FCC SAR Test Report

APPLICANT	:	Sonim Technologies, Inc.
EQUIPMENT	:	LTE Phone
BRAND NAME	:	Sonim
MODEL NAME	:	XP5800(PG2112)
FCC ID	:	WYPPG2132
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2013

We, Sporton International (Kunshan) Inc., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.

Mark Qu

Approved by: Mark Qu / Manager

NVLAP TESTING
NVLAP LAB CODE 600155-0

Sporton International (Kunshan) Inc.
No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA792101-01	Rev. 01	Initial issue of report	Dec. 05, 2017

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Sonim Technologies, Inc., LTE Phone, XP5800(PG2112),** are as follows.

Equipment Class	Frequency Band		Highest SAR Summary			Highest Simultaneous Transmission 1g SAR (W/kg)
			Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-Worn (Separation 15mm)	
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.72	0.74	0.57	1.54
		GSM1900	0.47	1.17	0.63	
	WCDMA	Band V	0.75	0.71	0.56	
		Band IV	0.85	1.15	1.17	
		Band II	0.82	1.11	1.05	
	LTE	Band 12	0.39	0.61	0.48	
		Band 13	0.57	0.47	0.35	
		Band 14	0.59	0.61	0.41	
		Band 26/Band 5	0.81	0.74	0.59	
		Band 66/Band 4	0.43	**1.20**	0.71	
		Band 25/Band 2	0.83	1.18	**1.20**	
		Band 30	0.52	0.79	0.45	
		Band 7	0.51	1.13	0.51	
		Band 41/Band 38	0.29	0.64	0.33	
DTS	WLAN	2.4GHz WLAN	0.54	0.18	0.10	1.38
NII		5GHz WLAN	**0.96**	0.91	0.52	1.54
DSS	Bluetooth	2.4GHz Bluetooth		<0.10	<0.10	1.23
Date of Testing:			2017/9/26~2017/11/30			

Remark: This device supports LTE B2 / B4 / B5 / B38 and B25 / B66 / B26 / B41. Since the supported frequency span for LTE B2 / B4 / B5 / B38 falls completely within the supports frequency span for B25 / B66 / B26 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for B25 / B66 / B26 / B41.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Testing Laboratory	
Test Site	Sporton International (Kunshan) Inc.
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958

Applicant	
Company Name	Sonim Technologies, Inc.
Address	1825 S. Grant St., Suite 200., San Mateo, CA, 94402

Manufacturer	
Company Name	Sonim Technologies (Shenzhen) Limited
Address	2nd Floor, No. 2 Building Phase B, Daqian Industrial park, Longchang Road, 67 District, Baoan, Shenzhen, P. R. China

3. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	LTE Phone
Brand Name	Sonim
Model Name	XP5800(PG2112)
FCC ID	WYPPG2132
IMEI Code	SIM1: 001080001911412 SIM2: 001080001911420
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 25: 1850.7 MHz ~ 1914.3 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 30 : 2307.5 MHz ~ 2312.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~1779.3 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is not supported) LTE: QPSK, 16QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0+EDR, Bluetooth v4.0 LE, Bluetooth v4.2 LE
HW Version	A
SW Version	5SA.0.0-00-7.1.2-10.32.01
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype

Remark:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications.
3. This device 2.4GHz WLAN/5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
4. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
5. The device has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
6. For WWAN transmitter

Hotspot exposure condition:
When hotspot mode is enabled, power reduction will be activated to limit the maximum power of WCDMA B2 / B4 and LTE B2 / B4 / B25 / B66.

7. For WLAN transmitter
Head exposure conditions:
While the device is in talking mode and receiver worked, then power reduction will be implemented immediately at WLAN5.5GHz and WLAN5.8GHz.

4.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>WYPPG2132</td></tr>
<tr><td>Equipment Name</td><td>LTE Phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850.7 MHz ~ 1909.3 MHz
LTE Band 4: 1710.7 MHz ~ 1754.3 MHz
LTE Band 5: 824.7 MHz ~ 848.3 MHz
LTE Band 7: 2502.5 MHz ~ 2567.5 MHz
LTE Band 12: 699.7 MHz ~ 715.3 MHz
LTE Band 13: 779.5 MHz ~ 784.5 MHz
LTE Band 14: 790.5 MHz ~ 795.5 MHz
LTE Band 25: 1850.7 MHz ~ 1914.3 MHz
LTE Band 26: 814.7 MHz ~ 848.3 MHz
LTE Band 30 : 2307.5 MHz ~ 2312.5 MHz
LTE Band 38: 2572.5 MHz ~ 2617.5 MHz
LTE Band 41: 2498.5 MHz ~ 2687.5 MHz
LTE Band 66: 1710.7 MHz ~1779.3 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 14: 5MHz, 10MHz
LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 30: 5MHz, 10MHz
LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66: 1.4MHz, 3MHz,5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>Uplink Modulations Used</td><td>QPSK and 16QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE Release Version</td><td>R10, Cat4</td></tr>
<tr><td>CA Support</td><td>Not Supported</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3.3-1: Maximum Power Reduction (MPR) for Power Class 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth configuration [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></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes
When hotspot mode is enabled, power reduction will be activated to limit the maximum power of LTE B2 / B4 / B25 / B66.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		
LTE Band 14				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23305	790.5	23330	793
M	23330	793		
H	23355	795.5		
LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 30				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	27685	2307.5	27710	2310
M	27710	2310		
H	27735	2312.5		

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

5. Re-use of Measured Data

5.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: XP5800(PG2112), FCC ID: WYPPG2132) is electrically identical to the reference device (Model: XP5800(PC2111), FCC ID: WYPPC2100) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 178919 D01.

5.2 Difference Section

For details concerning the similarity with respect to component placement, mechanical/electrical design etc., please refer to the Product Equality Declaration.

The re-used RF data includes the following bands provided in Appendix A
Sporton SAR Report No. FA792101 for the reference device Model: XP5800(PC2111), FCC ID: WYPPC2100.
-GSM850/1900
-WCDMA Band II/IV/V
-LTE Band 2/4/5/7/12/13/14/25/26/30/38/41/66
-BT/WLAN

Spot check for WWAN and BT/WLAN are performed for ensure that SAR measurement for both device are the same. So, the original SAR value can represent this application.

5.3 Spot Check Verification Data Section

Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Power Reduction	Ch.	Freq. (MHz)	Original model (FCC ID: WYPPC2100)				Spot check model (FCC ID: WYPPG2132)				Deviation
											Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Average Power (dBm)	Tune-Up Limit (dBm)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
GSM850	-	-	-	-	GPRS 2 Tx slots	Back	10	OFF	251	848.8	29.01	29.50	0.657	0.735	29.01	29.50	0.554	0.620	-15.65%
GSM1900	-	-	-	-	GPRS 2 Tx slots	Back	10	OFF	512	1850.2	27.78	28.50	0.987	1.165	27.78	28.50	1.030	1.216	4.38%
WCDMA Band V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0	OFF	4233	846.6	22.63	23.00	0.689	0.750	22.63	23.00	0.681	0.742	-1.07%
WCDMA Band IV	-	-	-	-	RMC 12.2Kbps	Back	15	OFF	1513	1752.6	22.77	23.50	0.988	1.169	22.77	23.50	1.160	1.372	17.37%
WCDMA Band II	-	-	-	-	RMC 12.2Kbps	Back	10	Hotspot On	9262	1852.4	19.64	21.00	0.808	1.105	19.64	21.00	0.881	1.205	9.05%
LTE Band 12	10M	QPSK	1	0	-	Back	10	OFF	23095	707.5	22.69	24.00	0.453	0.612	22.69	24.00	0.513	0.694	13.40%
LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0	OFF	23230	782	22.78	24.00	0.428	0.567	22.78	24.00	0.489	0.648	14.29%
LTE Band 14	10M	QPSK	1	0	-	Back	10	OFF	23330	793	22.75	24.00	0.456	0.608	22.75	24.00	0.480	0.640	5.26%
LTE Band 26	15M	QPSK	1	74	-	Left Cheek	0	OFF	26865	831.5	22.72	23.00	0.762	0.813	22.72	23.00	0.755	0.805	-0.98%
LTE Band 66	20M	QPSK	1	99	-	Back	10	Hotspot On	132572	1770	19.93	20.50	1.050	1.197	19.93	20.50	1.150	1.311	9.52%
LTE Band 25	20M	QPSK	1	0	-	Back	15	OFF	26140	1860	22.65	24.00	0.878	1.198	22.65	24.00	0.884	1.206	0.67%
LTE Band 30	10M	QPSK	1	0	-	Back	10	OFF	27710	2310	21.71	23.00	0.590	0.794	21.71	23.00	0.673	0.906	14.11%
LTE Band 7	20M	QPSK	1	99	-	Back	10	OFF	20850	2510	23.27	24.00	0.957	1.132	23.27	24.00	0.894	1.058	-6.54%
LTE Band 41	20M	QPSK	1	99	-	Back	10	OFF	39750	2506	22.95	24.00	0.500	0.641	22.95	24.00	0.482	0.618	-3.59%
WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0	OFF	6	2437	17.66	19.00	0.390	0.544	17.66	19.00	0.350	0.488	-10.29%
WLAN5.5GHz	-	-	-	-	802.11a 6Mbps	Left Cheek	0	Receiver On	116	5580	14.94	15.00	0.824	0.955	14.94	15.00	0.821	0.951	-0.42%

Note: In the table above, all the deviation of SAR test results are compliant with uncertainty budget.

5.4 Reference detail Section

Folder Test/RF Exposure	Reference FCC ID	Report Title/Section
PCE (2G/3G/4G)	WYPPC2100	RF Exposure(FA792101)
DTS (BLE)	WYPPC2100	RF Exposure(FA792101)
DSS (BER)	WYPPC2100	RF Exposure(FA792101)
DTS (WLAN 2.4G)	WYPPC2100	RF Exposure(FA792101)
NII (WLAN 5G)	WYPPC2100	RF Exposure(FA792101)

6. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			Note
		Head	Body-worn	Hotspot	
1.	GSM Voice + WLAN2.4GHz	Yes	Yes		
2.	GPRS/EDGE + WLAN2.4GHz	Yes	Yes	Yes	WLAN Hotspot
3.	WCDMA + WLAN2.4GHz	Yes	Yes	Yes	WLAN Hotspot
4.	LTE + WLAN2.4GHz	Yes	Yes	Yes	WLAN Hotspot
5.	GSM Voice + WLAN5.3/5.5GHz	Yes	Yes		
6.	GPRS/EDGE + WLAN5.3/5.5GHz	Yes	Yes		WLAN Direct (GC only)
7.	WCDMA + WLAN5.3/5.5GHz	Yes	Yes		WLAN Direct (GC only)
8.	LTE + WLAN5.3/5.5GHz	Yes	Yes		WLAN Direct (GC only)
9.	GSM Voice + WLAN5.2/5.8GHz	Yes	Yes		
10.	GPRS/EDGE + WLAN5.2/5.8GHz	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
11.	WCDMA + WLAN5.2/5.8GHz	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
12.	LTE + WLAN5.2/5.8GHz	Yes	Yes	Yes	WLAN Hotspot/Direct(GC/GO)
13.	GSM Voice + Bluetooth		Yes		
14.	GPRS/EDGE + Bluetooth		Yes	Yes	BT Tethering
15.	WCDMA + Bluetooth		Yes	Yes	BT Tethering
16.	LTE + Bluetooth		Yes	Yes	BT Tethering

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
3. This device WLAN 2.4GHz supports hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/ 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
5. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
6. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
7. According to the EUT character, WLAN 5GHz and Bluetooth can't transmit simultaneously.
8. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
9. For simultaneous transmission analysis for exposure position of back with headset 15mm, Bluetooth/WLAN SAR tested at back position 15mm separation is worse and the test data is used for conservative SAR summation.
10. The reported SAR summation is calculated based on the same configuration and test position.
11. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) Scalar SAR summation < 1.6W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
    iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.
    v) The SPLSR calculated results please refer to section 6.4.

6.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	1+2	1+3		
			WWAN	2.4GHz WLAN	5GHz WLAN	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
GSM	GSM850	Right Cheek	0.545	0.233	0.604	0.78	1.15		
		Right Tilted	0.345	0.544	0.615	0.89	0.96		
		Left Cheek	0.719	0.544	0.955	1.26	**1.67**	**0.04**	**#1**
		Left Tilted	0.319	0.544	0.568	0.86	0.89		
	GSM1900	Right Cheek	0.473	0.233	0.604	0.71	1.08		
		Right Tilted	0.159	0.544	0.615	0.70	0.77		
		Left Cheek	0.310	0.544	0.955	0.85	1.27		
		Left Tilted	0.133	0.544	0.568	0.68	0.70		
WCDMA	Band V	Right Cheek	0.711	0.233	0.604	0.94	1.32		
		Right Tilted	0.419	0.544	0.615	0.96	1.03		
		Left Cheek	0.750	0.544	0.955	1.29	**1.71**	**0.04**	**#2**
		Left Tilted	0.393	0.544	0.568	0.94	0.96		
	Band IV	Right Cheek	0.854	0.233	0.604	1.09	1.46		
		Right Tilted	0.188	0.544	0.615	0.73	0.80		
		Left Cheek	0.446	0.544	0.955	0.99	1.40		
		Left Tilted	0.106	0.544	0.568	0.65	0.67		
	Band II	Right Cheek	0.818	0.233	0.604	1.05	1.42		
		Right Tilted	0.281	0.544	0.615	0.83	0.90		
		Left Cheek	0.516	0.544	0.955	1.06	1.47		
		Left Tilted	0.226	0.544	0.568	0.77	0.79		

WWAN Band		Exposure Position	1	2	3	1+2	1+3		
			WWAN	2.4GHz WLAN	5GHz WLAN	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
LTE	Band 12	Right Cheek	0.376	0.233	0.604	0.61	0.98		
		Right Tilted	0.242	0.544	0.615	0.79	0.86		
		Left Cheek	0.392	0.544	0.955	0.94	1.35		
		Left Tilted	0.247	0.544	0.568	0.79	0.82		
	Band 13	Right Cheek	0.471	0.233	0.604	0.70	1.08		
		Right Tilted	0.293	0.544	0.615	0.84	0.91		
		Left Cheek	0.567	0.544	0.955	1.11	1.52		
		Left Tilted	0.281	0.544	0.568	0.83	0.85		
	Band 14	Right Cheek	0.560	0.233	0.604	0.79	1.16		
		Right Tilted	0.291	0.544	0.615	0.84	0.91		
		Left Cheek	0.587	0.544	0.955	1.13	**1.54**		
		Left Tilted	0.291	0.544	0.568	0.84	0.86		
	Band 26	Right Cheek	0.780	0.233	0.604	1.01	1.38		
		Right Tilted	0.460	0.544	0.615	1.00	1.08		
		Left Cheek	0.813	0.544	0.955	1.36	**1.77**	**0.04**	**#3**
		Left Tilted	0.437	0.544	0.568	0.98	1.01		
	Band 66	Right Cheek	0.433	0.233	0.604	0.67	1.04		
		Right Tilted	0.074	0.544	0.615	0.62	0.69		
		Left Cheek	0.239	0.544	0.955	0.78	1.19		
		Left Tilted	0.049	0.544	0.568	0.59	0.62		
	Band 25	Right Cheek	0.832	0.233	0.604	1.07	1.44		
		Right Tilted	0.292	0.544	0.615	0.84	0.91		
		Left Cheek	0.506	0.544	0.955	1.05	1.46		
		Left Tilted	0.253	0.544	0.568	0.80	0.82		
	Band 30	Right Cheek	0.524	0.233	0.604	0.76	1.13		
		Right Tilted	0.273	0.544	0.615	0.82	0.89		
		Left Cheek	0.323	0.544	0.955	0.87	1.28		
		Left Tilted	0.152	0.544	0.568	0.70	0.72		
	Band 7	Right Cheek	0.470	0.233	0.604	0.70	1.07		
		Right Tilted	0.444	0.544	0.615	0.99	1.06		
		Left Cheek	0.513	0.544	0.955	1.06	1.47		
		Left Tilted	0.214	0.544	0.568	0.76	0.78		
	Band 41	Right Cheek	0.293	0.233	0.604	0.53	0.90		
		Right Tilted	0.128	0.544	0.615	0.67	0.74		
		Left Cheek	0.144	0.544	0.955	0.69	1.10		
		Left Tilted	0.070	0.544	0.568	0.61	0.64		

6.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2	1+3	1+4
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Front	0.599	0.179	0.531	0.017	0.78	1.13	0.62
		Back	0.735	0.179	0.167	0.032	0.91	0.90	0.77
		Left Side	0.441				0.44	0.44	0.44
		Right Side	0.404	0.179	0.910	0.023	0.58	1.31	0.43
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.172				0.17	0.17	0.17
	GSM1900	Front	0.334	0.179	0.531	0.017	0.51	0.87	0.35
		Back	1.165	0.179	0.167	0.032	1.34	1.33	1.20
		Left Side	0.062				0.06	0.06	0.06
		Right Side	0.180	0.179	0.910	0.023	0.36	1.09	0.20
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.558				0.56	0.56	0.56
WCDMA	Band V	Front	0.708	0.179	0.531	0.017	0.89	1.24	0.73
		Back	0.685	0.179	0.167	0.032	0.86	0.85	0.72
		Left Side	0.407				0.41	0.41	0.41
		Right Side	0.461	0.179	0.910	0.023	0.64	1.37	0.48
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.186				0.19	0.19	0.19
	Band IV	Front	0.223	0.179	0.531	0.017	0.40	0.75	0.24
		Back	1.145	0.179	0.167	0.032	1.32	1.31	1.18
		Left Side	0.029				0.03	0.03	0.03
		Right Side	0.179	0.179	0.910	0.023	0.36	1.09	0.20
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.516				0.52	0.52	0.52
	Band II	Front	0.272	0.179	0.531	0.017	0.45	0.80	0.29
		Back	1.105	0.179	0.167	0.032	1.28	1.27	1.14
		Left Side	0.054				0.05	0.05	0.05
		Right Side	0.189	0.179	0.910	0.023	0.37	1.10	0.21
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.584				0.58	0.58	0.58

WWAN Band		Exposure Position	1	2	3	4	1+2	1+3	1+4
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)
LTE	Band 12	Front	0.461	0.179	0.531	0.017	0.64	0.99	0.48
		Back	0.612	0.179	0.167	0.032	0.79	0.78	0.64
		Left Side	0.376				0.38	0.38	0.38
		Right Side	0.330	0.179	0.910	0.023	0.51	1.24	0.35
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.093				0.09	0.09	0.09
	Band 13	Front	0.474	0.179	0.531	0.017	0.65	1.01	0.49
		Back	0.391	0.179	0.167	0.032	0.57	0.56	0.42
		Left Side	0.229				0.23	0.23	0.23
		Right Side	0.217	0.179	0.910	0.023	0.40	1.13	0.24
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.113				0.11	0.11	0.11
	Band 14	Front	0.563	0.179	0.531	0.017	0.74	1.09	0.58
		Back	0.608	0.179	0.167	0.032	0.79	0.78	0.64
		Left Side	0.236				0.24	0.24	0.24
		Right Side	0.357	0.179	0.910	0.023	0.54	1.27	0.38
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.123				0.12	0.12	0.12
	Band 26	Front	0.740	0.179	0.531	0.017	0.92	1.27	0.76
		Back	0.690	0.179	0.167	0.032	0.87	0.86	0.72
		Left Side	0.467				0.47	0.47	0.47
		Right Side	0.426	0.179	0.910	0.023	0.61	1.34	0.45
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.190				0.19	0.19	0.19
	Band 66	Front	0.223	0.179	0.531	0.017	0.40	0.75	0.24
		Back	1.197	0.179	0.167	0.032	**1.38**	1.36	**1.23**
		Left Side	0.036				0.04	0.04	0.04
		Right Side	0.218	0.179	0.910	0.023	0.40	1.13	0.24
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.607				0.61	0.61	0.61
	Band 25	Front	0.280	0.179	0.531	0.017	0.46	0.81	0.30
		Back	1.183	0.179	0.167	0.032	1.36	1.35	1.22
		Left Side	0.051				0.05	0.05	0.05
		Right Side	0.186	0.179	0.910	0.023	0.37	1.10	0.21
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.576				0.58	0.58	0.58
	Band 30	Front	0.408	0.179	0.531	0.017	0.59	0.94	0.43
		Back	0.794	0.179	0.167	0.032	0.97	0.96	0.83
		Left Side	0.075				0.08	0.08	0.08
		Right Side	0.331	0.179	0.910	0.023	0.51	1.24	0.35
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.472				0.47	0.47	0.47
	Band 7	Front	0.563	0.179	0.531	0.017	0.74	1.09	0.58
		Back	1.132	0.179	0.167	0.032	1.31	1.30	1.16
		Left Side	0.237				0.24	0.24	0.24
		Right Side	0.220	0.179	0.910	0.023	0.40	1.13	0.24
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.389				0.39	0.39	0.39
	Band 41	Front	0.245	0.179	0.531	0.017	0.42	0.78	0.26
		Back	0.641	0.179	0.167	0.032	0.82	0.81	0.67
		Left Side	0.059				0.06	0.06	0.06
		Right Side	0.139	0.179	0.910	0.023	0.32	1.05	0.16
		Top Side		0.179	0.910	0.014	0.18	0.91	0.01
		Bottom Side	0.220				0.22	0.22	0.22

6.3 Body-Worn Accessory Exposure Conditions

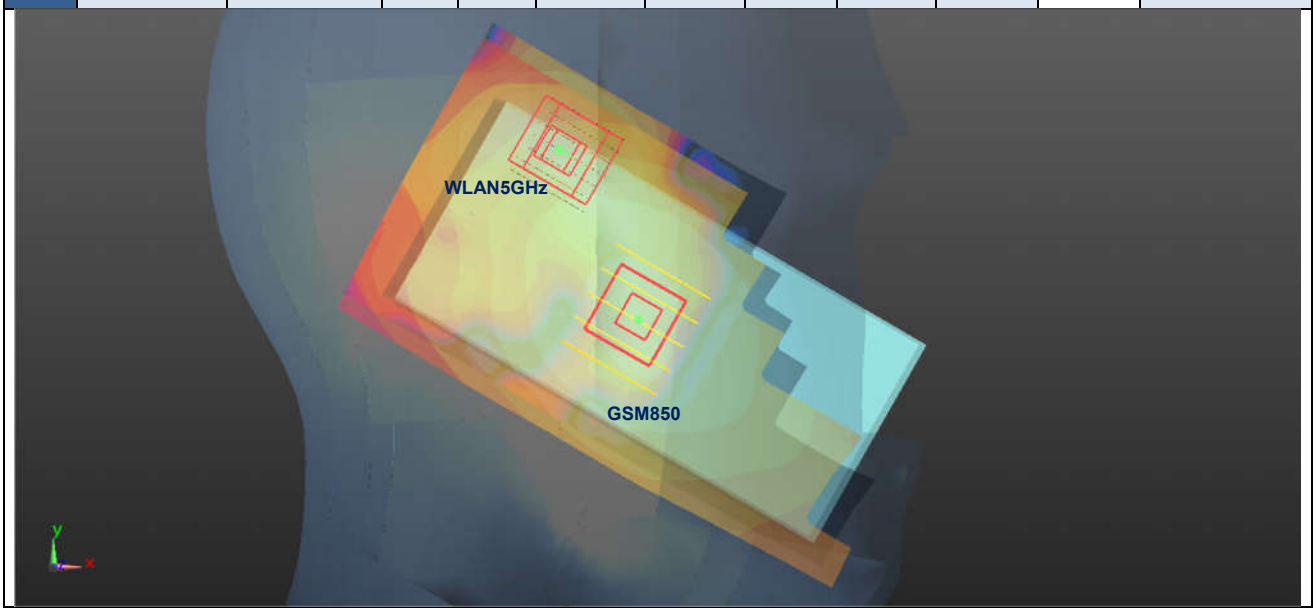
WWAN Band		Exposure Position	1	2	3	4	1+2	1+3	1+4
			WWAN	2.4GHz WLAN	5GHz WLAN	Bluetooth	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Front	0.518	0.102	0.517	0.001	0.62	1.04	0.52
		Back	0.565	0.102	0.127	0.019	0.67	0.69	0.58
	GSM1900	Front	0.162	0.102	0.517	0.001	0.26	0.68	0.16
		Back	0.630	0.102	0.127	0.019	0.73	0.76	0.65
WCDMA	Band V	Front	0.562	0.102	0.517	0.001	0.66	1.08	0.56
		Back	0.500	0.102	0.127	0.019	0.60	0.63	0.52
	Band IV	Front	0.275	0.102	0.517	0.001	0.38	0.79	0.28
		Back	1.169	0.102	0.127	0.019	1.27	1.30	1.19
	Band II	Front	0.300	0.102	0.517	0.001	0.40	0.82	0.30
		Back	1.046	0.102	0.127	0.019	1.15	1.17	1.07
LTE	Band 12	Front	0.372	0.102	0.517	0.001	0.47	0.89	0.37
		Back	0.477	0.102	0.127	0.019	0.58	0.60	0.50
	Band 13	Front	0.354	0.102	0.517	0.001	0.46	0.87	0.36
		Back	0.274	0.102	0.127	0.019	0.38	0.40	0.29
	Band 14	Front	0.412	0.102	0.517	0.001	0.51	0.93	0.41
		Back	0.413	0.102	0.127	0.019	0.52	0.54	0.43
	Band 26	Front	0.586	0.102	0.517	0.001	0.69	1.10	0.59
		Back	0.514	0.102	0.127	0.019	0.62	0.64	0.53
	Band 66	Front	0.132	0.102	0.517	0.001	0.23	0.65	0.13
		Back	0.709	0.102	0.127	0.019	0.81	0.84	0.73
	Band 25	Front	0.330	0.102	0.517	0.001	0.43	0.85	0.33
		Back	1.198	0.102	0.127	0.019	1.30	1.33	1.22
	Band 30	Front	0.240	0.102	0.517	0.001	0.34	0.76	0.24
		Back	0.452	0.102	0.127	0.019	0.55	0.58	0.47
	Band 7	Front	0.337	0.102	0.517	0.001	0.44	0.85	0.34
		Back	0.513	0.102	0.127	0.019	0.62	0.64	0.53
	Band 41	Front	0.171	0.102	0.517	0.001	0.27	0.69	0.17
		Back	0.333	0.102	0.127	0.019	0.44	0.46	0.35

6.4 SPLSR Evaluation and Analysis

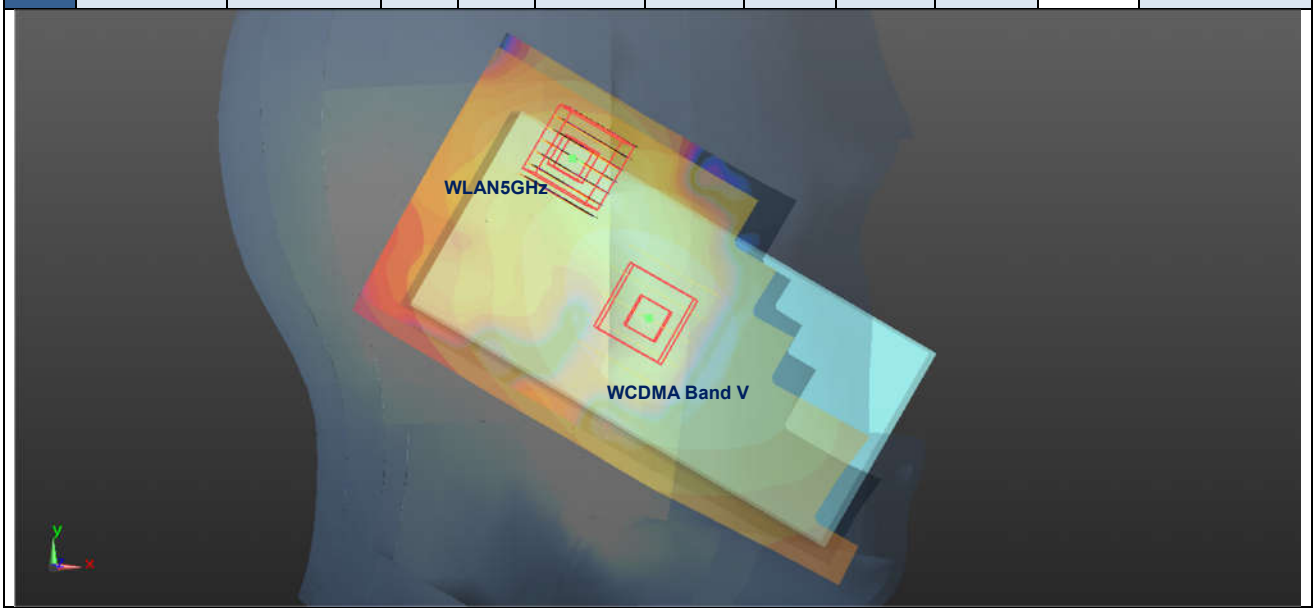
General Note:

1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. SPLSR = (SAR1 + SAR2)1.5 / (min. separation distance, mm). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

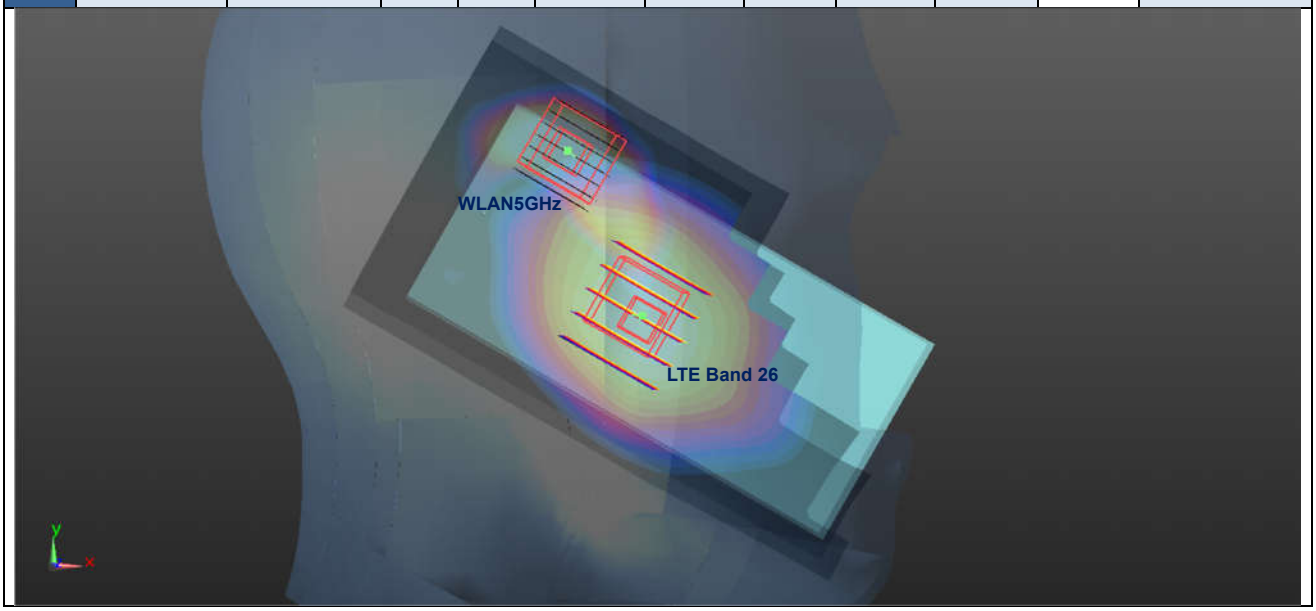
Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
#1	GSM850	Left Cheek	0.719	0	4.51	-3.69	-0.24	59.66	1.67	0.04	Not required
	WLAN5GHz		0.955	0	2.35	1.87	-0.12				



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
#2	WCDMA Band V	Left Cheek	0.750	0	4.69	-3.07	-0.24	54.68	1.71	0.04	Not required
	WLAN5GHz		0.955	0	2.35	1.87	-0.12				



Case #3	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (cm) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 26	Left Cheek	0.813	0	4.46	-3.48	-0.26	57.53	1.77	0.04	Not required
	WLAN5GHz		0.955	0	2.35	1.87	-0.12				



Test Engineer: Nick Hu

7. Uncertainty Assessment

Pre KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg. Therefore, the measurement uncertainty table is not required in this report.

8. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[11] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[12] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

Appendix A. Reference Report

Please refer to Sporton report number FA792101 which is issued separately.