SAR EVALUATION REPORT

For

Fujian Newland Payment Technology Co.,Ltd.

No.1,Rujiang XiRoad,Mawei District Newland, Fuzhou,Fujian,P.R.China

FCC ID: 2AM6U-N910

Report Type:	**Product Type:**
Original Report	Intelligent POS Terminal

Report Number:	RXM170815054-20
Report Date:	2017-10-17
Reviewed By:	Rocky Xiao RF Engineer
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Attestation of Test Results				
EUT Information		EUT Description	Intelligent POS Terminal	
		Model Number	N910	
		FCC ID	2AM6U-N910	
		Serial Number	00000304N7NL00142955	
		Test Date	2017/10/03 to 2017/10/06	
MODE			Max. SAR Level(s) Reported(W/Kg)	Limit (W/Kg)
Body-worn	GSM 850	1g SAR	0.86	1.6
	PCS 1900	1g SAR	0.65	
	WCDMA Band 2	1g SAR	1.28	
	WCDMA Band 4	1g SAR	1.32	
	WCDMA Band 5	1g SAR	1.22	
	LTE Band 2	1g SAR	0.79	
	LTE Band 4	1g SAR	0.80	
	LTE Band 5	1g SAR	0.53	
	LTE Band 7	1g SAR	0.46	
	LTE Band 13	1g SAR	0.87	
	LTE Band 26	1g SAR	1.14	
	WLAN 2.4G	1g SAR	0.17	
	WLAN U-NII-1 Band	1g SAR	0.09	
	WLAN U-NII-2A Band	1g SAR	0.06	
	WLAN U-NII-2C Band	1g SAR	0.06	
	WLAN U-NII-3 Band	1g SAR	0.07	
Simultaneous		1g SAR	1.49	

Handheld	**GSM 850**	10g SAR	0.34	**4.0**
	PCS 1900	10g SAR	0.04	
	WCDMA Band 2	10g SAR	0.17	
	WCDMA Band 4	10g SAR	0.09	
	WCDMA Band 5	10g SAR	0.20	
	LTE Band 2	10g SAR	0.09	
	LTE Band 4	10g SAR	0.13	
	LTE Band 5	10g SAR	0.17	
	LTE Band 7	10g SAR	0.05	
	LTE Band 13	10g SAR	0.22	
	LTE Band 26	10g SAR	0.13	
	WLAN 2.4G	10g SAR	0.35	
	WLAN U-NII-1 Band	10g SAR	0.27	
	WLAN U-NII-2A Band	10g SAR	0.20	
	WLAN U-NII-2C Band	10g SAR	0.20	
	WLAN U-NII-3 Band	10g SAR	0.19	
Simultaneous		10g SAR	0.61	

Applicable Standards	**ANSI / IEEE C95.1 : 2005** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fileds,3 kHz to 300 GHz.
	ANSI / IEEE C95.3 : 2002 IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to SuchFields,100 kHz—300 GHz.
	FCC 47 CFR part 2.1093 Radiofrequency radiation exposure evaluation: portable devices
	IEEE1528:2013 IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
	IEC 62209-2:2010 Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices-Human models, instrumentation, and procedures-Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)
	KDB procedures KDB 447498 D01 General RF Exposure Guidance v06. KDB 648474 D04 Handset SAR v01r03. KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04 KDB 865664 D02 RF Exposure Reporting v01r02 KDB 941225 D01 3G SAR Procedures v03r01 KDB 941225 D05 SAR for LTE Devices v02r05
Note: This wireless device has been shown to be capable of compliance for localized specific absorption rate (SAR) for General Population/Uncontrolled Exposure limits specified in **FCC 47 CFR part 2.1093** and has been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and RF exposure KDB procedures. **The results and statements contained in this report pertain only to the device(s) evaluated.**	

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	RXM170815054-20	Original Report	2017-10-17

EUT DESCRIPTION

This report has been prepared on behalf of ***Fujian Newland Payment Technology Co.,Ltd.*** and their product ***Intelligent POS Terminal***, Model: ***N910***, FCC ID: ***2AM6U-N910*** or the EUT (Equipment under Test) as referred to in the rest of this report.

**All measurement and test data in this report was gathered from production sample serial number: 00000304N7NL00142955 (Assigned by BACL, Dongguan).The EUT supplied by the applicant was received on 2017-08-22.*

Technical Specification

Device Type:	Portable
Exposure Category:	Population / Uncontrolled
Antenna Type(s):	Internal Antenna
DTM Type:	Class B
Multi-slot Class:	GPRS(Class 12)
Body-Worn Accessories:	None
Face-Head Accessories:	None
Operation Mode :	GPRS/EDGE Data, WCDMA(R99 (Voice+Data),HSUPA, HSDPA, DC-HSDPA, HSPA+), FDD-LTE WLAN, Bluetooth
Frequency Band:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 4: 1710-1755 MHz(TX); 2110-2155 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 4: 1710-1755 MHz(TX); 2110-2155 MHz(RX) LTE Band 5: 824-849 MHz(TX); 869-894 MHz(RX) LTE Band 7: 2500-2570 MHz(TX); 2620-2690 MHz(RX) LTE Band 13: 777-787 MHz(TX); 746-756 MHz(RX) LTE Band 26: 814-849 MHz(TX); 859-894 MHz(RX) WLAN (2.4G): 2412 -2462 MHz /2422 -2452 MHz WLAN (U-NII-1 Band): 5150-5250MHz WLAN (U-NII-2A Band): 5250-5350MHz WLAN (U-NII-2C Band): 5470-5725MHz WLAN (U-NII-3 Band): 5745-5825MHz Bluetooth : 2402 MHz-2480 MHz
Dimensions (L*W*H):	190 mm (L) × 81 mm (W) × 55 mm (H)
Power Source:	7.2 V_{DC} Rechargeable Battery
Normal Operation:	Body-worn and Hand-held

REFERENCE, STANDARDS, AND GUILDELINES

FCC:

The Report and Order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 1.6 mW/g as recommended by the ANSI/IEEE standard C95.1-1992 [6] for an uncontrolled environment (Paragraph 65). According to the Supplement C of OET Bulletin 65 “Evaluating Compliance with FCC Guide-lines for Human Exposure to Radio frequency Electromagnetic Fields", released on Jun 29, 2001 by the FCC, the device should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in North America is 1.6 mW/g average over 1 gram of tissue mass.

CE:

The order requires routine SAR evaluation prior to equipment authorization of portable transmitter devices, including portable telephones. For consumer products, the applicable limit is 2 mW/g as recommended by EN62209-1 for an uncontrolled environment. According to the Standard, the device should be evaluated at maximum output power (radiated from the antenna) under “worst-case” conditions for normal or intended use, incorporating normal antenna operating positions, device peak performance frequencies and positions for maximum RF energy coupling.

This report describes the methodology and results of experiments performed on wireless data terminal. The objective was to determine if there is RF radiation and if radiation is found, what is the extent of radiation with respect to safety limits. SAR (Specific Absorption Rate) is the measure of RF exposure determined by the amount of RF energy absorbed by human body (or its parts) – to determine how the RF energy couples to the body or head which is a primary health concern for body worn devices. The limit below which the exposure to RF is considered safe by regulatory bodies in Europe is 2 mW/g average over 10 gram of tissue mass.

The test configurations were laid out on a specially designed test fixture to ensure the reproducibility of measurements. Each configuration was scanned for SAR. Analysis of each scan was carried out to characterize the above effects in the device.

SAR Limits

FCC Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 1 g of tissue)	**1.60**	8.0
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

CE Limit

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average (averaged over the whole body)	0.08	0.4
Spatial Peak (averaged over any 10 g of tissue)	2.0	10
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.

Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

General Population/Uncontrolled environments Spatial Peak limit 1.6W/kg (FCC) & 2 W/kg (CE) applied to the EUT.

FACILITIES

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

The test sites and measurement facilities used to collect data are located at:

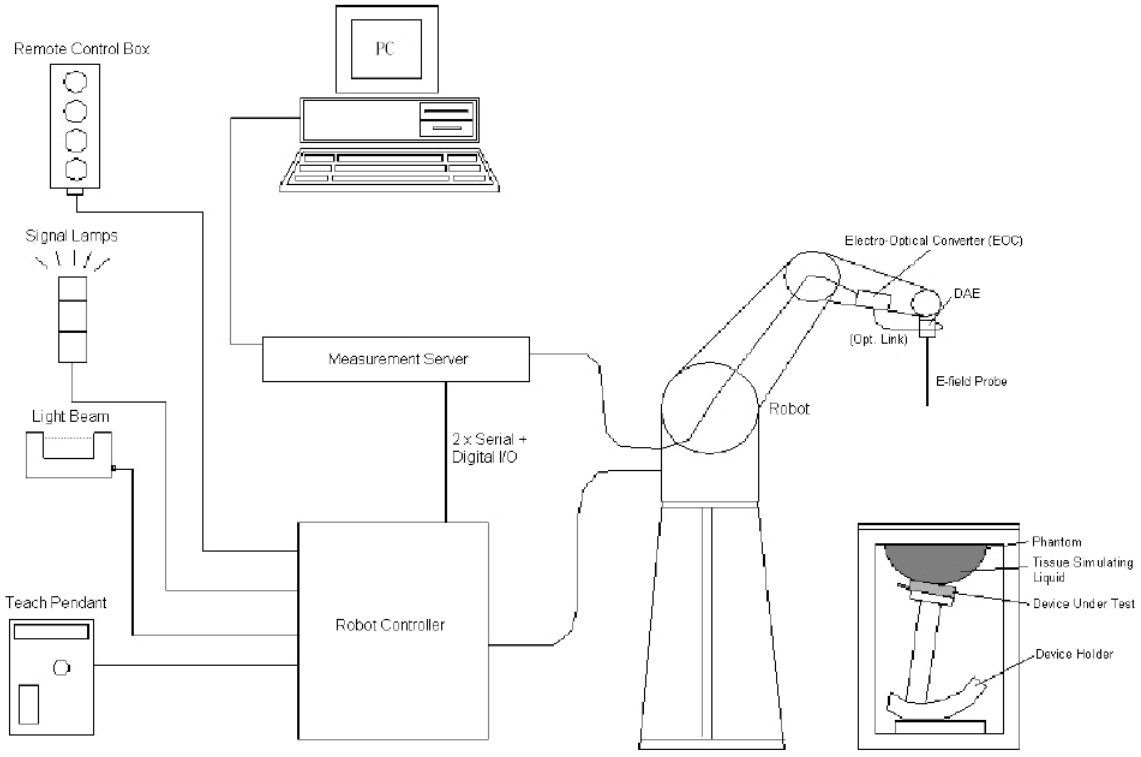
☒ SAR Lab 1	☐ SAR Lab 2

DESCRIPTION OF TEST SYSTEM

These measurements were performed with the automated near-field scanning system DASY5 from Schmid & Partner Engineering AG (SPEAG) which is the Fifth generation of the system shown in the figure hereinafter:

DASY5 System Description

The DASY5 system 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 application, 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 Win7 professional operating system and the DASY52 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.

DASY5 Measurement Server

The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz Intel ULV Celeron, 128MB chip-disk and 128MB RAM. The necessary circuits for communication with the DAE4 (or DAE3) electronics box, as well as the 16 bit AD-converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized point out, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.

Data Acquisition Electronics

The data acquisition electronics (DAE4) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of both the DAE4 as well as of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

EX3DV4 E-Field Probes

Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY3, DASY4, DASY52 SAR and higher, EASY4/MRI

SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region, where shell thickness
increases to 6 mm). The phantom has three measurement areas:
_ Left Head
_ Right Head
_ Flat phantom

The phantom table for the DASY systems based on the robots have the size of 100 x 50 x 85 cm (L x W x H).
For easy dislocation these tables have fork lift cut outs at the bottom.
The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. Only one device holder is necessary if two phantoms are used (e.g., for different liquids)

A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot.

Robots

The DASY5 system uses the high precision industrial robot. The robot offers the same features important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchrony motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)

The above mentioned robots are controlled by the Staubli CS8c robot controllers. All information regarding the use and maintenance of the robot arm and the robot controller is contained on the CDs delivered along with the robot. Paper manuals are available upon request direct from Staubli.

Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a 15mm 2 step integral, with 1.5mm interpolation used to locate the peak SAR area used for zoom scan assessments.

Where the system identifies multiple SAR peaks (which are within 25% of peak value) the system will provide the user with the option of assessing each peak location individually for zoom scan averaging.

Zoom Scan (Cube Scan Averaging)

The averaging zoom scan volume utilized in the DASY5 software is in the shape of a cube and the side dimension of a 1 g or 10 g mass is dependent on the density of the liquid representing the simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1g cube is 10mm,with the side length of the 10g cube is 21.5mm.

When the cube intersects with the surface of the phantom, it is oriented so that 3 vertices touch the surface of the shell or the center of a face is tangent to the surface. The face of the cube closest to the surface is modified in order to conform to the tangent surface.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 7 x7 x 7 (5mmx5mmx5mm) providing a volume of 30 mm in the X & Y & Z axis.

Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Recommended Tissue Dielectric Parameters for Head and Body

Frequency (MHz)	Head Tissue		Body Tissue	
	εr	Ơ (S/m)	εr	Ơ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

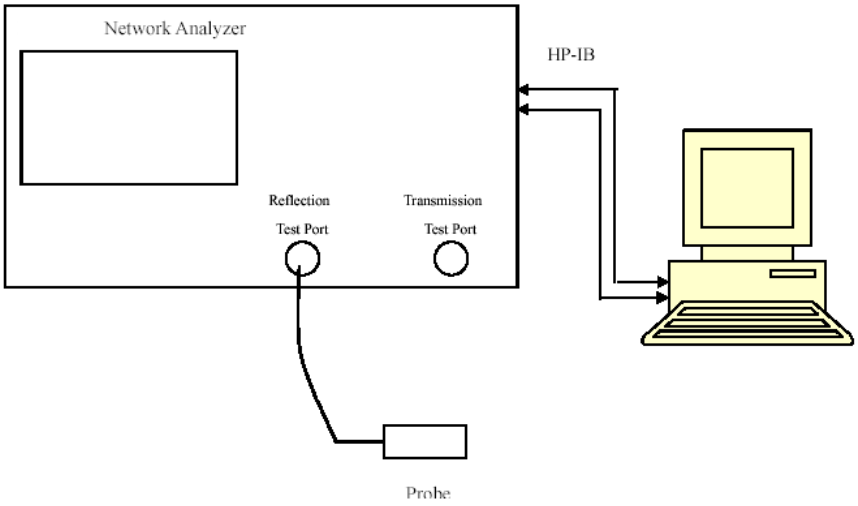
EQUIPMENT LIST AND CALIBRATION

Equipments List & Calibration Information

Equipment	Model	S/N	Calibration Date	Calibration Due Date
DASY5 Test Software	DASY52.8	N/A	N/A	N/A
DASY5 Measurement Server	DASY5 4.5.12	1470	N/A	N/A
Data Acquisition Electronics	DAE4	1459	2017/9/15	2018/9/15
E-Field Probe	EX3DV4	7329	2017/3/13	2018/3/12
Dipole, 750MHz	D750V3	1167	2016/11/8	2019/11/7
Dipole, 835 MHz	D835V2	445	2016/10/26	2019/10/26
Dipole, 1750 MHz	D1750V2	1141	2015/7/9	2018/7/9
Dipole, 1900 MHz	D1900V2	543	2016/10/25	2019/10/24
Dipole,2450MHz	D2450V3	971	2015/7/8	2018/7/8
Dipole, 2600 MHz	D2600V2	1132	2016/11/10	2019/11/9
Dipole,5GHz	D5GHzV2	1246	2016/11/7	2019/11/6
8960 WIRELESS COMMUNICATIONS TEST SET	E5515C	MY48367501	2016/12/8	2017/12/8
Wideband Radio Communication Tester	CMW500	1201.0002K50	2017/9/1	2018/9/1
Mounting Device	MD4HHTV5	SD 000 H01 KA	N/A	N/A
Twin SAM	Twin SAM V5.0	1874	N/A	N/A
Simulated Tissue 750 MHz Body	TS-750-B	1703075002	Each Time	/
Simulated Tissue 835 MHz Body	TS-835-B	1703083502	Each Time	/
Simulated Tissue 1750 MHz Body	TS-1750-B	1703175002	Each Time	/
Simulated Tissue 1900 MHz Body	TS-1900-B	1703190002	Each Time	/
Simulated Tissue 2450 MHz Body	TS-2450-B	1703245002	Each Time	/
Simulated Tissue 2600 MHz Body	TS-2600-B	1703260002	Each Time	/
Simulated Tissue 5250 MHz Body	TS-5250-B	1703525002	Each Time	/
Simulated Tissue 5600 MHz Body	TS-5600-B	1703560002	Each Time	/
Simulated Tissue 5800 MHz Body	TS-5800-B	1703580002	Each Time	/
Network Analyzer	8753C	3033A02857	2017/8/31	2018/8/31
Dielectric assessment kit	1253	SM DAK 040 CA	N/A	N/A
Signal Generator	E4422B	MY41000355	2016/12/8	2017/12/8
Power Meter	EPM-441A	GB37481494	2016/12/8	2017/12/8
Power Meter Sensor	8481A	T-03-EM-127	2016/12/8	2017/12/8
Power Amplifier	ZVA-183-S+	5969001149	N/A	N/A
Directional Coupler	488Z	N/A	N/A	N/A
Attenuator	20dB, 100W	N/A	N/A	N/A
Attenuator	3dB, 150W	N/A	N/A	N/A

SAR MEASUREMENT SYSTEM VERIFICATION

Liquid Verification



Liquid Verification Setup Block Diagram

Liquid Verification Results

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$	
824.2	Simulated Tissue 835 MHz Body	55.232	0.956	55.24	0.97	-0.01	-1.44	±5
826.4	Simulated Tissue 835 MHz Body	55.572	0.972	55.23	0.97	0.62	0.21	±5
829	Simulated Tissue 835 MHz Body	54.919	0.975	55.22	0.97	-0.55	0.52	±5
835	Simulated Tissue 835 MHz Body	55.198	0.961	55.2	0.97	0	-0.93	±5
836.5	Simulated Tissue 835 MHz Body	55.180	0.97	55.2	0.97	-0.04	0	±5
836.6	Simulated Tissue 835 MHz Body	55.180	0.97	55.2	0.97	-0.04	0	±5
844	Simulated Tissue 835 MHz Body	55.186	0.991	55.2	0.98	-0.03	1.12	±5
846.6	Simulated Tissue 835 MHz Body	55.295	0.987	55.2	0.98	0.17	0.71	±5
848.8	Simulated Tissue 835 MHz Body	54.750	0.996	55.2	0.98	-0.82	1.63	±5

**Liquid Verification above was performed on 2017/10/03.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$	
750	Simulated Tissue 750 MHz Body	55.590	0.951	55.53	0.96	0.11	-0.94	±5
782	Simulated Tissue 750 MHz Body	55.189	0.978	55.41	0.97	-0.4	0.82	±5
822.5	Simulated Tissue 835 MHz Body	55.339	0.972	55.25	0.97	0.16	0.21	±5
831.5	Simulated Tissue 835 MHz Body	55.084	0.985	55.21	0.97	-0.23	1.55	±5
835	Simulated Tissue 835 MHz Body	55.588	0.971	55.2	0.97	0.7	0.1	±5
841.5	Simulated Tissue 835 MHz Body	55.058	0.982	55.2	0.98	-0.26	0.2	±5

**Liquid Verification above was performed on 2017/10/04.*

Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$	
1712.4	Simulated Tissue 1750 MHz Body	53.349	1.477	53.45	1.48	-0.19	-0.2	±5
1720	Simulated Tissue 1750 MHz Body	53.566	1.485	53.44	1.49	0.24	-0.34	±5
1732.5	Simulated Tissue 1750 MHz Body	53.439	1.496	53.42	1.49	0.04	0.4	±5
1732.6	Simulated Tissue 1750 MHz Body	53.439	1.496	53.42	1.49	0.04	0.4	±5
1745	Simulated Tissue 1750 MHz Body	53.371	1.502	53.39	1.5	-0.04	0.13	±5
1750	Simulated Tissue 1750 MHz Body	53.159	1.515	53.38	1.5	-0.41	1	±5
1752.6	Simulated Tissue 1750 MHz Body	53.339	1.523	53.38	1.5	-0.08	1.53	±5
1850.2	Simulated Tissue 1900 MHz Body	53.015	1.534	53.3	1.52	-0.53	0.92	±5
1852.4	Simulated Tissue 1900 MHz Body	52.870	1.525	53.3	1.52	-0.81	0.33	±5
1860	Simulated Tissue 1900 MHz Body	53.533	1.524	53.3	1.52	0.44	0.26	±5
1880	Simulated Tissue 1900 MHz Body	53.304	1.523	53.3	1.52	0.01	0.2	±5
1900	Simulated Tissue 1900 MHz Body	53.208	1.558	53.3	1.52	-0.17	2.5	±5
1907.6	Simulated Tissue 1900 MHz Body	53.305	1.544	53.3	1.52	0.01	1.58	±5
1909.8	Simulated Tissue 1900 MHz Body	53.428	1.546	53.3	1.52	0.24	1.71	±5

**Liquid Verification above was performed on 2017/10/05.*

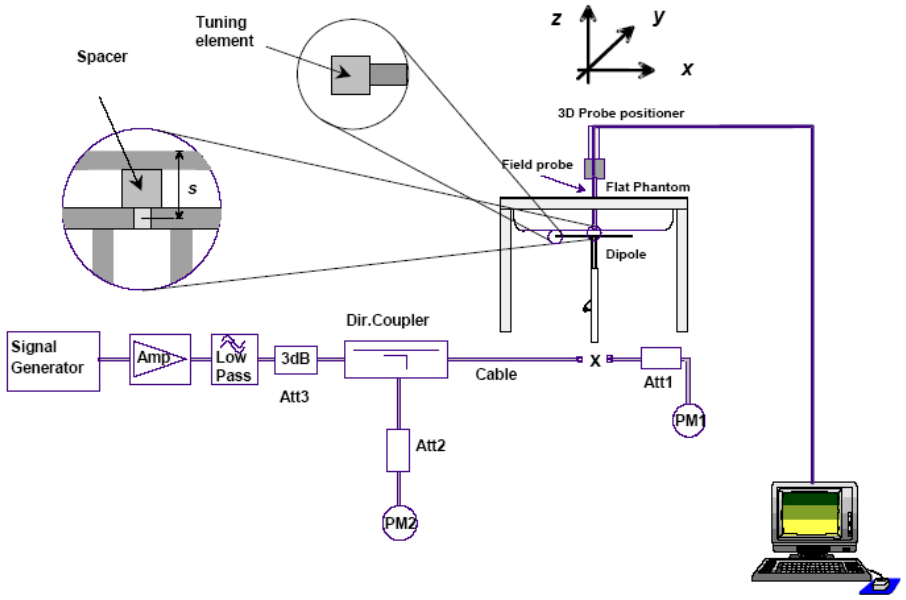
Frequency (MHz)	Liquid Type	Liquid Parameter		Target Value		Delta (%)		Tolerance (%)
		ε_r	σ (S/m)	ε_r	σ (S/m)	$\Delta\varepsilon_r$	$\Delta\sigma$	
2412	Simulated Tissue 2450 MHz Body	52.431	1.885	52.75	1.91	-0.6	-1.31	±5
2437	Simulated Tissue 2450 MHz Body	52.842	1.93	52.72	1.94	0.23	-0.52	±5
2450	Simulated Tissue 2450 MHz Body	52.857	1.943	52.7	1.95	0.3	-0.36	±5
2462	Simulated Tissue 2450 MHz Body	52.86	1.983	52.68	1.97	0.34	0.66	±5
2510	Simulated Tissue 2600 MHz Body	52.267	2.073	52.62	2.04	-0.67	1.62	±5
2535	Simulated Tissue 2600 MHz Body	52.343	2.045	52.59	2.07	-0.47	-1.21	±5
2560	Simulated Tissue 2600 MHz Body	52.601	2.138	52.56	2.11	0.08	1.33	±5
2600	Simulated Tissue 2600 MHz Body	52.522	2.176	52.51	2.16	0.02	0.74	±5
5200	Simulated Tissue 5250 MHz Body	49.327	5.253	49.01	5.30	0.65	-0.89	±5
5250	Simulated Tissue 5250 MHz Body	48.673	5.324	48.95	5.36	-0.57	-0.67	±5
5260	Simulated Tissue 5250 MHz Body	49.05	5.376	48.93	5.37	0.25	0.11	±5
5580	Simulated Tissue 5600 MHz Body	48.617	5.766	48.50	5.74	0.24	0.45	±5
5600	Simulated Tissue 5600 MHz Body	48.261	5.784	48.47	5.77	-0.43	0.24	±5
5745	Simulated Tissue 5800 MHz Body	48.329	5.985	48.27	5.94	0.12	0.76	±5
5800	Simulated Tissue 5800 MHz Body	48.215	6.035	48.2	6	0.03	0.58	±5

**Liquid Verification above was performed on 2017/10/06.*

System Accuracy Verification

Prior to the assessment, the system validation kit was used to test whether the system was operating within its specifications of ±10%. The validation results are tabulated below. And also the corresponding SAR plot is attached as well in the SAR plots files.

System Verification Setup Block Diagram



System Accuracy Check Results

Date	Frequency Band	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value(W/kg)	Delta (%)	Tolerance (%)
2017/10/04	750 MHz	Body	100	1g	0.826	8.26	8.58	-3.730	±10
				10g	0.543	5.43	5.69	-4.569	±10
2017/10/03	835 MHz	Body	100	1g	0.977	9.77	9.60	1.771	±10
				10g	0.639	6.39	6.44	-0.776	±10
2017/10/04	835 MHz	Body	100	1g	0.981	9.81	9.60	2.187	±10
				10g	0.644	6.44	6.44	0	±10
2017/10/05	1750 MHz	Body	100	1g	3.8	38	37.4	1.604	±10
				10g	2.06	20.6	20.3	1.478	±10
2017/10/05	1900 MHz	Body	100	1g	4.28	42.8	41.1	4.136	±10
				10g	2.26	22.6	21.7	4.147	±10

Date	Frequency Band	Liquid Type	Input Power (mW)	Measured SAR (W/kg)		Normalized to 1W (W/kg)	Target Value(W/kg)	Delta (%)	Tolerance (%)
2017/10/06	2450 MHz	Body	100	1g	5.42	54.2	50.6	7.115	±10
				10g	2.52	25.2	23.9	5.439	±10
2017/10/06	2600 MHz	Body	100	1g	5.56	55.6	53.9	3.154	±10
				10g	2.43	24.3	24.2	0.413	±10
2017/10/06	5250 MHz	Body	100	1g	8.12	81.2	77.6	4.639	±10
				10g	2.27	22.7	21.7	4.608	±10
2017/10/06	5600 MHz	Body	100	1g	7.68	76.8	77.8	-1.285	±10
				10g	2.22	22.2	21.7	2.304	±10
2017/10/06	5800 MHz	Body	100	1g	7.35	73.5	75.4	-2.520	±10
				10g	2.11	21.1	20.9	0.957	±10

*The SAR values above are normalized to 1 Watt forward power.

SAR SYSTEM VALIDATION DATA

System Performance 750 MHz Body

D UT: D750V3; Type: 750 MHz; Serial: 1167

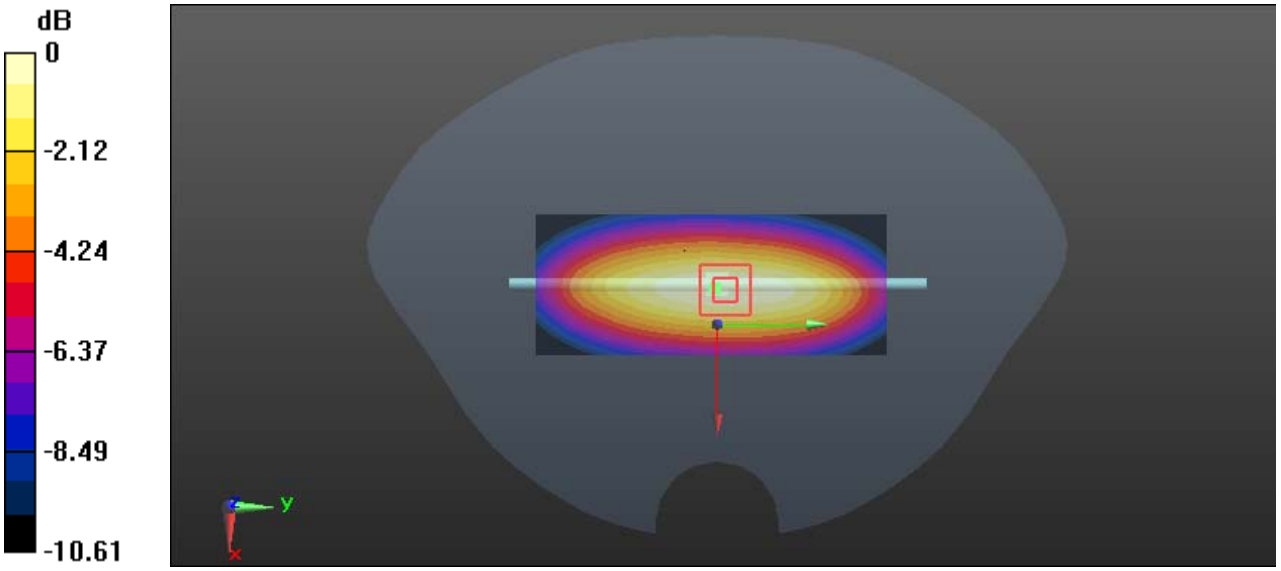
Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.951 S/m; ε_r = 55.59; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(9.91, 9.91, 9.91); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (41x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.10 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.30 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.826 W/kg; SAR(10 g) = 0.543 W/kg
Maximum value of SAR (measured) = 1.10 W/kg



0 dB = 1.10 W/kg = 0.41 dBW/kg

System Performance 835 MHz Body

D UT: D835V2; Type: 835 MHz; Serial: 445

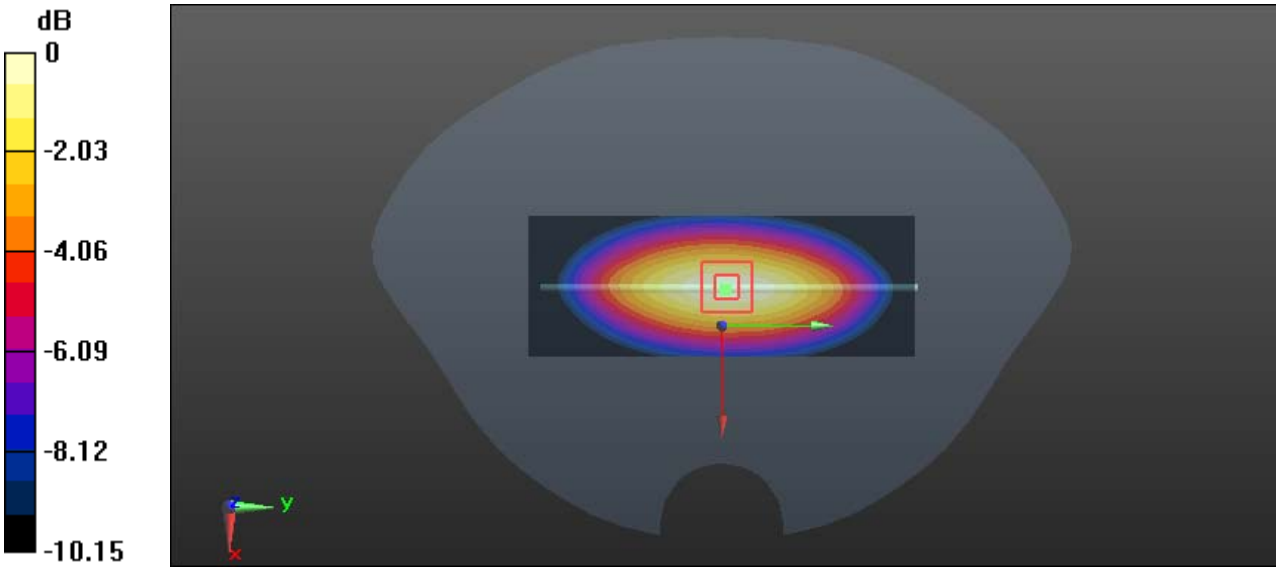
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.961 S/m; ε_r = 55.198; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(9.58, 9.58, 9.58); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (41x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.30 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.11 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.977 W/kg; SAR(10 g) = 0.639 W/kg
Maximum value of SAR (measured) = 1.32 W/kg



0 dB = 1.32 W/kg = 1.21 dBW/kg

System Performance 835 MHz Body

D UT: D835V2; Type: 835 MHz; Serial: 445

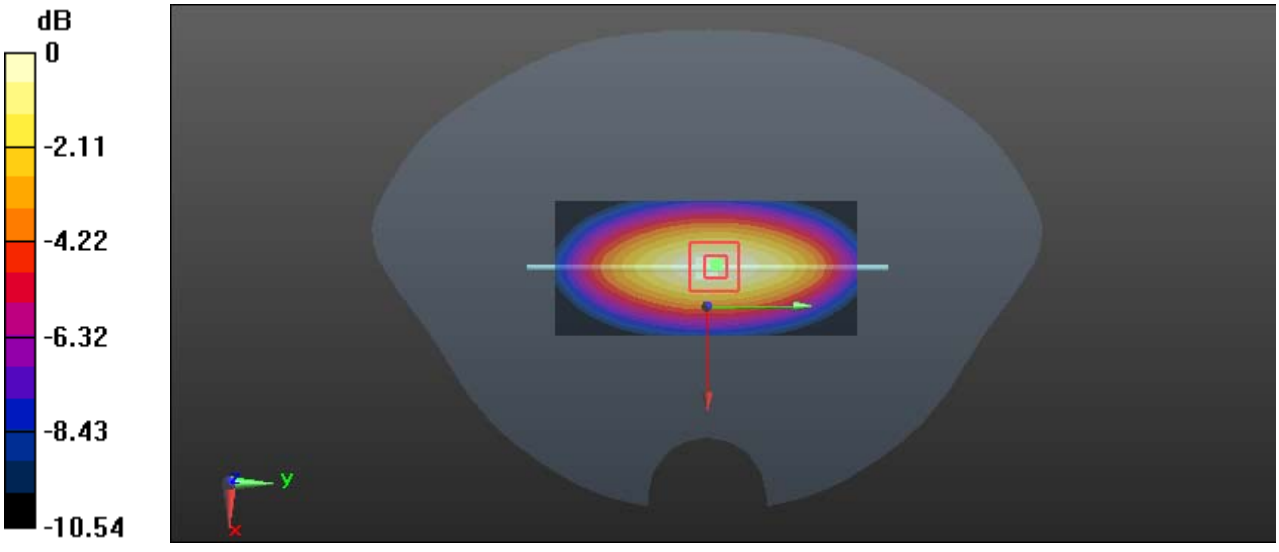
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.971 S/m; ε_r = 55.588; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(9.58, 9.58, 9.58); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (41x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.37 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.76 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.981 W/kg; SAR(10 g) = 0.644 W/kg
Maximum value of SAR (measured) = 1.34 W/kg



0 dB = 1.34 W/kg = 1.27 dBW/kg

System Performance1750MHz Body

D UT: D1750V2; Type: 1750 MHz; Serial: 1141

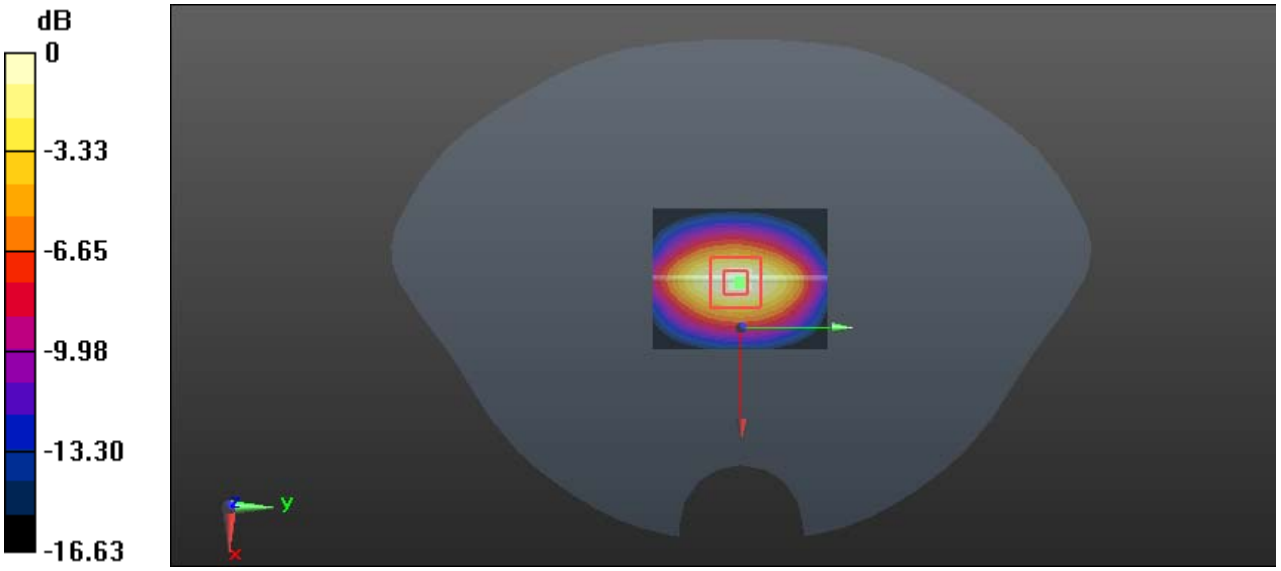
Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.515 S/m; ε_r = 53.159; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(8.13, 8.13, 8.13); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (41x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 6.06 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.95 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 6.80 W/kg
SAR(1 g) = 3.8 W/kg; SAR(10 g) = 2.06 W/kg
Maximum value of SAR (measured) = 5.72 W/kg



0 dB = 5.72 W/kg = 7.57 dBW/kg

System Performance 1900 MHz Body

DUT: D1900V2; Type: 1900 MHz; Serial: 543

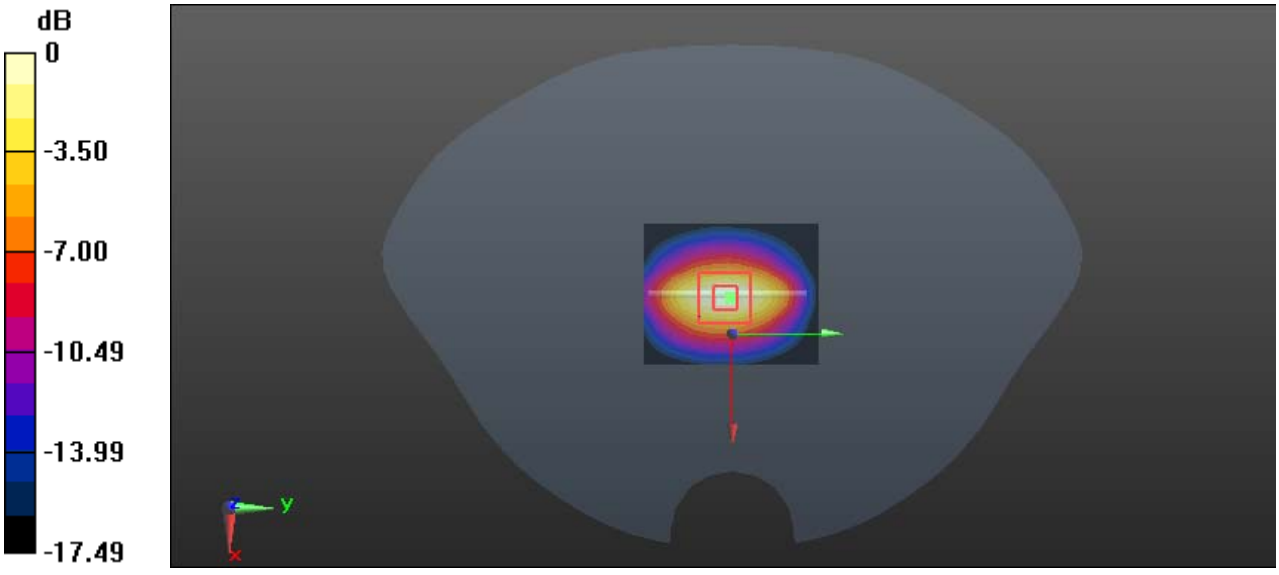
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.558 S/m; ε_r = 53.208; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(7.77, 7.77, 7.77); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (41x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 6.83 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.59 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 7.75 W/kg
SAR(1 g) = 4.28 W/kg; SAR(10 g) = 2.26 W/kg
Maximum value of SAR (measured) = 6.49 W/kg



0 dB = 6.49 W/kg = 8.12 dBW/kg

System Performance 2450 MHz Body

DUT: D2450V3; Type: 2450 MHz; Serial: 971

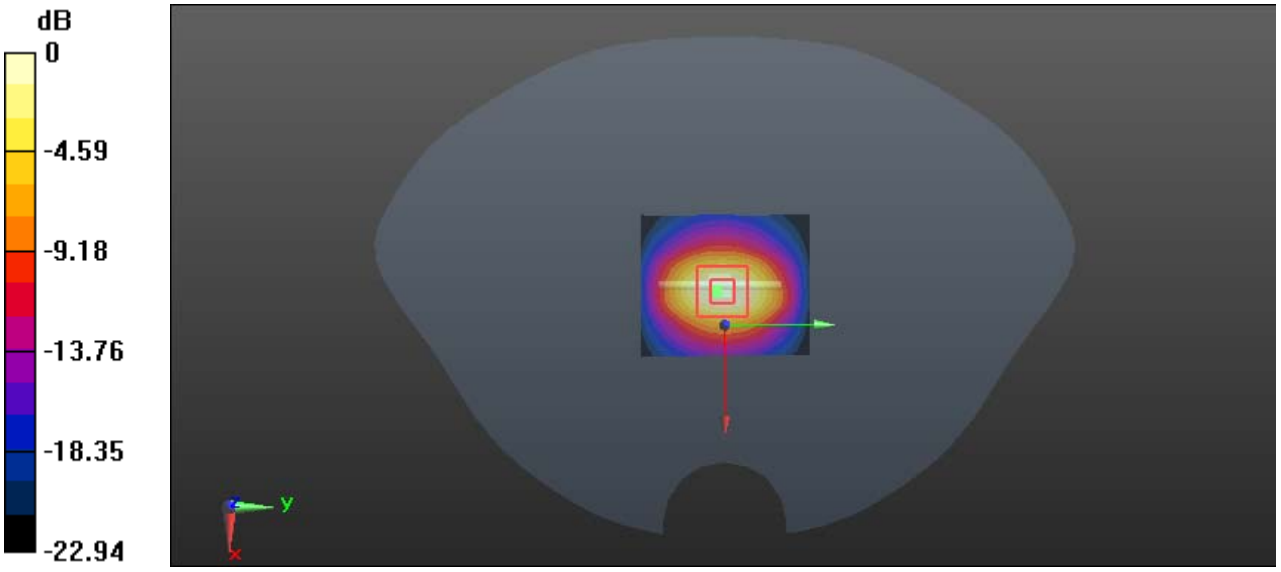
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.943 S/m; ε_r = 52.857; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(7.37, 7.37, 7.37); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (51x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 10.1 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.78 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 11.7 W/kg
SAR(1 g) = 5.42 W/kg; SAR(10 g) = 2.52 W/kg
Maximum value of SAR (measured) = 9.06 W/kg



0 dB = 9.06 W/kg = 9.57 dBW/kg

System Performance 2600 MHz Body

DUT: D2600V2; Type: 2600 MHz; Serial: 1132

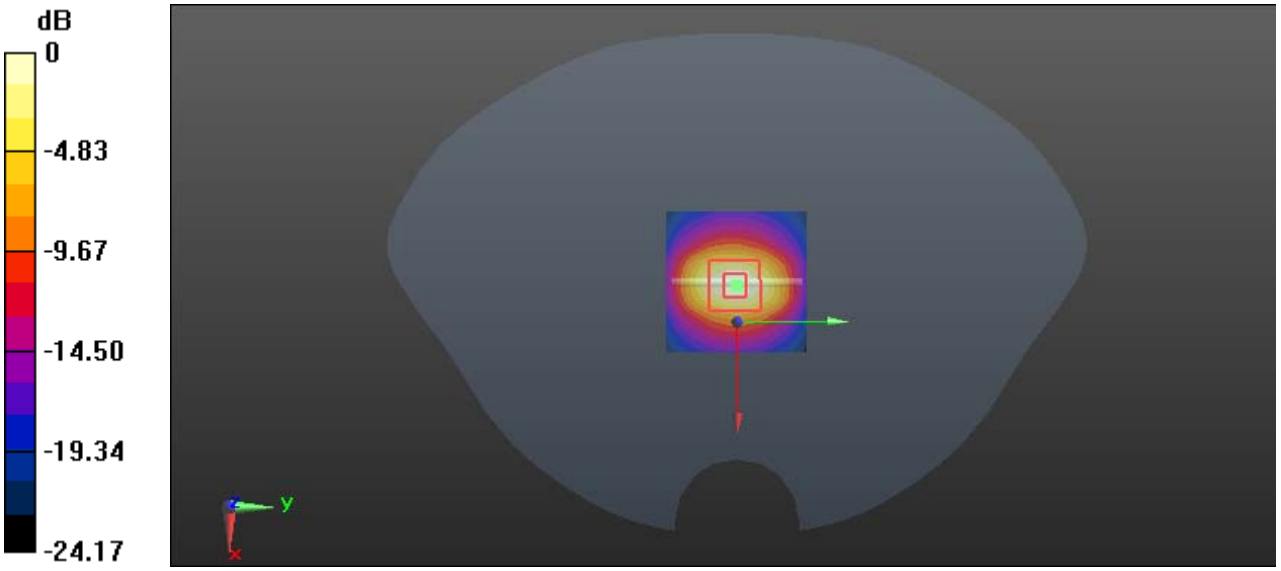
Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.176 S/m; ε_r = 52.522; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(7.24, 7.24, 7.24); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (51x51x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 11.6 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 56.70 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 12.1 W/kg
SAR(1 g) = 5.56 W/kg; SAR(10 g) = 2.43 W/kg
Maximum value of SAR (measured) = 9.60 W/kg



0 dB = 9.60 W/kg = 9.82 dBW/kg

System Performance 5250 MHz Body

DUT: D5GHzV2; Type: 5250 MHz; Serial: 1246

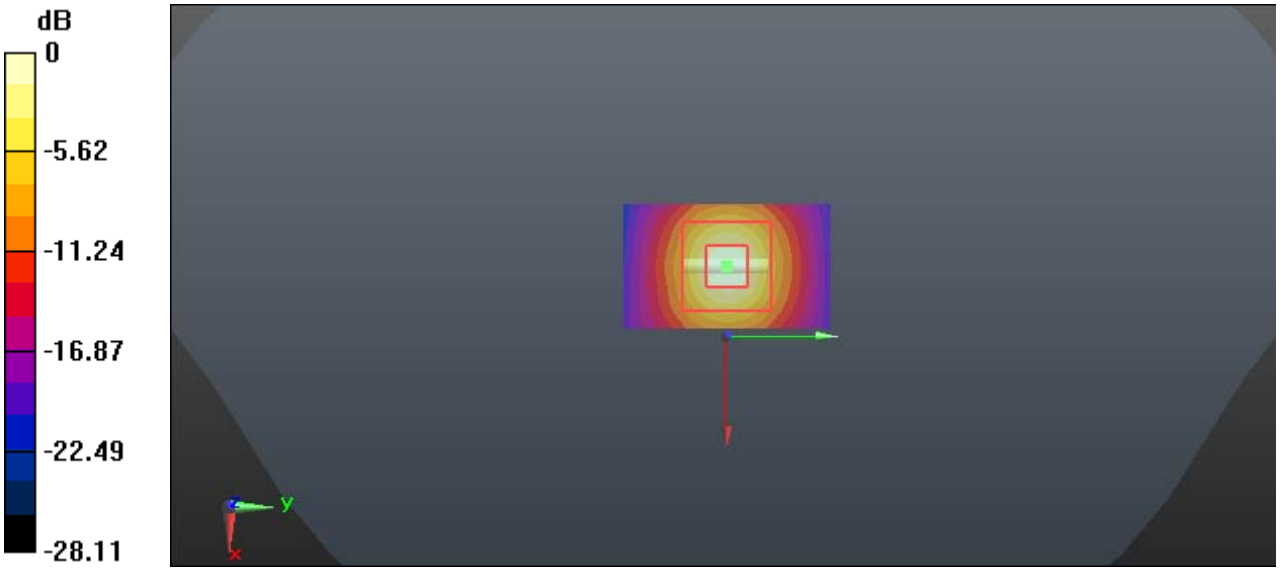
Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 5.324 S/m; ε_r = 48.673; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(4.84, 4.84, 4.84); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (31x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.5 W/kg

Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
Reference Value = 42.59 V/m; Power Drift = 0.20 dB
Peak SAR (extrapolated) = 30.2 W/kg
SAR(1 g) = 8.12 W/kg; SAR(10 g) = 2.27 W/kg
Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg = 13.01 dBW/kg

System Performance 5600 MHz Body

DUT: D5GHzV2; Type: 5600 MHz; Serial: 1246

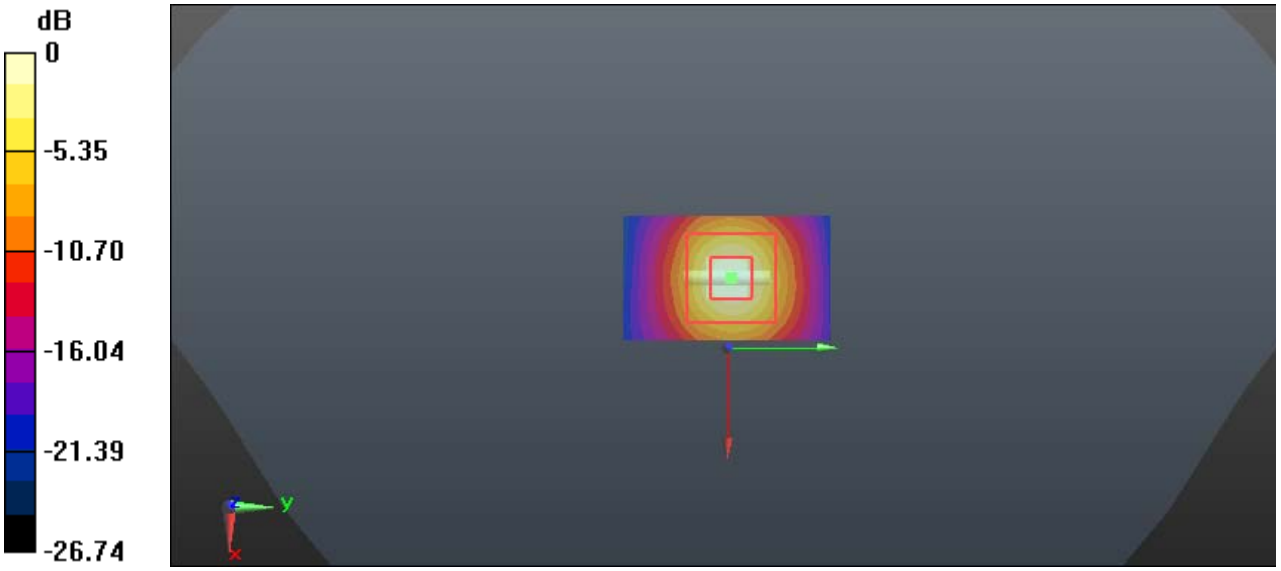
Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.784 S/m; ε_r = 48.261; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(4.12, 4.12, 4.12); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (31x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.5 W/kg

Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
Reference Value = 39.54 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 32.0 W/kg
SAR(1 g) = 7.68 W/kg; SAR(10 g) = 2.22 W/kg
Maximum value of SAR (measured) = 19.6 W/kg



0 dB = 19.6 W/kg = 12.92 dBW/kg

System Performance 5800 MHz Body

DUT: D5GHzV2; Type: 5800 MHz; Serial: 1246

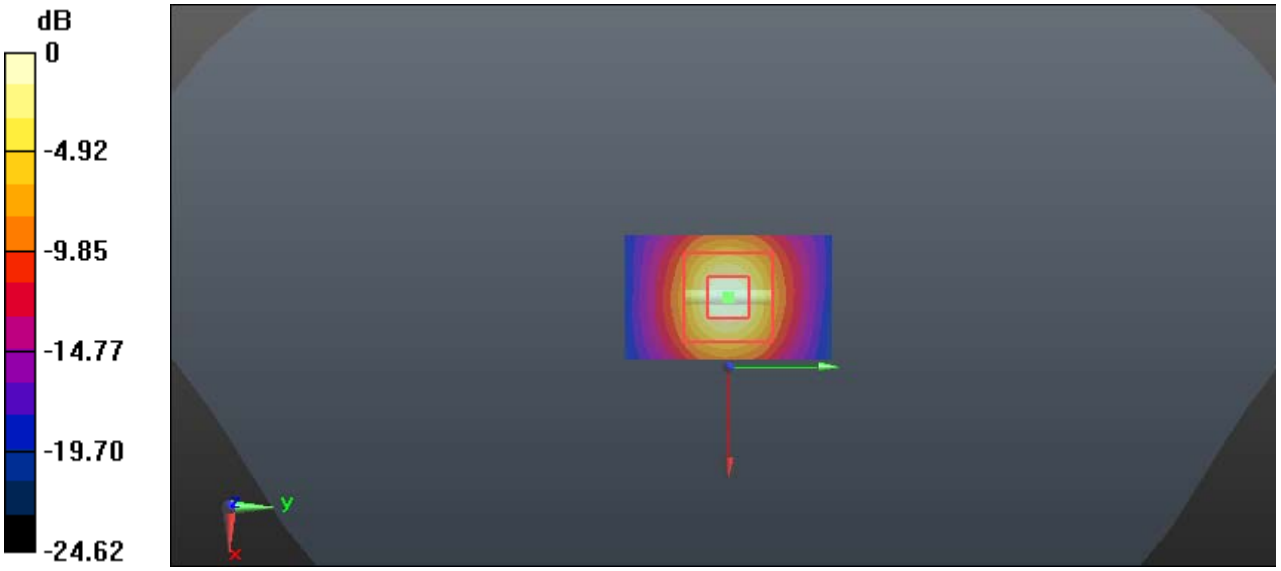
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5800 MHz; σ = 6.035 S/m; ε_r = 48.215; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7329; ConvF(4.48, 4.48, 4.48); Calibrated: 2017/3/13;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1459; Calibrated: 2017/9/15
- Phantom: SAM (30deg probe tilt) with CRP v5.0_20150321; Type: QD000P40CD; Serial: TP:1874
- Measurement SW: DASY52, Version 52.8 (8);

Area Scan (31x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.6 W/kg

Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=2mm
Reference Value = 38.76 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 31.6 W/kg
SAR(1 g) = 7.35 W/kg; SAR(10 g) = 2.11 W/kg
Maximum value of SAR (measured) = 19.2 W/kg

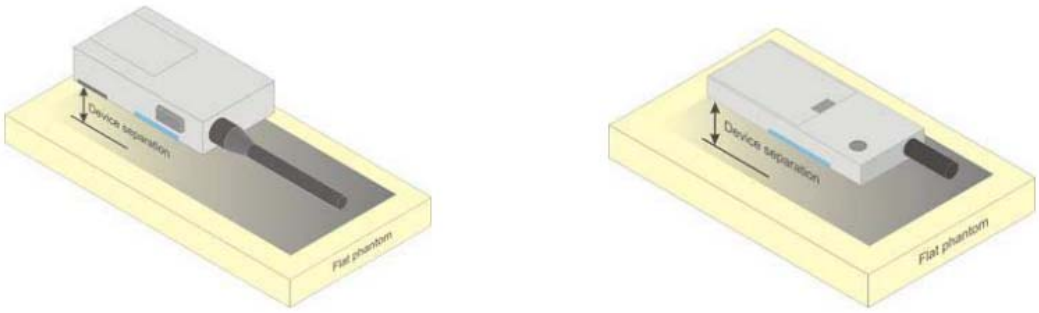


0 dB = 19.2 W/kg = 12.83 dBW/kg

EUT TEST STRATEGY AND METHODOLOGY

Test Positions for front-of-face configurations

A typical example of a front-of-face device is a two-way radio that is held at a distance from the face of the user when transmitting. In these cases the device under test shall be positioned at the distance to the phantom surface that corresponds to the intended use as specified by the manufacturer in the user instructions. If the intended use is not specified, a separation distance of 25 mm between the phantom surface and the device shall be used.



Test positions for body-worn and other configurations

Body-worn operating configurations should be tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in normal use configurations. Devices with a headset output should be tested with a headset connected to the device. When multiple accessories that do not contain metallic components are supplied with the device, the device may be tested with only the accessory that dictates the closest spacing to the body. When multiple accessories that contain metallic components are supplied with the device, the device must be tested with each accessory that contains a unique metallic component. If multiple accessories share an identical metallic component (e.g., the same metallic belt-clip used with different holsters with no other metallic components), only the accessory that dictates the closest spacing to the body must be tested.

Body-worn accessories may not always be supplied or available as options for some devices that are intended to be authorized for body-worn use. A separation distance of 1.5 cm between the back of the device and a flat phantom is recommended for testing body-worn SAR compliance under such circumstances. Other separation distances may be used, but they should not exceed 2.5 cm. In these cases, the device may use body-worn accessories that provide a separation distance greater than that tested for the device provided however that the accessory contains no metallic components.

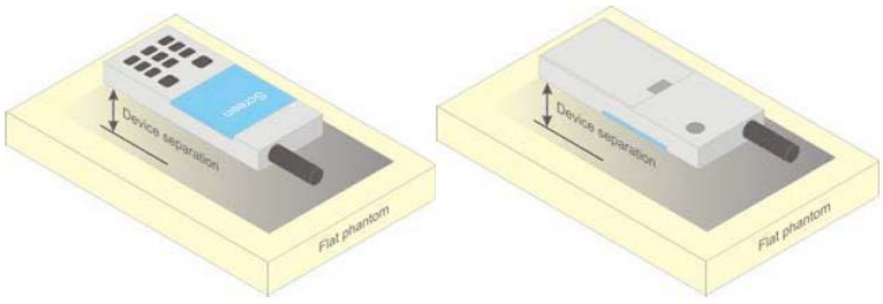


Figure 5 – Test positions for body-worn devices

Test positions for Hand-held device

Hand-held device means a portable device which is located in a user's hand during its intended use Hand-held usage of the device, not at the head or torso. The device shall be placed directly against the flat phantom as shown in Figure J.1, for those sides of the device that are in contact with the hand during intended use.

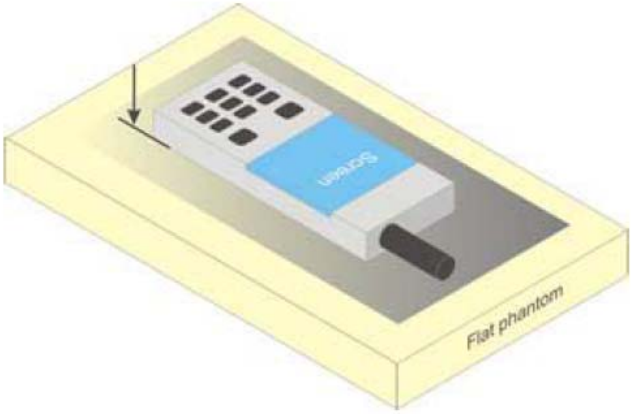


Figure J.1 – Test position for hand-held devices, not used at the head or torso

Test Distance for SAR Evaluation

For this case the EUT(Equipment Under Test) is set 0mm away from the phantom, the test distance is 0mm.

SAR Evaluation Procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the ear point or central position was used as a reference value for assessing the power drop. The SAR at this point is measured at the start of the test and then again at the end of the testing.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head or radiating structures of the EUT, the horizontal grid spacing was 15 mm x 15 mm, and the SAR distribution was determined by integrated grid of 1.5mm x 1.5mm. Based on these data, the area of the maximum absorption was determined by spline interpolation. The first Area Scan covers the entire dimension of the EUT to ensure that the hotspot was correctly identified.

Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7x 7 x 7 points. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

1) The data at the surface were extrapolated, since the center of the dipoles is 1.2 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

2) The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one dimensional splines with the “Not a knot"-condition (in x, y and z-directions). The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the averages.

All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation was repeated.

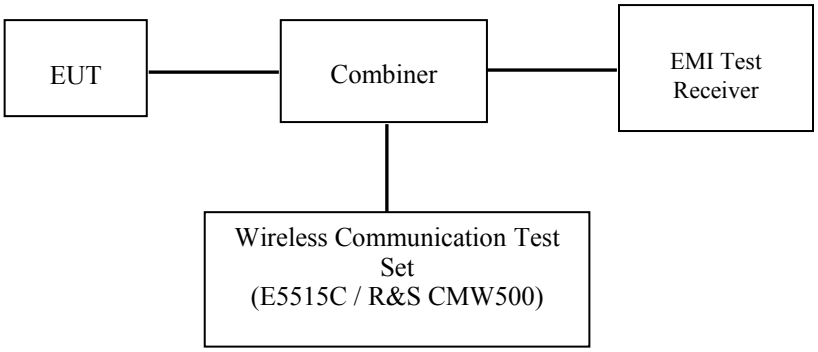
CONDUCTED OUTPUT POWER MEASUREMENT

Provision Applicable

The measured peak output power should be greater and within 5% than EMI measurement.

Test Procedure

The RF output of the transmitter was connected to the input of the EMI Test Receiver through sufficient attenuation.



GSM/WCDMA/LTE

Radio Configuration

The power measurement was configured by the Wireless Communication Test Set.

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900
Press Connection control to choose the different menus
Press RESET > choose all the reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM + GPRS or GSM + EGSM
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting
> Slot configuration > Uplink/Gamma
> 33 dBm for GPRS 850
> 30 dBm for GPRS 1900
> 27 dBm for EGPRS 850
> 26 dBm for EGPRS 1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stabe)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off
P0 > 4 dB
Slot Config >Unchanged (if already set under MS signal)
TCH > choose desired test channel
Hopping > Off

Main Timeslot > 3
Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)
Bit Stream >2E9-1 PSR Bit Stream
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

WCDMA Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

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

HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d(SF)	64			
	β_c/β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs=βhs/ βc	30/15			

HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	**1**	**2**	**3**	**4**	**5**
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$Ahs=\beta_{hs}/\beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCIs	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	

HSPA+

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	$\beta_{ed}1$: 30/15 $\beta_{ed}2$: 30/15	$\beta_{ed}3$: 24/15 $\beta_{ed}4$: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

DC-HSDPA

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

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	Processes	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.

LTE

For UE Power Class 1 and 3, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2-1due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{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

For UE Power Class 1 and 3 the specific requirements and identified sub clauses are specified in Table 6.2.4-1 along with the allowed A-MPR values that may be used to meet these requirements. The allowed A-MPR values specified below in Table 6.2.4.-1 to 6.2.4-15 are in addition to the allowed MPR requirements specified in sub clause 6.2.3.

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	N/A
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	
NS_11	6.6.2.2.1	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_12	6.6.3.3.5	26	1.4, 3, 5	Table 6.2.4-6	
NS_13	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_14	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_15	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9 Table 6.2.4-10	
NS_16	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_17	6.6.3.3.10	28	5, 10	Table 5.6-1	N/A
NS_18	6.6.3.3.11	28	5	≥ 2	≤ 1
			10, 15, 20	≥ 1	≤ 4
NS_19	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_20	6.2.2 6.6.2.2.1 6.6.3.2	23	5, 10, 15, 20	Table 6.2.4-15	
...					
NS_32	-	-	-	-	-

Maximum Output Power among production units

Max Target Power for Production Unit (dBm)				
Mode/Band		Channel		
		Low	Middle	High
GSM 850	GPRS 1 TX Slot	30.50	30.50	30.50
	GPRS 2 TX Slots	30.40	30.40	30.40
	GPRS 3 TX Slots	29.20	29.20	29.20
	GPRS 4 TX Slots	28.20	28.20	28.20
	EGPRS 1 TX Slot	25.60	25.60	25.60
	EGPRS 2 TX Slots	25.40	25.40	25.40
	EGPRS 3 TX Slots	25.30	25.30	25.30
	EGPRS 4 TX Slots	25.20	25.20	25.20
PCS 1900	GPRS 1 TX Slot	29.00	29.00	29.00
	GPRS 2 TX Slots	28.80	28.80	28.80
	GPRS 3 TX Slots	28.70	28.70	28.70
	GPRS 4 TX Slots	28.50	28.50	28.50
	EGPRS 1 TX Slot	25.00	25.00	25.00
	EGPRS 2 TX Slots	24.80	24.80	24.80
	EGPRS 3 TX Slots	24.70	24.70	24.70
	EGPRS 4 TX Slots	24.40	24.40	24.40
WCDMA Band 2	Rel 99	22.90	22.90	22.90
	HSDPA	21.80	21.80	21.80
	HSUPA	21.50	21.50	21.50
	DC-HSDPA	21.40	21.40	21.40
	HSPA+ (16QAM)	21.40	21.40	21.40
WCDMA Band 4	Rel 99	22.90	22.90	22.90
	HSDPA	21.80	21.80	21.80
	HSUPA	21.50	21.50	21.50
	DC-HSDPA	21.50	21.50	21.50
	HSPA+ (16QAM)	21.50	21.50	21.50
WCDMA Band 5	Rel 99	23.00	23.00	23.00
	HSDPA	22.00	22.00	22.00
	HSUPA	21.50	21.50	21.50
	DC-HSDPA	21.50	21.50	21.50
	HSPA+ (16QAM)	21.60	21.60	21.60
LTE Band 2		23.10	23.10	23.10
LTE Band 4		22.60	22.60	22.60
LTE Band 5		22.80	22.80	22.80
LTE Band 7		22.30	22.30	22.30
LTE Band 13		23.70	23.70	23.70
LTE Band 26		23.40	23.40	23.40
Bluetooth		6.00	6.00	6.00
BLE		2.00	2.00	2.00
WLAN 2.4G		15.50	15.50	15.50
WLAN U-NII-1 Ban		14.00	14.00	14.00
WLAN U-NII-2A Band		14.00	14.00	14.00
WLAN U-NII-2C Band		11.00	11.00	11.00
WLAN U-NII-3 Band		9.50	9.50	9.50

Test Results:

GPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	30.42	30.32	29.12	28.10
	190	836.6	30.48	30.34	29.04	28.07
	251	848.8	30.44	30.31	29.07	28.01
PCS 1900	512	1850.2	28.90	28.77	28.66	28.46
	661	1880	28.78	28.61	28.41	28.14
	810	1909.8	28.68	28.54	28.31	28.02

EGPRS:

Band	Channel No.	Frequency (MHz)	RF Output Power (dBm)			
			1 slot	2 slots	3 slots	4 slots
GSM 850	128	824.2	25.55	24.41	25.28	25.13
	190	836.6	25.47	25.38	25.21	25.10
	251	848.8	25.39	25.31	25.11	24.99
PCS 1900	512	1850.2	24.92	24.76	24.61	24.39
	661	1880	24.71	24.53	24.33	24.13
	810	1909.8	24.59	24.42	24.19	24.01

For SAR, the time based average power is relevant, the difference in between depends on the duty cycle of the TDMA signal.

Number of Time slot	1	2	3	4
Duty Cycle	1:8	1:4	1:2.66	1:2
Time based Ave. power compared to slotted Ave. power	-9 dB	-6 dB	-4.25 dB	-3 dB
Crest Factor	8	4	2.66	2

The time based average power for GPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	21.42	24.32	24.87	**25.10**
	190	836.6	21.48	24.34	24.79	25.07
	251	848.8	21.44	24.31	24.82	25.01
PCS 1900	512	1850.2	19.90	22.77	24.41	**25.46**
	661	1880	19.78	22.61	24.16	25.14
	810	1909.8	19.68	22.54	24.06	25.02

The time based average power for EGPRS

Band	Channel No.	Frequency (MHz)	Time based average Power (dBm)			
			1 slot	2 slot	3 slots	4 slots
GSM 850	128	824.2	16.55	18.41	21.03	**22.13**
	190	836.6	16.47	19.38	20.96	22.10
	251	848.8	16.39	19.31	20.86	21.99
PCS 1900	512	1850.2	15.92	18.76	20.36	**21.39**
	661	1880	15.71	18.53	20.08	21.13
	810	1909.8	15.59	18.42	19.94	21.01

Note:
1. Rohde & Schwarz Radio Communication Tester (CMU200) was used for the measurement of GSM peak and average output power for active timeslots.
2. For GPRS, 1, 2, 3 and 4 timeslots has been activated separately with power level 3(850 MHz band) and 3(1900 MHz band).
3. For EGPRS, 1, 2, 3 and 4 timeslots has been activated separately with power level 6(850 MHz band) and 5(1900 MHz band).

WCDMA
Results (12.2kbps RMC)

WCDMA Band 2:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	Rel99 RMC12.2k		**22.85**	22.78	22.77
	HSDPA	1	21.71	21.67	21.59
		2	**21.77**	21.66	21.62
		3	21.76	21.72	21.63
		4	21.70	21.68	21.67
	HSUPA	1	21.36	21.22	21.18
		2	21.40	21.22	21.23
		3	**21.45**	21.21	21.21
		4	21.36	21.25	21.16
		5	21.35	21.25	21.12
	DC-HSDPA	1	21.35	21.32	21.17
		2	21.31	21.16	21.22
		3	**21.37**	21.25	21.05
		4	21.32	21.24	21.25
	HSPA+ (16QAM)	1	**21.35**	21.21	21.15

WCDMA Band 4:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	Rel99 RMC12.2k		**22.80**	22.74	22.54
	HSDPA	1	**21.76**	21.68	21.42
		2	21.74	21.67	21.33
		3	21.66	21.67	21.44
		4	21.70	21.62	21.43
	HSUPA	1	21.39	21.31	21.13
		2	21.42	21.40	21.09
		3	21.42	21.24	21.03
		4	21.29	21.27	21.07
		5	**21.45**	21.41	21.07
	DC-HSDPA	1	21.37	21.25	21.09
		2	21.38	21.25	21.23
		3	**21.44**	21.31	21.15
		4	21.39	21.40	21.09
	HSPA+ (16QAM)	1	**21.41**	21.23	21.14

WCDMA Band 5:

Test Condition	Test Mode	3GPP Sub Test	Averaged Mean Power (dBm)		
			Low Frequency	Mid Frequency	High Frequency
Normal	Rel99 RMC12.2k		22.91	22.92	**22.94**
	HSDPA	1	21.85	21.81	21.81
		2	21.81	21.85	21.76
		3	21.83	21.72	21.81
		4	21.76	21.88	**21.91**
	HSUPA	1	21.36	21.26	21.31
		2	21.34	21.22	21.37
		3	21.31	21.36	21.34
		4	**21.45**	21.24	21.29
		5	21.43	21.24	21.40
	DC-HSDPA	1	21.31	21.28	21.33
		2	**21.42**	21.24	21.35
		3	21.34	21.27	21.40
		4	21.33	21.33	21.37
	HSPA+ (16QAM)	1	**21.57**	21.35	21.37

Note:
1. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model 1.

LTE Band 2:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	22.70	22.58	22.55
		1#3	22.70	22.66	22.61
		1#5	22.67	22.68	22.49
		3#0	22.73	22.51	22.52
		3#3	22.66	22.56	22.52
		6#0	21.80	21.78	21.69
	16QAM	1#0	21.41	21.80	21.83
		1#3	21.44	21.81	21.76
		1#5	21.33	21.73	21.52
		3#0	21.23	21.58	21.32
		3#3	21.22	21.36	21.36
		6#0	20.86	20.77	20.36
3MHz	QPSK	1#0	22.77	22.84	22.55
		1#8	22.72	22.80	22.43
		1#14	22.65	22.66	22.41
		10#0	22.35	22.41	22.21
		10#5	22.21	22.13	21.85
		15#0	21.81	21.82	21.65
	16QAM	1#0	22.48	21.90	21.53
		1#8	22.55	21.99	21.36
		1#14	22.48	21.79	21.25
		10#0	22.47	21.71	21.02
		10#5	22.35	21.36	21.14
		15#0	20.83	20.73	20.49
5MHz	QPSK	1#0	22.86	22.82	22.76
		1#13	23.00	22.69	22.70
		1#24	22.78	22.75	22.75
		10#0	22.97	22.48	22.71
		10#15	22.88	22.30	22.32
		25#0	22.01	21.77	21.73
	16QAM	1#0	22.04	22.17	22.08
		1#13	22.18	22.11	22.09
		1#24	21.96	22.03	21.85
		10#0	21.58	22.05	21.64
		10#15	21.69	22.31	21.47
		25#0	21.02	20.81	20.71

10MHz	QPSK	1#0	22.82	22.98	22.87
		1#25	22.71	22.76	22.73
		1#49	22.67	22.54	22.66
		25#0	22.72	22.48	22.63
		25#25	22.70	22.16	22.17
		50#0	21.95	21.78	21.76
	16QAM	1#0	22.35	22.11	21.95
		1#25	22.21	22.05	21.86
		1#49	21.96	21.46	21.64
		25#0	21.65	21.47	21.64
		25#25	21.48	21.41	21.38
		50#0	21.05	20.94	20.68
15MHz	QPSK	1#0	22.85	22.76	22.57
		1#38	22.72	22.72	22.47
		1#74	22.61	22.58	22.36
		36#0	22.65	22.55	22.38
		36#39	22.34	22.39	22.19
		75#0	22.09	21.89	21.80
	16QAM	1#0	22.20	22.43	22.68
		1#38	22.10	22.32	22.36
		1#74	21.90	21.98	22.13
		36#0	21.87	21.85	22.01
		36#39	21.56	21.58	21.58
		75#0	21.42	20.95	20.85
20MHz	QPSK	1#0	22.48	22.13	22.89
		1#50	22..33	22.06	22.69
		1#99	22.24	21.77	22.55
		50#0	22.26	21.96	22.47
		50#50	22.15	21.62	22.32
		100#0	21.42	21.31	21.28
	16QAM	1#0	22.12	21.59	22.36
		1#50	22.08	21.48	22.26
		1#99	21.86	21.45	22.13
		50#0	21.22	21.25	22.13
		50#50	21.26	21.58	22.24
		100#0	20.58	20.45	20.75

LTE Band 4:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	21.81	22.01	22.02
		1#3	21.95	22.13	21.91
		1#5	21.88	21.83	21.81
		3#0	21.87	21.83	21.96
		3#3	21.82	22.17	22.13
		6#0	20.89	21.11	21.25
	16QAM	1#0	21.07	20.77	21.09
		1#3	20.98	20.95	21.22
		1#5	21.20	20.77	20.97
		3#0	21.01	20.74	20.78
		3#3	21.03	20.58	20.25
		6#0	20.39	20.45	20.55
3MHz	QPSK	1#0	21.96	22.13	22.02
		1#8	21.92	22.23	21.84
		1#14	22.05	22.08	22.18
		10#0	21.78	21.85	21.56
		10#5	21.24	21.62	21.21
		15#0	20.93	21.12	21.20
	16QAM	1#0	21.15	21.12	20.95
		1#8	21.32	21.15	20.98
		1#14	21.25	20.97	20.93
		10#0	21.11	20.84	20.87
		10#5	21.25	20.47	20.71
		15#0	20.96	20.90	20.64
5MHz	QPSK	1#0	21.84	22.37	22.23
		1#13	21.70	22.27	22.36
		1#24	21.68	22.27	22.18
		10#0	22.02	22.53	22.42
		10#15	21.86	22.28	22.38
		25#0	20.93	21.19	21.10
	16QAM	1#0	20.84	21.56	21.46
		1#13	20.77	21.69	21.52
		1#24	20.93	21.40	21.43
		10#0	20.87	20.99	21.41
		10#15	20.47	21.02	21.02
		25#0	21.03	20.99	20.72

10MHz	QPSK	1#0	21.96	22.23	21.98
		1#25	22.00	22.36	22.01
		1#49	22.13	22.16	22.03
		25#0	21.86	22.07	21.91
		25#25	21.75	21.95	21.76
		50#0	20.93	21.06	21.26
	16QAM	1#0	21.19	21.42	20.82
		1#25	21.21	21.29	20.66
		1#49	21.35	21.42	20.70
		25#0	21.24	21.42	20.74
		25#25	21.23	21.23	20.15
		50#0	20.96	20.52	20.35
15MHz	QPSK	1#0	22.02	22.30	22.29
		1#38	22.03	22.20	22.28
		1#74	22.04	22.15	22.19
		36#0	22.12	22.07	22.01
		36#39	21.91	21.96	21.86
		75#0	21.41	21.12	21.16
	16QAM	1#0	21.72	22.06	21.58
		1#38	21.62	22.17	21.48
		1#74	21.66	21.72	21.50
		36#0	21.54	21.57	21.01
		36#39	21.36	21.54	21.22
		75#0	20.60	20.41	20.79
20MHz	QPSK	1#0	21.79	22.17	22.09
		1#50	21.62	22.14	22.13
		1#99	21.94	22.03	21.89
		50#0	21.65	21.65	22.06
		50#50	21.56	21.58	21.78
		100#0	21.05	21.02	20.95
	16QAM	1#0	20.80	21.51	21.51
		1#50	20.78	21.50	21.38
		1#99	20.63	21.41	21.60
		50#0	20.54	21.23	21.25
		50#50	20.44	21.35	21.54
		100#0	20.74	20.96	21.23

LTE Band 5:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	21.91	22.25	22.30
		1#3	21.83	22.34	22.25
		1#5	21.78	22.17	22.08
		3#0	21.87	22.26	22.26
		3#3	21.69	22.17	22.13
		6#0	20.94	21.38	21.36
	16QAM	1#0	21.00	21.76	21.23
		1#3	20.96	21.74	21.20
		1#5	20.87	21.58	21.15
		3#0	20.14	21.25	21.01
		3#3	20.45	21.28	20.98
		6#0	19.96	20.62	20.47
3MHz	QPSK	1#0	21.84	22.71	22.34
		1#8	21.77	22.69	22.78
		1#14	21.75	22.65	22.20
		10#0	21.80	22.70	22.32
		10#5	21.65	22.53	22.13
		15#0	21.04	21.32	21.28
	16QAM	1#0	21.05	22.10	21.56
		1#8	20.96	22.06	21.53
		1#14	20.92	22.00	21.22
		10#0	20.41	22.01	21.54
		10#5	20.91	22.04	21.21
		15#0	20.56	20.47	20.78
5MHz	QPSK	1#0	21.78	22.36	22.35
		1#13	21.69	22.32	22.30
		1#24	21.68	22.27	22.28
		10#0	21.85	22.31	22.31
		10#15	21.71	22.14	22.14
		25#0	21.09	21.34	21.40
	16QAM	1#0	20.75	21.71	20.96
		1#13	20.72	21.65	20.93
		1#24	20.69	21.63	20.84
		10#0	20.24	21.35	20.74
		10#15	20.14	21.17	20.41
		25#0	20.43	20.65	20.56
10MHz	QPSK	1#0	22.08	22.52	22.15
		1#25	21.96	22.47	22.12
		1#49	21.90	22.45	22.05
		25#0	21.95	22.50	22.16
		25#25	21.80	22.34	21.93
		50#0	21.36	21.45	21.38
	16QAM	1#0	21.24	21.71	21.31
		1#25	21.20	21.69	21.28
		1#49	21.18	21.66	21.26
		25#0	21.32	21.54	21.12
		25#25	21.65	21.44	21.21
		50#0	20.85	20.39	20.48

LTE Band 7:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	21.61	21.27	20.90
		1#13	21.56	21.23	20.85
		1#24	21.42	21.17	20.80
		10#0	21.45	21.22	20.81
		10#15	21.36	21.13	20.73
		25#0	20.53	20.47	20.92
	16QAM	1#0	21.00	20.70	20.05
		1#13	20.87	20.64	20.01
		1#24	20.80	20.52	20.97
		10#0	20.55	20.25	20.74
		10#15	20.48	20.45	20.71
		25#0	20.50	21.10	21.02
10MHz	QPSK	1#0	21.89	21.28	21.12
		1#25	21.85	21.23	21.10
		1#49	21.77	21.18	21.07
		25#0	21.76	21.12	21.08
		25#25	21.61	21.04	20.92
		50#0	20.82	20.32	20.02
	16QAM	1#0	20.77	20.69	19.96
		1#25	20.73	20.62	20.93
		1#49	20.69	20.58	20.88
		25#0	20.62	20.44	20.74
		25#25	20.41	20.47	20.47
		50#0	20.82	20.70	21.10
15MHz	QPSK	1#0	21.63	21.56	21.21
		1#38	21.58	21.53	21.15
		1#74	21.55	21.49	21.03
		36#0	21.48	21.40	21.05
		36#39	21.43	21.21	20.76
		75#0	20.48	20.45	20.87
	16QAM	1#0	21.36	21.19	20.42
		1#38	21.32	21.17	20.38
		1#74	21.29	21.02	20.56
		36#0	21.11	21.01	20.55
		36#39	21.25	21.07	20.15
		75#0	20.76	21.15	21.01
20MHz	QPSK	1#0	22.21	21.38	21.45
		1#50	22.19	21.35	21.40
		1#99	22.16	21.30	21.37
		50#0	22.18	21.28	21.38
		50#50	22.07	21.26	21.27
		100#0	20.55	20.10	20.90
	16QAM	1#0	20.46	20.92	21.17
		1#50	20.35	20.91	21.14
		1#99	20.47	20.88	21.02
		50#0	20.14	20.12	20.47
		50#50	20.47	20.74	20.65
		100#0	21.36	21.22	21.05

LTE Band 13:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	1#0	23.13	23.19	23.62
		1#13	23.11	23.15	23.38
		1#24	23.08	23.09	23.32
		10#0	23.15	23.12	23.35
		10#15	23.03	22.96	23.26
		25#0	22.45	22.41	22.35
	16QAM	1#0	22.14	22.20	22.24
		1#13	22.11	22.15	22.22
		1#24	22.05	21.98	22.18
		10#0	22.04	21.45	22.14
		10#15	22.10	21.57	22.01
		25#0	21.56	21.21	21.28
10MHz	QPSK	1#0	/	23.40	/
		1#25	/	23.25	/
		1#49	/	23.17	/
		25#0	/	23.28	/
		25#25	/	23.10	/
		50#0	/	22.34	/
	16QAM	1#0	/	21.95	/
		1#25	/	21.90	/
		1#49	/	21.87	/
		25#0	/	21.25	/
		25#25	/	21.54	/
		50#0	/	21.45	/

LTE Band 26:

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	22.95	23.03	22.90
		1#3	22.90	22.94	22.83
		1#5	22.85	22.87	22.74
		3#0	22.78	22.85	22.70
		3#3	22.64	22.76	21.66
		6#0	21.89	22.06	21.86
	16QAM	1#0	22.45	22.36	22.41
		1#3	22.37	22.29	22.38
		1#5	22.12	22.13	22.27
		3#0	22.14	22.01	22.05
		3#3	22.12	22.41	22.14
		6#0	21.12	21.26	20.60
3MHz	QPSK	1#0	23.27	23.25	22.92
		1#8	23.18	23.12	22.90
		1#14	23.07	22.97	22.81
		10#0	22.98	22.83	22.76
		10#5	22.91	22.79	21.68
		15#0	21.96	22.05	21.93
	16QAM	1#0	22.74	21.96	22.03
		1#8	22.66	21.88	21.91
		1#14	22.54	21.73	21.00
		10#0	22.47	21.25	21.01
		10#5	22.18	21.54	21.28
		15#0	21.25	21.12	21.00
5MHz	QPSK	1#0	23.30	22.96	22.84
		1#13	23.12	22.90	22.74
		1#24	22.84	22.50	22.63
		10#0	22.77	22.45	22.58
		10#15	21.00	22.33	22.55
		25#0	21.90	22.21	22.23
	16QAM	1#0	22.35	22.30	22.43
		1#13	22.28	22.15	22.33
		1#24	22.13	22.01	22.16
		10#0	22.25	22.10	22.01
		10#15	22.14	22.04	22.14
		25#0	20.91	21.17	20.97

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10MHz	QPSK	1#0	23.16	23.08	23.06
		1#25	23.12	22.93	22.97
		1#49	22.96	22.85	22.86
		25#0	22.94	22.70	22.74
		25#25	22.65	22.64	22.65
		50#0	21.94	22.15	22.00
	16QAM	1#0	22.92	21.98	21.70
		1#25	22.80	21.85	21.56
		1#49	22.72	21.78	21.49
		25#0	22.54	21.84	21.54
		25#25	22.17	21.47	21.21
		50#0	20.75	21.14	21.08
15MHz	QPSK	1#0	23.20	22.92	23.33
		1#38	23..4	22.83	23.21
		1#74	22.92	22.74	23.07
		36#0	22.84	22.72	22.88
		36#39	22.75	22.67	22.76
		75#0	21.90	21.23	22.10
	16QAM	1#0	22.36	21.66	21.92
		1#38	22.23	21.58	21.84
		1#74	21.98	21.36	21.73
		36#0	21.47	21.58	21.58
		36#39	21.74	21.04	21.25
		75#0	20.87	21.07	21.16

Note:

1. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
2. The CMW500 Wideband Radio Communication tester is used for LTE output power measurements and SAR testing. Closed loop power control is used to keep the radio transmitters the max output power during the test.
3. KDB941225D05v02- SAR for higher order modulation is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg

Bluetooth:

Mode	Channel frequency (MHz)	RF Output Power (dBm)
BDR(GFSK)	2402	4.83
	2441	5.26
	2480	3.79
EDR(π/4-DQPSK)	2402	4.47
	2441	4.98
	2480	3.52
EDR(8-DPSK)	2402	5.2
	2441	**5.66**
	2480	4.19
Bluetooth LE	2402	0.17
	2440	1.09
	2480	-0.47

Note:
The highest output power Channel do not located in 2402, 2441 or 2480 MHz, additional, the highest output power Channel is selected for measurement to ensure conservative.

WLAN (2.4G)

Mode	Channel frequency (MHz)	RF Output Power (dBm)
802.11b	2412	14.82
	2437	**15.23**
	2462	14.83
802.11g	2412	13.3
	2437	15.12
	2462	13.18
802.11n HT20	2412	13.07
	2437	13.34
	2462	11.26
802.11n HT40	2422	13.26
	2437	13.91
	2452	10.27

Note: The output power was tested under data rate 1Mbps for 802.11b, 6Mbps for 802.11g and MCS0 for 802.11n HT20 and 802.11n HT40.

Wi-Fi (5G Band):

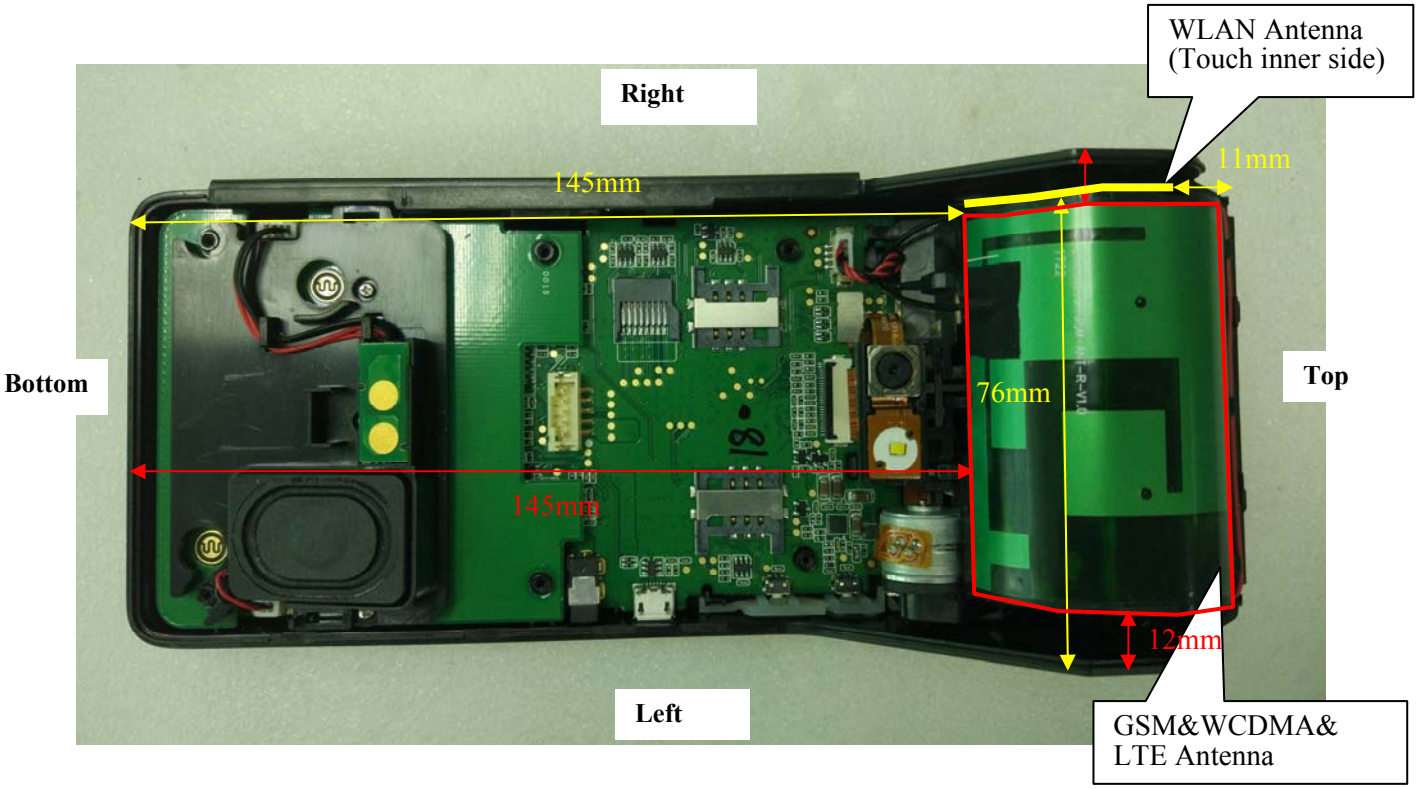
Band		Frequency (MHz)	Conducted Output Power (dBm)
U-NII-1 Band	802.11a	5180	13.59
		5200	**13.68**
		5240	13.6
	802.11n-HT20	5180	13.68
		5200	13.45
		5240	13.62
	802.11n-HT40	5190	9.16
		5230	13.41
U-NII-2A Band	802.11a	5260	13.76
		5280	13.64
		5320	13.37
	802.11n-HT20	5260	13.71
		5280	**13.87**
		5320	13.3
	802.11n-HT40	5270	13.15
		5310	10.2
U-NII-2C Band	802.11a	5500	9.41
		5580	10.11
		5700	7.87
	802.11n-HT20	5500	**10.97**
		5580	9.52
		5700	7.84
	802.11n-HT40	5510	7.27
		5550	9.79
U-NII-3 Band	802.11a	5745	9.22
		5785	9.09
		5825	7.14
	802.11n-HT20	5745	9.4
		5785	9.22
		5825	6.89
	802.11n-HT40	5755	8.9
		5795	**9.35**

Note:

1. The output power was tested under data rate MCS0 for 802.11a, MCS0 for 802.11n-HT20 and MCS0 for 802.11n-HT40.

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

WLAN/Bluetooth and GSM&WCDMA&LTE Antennas Location:



Antenna Distance To Edge：

Antenna Distance To Edge(mm)					
Antenna Mode	**Left**	**Right**	**Back**	**Top**	**Bottom**
WWAN(GSM/WCDMA/LTE)	12	9	< 5	< 5	145
WLAN/Bluetooth	76	9	<5	11	145

Note: When the separation distance is < 5 mm, a distance of 0 mm is applied to determine SAR test Exclusion.

SAR test exclusion for the EUT edge considerations Result

SAR Test Exclusion for the EUT Edges Considerations						
Mode	**Left**	**Right**	**Front**	**Back**	**Top**	**Bottom**
GSM/WCDMA/LTE	Judge	Judge	Exclusion	Judge	Judge	Judge
WLAN/Bluetooth	Judge	Judge	Exclusion	Judge	Judge	Judge

Note:
Exclusion: In normal operation mode, the Front side (screen) doesn't touch the user in the intended use, so SAR is not required .
Judge: Please refer the below tables for detail.

Standalone SAR test exclusion considerations

Distance< 50mm

Mode	Position	Max tune-up power		Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Required?
		(dBm)	(mW)				
Bluetooth	Body-worn	6.00	3.98	0	1.3	3.0	No
WLAN 2.4G	Body-worn	15.50	35.48	0	11.1	3.0	Yes
WLAN U-NII-1 Band	Body-worn	14.00	25.12	0	11.5	3.0	Yes
WLAN U-NII-2A Band	Body-worn	14.00	25.12	0	11.5	3.0	Yes
WLAN U-NII-2C Band	Body-worn	11.00	12.59	0	6.0	3.0	Yes
WLAN U-NII-3 Band	Body-worn	9.50	8.91	0	4.3	3.0	Yes

Mode	Position	Max Average tune-up power		Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Required?
		(dBm)	(mW)				
GSM 850	Body-worn	25.20	331.13	0	61.1	3.0	Yes
PCS 1900	Body-worn	25.50	354.81	0	97.8	3.0	Yes
WCDMA Band 2	Body-worn	22.90	194.98	0	53.8	3.0	Yes
WCDMA Band 4	Body-worn	22.90	194.98	0	51.6	3.0	Yes
WCDMA Band 5	Body-worn	23.00	199.53	0	36.8	3.0	Yes
LTE Band 2	Body-worn	23.10	204.17	0	56.3	3.0	Yes
LTE Band 4	Body-worn	22.60	181.97	0	48.1	3.0	Yes
LTE Band 5	Body-worn	22.80	190.55	0	35.1	3.0	Yes
LTE Band 7	Body-worn	22.30	169.82	0	54.8	3.0	Yes
LTE Band 13	Body-worn	23.70	234.42	0	41.9	3.0	Yes
LTE Band 26	Body-worn	23.40	218.78	0	40.3	3.0	Yes

Mode	Position	Max Average tune-up power		Minimum Distance (mm)	Calculated value	Threshold (10-g)	SAR Test Required?
		(dBm)	(mW)				
GSM 850	Handheld-Left	25.20	331.13	12	25.4	7.5	Yes
	Handheld-Right	25.20	331.13	9	33.9	7.5	Yes
	Handheld-Top	25.20	331.13	0	61.1	7.5	Yes
PCS 1900	Handheld-Left	25.50	354.81	12	40.9	7.5	Yes
	Handheld-Right	25.50	354.81	9	54.5	7.5	Yes
	Handheld-Top	25.50	354.81	0	98.1	7.5	Yes
WCDMA Band 2	Handheld-Left	22.90	194.98	12	22.5	7.5	Yes
	Handheld-Right	22.90	194.98	9	29.9	7.5	Yes
	Handheld-Top	22.90	194.98	0	53.9	7.5	Yes
WCDMA Band 4	Handheld-Left	22.90	194.98	12	21.5	7.5	Yes
	Handheld-Right	22.90	194.98	9	28.7	7.5	Yes
	Handheld-Top	22.90	194.98	0	51.6	7.5	Yes
WCDMA Band 5	Handheld-Left	23.00	199.53	12	15.3	7.5	Yes
	Handheld-Right	23.00	199.53	9	20.4	7.5	Yes
	Handheld-Top	23.00	199.53	0	36.8	7.5	Yes
LTE Band 2	Handheld-Left	23.10	204.17	12	23.5	7.5	Yes
	Handheld-Right	23.10	204.17	9	31.4	7.5	Yes
	Handheld-Top	23.10	204.17	0	56.4	7.5	Yes
LTE Band 4	Handheld-Left	22.60	181.97	12	20.1	7.5	Yes
	Handheld-Right	22.60	181.97	9	26.7	7.5	Yes
	Handheld-Top	22.60	181.97	0	48.1	7.5	Yes
LTE Band 5	Handheld-Left	22.80	190.55	12	14.6	7.5	Yes
	Handheld-Right	22.80	190.55	9	19.5	7.5	Yes
	Handheld-Top	22.80	190.55	0	35.1	7.5	Yes
LTE Band 7	Handheld-Left	22.30	169.82	12	22.6	7.5	Yes
	Handheld-Right	22.30	169.82	9	30.1	7.5	Yes
	Handheld-Top	22.30	169.82	0	54.2	7.5	Yes
LTE Band 13	Handheld-Left	23.70	234.42	12	16.9	7.5	Yes
	Handheld-Right	23.70	234.42	9	22.6	7.5	Yes
	Handheld-Top	23.70	234.42	0	40.6	7.5	Yes
LTE Band 26	Handheld-Left	23.40	218.78	12	16.8	7.5	Yes
	Handheld-Right	23.40	218.78	9	22.4	7.5	Yes
	Handheld-Top	23.40	218.78	0	40.3	7.5	Yes

Mode	Position	Max tune-up power		Minimum Distance (mm)	Calculated value	Threshold (10-g)	SAR Test Required?
		(dBm)	(mW)				
Bluetooth	Handheld-Right	6.00	3.98	9	0.7	7.5	No
	Handheld-Top	6.00	3.98	11	0.6	7.5	No
WLAN 2.4G	Handheld-Right	15.50	35.48	9	6.2	7.5	No
	Handheld-Top	15.50	35.48	11	5.1	7.5	No
WLAN U-NII-1 Band	Handheld-Right	14.00	25.12	9	6.4	7.5	No
	Handheld-Top	14.00	25.12	11	5.2	7.5	No
WLAN U-NII-2A Band	Handheld-Right	14.00	25.12	9	6.4	7.5	No
	Handheld-Top	14.00	25.12	11	5.2	7.5	No
WLAN U-NII-2C Band	Handheld-Right	11.00	12.59	9	3.3	7.5	No
	Handheld-Top	11.00	12.59	11	2.7	7.5	No
WLAN U-NII-3 Band	Handheld-Right	9.50	8.91	9	2.4	7.5	No
	Handheld-Top	9.50	8.91	11	2.0	7.5	No

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

1. f(GHz) is the RF channel transmit frequency in GHz.
2. Power and distance are rounded to the nearest mW and mm before calculation.
3. The result is rounded to one decimal place for comparison.
4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion.

Distance> 50mm

Mode	Position	Max Average tune-up power		Distance (mm)	Test exclusion Threshold (mW)	SAR Test required?
		(dBm)	(mW)			
GSM 850	Handheld-Bottom	25.20	331.13	145	945.08	No
PCS 1900	Handheld-Bottom	25.50	354.81	145	1222.05	No
WCDMA Band 2	Handheld-Bottom	22.90	194.98	145	1222.05	No
WCDMA Band 4	Handheld-Bottom	22.90	194.98	145	1233.47	No
WCDMA Band 5	Handheld-Bottom	23.00	199.53	145	945.08	No
LTE Band 2	Handheld-Bottom	23.10	204.17	145	1222.05	No
LTE Band 4	Handheld-Bottom	22.60	181.97	145	1233.47	No
LTE Band 5	Handheld-Bottom	22.80	190.55	145	945.08	No
LTE Band 7	Handheld-Bottom	22.30	169.82	145	1182.57	No
LTE Band 13	Handheld-Bottom	23.70	234.42	145	925.93	No
LTE Band 26	Handheld-Bottom	23.40	218.78	145	945.08	No

Mode	Position	Max tune-up power		Minimum Distance (mm)	Test exclusion Threshold (mW)	SAR Test Required?
		(dBm)	(mW)			
Bluetooth	Handheld-Left	6.00	3.98	76	498.13	No
	Handheld-Bottom	6.00	3.98	145	1188.13	No
WLAN 2.4G	Handheld-Left	15.50	35.48	76	498.51	No
	Handheld-Bottom	15.50	35.48	145	1188.51	No
WLAN U-NII-1 Band	Handheld-Left	14.00	25.12	76	424.45	No
	Handheld-Bottom	14.00	25.12	145	1114.45	No
WLAN U-NII-2A Band	Handheld-Left	14.00	25.12	76	424.45	No
	Handheld-Bottom	14.00	25.12	145	1114.45	No
WLAN U-NII-2C Band	Handheld-Left	11.00	12.59	76	418.47	No
	Handheld-Bottom	11.00	12.59	145	1108.47	No
WLAN U-NII-3 Band	Handheld-Left	9.50	8.91	76	415.71	No
	Handheld-Bottom	9.50	8.91	145	1105.71	No

At 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following:

a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz

b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

SAR test exclusion for the EUT edge considerations Result

SAR Test Exclusion for the EUT Edges Considerations						
Mode	**Left**	**Right**	**Front**	**Back**	**Top**	**Bottom**
GSM/WCDMA/LTE	Required	Required	Exclusion	Required	Required	Exclusion*
WLAN	Exclusion*	Exclusion*	Exclusion	Required	Exclusion*	Exclusion*
Bluetooth	Exclusion*	Exclusion*	Exclusion	Exclusion*	Exclusion*	Exclusion*

Note:
Required: The SAR test is required as Standalone SAR test exclusion considerations table.
Exclusion: In normal operation mode, the Edge(s) will not be touched by the users directly, so SAR test is not consideration.
Exclusion*: SAR test exclusion evaluation has been done above.

Standalone SAR estimation:

Mode	Position	Max tune-up power		Distance (mm)	Estimated $_{1\text{-g}}$ (W/kg)
		(dBm)	(mW)		
Bluetooth	Body-worn	6.00	3.98	0	0.17

Mode	Position	Max tune-up power		Distance (mm)	Estimated $_{10\text{-g}}$ (W/kg)
		(dBm)	(mW)		
Bluetooth	Handheld	6.00	3.98	9	0.04

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
[(*max. power of channel, including* ***tune-up tolerance****, mW*)/(*min. test separation distance,mm*)]·[√f(GHz)/*x*] W/kg for *test separation distances* ≤ 50 mm;
where *x* = 7.5 for 1-g SAR and *x* = 18.75 for 10-g SAR.
When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test Exclusion

SAR MEASUREMENT RESULTS

This page summarizes the results of the performed dosimetric evaluation.

SAR Test Data

Environmental Conditions

Temperature:	22.3-23.5 ℃	21.7-23.6 ℃	21.8-22.9 ℃	22.5-24.1 ℃
Relative Humidity:	46 %	43 %	52 %	59 %
ATM Pressure:	1005 mbar	1007 mbar	1011 mbar	1009 mbar
Test Date:	2017/10/03	2017/10/04	2017/10/05	2017/10/06

Testing was performed by William Wang, Van Xu, Brave Lu.

GSM 850:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	824.2	GPRS	28.10	28.20	1.023	0.839	**0.86**	1#
	836.6	GPRS	28.07	28.20	1.030	0.803	0.83	2#
	848.8	GPRS	28.01	28.20	1.045	0.571	0.60	3#

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	28.07	28.20	1.030	0.233	0.24	4#
	848.8	GPRS	/	/	/	/	/	/
Handheld-Right (0mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	28.07	28.20	1.030	0.254	0.26	5#
	848.8	GPRS	/	/	/	/	/	/
Handheld-Top (0mm)	824.2	GPRS	/	/	/	/	/	/
	836.6	GPRS	28.07	28.20	1.030	0.332	**0.34**	6#
	848.8	GPRS	/	/	/	/	/	/

Note:

1. For Body-worn mode, when the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. For Handheld mode, when the 10-g SAR is ≤ 2.0W/Kg, testing for other channels are optional.
3. The EUT transmit and receive through the same GSM antenna while testing SAR.
4. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
5. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.
6. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 1DL+4UL is the worst case.

PCS 1900:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.14	28.50	1.086	0.602	**0.65**	7#
	1909.8	GPRS	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.14	28.50	1.086	0.031	0.03	8#
	1909.8	GPRS	/	/	/	/	/	/
Handheld-Right (0mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.14	28.50	1.086	0.035	0.04	9#
	1909.8	GPRS	/	/	/	/	/	/
Handheld-Top (0mm)	1850.2	GPRS	/	/	/	/	/	/
	1880	GPRS	28.14	28.50	1.086	0.036	**0.04**	10#
	1909.8	GPRS	/	/	/	/	/	/

Note:

1. For Body-worn mode, when the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. For Handheld mode, when the 10-g SAR is ≤ 2.0W/Kg, testing for other channels are optional.
3. The EUT transmit and receive through the same GSM antenna while testing SAR.
4. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.
5. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.
6. The Multi-slot Classes of EUT is Class 12 which has maximum 4 Downlink slots and 4 Uplink slots, the maximum active slots is 5, when perform the multiple slots scan, 1DL+4UL is the worst case.

WCDMA Band 2:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	1852.4	RMC	**22.85**	22.90	1.012	1.27	**1.28**	11#
	1880	RMC	22.78	22.90	1.028	1.23	1.26	12#
	1907.6	RMC	22.77	22.90	1.030	1.23	1.27	13#

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.78	22.90	1.028	0.050	0.05	14#
	1907.6	RMC	/	/	/	/	/	/
Handheld-Right (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.78	22.90	1.028	0.052	0.05	15#
	1907.6	RMC	/	/	/	/	/	/
Handheld-Top (0mm)	1852.4	RMC	/	/	/	/	/	/
	1880	RMC	22.78	22.90	1.028	0.163	**0.17**	16#
	1907.6	RMC	/	/	/	/	/	/

WCDMA Band 4:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	1712.4	RMC	22.80	22.90	1.023	1.29	**1.32**	17#
	1732.6	RMC	22.74	22.90	1.038	1.17	1.21	18#
	1752.6	RMC	22.54	22.90	1.086	1.02	1.11	19#

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	1712.4	RMC	/	/	/	/	/	/
	1732.6	RMC	22.74	22.90	1.038	0.028	0.03	20#
	1752.6	RMC	/	/	/	/	/	/
Handheld-Right (0mm)	1712.4	RMC	/	/	/	/	/	/
	1732.6	RMC	22.74	22.90	1.038	0.045	0.05	21#
	1752.6	RMC	/	/	/	/	/	/
Handheld-Top (0mm)	1712.4	RMC	/	/	/	/	/	/
	1732.6	RMC	22.74	22.90	1.038	0.086	**0.09**	22#
	1752.6	RMC	/	/	/	/	/	/

WCDMA Band 5:

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	826.4	RMC	22.91	23.00	1.021	1.08	1.10	23#
	836.6	RMC	22.92	23.00	1.019	1.08	1.10	24#
	846.6	RMC	22.94	23.00	1.014	1.2	**1.22**	25#

EUT Position	Frequency (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.92	23.00	1.019	0.198	**0.20**	26#
	846.6	RMC	/	/	/	/	/	/
Handheld-Right (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.92	23.00	1.019	0.150	0.15	27#
	846.6	RMC	/	/	/	/	/	/
Handheld-Top (0mm)	826.4	RMC	/	/	/	/	/	/
	836.6	RMC	22.92	23.00	1.019	0.185	0.19	28#
	846.6	RMC	/	/	/	/	/	/

Note:

1. For Body-worn mode, when the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
2. For Handheld mode, when the 10-g SAR is ≤ 2.0W/Kg, testing for other channels are optional.
3. The EUT transmit and receive through the same antenna while testing SAR.
4. The default test configuration is to measure SAR with an established radio link between the EUT and a communication test set using a 12.2 kbps RMC (reference measurement Channel) Configured in Test Loop Model.
5. When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.
6. KDB 941225 D01-Body SAR is not required for HSDPA when the maximum average output of each RF channel is less than ¼ dB higher than measured 12.2kbps RMC or the maximum SAR for 12.2kbps RMC is < 75% of SAR limit.
7. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

LTE Band 2:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	/	/	/	/	/	/
	1900	20	1RB	22.89	23.10	1.050	0.753	**0.79**	29#
	1900	20	50%RB	22.47	23.10	1.156	0.682	0.79	30#

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	/	/	/	/	/	/
	1900	20	1RB	22.89	23.10	1.050	0.081	**0.09**	31#
	1900	20	50%RB	22.47	23.10	1.156	0.058	0.07	32#
Handheld-Right (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	/	/	/	/	/	/
	1900	20	1RB	22.89	23.10	1.050	0.064	0.07	33#
	1900	20	50%RB	22.47	23.10	1.156	0.048	0.06	34#
Handheld-Top (0mm)	1860	20	1RB	/	/	/	/	/	/
	1880	20	1RB	/	/	/	/	/	/
	1900	20	1RB	22.89	23.10	1.050	0.061	0.06	35#
	1900	20	50%RB	22.47	23.10	1.156	0.044	0.05	36#

LTE Band 4:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	22.17	22.60	1.104	0.726	0.80	37#
	1745	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	22.06	22.60	1.132	0.665	0.75	38#

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	22.17	22.60	1.104	0.025	0.03	39#
	1745	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	22.06	22.60	1.132	0.018	0.02	40#
Handheld-Right (0mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	22.17	22.60	1.104	0.022	0.02	41#
	1745	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	22.06	22.60	1.132	0.020	0.02	42#
Handheld-Top (0mm)	1720	20	1RB	/	/	/	/	/	/
	1732.5	20	1RB	22.17	22.60	1.104	0.119	0.13	43#
	1745	20	1RB	/	/	/	/	/	/
	1745	20	50%RB	22.06	22.60	1.132	0.084	0.10	44#

LTE Band 5:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.52	22.80	1.067	0.495	**0.53**	45#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	22.50	22.80	1.072	0.372	0.40	46#

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.52	22.80	1.067	0.061	0.07	47#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	22.50	22.80	1.072	0.070	0.08	48#
Handheld-Right (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.52	22.80	1.067	0.094	0.10	49#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	22.50	22.80	1.072	0.069	0.07	50#
Handheld-Top (0mm)	829	10	1RB	/	/	/	/	/	/
	836.5	10	1RB	22.52	22.80	1.067	0.157	**0.17**	51#
	844	10	1RB	/	/	/	/	/	/
	836.5	10	50%RB	22.50	22.80	1.072	0.127	0.14	52#

LTE Band 7:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	2510	20	1RB	22.21	22.30	1.021	0.450	**0.46**	53#
	2535	20	1RB	/	/	/	/	/	/
	2560	20	1RB	/	/	/	/	/	/
	2510	20	50%RB	22.18	22.30	1.028	0.119	0.12	54#

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	2510	20	1RB	22.21	22.30	1.021	0.029	0.03	55#
	2535	20	1RB	/	/	/	/	/	/
	2560	20	1RB	/	/	/	/	/	/
	2510	20	50%RB	22.18	22.30	1.028	0.019	0.02	56#
Handheld-Right (0mm)	2510	20	1RB	22.21	22.30	1.021	0.027	0.03	57#
	2535	20	1RB	/	/	/	/	/	/
	2560	20	1RB	/	/	/	/	/	/
	2510	20	50%RB	22.18	22.30	1.028	0.015	0.02	58#
Handheld-Top (0mm)	2510	20	1RB	22.21	22.30	1.021	0.047	**0.05**	59#
	2535	20	1RB	/	/	/	/	/	/
	2560	20	1RB	/	/	/	/	/	/
	2510	20	50%RB	22.18	22.30	1.028	0.037	0.04	60#

LTE Band 13:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	782	10	1RB	23.40	23.70	1.072	0.814	**0.872**	**61#**
	782	10	50%RB	23.28	23.70	1.102	0.72	0.793	62#
	782	10	100%RB	22.34	23.70	1.368	0.512	0.700	63#

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	782	10	1RB	23.40	23.70	1.072	0.111	0.12	64#
	782	10	50%RB	23.28	23.70	1.102	0.087	0.10	65#
Handheld-Right (0mm)	782	10	1RB	23.40	23.70	1.072	0.078	0.08	66#
	782	10	50%RB	23.28	23.70	1.102	0.059	0.06	67#
Handheld-Top (0mm)	782	10	1RB	23.40	23.70	1.072	0.208	**0.22**	68#
	782	10	50%RB	23.28	23.70	1.102	0.144	0.16	69#

LTE Band 26:

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	1g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Worn-Back (0mm)	822.5	15	1RB	23.20	23.40	1.047	0.979	1.025	70#
	831.5	15	1RB	22.92	23.40	1.117	1.02	**1.139**	**71#**
	841.5	15	1RB	23.33	23.40	1.016	1.02	1.037	72#
	841.5	15	50%RB	22.88	23.40	1.127	0.732	0.825	73#
	841.5	15	100%RB	22.10	23.40	1.349	0.538	0.726	74#

EUT Position	Frequency (MHz)	Bandwidth (MHz)	Test Mode	Max. Meas. Power (dBm)	Max. Rated Power (dBm)	10g SAR (W/Kg)			
						Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Left (0mm)	822.5	15	1RB	/	/	/	/	/	/
	831.5	15	1RB	/	/	/	/	/	/
	841.5	15	1RB	23.33	23.40	1.016	0.083	0.08	75#
	841.5	15	50%RB	22.88	23.40	1.127	0.077	0.09	76#
Handheld-Right (0mm)	822.5	15	1RB	/	/	/	/	/	/
	831.5	15	1RB	/	/	/	/	/	/
	841.5	15	1RB	23.33	23.40	1.016	0.122	0.12	77#
	841.5	15	50%RB	22.88	23.40	1.127	0.095	0.11	78#
Handheld-Top (0mm)	822.5	15	1RB	/	/	/	/	/	/
	831.5	15	1RB	/	/	/	/	/	/
	841.5	15	1RB	23.33	23.40	1.016	0.127	**0.13**	79#
	841.5	15	50%RB	22.88	23.40	1.127	0.114	0.13	80#

Note:

1. SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices v02.
2. KDB941225D05- 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 among RB offset the upper edge, middle and lower edge of each required test channel.
3. When the 1-g SAR is ≤ 0.8W/Kg, testing for other channels are optional.
4. The procedures required for 1 RB allocation are applied to measure the SAR for QPSK with 50% RB allocation..
5. KDB941225D05- 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.
6. KDB941225D05-For QPSK with 100% RB allocation, when the reported SAR measured for the Highest output power channel is <1.45 W/kg, tests for the remaining required test channels are optional.
7. KDB941225D05- other channel bandwidths SAR test is required when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.
8. KDB941225D05-SAR for higher order modulation is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg
9. KDB 648474 D04-When the peak SAR located in regions that probe is unable to access, a flat phantom is used for SAR measurement.

WLAN 2.4G

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	1 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Back (0mm)	2412	802.11b	/	/	/	/	/	/
	2437	802.11b	15.23	15.50	1.064	0.162	**0.17**	81#
	2462	802.11b	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	10 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Right (0mm)	2412	802.11b	/	/	/	/	/	/
	2437	802.11b	15.23	15.50	1.064	0.332	**0.35**	**82#**
	2462	802.11b	/	/	/	/	/	/
Handheld-Top (0mm)	2412	802.11b	/	/	/	/	/	/
	2437	802.11b	15.23	15.50	1.064	0.091	0.10	83#
	2462	802.11b	/	/	/	/	/	/

Note:
1. When the 1-g SAR is≤ 0.8W/Kg, testing for other channels are optional.
2. When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, OFDM SAR is not required.
3. When SAR or MPE is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance.

2.4 GHz 802.11g/n OFDM SAR Test Exclusion Consideration:

Modulation Mode	Pavg (dBm)	Pavg (mW)	Reported SAR(W/kg)	Adjusted SAR(W/kg)	Limit(W/kg)	SAR Test Exclusion
802.11b(DSSS)	15.50	35.48	0.17	/	/	/
802.11g(OFDM)	15.50	35.48	/	0.17	1.2	Yes
802.11n HT20(OFDM)	15.50	35.48	/	0.17	1.2	Yes
802.11n HT40(OFDM)	15.50	35.48	/	0.17	1.2	Yes

Note:

KDB 248227 D01-When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied. SAR is not required for the following 2.4 GHz OFDM conditions.

a) When KDB Publication 447498 D01 SAR test exclusion applies to the OFDM configuration.

b) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

WLAN U-NII-1 Band

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	1 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Back (0mm)	5180	802.11a	/	/	/	/	/	/
	5200	802.11a	13.68	14.00	1.076	0.081	**0.09**	84#
	5240	802.11a	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	10 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Right (0mm)	5180	802.11a	/	/	/	/	/	/
	5200	802.11a	13.68	14.00	1.076	0.253	**0.27**	85#
	5240	802.11a	/	/	/	/	/	/
Handheld-Top (0mm)	5180	802.11a	/	/	/	/	/	/
	5200	802.11a	13.68	14.00	1.076	0.072	0.08	86#
	5240	802.11a	/	/	/	/	/	/

WLAN U-NII-2A Band

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	1 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Back (0mm)	5260	802.11a	13.76	14.00	1.057	0.060	**0.06**	87#
	5280	802.11a	/	/	/	/	/	/
	5320	802.11a	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	10 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Right (0mm)	5260	802.11a	13.76	14.00	1.057	0.191	**0.20**	88#
	5280	802.11a	/	/	/	/	/	/
	5320	802.11a	/	/	/	/	/	/
Handheld-Top (0mm)	5260	802.11a	13.76	14.00	1.057	0.050	0.05	89#
	5280	802.11a	/	/	/	/	/	/
	5320	802.11a	/	/	/	/	/	/

WLAN U-NII-2C Band

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	1 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Back (0mm)	5500	802.11a	/	/	/	/	/	/
	5580	802.11a	10.11	11.00	1.227	0.047	**0.06**	90#
	5700	802.11a	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	10 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Right (0mm)	5500	802.11a	/	/	/	/	/	/
	5580	802.11a	10.11	11.00	1.227	0.161	**0.20**	91#
	5700	802.11a	/	/	/	/	/	/
Handheld-Top (0mm)	5500	802.11a	/	/	/	/	/	/
	5580	802.11a	10.11	11.00	1.227	0.067	0.08	92#
	5700	802.11a	/	/	/	/	/	/

WLAN U-NII-3 Band

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	1 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Body-Back (0mm)	5745	802.11a	9.22	9.50	1.067	0.061	**0.07**	93#
	5785	802.11a	/	/	/	/	/	/
	5825	802.11a	/	/	/	/	/	/

EUT Position	Frequency (MHz)	Test Mode	Meas. Avg. Power (dBm)	Max. Rated Avg. Power (dBm)	10 g SAR Value (W/Kg)			
					Scaled Factor	Meas. SAR	Scaled SAR	Plot
Handheld-Right (0mm)	5745	802.11a	9.22	9.50	1.067	0.174	**0.19**	94#
	5785	802.11a	/	/	/	/	/	/
	5825	802.11a	/	/	/	/	/	/
Handheld-Top (0mm)	5745	802.11a	9.22	9.50	1.067	0.081	0.09	95#
	5785	802.11a	/	/	/	/	/	/
	5825	802.11a	/	/	/	/	/	/

SAR Measurement Variability

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

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

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The Highest Measured SAR Configuration in Each Frequency Band

Body-worn

Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
			Original	Repeated	
GSM 850	824.2	Body-Worn-Back (0mm)	0.839	0.871	1.04
WCDMA Band 2	1852.4	Body-Worn-Back (0mm)	1.27	1.16	1.09
WCDMA Band 4	1712.4	Body-Worn-Back (0mm)	1.29	1.20	1.08
WCDMA Band 5	846.6	Body-Worn-Back (0mm)	1.2	1.21	1.01
LTE Band 13	782	Body-Worn-Back (0mm)	0.814	0.763	1.07
LTE Band 26	831.5	Body-Worn-Back (0mm)	1.02	1.05	1.03

Handheld

Frequency Band	Freq.(MHz)	EUT Position	Meas. SAR (W/kg)		Largest to Smallest SAR Ratio
			Original	Repeated	
/	/	/	/	/	/

SAR SIMULTANEOUS TRANSMISSION DESCRIPTION

Simultaneous Transmission:

Description of Simultaneous Transmit Capabilities		
Transmitter Combination	**Simultaneous?**	**Hotspot?**
GSM + WCDMA	×	×
GSM+LTE	×	×
GSM + Bluetooth	√	×
GSM + WLAN	√	×
WCDMA+LTE	×	×
WCDMA + Bluetooth	√	×
WCDMA + WLAN	√	×
LTE + Bluetooth	√	×
LTE + WLAN	√	×

Simultaneous SAR test exclusion considerations:

Mode(SAR1+SAR2)	Position	Reported 1-g SAR(W/kg)		Σ1-g SAR < 1.6W/kg
		SAR1	SAR2	
GSM 850+ Bluetooth	Body-Worn-Back	0.86	0.17	1.03
PCS1900 + Bluetooth	Body-Worn-Back	0.65	0.17	0.82
WCDMA Band 2 + Bluetooth	Body-Worn-Back	1.28	0.17	1.45
WCDMA Band 4 + Bluetooth	Body-Worn-Back	1.32	0.17	**1.49**
WCDMA Band 5 + Bluetooth	Body-Worn-Back	1.22	0.17	1.39
LTE Band 2 + Bluetooth	Body-Worn-Back	0.79	0.17	0.96
LTE Band 4 + Bluetooth	Body-Worn-Back	0.80	0.17	0.97
LTE Band 5 + Bluetooth	Body-Worn-Back	0.53	0.17	0.70
LTE Band 7 + Bluetooth	Body-Worn-Back	0.46	0.17	0.63
LTE Band 13 + Bluetooth	Body-Worn-Back	0.87	0.17	1.04
LTE Band 26 + Bluetooth	Body-Worn-Back	1.14	0.17	1.31

Mode(SAR1+SAR2)	Position	Reported 1-g SAR(W/kg)		Σ1-g SAR < 1.6W/kg
		SAR1	SAR2	
GSM 850+ WLAN	Body-Worn-Back	0.86	0.17	1.03
PCS1900 + WLAN	Body-Worn-Back	0.65	0.17	0.82
WCDMA Band 2 + WLAN	Body-Worn-Back	1.28	0.17	1.45
WCDMA Band 4 + WLAN	Body-Worn-Back	1.32	0.17	**1.49**
WCDMA Band 5 + WLAN	Body-Worn-Back	1.22	0.17	1.39
LTE Band 2 + WLAN	Body-Worn-Back	0.79	0.17	0.96
LTE Band 4 + WLAN	Body-Worn-Back	0.80	0.17	0.97
LTE Band 5 + WLAN	Body-Worn-Back	0.53	0.17	0.70
LTE Band 7 + WLAN	Body-Worn-Back	0.46	0.17	0.63
LTE Band 13 + WLAN	Body-Worn-Back	0.87	0.17	1.04
LTE Band 26 + WLAN	Body-Worn-Back	1.14	0.17	1.31

Note:

Σ1-g SAR is lower than 1.6W/kg, test for simultaneous mode is not required.

Mode(SAR1+SAR2)	Position	Reported 10-g SAR(W/kg)		Σ10-g SAR < 4.0W/kg
		SAR1	SAR2	
GSM 850+ Bluetooth	Handheld-Left	0.24	0.04	0.28
	Handheld-Right	0.26	0.04	0.30
	Handheld-Top	0.34	0.04	0.38
PCS1900 + Bluetooth	Handheld-Left	0.03	0.04	0.07
	Handheld-Right	0.04	0.04	0.08
	Handheld-Top	0.04	0.04	0.08
WCDMA Band 2 + Bluetooth	Handheld-Left	0.05	0.04	0.09
	Handheld-Right	0.05	0.04	0.09
	Handheld-Top	0.17	0.04	0.21
WCDMA Band 4 + Bluetooth	Handheld-Left	0.03	0.04	0.07
	Handheld-Right	0.05	0.04	0.09
	Handheld-Top	0.09	0.04	0.13
WCDMA Band 5 + Bluetooth	Handheld-Left	0.20	0.04	0.24
	Handheld-Right	0.15	0.04	0.19
	Handheld-Top	0.19	0.04	0.23
LTE Band 2 + Bluetooth	Handheld-Left	0.09	0.04	0.13
	Handheld-Right	0.07	0.04	0.11
	Handheld-Top	0.06	0.04	0.10
LTE Band 4 + Bluetooth	Handheld-Left	0.03	0.04	0.07
	Handheld-Right	0.02	0.04	0.06
	Handheld-Top	0.13	0.04	0.17
LTE Band 5 + Bluetooth	Handheld-Left	0.08	0.04	0.12
	Handheld-Right	0.10	0.04	0.14
	Handheld-Top	0.17	0.04	0.21
LTE Band 7 + Bluetooth	Handheld-Left	0.03	0.04	0.07
	Handheld-Right	0.03	0.04	0.07
	Handheld-Top	0.05	0.04	0.09
LTE Band 13 + Bluetooth	Handheld-Left	0.12	0.04	0.16
	Handheld-Right	0.08	0.04	0.12
	Handheld-Top	0.22	0.04	0.26
LTE Band 26 + Bluetooth	Handheld-Left	0.09	0.04	0.13
	Handheld-Right	0.12	0.04	0.16
	Handheld-Top	0.13	0.04	0.17

Mode(SAR1+SAR2)	Position	Reported 10-g SAR(W/kg)		Σ10-g SAR < 4.0W/kg
		SAR1	SAR2	
GSM 850+ WLAN	Handheld-Left	0.24	/	/
	Handheld-Right	0.26	0.35	**0.61**
	Handheld-Top	0.34	0.10	0.44
PCS1900 + WLAN	Handheld-Left	0.03	/	/
	Handheld-Right	0.04	0.35	0.39
	Handheld-Top	0.04	0.10	0.14
WCDMA Band 2 + WLAN	Handheld-Left	0.05	/	/
	Handheld-Right	0.05	0.35	0.40
	Handheld-Top	0.17	0.10	0.27
WCDMA Band 4 + WLAN	Handheld-Left	0.03	/	/
	Handheld-Right	0.05	0.35	0.40
	Handheld-Top	0.09	0.10	0.19
WCDMA Band 5 + WLAN	Handheld-Left	0.20	/	/
	Handheld-Right	0.15	0.35	0.50
	Handheld-Top	0.19	0.10	0.29
LTE Band 2 + WLAN	Handheld-Left	0.09	/	/
	Handheld-Right	0.07	0.35	0.42
	Handheld-Top	0.06	0.10	0.16
LTE Band 4 + WLAN	Handheld-Left	0.03	/	/
	Handheld-Right	0.02	0.35	0.37
	Handheld-Top	0.13	0.10	0.23
LTE Band 5 + WLAN	Handheld-Left	0.08	/	/
	Handheld-Right	0.10	0.35	0.45
	Handheld-Top	0.17	0.10	0.27
LTE Band 7 + WLAN	Handheld-Left	0.03	/	/
	Handheld-Right	0.03	0.35	0.38
	Handheld-Top	0.05	0.10	0.15
LTE Band 13 + WLAN	Handheld-Left	0.12	/	/
	Handheld-Right	0.08	0.35	0.43
	Handheld-Top	0.22	0.10	0.32
LTE Band 26 + WLAN	Handheld-Left	0.09	/	/
	Handheld-Right	0.12	0.35	0.47
	Handheld-Top	0.13	0.10	0.23

Note:

Σ10-g SAR is lower than 4.0W/kg, test for simultaneous mode is not required.

SAR Plots

Please Refer to the Attachment.

APPENDIX A MEASUREMENT UNCERTAINTY

The uncertainty budget has been determined for the measurement system and is given in the following Table.

Measurement uncertainty evaluation for IEEE1528-2013 SAR test

Source of uncertainty	Tolerance/ uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.7	R	√3	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	√3	0	0	0.0	0.0
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Linearity	4.7	R	√3	1	1	2.7	2.7
Detection limits	1.0	R	√3	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions–reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Post-processing	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Device holder uncertainty	6.3	N	1	1	1	6.3	6.3
Drift of output power	5.0	R	√3	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Liquid conductivity target)	5.0	R	√3	0.64	0.43	1.8	1.2
Liquid conductivity meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity target)	5.0	R	√3	0.6	0.49	1.7	1.4
Liquid permittivity meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Combined standard uncertainty		RSS				12.2	12.0
Expanded uncertainty 95 % confidence interval)						24.3	23.9

Measurement uncertainty evaluation for IEC62209-2 SAR test

Source of uncertainty	Tolerance/ uncertainty ± %	Probability distribution	Divisor	ci (1 g)	ci (10 g)	Standard uncertainty ± %, (1 g)	Standard uncertainty ± %, (10 g)
Measurement system							
Probe calibration	6.55	N	1	1	1	6.6	6.6
Axial Isotropy	4.7	R	√3	1	1	2.7	2.7
Hemispherical Isotropy	9.6	R	√3	0	0	0.0	0.0
Linearity	4.7	R	√3	1	1	2.7	2.7
Modulation Response	0.0	R	√3	1	1	0.0	0.0
Detection limits	1.0	R	√3	1	1	0.6	0.6
Boundary effect	1.0	R	√3	1	1	0.6	0.6
Readout electronics	0.3	N	1	1	1	0.3	0.3
Response time	0.0	R	√3	1	1	0.0	0.0
Integration time	0.0	R	√3	1	1	0.0	0.0
RF ambient conditions – noise	1.0	R	√3	1	1	0.6	0.6
RF ambient conditions–reflections	1.0	R	√3	1	1	0.6	0.6
Probe positioner mech. Restrictions	0.8	R	√3	1	1	0.5	0.5
Probe positioning with respect to phantom shell	6.7	R	√3	1	1	3.9	3.9
Post-processing	2.0	R	√3	1	1	1.2	1.2
Test sample related							
Device holder Uncertainty	6.3	N	1	1	1	6.3	6.3
Test sample positioning	2.8	N	1	1	1	2.8	2.8
Power scaling	4.5	R	√3	1	1	2.6	2.6
Drift of output power	5.0	R	√3	1	1	2.9	2.9
Phantom and set-up							
Phantom uncertainty (shape and thickness tolerances)	4.0	R	√3	1	1	2.3	2.3
Algorithm for correcting SAR for deviations in permittivity and conductivity	1.9	N	1	1	0.84	1.1	0.9
Liquid conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1
Liquid permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2
Temp. unc. - Conductivity	1.7	R	√3	0.78	0.71	0.8	0.7
Temp. unc. - Permittivity	0.3	R	√3	0.23	0.26	0.0	0.0
Combined standard uncertainty		RSS				12.2	12.1
Expanded uncertainty 95 % confidence interval)						24.5	24.2

APPENDIX B EUT TEST POSITION PHOTOS

Please Refer to the Attachment.

APPENDIX C CALIBRATION CERTIFICATES

Please Refer to the Attachment.

******* END OF REPORT *******