FCC 47 CFR Parts 1 & 2
Published RF Exposure KDB Procedures
IEEE 1528-2013

SAR EVALUATION REPORT

For
Portable Computing Device

Model: 1573
FCC ID: C3K1573

Report Number: 13U15414-17
Issue Date: 1/17/2014

Prepared for
Microsoft Corporation
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	1/17/2014	Initial Issue	--

Table of Contents

1. Attestation of Test Results

Applicant	Microsoft Corporation			
DUT description	Portable Computing Device			
Model	1573			
Test device is	An identical prototype			
Device category	Portable			
Exposure category	General Population/Uncontrolled Exposure			
Date tested	10/23/2013 – 12/16/2013			
The highest reported SAR values	RF exposure condition	Licensed	DTS	UNII
	Standalone	1.440 W/kg	N/A W/kg	N/A W/kg
	Simultaneous Transmission	1.575 W/kg	N/A W/kg	N/A W/kg
Applicable Standards	FCC 47 CFR Parts 1 & 2 Published RF Exposure KDB Procedures, and TCB workshop updates IEEE 1528-2013			
Test Results	Pass			

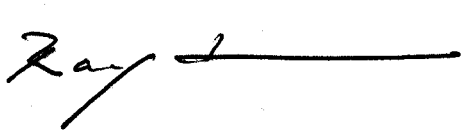
UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 By:

Dave Weaver
WiSE Program Manager
UL Verification Services Inc.

Prepared By:



Ray Su
WiSE Laboratory Engineer
UL Verification Services Inc.

2. Test Methodology

The tests documented in this report were performed in accordance with FCC 47 CFR Parts 1 & 2, IEEE 1528-2013, the following FCC Published RF exposure KDB procedures, and TCB workshop updates:

- 447498 D01 General RF Exposure Guidance v05r01
- 616217 D04 SAR for Laptop and Tablets v01r01
- 941225 D01 SAR test for 3G devices v02
- 941225 D02 HSPA and 1x Advanced v02r02
- 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- 941225 D04 SAR for GSM E GPRS Dual Xfer Mode v01
- 941225 D05 SAR for LTE Devices v02r02
- 248227 D01 SAR Meas for 802 11abg v01r02
- 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01
- 865664 D02 SAR Reporting v01r01
- 690783 D01 SAR Listings on Grants v01r02

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA.

47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	
SAR Lab F	

UL Verification Services Inc. 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.

Tissue Dielectric Properties

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	8753ES	MY40000980	2/20/2014
Dielectronic Probe kit	SPEAG	DAK-3.5	1103	2/5/2014
Thermometer	Control Company	4242	122529163	9/19/2014

System Performance Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	HP	8665B	3744A01084	5/7/2014
Power Meter	HP	437B	3125U12345	7/29/2014
Power Sensor	HP	8481A	1926A27048	7/29/2014
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1620606	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	AMETEK	XHR60-18	1318A00530	N/A
Thermometer	EXTECH	445703	T35480662	3/19/2014
Thermometer	EXTECH	445703	T35480666	3/19/2014
E-Field Probe	SPEAG	EX3DV4	3773	4/26/2014
E-Field Probe	SPEAG	EX3DV4	3902	7/12/2014
Data Acquisition Electronics	SPEAG	DAE4	1359	2/8/2014
Data Acquisition Electronics	SPEAG	DAE4	1377	7/15/2014
System Validation Dipole	SPEAG	D750V2	1019	3/5/2014
System Validation Dipole	SPEAG	D835V2	4d117	5/28/2014
System Validation Dipole	SPEAG	D1750V2	1050	5/20/2014
System Validation Dipole	SPEAG	D1900V2	5d140	4/18/2014

Others

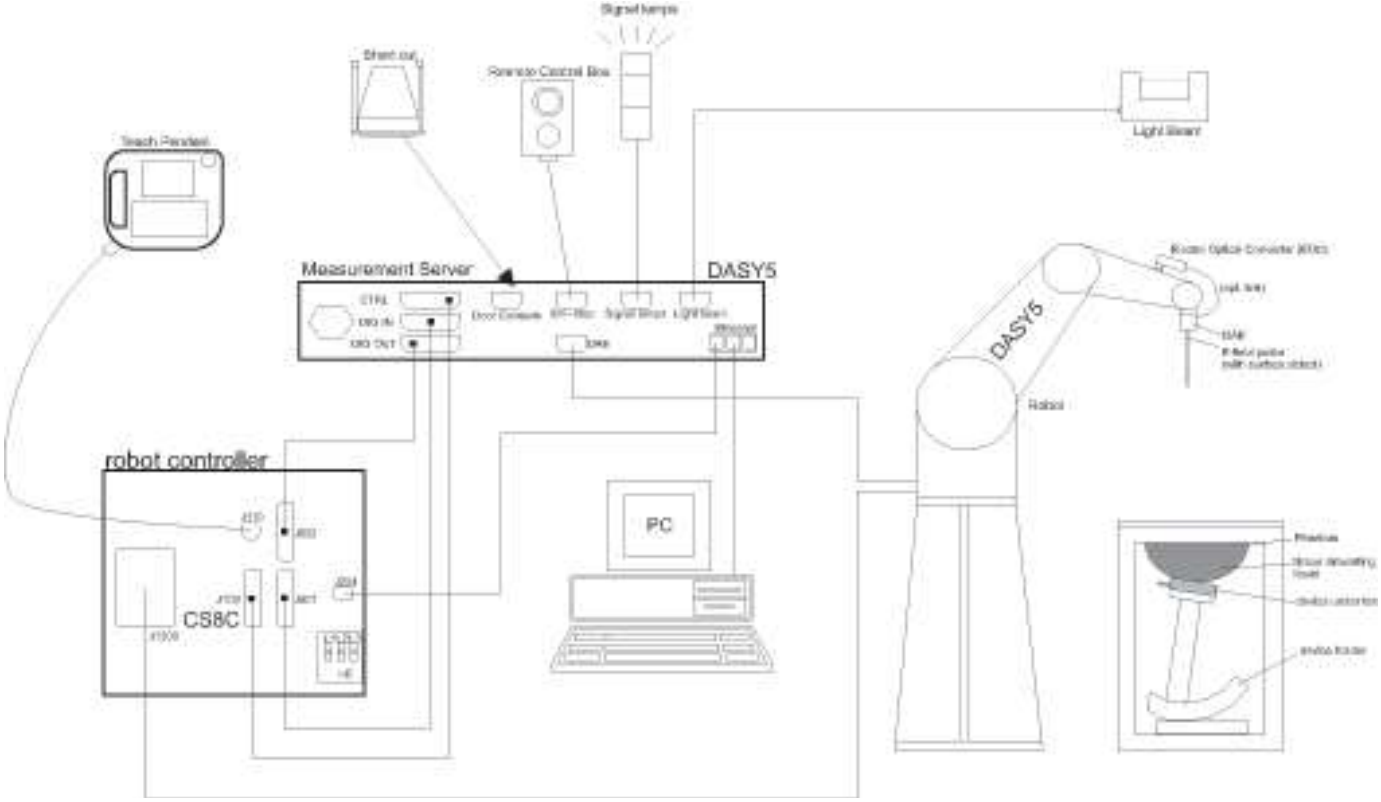
Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMU200	106301	7/3/2014
Base Station Simulator	R & S	CMW500	139915-IG	6/1/2014
Base Station Simulator	R & S	CMW500	124593-SS	7/25/2014

4.2. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01 Section 2.8.1., when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2003 is not required in SAR reports submitted for equipment approval.

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 v01r01

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

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 v01r01

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
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 *reported* 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

7.1. General Information

WiFi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ WiFi Direct WiFi 2.4 GHz (owner) ☒ WiFi Direct WiFi 5 GHz (client)
RF Exposure Condition(s)	Stand-alone
Device dimension	Overall (Length x Width): 274.7mm x 172.5mm Overall Diagonal: 319.5mm Display Diagonal: 271.5mm
Battery Options	☒ Standard – Lithium-ion battery ☐ Extended (large capacity)

7.2. Wireless Technologies

Wireless Technology and Frequency Bands	GSM: 850 / 1900 W-CDMA Band: II / V LTE Band 2/ 4 / 5 / 17 WiFi: 2.4 / 5 GHz Bluetooth: 2.4 GHz.
Mode	GSM - ☒ GPRS (GMSK) - ☒ EGPRS (8PSK) W-CDMA - ☒ UMTS Rel. 99 - ☒ HSDPA (Rel. 6) - ☒ HSUPA (Rel. 6) - ☒ HSPA+ (Rel. 7) LTE - ☒ QPSK - ☒ 16QAM WiFi 2.4GHz - ☒ 802.11b - ☒ 802.11g - ☒ 802.11n (20MHz) WiFi 5GHz - ☒ 802.11a - ☒ 802.11n (20MHz) - ☒ 802.11n (40MHz) Bluetooth Ver. 3.0
Duty Cycle	GSM GPRS 1 Slot: 12.5%; 2 Slots: 25%, 3 Slots: 37.5%,4 Slots: 50%, W-CDMA: 100% LTE: 100% WiFi 802.11a/b/g/n: 100% Bluetooth: 77.52% (DH5)
GPRS Multi-Slot Class	☐ Class 8 - One Up ☐ Class 10 - Two Up ☒ Class 12 - Four Up

7.3. Simultaneous Transmission Condition

RF Exposure Condition	Capable Transmit Configurations
Body (WWAN + Wi-Fi)	GSM + Wi-Fi / BT 1. GSM 850/1900 + BT (WLAN Antenna B) 2. GSM 850/1900 + 2.4GHz (WLAN Antenna A) 3. GSM850/1900 + 5GHz (WLAN Antenna A) 4. GSM 850/1900 + 2.4GHz (WLAN Antenna A) + BT (WLAN Antenna B) 5. GSM850/1900 + 5GHz (WLAN Antenna A) + BT (WLAN Antenna B) W-CDMA + Wi-Fi / BT 6. W-CDMA Band 2/5 + BT (WLAN Antenna B) 7. W-CDMA Band 2/5 + 2.4GHz (WLAN Antenna A) 8. W-CDMA Band 2/5 + 5GHz (WLAN Antenna A) 9. W-CDMA Band 2/5 + 2.4GHz (WLAN Antenna A) + BT (WLAN Antenna B) 10. W-CDMA Band 2/5 + 5GHz (WLAN Antenna A) + BT (WLAN Antenna B) LTE + Wi-Fi / BT 11. LTE Band 2/4/5/17 + BT (WLAN Antenna B) 12. LTE Band 2/4/5/17 + 2.4GHz (WLAN Antenna A) 13. LTE Band 2/4/5/17 + 5GHz (WLAN Antenna A) 14. LTE Band 2/4/5/17 + 2.4GHz (WLAN Antenna A) + BT (WLAN Antenna B) 15. LTE Band 2/4/5/17 + 5GHz (WLAN Antenna A) + BT (WLAN Antenna B)
Body (WiFi)	SISO (1TX) 16. 2.4GHz (WLAN Antenna A) + BT (WLAN Antenna B) 17. 5GHz (WLAN Antenna A) + BT (WLAN Antenna B)
Refer to Appendix for antenna locations Wi-Fi MIMO is supported in all Wi-Fi bands, but is not possible during BT or WWAN transmission.	

7.4. General LTE SAR Test and Reporting Considerations

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Frequency range, Channel Bandwidth, Numbers and Frequencies</td><td>
<table>
<tr><td rowspan="2">Band 2</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td>18700 /1860</td><td>18675/ 1857.5</td><td>18650/ 1855</td><td>18625/ 1852.5</td><td>18615/ 1851.5</td><td>18607/ 1850.7</td></tr>
<tr><td>Mid</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td><td>18900/ 1880</td></tr>
<tr><td>High</td><td>19100/ 1900</td><td>19125/ 1902.5</td><td>19150/ 1905</td><td>19175/ 1907.5</td><td>19185/ 1908.5</td><td>19193/ 1909.3</td></tr>
<tr><td rowspan="2">Band 4</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td>20050/ 1720</td><td>20025/ 1717.5</td><td>20000/ 1715</td><td>19975/ 1712.5</td><td>19965/ 1711.5</td><td>19957/ 1710.7</td></tr>
<tr><td>Mid</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td><td>20175/ 1732.5</td></tr>
<tr><td>High</td><td>20300/ 1745</td><td>20325/ 1747.5</td><td>20350/ 1750</td><td>20375/ 1752.5</td><td>20385/ 1753.5</td><td>20393/ 1754.3</td></tr>
<tr><td rowspan="2">Band 5</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td>20450/ 829</td><td>20425/ 826.5</td><td>20415/ 825.5</td><td>20407/ 824.7</td></tr>
<tr><td>Mid</td><td></td><td></td><td>20525/ 836.5</td><td>20525/ 836.5</td><td>20525/ 836.5</td><td>20525/ 836.5</td></tr>
<tr><td>High</td><td></td><td></td><td>20600/ 844</td><td>20625/ 846.5</td><td>20635/ 847.5</td><td>20643/ 848.3</td></tr>
<tr><td rowspan="2">Band 17</td><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td></td><td></td><td></td><td>23755/ 706.5</td><td></td><td></td></tr>
<tr><td>Mid</td><td></td><td></td><td>23790/ 710</td><td>23790/ 710</td><td></td><td></td></tr>
<tr><td>High</td><td></td><td></td><td></td><td>23825/ 713.5</td><td></td><td></td></tr>
</table>
</td></tr>
<tr><td>LTE transmitter and antenna implementation</td><td>LTE 1 antenna is used for Tx/Rx for LTE and other wireless modes (GPRS/EGPRS/W-CDMA).
LTE 2 antenna is used for Rx only for LTE and other wireless modes (GPRS/EGPRS/W-CDMA).</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td>
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>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
</table>
MPR Built-in by design
A-MPR (additional MPR) was disabled during SAR testing
</td></tr>
<tr><td>Power reduction</td><td>Yes, refer to Section 7.6.</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
</table>

7.5. Output Power Tune-up Limit

RF Air Interface	Mode	Full Power (dBm)			With Power Reduction		
		Lower Limit	Target Power	Upper Limit	Lower Limit	Target Power	Upper Limit
		Tolerance (dB) : -0.5		Tolerance (dB) : 0.5	Tolerance (dB) : -0.5		Tolerance (dB) : 0.5
GSM 850	GPRS 1 Slot	31.3	31.8	**32.3**	30.2	30.7	**31.2**
	GPRS 2 Slots	28.3	28.8	**29.3**	27.1	27.6	**28.1**
	GPRS 3 Slots	26.4	26.9	**27.4**	25.2	25.7	**26.2**
	GPRS 4 Slots	25.2	25.7	**26.2**	23.9	24.4	**24.9**
	EGPRS 1 Slot	25.8	26.3	**26.8**	24.8	25.3	**25.8**
	EGPRS 2 Slots	22.7	23.2	**23.7**	21.7	22.2	**22.7**
	EGPRS 3 Slots	20.8	21.3	**21.8**	19.9	20.4	**20.9**
	EGPRS 4 Slots	19.7	20.2	**20.7**	18.5	19.0	**19.5**
GSM 1900	GPRS 1 Slot	28.5	29.0	**29.5**	23.1	23.6	**24.1**
	GPRS 2 Slots	25.5	26.0	**26.5**	20.0	20.5	**21.0**
	GPRS 3 Slots	23.7	24.2	**24.7**	18.0	18.5	**19.0**
	GPRS 4 Slots	22.4	22.9	**23.4**	16.8	17.3	**17.8**
	EGPRS 1 Slot	25.6	26.1	**26.6**	19.4	19.9	**20.4**
	EGPRS 2 Slots	22.6	23.1	**23.6**	16.1	16.6	**17.1**
	EGPRS 3 Slots	20.5	21.0	**21.5**	14.2	14.7	**15.2**
	EGPRS 4 Slots	19.3	19.8	**20.3**	12.7	13.2	**13.7**
W-CDMA Band V	Rel. 99	21.9	22.4	**22.9**	19.2	19.7	**20.2**
W-CDMA Band II	Rel. 99	22.0	22.5	**23.0**	12.6	13.1	**13.6**
LTE Band 2	QPSK 1 RB	22.1	22.6	**23.5**	13.1	13.6	**14.1**
LTE Band 4	QPSK 1 RB	22.8	23.3	**23.8**	14.4	14.9	**15.4**
LTE Band 5	QPSK 1 RB	22.2	22.7	**23.2**	19.3	19.8	**20.3**
LTE Band 17	QPSK 1 RB	22.3	22.8	**23.3**	20.2	20.7	**21.2**

7.6. Power Reduction by Proximity Sensing

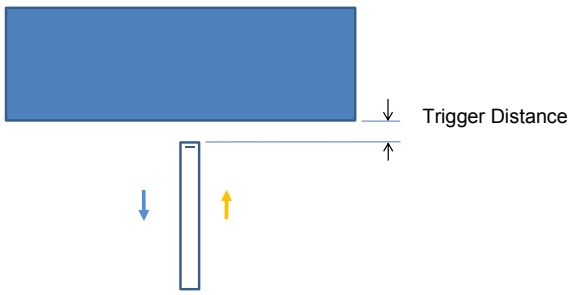
7.6.1. Proximity Sensor Triggering Distance (KDB 616217 §6.2)

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.

The measurement was then repeated for the Rear surface.

The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered). This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement.

It was confirmed separately that the output power was altered according to the proximity sensor status indication. This was achieved by observing the proximity sensor status at the same time as monitoring the conducted power. Section 9 contains both the full and reduced conducted power measurements.



Proximity Sensor Trigger Distance Assessment
KDB 616217 §6.2, **Edge 1**

Proximity Sensor Trigger Distance Assessment
KDB 616217 §6.2, **Rear**

LEGEND

Direction of DUT travel for determination of power reduction triggering point

Direction of DUT travel for determination of full power resumption triggering point

Summary of Trigger Distances

Tissue simulating liquid	Trigger distance - Edge 1		Trigger distance - Rear	
	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
750 muscle	30 mm	32 mm	45 mm	57 mm
850 muscle	28 mm	37 mm	49 mm	53 mm
1750 muscle	27 mm	36 mm	50 mm	55 mm
1900 muscle	27 mm	34 mm	45 mm	50 mm

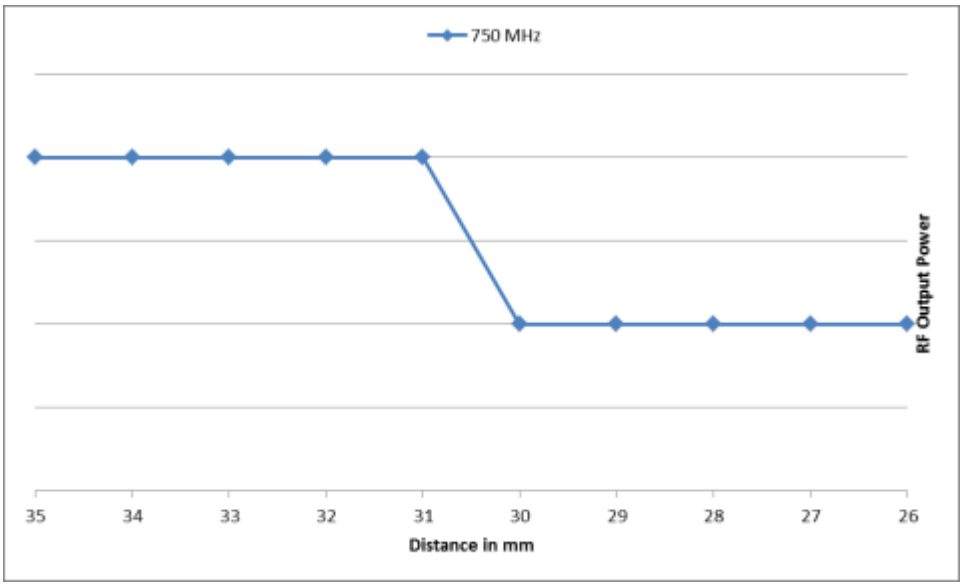
7.6.2. Proximity Sensor Triggering Distance Measurement Results

DUT Moving Toward the Phantom

750 MHz

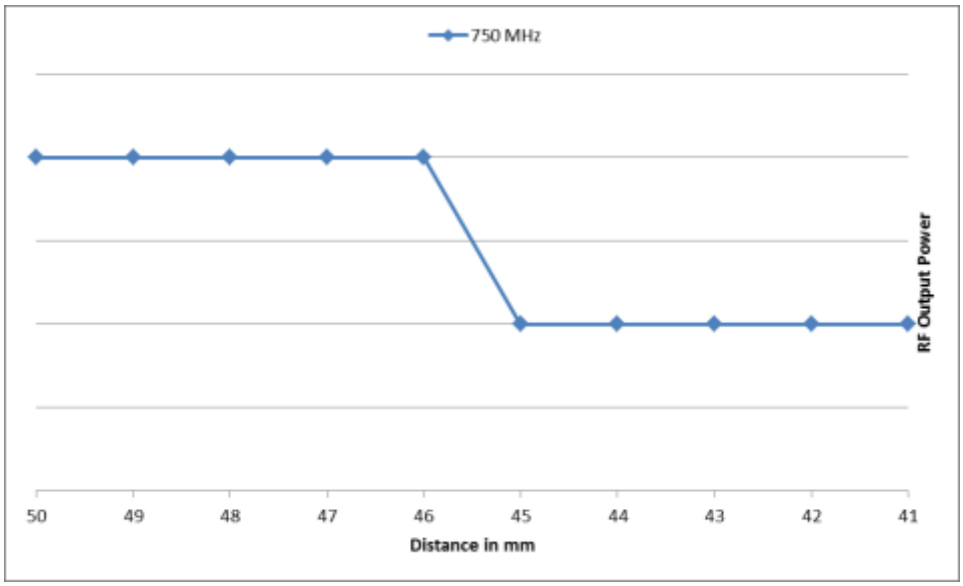
Edge 1

750 MHz										
Distance	35	34	33	32	31	30	29	28	27	26
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

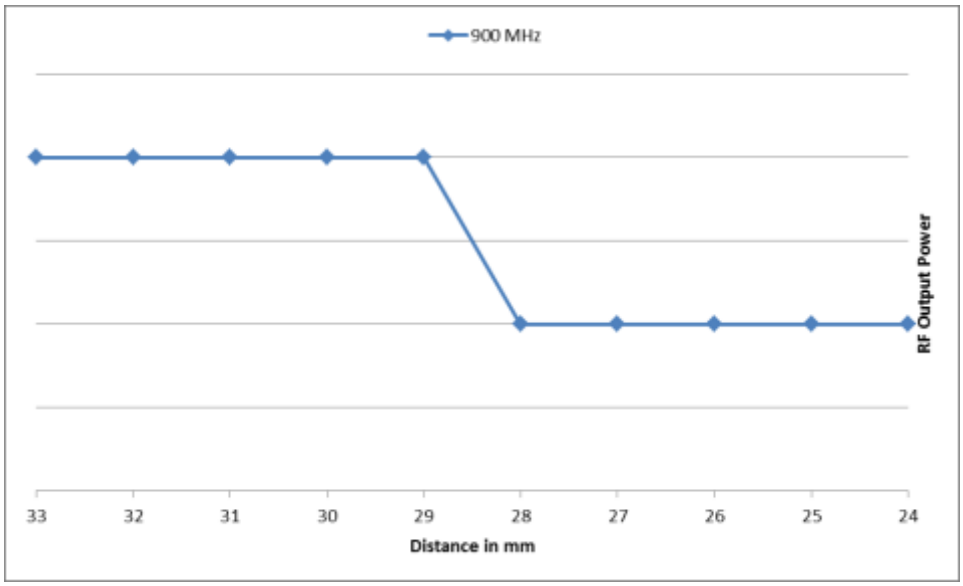
750 MHz										
Distance	50	49	48	47	46	45	44	43	42	41
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



900 MHz

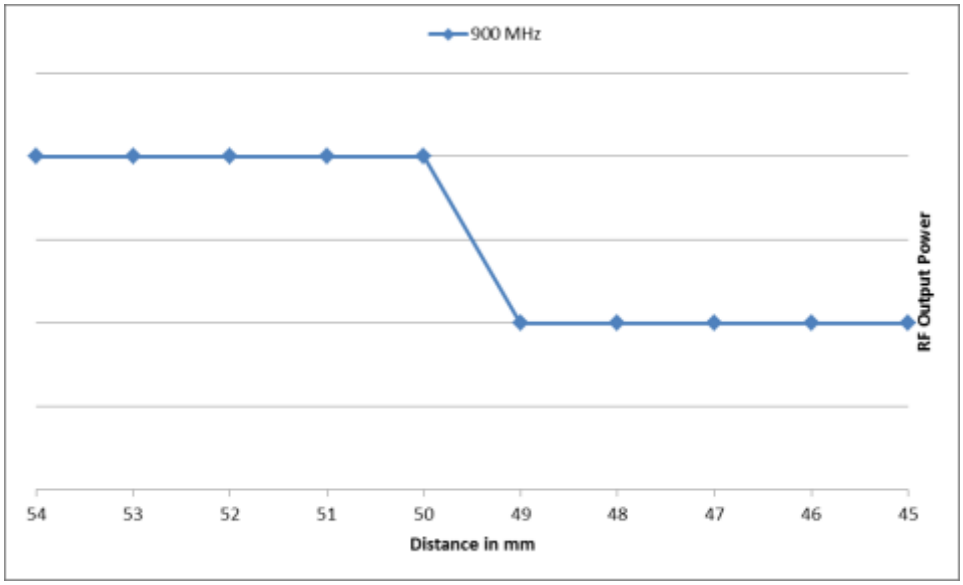
Edge 1

900 MHz										
Distance	33	32	31	30	29	28	27	26	25	24
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

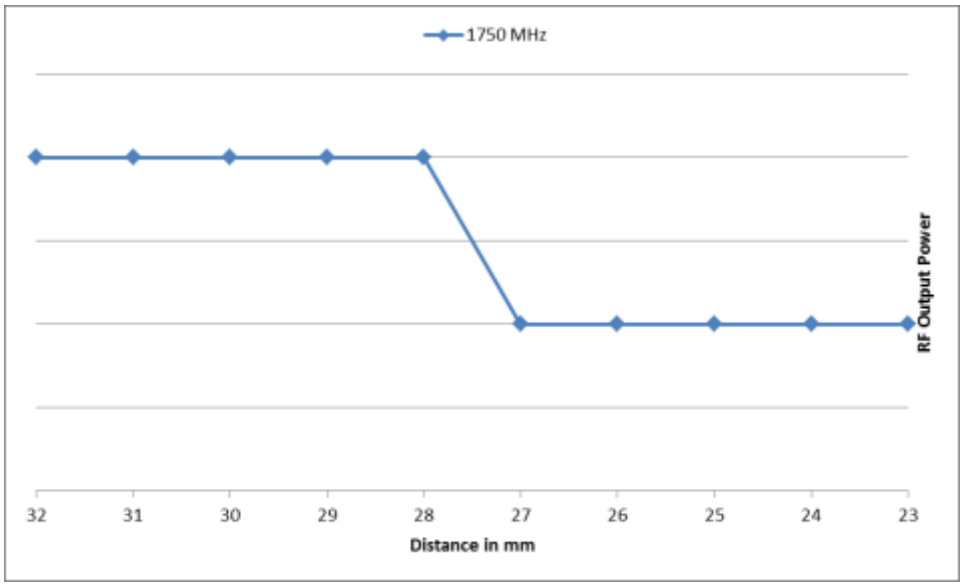
900 MHz										
Distance	54	53	52	51	50	49	48	47	46	45
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1750 MHz

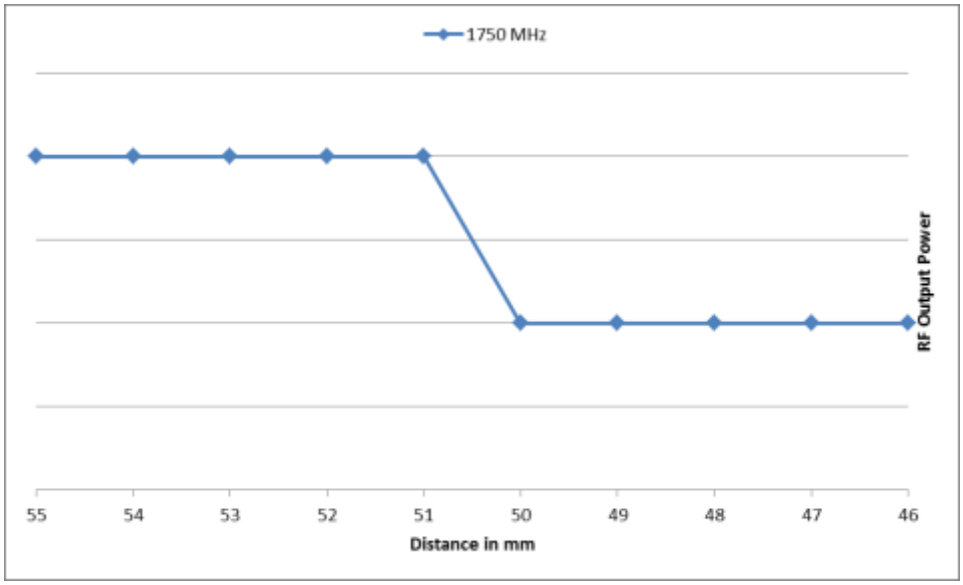
Edge 1

1750 MHz										
Distance	32	31	30	29	28	27	26	25	24	23
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

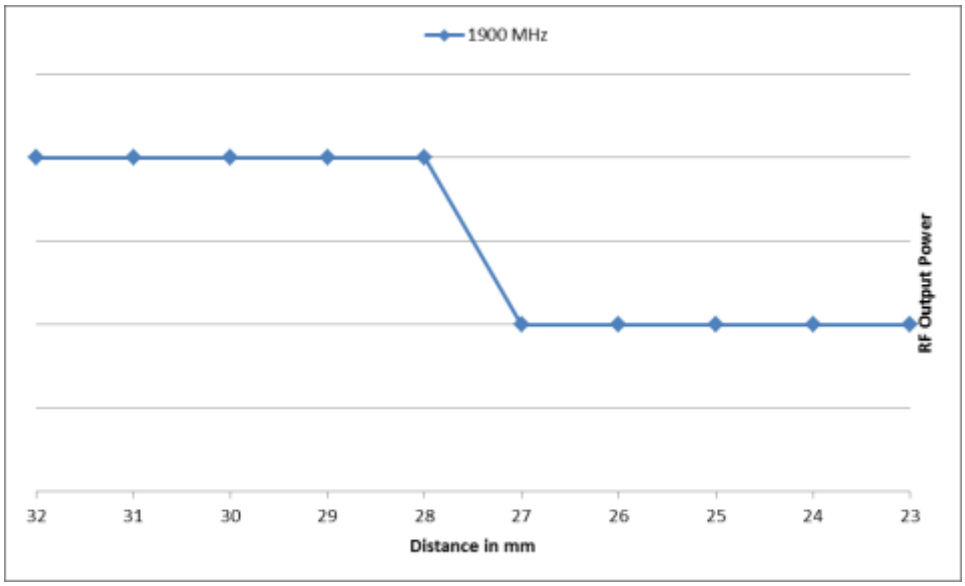
1750 MHz										
Distance	55	54	53	52	51	50	49	48	47	46
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1900 MHz

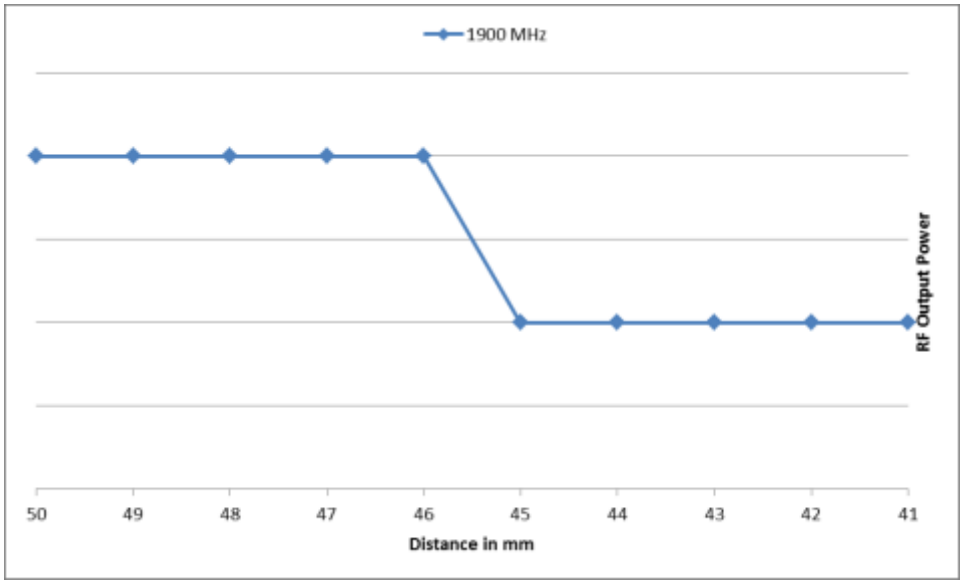
Edge 1

1900 MHz										
Distance	32	31	30	29	28	27	26	25	24	23
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

1900 MHz										
Distance	50	49	48	47	46	45	44	43	42	41
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON

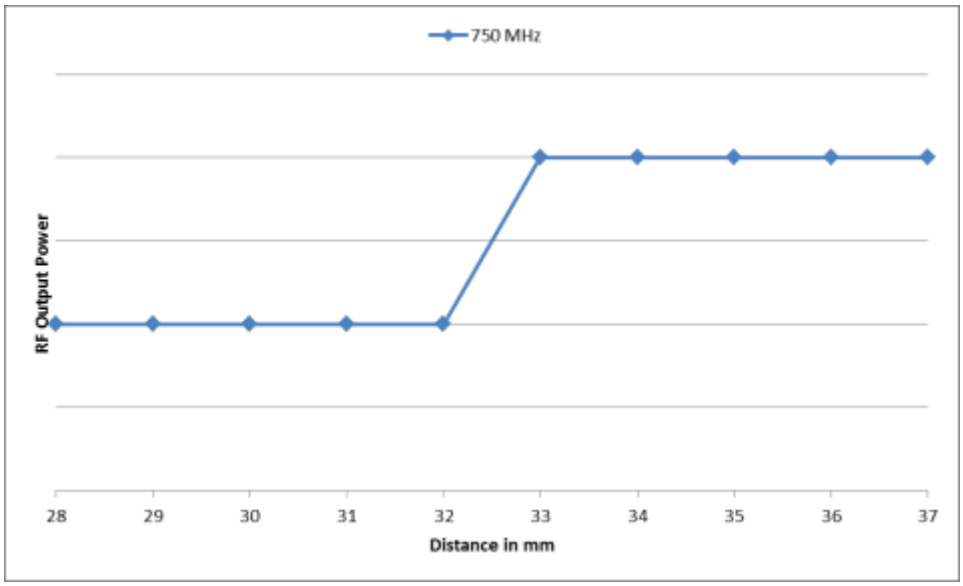


DUT Moving Away from the Phantom

750 MHz

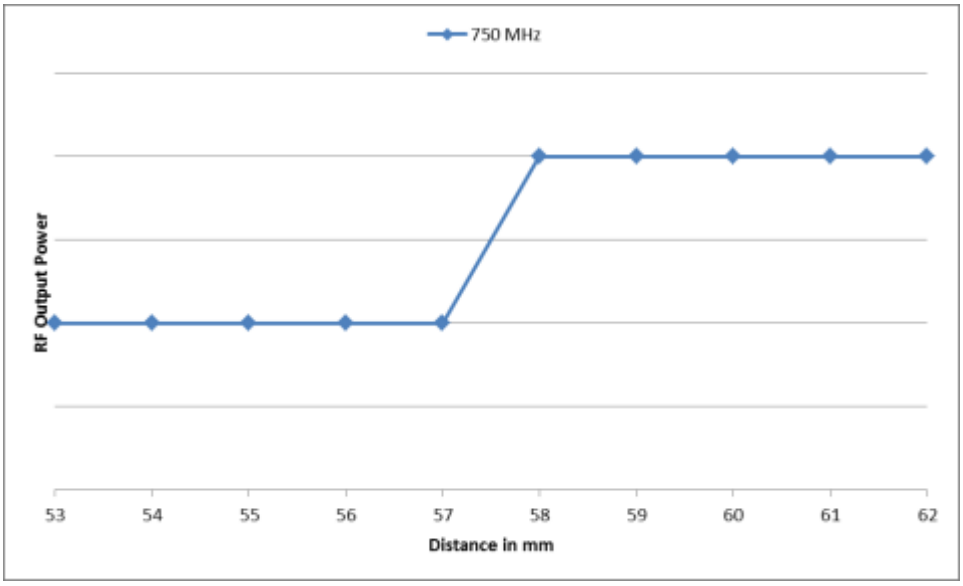
Edge 1

750 MHz										
Distance	28	29	30	31	32	33	34	35	36	37
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

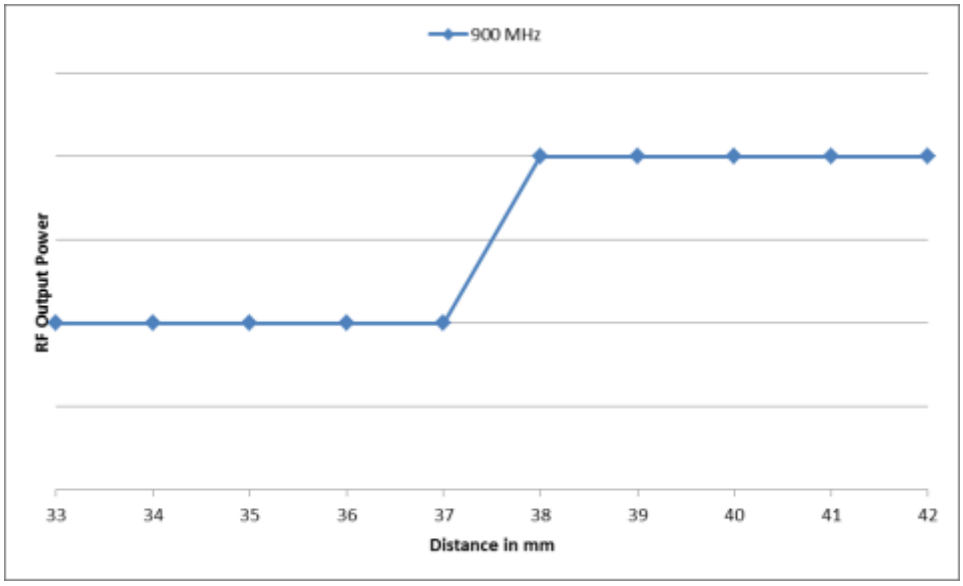
750 MHz										
Distance	53	54	55	56	57	58	59	60	61	62
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



900 MHz

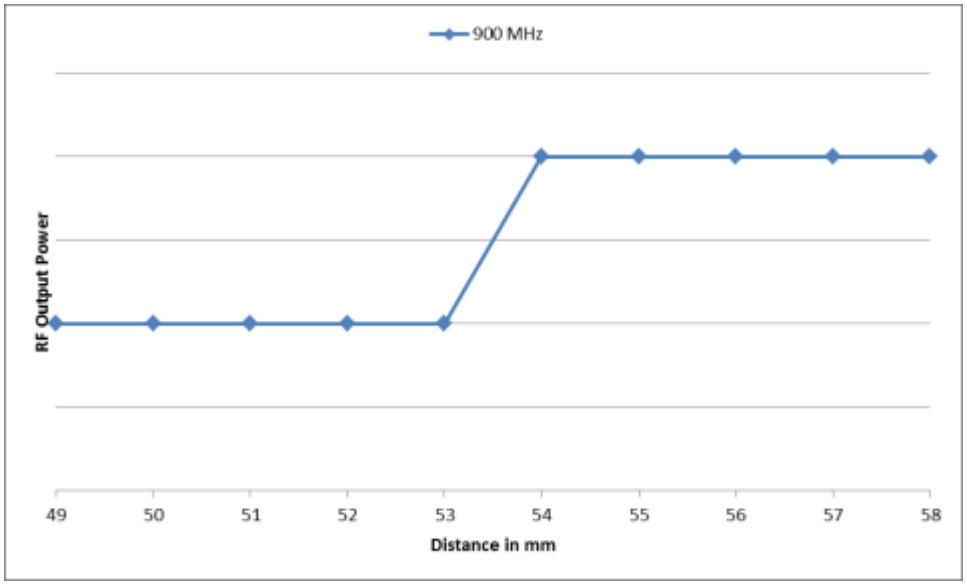
Edge 1

900 MHz										
Distance	33	34	35	36	37	38	39	40	41	42
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

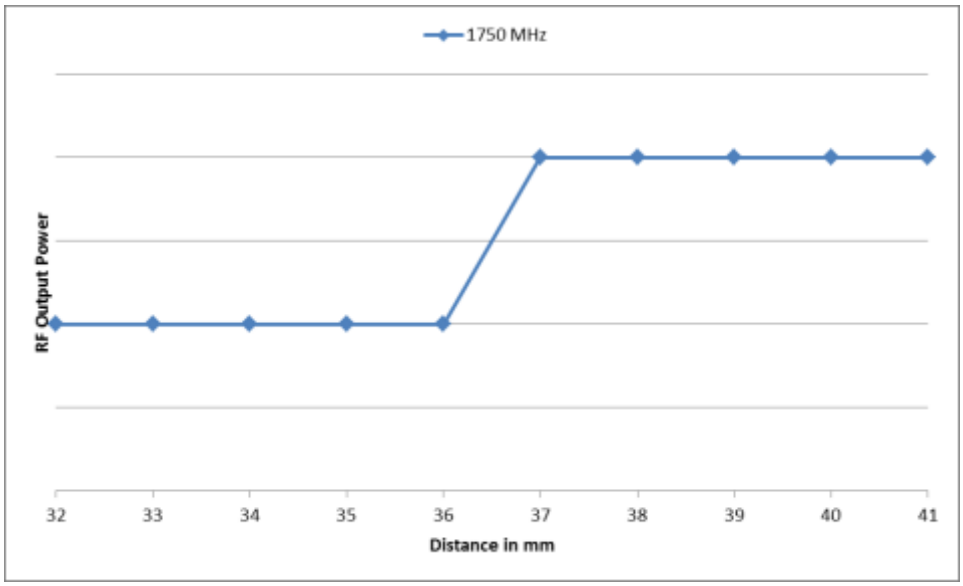
900 MHz										
Distance	49	50	51	52	53	54	55	56	57	58
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1750 MHz

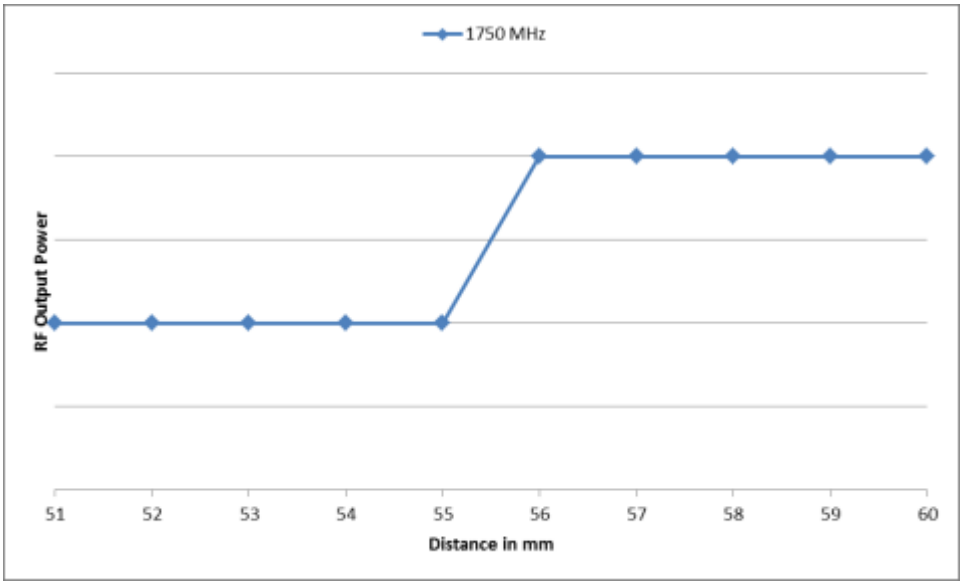
Edge 1

1750 MHz										
Distance	32	33	34	35	36	37	38	39	40	41
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

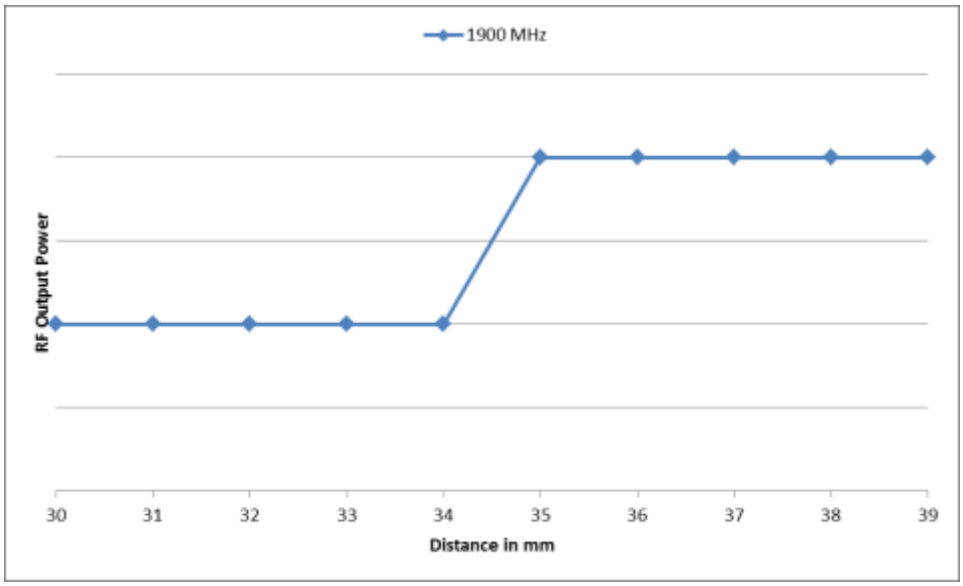
1750 MHz										
Distance	51	52	53	54	55	56	57	58	59	60
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1900 MHz

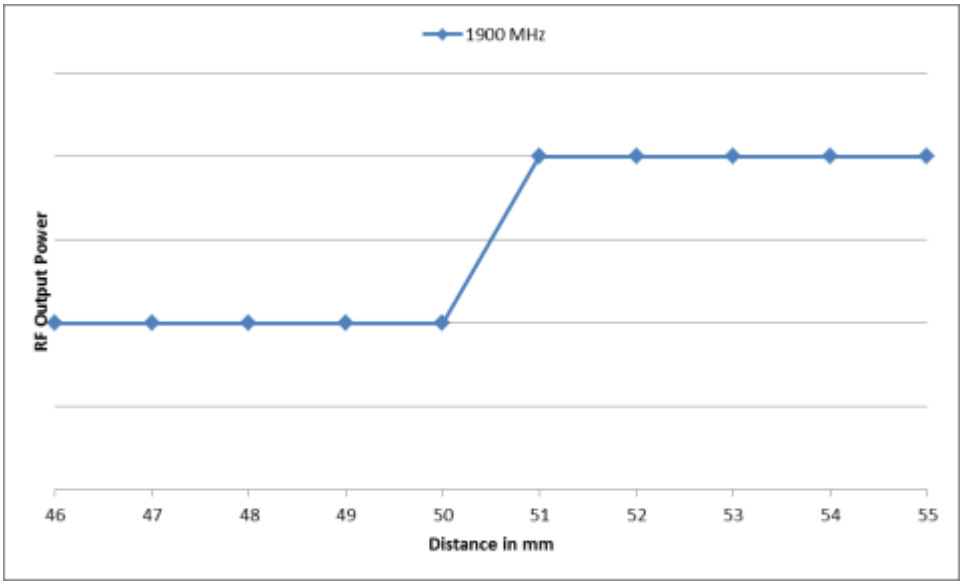
Edge 1

1900 MHz										
Distance	30	31	32	33	34	35	36	37	38	39
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

1900 MHz										
Distance	46	47	48	49	50	51	52	53	54	55
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF

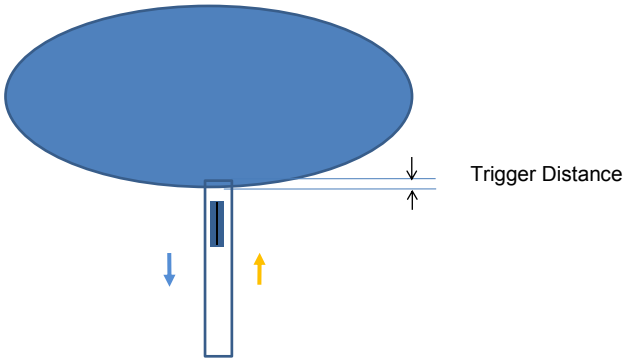


7.6.3. Proximity Sensor Coverage (KDB 616217 §6.3)

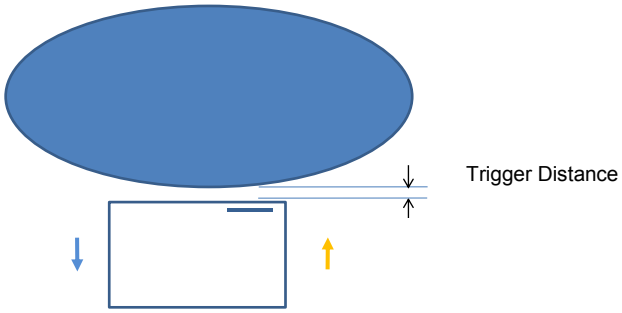
The DUT was positioned under the phantom at a distance less than 21 mm for Edge 1(smallest measured trigger distance for this edge) and 11 mm for Rear (smallest measured trigger distance for this surface). The DUT was held perpendicular to the phantom with edge 4 parallel to the phantom's bottom surface.

Coverage Step 1

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.



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Edge 1**



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Rear**

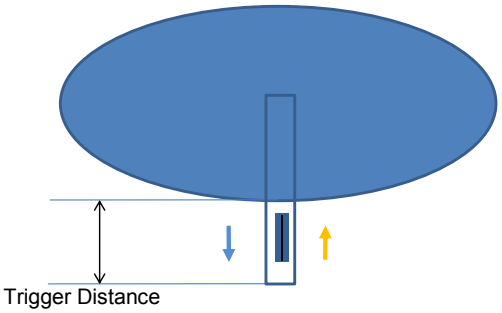
LEGEND

Direction of DUT travel for determination of power reduction triggering point

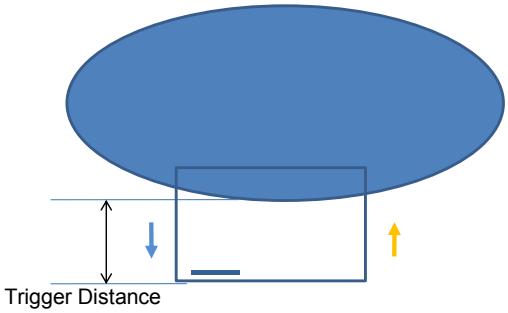
Direction of DUT travel for determination of full power resumption triggering point

Coverage Step 2

The DUT was rotated 180° from the previous step and the process repeated



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Edge 1**



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Rear**

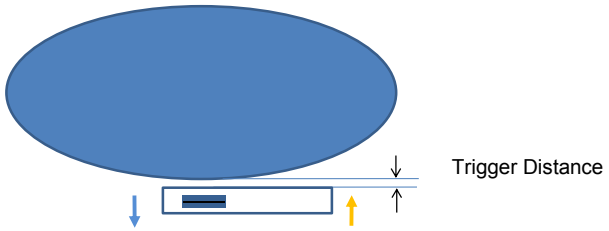
LEGEND

Direction of DUT travel for determination of power reduction triggering point

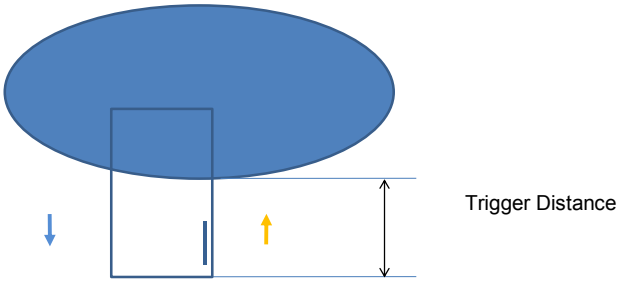
Direction of DUT travel for determination of full power resumption triggering point

Coverage Step 3

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.



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Edge 1**



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Rear**

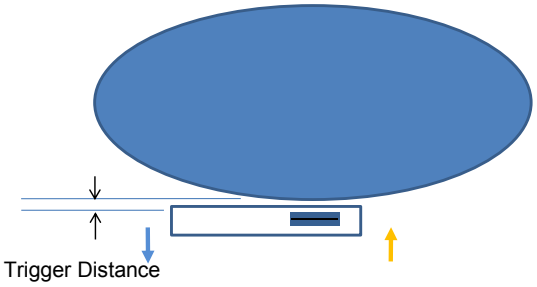
LEGEND

Direction of DUT travel for determination of power reduction triggering point

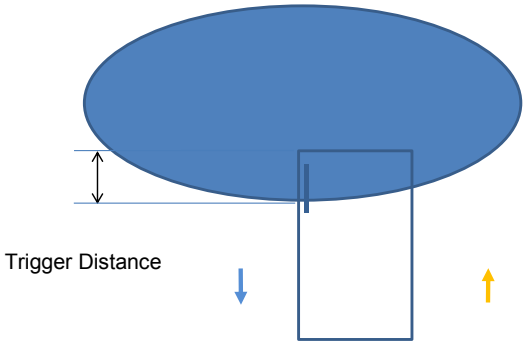
Direction of DUT travel for determination of full power resumption triggering point

Coverage Step 4

The DUT was rotated 180° from the previous step and the process repeated



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Edge 1**



Proximity Sensor Trigger Coverage Assessment
KDB 616217 §6.3, **Rear**

LEGEND

Direction of DUT travel for determination of power reduction triggering point

Direction of DUT travel for determination of full power resumption triggering point

Summary of Proximity Sensor Coverage Distances

Edge 1

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	6 mm	12 mm	-79 mm	-87 mm	33 mm	36 mm	4 mm	18 mm
850 muscle	16 mm	13 mm	-79 mm	-89 mm	33 mm	42 mm	2 mm	25 mm
1750 muscle	6 mm	16 mm	-77 mm	-86 mm	24 mm	40 mm	3 mm	25 mm
1900 muscle	16 mm	14 mm	-68 mm	-87 mm	24 mm	32 mm	3 mm	25 mm

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

Rear

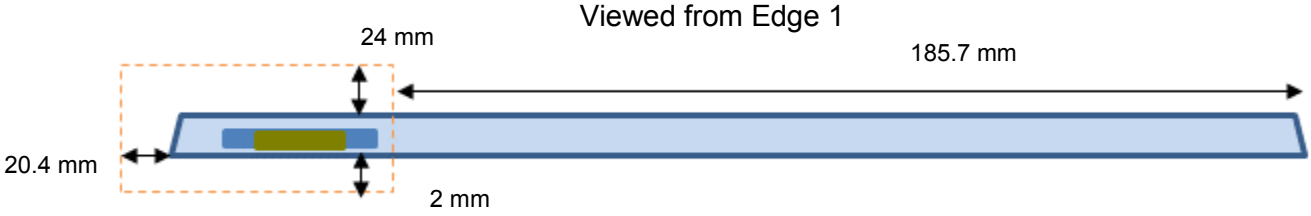
Tissue simulating liquid	Trigger distance Step 1		Trigger distance Step 2		Trigger distance Step 3		Trigger distance Step 4	
	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
750 muscle	39 mm	42 mm	27 mm	31 mm	73 mm	77 mm	10 mm	5 mm
850 muscle	32 mm	47 mm	22 mm	29 mm	79 mm	85 mm	4 mm	-1 mm
1750 muscle	30 mm	39 mm	20 mm	29 mm	72 mm	81 mm	8 mm	4 mm
1900 muscle	43 mm	44 mm	29 mm	32 mm	77 mm	85 mm	1 mm	11 mm

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

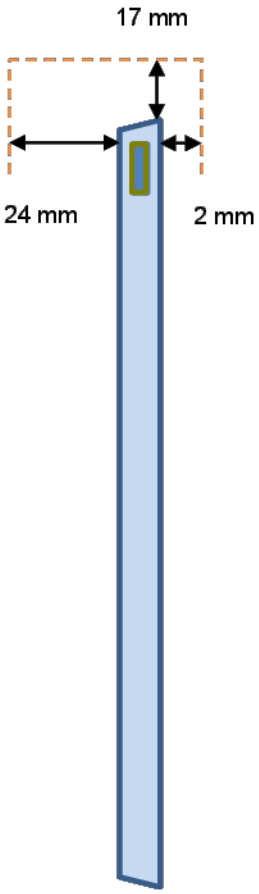
Illustration of Proximity Sensor Coverage Distances

Edge 1

Viewed from Edge 1

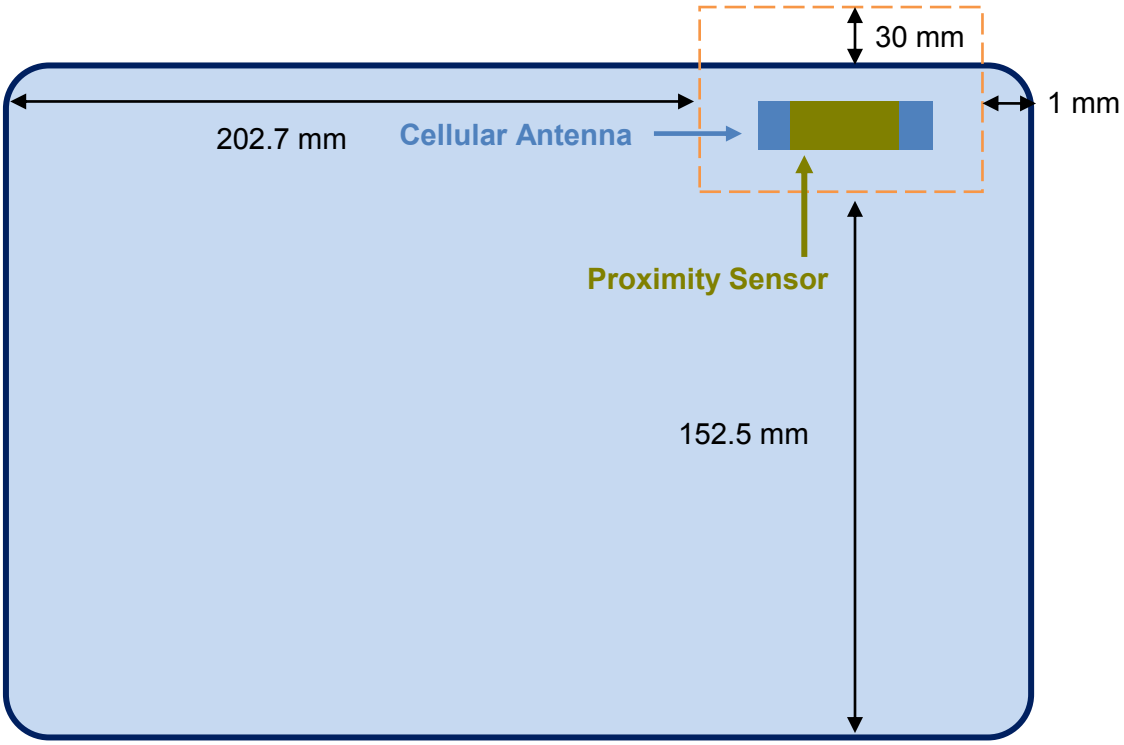


Viewed from Edge 4

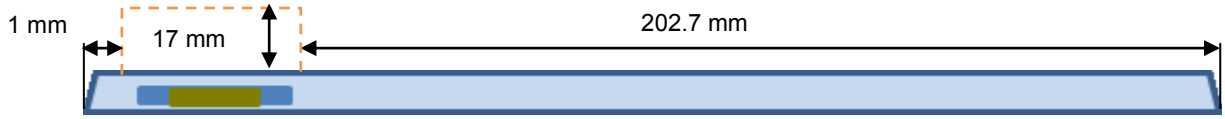


Rear

Viewed from the Rear



Viewed from Edge 1



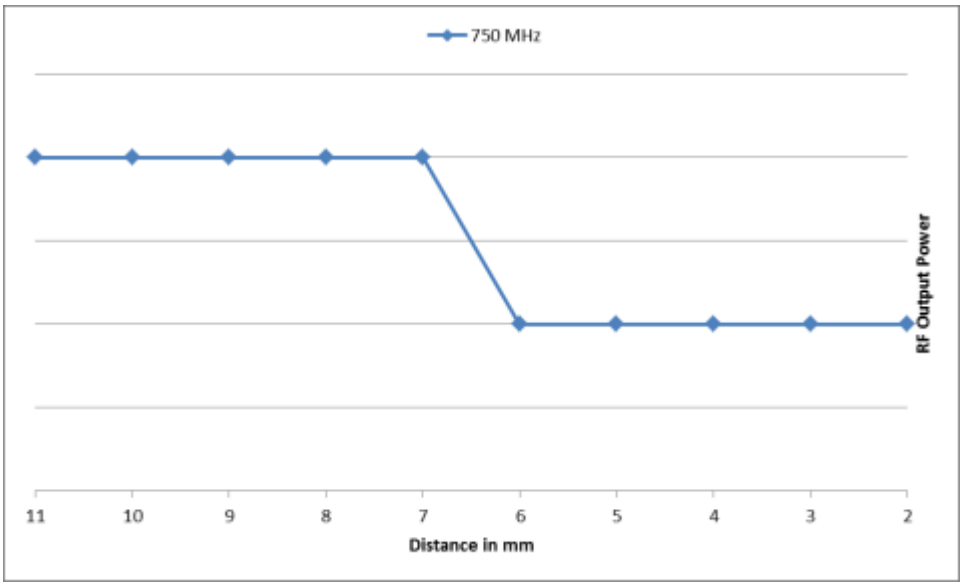
7.6.4. Proximity Sensor Coverage Measurement Results

DUT Moving Toward the Phantom, Step 1

750 MHz

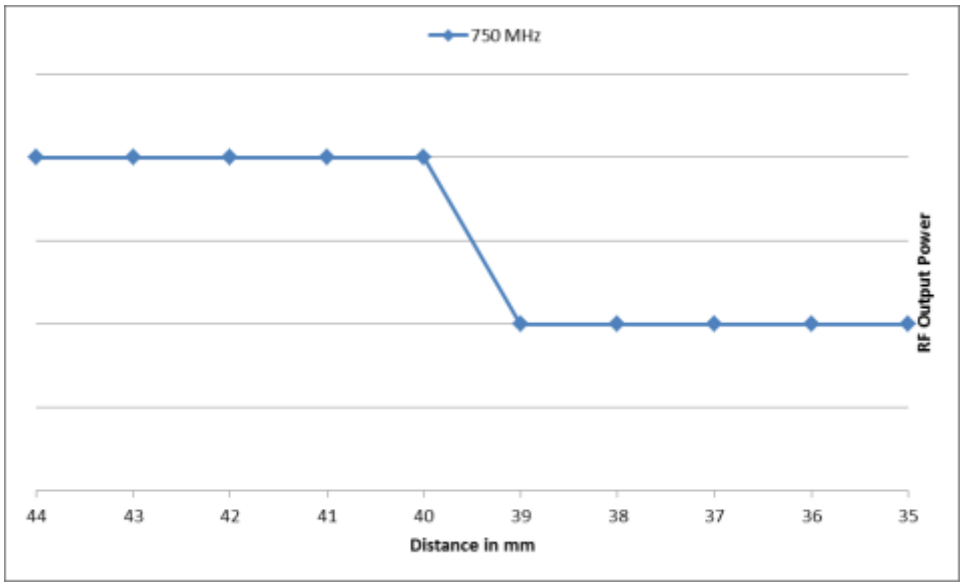
Edge 1

750 MHz										
Distance	11	10	9	8	7	6	5	4	3	2
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

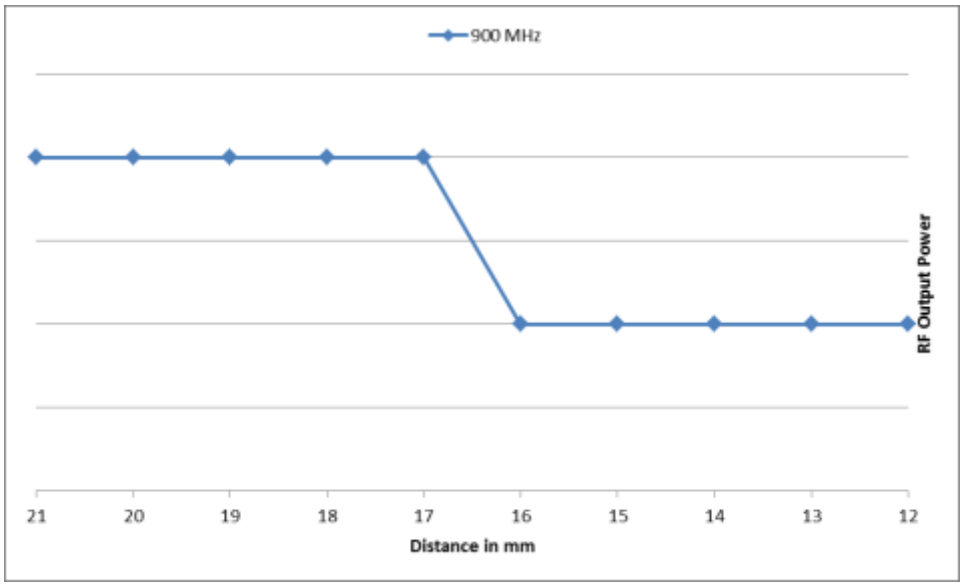
750 MHz										
Distance	44	43	42	41	40	39	38	37	36	35
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



900 MHz

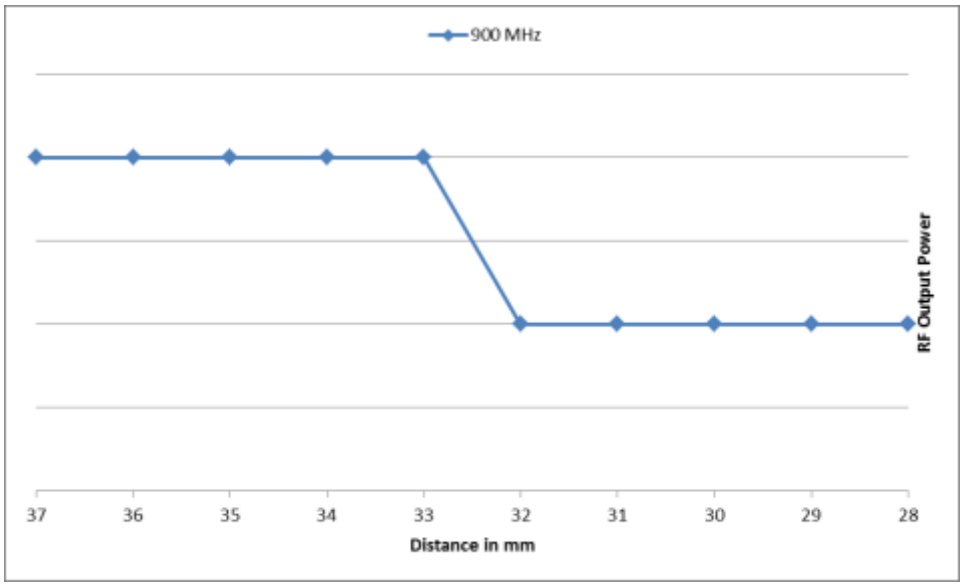
Edge 1

900 MHz										
Distance	21	20	19	18	17	16	15	14	13	12
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

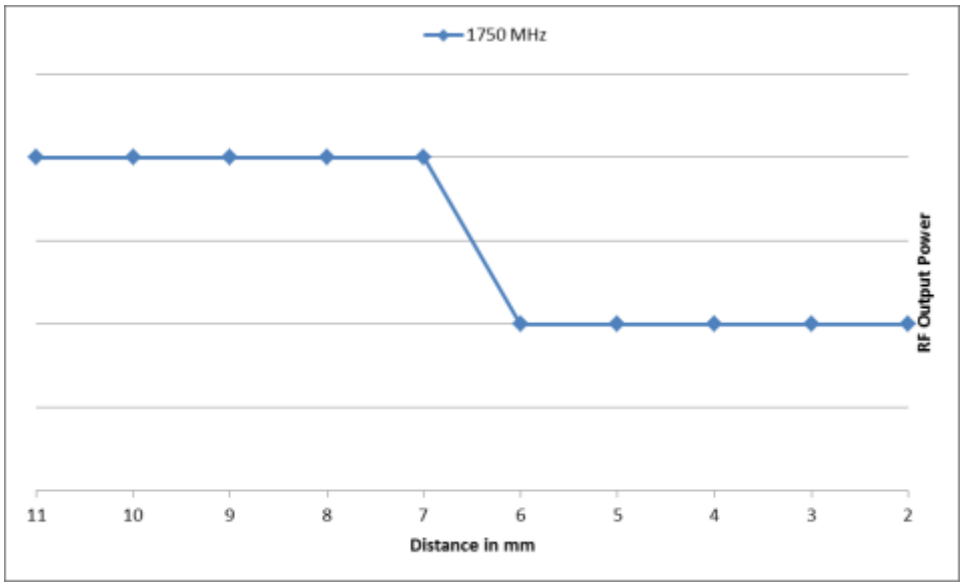
900 MHz										
Distance	37	36	35	34	33	32	31	30	29	28
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1750 MHz

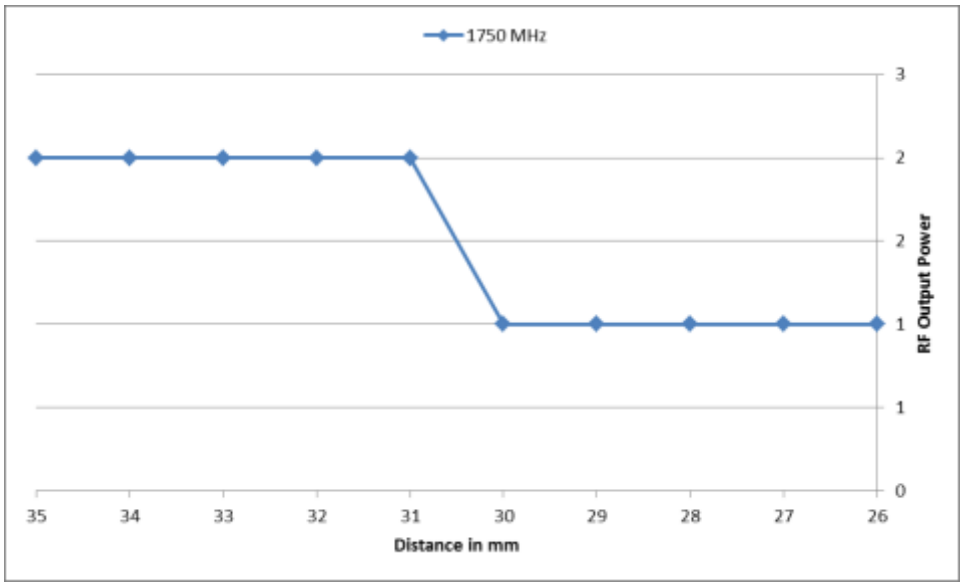
Edge 1

1750 MHz										
Distance	11	10	9	8	7	6	5	4	3	2
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

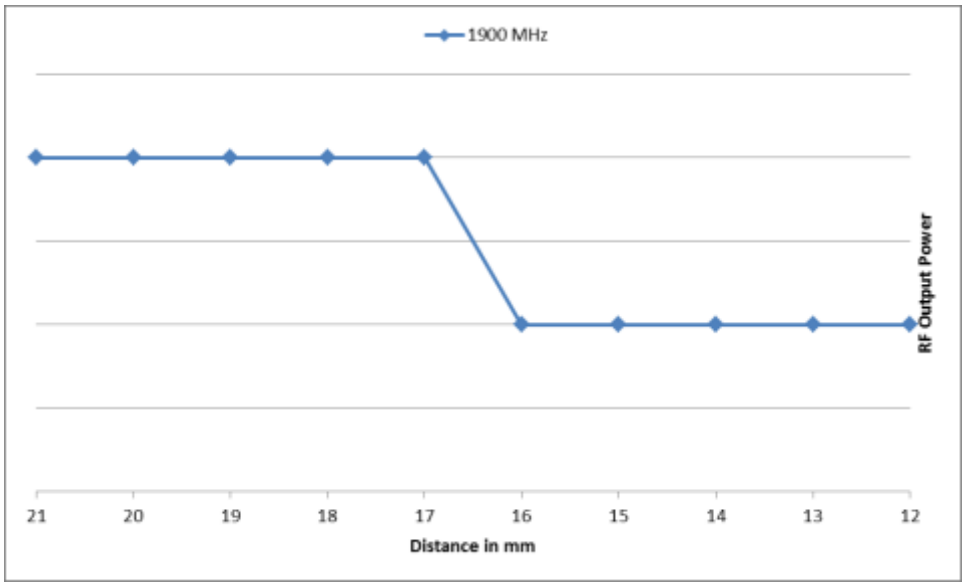
1750 MHz										
Distance	35	34	33	32	31	30	29	28	27	26
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1900 MHz

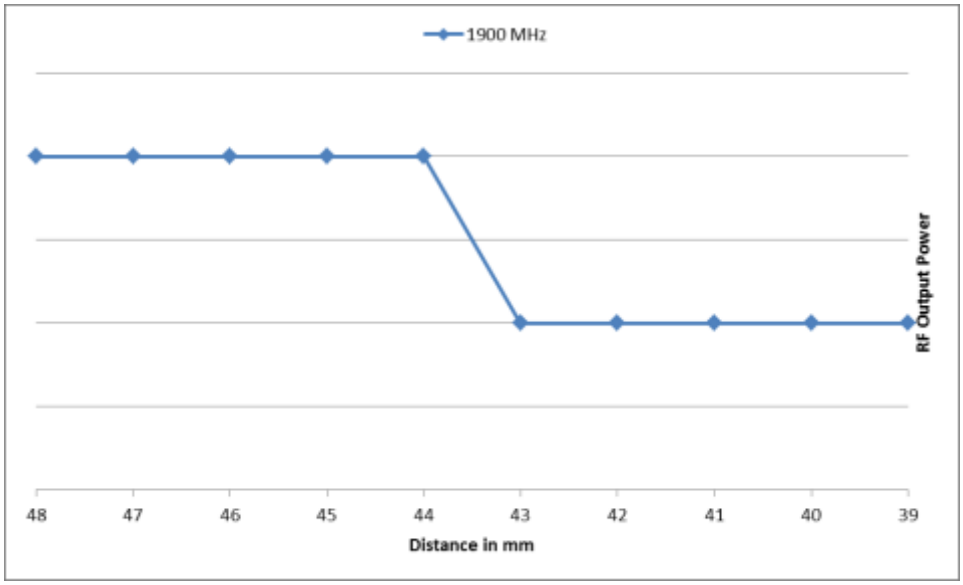
Edge 1

1900 MHz										
Distance	21	20	19	18	17	16	15	14	13	12
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

1900 MHz										
Distance	48	47	46	45	44	43	42	41	40	39
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON

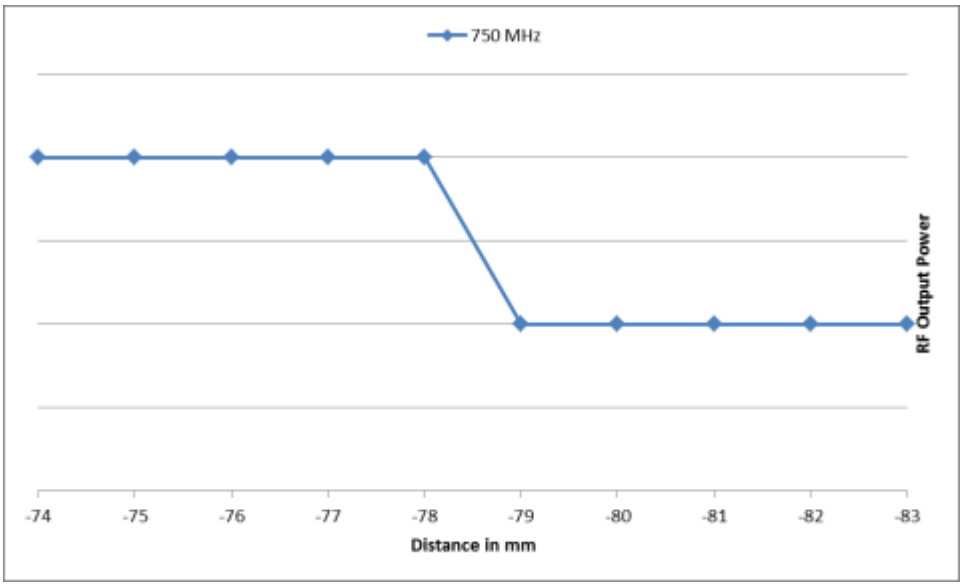


DUT Moving Toward the Phantom, Step 2

750 MHz

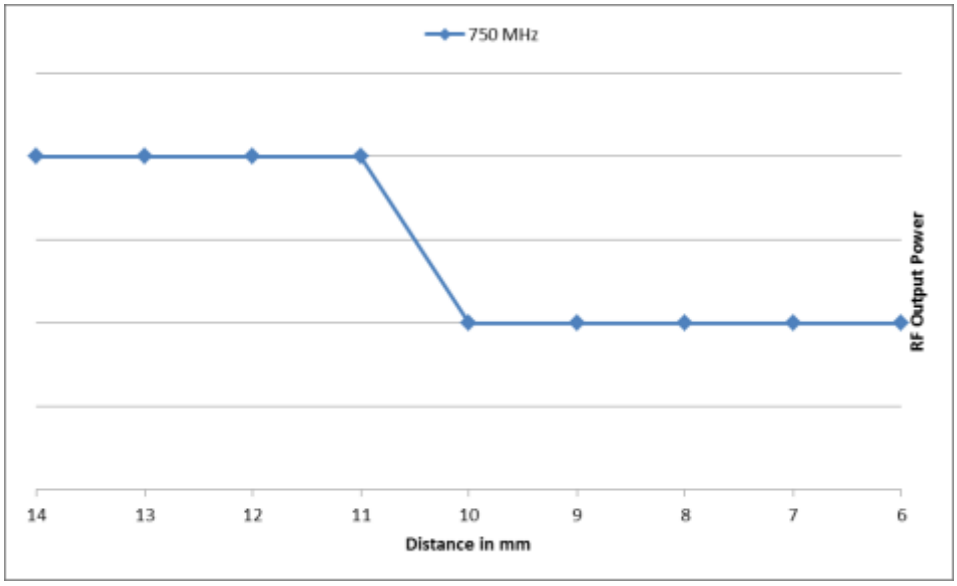
Edge 1

750 MHz										
Distance	-74	-75	-76	-77	-78	-79	-80	-81	-82	-83
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

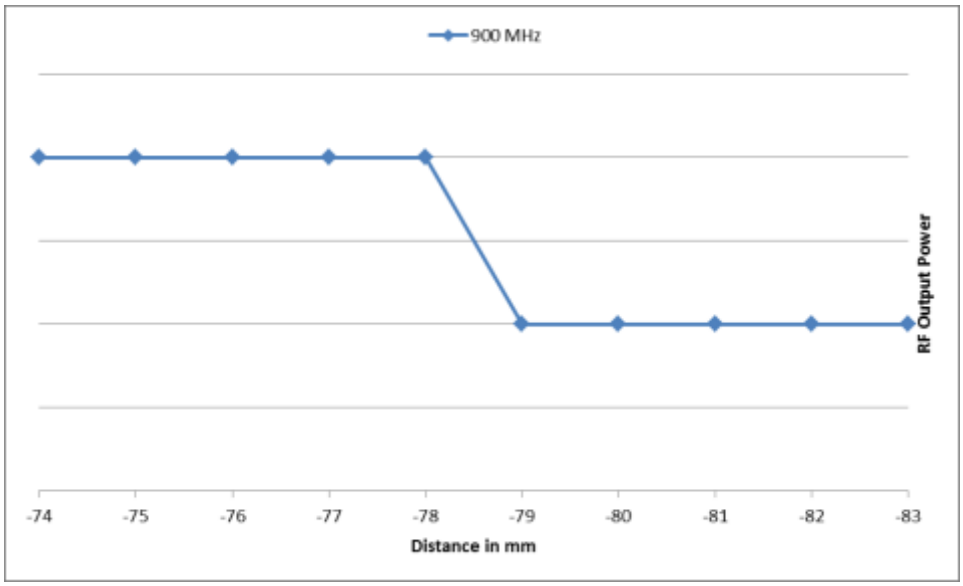
750 MHz										
Distance	15	14	13	12	11	10	9	8	7	6
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



900 MHz

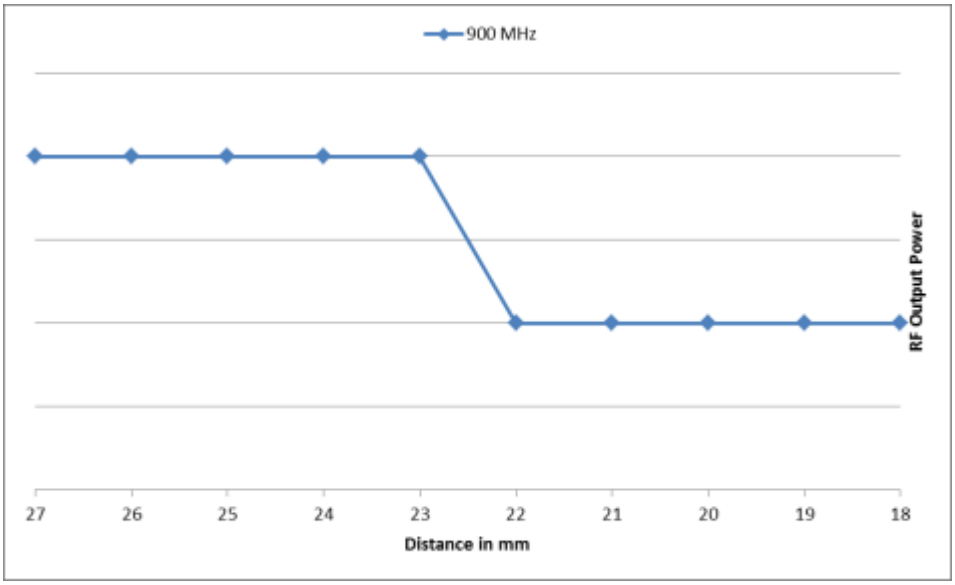
Edge 1

900 MHz										
Distance	-74	-75	-76	-77	-78	-79	-80	-81	-82	-83
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

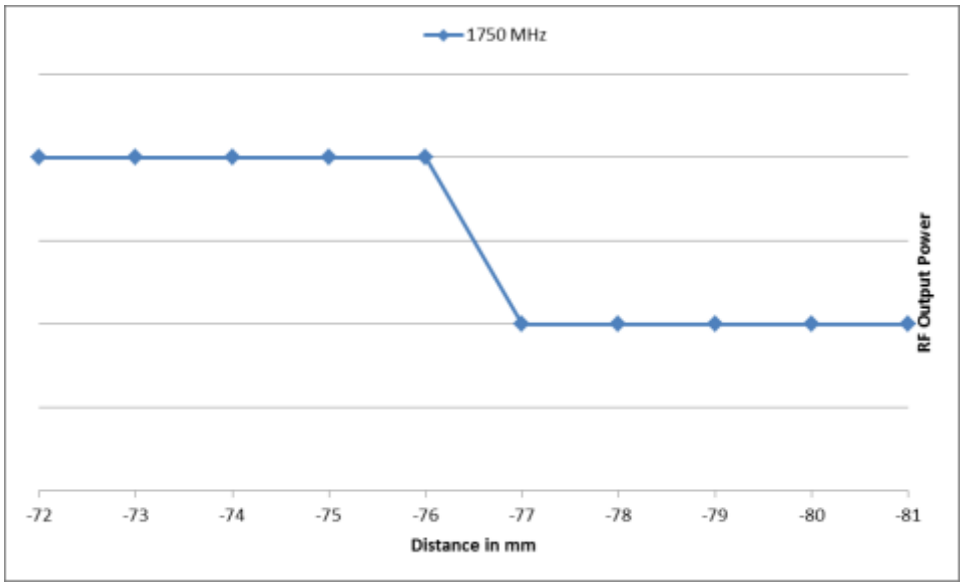
900 MHz										
Distance	27	26	25	24	23	22	21	20	19	18
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1750 MHz

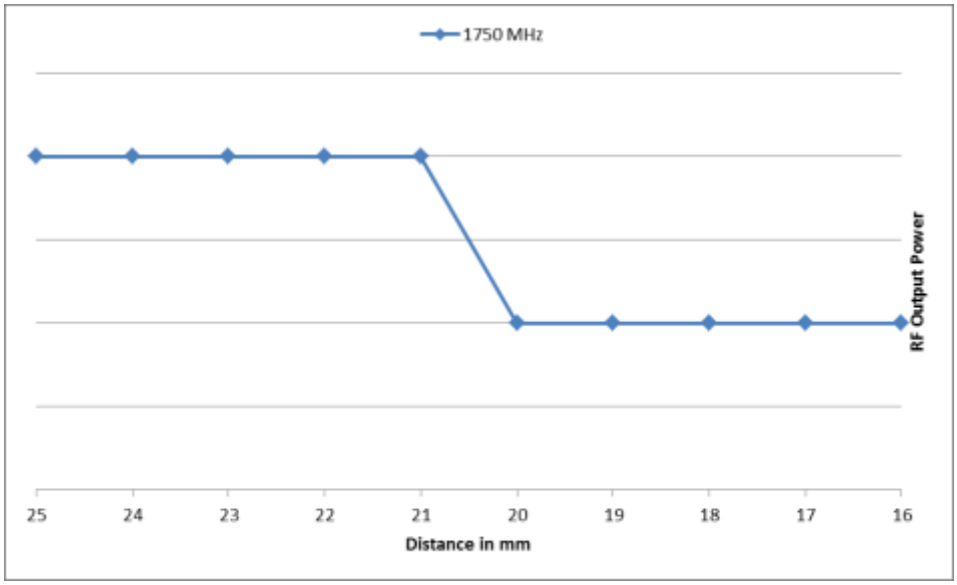
Edge 1

1750 MHz										
Distance	-72	-73	-74	-75	-76	-77	-78	-79	-80	-81
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

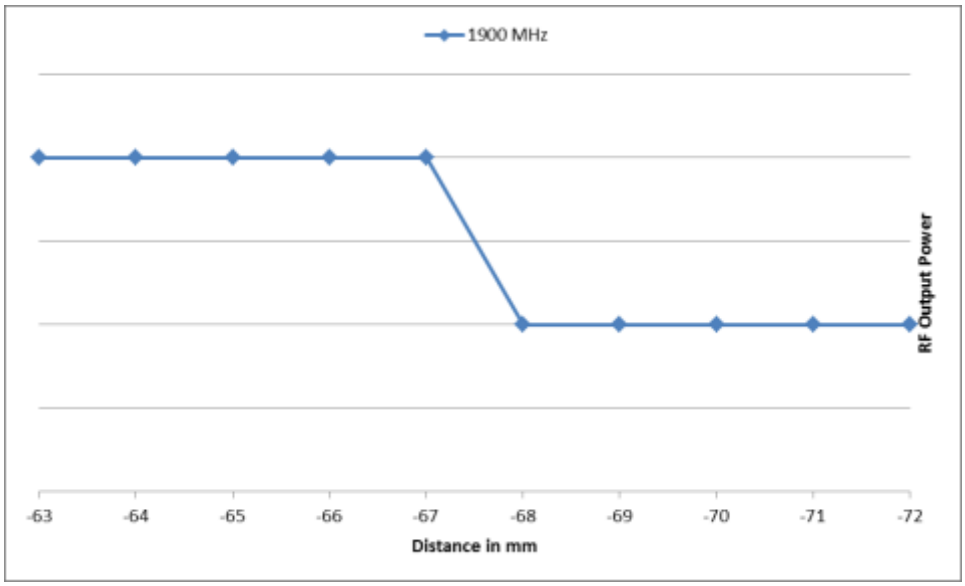
1750 MHz										
Distance	25	24	23	22	21	20	19	18	17	16
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1900 MHz

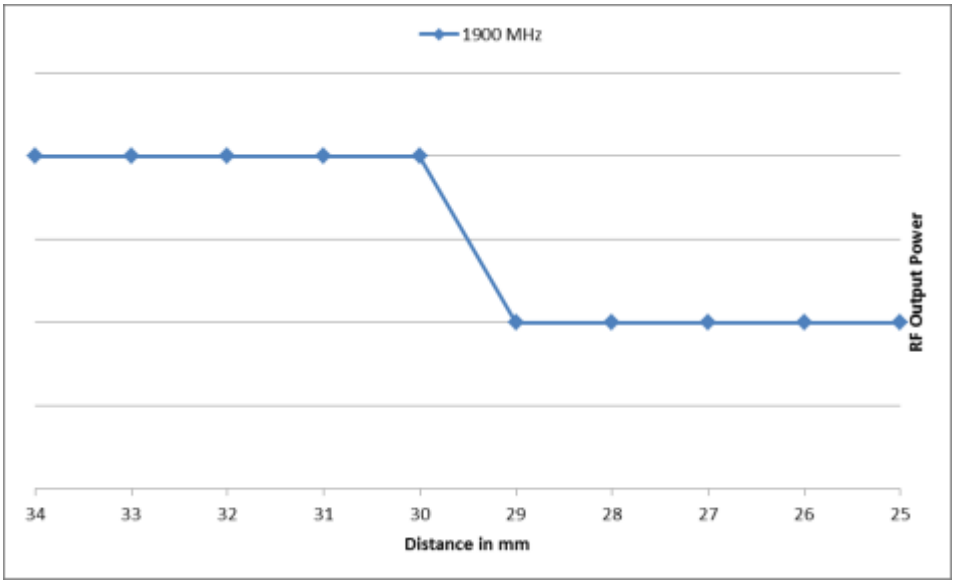
Edge 1

1900 MHz										
Distance	-63	-64	-65	-66	-67	-68	-69	-70	-71	-72
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

1900 MHz										
Distance	34	33	32	31	30	29	28	27	26	25
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON

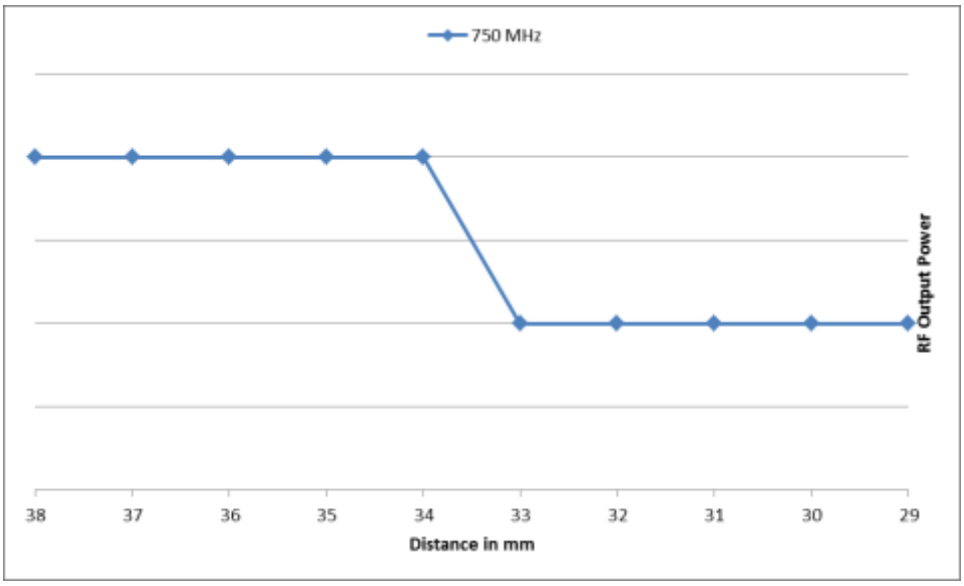


DUT Moving Toward the Phantom, Step 3

750 MHz

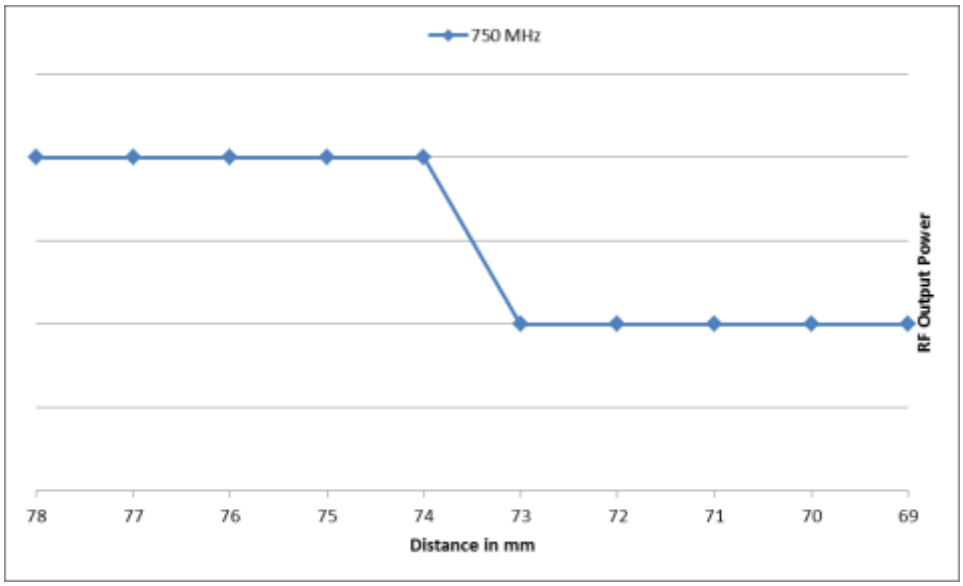
Edge 1

750 MHz										
Distance	38	37	36	35	34	33	32	31	30	29
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

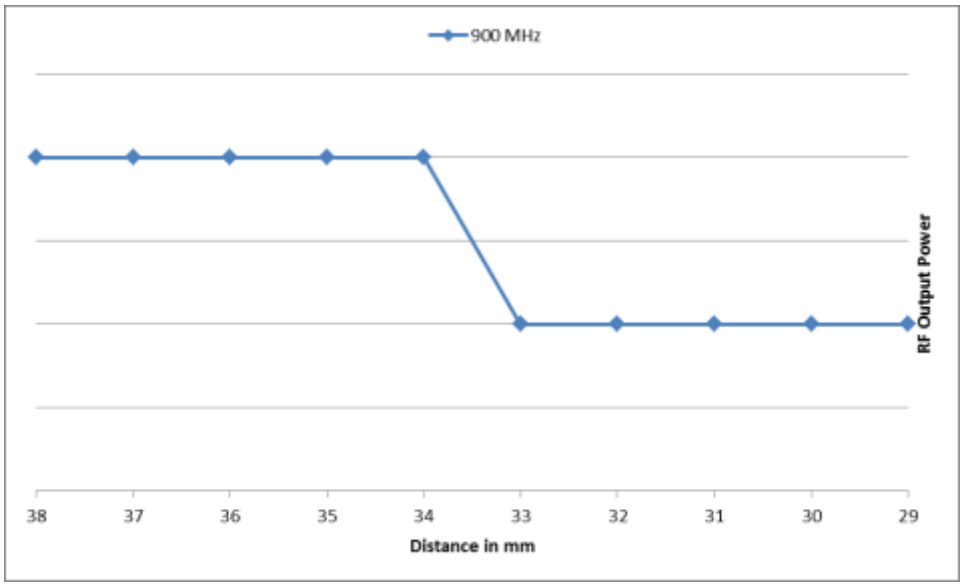
750 MHz										
Distance	78	77	76	75	74	73	72	71	70	69
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



900 MHz

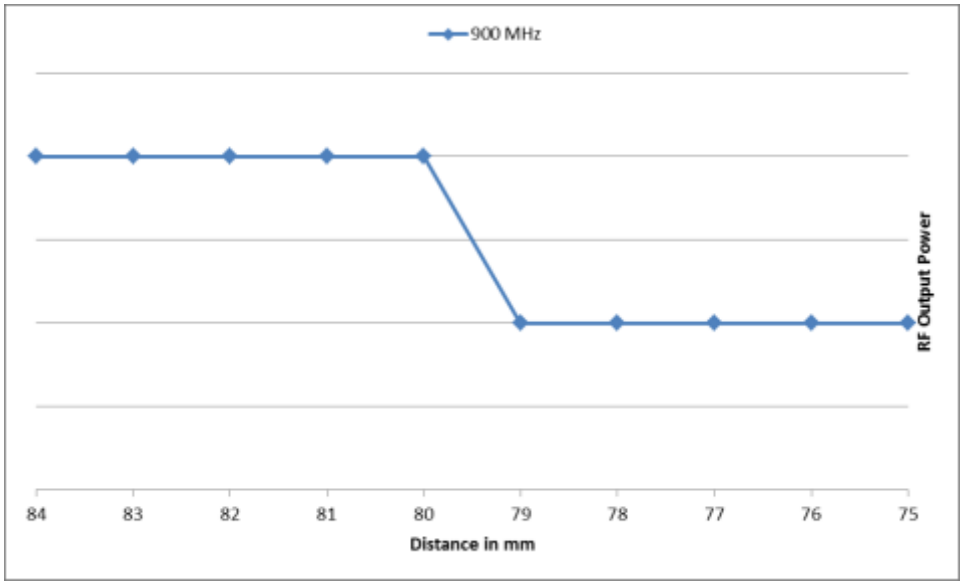
Edge 1

900 MHz										
Distance	38	37	36	35	34	33	32	31	30	29
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

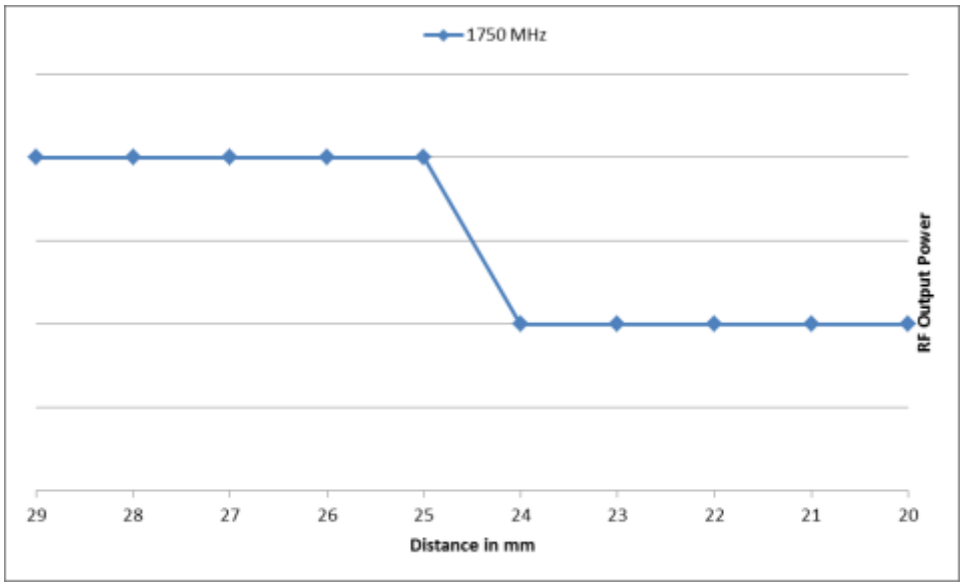
900 MHz										
Distance	84	83	82	81	80	79	78	77	76	75
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1750 MHz

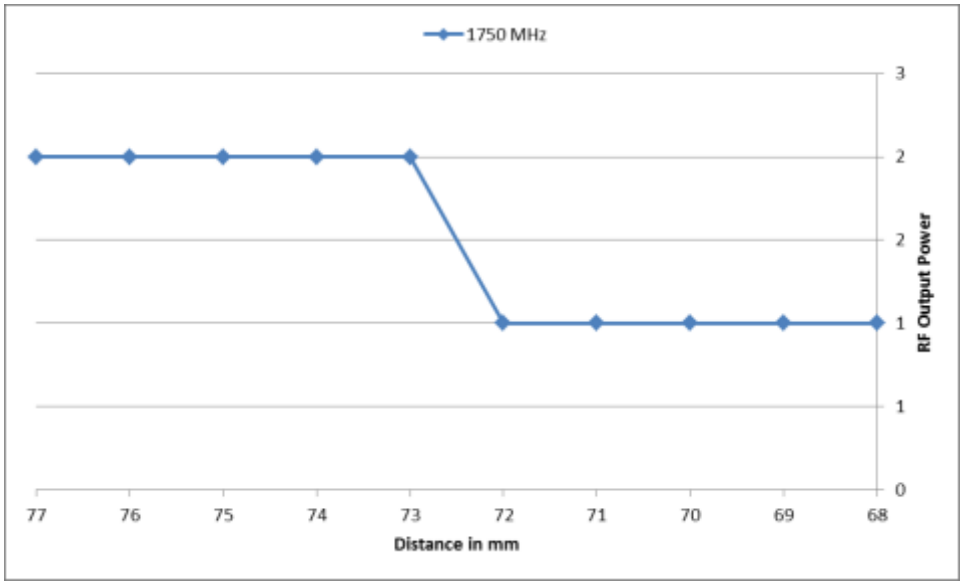
Edge 1

1750 MHz										
Distance	29	28	27	26	25	24	23	22	21	20
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

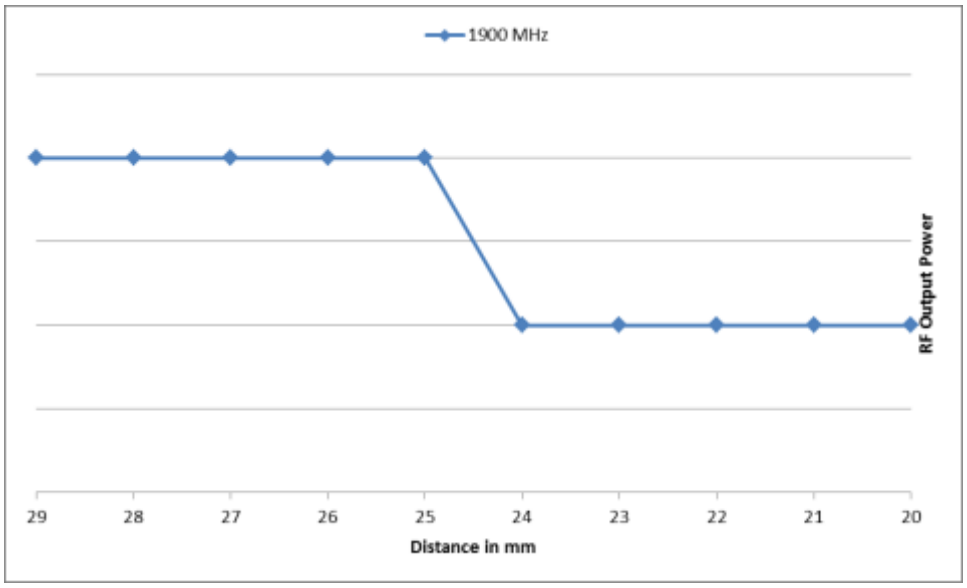
1750 MHz										
Distance	77	76	75	74	73	72	71	70	69	68
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1900 MHz

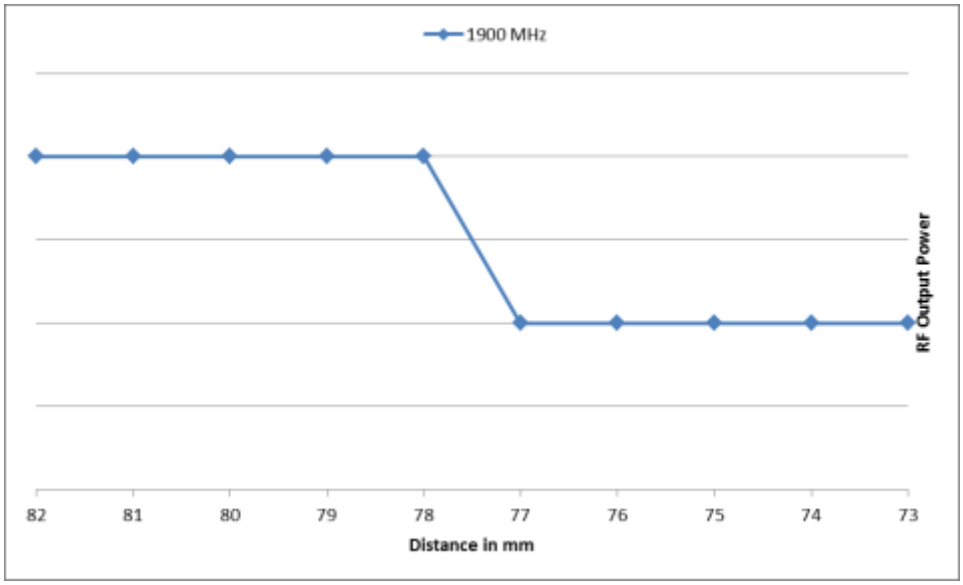
Edge 1

1900 MHz										
Distance	29	28	27	26	25	24	23	22	21	20
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

1900 MHz										
Distance	82	81	80	79	78	77	76	75	74	73
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON

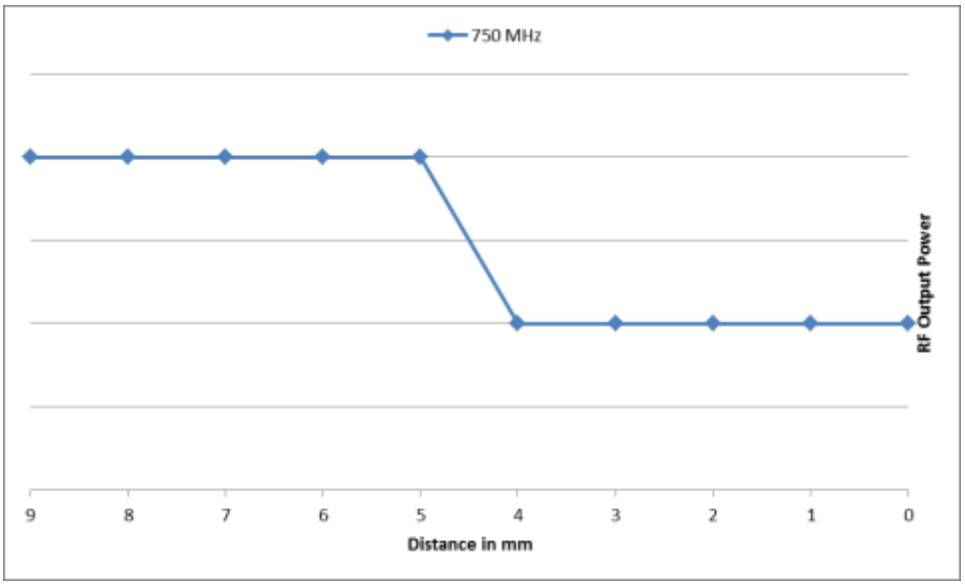


DUT Moving Toward the Phantom, Step 4

750 MHz

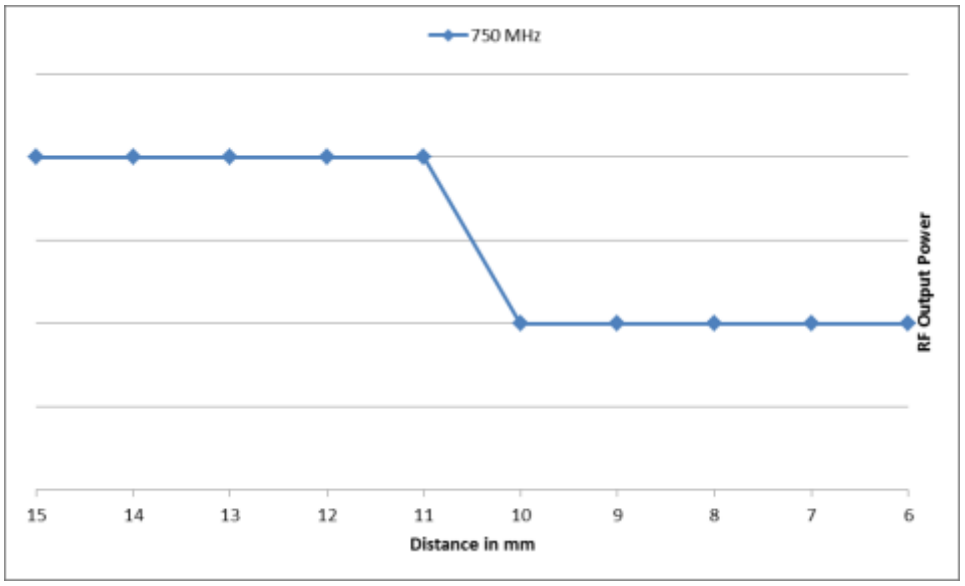
Edge 1

750 MHz										
Distance	9	8	7	6	5	4	3	2	1	0
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

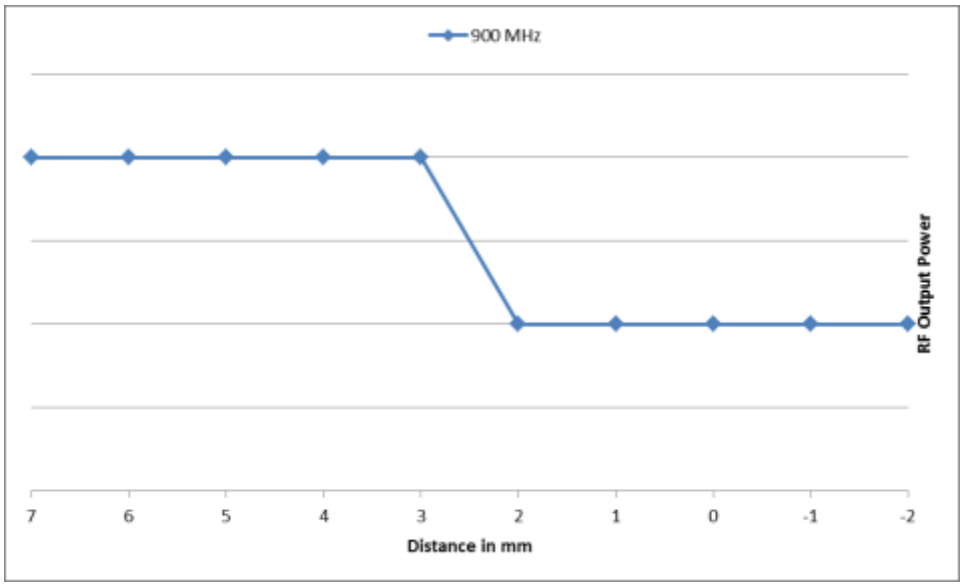
750 MHz										
Distance	15	14	13	12	11	10	9	8	7	6
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



900 MHz

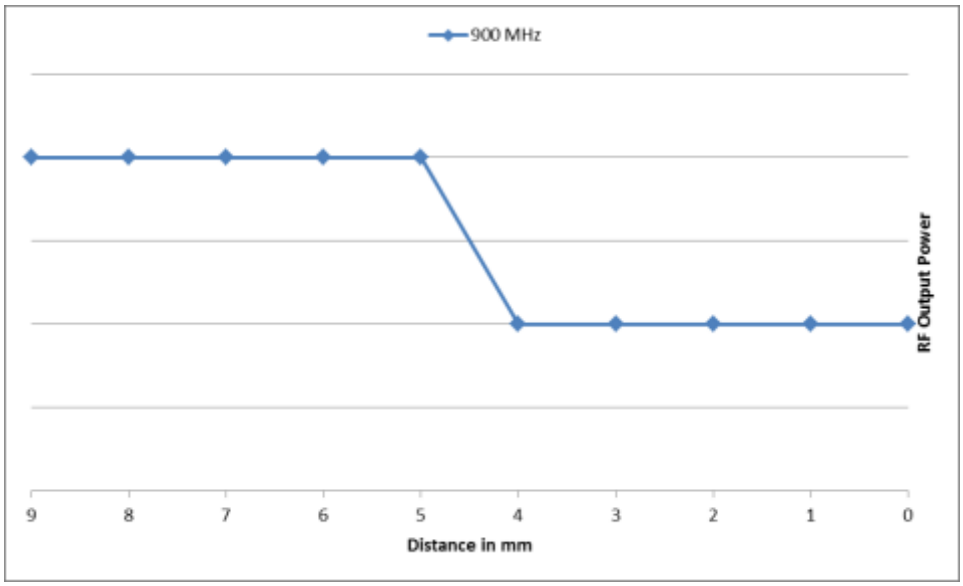
Edge 1

900 MHz										
Distance	7	6	5	4	3	2	1	0	-1	-2
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

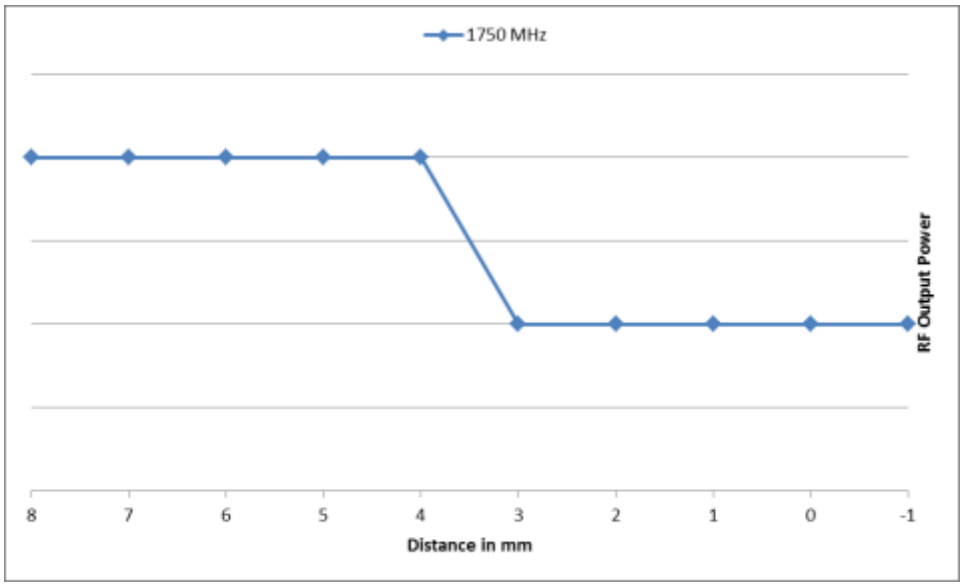
900 MHz										
Distance	9	8	7	6	5	4	3	2	1	0
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1750 MHz

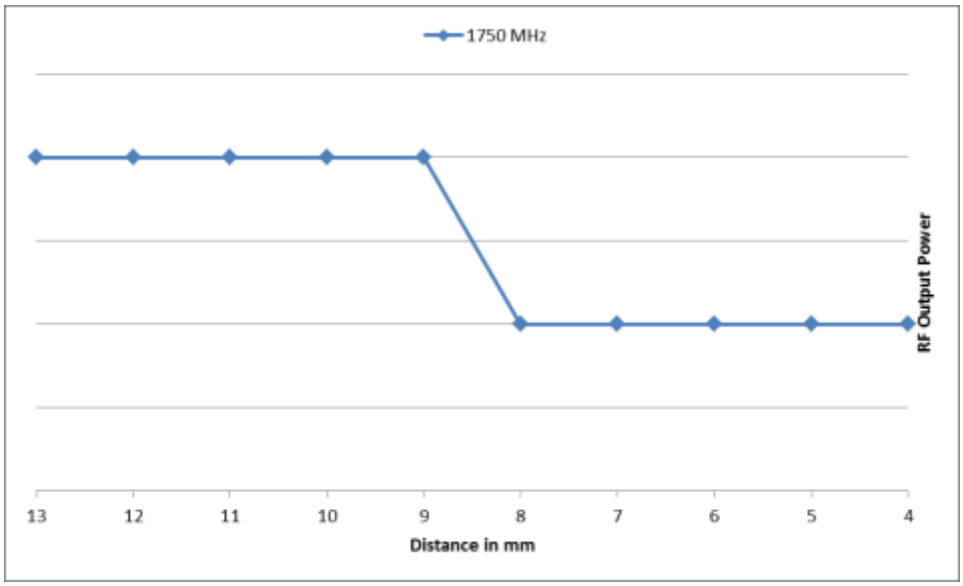
Edge 1

1750 MHz										
Distance	8	7	6	5	4	3	2	1	0	-1
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

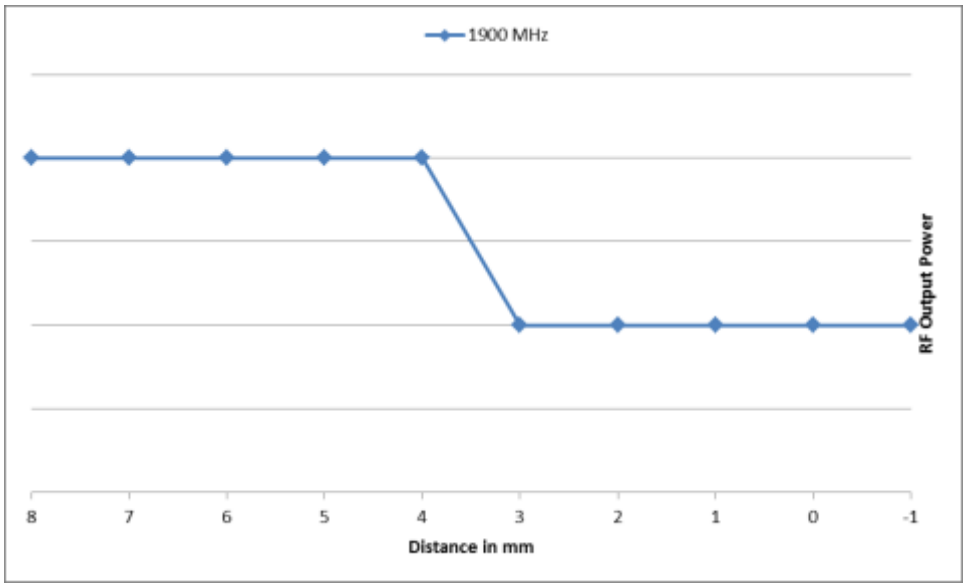
1750 MHz										
Distance	13	12	11	10	9	8	7	6	5	4
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



1900 MHz

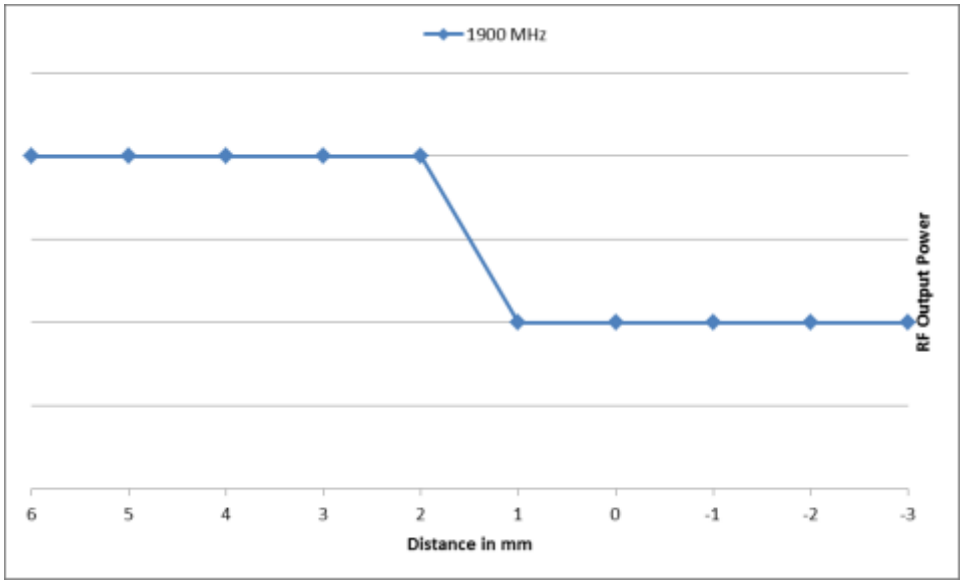
Edge 1

1900 MHz										
Distance	8	7	6	5	4	3	2	1	0	-1
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON



Rear

1900 MHz										
Distance	6	5	4	3	2	1	0	-1	-2	-3
Proximity Sensor State	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON

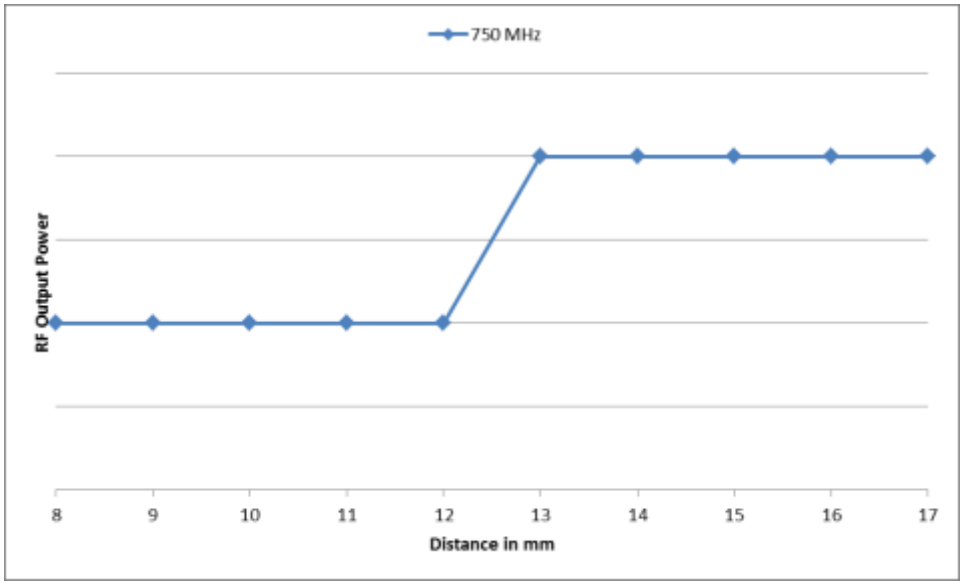


DUT Moving Away From the Phantom, Step 1

750 MHz

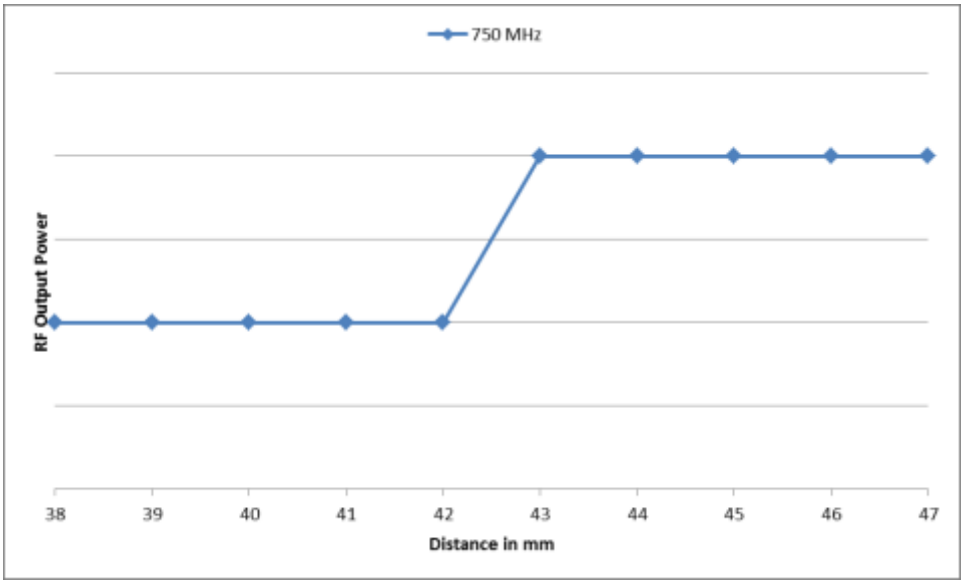
Edge 1

750 MHz										
Distance	8	9	10	11	12	13	14	15	16	17
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

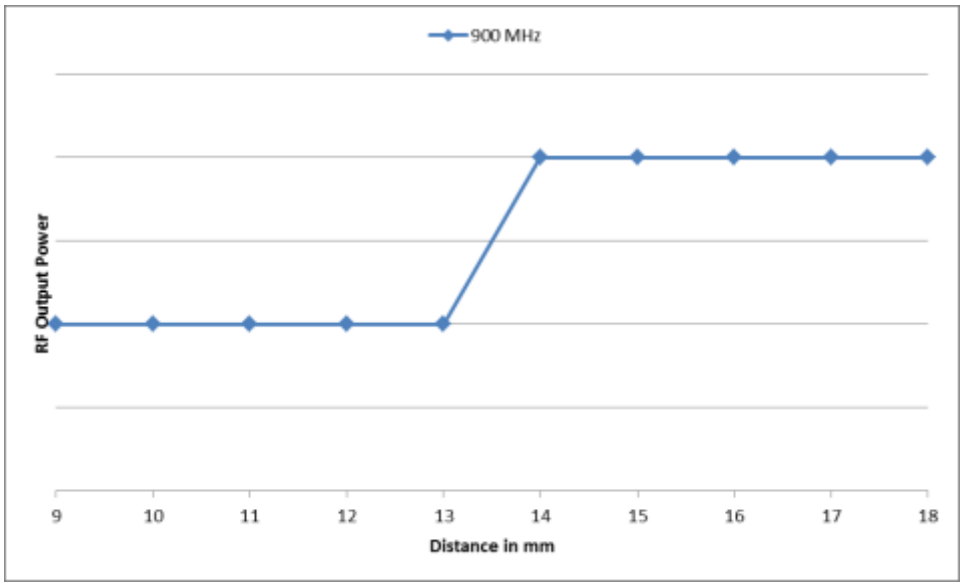
750 MHz										
Distance	38	39	40	41	42	43	44	45	46	47
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



900 MHz

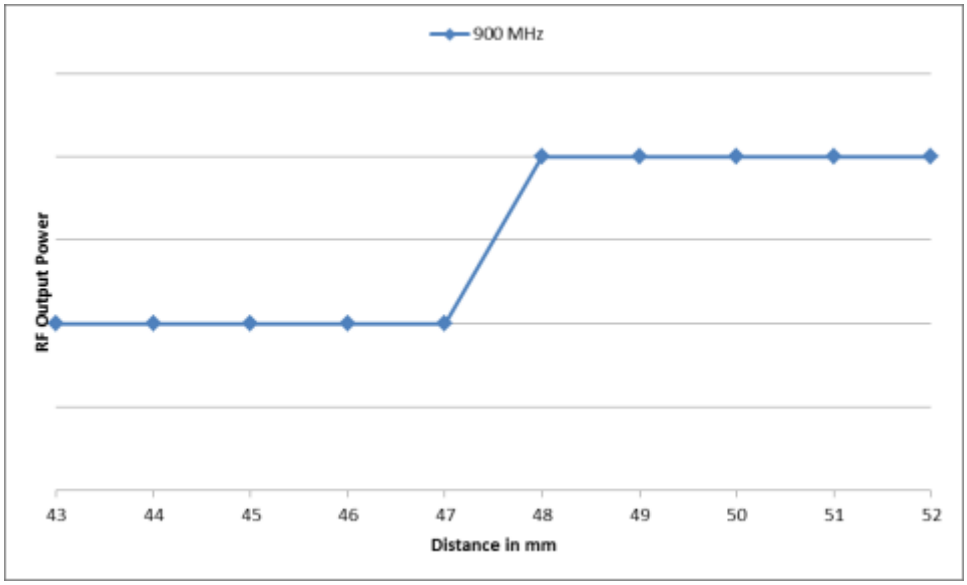
Edge 1

900 MHz										
Distance	9	10	11	12	13	14	15	16	17	18
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

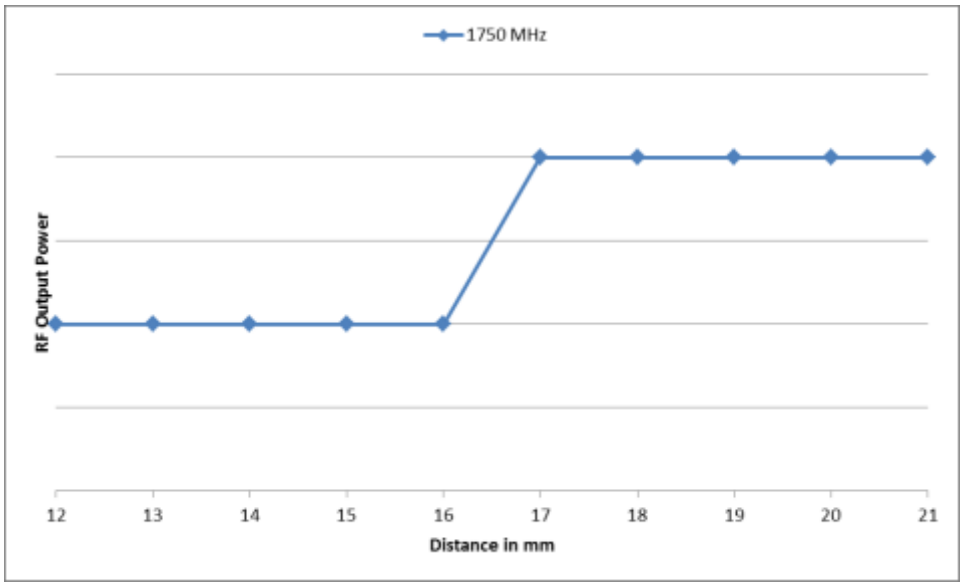
900 MHz										
Distance	43	44	45	46	47	48	49	50	51	52
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1750 MHz

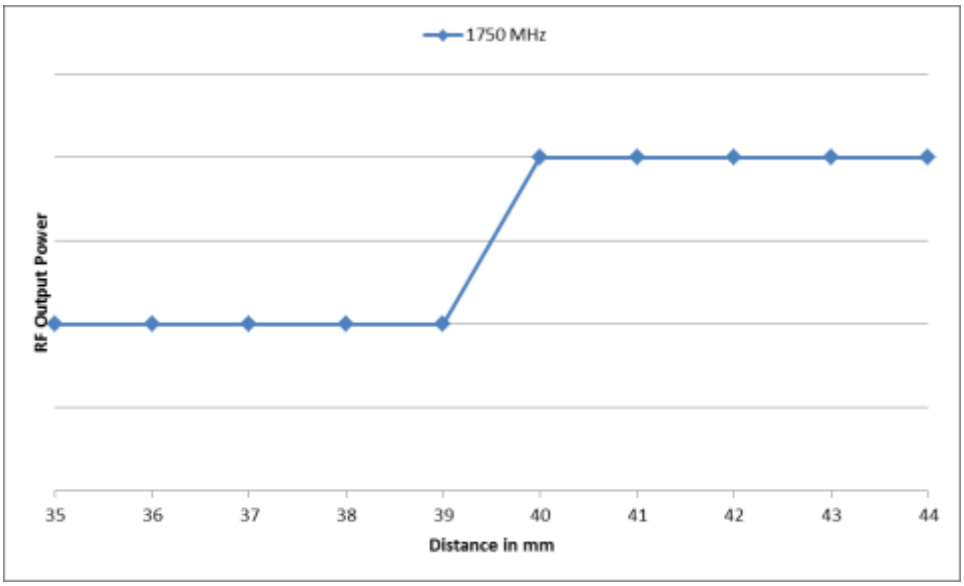
Edge 1

1750 MHz										
Distance	12	13	14	15	16	17	18	19	20	21
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

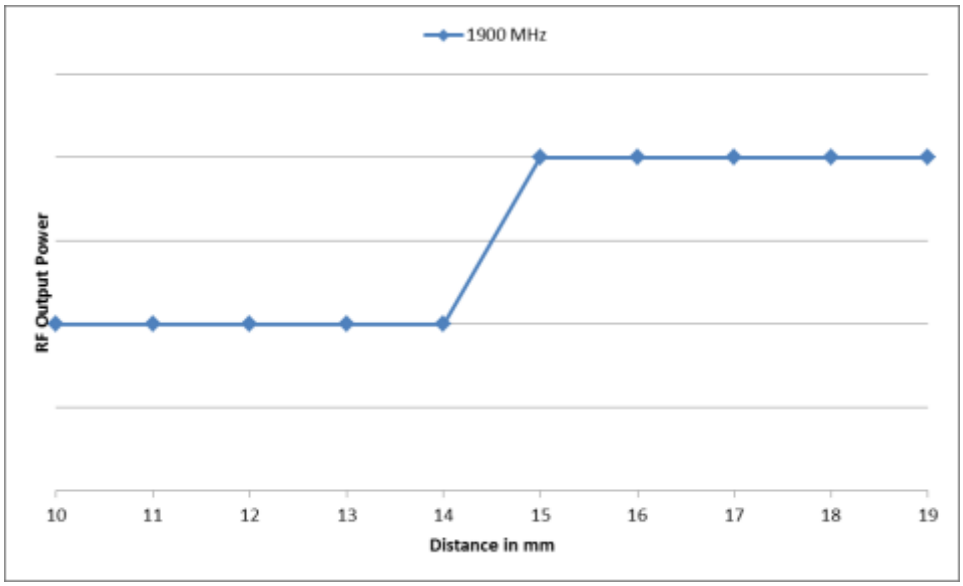
1750 MHz										
Distance	35	36	37	38	39	40	41	42	43	44
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1900 MHz

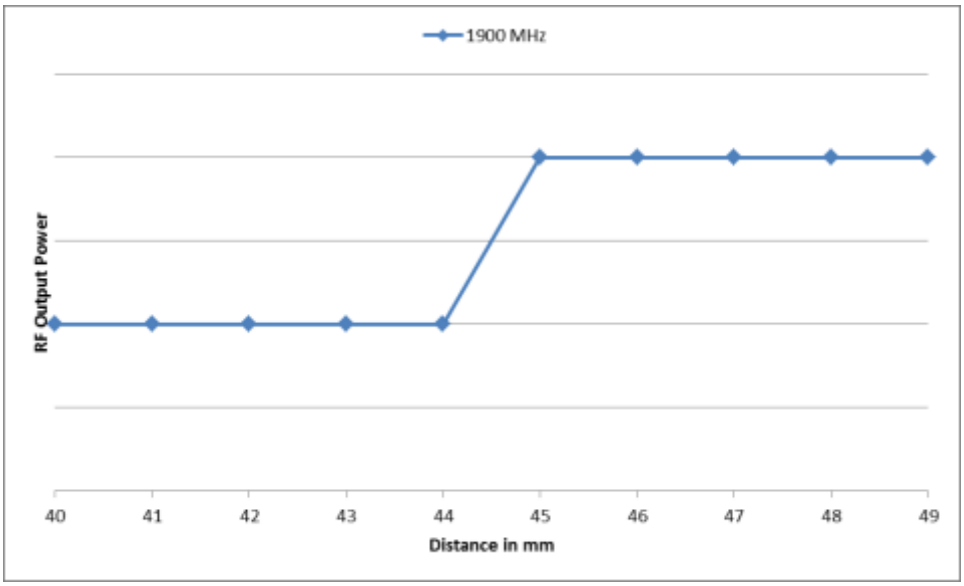
Edge 1

1900 MHz										
Distance	10	11	12	13	14	15	16	17	18	19
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

1900 MHz										
Distance	40	41	42	43	44	45	46	47	48	49
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF

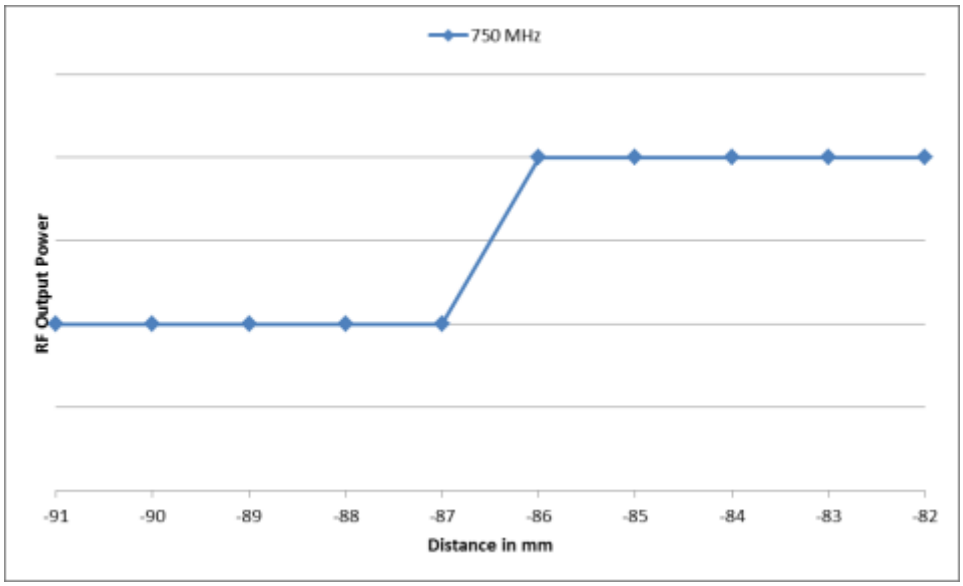


DUT Moving Away From the Phantom, Step 2

750 MHz

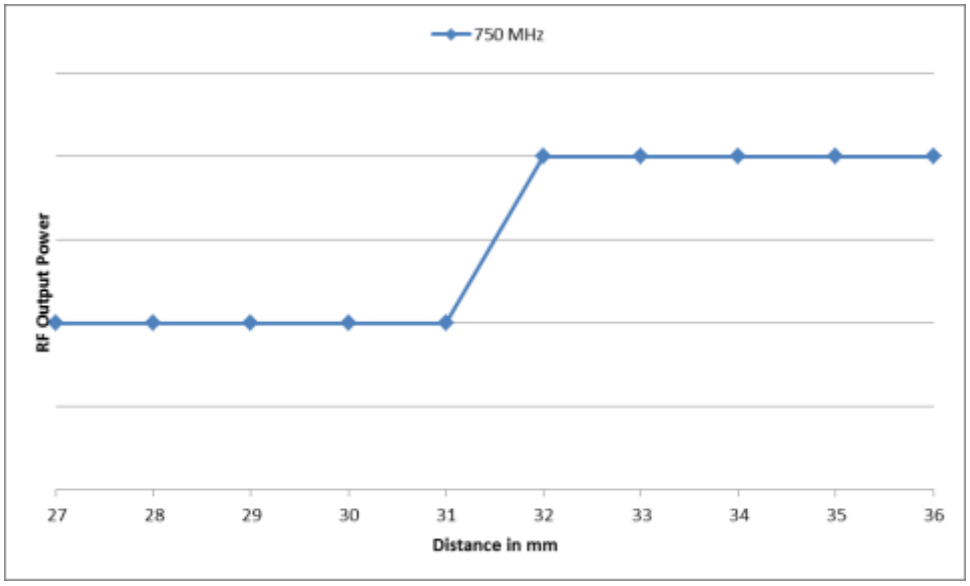
Edge 1

750 MHz										
Distance	-91	-90	-89	-88	-87	-86	-85	-84	-83	-82
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

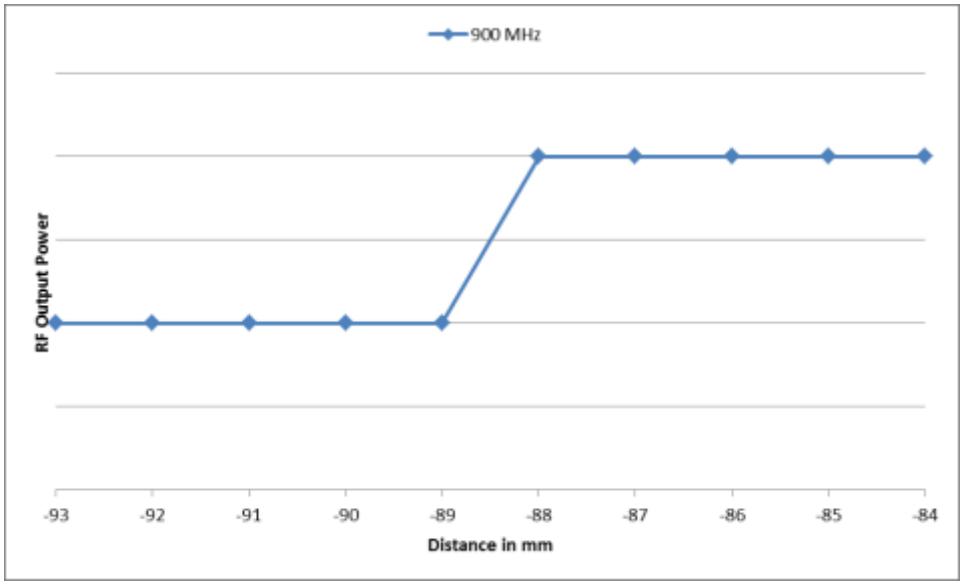
750 MHz										
Distance	27	28	29	30	31	32	33	34	35	36
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



900 MHz

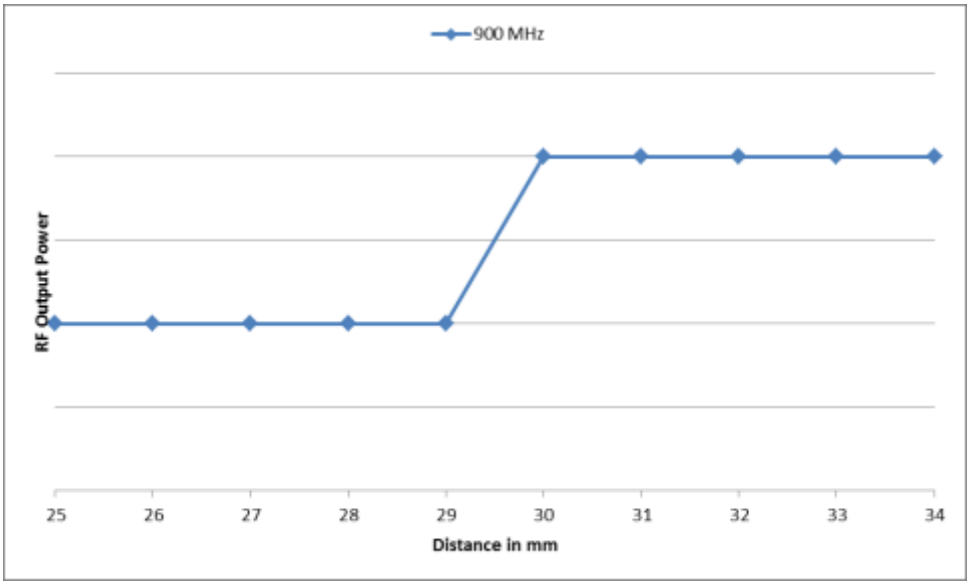
Edge 1

900 MHz										
Distance	-93	-92	-91	-90	-89	-88	-87	-86	-85	-84
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

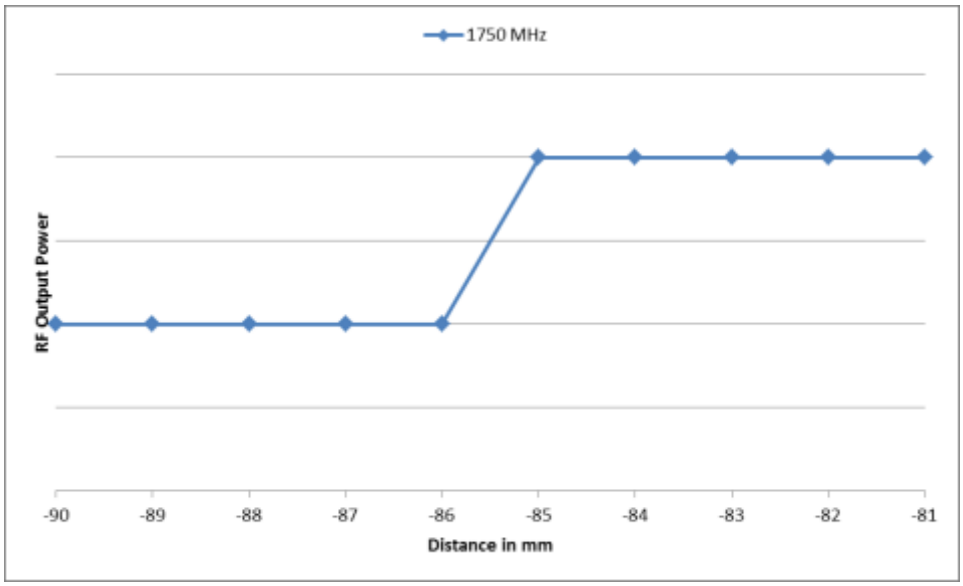
900 MHz										
Distance	25	26	27	28	29	30	31	32	33	34
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1750 MHz

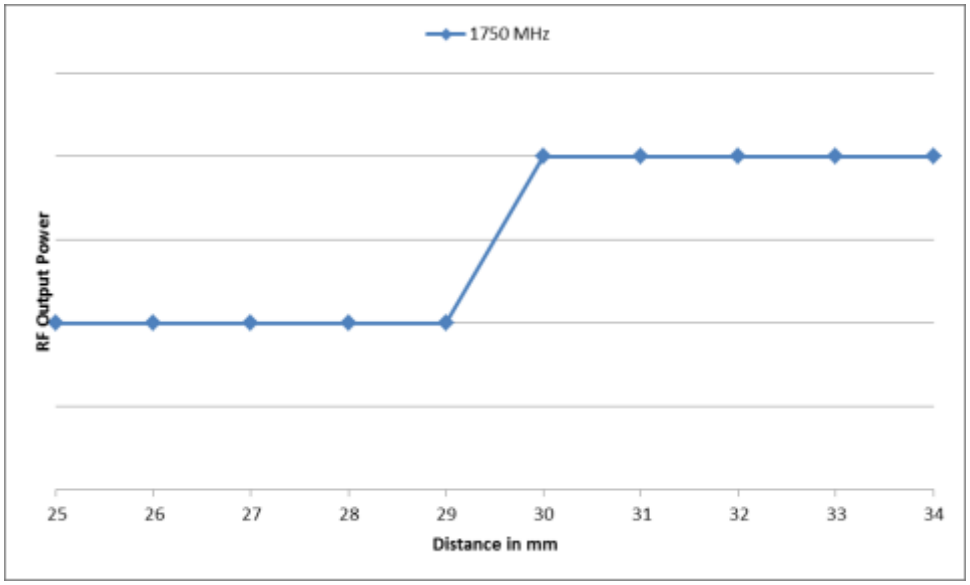
Edge 1

1750 MHz										
Distance	-90	-89	-88	-87	-86	-85	-84	-83	-82	-81
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

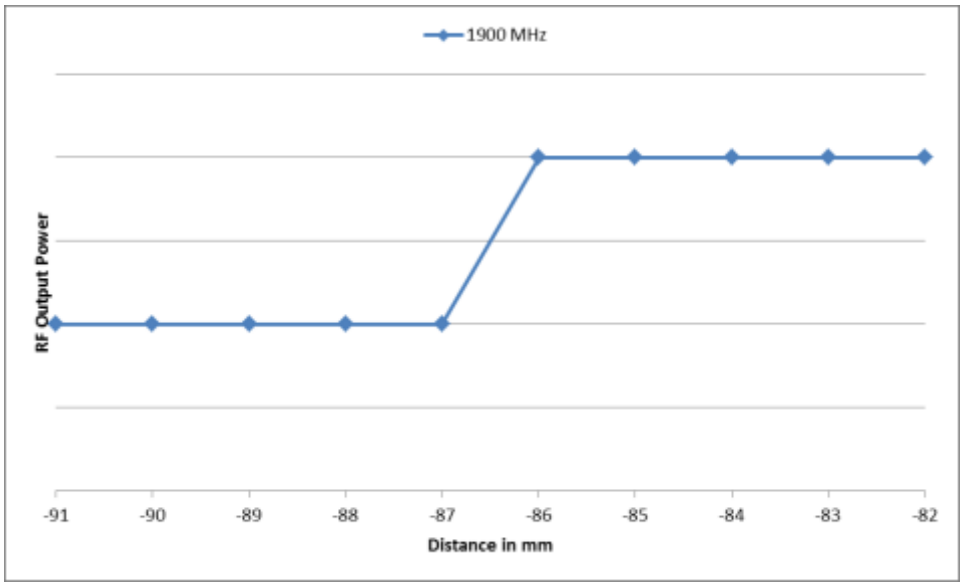
1750 MHz										
Distance	25	26	27	28	29	30	31	32	33	34
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1900 MHz

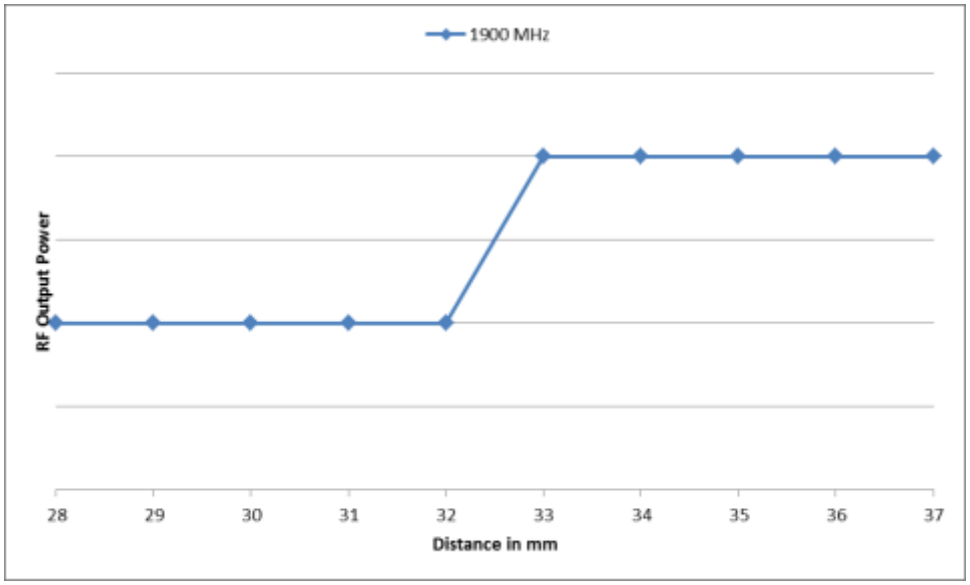
Edge 1

1900 MHz										
Distance	-91	-90	-89	-88	-87	-86	-85	-84	-83	-82
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

1900 MHz										
Distance	28	29	30	31	32	33	34	35	36	37
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF

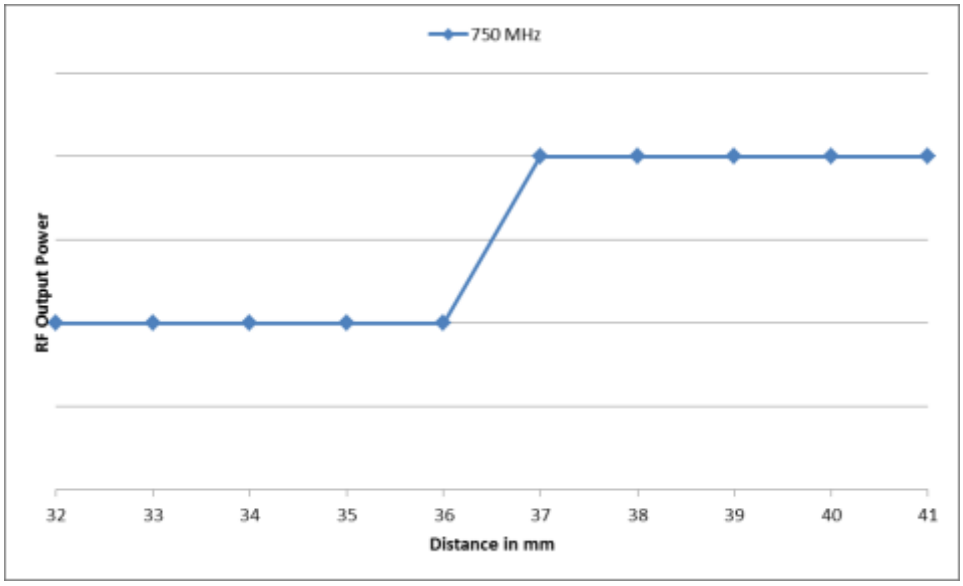


DUT Moving Away From the Phantom, Step 3

750 MHz

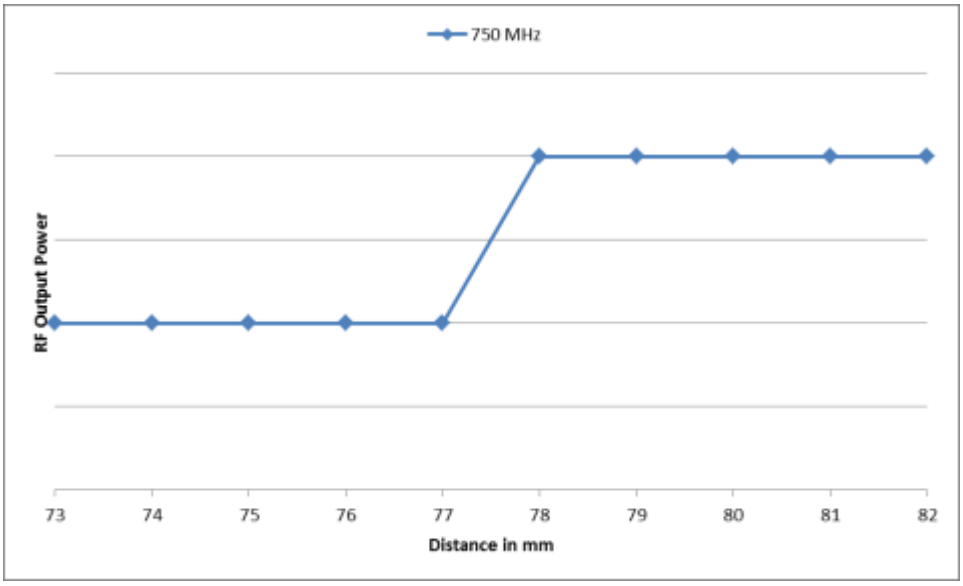
Edge 1

750 MHz										
Distance	32	33	34	35	36	37	38	39	40	41
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

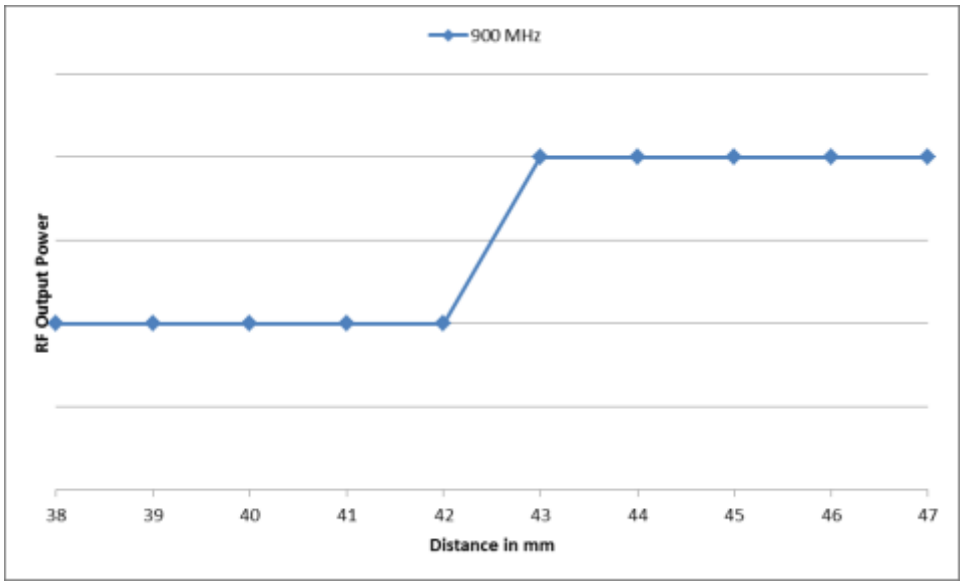
750 MHz										
Distance	73	74	75	76	77	78	79	80	81	82
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



900 MHz

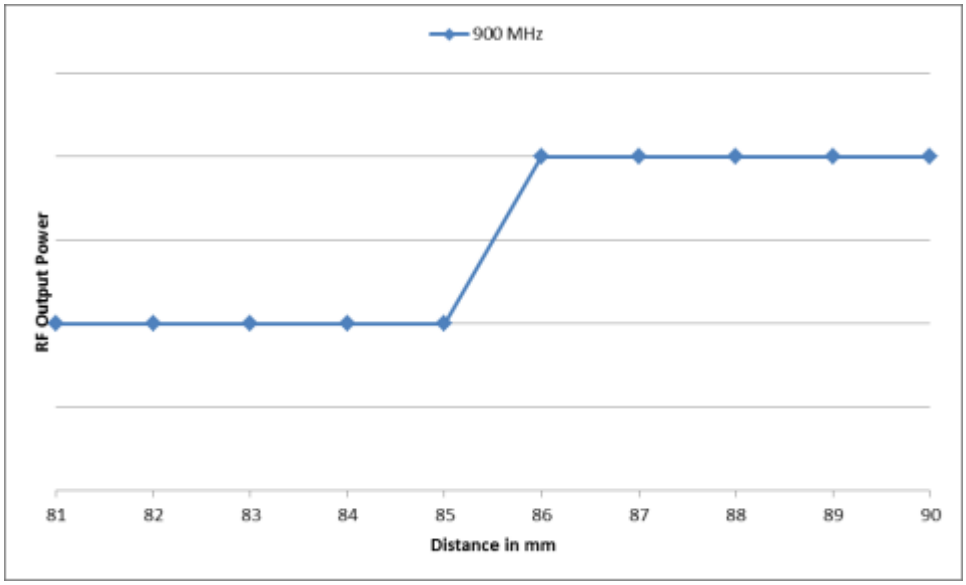
Edge 1

900 MHz										
Distance	38	39	40	41	42	43	44	45	46	47
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

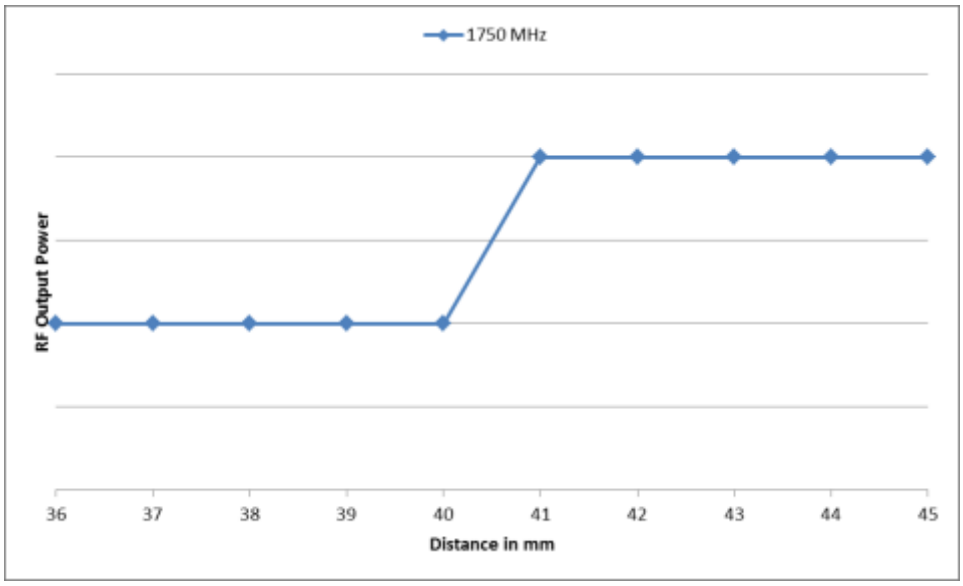
900 MHz										
Distance	81	82	83	84	85	86	87	88	89	90
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1750 MHz

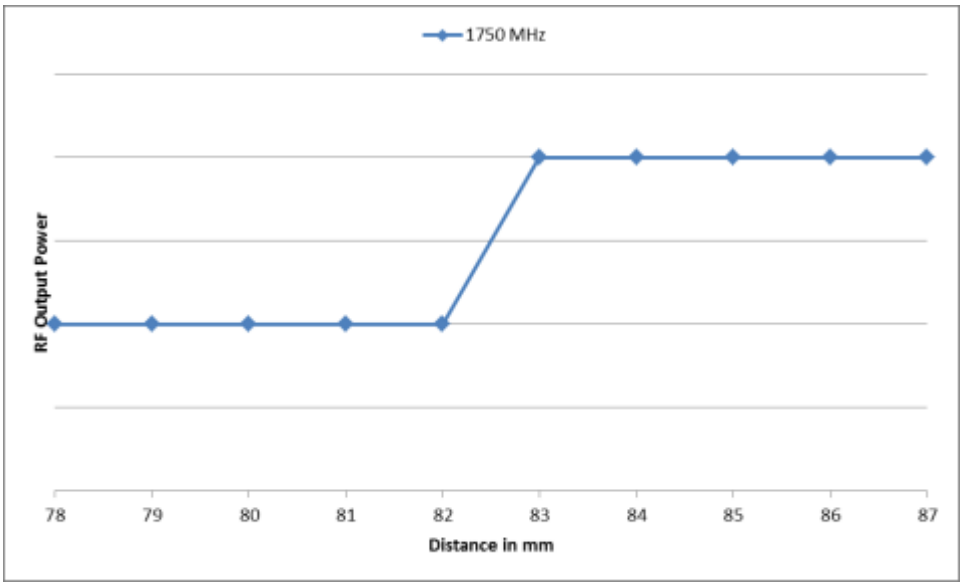
Edge 1

1750 MHz										
Distance	36	37	38	39	40	41	42	43	44	45
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

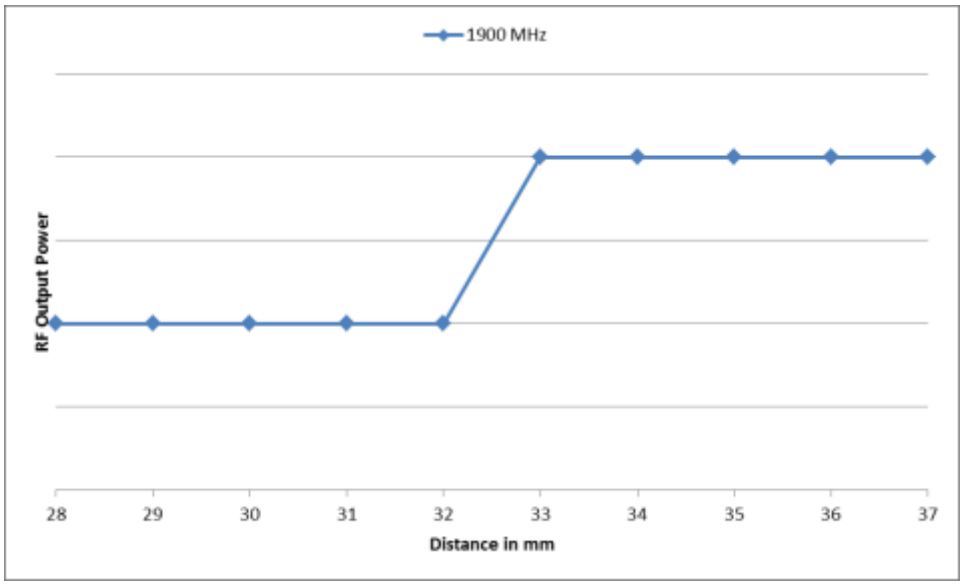
1750 MHz										
Distance	78	79	80	81	82	83	84	85	86	87
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1900 MHz

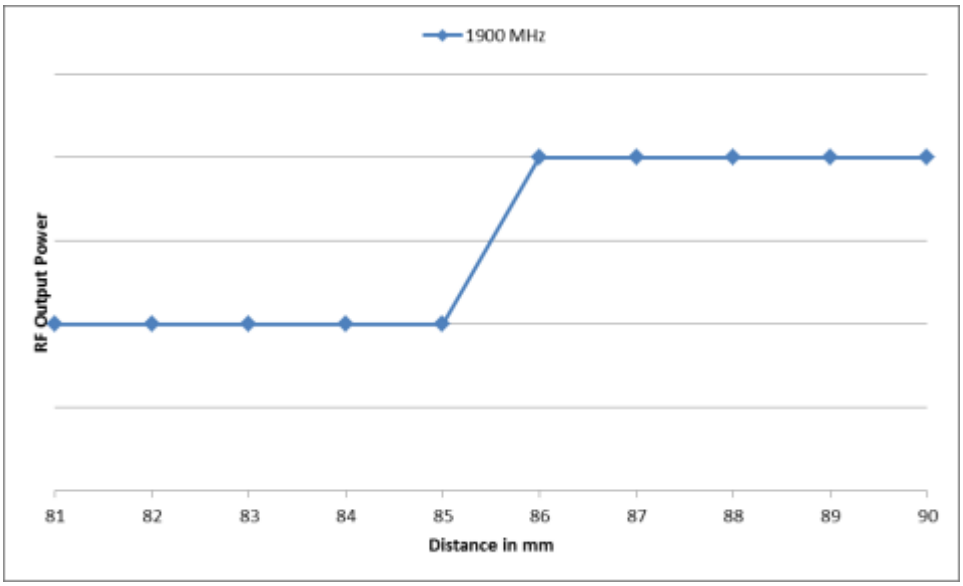
Edge 1

1900 MHz										
Distance	28	29	30	31	32	33	34	35	36	37
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

1900 MHz										
Distance	81	82	83	84	85	86	87	88	89	90
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF

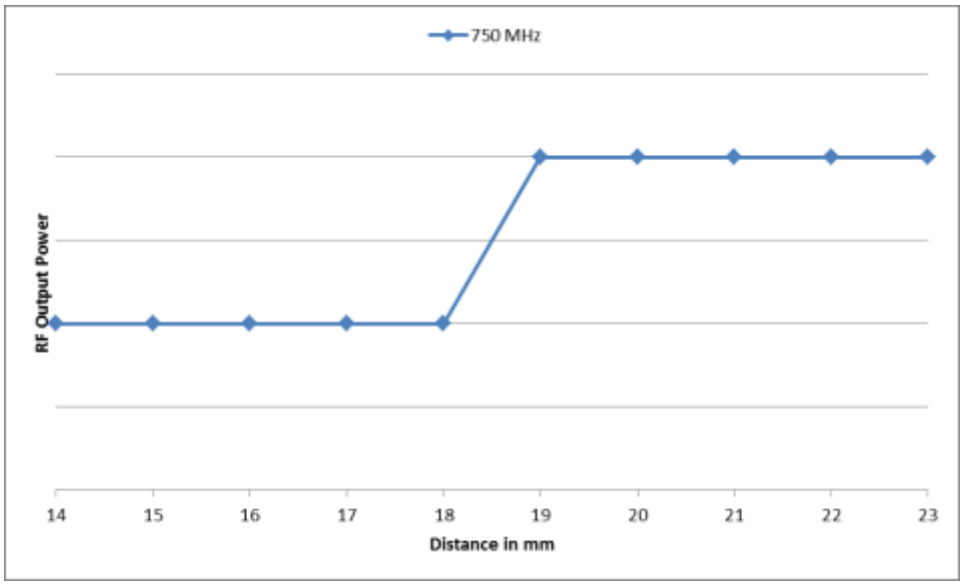


DUT Moving Away From the Phantom, Step 4

750 MHz

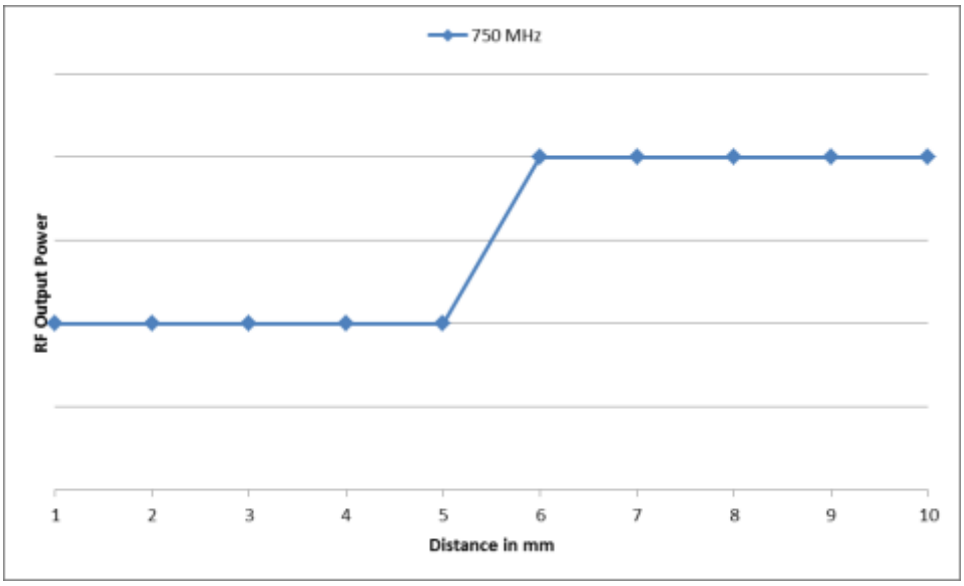
Edge 1

750 MHz										
Distance	14	15	16	17	18	19	20	21	22	23
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

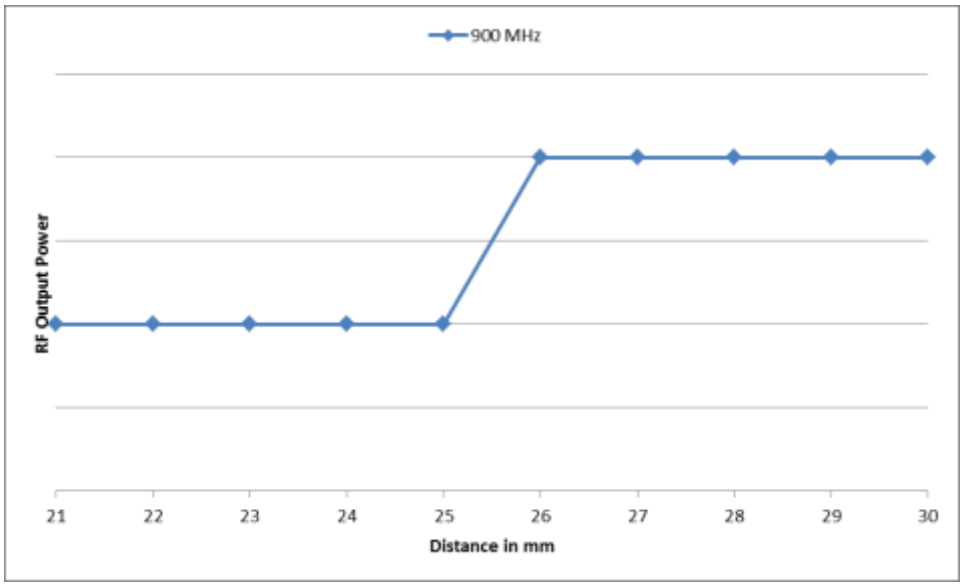
750 MHz										
Distance	1	2	3	4	5	6	7	8	9	10
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



900 MHz

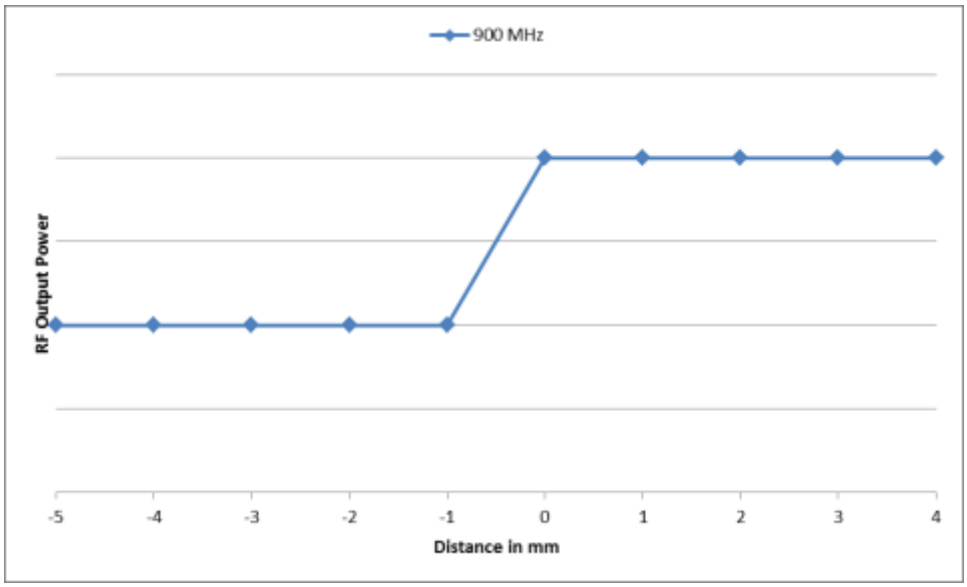
Edge 1

900 MHz										
Distance	21	22	23	24	25	26	27	28	29	30
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

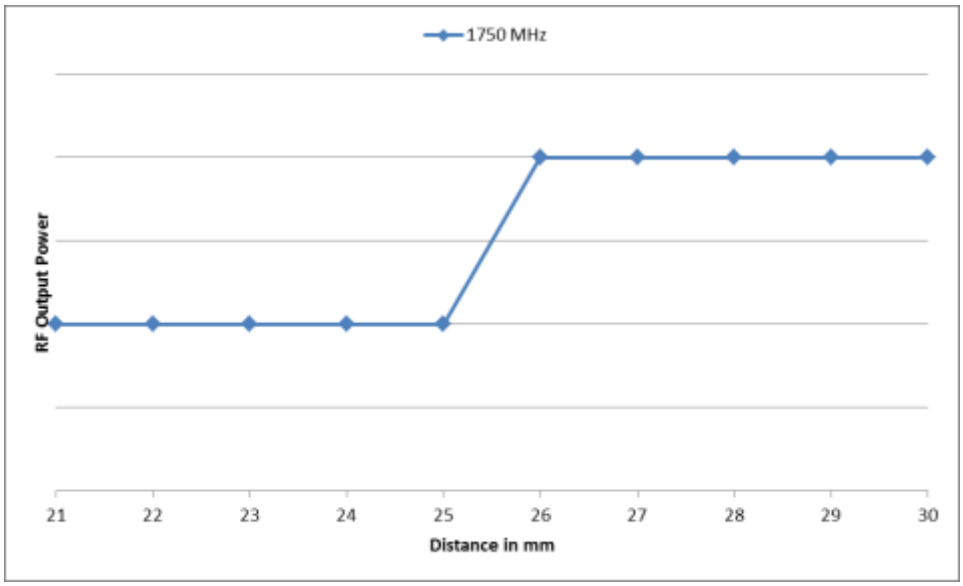
900 MHz										
Distance	-5	-4	-3	-2	-1	0	1	2	3	4
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1750 MHz

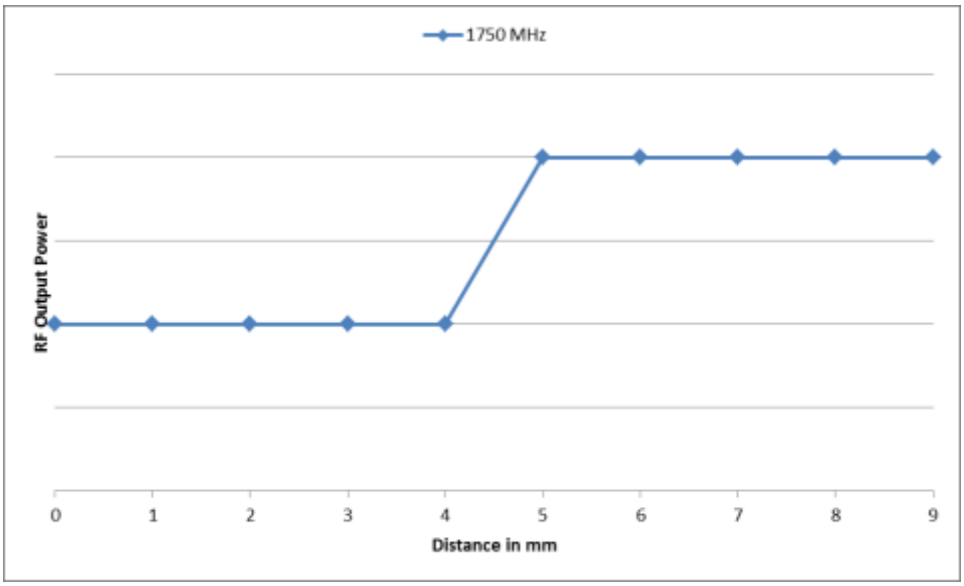
Edge 1

1750 MHz										
Distance	21	22	23	24	25	26	27	28	29	30
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

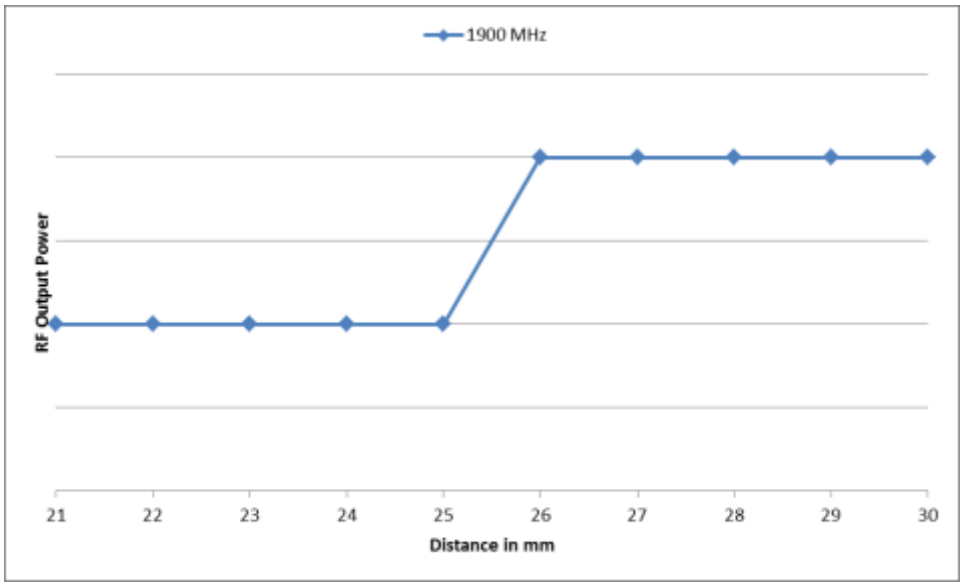
1750 MHz										
Distance	0	1	2	3	4	5	6	7	8	9
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



1900 MHz

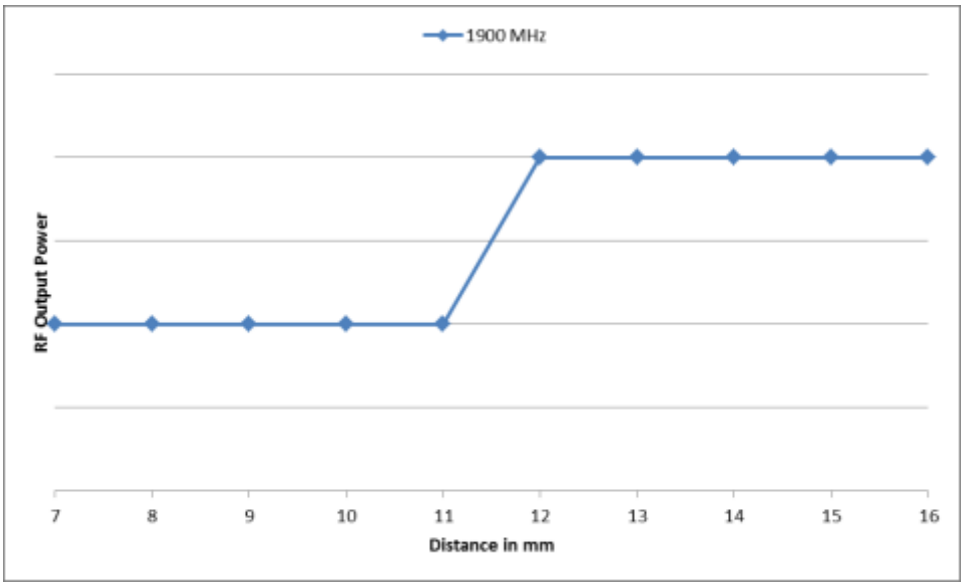
Edge 1

1900 MHz										
Distance	21	22	23	24	25	26	27	28	29	30
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



Rear

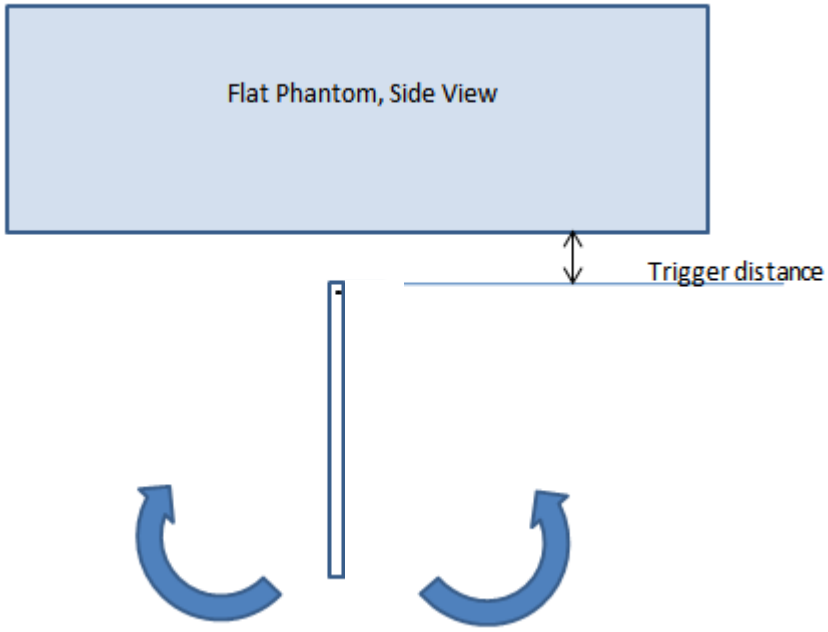
1900 MHz										
Distance	7	8	9	10	11	12	13	14	15	16
Proximity Sensor State	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF



7.6.5. Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with edge 1 parallel to the base of the flat phantom for each band.

The EUT was rotated about edge 1 for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.



Proximity sensor tilt angle assessment (Edge 4) KDB 616217 §6.4

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
750	30	17	On	On	On	On	On	On	On	On	On	On	On
900	28	20	On	On	On	On	On	On	On	On	On	On	On
1750	27	20	On	On	On	On	On	On	On	On	On	On	On
1900	27	20	On	On	On	On	On	On	On	On	On	On	On

The minimum trigger distance measured for any of the steps required in KDB 616217 §6.2, §6.3 and §6.4 was 17mm. Full power SAR measurements for the rear and Edge 1 were performed at 16mm separation distance from the phantom.

8. RF Exposure Conditions

The EUT implements the power reduction scheme for SAR compliance, for specific device configuration and orientations, as described below. The complete description of the implementation and functionality is provided in the "Operational Description of Power Reduction" exhibit.

8.1. Standalone SAR Test Exclusion Considerations

Since the *Dedicated Host Approach* is applied, the standalone SAR test exclusion procedure in KDB 447498 § 4.3.1 is applied in conjunction with KDB 616217 § 4.3 to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.

Though this device is capable of simultaneous transmission between WLAN and WWAN, standalone SAR test exclusion is, along with the associated SAR Estimation, is only considered for the WWAN antenna in the body of this report, with WLAN-related considerations and test results being leveraged from SAR report 13U15414-10B, submitted under **FCC ID C3K1572**

SAR Test Exclusion Calculations for WWAN

Antennas < 50mm to adjacent edges

Antenna	Tx Interface	Freq. (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power, Proximity Sensor Off. A sensor triggering of 16 mm is included for both Rear and Edge 1.																
Cellular	GPRS 2 Slots	836.6	29.30	213	17.18	20	194.3	155.7	14.4		11.5 -MEASURE-	9.7 -MEASURE-	> 50 mm	> 50 mm	13.9 -MEASURE-	N/A
Cellular	GPRS 2 Slots	1880	26.50	112	17.18	20	194.3	155.7	14.4		9 -MEASURE-	7.7 -MEASURE-	> 50 mm	> 50 mm	11 -MEASURE-	N/A
Cellular	W-CDMA V	836.6	22.90	195	17.18	20	194.3	155.7	14.4		10.5 -MEASURE-	8.9 -MEASURE-	> 50 mm	> 50 mm	12.7 -MEASURE-	N/A
Cellular	W-CDMA II	1880	23.90	245	17.18	20	194.3	155.7	14.4		19.8 -MEASURE-	16.8 -MEASURE-	> 50 mm	> 50 mm	24 -MEASURE-	N/A
Cellular	LTE Band 2	1880	24.20	263	17.18	20	194.3	155.7	14.4		21.2 -MEASURE-	18 -MEASURE-	> 50 mm	> 50 mm	25.8 -MEASURE-	N/A
Cellular	LTE Band 4	1732.5	23.80	240	17.18	20	194.3	155.7	14.4		18.6 -MEASURE-	15.8 -MEASURE-	> 50 mm	> 50 mm	22.6 -MEASURE-	N/A
Cellular	LTE Band 5	836.6	23.20	209	17.18	20	194.3	155.7	14.4		11.2 -MEASURE-	9.6 -MEASURE-	> 50 mm	> 50 mm	13.7 -MEASURE-	N/A
Cellular	LTE Band 17	710	23.30	214	17.18	20	194.3	155.7	14.4		10.6 -MEASURE-	9 -MEASURE-	> 50 mm	> 50 mm	12.9 -MEASURE-	N/A
Reduced Power, Proximity Sensor On																
Cellular	GPRS 2 Slots	836.6	28.10	161	1.18	4					29.5 -MEASURE-	29.5 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	GPRS 2 Slots	1880	21.00	31	1.18	4					8.5 -MEASURE-	8.5 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	W-CDMA V	20.2	20.50	112	1.18	4					3.2 -MEASURE-	3.2 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	W-CDMA II	1880	13.60	23	1.18	4					6.3 -MEASURE-	6.3 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	LTE Band 2	1880	14.10	26	1.18	4					7.1 -MEASURE-	7.1 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	LTE Band 4	1732.5	15.40	35	1.18	4					9.2 -MEASURE-	9.2 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	LTE Band 5	836.6	20.30	107	1.18	4					19.6 -MEASURE-	19.6 -MEASURE-	N/A	N/A	N/A	N/A
Cellular	LTE Band 17	710	21.20	132	1.18	4					22.2 -MEASURE-	22.2 -MEASURE-	N/A	N/A	N/A	N/A

Note(s):

1. According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required.

Antennas > 50mm to adjacent edges

Antenna	Tx Interface	Freq. (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power, Proximity Sensor Off. A sensor triggering of 16 mm is included for both Rear and Edge 1.																
Cellular	GPRS 2 Slots	836.6	29.30	213	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	968.6 mW -EXEMPT-	753.4 mW -EXEMPT-	< 50 mm	N/A
Cellular	GPRS 2 Slots	1880	26.50	112	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	1552 mW -EXEMPT-	1166.1 mW -EXEMPT-	< 50 mm	N/A
Cellular	W-CDMA V	836.6	22.90	195	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	968.6 mW -EXEMPT-	753.4 mW -EXEMPT-	< 50 mm	N/A
Cellular	W-CDMA II	1880	23.90	245	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	1552 mW -EXEMPT-	1166.1 mW -EXEMPT-	< 50 mm	N/A
Cellular	LTE Band 2	1880	24.20	263	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	1552 mW -EXEMPT-	1166.1 mW -EXEMPT-	< 50 mm	N/A
Cellular	LTE Band 4	1732.5	23.80	240	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	1556.6 mW -EXEMPT-	1170.7 mW -EXEMPT-	< 50 mm	N/A
Cellular	LTE Band 5	836.6	23.20	209	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	968.6 mW -EXEMPT-	753.4 mW -EXEMPT-	< 50 mm	N/A
Cellular	LTE Band 17	710	23.30	214	17.18	20	194.3	155.7	14.4		< 50 mm	< 50 mm	860.8 mW -EXEMPT-	678.2 mW -EXEMPT-	< 50 mm	N/A
Reduced Power, Proximity Sensor On																
Cellular	GPRS 2 Slots	836.6	28.10	161	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	GPRS 2 Slots	1880	21.00	31	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	W-CDMA V	836.6	20.50	112	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	W-CDMA II	1880	13.60	23	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	LTE Band 2	1880	14.10	26	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	LTE Band 4	1732.5	15.40	35	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	LTE Band 5	836.6	20.30	107	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A
Cellular	LTE Band 17	710	21.20	132	1.18	4					< 50 mm	< 50 mm	N/A	N/A	N/A	N/A

Note(s):

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

8.2. Required Test Configurations

The table below identifies the standalone WWAN test configurations required for this device according to the findings in Section 8.1:

Test Configurations	Rear	Edge 1 (Top Edge)	Edge 2 (Right Edge)	Edge 3 (Bottom Edge)	Edge 4 (Left Edge)
GSM850 Full Power	Yes	Yes	No	No	Yes
GSM850 w/ Power Reduction	Yes	Yes	No	No	Yes
GSM1900 Full Power	Yes	Yes	No	No	Yes
GSM1900 w/ Power Reduction	Yes	Yes	No	No	Yes
W-CDMA Band V Full Power	Yes	Yes	No	No	Yes
W-CDMA Band V w/ Power Reduction	Yes	Yes	No	No	Yes
W-CDMA Band II Full Power	Yes	Yes	No	No	Yes
W-CDMA Band II w/ Power Reduction	Yes	Yes	No	No	Yes
LTE Band 2 Full Power	Yes	Yes	No	No	Yes
LTE Band 2 w/ Power Reduction	Yes	Yes	No	No	Yes
LTE Band 4 Full Power	Yes	Yes	No	No	Yes
LTE Band 4 w/ Power Reduction	Yes	Yes	No	No	Yes
LTE Band 5 Full Power	Yes	Yes	No	No	Yes
LTE Band 5 w/ Power Reduction	Yes	Yes	No	No	Yes
LTE Band 17 Full Power	Yes	Yes	No	No	Yes
LTE Band 17 w/ Power Reduction	Yes	Yes	No	No	Yes

Note(s):

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

8.3. Additional Test Scenarios

The DUT features beveled edges. Additional testing of Edge 1 and Edge 4 was performed with the DUT angled so that the edges were placed flush to the surface of the flat phantom. Since the proximity sensor remains in an active state under these circumstances, testing for these configurations was performed with power reduction active. These test positions are identified as Rear/Edge 1 Slant and Rear/Edge 4 Slant.

The DUT also supports attachable keyboards (two types) that may be folded against the rear. Additional testing on the rear was performed with each of the keyboards folded back on the DUT and with power reduction, with the test cases being chosen from the worst-case of the normal Rear-With Power Reduction test configurations

9. RF Output Power Measurement

9.1. GSM

GSM850

Full Power

GPRS (GMSK) - Coding Scheme: CS1						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
850	Burst Power (dBm)					
	128	824.2	32.3	**29.3**	27.4	26.1
	190	836.6	32.3	**29.3**	27.4	26.2
	251	848.8	32.1	**29.2**	27.3	26.1
	Frame Power (dBm)					
	128	824.2	23.3	**23.3**	18.4	20.1
	190	836.6	23.3	**23.3**	18.4	20.2
	251	848.8	23.1	**23.2**	18.3	20.1
EGPRS (8PSK) - Coding Scheme: MCS5						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
850	Burst Power (dBm)					
	128	824.2	26.8	23.7	21.8	20.7
	190	836.6	26.5	23.4	21.6	20.4
	251	848.8	26.3	23.2	21.4	20.1
	Frame Power (dBm)					
	128	824.2	17.7	17.7	12.8	14.7
	190	836.6	17.4	17.4	12.6	14.4
	251	848.8	17.2	17.2	12.4	14.0

With Power Reduction

GPRS (GMSK) - Coding Scheme: CS1						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
850	Burst Power (dBm)					
	128	824.2	31.2	**28.1**	26.2	24.9
	190	836.6	31.1	**28.0**	26.1	24.9
	251	848.8	30.9	**28.0**	26.0	24.7
	Frame Power (dBm)					
	128	824.2	22.1	**22.1**	17.2	18.8
	190	836.6	22.1	**22.0**	17.1	18.8
	251	848.8	21.9	**22.0**	16.9	18.6
EGPRS (8PSK) - Coding Scheme: MCS5						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
850	Burst Power (dBm)					
	128	824.2	25.8	22.7	20.9	19.5
	190	836.6	25.5	22.4	20.6	19.4
	251	848.8	25.3	22.3	20.4	19.1
	Frame Power (dBm)					
	128	824.2	16.7	16.6	11.9	13.5
	190	836.6	16.4	16.4	11.5	13.3
	251	848.8	16.2	16.3	11.4	13.1

Notes:

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

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

GSM1900

Full Power

GPRS (GMSK) - Coding Scheme: CS1						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
1900	Burst Power (dBm)					
	512	1850.2	29.5	**26.5**	24.7	23.4
	661	1880	29.4	**26.4**	24.6	23.3
	810	1909.8	29.5	**26.5**	24.7	23.4
	Frame Power (dBm)					
	512	1850.2	20.5	**20.5**	15.7	17.4
	661	1880	20.4	**20.4**	15.6	17.3
	810	1909.8	20.5	**20.5**	15.7	17.4
EGPRS (8PSK) - Coding Scheme: MCS5						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
1900	Burst Power (dBm)					
	512	1850.2	26.6	23.6	21.5	20.3
	661	1880	26.0	23.0	20.9	19.7
	810	1909.8	26.4	23.4	21.3	20.2
	Frame Power (dBm)					
	512	1850.2	17.6	17.6	12.5	14.3
	661	1880	17.0	17.0	11.9	13.7
	810	1909.8	17.4	17.4	12.3	14.2

With Power Reduction

GPRS (GMSK) - Coding Scheme: CS1						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
1900	Burst Power (dBm)					
	512	1850.2	24.1	**21.0**	19.0	17.7
	661	1880	24.1	**21.0**	19.0	17.8
	810	1909.8	24.1	**21.0**	19.0	17.8
	Frame Power (dBm)					
	512	1850.2	15.0	**15.0**	9.9	11.6
	661	1880	15.0	**15.0**	10.0	11.7
	810	1909.8	15.0	**15.0**	10.0	11.7
EGPRS (8PSK) - Coding Scheme: MCS5						
Band	Ch No.	Freq. (MHz)	1 slot	2 slots	3 slots	4 slots
1900	Burst Power (dBm)					
	512	1850.2	20.2	17.1	15.2	13.7
	661	1880	20.1	16.9	15.0	13.4
	810	1909.8	20.4	17.1	15.1	13.6
	Frame Power (dBm)					
	512	1850.2	11.2	11.1	6.1	7.7
	661	1880	11.1	10.9	5.9	7.4
	810	1909.8	11.3	11.1	6.0	7.6

Notes:

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

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

9.2. W-CDMA

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
	βc/βd	8/15

Measured Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Max. Power	with Pwr Reduction
W-CDMA Band V	Rel 99 (RMC, 12.2 kbps)	4132	826.4	22.8	20.2
		4183	836.6	22.9	20.0
		4233	846.6	22.9	20.0
W-CDMA Band II	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	23.0	13.6
		9400	1880.0	22.4	13.6
		9538	1907.6	23.0	13.4

HSDPA

The following 4 Sub-tests were completed according to Release 5 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			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs=βhs/βc	30/15			

Measured Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Max. Power	with Pwr Reduction
W-CDMA Band V	Subtest 1	4132	826.4	22.8	20.1
		4183	836.6	22.9	20.0
		4233	846.6	22.8	20.0
	Subtest 2	4132	826.4	22.8	20.0
		4183	836.6	22.9	19.9
		4233	846.6	22.8	19.9
	Subtest 3	4132	826.4	22.3	19.6
		4183	836.6	22.6	19.6
		4233	846.6	22.3	19.6
	Subtest 4	4132	826.4	22.2	19.5
		4183	836.6	22.5	19.6
		4233	846.6	22.2	19.5
W-CDMA Band II	Subtest 1	9262	1852.4	23.0	13.6
		9400	1880.0	22.4	13.3
		9538	1907.6	23.0	13.3
	Subtest 2	9262	1852.4	22.9	12.9
		9400	1880.0	22.6	12.5
		9538	1907.6	23.0	12.6
	Subtest 3	9262	1852.4	22.6	12.9
		9400	1880.0	22.2	12.5
		9538	1907.6	22.6	12.7
	Subtest 4	9262	1852.4	22.5	12.9
		9400	1880.0	22.2	12.5
		9538	1907.6	22.5	12.6

Maximum output power levels that are possible for all subtests reported.

HSPA (HSDPA & HSUPA)

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

	Mode	HSPA	HSPA	HSPA	HSPA	HSPA
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	15/15
	βec	209/225	12/15	30/15	2/15	24/15
	βc/βd	11/15	6/15	15/9	2/15	15/15
	βhs	22/15	12/15	30/15	4/15	30/15
	βed	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 = βhs/βc	30/15				
HSUPA Specific Settings	D E-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_TFCIs	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27	

Measured Results

Band	Mode	UL Ch No.	Freq. (MHz)	Avg Pwr (dBm)	
				Max. Power	with Reduction
W-CDMA Band V	Subtest 1	4132	826.4	22.2	19.3
		4183	836.6	22.2	19.5
		4233	846.6	22.5	19.6
	Subtest 2	4132	826.4	22.2	19.1
		4183	836.6	22.2	19.5
		4233	846.6	22.0	19.6
	Subtest 3	4132	826.4	21.9	19.3
		4183	836.6	21.9	19.6
		4233	846.6	22.7	19.7
	Subtest 4	4132	826.4	22.8	19.2
		4183	836.6	22.8	19.2
		4233	846.6	22.6	19.4
	Subtest 5	4132	826.4	22.6	19.2
		4183	836.6	22.6	19.4
		4233	846.6	22.4	19.7
W-CDMA Band II	Subtest 1	9262	1852.4	21.2	12.8
		9400	1880.0	21.2	12.9
		9538	1907.6	21.4	13.2
	Subtest 2	9262	1852.4	21.0	10.9
		9400	1880.0	20.7	11.0
		9538	1907.6	21.1	11.3
	Subtest 3	9262	1852.4	22.2	12.6
		9400	1880.0	21.6	12.2
		9538	1907.6	22.2	12.3
	Subtest 4	9262	1852.4	20.9	11.5
		9400	1880.0	20.8	11.1
		9538	1907.6	21.1	11.2
	Subtest 5	9262	1852.4	23.0	13.3
		9400	1880.0	22.4	12.9
		9538	1907.6	23.0	13.0

9.3. LTE

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 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-
Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.					

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)					
						Full Power			with Power Reduction		
						18700	18900	19100	18700	18900	19100
						1860 MHz	1880 MHz	1900 MHz	1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	22.9	23.0	23.1	14.1	14.1	14.0
			1	49	0	22.8	22.4	23.1	13.6	13.7	13.5
			1	99	0	22.7	22.9	23.1	14.0	14.0	13.6
			50	0	1	22.0	21.9	22.4	12.9	12.9	12.8
			50	24	1	21.8	21.7	22.3	12.7	12.6	12.6
			50	50	1	21.8	21.8	22.2	12.7	12.6	12.5
			100	0	1	21.9	21.9	22.3	12.7	12.7	12.6
		16QAM	1	0	1	22.5	22.4	22.6	13.6	13.3	13.3
			1	49	1	22.5	21.8	22.6	13.2	12.9	12.7
			1	99	1	22.3	22.2	22.5	13.5	13.2	12.8
			50	0	2	21.0	21.0	21.6	11.8	11.8	11.9
			50	24	2	21.0	20.8	21.5	11.6	11.6	11.7
			50	50	2	21.0	20.8	21.4	11.6	11.6	11.6
			100	0	2	20.9	21.0	21.6	11.7	11.7	11.8
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						18675	18900	19125	18675	18900	19125
						1857.5 MHz	1880 MHz	1902.5 MHz	1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.2	23.0	23.5	14.1	13.9	14.0
			1	37	0	23.1	22.5	23.2	13.6	13.5	13.6
			1	74	0	23.2	22.9	23.2	13.7	13.7	13.6
			36	0	1	22.4	21.9	22.8	12.8	12.9	12.7
			36	16	1	22.4	21.7	22.5	12.6	12.7	12.6
			36	35	1	22.4	21.8	22.4	12.6	12.6	12.6
			75	0	1	22.4	21.9	22.5	12.7	12.7	12.6
		16QAM	1	0	1	22.7	22.1	22.6	13.2	13.0	12.9
			1	37	1	22.7	21.7	22.4	12.9	12.6	12.5
			1	74	1	22.7	22.1	22.4	13.0	12.8	12.4
			36	0	2	21.5	21.1	21.8	11.9	11.8	11.9
			36	16	2	21.4	21.0	21.7	11.7	11.6	11.7
			36	35	2	21.5	21.0	21.6	11.7	11.6	11.7
			75	0	2	21.4	21.1	21.7	11.8	11.7	11.7
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						18650	18900	19150	18650	18900	19150
						1855 MHz	1880 MHz	1905 MHz	1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.2	22.7	23.4	13.8	13.7	13.6
			1	24	0	23.2	22.4	23.1	13.6	13.4	13.5
			1	49	0	23.3	22.7	23.1	13.6	13.6	13.4
			25	0	1	22.4	21.7	22.4	12.6	12.6	12.5
			25	12	1	22.4	21.6	22.3	12.5	12.5	12.4
			25	24	1	22.5	21.6	22.3	12.5	12.5	12.4
			50	0	1	22.4	21.7	22.4	12.6	12.6	12.4
		16QAM	1	0	1	22.3	22.2	22.3	12.4	12.7	12.9
			1	24	1	22.4	21.9	22.0	12.3	12.5	12.7
			1	49	1	22.5	22.2	22.0	12.3	12.6	12.6
			25	0	2	21.6	21.0	21.7	11.8	11.6	11.6
			25	12	2	21.6	20.9	21.6	11.7	11.5	11.5
			25	24	2	21.7	20.9	21.6	11.7	11.5	11.5
			50	0	2	21.6	20.9	21.6	11.7	11.5	11.5

LTE Band 2 Measured Results continued

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)					
						Full Power			with Power Reduction		
						18625	18900	19175	18625	18900	19175
						1852.5 MHz	1880 MHz	1907.5 MHz	1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.1	22.6	23.3	13.7	13.7	13.5
			1	12	0	23.1	22.4	23.2	13.6	13.5	13.5
			1	24	0	23.3	22.7	23.3	13.7	13.6	13.5
			12	0	1	22.3	21.6	22.4	12.5	12.5	12.4
			12	6	1	22.3	21.6	22.4	12.5	12.4	12.4
			12	11	1	22.3	21.5	22.2	12.5	12.4	12.4
			25	0	1	22.3	21.6	22.2	12.5	12.4	12.4
		16QAM	1	0	1	22.1	21.8	22.8	12.2	12.6	12.9
			1	12	1	22.1	21.7	22.7	12.2	12.5	12.8
			1	24	1	22.3	21.9	22.8	12.3	12.5	12.8
			12	0	2	21.4	21.0	21.4	11.5	11.5	11.5
			12	6	2	21.4	20.9	21.4	11.5	11.5	11.5
			12	11	2	21.5	20.9	21.5	11.6	11.5	11.5
			25	0	2	21.6	20.9	21.4	11.6	11.5	11.4
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						18615	18900	19185	18615	18900	19185
						1851.5 MHz	1880 MHz	1908.5 MHz	1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	23.2	22.6	23.3	13.6	13.6	13.5
			1	7	0	23.1	22.4	23.2	13.4	13.4	13.3
			1	14	0	23.2	22.5	23.2	13.5	13.4	13.3
			8	0	1	22.3	21.6	22.3	12.5	12.4	12.3
			8	4	1	22.3	21.6	22.3	12.6	12.4	12.3
			8	7	1	22.3	21.6	22.3	12.6	12.4	12.3
			15	0	1	22.3	21.6	22.3	12.6	12.4	12.3
		16QAM	1	0	1	22.3	22.0	22.2	12.5	12.8	12.2
			1	7	1	22.2	21.9	22.1	12.5	12.7	12.1
			1	14	1	22.3	22.0	22.1	12.6	12.7	12.0
			8	0	2	21.4	20.9	21.5	11.5	11.5	11.3
			8	4	2	21.4	20.8	21.4	11.5	11.4	11.2
			8	7	2	21.5	20.8	21.4	11.5	11.4	11.2
			15	0	2	21.5	20.8	21.4	11.5	11.4	11.2
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						18607	18900	19193	18607	18900	19193
						1850.7 MHz	1880 MHz	1909.3 MHz	1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.1	22.5	23.2	13.4	13.4	13.2
			1	2	0	23.0	22.5	23.2	13.4	13.3	13.1
			1	5	0	23.1	22.5	23.2	13.4	13.3	13.1
			3	0	0	23.0	22.4	23.1	13.4	13.3	13.2
			3	1	0	23.0	22.4	23.1	13.4	13.3	13.2
			3	2	0	23.0	22.4	23.1	13.4	13.3	13.2
			6	0	1	22.1	21.6	22.3	12.5	12.4	12.2
		16QAM	1	0	1	22.5	21.4	22.2	12.7	12.2	11.9
			1	2	1	22.5	21.4	22.1	12.7	12.1	11.9
			1	5	1	22.5	21.4	22.2	12.7	12.2	11.8
			3	0	1	22.4	21.7	22.5	12.7	12.5	12.2
			3	1	1	22.4	21.7	22.5	12.6	12.5	12.2
			3	2	1	22.4	21.8	22.5	12.6	12.5	12.2
			6	0	2	21.1	21.0	21.6	11.2	11.5	11.3

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)					
						Full Power			with Power Reduction		
						20050	20175	20300	20050	20175	20300
						1720 MHz	1732.5 MHz	1745 MHz	1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	23.6	23.8	23.6	15.0	15.4	15.0
			1	49	0	23.8	23.4	23.4	15.2	15.0	14.7
			1	99	0	23.5	23.3	23.8	15.1	14.9	15.1
			50	0	1	22.8	22.8	22.5	14.0	14.2	13.9
			50	24	1	22.8	22.7	22.4	14.1	14.0	13.9
			50	50	1	22.8	22.4	22.6	14.0	13.9	14.0
			100	0	1	22.7	22.7	22.6	14.1	14.1	14.0
		16QAM	1	0	1	22.9	23.3	23.3	14.5	14.7	14.2
			1	49	1	23.1	22.9	23.1	14.7	14.2	14.0
			1	99	1	22.9	22.8	23.5	14.6	14.1	14.2
			50	0	2	22.1	22.0	21.6	13.1	13.2	12.8
			50	24	2	22.2	21.7	21.6	13.2	13.0	12.8
			50	50	2	22.1	21.5	21.8	13.1	12.9	12.9
			100	0	2	22.1	21.8	21.7	13.1	13.0	12.9
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						20025	20175	20325	20025	20175	20325
						1717.5 MHz	1732.5 MHz	1747.5 MHz	1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	23.8	23.6	23.5	14.7	15.3	14.9
			1	37	0	23.8	23.6	23.5	15.0	14.8	14.8
			1	74	0	23.8	23.4	23.6	15.2	14.7	15.0
			36	0	1	22.8	22.9	22.5	14.1	14.1	13.9
			36	16	1	23.0	22.7	22.7	14.2	13.9	13.8
			36	35	1	23.1	22.5	22.7	14.3	13.8	13.9
			75	0	1	23.0	22.7	22.6	14.2	13.9	13.9
		16QAM	1	0	1	22.7	22.9	22.7	13.9	14.2	14.3
			1	37	1	22.9	22.5	22.7	14.2	13.8	14.2
			1	74	1	22.9	22.4	22.7	14.3	13.7	14.3
			36	0	2	21.9	22.1	21.7	13.0	13.1	12.9
			36	16	2	22.1	21.9	21.7	13.0	12.9	12.9
			36	35	2	22.2	21.7	21.9	13.1	12.9	13.0
			75	0	2	22.1	21.9	21.6	13.0	12.9	12.9
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						20000	20175	20350	20000	20175	20350
						1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.3	23.7	23.5	14.7	14.9	14.9
			1	24	0	23.7	23.5	23.6	15.0	14.7	14.9
			1	49	0	23.8	23.3	23.7	15.3	14.6	15.0
			25	0	1	22.7	22.7	22.6	13.7	14.1	13.8
			25	12	1	22.8	22.6	22.6	13.9	13.9	13.8
			25	24	1	23.0	22.5	22.7	14.0	13.9	13.8
			50	0	1	22.8	22.6	22.7	13.9	13.9	13.8
		16QAM	1	0	1	22.3	22.7	22.2	13.5	14.3	13.6
			1	24	1	22.7	22.5	22.4	13.8	14.2	13.6
			1	49	1	22.9	22.3	22.5	14.1	14.1	13.6
			25	0	2	21.7	21.9	21.7	12.8	12.9	12.8
			25	12	2	21.9	21.7	21.8	12.9	12.8	12.9
			25	24	2	22.0	21.6	21.9	13.1	12.8	12.9
			50	0	2	21.9	21.7	21.8	12.9	12.8	12.8

LTE Band 4 Measured Results continued

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)					
						Full Power			with Power Reduction		
						19975	20175	20375	19975	20175	20375
						1712.5 MHz	1732.5 MHz	1752.5 MHz	1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.5	23.6	23.7	14.6	15.0	14.8
			1	12	0	23.6	23.5	23.7	14.7	14.9	14.8
			1	24	0	23.7	23.4	23.7	15.0	14.9	14.9
			12	0	1	22.5	22.7	22.8	13.7	13.9	13.8
			12	6	1	22.6	22.6	22.7	13.8	13.9	13.8
			12	11	1	22.7	22.6	22.9	13.9	13.9	13.9
			25	0	1	22.6	22.6	22.8	13.8	13.9	13.9
		16QAM	1	0	1	22.5	23.1	22.5	13.4	13.9	14.3
			1	12	1	22.6	23.0	22.6	13.5	13.9	14.3
			1	24	1	23.0	23.1	22.6	13.9	14.0	14.4
			12	0	2	21.5	21.9	21.8	12.6	12.8	12.8
			12	6	2	21.7	21.8	21.9	12.7	12.8	12.8
			12	11	2	21.8	21.7	21.9	12.8	12.8	12.9
			25	0	2	21.7	21.7	21.9	12.8	12.8	12.8
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						19965	20175	20385	19965	20175	20385
						1711.5 MHz	1732.5 MHz	1753.5 MHz	1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.2	23.6	23.8	14.5	14.8	14.9
			1	7	0	23.3	23.4	23.7	14.5	14.7	14.9
			1	14	0	23.5	23.5	23.7	14.7	14.8	14.9
			8	0	1	22.2	22.6	22.8	13.5	13.9	13.9
			8	4	1	22.3	22.5	22.8	13.6	13.9	13.9
			8	7	1	22.4	22.5	22.8	13.7	13.9	13.9
			15	0	1	22.3	22.5	22.8	13.6	13.9	13.9
		16QAM	1	0	1	22.1	22.9	22.6	13.3	13.9	14.1
			1	7	1	22.2	22.8	22.5	13.4	13.8	14.1
			1	14	1	22.4	22.8	22.5	13.6	13.8	14.2
			8	0	2	21.4	21.7	21.8	12.5	12.8	12.8
			8	4	2	21.5	21.7	21.8	12.6	12.8	12.9
			8	7	2	21.6	21.7	21.9	12.6	12.8	12.9
			15	0	2	21.5	21.7	21.8	12.5	12.8	12.8
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						19957	20175	20393	19957	20175	20393
						1710.7 MHz	1732.5 MHz	1754.3 MHz	1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	23.2	23.5	23.8	14.3	14.9	14.9
			1	2	0	23.3	23.4	23.7	14.4	14.8	14.9
			1	5	0	23.3	23.4	23.7	14.4	14.8	14.9
			3	0	0	23.1	23.4	23.6	14.4	14.8	14.8
			3	1	0	23.2	23.4	23.6	14.4	14.8	14.8
			3	2	0	23.2	23.4	23.6	14.4	14.8	14.8
			6	0	1	22.2	22.5	22.8	13.5	13.8	13.8
		16QAM	1	0	1	22.0	22.3	22.6	13.7	13.6	14.1
			1	2	1	22.0	22.3	22.5	13.8	13.5	14.1
			1	5	1	22.0	22.3	22.5	13.8	13.6	14.1
			3	0	1	22.4	22.7	22.9	13.7	13.9	14.0
			3	1	1	22.4	22.7	22.9	13.7	13.9	14.0
			3	2	1	22.4	22.6	22.9	13.7	13.9	14.0
			6	0	2	21.4	21.8	22.0	12.3	12.9	12.6

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)					
						Full Power			with Power Reduction		
						20450	20525	20600	20450	20525	20600
						829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz
LTE Band 5	10	QPSK	1	0	0	23.1	23.0	23.2	20.0	20.3	20.3
			1	24	0	22.8	23.0	22.9	20.0	20.2	20.1
			1	49	0	23.2	22.9	22.8	20.1	20.1	20.0
			25	0	1	21.8	21.8	21.9	19.3	19.3	19.3
			25	12	1	21.8	21.8	21.9	19.3	19.3	19.3
			25	24	1	21.8	21.9	21.7	19.2	19.2	19.3
			50	0	1	22.0	22.0	22.1	19.3	19.3	19.3
		16QAM	1	0	1	22.4	22.1	22.2	19.8	19.9	19.2
			1	24	1	21.8	22.1	21.7	19.2	19.6	19.0
			1	49	1	22.1	21.9	21.9	19.1	19.6	19.0
			25	0	2	21.2	21.3	21.3	18.8	18.6	18.5
			25	12	2	21.0	21.1	21.0	18.5	18.4	18.5
			25	24	2	21.1	21.1	21.1	18.4	18.4	18.5
			50	0	2	21.1	21.1	21.0	18.5	18.4	18.5
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						20425	20525	20625	20425	20525	20625
						826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz
LTE Band 5	5	QPSK	1	0	0	23.1	23.0	22.8	20.3	20.3	20.2
			1	12	0	22.6	23.0	22.7	20.3	20.3	20.2
			1	24	0	22.6	23.0	22.9	20.3	20.2	20.3
			12	0	1	21.8	22.2	21.8	19.4	19.4	19.4
			12	6	1	21.6	22.2	21.8	19.3	19.3	19.3
			12	11	1	21.7	22.2	21.8	19.3	19.3	19.3
			25	0	1	21.6	22.1	21.8	19.3	19.3	19.3
		16QAM	1	0	1	22.1	22.1	22.5	20.0	19.6	19.2
			1	12	1	21.6	22.1	22.4	19.9	19.4	19.1
			1	24	1	21.7	22.2	22.5	19.9	19.3	19.1
			12	0	2	21.0	21.2	21.0	18.6	18.4	18.2
			12	6	2	20.9	21.1	21.0	18.5	18.3	18.2
			12	11	2	20.8	21.1	21.1	18.5	18.3	18.2
			25	0	2	20.9	21.3	21.0	18.5	18.3	18.3
Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)			Avg Pwr (dBm)		
						20415	20525	20635	20415	20525	20635
						825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz
LTE Band 5	3	QPSK	1	0	0	23.0	23.1	22.9	20.3	20.3	20.3
			1	7	0	22.7	23.0	22.8	20.2	20.3	20.2
			1	14	0	22.7	22.9	23.0	20.2	20.2	20.2
			8	0	1	21.7	22.2	21.8	19.3	19.2	19.3
			8	4	1	21.7	22.1	21.9	19.3	19.2	19.3
			8	7	1	21.8	22.1	21.9	19.3	19.2	19.3
			15	0	1	21.8	22.1	21.9	19.3	19.2	19.3
		16QAM	1	0	1	22.0	22.1	21.9	19.8	19.2	19.0
			1	7	1	21.8	21.9	21.8	19.7	19.1	19.0
			1	14	1	21.8	21.9	22.0	19.7	19.1	19.0
			8	0	2	21.1	21.3	21.1	18.6	18.3	18.2
			8	4	2	21.0	21.2	21.1	18.6	18.3	18.2
			8	7	2	21.0	21.2	21.1	18.6	18.3	18.3
			15	0	2	20.9	21.2	21.0	18.5	18.3	18.2

LTE Band 5 Measured Results continued

Band	BW (MHz)	Mode	RB Allocation	RB Size	Target MPR	Avg Pwr (dBm)					
						Full Power			with Power Reduction		
						20407	20525	20643	20407	20525	20643
						824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz
LTE Band 5	1.4	QPSK	1	0	0	23.2	23.2	23.2	20.2	20.2	20.3
			1	2	0	23.2	23.1	23.2	20.2	20.2	20.2
			1	5	0	23.1	23.1	23.2	20.2	20.2	20.2
			3	0	0	23.2	23.0	23.2	20.2	20.2	20.1
			3	1	0	23.2	23.0	23.2	20.2	20.2	20.1
			3	2	0	23.1	23.0	23.2	20.2	20.2	20.1
			6	0	1	22.2	22.1	22.3	19.3	19.3	19.1
		16QAM	1	0	1	22.4	22.2	22.3	19.1	19.1	19.0
			1	2	1	22.3	22.1	22.3	19.1	19.1	18.9
			1	5	1	22.4	22.1	22.3	19.1	19.1	18.9
			3	0	1	22.5	22.1	22.5	19.5	19.4	19.3
			3	1	1	22.4	22.1	22.4	19.5	19.4	19.3
			3	2	1	22.4	22.1	22.5	19.5	19.4	19.3
			6	0	2	21.4	21.3	21.5	18.6	18.4	18.4

LTE Band 17 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)	
						Full Power	with Power Reduction
						23790	23790
						710 MHz	710 MHz
LTE Band 17	10	QPSK	1	0	0	23.3	21.2
			1	25	0	23.0	20.8
			1	49	0	23.0	20.6
			25	0	1	22.1	19.9
			25	12	1	22.1	20.0
			25	25	1	22.3	20.0
			50	0	1	22.3	19.9
		16QAM	1	0	1	22.3	19.8
			1	25	1	21.8	20.1
			1	49	1	21.9	19.6
			25	0	2	21.2	19.0
			25	12	2	21.0	19.1
			25	25	2	21.0	19.0
			50	0	2	20.9	18.9

Band	BW (MHz)	Mode	RB Allocation	RB offset	Target MPR	Avg Pwr (dBm)	
						23790	23790
						710 MHz	710 MHz
LTE Band 17	5	QPSK	1	0	0	22.9	20.7
			1	12	0	22.7	21.1
			1	24	0	22.6	21.1
			12	0	1	22.1	20.0
			12	7	1	22.0	20.2
			12	13	1	21.8	20.1
			25	0	1	21.9	20.0
		16QAM	1	0	1	21.6	19.3
			1	12	1	21.5	19.9
			1	24	1	21.5	19.8
			12	0	2	21.1	19.0
			12	7	2	21.0	19.2
			12	13	2	20.8	19.1
			25	0	2	20.9	19.1

Note(s):

10/5 MHz Bandwidths does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB941225 D05 SAR for LTE Devices v02r02

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

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r01

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^2O	Water, 35 – 58%
Sucrese	Sugar, white, refined, 40-60%
NaCl	Sodium Chloride, 0-6%
Hydroxyethel-cellulsoe	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-methyyl-3(2H)-isothiazolone, 0.1-0.7%

MSL/HSL1750 (Body and Head liquids for 1700 – 1800 MHz)

Item	Head Tissue Simulation Liquids HSL1750 Muscle (body) Tissue Simulation Liquids MSL1750
Type No	SL AAM 175
Manufacturer	SPEAG
-The item is composed of the following ingredients:	
H^2O	Water, 52 – 75%
C8H18O3	Diethylene glycol monobutyl ether (DGBE), 25-48%
NaCl	Sodium Chloride, <1.0%

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

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

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

SAR Room 2

Date Tested	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
10/23/2013	Body 1750	e'	51.6300	Relative Permittivity (ε_r):	51.63	53.44	-3.39	5
		e"	15.5600	Conductivity (σ):	1.51	1.49	1.88	5
	Body 1710	e'	51.8000	Relative Permittivity (ε_r):	51.80	53.54	-3.26	5
		e"	15.5700	Conductivity (σ):	1.48	1.46	1.29	5
	Body 1755	e'	51.6200	Relative Permittivity (ε_r):	51.62	53.43	-3.38	5
		e"	15.5700	Conductivity (σ):	1.52	1.49	2.02	5
10/27/2013	Body 1900	e'	52.5900	Relative Permittivity (ε_r):	52.59	53.30	-1.33	5
		e"	14.5000	Conductivity (σ):	1.53	1.52	0.78	5
	Body 1850	e'	52.8000	Relative Permittivity (ε_r):	52.80	53.30	-0.94	5
		e"	14.3700	Conductivity (σ):	1.48	1.52	-2.75	5
	Body 1910	e'	52.5600	Relative Permittivity (ε_r):	52.56	53.30	-1.39	5
		e"	14.5200	Conductivity (σ):	1.54	1.52	1.45	5
10/27/2013	Body 1750	e'	53.1200	Relative Permittivity (ε_r):	53.12	53.44	-0.60	5
		e"	14.8800	Conductivity (σ):	1.45	1.49	-2.57	5
	Body 1710	e'	53.2500	Relative Permittivity (ε_r):	53.25	53.54	-0.55	5
		e"	14.7600	Conductivity (σ):	1.40	1.46	-3.98	5
	Body 1755	e'	53.1000	Relative Permittivity (ε_r):	53.10	53.43	-0.61	5
		e"	14.8900	Conductivity (σ):	1.45	1.49	-2.43	5
10/30/2013	Body 1750	e'	52.1100	Relative Permittivity (ε_r):	52.11	53.44	-2.49	5
		e"	15.5300	Conductivity (σ):	1.51	1.49	1.68	5
	Body 1710	e'	52.2700	Relative Permittivity (ε_r):	52.27	53.54	-2.38	5
		e"	15.4300	Conductivity (σ):	1.47	1.46	0.38	5
	Body 1755	e'	52.1000	Relative Permittivity (ε_r):	52.10	53.43	-2.49	5
		e"	15.5500	Conductivity (σ):	1.52	1.49	1.89	5
10/30/2013	Body 1900	e'	53.1500	Relative Permittivity (ε_r):	53.15	53.30	-0.28	5
		e"	14.8400	Conductivity (σ):	1.57	1.52	3.14	5
	Body 1850	e'	53.3600	Relative Permittivity (ε_r):	53.36	53.30	0.11	5
		e"	14.7300	Conductivity (σ):	1.52	1.52	-0.31	5
	Body 1910	e'	53.1200	Relative Permittivity (ε_r):	53.12	53.30	-0.34	5
		e"	14.8900	Conductivity (σ):	1.58	1.52	4.04	5
11/8/2013	Body 1900	e'	52.4900	Relative Permittivity (ε_r):	52.49	53.30	-1.52	5
		e"	14.4000	Conductivity (σ):	1.52	1.52	0.09	5
	Body 1850	e'	52.6700	Relative Permittivity (ε_r):	52.67	53.30	-1.18	5
		e"	14.2600	Conductivity (σ):	1.47	1.52	-3.50	5
	Body 1910	e'	52.4600	Relative Permittivity (ε_r):	52.46	53.30	-1.58	5
		e"	14.4400	Conductivity (σ):	1.53	1.52	0.89	5

SAR Room 2 continued

Date Tested	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
11/25/2013	Body 1900	e'	52.2000	Relative Permittivity (ϵ_r):	52.20	53.30	-2.06	5
		e"	14.2600	Conductivity (σ):	1.51	1.52	-0.89	5
	Body 1850	e'	52.3800	Relative Permittivity (ϵ_r):	52.38	53.30	-1.73	5
		e"	14.1500	Conductivity (σ):	1.46	1.52	-4.24	5
	Body 1910	e'	52.1500	Relative Permittivity (ϵ_r):	52.15	53.30	-2.16	5
		e"	14.3100	Conductivity (σ):	1.52	1.52	-0.02	5
12/5/2013	Head 2550	e'	38.2800	Relative Permittivity (ϵ_r):	38.28	39.07	-2.03	5
		e"	13.9000	Conductivity (σ):	1.97	1.91	3.29	5
	Head 2500	e'	38.4600	Relative Permittivity (ϵ_r):	38.46	39.14	-1.73	5
		e"	13.8200	Conductivity (σ):	1.92	1.85	3.62	5
	Head 2600	e'	38.0300	Relative Permittivity (ϵ_r):	38.03	39.01	-2.51	5
		e"	14.1100	Conductivity (σ):	2.04	1.96	3.96	5
12/13/2013	Body 1900	e'	51.3200	Relative Permittivity (ϵ_r):	51.32	53.30	-3.71	5
		e"	14.8800	Conductivity (σ):	1.57	1.52	3.42	5
	Body 1850	e'	51.5200	Relative Permittivity (ϵ_r):	51.52	53.30	-3.34	5
		e"	14.6900	Conductivity (σ):	1.51	1.52	-0.59	5
	Body 1910	e'	51.3000	Relative Permittivity (ϵ_r):	51.30	53.30	-3.75	5
		e"	14.9100	Conductivity (σ):	1.58	1.52	4.18	5
12/16/2013	Body 1900	e'	52.5200	Relative Permittivity (ϵ_r):	52.52	53.30	-1.46	5
		e"	14.6000	Conductivity (σ):	1.54	1.52	1.48	5
	Body 1850	e'	52.6900	Relative Permittivity (ϵ_r):	52.69	53.30	-1.14	5
		e"	14.4500	Conductivity (σ):	1.49	1.52	-2.21	5
	Body 1910	e'	52.4800	Relative Permittivity (ϵ_r):	52.48	53.30	-1.54	5
		e"	14.6300	Conductivity (σ):	1.55	1.52	2.22	5

SAR Room 3

Date Tested	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
10/23/2013	Body 750	e'	54.7900	Relative Permittivity (ε_r):	54.79	55.55	-1.36	5
		e"	23.3300	Conductivity (σ):	0.97	0.96	1.02	5
	Body 700	e'	55.3500	Relative Permittivity (ε_r):	55.35	55.74	-0.70	5
		e"	23.7100	Conductivity (σ):	0.92	0.96	-3.79	5
	Body 790	e'	54.3500	Relative Permittivity (ε_r):	54.35	55.39	-1.88	5
		e"	22.9900	Conductivity (σ):	1.01	0.97	4.52	5
10/28/2013	Body 835	e'	53.0000	Relative Permittivity (ε_r):	53.00	55.20	-3.99	5
		e"	21.7700	Conductivity (σ):	1.01	0.97	4.20	5
	Body 820	e'	53.1500	Relative Permittivity (ε_r):	53.15	55.28	-3.85	5
		e"	21.8500	Conductivity (σ):	1.00	0.97	2.87	5
	Body 850	e'	52.8300	Relative Permittivity (ε_r):	52.83	55.16	-4.22	5
		e"	21.7100	Conductivity (σ):	1.03	0.99	3.94	5
10/31/2013	Body 835	e'	54.3500	Relative Permittivity (ε_r):	54.35	55.20	-1.54	5
		e"	21.7500	Conductivity (σ):	1.01	0.97	4.11	5
	Body 820	e'	54.5000	Relative Permittivity (ε_r):	54.50	55.28	-1.41	5
		e"	21.8300	Conductivity (σ):	1.00	0.97	2.77	5
	Body 850	e'	54.2300	Relative Permittivity (ε_r):	54.23	55.16	-1.68	5
		e"	21.7000	Conductivity (σ):	1.03	0.99	3.90	5
11/11/2013	Body 835	e'	54.4100	Relative Permittivity (ε_r):	54.41	55.20	-1.43	5
		e"	21.8400	Conductivity (σ):	1.01	0.97	4.54	5
	Body 820	e'	54.5600	Relative Permittivity (ε_r):	54.56	55.28	-1.30	5
		e"	21.8900	Conductivity (σ):	1.00	0.97	3.06	5
	Body 850	e'	54.2600	Relative Permittivity (ε_r):	54.26	55.16	-1.63	5
		e"	21.7800	Conductivity (σ):	1.03	0.99	4.28	5
11/11/2013	Body 750	e'	53.5900	Relative Permittivity (ε_r):	53.59	55.55	-3.52	5
		e"	23.2600	Conductivity (σ):	0.97	0.96	0.72	5
	Body 700	e'	54.1500	Relative Permittivity (ε_r):	54.15	55.74	-2.85	5
		e"	23.6700	Conductivity (σ):	0.92	0.96	-3.96	5
	Body 790	e'	53.1900	Relative Permittivity (ε_r):	53.19	55.39	-3.98	5
		e"	22.8600	Conductivity (σ):	1.00	0.97	3.93	5
11/25/2013	Body 835	e'	54.3600	Relative Permittivity (ε_r):	54.36	55.20	-1.52	5
		e"	21.4800	Conductivity (σ):	1.00	0.97	2.81	5
	Body 820	e'	54.5000	Relative Permittivity (ε_r):	54.50	55.28	-1.41	5
		e"	21.5600	Conductivity (σ):	0.98	0.97	1.50	5
	Body 850	e'	54.2300	Relative Permittivity (ε_r):	54.23	55.16	-1.68	5
		e"	21.4100	Conductivity (σ):	1.01	0.99	2.51	5

11. System Performance Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are remeasured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

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 depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm ± 0.5 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm ± 0.5 cm for measurements > 3 GHz.
- 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	03/05/2013	750	1g	8.50	8.68
				10g	5.59	5.75
D835V2	4d117	5/28/2013	835	1g	9.54	9.40
				10g	6.21	6.16
D1750V2	1050	04/20/2013	1750	1g	36.5	37.1
				10g	19.4	20.1
D1900V2	5d140	4/18/2013	1900	1g	41.2	41.5
				10g	21.5	22.0

11.3. System Performance Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

SAR Room 2

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
10/23/2013	D1900V2	5d140	BODY	1g	4.03	4.00	40.00	41.50	-3.61	0.74	
				10g	2.02	2.09	20.90	22.00	-5.00		
10/27/2013	D1900V2	5d140	BODY	1g	3.94	4.01	40.10	41.50	-3.37	-1.78	
				10g	1.97	2.09	20.90	22.00	-5.00		
10/27/2013	D1750V2	1050	BODY	1g	3.68	3.74	37.40	37.10	0.81	-1.63	
				10g	1.97	1.99	19.90	20.10	-1.00		
10/30/2013	D1900V2	5d140	BODY	1g	4.09	4.04	40.40	41.50	-2.65	1.22	
				10g	2.050	2.11	21.10	22.00	-4.09		
10/30/2013	D1750V2	1050	BODY	1g	3.84	3.84	38.40	37.10	3.50	0.00	1, 2
				10g	2.06	2.04	20.40	20.10	1.49		
11/8/2013	D1900V2	5d140	BODY	1g	4.20	4.20	42.00	41.50	1.20	0.00	
				10g	2.100	2.19	21.90	22.00	-0.45		
11/25/2013	D1900V2	5d140	BODY	1g	4.01	4.01	40.10	41.50	-3.37	0.00	
				10g	2.00	2.10	21.00	22.00	-4.55		
12/13/2013	D1900V2	5d140	BODY	1g	4.00	3.96	39.60	41.50	-4.58	1.00	3, 4
				10g	1.99	2.06	20.60	22.00	-6.36		
12/16/2013	D1900V2	5d140	BODY	1g	4.10	4.09	40.90	41.50	-1.45	0.24	
				10g	2.06	2.14	21.40	22.00	-2.73		

SAR Room 3

Date Tested	System Dipole		T.S. Liquid		Measured Results			Target (Ref. Value)	Delta ±10 %	Est./Zoom Ratio ±3 %	Plot No.
	Type	Serial #			Area Scan	Zoom Scan	Normalize to 1 W				
10/23/2013	D750V3	1019	BODY	1g	0.89	0.84	8.39	8.68	-3.34	5.84	5, 6
				10g	0.60	0.56	5.59	5.75	-2.78		
10/28/2013	D750V3	1019	BODY	1g	0.94	0.85	8.48	8.68	-2.30	9.40	
				10g	0.63	0.57	5.65	5.75	-1.74		
10/28/2013	D835V2	4d117	BODY	1g	0.96	0.95	9.48	9.40	0.85	1.35	
				10g	0.65	0.62	6.24	6.16	1.30		
11/11/2013	D835V2	4d117	BODY	1g	0.98	0.98	9.78	9.40	4.04	0.41	7, 8
				10g	0.66	0.64	6.44	6.16	4.55		
11/11/2013	D750V3	1019	BODY	1g	0.86	0.86	8.57	8.68	-1.27	0.81	
				10g	0.59	0.57	5.72	5.75	-0.52		
11/25/2013	D835V2	4d117	BODY	1g	0.98	0.96	9.63	9.40	2.45	2.03	
				10g	0.66	0.64	6.35	6.16	3.08		

12. SAR Test Results

12.1. GSM850

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear	GPRS 2 Slots	on	0	128	824.2	28.1	28.1	1.170	1.170	
				190	836.6	28.1	28.0	1.280	1.310	
				251	848.8	28.1	28.0	1.360	**1.392**	1
Edge 1	GPRS 2 Slots	on	0	128	824.2	28.1	28.1	0.912	0.912	
				190	836.6	28.1	28.0	1.010	1.034	
				251	848.8	28.1	28.0	1.060	1.085	
Rear/Edge 1 slant	GPRS 2 Slots	on	0	128	824.2	28.1	28.1	0.900	0.900	
				190	836.6	28.1	28.0	0.948	0.970	
				251	848.8	28.1	28.0	0.983	1.006	
Rear/Edge 4 slant	GPRS 2 Slots	on	0	128	824.2	29.3	29.3			
				190	836.6	29.3	29.3	0.367	0.367	
				251	848.8	29.3	29.2			
Rear	GPRS 2 Slots	off	16	128	824.2	29.3	29.3			
				190	836.6	29.3	29.3	0.224	0.224	
				251	848.8	29.3	29.2			
Edge 1	GPRS 2 Slots	off	16	128	824.2	29.3	29.3			
				190	836.6	29.3	29.3	0.153	0.153	
				251	848.8	29.3	29.2			
Edge 4	GPRS 2 Slots	off	0	128	824.2	29.3	29.3			
				190	836.6	29.3	29.3	0.382	0.382	
				251	848.8	29.3	29.2			

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	GPRS 2 Slots	on	0	128	824.2	28.1	28.1			
				190	836.6	28.1	28.0			
				251	848.8	28.1	28.0	0.757	0.775	
Rear w/ Type Keyboard	GPRS 2 Slots	on	0	128	824.2	28.1	28.1			
				190	836.6	28.1	28.0			
				251	848.8	28.1	28.0	0.595	0.609	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 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	Mode	Pwr Reduction	Dist. (mm)	Ch #	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear	GPRS 2 Slots	on	0	512	1850.2	21.0	21.0	0.823	0.823	
				661	1880	21.0	21.0	0.755	0.755	
				810	1909.8	21.0	21.0	0.718	0.718	
Edge 1	GPRS 2 Slots	on	0	512	1850.2	21.0	21.0	1.120	1.120	
				661	1880	21.0	21.0	0.996	0.996	
				810	1909.8	21.0	21.0	0.935	0.935	
Rear/Edge 1 slant	GPRS 2 Slots	on	0	512	1850.2	21.0	21.0	1.410	**1.410**	2
				661	1880	21.0	21.0	1.280	1.280	
				810	1909.8	21.0	21.0	1.180	1.180	
Rear/Edge 4 slant	GPRS 2 Slots	on	0	512	1850.2	26.5	26.5			
				661	1880	26.5	26.4	0.080	0.081	
				810	1909.8	26.5	26.5			
Rear	GPRS 2 Slots	off	16	512	1850.2	26.5	26.5			
				661	1880	26.5	26.4	0.255	0.261	
				810	1909.8	26.5	26.5			
Edge 1	GPRS 2 Slots	off	16	512	1850.2	26.5	26.5			
				661	1880	26.5	26.4	0.361	0.369	
				810	1909.8	26.5	26.5			
Edge 4	GPRS 2 Slots	off	0	512	1850.2	26.5	26.5			
				661	1880	26.5	26.4	0.183	0.187	
				810	1909.8	26.5	26.5			

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	GPRS 2 Slots	on	0	512	1850.2	21.0	21.0			
				661	1880	21.0	21.0	0.463	0.463	
				810	1909.8	21.0	21.0			
Rear w/ Type Keyboard	GPRS 2 Slots	on	0	512	1850.2	21.0	21.0			
				661	1880	21.0	21.0	0.339	0.339	
				810	1909.8	21.0	21.0			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 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 Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear	Rel 99 RMC	on	0	4132	826.4	20.2	20.2	1.430	**1.430**	3
				4183	836.6	20.2	20.0	1.150	1.204	
				4233	846.6	20.2	20.0	1.110	1.162	
Edge 1	Rel 99 RMC	on	0	4132	826.4	20.2	20.2			
				4183	836.6	20.2	20.0	0.633	0.663	
				4233	846.6	20.2	20.0			
Rear/Edge 1 slant	Rel 99 RMC	on	0	4132	826.4	20.2	20.2			
				4183	836.6	20.2	20.0	0.670	0.702	
				4233	846.6	20.2	20.0			
Rear/Edge 4 slant	Rel 99 RMC	on	0	4132	826.4	20.2	20.2			
				4183	836.6	20.2	20.0	0.401	0.420	
				4233	846.6	20.2	20.0			
Rear	Rel 99 RMC	off	16	4132	826.4	22.9	22.8			
				4183	836.6	22.9	22.9	0.283	0.283	
				4233	846.6	22.9	22.9			
Edge 1	Rel 99 RMC	off	16	4132	826.4	22.9	22.8			
				4183	836.6	22.9	22.9	0.189	0.189	
				4233	846.6	22.9	22.9			
Edge 4	Rel 99 RMC	off	16	4132	826.4	22.9	22.8			
				4183	836.6	22.9	22.9	0.550	0.550	
				4233	846.6	22.9	22.9			

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	Rel 99 RMC	on	0	4132	826.4	20.2	20.2	0.848	0.848	
				4183	836.6	20.2	20.0			
				4233	846.6	20.2	20.0			
Rear w/ Type Keyboard	Rel 99 RMC	on	0	4132	826.4	20.2	20.2	0.617	0.617	
				4183	836.6	20.2	20.0			
				4233	846.6	20.2	20.0			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 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 Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear	Rel 99 RMC	on	0	9262	1852.4	13.6	13.6	0.694	0.688	
				9400	1880.0	13.6	13.6	0.939	0.939	
				9538	1907.6	13.6	13.4	0.832	0.871	
Edge 1	Rel 99 RMC	on	0	9262	1852.4	13.6	13.6	0.884	0.876	
				9400	1880.0	13.6	13.6	1.150	1.150	
				9538	1907.6	13.6	13.4	0.976	1.022	
Rear/Edge 1 slant	Rel 99 RMC	on	0	9262	1852.4	13.6	13.6	1.110	1.100	
				9400	1880.0	13.6	13.6	1.380	**1.380**	4
				9538	1907.6	13.6	13.4	1.200	1.257	
Rear/Edge 4 slant	Rel 99 RMC	on	0	9262	1852.4	13.6	13.6			
				9400	1880.0	13.6	13.6	0.096	0.096	
				9538	1907.6	13.6	13.4			
Rear	Rel 99 RMC	off	16	9262	1852.4	23.0	23.0			
				9400	1880.0	23.0	22.4	0.666	0.765	
				9538	1907.6	23.0	23.0			
Edge 1	Rel 99 RMC	off	16	9262	1852.4	23.0	23.0	0.673	0.673	
				9400	1880.0	23.0	22.4	0.992	1.139	
				9538	1907.6	23.0	23.0	1.120	1.120	
Edge 4	Rel 99 RMC	off	0	9262	1852.4	23.0	23.0			
				9400	1880.0	23.0	22.4	0.590	0.677	
				9538	1907.6	23.0	23.0			

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	Rel 99 RMC	on	0	9262	1852.4	13.6	13.6			
				9400	1880.0	13.6	13.6	0.504	0.504	
				9538	1907.6	13.6	13.4			
Rear w/ Type Keyboard	Rel 99 RMC	on	0	9262	1852.4	13.6	13.6			
				9400	1880.0	13.6	13.6	0.373	0.373	
				9538	1907.6	13.6	13.4			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 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 2 (BW=20 MHz)

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear	QPSK	on	0	18700	1860	1	0	14.1	14.1	0.813	0.813	
						50	0	13.1	12.9	0.572	0.599	
						100	0	13.1	12.7			
				18900	1880	1	0	14.1	14.1	0.997	0.997	
						50	0	13.1	12.9	0.818	0.857	
						100	0	13.1	12.7	0.783	0.859	
				19100	1900	1	0	14.1	14.1	0.890	0.890	
						50	0	13.1	12.8	0.621	0.668	
						100	0	13.1	12.6			
Edge 1	QPSK	on	0	18700	1860	1	0	14.1	14.1	1.000	1.000	
						50	0	13.1	12.9	0.711	0.745	
						100	0	13.1	12.7			
				18900	1880	1	0	14.1	14.1	1.060	1.060	
						50	0	13.1	12.9	0.913	0.956	
						100	0	13.1	12.7	0.920	1.009	
				19100	1900	1	0	14.1	14.1	1.120	1.120	
						50	0	13.1	12.8	0.782	0.842	
						100	0	13.1	12.6			
Rear/ Edge 1 slant	QPSK	on	0	18700	1860	1	0	14.1	14.1	1.290	1.290	
						50	0	13.1	12.9	0.928	0.972	
						100	0	13.1	12.7			
				18900	1880	1	0	14.1	14.1	1.420	**1.420**	5
						50	0	13.1	12.9	1.190	1.246	
						100	0	13.1	12.7	1.170	1.283	
				19100	1900	1	0	14.1	14.1	1.400	1.400	
						50	0	13.1	12.7	0.987	1.082	
						100	0	13.1	12.6			
Rear/ Edge 4 slant	QPSK	on	0	18900	1880	1	0	14.1	14.1	0.144	0.144	
						50	0	13.1	12.9	0.100	0.105	
						100	0	13.1	12.7			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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.

SAR Test Results for LTE Band 2 continued

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear	QPSK	off	16	18700	1860	1	0	23.5	22.9	0.501	0.575	
						50	0	23.5	22.0	0.396	0.559	
						100	0	23.5	21.9			
				18900	1880	1	0	23.5	23.0	0.868	0.974	
						50	0	23.5	21.9	0.663	0.958	
						100	0	23.5	21.9	0.572	0.827	
				19100	1900	1	0	23.5	23.1	0.538	0.590	
						50	0	23.5	22.4	0.443	0.571	
						100	0	23.5	22.3	0.535	0.705	
Edge 1	QPSK	off	16	18700	1860	1	0	23.5	22.9	0.784	0.900	
						50	0	23.5	22.0	0.604	0.853	
						100	0	23.5	21.9			
				18900	1880	1	0	23.5	23.0	1.120	1.257	
						50	0	23.5	21.9	0.884	1.278	
						100	0	23.5	21.9	0.840	1.214	
				19100	1900	1	0	23.5	23.1	1.140	1.250	
						50	0	23.5	22.4	0.647	0.833	
						100	0	23.5	22.3	0.857	1.130	
Edge 4	QPSK	off	0	18700	1860	1	0	23.5	22.9	0.599	0.688	
						50	0	23.5	22.0	0.489	0.691	
						100	0	23.5	21.9			
				18900	1880	1	0	23.5	23.0	1.040	1.167	
						50	0	23.5	21.9	0.772	1.116	
						100	0	23.5	21.9	0.654	0.945	
				19100	1900	1	0	23.5	23.1	0.595	0.652	
						50	0	23.5	22.4	0.514	0.662	
						100	0	23.5	22.3	0.574	0.757	

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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 $\geq$ 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.

SAR Test Results for LTE Band 2 continued

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	QPSK	on	0	18900	1880	1	0	14.1	14.1	0.600	0.600	
						50	0	13.1	12.9			
						100	0	13.1	12.7			
Rear w/ Type Keyboard	QPSK	on	0	18900	1880	1	0	14.1	14.1	0.458	0.458	
						50	0	13.1	12.9			
						100	0	13.1	12.7			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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 $\geq$ 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 4 (BW=20 MHz)

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear	QPSK	on	0	20050	1720.0	1	49	15.4	15.2	0.897	0.933	
						50	24	14.4	14.1	0.697	0.745	
						100	0	14.4	14.1			
				20175	1732.5	1	0	15.4	15.4	1.040	1.040	
						50	0	14.4	14.2	0.907	0.950	
						100	0	14.4	14.1	0.899	0.963	
				20300	1745.0	1	99	15.4	15.1	0.969	1.048	
						50	50	14.4	14.0	0.766	0.846	
						100	0	14.4	14.0			
Edge 1	QPSK	on	0	20050	1720.0	1	49	15.4	15.2	0.809	0.841	
						50	24	14.4	14.1	0.636	0.680	
						100	0	14.4	14.1			
				20175	1732.5	1	0	15.4	15.4	0.914	0.914	
						50	0	14.4	14.2	0.746	0.781	
						100	0	14.4	14.1	0.770	0.825	
				20300	1745.0	1	99	15.4	15.1	0.918	0.993	
						50	50	14.4	14.0	0.728	0.804	
						100	0	14.4	14.0			
Rear/ Edge 1 slant	QPSK	on	0	20050	1720.0	1	49	15.4	15.2	1.100	1.144	
						50	24	14.4	14.1	0.869	0.929	
						100	0	14.4	14.1			
				20175	1732.5	1	0	15.4	15.4	1.240	**1.240**	6
						50	0	14.4	14.2	1.060	1.110	
						100	0	14.4	14.1	1.060	1.136	
				20300	1745.0	1	99	15.4	15.1	1.230	1.330	
						50	50	14.4	14.0	0.979	1.081	
						100	0	14.4	14.0			
Rear/ Edge 4 slant	QPSK	on	0	20175	1732.5	1	0	15.4	15.4	0.188	0.188	
						50	0	14.4	14.2	0.151	0.158	
						100	0	14.4	14.1			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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.

SAR Test Results for LTE Band 4 continued

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear	QPSK	off	16	20175	1732.5	1	0	23.8	23.8	0.658	0.658	
						50	0	22.8	22.8	0.560	0.560	
						100	0	22.8	22.7			
Edge 1	QPSK	off	16	20175	1732.5	1	0	23.8	23.8	0.679	0.679	
						50	0	22.8	22.8	0.563	0.563	
						100	0	22.8	22.7			
Edge 4	QPSK	off	0	20050	1720.0	1	49	23.8	23.8	1.220	1.220	
						50	0	22.8	22.8	0.848	0.848	
						100	0	22.8	22.7			
				20175	1732.5	1	0	23.8	23.8	1.230	1.230	
						50	0	22.8	22.8	1.070	1.070	
						100	0	22.8	22.7	0.966	0.984	
				20300	1745.0	1	99	23.8	23.8	0.893	0.893	
						50	50	22.8	22.6	0.673	0.711	
						100	0	22.8	22.6			

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	QPSK	on	0	20175	1732.5	1	0	15.4	15.4	0.590	0.590	
						50	0	14.4	14.2			
						100	0	14.4	14.1			
Rear w/ Type Keyboard	QPSK	on	0	20175	1732.5	1	0	15.4	15.4	0.449	0.449	
						50	0	14.4	14.2			
						100	0	14.4	14.1			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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.

12.7. LTE Band 5 (BW=10 MHz)

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear	QPSK	on	0	20450	829.0	1	49	20.3	20.1	1.000	1.047	
						25	0	19.3	19.3	1.120	1.120	
						50	0	19.3	19.3			
				20525	836.6	1	0	20.3	20.3	1.020	1.020	
						25	0	19.3	19.3	0.889	0.889	
						50	0	19.3	19.3	0.932	0.932	
				20600	844.0	1	0	20.3	20.3	1.390	**1.390**	7
						25	0	19.3	19.3	0.964	0.964	
						50	0	19.3	19.3			
Edge 1	QPSK	on	0	20525	836.6	1	0	20.3	20.3	0.605	0.605	
						25	0	19.3	19.3	0.495	0.495	
						50	0	19.3	19.3			
Rear/ Edge 1 slant	QPSK	on	0	20450	829.0	1	49	20.3	20.1	0.791	0.828	
						25	0	19.3	19.3	0.756	0.756	
						50	0	19.3	19.3			
				20525	836.6	1	0	20.3	20.3	0.812	0.812	
						25	0	19.3	19.3	0.686	0.686	
						50	0	19.3	19.3	0.698	0.698	
				20600	844.0	1	0	20.3	20.3	0.951	0.951	
						25	0	19.3	19.3	0.712	0.712	
						50	0	19.3	19.3			
Rear/ Edge 4 slant	QPSK	on	0	20525	836.6	1	0	20.3	20.3	0.410	0.410	
						25	0	19.3	19.3	0.296	0.296	
						50	0	19.3	19.3			
Rear	QPSK	off	16	20600	844.0	1	0	23.2	23.2	0.462	0.462	
						25	0	22.2	21.9	0.368	0.392	
						50	0	22.2	22.1			
Edge 1	QPSK	off	16	20600	844.0	1	0	23.2	23.2	0.294	0.294	
						25	0	22.2	21.9	0.235	0.252	
						50	0	22.2	22.1			
Edge 4	QPSK	off	16	20600	844.0	1	0	23.2	23.2	0.659	0.659	
						25	0	22.2	21.9	0.504	0.540	
						50	0	22.2	22.1			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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 $\geq$ 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.

SAR Test Results for LTE Band 5 continued

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	QPSK	on	0	20600	844	1	0	20.3	20.30	0.713	0.713	
						25	0	19.3	19.30			
						50	0	19.3	19.30			
Rear w/ Type Keyboard	QPSK	on	0	20600	844	1	0	20.3	20.30	0.558	0.558	
						25	0	19.3	19.30			
						50	0	19.3	19.30			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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.

12.8. LTE Band 17 (BW=10 MHz)

Test Position	Mode	Pwr Back-off	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear	QPSK	on	0	23790	710.0	1	0	21.2	21.2	1.350	**1.350**	**8***
						25	25	20.2	20.0	0.754	0.799	
						50	0	20.2	19.9			
Edge 1	QPSK	on	0	23790	710.0	1	0	21.2	21.2	0.536	0.536	
						25	25	20.2	20.0	0.485	0.514	
						50	0	20.2	19.9			
Rear/ Edge 1 slant	QPSK	on	0	23790	710.0	1	0	21.2	21.2	1.060	1.060	
						25	25	20.2	20.0	0.780	0.826	
						50	0	20.2	19.9			
Rear/ Edge 4 slant	QPSK	on	0	23790	710.0	1	0	21.2	21.2	0.356	0.356	
						25	25	20.2	20.0	0.248	0.263	
						50	0	20.2	19.9			
Rear	QPSK	off	16	23790	710.0	1	0	23.3	23.3	0.323	0.324	
						25	25	22.3	22.3	0.184	0.186	
						50	0	22.3	22.3			
Edge 1	QPSK	off	16	23790	710.0	1	0	23.3	23.3	0.176	0.177	
						25	25	22.3	22.3	0.121	0.122	
						50	0	22.3	22.3			
Edge 4	QPSK	off	16	23790	710.0	1	0	23.3	23.3	0.558	0.561	
						25	25	22.3	22.3	0.218	0.220	
						50	0	22.3	22.3			

***:** The worst-case SAR configuration for LTE Band 17 is not the initial measurement shown here, but a repeated measurement with a value of 1.44 W/kg. The repeated result was therefore used to represent LTE Band 17 in the worst-case SAR plots submitted, and is also the value used for simultaneous transmission SAR analysis in the corresponding test position.

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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.

SAR Test Results for LTE Band 17 continued

With Keyboard Attached

Test Position	Mode	Pwr Reduction	Dist. (mm)	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Rear w/ Touch Keyboard	QPSK	on	0	23790	710	1	0	21.2	21.2	0.941	0.941	
						25	25	20.2	20.0			
						50	0	20.2	19.9			
Rear w/ Type Keyboard	QPSK	on	0	23790	710	1	0	21.2	21.2	0.575	0.575	
						25	25	20.2	20.0			
						50	0	20.2	19.9			

Note(s):

1. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 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
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
2. Per KDB 941225 D05 SAR for LTE Devices, 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. SAR Measurement Variability

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.

13.1. The Highest Measured SAR Configuration in Each Frequency Band

Frequency Band (MHz)	Air Interface	Stand-alone	Repeated SAR (Yes/No)
700	LTE Band 17	1.35 W/kg	Yes
850	GSM 850	1.36 W/kg	No
	W-CDMA Band V	1.43 W/kg	Yes
	LTE Band 5	1.39 W/kg	No
1700	LTE Band 4	1.24 W/kg	Yes
1900	GSM 1900	1.41 W/kg	No
	W-CDMA Band II	1.38 W/kg	No
	LTE Band 2	1.42 W/kg	Yes

13.2. Repeated Measurement Results

Frequency band	Test Position	Mode	Pwr Back-off	Dist. (mm)	Ch #.	Freq. (MHz)	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
							Original	Repeated	
LTE Band 17	Rear	QPSK RB1/0	on	0	23790	710.0	1.350	1.440	1.07
W-CDMA Band V	Rear	RMC Rel. 99	on	0	4132	826.4	1.430	1.350	1.06
LTE Band 4	Rear/Edge 1 slant	QPSK RB1/0	on	0	20175	1732.5	1.240	1.240	1.00
LTE Band 2	Rear/Edge 1 slant	QPSK RB1/0	on	0	18900	1880.0	1.420	1.350	1.05

Note(s):

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.

14. Simultaneous Transmission SAR Analysis

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

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

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

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

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

A new threshold of 0.04 is also introduced in the draft KDB. Thus, in order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri < 0.04$$

14.1. Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR estimation

1. When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
2. Dedicated Host Approach criteria for SAR test exclusion is likewise applied to SAR estimation, with certain distinctions between test exclusion and SAR estimation:
   - When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied for SAR estimation; this is the same between test exclusion and SAR estimation calculations.
   - When the separation distance from the antenna to an adjacent edge is > 5 mm but ≤ 50 mm, the actual antenna-to-edge separation distance is applied for SAR estimation.
   - When the minimum test separation distance is > 50 mm, the estimated SAR value is 0.4 W/kg
3. Test positions Edge 2 and Edge 3 are inherently compliant as they consist of only estimated SAR values for all applicable transmitters and consequently will always have sum of SAR values < 1.2 W/kg. Simultaneous transmission SAR analysis was therefore not performed for these two test positions.
4. All Wi-Fi and Bluetooth SAR values- measured or estimated- used in this report were taken from SAR report 13U15414-10B, submitted under **FCC ID C3K1572**

14.1.1. Estimated SAR for WWAN

Antenna	Tx Interface	Freq. (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Full Power, Proximity Sensor Off. A sensor triggering of 16 mm is included for both Rear and Edge 1.																
Cellular	GPRS 2 Slots	836.6	32.00	396	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	GPRS 2 Slots	1880	29.00	199	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	W-CDMA V	836.6	23.50	224	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	W-CDMA II	1880	23.50	224	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	LTE Band 2	1880	24.50	282	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	LTE Band 4	1732.5	24.50	282	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	LTE Band 5	836.6	24.50	282	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A
Cellular	LTE Band 17	710	23.50	224	17.18	20	194.3	155.7	14.4		-MEASURE-	-MEASURE-	0.400	0.400	-MEASURE-	N/A

14.2. Sum of the SAR for GSM850, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			GSM 850	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	1.392	1.355			2.747	**Yes**
		WWAN + Wi-Fi (UNII)	1.392		1.372		2.764	**Yes**
		WWAN + BT	1.392			0.165	1.557	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	1.085	0.425			1.510	No
		WWAN + Wi-Fi 1(UNII)	1.085		0.336		1.421	No
		WWAN + BT	1.085			0.165	1.250	No
	Edge 4	WWAN + Wi-Fi (DTS)	0.382	0.400			0.782	No
		WWAN + Wi-Fi 1(UNII)	0.382		0.400		0.782	No
		WWAN + Wi-Fi (UNII)	0.382			0.400	0.782	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	0.224	0.389			0.613	No
		WWAN + Wi-Fi 1(UNII)	0.224		0.407		0.631	No
		WWAN + BT	0.224			0.165	0.389	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.367	0.400			0.767	No
		WWAN + Wi-Fi (UNII)	0.367		0.400		0.767	No
		WWAN + BT	0.367			0.400	0.767	No

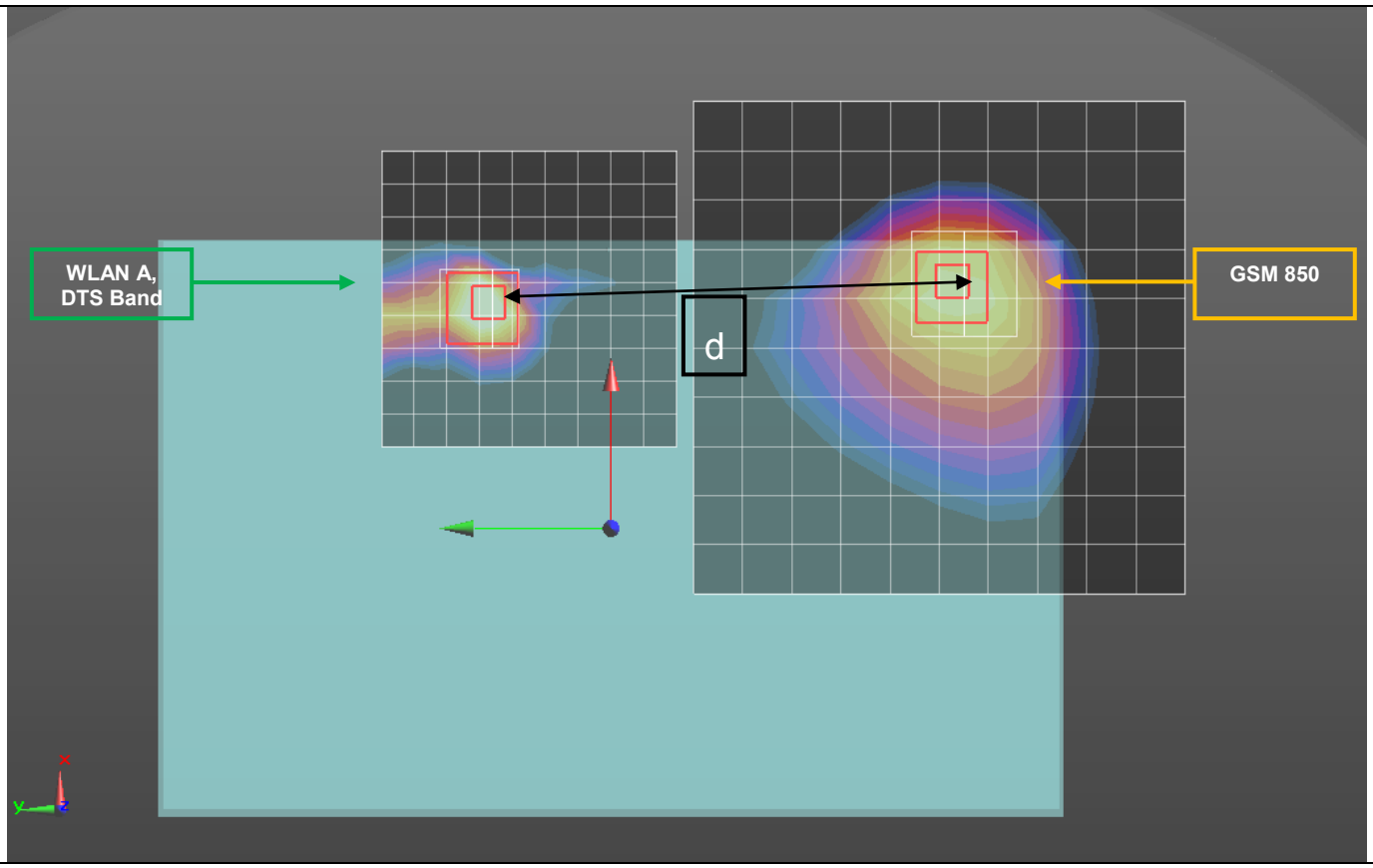
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			GSM 850	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
1	Rear	WWAN + Wi-Fi (DTS)	1.392	1.355			2.747	142.2	0.032	No	1
		WWAN + Wi-Fi (UNII)	1.392		1.372		2.764	143.7	0.032	No	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.

Figure (1)



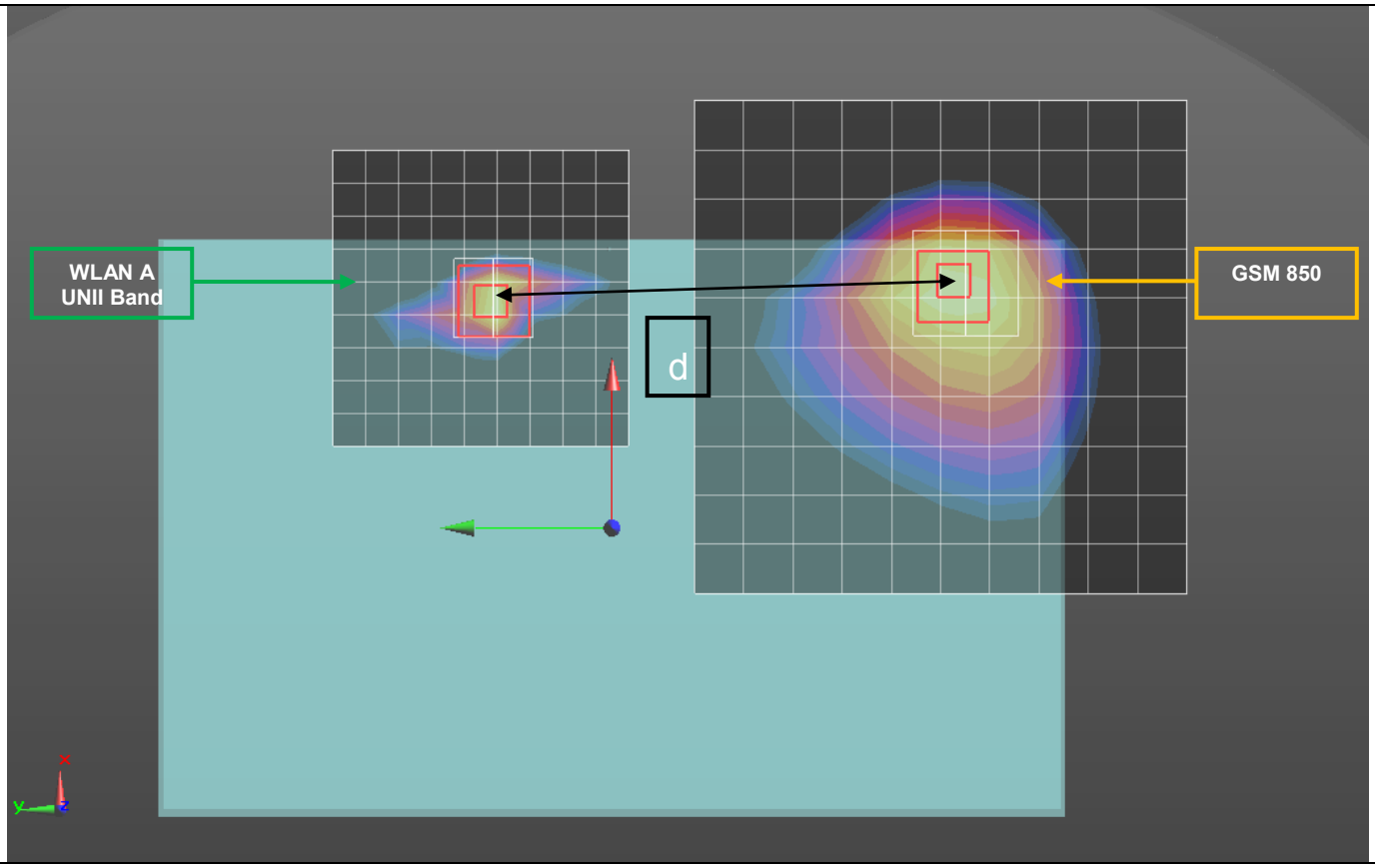
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM850	2.37	0.0745	-0.106	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	142.2

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM850	2.37	0.0745	-0.106	-0.183
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	143.7

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.3. Sum of the SAR for GSM1900, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			GSM 1900	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	0.823	1.355			2.178	**Yes**
		WWAN + Wi-Fi (UNII)	0.823		1.372		2.195	**Yes**
		WWAN + BT	0.823			0.165	0.988	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	1.120	0.425			1.545	No
		WWAN + Wi-Fi 1(UNII)	1.120		0.336		1.456	No
		WWAN + BT	1.120			0.165	1.285	No
	Edge 4	WWAN + Wi-Fi (DTS)	0.183	0.400			0.583	No
		WWAN + Wi-Fi 1(UNII)	0.183		0.400		0.583	No
		WWAN + Wi-Fi (UNII)	0.183			0.400	0.583	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.410	0.389			1.799	**Yes**
		WWAN + Wi-Fi 1(UNII)	1.410		0.407		1.817	**Yes**
		WWAN + BT	1.410			0.165	1.575	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.080	0.400			0.480	No
		WWAN + Wi-Fi (UNII)	0.080		0.400		0.480	No
		WWAN + BT	0.080			0.400	0.480	No

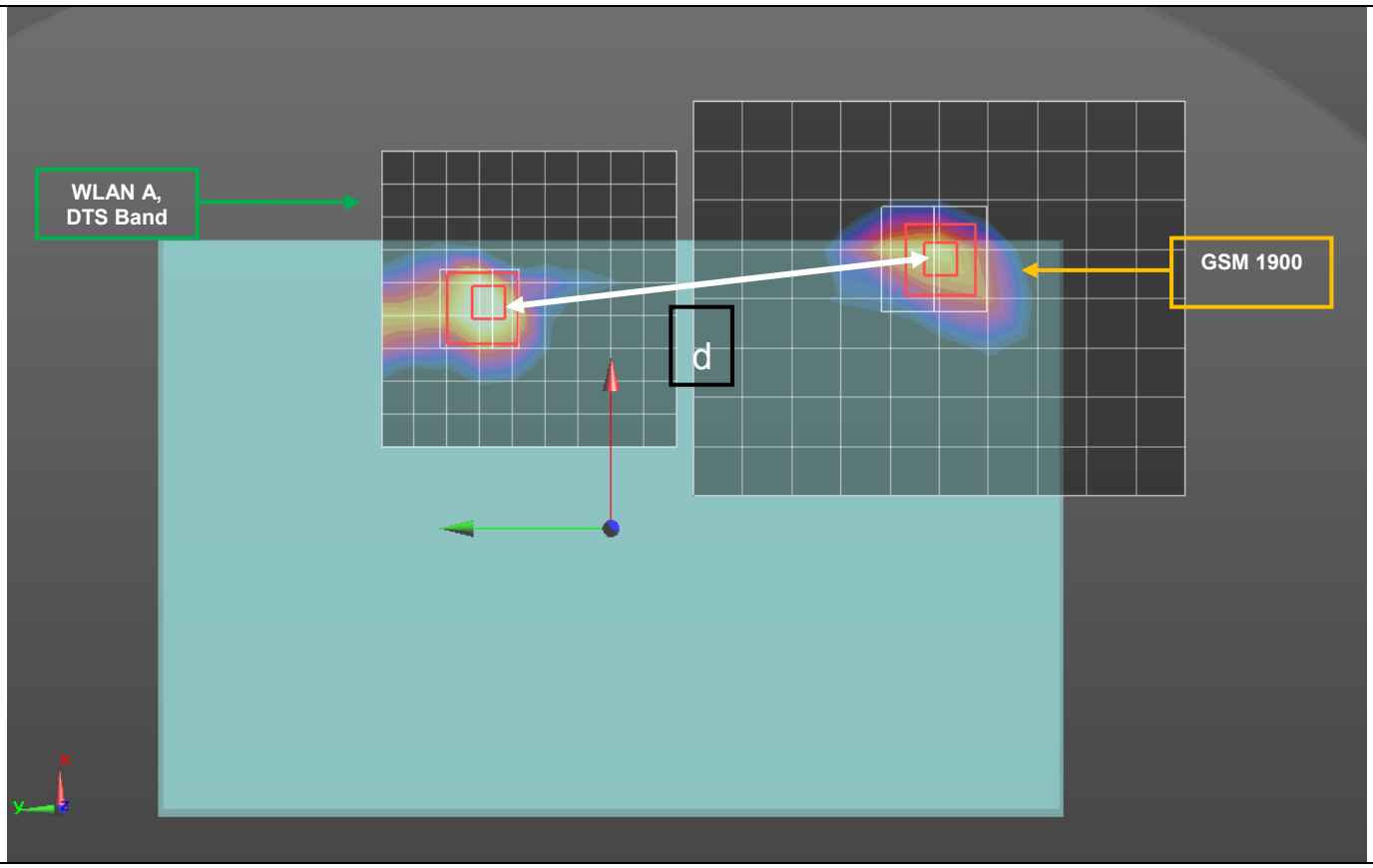
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			GSM1900	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
2	Rear	WWAN + Wi-Fi (DTS)	0.823	1.355			2.178	136.6	0.024	No	1
		WWAN + Wi-Fi (UNII)	0.823		1.372		2.195	138.2	0.024	No	2
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.410	0.389			1.799	150.7	0.016	No	3
		WWAN + Wi-Fi (UNII)	1.410		0.407		1.817	159.6	0.015	No	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.

Figure (1)



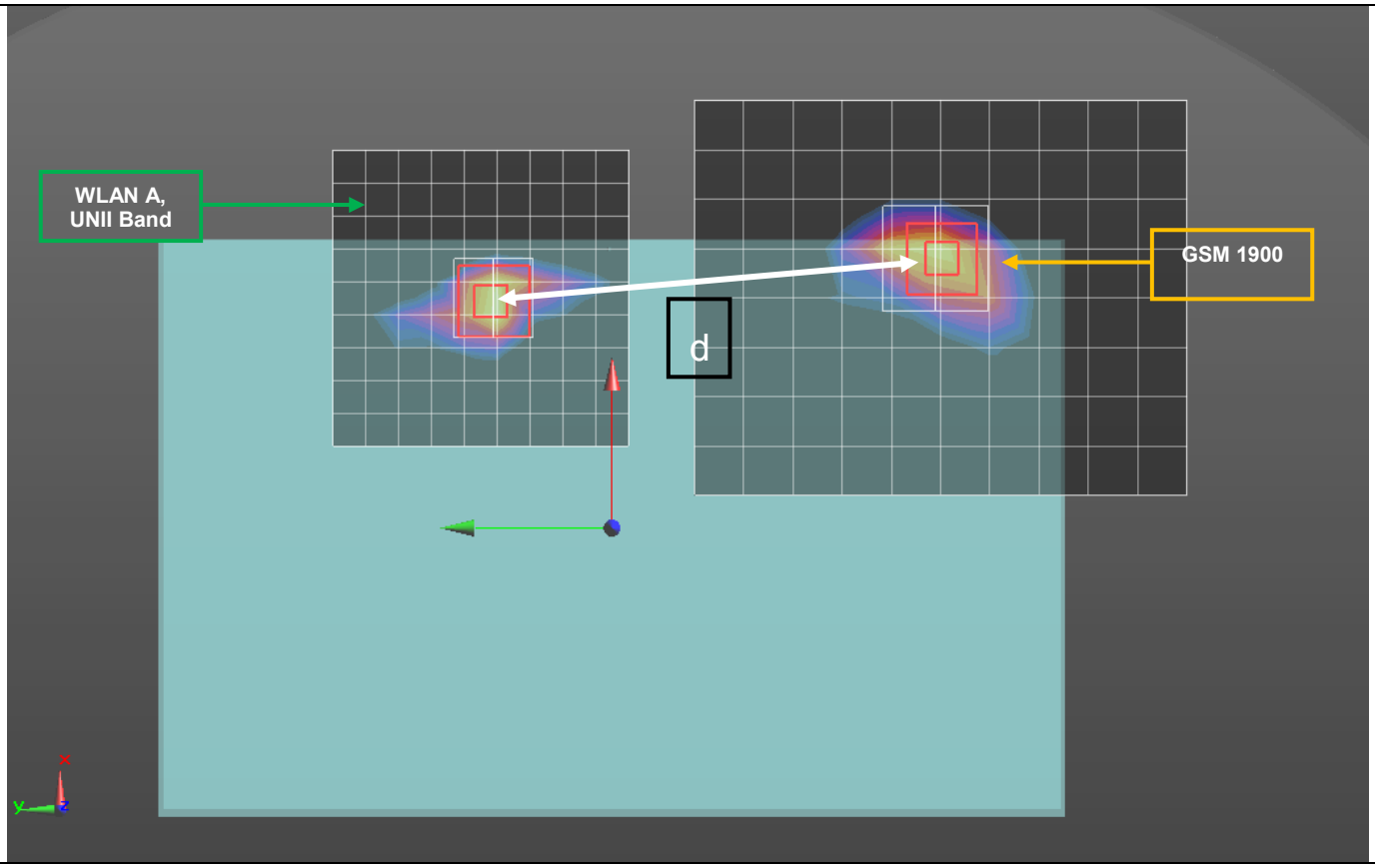
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM1900	1.69	0.082	-0.1	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A W-Fi DTS	136.6

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



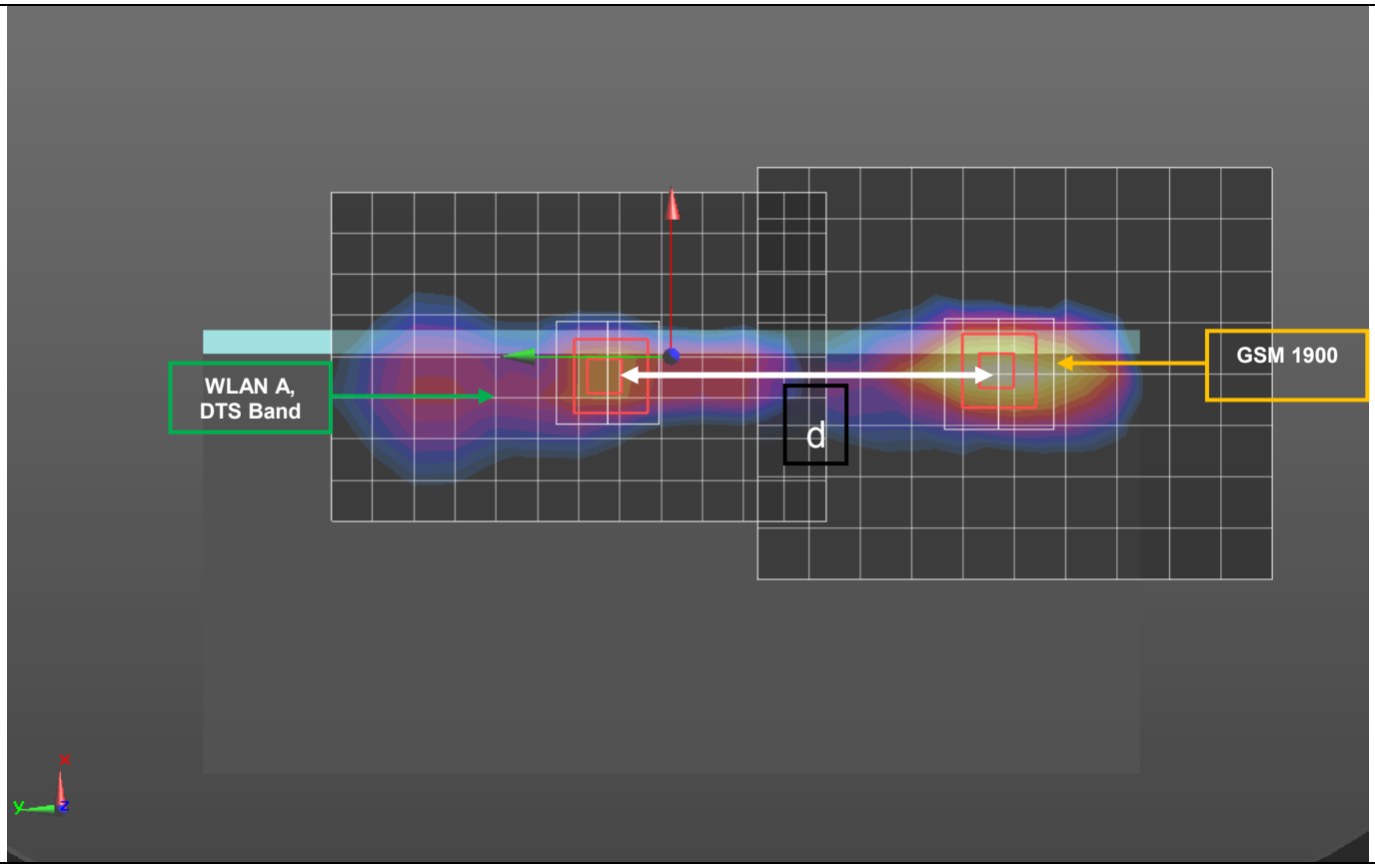
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM1900	3.23	-0.005	-0.0955	-0.184
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	152.4

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (3)



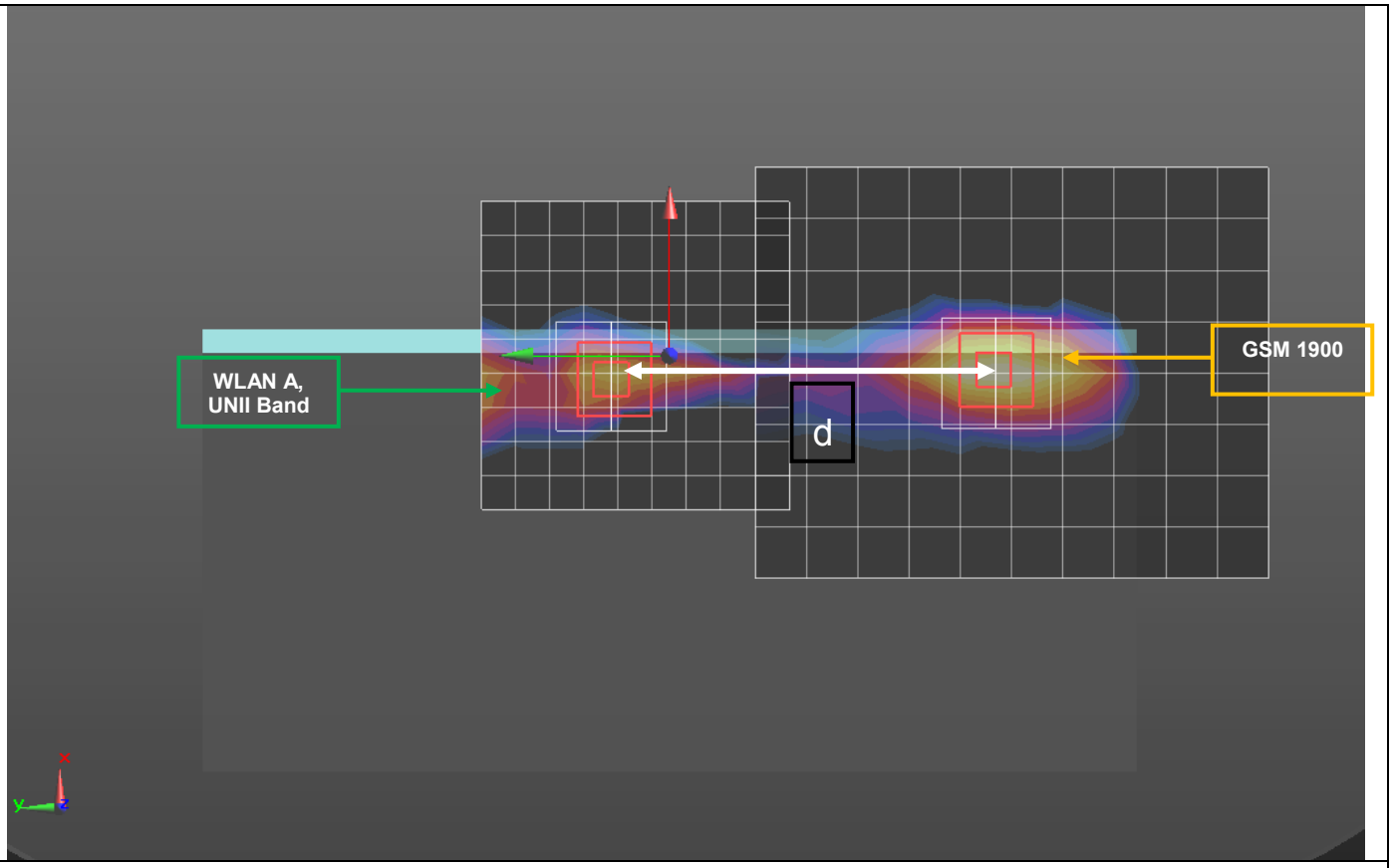
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM1900	3.23	-0.005	-0.0955	-0.184
WLAN A, Wi-Fi DTS Band	2.96	0.075	0.0322	-0.182

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	150.7

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (4)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
GSM1900	1.69	0.082	-0.1	-0.183
WLAN A, Wi-Fi UNII Band	3.79	-0.022	0.021	-0.184

d: Calculated distance (mm)	WWAN TO WLAN A Wi-Fi UNII	159.6

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.4. Sum of the SAR for W-CDMA Band V, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			W-CDMA Band V	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	1.430	1.355			2.785	**Yes**
		WWAN + Wi-Fi (UNII)	1.430		1.372		2.802	**Yes**
		WWAN + BT	1.430			0.165	1.595	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	0.633	0.425			1.058	No
		WWAN + Wi-Fi 1(UNII)	0.633		0.336		0.969	No
		WWAN + BT	0.633			0.165	0.798	No
	Edge 4	WWAN + Wi-Fi (DTS)	0.550	0.400			0.950	No
		WWAN + Wi-Fi 1(UNII)	0.550		0.400		0.950	No
		WWAN + BT	0.550			0.400	0.950	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	0.702	0.389			1.091	No
		WWAN + Wi-Fi 1(UNII)	0.702		0.407		1.109	No
		WWAN + BT	0.702			0.165	0.867	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.420	0.400			0.820	No
		WWAN + Wi-Fi (UNII)	0.420		0.400		0.820	No
		WWAN + BT	0.420			0.400	0.820	No

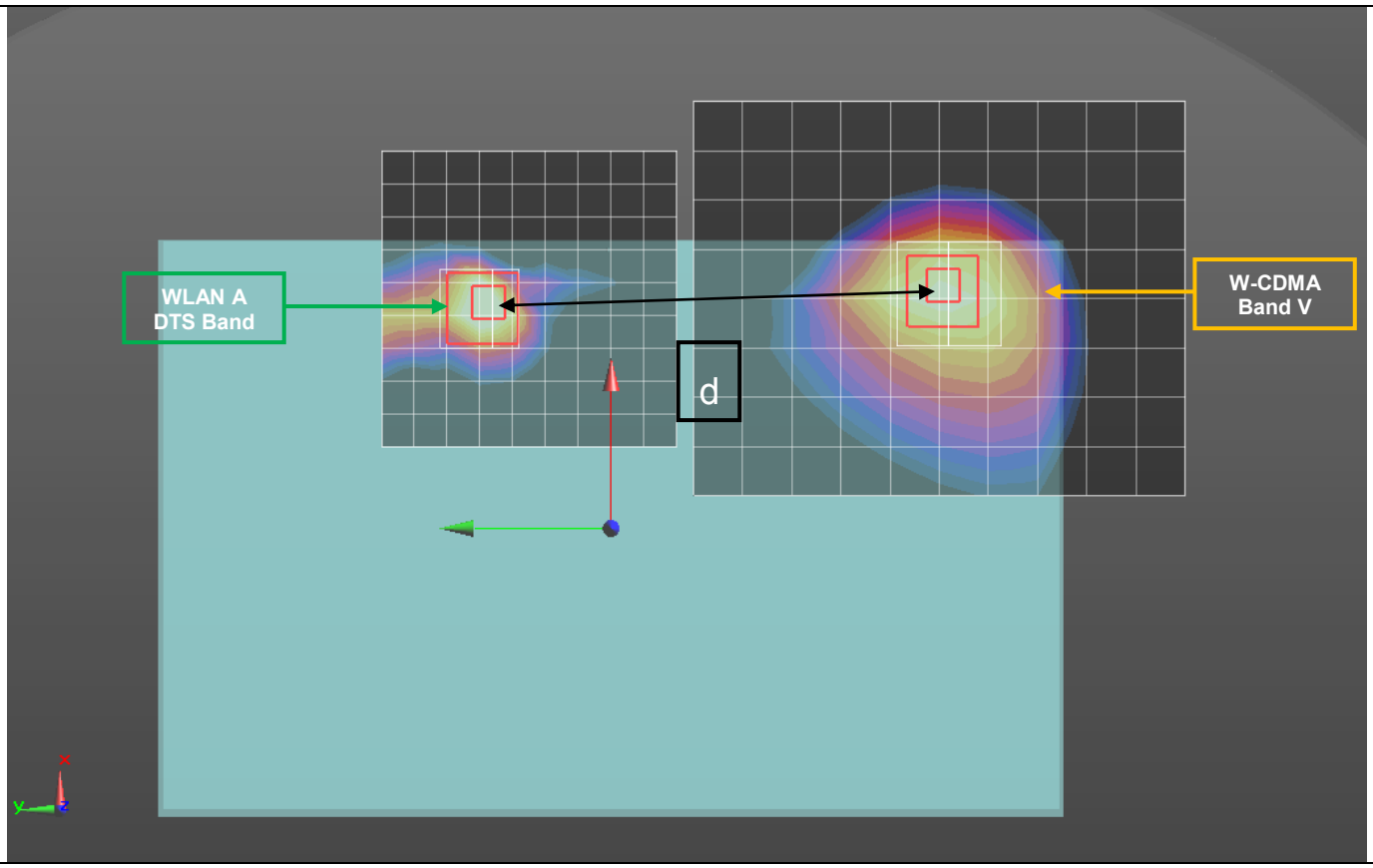
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			W-CDMA Band V	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
3	Rear	WWAN + Wi-Fi (DTS)	1.430	1.355			2.785	139.2	0.033	No	1
		WWAN + Wi-Fi (UNII)	1.430		1.372		2.802	140.7	0.033	No	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.

Figure (1)



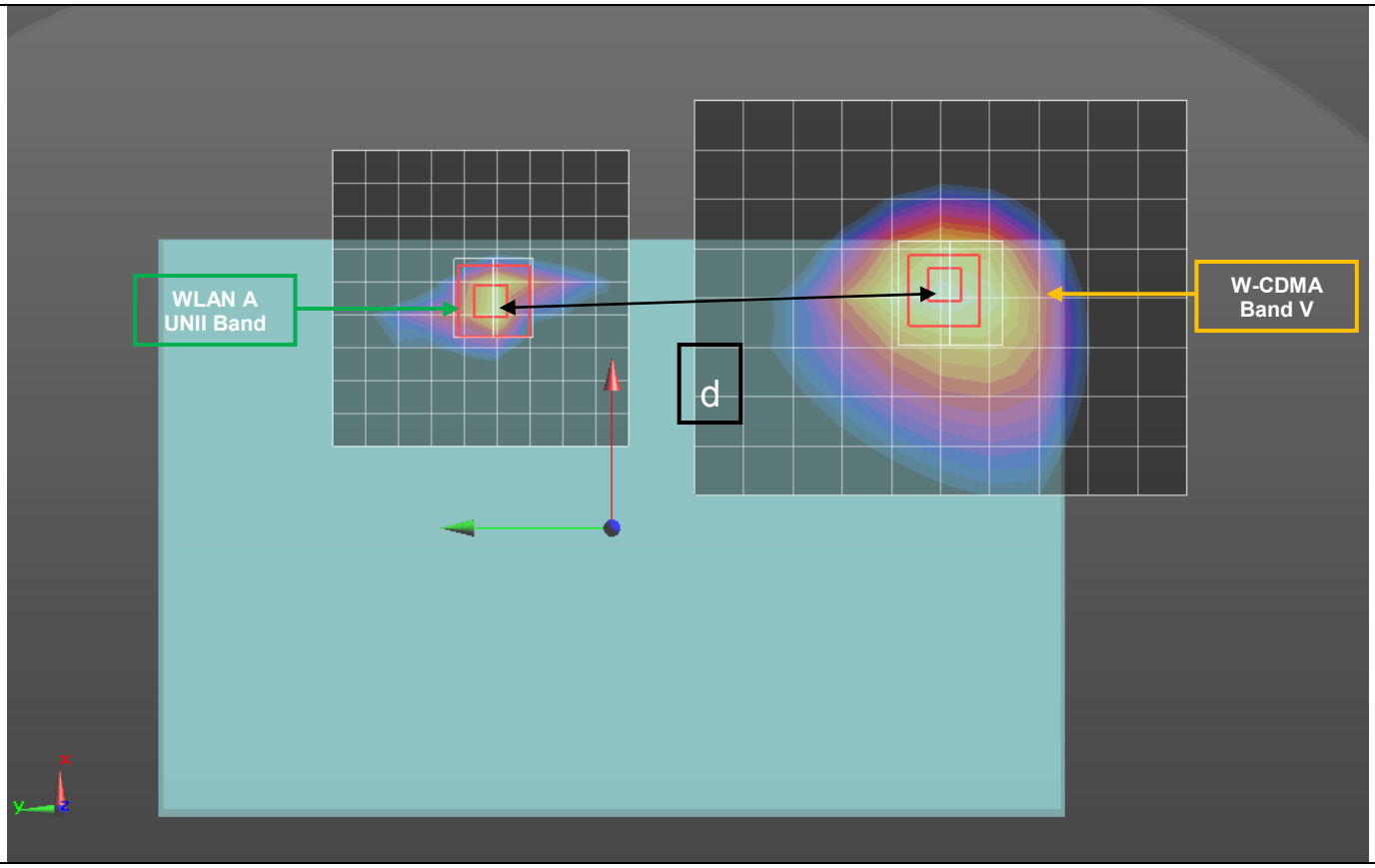
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band V	2.57	0.0747	-0.103	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	139.2

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band V	2.57	0.0747	-0.103	-0.183
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	140.7

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.5. Sum of the SAR for W-CDMA Band II, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			W-CDMA Band II	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	0.939	1.355			2.294	**Yes**
		WWAN + Wi-Fi (UNII)	0.939		1.372		2.311	**Yes**
		WWAN + BT	0.939			0.165	1.104	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	1.150	0.425			**1.575**	No
		WWAN + Wi-Fi 1(UNII)	1.150		0.336		1.486	No
		WWAN + BT	1.150			0.165	1.315	No
	Edge 4	WWAN + Wi-Fi (DTS)	0.677	0.400			1.077	No
		WWAN + Wi-Fi 1(UNII)	0.677		0.400		1.077	No
		WWAN + Wi-Fi (UNII)	0.677			0.400	1.077	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.380	0.389			1.769	**Yes**
		WWAN + Wi-Fi 1(UNII)	1.380		0.407		1.787	**Yes**
		WWAN + BT	1.380			0.165	1.545	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.096	0.400			0.496	No
		WWAN + Wi-Fi (UNII)	0.096		0.400		0.496	No
		WWAN + BT	0.096			0.400	0.496	No

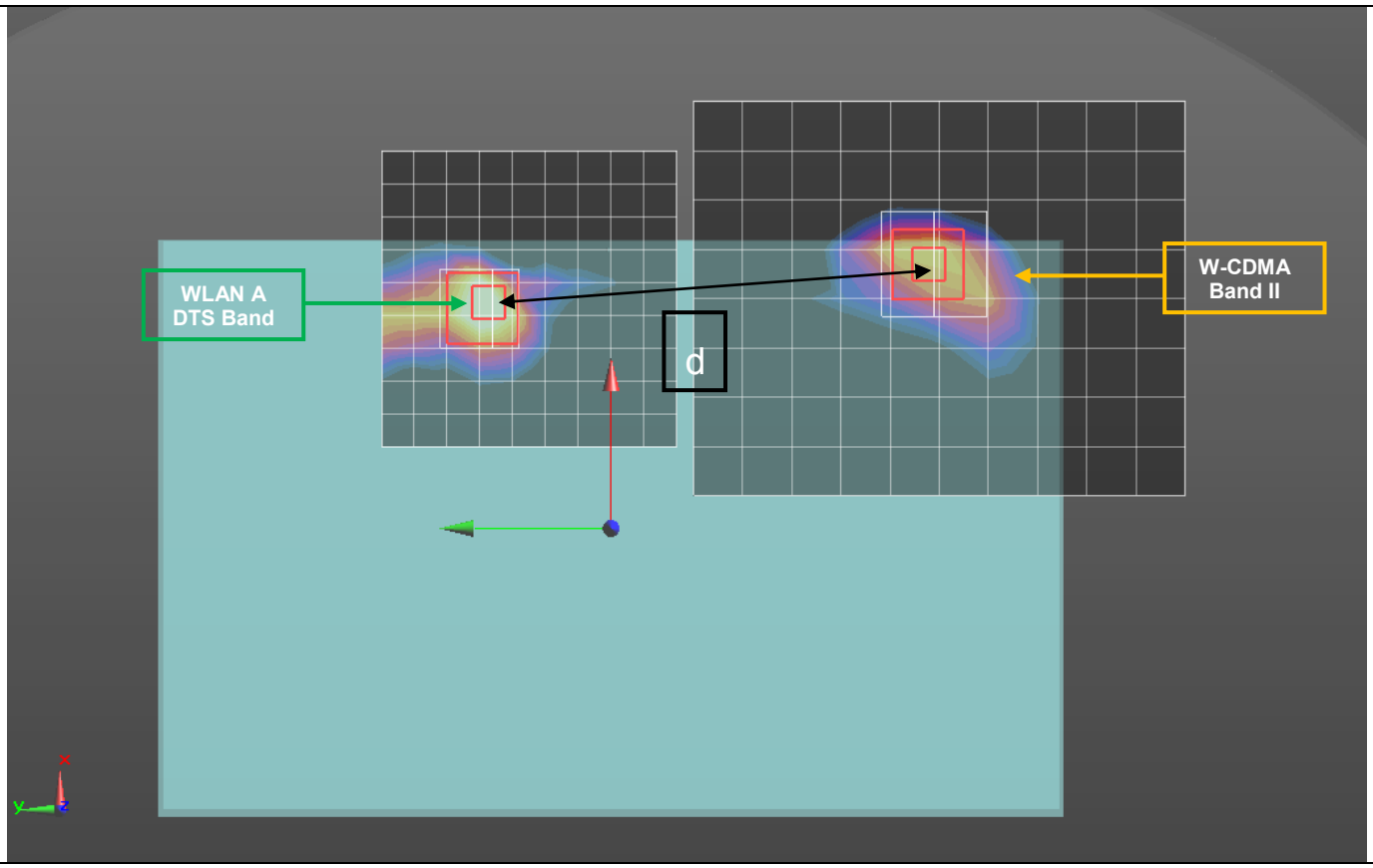
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			W-CDMA Band II	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
4	Rear	WWAN + Wi-Fi (DTS)	0.939	1.355			2.294	135.0	0.026	No	1
		WWAN + Wi-Fi (UNII)	0.939		1.372		2.311	136.6	0.026	No	2
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.380	0.389			1.769	149.5	0.016	No	3
		WWAN + Wi-Fi (UNII)	1.380		0.407		1.787	116.3	0.021	No	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.

Figure (1)



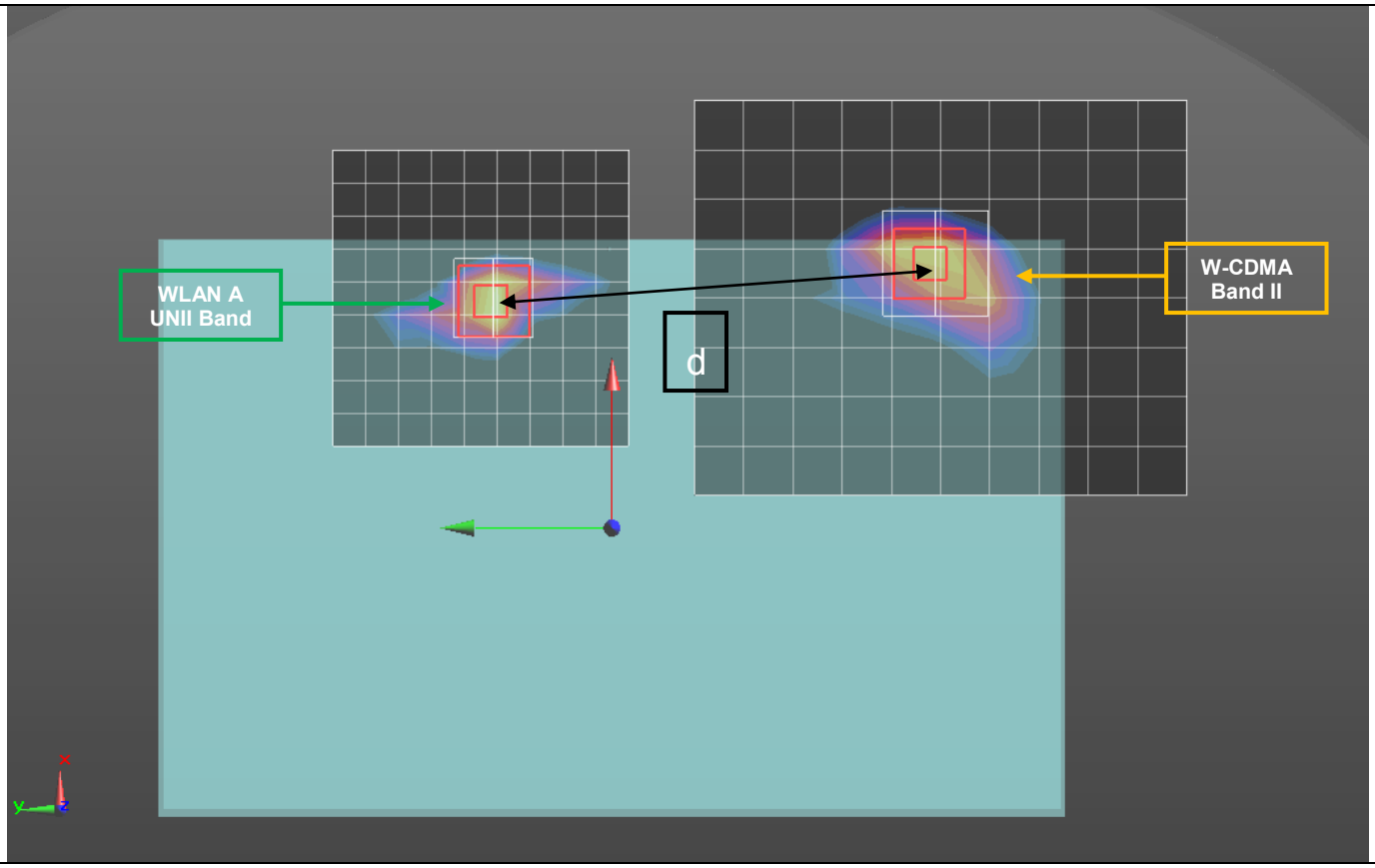
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band II	1.86	0.0805	-0.0985	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	135.0

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band II	1.86	0.0805	-0.0985	-0.183
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	136.6

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

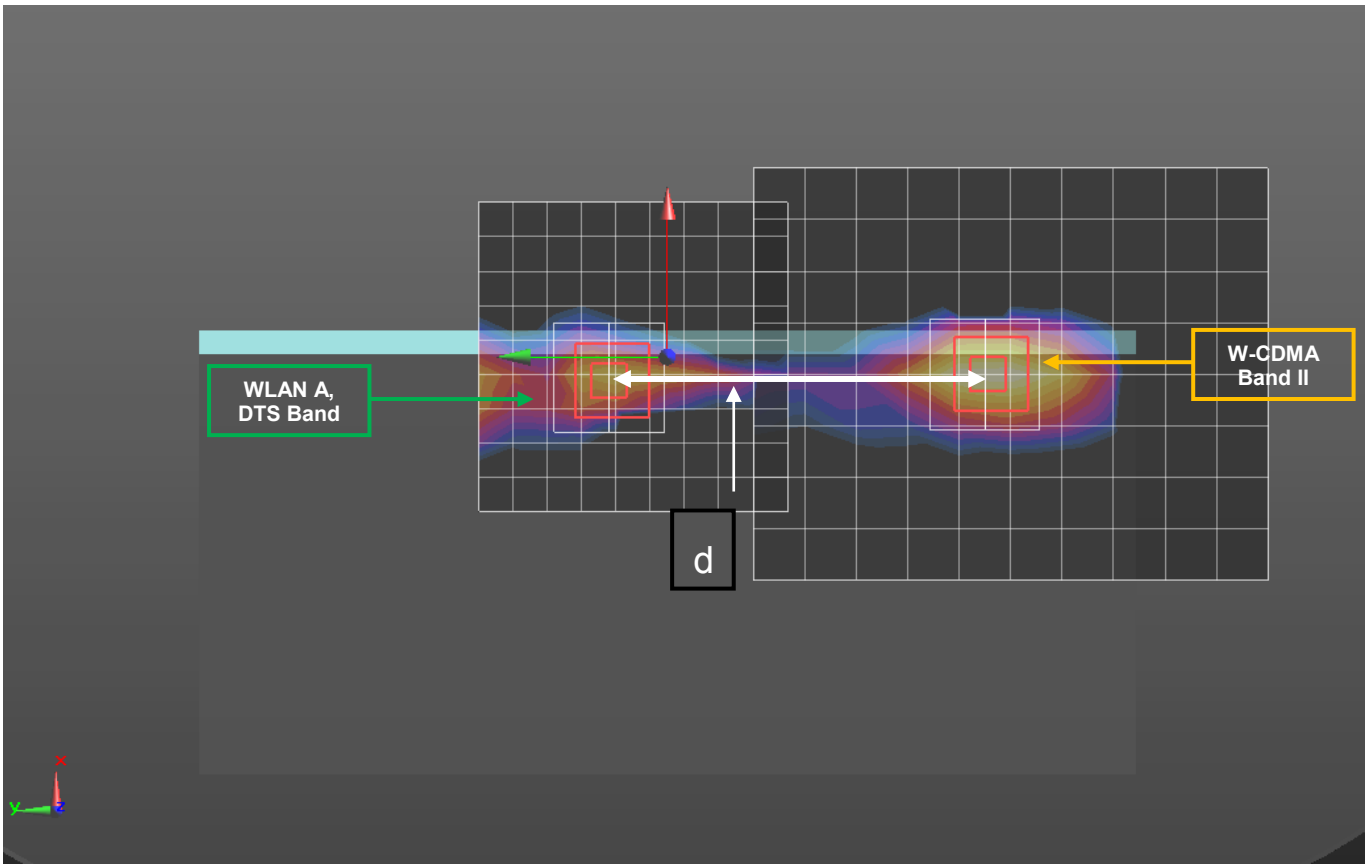


Figure (3)

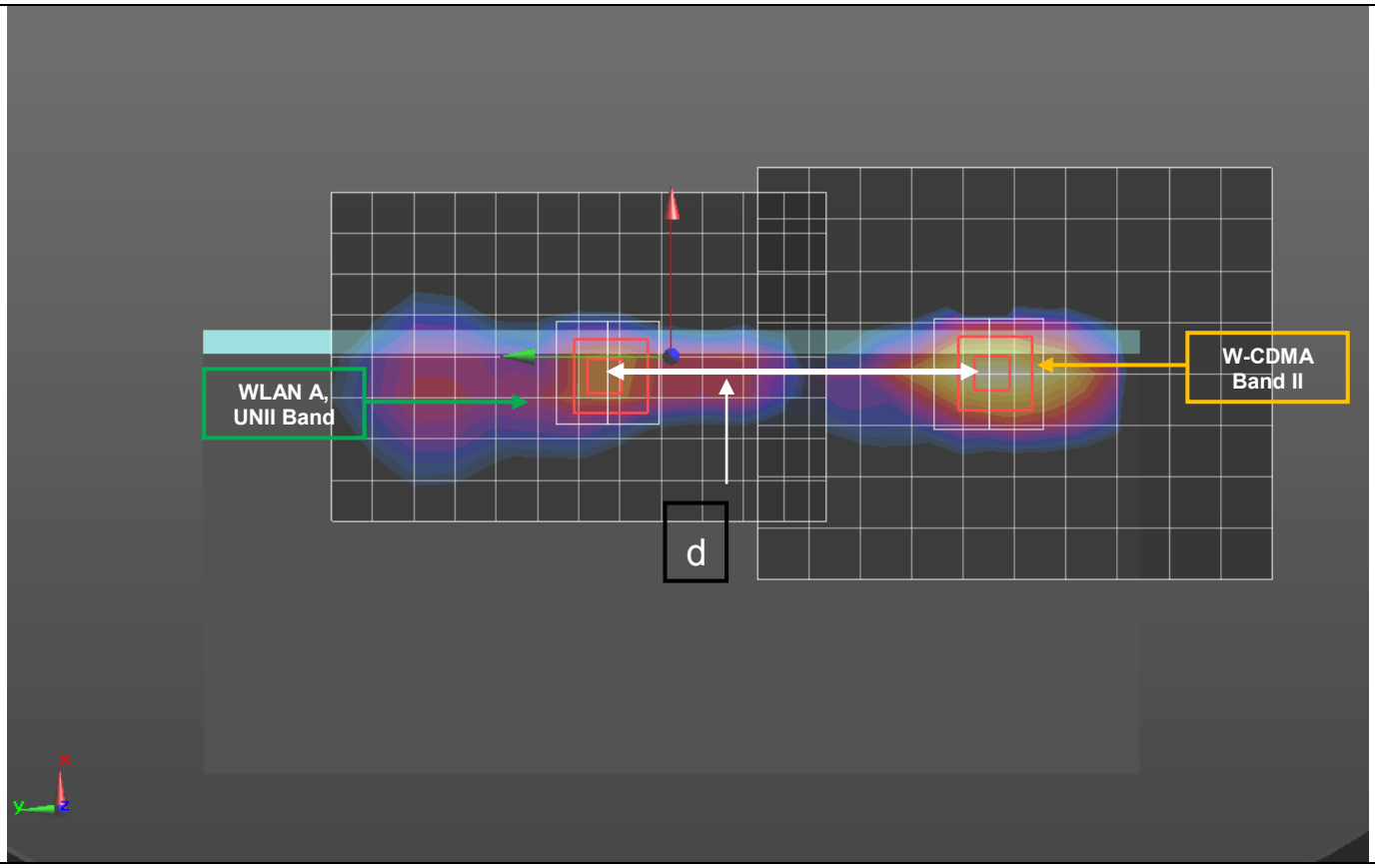
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band II	3.2	-0.005	-0.0941	-0.184
WLAN A, Wi-Fi DTS Band	2.96	0.075	0.0322	-0.182

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	149.5

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (4)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
W-CDMA Band II	3.2	-0.005	-0.0941	-0.184
WLAN A, Wi-Fi UNII Band	3.79	-0.022	0.021	-0.184

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	116.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.6. Sum of the SAR for LTE Band 2, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			LTE Band 2	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	0.997	1.355			2.352	**Yes**
		WWAN + Wi-Fi (UNII)	0.997		1.372		2.369	**Yes**
		WWAN + BT	0.997			0.165	1.162	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	1.278	0.425			1.703	**Yes**
		WWAN + Wi-Fi 1(UNII)	1.278		0.336		1.614	**Yes**
		WWAN + BT	1.278			0.165	1.443	No
	Edge 4	WWAN + Wi-Fi (DTS)	1.064	0.400			1.464	No
		WWAN + Wi-Fi 1(UNII)	1.064		0.400		1.464	No
		WWAN + BT	1.064			0.400	1.464	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.420	0.389			1.809	**Yes**
		WWAN + Wi-Fi 1(UNII)	1.420		0.407		1.827	**Yes**
		WWAN + BT	1.420			0.165	1.585	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.144	0.400			0.544	No
		WWAN + Wi-Fi (UNII)	0.144		0.400		0.544	No
		WWAN + BT	0.144			0.400	0.544	No

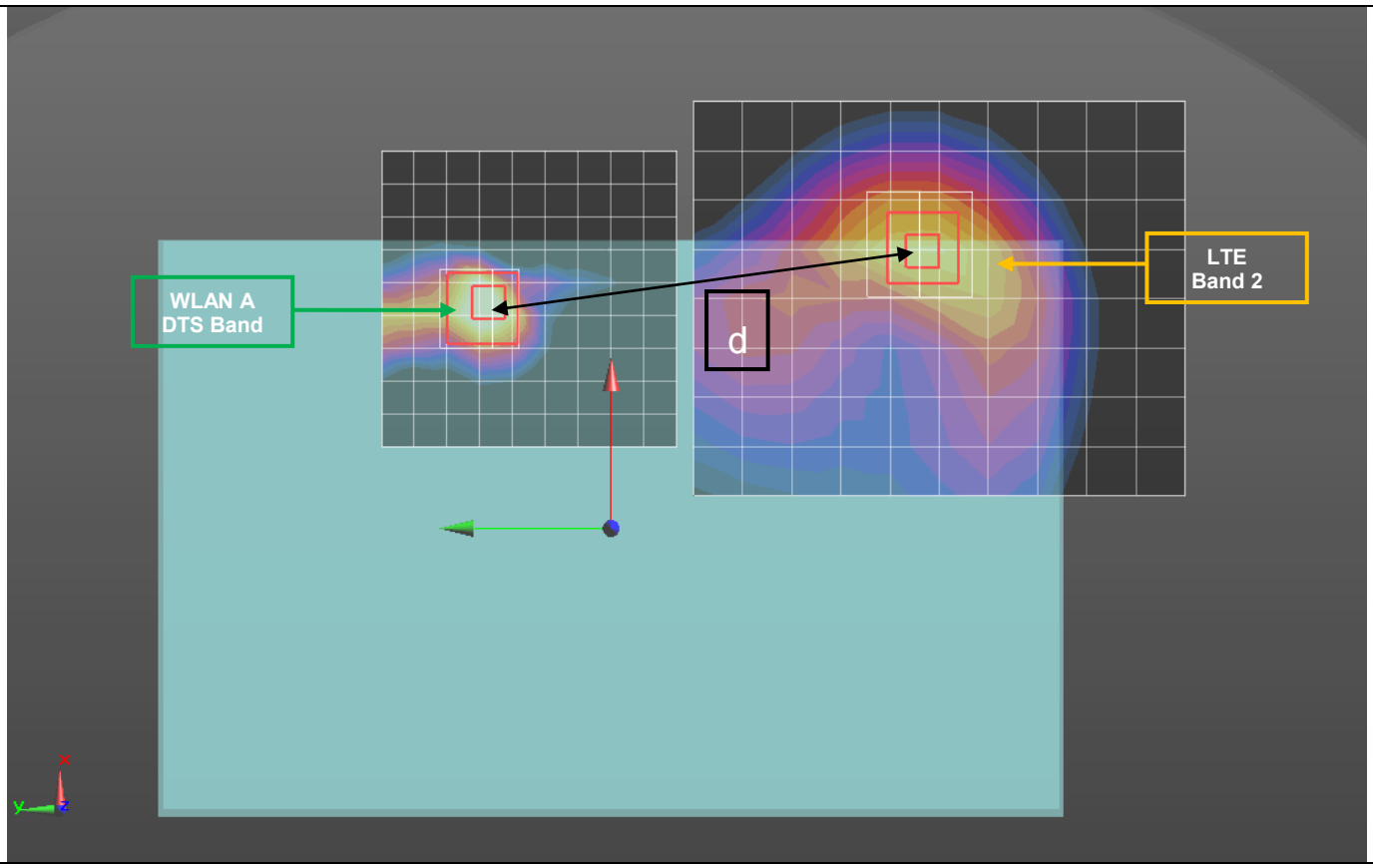
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			LTE Band 2	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
5	Rear	WWAN + Wi-Fi (DTS)	0.997	1.355			2.352	132.5	0.027	No	1
		WWAN + Wi-Fi (UNII)	0.997		1.372		2.369	134.1	0.027	No	2
	Edge 1	WWAN + Wi-Fi (DTS)	1.278	0.425			1.703	114.3	0.019	No	3
		WWAN + Wi-Fi (UNII)	1.278		0.336		1.614	102.8	0.020	No	4
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.420	0.389			1.809	149.5	0.016	No	5
		WWAN + Wi-Fi (UNII)	1.420		0.407		1.827	116.3	0.021	No	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.

Figure (1)



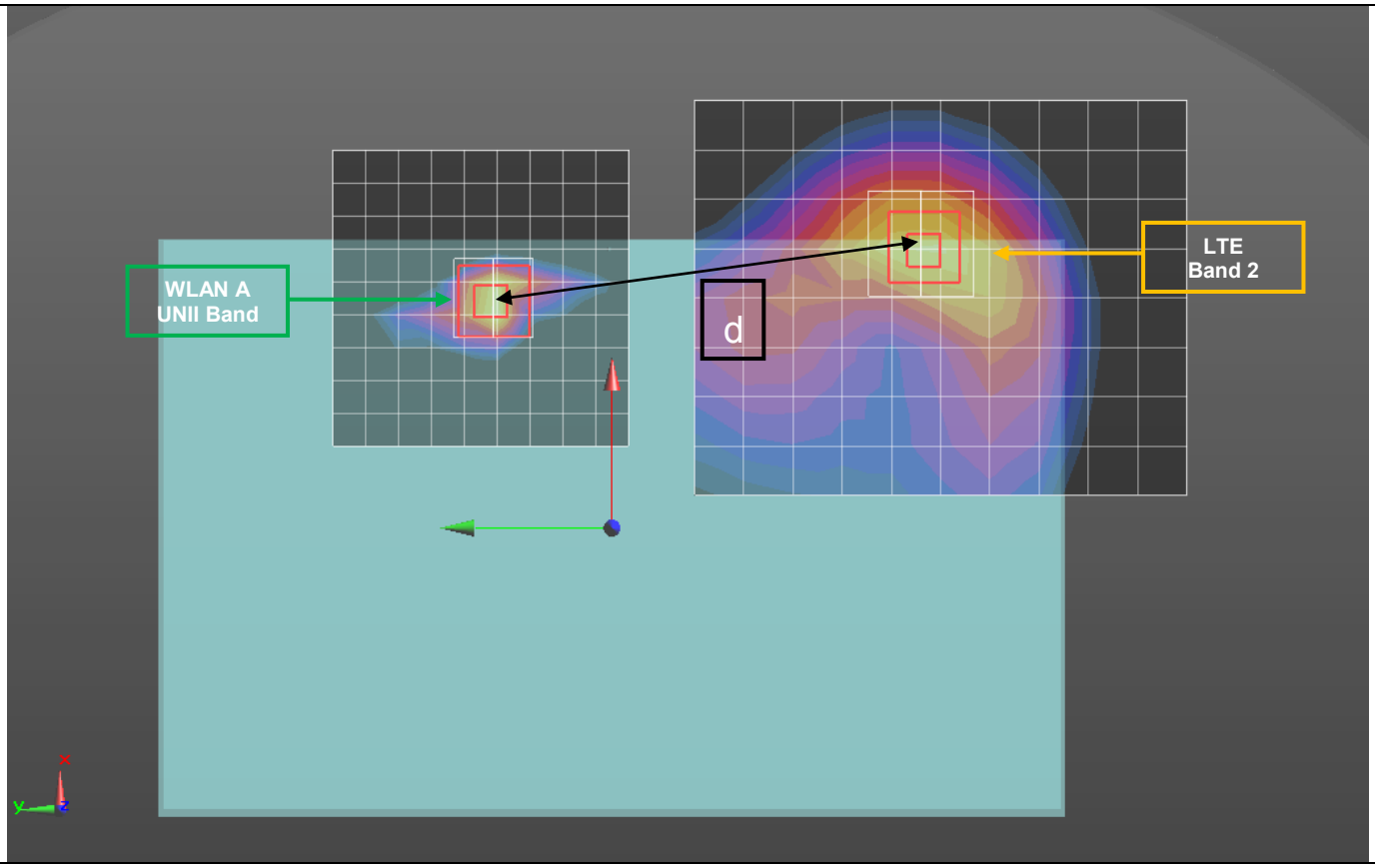
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	1.63	0.0849	-0.0956	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	132.5

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



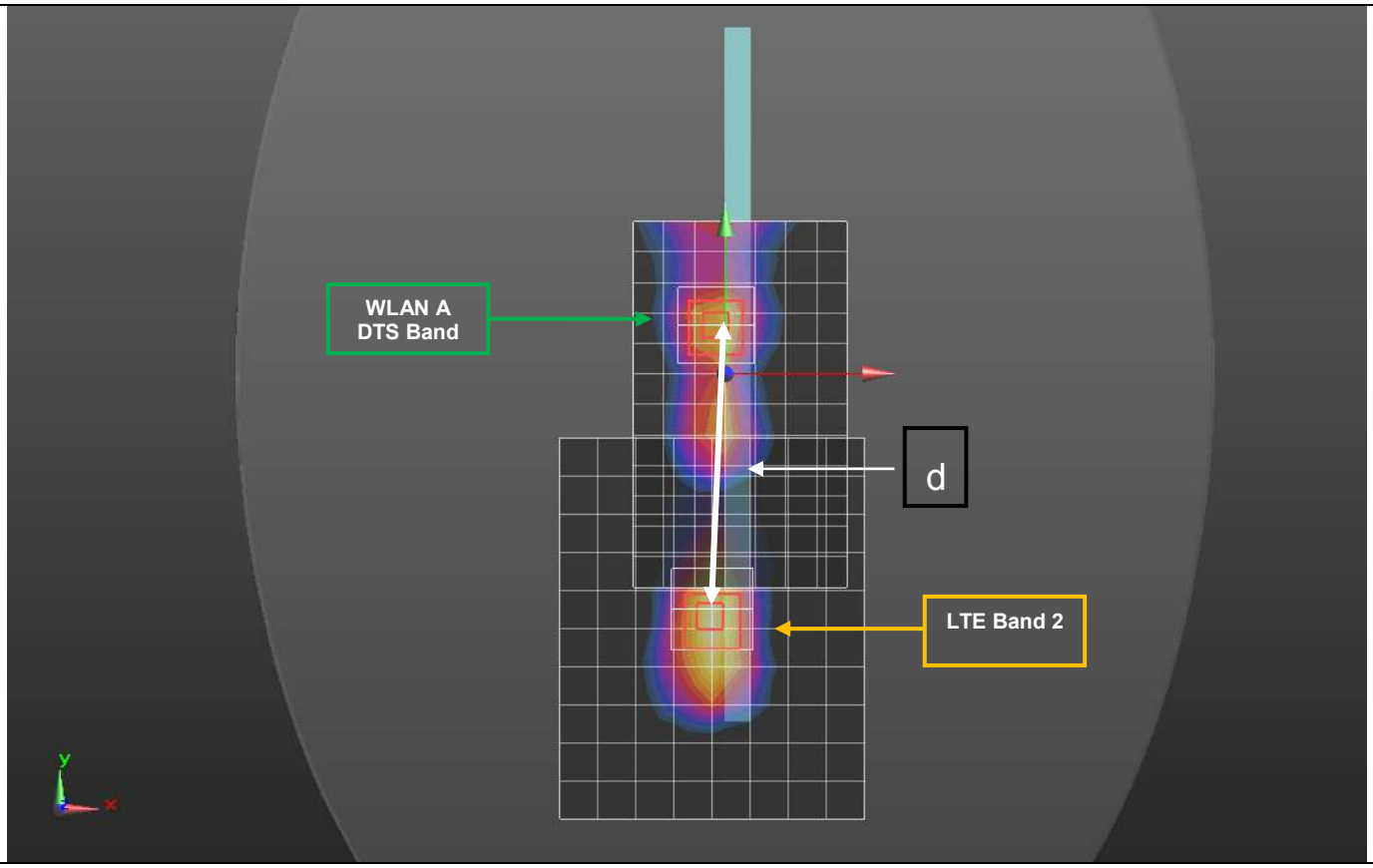
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	1.63	0.0849	-0.0956	-0.183
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	134.1

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (3)



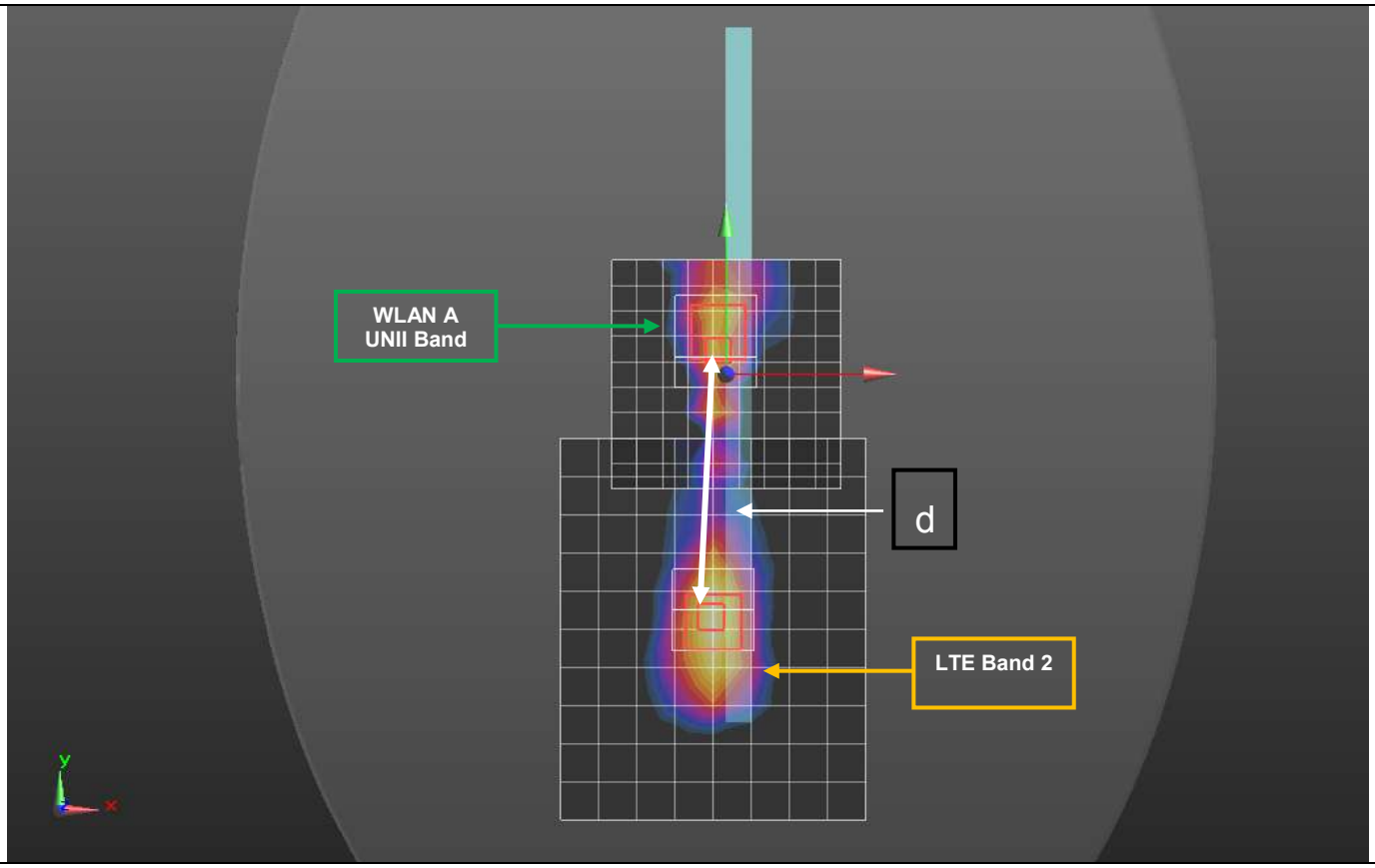
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	2.42	-0.005	-0.0941	-0.184
WLAN A, Wi-Fi DTS Band	0.908	-0.0036	0.0202	-0.184

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	114.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (4)



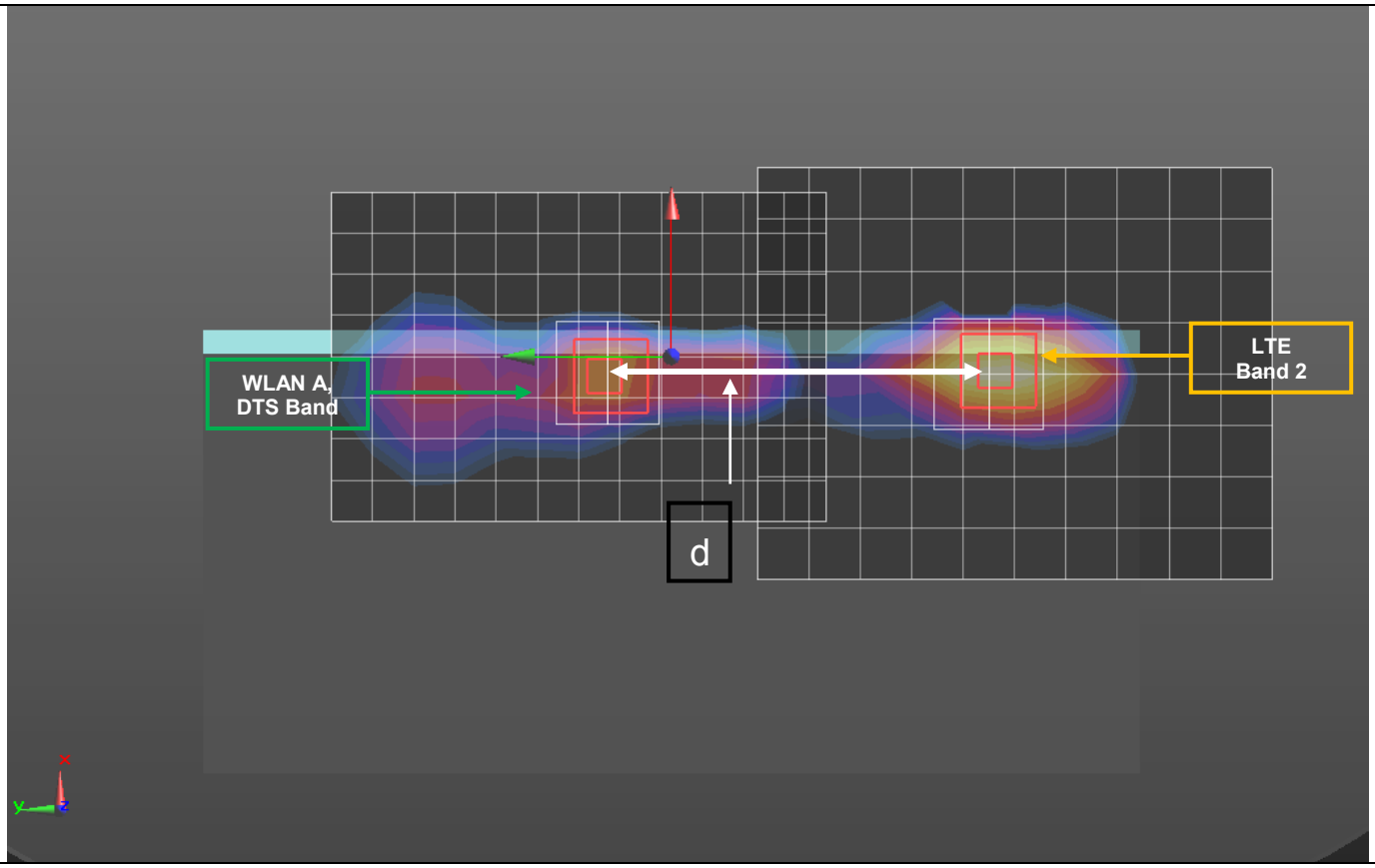
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	2.42	-0.005	-0.0941	-0.184
WLAN A, Wi-Fi UNII Band	1.55	-0.0024	0.0086	-0.182

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	102.8

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (5)



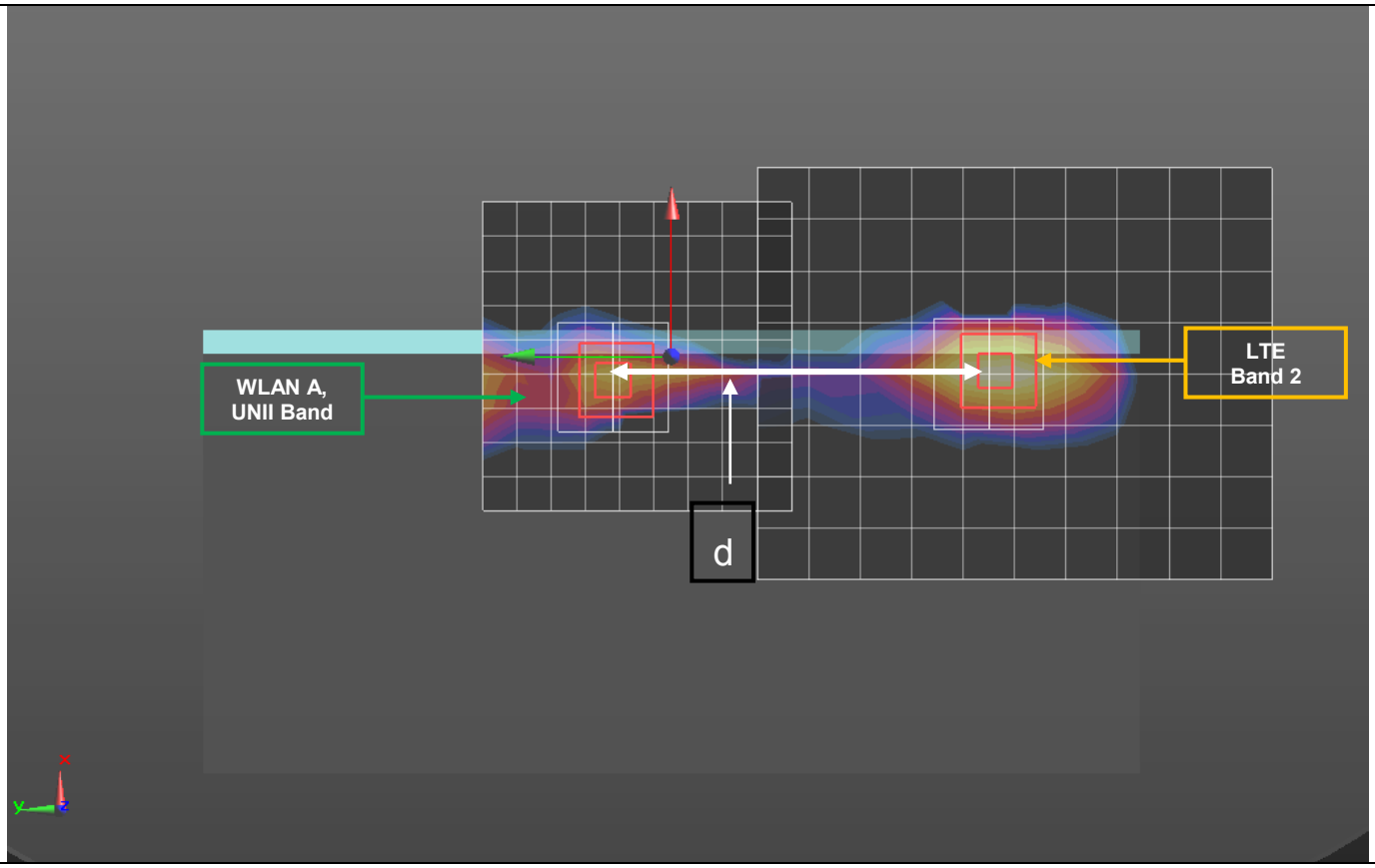
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	3.24	-0.005	-0.0941	-0.184
WLAN A, Wi-Fi DTS Band	2.96	0.075	0.0322	-0.182

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	149.5

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (6)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 2	3.24	-0.005	-0.0941	-0.184
WLAN A, Wi-Fi UNII Band	3.79	-0.022	0.021	-0.184

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	116.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.7. Sum of the SAR for LTE Band 4, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			LTE Band 4	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	1.048	1.355			2.403	**Yes**
		WWAN + Wi-Fi (UNII)	1.048		1.372		2.420	**Yes**
		WWAN + BT	1.048			0.165	1.213	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	0.993	0.425			1.418	No
		WWAN + Wi-Fi 1(UNII)	0.993		0.336		1.329	No
		WWAN + BT	0.993			0.165	1.158	No
	Edge 4	WWAN + Wi-Fi (DTS)	1.230	0.400			1.630	**Yes**
		WWAN + Wi-Fi 1(UNII)	1.230		0.400		1.630	**Yes**
		WWAN + Wi-Fi (UNII)	1.230			0.400	1.630	**Yes**
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.330	0.389			1.719	**Yes**
		WWAN + Wi-Fi 1(UNII)	1.330		0.407		1.737	**Yes**
		WWAN + BT	1.330			0.165	1.495	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.188	0.400			0.588	No
		WWAN + Wi-Fi (UNII)	0.188		0.400		0.588	No
		WWAN + BT	0.188			0.400	0.588	No

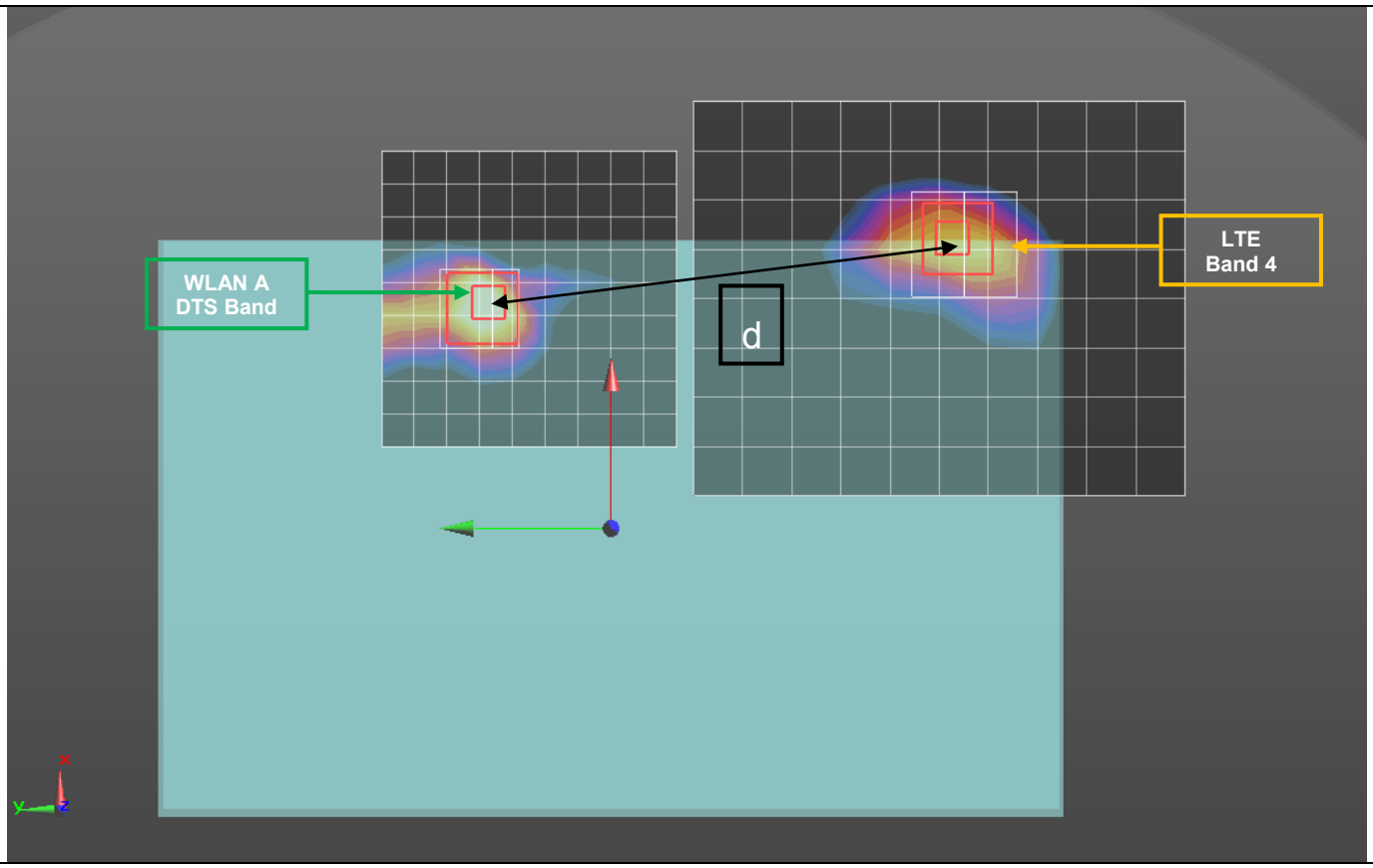
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			LTE Band 2	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
6	Rear	WWAN + Wi-Fi (DTS)	1.048	1.355			2.403	141.1	0.026	No	1
		WWAN + Wi-Fi (UNII)	1.048		1.372		2.420	142.9	0.026	No	2
	Edge 4	WWAN + Wi-Fi (DTS)	1.230	0.400			1.630	85.0	0.024	No	3
		WWAN + Wi-Fi (UNII)	1.230		0.400		1.630	85.0	0.024	No	3
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.330	0.389			1.719	148.3	0.015	No	4
		WWAN + Wi-Fi (UNII)	1.330		0.407		1.737	120.7	0.019	No	5

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.

Figure (1)



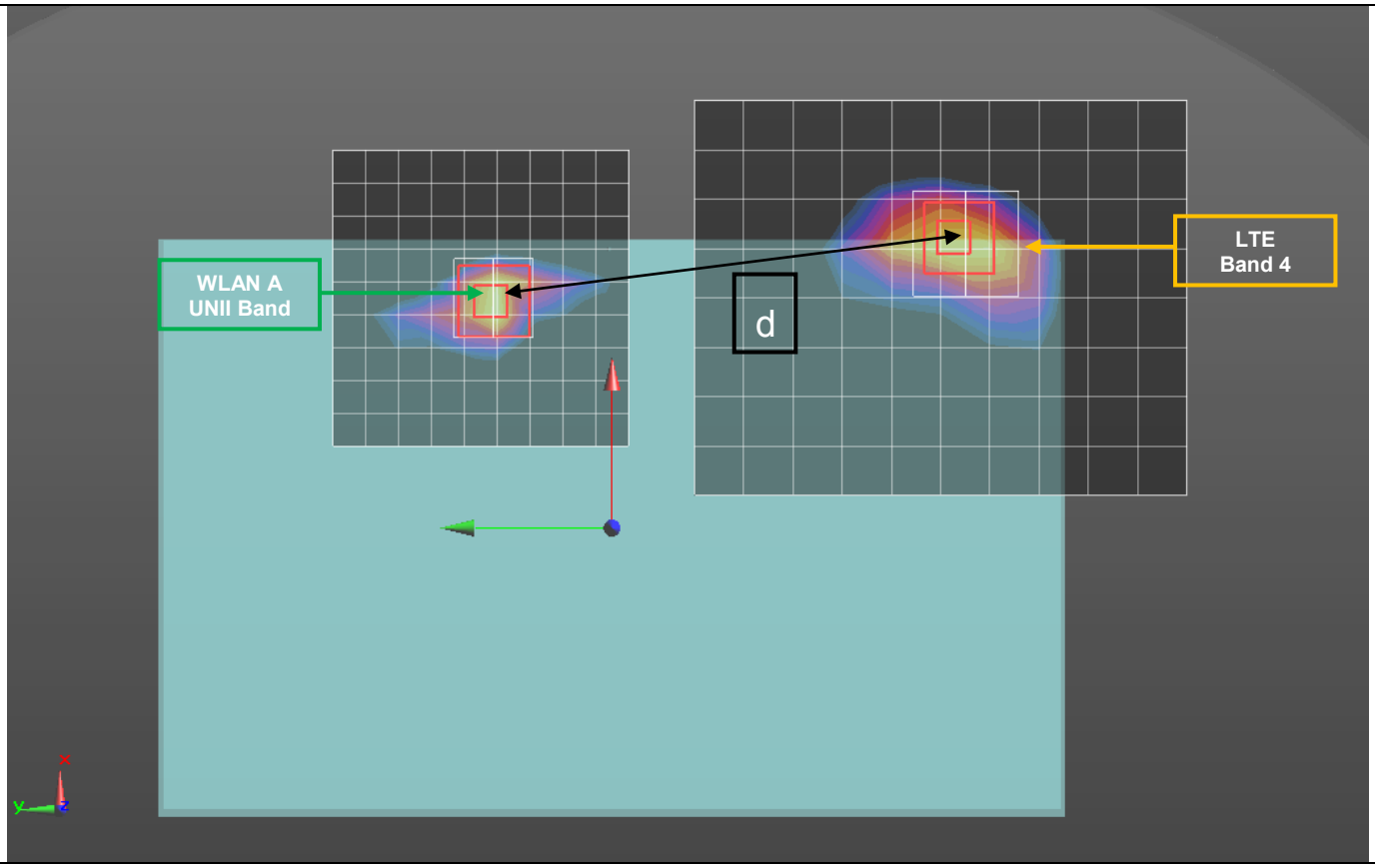
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.93	0.0881	-0.104	-0.181
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	141.1

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



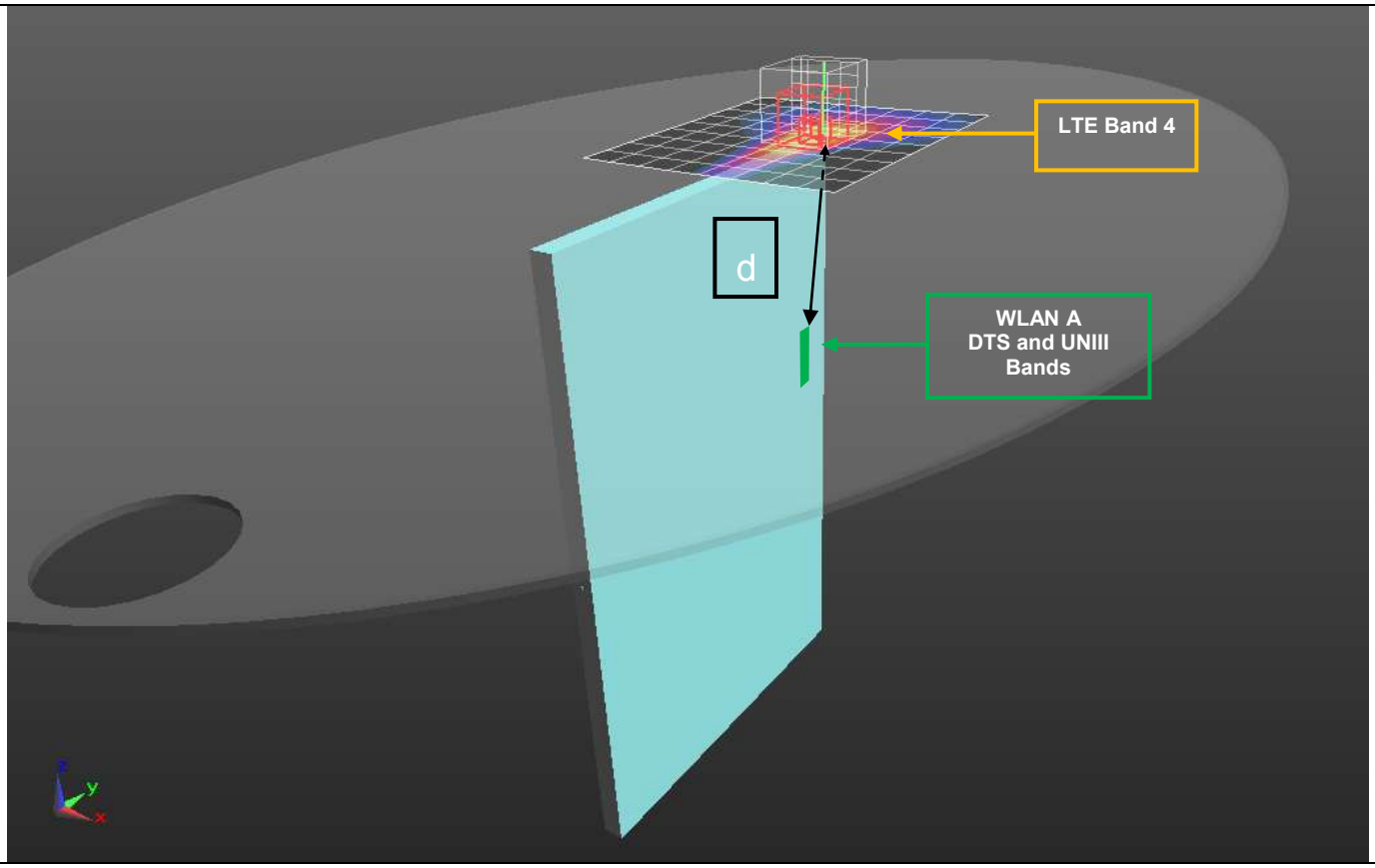
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	1.93	0.0881	-0.104	-0.181
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	142.9

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (3)



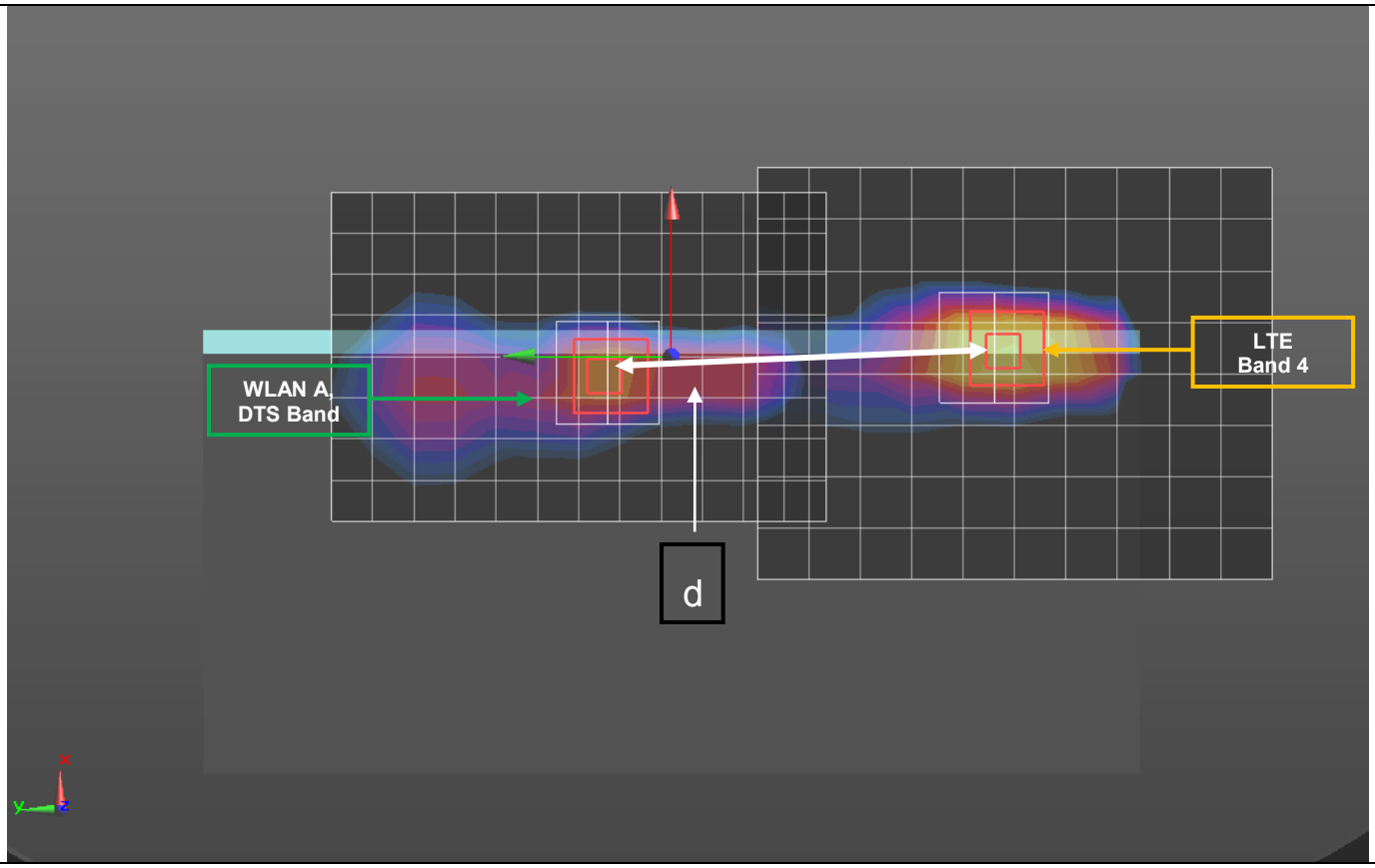
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	2.65	0.004	0.0769	-0.183
WLAN A, Wi-Fi DTS and UNII Bands		0.004	0.074	-0.268

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS and UNII	85.0

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (4)



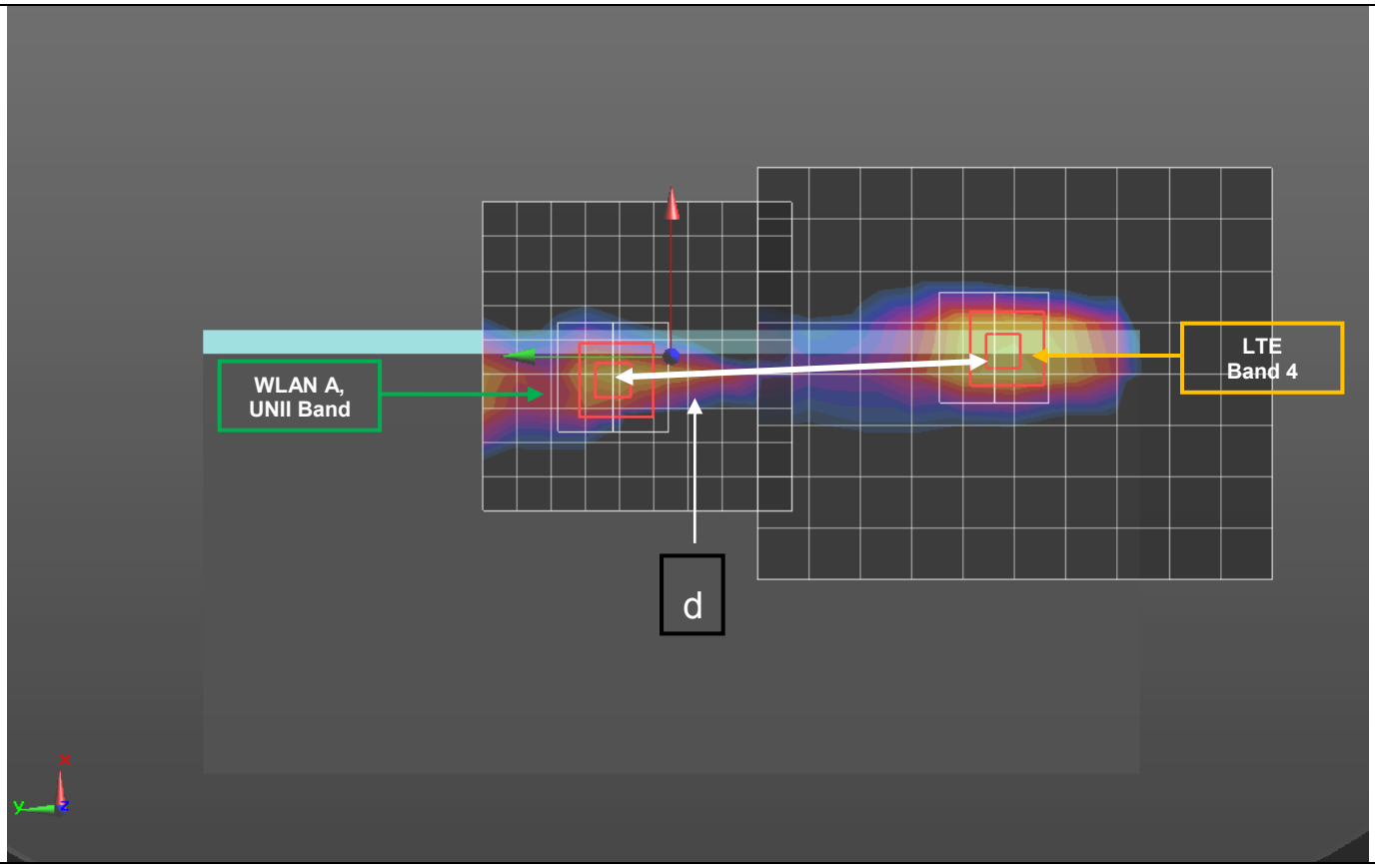
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 4	2.84	0.0025	-0.0972	-0.183
WLAN A, Wi-Fi DTS Band	2.96	0.075	0.0322	-0.182

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	148.3

The Peak Location Separation Distance is computed by using the formula below:

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	2.84	0.0025	-0.0972	-0.183
WLAN A, Wi-Fi UNII Band	3.79	-0.022	0.021	-0.184

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	120.7

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.8. Sum of the SAR for LTE Band 5, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			LTE Band 5	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	1.390	1.355			2.745	**Yes**
		WWAN + Wi-Fi (UNII)	1.390		1.372		2.762	**Yes**
		WWAN + BT	1.390			0.165	1.555	No
	Edge 1	WWAN + Wi-Fi 1(DTS)	0.605	0.425			1.030	No
		WWAN + Wi-Fi 1(UNII)	0.605		0.336		0.941	No
		WWAN + BT	0.605			0.165	0.770	No
	Edge 4	WWAN + Wi-Fi (DTS)	0.659	0.400			1.059	No
		WWAN + Wi-Fi 1(UNII)	0.659		0.400		1.059	No
		WWAN + Wi-Fi (UNII)	0.659			0.400	1.059	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	0.951	0.389			1.340	No
		WWAN + Wi-Fi 1(UNII)	0.951		0.407		1.358	No
		WWAN + BT	0.951			0.165	1.116	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.410	0.400			0.810	No
		WWAN + Wi-Fi (UNII)	0.410		0.400		0.810	No
		WWAN + BT	0.410			0.400	0.810	No

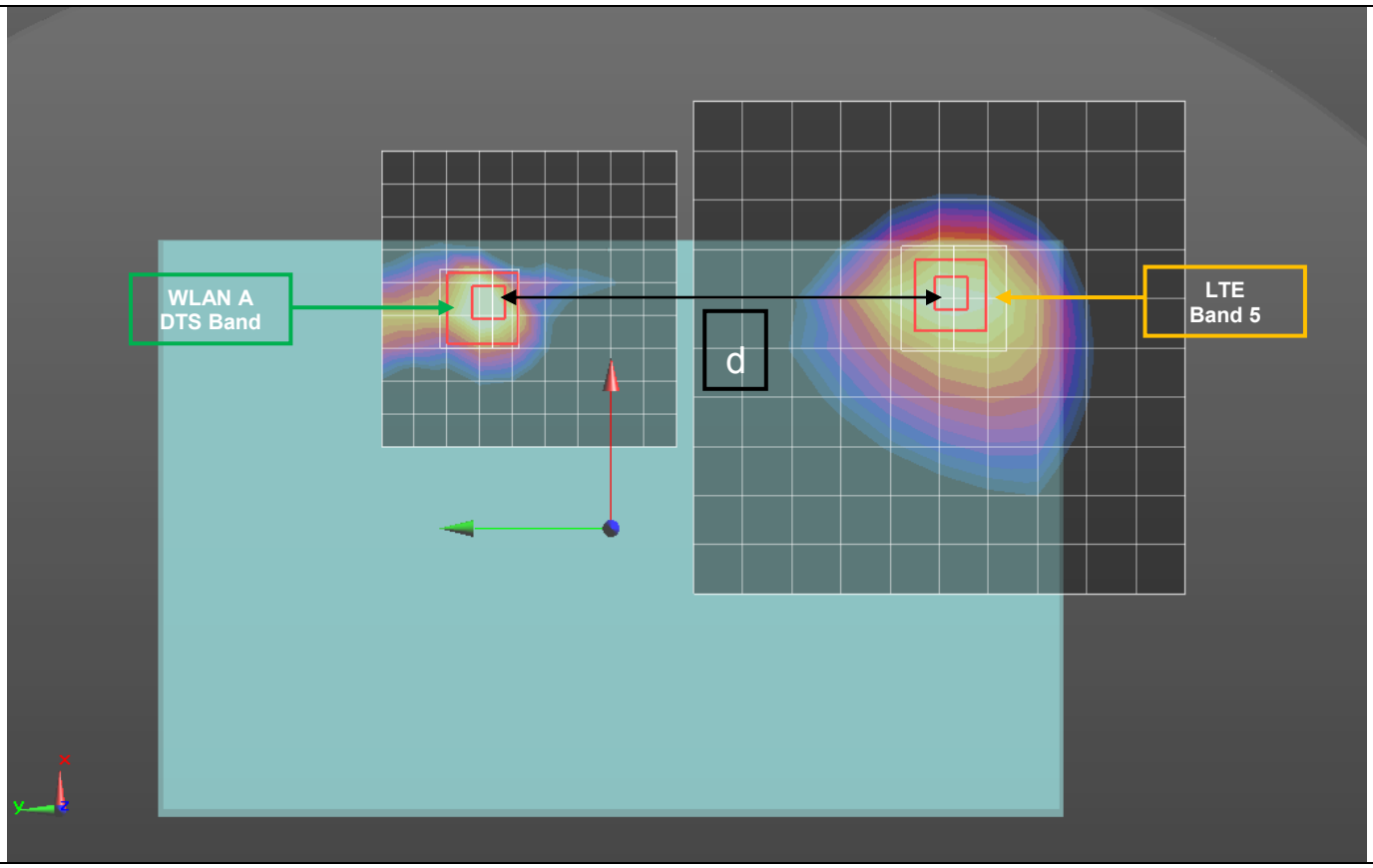
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			LTE Band 5	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
7	Rear	WWAN + Wi-Fi (DTS)	1.390	1.355			2.745	142.1	0.032	No	1
		WWAN + Wi-Fi (UNII)	1.390		1.372		2.762	143.5	0.032	No	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.

Figure (1)



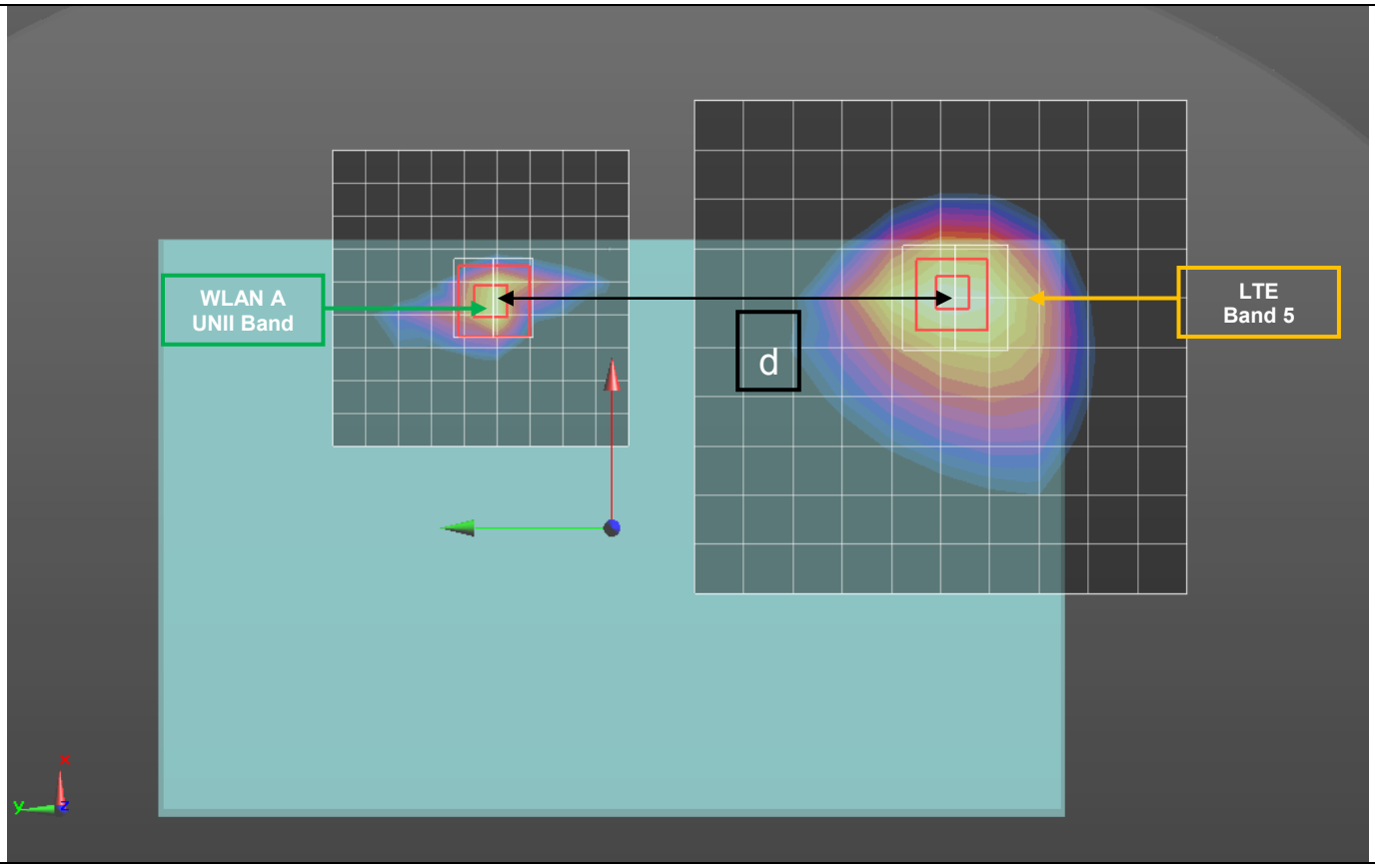
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 5	2.52	0.0716	-0.106	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	142.1

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 5	2.52	0.0716	-0.106	-0.183
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi UNII	143.6

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

14.9. Sum of the SAR for LTE Band 17, Wi-Fi, and BT

RF Exposure condition	Test Position		Simultaneous Transmission Scenario				∑ 1-g SAR (mW/g)	SPLSR (Yes/ No)
			LTE Band 17	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth		
Standalone	Rear	WWAN + Wi-Fi (DTS)	1.440	1.355			2.795	**Yes**
		WWAN + Wi-Fi (UNII)	1.440		1.372		2.812	**Yes**
		WWAN + BT	1.440			0.165	1.605	**Yes**
	Edge 1	WWAN + Wi-Fi 1(DTS)	0.536	0.425			0.961	No
		WWAN + Wi-Fi 1(UNII)	0.536		0.336		0.872	No
		WWAN + BT	0.536			0.165	0.701	No
	Edge 4	WWAN + Wi-Fi (DTS)	0.561	0.400			0.961	No
		WWAN + Wi-Fi 1(UNII)	0.561		0.400		0.961	No
		WWAN + BT	0.561			0.400	0.961	No
	Rear/Edge 1 slant	WWAN + Wi-Fi (DTS)	1.060	0.389			1.449	No
		WWAN + Wi-Fi 1(UNII)	1.060		0.407		1.467	No
		WWAN + BT	1.060			0.165	1.225	No
	Rear/Edge 4 slant	WWAN + Wi-Fi (DTS)	0.356	0.400			0.756	No
		WWAN + Wi-Fi (UNII)	0.356		0.400		0.756	No
		WWAN + BT	0.356			0.400	0.756	No

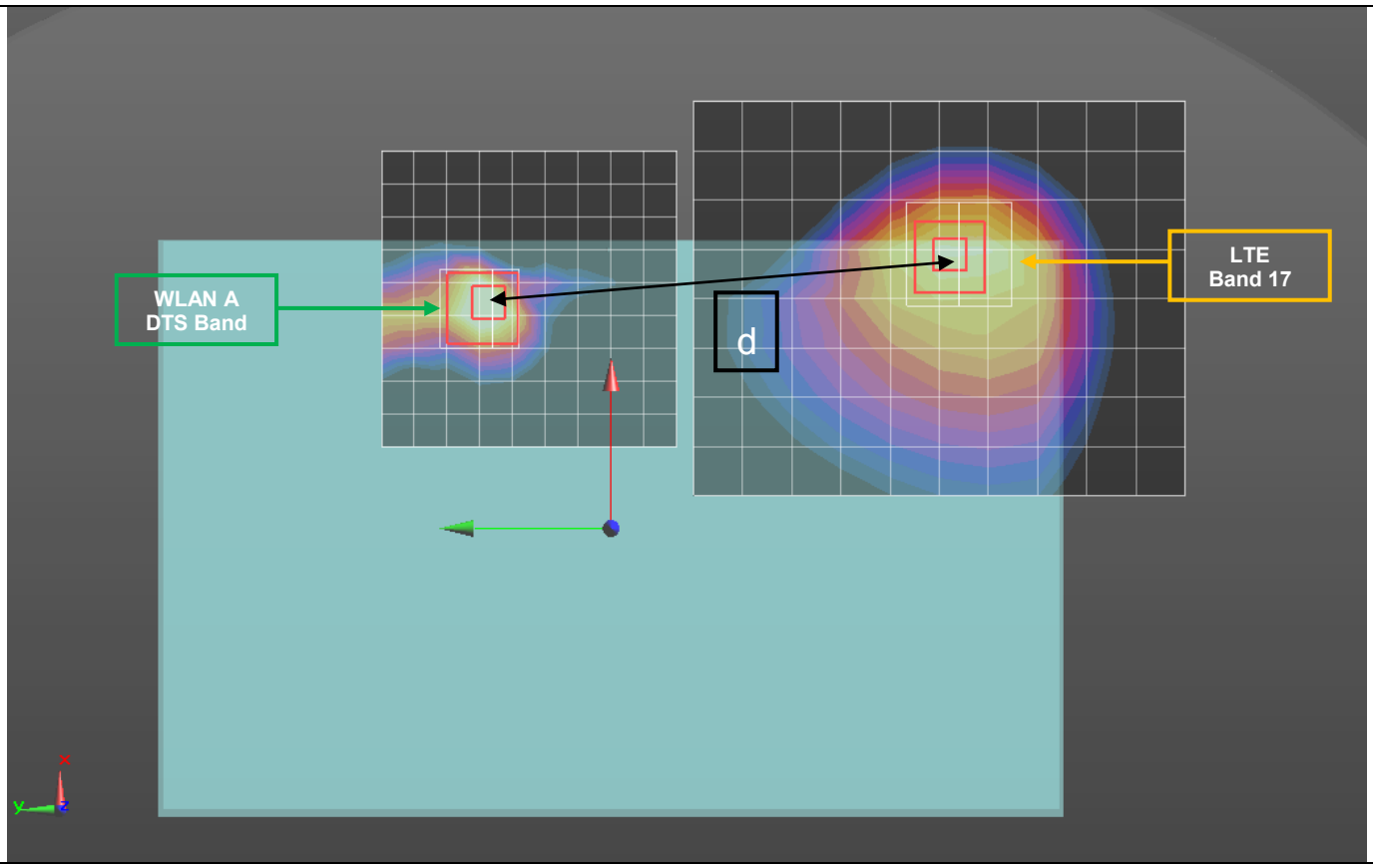
SAR to Peak Location Separation Ratio (SPLSR)

Case #	Test Position	Test Position	Worst-case combination				∑ 1-g SAR (mW/g)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)	Figure
			LTE Band 17	WLAN A DTS Band	WLAN A UNII Band	WLAN B Bluetooth					
8	Rear	WWAN + Wi-Fi (DTS)	1.440	1.355			2.795	144.3	0.032	No	1
		WWAN + Wi-Fi (UNII)	1.440		1.372		2.812	142.7	0.033	No	2
		WWAN + BT	1.440			0.165	1.605	56.3	0.036	No	3

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.

Figure (1)



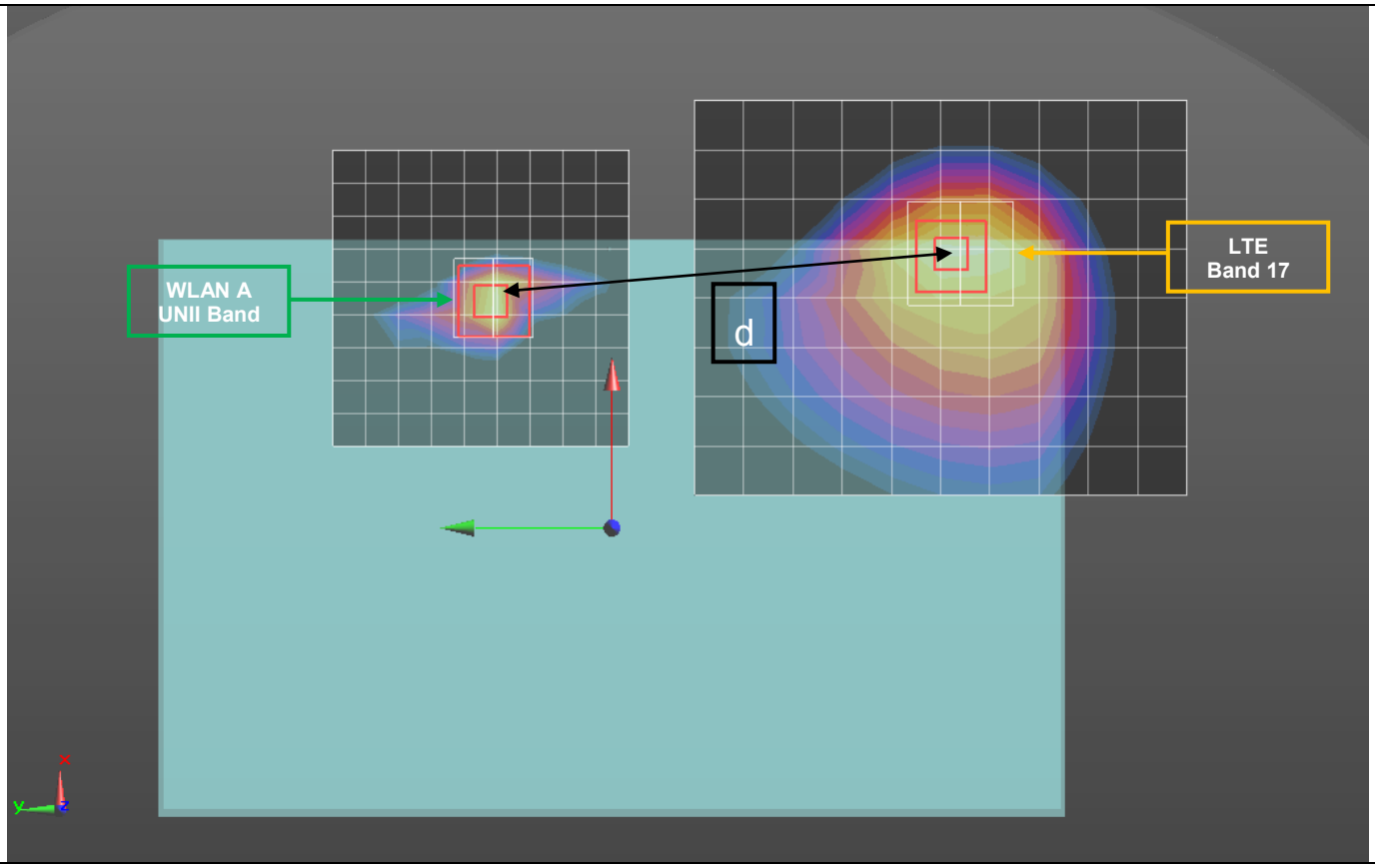
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 17	2.28	0.0835	-0.106	-0.183
WLAN A, Wi-Fi DTS Band	2.55	0.071	0.036	-0.177

d: Calculated distance (mm)	WWAN to WLAN A Wi-Fi DTS	142.7

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (2)



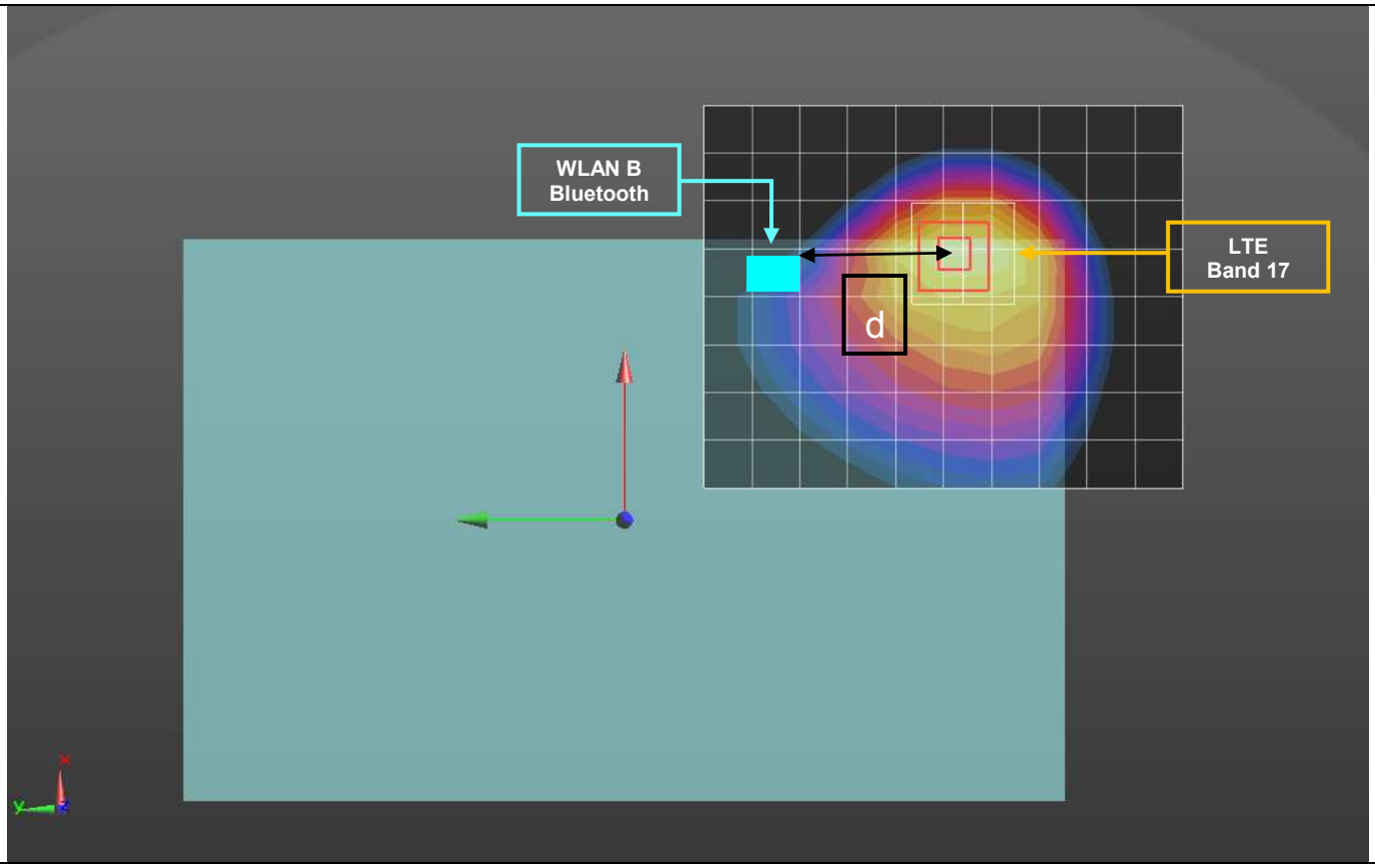
Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 17	2.28	0.0835	-0.106	-0.183
WLAN A, Wi-Fi UNII Band	5.83	0.0692	0.0376	-0.181

d: Calculated distance (mm)	WWAN to WLAN A WI-Fi UNII	144.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Figure (3)



Mode	Peak SAR	X	Y	Z
	mW/g	m	m	m
LTE Band 17	2.28	0.0835	-0.106	-0.183
WLAN B, Bluetooth		0.08235	-0.04975	-0.181

d: Calculated distance (mm)	WWAN to WLAN B Bluetooth	56.3

The Peak Location Separation Distance is computed by using the formula below:

SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

15. Appendixes

Refer to separated files for the following appendixes.

15.1. DUT and SAR setup Photos

15.2. System Performance Check Plots

15.3. Highest SAR Test Plots

15.4. Calibration Certificate for E-Field Probe EX3DV4 - SN 3773

15.5. Calibration Certificate for E-Field Probe EX3DV4 - SN 3902

15.6. Calibration Certificate for D750V3 - SN 1019

15.7. Calibration Certificate for D835V2 - SN 4d117

15.8. Calibration Certificate for D1750V2- SN 1050

15.9. Calibration Certificate for D1900V2- SN 5d140

END OF REPORT