FCC SAR Test Report

Applicant:	Sony Corporation
EUT Description:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax and NFC and GNSS
Brand:	Sony
FCC ID:	PY7-35087R
Standards:	FCC 47CFR §2.1093
Date of Receipt:	2025/03/07
Date of Test:	2025/04/12 to 2025/05/20
Date of Issue:	2025/06/18

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.

ACCREDITED
CERTIFICATE #7088.01

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Approved By:

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Revision History

Rev.	Issue Date	Description	Revised by
01	2025/06/18	Original	Li Wei

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1 Summary of Test Results

Band	Highest SAR(W/kg)			
	Head (1g)	Body-worn (1g)	Hotspot (1g)	Product specific (10g)
GSM850	0.10	0.23	0.23	-
GSM1900	0.04	0.23	0.23	-
WCDMA Band IV	0.05	0.28	0.28	-
WCDMA Band V	0.09	0.32	0.32	-
LTE Band 4	0.05	0.29	0.29	-
LTE Band 12	0.11	0.29	**0.39**	-
LTE Band 41	0.02	0.32	0.32	-
WI-FI (2.4GHz)	0.23	0.33	0.33	-
WI-FI (5GHz)	**0.40**	**0.47**	0.32	**0.34**
BT	0.24	0.28	0.28	-
NFC	-	-	-	0.02
Highest Simultaneous Transmission SAR (W/kg)				
Scenario	**Head (1g)**	**Body-worn (1g)**	**Hotspot (1g)**	**Product specific (10g)**
Summed SAR	0.66	1.07	0.92	0.34

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2 Guidance Applied

FCC 47CFR §2.1093
ANSI/IEEE C95.1-1992
IEEE 1528-2013
FCC KDB 941225 D01 3G SAR Measurement Procedures v03r01
FCC KDB 941225 D05 SAR for LTE Devices v02r05
FCC KDB 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02
FCC KDB 941225 D06 Hotspot Mode SAR v02r01
FCC KDB 248227 D01 SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02
FCC KDB 648474 D04 Handset SAR v01r03
FCC KDB 447498 D01 General RF Exposure Guidance v06
FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
FCC KDB 865664 D02 RF Exposure Reporting v01r02
FCC KDB 616217 D04 SAR for laptop and tablets v01r02

3 Lab Information

3.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014
Tel.: +86-755-27212361
Contact Email: info@towewireless.com

3.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)
This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

ISED CAB identifier: CN0152
Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0152
Company Number: 31000

3.3 Ambient Condition

Temperature: 18°C~25°C
Relative Humidity: 30%~75%

4 Client Information

4.1 Applicant

Applicant:	Sony Corporation
Address:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

4.2 Manufacturer

Manufacturer:	Sony Corporation
Address:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

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5 Product Information

EUT Description	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac/ax and NFC and GNSS	
Brand	Sony	
Hardware Version	A	
Software Version	0.113 (Lead Model) 0.117 (This Model)	
SN.:	HQ652D013F (Lead Model) HQ652D000C (Lead Model) HQ652D025D (This Model) HQ654A0262 (This Model)	
Device Capabilities:		
Band	Frequency Range (MHz)	Modulation Type
GSM850	824~849	GSM, GPRS, EGPRS
GSM1900	1850~1910	
WCDMA Band IV	1710~1755	RMC/AMR, HSDPA, HSUPA, DC-HSDPA
WCDMA Band V	824~849	
LTE Band 4	1710~1755	QPSK 16QAM 64QAM
LTE Band 12	699~716	
LTE Band 41	2496~2690	
NFC	13.56	ASK
Bluetooth	2400~2483.5	GFSK, π/4DQPSK, 8DPSK
Wi-Fi 2.4G	2412~2462	802.11b/g/n/11ax
Wi-Fi 5G	5150~5250	802.11a/n/ac/ax
	5250~5350	
	5470~5725	
	5725~5850	
Antenna Type	☐ External, ☒ Integrated	
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user's manual for more detailed description.		

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5.1 Antenna Locations

The detailed antenna location information can refer to Appendix D.

Note:

1) The overall dimensions of this device are > 9 x 5 cm. A diagram showing the location of the device antennas can be found in DUT Antenna Diagram & SAR Test Setup Photographs Appendix D. Since the display diagonal dimensions of this device is > 150 mm and <200 mm, it is considered a "phablet." Exact antenna dimensions and separation distances are shown in the Appendix D.
2) SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hotspot Mode.

According to the distance between antennas and the sides of the EUT we can draw the conclusion that:

EUT Sides for SAR Testing							
Antenna	Exposure Conditions	Front	Back	Left	Right	Top	Bottom
Ant0	Hotspot Product specific	Yes	Yes	Yes	Yes	No	Yes
Ant1	Hotspot Product specific	Yes	Yes	Yes	No	No	Yes
Ant6	Hotspot Product specific	Yes	Yes	Yes	No	Yes	No
Ant7	Hotspot Product specific	Yes	Yes	No	Yes	Yes	No

Table 1： EUT Sides for SAR Test

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6 Reuse Of Test Data

6.1 Introduction

According to the manufacturer the major change between FCC ID: PY7-63277Y (Lead Model), and FCC ID: PY7-35087R (This Model) is changing band configuration by software, The FCC ID: PY7-63277Y (Lead Model) conducted test data shall remain representative of FCC ID: PY7-35087R. So, FCC ID: PY7-35087R (This Model) leverages conducted test data from FCC ID: PY7-63277Y (Lead Model).

6.2 Device Differences

The equipment under test (EUT) in this filing FCC ID: PY7-35087R (This Model) and the reference device certified under FCC ID: PY7-63277Y (Lead Model) share a common design. The components used for 2.4GHz and 5GHz Wi-Fi and BT and NFC, including antennas and output power are identical between the EUT and reference device.

6.3 Spot Check Verification Data

In this filing, the worst-case data and spot checks were tested on the EUT as noted below, against the reference device. All the necessary test cases were performed to verify the variant EUT is still in compliance with the spot-checked results to the reference device.

According to 484596 Referencing Test Data v03, Spot checks of the following tests were performed:

Test	Reference (PY7-63277Y) Worst-Case TER_R	Variant Test (PY7-35087R) TER_V	Relative Difference d_{TER}	Spot-Check Parameters		Pass Criterion
				M	$d_{TERmax}(M)$	
WIFI 2.4G Ant6 Head	0.145	0.131	0.097	0.855	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G Ant6 Body worn	0.139	0.132	0.050	0.861	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G Ant6 Hotspot	0.139	0.132	0.050	0.861	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G Ant7 Head	0.052	0.059	0.135	0.948	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G Ant7 Body worn	0.186	0.145	0.220	0.814	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G Ant7 Hotspot	0.186	0.145	0.220	0.814	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G MIMO Head	0.126	0.112	0.111	0.874	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G MIMO Body worn	0.204	0.171	0.162	0.796	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 2.4G MIMO Hotspot	0.204	0.171	0.162	0.796	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant6 Head	0.253	0.207	0.182	0.747	0.498	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass

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WIFI 5G Ant6 Body worn	0.296	0.290	0.020	0.704	0.454	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant6 Hotspot	0.201	0.200	0.005	0.799	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant6 Product specific 10g SAR	0.085	0.084	0.012	0.915	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant7 Head	0.031	0.031	0.000	0.969	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant7 Body worn	0.048	0.057	0.188	0.952	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant7 Hotspot	0.046	0.066	0.435	0.954	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G Ant7 Product specific 10g SAR	0.012	0.011	0.083	0.988	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G MIMO Head	0.211	0.162	0.232	0.789	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G MIMO Body worn	0.226	0.170	0.248	0.774	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G MIMO Hotspot	0.155	0.192	0.239	0.845	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
WIFI 5G MIMO Product specific 10g SAR	0.072	0.084	0.167	0.928	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
BT Ant6 Head	0.148	0.124	0.162	0.852	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
BT Ant6 Body worn	0.173	0.143	0.173	0.827	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
BT Ant6 Hotspot	0.173	0.143	0.173	0.827	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
BT Ant7 Head	0.023	0.033	0.435	0.977	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
BT Ant7 Body worn	0.094	0.136	0.447	0.906	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
BT Ant7 Hotspot	0.094	0.136	0.447	0.906	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass
NFC	0.006	0.005	0.167	0.994	0.5	TER<1 and $d_{TER} < d_{TERmax}(M)$ Pass

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7 RF Exposure Limits

Human Exposure	Uncontrolled Environment General Population (W/kg) or (mW/g)	Controlled Environment Occupational (W/kg) or (mW/g)
Spatial Peak SAR[1] (Brain/Trunk)	1.6	8.0
Spatial Average SAR[2] (Whole Body)	0.08	0.4
Spatial Peak SAR[3] (Hands/Feet/Ankle/Wrist)	4.0	20.0

Note:

1, The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

2, The Spatial Average value of the SAR averaged over the whole body.

3, The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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

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8 Introduction

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

8.1 SAR Definition

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

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

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

$$\mathrm{SAR} = \frac{\sigma E^2}{\rho}$$

Where:

σ is the conductivity of the tissue material (S/m)

ρ is the mass density of the tissue material (kg/m^3)

E is the RMS electrical field strength (V/m)

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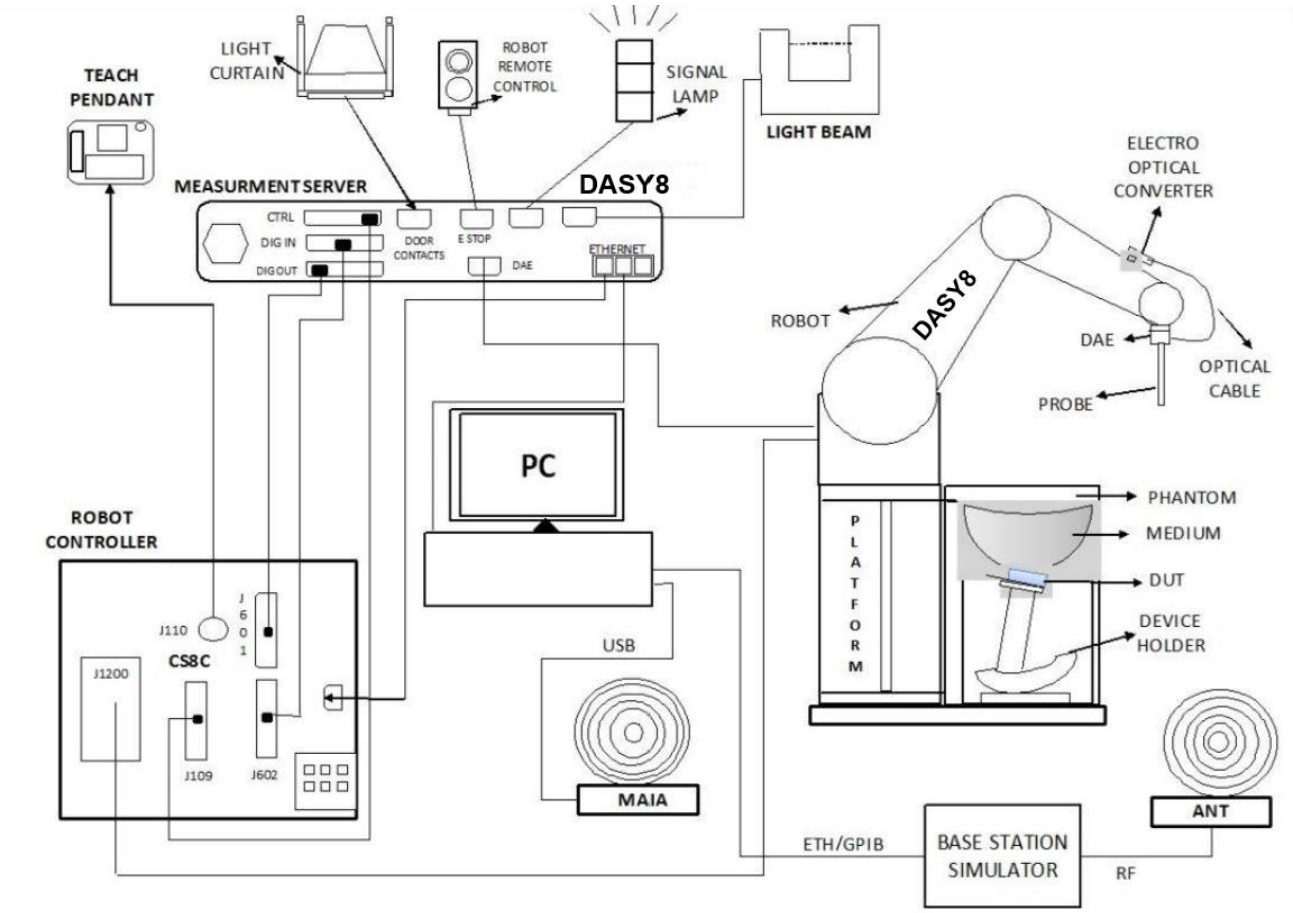
9 SAR Measurements System

9.1 The SAR Measurement Set-up

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Windows 11 and the DASY8 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.

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9.2 E-Field Probe

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
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

9.3 Data Acquisition Electronics (DAE)

	The data acquisition electronics (DAE) consists 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 and 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 input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

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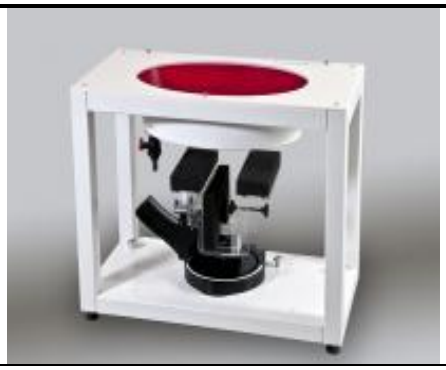
9.4 Phantom

SAM Twin Phantom:

Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	Approx. 25 liters	
Wooden Support	SPEAG standard phantom table	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

ELI Phantom:

Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	
Wooden Support	SPEAG standard phantom table	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

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9.5 Device Holder

The SAR measured in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of ± 0.5mm would produce uncertainty in the SAR of ±20%. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions at which the devices must be measured are defined by the standards. The DASY8 device holder along with the associated adaptors / options is designed to accommodate different types & sizes (laptops, tablets, phones) of test devices and yet provide accurate and repeatable positioning as described in the test standards.

The device holder is available in two configurations (see Figure 3.13.1): for hand held transmitters (mobile phones) – MD4HHTV5 – Mounting Device for Hand-Held Transmitters and for Body-Worn transmitters – MD4LAP5 – Mounting Device for laptops and other body worn transmitters.

(a) MD4HHTV5

(b) MD4LAPV5

Figure 3.13.1: Mounting Device for Hand-Held Devices and Laptop / Body-Worn Devices

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9.6 Measurement procedure

9.6.1 Power reference measurement

The Power Reference Measurement and Power Drift Measurement jobs are useful jobs for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

9.6.2 Area scan

Measurement procedures for evaluating SAR from wireless handsets typically start with a coarse measurement grid to determine the approximate location of the local peak SAR values. This is known as the area-scan procedure. In addition, identify the positions of any local maxima with SAR values within 2 dB of the maximum value, and that will not be within the zoom scan of other peaks. Additional zoom scans shall be measured for such peaks only when the primary peak is within 2 dB of the SAR compliance limit.

Area scan parameters extracted from FCC KDB 865664 D01.

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

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9.6.3 Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

9.6.4 Power Drift Measurement

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. Several drift measurements are possible for one reference measurement. This allows a user to monitor the power drift of the device under test that must remain within a maximum variation of ±5%.

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10 Test Equipment list

Manufacturer	Equipment Name	Model	Serial Number	Calibration Date	Due Date of calibration
SPEAG	ELI	ELI V8.0	2222	NCR	NCR
SPEAG	Twin Phantom	SAM	2168	NCR	NCR
SPEAG	E-Field Probe	EX3DV4	7858	2025/01/15	2026/04/14
SPEAG	E-Field Probe	EX3DV4	7858	2025/02/20	2026/02/19
SPEAG	E-Field Probe	EX3DV4	7812	2024/06/25	2025/06/24
SPEAG	E-Field Probe	EX3DV4	3624	2025/01/15	2026/01/14
SPEAG	Data Acquisition Electronics	DAE4	1846	2024/12/10	2025/12/09
SPEAG	System Validation Kits	CLA13	1043	2024/01/03	2027/01/02
SPEAG	System Validation Kits	D750V3	1231	2023/05/04	2026/05/03
SPEAG	System Validation Kits	D835V2	4d302	2023/02/06	2026/02/05
SPEAG	System Validation Kits	D1750V2	1115	2023/03/23	2026/03/22
SPEAG	System Validation Kits	D1950V3	1266	2023/01/27	2026/01/26
SPEAG	System Validation Kits	D2450V2	1099	2023/02/02	2026/02/01
SPEAG	System Validation Kits	D2600V2	1094	2023/03/23	2026/03/22
SPEAG	System Validation Kits	D5GHzV2	1371	2023/02/03	2026/02/02
SPEAG	Dielectric parameter probes	DAK3.5	1341	2024/07/15	2025/07/14
Agilent	Network Analyzer	E5071B	MY42302220	2025/03/11	2026/03/10
Anritsu	Radio Communication Analyzer	MT8821C	6262170463	2025/03/11	2026/03/10
Anritsu	Radio Communication Analyzer	MT8821C	6261991091	2025/03/11	2026/03/10
R&S	Wideband Radio Communication Tester	CMW500	171955	2024/05/31	2025/05/30
Talent Microwave	Directional Coupler	TC-05180-10S	220420003	NCR	NCR
R&S	Signal Generator	SMR20	100648	2025/03/11	2026/03/10
QiJi	Preamplifier	YX28982302	TOWE-EQ-SR-020	NCR	NCR
QiJi	Preamplifier	YX28982301	TOWE-EQ-SR-021	NCR	NCR
R&S	Power Sensor	NRP-Z21	101651	2025/03/11	2026/03/10
R&S	Power Sensor	NRP-Z21	104189	2025/03/11	2026/03/10
HiSiDiKe	Thermometer	TP300	TOWE-EQ-SR-023	2025/03/12	2026/03/11
BingYu	Temperature and Humidity Indicator	HTC-1	TOWE-EQ-SR-024	2025/03/13	2026/03/12

Note:

1. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged or repaired during the interval.

2. The justification data of dipole can be found in Appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

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11 SAR measurement variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 or 2 W/kg (1-g or 10-g respectively); steps2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 or 2 W/kg (1-g or 10-g respectively), 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 or 3.6W/kg (~ 10% from the 1-g or 10-g respective SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20

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12 Description of Test Position

12.1 Ear Reference Point

Figure 11-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 11-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front), also called the Reference Pivoting Line, is not perpendicular to the reference plane (see Figure 11-1). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning.

12.2 Handset Reference Point

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The device under test was placed in a normal operating position with the acoustic output located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (see Figure 11-3). The acoustic output was than located at the same level as the center of the ear reference point. The device under test was positioned so that the “vertical centerline” was bisecting the front surface of the handset at its top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.

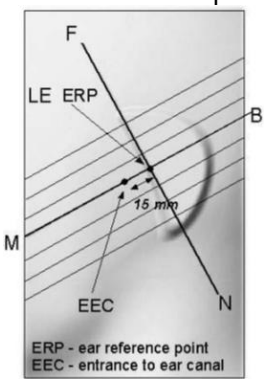

Figure 11-1: Close-up side view of phantom showing the ear region, N-F and B-M lines, and seven cross-sectional plane locations.

Figure 11-2: Front, back and side view of SAM Twin Phantom.

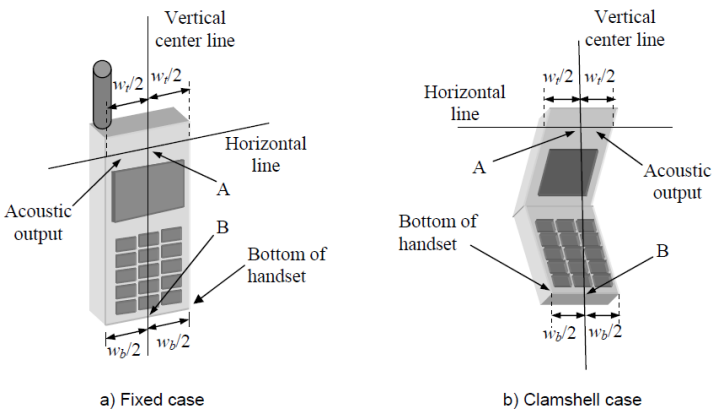

Figure 11-3: Handset vertical and horizontal reference lines

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12.3 Definition of the cheek position

The test device was positioned with the device close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 11-4), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

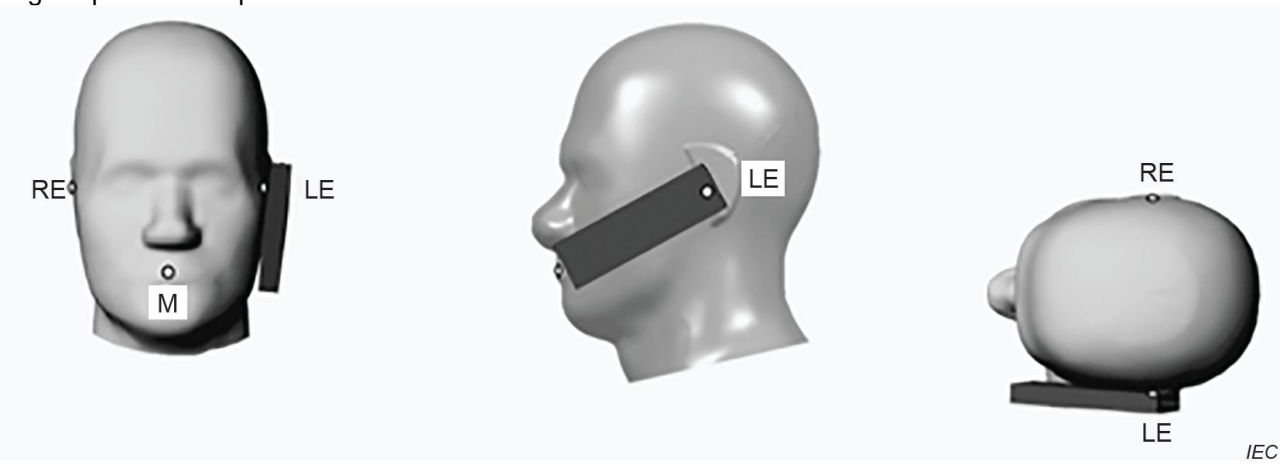

Figure 11-4: Front, Side and Top View of Cheek or Touch Position

1) Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 11-4), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
2) Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
3) While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
4) Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
5) While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 11-4. The actual rotation angles should be documented in the test report.

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12.4 Definition of the tilt position

Figure 11-5. shows tilted position. Place the device in the cheek position. Then while maintaining the orientation of the device, retract the device parallel to the reference plane far enough away from the phantom to enable a rotation of the device by 15°.

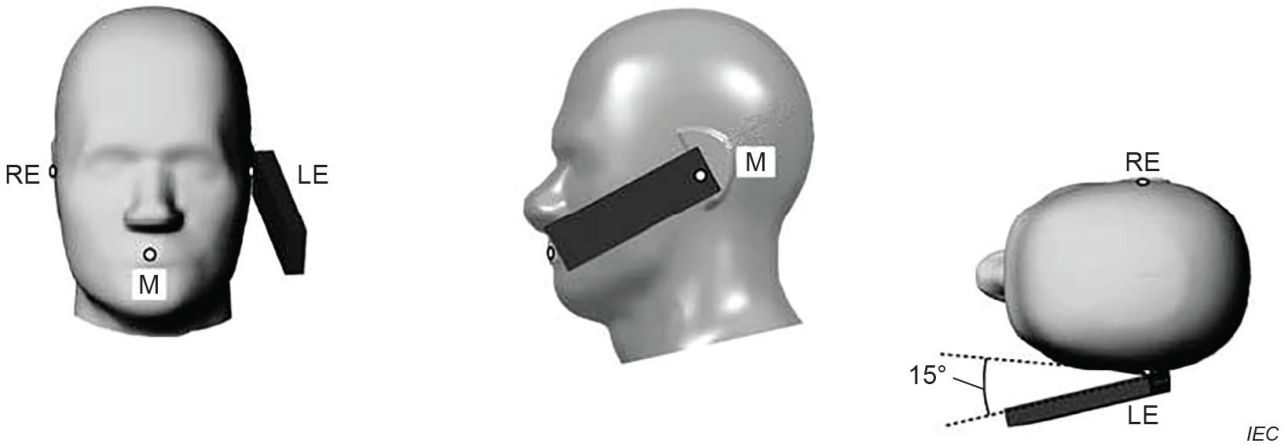

Figure 11-5: Front, Side and Top View of Tilt 15° Position

12.5 Body-worn accessory exposure conditions

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 11-6). Per FCC KDB Publication 648474 D04, Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB Publication 447498 D01should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. 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 is tested.

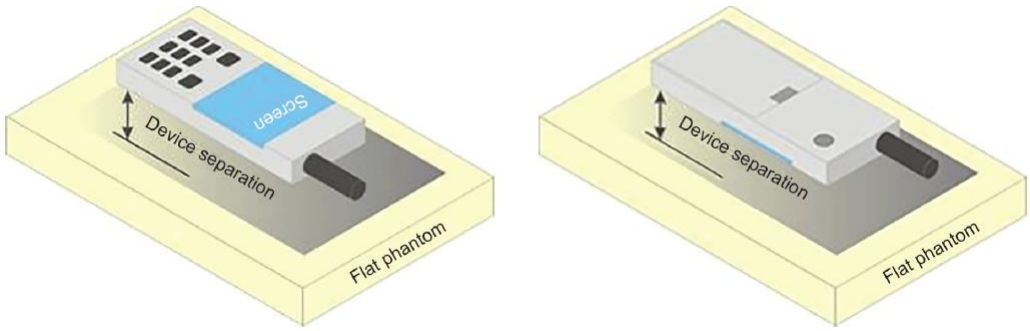

Figure 11-6: Test positions for body-worn devices

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12.6 Wireless Router exposure conditions

Some battery-operated handsets have the capability to transmit and receive user data through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 5 mm from the front, back and edges of the device containing transmitting antennas within 2.5 cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often
do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01 procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12.7 Product Specific 10g SAR exposure conditions

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions, i.e., hands, wrists, feet and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user’s body, SAR compliance for the body is also required. The 1g body and 10g extremity SAR Exclusion Thresholds found in KDB Publication 447498 D01 should be applied to determine SAR test requirements.

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear. the phablets procedures outlined in KDB Publication 648474 D04 v01r03 should be applied to evaluate SAR compliance. A device marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance. In addition to the normally required head and body-worm accessory SAR test procedures required for handsets, the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna ≤25 mm from that surface or edge, in direct contact with the phantom, for 10-g SAR. The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g SAR is required only for the surfaces and edges with hotspot mode scaled to the maximum output power (including tolerance) is 1-g SAR > 1.2 W/kg.

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13 System Verification

13.1 Tissue Verification

The Conductivity (σ) and Permittivity (ρ) are listed in bellow table. The temperature variation of the Tissue Simulate Liquids was 22±2°C, the liquid depth of the ear reference point or the flat phantom was at least 15 cm (which is shown in Figure 12-1/12-2).

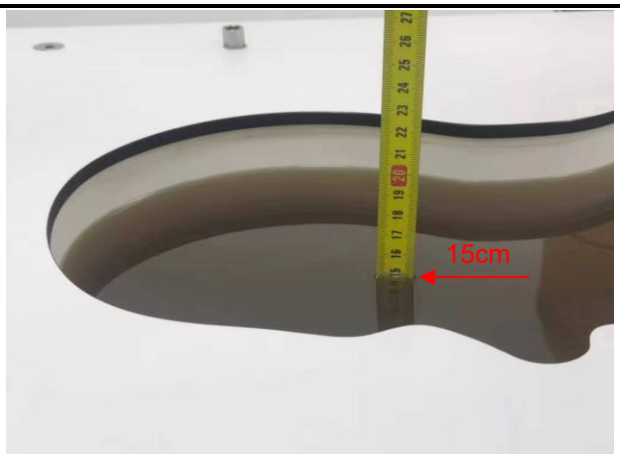

Figure 12-1 Liquid depth in the Head Phantom

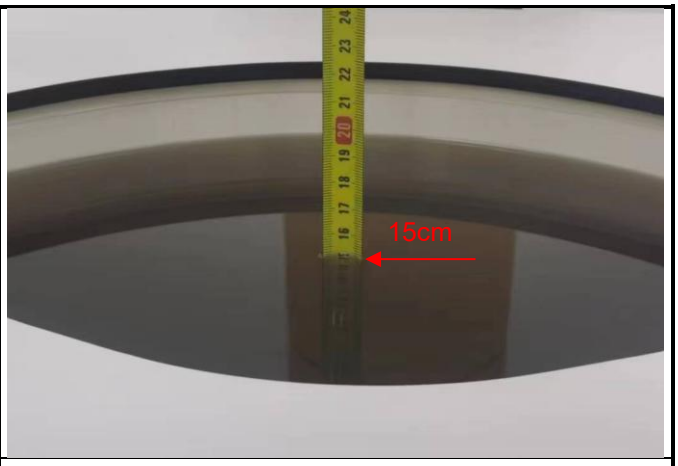

Figure 12-2 Liquid depth in the Flat Phantom

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Target Tissue		Measured Tissue		Deviation (Limit ±5%)		Date
			Permittivity ε_r	Conductivity σ(S/m)	Permittivity ε_r	Conductivity σ(S/m)	$\Delta\varepsilon_r$	Δσ	
13	Head	21.9	55.00	0.75	56.100	0.765	2.00%	2.00%	2025/05/06
750	Head	22.1	41.90	0.89	43.200	0.893	3.10%	0.34%	2025/04/26
835	Head	22.0	41.50	0.90	42.600	0.907	2.65%	0.78%	2025/04/22
835	Head	22.1	41.50	0.90	41.800	0.898	0.72%	-0.22%	2025/05/06
1750	Head	21.9	40.10	1.37	41.000	1.410	2.24%	2.92%	2025/04/21
1950	Head	22.0	40.00	1.40	40.500	1.460	1.25%	4.29%	2025/04/21
2450	Head	22.2	39.20	1.80	40.800	1.840	4.08%	2.22%	2025/04/23
2600	Head	22.0	39.00	1.96	38.800	2.020	-0.51%	3.06%	2025/04/26
5200	Head	22.1	36.00	4.66	35.800	4.720	-0.56%	1.29%	2025/04/24
5300	Head	22.1	35.90	4.76	35.800	4.830	-0.28%	1.47%	2025/04/24
5600	Head	22.2	35.50	5.07	34.900	5.190	-1.69%	2.37%	2025/04/25
5800	Head	22.2	35.30	5.27	34.800	5.460	-1.42%	3.61%	2025/04/26

Table 2： Measurement Tissue Parameters

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13.2 SAR System Check

Prior to SAR assessment, a SAR system Check measurement was performed to see if the measured SAR was within ±10% from the target SAR values. The System Performance Check Setup in Figure 12-3.

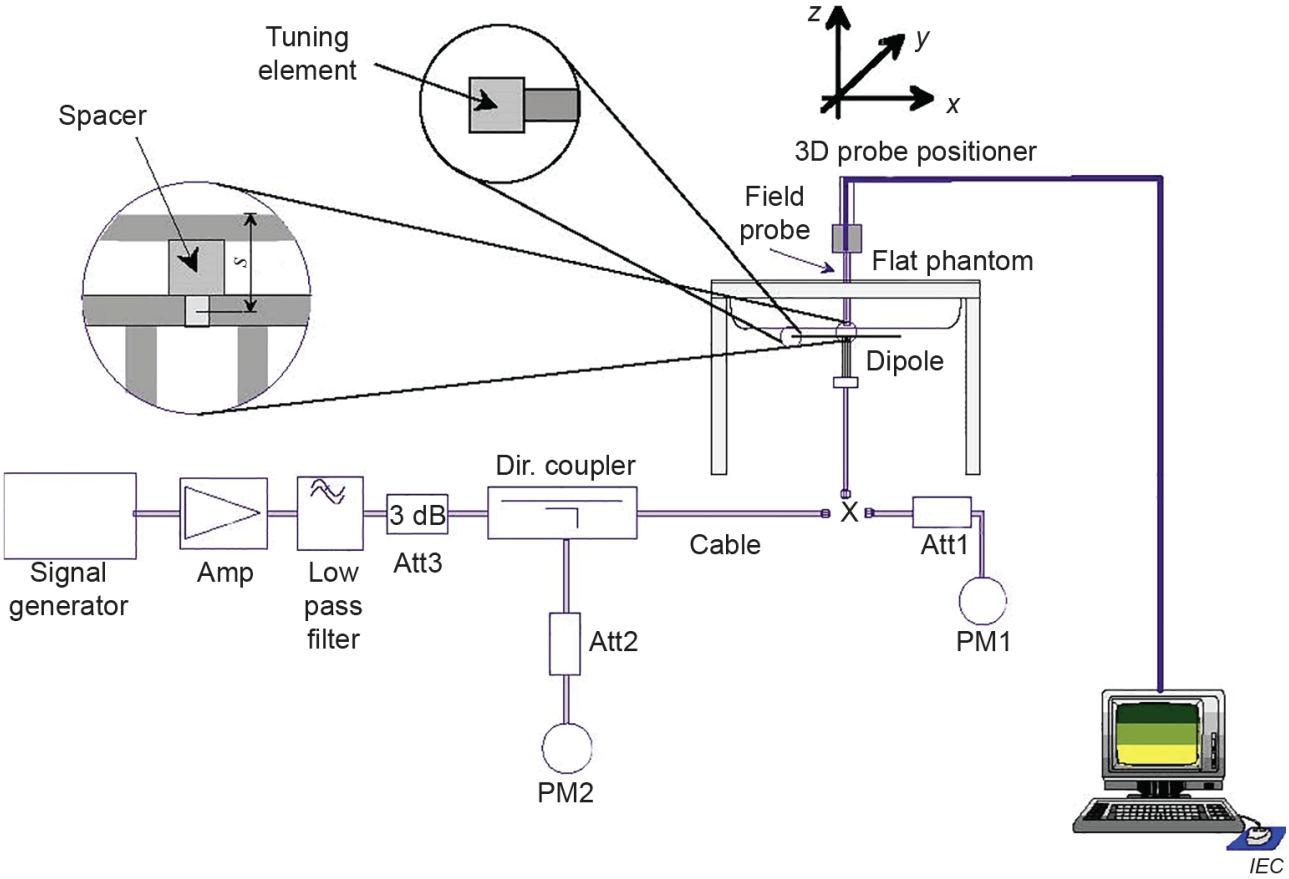

Figure 12-3 System Performance Check Setup

13.2.1 System Check Result

Frequency (MHz)	Tissue Type	Dipole	S/N	Target SAR (1W)		Measured SAR (100mW)		Measured SAR (normalized to 1W)		Deviation (Limit ±10%)		Date
				1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	Δ1g	Δ10g	
13	Head	CLA-13	1043	0.484	0.297	0.050	0.032	0.50	0.32	3.31%	7.74%	2025/05/06
750	Head	D750V3	1231	8.67	5.67	0.865	0.568	8.65	5.68	-0.23%	0.18%	2025/04/26
835	Head	D835V2	4d302	9.78	6.37	0.980	0.635	9.80	6.35	0.20%	-0.31%	2025/04/22
835	Head	D835V2	4d302	9.78	6.37	1.030	0.656	10.30	6.56	5.32%	2.98%	2025/05/06
1750	Head	D1750V2	1115	36.90	19.50	3.760	2.010	37.60	20.10	1.90%	3.08%	2025/04/21
1950	Head	D1950V3	1266	40.60	20.80	4.180	2.160	41.80	21.60	2.96%	3.85%	2025/04/21
2450	Head	D2450V2	1099	51.40	23.90	5.220	2.450	52.20	24.50	1.56%	2.51%	2025/04/23
2600	Head	D2600V2	1094	56.30	25.00	5.630	2.560	56.30	25.60	0.00%	2.40%	2025/04/26
5200	Head	D5GHzV2	1371	78.90	22.40	7.980	2.320	79.80	23.20	1.14%	3.57%	2025/04/24
5300	Head	D5GHzV2	1371	80.90	23.10	8.120	2.350	81.20	23.50	0.37%	1.73%	2025/04/24
5600	Head	D5GHzV2	1371	82.30	23.30	8.310	2.380	83.10	23.80	0.97%	2.15%	2025/04/25
5800	Head	D5GHzV2	1371	79.80	22.40	7.520	2.160	75.20	21.60	-5.76%	-3.57%	2025/04/26

Table 3： SAR System Check Result

13.2.2 Detailed System Check Result

Please see Appendix A

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14 SAR General Measurement Procedures

14.1 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

14.2 SAR Measurement Conditions for GSM

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode.

14.3 SAR Measurement Conditions for UMTS

14.3.1 Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HSDPA, HSPA) are required in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

14.3.2 Head SAR Measurements

SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to AMR configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for 12.2 kbps AMR in 3.4 kbps SRB (signaling radio bearer) using the highest reported SAR configuration in 12.2 kbps RMC for head exposure.

14.3.3 Body SAR Measurements

SAR for body configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spearing code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

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14.3.4 SAR Measurements with Rel. 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using and FRC with H-SET 1 in Sub-test and a 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to release 6 HSPA test procedures. 8.4.5 SAR Measurement with Rel.6 HSUPA The 3G SAR test Reduction Procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, Using H-Set 1 and QPSK for FRC and a 12.2kbps RMC configured in Test Loop Mode 1 and Power Control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

14.3.5 SAR Measurements with Rel. 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

14.3.6 SAR Measurement Conditions for DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

14.3.7 SAR Measurement Conditions for HSPA+(16QAM)

Per KDB 941225D01, SAR is required for Rel. 7 HSPA+ when SAR is required for Rel. 6 HSPA; otherwise, the 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode. Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

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.

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14.4 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C/MT8821C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

14.4.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

14.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

Modulation	Channel bandwidth/Transmission bandwidth						MPR (dB)
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	0
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2
64QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	2
64QAM	> 5	> 4	> 8	> 12	> 16	> 18	3
256QAM	≥1						5

14.4.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

14.4.4 Largest channel bandwidth standalone SAR test requirements

A. QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

B. QPSK with 50% RB allocation

The procedures required for 1 RB allocation in A are applied to measure the SAR for QPSK with 50% RB allocation.

C. QPSK with 100% RB allocation

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 in A and B are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

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D. Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in A, B, and C to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR 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.

14.4.5 Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in 13.4.4 to determine the channels and RB configurations that need SAR testing, then only measure SAR 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.

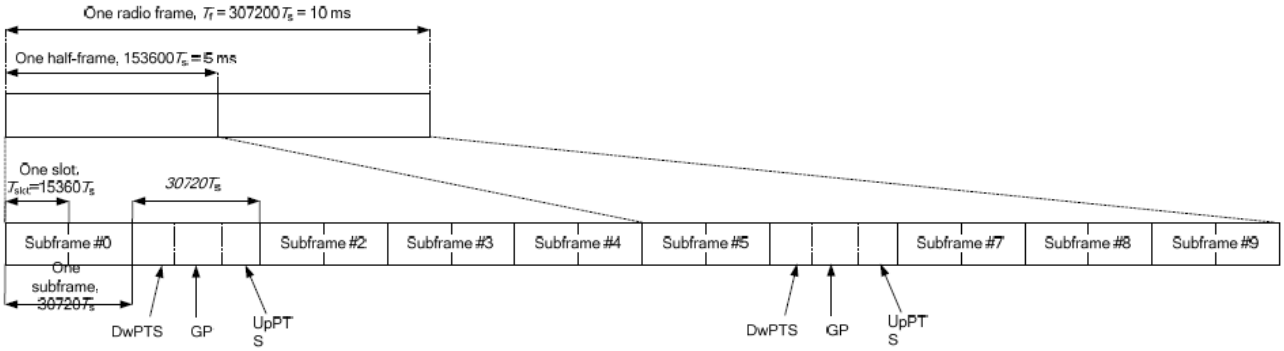
14.4.6 LTE TDD Considerations

For Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

LTE TDD Band support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

Frame structure type 2:



Uplink-downlink configurations

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

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Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	6592. T_s	2192.T_s	2560.T_s	7680.T_s	2192.T_s	2560.T_s
1	19760.T_s			20480.T_s		
2	21952.T_s			23040.T_s		
3	24144.T_s			25600.T_s		
4	26336.T_s			7680.T_s	4384.T_s	5120.T_s
5	6592.T_s	4384.T_s	5120.T_s	20480.T_s		
6	19760.T_s			23040.T_s		
7	21952.T_s			25600.T_s		
8	24144.T_s			-	-	-
9	13168.T_s			-	-	-

Calculated Duty Cycle=[Extended cyclic prefix in uplink x (Ts) x # of S + # of U]/10ms

Uplink-Downlink Configuration	Downlink-to- Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = (5120 x (1/(15000 x 2048)) x 2 + 0.006)/0.01 = 63.33 %
Where
Ts = 1/(15000 x 2048) seconds
HPUE:
Calculated Duty Cycle for Uplink-Downlink Configuration 1:
Calculated Duty Cycle =5120*(1/(15000*2048))*2+0.004)/0.01 = 43.33 %

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14.5 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01 for more details.

A Wi-Fi device must be configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools for SAR measurement.

For WiFi SAR testing, a communication link is set up with some command for WiFi mode test. During the test,at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Per KDB248227 D01, a minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

14.5.1 Initial Test Position Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

1. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
2. When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
3. For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

14.5.2 Initial Test Configuration Procedure

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to reported SAR of the initial test configuration.
For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.
When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until reported SAR is ≤ 1.2 W/kg or all required channels are tested.

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14.5.3 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency Band and aggregated Band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position on procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ⩽ 1.2 W/kg for 1g SAR and ⩽ 3.0 W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

14.5.4 2.4 GHz SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

A) 802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ⩽ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS is that exposure configuration.

2. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

B) 2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB248227 D01). SAR is not required for the following 2.4 GHz OFDM conditions.

1. When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

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.

C) SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 g/n OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

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14.5.5 5 GHz SAR Procedures

14.5.5.1 U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following:

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

14.5.5.2 U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

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14.5.6 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

14.5.7 MIMO SAR Considerations

Per KDB 248227 D01, the simultaneous SAR provisions in KDB 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is <1.6 W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

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15 Conducted Power

Note:
The frame-averaged power is linearly reported the maximum burst averaged power over 8 time slots. The calculated method are shown as below:
The duty cycle “X” of different time slots as below:
1 TX slot is 1/8
2 TX slots is 2/8
3 TX slots is 3/8
4 TX slots is 4/8
Based on the calculation formula: Frame-averaged power = Burst averaged power + 10*1og(X)
So Time slot average factor is as follows：
Frame-averaged power (1 TX slot) = Burst averaged power (1 TX slot) – 9.03
Frame-averaged power (2 TX slots) = Burst averaged power (2 TX slots) – 6.02
Frame-averaged power (3 TX slots) = Burst averaged power (3 TX slots) – 4.26
Frame-averaged power (4 TX slots) = Burst averaged power (4 TX slots) – 3.01

The detailed conducted power table can refer to Appendix E.

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16 SAR Data Summary

General Notes:

1) The Highest Reported SAR Plot refer to Appendix B.

2) Per KDB 447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1g or 10g SAR for the mid-band or highest output power channel is:

- ≤ 0.8W/kg for 1g or 2.0W/kg for 10g respectively, when the transmission band is ≤ 100MHz.
- ≤ 0.6 W/kg or 1.5 W/kg, for 1g or 10g respectively, when the transmission band is between 100 MHz and 200MHz.
- ≤ 0.4 W/kg or 1.0 W/kg, for 1g or 10g respectively, when the transmission band is ≥ 200MHz.

Wi-Fi 5G Notes:

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest reported SAR for a test configuration is ⩽ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration.

2) For Wi-Fi 5G, U-NII-2A (5250-5350 MHz) and U-NII-2C (5470-5725 MHz) bands does not support hotspot function.

When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ⩽ 1.2 W/kg, SAR test for the other 802.11 modes are not required.

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16.1 SAR Measurement Result of GSM850

Ant 0 Test Results								
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power Drift (dB)**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head								
Left cheek	GPRS 3TS	190/836.6	0.066	0.01	23.87	24.30	1.104	0.073
Left tilted	GPRS 3TS	190/836.6	0.037	0.04	23.87	24.30	1.104	0.041
Right cheek	GPRS 3TS	190/836.6	0.091	-0.05	23.87	24.30	1.104	**0.100**
Right tilted	GPRS 3TS	190/836.6	0.047	0.00	23.87	24.30	1.104	0.052
Body worn 5mm								
Front side	GPRS 3TS	190/836.6	0.104	0.08	23.87	24.30	1.104	0.115
Back side	GPRS 3TS	190/836.6	0.206	-0.01	23.87	24.30	1.104	**0.227**
Hotspot 5mm								
Front side	GPRS 3TS	190/836.6	0.104	0.08	23.87	24.30	1.104	0.115
Back side	GPRS 3TS	190/836.6	0.206	-0.01	23.87	24.30	1.104	**0.227**
Left side	GPRS 3TS	190/836.6	0.179	0.03	23.87	24.30	1.104	0.198
Right side	GPRS 3TS	190/836.6	0.092	0.06	23.87	24.30	1.104	0.102
Bottom side	GPRS 3TS	190/836.6	0.139	-0.04	23.87	24.30	1.104	0.153

Table 4： SAR of GSM850.

16.2 SAR Measurement Result of GSM1900

Ant 1 Test Results								
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power Drift (dB)**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head								
Left cheek	GPRS 3TS	661/1880	0.038	-0.11	19.95	20.30	1.084	**0.041**
Left tilted	GPRS 3TS	661/1880	0.023	0.05	19.95	20.30	1.084	0.025
Right cheek	GPRS 3TS	661/1880	0.027	0.08	19.95	20.30	1.084	0.029
Right tilted	GPRS 3TS	661/1880	0.014	-0.02	19.95	20.30	1.084	0.015
Body worn 5mm								
Front side	GPRS 3TS	661/1880	0.144	0.04	19.95	20.30	1.084	0.156
Back side	GPRS 3TS	661/1880	0.215	0.00	19.95	20.30	1.084	**0.233**
Hotspot 5mm								
Front side	GPRS 3TS	661/1880	0.144	0.04	19.95	20.30	1.084	0.156
Back side	GPRS 3TS	661/1880	0.215	0.00	19.95	20.30	1.084	**0.233**
Left side	GPRS 3TS	661/1880	0.117	0.07	19.95	20.30	1.084	0.127
Bottom side	GPRS 3TS	661/1880	0.124	0.01	19.95	20.30	1.084	0.134

Table 5： SAR of GSM1900.

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16.3 SAR Measurement Result of WCDMA Band IV

Ant 1 Test Results								
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head								
Left cheek	RMC	1412/1732.4	0.043	-0.04	14.86	15.50	1.159	**0.050**
Left tilted	RMC	1412/1732.4	0.029	0.03	14.86	15.50	1.159	0.034
Right cheek	RMC	1412/1732.4	0.031	0.08	14.86	15.50	1.159	0.036
Right tilted	RMC	1412/1732.4	0.024	0.01	14.86	15.50	1.159	0.028
Body worn 5mm								
Front side	RMC	1412/1732.4	0.160	0.06	14.86	15.50	1.159	0.185
Back side	RMC	1412/1732.4	0.244	0.02	14.86	15.50	1.159	**0.283**
Hotspot 5mm								
Front side	RMC	1412/1732.4	0.160	0.06	14.86	15.50	1.159	0.185
Back side	RMC	1412/1732.4	0.244	0.02	14.86	15.50	1.159	**0.283**
Left side	RMC	1412/1732.4	0.100	0.09	14.86	15.50	1.159	0.116
Bottom side	RMC	1412/1732.4	0.088	-0.03	14.86	15.50	1.159	0.102

Table 6： SAR of WCDMA Band IV.

16.4 SAR Measurement Result of WCDMA Band V

Ant 0 Test Results								
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power Drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head								
Left cheek	RMC	4182/836.4	0.066	0.09	18.77	19.50	1.183	0.078
Left tilted	RMC	4182/836.4	0.043	-0.03	18.77	19.50	1.183	0.051
Right cheek	RMC	4182/836.4	0.078	0.01	18.77	19.50	1.183	**0.092**
Right tilted	RMC	4182/836.4	0.066	0.07	18.77	19.50	1.183	0.078
Body worn 5mm								
Front side	RMC	4182/836.4	0.108	0.06	18.77	19.50	1.183	0.128
Back side	RMC	4182/836.4	0.270	0.01	18.77	19.50	1.183	**0.319**
Hotspot 5mm								
Front side	RMC	4182/836.4	0.108	0.06	18.77	19.50	1.183	0.128
Back side	RMC	4182/836.4	0.270	0.01	18.77	19.50	1.183	**0.319**
Left side	RMC	4182/836.4	0.077	0.00	18.77	19.50	1.183	0.091
Right side	RMC	4182/836.4	0.150	0.09	18.77	19.50	1.183	0.177
Bottom side	RMC	4182/836.4	0.167	-0.04	18.77	19.50	1.183	0.198

Table 7： SAR of WCDMA Band V.

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16.5 SAR Measurement Result of LTE Band 4

Ant 1 Test Results									
Test position	**BW. (MHz)**	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power Drift (dB)**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head 1RB									
Left cheek	20	QPSK 1_99	20175/1732.5	0.039	0.07	14.53	15.50	1.250	**0.049**
Left tilted	20	QPSK 1_99	20175/1732.5	0.028	0.01	14.53	15.50	1.250	0.035
Right cheek	20	QPSK 1_99	20175/1732.5	0.028	0.09	14.53	15.50	1.250	0.035
Right tilted	20	QPSK 1_99	20175/1732.5	0.020	0.10	14.53	15.50	1.250	0.025
Head 50%RB									
Left cheek	20	QPSK 50_50	20175/1732.5	0.037	0.01	14.45	15.50	1.274	0.047
Left tilted	20	QPSK 50_50	20175/1732.5	0.028	-0.04	14.45	15.50	1.274	0.036
Right cheek	20	QPSK 50_50	20175/1732.5	0.029	0.08	14.45	15.50	1.274	0.037
Right tilted	20	QPSK 50_50	20175/1732.5	0.020	0.02	14.45	15.50	1.274	0.025
Body worn 5mm 1RB									
Front side	20	QPSK 1_99	20175/1732.5	0.144	0.05	14.53	15.50	1.250	0.180
Back side	20	QPSK 1_99	20175/1732.5	0.231	-0.01	14.53	15.50	1.250	**0.289**
Body worn 5mm 50%RB									
Front side	20	QPSK 50_50	20175/1732.5	0.147	0.06	14.45	15.50	1.274	0.187
Back side	20	QPSK 50_50	20175/1732.5	0.213	-0.03	14.45	15.50	1.274	0.271
Hotspot 5mm 1RB									
Front side	20	QPSK 1_99	20175/1732.5	0.144	0.05	14.53	15.50	1.250	0.180
Back side	20	QPSK 1_99	20175/1732.5	0.231	-0.01	14.53	15.50	1.250	**0.289**
Left side	20	QPSK 1_99	20175/1732.5	0.090	0.04	14.53	15.50	1.250	0.113
Bottom side	20	QPSK 1_99	20175/1732.5	0.098	0.01	14.53	15.50	1.250	0.123
Hotspot 5mm 50%RB									
Front side	20	QPSK 50_50	20175/1732.5	0.147	0.06	14.45	15.50	1.274	0.187
Back side	20	QPSK 50_50	20175/1732.5	0.213	-0.03	14.45	15.50	1.274	0.271
Left side	20	QPSK 50_50	20175/1732.5	0.091	0.07	14.45	15.50	1.274	0.116
Bottom side	20	QPSK 50_50	20175/1732.5	0.098	0.01	14.45	15.50	1.274	0.125

Table 8： SAR of LTE Band 4.

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16.6 SAR Measurement Result of LTE Band 12

Ant 0 Test Results									
Test position	**BW. (MHz)**	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power Drift (dB)**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head 1RB									
Left cheek	10	QPSK 1_0	23095/707.5	0.079	0.08	21.83	22.50	1.167	0.092
Left tilted	10	QPSK 1_0	23095/707.5	0.041	0.00	21.83	22.50	1.167	0.048
Right cheek	10	QPSK 1_0	23095/707.5	0.095	0.01	21.83	22.50	1.167	**0.111**
Right tilted	10	QPSK 1_0	23095/707.5	0.060	-0.06	21.83	22.50	1.167	0.070
Head 50%RB									
Left cheek	10	QPSK 25_13	23095/707.5	0.079	0.07	21.82	22.50	1.169	0.092
Left tilted	10	QPSK 25_13	23095/707.5	0.043	0.02	21.82	22.50	1.169	0.050
Right cheek	10	QPSK 25_13	23095/707.5	0.093	0.09	21.82	22.50	1.169	0.109
Right tilted	10	QPSK 25_13	23095/707.5	0.058	0.10	21.82	22.50	1.169	0.068
Body worn 5mm 1RB									
Front side	10	QPSK 1_0	23095/707.5	0.086	0.03	21.83	22.50	1.167	0.100
Back side	10	QPSK 1_0	23095/707.5	0.251	-0.08	21.83	22.50	1.167	**0.293**
Body worn 5mm 50%RB									
Front side	10	QPSK 25_13	23095/707.5	0.088	0.01	21.82	22.50	1.169	0.103
Back side	10	QPSK 25_13	23095/707.5	0.225	-0.05	21.82	22.50	1.169	0.263
Hotspot 5mm 1RB									
Front side	10	QPSK 1_0	23095/707.5	0.086	0.03	21.83	22.50	1.167	0.100
Back side	10	QPSK 1_0	23095/707.5	0.251	-0.08	21.83	22.50	1.167	0.293
Left side	10	QPSK 1_0	23095/707.5	0.171	0.06	21.83	22.50	1.167	0.200
Right side	10	QPSK 1_0	23095/707.5	0.330	-0.02	21.83	22.50	1.167	**0.385**
Bottom side	10	QPSK 1_0	23095/707.5	0.095	0.00	21.83	22.50	1.167	0.111
Hotspot 5mm 50%RB									
Front side	10	QPSK 25_13	23095/707.5	0.088	0.01	21.82	22.50	1.169	0.103
Back side	10	QPSK 25_13	23095/707.5	0.225	-0.05	21.82	22.50	1.169	0.263
Left side	10	QPSK 25_13	23095/707.5	0.172	0.07	21.82	22.50	1.169	0.201
Right side	10	QPSK 25_13	23095/707.5	0.286	0.03	21.82	22.50	1.169	0.334
Bottom side	10	QPSK 25_13	23095/707.5	0.096	0.09	21.82	22.50	1.169	0.112

Table 9： SAR of LTE Band 12.

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16.7 SAR Measurement Result of LTE Band 41

Ant 0 Test Results										
Test position	**BW. (MHz)**	**Mode**	**Duty Cycle**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power Drift (dB)**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head 1RB										
Left cheek	20	QPSK 1_99	1:1.58	41490/2680	0.019	0.08	15.62	16.50	1.225	**0.023**
Left tilted	20	QPSK 1_99	1:1.58	41490/2680	0.006	0.03	15.62	16.50	1.225	0.007
Right cheek	20	QPSK 1_99	1:1.58	41490/2680	0.011	-0.06	15.62	16.50	1.225	0.013
Right tilted	20	QPSK 1_99	1:1.58	41490/2680	0.009	0.00	15.62	16.50	1.225	0.011
Head 50%RB										
Left cheek	20	QPSK 50_50	1:1.58	41490/2680	0.014	0.07	15.61	16.50	1.227	0.017
Left tilted	20	QPSK 50_50	1:1.58	41490/2680	0.007	0.00	15.61	16.50	1.227	0.009
Right cheek	20	QPSK 50_50	1:1.58	41490/2680	0.010	0.03	15.61	16.50	1.227	0.012
Right tilted	20	QPSK 50_50	1:1.58	41490/2680	0.010	-0.04	15.61	16.50	1.227	0.012
Body worn 5mm 1RB										
Front side	20	QPSK 1_99	1:1.58	41490/2680	0.097	0.08	15.62	16.50	1.225	0.119
Back side	20	QPSK 1_99	1:1.58	41490/2680	0.264	-0.11	15.62	16.50	1.225	**0.323**
Body worn 5mm 50%RB										
Front side	20	QPSK 50_50	1:1.58	41490/2680	0.096	0.03	15.61	16.50	1.227	0.118
Back side	20	QPSK 50_50	1:1.58	41490/2680	0.200	0.06	15.61	16.50	1.227	0.245
Hotspot 5mm 1RB										
Front side	20	QPSK 1_99	1:1.58	41490/2680	0.097	0.08	15.62	16.50	1.225	0.119
Back side	20	QPSK 1_99	1:1.58	41490/2680	0.264	-0.11	15.62	16.50	1.225	**0.323**
Left side	20	QPSK 1_99	1:1.58	41490/2680	0.064	0.02	15.62	16.50	1.225	0.078
Right side	20	QPSK 1_99	1:1.58	41490/2680	0.031	0.09	15.62	16.50	1.225	0.038
Bottom side	20	QPSK 1_99	1:1.58	41490/2680	0.170	-0.02	15.62	16.50	1.225	0.208
Hotspot 5mm 50%RB										
Front side	20	QPSK 50_50	1:1.58	41490/2680	0.096	0.03	15.61	16.50	1.227	0.118
Back side	20	QPSK 50_50	1:1.58	41490/2680	0.200	0.06	15.61	16.50	1.227	0.245
Left side	20	QPSK 50_50	1:1.58	41490/2680	0.063	0.10	15.61	16.50	1.227	0.077
Right side	20	QPSK 50_50	1:1.58	41490/2680	0.029	0.01	15.61	16.50	1.227	0.036
Bottom side	20	QPSK 50_50	1:1.58	41490/2680	0.168	0.05	15.61	16.50	1.227	0.206

Table 10：SAR of LTE Band 41.

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16.8 SAR Measurement Result of WIFI 2.4G

Ant6 Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Left cheek	802.11b	1/2412	0.094	0.03	93.33%	100.00%	1.071	12.67	13.00	1.079	0.109
Left tilted	802.11b	1/2412	0.076	0.01	93.33%	100.00%	1.071	12.67	13.00	1.079	0.088
Right cheek	802.11b	1/2412	0.201	-0.04	93.33%	100.00%	1.071	12.67	13.00	1.079	**0.232**
Right tilted	802.11b	1/2412	0.112	0.07	93.33%	100.00%	1.071	12.67	13.00	1.079	0.129
Body worn 5mm											
Front side	802.11b	1/2412	0.073	0.06	93.33%	100.00%	1.071	12.67	13.00	1.079	0.084
Back side	802.11b	1/2412	0.193	-0.03	93.33%	100.00%	1.071	12.67	13.00	1.079	**0.223**
Hotspot 5mm											
Front side	802.11b	1/2412	0.073	0.06	93.33%	100.00%	1.071	12.67	13.00	1.079	0.084
Back side	802.11b	1/2412	0.193	-0.03	93.33%	100.00%	1.071	12.67	13.00	1.079	**0.223**
Left side	802.11b	1/2412	0.013	0.02	93.33%	100.00%	1.071	12.67	13.00	1.079	0.015
Top side	802.11b	1/2412	0.072	0.05	93.33%	100.00%	1.071	12.67	13.00	1.079	0.083
Ant7 Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Left cheek	802.11b	6/2437	0.072	-0.13	93.33%	100.00%	1.071	12.66	13.00	1.081	**0.083**
Left tilted	802.11b	6/2437	0.018	0.00	93.33%	100.00%	1.071	12.66	13.00	1.081	0.021
Right cheek	802.11b	6/2437	0.056	0.04	93.33%	100.00%	1.071	12.66	13.00	1.081	0.065
Right tilted	802.11b	6/2437	0.011	0.07	93.33%	100.00%	1.071	12.66	13.00	1.081	0.013
Body worn 5mm											
Front side	802.11b	6/2437	0.055	0.05	93.33%	100.00%	1.071	12.66	13.00	1.081	0.064
Back side	802.11b	6/2437	0.256	-0.02	93.33%	100.00%	1.071	12.66	13.00	1.081	**0.297**
Hotspot 5mm											
Front side	802.11b	6/2437	0.055	0.05	93.33%	100.00%	1.071	12.66	13.00	1.081	0.064
Back side	802.11b	6/2437	0.256	-0.02	93.33%	100.00%	1.071	12.66	13.00	1.081	**0.297**
Right side	802.11b	6/2437	0.123	0.03	93.33%	100.00%	1.071	12.66	13.00	1.081	0.142
Top side	802.11b	6/2437	0.007	0.01	93.33%	100.00%	1.071	12.66	13.00	1.081	0.008
MIMO Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Left cheek	802.11b	1/2412	0.104	0.06	93.33%	100.00%	1.071	15.61	16.00	1.094	0.122
Left tilted	802.11b	1/2412	0.086	0.04	93.33%	100.00%	1.071	15.61	16.00	1.094	0.101
Right cheek	802.11b	1/2412	0.172	0.02	93.33%	100.00%	1.071	15.61	16.00	1.094	**0.202**
Right tilted	802.11b	1/2412	0.111	0.07	93.33%	100.00%	1.071	15.61	16.00	1.094	0.130
Body worn 5mm											
Front side	802.11b	1/2412	0.079	0.06	93.33%	100.00%	1.071	15.61	16.00	1.094	0.093
Back side	802.11b	1/2412	0.279	-0.03	93.33%	100.00%	1.071	15.61	16.00	1.094	**0.327**
Hotspot 5mm											
Front side	802.11b	1/2412	0.079	0.06	93.33%	100.00%	1.071	15.61	16.00	1.094	0.093
Back side	802.11b	1/2412	0.279	-0.03	93.33%	100.00%	1.071	15.61	16.00	1.094	**0.327**
Left side	802.11b	1/2412	0.019	0.04	93.33%	100.00%	1.071	15.61	16.00	1.094	0.022
Right side	802.11b	1/2412	0.060	-0.05	93.33%	100.00%	1.071	15.61	16.00	1.094	0.070
Top side	802.11b	1/2412	0.083	0.08	93.33%	100.00%	1.071	15.61	16.00	1.094	0.097

Table 11：SAR of WIFI 2.4G (Reference: PY7-63277Y).

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Ant6 Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head											
Right cheek	802.11b	1/2412	0.181	0.05	93.33%	100.00%	1.071	12.67	13.00	1.079	0.209
Body worn 5mm											
Back side	802.11b	1/2412	0.183	-0.03	93.33%	100.00%	1.071	12.67	13.00	1.079	0.211
Hotspot 5mm											
Back side	802.11b	1/2412	0.183	-0.03	93.33%	100.00%	1.071	12.67	13.00	1.079	0.211
Ant7 Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head											
Left cheek	802.11b	6/2437	0.082	0.01	93.33%	100.00%	1.071	12.66	13.00	1.081	0.095
Body worn 5mm											
Back side	802.11b	6/2437	0.200	-0.10	93.33%	100.00%	1.071	12.66	13.00	1.081	0.232
Hotspot 5mm											
Back side	802.11b	6/2437	0.200	-0.10	93.33%	100.00%	1.071	12.66	13.00	1.081	0.232
MIMO Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1-g**	**Power drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power(dBm)**	**Tune up Limit(dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
Head											
Right cheek	802.11b	1/2412	0.153	0.07	93.33%	100.00%	1.071	15.61	16.00	1.094	0.179
Body worn 5mm											
Back side	802.11b	1/2412	0.234	-0.02	93.33%	100.00%	1.071	15.61	16.00	1.094	0.274
Hotspot 5mm											
Back side	802.11b	1/2412	0.234	-0.02	93.33%	100.00%	1.071	15.61	16.00	1.094	0.274

Table 12：SAR of WIFI 2.4G (Variant).

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16.9 SAR Measurement Result of WIFI 5G

Ant6 Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
U-NII-2A Head											
Left cheek	802.11ac 80M	58/5290	0.227	0.02	93.10%	100.00%	1.074	8.74	9.00	1.062	0.259
Left tilted	802.11ac 80M	58/5290	0.242	0.04	93.10%	100.00%	1.074	8.74	9.00	1.062	0.276
Right cheek	802.11ac 80M	58/5290	0.276	0.01	93.10%	100.00%	1.074	8.74	9.00	1.062	0.315
Right tilted	802.11ac 80M	58/5290	0.354	0.06	93.10%	100.00%	1.074	8.74	9.00	1.062	**0.404**
U-NII-2C Head											
Left cheek	802.11ac 160M	114/5570	0.072	0.07	93.10%	100.00%	1.074	8.66	9.00	1.081	0.084
Left tilted	802.11ac 160M	114/5570	0.083	-0.03	93.10%	100.00%	1.074	8.66	9.00	1.081	0.096
Right cheek	802.11ac 160M	114/5570	0.090	0.04	93.10%	100.00%	1.074	8.66	9.00	1.081	0.105
Right tilted	802.11ac 160M	114/5570	0.098	0.01	93.10%	100.00%	1.074	8.66	9.00	1.081	**0.114**
U-NII-3 Head											
Left cheek	802.11ac 80M	155/5775	0.101	0.08	93.10%	100.00%	1.074	8.12	9.00	1.225	0.133
Left tilted	802.11ac 80M	155/5775	0.119	0.01	93.10%	100.00%	1.074	8.12	9.00	1.225	0.157
Right cheek	802.11ac 80M	155/5775	0.106	0.09	93.10%	100.00%	1.074	8.12	9.00	1.225	0.139
Right tilted	802.11ac 80M	155/5775	0.128	-0.14	93.10%	100.00%	1.074	8.12	9.00	1.225	**0.168**
U-NII-2A Body worn 5mm											
Front side	802.11ac 80M	58/5290	0.121	0.04	93.10%	100.00%	1.074	8.74	9.00	1.062	0.138
Back side	802.11ac 80M	58/5290	0.415	-0.06	93.10%	100.00%	1.074	8.74	9.00	1.062	**0.473**
U-NII-2C Body worn 5mm											
Front side	802.11ac 160M	114/5570	0.046	0.05	93.10%	100.00%	1.074	8.66	9.00	1.081	0.053
Back side	802.11ac 160M	114/5570	0.221	-0.01	93.10%	100.00%	1.074	8.66	9.00	1.081	**0.257**
U-NII-3 Body worn 5mm											
Front side	802.11ac 80M	155/5775	0.062	0.02	93.10%	100.00%	1.074	8.12	9.00	1.225	0.082
Back side	802.11ac 80M	155/5775	0.244	0.04	93.10%	100.00%	1.074	8.12	9.00	1.225	**0.321**
U-NII-1 Hotspot 5mm											
Front side	802.11ac 80M	42/5210	0.074	0.06	93.10%	100.00%	1.074	8.57	9.00	1.104	0.088
Back side	802.11ac 80M	42/5210	0.243	-0.07	93.10%	100.00%	1.074	8.57	9.00	1.104	**0.288**
Left side	802.11ac 80M	42/5210	0.017	0.04	93.10%	100.00%	1.074	8.57	9.00	1.104	0.020
Top side	802.11ac 80M	42/5210	0.181	-0.03	93.10%	100.00%	1.074	8.57	9.00	1.104	0.215
U-NII-3 Hotspot 5mm											
Front side	802.11ac 80M	155/5775	0.062	0.02	93.10%	100.00%	1.074	8.12	9.00	1.225	0.082
Back side	802.11ac 80M	155/5775	0.244	0.04	93.10%	100.00%	1.074	8.12	9.00	1.225	**0.321**
Left side	802.11ac 80M	155/5775	0.065	-0.05	93.10%	100.00%	1.074	8.12	9.00	1.225	0.085
Top side	802.11ac 80M	155/5775	0.111	0.07	93.10%	100.00%	1.074	8.12	9.00	1.225	0.146
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 10g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 10g SAR (W/kg)**
U-NII-2A Product specific 10g SAR 0mm											
Front side	802.11ac 80M	58/5290	0.137	0.01	93.10%	100.00%	1.074	8.74	9.00	1.062	0.156
Back side	802.11ac 80M	58/5290	0.214	0.00	93.10%	100.00%	1.074	8.74	9.00	1.062	0.244
Left side	802.11ac 80M	58/5290	0.039	0.04	93.10%	100.00%	1.074	8.74	9.00	1.062	0.044
Top side	802.11ac 80M	58/5290	0.297	-0.01	93.10%	100.00%	1.074	8.74	9.00	1.062	**0.339**
U-NII-2C Product specific 10g SAR 0mm											
Front side	802.11ac 160M	114/5570	0.051	0.08	93.10%	100.00%	1.074	8.66	9.00	1.081	0.059
Back side	802.11ac 160M	114/5570	0.099	0.05	93.10%	100.00%	1.074	8.66	9.00	1.081	**0.115**
Left side	802.11ac 160M	114/5570	0.023	0.10	93.10%	100.00%	1.074	8.66	9.00	1.081	0.027
Top side	802.11ac 160M	114/5570	0.082	0.03	93.10%	100.00%	1.074	8.66	9.00	1.081	0.095

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Ant7 Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
U-NII-2A Head											
Left cheek	802.11ac 80M	58/5290	0.033	0.17	93.10%	100.00%	1.074	8.20	9.00	1.202	**0.043**
Left tilted	802.11ac 80M	58/5290	0.010	0.03	93.10%	100.00%	1.074	8.20	9.00	1.202	0.013
Right cheek	802.11ac 80M	58/5290	0.006	0.08	93.10%	100.00%	1.074	8.20	9.00	1.202	0.008
Right tilted	802.11ac 80M	58/5290	0.008	-0.01	93.10%	100.00%	1.074	8.20	9.00	1.202	0.010
U-NII-2C Head											
Left cheek	802.11ac 160M	114/5570	0.040	0.04	93.10%	100.00%	1.074	8.41	9.00	1.146	**0.049**
Left tilted	802.11ac 160M	114/5570	0.003	0.01	93.10%	100.00%	1.074	8.41	9.00	1.146	0.004
Right cheek	802.11ac 160M	114/5570	0.009	0.06	93.10%	100.00%	1.074	8.41	9.00	1.146	0.011
Right tilted	802.11ac 160M	114/5570	0.011	0.02	93.10%	100.00%	1.074	8.41	9.00	1.146	0.014
U-NII-3 Head											
Left cheek	802.11ac 80M	155/5775	0.010	0.09	93.10%	100.00%	1.074	8.13	9.00	1.222	**0.013**
Left tilted	802.11ac 80M	155/5775	0.009	0.07	93.10%	100.00%	1.074	8.13	9.00	1.222	0.012
Right cheek	802.11ac 80M	155/5775	0.006	0.02	93.10%	100.00%	1.074	8.13	9.00	1.222	0.008
Right tilted	802.11ac 80M	155/5775	0.007	0.06	93.10%	100.00%	1.074	8.13	9.00	1.222	0.009
U-NII-2A Body worn 5mm											
Front side	802.11ac 80M	58/5290	0.005	0.03	93.10%	100.00%	1.074	8.20	9.00	1.202	0.006
Back side	802.11ac 80M	58/5290	0.032	0.07	93.10%	100.00%	1.074	8.20	9.00	1.202	**0.041**
U-NII-2C Body worn 5mm											
Front side	802.11ac 160M	114/5570	0.005	0.03	93.10%	100.00%	1.074	8.41	9.00	1.146	0.006
Back side	802.11ac 160M	114/5570	0.062	0.09	93.10%	100.00%	1.074	8.41	9.00	1.146	**0.076**
U-NII-3 Body worn 5mm											
Front side	802.11ac 80M	155/5775	0.003	0.070	93.10%	100.00%	1.074	8.13	9.00	1.222	0.004
Back side	802.11ac 80M	155/5775	0.056	-0.08	93.10%	100.00%	1.074	8.13	9.00	1.222	**0.073**
U-NII-1 Hotspot 5mm											
Front side	802.11ac 80M	42/5210	0.002	0.01	93.10%	100.00%	1.074	8.39	9.00	1.151	0.002
Back side	802.11ac 80M	42/5210	0.045	0.00	93.10%	100.00%	1.074	8.39	9.00	1.151	**0.056**
Right side	802.11ac 80M	42/5210	0.016	0.04	93.10%	100.00%	1.074	8.39	9.00	1.151	0.020
Top side	802.11ac 80M	42/5210	0.003	0.05	93.10%	100.00%	1.074	8.39	9.00	1.151	0.004
U-NII-3 Hotspot 5mm											
Front side	802.11ac 80M	155/5775	0.003	0.07	93.10%	100.00%	1.074	8.13	9.00	1.222	0.004
Back side	802.11ac 80M	155/5775	0.056	-0.08	93.10%	100.00%	1.074	8.13	9.00	1.222	**0.073**
Right side	802.11ac 80M	155/5775	0.020	0.01	93.10%	100.00%	1.074	8.13	9.00	1.222	0.026
Top side	802.11ac 80M	155/5775	0.004	0.06	93.10%	100.00%	1.074	8.13	9.00	1.222	0.005
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 10g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 10g SAR (W/kg)**
U-NII-2A Product specific 10g SAR 0mm											
Front side	802.11ac 80M	58/5290	0.001	0.00	93.10%	100.00%	1.074	8.20	9.00	1.202	0.001
Back side	802.11ac 80M	58/5290	0.026	0.05	93.10%	100.00%	1.074	8.20	9.00	1.202	**0.034**
Right side	802.11ac 80M	58/5290	0.013	0.03	93.10%	100.00%	1.074	8.20	9.00	1.202	0.017
Top side	802.11ac 80M	58/5290	0.001	0.00	93.10%	100.00%	1.074	8.20	9.00	1.202	0.001
U-NII-2C Product specific 10g SAR 0mm											
Front side	802.11ac 160M	114/5570	0.002	0.04	93.10%	100.00%	1.074	8.41	9.00	1.146	0.002
Back side	802.11ac 160M	114/5570	0.040	-0.01	93.10%	100.00%	1.074	8.41	9.00	1.146	**0.049**
Right side	802.11ac 160M	114/5570	0.026	0.05	93.10%	100.00%	1.074	8.41	9.00	1.146	0.032
Top side	802.11ac 160M	114/5570	0.002	0.00	93.10%	100.00%	1.074	8.41	9.00	1.146	0.002

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MIMO Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
U-NII-2A Head											
Left cheek	802.11ac 80M	58/5290	0.179	0.08	93.10%	100.00%	1.074	11.49	12.00	1.125	0.216
Left tilted	802.11ac 80M	58/5290	0.213	0.01	93.10%	100.00%	1.074	11.49	12.00	1.125	0.257
Right cheek	802.11ac 80M	58/5290	0.225	0.06	93.10%	100.00%	1.074	11.49	12.00	1.125	0.272
Right tilted	802.11ac 80M	58/5290	0.280	0.00	93.10%	100.00%	1.074	11.49	12.00	1.125	**0.338**
U-NII-2C Head											
Left cheek	802.11ac 160M	114/5570	0.061	0.02	93.10%	100.00%	1.074	11.55	12.00	1.110	0.073
Left tilted	802.11ac 160M	114/5570	0.065	0.05	93.10%	100.00%	1.074	11.55	12.00	1.110	0.077
Right cheek	802.11ac 160M	114/5570	0.064	-0.04	93.10%	100.00%	1.074	11.55	12.00	1.110	0.076
Right tilted	802.11ac 160M	114/5570	0.070	0.00	93.10%	100.00%	1.074	11.55	12.00	1.110	**0.083**
U-NII-3 Head											
Left cheek	802.11ac 80M	155/5775	0.083	0.03	93.10%	100.00%	1.074	11.14	12.00	1.220	0.109
Left tilted	802.11ac 80M	155/5775	0.092	0.12	93.10%	100.00%	1.074	11.14	12.00	1.220	**0.121**
Right cheek	802.11ac 80M	155/5775	0.085	0.05	93.10%	100.00%	1.074	11.14	12.00	1.220	0.111
Right tilted	802.11ac 80M	155/5775	0.090	0.07	93.10%	100.00%	1.074	11.14	12.00	1.220	0.118
U-NII-2A Body worn 5mm											
Front side	802.11ac 80M	58/5290	0.080	0.03	93.10%	100.00%	1.074	11.49	12.00	1.125	0.097
Back side	802.11ac 80M	58/5290	0.299	-0.07	93.10%	100.00%	1.074	11.49	12.00	1.125	**0.361**
U-NII-2C Body worn 5mm											
Front side	802.11ac 160M	114/5570	0.043	0.06	93.10%	100.00%	1.074	11.55	12.00	1.110	0.051
Back side	802.11ac 160M	114/5570	0.171	0.12	93.10%	100.00%	1.074	11.55	12.00	1.110	**0.204**
U-NII-3 Body worn 5mm											
Front side	802.11ac 80M	155/5775	0.050	0.02	93.10%	100.00%	1.074	11.14	12.00	1.220	0.066
Back side	802.11ac 80M	155/5775	0.189	-0.01	93.10%	100.00%	1.074	11.14	12.00	1.220	**0.248**
U-NII-1 Hotspot 5mm											
Front side	802.11ac 80M	42/5210	0.067	0.05	93.10%	100.00%	1.074	11.49	12.00	1.124	0.081
Back side	802.11ac 80M	42/5210	0.188	-0.09	93.10%	100.00%	1.074	11.49	12.00	1.124	**0.227**
Left side	802.11ac 80M	42/5210	0.012	0.03	93.10%	100.00%	1.074	11.49	12.00	1.124	0.014
Right side	802.11ac 80M	42/5210	0.015	0.05	93.10%	100.00%	1.074	11.49	12.00	1.124	0.018
Top side	802.11ac 80M	42/5210	0.138	0.06	93.10%	100.00%	1.074	11.49	12.00	1.124	0.167
U-NII-3 Hotspot 5mm											
Front side	802.11ac 80M	155/5775	0.050	0.02	93.10%	100.00%	1.074	11.14	12.00	1.220	0.066
Back side	802.11ac 80M	155/5775	0.189	-0.01	93.10%	100.00%	1.074	11.14	12.00	1.220	**0.248**
Left side	802.11ac 80M	155/5775	0.040	-0.06	93.10%	100.00%	1.074	11.14	12.00	1.220	0.052
Right side	802.11ac 80M	155/5775	0.020	0.04	93.10%	100.00%	1.074	11.14	12.00	1.220	0.026
Top side	802.11ac 80M	155/5775	0.097	0.03	93.10%	100.00%	1.074	11.14	12.00	1.220	0.127
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 10g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 10g SAR (W/kg)**
U-NII-2A Product specific 10g SAR 0mm											
Front side	802.11ac 80M	58/5290	0.106	0.08	93.10%	100.00%	1.074	11.49	12.00	1.125	0.128
Back side	802.11ac 80M	58/5290	0.172	0.01	93.10%	100.00%	1.074	11.49	12.00	1.125	0.208
Left side	802.11ac 80M	58/5290	0.030	0.09	93.10%	100.00%	1.074	11.49	12.00	1.125	0.036
Right side	802.11ac 80M	58/5290	0.015	0.04	93.10%	100.00%	1.074	11.49	12.00	1.125	0.018
Top side	802.11ac 80M	58/5290	0.237	-0.01	93.10%	100.00%	1.074	11.49	12.00	1.125	**0.286**
U-NII-2C Product specific 10g SAR 0mm											
Front side	802.11ac 160M	114/5570	0.040	0.08	93.10%	100.00%	1.074	11.55	12.00	1.110	0.048
Back side	802.11ac 160M	114/5570	0.076	-0.11	93.10%	100.00%	1.074	11.55	12.00	1.110	**0.091**
Left side	802.11ac 160M	114/5570	0.021	0.02	93.10%	100.00%	1.074	11.55	12.00	1.110	0.025
Right side	802.11ac 160M	114/5570	0.021	0.06	93.10%	100.00%	1.074	11.55	12.00	1.110	0.025
Top side	802.11ac 160M	114/5570	0.055	-0.02	93.10%	100.00%	1.074	11.55	12.00	1.110	0.066

Table 13：SAR of WIFI 5G (Reference: PY7-63277Y).

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Ant6 Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
U-NII-2A Head											
Right tilted	802.11ac 80M	58/5290	0.290	0.03	93.10%	100.00%	1.074	8.74	9.00	1.062	0.331
U-NII-2A Body worn 5mm											
Back side	802.11ac 80M	58/5290	0.407	0.03	93.10%	100.00%	1.074	8.74	9.00	1.062	0.464
U-NII-3 Hotspot 5mm											
Back side	802.11ac 80M	155/5775	0.243	-0.08	93.10%	100.00%	1.074	8.12	9.00	1.225	0.320
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 10g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 10g SAR (W/kg)**
U-NII-2A Product specific 10g SAR 0mm											
Top side	802.11ac 80M	58/5290	0.294	-0.03	93.10%	100.00%	1.074	8.74	9.00	1.062	0.335
Ant7 Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
U-NII-2C Head											
Left cheek	802.11ac 160M	114/5570	0.040	0.06	93.10%	100.00%	1.074	8.41	9.00	1.146	0.049
U-NII-2C Body worn 5mm											
Back side	802.11ac 160M	114/5570	0.074	0.03	93.10%	100.00%	1.074	8.41	9.00	1.146	0.091
U-NII-3 Hotspot 5mm											
Back side	802.11ac 80M	155/5775	0.081	-0.02	93.10%	100.00%	1.074	8.13	9.00	1.222	0.106
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 10g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 10g SAR (W/kg)**
U-NII-2C Product specific 10g SAR 0mm											
Back side	802.11ac 160M	114/5570	0.036	0.05	93.10%	100.00%	1.074	8.41	9.00	1.146	0.044
MIMO Test Results											
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 1g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 1g SAR (W/kg)**
U-NII-2A Head											
Right tilted	802.11ac 80M	58/5290	0.214	0.04	93.10%	100.00%	1.074	11.49	12.00	1.125	0.259
U-NII-2A Body worn 5mm											
Back side	802.11ac 80M	58/5290	0.225	-0.10	93.10%	100.00%	1.074	11.49	12.00	1.125	0.272
U-NII-3 Hotspot 5mm											
Back side	802.11ac 80M	155/5775	0.234	-0.12	93.10%	100.00%	1.074	11.14	12.00	1.220	0.307
Test position	**Mode**	**Ch./Freq. (MHz)**	**SAR (W/kg) 10g**	**Power Drift (dB)**	**Duty Cycle**	**Max Duty Cycle**	**Duty Cycle Scaling Factor**	**Conducted Power (dBm)**	**Tune up Limit (dBm)**	**Scaling Factor**	**Reported 10g SAR (W/kg)**
U-NII-2A Product specific 10g SAR 0mm											
Top side	802.11ac 80M	58/5290	0.277	0.03	93.10%	100.00%	1.074	11.49	12.00	1.125	0.335

Table 14：SAR of WIFI 5G (Variant).

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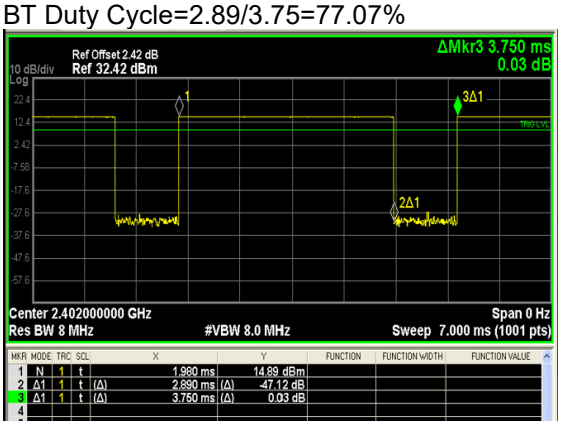
16.10 SAR Measurement Result of BT

Ant6 Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power Drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Left cheek	2DH5	0/2402	0.106	0.02	77.07%	78.30%	1.016	13.78	14.00	1.052	0.113
Left tilted	2DH5	0/2402	0.077	-0.03	77.07%	78.30%	1.016	13.78	14.00	1.052	0.082
Right cheek	2DH5	0/2402	0.222	0.06	77.07%	78.30%	1.016	13.78	14.00	1.052	**0.237**
Right tilted	2DH5	0/2402	0.123	0.04	77.07%	78.30%	1.016	13.78	14.00	1.052	0.131
Body worn 5mm											
Front side	2DH5	0/2402	0.076	0.05	77.07%	78.30%	1.016	13.78	14.00	1.052	0.081
Back side	2DH5	0/2402	0.258	-0.16	77.07%	78.30%	1.016	13.78	14.00	1.052	**0.276**
Hotspot 5mm											
Front side	2DH5	0/2402	0.076	0.05	77.07%	78.30%	1.016	13.78	14.00	1.052	0.081
Back side	2DH5	0/2402	0.258	-0.16	77.07%	78.30%	1.016	13.78	14.00	1.052	**0.276**
Left side	2DH5	0/2402	0.013	0.01	77.07%	78.30%	1.016	13.78	14.00	1.052	0.014
Top side	2DH5	0/2402	0.068	0.04	77.07%	78.30%	1.016	13.78	14.00	1.052	0.073
Ant7 Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power Drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power (dBm)	Tune up Limit (dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Left cheek	2DH5	0/2402	0.028	0.14	77.07%	78.30%	1.016	12.97	14.00	1.268	**0.036**
Left tilted	2DH5	0/2402	0.006	0.00	77.07%	78.30%	1.016	12.97	14.00	1.268	0.008
Right cheek	2DH5	0/2402	0.018	0.02	77.07%	78.30%	1.016	12.97	14.00	1.268	0.023
Right tilted	2DH5	0/2402	0.005	0.05	77.07%	78.30%	1.016	12.97	14.00	1.268	0.006
Body worn 5mm											
Front side	2DH5	0/2402	0.018	0.07	77.07%	78.30%	1.016	12.97	14.00	1.268	0.023
Back side	2DH5	0/2402	0.117	0.03	77.07%	78.30%	1.016	12.97	14.00	1.268	**0.151**
Hotspot 5mm											
Front side	2DH5	0/2402	0.018	0.07	77.07%	78.30%	1.016	12.97	14.00	1.268	0.023
Back side	2DH5	0/2402	0.117	0.03	77.07%	78.30%	1.016	12.97	14.00	1.268	**0.151**
Right side	2DH5	0/2402	0.048	0.05	77.07%	78.30%	1.016	12.97	14.00	1.268	0.062
Top side	2DH5	0/2402	0.004	-0.04	77.07%	78.30%	1.016	12.97	14.00	1.268	0.005

Table 15：SAR of BT (Reference: PY7-63277Y).

BT Duty Cycle=2.89/3.75=77.07%



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Ant6 Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power Drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Right cheek	2DH5	0/2402	0.185	-0.02	77.07%	78.30%	1.016	13.78	14.00	1.052	0.198
Body worn 5mm											
Back side	2DH5	0/2402	0.214	-0.04	77.07%	78.30%	1.016	13.78	14.00	1.052	0.229
Hotspot 5mm											
Back side	2DH5	0/2402	0.214	-0.04	77.07%	78.30%	1.016	13.78	14.00	1.052	0.229
Ant7 Test Results											
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	Power Drift (dB)	Duty Cycle	Max Duty Cycle	Duty Cycle Scaling Factor	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor	Reported 1g SAR (W/kg)
Head											
Left cheek	2DH5	0/2402	0.041	0.05	77.07%	78.30%	1.016	12.97	14.00	1.268	0.053
Body worn 5mm											
Back side	2DH5	0/2402	0.169	0.01	77.07%	78.30%	1.016	12.97	14.00	1.268	0.218
Hotspot 5mm											
Back side	2DH5	0/2402	0.169	0.01	77.07%	78.30%	1.016	12.97	14.00	1.268	0.218

Table 16：SAR of BT (Variant).

16.11 SAR Measurement Result of NFC

Test Results					
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)
Body 0mm					
Front side	NFC	13.56MHz	0.001	0.000	0.00
Back side	NFC	13.56MHz	0.058	**0.022**	0.10
Left side	NFC	13.56MHz	0.000	0.000	0.00
Right side	NFC	13.56MHz	0.000	0.000	0.00
Top side	NFC	13.56MHz	0.000	0.000	0.00
Bottom side	NFC	13.56MHz	0.000	0.000	0.00

Table 17：SAR of NFC (Reference: PY7-63277Y).

Test Results					
Test position	Mode	Ch./Freq. (MHz)	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)
Body 0mm					
Back side	NFC	13.56MHz	0.061	0.021	0.00

Table 18：SAR of NFC (Variant).

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17 Simultaneous Transmission Analysis

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Simultaneous TX Combination	Head	Body-worn	Hotspot	Product Specific (0mm)
1	WWAN + WIFI 2.4G	Y	Y	Y	Y
2	WWAN + WIFI 5G	Y	Y	Y	Y
3	WWAN + BT	Y	Y	Y	Y
4	WWAN + WIFI 5G + BT	Y	Y	Y	Y
5	WIFI 5G + BT	Y	Y	Y	Y
6	WWAN + NFC	N	N	N	Y
7	WWAN + WIFI 2.4G + NFC	N	N	N	Y
8	WWAN + WIFI 5G + NFC	N	N	N	Y
9	WWAN + BT + NFC	N	N	N	Y
10	WWAN + WIFI 5G + BT + NFC	N	N	N	Y
11	WIFI 5G + BT + NFC	N	N	N	Y

Head:

Test position		SARmax (W/kg)									Summed SAR								
		Ant 0	WiFi 2.4G Ant6	WiFi 2.4G Ant7	WiFi 2.4G MIMO	WiFi 5G Ant6	WiFi 5G Ant7	WiFi 5G MIMO	BT Ant6	BT Ant7									
		1	2	3	4	5	6	7	8	9	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+5/6/7+8/9
GSM850	Left cheek	0.073	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.182	0.168	0.195	0.332	0.122	0.289	0.186	0.126	0.445
	Left tilted	0.041	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.129	0.062	0.142	0.317	0.054	0.298	0.123	0.049	0.399
	Right cheek	**0.100**	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.332	0.165	0.302	0.415	0.111	0.372	0.337	0.123	0.652
	Right tilted	0.052	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.181	0.065	0.182	0.456	0.066	0.390	0.183	0.058	0.587
GSM1900	Left cheek	**0.041**	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.150	0.136	0.163	0.300	0.090	0.257	0.154	0.094	0.413
	Left tilted	0.025	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.113	0.046	0.126	0.301	0.038	0.282	0.107	0.033	0.383
	Right cheek	0.029	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.261	0.094	0.231	0.344	0.040	0.301	0.266	0.052	0.581
	Right tilted	0.015	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.144	0.028	0.145	0.419	0.029	0.353	0.146	0.021	0.550
WCDMA B4	Left cheek	0.050	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.159	0.145	0.172	0.309	0.099	0.266	0.163	0.103	0.422
	Left tilted	0.034	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.122	0.055	0.135	0.310	0.047	0.291	0.116	0.042	0.392
	Right cheek	0.036	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.268	0.101	0.238	0.351	0.047	0.308	0.273	0.059	0.588
	Right tilted	0.028	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.157	0.041	0.158	0.432	0.042	0.366	0.159	0.034	0.563
WCDMA B5	Left cheek	0.078	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.187	0.173	0.200	0.337	0.127	0.294	0.191	0.131	0.450
	Left tilted	0.051	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.139	0.072	0.152	0.327	0.064	0.308	0.133	0.059	0.409
	Right cheek	0.092	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.324	0.157	0.294	0.407	0.103	0.364	0.329	0.115	0.644
	Right tilted	0.078	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.207	0.091	0.208	0.482	0.092	0.416	0.209	0.084	0.613
LTE B4	Left cheek	0.049	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.158	0.144	0.171	0.308	0.098	0.265	0.162	0.102	0.421
	Left tilted	0.036	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.124	0.057	0.137	0.312	0.049	0.293	0.118	0.044	0.394
	Right cheek	0.037	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.269	0.102	0.239	0.352	0.048	0.309	0.274	0.060	0.589
	Right tilted	0.025	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.154	0.038	0.155	0.429	0.039	0.363	0.156	0.031	0.560
LTE B12	Left cheek	0.092	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.201	0.187	0.214	0.351	0.141	0.308	0.205	0.145	0.464
	Left tilted	0.050	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.138	0.071	0.151	0.326	0.063	0.307	0.132	0.058	0.408
	Right cheek	0.111	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.343	0.176	0.313	0.426	0.122	0.383	0.348	0.134	0.663
	Right tilted	0.070	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.199	0.083	0.200	0.474	0.084	0.408	0.201	0.076	0.605
LTE B41	Left cheek	0.023	0.109	0.095	0.122	0.259	0.049	0.216	0.113	0.053	0.132	0.118	0.145	0.282	0.072	0.239	0.136	0.076	0.395
	Left tilted	0.009	0.088	0.021	0.101	0.276	0.013	0.257	0.082	0.008	0.097	0.030	0.110	0.285	0.022	0.266	0.091	0.017	0.367
	Right cheek	0.013	0.232	0.065	0.202	0.315	0.011	0.272	0.237	0.023	0.245	0.078	0.215	0.328	0.024	0.285	0.250	0.036	0.565
	Right tilted	0.012	0.129	0.013	0.130	0.404	0.014	0.338	0.131	0.006	0.141	0.025	0.142	0.416	0.026	0.350	0.143	0.018	0.547

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Body worn:

Test position		SARmax (W/kg)									Summed SAR								
		Ant 0	WiFi 2.4G Ant6	WiFi 2.4G Ant7	WiFi 2.4G MIMO	WiFi 5G Ant6	WiFi 5G Ant7	WiFi 5G MIMO	BT Ant6	BT Ant7									
		1	2	3	4	5	6	7	8	9	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+5/6/7+8/9
GSM850	Front side	0.115	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.199	0.179	0.208	0.253	0.121	0.212	0.196	0.138	0.334
	Back side	0.227	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.450	0.524	0.554	0.700	0.318	0.588	0.503	0.445	0.976
GSM1900	Front side	0.156	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.240	0.220	0.249	0.294	0.162	0.253	0.237	0.179	0.375
	Back side	0.233	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.456	0.530	0.560	0.706	0.324	0.594	0.509	0.451	0.982
WCDMA B4	Front side	0.185	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.269	0.249	0.278	0.323	0.191	0.282	0.266	0.208	0.404
	Back side	0.283	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.506	0.580	0.610	0.756	0.374	0.644	0.559	0.501	1.032
WCDMA B5	Front side	0.128	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.212	0.192	0.221	0.266	0.134	0.225	0.209	0.151	0.347
	Back side	0.319	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.542	0.616	0.646	0.792	0.410	0.680	0.595	0.537	1.068
LTE B4	Front side	0.187	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.271	0.251	0.280	0.325	0.193	0.284	0.268	0.210	0.406
	Back side	0.289	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.512	0.586	0.616	0.762	0.380	0.650	0.565	0.507	1.038
LTE B12	Front side	0.103	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.187	0.167	0.196	0.241	0.109	0.200	0.184	0.126	0.322
	Back side	0.293	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.516	0.590	0.620	0.766	0.384	0.654	0.569	0.511	1.042
LTE B41	Front side	0.119	0.084	0.064	0.093	0.138	0.006	0.097	0.081	0.023	0.203	0.183	0.212	0.257	0.125	0.216	0.200	0.142	0.338
	Back side	0.323	0.223	0.297	0.327	0.473	0.091	0.361	0.276	0.218	0.546	0.620	0.650	0.796	0.414	0.684	0.599	0.541	1.072

Hotspot:

Test position		SARmax (W/kg)									Summed SAR								
		Ant 0	WiFi 2.4G Ant6	WiFi 2.4G Ant7	WiFi 2.4G MIMO	WiFi 5G Ant6	WiFi 5G Ant7	WiFi 5G MIMO	BT Ant6	BT Ant7									
		1	2	3	4	5	6	7	8	9	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+5/6/7+8/9
GSM850	Front side	0.115	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.199	0.179	0.208	0.203	0.119	0.196	0.196	0.138	0.284
	Back side	0.227	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.450	0.524	0.554	0.548	0.333	0.534	0.503	0.445	0.824
	Left side	0.198	0.015	-	0.022	0.085	-	0.052	0.014	-	0.213	0.198	0.220	0.283	0.198	0.250	0.212	0.198	0.297
	Right side	0.102	-	0.142	0.070	-	0.026	0.026	-	0.062	0.102	0.244	0.172	0.102	0.128	0.128	0.102	0.164	0.190
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.153	-	-	-	-	-	-	-	-	0.153	0.153	0.153	0.153	0.153	0.153	0.153	0.153	0.153
GSM1900	Front side	0.156	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.240	0.220	0.249	0.244	0.160	0.237	0.237	0.179	0.325
	Back side	0.233	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.456	0.530	0.560	0.554	0.339	0.540	0.509	0.451	0.830
	Left side	0.127	0.015	-	0.022	0.085	-	0.052	0.014	-	0.142	0.127	0.149	0.212	0.127	0.179	0.141	0.127	0.226
	Right side	-	-	0.142	0.070	-	0.026	0.026	-	0.062	0.000	0.142	0.070	0.000	0.026	0.026	0.000	0.062	0.088
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.134	-	-	-	-	-	-	-	-	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134
WCDMA B4	Front side	0.185	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.269	0.249	0.278	0.273	0.189	0.266	0.266	0.208	0.354
	Back side	0.283	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.506	0.580	0.610	0.604	0.389	0.590	0.559	0.501	0.880
	Left side	0.116	0.015	-	0.022	0.085	-	0.052	0.014	-	0.131	0.116	0.138	0.201	0.116	0.168	0.130	0.116	0.215
	Right side	-	-	0.142	0.070	-	0.026	0.026	-	0.062	0.000	0.142	0.070	0.000	0.026	0.026	0.000	0.062	0.088
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.102	-	-	-	-	-	-	-	-	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102
WCDMA B5	Front side	0.128	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.212	0.192	0.221	0.216	0.132	0.209	0.209	0.151	0.297
	Back side	0.319	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.542	0.616	0.646	0.640	0.425	0.626	0.595	0.537	0.916
	Left side	0.091	0.015	-	0.022	0.085	-	0.052	0.014	-	0.106	0.091	0.113	0.176	0.091	0.143	0.105	0.091	0.190
	Right side	0.177	-	0.142	0.070	-	0.026	0.026	-	0.062	0.177	0.319	0.247	0.177	0.203	0.203	0.177	0.239	0.265
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.000	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE B4	Front side	0.187	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.271	0.251	0.280	0.275	0.191	0.268	0.268	0.210	0.356
	Back side	0.289	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.512	0.586	0.616	0.610	0.395	0.596	0.565	0.507	0.886
	Left side	0.116	0.015	-	0.022	0.085	-	0.052	0.014	-	0.131	0.116	0.138	0.201	0.116	0.168	0.130	0.116	0.215
	Right side	-	-	0.142	0.070	-	0.026	0.026	-	0.062	0.000	0.142	0.070	0.000	0.026	0.026	0.000	0.062	0.088
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.125	-	-	-	-	-	-	-	-	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125
LTE B12	Front side	0.103	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.187	0.167	0.196	0.191	0.107	0.184	0.184	0.126	0.272
	Back side	0.293	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.516	0.590	0.620	0.614	0.399	0.600	0.569	0.511	0.890
	Left side	0.201	0.015	-	0.022	0.085	-	0.052	0.014	-	0.216	0.201	0.223	0.286	0.201	0.253	0.215	0.201	0.300
	Right side	0.385	-	0.142	0.070	-	0.026	0.026	-	0.062	0.385	0.527	0.455	0.385	0.411	0.411	0.385	0.447	0.473
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.112	-	-	-	-	-	-	-	-	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112	0.112
LTE B41	Front side	0.119	0.084	0.064	0.093	0.088	0.004	0.081	0.081	0.023	0.203	0.183	0.212	0.207	0.123	0.200	0.200	0.142	0.288
	Back side	0.323	0.223	0.297	0.327	0.321	0.106	0.307	0.276	0.218	0.546	0.620	0.650	0.644	0.429	0.630	0.599	0.541	0.920
	Left side	0.078	0.015	-	0.022	0.085	-	0.052	0.014	-	0.093	0.078	0.100	0.163	0.078	0.130	0.092	0.078	0.177
	Right side	0.038	-	0.142	0.070	-	0.026	0.026	-	0.062	0.038	0.180	0.108	0.038	0.064	0.064	0.038	0.100	0.126
	Top side	-	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.083	0.008	0.097	0.215	0.005	0.167	0.073	0.005	0.288
	Bottom side	0.208	-	-	-	-	-	-	-	-	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208	0.208

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Product specific (10g):

Test position		SARmax (W/kg)										Summed SAR													
		Ant 0	WiFi 2.4G Ant6	WiFi 2.4G Ant7	WiFi 2.4G MIMO	WiFi 5G Ant6	WiFi 5G Ant7	WiFi 5G MIMO	BT Ant6	BT Ant7	NFC														
		1	2	3	4	5	6	7	8	9	10	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10	1+5/6/7+8/9	1+2/3/4+10	1+5/6/7+10	1+8/9+10	1+5/6/7+8/9+10
GSM850	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GSM1900	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA B4	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA B5	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE B4	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE B12	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE B41	Front side	-	-	-	-	0.156	0.002	0.128	-	-	0.000	0.000	0.000	0.000	0.156	0.002	0.128	0.000	0.000	0.000	0.156	0.000	0.156	0.000	0.156
	Back side	-	-	-	-	0.244	0.049	0.208	-	-	0.022	0.000	0.000	0.000	0.244	0.049	0.208	0.000	0.000	0.022	0.244	0.022	0.266	0.022	0.266
	Left side	-	-	-	-	0.044	-	0.036	-	-	0.000	0.000	0.000	0.000	0.044	0.000	0.036	0.000	0.000	0.000	0.044	0.000	0.044	0.000	0.044
	Right side	-	-	-	-	-	0.032	0.025	-	-	0.000	0.000	0.000	0.000	0.000	0.032	0.025	0.000	0.000	0.000	0.032	0.000	0.032	0.000	0.032
	Top side	-	-	-	-	0.339	0.002	0.286	-	-	0.000	0.000	0.000	0.000	0.339	0.002	0.286	0.000	0.000	0.000	0.339	0.000	0.339	0.000	0.339
	Bottom side	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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18 Measurement Uncertainty

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

19 Calibration Certificate

Please see the Appendix C

20 Test Setup Photos

Please see the Appendix D

Appendix A: System Check Plots

Appendix B: SAR Test Plots

Appendix C: Calibration certificate

Appendix D: Test Setup Photos

Appendix E: Conducted RF Output Power

--- The End ---

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