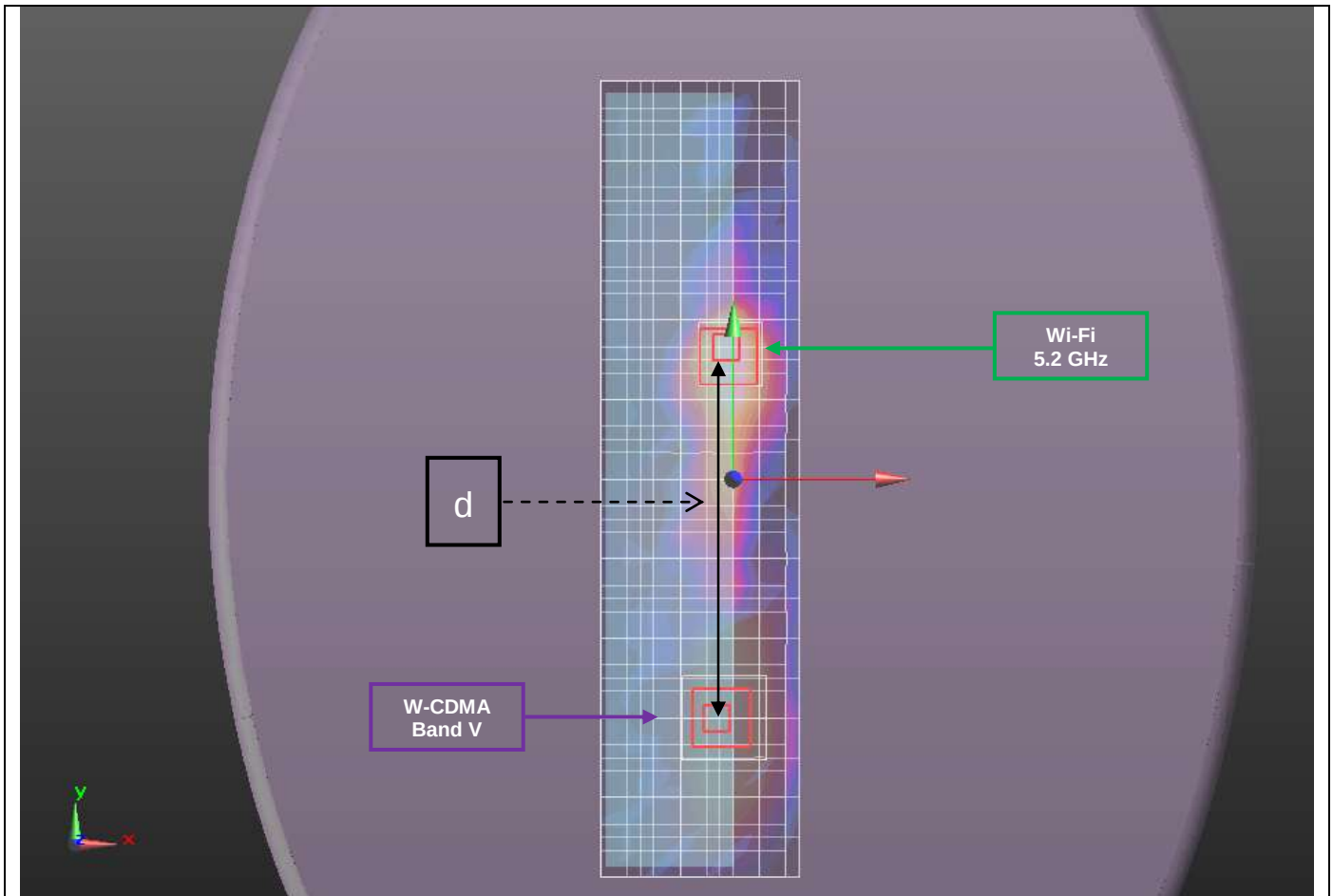


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GPRS 1900	3.01	-0.0004	-0.0873	-0.185
WiFi 5.2 GHz	7.24	-0.000154	0.035	-0.182

d: Calculated distance (mm)	
122.34	

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (9)

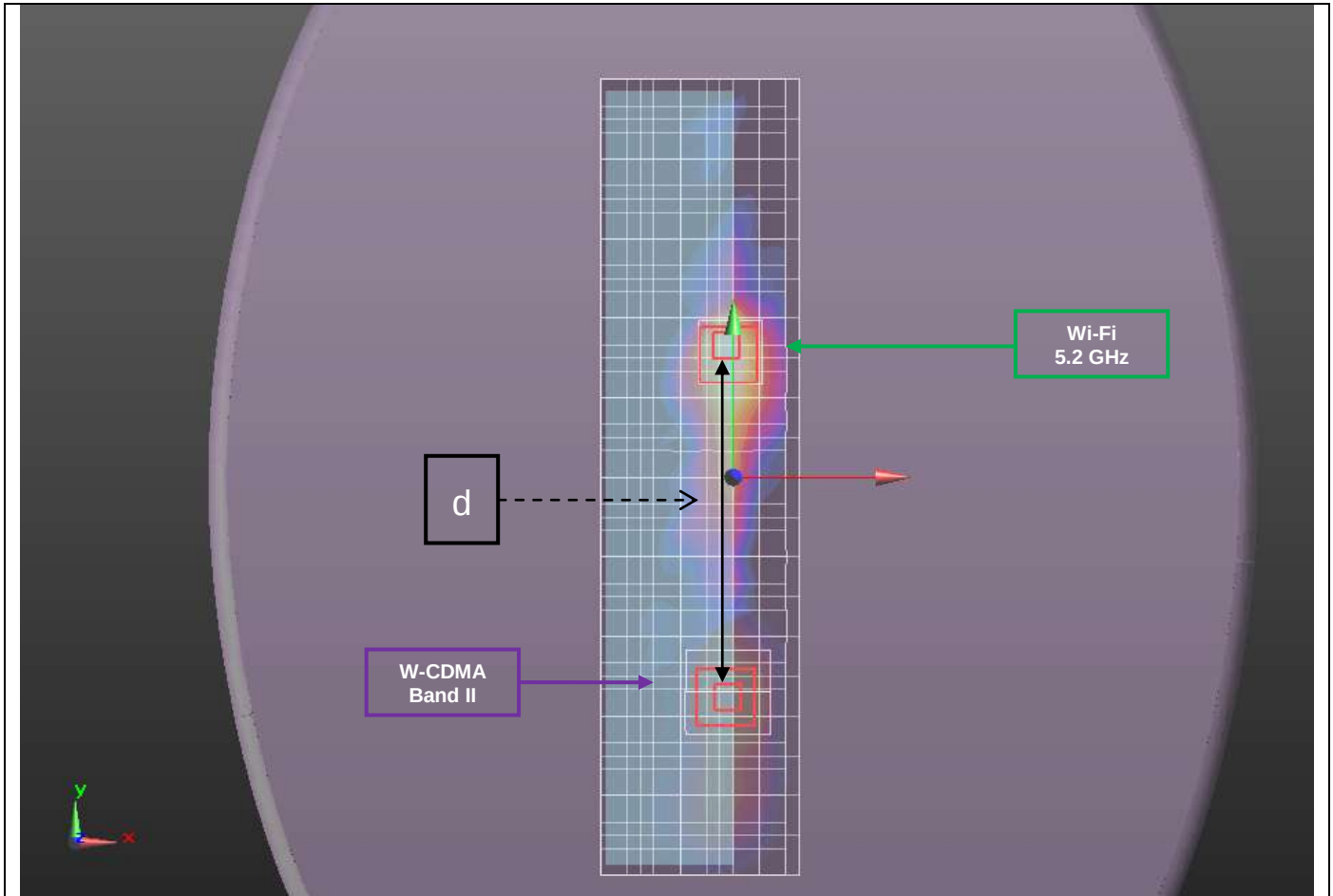


Mode	Peak SAR mW/g	X m	Y m	Z m
W-CDMA Band V	1.62	-0.00666	-0.09	-0.181
WiFi 5.2 GHz	7.24	-0.000154	0.035	-0.182

d: Calculated distance (mm)	
125.17	

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

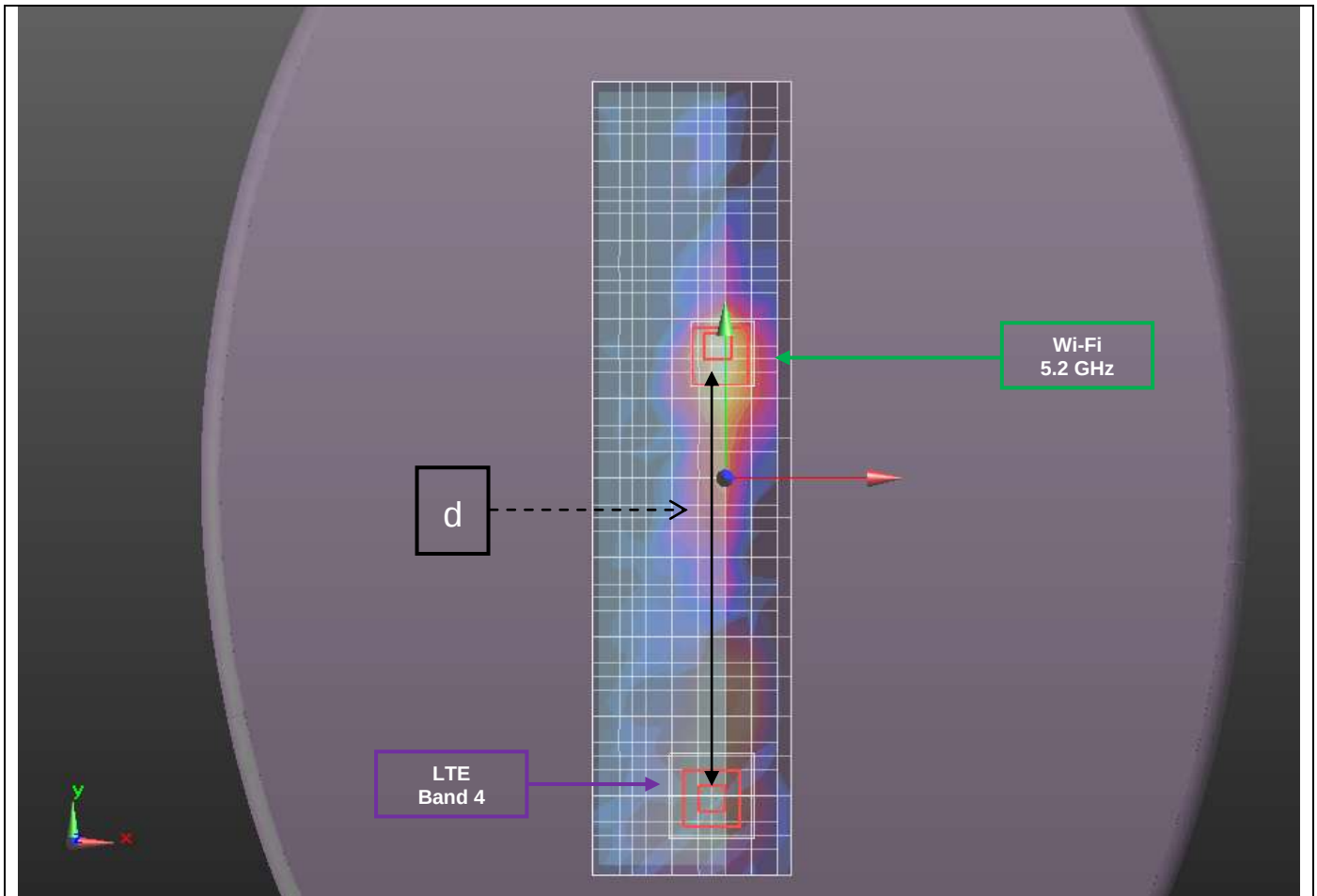
Figure (10)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band II	2.34	-0.00196	-0.0826	-0.181
WiFi 5.2 GHz	7.24	-0.000154	0.035	-0.182
d: Calculated distance (mm)				
117.62				

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (11)

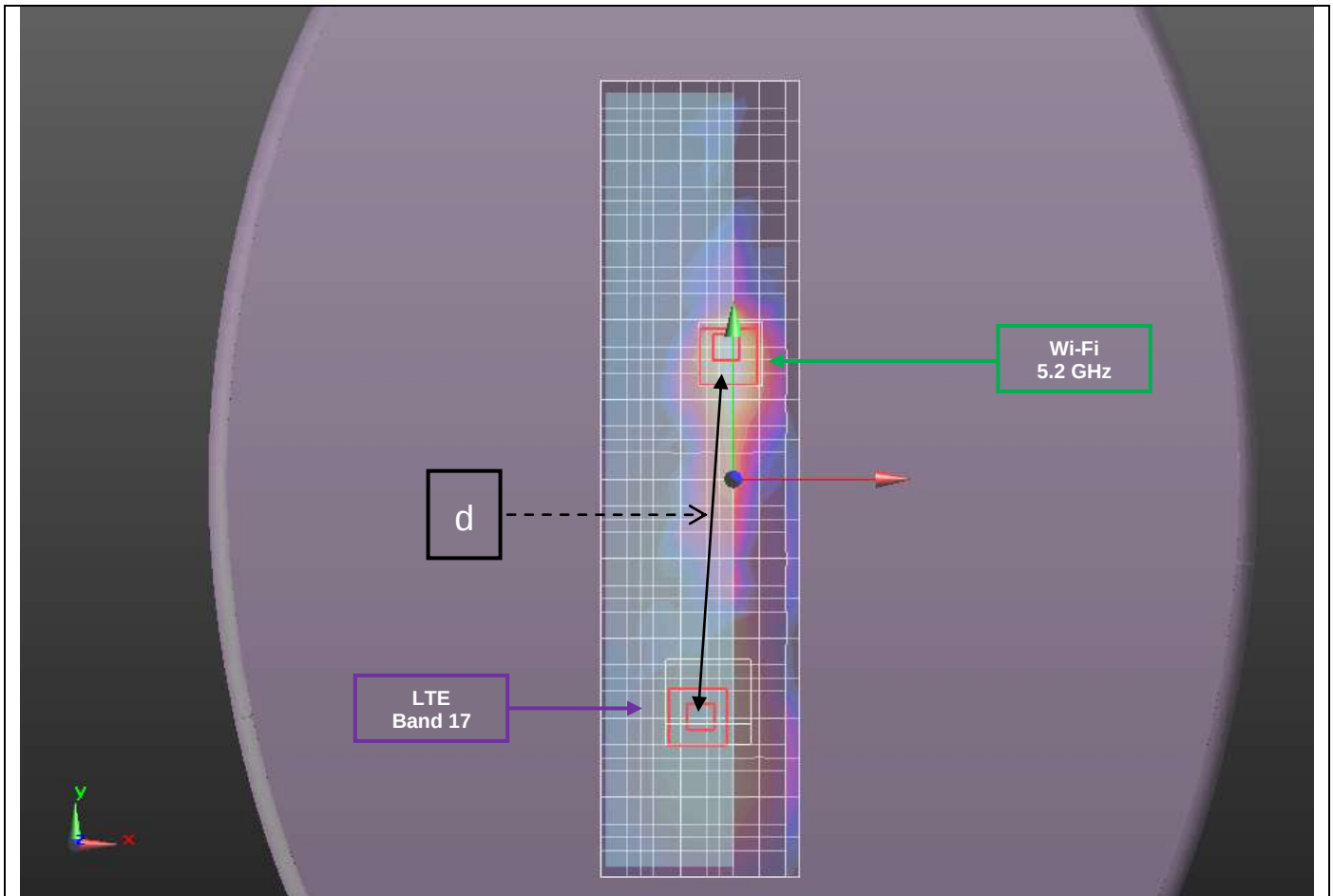


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.94	-0.0034	-0.12	-0.184
WiFi 5.2 GHz	7.24	-0.000154	0.035	-0.182

d: Calculated distance (mm)
155.05

Note: $d = \text{SQRT}((X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2)$

Figure (12)



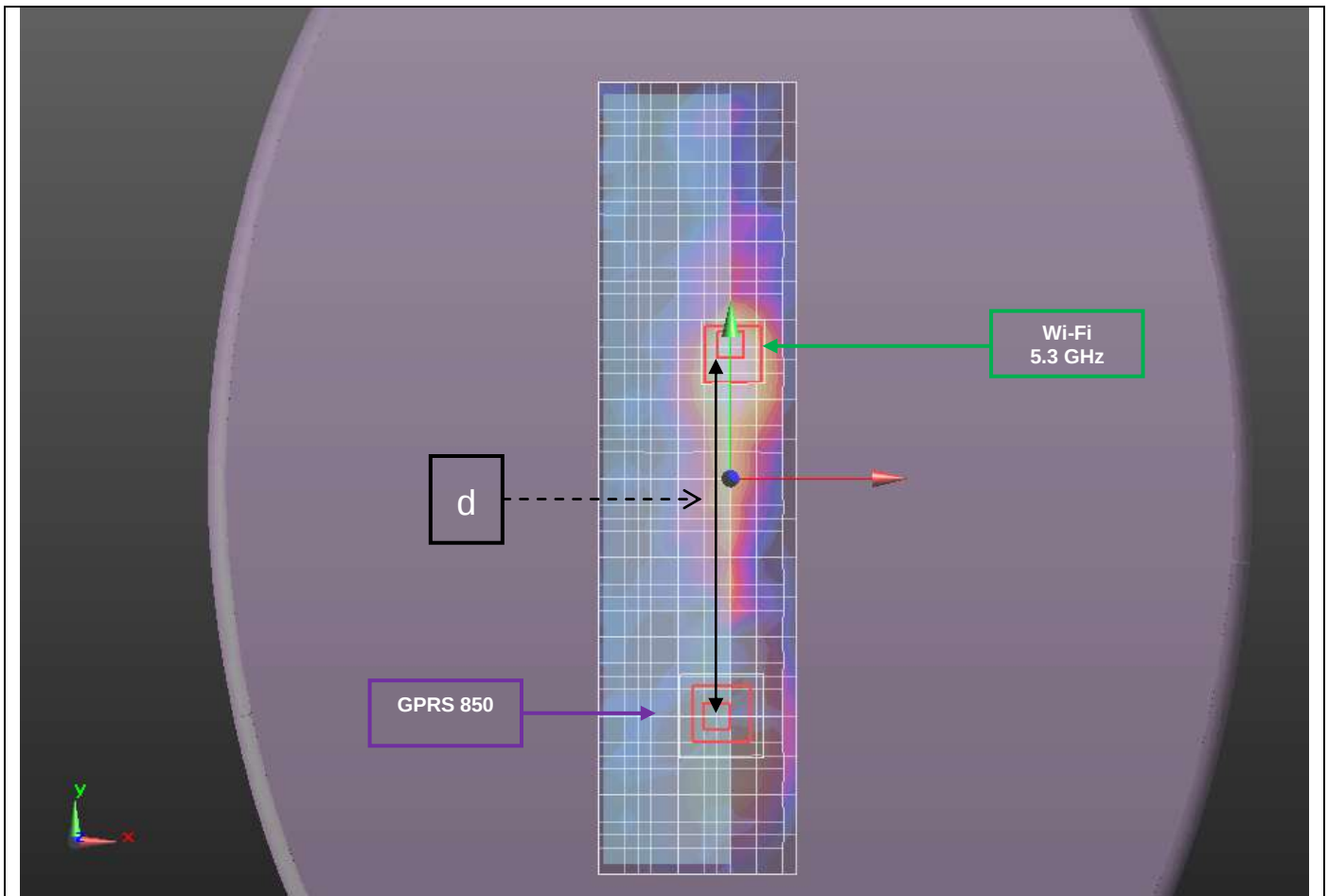
Mode	Peak SAR mW/g	X m	Y m	Z m
LTE Band 17	2.07	-0.0111	-0.0888	-0.181
WiFi 5.2 GHz	7.24	-0.000154	0.035	-0.182

d: Calculated distance (mm)
124.29

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

14.17.3. Wi-Fi 5.3 GHz and WWAN

Figure (13)

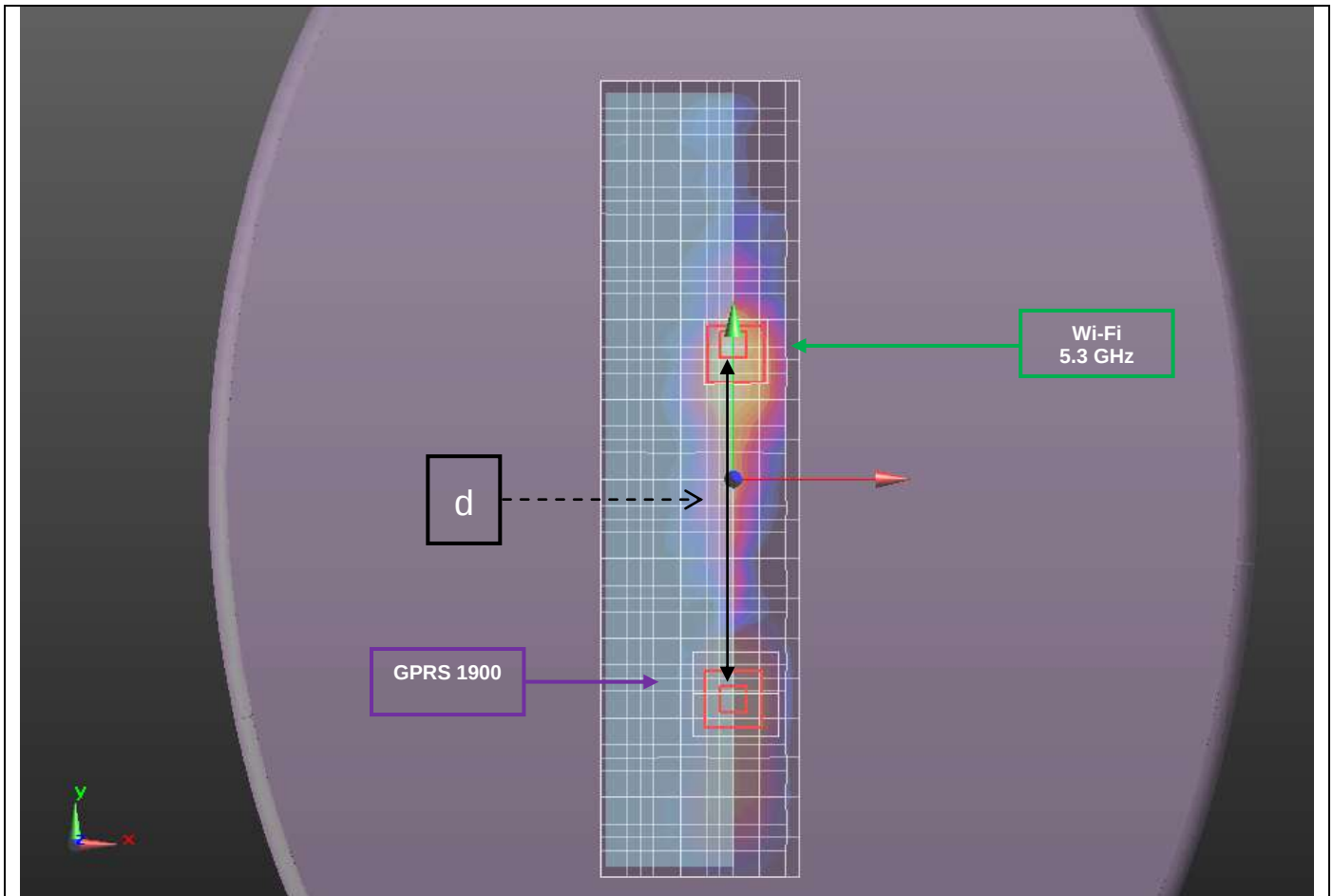


Mode	Peak SAR mW/g	X m	Y m	Z m
GPRS 850	1.43	-0.00668	-0.0916	-0.181
WiFi 5.3 GHz	8.02	0.00266	0.036	-0.182

d: Calculated distance (mm)
127.95

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (14)

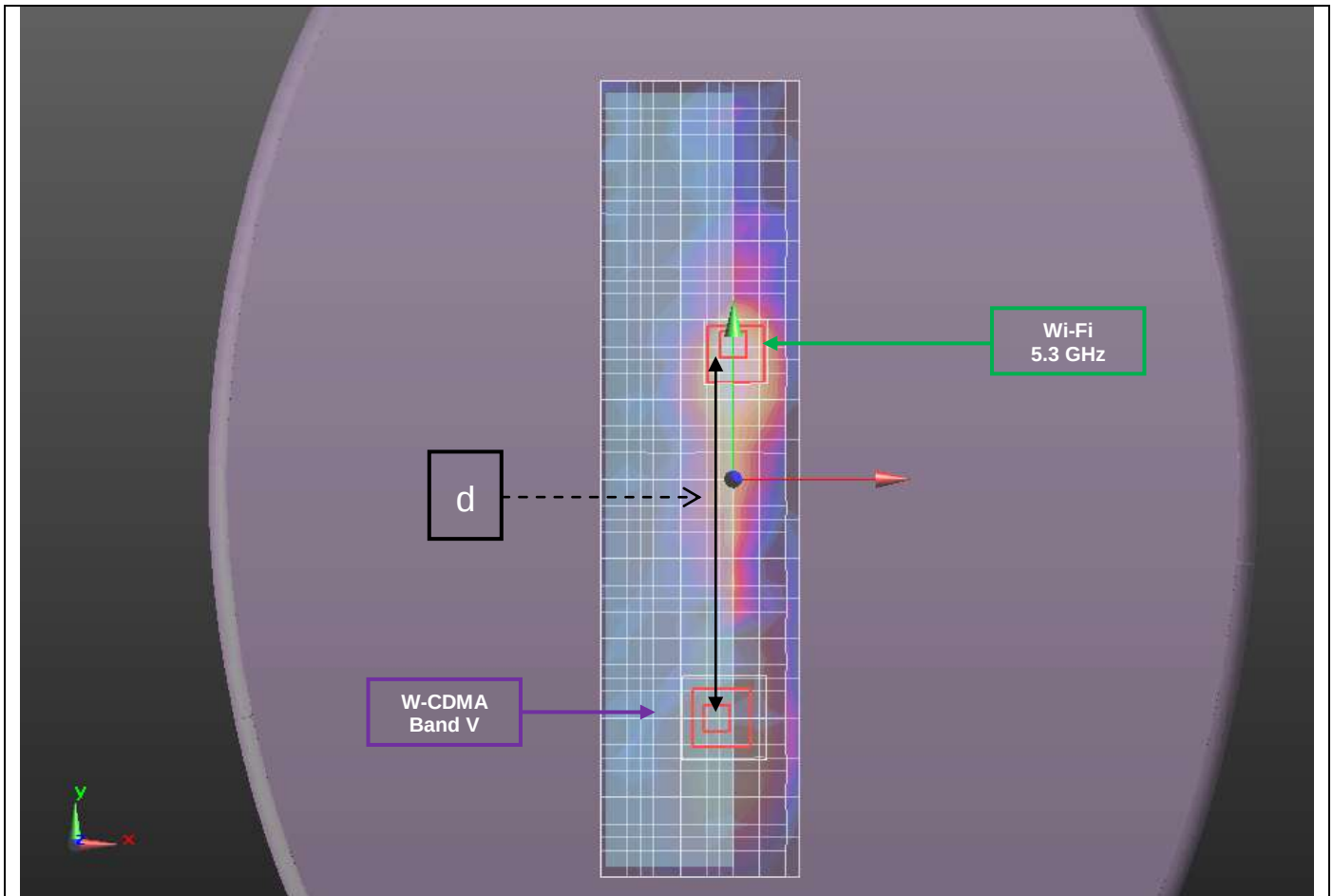


Mode	Peak SAR mW/g	X m	Y m	Z m
GPRS 1900	3.01	-0.0004	-0.0873	-0.185
WiFi 5.3 GHz	8.02	0.00266	0.036	-0.182

d: Calculated distance (mm)
123.37

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

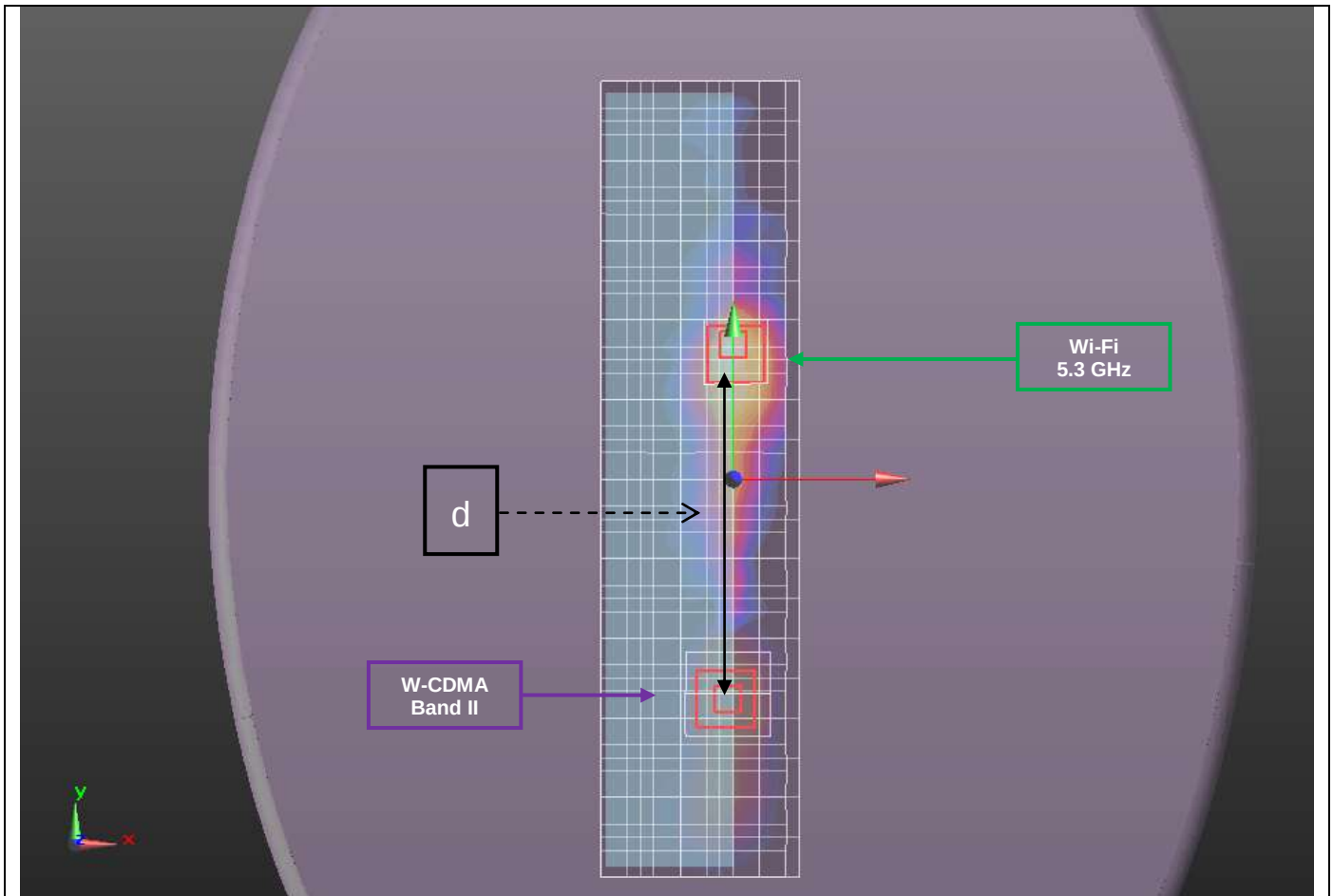
Figure (15)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band V	1.62	-0.00666	-0.09	-0.181
WiFi 5.3 GHz	8.02	0.00266	0.036	-0.182
d: Calculated distance (mm)				
126.35				

Note: $d = \text{SQRT}((X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2)$

Figure (16)

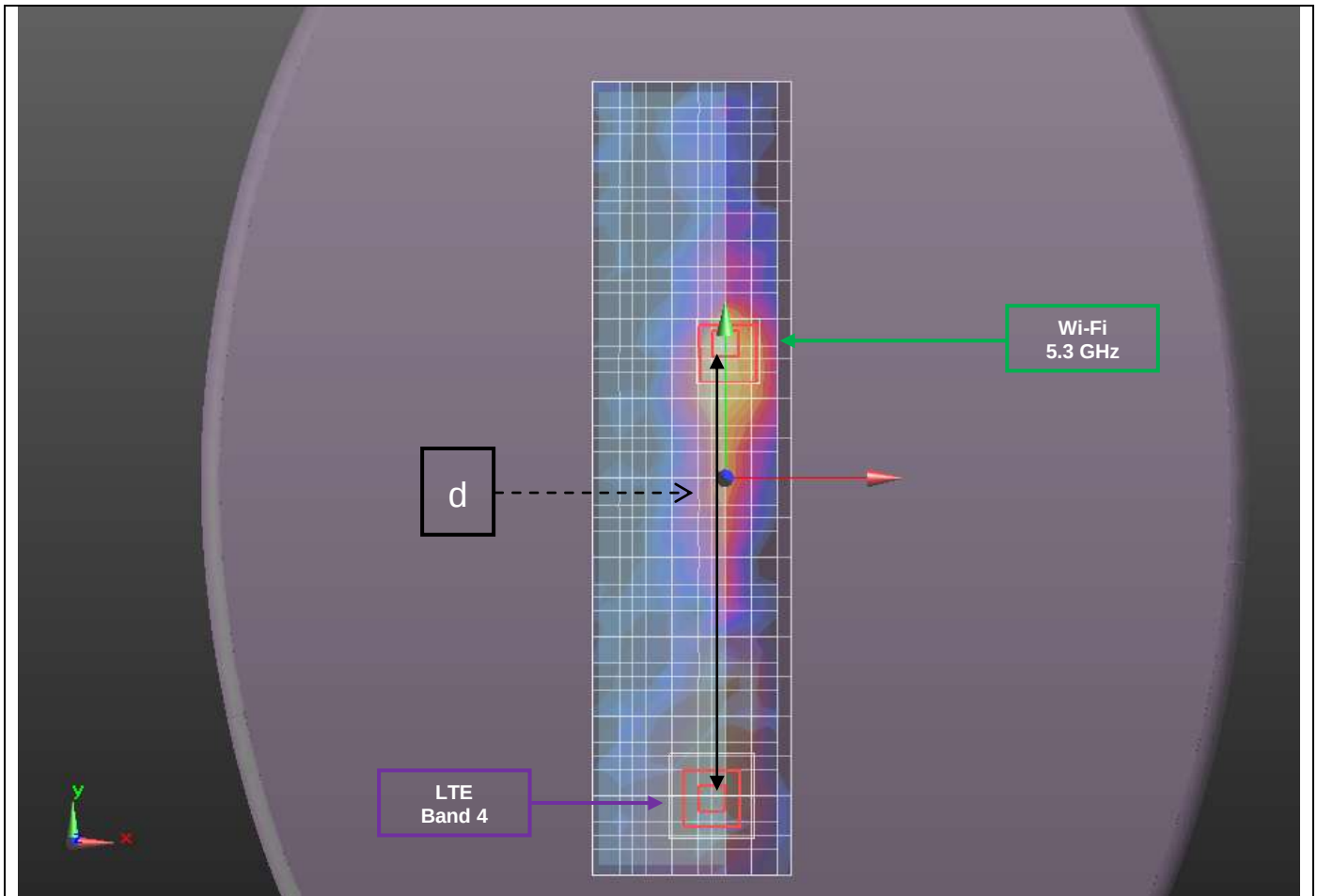


Mode	Peak SAR mW/g	X m	Y m	Z m
W-CDMA Band II	2.34	-0.00196	-0.0826	-0.181
WiFi 5.3 GHz	8.02	0.00266	0.036	-0.182

d: Calculated distance (mm)
118.69

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (17)

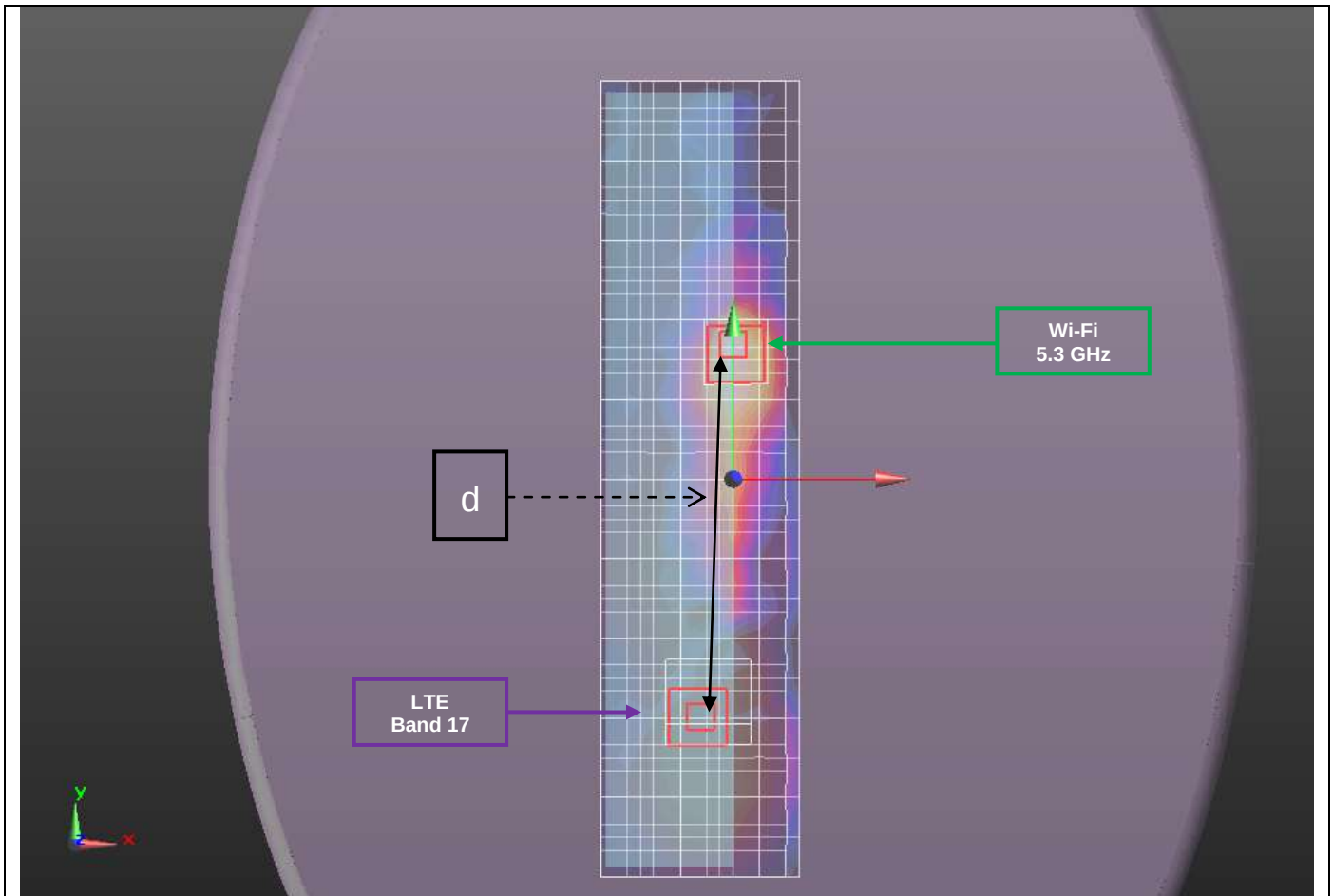


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.94	-0.0034	-0.12	-0.184
WiFi 5.3 GHz	8.02	0.00266	0.036	-0.182

d: Calculated distance (mm)
156.13

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (18)



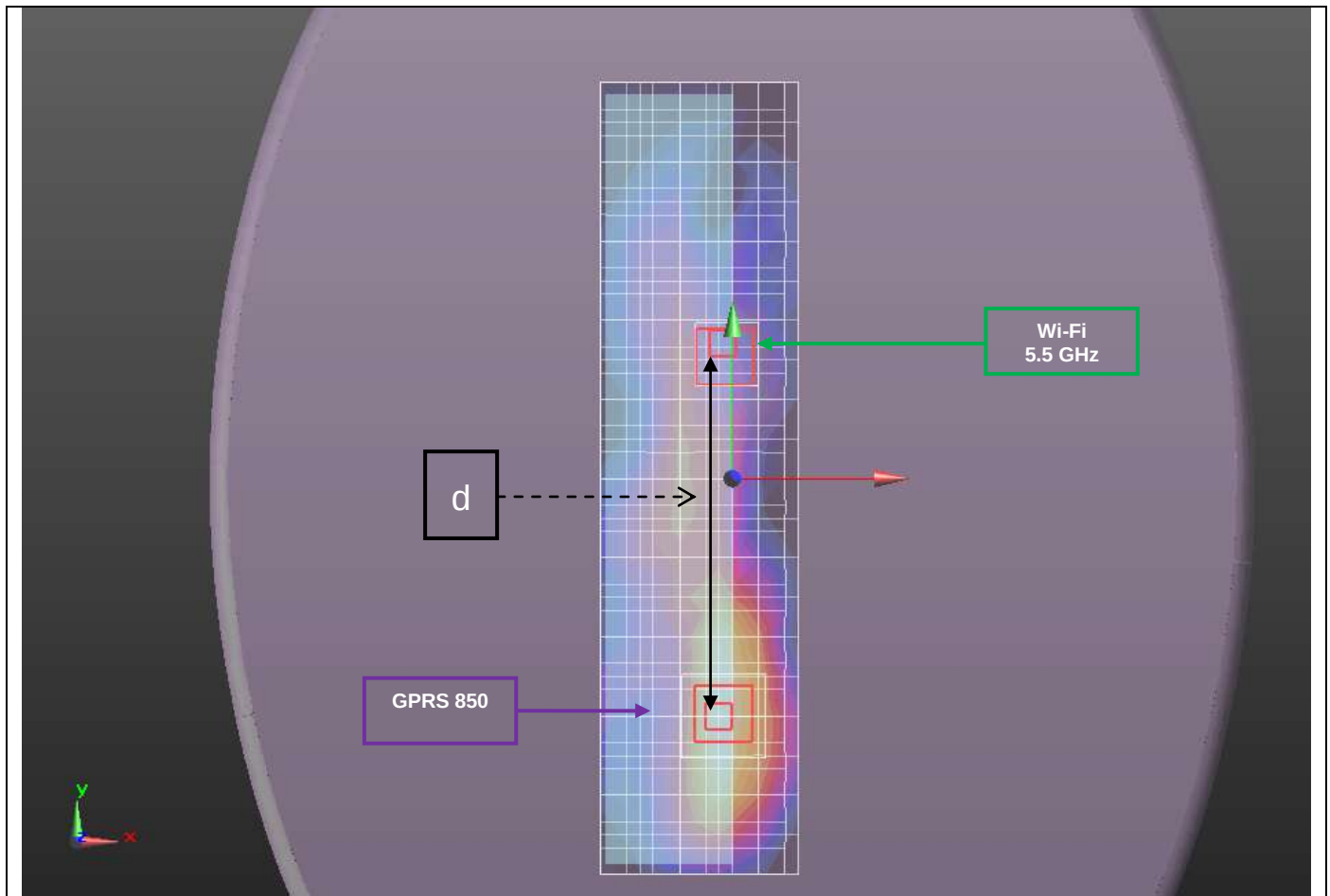
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 17	2.07	-0.0111	-0.0888	-0.181
WiFi 5.3 GHz	8.02	0.00266	0.036	-0.182

d: Calculated distance (mm)	
125.56	

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

14.17.4. Wi-Fi 5.5 GHz and WWAN

Figure (19)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GPRS 850	1.43	-0.00668	-0.0916	-0.181
WiFi 5.5 GHz	9.92	-0.00112	0.0374	-0.182

d: Calculated distance (mm)

129.12

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (20)

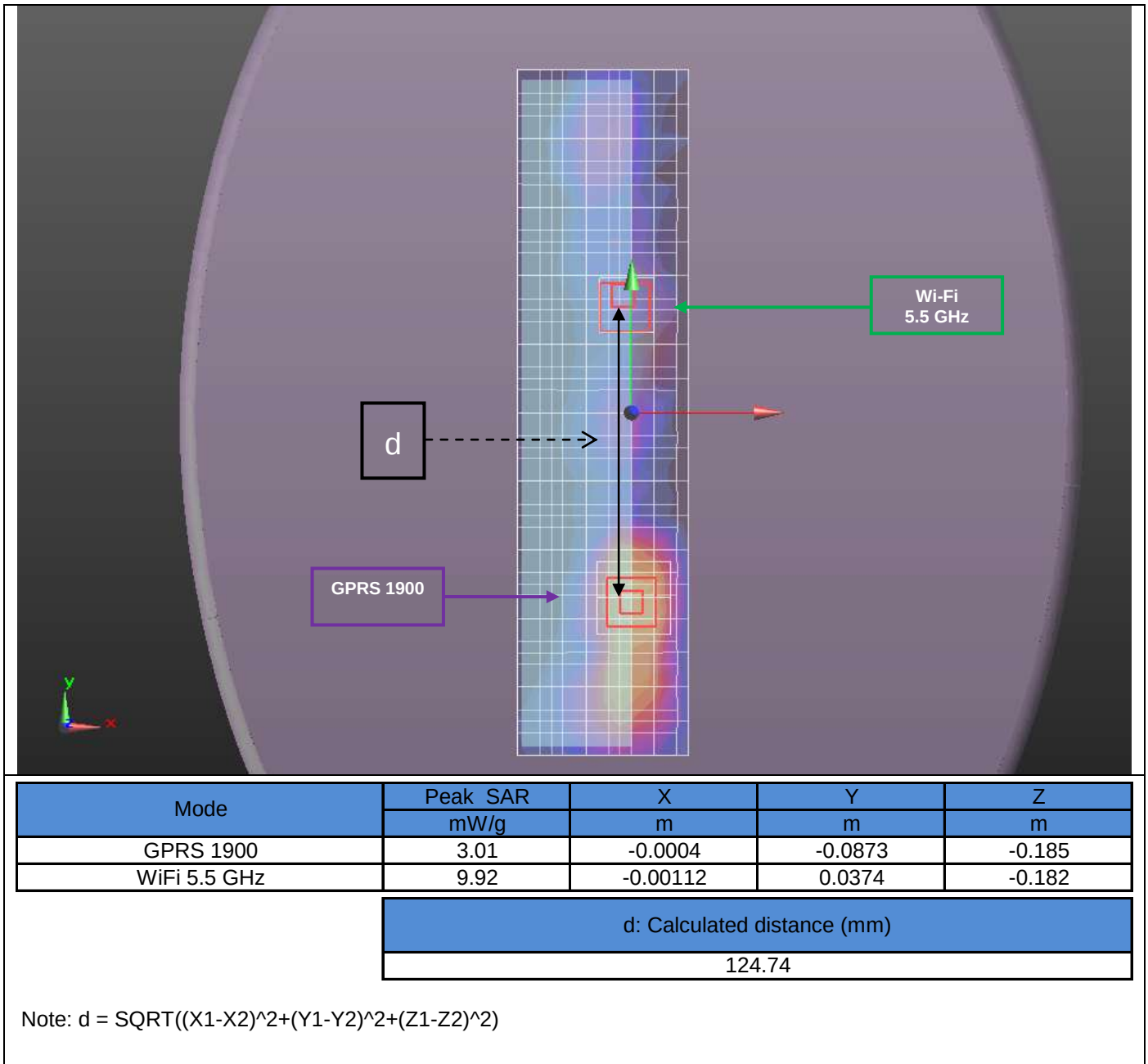
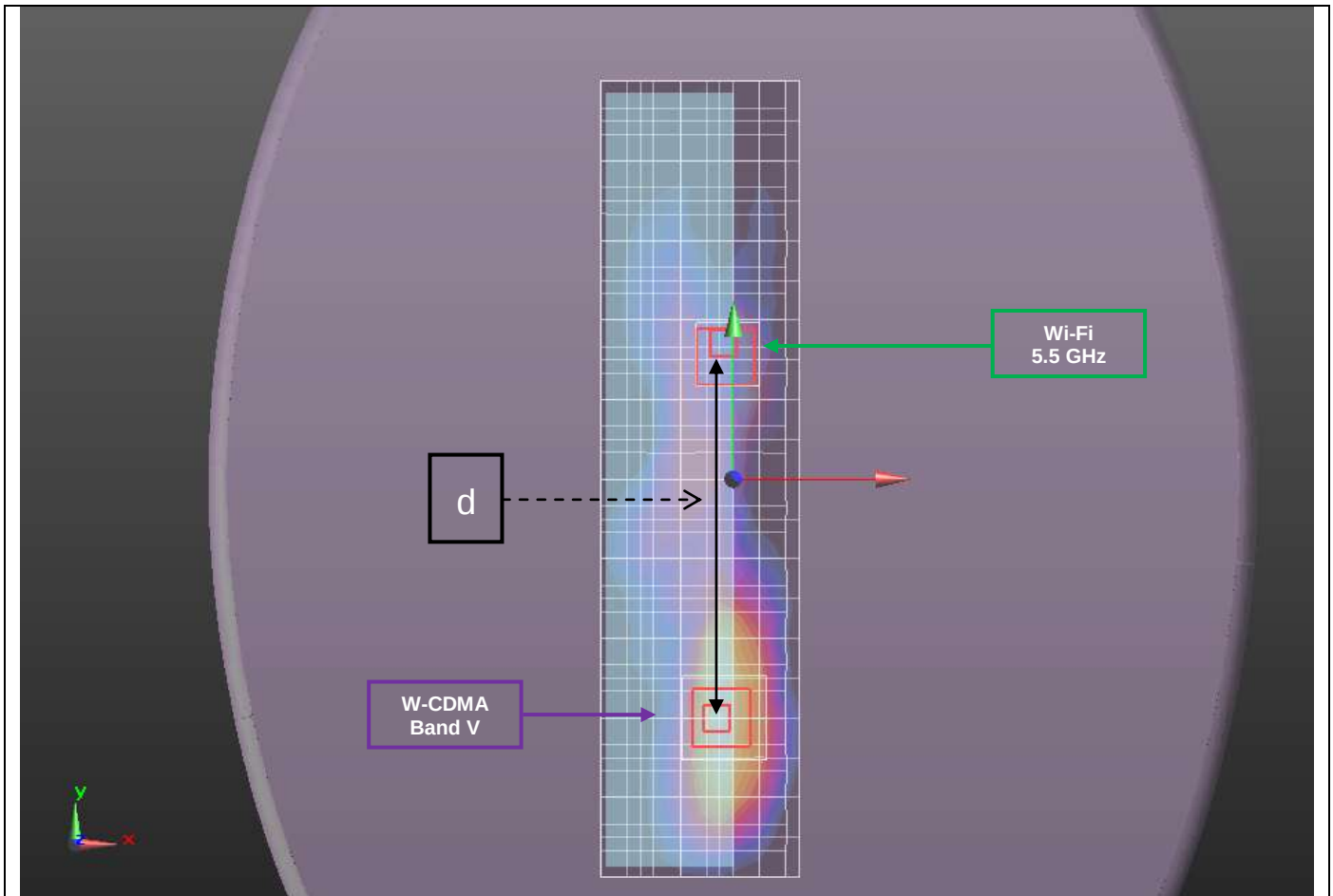


Figure (21)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band V	1.62	-0.00666	-0.09	-0.181
WiFi 5.5 GHz	9.92	-0.00112	0.0374	-0.182
d: Calculated distance (mm)				
127.52				

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (22)

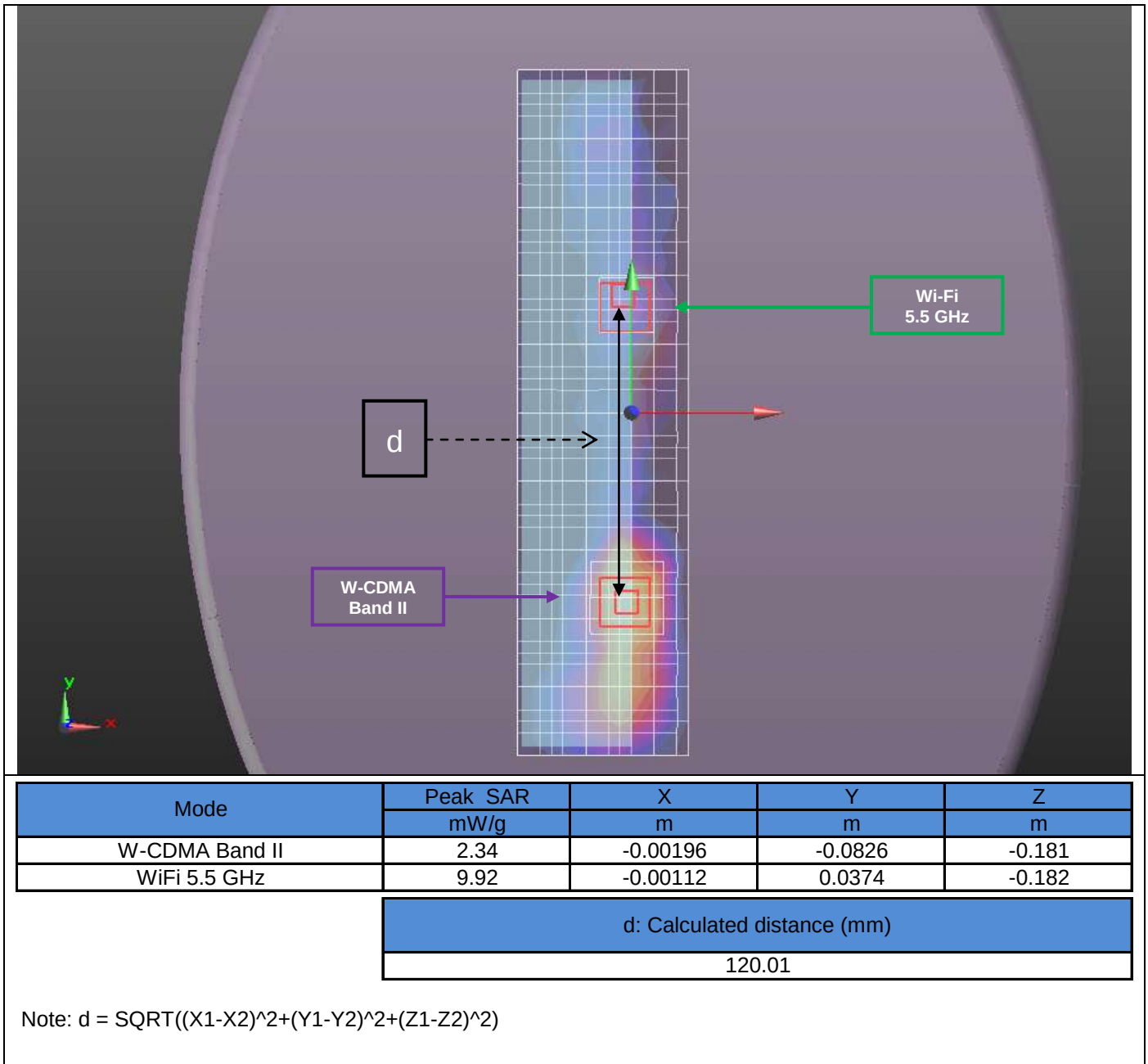
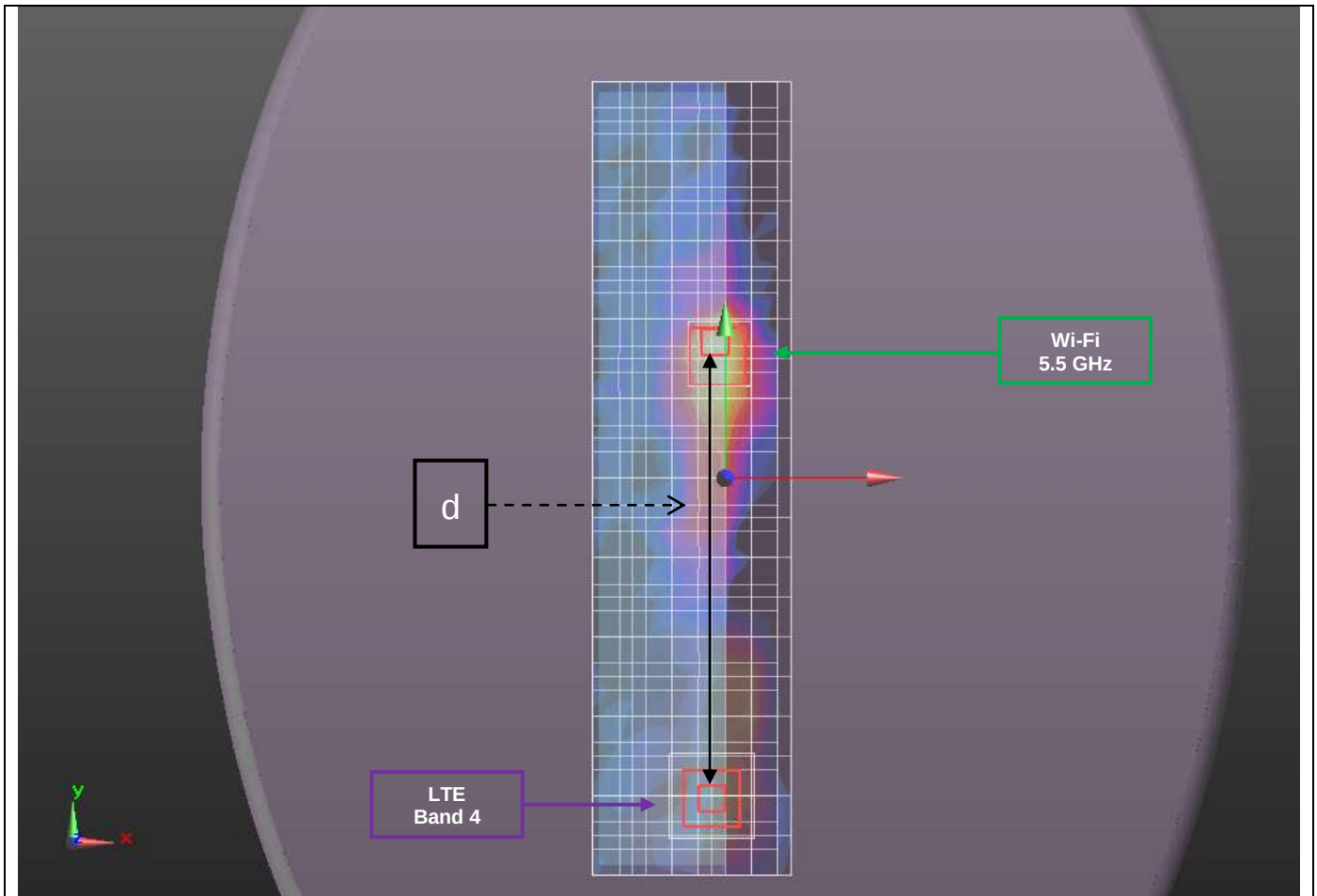


Figure (23)

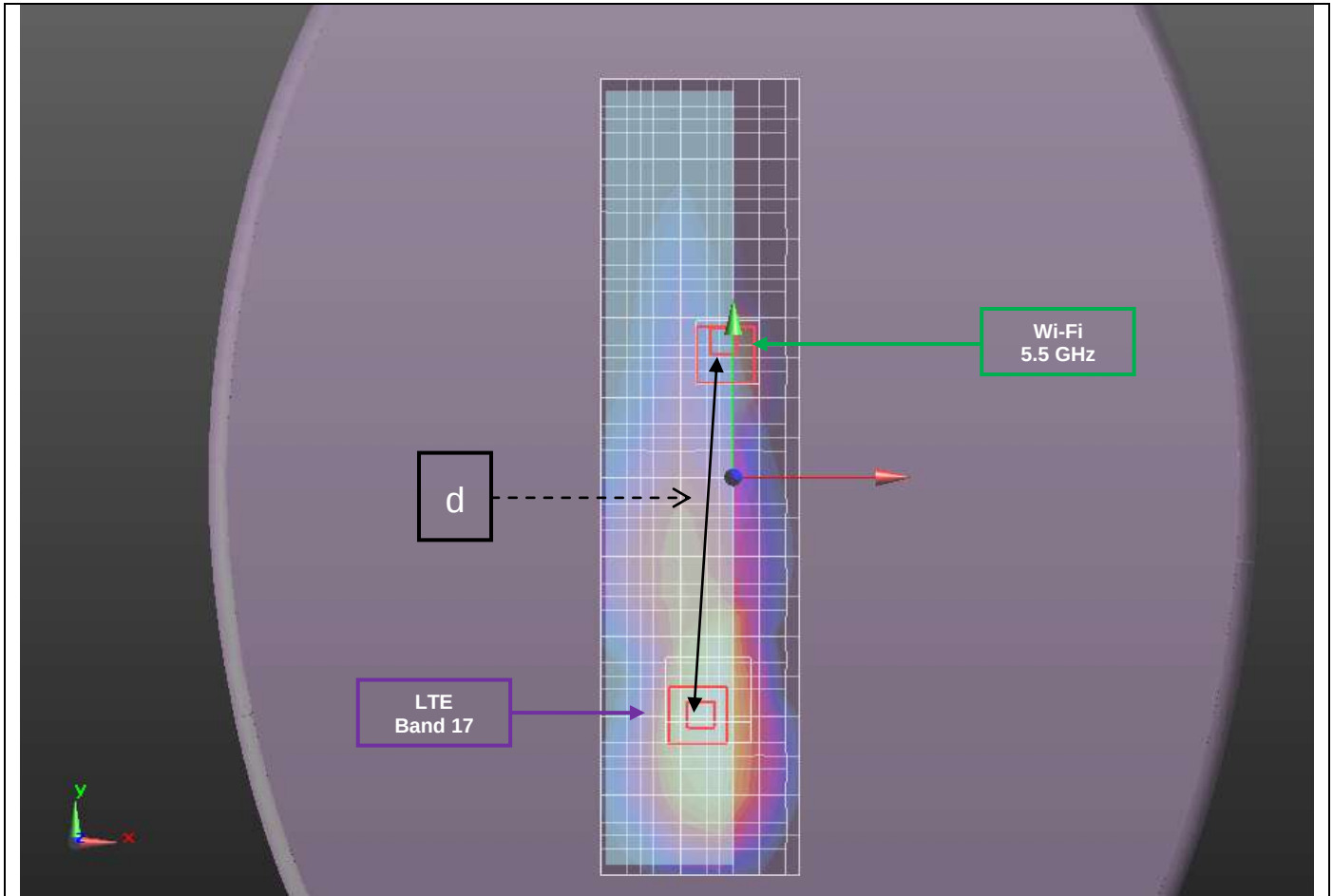


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.94	-0.0034	-0.12	-0.184
WiFi 5.5 GHz	9.92	-0.00112	0.0374	-0.182

d: Calculated distance (mm)
157.43

Note: $d = \text{SQRT}((X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2)$

Figure (24)



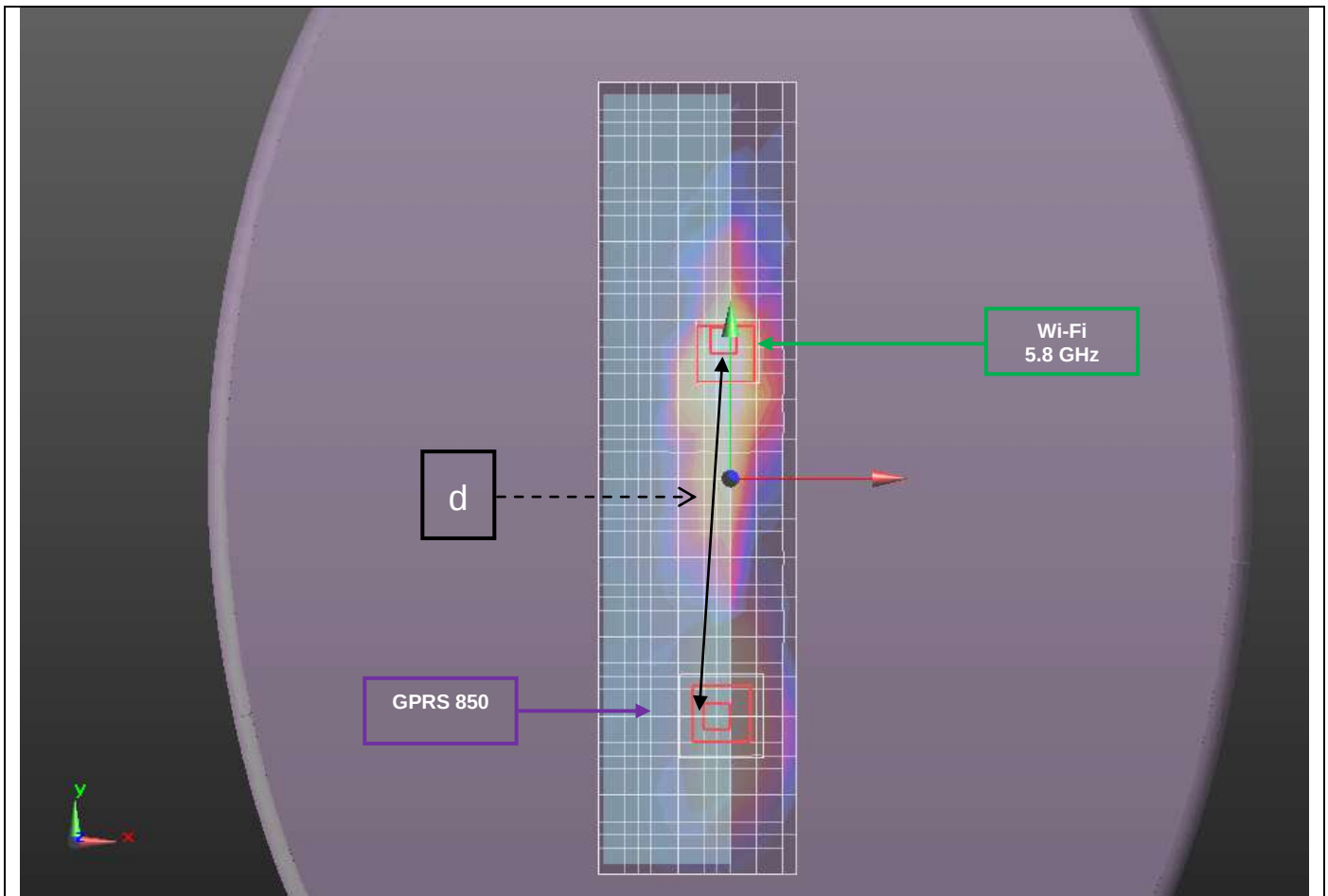
Mode	Peak SAR mW/g	X m	Y m	Z m
LTE Band 17	2.07	-0.0111	-0.0888	-0.181
WiFi 5.5 GHz	9.92	-0.00112	0.0374	-0.182

d: Calculated distance (mm)
126.60

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

14.17.5. Wi-Fi 5.8 GHz and WWAN

Figure (25)

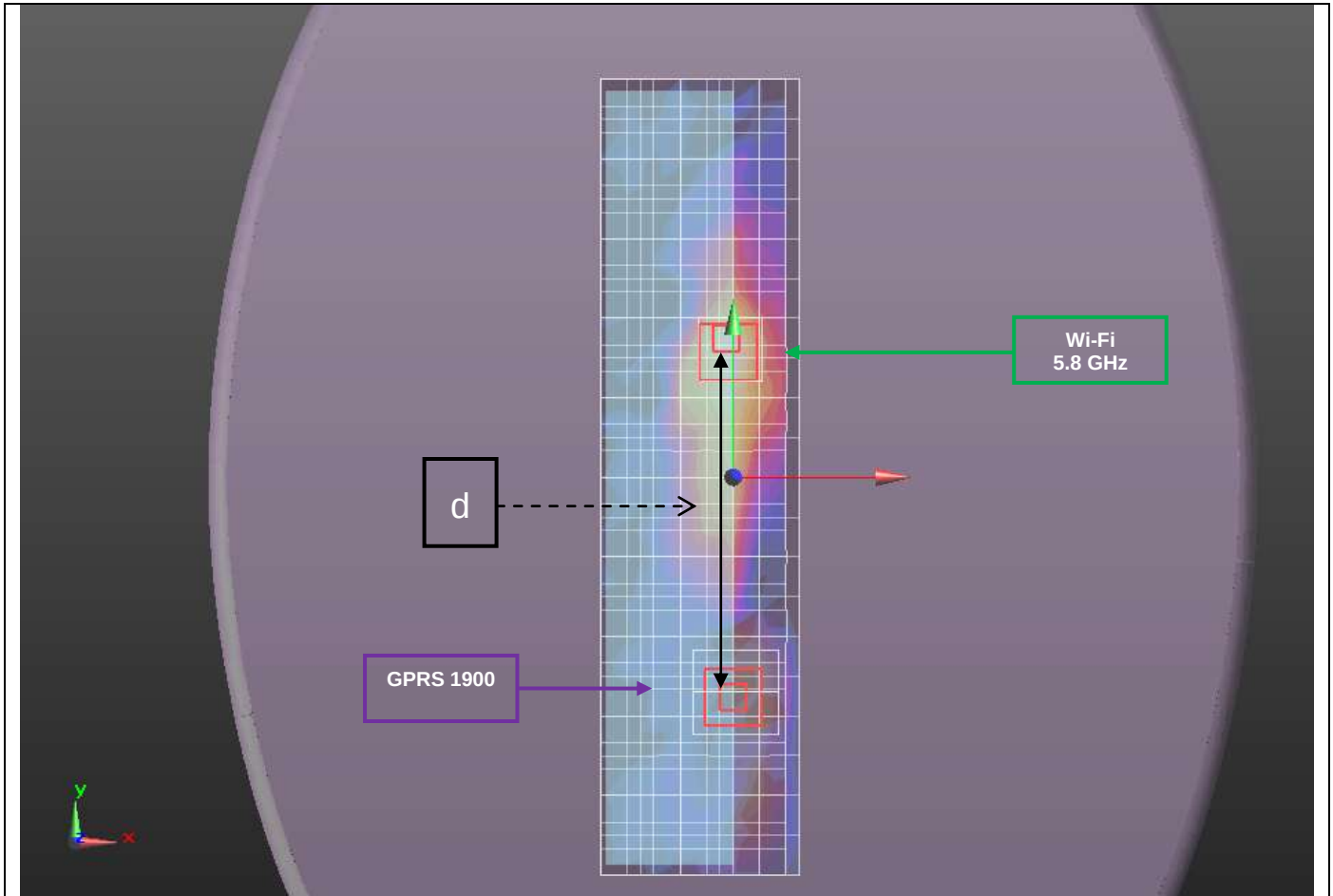


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GPRS 850	1.43	-0.00668	-0.0916	-0.181
WiFi 5.8 GHz	9.55	-0.000155	0.036	-0.182

d: Calculated distance (mm)
127.77

Note: $d = \sqrt{(X1-X2)^2 + (Y1-Y2)^2 + (Z1-Z2)^2}$

Figure (26)



Mode	Peak SAR mW/g	X m	Y m	Z m
GPRS 1900	3.01	-0.0004	-0.0873	-0.185
WiFi 5.8 GHz	9.55	-0.000155	0.036	-0.182

d: Calculated distance (mm)
123.34

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (27)

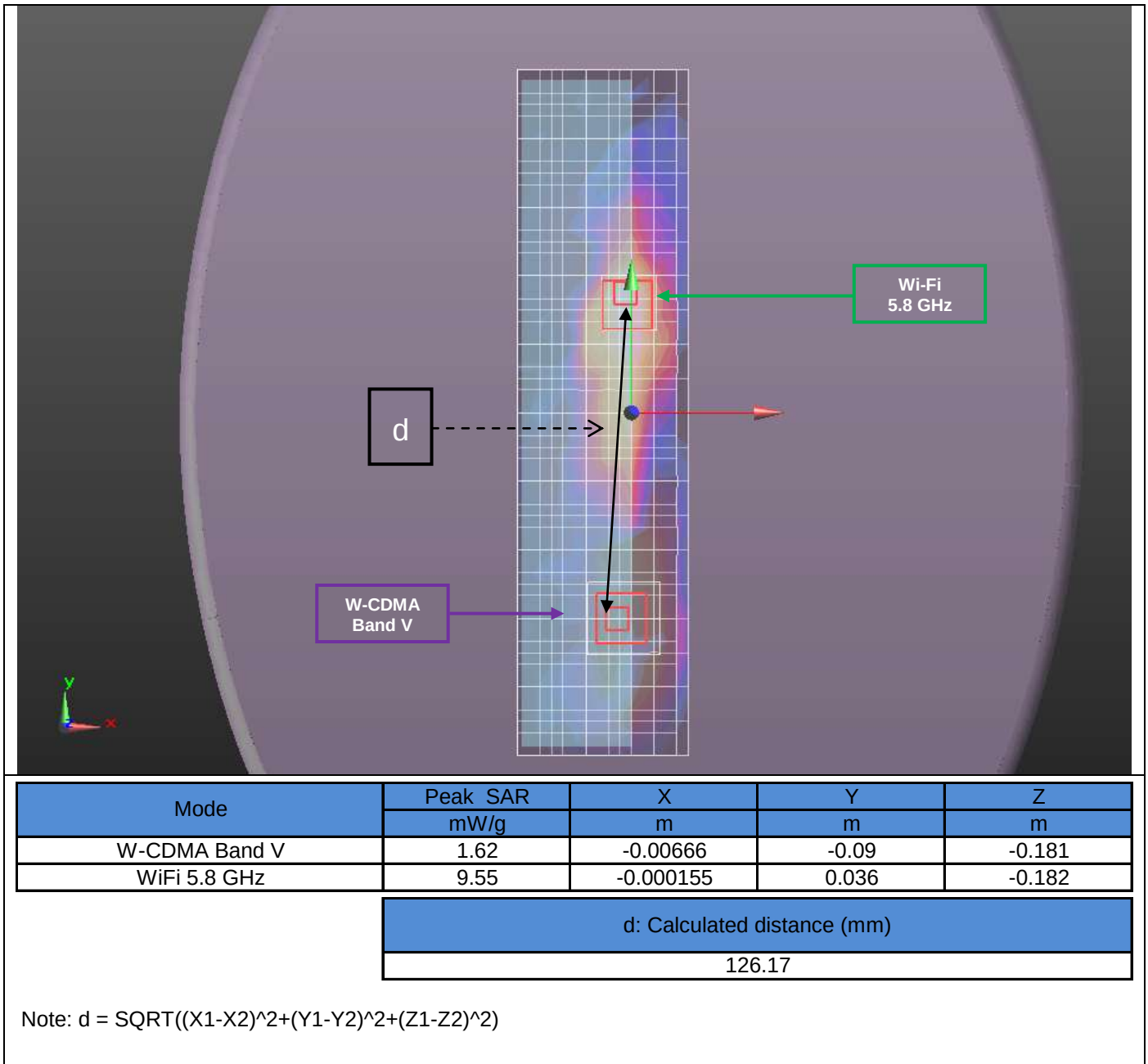
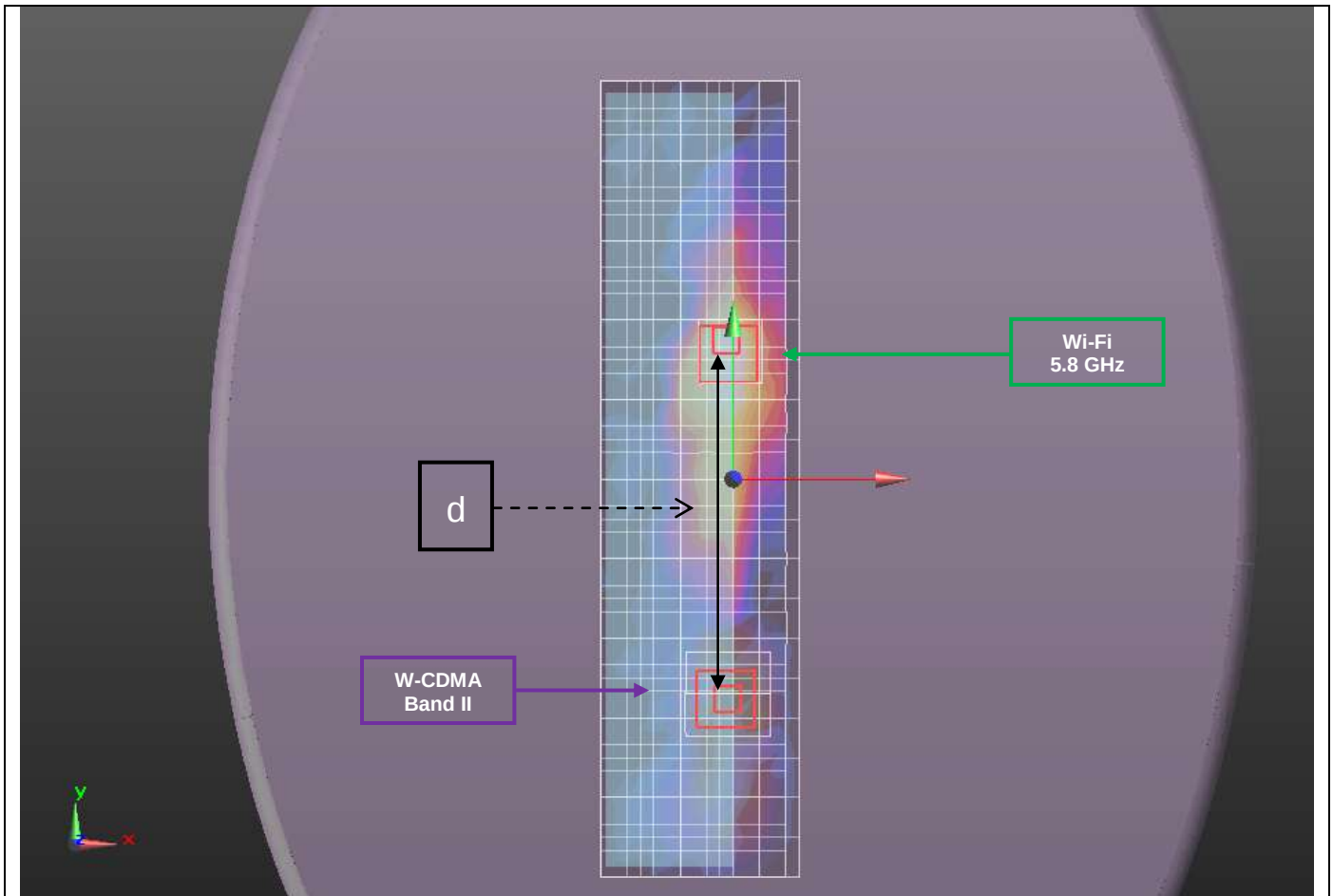


Figure (28)

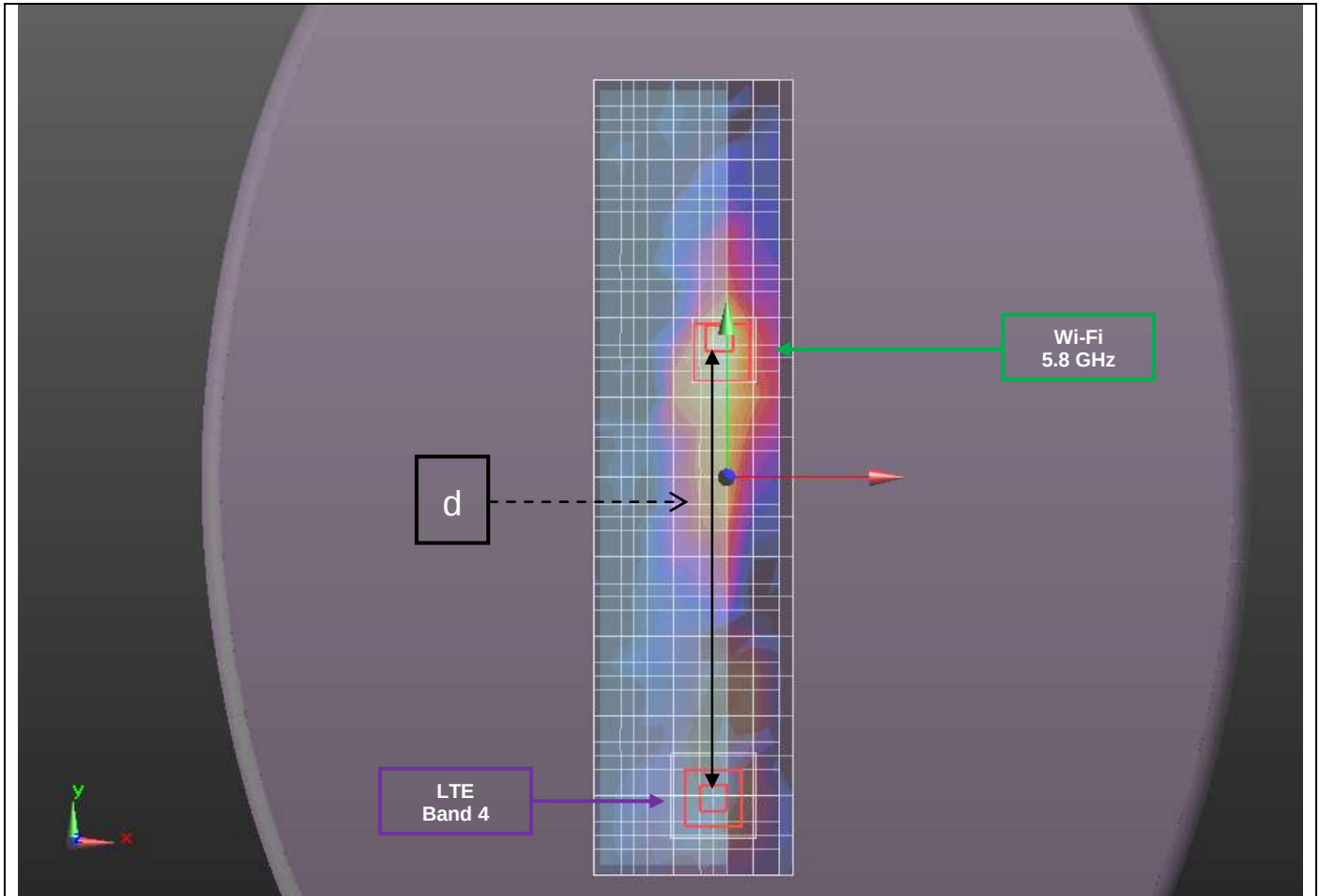


Mode	Peak SAR mW/g	X m	Y m	Z m
W-CDMA Band II	2.34	-0.00196	-0.0826	-0.181
WiFi 5.8 GHz	9.55	-0.000155	0.036	-0.182

d: Calculated distance (mm)
118.62

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (29)

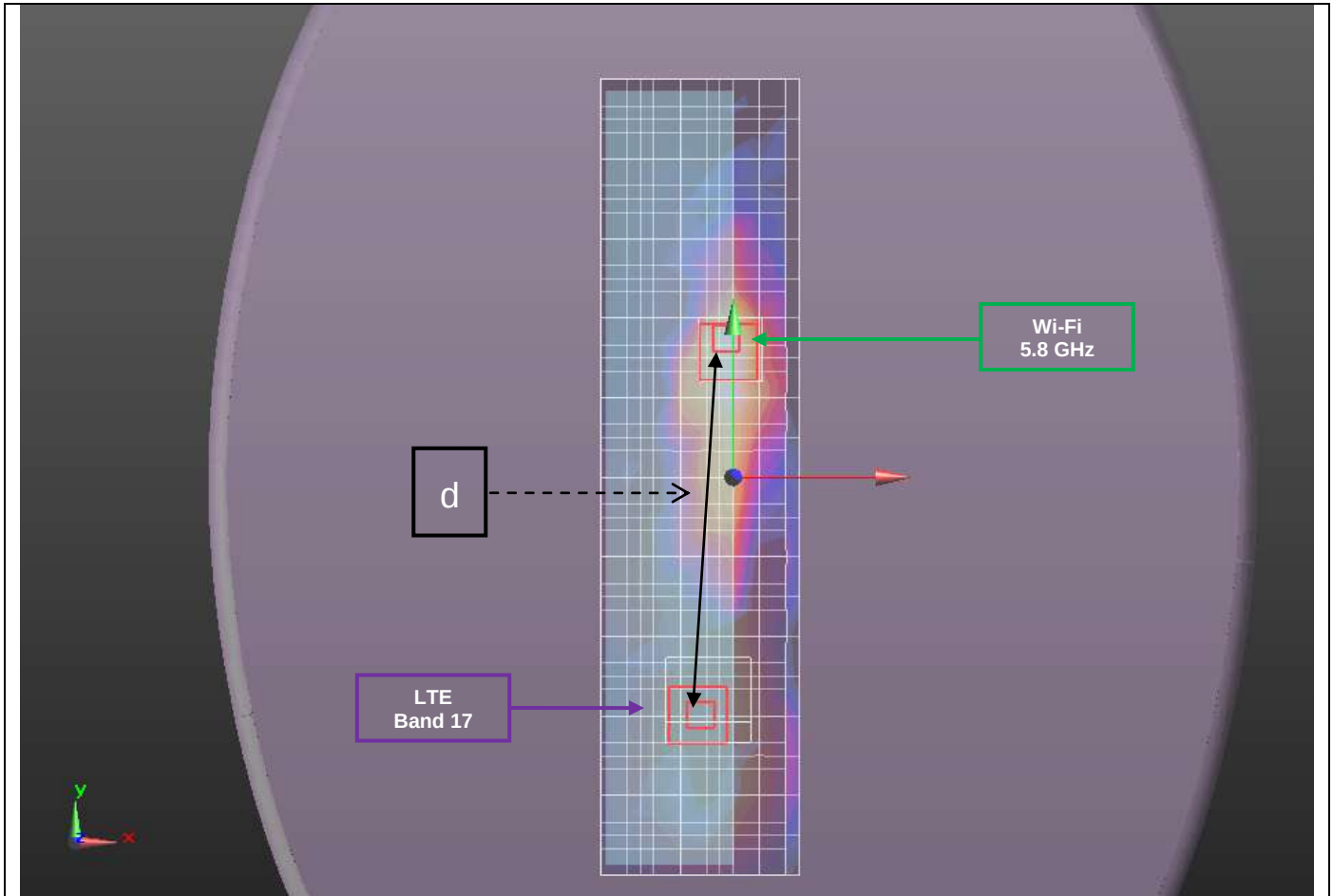


Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.94	-0.0034	-0.12	-0.184
WiFi 5.8 GHz	9.55	-0.000155	0.036	-0.182

d: Calculated distance (mm)
156.05

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Figure (30)



Mode	Peak SAR mW/g	X m	Y m	Z m
LTE Band 17	2.07	-0.0111	-0.0888	-0.181
WiFi 5.8 GHz	9.55	-0.000155	0.036	-0.182

d: Calculated distance (mm)
125.28

Note: $d = \text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

15. Appendixes

Refer to separated files for the following appendixes.

- 15.1. System Performance Check Plots**
- 15.2. SAR Test Plots for GSM850**
- 15.3. SAR Test Plots for GSM1900**
- 15.4. SAR Test Plots for W-CDMA Band V**
- 15.5. SAR Test Plots for W-CDMA Band II**
- 15.6. SAR Test Plots for LTE Band 4**
- 15.7. SAR Test Plots for LTE Band 17**
- 15.8. SAR Test Plots for Measurement Variability and Uncertainty**
- 15.9. Calibration Certificate for E-Field Probe EX3DV4 - SN 3749**
- 15.10. Calibration Certificate for E-Field Probe EX3DV4 - SN 3772**
- 15.11. Calibration Certificate for E-Field Probe EX3DV4 - SN 3773**
- 15.12. Calibration Certificate for D750V3 - SN 1019**
- 15.13. Calibration Certificate for D835V2 - SN 4d117**
- 15.14. Calibration Certificate for D1750V2 - SN 1050**
- 15.15. Calibration Certificate for D1900V2 - SN 5d140**