FCC SAR Test Report

APPLICANT	:	TCT Mobile Limited
EQUIPMENT	:	LTE USB Modem/4G AP
BRAND NAME	:	ALCATEL onetouch
MODEL NAME	:	ONE TOUCH Y850O0
MARKETING NAME	:	ALCATEL ONETOUCH LINK Y850
FCC ID	:	RAD522
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

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA493052	Rev. 01	Initial issue of report	Oct. 15, 2014
FA493052	Rev. 02	Adding LTE B7 tune-up limit on page7.	Oct. 17, 2014

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **TCT Mobile Limited, LTE USB Modem/4G AP, ONE TOUCH Y850O0**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary	
		Wireless Router (Separation 5mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
PCE	GSM850	0.10	1.51
	GSM1900	0.64	
	WCDMA Band V	0.10	
	WCDMA Band IV	1.30	
	WCDMA Band II	0.77	
	LTE Band 17	0.28	
	LTE Band 5	0.09	
	LTE Band 4	**1.30**	
	LTE Band 2	0.75	
	LTE Band 7	0.31	
DTS	WLAN 2.4GHz Band	0.46	1.33
NII	WLAN 5.2GHz Band	0.40	1.51
	WLAN 5.8GHz Band	0.28	
Date of Testing:		08/22/2014 ~ 08/29/2014	

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	TCT Mobile Limited
Address	5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area Shanghai, P.R. China. 201203

Manufacturer	
Company Name	TCL COMMUNICATION TECHNOLOGY HOLDINGS LIMITED
Address	70 Huifeng 4rd,ZhongKai Hi-tech Development District ,Huizhou,Guangdong 516006 P.R.China TCL Mobile Communication Co.,LTD.Huizhou）

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 941225 D01 SAR test for 3G devices v02
- FCC KDB 941225 D02 HSPA and 1x Advanced v02r02
- FCC KDB 941225 D03 SAR Test Reduction GSM GPRS EDGE v01
- FCC KDB 941225 D05 SAR for LTE Devices v02r03

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	LTE USB Modem/4G AP
Brand Name	ALCATEL onetouch
Model Name	ONE TOUCH Y850O0
Marketing Name	ALCATEL ONETOUCH LINK Y850
FCC ID	RAD522
IMEI Code	863458020101214
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 LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz
Mode	・GPRS/EGPRS ・RMC 12.2Kbps ・HSDPA ・HSUPA ・DC-HSDPA ・LTE: QPSK, 16QAM ・802.11a/b/g/n HT20/HT40
HW Version	V4.0
SW Version	Y850V_00_01.13_15_20140626
EUT Stage	Identical Prototype

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GPRS (GMSK, 1 Tx slot)	32.50	30.00
GPRS (GMSK, 2 Tx slots)	29.50	27.50
GPRS (GMSK, 3 Tx slots)	27.50	25.00
GPRS (GMSK, 4 Tx slots)	26.50	24.00
EDGE (8PSK, 1 Tx slot)	27.00	26.00
EDGE (8PSK, 2 Tx slots)	24.00	23.00
EDGE (8PSK, 3 Tx slots)	21.50	21.00
EDGE (8PSK, 4 Tx slots)	21.00	20.00

Band / Mode			Average power(dBm)
WCDMA	Band V / II	RMC 12.2Kbps	23.0
		HSDPA Subtest-1	22.0
		DC-HSDPA Subtest-1	22.0
		HSUPA Subtest-5	22.0
	Band IV	RMC 12.2Kbps	21.50
		HSDPA Subtest-1	20.5
		DC-HSDPA Subtest-1	20.5
		HSUPA Subtest-5	20.5
LTE		Band 17	23.0
		Band 5	23.5
		Band 4	21.5
		Band 2	23.0
		Band 7	23.0

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)			
		11b	11g	HT20	HT40
2.4GHz Band	Antenna 0	13.5	10.5	9.5	9.0
	Antenna 1	12.5	9.5	9.0	6.5
	Antenna 0+1	15.5	13.0	11.5	11.0

Band / Frequency (MHz)		IEEE 802.11 Average Power (dBm)		
		11a	HT20	HT40
5.2GHz Band	Antenna 0	6.5	5.0	5.5
	Antenna 1	8.0	6.5	7.0
	Antenna 0+1	10.5	8.5	9.5
5.8GHz Band	Antenna 0	4.0	3.0	2.5
	Antenna 1	8.0	6.5	6.0
	Antenna 0+1	9.0	7.5	7.5

4.3 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r03	
FCC ID	RAD522
Equipment Name	LTE USB Modem/4G AP
Operating Frequency Range of each LTE transmission band	LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz
Channel Bandwidth	LTE Band 17: 5MHz, 10MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz
Category and uplink modulations	Cat4, QPSK and 16QAM
LTE Voice / Data requirements	Data only
LTE MPR permanently built-in by design	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

Transmission (H, M, L) channel numbers and frequencies in each LTE band

LTE Band 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 5

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844

LTE Band 4

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 2

	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 7

	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

5. RF Exposure Limits

5.1 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.

5.2 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.

6. Specific Absorption Rate (SAR)

6.1 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.

6.2 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:

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

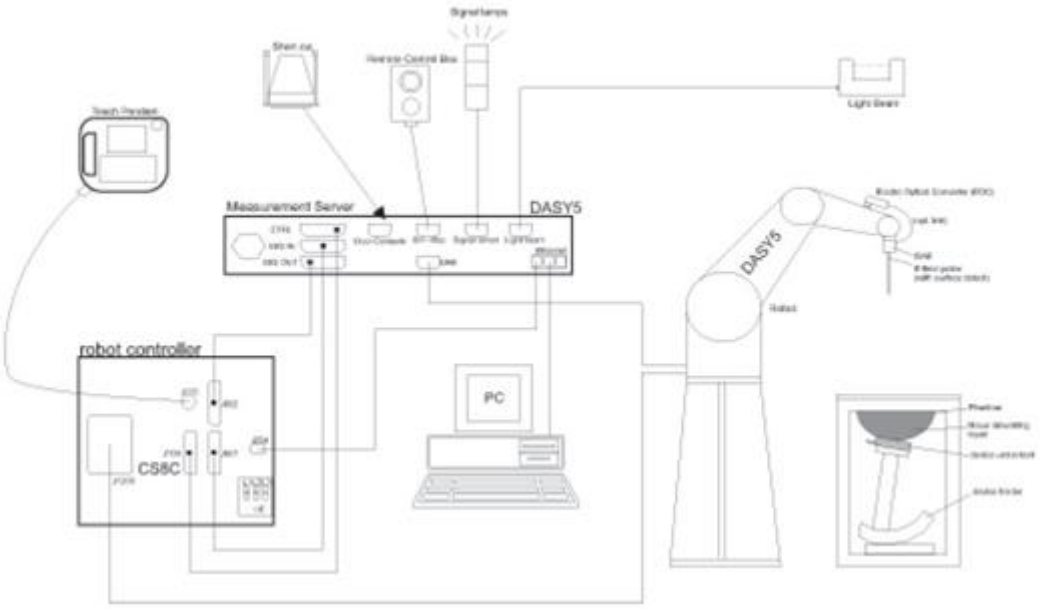
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

7. 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.

8. 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

8.1 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

8.2 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.

8.3 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.	

8.4 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	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
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.

8.5 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.

8.6 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.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	735MHz System Validation Kit	D750V3	1099	Nov. 11, 2013	Nov. 10, 2014
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 18, 2011	Nov. 17, 2014
SPEAG	1750MHz System Validation Kit	D1750V2	1090	Mar. 27, 2013	Mar. 26, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2011	Nov. 20, 2014
SPEAG	2450MHz System Validation Kit	D2450V2	908	Mar. 26, 2013	Mar. 25, 2015
SPEAG	2600MHz System Validation Kit	D2600V2	1061	Mar. 26, 2013	Mar. 25, 2015
SPEAG	5GHz System Validation Kit	D5GHzV2	1006	Sep. 23, 2013	Sep. 22, 2014
SPEAG	Data Acquisition Electronics	DAE4	910	Jul. 22, 2014	Jul. 21, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Nov. 27, 2013	Nov. 26, 2014
Anritsu	Radio Communication Analyzer	MT8820C	6201074414	Feb. 11, 2014	Feb. 10, 2015
Agilent	Wireless Communication Test Set	E5515C	MY50266977	May. 27, 2014	May. 26, 2015
SPEAG	Device Holder	N/A	N/A	NCR	NCR
Agilent	Signal Generator	N5181A	MY50145381	Jan. 04, 2014	Jan. 03, 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	1349001	Dec. 04, 2013	Dec. 03, 2014
Anritsu	Power Sensor	MA2411B	1306099	Dec. 03, 2013	Dec. 02, 2014
R&S	Spectrum Analyzer	FSP 30	101329	Jun. 14, 2014	Jun. 13, 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.
2. Referring to KDB 865664 D01v01r03, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole D835V2, SN: 4d091, D1750V2, SN: 1090, D1900V2, SN: 5d118 can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

10. System Verification

10.1 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 (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Body	22.6	0.970	54.646	0.96	55.50	1.04	-1.54	±5	2014/8/27
835	Body	22.7	0.972	53.975	0.97	55.20	0.21	-2.22	±5	2014/8/27
1750	Body	22.8	1.524	52.564	1.49	53.40	2.28	-1.57	±5	2014/8/28
1900	Body	22.6	1.542	53.532	1.52	53.30	1.45	0.44	±5	2014/8/22
2450	Body	22.8	2.001	52.089	1.95	52.70	2.62	-1.16	±5	2014/8/27
2600	Body	22.7	2.165	53.823	2.16	52.50	0.23	2.52	±5	2014/8/26
5200	Body	22.7	5.266	49.165	5.30	49.00	-0.64	0.34	±5	2014/8/29
5800	Body	22.8	6.128	47.929	6.00	48.20	2.13	-0.56	±5	2014/8/29

10.2 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 (%)
2014/8/27	750	Body	250	1099	3819	910	2.21	8.56	8.84	3.27
2014/8/27	835	Body	250	4d091	3819	910	2.27	9.42	9.08	-3.61
2014/8/28	1750	Body	250	1090	3819	910	9.55	38.10	38.20	0.26
2014/8/22	1900	Body	250	5d118	3819	910	10.40	41.80	41.60	-0.48
2014/8/27	2450	Body	250	908	3819	910	11.60	50.40	46.40	-7.94
2014/8/26	2600	Body	250	1061	3819	910	13.00	55.70	52.00	-6.47
2014/8/29	5200	Body	100	1006	3819	910	7.42	71.50	74.20	3.78
2014/8/29	5800	Body	100	1006	3819	910	7.81	72.30	78.10	8.02

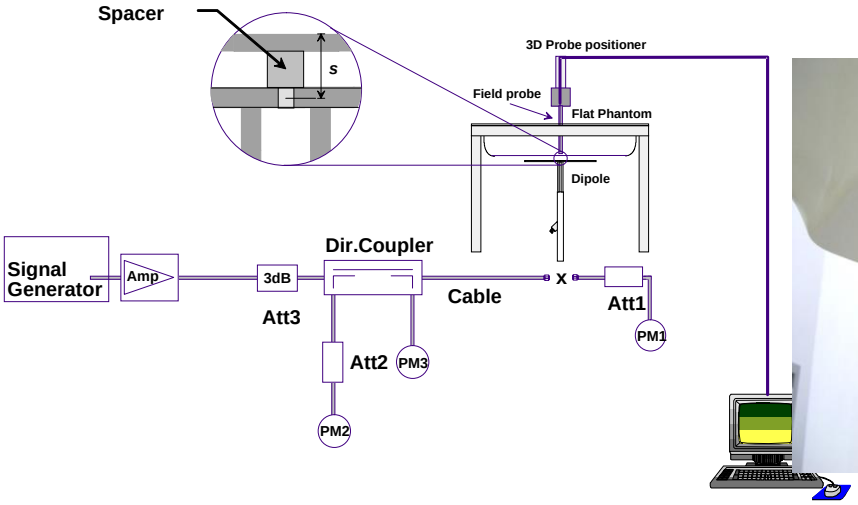


Fig 8.3.1 System Performance Check Setup

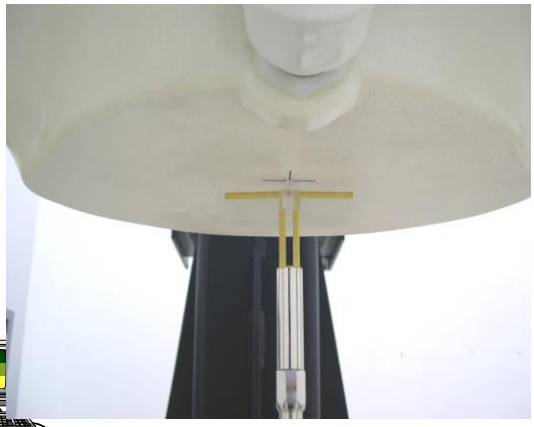


Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC HDB Publication 941225 D06v01r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v05r02 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. 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. According to October 2013TCB Workshop, For EGPRS, the number of time slots to test for SAR should correspond to the highest source-based time-averaged maximum output power configuration, therefore, the EUT was set in GPRS (4Tx slots) for GSM850 and GPRS (2Tx slots) for GSM1900, due to its highest frame-average power.

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)	31.76	31.65	31.98	32.50	22.76	22.65	22.98	23.50
GPRS (GMSK, 2 Tx slots)	28.67	28.73	28.86	29.50	22.67	22.73	22.86	23.50
GPRS (GMSK, 3 Tx slots)	26.79	27.11	27.13	27.50	22.53	22.85	22.87	23.24
GPRS (GMSK, 4 Tx slots)	25.68	25.81	26.13	26.50	22.68	22.81	23.13	23.50
EDGE (8PSK, 1 Tx slot)	25.92	26.02	26.17	27.00	16.92	17.02	17.17	18.00
EDGE (8PSK, 2 Tx slots)	22.92	23.02	23.20	24.00	16.92	17.02	17.20	18.00
EDGE (8PSK, 3 Tx slots)	20.78	20.92	21.05	21.50	16.52	16.66	16.79	17.24
EDGE (8PSK, 4 Tx slots)	19.70	19.88	20.04	21.00	16.70	16.88	17.04	18.00

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)	29.50	29.37	29.13	30.00	20.50	20.37	20.13	21.00
GPRS (GMSK, 2 Tx slots)	27.18	27.15	26.89	27.50	21.18	21.15	20.89	21.50
GPRS (GMSK, 3 Tx slots)	24.77	24.69	24.22	25.00	20.51	20.43	19.96	20.74
GPRS (GMSK, 4 Tx slots)	23.72	23.69	23.21	24.00	20.72	20.69	20.21	21.00
EDGE (8PSK, 1 Tx slot)	25.13	25.24	25.00	26.00	16.13	16.24	16.00	17.00
EDGE (8PSK, 2 Tx slots)	22.22	22.46	22.15	23.00	16.22	16.46	16.15	17.00
EDGE (8PSK, 3 Tx slots)	20.46	20.70	20.25	21.00	16.20	16.44	15.99	16.74
EDGE (8PSK, 4 Tx slots)	19.49	19.74	19.26	20.00	16.49	16.74	16.26	17.00

<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.
3. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

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

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
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 RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

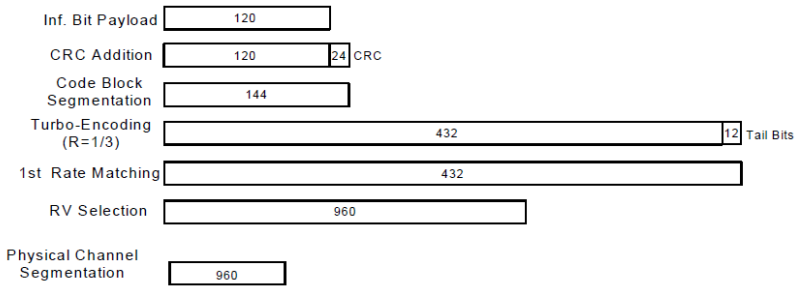


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<WCDMA Conducted Power>

General Note:

4. SAR testing in AMR configuration is not required when the maximum average output of each RF channel for AMR 12.2Kbps is less than 0.25dB higher than that measured in RMC 12.2Kbps
5. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.

Band			WCDMA V			WCDMA II			WCDMA IV		
TX Channel			4132	4182	4233	9262	9400	9538	1312	1413	1513
Rx Channel			4357	4407	4458	9662	9800	9938	1537	1638	1738
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
MPR	3GPP Rel 99	RMC 12.2Kbps	21.75	21.92	22.76	22.23	22.51	22.35	21.21	21.15	21.38
0	3GPP Rel 6	HSDPA Subtest-1	20.88	21.06	21.87	21.41	21.49	21.23	20.28	20.06	19.58
0	3GPP Rel 6	HSDPA Subtest-2	20.90	21.01	21.82	21.31	21.39	21.21	20.13	19.91	19.47
0.5	3GPP Rel 6	HSDPA Subtest-3	20.51	20.53	21.33	20.96	20.91	20.77	19.65	19.43	19.00
0.5	3GPP Rel 6	HSDPA Subtest-4	20.51	20.52	21.31	20.93	20.89	20.75	19.65	19.42	19.07
0	3GPP Rel 8	DC-HSDPA Subtest-1	20.77	20.95	21.76	21.38	21.47	21.18	20.25	20.03	19.58
0	3GPP Rel 8	DC-HSDPA Subtest-2	20.82	20.92	21.71	21.34	21.42	21.15	20.18	20.00	19.52
0.5	3GPP Rel 8	DC-HSDPA Subtest-3	20.43	20.44	21.21	20.88	20.90	20.73	19.62	19.45	18.99
0.5	3GPP Rel 8	DC-HSDPA Subtest-4	20.42	20.46	21.20	20.85	20.86	20.74	19.60	19.43	18.94
0	3GPP Rel 6	HSUPA Subtest-1	20.92	20.36	21.55	20.77	21.17	21.06	19.96	19.85	18.91
2	3GPP Rel 6	HSUPA Subtest-2	19.49	19.88	20.83	20.09	20.4	19.73	18.62	18.62	18.41
1	3GPP Rel 6	HSUPA Subtest-3	19.48	19.69	20.42	19.83	20.2	19.79	18.67	18.52	18.05
2	3GPP Rel 6	HSUPA Subtest-4	19.84	19.78	20.69	20.38	20.74	20.75	19.00	19.08	18.34
0	3GPP Rel 6	HSUPA Subtest-5	20.90	20.90	21.90	21.4	21.4	21.2	20.19	19.89	19.49

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r03, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.

<LTE Band 17>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				23780	23790	23800		
Frequency (MHz)				709	710	711		
10	QPSK	1	0	22.66	22.77	22.59	23	0
10	QPSK	1	24	22.49	22.72	22.47		
10	QPSK	1	49	22.59	22.55	22.44		
10	QPSK	25	0	21.62	21.65	21.54	22	1
10	QPSK	25	12	21.52	21.57	21.52		
10	QPSK	25	24	21.46	21.53	21.53		
10	QPSK	50	0	21.51	21.42	21.55		
10	16QAM	1	0	21.62	21.66	21.47	22	1
10	16QAM	1	24	21.55	21.49	21.42		
10	16QAM	1	49	21.39	21.61	21.40		
10	16QAM	25	0	20.42	20.66	20.56	21	2
10	16QAM	25	12	20.47	20.67	20.51		
10	16QAM	25	24	20.41	20.52	20.72		
10	16QAM	50	0	20.53	20.62	20.59		
Channel				23755	23790	23825	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				706.5	710	713.5		
5	QPSK	1	0	22.67	22.75	22.68	23	0
5	QPSK	1	12	22.64	22.50	22.55		
5	QPSK	1	24	22.64	22.71	22.62		
5	QPSK	12	0	21.57	21.67	21.61	22	1
5	QPSK	12	6	21.69	21.51	21.48		
5	QPSK	12	11	21.66	21.61	21.63		
5	QPSK	25	0	21.65	21.57	21.53		
5	16QAM	1	0	21.91	21.81	21.84	22	1
5	16QAM	1	12	21.89	21.77	21.77		
5	16QAM	1	24	21.72	21.80	21.79		
5	16QAM	12	0	20.73	20.59	20.62	21	2
5	16QAM	12	6	20.74	20.61	20.60		
5	16QAM	12	11	20.81	20.51	20.65		
5	16QAM	25	0	20.64	20.49	20.47		

<LTE Band 5>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20450	20525	20600		
Frequency (MHz)				829	836.5	844		
10	QPSK	1	0	22.80	22.44	22.83	23.5	0
10	QPSK	1	24	22.25	22.31	22.52		
10	QPSK	1	49	22.20	22.43	22.60		
10	QPSK	25	0	21.37	21.10	21.55	22.5	1
10	QPSK	25	12	21.39	21.34	21.69		
10	QPSK	25	24	21.32	21.33	21.67		
10	QPSK	50	0	21.22	21.16	21.66		
10	16QAM	1	0	21.53	20.81	21.77	22.5	1
10	16QAM	1	24	21.10	20.95	21.27		
10	16QAM	1	49	21.23	21.28	21.68		
10	16QAM	25	0	20.47	20.78	21.23	21.5	2
10	16QAM	25	12	20.18	20.83	21.32		
10	16QAM	25	24	20.16	20.79	21.41		
10	16QAM	50	0	20.29	20.15	20.72		
Channel				20425	20525	20625	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				826.5	836.5	846.5		
5	QPSK	1	0	22.73	22.32	22.75	23.5	0
5	QPSK	1	12	22.44	22.31	22.71		
5	QPSK	1	24	22.16	22.28	22.62		
5	QPSK	12	0	21.50	21.16	21.52	22.5	1
5	QPSK	12	6	21.52	21.07	21.62		
5	QPSK	12	11	21.30	21.14	22.04		
5	QPSK	25	0	21.42	21.09	22.02		
5	16QAM	1	0	22.08	21.56	22.30	22.5	1
5	16QAM	1	12	21.90	21.41	22.22		
5	16QAM	1	24	21.54	21.49	22.24		
5	16QAM	12	0	20.75	20.74	21.33	21.5	2
5	16QAM	12	6	20.49	20.71	21.43		
5	16QAM	12	11	20.39	20.75	21.34		
5	16QAM	25	0	20.51	20.14	20.93		
Channel				20415	20525	20635	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				825.5	836.5	847.5		
3	QPSK	1	0	22.71	22.26	22.79	23.5	0
3	QPSK	1	7	22.56	22.17	22.76		
3	QPSK	1	14	22.46	22.20	22.69		
3	QPSK	8	0	21.96	21.08	21.67	22.5	1
3	QPSK	8	4	21.53	21.29	21.73		
3	QPSK	8	7	21.51	21.21	22.06		
3	QPSK	15	0	21.54	21.24	22.05		
3	16QAM	1	0	22.19	21.34	22.23	22.5	1
3	16QAM	1	7	21.59	21.25	22.21		
3	16QAM	1	14	21.85	21.29	22.15		
3	16QAM	8	0	20.74	20.57	21.32	21.5	2
3	16QAM	8	4	20.61	20.68	21.29		
3	16QAM	8	7	20.39	20.59	21.43		
3	16QAM	15	0	20.62	20.12	21.01		

Channel				20407	20525	20643	Tune up Limit (dBm)	Target MPR (dB)
Frequency (MHz)				824.7	836.5	848.3		
1.4	QPSK	1	0	22.77	22.28	22.74	23.5	0
1.4	QPSK	1	2	22.76	22.27	22.72		
1.4	QPSK	1	5	22.73	22.25	22.71		
1.4	QPSK	3	0	22.76	22.26	22.69		
1.4	QPSK	3	1	22.71	22.27	22.69		
1.4	QPSK	3	2	22.71	22.23	22.72		
1.4	QPSK	6	0	21.65	21.22	21.85	22.5	1
1.4	16QAM	1	0	21.97	21.34	21.91	22.5	1
1.4	16QAM	1	2	21.88	21.04	21.83		
1.4	16QAM	1	5	21.90	21.11	21.89		
1.4	16QAM	3	0	21.88	21.22	21.89		
1.4	16QAM	3	1	21.81	21.33	21.75		
1.4	16QAM	3	2	21.83	21.30	21.79		
1.4	16QAM	6	0	20.82	20.34	20.90	21.5	2

<LTE Band 4>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20050	20175	20300		
Frequency (MHz)				1720	1732.5	1745		
20	QPSK	1	0	21.26	20.98	20.62	21.5	0
20	QPSK	1	49	21.23	20.80	20.52		
20	QPSK	1	99	21.05	20.69	20.39		
20	QPSK	50	0	20.16	19.94	19.89	20.5	1
20	QPSK	50	24	20.04	19.89	19.71		
20	QPSK	50	49	19.91	19.79	19.50		
20	QPSK	100	0	20.04	19.88	19.75		
20	16QAM	1	0	20.25	20.07	19.62	20.5	1
20	16QAM	1	49	20.23	19.84	19.60		
20	16QAM	1	99	20.06	19.83	19.52		
20	16QAM	50	0	19.03	19.19	18.72	19.5	2
20	16QAM	50	24	18.96	18.94	18.72		
20	16QAM	50	49	18.81	18.77	18.50		
20	16QAM	100	0	18.99	18.84	18.88		
Channel				20025	20175	20325	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1717.5	1732.5	1747.5		
15	QPSK	1	0	21.00	21.03	20.93	21.5	0
15	QPSK	1	37	21.05	20.86	20.76		
15	QPSK	1	74	21.14	20.76	20.39		
15	QPSK	36	0	20.04	20.04	19.60	20.5	1
15	QPSK	36	18	20.10	19.83	19.78		
15	QPSK	36	37	20.04	19.78	19.59		
15	QPSK	75	0	19.91	19.83	19.71		
15	16QAM	1	0	20.14	20.19	20.12	20.5	1
15	16QAM	1	37	19.99	19.96	19.98		
15	16QAM	1	74	20.22	19.98	19.67		
15	16QAM	36	0	19.08	19.04	18.69	19.5	2
15	16QAM	36	18	19.01	19.10	18.73		
15	16QAM	36	37	19.12	18.99	18.55		
15	16QAM	75	0	19.21	18.92	18.73		
Channel				20000	20175	20350	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1715	1732.5	1750		
10	QPSK	1	0	21.01	20.93	20.53	21.5	0
10	QPSK	1	24	21.15	20.78	20.45		
10	QPSK	1	49	21.01	20.80	20.61		
10	QPSK	25	0	20.19	19.98	19.66	20.5	1
10	QPSK	25	12	20.07	19.91	19.47		
10	QPSK	25	24	19.93	19.82	19.46		
10	QPSK	50	0	19.98	19.89	19.47		
10	16QAM	1	0	20.11	19.96	19.56	20.5	1
10	16QAM	1	24	20.04	19.87	19.44		
10	16QAM	1	49	20.23	19.73	19.89		
10	16QAM	25	0	19.08	18.86	18.50	19.5	2
10	16QAM	25	12	18.96	18.87	18.47		
10	16QAM	25	24	19.00	18.72	18.38		
10	16QAM	50	0	19.15	18.90	18.51		

Channel				19975	20175	20375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1712.5	1732.5	1752.5		
5	QPSK	1	0	20.88	20.91	20.56	21.5	0
5	QPSK	1	12	21.14	20.80	20.45		
5	QPSK	1	24	20.95	20.80	20.70		
5	QPSK	12	0	20.01	19.93	19.59	20.5	1
5	QPSK	12	6	20.06	19.88	19.49		
5	QPSK	12	11	20.07	19.78	19.51		
5	QPSK	25	0	19.96	19.94	19.42		
5	16QAM	1	0	20.13	20.26	19.78	20.5	1
5	16QAM	1	12	20.39	19.92	19.93		
5	16QAM	1	24	20.41	20.18	19.90		
5	16QAM	12	0	18.94	18.93	18.55	19.5	2
5	16QAM	12	6	19.00	18.89	18.69		
5	16QAM	12	11	19.15	18.80	18.39		
5	16QAM	25	0	19.07	18.95	18.42		
Channel				19965	20175	20385	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1711.5	1732.5	1753.5		
3	QPSK	1	0	20.92	20.89	20.44	21.5	0
3	QPSK	1	7	21.03	20.74	20.54		
3	QPSK	1	14	21.19	20.79	20.68		
3	QPSK	8	0	20.08	19.96	19.60	20.5	1
3	QPSK	8	4	20.08	19.98	19.64		
3	QPSK	8	7	20.06	19.79	19.63		
3	QPSK	15	0	20.02	19.93	19.61		
3	16QAM	1	0	19.82	19.62	19.32	20.5	1
3	16QAM	1	7	19.77	19.58	19.56		
3	16QAM	1	14	19.76	19.56	19.61		
3	16QAM	8	0	19.07	18.91	18.52	19.5	2
3	16QAM	8	4	18.96	18.86	18.84		
3	16QAM	8	7	19.04	18.84	18.52		
3	16QAM	15	0	19.16	18.98	18.51		
Channel				19957	20175	20393	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1710.7	1732.5	1754.3		
1.4	QPSK	1	0	20.96	20.91	20.84	21.5	0
1.4	QPSK	1	2	21.02	20.93	20.66		
1.4	QPSK	1	5	21.07	20.93	20.81		
1.4	QPSK	3	0	20.93	20.97	20.41		
1.4	QPSK	3	1	20.95	20.92	20.60		
1.4	QPSK	3	2	20.95	20.90	20.60		
1.4	QPSK	6	0	19.99	20.05	19.57	20.5	1
1.4	16QAM	1	0	20.11	20.16	19.64	20.5	1
1.4	16QAM	1	2	20.13	20.08	19.71		
1.4	16QAM	1	5	20.03	19.86	19.97		
1.4	16QAM	3	0	19.99	20.12	19.60		
1.4	16QAM	3	1	19.98	20.11	19.75		
1.4	16QAM	3	2	19.98	20.01	19.74		
1.4	16QAM	6	0	18.99	19.13	18.76	19.5	2

<LTE Band 2>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				18700	18900	19100		
Frequency (MHz)				1860	1880	1900		
20	QPSK	1	0	22.44	22.57	22.43	23	0
20	QPSK	1	49	22.42	22.54	22.30		
20	QPSK	1	99	22.43	22.48	22.30		
20	QPSK	50	0	21.45	21.44	21.25	22	1
20	QPSK	50	24	21.62	21.49	21.35		
20	QPSK	50	49	21.36	21.32	21.18		
20	QPSK	100	0	21.39	21.42	21.22		
20	16QAM	1	0	21.16	21.73	21.08	22	1
20	16QAM	1	49	21.12	21.67	21.02		
20	16QAM	1	99	21.15	21.70	20.97		
20	16QAM	50	0	20.34	20.53	20.23	21	2
20	16QAM	50	24	20.36	20.57	20.34		
20	16QAM	50	49	20.30	20.56	20.15		
20	16QAM	100	0	20.38	20.50	20.29		
Channel				18675	18900	19125	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1857.5	1880	1902.5		
15	QPSK	1	0	22.20	22.53	22.43	23	0
15	QPSK	1	37	22.17	22.46	22.35		
15	QPSK	1	74	22.13	22.51	22.41		
15	QPSK	36	0	21.66	21.58	21.23	22	1
15	QPSK	36	18	21.69	21.63	21.16		
15	QPSK	36	37	21.60	21.36	21.04		
15	QPSK	75	0	21.32	21.44	21.27		
15	16QAM	1	0	21.43	21.46	21.41	22	1
15	16QAM	1	37	21.34	21.43	21.34		
15	16QAM	1	74	21.38	21.27	21.36		
15	16QAM	36	0	20.40	20.65	20.37	21	2
15	16QAM	36	18	20.41	20.43	20.18		
15	16QAM	36	37	20.40	20.40	20.16		
15	16QAM	75	0	20.32	20.45	20.19		
Channel				18650	18900	19150	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1855	1880	1905		
10	QPSK	1	0	22.44	22.52	22.39	23	0
10	QPSK	1	24	22.41	22.48	21.98		
10	QPSK	1	49	22.38	22.44	22.35		
10	QPSK	25	0	21.58	21.49	21.25	22	1
10	QPSK	25	12	21.59	21.44	21.22		
10	QPSK	25	24	21.53	21.39	21.19		
10	QPSK	50	0	21.53	21.44	21.18		
10	16QAM	1	0	21.30	21.68	21.42	22	1
10	16QAM	1	24	21.27	21.60	21.24		
10	16QAM	1	49	21.05	21.15	21.41		
10	16QAM	25	0	20.51	20.47	20.15	21	2
10	16QAM	25	12	20.54	20.40	20.10		
10	16QAM	25	24	20.47	20.38	20.09		
10	16QAM	50	0	20.20	20.48	20.15		

Channel				18625	18900	19175	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1852.5	1880	1907.5		
5	QPSK	1	0	22.47	22.47	22.27	23	0
5	QPSK	1	12	22.42	22.43	22.21		
5	QPSK	1	24	22.39	22.40	22.19		
5	QPSK	12	0	21.35	21.58	21.27	22	1
5	QPSK	12	6	21.59	21.50	21.28		
5	QPSK	12	11	21.55	21.41	21.27		
5	QPSK	25	0	21.66	21.45	21.22		
5	16QAM	1	0	21.49	21.74	21.63	22	1
5	16QAM	1	12	21.41	21.70	21.50		
5	16QAM	1	24	21.43	21.69	21.61		
5	16QAM	12	0	20.32	20.66	20.15	21	2
5	16QAM	12	6	20.52	20.65	20.16		
5	16QAM	12	11	20.49	20.52	20.05		
5	16QAM	25	0	20.43	20.52	20.16		
Channel				18615	18900	19185	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1851.5	1880	1908.5		
3	QPSK	1	0	22.24	22.56	22.43	23	0
3	QPSK	1	7	22.17	22.50	22.28		
3	QPSK	1	14	22.19	22.52	22.35		
3	QPSK	8	0	21.31	21.58	21.44	22	1
3	QPSK	8	4	21.33	21.49	21.26		
3	QPSK	8	7	21.31	21.44	21.51		
3	QPSK	15	0	21.25	21.50	21.32		
3	16QAM	1	0	21.17	21.45	21.53	22	1
3	16QAM	1	7	21.08	21.39	21.46		
3	16QAM	1	14	20.81	21.41	21.48		
3	16QAM	8	0	20.41	20.60	20.20	21	2
3	16QAM	8	4	20.42	20.60	20.39		
3	16QAM	8	7	20.41	20.47	20.34		
3	16QAM	15	0	20.38	20.55	20.43		
Channel				18607	18900	19193	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				1850.7	1880	1909.3		
1.4	QPSK	1	0	22.43	22.59	22.44	23	0
1.4	QPSK	1	2	22.30	22.49	22.42		
1.4	QPSK	1	5	22.37	22.54	22.42		
1.4	QPSK	3	0	22.32	22.53	22.39		
1.4	QPSK	3	1	22.35	22.49	22.40		
1.4	QPSK	3	2	22.34	22.54	22.40		
1.4	QPSK	6	0	21.25	21.55	21.45	22	1
1.4	16QAM	1	0	21.43	21.55	21.28	22	1
1.4	16QAM	1	2	21.24	21.38	21.41		
1.4	16QAM	1	5	21.31	21.32	21.43		
1.4	16QAM	3	0	21.41	21.54	21.56		
1.4	16QAM	3	1	21.41	21.52	21.58		
1.4	16QAM	3	2	21.42	21.53	21.54		
1.4	16QAM	6	0	20.29	20.51	20.34	21	2

<LTE Band 7>

BW [MHz]	Modulation	RB Size	RB Offset	Power Low Ch. / Freq.	Power Middle Ch. / Freq.	Power High Ch. / Freq.	Tune up Limit (dBm)	MPR (dB)
Channel				20850	21100	21350		
Frequency (MHz)				2510	2535	2560		
20	QPSK	1	0	21.94	22.26	21.93	23	0
20	QPSK	1	49	22.07	22.35	22.09		
20	QPSK	1	99	22.26	22.62	22.11		
20	QPSK	50	0	21.06	21.28	21.16	22	1
20	QPSK	50	24	21.22	21.21	21.10		
20	QPSK	50	49	21.25	21.31	21.17		
20	QPSK	100	0	21.24	21.26	21.15		
20	16QAM	1	0	20.98	21.32	21.22	22	1
20	16QAM	1	49	21.23	21.31	21.23		
20	16QAM	1	99	21.48	21.58	21.25		
20	16QAM	50	0	20.04	20.43	20.30	21	2
20	16QAM	50	24	20.17	20.35	20.25		
20	16QAM	50	49	20.30	20.20	20.29		
20	16QAM	100	0	20.26	20.31	20.27		
Channel				20825	21100	21375	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2507.5	2535	2562.5		
15	QPSK	1	0	21.92	22.22	22.16	23	0
15	QPSK	1	37	22.08	22.31	22.06		
15	QPSK	1	74	22.18	22.42	22.30		
15	QPSK	36	0	21.15	21.31	21.05	22	1
15	QPSK	36	18	21.13	21.28	21.07		
15	QPSK	36	37	21.16	21.27	21.12		
15	QPSK	75	0	21.08	21.25	21.05		
15	16QAM	1	0	21.04	21.41	21.13	22	1
15	16QAM	1	37	21.19	21.42	21.41		
15	16QAM	1	74	21.36	21.43	21.44		
15	16QAM	36	0	20.06	20.33	20.27	21	2
15	16QAM	36	18	20.11	20.39	20.28		
15	16QAM	36	37	20.08	20.14	20.18		
15	16QAM	75	0	19.96	20.27	20.12		
Channel				20800	21100	21400	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2505	2535	2565		
10	QPSK	1	0	21.91	22.25	22.00	23	0
10	QPSK	1	24	22.01	22.22	22.10		
10	QPSK	1	49	22.08	22.29	22.20		
10	QPSK	25	0	21.03	21.30	21.06	22	1
10	QPSK	25	12	21.03	21.24	21.08		
10	QPSK	25	24	20.97	21.26	21.07		
10	QPSK	50	0	20.92	21.28	21.01		
10	16QAM	1	0	20.79	21.07	20.93	22	1
10	16QAM	1	24	20.95	21.11	20.99		
10	16QAM	1	49	20.96	21.19	21.00		
10	16QAM	25	0	19.98	20.30	20.13	21	2
10	16QAM	25	12	20.09	20.25	20.01		
10	16QAM	25	24	19.98	20.34	20.14		
10	16QAM	50	0	19.85	20.25	20.05		

Channel				20775	21100	21425	Tune up Limit (dBm)	MPR (dB)
Frequency (MHz)				2502.5	2535	2567.5		
5	QPSK	1	0	21.95	22.22	22.08	23	0
5	QPSK	1	12	21.92	22.27	22.06		
5	QPSK	1	24	22.08	22.33	22.21		
5	QPSK	12	0	20.97	21.36	21.18	22	1
5	QPSK	12	6	21.00	21.33	21.08		
5	QPSK	12	11	21.01	21.32	21.09		
5	QPSK	25	0	20.94	21.24	21.14		
5	16QAM	1	0	21.11	21.44	21.41	22	1
5	16QAM	1	12	21.26	21.46	21.36		
5	16QAM	1	24	21.31	21.66	21.42		
5	16QAM	12	0	19.99	20.37	20.27	21	2
5	16QAM	12	6	20.06	20.33	20.17		
5	16QAM	12	11	20.13	20.25	20.30		
5	16QAM	25	0	20.09	20.26	20.21		

<WLAN Conducted Power>

General Note:

1. For 2.4GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11b were selected for SAR evaluation. 802.11g/n HT20/HT40 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 802.11b mode.
2. For 5 GHz WLAN SAR testing, highest average RF output power channel for the lowest data rate for 802.11a were selected for SAR evaluation. 802.11n HT20/HT40 modes 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 mode.

<2.4GHz WLAN Antenna 0>

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	12.15	12.90	12.92	12.91
CH 6	2437	12.05			
CH 11	2462	12.95			

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	9.01	10.06	10.03	10.13	10.04	10.09	10.14	10.14
CH 6	2437	9.38							
CH 11	2462	10.16							

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	8.24	9.04	9.06	9.05	9.10	9.10	9.09	9.06
CH 6	2437	8.59							
CH 11	2462	9.13							

WLAN 2.4GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 3	2422	7.38	8.71	8.68	8.64	8.65	8.64	8.68	8.61
CH 6	2437	7.84							
CH 9	2452	8.72							

<2.4GHz WLAN Antenna 1>

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	11.53	12.01	11.99	11.99
CH 6	2437	12.05			
CH 11	2462	11.27			

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	8.65	8.81	8.86	8.96	8.96	8.94	8.97	9.01
CH 6	2437	9.04							
CH 11	2462	8.37							

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	7.64	8.24	8.37	8.41	8.47	8.43	8.43	8.45
CH 6	2437	8.48							
CH 11	2462	7.69							

WLAN 2.4GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 3	2422	5.72	5.83	5.89	5.90	5.98	5.98	5.96	5.97
CH 6	2437	6.01							
CH 9	2452	5.94							

<2.4GHz WLAN Antenna 0+1>

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	14.96	15.18	15.14	15.19
CH 6	2437	15.19			
CH 11	2462	15.22			

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	12.11	12.43	12.42	12.42	12.42	12.40	12.34	12.26
CH 6	2437	12.49							
CH 11	2462	12.50							

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	10.94	11.00	11.04	11.01	10.71	10.74	11.03	11.01
CH 6	2437	11.24							
CH 11	2462	11.12							

WLAN 2.4GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 3	2422	9.60	10.46	10.60	10.61	10.56	10.33	10.34	10.45
CH 6	2437	10.08							
CH 9	2452	10.65							

<WLAN Conducted Power>

General Note:

1. For 5 GHz WLAN Ant 0+1 SAR testing, highest average RF output power channel for the lowest data rate for 802.11a were selected for SAR evaluation. 802.11n HT20/HT40 modes 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 mode.
2. For 5GHz WLAN Ant0, the maximum Tune-up limit is 6.0dBm, according to KDB 447498 D01v05r02 test exclusion the maximum exclusion threshold is 1.93 which is < 3, SAR testing is not required.
3. For 5GHz WLAN Ant0, the maximum Tune-up limit is 8.0dBm, according to KDB 447498 D01v05r02 test exclusion the maximum exclusion threshold is 2.90 which is < 3, SAR testing is not required.

6.0 8.0

<5GHz WLAN Antenna 0>

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	6.03	5.73	5.75	5.79	5.70	5.87	5.92	5.99
CH 40	5200	6.01							
CH 44	5220	5.88							
CH 48	5240	4.99							
CH 149	5745	3.91	3.72	3.78	3.76	3.76	3.79	3.75	3.79
CH 153	5765	3.09							
CH 157	5785	3.64							
CH 161	5805	2.64							
CH 165	5825	1.98							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 36	5180	3.98	4.06	4.25	4.26	4.34	4.41	4.48	4.32
CH 40	5200	4.52							
CH 44	5220	4.64							
CH 48	5240	3.13							
CH 149	5745	2.19	1.59	1.76	1.72	1.86	1.91	1.97	1.85
CH 153	5765	1.55							
CH 157	5785	1.83							
CH 161	5805	1.08							
CH 165	5825	-0.10							

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	5.05	4.68	4.81	4.87	4.98	5.03	4.99	4.97
CH 46	5230	3.72							
CH 151	5755	2.30	1.88	2.04	2.06	2.21	2.24	2.15	2.19
CH 159	5795	1.79							

<5GHz WLAN Antenna 1>

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	7.14	7.70	7.69	7.82	7.68	7.77	7.75	7.74
CH 40	5200	7.06							
CH 44	5220	7.90							
CH 48	5240	7.70							
CH 149	5745	7.17	7.28	7.33	7.43	7.31	7.35	7.37	7.36
CH 153	5765	6.35							
CH 157	5785	7.50							
CH 161	5805	6.64							
CH 165	5825	6.05							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	Data Rate 6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 36	5180	5.03	5.71	5.84	5.86	5.94	5.98	6.00	6.05
CH 40	5200	4.89							
CH 44	5220	6.08							
CH 48	5240	5.62							
CH 149	5745	5.63	5.56	5.71	5.74	5.76	5.80	5.87	5.90
CH 153	5765	5.32							
CH 157	5785	5.99							
CH 161	5805	5.21							
CH 165	5825	4.49							

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	5.87	6.36	6.42	5.66	6.41	6.10	5.29	6.47
CH 46	5230	6.70							
CH 151	5755	5.59	5.16	5.28	4.50	5.24	4.93	4.16	5.33
CH 159	5795	5.45							

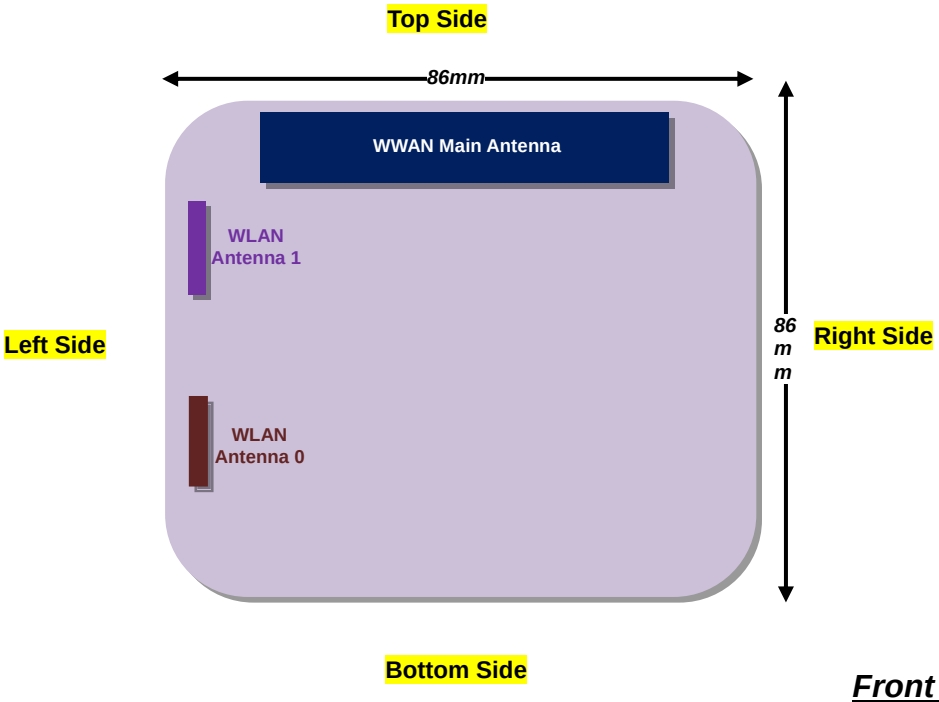
<5GHz WLAN Antenna 0+1>

WLAN 5GHz 802.11a Average Power (dBm)									
Power vs. Channel			Power vs. Data Rate						
Channel	Frequency (MHz)	Data Rate	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps							
CH 36	5180	9.71	9.92	9.95	10.04	9.96	10.11	10.15	10.05
CH 40	5200	9.53							
CH 44	5220	10.17							
CH 48	5240	9.58							
CH 149	5745	8.49	8.22	8.24	8.38	8.25	8.36	8.41	8.34
CH 153	5765	8.32							
CH 157	5785	8.72							
CH 161	5805	7.83							
CH 165	5825	7.24							

WLAN 5GHz 802.11n-HT20 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	Data Rate	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
		6Mbps							
CH 36	5180	7.96	7.73	7.87	7.93	7.78	7.90	7.91	7.89
CH 40	5200	7.73							
CH 44	5220	8.17							
CH 48	5240	7.68							
CH 149	5745	7.19	6.84	6.98	7.02	6.85	6.96	7.04	6.97
CH 153	5765	6.89							
CH 157	5785	7.28							
CH 161	5805	6.56							
CH 165	5825	5.73							

WLAN 5GHz 802.11n-HT40 Average Power (dBm)									
Power vs. Channel			Power vs. MCS Index						
Channel	Frequency (MHz)	MCS Index	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
		MCS0							
CH 38	5190	8.69	8.88	8.91	8.88	8.95	8.86	8.93	8.92
CH 46	5230	9.03							
CH 151	5755	6.65	7.05	7.11	7.08	7.15	7.08	7.12	7.07
CH 159	5795	7.27							

13. Antenna Location



Front View

General Note:

1. Referring to KDB 941225 D06 v01r01, when the overall device length and width are < 9cm*5cm, the test distance is 5 mm. SAR must be measured for all sides and surfaces.

14. 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 WWAN / WLAN Reported SAR(W/kg)= Measured SAR(W/kg)*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. According to October 2013TCB Workshop, For EGPRS, the number of time slots to test for SAR should correspond to the highest source-based time-averaged maximum output power configuration, therefore, the EUT was set in GPRS (4Tx slots) for GSM850 and GPRS (2Tx slots) for GSM1900, due to its highest frame-average power.
4. Per KDB 941225 D02v02r02, RMC 12.2kbps setting is used to evaluate SAR. If HSDPA/HSUPA/DC-HSDPA output power is < 0.25dB higher than RMC, or reported SAR with RMC 12.2kbps setting is ≤ 1.2W/kg, HSDPA/HSUPA/DC-HSDPA SAR evaluation can be excluded.
5. Per KDB 941225 D05v02r03, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
6. Per KDB 941225 D05v02r03, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
7. Per KDB 941225 D05v02r03, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
8. Per KDB 941225 D05v02r03, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, 16QAM SAR testing is not required.
9. Per KDB 941225 D05v02r03, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r03, smaller bandwidth SAR testing is not required.
10. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	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)
01	GSM850	GPRS(4 Tx slots)	Front	0.5	251	848.8	26.13	26.50	1.089	-0.06	0.092	**0.100**
	GSM850	GPRS(4 Tx slots)	Back	0.5	251	848.8	26.13	26.50	1.089	0.02	0.082	0.089
	GSM850	GPRS(4 Tx slots)	Left side	0.5	251	848.8	26.13	26.50	1.089	0.03	0.024	0.026
	GSM850	GPRS(4 Tx slots)	Right side	0.5	251	848.8	26.13	26.50	1.089	-0.02	0.024	0.026
	GSM850	GPRS(4 Tx slots)	Top side	0.5	251	848.8	26.13	26.50	1.089	0.06	0.029	0.032
	GSM850	GPRS(4 Tx slots)	Bottom side	0.5	251	848.8	26.13	26.50	1.089	0.08	0.007	0.008
	GSM1900	GPRS(2 Tx slots)	Front	0.5	512	1850.2	27.18	27.50	1.076	0.06	0.461	0.496
	GSM1900	GPRS(2 Tx slots)	Back	0.5	512	1850.2	27.18	27.50	1.076	-0.08	0.023	0.025
	GSM1900	GPRS(2 Tx slots)	Left side	0.5	512	1850.2	27.18	27.50	1.076	-0.02	0.002	0.002
	GSM1900	GPRS(2 Tx slots)	Right side	0.5	512	1850.2	27.18	27.50	1.076	-0.05	0.000	0.000
02	GSM1900	GPRS(2 Tx slots)	Top side	0.5	512	1850.2	27.18	27.50	1.076	-0.06	0.591	**0.636**
	GSM1900	GPRS(2 Tx slots)	Bottom side	0.5	512	1850.2	27.18	27.50	1.076	0.06	0.001	0.002

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (cm)	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)
03	WCDMA V	RMC 12.2Kbps	Front	0.5	4233	846.6	22.76	23.00	1.057	0.05	0.091	**0.096**
	WCDMA V	RMC 12.2Kbps	Back	0.5	4233	846.6	22.76	23.00	1.057	0.02	0.078	0.082
	WCDMA V	RMC 12.2Kbps	Left side	0.5	4233	846.6	22.76	23.00	1.057	0.04	0.021	0.022
	WCDMA V	RMC 12.2Kbps	Right side	0.5	4233	846.6	22.76	23.00	1.057	0.12	0.019	0.020
	WCDMA V	RMC 12.2Kbps	Top side	0.5	4233	846.6	22.76	23.00	1.057	0.01	0.030	0.032
	WCDMA V	RMC 12.2Kbps	Bottom side	0.5	4233	846.6	22.76	23.00	1.057	0.03	0.007	0.007
	WCDMA IV	RMC 12.2Kbps	Front	0.5	1513	1752.6	21.38	21.50	1.028	0.01	0.699	0.719
	WCDMA IV	RMC 12.2Kbps	Back	0.5	1513	1752.6	21.38	21.50	1.028	-0.04	0.062	0.064
	WCDMA IV	RMC 12.2Kbps	Left side	0.5	1513	1752.6	21.38	21.50	1.028	0.05	0.002	0.002
	WCDMA IV	RMC 12.2Kbps	Right side	0.5	1513	1752.6	21.38	21.50	1.028	-0.01	0.013	0.013
04	WCDMA IV	RMC 12.2Kbps	Top side	0.5	1513	1752.6	21.38	21.50	1.028	0.08	1.260	**1.295**
	WCDMA IV	RMC 12.2Kbps	Top side	0.5	1513	1752.6	21.38	21.50	1.028	0.07	1.240	1.275
	WCDMA IV	RMC 12.2Kbps	Top side	0.5	1312	1712.4	21.21	21.50	1.069	0.17	1.170	1.251
	WCDMA IV	RMC 12.2Kbps	Top side	0.5	1413	1732.6	21.15	21.50	1.084	0.08	1.190	1.290
	WCDMA IV	RMC 12.2Kbps	Bottom side	0.5	1513	1752.6	21.38	21.50	1.028	-0.08	0.001	0.001
	WCDMA II	RMC 12.2Kbps	Front	0.5	9400	1880	22.51	23.00	1.119	0.04	0.504	0.564
	WCDMA II	RMC 12.2Kbps	Back	0.5	9400	1880	22.51	23.00	1.119	-0.08	0.040	0.045
	WCDMA II	RMC 12.2Kbps	Left side	0.5	9400	1880	22.51	23.00	1.119	0.09	0.016	0.018
	WCDMA II	RMC 12.2Kbps	Right side	0.5	9400	1880	22.51	23.00	1.119	-0.05	0.011	0.012
05	WCDMA II	RMC 12.2Kbps	Top side	0.5	9400	1880	22.51	23.00	1.119	-0.01	0.691	**0.774**
	WCDMA II	RMC 12.2Kbps	Bottom side	0.5	9400	1880	22.51	23.00	1.119	0.03	0.002	0.002

<LTE SAR>

Plot No.	Band	BW (MHz)	Mode	Test Position	Gap (cm)	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)
	LTE Band 17	10M	QPSK 1RB 0offset	Front	0.5	23790	710	22.77	23.00	1.054	0.02	0.260	0.274
	LTE Band 17	10M	QPSK 25RB 0offset	Front	0.5	23790	710	21.65	22.00	1.084	0.04	0.202	0.219
06	LTE Band 17	10M	QPSK 1RB 0offset	Back	0.5	23790	710	22.77	23.00	1.054	0.01	0.264	**0.278**
	LTE Band 17	10M	QPSK 25RB 0offset	Back	0.5	23790	710	21.65	22.00	1.084	0.17	0.203	0.220
	LTE Band 17	10M	QPSK 1RB 0offset	Left side	0.5	23790	710	22.77	23.00	1.054	-0.19	0.021	0.022
	LTE Band 17	10M	QPSK 25RB 0offset	Left side	0.5	23790	710	21.65	22.00	1.084	0.05	0.021	0.023
	LTE Band 17	10M	QPSK 1RB 0offset	Right side	0.5	23790	710	22.77	23.00	1.054	0.06	0.056	0.059
	LTE Band 17	10M	QPSK 25RB 0offset	Right side	0.5	23790	710	21.65	22.00	1.084	0.02	0.045	0.049
	LTE Band 17	10M	QPSK 1RB 0offset	Top side	0.5	23790	710	22.77	23.00	1.054	-0.08	0.032	0.034
	LTE Band 17	10M	QPSK 25RB 0offset	Top side	0.5	23790	710	21.65	22.00	1.084	0.03	0.027	0.029
	LTE Band 17	10M	QPSK 1RB 0offset	Bottom side	0.5	23790	710	22.77	23.00	1.054	0.02	0.006	0.006
	LTE Band 17	10M	QPSK 25RB 0offset	Bottom side	0.5	23790	710	21.65	22.00	1.084	0.04	0.005	0.005
07	LTE Band 5	10M	QPSK 1RB 0offset	Front	0.5	20600	844	22.83	23.50	1.167	-0.03	0.073	**0.085**
	LTE Band 5	10M	QPSK 25RB 12offset	Front	0.5	20600	844	21.69	22.50	1.205	0.08	0.053	0.064
	LTE Band 5	10M	QPSK 1RB 0offset	Back	0.5	20600	844	22.83	23.50	1.167	0.01	0.062	0.072
	LTE Band 5	10M	QPSK 25RB 12offset	Back	0.5	20600	844	21.69	22.50	1.205	0.14	0.051	0.061
	LTE Band 5	10M	QPSK 1RB 0offset	Left side	0.5	20600	844	22.83	23.50	1.167	0.01	0.019	0.022
	LTE Band 5	10M	QPSK 25RB 12offset	Left side	0.5	20600	844	21.69	22.50	1.205	0.03	0.013	0.016
	LTE Band 5	10M	QPSK 1RB 0offset	Right side	0.5	20600	844	22.83	23.50	1.167	0.06	0.025	0.029
	LTE Band 5	10M	QPSK 25RB 12offset	Right side	0.5	20600	844	21.69	22.50	1.205	0.02	0.011	0.013
	LTE Band 5	10M	QPSK 1RB 0offset	Top side	0.5	20600	844	22.83	23.50	1.167	0.06	0.023	0.027
	LTE Band 5	10M	QPSK 25RB 12offset	Top side	0.5	20600	844	21.69	22.50	1.205	0.05	0.015	0.018
	LTE Band 5	10M	QPSK 1RB 0offset	Bottom side	0.5	20600	844	22.83	23.50	1.167	0.09	0.010	0.011
	LTE Band 5	10M	QPSK 25RB 12offset	Bottom side	0.5	20600	844	21.69	22.50	1.205	-0.04	0.009	0.011
	LTE Band 4	20M	QPSK 1RB 0offset	Front	0.5	20050	1720	21.26	21.50	1.057	0.02	1.200	1.268
	LTE Band 4	20M	QPSK 1RB 0offset	Front	0.5	20175	1732.5	20.98	21.50	1.127	0.07	1.150	1.296
	LTE Band 4	20M	QPSK 1RB 0offset	Front	0.5	20300	1745	20.62	21.50	1.225	0.04	1.050	1.286
	LTE Band 4	20M	QPSK 50RB 0offset	Front	0.5	20050	1720	20.16	20.50	1.081	0.03	0.691	0.747
	LTE Band 4	20M	QPSK 100RB 0offset	Front	0.5	20050	1720	20.04	20.50	1.112	0.05	0.703	0.782
	LTE Band 4	20M	QPSK 1RB 0offset	Back	0.5	20050	1720	21.26	21.50	1.057	-0.06	0.097	0.103
	LTE Band 4	20M	QPSK 50RB 0offset	Back	0.5	20050	1720	20.16	20.50	1.081	-0.09	0.079	0.085
	LTE Band 4	20M	QPSK 1RB 0offset	Left side	0.5	20050	1720	21.26	21.50	1.057	0.04	0.002	0.002
	LTE Band 4	20M	QPSK 50RB 0offset	Left side	0.5	20050	1720	20.16	20.50	1.081	0.05	0.003	0.003
	LTE Band 4	20M	QPSK 1RB 0offset	Right side	0.5	20050	1720	21.26	21.50	1.057	-0.08	0.027	0.029
	LTE Band 4	20M	QPSK 50RB 0offset	Right side	0.5	20050	1720	20.16	20.50	1.081	-0.08	0.013	0.014
	LTE Band 4	20M	QPSK 1RB 0offset	Top side	0.5	20050	1720	21.26	21.50	1.057	0.05	1.180	1.247
	LTE Band 4	20M	QPSK 1RB 0offset	Top side	0.5	20175	1732.5	20.98	21.50	1.127	0.16	1.140	1.285
08	LTE Band 4	20M	QPSK 1RB 0offset	Top side	0.5	20300	1745	20.62	21.50	1.225	0.08	1.060	**1.298**
	LTE Band 4	20M	QPSK 50RB 0offset	Top side	0.5	20050	1720	20.16	20.50	1.081	0.18	0.945	1.022
	LTE Band 4	20M	QPSK 50RB 0offset	Top side	0.5	20175	1732.5	19.94	20.50	1.138	0.01	0.967	1.100
	LTE Band 4	20M	QPSK 50RB 0offset	Top side	0.5	20300	1745	19.89	20.50	1.151	-0.08	0.943	1.085
	LTE Band 4	20M	QPSK 100RB 0offset	Top side	0.5	20050	1720	20.04	20.50	1.112	0.01	0.983	1.093
	LTE Band 4	20M	QPSK 1RB 0offset	Bottom side	0.5	20050	1720	21.26	21.50	1.057	0.03	0.002	0.002
	LTE Band 4	20M	QPSK 50RB 0offset	Bottom side	0.5	20050	1720	20.16	20.50	1.081	-0.06	0.001	0.001

Plot No.	Band	BW (MHz)	Mode	Test Position	Gap (cm)	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)
	LTE Band 2	20M	QPSK 1RB 0offset	Front	0.5	18900	1880	22.57	23.00	1.104	0.1	0.528	0.583
	LTE Band 2	20M	QPSK 50RB 24offset	Front	0.5	18700	1860	21.62	22.00	1.091	0.07	0.394	0.430
	LTE Band 2	20M	QPSK 1RB 0offset	Back	0.5	18900	1880	22.57	23.00	1.104	-0.07	0.038	0.042
	LTE Band 2	20M	QPSK 50RB 24offset	Back	0.5	18700	1860	21.62	22.00	1.091	-0.04	0.033	0.036
	LTE Band 2	20M	QPSK 1RB 0offset	Left side	0.5	18900	1880	22.57	23.00	1.104	-0.02	0.014	0.015
	LTE Band 2	20M	QPSK 50RB 24offset	Left side	0.5	18700	1860	21.62	22.00	1.091	0.05	0.010	0.011
	LTE Band 2	20M	QPSK 1RB 0offset	Right side	0.5	18900	1880	22.57	23.00	1.104	-0.04	0.001	0.001
	LTE Band 2	20M	QPSK 50RB 24offset	Right side	0.5	18700	1860	21.62	22.00	1.091	0.05	0.001	0.001
09	LTE Band 2	20M	QPSK 1RB 0offset	Top side	0.5	18900	1880	22.57	23.00	1.104	0.05	0.679	**0.750**
	LTE Band 2	20M	QPSK 50RB 24offset	Top side	0.5	18700	1860	21.62	22.00	1.091	0.04	0.617	0.673
	LTE Band 2	20M	QPSK 1RB 0offset	Bottom side	0.5	18900	1880	22.57	23.00	1.104	0.06	0.002	0.002
	LTE Band 2	20M	QPSK 50RB 24offset	Bottom side	0.5	18700	1860	21.62	22.00	1.091	0.07	0.002	0.002
	LTE Band 7	20M	QPSK 1RB 99offset	Front	0.5	21100	2535	22.62	23.00	1.091	-0.02	0.182	0.199
	LTE Band 7	20M	QPSK 50RB 49offset	Front	0.5	21100	2535	21.31	22.00	1.172	0.08	0.231	0.271
	LTE Band 7	20M	QPSK 1RB 99offset	Back	0.5	21100	2535	22.62	23.00	1.091	0.02	0.186	0.203
10	LTE Band 7	20M	QPSK 50RB 49offset	Back	0.5	21100	2535	21.31	22.00	1.172	-0.09	0.265	**0.311**
	LTE Band 7	20M	QPSK 1RB 99offset	Left side	0.5	21100	2535	22.62	23.00	1.091	0.07	0.131	0.143
	LTE Band 7	20M	QPSK 50RB 49offset	Left side	0.5	21100	2535	21.31	22.00	1.172	0.08	0.186	0.218
	LTE Band 7	20M	QPSK 1RB 99offset	Right side	0.5	21100	2535	22.62	23.00	1.091	-0.09	0.027	0.029
	LTE Band 7	20M	QPSK 50RB 49offset	Right side	0.5	21100	2535	21.31	22.00	1.172	0.02	0.035	0.041
	LTE Band 7	20M	QPSK 1RB 99offset	Top side	0.5	21100	2535	22.62	23.00	1.091	0.08	0.164	0.179
	LTE Band 7	20M	QPSK 50RB 49offset	Top side	0.5	21100	2535	21.31	22.00	1.172	-0.08	0.223	0.261
	LTE Band 7	20M	QPSK 1RB 99offset	Bottom side	0.5	21100	2535	22.62	23.00	1.091	0.03	0.001	0.001
	LTE Band 7	20M	QPSK 50RB 49offset	Bottom side	0.5	21100	2535	21.31	22.00	1.172	0.01	0.001	0.001

<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	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Front	0.5	Ant 0	11	2462	12.95	13.50	1.135	-0.01	0.136	0.154
	WLAN2.4GHz	802.11b 1Mbps	Back	0.5	Ant 0	11	2462	12.95	13.50	1.135	-0.06	0.164	0.186
	WLAN2.4GHz	802.11b 1Mbps	Left side	0.5	Ant 0	11	2462	12.95	13.50	1.135	0.08	0.155	0.176
	WLAN2.4GHz	802.11b 1Mbps	Right side	0.5	Ant 0	11	2462	12.95	13.50	1.135	-0.03	0.023	0.026
	WLAN2.4GHz	802.11b 1Mbps	Top side	0.5	Ant 0	11	2462	12.95	13.50	1.135	0.05	0.029	0.033
	WLAN2.4GHz	802.11b 1Mbps	Bottom side	0.5	Ant 0	11	2462	12.95	13.50	1.135	0.09	0.004	0.005
	WLAN2.4GHz	802.11b 1Mbps	Front	0.5	Ant 1	6	2437	12.05	12.50	1.109	0.05	0.312	0.346
	WLAN2.4GHz	802.11b 1Mbps	Back	0.5	Ant 1	6	2437	12.05	12.50	1.109	0.06	0.318	0.353
	WLAN2.4GHz	802.11b 1Mbps	Left side	0.5	Ant 1	6	2437	12.05	12.50	1.109	-0.04	0.198	0.220
	WLAN2.4GHz	802.11b 1Mbps	Right side	0.5	Ant 1	6	2437	12.05	12.50	1.109	0.08	0.028	0.031
	WLAN2.4GHz	802.11b 1Mbps	Top side	0.5	Ant 1	6	2437	12.05	12.50	1.109	0.02	0.001	0.001
	WLAN2.4GHz	802.11b 1Mbps	Bottom side	0.5	Ant 1	6	2437	12.05	12.50	1.109	0.08	0.110	0.122
11	WLAN2.4GHz	802.11b 1Mbps	Front	0.5	Ant 0+1	11	2462	15.22	15.50	1.067	0.05	0.432	**0.461**
	WLAN2.4GHz	802.11b 1Mbps	Back	0.5	Ant 0+1	11	2462	15.22	15.50	1.067	0.05	0.398	0.424
	WLAN2.4GHz	802.11b 1Mbps	Left side	0.5	Ant 0+1	11	2462	15.22	15.50	1.067	0.02	0.020	0.021
	WLAN2.4GHz	802.11b 1Mbps	Right side	0.5	Ant 0+1	11	2462	15.22	15.50	1.067	-0.04	0.064	0.068
	WLAN2.4GHz	802.11b 1Mbps	Top side	0.5	Ant 0+1	11	2462	15.22	15.50	1.067	0.09	0.021	0.022
	WLAN2.4GHz	802.11b 1Mbps	Bottom side	0.5	Ant 0+1	11	2462	15.22	15.50	1.067	0.02	0.158	0.169
	WLAN 5GHz	802.11a 6Mbps	Front	0.5	Ant 0+1	44	5220	10.17	10.50	1.079	-0.13	0.199	0.215
	WLAN 5GHz	802.11a 6Mbps	Back	0.5	Ant 0+1	44	5220	10.17	10.50	1.079	0.09	0.023	0.025
12	WLAN 5GHz	802.11a 6Mbps	Left side	0.5	Ant 0+1	44	5220	10.17	10.50	1.079	0.08	0.367	**0.396**
	WLAN 5GHz	802.11a 6Mbps	Right side	0.5	Ant 0+1	44	5220	10.17	10.50	1.079	0.06	0.026	0.028
	WLAN 5GHz	802.11a 6Mbps	Top side	0.5	Ant 0+1	44	5220	10.17	10.50	1.079	0.09	0.001	0.001
	WLAN 5GHz	802.11a 6Mbps	Bottom side	0.5	Ant 0+1	44	5220	10.17	10.50	1.079	0.01	0.001	0.001
	WLAN 5GHz	802.11a 6Mbps	Front	0.5	Ant 0+1	157	5785	8.72	9.00	1.065	0.08	0.071	0.076
	WLAN 5GHz	802.11a 6Mbps	Back	0.5	Ant 0+1	157	5785	8.72	9.00	1.065	0.01	0.019	0.020
13	WLAN 5GHz	802.11a 6Mbps	Left side	0.5	Ant 0+1	157	5785	8.72	9.00	1.065	0.1	0.265	**0.282**
	WLAN 5GHz	802.11a 6Mbps	Right side	0.5	Ant 0+1	157	5785	8.72	9.00	1.065	-0.06	0.029	0.031
	WLAN 5GHz	802.11a 6Mbps	Top side	0.5	Ant 0+1	157	5785	8.72	9.00	1.065	-0.16	0.001	0.001
	WLAN 5GHz	802.11a 6Mbps	Bottom side	0.5	Ant 0+1	157	5785	8.72	9.00	1.065	-0.05	0.001	0.001

14.2 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (cm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WCDMA IV	RMC 12.2K	Top side	0.5	1513	1752.6	21.38	21.50	1.028	0.08	1.26	-	1.295
2nd	WCDMA IV	RMC 12.2K	Top side	0.5	1513	1752.6	21.38	21.50	1.028	0.07	1.24	1.02	1.275

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.

15. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
		Supported
1.	GPRS/EDGE(Data) + WLAN2.4GHz(data)	Yes
2.	WCDMA(Data) + WLAN2.4GHz(data)	Yes
3.	LTE(Data) + WLAN2.4GHz(data)	Yes
4.	GPRS/EDGE(data) + WLAN5GHz(data)	Yes
5.	WCDMA(data) + WLAN5GHz(data)	Yes
6.	LTE(data) + WLAN5GHz(data)	Yes

General Note:

1. 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.
2. 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.
3. The Scaled SAR summation is calculated based on the same configuration and test position.
4. 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 15.2.

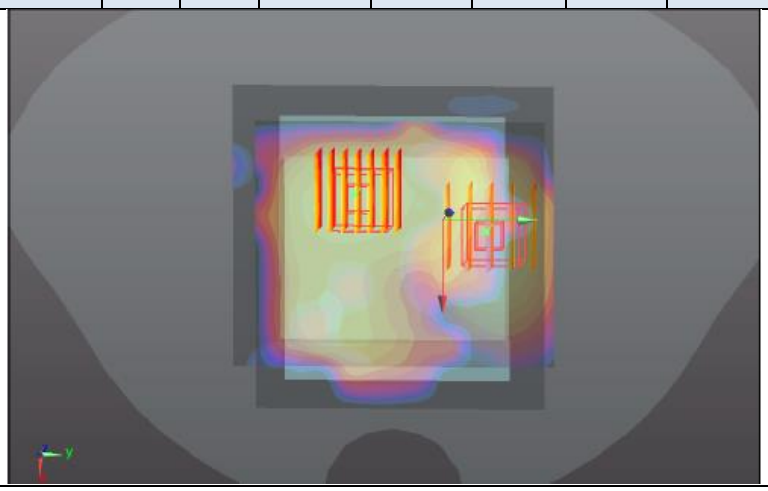
15.1 Body Exposure Conditions

WWAN Band		Exposure Position	1	2	3		1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WALN	5.2GHz / 5.8GHz WLAN					
			SAR (W/kg)	SAR (W/kg)	Band	SAR (W/kg)				
GSM	GSM850	Front	0.100	0.461	5.2GHz WLAN	0.215	**0.56**	**0.32**		
		Back	0.089	0.424	5.2GHz WLAN	0.025	**0.51**	**0.11**		
		Left side	0.026	0.220	5.2GHz WLAN	0.396	**0.25**	**0.42**		
		Right side	0.026	0.068	5.8GHz WLAN	0.031	**0.09**	**0.06**		
		Top side	0.032	0.033	5.2GHz WLAN	0.001	**0.07**	**0.03**		
		Bottom side	0.008	0.169	5.2GHz WLAN	0.001	**0.18**	**0.01**		
	GSM1900	Front	0.496	0.461	5.2GHz WLAN	0.215	**0.96**	**0.71**		
		Back	0.025	0.424	5.2GHz WLAN	0.025	**0.45**	**0.05**		
		Left side	0.002	0.220	5.2GHz WLAN	0.396	**0.22**	**0.40**		
		Right side	0.000	0.068	5.8GHz WLAN	0.031	**0.07**	**0.03**		
		Top side	0.636	0.033	5.2GHz WLAN	0.001	**0.67**	**0.64**		
		Bottom side	0.002	0.169	5.2GHz WLAN	0.001	**0.17**	**0.00**		
WCMDA	Band V	Front	0.096	0.461	5.2GHz WLAN	0.215	**0.56**	**0.31**		
		Back	0.082	0.424	5.2GHz WLAN	0.025	**0.51**	**0.11**		
		Left side	0.022	0.220	5.2GHz WLAN	0.396	**0.24**	**0.42**		
		Right side	0.020	0.068	5.8GHz WLAN	0.031	**0.09**	**0.05**		
		Top side	0.032	0.033	5.2GHz WLAN	0.001	**0.07**	**0.03**		
		Bottom side	0.007	0.169	5.2GHz WLAN	0.001	**0.18**	**0.01**		
	Band IV	Front	0.719	0.461	5.2GHz WLAN	0.215	**1.18**	**0.93**		
		Back	0.064	0.424	5.2GHz WLAN	0.025	**0.49**	**0.09**		
		Left side	0.002	0.220	5.2GHz WLAN	0.396	**0.22**	**0.40**		
		Right side	0.013	0.068	5.8GHz WLAN	0.031	**0.08**	**0.04**		
		Top side	1.295	0.033	5.2GHz WLAN	0.001	**1.33**	**1.30**		
		Bottom side	0.001	0.169	5.2GHz WLAN	0.001	**0.17**	**0.00**		
	Band II	Front	0.564	0.461	5.2GHz WLAN	0.215	**1.03**	**0.78**		
		Back	0.045	0.424	5.2GHz WLAN	0.025	**0.47**	**0.07**		
		Left side	0.018	0.220	5.2GHz WLAN	0.396	**0.24**	**0.41**		
		Right side	0.012	0.068	5.8GHz WLAN	0.031	**0.08**	**0.04**		
		Top side	0.774	0.033	5.2GHz WLAN	0.001	**0.81**	**0.78**		
		Bottom side	0.002	0.169	5.2GHz WLAN	0.001	**0.17**	**0.00**		

WWAN Band		Exposure Position	1	2	3		1+2 Summed SAR (W/kg)	1+3 Summed SAR (W/kg)	SPLSR	Case No
			WWAN	2.4GHz WALN	5.2GHz / 5.8GHz WLAN					
			SAR (W/kg)	SAR (W/kg)	Band	SAR (W/kg)				
LTE	Band 17	Front	0.274	0.461	5.2GHz WLAN	0.215	**0.74**	**0.49**		
		Back	0.278	0.424	5.2GHz WLAN	0.025	**0.70**	**0.30**		
		Left side	0.023	0.220	5.2GHz WLAN	0.396	**0.24**	**0.42**		
		Right side	0.059	0.068	5.8GHz WLAN	0.031	**0.13**	**0.09**		
		Top side	0.034	0.033	5.2GHz WLAN	0.001	**0.07**	**0.04**		
		Bottom side	0.006	0.169	5.2GHz WLAN	0.001	**0.18**	**0.01**		
	Band 5	Front	0.085	0.461	5.2GHz WLAN	0.215	**0.55**	**0.30**		
		Back	0.072	0.424	5.2GHz WLAN	0.025	**0.50**	**0.10**		
		Left side	0.022	0.220	5.2GHz WLAN	0.396	**0.24**	**0.42**		
		Right side	0.029	0.068	5.8GHz WLAN	0.031	**0.10**	**0.06**		
		Top side	0.027	0.033	5.2GHz WLAN	0.001	**0.06**	**0.03**		
		Bottom side	0.011	0.169	5.2GHz WLAN	0.001	**0.18**	**0.01**		
	Band 4	Front	1.296	0.461	5.2GHz WLAN	0.215	**1.76**	**1.51**	0.04	Case 1
		Back	0.103	0.424	5.2GHz WLAN	0.025	**0.53**	**0.13**		
		Left side	0.003	0.220	5.2GHz WLAN	0.396	**0.22**	**0.40**		
		Right side	0.029	0.068	5.8GHz WLAN	0.031	**0.10**	**0.06**		
		Top side	1.298	0.033	5.2GHz WLAN	0.001	**1.33**	**1.30**		
		Bottom side	0.002	0.169	5.2GHz WLAN	0.001	**0.17**	**0.00**		
	Band 2	Front	0.583	0.461	5.2GHz WLAN	0.215	**1.04**	**0.80**		
		Back	0.042	0.424	5.2GHz WLAN	0.025	**0.47**	**0.07**		
		Left side	0.015	0.220	5.2GHz WLAN	0.396	**0.24**	**0.41**		
		Right side	0.001	0.068	5.8GHz WLAN	0.031	**0.07**	**0.03**		
		Top side	0.750	0.033	5.2GHz WLAN	0.001	**0.78**	**0.75**		
		Bottom side	0.002	0.169	5.2GHz WLAN	0.001	**0.17**	**0.00**		
	Band 7	Front	0.271	0.461	5.2GHz WLAN	0.215	**0.73**	**0.49**		
		Back	0.311	0.424	5.2GHz WLAN	0.025	**0.74**	**0.34**		
		Left side	0.218	0.220	5.2GHz WLAN	0.396	**0.44**	**0.61**		
		Right side	0.041	0.068	5.8GHz WLAN	0.031	**0.11**	**0.07**		
		Top side	0.261	0.033	5.2GHz WLAN	0.001	**0.29**	**0.26**		
		Bottom side	0.001	0.169	5.2GHz WLAN	0.001	**0.17**	**0.00**		

15.2 SPLSR Evaluation and Analysis

Case 1	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	SAR peak location (m) Y	SAR peak location (m) Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	WLAN2.4GHz	Front	0.461	0.5	-0.0264	-0.0168	-0.182	57.7	1.76	0.04	Not required
	LTE Band 4		1.296	0.5	-0.0155	0.0345	-0.206				



Test Engineer： Luke Lu

16. 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

17. 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 v02, “SAR Measurement Procedures for 3G Devices – CDMA 2000 / Ev-Do / WCDMA / HSDPA / HSPA”, October 2007

[8] FCC KDB 941225 D02 v02r02, “SAR Guidance for HSPA, HSPA+, DC-HSDPA and 1x-Advanced”, May 2013.

[9] FCC KDB 941225 D03 v01, “Recommended SAR Test Reduction Procedures for GSM / GPRS / EDGE”, December 2008

[10] FCC KDB 941225 D04 v01, “Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode”, January 2010

[11] FCC KDB 941225 D05 v02r03, “SAR Evaluation Considerations for LTE Devices”, Dec 2013

[12] FCC KDB 941225 D06 v01r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", May 2013.

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

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