FCC SAR Test Report

APPLICANT	:	Hewlett-Packard Company
EQUIPMENT	:	Slate Tablet
BRAND NAME	:	hp
MODEL NAME	:	HSTNN-Q91C
FCC ID	:	B94HNQ91CHWFTWN
STANDARD	:	FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003

We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Eric Huang / Deputy Manager

Approved by: Jones Tsai / Manager

Testing Laboratory
1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA4O0308	Rev. 01	Initial issue of report	Nov. 14, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Hewlett-Packard Company, Slate Tablet, HSTNN-Q91C**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary	
		Body 1g SAR (W/kg)	Simultaneous Transmission 1g SAR (W/kg)
PCB	GSM850	1.21	1.55
	GSM1900	1.30	
	WCDMA Band V	1.14	
	WCDMA Band IV	1.30	
	WCDMA Band II	**1.45**	
DTS	WLAN 2.4GHz Band	0.87	1.34
NII	WLAN 5.2GHz Band	1.07	1.53
	WLAN 5.3GHz Band	0.90	
	WLAN 5.5GHz Band	1.20	
	WLAN 5.8GHz Band	1.10	
Date of Testing:		10/15/2014~11/06/2014	

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) 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 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Hewlett-Packard Company
Address	3000 Hanover Street, Palo Alto, California 94304, USA

Manufacturer	
Company Name	Quanta Computer Inc.
Address	No. 211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C.

3. Guidance Standard

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 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 248227 D01 SAR meas for 802 11abg v01r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 3G SAR Procedures v03

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Slate Tablet
Brand Name	hp
Model Name	HSTNN-Q91C
FCC ID	B94HNQ91CHWFTWN
Integrated WWAN Module	Brand Name: HUAWEI Model Name: MU736
Integrated WLAN Module	Brand Name: FOXCONN Model Name: T77H462
Integrated NFC Module	Brand Name: WNC Model Name: DFCN-2
IMEI Code	355870054391328
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 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 ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	・GPRS/EGPRS ・RMC 12.2Kbps ・HSDPA ・HSUPA ・802.11a/b/g/n HT20/HT40 ・Bluetooth v3.0+HS，Bluetooth v4.0-LE ・NFC:ASK
EUT Stage	Identical Prototype
Remark: 1. 802.11n-HT40 is not supported in 2.4GHz WLAN.	

Battery option				
Battery 1	Brand Name	N/A	Model Name	SQU-1410
	Power Rating	3.7Vdc, 7700mAh	Type	Li-ion,

4.2 Maximum Tune-up Limit

Burst average power (dBm)				
Mode	GSM 850		GSM 1900	
Output Power Status	Full power mode	Reduced Power mode	Full power mode	Reduced Power mode
GPRS/EDGE (GMSK, 1 Tx slot)	33.50	30.00	30.50	28.50
GPRS/EDGE (GMSK, 2 Tx slots)	31.00	27.50	28.00	26.00
EDGE (8PSK, 1 Tx slot)	28.00	28.00	27.00	27.00
EDGE (8PSK, 2 Tx slots)	25.50	25.50	24.50	24.50
EDGE (8PSK, 3 Tx slot)	24.00	24.00	23.00	23.00
EDGE (8PSK, 4 Tx slots)	22.50	22.50	21.50	21.50

Average power (dBm)						
Mode	WCDMA Band V		WCDMA Band II		WCDMA Band IV	
Output Power Status	Full power mode	Reduced Power mode	Full power mode	Reduced Power mode	Full power mode	Reduced Power mode
RMC 12.2Kbps	24.50	21.50	24.50	19.50	24.50	19.50
HSDPA Subtest-1	22.50	21.50	22.50	19.50	22.50	19.50
HSUPA Subtest-5	22.50	21.50	22.50	19.50	22.50	19.50

Band / Mode	Average Power (dBm)	
	v3.0+HS	v4.0+LE
Bluetooth	9.00	8.00

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)			
		Ant A & Ant B			Ant A+B
		11b	11g	HT20	HT20
2.4GHz Band	2412	16.00	12.00	12.50	13.50
	2437	16.00	14.50	13.50	13.50
	2462	15.00	11.50	11.00	12.50

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)				
		Ant A&B			Ant A+B	
		11a	HT20	HT40	HT20	HT40
5.2GHz Band		14.50	13.50	13.50	13.50	13.50
5.3GHz Band		14.50	13.50	13.50	13.50	13.50
5.5GHz Band	5500	14.50	13.50		13.50	13.50
	5510			10.00		
	5520	14.50				
	5540	14.50				
	5550			13.50		
	5560	14.50				
	5580	14.50				
	5600	14.50				
	5620	14.50				
	5630			13.50		
	5640	14.50				
	5660	14.50				
	5670			13.50		
	5680	14.50				
	5700	12.50				
5.8GHz Band	5745	14.50	13.50		13.50	13.50
	5755			11.00		
	5765					
	5785					
	5795			13.50		
	5805					
	5825					

5. Proximity Sensor Triggering Test

Proximity sensor power reduction

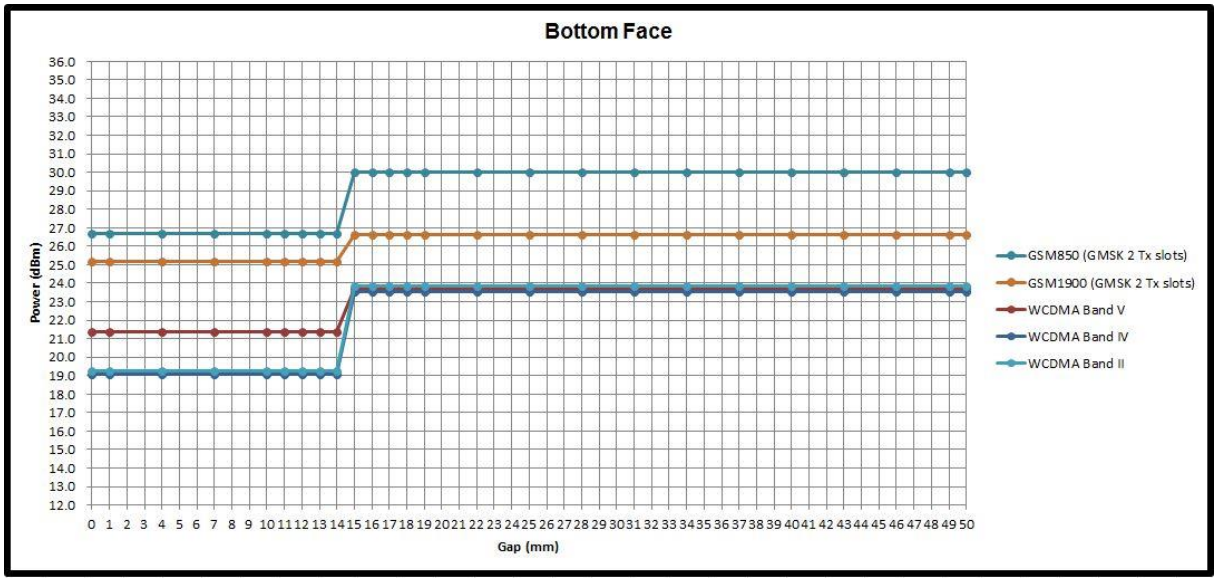
Exposure Position / wireless mode	Bottom Face(1)	Edge 2(1)	Curved surface of Edge2(1)	Edge 1	Edge 3	Edge 4
GSM850 GPRS (GMSK 1 Tx slot) - CS1	3.5 dB	3.5 dB	3.5 dB	0 dB	0 dB	0 dB
GSM850 GPRS (GMSK 2 Tx slots) - CS1	3.5 dB	3.5 dB	3.5 dB			
GSM850 EDGE (8PSK 1 Tx slot) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM850 EDGE (8PSK 2 Tx slots) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM850 EDGE (8PSK 3 Tx slots) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM850 EDGE (8PSK 4 Tx slots) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM1900 GPRS (GMSK 1 Tx slot) - CS1	2.0 dB	2.0 dB	2.0 dB			
GSM1900 GPRS (GMSK 2 Tx slots) - CS1	2.0 dB	2.0 dB	2.0 dB			
GSM1900 EDGE (8PSK 1 Tx slot) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM1900 EDGE (8PSK 2 Tx slots) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM1900 EDGE (8PSK 3 Tx slots) - MCS5	0.0 dB	0.0 dB	0.0 dB			
GSM1900 EDGE (8PSK 4 Tx slots) - MCS5	0.0 dB	0.0 dB	0.0 dB			
WCDMA Band V	3.0 dB	3.0 dB	3.0 dB			
WCDMA Band II	5.0 dB	5.0 dB	5.0 dB			
WCDMA Band IV	5.0 dB	5.0 dB	5.0 dB			

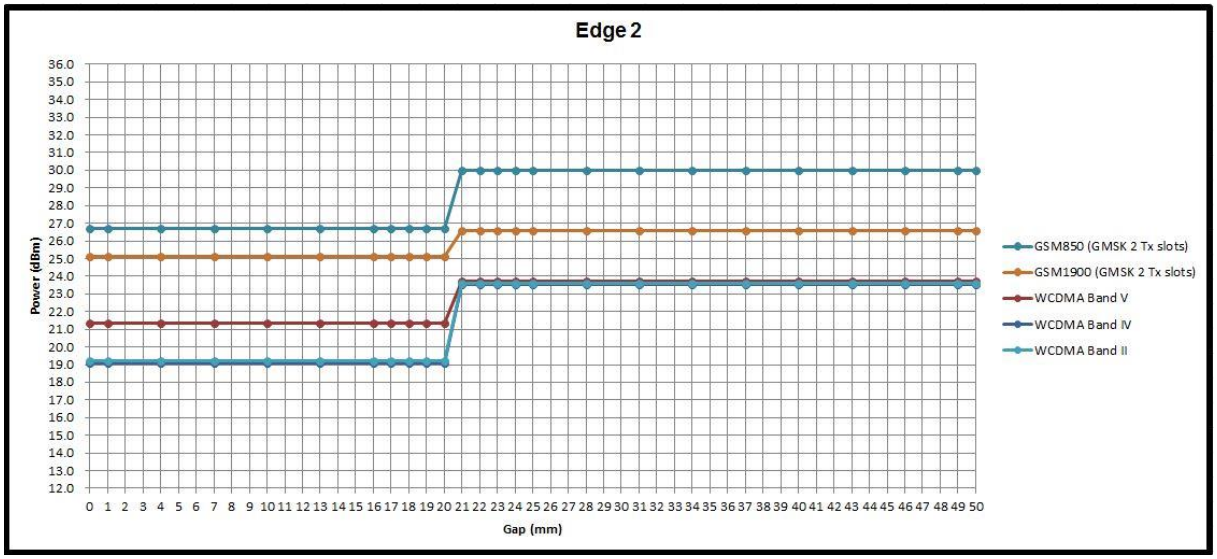
Remark:

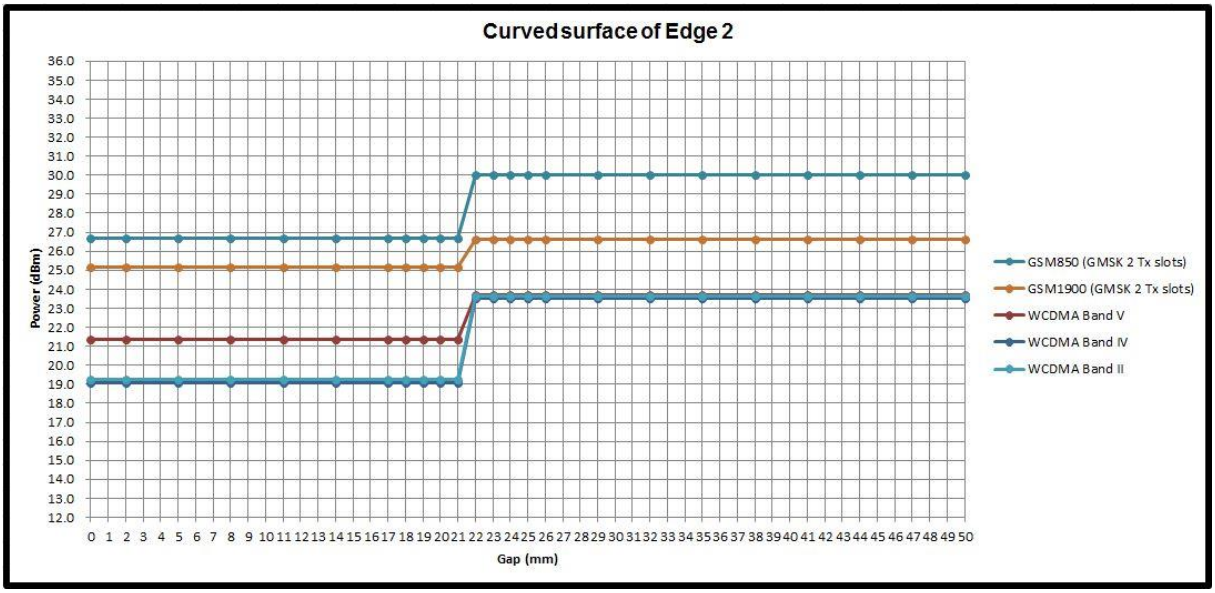
1. (1): Reduced maximum limit applied by activation of proximity sensor.
2. Power reduction is not applicable for WLAN and Bluetooth.
3. Tests were performed in accordance with KDB 616217 D04 section 6.1, 6.2, 6.3, 6.4 and 6.5 and compliant results are shown and described in exhibit “P-Sensor operational description
4. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed:
   - Bottom Face: 8 mm
   - Edge2: 8 mm
   - Curved surface of Edge2: 8 mm

Power Measurement during Sensor Trigger distance testing

Band/Mode	Ch #	Measured power reduction (dBm)		Reduction Levels
		w/o power back-off	w/ power back-off	(dB)
GSM850 GPRS (GMSK 2 Tx slot)	251	29.99	26.68	3.31
GSM1900 GPRS (GMSK 2 Tx slot)	661	26.60	25.15	1.45
WCDMA Band V (RMC 12.2Kbps)	4132	23.70	21.35	2.35
WCDMA Band IV (RMC 12.2Kbps)	1312	23.54	19.10	4.44
WCDMA Band II (RMC 12.2Kbps)	9400	23.83	19.23	4.60






Curved surface of Edge 2
Power (dBm)
Gap (mm)
GSM850 (GMSK 2 Tx slots)
GSM1900 (GMSK 2 Tx slots)
WCDMA Band V
WCDMA Band IV
WCDMA Band II

6. RF Exposure Limits

6.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

6.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

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

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

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

7. Specific Absorption Rate (SAR)

7.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

7.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

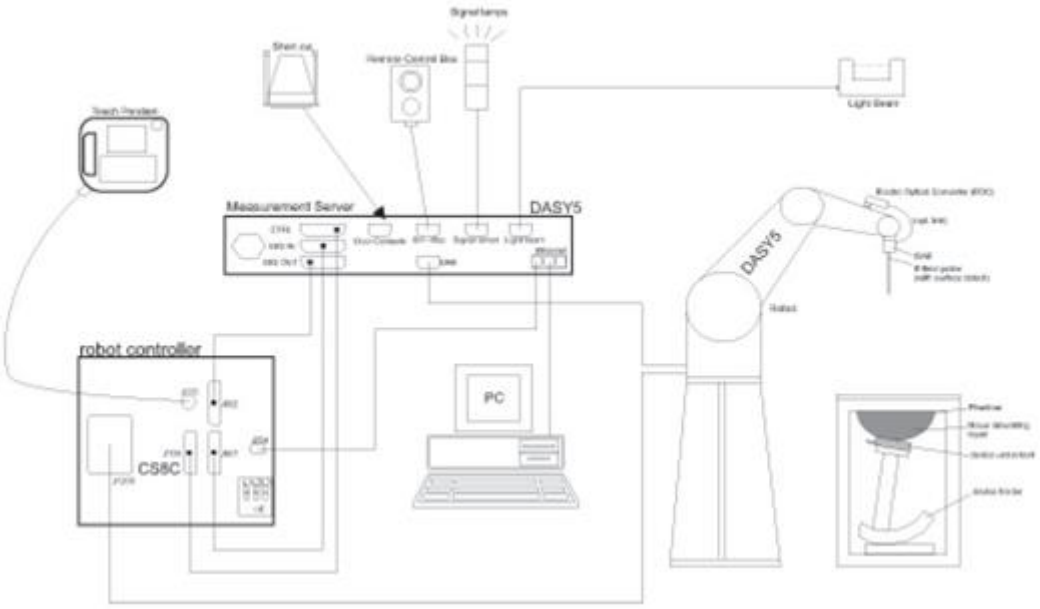
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^{\mathbf{2}}}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

8. System Description and Setup

The DASY 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.

9. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

9.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

9.2 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. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.3 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 found in the scanned area, within a range of the global maximum. The range (in dB0 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 FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

	≤ 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.	

9.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes 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 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

			≤ 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.

9.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	499	Mar. 24, 2014	Mar. 23, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1068	Nov. 27, 2013	Nov. 26, 2014
SPEAG	1900MHz System Validation Kit	D1900V2	5d041	Mar. 21, 2014	Mar. 20, 2015
SPEAG	2450MHz System Validation Kit	D2450V2	736	Aug. 21, 2014	Aug. 20, 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1040	Jun. 20, 2014	Jun. 19, 2015
SPEAG	Data Acquisition Electronics	DAE4	778	Aug. 21, 2014	Aug. 20, 2015
SPEAG	Data Acquisition Electronics	DAE3	360	Feb. 17, 2014	Feb. 16, 2015
SPEAG	Data Acquisition Electronics	DAE4	1279	Jul. 23, 2014	Jul. 22, 2015
SPEAG	Data Acquisition Electronics	DAE3	495	May. 19, 2014	May. 18, 2015
SPEAG	Data Acquisition Electronics	DAE4	1388	Sep. 24, 2014	Sep. 23, 2015
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 26, 2014	Sep. 25, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3753	Mar. 26, 2014	Mar. 25, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Sep. 25, 2014	Sep. 24, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3954	Nov. 04, 2013	Nov. 03, 2014
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	May. 22, 2014	May. 21, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3697	Sep. 29, 2014	Sep. 28, 2015
Wisewind	Thermometer	ETP-101	TM560	Oct. 03, 2014	Oct. 02, 2015
Wisewind	Thermometer	ETP-101	TM685	Oct. 03, 2014	Oct. 02, 2015
Wisewind	Thermometer	HTC-1	TM642	Oct. 03, 2014	Oct. 02, 2015
Wisewind	Thermometer	HTC-1	TM281	Oct. 03, 2014	Oct. 02, 2015
H.M.IRIS	Thermometer	TH-08	TM658	Oct. 03, 2014	Oct. 02, 2015
WonDer	Thermometer	WD-5015	TM225	Oct. 03, 2014	Oct. 02, 2015
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2014	May. 26, 2015
SPEAG	Device Holder	N/A	N/A	NCR	NCR
R&S	Signal Generator	SMU200A	102502	Jul. 07, 2014	Jul. 06, 2015
SPEAG	Dielectric Probe Kit	DAKS-3.5	0004	Mar. 04, 2014	Mar. 03, 2015
Agilent	ENA Network Analyzer	E5071C	MY46101588	May. 31, 2014	May. 30, 2015
Anritsu	Power Meter	ML2495A	1036004	Aug. 09, 2014	Aug. 08, 2015
Anritsu	Power Sensor	MA2411B	1027253	Aug. 11, 2014	Aug. 10, 2015
R&S	Spectrum Analyzer	FSP 7	101131	Jul. 10, 2014	Jul. 09, 2015
Agilent	Dual Directional Coupler	778D	50422	Note1	
Woken	Attenuator 1	WK0602-XX	N/A	Note1	
PE	Attenuator 2	PE7005-10	N/A	Note1	
PE	Attenuator 3	PE7005- 3	N/A	Note1	
AR	Power Amplifier	5S1G4M2	0328767	Note1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

11. System Verification

11.1 Tissue Verification

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.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
900	40.3	57.9	0.2	1.4	0.2	0	0.97	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0
For Body								
750	51.7	47.2	0	0.9	0.1	0	0.96	55.5
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
900	50.8	48.2	0	0.9	0.1	0	1.05	55.0
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7
2600	68.1	0	0	0.1	0	31.8	2.16	52.5

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Conductivity Target (σ)	Permittivity Target (εr)	Delta (σ) (%)	Delta (εr) (%)	Limit (%)	Date
835	MSL	22.6	0.964	54.489	0.97	55.20	-0.62	-1.29	±5	2014/10/16
835	MSL	22.6	0.964	54.489	0.97	55.20	-0.62	-1.29	±5	2014/10/16
835	MSL	22.5	0.981	55.337	0.97	55.20	1.13	0.25	±5	2014/11/4
1750	MSL	22.2	1.510	52.098	1.49	53.40	1.34	-2.44	±5	2014/10/15
1750	MSL	22.3	1.517	52.252	1.49	53.40	1.81	-2.15	±5	2014/10/31
1900	MSL	22.2	1.544	51.591	1.52	53.30	1.58	-3.21	±5	2014/10/15
1900	MSL	22.3	1.499	53.26	1.52	53.30	-1.38	-0.08	±5	2014/10/31
1900	MSL	22.6	1.532	52.506	1.52	53.30	0.79	-1.49	±5	2014/11/4
2450	MSL	22.3	1.931	53.552	1.95	52.70	-0.97	1.62	±5	2014/10/17
2450	MSL	22.4	2.003	51.846	1.95	52.70	2.72	-1.62	±5	2014/11/5
5200	MSL	22.6	5.257	47.536	5.30	49.00	-0.81	-2.99	±5	2014/10/18
5200	MSL	22.4	5.138	47.493	5.30	49.00	-3.06	-3.08	±5	2014/11/6
5300	MSL	22.3	5.393	47.275	5.42	48.90	-0.50	-3.32	±5	2014/10/22
5300	MSL	22.4	5.270	47.255	5.42	48.90	-2.77	-3.36	±5	2014/11/6
5600	MSL	22.3	5.790	46.784	5.77	48.50	0.35	-3.54	±5	2014/10/22
5600	MSL	22.5	5.784	49.807	5.77	48.50	0.24	2.69	±5	2014/10/27
5600	MSL	22.5	5.653	46.801	5.77	48.50	-2.03	-3.50	±5	2014/11/6
5800	MSL	22.4	5.956	46.473	6.00	48.20	-0.73	-3.58	±5	2014/10/29
5800	MSL	22.5	5.991	46.521	6.00	48.20	-0.15	-3.48	±5	2014/11/6

11.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2014/10/16	835	MSL	250	D835V2-499	EX3DV4 - SN3931	DAE3 Sn360	2.27	9.46	9.08	-4.02
2014/10/16	835	MSL	250	D835V2-499	ES3DV3 - SN3270	DAE4 Sn778	2.50	9.46	10.00	5.71
2014/11/4	835	MSL	250	D835V2-499	EX3DV4 - SN3697	DAE4 Sn1388	2.52	9.46	10.08	6.55
2014/10/15	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3931	DAE3 Sn360	9.39	37.50	37.56	0.16
2014/10/31	1750	MSL	250	D1750V2-1068	EX3DV4 - SN3697	DAE4 Sn1388	9.13	37.50	36.52	-2.61
2014/10/15	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3931	DAE3 Sn360	9.99	41.00	39.96	-2.54
2014/10/31	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3697	DAE4 Sn1388	10.1	41.00	40.4	-1.46
2014/11/4	1900	MSL	250	D1900V2-5d041	EX3DV4 - SN3925	DAE3 Sn495	9.76	41.00	39.04	-4.78
2014/10/17	2450	MSL	250	D2450V2-736	ES3DV3 - SN3270	DAE4 Sn778	12.30	50.60	49.2	-2.77
2014/11/5	2450	MSL	250	D2450V2-736	EX3DV4 - SN3753	DAE4 Sn1279	13.60	50.60	54.4	7.51
2014/10/18	5200	MSL	100	D5GHzV2-1040	EX3DV4 - SN3954	DAE4 Sn1279	7.34	77.80	73.4	-5.66
2014/11/6	5200	MSL	100	D5GHzV2-1040	EX3DV4 - SN3753	DAE4 Sn1279	7.67	77.80	76.7	-1.41
2014/10/22	5300	MSL	100	D5GHzV2-1040	EX3DV4 - SN3954	DAE4 Sn1279	7.97	79.10	79.7	0.76
2014/11/6	5300	MSL	100	D5GHzV2-1040	EX3DV4 - SN3753	DAE4 Sn1279	7.94	79.10	79.4	0.38
2014/10/22	5600	MSL	100	D5GHzV2-1040	EX3DV4 - SN3954	DAE4 Sn1279	8.20	82.70	82	-0.85
2014/10/27	5600	MSL	100	D5GHzV2-1040	EX3DV4 - SN3954	DAE4 Sn1279	7.90	82.70	79	-4.47
2014/11/6	5600	MSL	100	D5GHzV2-1040	EX3DV4 - SN3925	DAE3 Sn495	7.81	82.70	78.1	-5.56
2014/10/29	5800	MSL	100	D5GHzV2-1040	EX3DV4 - SN3954	DAE4 Sn1279	8.01	77.30	80.1	3.62
2014/11/6	5800	MSL	100	D5GHzV2-1040	EX3DV4 - SN3925	DAE3 Sn495	7.98	77.30	79.8	3.23

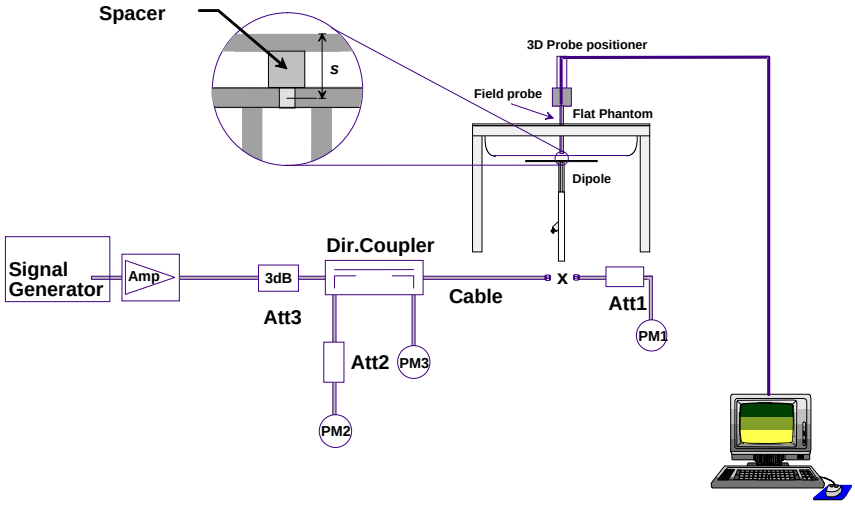


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

12. RF Exposure Positions

12.1 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v05r02 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

13. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

General Note:

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, for Body SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the GPRS 2Tx slots modes was selected when EUT operating without power back-off, the GPRS 2Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.

Full Power mode (Proximity Sensor Inactive)

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot)	32.23	32.35	32.39	33.50	23.23	23.35	23.39	24.50
GPRS (GMSK, 2 Tx slots)	29.89	29.98	29.99	31.00	23.89	23.98	23.99	25.00
EDGE (8PSK, 1 Tx slot)	26.49	26.60	26.65	28.00	17.49	17.60	17.65	19.00
EDGE (8PSK, 2 Tx slots)	24.21	24.32	24.35	25.50	18.21	18.32	18.35	19.50
EDGE (8PSK, 3 Tx slots)	22.23	22.36	22.39	24.00	17.97	18.10	18.13	19.74
EDGE (8PSK, 4 Tx slots)	21.17	21.35	21.39	22.50	18.17	18.35	18.39	19.50

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot)	29.18	29.20	29.09	30.50	20.18	20.20	20.09	21.50
GPRS (GMSK, 2 Tx slots)	26.58	26.60	26.51	28.00	20.58	20.60	20.51	22.00
EDGE (8PSK, 1 Tx slot)	25.57	25.58	25.46	27.00	16.57	16.58	16.46	18.00
EDGE (8PSK, 2 Tx slots)	23.15	23.16	23.04	24.50	17.15	17.16	17.04	18.50
EDGE (8PSK, 3 Tx slots)	21.65	21.66	21.53	23.00	17.39	17.40	17.27	18.74
EDGE (8PSK, 4 Tx slots)	20.17	20.18	20.06	21.50	17.17	17.18	17.06	18.50

Reduced Power Mode (Proximity Sensor active)

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GPRS (GMSK, 1 Tx slot)	29.48	29.59	29.62	30.00	20.48	20.59	20.62	21.00
GPRS (GMSK, 2 Tx slots)	26.53	26.65	26.68	27.50	20.53	20.65	20.68	21.50
EDGE (8PSK, 1 Tx slot)	26.39	26.50	26.53	28.00	17.39	17.50	17.53	19.00
EDGE (8PSK, 2 Tx slots)	24.12	24.22	24.26	25.50	18.12	18.22	18.26	19.50
EDGE (8PSK, 3 Tx slots)	22.13	22.26	22.29	24.00	17.87	18.00	18.03	19.74
EDGE (8PSK, 4 Tx slots)	21.15	21.25	21.30	22.50	18.15	18.25	18.30	19.50

Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GPRS (GMSK, 1 Tx slot)	28.15	28.23	28.13	28.50	19.15	19.23	19.13	19.50
GPRS (GMSK, 2 Tx slots)	25.11	25.15	25.06	26.00	19.11	19.15	19.06	20.00
EDGE (8PSK, 1 Tx slot)	25.54	25.55	25.43	27.00	16.54	16.55	16.43	18.00
EDGE (8PSK, 2 Tx slots)	23.04	23.05	22.93	24.50	17.04	17.05	16.93	18.50
EDGE (8PSK, 3 Tx slots)	21.42	21.44	21.41	23.00	17.16	17.18	17.15	18.74
EDGE (8PSK, 4 Tx slots)	20.03	20.05	19.93	21.50	17.03	17.05	16.93	18.50

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 5) (Note 6)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.

Full Power mode (Proximity Sensor Inactive)

Band		WCDMA V			WCDMA II			WCDMA IV		
TX Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	23.70	23.32	23.20	23.80	23.83	23.38	23.54	23.25	23.35
3GPP Rel 6	HSDPA Subtest-1	22.00	21.70	21.62	21.59	21.76	21.30	21.82	21.60	21.65
3GPP Rel 6	HSDPA Subtest-2	21.97	21.64	21.59	21.55	21.75	21.29	21.80	21.55	21.64
3GPP Rel 6	HSDPA Subtest-3	21.88	21.54	21.48	21.53	21.72	21.28	21.79	21.52	21.61
3GPP Rel 6	HSDPA Subtest-4	21.85	21.53	21.45	21.51	21.70	21.25	21.77	21.50	21.59
3GPP Rel 6	HSUPA Subtest-1	21.60	21.32	21.29	21.45	21.60	21.30	21.79	21.59	21.61
3GPP Rel 6	HSUPA Subtest-2	20.22	20.06	20.01	20.15	20.31	20.06	20.33	20.10	20.20
3GPP Rel 6	HSUPA Subtest-3	20.86	20.61	20.55	20.66	20.80	20.55	20.89	20.68	20.77
3GPP Rel 6	HSUPA Subtest-4	20.93	20.33	20.25	20.49	20.63	20.30	20.66	20.42	20.50
3GPP Rel 6	HSUPA Subtest-5	22.30	21.96	21.82	21.93	22.15	21.60	22.19	21.92	21.95

Reduced Power Mode (Proximity Sensor active)

Band		WCDMA V			WCDMA II			WCDMA IV		
TX Channel		4132	4182	4233	9262	9400	9538	1312	1413	1513
Frequency (MHz)		826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
3GPP Rel 99	RMC 12.2Kbps	21.35	21.01	20.90	19.17	19.23	18.70	19.10	18.65	18.92
3GPP Rel 6	HSDPA Subtest-1	21.10	20.77	20.74	18.63	18.70	18.12	18.57	18.23	18.32
3GPP Rel 6	HSDPA Subtest-2	20.96	20.59	20.55	18.86	19.04	18.32	18.88	18.52	18.65
3GPP Rel 6	HSDPA Subtest-3	20.91	20.63	20.57	18.88	19.00	18.36	18.95	18.59	18.66
3GPP Rel 6	HSDPA Subtest-4	21.00	20.68	20.63	18.87	18.94	18.25	18.91	18.51	18.65
3GPP Rel 6	HSUPA Subtest-1	20.45	20.15	20.11	17.99	18.07	17.55	17.92	17.67	17.71
3GPP Rel 6	HSUPA Subtest-2	19.94	19.59	19.68	18.25	18.32	17.79	18.25	17.94	17.98
3GPP Rel 6	HSUPA Subtest-3	20.49	20.13	20.07	18.49	18.50	18.26	18.50	18.44	18.46
3GPP Rel 6	HSUPA Subtest-4	20.69	20.38	20.26	18.62	18.82	18.30	18.67	18.52	18.55
3GPP Rel 6	HSUPA Subtest-5	21.08	20.70	20.69	18.93	19.08	18.45	18.86	18.69	18.71

<WLAN Conducted Power>

General Note:

1. For SAR testing was performed on single antenna RF power in SISO mode is larger or equal to the single antenna RF power in MIMO mode, and for RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode.
2. For IEEE802.11a/b/g SAR testing, highest average RF output power channel for the lowest data rate for 802.11a/b were selected for SAR evaluation. 802.11g were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of 802.11a/b mode.
3. For IEEE802.11n, SAR testing can be conducted on channel with the highest output power when taking into consideration tune-up tolerance for same test configuration that was identified during SAR evaluations for IEEE802.11a/b/g (as applicable) provided bandwidth and test position are the same.
4. For IEEE802.11n with multiple channel BW configurations, highest channel BW configuration with highest output power limit shall be tested.
5. Testing of lower BW configurations is not required when the maximum average output of the default test channels in each lower BW configuration is less than 1/4dB higher than the default test channel in the highest BW configuration.

<2.4GHz WLAN Conducted Power>

<Antenna A>

WLAN 2.4GHz 802.11b Average Power (dBm)					
Power vs. Channel			Power vs. Data Rate		
Channel	Frequency (MHz)	Data Rate	2Mbps	5.5Mbps	11Mbps
		1Mbps			
CH 1	2412	15.95	15.90	15.89	15.85
CH 6	2437	15.96			
CH 11	2462	14.91			

WLAN 2.4GHz 802.11g Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps							
CH 1	2412	11.94	14.40	14.39	14.38	14.35	14.34	14.33	14.32
CH 6	2437	14.42							
CH 11	2462	11.14							

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 1	2412	12.09	13.30	13.29	13.28	13.25	13.24	13.20	13.18
CH 6	2437	13.32							
CH 11	2462	10.80							

<Antenna B>

WLAN 2.4GHz 802.11b Average Power (dBm)					
Power vs. Channel			Power vs. Data Rate		
Channel	Frequency (MHz)	Data Rate 1Mbps	2Mbps	5.5Mbps	11Mbps
CH 1	2412	15.90	15.90	15.89	15.88
CH 6	2437	15.92			
CH 11	2462	14.82			

WLAN 2.4GHz 802.11g Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 1	2412	11.87	14.23	14.20	14.19	14.18	14.15	14.13	14.12
CH 6	2437	14.25							
CH 11	2462	10.95							

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 1	2412	12.09	13.25	13.24	13.22	13.20	13.20	13.19	13.18
CH 6	2437	13.27							
CH 11	2462	10.75							

<Antenna A+B>

WLAN 2.4GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 1	2412	13.49	13.40	13.35	13.35	13.32	13.32	13.30	13.29
CH 6	2437	13.42							
CH 11	2462	12.05							

<5GHz WLAN Conducted Power>

<Antenna A>

WLAN 5GHz 802.11a Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 36	5180	14.49	14.38	14.41	14.38	14.33	14.40	14.28	14.31
CH 40	5200	14.28							
CH 44	5220	14.27							
CH 48	5240	14.21							
CH 52	5260	14.21	14.33	14.29	14.24	14.34	14.19	14.29	14.27
CH 56	5280	14.24							
CH 60	5300	14.43							
CH 64	5320	14.37							
CH 100	5500	13.35	14.31	14.33	14.22	14.25	14.17	14.26	14.24
CH 104	5520	14.10							
CH 108	5540	14.30							
CH 112	5560	14.40							
CH 116	5580	14.33							
CH 120	5600	14.30							
CH 124	5620	14.28							
CH 128	5640	14.22							
CH 132	5660	14.26							
CH 136	5680	14.11							
CH 140	5700	12.12							
CH 149	5745	12.49	14.25	14.27	14.26	14.18	14.17	14.13	14.06
CH 153	5765	14.25							
CH 157	5785	14.35							
CH 161	5805	14.27							
CH 165	5825	14.18							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	13.46	13.33	13.38	13.29	13.28	13.20	13.29	13.26
CH 40	5200	13.25							
CH 44	5220	13.29							
CH 48	5240	13.19							
CH 52	5260	13.44	13.34	13.37	13.33	13.26	13.24	13.23	13.15
CH 56	5280	13.30							
CH 60	5300	13.28							
CH 64	5320	13.27							
CH 100	5500	13.30	13.41	13.32	13.45	13.28	13.21	13.36	13.25
CH 104	5520	13.46							
CH 108	5540	13.42							
CH 112	5560	13.16							
CH 116	5580	13.47							
CH 120	5600	13.14							
CH 124	5620	13.27							
CH 128	5640	13.23							
CH 132	5660	13.28							
CH 136	5680	13.32							
CH 140	5700	13.32							
CH 149	5745	12.42	13.31	13.26	13.34	13.34	13.22	13.23	13.28
CH 153	5765	13.18							
CH 157	5785	13.23							
CH 161	5805	13.19							
CH 165	5825	13.42							

WLAN 5GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	13.31	13.18	13.17	13.19	13.15	13.09	13.15	13.14
CH 46	5230	13.21							
CH 54	5270	13.23	13.13	13.11	13.16	13.10	12.98	13.10	13.03
CH 62	5310	13.21							
CH 102	5510	9.79	13.15	13.16	13.24	13.12	13.11	13.09	12.99
CH 110	5550	13.27							
CH 126	5630	13.29							
CH 134	5670	13.21							
CH 151	5755	10.96	13.13	13.05	13.07	13.05	13.08	13.00	13.04
CH 159	5795	13.20							

<Antenna B>

WLAN 5GHz 802.11a Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 36	5180	14.32	14.26	14.30	14.21	14.23	14.15	14.25	14.25
CH 40	5200	14.33							
CH 44	5220	14.39							
CH 48	5240	14.22							
CH 52	5260	14.20	14.39	14.35	14.39	14.33	14.29	14.31	14.20
CH 56	5280	14.32							
CH 60	5300	14.44							
CH 64	5320	14.47							
CH 100	5500	13.25	14.35	14.27	14.38	14.28	14.22	14.28	14.21
CH 104	5520	14.11							
CH 108	5540	14.16							
CH 112	5560	14.22							
CH 116	5580	14.28							
CH 120	5600	14.17							
CH 124	5620	14.16							
CH 128	5640	14.03							
CH 132	5660	14.41							
CH 136	5680	14.37							
CH 140	5700	12.10							
CH 149	5745	12.29	14.15	14.06	14.14	14.06	14.09	13.99	14.09
CH 153	5765	14.20							
CH 157	5785	14.21							
CH 161	5805	14.22							
CH 165	5825	14.19							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	13.27	13.25	13.27	13.24	13.12	13.30	13.21	13.18
CH 40	5200	13.33							
CH 44	5220	13.37							
CH 48	5240	13.24							
CH 52	5260	13.22	13.40	13.35	13.26	13.37	13.23	13.36	13.34
CH 56	5280	13.46							
CH 60	5300	13.31							
CH 64	5320	13.46							
CH 100	5500	13.26	13.35	13.33	13.35	13.26	13.26	13.26	13.11
CH 104	5520	13.36							
CH 108	5540	13.33							
CH 112	5560	13.39							
CH 116	5580	13.35							
CH 120	5600	13.32							
CH 124	5620	13.42							
CH 128	5640	13.37							
CH 132	5660	13.43							
CH 136	5680	13.38							
CH 140	5700	13.22							
CH 149	5745	12.13	13.40	13.36	13.33	13.30	13.21	13.37	13.20
CH 153	5765	13.39							
CH 157	5785	13.34							
CH 161	5805	13.24							
CH 165	5825	13.45							

WLAN 5GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	13.33	13.32	13.42	13.32	13.30	13.38	13.31	13.29
CH 46	5230	13.46							
CH 54	5270	13.42	13.33	13.27	13.30	13.33	13.24	13.27	13.27
CH 62	5310	13.38							
CH 102	5510	9.62	13.31	13.30	13.26	13.27	13.16	13.17	13.10
CH 110	5550	13.38							
CH 126	5630	13.36							
CH 134	5670	13.28							
CH 151	5755	10.68	13.20	13.14	13.19	13.09	13.03	13.14	13.00
CH 159	5795	13.27							

<Antenna A+B>

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	13.26	13.40	13.37	13.34	13.31	13.35	13.27	13.24
CH 40	5200	13.42							
CH 44	5220	13.45							
CH 48	5240	13.35							
CH 52	5260	13.26	13.27	13.33	13.35	13.26	13.26	13.31	13.26
CH 56	5280	13.42							
CH 60	5300	13.39							
CH 64	5320	13.27							
CH 100	5500	13.31	13.41	13.33	13.38	13.31	13.30	13.21	13.18
CH 104	5520	13.33							
CH 108	5540	13.31							
CH 112	5560	13.41							
CH 116	5580	13.39							
CH 120	5600	13.40							
CH 124	5620	13.38							
CH 128	5640	13.33							
CH 132	5660	13.33							
CH 136	5680	13.46							
CH 140	5700	13.44							
CH 149	5745	13.20	13.33	13.40	13.35	13.36	13.35	13.23	13.24
CH 153	5765	13.20							
CH 157	5785	13.46							
CH 161	5805	13.33							
CH 165	5825	13.32							

WLAN 5GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	13.23	13.35	13.24	13.29	13.32	13.28	13.15	13.22
CH 46	5230	13.40							
CH 54	5270	13.17	13.17	13.16	13.21	13.18	13.13	13.19	13.14
CH 62	5310	13.31							
CH 102	5510	13.29	13.28	13.19	13.26	13.12	13.09	13.11	12.98
CH 110	5550	13.17							
CH 126	5630	13.12							
CH 134	5670	13.01							
CH 151	5755	13.25	13.29	13.25	13.30	13.23	13.22	13.14	13.20
CH 159	5795	13.36							

14. Bluetooth Exclusions Applied

Mode Band	Average power(dBm)	
	Bluetooth v3.0+HS	Bluetooth v4.0+LE
2.4GHz Bluetooth	9.0	8.0

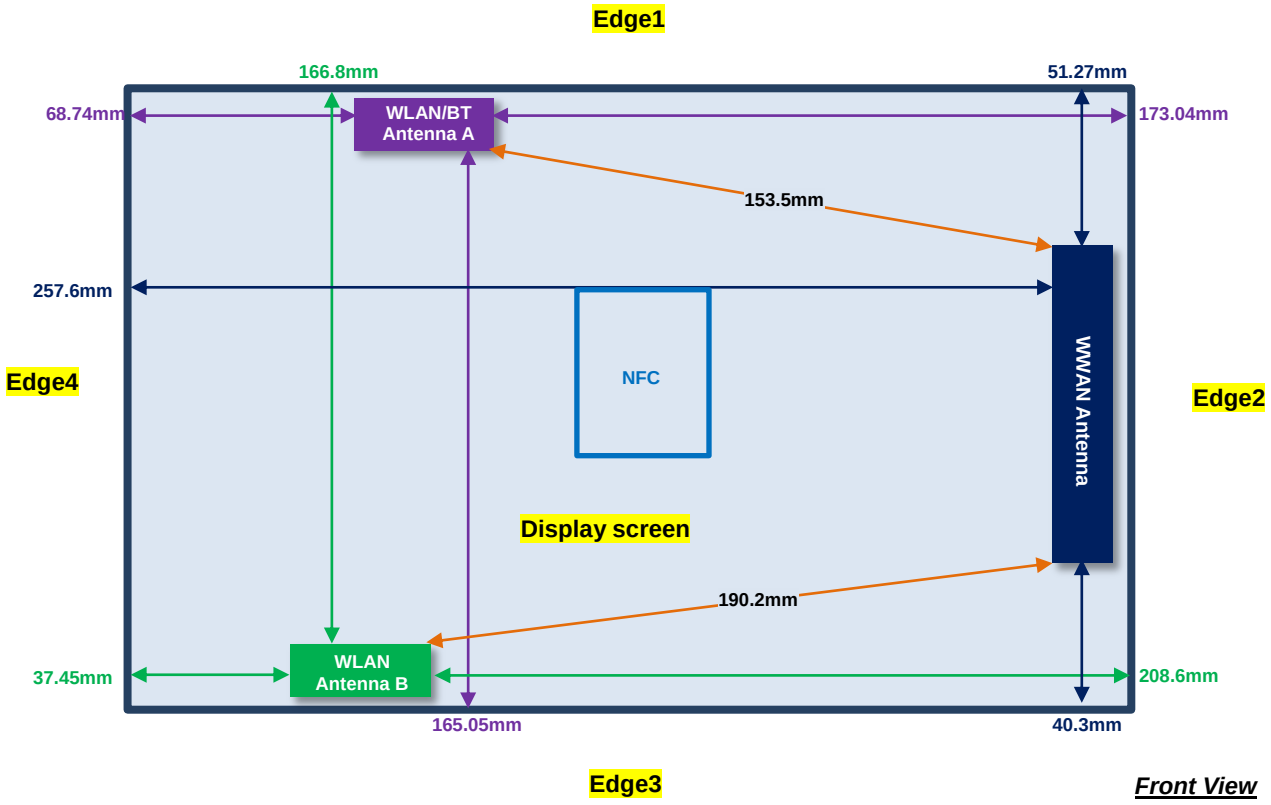
Note:

1. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison

Bluetooth Max Power (dBm)	Separation Distance (mm)	Frequency (GHz)	exclusion thresholds
9	< 5	2.48	2.52

Note:
Per KDB 447498 D01v05r02, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is 2.52 which is <= 3, SAR testing is not required.

15. Antenna Location



Front View

<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v05r02, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v05r02, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v05r02, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

Exposure Position	Wireless Interface	GPRS 850 Class 10	GPRS 1900 Class 10	WCDMA Band V	WCDMA Band IV	WCDMA Band II	802.11b Ant A	802.11b Ant B	802.11a Ant A	802.11a Ant B
	Calculated Frequency	848MHz	1909MHz	846MHz	1750MHz	1907MHz	2462MHz	2462MHz	5825MHz	5825MHz
	Maximum power (dBm)	25	22	24.5	24.5	24.5	16	16	14.5	14.5
	Maximum rated power(mW)	316	158	282	282	282	40	40	28	28
Bottom Face	Separation distance(mm)	5					5	5	5	5
	exclusion threshold	58	44	52	75	78	13	13	14	14
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Edge 1	Separation distance(mm)	51.27					5	166.80	5	166.80
	exclusion threshold	170	121	170	126	121	13	1264	14	1230
	Testing required?	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Edge 2	Separation distance(mm)	5					173.04	208.60	173.04	208.60
	exclusion threshold	58	44	52	75	78	1326	1682	1293	1648
	Testing required?	Yes	Yes	Yes	Yes	Yes	No	No	No	No
Edge 3	Separation distance(mm)	40.30					165.05	5	165.05	5
	exclusion threshold	7	5	6	9	10	1246	13	1213	14
	Testing required?	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Edge 4	Separation distance(mm)	257.60					68.74	37.45	68.74	37.45
	exclusion threshold	1337	2185	1334	2189	2185	283	2	250	2
	Testing required?	No	No	No	No	No	No	No	No	No

16. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, for each exposure position, 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
3. For the exposure positions that proximity sensor power reduction is applied for SAR compliance, additional SAR testing with EUT transmitting full power in normal mode was performed; 0.8cm for bottom face, 0.8cm for edge2, and 0.8cm for curved surface of Edge 2
4. Per KDB 941225 D01v03, for Body SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance, for modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested, therefore, the GPRS 2Tx slots modes was selected when EUT operating without power back-off, the GPRS 2Tx slots modes was selected when EUT operating with power back-off, according to the highest source-based time-averaged output power.
5. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.
6. For SAR testing of the curved region of the device, the device was placed directly against the phantom at the point where the distance between the antenna and device exterior is a minimum.
7. Per KDB 616217 D04v01r01, the additional separation introduced by the contour against a flat phantom is > 5 mm on this device and reported SAR is > 1.2 W/kg, a curved or contoured back surface or edge SAR is required, more detail information please refer to the setup photo.
8. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

16.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	ON	251	848.8	26.68	27.50	1.208	0.03	0.949	1.146
	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	ON	128	824.2	26.53	27.50	1.250	-0.03	0.878	1.098
	GSM850	GPRS (2 Tx slots)	Bottom Face	0cm	ON	189	836.4	26.65	27.50	1.216	0.03	0.953	1.159
	GSM850	GPRS (2 Tx slots)	Edge 2	0cm	ON	251	836.4	26.68	27.50	1.208	-0.08	0.442	0.534
	GSM850	GPRS (2 Tx slots)	Curved surface of Edge 2	0cm	ON	251	848.8	26.68	27.50	1.208	0.09	0.591	0.714
1	GSM850	GPRS (2 Tx slots)	Bottom Face	0.8cm	OFF	251	848.8	29.99	31.00	1.262	0	0.962	**1.214**
	GSM850	GPRS (2 Tx slots)	Bottom Face	0.8cm	OFF	128	824.2	29.89	31.00	1.291	0.04	0.859	1.109
	GSM850	GPRS (2 Tx slots)	Bottom Face	0.8cm	OFF	189	836.4	29.98	31.00	1.265	0.01	0.926	1.171
	GSM850	GPRS (2 Tx slots)	Edge 1	0cm	OFF	251	848.8	29.99	31.00	1.262	0.1	0.398	0.502
	GSM850	GPRS (2 Tx slots)	Edge 2	0.8cm	OFF	251	848.8	29.99	31.00	1.262	-0.07	0.453	0.572
	GSM850	GPRS (2 Tx slots)	Edge 3	0cm	OFF	251	848.8	29.99	31.00	1.262	0	0.253	0.319
	GSM850	GPRS (2 Tx slots)	Curved surface of Edge 2	0.8cm	OFF	251	848.8	29.99	31.00	1.262	-0.01	0.563	0.710
	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	ON	661	1880	25.15	26.00	1.216	-0.08	1.010	1.228
	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	ON	512	1850.2	25.11	26.00	1.227	-0.08	0.990	1.215
2	GSM1900	GPRS (2 Tx slots)	Bottom Face	0cm	ON	810	1909.8	25.06	26.00	1.242	-0.08	1.050	**1.304**
	GSM1900	GPRS (2 Tx slots)	Edge 2	0cm	ON	661	1880	25.15	26.00	1.216	0.05	0.793	0.964
	GSM1900	GPRS (2 Tx slots)	Edge 2	0cm	ON	512	1850.2	25.11	26.00	1.227	0.03	0.753	0.924
	GSM1900	GPRS (2 Tx slots)	Edge 2	0cm	ON	810	1909.8	25.06	26.00	1.242	0.03	0.802	0.996
	GSM1900	GPRS (2 Tx slots)	Curved surface of Edge 2	0cm	ON	661	1880	25.15	26.00	1.216	0.04	0.754	0.917
	GSM1900	GPRS (2 Tx slots)	Curved surface of Edge 2	0cm	ON	512	1850.2	25.11	26.00	1.227	-0.03	0.746	0.916
	GSM1900	GPRS (2 Tx slots)	Curved surface of Edge 2	0cm	ON	810	1909.8	25.06	26.00	1.242	-0.01	0.740	0.919
	GSM1900	GPRS (2 Tx slots)	Bottom Face	0.8cm	OFF	661	1880	26.60	28.00	1.380	-0.01	0.355	0.490
	GSM1900	GPRS (2 Tx slots)	Edge 1	0cm	OFF	661	1880	26.60	28.00	1.380	0.04	0.071	0.098
	GSM1900	GPRS (2 Tx slots)	Edge 2	0.8cm	OFF	661	1880	26.60	28.00	1.380	-0.05	0.477	0.658
	GSM1900	GPRS (2 Tx slots)	Edge 3	0cm	OFF	661	1880	26.60	28.00	1.380	0.01	0.088	0.121
	GSM1900	GPRS (2 Tx slots)	Curved surface of Edge 2	0.8cm	OFF	661	1880	26.60	28.00	1.380	0.03	0.336	0.464

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	ON	4132	826.4	21.35	21.50	1.035	0.08	1.030	1.066
	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	ON	4182	836.4	21.01	21.50	1.119	0.06	0.936	1.048
3	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	ON	4233	846.6	20.90	21.50	1.148	0.03	0.991	**1.138**
	WCDMA V	RMC 12.2Kbps	Edge 2	0cm	ON	4132	826.4	21.35	21.50	1.035	-0.01	0.487	0.504
	WCDMA V	RMC 12.2Kbps	Curved surface of Edge 2	0cm	ON	4132	826.4	21.35	21.50	1.035	-0.04	0.645	0.668
	WCDMA V	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	4132	826.4	23.70	24.50	1.202	0.07	0.787	0.946
	WCDMA V	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	4182	836.4	23.32	24.50	1.312	-0.04	0.745	0.978
	WCDMA V	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	4233	846.6	23.20	24.50	1.349	0.02	0.794	1.071
	WCDMA V	RMC 12.2Kbps	Edge 1	0cm	OFF	4132	826.4	23.70	24.50	1.202	0.07	0.118	0.142
	WCDMA V	RMC 12.2Kbps	Edge 2	0.8cm	OFF	4132	826.4	23.70	24.50	1.202	0.02	0.392	0.471
	WCDMA V	RMC 12.2Kbps	Edge 3	0cm	OFF	4132	826.4	23.70	24.50	1.202	0.02	0.217	0.261
	WCDMA V	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	4132	826.4	23.70	24.50	1.202	-0.02	0.421	0.506
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	ON	1312	1712.4	19.10	19.50	1.096	-0.05	0.986	1.081
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	ON	1413	1732.6	18.65	19.50	1.216	-0.03	0.844	1.026
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0cm	ON	1513	1752.6	18.92	19.50	1.143	-0.03	0.882	1.008
	WCDMA IV	RMC 12.2Kbps	Edge 2	0cm	ON	1312	1712.4	19.10	19.50	1.096	-0.03	0.881	0.966
	WCDMA IV	RMC 12.2Kbps	Edge 2	0cm	ON	1413	1732.6	18.65	19.50	1.216	0.05	0.823	1.001
	WCDMA IV	RMC 12.2Kbps	Edge 2	0cm	ON	1513	1752.6	18.92	19.50	1.143	-0.03	0.794	0.907
	WCDMA IV	RMC 12.2Kbps	Curved surface of Edge 2	0cm	ON	1312	1712.4	19.10	19.50	1.096	-0.07	0.904	0.991
	WCDMA IV	RMC 12.2Kbps	Curved surface of Edge 2	0cm	ON	1413	1732.6	18.65	19.50	1.216	-0.09	0.839	1.020
	WCDMA IV	RMC 12.2Kbps	Curved surface of Edge 2	0cm	ON	1513	1752.6	18.92	19.50	1.143	0.01	0.857	0.979
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	1312	1712.4	23.54	24.50	1.247	-0.05	0.745	0.929
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	1413	1732.6	23.25	24.50	1.334	0	0.620	0.827
	WCDMA IV	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	1513	1752.6	23.35	24.50	1.303	0.02	0.719	0.937
	WCDMA IV	RMC 12.2Kbps	Edge 1	0cm	OFF	1312	1712.4	23.54	24.50	1.247	-0.18	0.027	0.034
4	WCDMA IV	RMC 12.2Kbps	Edge 2	0.8cm	OFF	1312	1712.4	23.54	24.50	1.247	-0.01	1.040	**1.297**
	WCDMA IV	RMC 12.2Kbps	Edge 2	0.8cm	OFF	1413	1732.6	23.25	24.50	1.334	-0.08	0.807	1.076
	WCDMA IV	RMC 12.2Kbps	Edge 2	0.8cm	OFF	1513	1752.6	23.35	24.50	1.303	-0.03	0.929	1.211
	WCDMA IV	RMC 12.2Kbps	Edge 3	0cm	OFF	1312	1712.4	23.54	24.50	1.247	-0.12	0.091	0.114
	WCDMA IV	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	1312	1712.4	23.54	24.50	1.247	0	0.847	1.057
	WCDMA IV	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	1413	1732.6	23.25	24.50	1.334	0.03	0.729	0.972
	WCDMA IV	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	1513	1752.6	23.35	24.50	1.303	-0.01	0.835	1.088
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	ON	9400	1880	19.23	19.50	1.064	-0.03	1.170	1.245
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	ON	9262	1852.4	19.17	19.50	1.079	-0.04	1.110	1.198
	WCDMA II	RMC 12.2Kbps	Bottom Face	0cm	ON	9538	1907.6	18.70	19.50	1.202	-0.06	1.050	1.262
	WCDMA II	RMC 12.2Kbps	Edge 2	0cm	ON	9400	1880	19.23	19.50	1.064	0.03	0.781	0.831
	WCDMA II	RMC 12.2Kbps	Edge 2	0cm	ON	9262	1852.4	19.17	19.50	1.079	-0.07	0.903	0.974
	WCDMA II	RMC 12.2Kbps	Edge 2	0cm	ON	9538	1907.6	18.70	19.50	1.202	0.06	0.739	0.888
	WCDMA II	RMC 12.2Kbps	Curved surface of Edge 2	0cm	ON	9400	1880	19.23	19.50	1.064	-0.1	0.678	0.721
	WCDMA II	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	9400	1880	23.83	24.50	1.167	0.06	0.835	0.974
	WCDMA II	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	9262	1852.4	23.80	24.50	1.175	-0.02	0.834	0.980
	WCDMA II	RMC 12.2Kbps	Bottom Face	0.8cm	OFF	9538	1907.6	23.38	24.50	1.294	0.03	0.796	1.030
	WCDMA II	RMC 12.2Kbps	Edge 1	0cm	OFF	9400	1880	23.83	24.50	1.167	0.07	0.090	0.105
	WCDMA II	RMC 12.2Kbps	Edge 2	0.8cm	OFF	9400	1880	23.83	24.50	1.167	0.01	1.190	1.389
5	WCDMA II	RMC 12.2Kbps	Edge 2	0.8cm	OFF	9262	1852.4	23.80	24.50	1.175	0.09	1.230	**1.445**
	WCDMA II	RMC 12.2Kbps	Edge 2	0.8cm	OFF	9538	1907.6	23.38	24.50	1.294	-0.19	1.050	1.359
	WCDMA II	RMC 12.2Kbps	Edge 3	0cm	OFF	9400	1880	23.83	24.50	1.167	-0.13	0.043	0.050
	WCDMA II	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	9400	1880	23.83	24.50	1.167	-0.04	0.756	0.882
	WCDMA II	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	9262	1852.4	23.80	24.50	1.175	0.06	0.946	1.111
	WCDMA II	RMC 12.2Kbps	Curved surface of Edge 2	0.8cm	OFF	9538	1880	23.38	24.50	1.294	0.06	0.854	1.105

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant A	6	2437	15.96	16.00	1.009	99.04	1.010	0.02	0.463	0.472
	WLAN2.4GHz	802.11b 1Mbps	Edge 1	0cm	Ant A	6	2437	15.96	16.00	1.009	99.04	1.010	-0.13	0.587	0.598
	WLAN2.4GHz	802.11n-HT20 MCS0	Edge 1	0cm	Ant A	6	2437	13.32	13.50	1.042	95.07	1.052	-0.03	0.337	0.370
	WLAN2.4GHz	802.11b 1Mbps	Curved surface of Edge 1	0cm	Ant A	6	2437	15.96	16.00	1.009	99.04	1.010	-0.08	0.558	0.569
6	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant B	6	2437	15.92	16.00	1.019	99.04	1.010	0.11	0.848	**0.872**
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant B	1	2412	15.90	16.00	1.023	99.04	1.010	-0.19	0.670	0.692
	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant B	11	2462	14.82	15.00	1.042	99.04	1.010	0.17	0.591	0.622
	WLAN2.4GHz	802.11n-HT20 MCS0	Bottom Face	0cm	Ant B	6	2437	13.27	13.50	1.054	94.67	1.056	-0.14	0.369	0.411
	WLAN2.4GHz	802.11b 1Mbps	Edge 3	0cm	Ant B	6	2437	15.92	16.00	1.019	99.04	1.010	-0.13	0.726	0.747
	WLAN2.4GHz	802.11b 1Mbps	Curved surface of Edge 3	0cm	Ant B	6	2437	15.92	16.00	1.019	99.04	1.010	-0.17	0.715	0.736
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	36	5180	14.49	14.50	1.002	95.39	1.048	-0.11	0.362	0.380
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	36	5180	14.49	14.50	1.002	95.39	1.048	-0.14	0.553	0.581
	WLAN5GHz	802.11n-HT40 MCS0	Edge 1	0cm	Ant A	38	5190	13.31	13.50	1.045	91.35	1.095	-0.12	0.359	0.411
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	36	5180	14.49	14.50	1.002	95.39	1.048	0.14	0.463	0.486
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	44	5220	14.39	14.50	1.026	95.39	1.048	-0.11	0.634	0.681
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	44	5220	14.39	14.50	1.026	95.39	1.048	-0.18	0.955	1.027
7	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	40	5200	14.33	14.50	1.040	95.39	1.048	0.14	0.979	**1.067**
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	46	5230	13.46	13.50	1.009	90.48	1.105	-0.16	0.746	0.832
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	38	5190	13.33	13.50	1.040	90.48	1.105	0.19	0.843	0.969
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	44	5220	14.39	14.50	1.026	95.39	1.048	0.1	0.698	0.750
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	60	5300	14.43	14.50	1.016	95.39	1.048	0.19	0.394	0.420
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	60	5300	14.43	14.50	1.016	95.39	1.048	-0.17	0.522	0.556
	WLAN5GHz	802.11n-HT40 MCS0	Edge 1	0cm	Ant A	54	5270	13.23	13.50	1.064	91.35	1.095	0.19	0.416	0.485
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	60	5300	14.43	14.50	1.016	95.39	1.048	0.16	0.517	0.551
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	64	5320	14.47	14.50	1.007	95.39	1.048	0.07	0.462	0.488
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	64	5320	14.47	14.50	1.007	95.39	1.048	0.16	0.766	0.808
8	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	56	5280	14.32	14.50	1.042	95.39	1.048	0.19	0.824	**0.900**
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	54	5270	13.42	13.50	1.019	90.48	1.105	-0.19	0.593	0.667
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	64	5320	14.47	14.50	1.007	95.39	1.048	0.14	0.621	0.655

Plot No.	Band	Mode	Test Position	Gap (cm)	Antenna	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	112	5560	14.40	14.50	1.023	95.39	1.048	0.07	0.701	0.752
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	108	5540	14.30	14.50	1.047	95.39	1.048	0.04	0.841	0.923
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	120	5600	14.30	14.50	1.047	95.39	1.048	0.02	1.000	1.097
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	132	5660	14.26	14.50	1.057	95.39	1.048	-0.03	0.971	1.075
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Face	0cm	Ant A	126	5630	13.29	13.50	1.050	91.35	1.095	0.16	0.522	0.600
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Face	0cm	Ant A	102	5510	9.79	10.00	1.050	91.35	1.095	0.15	0.181	0.208
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Face	0cm	Ant A	110	5550	13.27	13.50	1.054	91.35	1.095	0.18	0.551	0.636
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Face	0cm	Ant A	134	5670	13.21	13.50	1.069	91.35	1.095	0.1	0.458	0.536
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	112	5560	14.40	14.50	1.023	95.39	1.048	-0.11	0.449	0.482
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	108	5540	14.30	14.50	1.047	95.39	1.048	-0.02	0.525	0.576
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	120	5600	14.30	14.50	1.047	95.39	1.048	0.19	0.429	0.471
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	132	5660	14.26	14.50	1.057	95.39	1.048	-0.18	0.474	0.525
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	112	5560	14.40	14.50	1.023	95.39	1.048	-0.15	0.644	0.691
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	108	5540	14.30	14.50	1.047	95.39	1.048	0.18	0.537	0.589
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	120	5600	14.30	14.50	1.047	95.39	1.048	0.16	0.640	0.702
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	132	5660	14.26	14.50	1.057	95.39	1.048	-0.13	0.637	0.706
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	132	5660	14.41	14.50	1.021	95.39	1.048	0	0.939	1.005
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	108	5540	14.16	14.50	1.081	95.39	1.048	-0.09	0.841	0.953
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	116	5580	14.28	14.50	1.052	95.39	1.048	0.04	0.832	0.917
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	120	5600	14.17	14.50	1.079	95.39	1.048	0.02	0.885	1.001
9	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	132	5660	14.41	14.50	1.021	95.39	1.048	-0.03	1.120	**1.198**
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	108	5540	14.16	14.50	1.081	95.39	1.048	0.03	0.960	1.088
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	116	5580	14.28	14.50	1.052	95.39	1.048	0.07	1.010	1.113
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	120	5600	14.17	14.50	1.079	95.39	1.048	0.05	1.010	1.142
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	110	5550	13.38	13.50	1.028	90.48	1.105	-0.19	0.774	0.879
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	102	5510	9.62	10.00	1.091	90.48	1.105	-0.06	0.310	0.374
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	126	5550	13.36	13.50	1.033	90.48	1.105	-0.1	0.733	0.837
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	134	5670	13.28	13.50	1.052	90.48	1.105	-0.12	0.821	0.954
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	132	5660	14.41	14.50	1.021	95.39	1.048	0.04	0.956	1.023
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	108	5540	14.16	14.50	1.081	95.39	1.048	-0.14	1.010	1.145
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	116	5580	14.28	14.50	1.052	95.39	1.048	0.14	0.958	1.056
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	120	5600	14.17	14.50	1.079	95.39	1.048	-0.19	0.945	1.069
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	157	5785	14.35	14.50	1.035	95.39	1.048	0.18	0.612	0.664
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	153	5765	14.25	14.50	1.059	95.39	1.048	-0.03	0.522	0.579
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant A	161	5805	14.27	14.50	1.054	95.39	1.048	-0.04	0.490	0.541
	WLAN5GHz	802.11n-HT40 MCS0	Bottom Face	0cm	Ant A	159	5795	13.20	13.50	1.072	91.35	1.095	0.11	0.442	0.519
	WLAN5GHz	802.11a 6Mbps	Edge 1	0cm	Ant A	157	5785	14.35	14.50	1.035	95.39	1.048	-0.18	0.473	0.513
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 1	0cm	Ant A	157	5785	14.35	14.50	1.035	95.39	1.048	0.19	0.495	0.537
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	161	5805	14.22	14.50	1.067	95.39	1.048	-0.01	0.820	0.917
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	153	5765	14.20	14.50	1.072	95.39	1.048	-0.13	0.782	0.878
	WLAN5GHz	802.11a 6Mbps	Bottom Face	0cm	Ant B	157	5785	14.21	14.50	1.069	95.39	1.048	0.11	0.870	0.975
10	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	161	5805	14.22	14.50	1.067	95.39	1.048	0.04	0.988	**1.104**
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	153	5765	14.20	14.50	1.072	95.39	1.048	0.02	0.966	1.085
	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	157	5785	14.21	14.50	1.069	95.39	1.048	-0.07	0.972	1.089
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	159	5795	13.27	13.50	1.054	90.48	1.105	-0.15	0.729	0.849
	WLAN5GHz	802.11n-HT40 MCS0	Edge 3	0cm	Ant B	151	5755	10.68	11.00	1.076	90.48	1.105	-0.12	0.477	0.567
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	161	5805	14.22	14.50	1.067	95.39	1.048	-0.13	0.793	0.886
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	153	5765	14.20	14.50	1.072	95.39	1.048	0.14	0.857	0.962
	WLAN5GHz	802.11a 6Mbps	Curved surface of Edge 3	0cm	Ant B	157	5785	14.21	14.50	1.069	95.39	1.048	0.18	0.817	0.915

16.2 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (cm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	-	ON	4132	826.4	21.35	21.50	1.035	-	1.000	0.08	1.030	-	1.066
2nd	WCDMA V	RMC 12.2Kbps	Bottom Face	0cm	-	ON	4132	826.4	21.35	21.50	1.035	-	1.000	0.03	1.020	1.01	1.056
1st	WCDMA IV	RMC 12.2Kbps	Edge 2	0.8cm	-	OFF	1312	1712.4	23.54	24.50	1.247	-	1.000	-0.01	1.040	-	1.297
2nd	WCDMA IV	RMC 12.2Kbps	Edge 2	0.8cm	-	OFF	1312	1712.4	23.54	24.50	1.247	-	1.000	0	1.020	1.02	1.272
1st	WCDMA II	RMC 12.2Kbps	Edge 2	0.8cm	-	OFF	9262	1852.4	23.80	24.50	1.175	-	1.000	0.09	1.230	-	1.445
2nd	WCDMA II	RMC 12.2Kbps	Edge 2	0.8cm	-	OFF	9262	1852.4	23.80	24.50	1.175	-	1.000	-0.06	1.190	1.03	1.398
1st	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant B	-	6	2437	15.92	16.00	1.019	99.04	1.010	0.11	0.848	-	0.872
2nd	WLAN2.4GHz	802.11b 1Mbps	Bottom Face	0cm	Ant B	-	6	2437	15.92	16.00	1.019	99.04	1.010	0.11	0.836	1.01	0.860
1st	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	40	5200	14.33	14.50	1.040	95.39	1.048	0.14	0.979	-	1.067
2nd	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	40	5200	14.33	14.50	1.040	95.39	1.048	-0.18	0.964	1.02	1.051
1st	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	56	5280	14.32	14.50	1.042	95.39	1.048	0.19	0.824	-	0.900
2nd	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	56	5280	14.32	14.50	1.042	95.39	1.048	0.15	0.773	1.07	0.844
1st	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	132	5660	14.41	14.50	1.021	95.39	1.048	-0.03	1.120	-	1.198
2nd	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	132	5660	14.41	14.50	1.021	95.39	1.048	0.03	1.040	1.08	1.113
1st	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	161	5805	14.22	14.50	1.067	95.39	1.048	0.04	0.988	-	1.104
2nd	WLAN5GHz	802.11a 6Mbps	Edge 3	0cm	Ant B	-	161	5805	14.22	14.50	1.067	95.39	1.048	0.04	0.981	1.01	1.097

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

17. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Portable Tablet	Note
		Body	
1.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes	Hotspot / WiFi Direct
2.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Hotspot / WiFi Direct
3.	GPRS/EDGE(Data) + Bluetooth(data)	Yes	
4.	WCDMA(Data) + Bluetooth(data)	Yes	
5.	GPRS/EDGE(data) + WLAN5GHz(data)	No	
6.	WCDMA(data) + WLAN5GHz(data)	No	
7.	WLAN Ant A + WLAN Ant B	Yes	

General Note:

1. For simultaneous transmission analysis for exposure position of edge2 0.8cm, bottom face 0.8cm and curved surface of Edge 2 0.8cm, WLAN SAR tested at 0mm separation is worse and the test data is used for conservative SAR summation.
2. WLAN RF exposure assessment of MIMO mode simultaneous transmission exclusion analysis was performed with SAR test results of each antenna in SISO mode. Therefore the calculation was choose worst case with SAR test results of each antenna in SISO mode perform evaluation.
3. The worst case WLAN reported SAR for each configuration was used for SAR summation; therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
4. WLAN and Bluetooth share the same antenna A, and cannot transmit simultaneously.
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.
6. The Scaled SAR summation is calculated based on the same configuration and test position.
7. Per KDB 447498 D01v05r02, 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 17.2.
8. For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v05r02 based on the formula below.
   i) (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{}$f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm; where *x* = 7.5 for 1-g SAR, and *x* = 18.75 for 10-g SAR.
   ii) When the minimum separation distance is < 5mm, the distance is used 5mm to determine SAR test exclusion.
   iii) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.
   iv) Bluetooth estimated SAR is conservatively determined by 5mm separation, for all applicable exposure positions.

Bluetooth Max Power	Exposure Position	All Positions
9 dBm	Estimated SAR (W/kg)	0.336 W/kg

17.1 Body Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	1 WWAN SAR (W/kg)	2 2.4GHz WLAN Ant A SAR (W/kg)	3 2.4GHz WLAN Ant B SAR (W/kg)	1+2+3 Summed SAR (W/kg)	SPLSR Results	Case No
GSM	GSM850	Bottom Face at 0 cm	1.159	0.472	0.872	**2.50**	0.01	Case 1
		Edge 2 at 0 cm	0.534			**0.53**		
		Curved surface of Edge 2 at 0cm	0.714			**0.71**		
		Bottom Face at 0.8 cm	1.214	0.472	0.872	**2.56**	0.01	Case 2
		Edge1 at 0cm	0.502	0.598		**1.10**		
		Edge2 at 0.8cm	0.572			**0.57**		
		Edge3 at 0cm	0.319		0.747	**1.07**		
		Curved surface of Edge 2 at 0.8cm	0.710			**0.71**		
	GSM1900	Bottom Face at 0 cm	1.304	0.472	0.872	**2.65**	0.02	Case 3
		Edge 2 at 0 cm	0.996			**1.00**		
		Curved surface of Edge 2 at 0cm	0.919			**0.92**		
		Bottom Face at 0.8 cm	0.490	0.472	0.872	**1.83**	0.01	Case 4
		Edge1 at 0cm	0.098	0.598		**0.70**		
		Edge2 at 0.8cm	0.658			**0.66**		
		Edge3 at 0cm	0.121		0.747	**0.87**		
		Curved surface of Edge 2 at 0.8cm	0.464			**0.46**		
WCDMA	Band V	Bottom Face at 0 cm	1.138	0.472	0.872	**2.48**	0.01	Case 5
		Edge 2 at 0 cm	0.504			**0.50**		
		Curved surface of Edge 2 at 0cm	0.668			**0.67**		
		Bottom Face at 0.8 cm	1.071	0.472	0.872	**2.42**	0.01	Case 6
		Edge1 at 0cm	0.142	0.598		**0.74**		
		Edge2 at 0.8cm	0.471			**0.47**		
		Edge3 at 0cm	0.261		0.747	**1.01**		
		Curved surface of Edge 2 at 0.8cm	0.506			**0.51**		
	Band IV	Bottom Face at 0 cm	1.081	0.472	0.872	**2.43**	0.01	Case 7
		Edge 2 at 0 cm	1.001			**1.00**		
		Curved surface of Edge 2 at 0cm	1.020			**1.02**		
		Bottom Face at 0.8 cm	0.937	0.472	0.872	**2.28**	0.01	Case 8
		Edge1 at 0cm	0.034	0.598		**0.63**		
		Edge2 at 0.8cm	1.297			**1.30**		
		Edge3 at 0cm	0.114		0.747	**0.86**		
		Curved surface of Edge 2 at 0.8cm	1.088			**1.09**		
	Band II	Bottom Face at 0 cm	1.262	0.472	0.872	**2.61**	0.01	Case 9
		Edge 2 at 0 cm	0.974			**0.97**		
		Curved surface of Edge 2 at 0cm	0.721			**0.72**		
		Bottom Face at 0.8 cm	1.030	0.472	0.872	**2.37**	0.01	Case 10
		Edge1 at 0cm	0.105	0.598		**0.70**		
		Edge2 at 0.8cm	1.445			**1.45**		
		Edge3 at 0cm	0.050		0.747	**0.80**		
		Curved surface of Edge 2 at 0.8cm	1.111			**1.11**		

WWAN Band		Exposure Position	1 WWAN SAR (W/kg)	4 Bluetooth Estimated SAR (W/kg)	1+4 Summed SAR (W/kg)	SPLSR Results	Case No
GSM	GSM850	Bottom Face at 0 cm	1.159	0.336	**1.50**		
		Edge 2 at 0 cm	0.534	0.336	**0.87**		
		Curved surface of Edge 2 at 0cm	0.714	0.336	**1.05**		
		Bottom Face at 0.8 cm	1.214	0.336	**1.55**		
		Edge1 at 0cm	0.502	0.336	**0.84**		
		Edge2 at 0.8cm	0.572	0.336	**0.91**		
		Edge3 at 0cm	0.319	0.336	**0.66**		
		Curved surface of Edge 2 at 0.8cm	0.710	0.336	**1.05**		
	GSM1900	Bottom Face at 0 cm	1.304	0.336	**1.64**	0.01	Case 11
		Edge 2 at 0 cm	0.996	0.336	**1.33**		
		Curved surface of Edge 2 at 0cm	0.919	0.336	**1.26**		
		Bottom Face at 0.8 cm	0.490	0.336	**0.83**		
		Edge1 at 0cm	0.098	0.336	**0.43**		
		Edge2 at 0.8cm	0.658	0.336	**0.99**		
		Edge3 at 0cm	0.121	0.336	**0.46**		
		Curved surface of Edge 2 at 0.8cm	0.464	0.336	**0.80**		
WCDMA	Band V	Bottom Face at 0 cm	1.138	0.336	**1.47**		
		Edge 2 at 0 cm	0.504	0.336	**0.84**		
		Curved surface of Edge 2 at 0cm	0.668	0.336	**1.00**		
		Bottom Face at 0.8 cm	1.071	0.336	**1.41**		
		Edge1 at 0cm	0.142	0.336	**0.48**		
		Edge2 at 0.8cm	0.471	0.336	**0.81**		
		Edge3 at 0cm	0.261	0.336	**0.60**		
		Curved surface of Edge 2 at 0.8cm	0.506	0.336	**0.84**		
	Band IV	Bottom Face at 0 cm	1.081	0.336	**1.42**		
		Edge 2 at 0 cm	1.001	0.336	**1.34**		
		Curved surface of Edge 2 at 0cm	1.020	0.336	**1.36**		
		Bottom Face at 0.8 cm	0.937	0.336	**1.27**		
		Edge1 at 0cm	0.034	0.336	**0.37**		
		Edge2 at 0.8cm	1.297	0.336	**1.63**	0.01	Case 12
		Edge3 at 0cm	0.114	0.336	**0.45**		
		Curved surface of Edge 2 at 0.8cm	1.088	0.336	**1.42**		
	Band II	Bottom Face at 0 cm	1.262	0.336	**1.60**	0.01	Case 13
		Edge 2 at 0 cm	0.974	0.336	**1.31**		
		Curved surface of Edge 2 at 0cm	0.721	0.336	**1.06**		
		Bottom Face at 0.8 cm	1.030	0.336	**1.37**		
		Edge1 at 0cm	0.105	0.336	**0.44**		
		Edge2 at 0.8cm	1.445	0.336	**1.78**	0.02	Case 14
		Edge3 at 0cm	0.050	0.336	**0.39**		
		Curved surface of Edge 2 at 0.8cm	1.111	0.336	**1.45**		

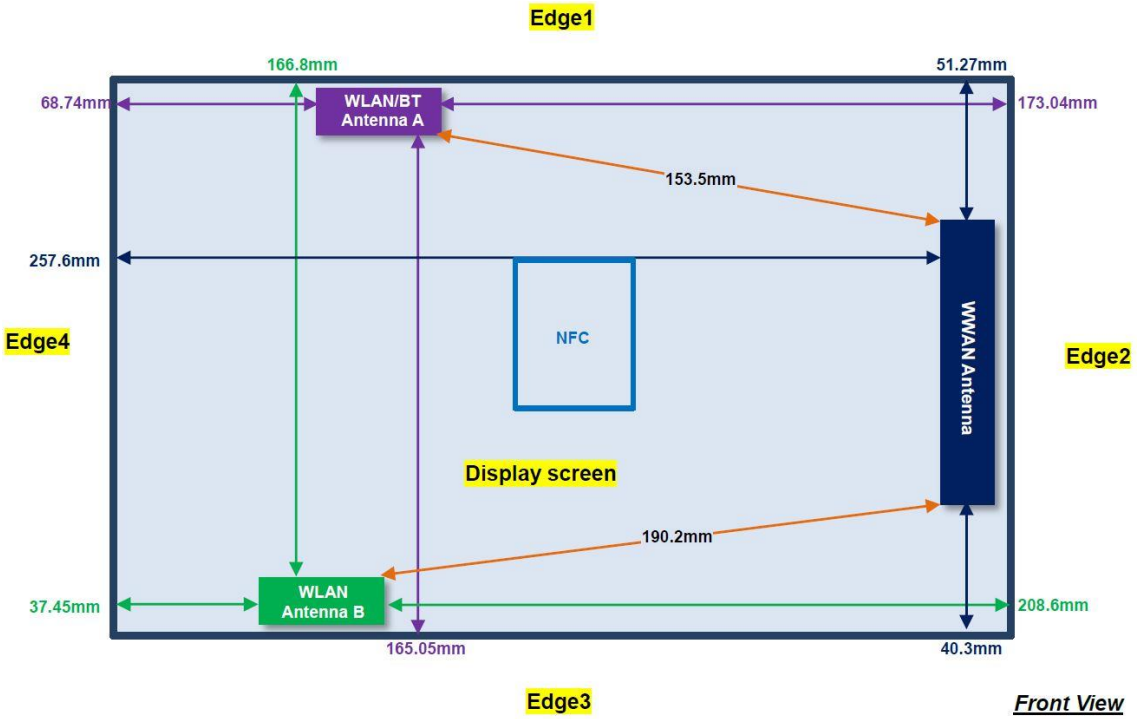
<WLAN Ant A + WLAN Ant B>

WLAN Band		1 WALN Antenna A SAR (W/kg)	2 WLAN Antenna B SAR (W/kg)	1+2 Summed SAR (W/kg)	SPLSR	Case No
Bottom Face	2.4GHz	0.472	0.872	**1.34**		
	5.2GHz	0.380	0.681	**1.06**		
	5.3GHz	0.420	0.488	**0.91**		
	5.5GHz	1.097	1.005	**2.10**	0.02	Case 15
	5.8GHz	0.664	0.975	**1.64**	0.01	Case 16
Edge 1	2.4GHz	0.598		**0.60**		
	5.2GHz	0.581		**0.58**		
	5.3GHz	0.556		**0.56**		
	5.5GHz	0.576		**0.58**		
	5.8GHz	0.513		**0.51**		
Curved surface of Edge 1	2.4GHz	0.569		**0.57**		
	5.2GHz	0.486		**0.49**		
	5.3GHz	0.551		**0.55**		
	5.5GHz	0.706		**0.71**		
	5.8GHz	0.537		**0.54**		
Edge 3	2.4GHz		0.747	**0.75**		
	5.2GHz		1.067	**1.07**		
	5.3GHz		0.900	**0.90**		
	5.5GHz		1.198	**1.20**		
	5.8GHz		1.104	**1.10**		
Curved surface of Edge 3	2.4GHz		0.736	**0.74**		
	5.2GHz		0.750	**0.75**		
	5.3GHz		0.655	**0.66**		
	5.5GHz		1.145	**1.15**		
	5.8GHz		0.962	**0.96**		

<WLAN Ant B + Bluetooth>

WLAN Band		2 WLAN Antenna B SAR (W/kg)	3 Bluetooth Antenna A Estimated SAR (W/kg)	2+3 Summed SAR (W/kg)	SPLSR	Case No
Bottom Face	2.4GHz	0.872	0.336	**1.21**		
	5.2GHz	0.681	0.336	**1.02**		
	5.3GHz	0.488	0.336	**0.82**		
	5.5GHz	1.005	0.336	**1.34**		
	5.8GHz	0.975	0.336	**1.31**		
Edge 1	2.4GHz		0.336	**0.34**		
	5.2GHz		0.336	**0.34**		
	5.3GHz		0.336	**0.34**		
	5.5GHz		0.336	**0.34**		
	5.8GHz		0.336	**0.34**		
Curved surface of Edge 1	2.4GHz		0.336	**0.34**		
	5.2GHz		0.336	**0.34**		
	5.3GHz		0.336	**0.34**		
	5.5GHz		0.336	**0.34**		
	5.8GHz		0.336	**0.34**		
Edge 3	2.4GHz	0.747	0.336	**1.08**		
	5.2GHz	1.067	0.336	**1.40**		
	5.3GHz	0.900	0.336	**1.24**		
	5.5GHz	1.198	0.336	**1.53**		
	5.8GHz	1.104	0.336	**1.44**		
Curved surface of Edge 3	2.4GHz	0.736	0.336	**1.07**		
	5.2GHz	0.750	0.336	**1.09**		
	5.3GHz	0.655	0.336	**0.99**		
	5.5GHz	1.145	0.336	**1.48**		
	5.8GHz	0.962	0.336	**1.30**		

17.2 SPLSR Evaluation and Analysis

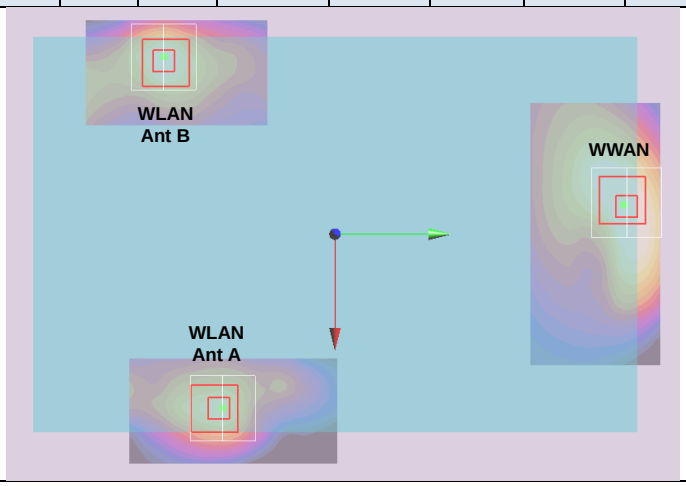


Front View

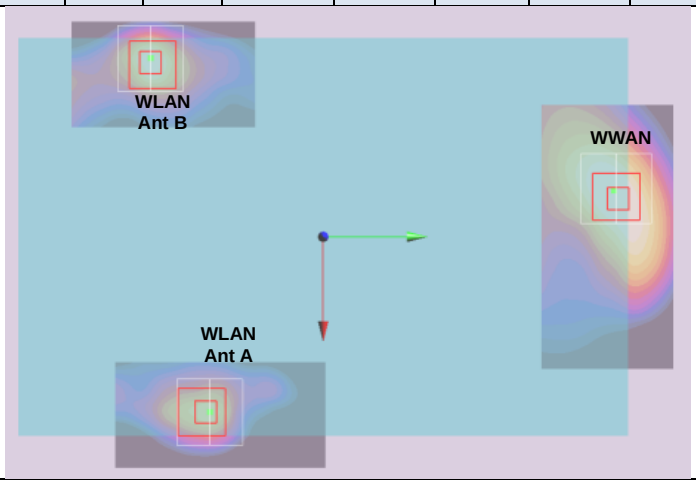
General Note:

1. For WWAN SPLSR analysis of colocation with Bluetooth, the minimum distances between each antenna pair was used for conservative SPLSR calculation. This is justified to compare the SAR peak separation in SPLSR analysis case 1 ~ 10 with SPLSR analysis case 11 ~ 14.
2. SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.

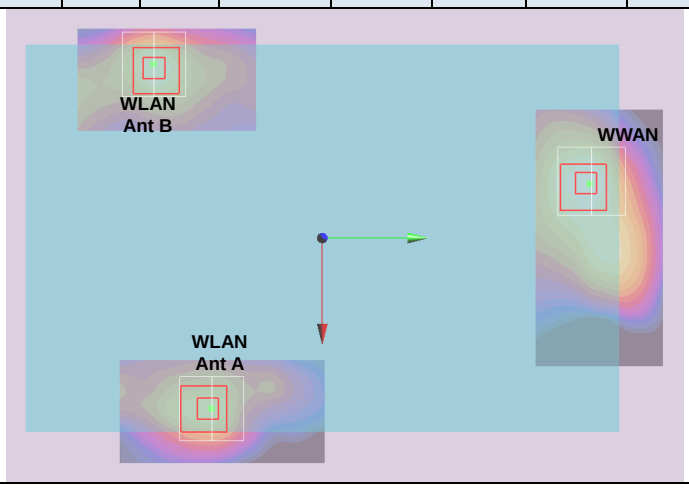
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 1	GSM850	Bottom Face	1.159	0	-0.0145	0.135	-0.18	209.3	1.63	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	GSM850		1.159	0	-0.0145	0.135	-0.18	224.2	2.03	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



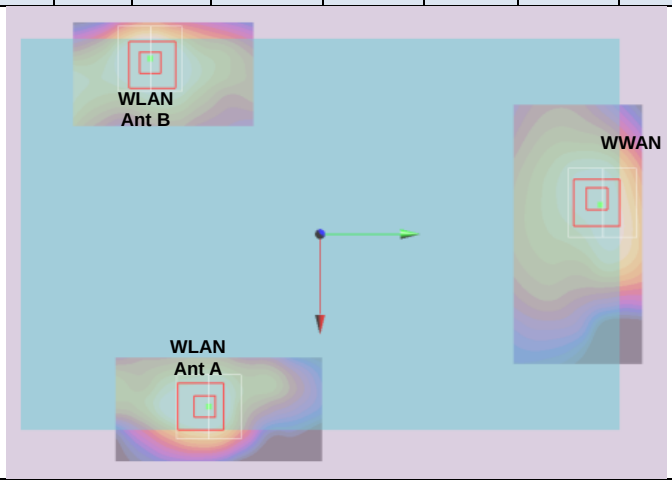
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 2	GSM850	Bottom Face	1.214	0.8	-0.014	0.134	-0.181	208.2	1.69	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	GSM850		1.214	0.8	-0.014	0.134	-0.181	223.4	2.09	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



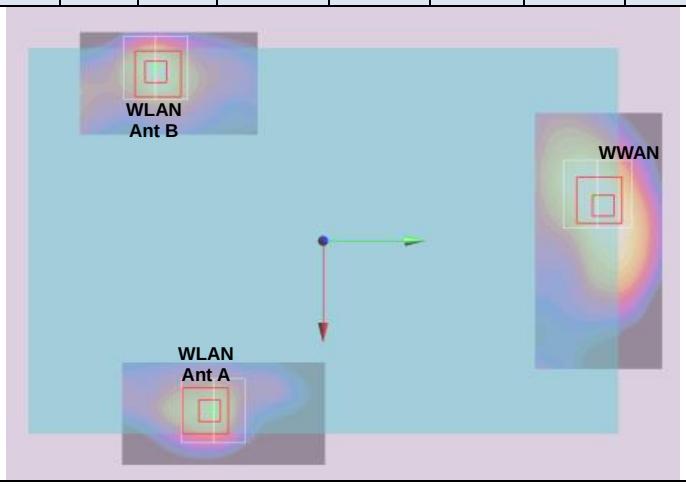
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 3	GSM1900	Bottom Face	1.304	0	-0.0265	0.127	-0.18	208.0	1.78	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	GSM1900		1.304	0	-0.0265	0.127	-0.18	213.2	2.18	0.02	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



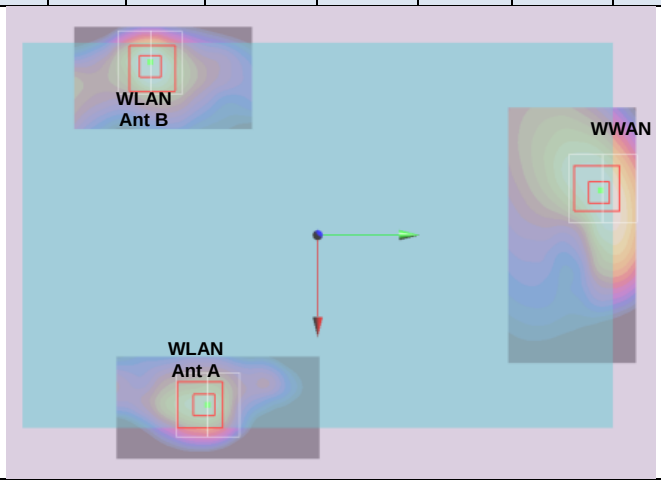
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 4	GSM1900	Bottom Face	0.49	0.8	-0.0145	0.132	-0.181	206.6	0.96	0.00	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	GSM1900		0.49	0.8	-0.0145	0.132	-0.181	221.3	1.36	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



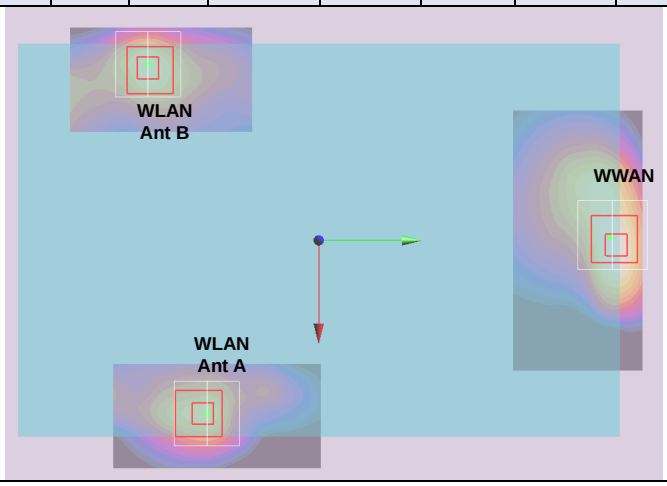
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 5	WCDMA V	Bottom Face	1.138	0	-0.022	0.13	-0.18	208.4	1.61	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	WCDMA V		1.138	0	-0.022	0.13	-0.18	217.2	2.01	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



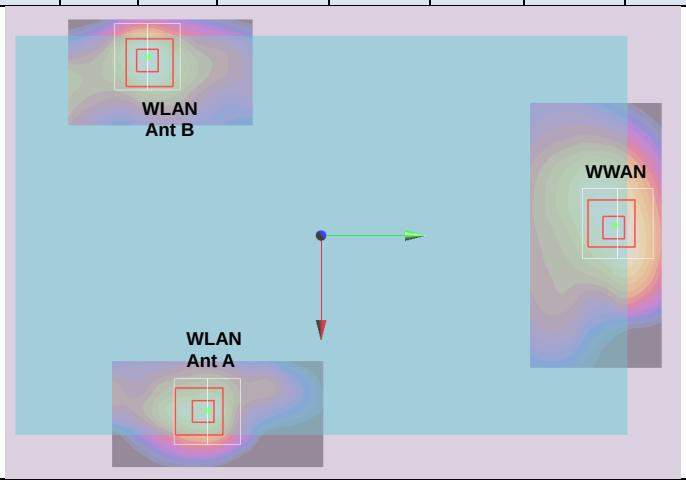
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 6	WCDMA V	Bottom Face	1.071	0.8	-0.022	0.135	-0.181	212.8	1.54	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	WCDMA V		1.071	0.8	-0.022	0.135	-0.181	222.1	1.94	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



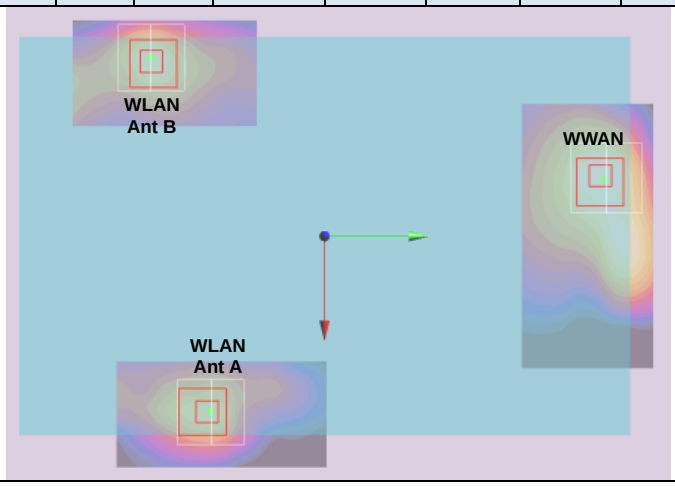
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 7	WCDMA IV	Bottom Face	1.081	0	0.0055	0.136	-0.18	202.0	1.55	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	WCDMA IV		1.081	0	0.0055	0.136	-0.18	231.8	1.95	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



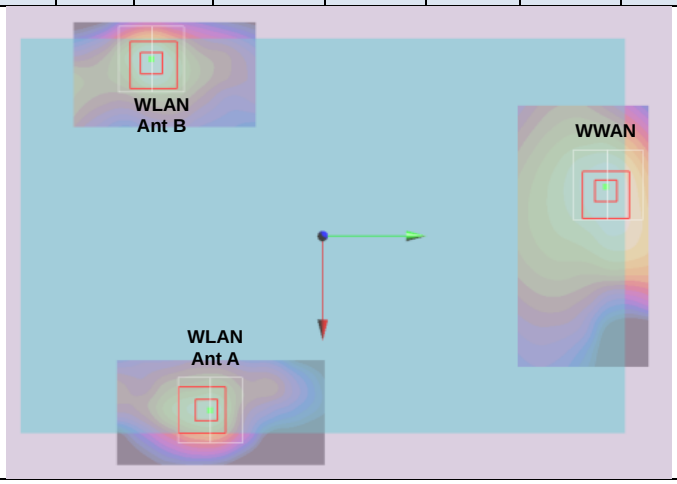
	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 8	WCDMA IV	Bottom Face	0.937	0.8	0.0025	0.135	-0.181	202.2	1.41	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	WCDMA IV		0.937	0.8	0.0025	0.135	-0.181	229.8	1.81	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 9	WCDMA II	Bottom Face	1.262	0	-0.0265	0.128	-0.18	208.9	1.73	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	WCDMA II		1.262	0	-0.0265	0.128	-0.18	214.1	2.13	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 10	WCDMA II	Bottom Face	1.03	0.8	-0.0235	0.132	-0.182	210.9	1.50	0.01	Not required
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178				
	WCDMA II		1.03	0.8	-0.0235	0.132	-0.182	218.8	1.90	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				
	2.4GHz Ant A		0.472	0	0.0798	-0.0518	-0.178	163.3	1.34	0.01	Not required
	2.4GHz Ant B		0.872	0	-0.0812	-0.079	-0.177				



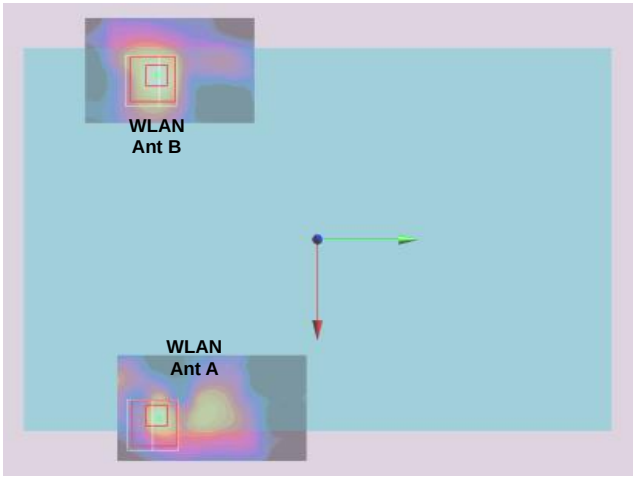
	Band	Position	SAR (W/kg)	Gap (cm)	Minimum Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 11	GSM1900	Bottom Face	1.304	0	153.5	1.64	0.01	Not required
	Bluetooth		0.336	0				

	Band	Position	SAR (W/kg)	Gap (cm)	Minimum Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 12	WCDMA IV	Edge 2	1.297	0.8	153.5	1.63	0.01	Not required
	Bluetooth		0.336	0				

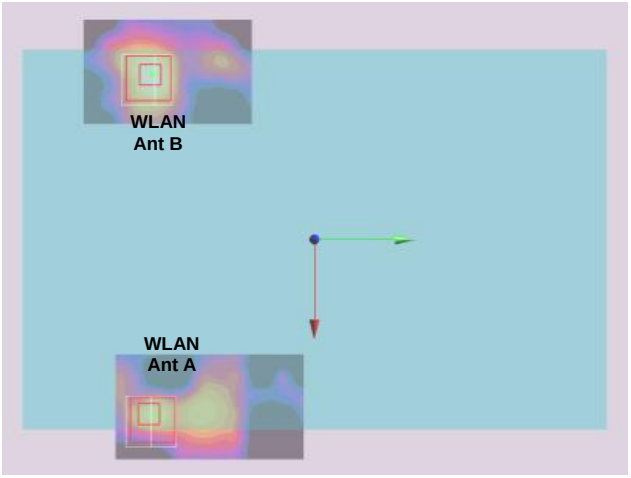
	Band	Position	SAR (W/kg)	Gap (cm)	Minimum Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 13	WCDMA II	Bottom Face	1.262	0	153.5	1.60	0.01	Not required
	Bluetooth		0.336	0				

	Band	Position	SAR (W/kg)	Gap (cm)	Minimum Distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 14	WCDMA II	Edge 2	1.445	0.8	153.5	1.78	0.02	Not required
	Bluetooth		0.336	0				

Case 15	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	5.5GHz Ant A	Bottom Face	1.097	0	0.079	-0.083	-0.178	158.2	2.10	0.02	Not required
	5.5GHz Ant B		1.005	0	-0.079	-0.075	-0.18				



Case 16	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	5.8GHz Ant A	Bottom Face	0.664	0	0.082	-0.083	-0.177	162.2	1.64	0.01	Not required
	5.8GHz Ant B		0.975	0	-0.08	-0.076	-0.181				



Test Engineer： Frank Wu, Ken Li, Nick Yu, Mood Huang, Angel Chang, and Domo Hsiao

18. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[a]	1/k[b]	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 16.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.55	Normal	1	1	1	± 6.55 %	± 6.55 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Probe Positioning	9.9	Rectangular	√3	1	1	± 5.7 %	± 5.7 %
Max. SAR Eval.	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 12.8 %	± 12.6 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 25.6 %**	**± 25.2 %**

Table 16.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz

19. 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. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v01r02, “SAR Measurement Procedures for 802.11 a/b/g Transmitters”, May 2007.

[6] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014

[7] FCC KDB 941225 D01 v03, “3G SAR MEAUREMENT PROCEDURES”, Oct 2014

[8] FCC KDB 616217 D04 v01r01, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, May 2013

[9] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.

[10] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.