Certificate #4312.01

SAR TEST REPORT

Product Name / PMN:	Countertop Payment Terminal
Trade Mark:	PAX
Model No.:	A80
HVIN:	A80SBWN
Report Number:	26062925733SAR-1
Test Standards:	FCC 47 CFR Part 2 §2.1093 RSS-102 Issue 6 RSS-102.SAR.MEAS Issue 2 ANSI/IEEE C95.1-1992 IEEE Std 1528-2013 IEC/IEEE 62209-1528:2020
FCC ID:	V5PA80SBWN
IC:	11689A-A80SBWN
Test Result:	PASS
Date of Issue:	October 10, 2026

Prepared for:

PAX Technology Limited
FLAT/RM 2504, 25/F, SUN HUNG KAI CENTRE, 30 HARBOUR ROAD, WANCHAI, HK, China

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
16/F., Block A, Building 6, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, Guangdong, China
TEL: +86-755-2823 0888
FAX: +86-755-2823 0886

Prepared by:	Curry Xue Test Engineer	Reviewed by:	Kevin Liang Assistant Manager
Approved by:	Billy Li Technical Director	Date:	October 10, 2026

UnionTrust Laboratories UnionTrust *Certified*

Version

Version No.	Date	Description
V1.0	October 10, 2026	Original Report

CONTENTS

1. GENERAL INFORMATION 5
   1.1. STATEMENT OF COMPLIANCE 5
   1.2. CLIENT INFORMATION 6
   1.3. EUT INFORMATION 6
      1.3.1. GENERAL DESCRIPTION OF EUT 6
      1.3.2. DESCRIPTION OF ACCESSORIES 6
      1.3.3. EUT TX FREQUENCY BANDS 6
      1.3.4. WIRELESS TECHNOLOGIES 6
   1.4. MAXIMUM CONDUCTED POWER 7
   1.5. OTHER INFORMATION 7
   1.6. TEST LOCATION 7
   1.7. TEST FACILITY 8
   1.8. GUIDANCE STANDARD 8
2. SPECIFIC ABSORPTION RATE (SAR) 9
   2.1. INTRODUCTION 9
   2.2. SAR DEFINITION 9
   2.3. SAR LIMITS 9
3. SAR MEASUREMENT SYSTEM 10
   3.1. SPEAG DASY SYSTEM 10
      3.1.1. ROBOT 10
      3.1.2. PROBE 11
      3.1.3. DATA ACQUISITION ELECTRONICS (DAE) 11
      3.1.4. PHANTOM 12
      3.1.5. DEVICE HOLDER 13
      3.1.6. SYSTEM VALIDATION DIPOLES 13
   3.2. SAR SCAN PROCEDURE 14
      3.2.1. SAR REFERENCE MEASUREMENT (DRIFT) 14
      3.2.2. AREA SCAN 14
      3.2.3. ZOOM SCAN 15
      3.2.4. SAR DRIFT MEASUREMENT 15
   3.3. EQUIPMENT LIST 16
   3.4. MEASUREMENT UNCERTAINTY 17
   3.5. TISSUE DIELECTRIC PARAMETER MEASUREMENT & SYSTEM VERIFICATION 19
      3.5.1. TISSUE SIMULATING LIQUIDS 19
      3.5.2. SYSTEM CHECK DESCRIPTION 21
      3.5.3. TISSUE VERIFICATION 22
      3.5.4. SYSTEM VERIFICATION 22
4. SAR MEASUREMENT EVALUATION 23
   4.1. EUT CONFIGURATION AND SETTING 23
      4.1.1. WLAN CONFIGURATION AND TESTING 23
   4.2. EUT TESTING POSITION 25
      4.2.1. BODY EXPOSURE CONDITIONS 25
   4.3. MEASURED CONDUCTED POWER RESULT 26
      4.3.1. CONDUCTED POWER OF WLAN 26
      4.3.2. CONDUCTED POWER OF BT 28
   4.4. SAR TESTING RESULTS 29
      4.4.1. SAR TEST REDUCTION CONSIDERATIONS 29
      4.4.2. SAR RESULTS FOR BODY EXPOSURE CONDITION (SEPARATION DISTANCE IS 0 CM) 30
   4.5. SAR MEASUREMENT VARIABILITY 32
      4.5.1. REPEATED MEASUREMENT 32
   4.6. SIMULTANEOUS MULTI-BAND TRANSMISSION EVALUATION 33
      4.6.1. SIMULTANEOUS TRANSMISSION SAR TEST EXCLUSION CONSIDERATIONS 33

4.6.2. SIMULTANEOUS TRANSMISSION POSSIBILITIES 33

5. NFC EXPOSURE REQUIREMENTS 34

Appendix A. SAR Plots of System Verification
Appendix B. SAR Plots of SAR Measurement
Appendix C. Calibration Certificate for Probe and Dipole
Appendix D. Photographs of EUT and Setup

1. GENERAL INFORMATION

1.1. STATEMENT OF COMPLIANCE

The maximum results of Specific Absorption Rate (SAR) found during testing for the EUT are as follows:

Equipment Class	Mode	Highest Reported Body SAR_{1g} (0 cm Gap) (W/kg)
Limits		1.6 W/kg
DTS	2.4G WLAN	0.550
DSS	Bluetooth	0.426
NII-1	5G WLAN	1.242
NII-2A	5G WLAN	1.410
NII-2C	5G WLAN	1.250
NII-3	5G WLAN	1.015
Max. SAR		1.410

1.2. CLIENT INFORMATION

Applicant:	PAX Technology Limited
Address of Applicant:	FLAT/RM 2504, 25/F, SUN HUNG KAI CENTRE, 30 HARBOUR ROAD, WANCHAI, HK, China
Manufacturer:	PAX Computer Technology (Shenzhen) Co., Ltd.
Address of Manufacturer:	Room 701, PAX Technology Building, Shanxia Community, Pinghu Sub-district, Longgang District, Shenzhen, China

1.3. EUT INFORMATION

1.3.1. General Description of EUT

Product Name / PMN:	Countertop Payment Terminal
Trade Mark:	PAX
Model No.:	A80
HVIN:	A80SBWN
Sample Received Date:	June 26, 2026
Sample Tested Date:	July 29, 2026 to August 8, 2026

Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.3.2. Description of Accessories

Refer to Report 26062925733EMC-1 for accessories.

1.3.3. EUT Tx Frequency Bands

RF Type	Band(s)	Tx Frequency Range (Unit: MHz)
WLAN	**2.4 GHz:**	2412 - 2462
	U-NII-1:	5180 - 5240
	U-NII-2A:	5260 - 5320
	U-NII-2C:	5500 - 5720
	U-NII-3:	5745 - 5825
Bluetooth	**2.4 GHz:**	2402 - 2480
NFC	**13.553 - 13.567 MHz**	13.56

1.3.4. Wireless Technologies

2.4G WLAN	802.11b 802.11g 802.11n (HT20/HT40) 802.11ax (HE20/HE40)
5G WLAN	802.11a 802.11n (HT20/HT40) 802.11ac (VHT20/VHT40/VHT80) 802.11ax (HE20/HE40/HE80)
Bluetooth	BR+EDR LE
Others	NFC
Antenna Type	WWAN/WLAN/Bluetooth: PIFA Antenna NFC: FPCB Antenna
Wireless Router (Hotspot)	2.4G WLAN: Not Support 5.2G WLAN: Not Support 5.3G WLAN: Not Support 5.6G WLAN: Not Support 5.8G WLAN: Not Support

1.4. MAXIMUM CONDUCTED POWER

The maximum conducted average power including tune-up tolerance is shown as below.

➢ **2.4GHz WLAN**

Mode	Maximum conducted average power (dBm)
802.11b	16.5
802.11g	15.5
802.11n-HT20	15.5
802.11n-HT40	14.0
802.11ax-HE20	14.0
802.11ax-HE40	13.5

➢ **5GHz WLAN**

Mode	Maximum conducted average power (dBm)			
	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
802.11a	16.5	16.5	15.5	13.5
802.11n-HT20	15.5	15.0	15.0	13.5
802.11n-HT40	13.5	13.5	14.5	14.0
802.11ac-VHT20	13.0	12.5	13.0	12.5
802.11ac-VHT40	11.5	11.5	12.0	12.0
802.11ac-VHT80	10.0	10.5	11.0	11.0
802.11ax-HE20	13.0	12.5	13.0	13.0
802.11ax-HE40	12.0	12.0	12.5	12.0
802.11ax-HE80	10.0	10.5	11.0	11.0

➢ **Bluetooth**

Mode	Modulation	Maximum conducted average power (dBm)
BR + EDR	GFSK	10.5
	π/4-DQPSK	9.0
	8-DPSK	9.0
LE	GFSK	10.5

➢ **NFC**

Mode	Modulation	Maximum Field Strength (dBμV/m)
NFC	ASK	71.61 dBμV/m at 3 meter

1.5. OTHER INFORMATION

None.

1.6. TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F., Block A, Building 6, Baoneng Science and Technology Park, Longhua Street, Longhua District, Shenzhen, Guangdong, China
Telephone: +86 (0) 755 2823 0888
Fax: +86 (0) 755 2823 0886

1.7. TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories
CAB identifier: CN0032

FCC Accredited Lab.
Designation Number: CN1194
Test Firm Registration Number: 259480

1.8. GUIDANCE STANDARD

The tests documented in this report were performed in accordance with FCC 47 CFR Part 2 §2.1093, IEEE Std 1528-2013, ANSI/IEEE C95.1-1992, the following FCC Published RF exposure KDB procedures:

KDB 865664 D01 v01r04
KDB 865664 D02 v01r02
KDB 248227 D01 v02r02
KDB 447498 D04 v01

2. SPECIFIC ABSORPTION RATE (SAR)

2.1. INTRODUCTION

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling, by appropriate techniques, to produce specific absorption rates (SARs) as averaged over the whole-body, any 1 g or any 10 g of tissue (defined as a tissue volume in the shape of a cube). All SAR values are to be averaged over any six-minute period. When portable device was used within 20 cm of the user's body, SAR evaluation of the device will be required. The SAR limit in chapter 2.3.

2.2. SAR DEFINITION

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

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

SAR is expressed in units of Watts per kilogram (W/kg)
SAR measurement can be related to the electrical field in the tissue by

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

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

2.3. SAR LIMITS

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

Note:

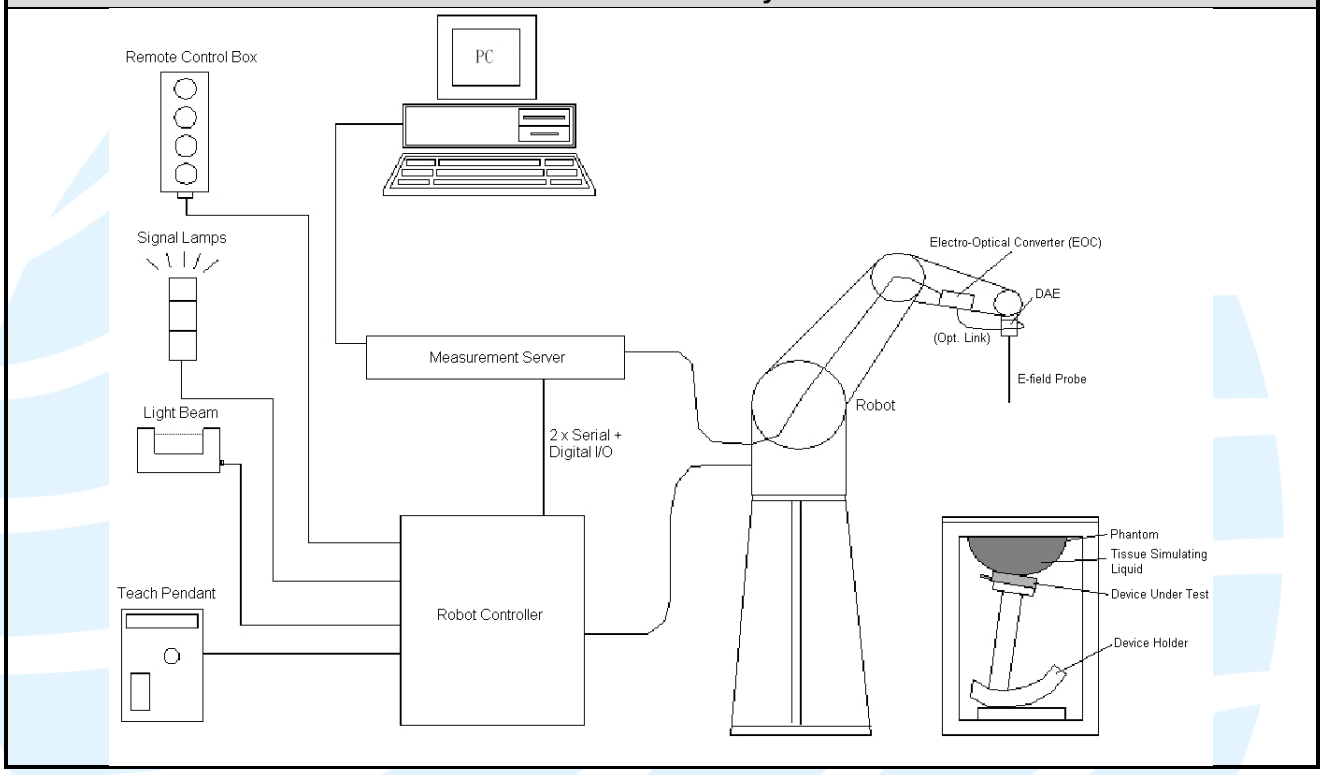
1) Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.
2) At frequencies above 6.0 GHz, SAR limits are not applicable and MPE limits for power density should be applied at 5 cm or more from the transmitting device.
3) The SAR limit is specified in FCC 47 CFR Part 2 §2.1093, ANSI/IEEE C95.1-1992.

3. SAR MEASUREMENT SYSTEM

3.1. SPEAG DASY SYSTEM

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

DASY Measurement System



3.1.1. Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY4: CS7MB) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

3.1.2. Probe

The SAR measurement is conducted with the dosimetric probe. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

Model	EX3DV4	
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (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	

Model	ES3DV3	
Construction	Symmetrical design with triangular core. Interleaved sensors. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).	
Frequency	10 MHz to 4 GHz Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	5 µW/g to 100 mW/g Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

3.1.3. Data Acquisition Electronics (DAE)

Model	DAE3, DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detectors for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16-bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

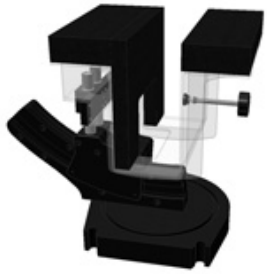
3.1.4. Phantom

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
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	

3.1.5. Device Holder

Model	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, Foam	

3.1.6. System Validation Dipoles

Model	D-Serial	
Construction	Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.	
Frequency	750 MHz to 5800 MHz	
Return Loss	> 20 dB	
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)	

3.2. SAR SCAN PROCEDURE

3.2.1. SAR Reference Measurement (drift)

Prior to the SAR test, local SAR shall be measured at a stationary reference point where the SAR exceeds the lower detection limit of the measurement system.

3.2.2. Area Scan

Measurement procedures for evaluating the SAR of wireless device 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. All antennas and radiating structures that may contribute to the measured SAR or influence the SAR distribution must be included in the area scan. The area scan measurement resolution must enable the extrapolation algorithms of the SAR system to correctly identify the peak SAR location(s) for subsequent zoom scan measurements to correctly determine the 1-g SAR. Area scans are performed at a constant distance from the phantom surface, determined by the measurement frequencies. When a measured peak is closer than ½ the zoom scan volume dimension (x, y) from the edge of the area scan region, unless the entire peak and gram-averaging volume are both captured within the zoom scan volume, the area scan must be repeated by shifting and expanding the area scan region to ensure all peaks are away from the area scan boundary. The area scan resolutions specified in the table below must be applied to the SAR measurements.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scans 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.	

3.2.3. Zoom Scan

To evaluate the peak spatial-average SAR values with respect to 1 g or 10 g cubes, fine resolution volume scans, called zoom scans, are performed at the peak SAR locations identified during the area scan. If the cube volume within the zoom scan chosen to calculate the peak spatial-average SAR touches any boundary of the zoom-scan volume, the zoom scan shall be repeated with the center of the zoom-scan volume shifted to the new maximum SAR location. For any secondary peaks found in the area scan that are within 2 dB of the maximum peak and are not within this zoom scan, the zoom scan shall be performed for such peaks, unless the peak spatial-average SAR at the location of the maximum peak is more than 2 dB below the applicable SAR limit (i.e., 1 W/kg for a 1.6 W/kg 1 g limit, or 1.26 W/kg for a 2 W/kg 10 g limit). The zoom scan resolutions specified in the table below must be applied to the SAR measurements.

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

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

3.2.4. SAR Drift Measurement

The local SAR (or conducted power) shall be measured at exactly the same location as in 3.2.1 section. The absolute value of the measurement drift (the difference between the SAR measured in 3.2.1 and 3.2.4 section) shall be recorded. The SAR drift shall be kept within ± 5%.

3.3. EQUIPMENT LIST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D2450V2	883	Jan. 02, 2024	3 Year
System Validation Dipole	SPEAG	D5GHzV2	1115	Jan. 02, 2024	3 Year
Dosimetric E-Field Probe	SPEAG	ES3DV3	3090	Dec. 15, 2025	1 Year
Data Acquisition Electronics	SPEAG	DAE4	662	Dec. 15, 2025	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7506	Nov. 28, 2025	1 Year
Wideband Radio Communication Tester	R&S	CMW500	120932	Mar. 20, 2026	1 Year
ENA Series Network Analyzer	Agilent	8753ES	US39170317	Oct. 24, 2025	1 Year
Twin Phantom	SPEAG	SAM	TP-1376	N/A	N/A
Twin Phantom	SPEAG	SAM	TP-1378	N/A	N/A
Robot controller	STAUBLI	CS7MB	F05/511KA1/A/01	N/A	N/A
Robot	STAUBLI	RX90BL	F05/511KA1/A/01	N/A	N/A
Dielectric Assessment Kit	SPEAG	DAK-3.5	1056	N/A	N/A
USB/GPIB Interface	Agilent	82357B	N10149	N/A	N/A
Signal Generator	R&S	SMB100A	103718	Mar. 20, 2026	1 Year
POWER METER	R&S	NRP	101293	Oct. 24, 2025	1 Year
Thermometer	Shanghai Gao Zhi Precision Instrument Co., Ltd.	HB6801	18022507	Oct. 29, 2025	1 Year
Dual Directional Coupler	Agilent	778D	MY52180234	Oct. 24, 2025	1 Year
Amplifier	Mini-Circuit	ZHL42	QA1252001	Mar. 20, 2026	1 Year
DC Source	Agilent	66319B	MY43000795	Oct. 24, 2025	1 Year

3.4. MEASUREMENT UNCERTAINTY

TABLE 1 EXPOSURE ASSESSMENT UNCERTAINTY FOR HANDSET SAR

Source of Uncertainty	Tolerance (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g) (± %)	Standard Uncertainty (10g) (± %)	Vi Veff
Measurement System								
Probe Calibration (< 3 GHz)	7.5	N (k=2)	2	1	1	3.75	3.75	∞
Probe Calibration (> 3 GHz)	6.3	N (k=2)	2	1	1	3.15	3.15	∞
Axial Isotropy	1.2	N (k=2)	2	0.7	0.7	0.42	0.42	∞
Hemispherical Isotropy	3.2	N (k=2)	2	0.7	0.7	1.12	1.12	∞
Boundary Effects	2	Rectangular	√3	1	1	1.15	1.15	∞
Linearity	0.9	N (k=2)	2	1	1	0.45	0.45	∞
Detection Limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Modulation Response	2.4	Rectangular	√3	1	1	1.39	1.39	∞
Readout Electronics	0.3	Normal	1	1	1	0.30	0.30	∞
Response Time	0	Rectangular	√3	1	1	0.00	0.00	∞
Integration Time	1.7	Rectangular	√3	1	1	0.98	0.98	∞
RF Ambient – Noise	3	Rectangular	√3	1	1	1.73	1.73	∞
RF Ambient – Reflections	3	Rectangular	√3	1	1	1.73	1.73	∞
Probe Positioner	0.4	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.87	3.87	∞
Max. SAR Evaluation	4	Rectangular	√3	1	1	2.31	2.31	∞
Test Sample Related								
Device Positioning	2.3 / 2.4	Normal	1	1	1	2.30	2.40	30
Device Holder	2.8 / 2.8	Normal	1	1	1	2.80	2.80	30
Power Drift	5	Rectangular	√3	1	1	2.89	2.89	∞
Power Scaling	0	Rectangular	√3	1	1	0.00	0.00	∞
Phantom and Setup								
Phantom Uncertainty	7.9	Rectangular	√3	1	1	4.56	4.56	∞
SAR correction	1.2 / 0.97	Rectangular	√3	1	0.84	0.69	0.47	∞
Liquid Conductivity (Meas.)	2.5	Rectangular	√3	0.78	0.71	1.13	1.02	∞
Liquid Permittivity (Meas.)	2.5	Rectangular	√3	0.26	0.26	0.38	0.38	∞
Temp. unc. - Conductivity	3.4	Rectangular	√3	0.78	0.71	1.53	1.39	∞
Temp. unc. - Permittivity	0.4	Rectangular	√3	0.23	0.26	0.05	0.06	∞
Combined Standard Uncertainty (k = 1) (≤ 3 GHz)						9.64	9.62	
Combined Standard Uncertainty (k = 1) (> 3 GHz)						9.42	9.40	
Max. Expanded Uncertainty (k = 2)						**19.27**	**19.23**	

TABLE 2SYSTEM VALIDATION Measurement uncertainty

Source of Uncertainty	Tolerance (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g) (± %)	Standard Uncertainty (10g) (± %)	Vi Veff
Measurement System								
Probe Calibration (< 3 GHz)	7.5	N (k=2)	2	1	1	3.75	3.75	∞
Probe Calibration (> 3 GHz)	6.3	N (k=2)	2	1	1	3.15	3.15	∞
Axial Isotropy	1.2	N (k=2)	2	0.7	0.7	0.42	0.42	∞
Hemispherical Isotropy	3.2	N (k=2)	2	0.7	0.7	1.12	1.12	∞
Boundary Effects	2	Rectangular	√3	1	1	1.15	1.15	∞
Linearity	0.9	N (k=2)	2	1	1	0.45	0.45	∞
Detection Limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Modulation Response	2.4	Rectangular	√3	1	1	1.39	1.39	∞
Readout Electronics	0.3	Normal	1	1	1	0.30	0.30	∞
Response Time	0	Rectangular	√3	1	1	0.00	0.00	∞
Integration Time	1.7	Rectangular	√3	1	1	0.98	0.98	∞
RF Ambient – Noise	3	Rectangular	√3	1	1	1.73	1.73	∞
RF Ambient – Reflections	3	Rectangular	√3	1	1	1.73	1.73	∞
Probe Positioner	0.4	Rectangular	√3	1	1	0.23	0.23	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.87	3.87	∞
Max. SAR Evaluation	4	Rectangular	√3	1	1	2.31	2.31	∞
Test Sample Related								
Device Positioning	2.3 / 2.4	Normal	1	1	1	2.30	2.40	30
Device Holder	2.8 / 2.8	Normal	1	1	1	2.80	2.80	30
Power Drift	5	Rectangular	√3	1	1	2.89	2.89	∞
Power Scaling	0	Rectangular	√3	1	1	0.00	0.00	∞
Phantom and Setup								
Phantom Uncertainty	7.9	Rectangular	√3	1	1	4.56	4.56	∞
SAR correction	1.2 / 0.97	Rectangular	√3	1	0.84	0.69	0.47	∞
Liquid Conductivity (Meas.)	2.5	Rectangular	√3	0.78	0.71	1.13	1.02	∞
Liquid Permittivity (Meas.)	2.5	Rectangular	√3	0.26	0.26	0.38	0.38	∞
Temp. unc. - Conductivity	3.4	Rectangular	√3	0.78	0.71	1.53	1.39	∞
Temp. unc. - Permittivity	0.4	Rectangular	√3	0.23	0.26	0.05	0.06	∞
Combined Standard Uncertainty (k = 1) (≤ 3 GHz)						9.64	9.62	
Combined Standard Uncertainty (k = 1) (> 3 GHz)						9.42	9.40	
Max. Expanded Uncertainty (k = 2)						**19.27**	**19.23**	

3.5. TISSUE DIELECTRIC PARAMETER MEASUREMENT & SYSTEM VERIFICATION

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

3.5.1. Tissue Simulating Liquids

The temperature of the tissue-equivalent medium used during measurement must also be within 18 °C to 25 °C and within ± 2 °C of the temperature when the tissue parameters are characterized. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 - 4 days of use; or earlier if the dielectric parameters can become out of tolerance.

The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm with ≤ ± 0.5 cm variation for SAR measurements ≤ 3 GHz and ≥ 10.0 cm with ≤ ± 0.5 cm variation for measurements > 3 GHz. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-3.1.

Photo of Liquid Height

Tissue Dielectric Parameters for Head and Body				
Target Frequency	Head		Body	
(MHz)	ε_r	σ(S/m)	ε_r	σ(S/m)
750	*41.9*	*0.89*	*55.5*	*0.96*
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
1450	*40.5*	*1.20*	*54.0*	*1.30*
1640	*40.3*	*1.29*	*53.8*	*1.40*
1750	*40.1*	*1.37*	*53.4*	*1.49*
1800	40.0	1.40	53.3	1.52
1900	40.0	1.40	53.3	1.52
2000	40.0	1.40	53.3	1.52
2300	*39.5*	*1.67*	*52.9*	*1.81*
2450	39.2	1.80	52.7	1.95
2600	*39.0*	*1.96*	*52.5*	*2.16*
3500	*37.9*	*2.91*	*51.3*	*3.31*
5200	*36.0*	*4.66*	*49.0*	*5.30*
5300	*35.9*	*4.76*	*48.9*	*5.42*
5500	*35.6*	*4.96*	*48.6*	*5.65*
5600	*35.5*	*5.07*	*48.5*	*5.77*
5800	35.3	5.27	48.2	6.00
(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m³)				

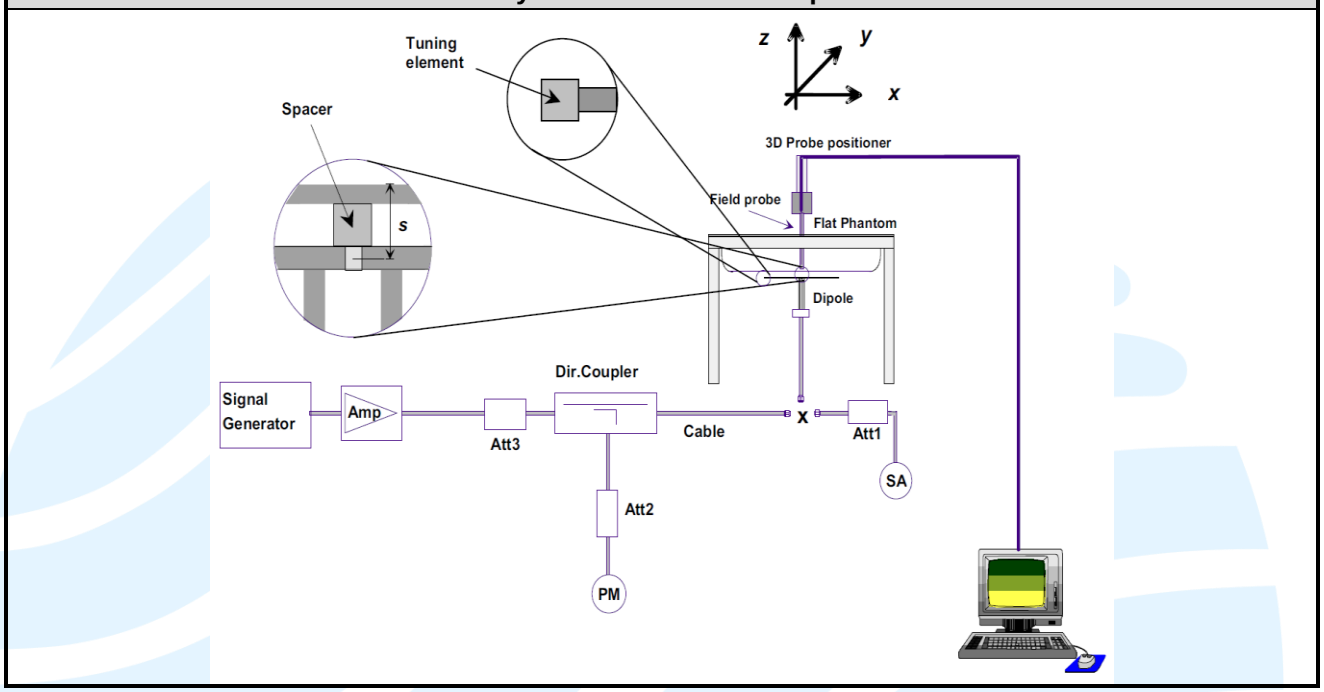
The following table gives the recipes for tissue simulating liquids.

Recipes of Tissue Simulating Liquid								
Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.4	57.0	-	41.1	-
H835	0.1	-	1.0	1.4	57.0	-	40.5	-
H900	0.1	-	1.0	1.5	56.5	-	40.9	-
H1450	-	45.5	-	0.7	-	-	53.8	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	44.5	-	0.3	-	-	55.2	-
H1800	-	44.9	-	0.2	-	-	54.9	-
H1900	-	44.9	-	0.2	-	-	54.9	-
H2000	-	50	-	-	-	-	50	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.52	17.3
B750	0.2	-	0.2	0.8	48.8	-	50.0	-
B835	0.2	-	0.2	0.9	48.5	-	50.2	-
B900	0.2	-	0.2	0.9	48.2	-	50.5	-
B1450	-	34.0	-	0.3	-	-	65.7	-
B1640	-	32.5	-	0.3	-	-	67.2	-
B1750	-	29.4	-	0.4	-	-	70.2	-
B1800	-	29.5	-	0.4	-	-	70.1	-
B1900	-	29.5	-	0.3	-	-	70.2	-
B2000	-	30.0	-	0.2	-	-	69.8	-
B2300	-	31.0	-	0.1	-	-	68.9	-
B2450	-	31.4	-	0.1	-	-	68.5	-
B2600	-	31.8	-	0.1	-	-	68.1	-
B3500	-	28.8	-	0.1	-	-	71.1	-
B5G	-	-	-	-	-	10.7	78.6	10.7

3.5.2. System Check Description

The system check procedure provides a simple, fast, and reliable test method that can be performed daily or before every SAR measurement. The objective here is to ascertain that the measurement system has acceptable accuracy and repeatability. This test requires a flat phantom and a radiating source. The system verification setup is shown as below.

System Verification Setup



3.5.3. Tissue Verification

The measuring results for tissue simulating liquid are shown as below.

Test Date	Tissue Type	Frequency (MHz)	Liquid Temp. (℃)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
Jul. 29, 2026	Head	2450	20.9	1.834	38.37	1.80	39.20	1.89	-2.12
Jul. 29, 2026	Head	2412	20.9	1.805	38.43	1.80	39.20	0.28	-1.96
Jul. 29, 2026	Head	2437	20.9	1.826	38.38	1.80	39.20	1.44	-2.09
Jul. 29, 2026	Head	2462	20.9	1.843	38.34	1.80	39.20	2.39	-2.19
Jul. 29, 2026	Head	2402	20.9	1.799	38.46	1.80	39.20	-0.06	-1.89
Jul. 29, 2026	Head	2440	20.9	1.828	38.38	1.80	39.20	1.56	-2.09
Jul. 29, 2026	Head	2441	20.9	1.830	38.36	1.80	39.20	1.67	-2.14
Jul. 29, 2026	Head	2480	20.9	1.861	38.27	1.80	39.20	3.39	-2.37
Aug. 8, 2026	Head	5250	21.8	4.626	37.124	4.71	35.90	-1.78	3.41
Aug. 8, 2026	Head	5200	21.8	4.551	37.261	4.64	36.02	-1.90	3.45
Aug. 8, 2026	Head	5240	21.8	4.572	37.211	4.66	36.00	-1.89	3.36
Aug. 8, 2026	Head	5260	21.8	4.618	37.143	4.70	35.96	-1.74	3.29
Aug. 8, 2026	Head	5280	21.8	4.637	37.109	4.72	35.94	-1.76	3.25
Aug. 8, 2026	Head	5320	21.8	4.656	37.069	4.74	35.92	-1.77	3.20
Aug. 8, 2026	Head	5200	21.8	4.692	36.977	4.78	35.88	-1.84	3.06
Aug. 8, 2026	Head	5600	21.8	5.016	36.455	5.07	35.50	-1.07	2.69
Aug. 8, 2026	Head	5500	21.8	4.899	36.667	4.96	35.60	-1.23	3.00
Aug. 8, 2026	Head	5700	21.8	5.149	36.330	5.17	35.40	-0.41	2.63
Aug. 8, 2026	Head	5800	21.8	5.244	36.123	5.27	35.30	-0.49	2.33
Aug. 8, 2026	Head	5745	21.8	5.181	36.256	5.22	35.35	-0.65	2.56
Aug. 8, 2026	Head	5785	21.8	5.221	36.145	5.26	35.31	-0.65	2.36
Aug. 8, 2026	Head	5825	21.8	5.273	36.066	5.30	35.27	-0.43	2.26

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ± 5% of the target values. The variation of the liquid temperature must be within ± 2 °C during the test.

3.5.4. System Verification

The measuring result for system verification is tabulated as below.

Test Date	Tissue Type	Freq. (MHz)	1W Target SAR-1g (W/kg)	1W Target SAR-10g (W/kg)	Measured SAR-1g (W/kg)	Measured SAR-10g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Normalized to 1W SAR-10g (W/kg)	Deviation 1g(%)	Deviation 10g(%)	Dipole S/N	Probe S/N	DAE S/N
Jul. 29, 2026	Head	2450	53.70	24.80	14.000	6.470	56.00	25.88	4.28	4.35	883	3090	662
Aug. 8, 2026	Head	5250	78.60	22.30	7.960	2.290	79.60	22.90	1.27	2.69	1115	7506	662
Aug. 8, 2026	Head	5600	81.90	23.10	8.020	2.260	80.20	22.60	-2.08	-2.16	1115	7506	662
Aug. 8, 2026	Head	5800	78.60	22.00	8.080	2.280	80.80	22.80	2.80	3.64	1115	7506	662

Note:

Comparing to the reference SAR value, the validation data should be within its specification of 10%. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.

4. SAR MEASUREMENT EVALUATION

4.1. EUT CONFIGURATION AND SETTING

Connections between EUT and System Simulator

For WWAN SAR testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during SAR testing.

4.1.1. WLAN Configuration and Testing

In general, various vendor specific external test software and chipset based internal test modes are typically used for SAR measurement. These chipset-based test mode utilities are generally hardware and manufacturer dependent, and often include substantial flexibility to reconfigure or reprogram a device. 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. The test frequencies established using test mode must correspond to the actual channel frequencies. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. In addition, a periodic transmission duty factor is required for current generation SAR systems to measure SAR correctly. The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

According to KDB 248227 D01, this device has installed WLAN engineering testing software which can provide continuous transmitting RF signal. During WLAN SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

Initial Test Configuration

An initial test configuration is determined for OFDM transmission modes in 2.4 GHz and 5 GHz bands 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. When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.

Subsequent Test Configuration

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, 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 is not required for that subsequent test configuration.

SAR Test Configuration and Channel Selection

When multiple channel bandwidth configurations in a frequency band have the same specified maximum output power, the initial test configuration is using largest channel bandwidth, lowest order modulation, lowest data rate, and lowest order 802.11 mode (i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n). After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following.

1) The channel closest to mid-band frequency is selected for SAR measurement.

2) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

Test Reduction for U-NII-1 (5.2 GHz) and U-NII-2A (5.3 GHz) Bands

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).

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.

4.2. EUT TESTING POSITION

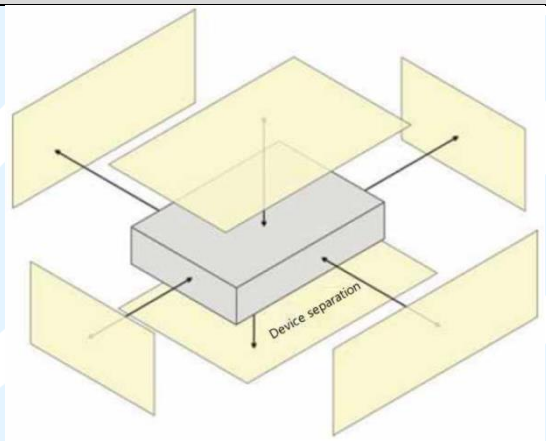
4.2.1. Body Exposure Conditions

RF Exposure Conditions	Test Position	Separation Distance	SAR test exclusion
Body	Front Face	0.5 cm	Note 2
	Rear Face		
	Left Side		
	Right Side		
	Top Side		
	Bottom Side		

Note:

1) Voice communication for UMPC mini-tablet devices is limited to speaker mode only.
2) For mini-tablet, according to KDB 941225 D07, SAR evaluation is required on all surfaces and edges with a transmitting antenna within 25 mm from that surface or edge.

Test Positions for mini-Tablet



4.3. MEASURED CONDUCTED POWER RESULT

4.3.1. Conducted Power of WLAN

The measuring conducted average power is shown as below.

Band	Mode	Channel	Frequency (MHz)	Average Power (dBm)
2.4GHz	802.11b	1	2412	15.94
		6	2437	16.01
		11	2462	15.45
	802.11g	1	2412	14.65
		6	2437	14.87
		11	2462	14.67
	802.11n-HT20	1	2412	14.62
		6	2437	14.83
		11	2462	14.62
	802.11n-HT40	3	2422	13.12
		6	2437	13.03
		9	2452	13.58
	802.11ax-HE20	1	2412	13.57
		6	2437	13.60
		11	2462	13.52
	802.11ax-HE40	3	2422	13.08
		6	2437	12.99
		9	2452	12.04

Mode	Band	Channel	Freq. (MHz)	Average Power (dBm)
IEEE 802.11a	U-NII-1	36	5180	15.90
		44	5220	15.97
		48	5240	15.70
	U-NII-2A	52	5260	15.91
		60	5300	15.63
		64	5320	14.89
	U-NII-2C	100	5500	15.14
		120	5600	14.80
		140	5700	14.36
	U-NII-3	149	5745	13.21
		157	5785	12.58
		165	5825	13.05
IEEE 802.11n-HT20	U-NII-1	36	5180	14.61
		44	5220	14.42
		48	5240	14.74
	U-NII-2A	52	5260	14.67
		60	5300	14.37
		64	5320	13.77
	U-NII-2C	100	5500	14.65
		120	5600	13.98
		140	5700	14.26
	U-NII-3	149	5745	13.18
		157	5785	13.14
		165	5825	13.05
IEEE 802.11n-HT40	U-NII-1	38	5190	12.99
		46	5230	12.77
	U-NII-2A	54	5270	13.01
		62	5310	12.35

Mode	Band	Channel	Freq. (MHz)	Average Power (dBm)
	U-NII-2C	102	5510	12.98
		118	5590	13.94
		134	5670	12.27
	U-NII-3	151	5755	13.21
		159	5795	13.50
IEEE 802.11ac-VHT20	U-NII-1	36	5180	11.94
		44	5220	11.80
		48	5240	12.25
	U-NII-2A	52	5260	12.01
		60	5300	11.63
		64	5320	11.92
	U-NII-2C	100	5500	12.31
		120	5600	12.10
		140	5700	12.34
	U-NII-3	149	5745	12.13
		157	5785	12.13
		165	5825	12.07
IEEE 802.11ac-VHT40	U-NII-1	38	5190	11.09
		46	5230	11.23
	U-NII-2A	54	5270	11.05
		62	5310	10.34
	U-NII-2C	102	5510	11.46
		118	5590	11.51
		134	5670	11.36
	U-NII-3	151	5755	11.38
		159	5795	11.12
IEEE 802.11ac-VHT80	U-NII-1	42	5210	9.51
	U-NII-2A	58	5290	10.06
	U-NII-2C	106	5530	10.00
		122	5610	10.48
	U-NII-3	155	5775	10.61
IEEE 802.11ax-HE20	U-NII-1	36	5180	12.27
		44	5220	12.14
		48	5240	12.61
	U-NII-2A	52	5260	11.91
		60	5300	11.98
		64	5320	11.82
	U-NII-2C	100	5500	12.64
		120	5600	11.98
		140	5700	12.67
	U-NII-3	149	5745	12.45
		157	5785	11.99
		165	5825	12.37
IEEE 802.11ax-HE40	U-NII-1	38	5190	11.67
		46	5230	11.34
	U-NII-2A	54	5270	11.62
		62	5310	10.90
	U-NII-2C	102	5510	11.47
		118	5590	11.98
		134	5670	10.86
	U-NII-3	151	5755	11.36
		159	5795	11.16
IEEE 802.11ax-HE80	U-NII-1	42	5210	9.67
	U-NII-2A	58	5290	10.23

Mode	Band	Channel	Freq. (MHz)	Average Power (dBm)
	U-NII-2C	106	5530	10.18
		122	5610	10.66
	U-NII-3	155	5775	10.35

4.3.2. Conducted Power of BT

Mode	Modulation	Channel	Frequency (MHz)	Average Power (dBm)
BR + EDR	GFSK	0	2402	9.49
		39	2441	9.64
		78	2480	9.76
	π/4-DQPSK	0	2402	7.95
		39	2441	8.21
		78	2480	8.46
	8-DPSK	0	2402	7.98
		39	2441	8.21
		78	2480	8.47

Mode	Modulation	Channel	Frequency (MHz)	Average Power (dBm)
LE	GFSK	0	2402	9.94
		19	2440	9.91
		39	2480	9.90

4.4. SAR TESTING RESULTS

4.4.1. SAR Test Reduction Considerations

KDB 447498 D04 Interim General RF Exposure Guidance

Testing of other required channels within the operating mode of a frequency band is not required when the reported SAR for the mid-band or highest output power channel is:

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

KDB 248227 D01 Wi-Fi SAR

a) For handsets operating next to ear, hotspot mode or mini-tablet configurations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When the reported SAR of initial test position is <= 0.4 W/kg, SAR testing for remaining test positions is not required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is <= 0.8 W/kg or all test positions are measured.
b) For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg.
c) For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is <= 1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is <= 1.2 W/kg.
d) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498 to determine simultaneous transmission SAR test exclusion should be applied. Otherwise, SAR for MIMO mode will be measured with all applicable antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

4.4.2. SAR Results for Body Exposure Condition (Separation Distance is 0 cm)

Plot No.	Band	Mode	Test Position	Channel	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Measured SAR-10g (W/kg)	Scaling Factor	Scaled SAR-1g (W/kg)
	2.4GHz	IEEE 802.11b	Front Face	6	-	-	99.29%	16.5	16.01	-0.09	0.0311	0.0161	1.12	0.035
	2.4GHz	IEEE 802.11b	Rear Face	6	-	-	99.29%	16.5	16.01	0.02	0.0158	0.00875	1.12	0.018
1	2.4GHz	IEEE 802.11b	Right Side	6	-	-	99.29%	16.5	16.01	-0.03	0.488	0.214	1.12	**0.550**
	2.4GHz	IEEE 802.11b	Top Side	6	-	-	99.29%	16.5	16.01	0.15	0.0134	0.00774	1.12	0.015
	2.4GHz	Bluetooth DH5	Front Face	78	-	-	76.80%	10.5	9.76	0.06	0.0203	0.0108	1.19	0.031
	2.4GHz	Bluetooth DH5	Rear Face	78	-	-	76.80%	10.5	9.76	0.08	0.0109	0.0062	1.19	0.017
2	2.4GHz	Bluetooth DH5	Right Side	78	-	-	76.80%	10.5	9.76	0.07	0.276	0.122	1.19	**0.426**
	2.4GHz	Bluetooth DH5	Top Side	78	-	-	76.80%	10.5	9.76	0.03	0.00809	0.00471	1.19	0.012
	2.4GHz	Bluetooth LE	Front Face	0	-	-	61.29%	10.5	9.94	0.05	0.0129	0.00735	1.14	0.024
	2.4GHz	Bluetooth LE	Rear Face	0	-	-	61.29%	10.5	9.94	-0.06	0.00661	0.00369	1.14	0.012
3	2.4GHz	Bluetooth LE	Right Side	0	-	-	61.29%	10.5	9.94	-0.03	0.135	0.0596	1.14	**0.251**
	2.4GHz	Bluetooth LE	Top Side	0	-	-	61.29%	10.5	9.94	0.11	0.00453	0.00258	1.14	0.008
	U-NII-1	IEEE 802.11a	Front Face	40	-	-	98.74%	16.5	15.97	0.06	0.041	0.013	1.13	0.047
	U-NII-1	IEEE 802.11a	Rear Face	40	-	-	98.74%	16.5	15.97	0.05	0.061	0.026	1.13	0.070
	U-NII-1	IEEE 802.11a	Right Side	40	-	-	98.74%	16.5	15.97	0.08	0.933	0.279	1.13	1.068
	U-NII-1	IEEE 802.11a	Top Side	40	-	-	98.74%	16.5	15.97	0.01	0.201	0.086	1.13	0.230
	U-NII-1	IEEE 802.11a	Right Side	36	-	-	98.74%	16.5	15.90	0.01	0.808	0.249	1.15	0.940
4	U-NII-1	IEEE 802.11a	Right Side	48	-	-	98.74%	16.5	15.70	-0.06	1.02	0.317	1.20	**1.242**
*	U-NII-1	IEEE 802.11a	Right Side	48	-	-	98.74%	16.5	15.70	-0.04	0.997	0.312	1.20	1.214
	U-NII-2A	IEEE 802.11a	Front Face	52	-	-	98.74%	16.5	15.91	0.08	0.05	0.017	1.15	0.058
	U-NII-2A	IEEE 802.11a	Rear Face	52	-	-	98.74%	16.5	15.91	0.08	0.064	0.028	1.15	0.074
	U-NII-2A	IEEE 802.11a	Right Side	52	-	-	98.74%	16.5	15.91	0.13	1.14	0.354	1.15	1.323
	U-NII-2A	IEEE 802.11a	Top Side	52	-	-	98.74%	16.5	15.91	0.03	0.218	0.088	1.15	0.253
	U-NII-2A	IEEE 802.11a	Right Side	56	-	-	98.74%	16.0	15.63	0.05	1.16	0.358	1.09	1.279
5	U-NII-2A	IEEE 802.11a	Right Side	64	-	-	98.74%	15.5	14.89	-0.05	1.21	0.365	1.15	**1.410**
*	U-NII-2A	IEEE 802.11a	Right Side	64	-	-	98.74%	15.5	14.89	0.04	1.17	0.363	1.15	1.364
	U-NII-2C	IEEE 802.11a	Front Face	100	-	-	98.20%	15.5	15.14	0.06	0.122	0.046	1.09	0.135
	U-NII-2C	IEEE 802.11a	Rear Face	100	-	-	98.20%	15.5	15.14	0.04	0.125	0.055	1.09	0.138
6	U-NII-2C	IEEE 802.11a	Right Side	100	-	-	98.20%	15.5	15.14	-0.01	1.13	0.328	1.09	**1.250**
	U-NII-2C	IEEE 802.11a	Top Side	100	-	-	98.20%	15.5	15.14	0.04	0.314	0.122	1.09	0.347
	U-NII-2C	IEEE 802.11a	Right Side	120	-	-	98.20%	15.5	14.80	0.08	0.849	0.246	1.17	1.016

Plot No.	Band	Mode	Test Position	Channel	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Power Drift (dB)	Measured SAR-1g (W/kg)	Measured SAR-10g (W/kg)	Scaling Factor	Scaled SAR-1g (W/kg)
	U-NII-2C	IEEE 802.11a	Right Side	140	-	-	98.20%	15.5	14.36	0.00	0.567	0.164	1.30	0.751
*	U-NII-2C	IEEE 802.11a	Right Side	100	-	-	98.20%	15.5	15.14	-0.06	1.1	0.324	1.09	1.217
	U-NII-3	IEEE 802.11a	Front Face	149	-	-	98.56%	13.5	13.21	-0.02	0.139	0.058	1.07	0.151
	U-NII-3	IEEE 802.11a	Rear Face	149	-	-	98.56%	13.5	13.21	0.01	0.148	0.134	1.07	0.161
7	U-NII-3	IEEE 802.11a	Right Side	149	-	-	98.56%	13.5	13.21	0.00	0.936	0.278	1.07	**1.015**
	U-NII-3	IEEE 802.11a	Top Side	149	-	-	98.56%	13.5	13.21	0.08	0.259	0.102	1.07	0.281
	U-NII-3	IEEE 802.11a	Right Side	165	-	-	98.56%	13.5	13.05	0.00	0.902	0.266	1.11	1.015
*	U-NII-3	IEEE 802.11a	Right Side	149	-	-	98.56%	13.5	13.21	0.08	0.927	0.274	1.07	1.005
	U-NII-3	IEEE 802.11a	Right Side	157	-	-	98.56%	13.5	12.58	0.00	0.375	0.106	1.24	0.470

Note:

1. Scaled SAR-1g (W/kg) = (Measured SAR-1g (W/kg) x Scaling Factor) / Duty Cycle.
2. "*" indicates that the data is repeated.

4.5. SAR MEASUREMENT VARIABILITY

4.5.1. Repeated Measurement

According to KDB 865664 D01, SAR measurement variability was 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. Alternatively, if the highest measured SAR for both head and body tissue-equivalent media are ≤ 1.45 W/kg and the ratio of these highest SAR values, i.e., largest divided by smallest value, is ≤ 1.10, the highest SAR configuration for either head or body tissue-equivalent medium may be used to perform the repeated measurement. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR repeated measurement procedure:

1) When the highest measured SAR is < 0.80 W/kg, repeated measurement is not required.
2) When the highest measured SAR is >= 0.80 W/kg, repeat that measurement once.
3) If the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20, or when the original or repeated measurement is >= 1.45 W/kg, perform a second repeated measurement.
4) If the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20, and the original, first or second repeated measurement is >= 1.5 W/kg, perform a third repeated measurement.

Band	Mode	Test Position	Channel	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
Body Exposure Condition										
U-NII-1	IEEE 802.11a	Right Side	48	1.02	0.997	1.0231	N/A	N/A	N/A	N/A
U-NII-2A	IEEE 802.11a	Right Side	64	1.21	1.17	1.0342	N/A	N/A	N/A	N/A
U-NII-2C	IEEE 802.11a	Right Side	100	1.13	1.1	1.0273	N/A	N/A	N/A	N/A
U-NII-3	IEEE 802.11a	Right Side	149	0.936	0.927	1.0097	N/A	N/A	N/A	N/A

4.6. SIMULTANEOUS MULTI-BAND TRANSMISSION EVALUATION

4.6.1. Simultaneous Transmission SAR Test Exclusion Considerations

a) Sum of SAR Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. When the sum of SAR_{1g} of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit (SAR_{1g} 1.6 W/kg), the simultaneous transmission SAR is not required. When the sum of SAR_{1g} is greater than the SAR limit (SAR_{1g} 1.6 W/kg), SAR test exclusion is determined by the SPLSR.

b) SAR to Peak Location Separation Ratio

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR.

$$SPLSR = (SAR_1 + SAR_2)^{1.5}/R_i$$

The ratio is rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion. When 10-g SAR applies, the ratio must be ≤ 0.10.

SAR_1 and SAR_2 are the highest reported or estimated SAR values for each antenna in the pair, and R_i is the separation distance in mm between the peak SAR locations for the antenna pair

$$peak\ location\ separation\ distance = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

Where $(x_1,\ y_1,\ z_1)$ and $(x_2,\ y_2,\ z_2)$ are the coordinates of the extrapolated peak SAR locations in the area or zoom scans.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna. Due to curvatures on the SAM phantom, when SAR is estimated for one of the antennas in an antenna pair, the measured peak SAR location will be translated onto the test device to determine the peak location separation for the antenna pair.

When SAR is estimated for both antennas, the peak location separation should be determined by the closest physical separation of the antennas, according to the feed-point or geometric center of the antennas.

c) Volume Scan

When the SPLSR is <= 0.04 for 1-g SAR and <= 0.10 for 10-g SAR, the simultaneous transmission SAR is not required. Otherwise, the enlarged zoom scan and volume scan post-processing procedures will be performed.

4.6.2. Simultaneous Transmission Possibilities

Note:

The WLAN and Bluetooth cannot transmit simultaneously, so there is no co-location test requirement for WLAN and Bluetooth.

5. NFC EXPOSURE REQUIREMENTS

According to the FCC Part 1.1307(b)(3)(i)(A) and KDB 447498 D04v01, a single RF source is exempt RF device if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

According to the RSS-102 Issue 6 Table 11, a single RF source is an exempt RF device if the maximum time-average power available at a separation distance of 5mm or less does not exceed 32mw, regardless of separation distance.

Since the source-based time-averaging conducted output power is well below the SAR low threshold level, so the EUT is considered to comply with SAR requirement without testing.

*** End of Report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.

APPENDIX A. SAR PLOTS OF SYSTEM VERIFICATION

The plots for system verification with largest deviation for each SAR system combination are shown as follows.

APPENDIX B. SAR PLOTS OF SAR MEASUREMENT

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination, and measured SAR > 1.5 W/kg are shown as follows.

APPENDIX C. CALIBRATION CERTIFICATE FOR PROBE AND DIPOLE

The calibration certificates are shown as follows.

APPENDIX D. PHOTOGRAPHS OF EUT AND SETUP

The photographs of EUT and setup are shown as follows.