

RF EXPOSURE TEST REPORT

Application No.: SUCR2606000479AT
Applicant: Shanghai Sunmi Technology Co.,Ltd.
Address of Applicant: Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China
Manufacturer: Shanghai Sunmi Technology Co.,Ltd.
Address of Manufacturer: Room 505, No.388, Song Hu Road, Yang Pu District, Shanghai, China
EUT Description: Wireless Data Terminal
Model No.: TFB1B
Trade Mark: SUNMI
FCC ID: 2AH25M3LDN
Standards: FCC 47CFR §2.1093
Date of Receipt: 2026-06-02
Date of Test: 2026-06-05 to 2026-06-25
Date of Issue: 2026-06-25

Test Result :	PASS *
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* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

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Revision Record			
Version	Description	Date	Remark
00	Original	2026-06-25	/

Authorized for issue by:		
Prepared By		
		Leon Liu/ Project Engineer
Approved By		
		Nick Hu/ Reviewer

TEST SUMMARY

Frequency Band	Maximum Reported SAR(W/kg)
	Body 0mm
GSM850	0.74
GSM1900	0.76
WCDMA Band II	0.49
WCDMA Band IV	0.76
WCDMA Band V	0.20
LTE Band 7	0.66
LTE Band 12(17)	0.72
LTE Band 13	0.47
LTE Band 25(2)	0.35
LTE Band 26 (5)	0.46
LTE Band 30	0.73
LTE Band 41(38)	0.72
LTE Band 66(4)	0.78
LTE Band 71	0.75
WI-FI (2.4GHz)	0.45
WI-FI (5GHz)	0.33
WI-FI 6E	0.12
BT	0.28
SAR Limited(W/kg)	1.6
Maximum Simultaneous Transmission SAR (W/kg)	
Scenario	Body 0mm
Sum SAR	1.59
SPLSR	/
SPLSR Limited	0.04

Note:

1) The Simultaneous transmission SAR is the same test position of the WWAN Antenna + WiFi/BT Antenna.

2) According to TCB Workshop October, 2014 RF Exposure Procedures Update (Overlapping Bands): SAR for LTE Band 2/4/5/17/38 is respectively covered by LTE Band 25/66/26/12/41 due to similar frequency range, same maximum tune up limit and same channel bandwidth. Because the frequency range is similar, the maximum tuning limit is the same, and the channel bandwidth and other operating parameters for the smaller band is fully supported by the larger band.

Frequency Band	Report Power Density (W/m ²)
WIFI 6E	2.97
SAR Limited(W/kg)	10.00

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1 General Information

1.1 General Description of EUT

Product Name:	Wireless Data Terminal		
Model No.:	TFB1B		
Trade Mark:	SUNMI		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
IMEI:	865647070103058/865647070103322		
Antenna Type:	WWAN: Internal Antenna; BT/WLAN: FPC Antenna		
Device Operating Configurations:			
Test Mode Configuration:	GSM: GMSK,8PSK; WCDMA: QPSK LTE: QPSK,16QAM WIFI: DSSS,OFDM,OFDMA; BT: GFSK, $\pi/4$ DQPSK,8DPSK		
Device Class:	B		
GPRS Multi-slots Class:	33	EGPRS Multi-slots Class:	33
HSDPA UE Category:	24	HSUPA UE Category:	6
Power Class:	4, tested with power level 5(GSM850)		
	1, tested with power level 0(GSM1900)		
	3, tested with power control “all 1”(WCDMA Band)		
	3, tested with power control “max power”(LTE Band)		
Frequency Bands:	Band	Tx(MHz)	
	GSM850	824~849	
	GSM1900	1850~1910	
	WCDMA Band II	1850~1910	
	WCDMA Band IV	1710~1755	
	WCDMA Band V	824~849	
	LTE Band 2	1850 ~1910	
	LTE Band 4	1710~1755	
	LTE Band 5	824~849	
	LTE Band 7	2500~2570	
	LTE Band 12	699~716	
	LTE Band 13	777~787	
	LTE Band 17	704-716	
	LTE Band 25	1850~1915	
	LTE Band 26	814~849	
	LTE Band 30	2305~2315	

	LTE Band 38	2570~2620
	LTE Band 41	2496~2690
	LTE Band 66	1710~1780
	LTE Band 71	663~698
	WIFI 2.4G	2412~2462
	WIFI 5G	5150~5250
		5250~5350
		5470~5725
		5725~5850
	WIFI 6E	5925~6425
		6425~6525
		6525~6875
		6875~7125
	BT	2402~2480
RF Cable:	☒ Provided by applicant ☐ Provided by the laboratory	
Battery Information:	Model:	FHPP 11CP5/70/61-2
	Normal Voltage:	3.87V
	Rated capacity:	6000mAh
	Manufacturer:	Guangdong Fenghua New Energy co., Ltd.
Note: Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.		

1.2 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radiofrequency Radiation Exposure Evaluation: Portable Devices
ANSI/IEEE C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz.
IEEE 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
IEC/IEEE 62209-1528:2020	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices –Part 1528: Human models, instrumentation, and procedures(Frequency range of 4 MHz to 10 GHz)
IEC/IEEE 63195-1:2022	Assessment of power density of human exposure to radio frequency fields from wireless devices in close proximity to the head and body (frequency range of 6 GHz to 300 GHz) – Part 1: Measurement procedure
KDB 941225 D01	3G SAR Measurement Procedures v03r01
KDB 941225 D05	SAR for LTE Devices v02r05
KDB 941225 D05A	LTE Rel.10 KDB Inquiry Sheet v01r02
KDB 248227 D01	SAR Guidance for IEEE 802.11 Wi-Fi SAR v02r02
KDB 447498 D04	Interim General RF Exposure Guidance v01
KDB 865664 D01	SAR Measurement 100 MHz to 6 GHz v01r04
KDB 865664 D02	RF Exposure Reporting v01r02
KDB 690783 D01	SAR Listings on Grants v01r03
KDB 616217 D04	SAR for laptop and tablets v01r02

1.3 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain*Trunk)	1.60 mW/g	8.00 mW/g
Spatial Average SAR** (Whole Body)	0.08 mW/g	0.40 mW/g
Spatial Peak SAR*** (Hands/Feet/Ankle/Wrist)	4.00 mW/g	20.00 mW/g

Notes:

* 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

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

*** 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.

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.)

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4cm² per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

Note: 1.0 mW/cm² is equal to 10 W/m²

1.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu)
Pilot Free Trade Zone

No tests were sub-contracted.

1.5 Test Engineer

Test Engineer: Alan Zhang

1.6 Test Facility

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

- **A2LA (Certificate No. 6336.01)**

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA).

- **FCC (Designation Number: CN1312)**

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd. has been recognized as an accredited testing laboratory.

Test Firm Registration Number: 717327

- **ISED (CAB Identifier: CN0120)**

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 27594

2 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

3 SAR Measurements System Configuration

3.1 The SAR Measurement System

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation $SAR = \sigma (|E_i|^2) / \rho$ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

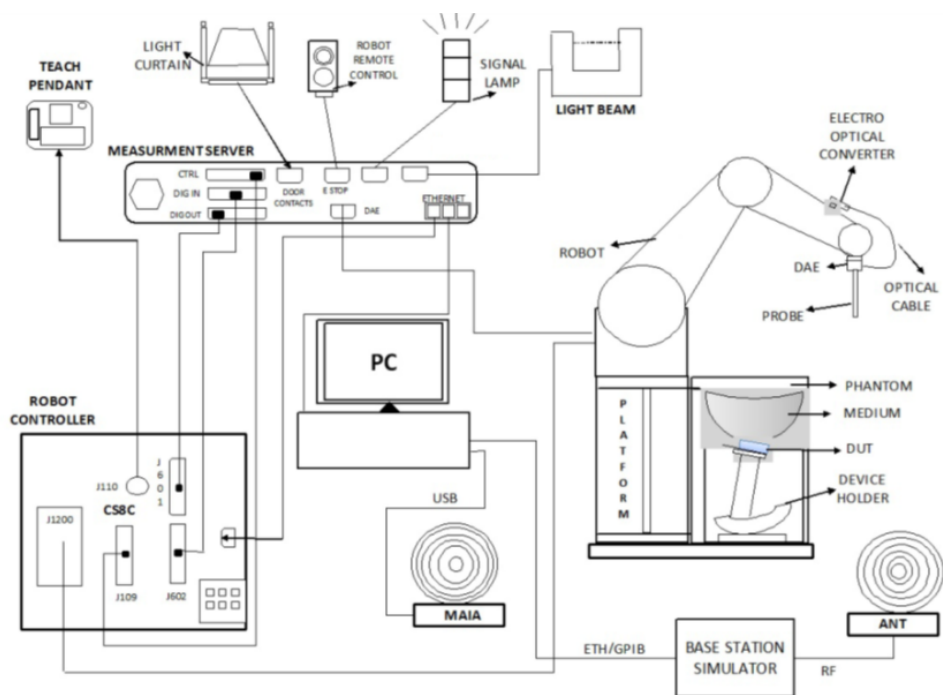
The DASY system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software. An arm extension for accommodation the data acquisition electronics (DAE).

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

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 between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.



F-1. SAR Measurement System Configuration

- 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.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows system.
- DASY software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validating the proper functioning of the system.

3.2 Isotropic E-field Probe EX3DV4

	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	4 MHz - 10 GHz Linearity: ± 0.2 dB (30 MHz - 10 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μ W/g - 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μ W/g)
Dimensions	Overall length: 337 mm (Tip: 9 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 10 GHz with precision of better 30%.
Compatibility	DASY52 SAR and higher, EASY4/MRI

3.3 Data Acquisition Electronics (DAE)

Model	DAE	
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 detector 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 f A	
Dimensions	60 x 60 x 68 mm	

3.4 SAM Twin Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
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 shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom. 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.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

3.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
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	

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. 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. ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4 but has reinforced top structure.

3.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

3.7 Measurement Procedure

3.7.1 Scanning procedure

Step 1: Power reference measurement

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure.

Step 2: Area scan

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm*15mm or 12mm*12mm or 10mm*10mm. Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Zoom scan

Around this point, a volume of 32mm*32mm*30mm ($f \leq 2\text{GHz}$), 30mm*30mm*30mm (f for 2-3GHz) and 24mm*24mm*22mm (f for 5-6GHz) was assessed by measuring 5x5x7 points ($f \leq 2\text{GHz}$), 7x7x7 points (f for 2-3GHz) and 7x7x12 points (f for 5-6GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification). The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

If the zoom scan measured as specified in the preceding paragraphs complies with both i) and ii), or if the psSAR is below 0,1 W/kg, no additional measurements are needed.

i) The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal grid steps in both x- and y-directions (Δx , Δy). This shall be checked for the measured zoom scan plane conformal to the phantom at the distance zM1. The minimum distance shall be recorded in the SAR test report.

ii) The ratio of the SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x-y location of the measured maximum SAR value shall be at least 30 %. This ratio (in %) shall be recorded in the SAR test report.

			$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			$5 \pm 1 \text{ mm}$	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location			$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$			$\leq 2 \text{ GHz: } \leq 15 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 12 \text{ mm}$	$3 - 4 \text{ GHz: } \leq 12 \text{ mm}$ $4 - 6 \text{ GHz: } \leq 10 \text{ mm}$
			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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			$\leq 2 \text{ GHz: } \leq 8 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz: } \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz: } \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		$\leq 5 \text{ mm}$	$3 - 4 \text{ GHz: } \leq 4 \text{ mm}$ $4 - 5 \text{ GHz: } \leq 3 \text{ mm}$ $5 - 6 \text{ GHz: } \leq 2 \text{ mm}$
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	$\leq 4 \text{ mm}$	$3 - 4 \text{ GHz: } \leq 3 \text{ mm}$ $4 - 5 \text{ GHz: } \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz: } \leq 2 \text{ mm}$
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz: } \geq 28 \text{ mm}$ $4 - 5 \text{ GHz: } \geq 25 \text{ mm}$ $5 - 6 \text{ GHz: } \geq 22 \text{ mm}$

Step 4: Power reference measurement (drift)

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 indicated drift is mainly the variation of the DUT's output power and should vary max $\pm 5 \%$.

3.7.2 Data storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [m W/g], [m W/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

3.7.3 Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
- Conversion factor	ConvFi	
- Diode compression point	Dcpi	
Device parameters:	- Frequency	f
- Crest factor	cf	
Media parameters:	- Conductivity	ε
- Density	ρ	

These parameters must be set correctly in the software. They can be found in the component documents, or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcp_i$$

With V_i = compensated signal of channel I (I = x, y, z)

U_i = input signal of channel I (I = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcp I = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$$

H-field probes:

$$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2) / f$$

With V_i = compensated signal of channel i ($i = x, y, z$)

$Norm_i$ = sensor sensitivity of channel i ($i = x, y, z$)

[mV/(V/m)²] for E-field Probes

$ConvF$ = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \sigma) / (\epsilon \cdot 1000)$$

with SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ϵ = equivalent tissue density in g/cm³

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \text{ or } P_{pwe} = H_{tot}^2 \cdot 37.7$$

with P_{pwe} = equivalent power density of a plane wave in mW/cm²

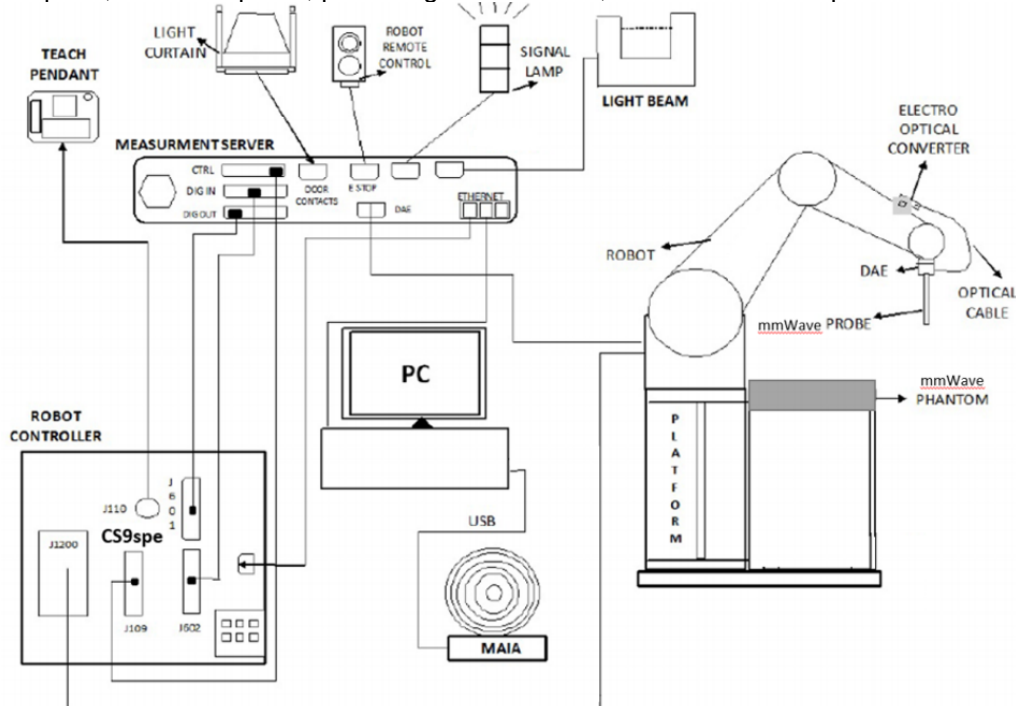
E_{tot} = total electric field strength in V/m

H_{tot} = total magnetic field strength in A/m

4 PD Measurements System Configuration

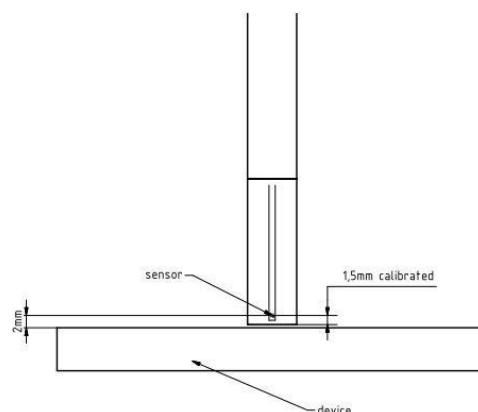
4.1 Power density measurement system

Power density measurements for mmWave frequencies were performed using SPEAG DASY8 or Higher with mmWave module. The system included a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the mmWave phantom cover.



4.2 EUmW probe

Frequency	750 MHz – 110 GHz
Probe Overall Length	320 mm
Probe Body Diameter	8.0 mm
Tip Length	23.0 mm
Tip Diameter	8.0 mm
Probe's two dipoles length	0.9 mm – Diode loaded
Dynamic Range	< 20 V/m - 10000 V/m with PRE-10 (min < 50 V/m - 3000 V/m)
Position Precision	< 0.2 mm
Distance between diode sensors and probe's tip	1.5 mm
Minimum Mechanical separation between probe tip and a Surface	0.5 mm
Applications	E-field measurements of 5G devices and other mm-wave transmitters operating above 10GHz in < 2 mm distance from device (free-space) Power density, H-field and far-field analysis using total field reconstruction.
Compatibility	cDASY8 + 5G-Module SW1.0 and higher



The EUmW probe is based on the pseudo-vector probe design, which not only measures the field magnitude but also derives its polarization ellipse. The design entails two small 0.8mm dipole sensors mechanically protected by high-density foam, printed on both sides of a 0.9mm wide and 0.12mm thick glass substrate. The body of the probe is specifically constructed to minimize distortion by the scattered fields. The probe consists of two sensors with different angles (1 and 2) arranged in the same plane in the probe axis. Three or more measurements of the two sensors are taken for different probe rotational angles to derive the amplitude and polarization information. The probe design allows measurements at distances as small as 2mm from the sensors to the surface of the device under test (DUT). The typical sensor to probe tip distance is 1.5 mm. The exact distance is calibrated.

4.3 Data Acquisition Electronics (DAE)

Model	DAE	
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 detector 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 f A	
Dimensions	60 x 60 x 68 mm	

4.4 Measurement Procedure

Fine-resolution scans on 2 different planes are performed to reconstruct the E- and H-fields as well as the power density; the z-distance between the 2 planes is set to $\lambda/4$. The (x, y) grid step is also set $\lambda/4$, the grid extent is set to sufficiently large to identify the field pattern and the peak.

5 SAR measurement variability and uncertainty

5.1 SAR measurement variability

Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, 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. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

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

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

5.2 SAR measurement uncertainty

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. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

6 PD measurement uncertainty

Declaration of Conformity:

The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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

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

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

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi plying Factor ^(a)	$1/k^{(b)}$	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

Standard Uncertainty for Assumed Distribution

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

(b) k is the coverage factor

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

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

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

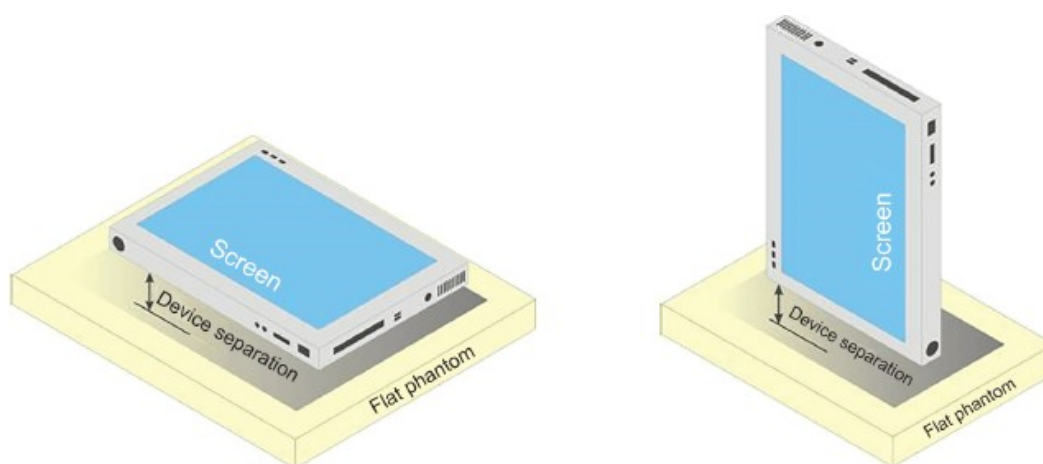
a	b	c	d	e	f=b*e/d	g
Error Description	Uncertainty Value (±dB)	Probability	Div.	Ci	Standard Uncertainty (±dB)	Vi (Veff)
Probe Calibration	0.49	N	1	1	0.49	∞
Probe correction	0.00	R	1.732	1	0.00	∞
Frequency response (BW ≤1 GHz)	0.20	R	1.732	1	0.12	∞
Sensor cross coupling	0.00	R	1.732	1	0.00	∞
Isotropy	0.50	R	1.732	1	0.29	∞
Linearity	0.20	R	1.732	1	0.12	∞
Probe scattering	0.00	R	1.732	1	0.00	∞
Probe positioning offset	0.30	R	1.732	1	0.17	∞
Probe positioning repeatability	0.04	R	1.732	1	0.02	∞
Sensor mechanical offset	0.00	R	1.732	1	0.00	∞
Probe spatial resolution	0.00	R	1.732	1	0.00	∞
Field impedance dependance	0.00	R	1.732	1	0.00	∞
Amplitude and phase drift	0.00	R	1.732	1	0.00	∞
Amplitude and phase noise	0.04	R	1.732	1	0.02	∞
Measurement area truncation	0.00	R	1.732	1	0.00	∞
Data acquisition	0.03	N	1	1	0.03	∞
Sampling	0.00	R	1.732	1	0.00	∞
Field reconstruction	2.00	R	1.732	1	1.15	∞
Forward transformation	0.00	R	1.732	1	0.00	∞
Power density scaling	0.00	R	1.732	1	0.00	∞
Spatial averaging	0.10	R	1.732	1	0.06	∞
System detection limit	0.04	R	1.732	1	0.02	∞
Probe coupling with DUT	0.00	R	1.732	1	0.00	∞
Modulation response	0.40	R	1.732	1	0.23	∞
Integration time	0.00	R	1.732	1	0.00	∞
Response time	0.00	R	1.732	1	0.00	∞
Device holder influence	0.10	R	1.732	1	0.06	∞
DUT alignment	0.00	R	1.732	1	0.00	∞
RF ambient conditions	0.04	R	1.732	1	0.02	∞
Ambient reflections	0.04	R	1.732	1	0.02	∞
Immunity / secondary reception	0.00	R	1.732	1	0.00	∞
Drift of the DUT		R	1.732	1	0.00	∞
Combined Std. Uncertainty					1.33	
Expanded STD Uncertainty (95%), K=2					2.67	

7 Description of Test Position

7.1 The Body Test Position

7.1.1 Tablet Computers used next to or against the body

The overall diagonal dimension of the display section of a tablet is > 20 cm, Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. SAR evaluation for the front surface of tablet display screens are generally not necessary. The SAR Exclusion Threshold in KDB 447498 D04 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

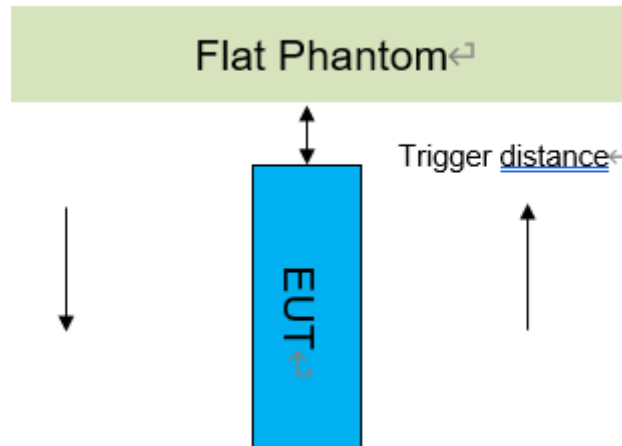


a) Tablet form factor portable computer

7.2 Proximity Sensor Triggering Test

7.2.1 Proximity sensor triggering distances

The Proximity sensor triggering was applied to the below table list antenna. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed.

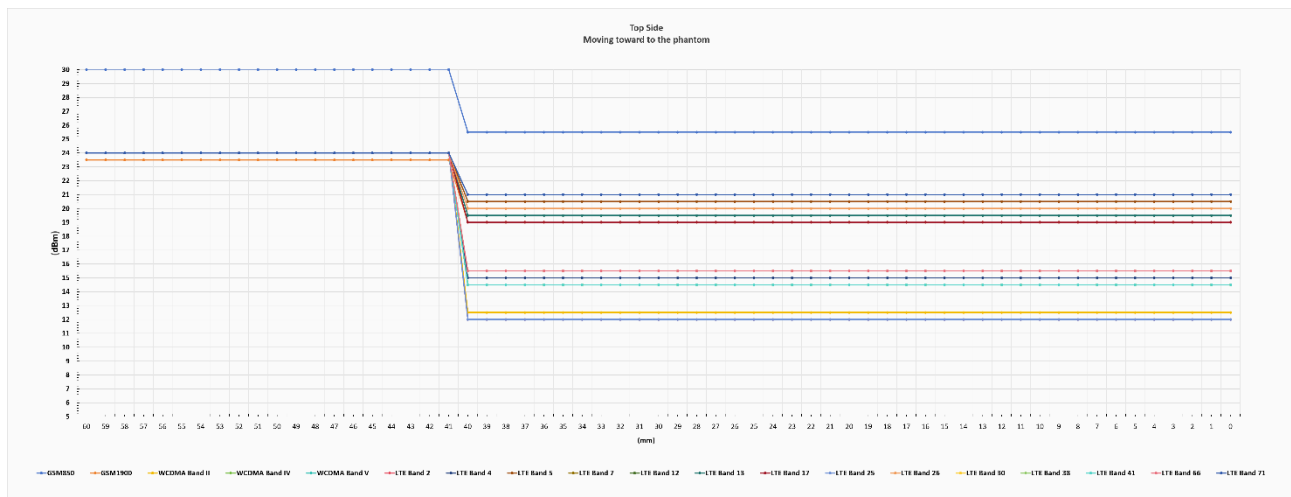


Proximity Sensor Triggering Distance(mm)		
Ant.0		
Position	Back side	Top Side
Minimum	33	40
Ant.2		
Position	Back side	Top Side
Minimum	19	21
Ant.3		
Position	Back side	Top Side
Minimum	25	26

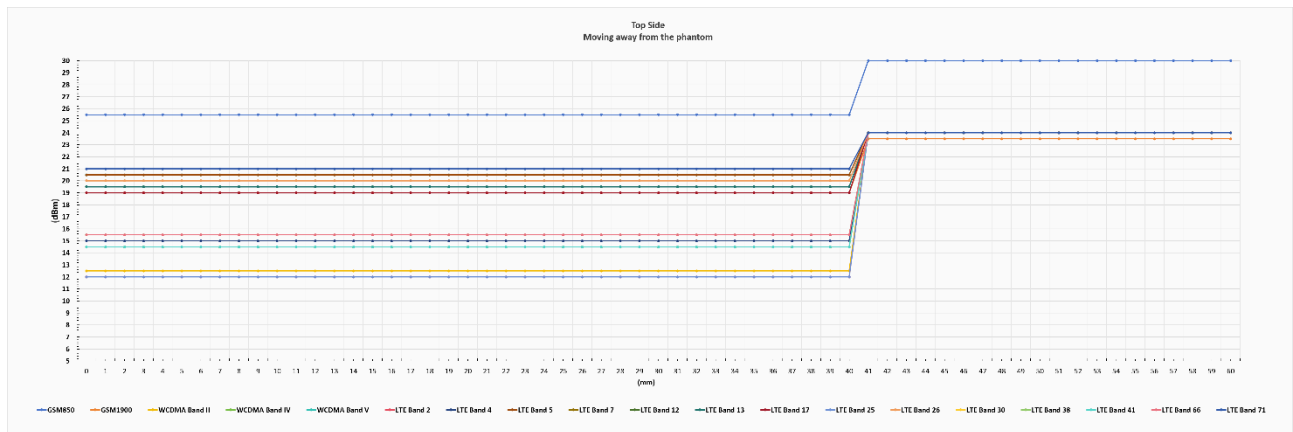
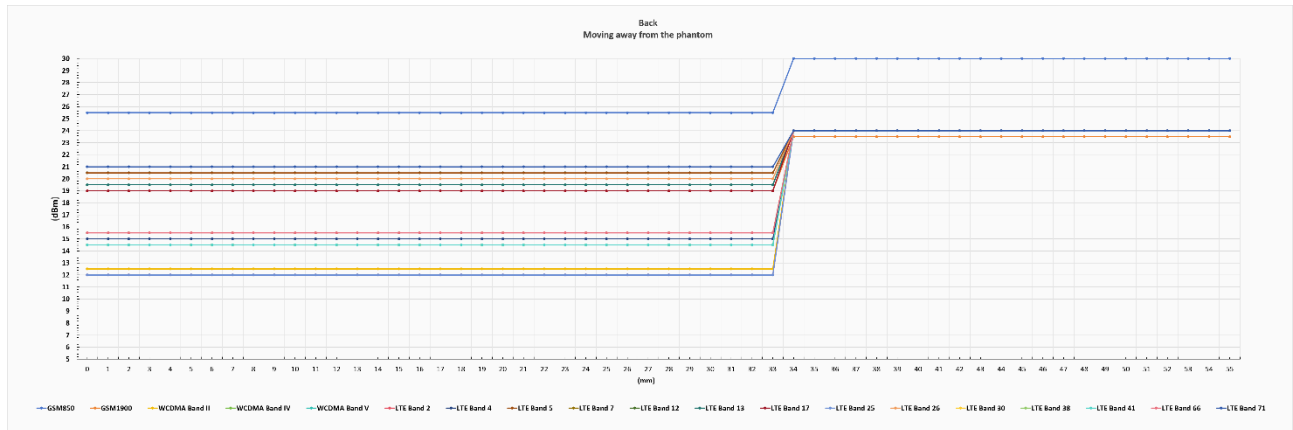
Note:

SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

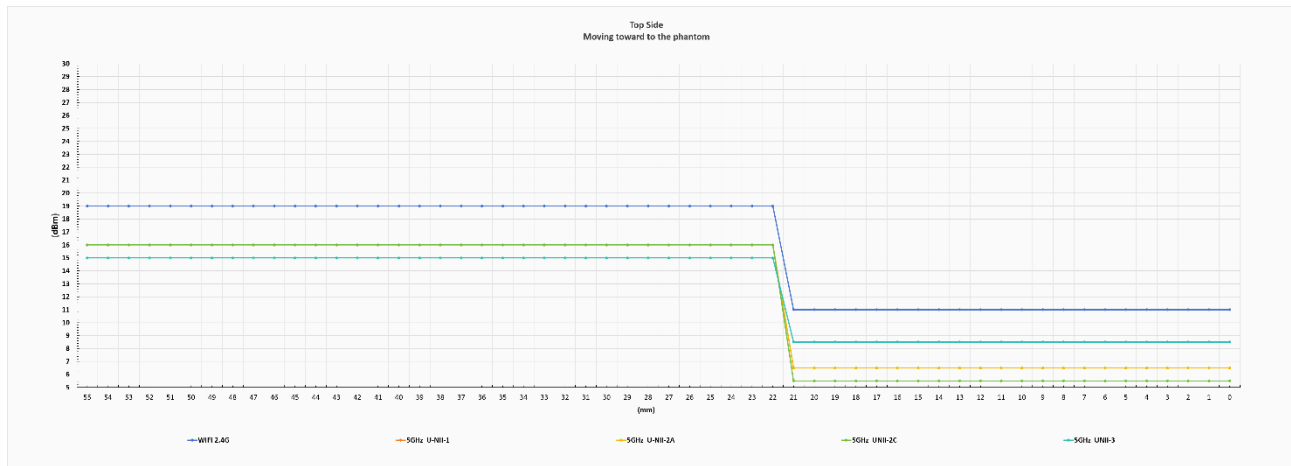
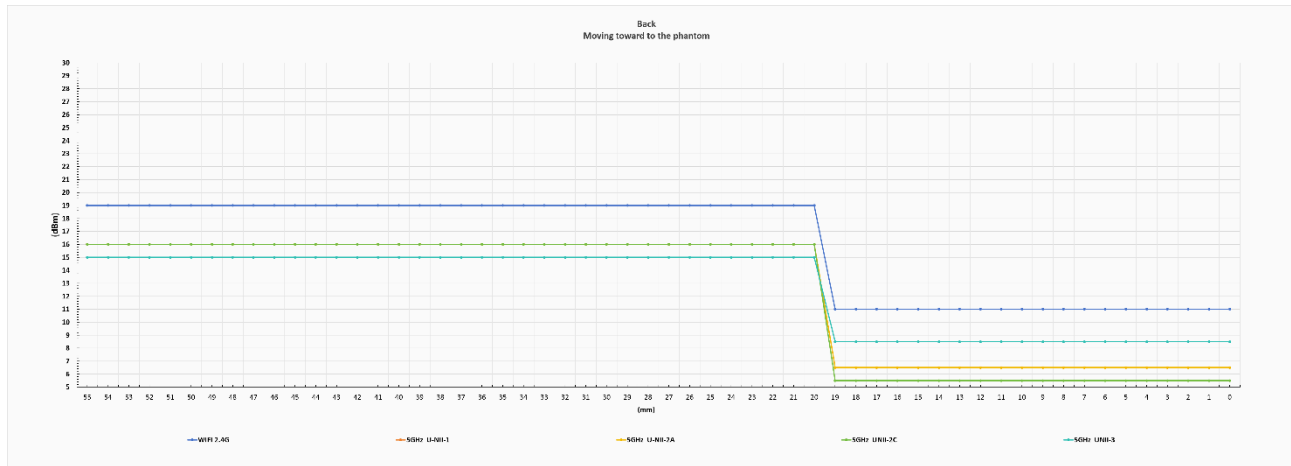
● Ant 0 DUT Moving Toward(Trigger)the Phantom



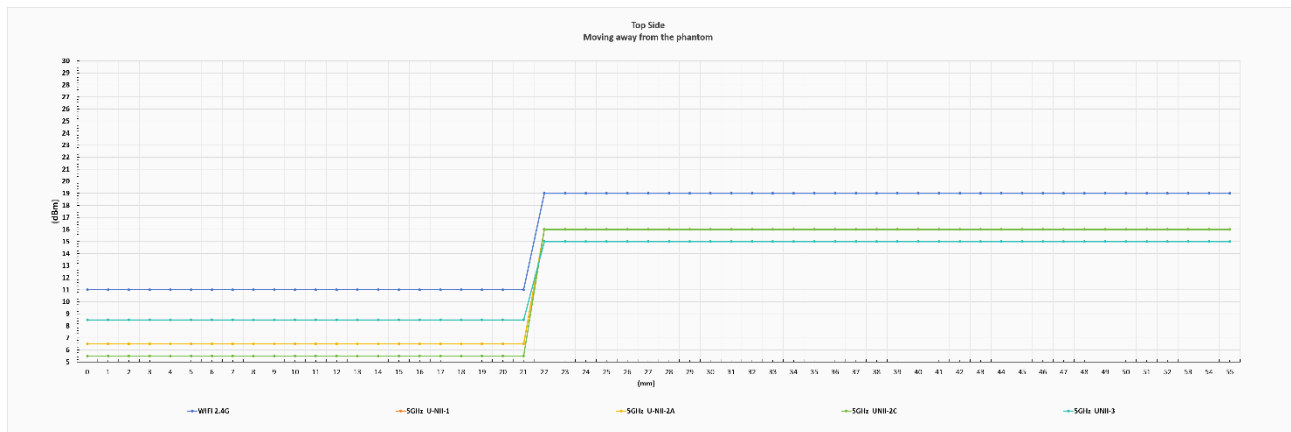
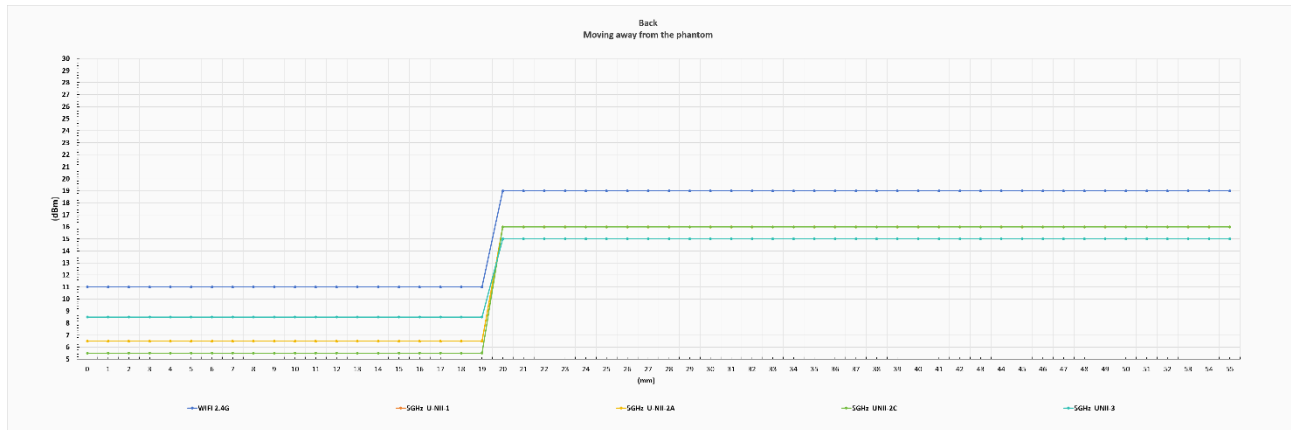
● Ant 0 DUT Moving Away(Release) from the Phantom



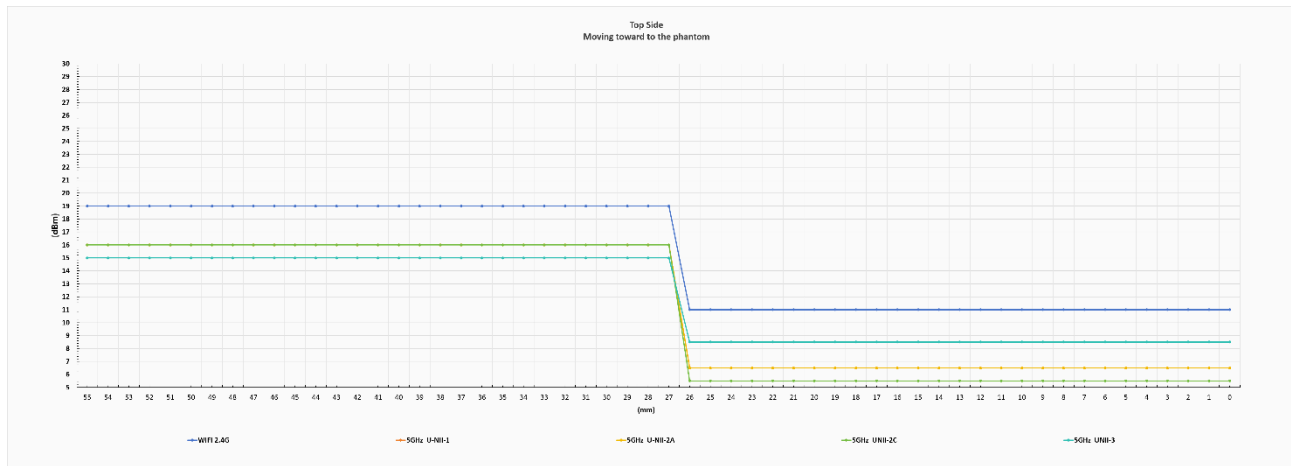
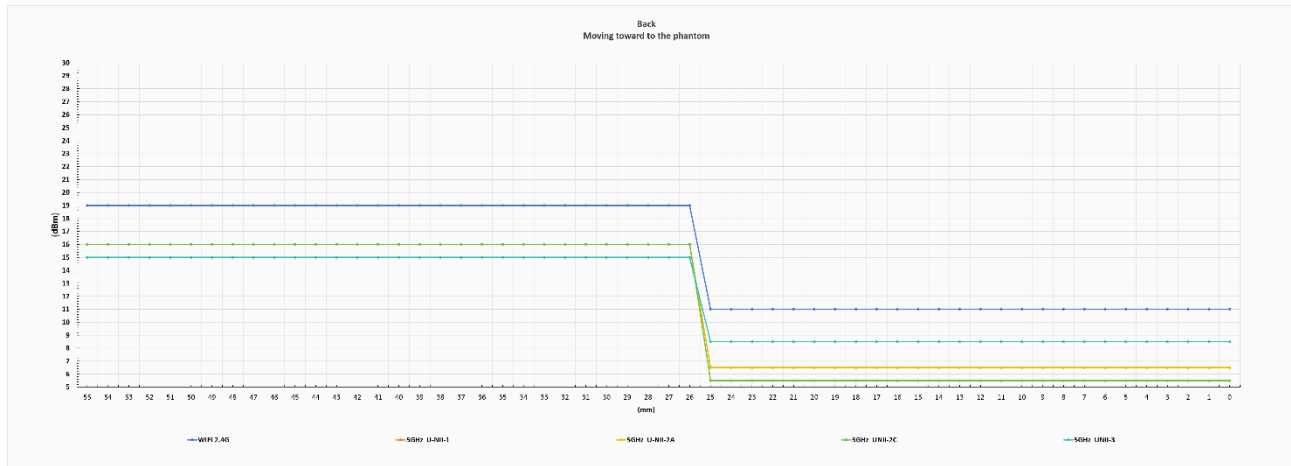
● Ant 2 DUT Moving Toward(Trigger)the Phantom



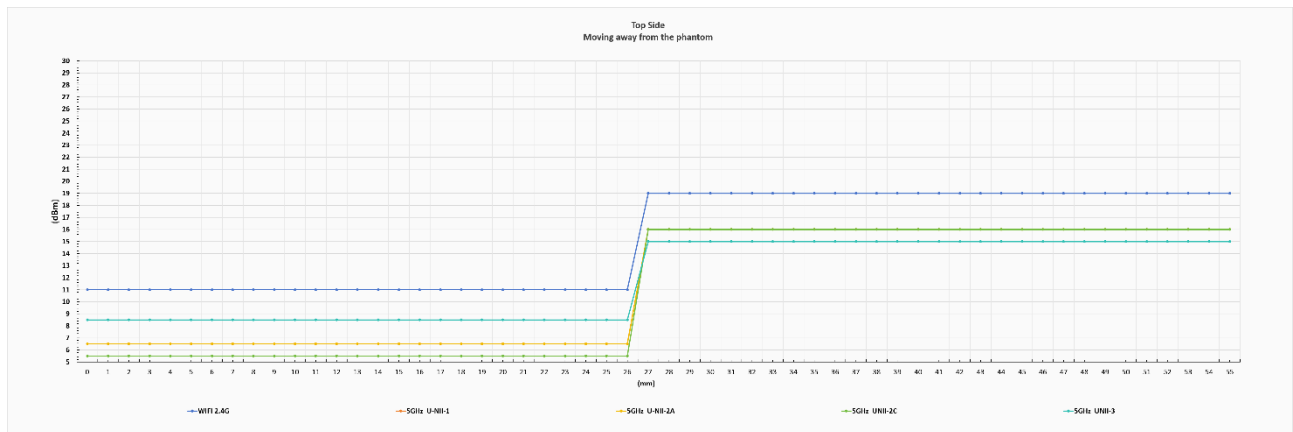
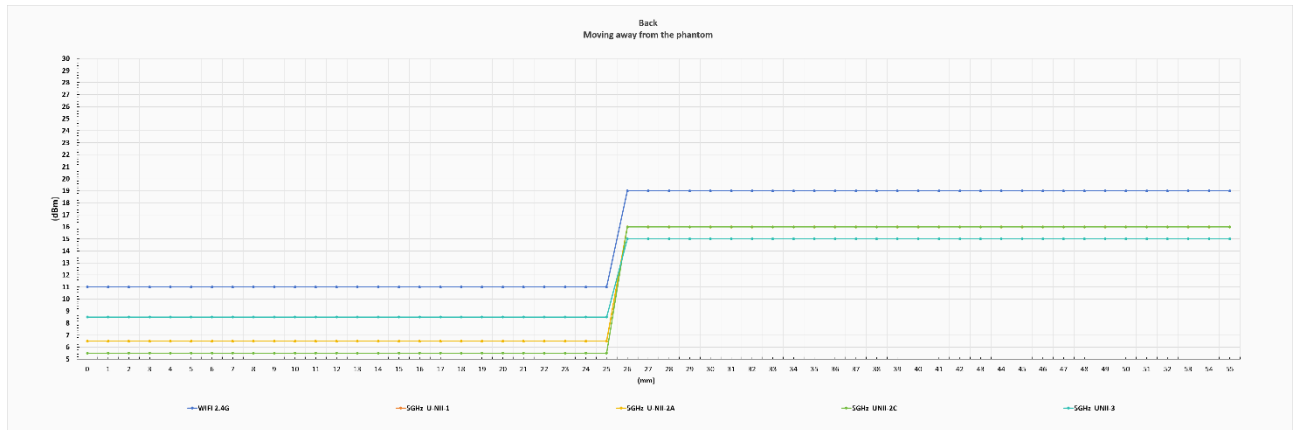
● Ant 2 DUT Moving Away(Release) from the Phantom



● Ant 3 DUT Moving Toward(Trigger)the Phantom



● Ant 3 DUT Moving Away(Release) from the Phantom



7.2.2 Proximity sensor coverage

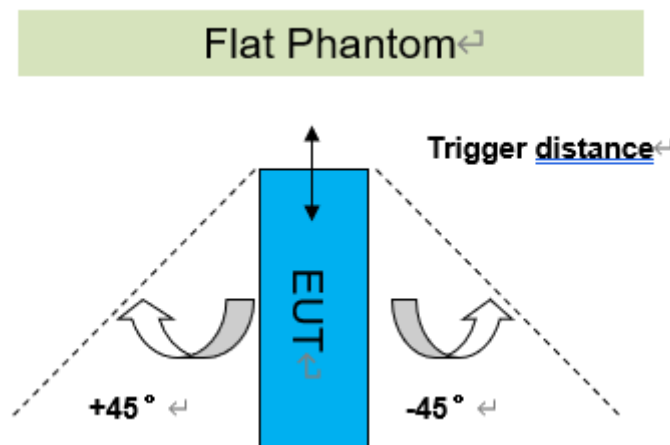
If a sensor is spatially offset from the antenna(s), it is necessary to verify sensor triggering for conditions where the antenna is next to the user, but the sensor is laterally further away to ensure sensor coverage is sufficient for reducing the power to maintain compliance. For p-sensor coverage testing, the device is moved and “along the direction of maximum antenna and sensor offset”.

The proximity sensor and main antenna use same metallic electrode, so there is no spatial offset.

7.2.3 Device tilt angle influences on proximity sensor triggering

The influence of device tilt angles to proximity sensor triggering was determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom.

Rotating the tablet around the edge next to the phantom in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ from the vertical position at 0° , and the maximum output power remains in the reduced mode.



Summary of Tablet Tilt Angle Influence on Proximity Sensor Triggering for Edge Side													
Band (MHz)	Minimum trigger distance Per KDB616217\$6.2	Minimum trigger distance at which power reduction was maintained over $\pm 45^\circ$	Power Reduction Status										
			-45°	-35°	-25°	-15°	-5°	0°	5°	15°	25°	35°	45°
Ant 0:	Top Side 40mm	Top Side 40mm	on	on	on	on	on	on	on	on	on	on	on
Ant 2:	Top Side 21mm	Top Side 21mm	on	on	on	on	on	on	on	on	on	on	on
Ant 3:	Top Side 26mm	Top Side 26mm	on	on	on	on	on	on	on	on	on	on	on

8 SAR System Verification Procedure

8.1 Tissue Simulate Liquid

8.1.1 Recipes for Tissue Simulate Liquid

The following tables give the recipes for tissue simulating liquids to be used in different frequency bands:

Ingredients (% by weight)	Frequency (MHz)				
	450	700-1000	1700-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85
Salt: 99+% Pure Sodium Chloride Water: De-ionized, 16 MΩ+ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate Sucrose: 98+% Pure Sucrose HEC: Hydroxyethyl Cellulose					
Head Tissue Simulate Liquid (HBBL600-10000V6) is composed of the following ingredients: (Manufactured by SPEAG) Water: 50-65% Mineral oil: 10-30% Emulsifiers: 8-25% Sodium salt: 0-1.5%					

Table 1 : Recipe of Tissue Simulate Liquid

8.1.2 Measurement for Tissue Simulate Liquid

The Conductivity (σ) and Permittivity (ϵ_r) are listed in Table 2. For the SAR measurement given in this report.

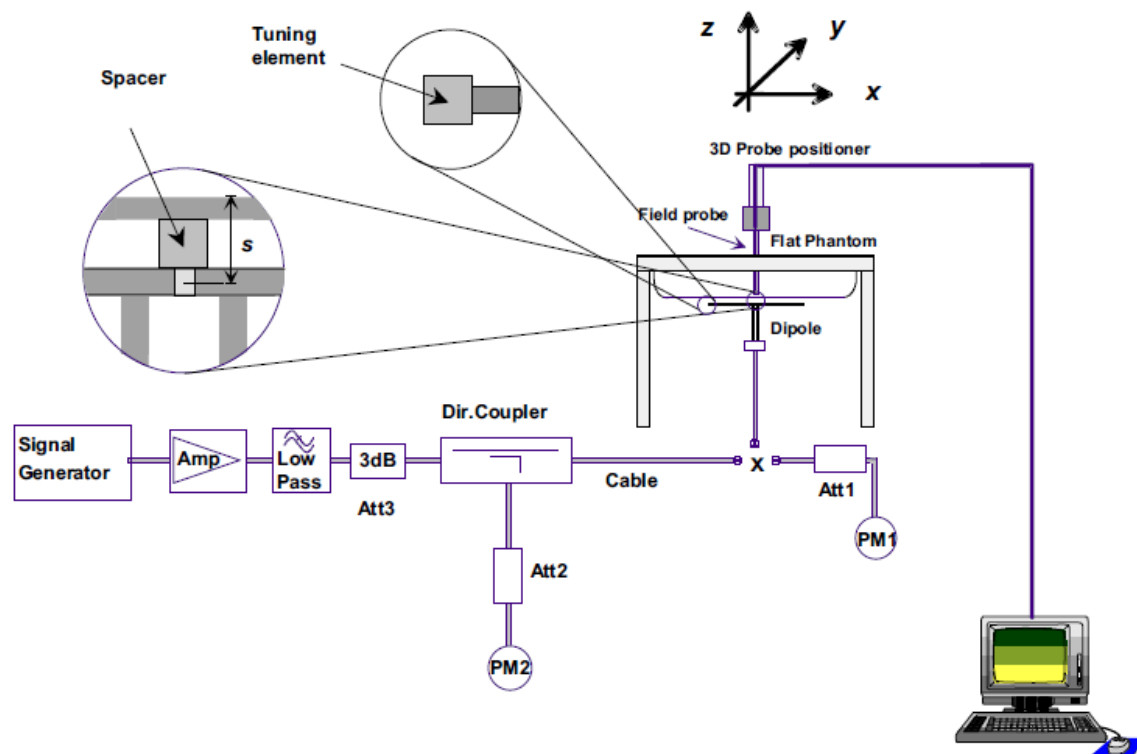
The temperature variation of the Tissue Simulate Liquids was $22 \pm 2^\circ\text{C}$.

Tissue Type	Measured Frequency (MHz)	Measured Tissue		Target Tissue ($\pm 5\%$)		Deviation (Within $\pm 5\%$)		Liquid Temp. ($^\circ\text{C}$)	Test Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
750 Head	750	42.386	0.891	41.90	0.89	1.16%	0.11%	22.6	2026/6/5
835 Head	835	42.554	0.912	41.50	0.90	2.54%	1.33%	22.7	2026/6/7
1750 Head	1750	38.964	1.312	40.10	1.37	-2.83%	-4.23%	22.5	2026/6/9
1950 Head	1950	39.225	1.411	40.00	1.40	-1.94%	0.79%	22.4	2026/6/11
2300 Head	2300	39.103	1.701	39.50	1.67	-1.01%	1.86%	22.8	2026/6/13
2450 Head	2450	38.922	1.852	39.20	1.80	-0.71%	2.89%	22.9	2026/6/15
2600 Head	2600	38.762	1.996	39.00	1.96	-0.61%	1.84%	23.1	2026/6/17
5250 Head	5250	36.922	4.830	35.90	4.71	2.85%	2.55%	22.2	2026/6/19
5600 Head	5600	36.156	5.225	35.50	5.07	1.85%	3.06%	22.2	2026/6/21
5750 Head	5750	35.898	5.362	35.40	5.22	1.41%	2.72%	22.2	2026/6/23
6500 Head	6500	34.800	6.100	34.50	6.07	0.87%	0.49%	22.2	2026/6/25

Table 2 : Measurement result of Tissue electric parameters

8.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within $\pm 10\%$ from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range $22\pm 2^\circ\text{C}$, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 ± 0.5 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-12.The microwave circuit arrangement used for SAR system Check

8.2.1 Justification for Extended SAR Dipole Calibrations

1) Instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

- a) There is no physical damage on the dipole;
- b) System check with specific dipole is within 10% of calibrated value;
- c) Return-loss is within 20% of calibrated measurement;
- d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

8.2.2 Summary System Check Result(s)

Validation Kit	Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within $\pm 10\%$)		Liquid Temp. (°C)	Test Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1- g(W/kg)	10- g(W/kg)		
D750V3_Head	2.09	1.34	8.36	5.36	8.54	5.80	-2.11%	-7.59%	22.6	2026/6/5
D835V2_Head	2.35	1.54	9.40	6.16	9.60	6.16	-2.08%	0.00%	22.7	2026/6/7
D1750V2_Head	8.88	4.68	35.52	18.72	36.30	19.30	-2.15%	-3.01%	22.5	2026/6/9
D1950V3_Head	9.85	5.01	39.40	20.04	40.70	21.20	-3.19%	-5.47%	22.4	2026/6/11
D2300V2_Head	12.30	5.97	49.20	23.88	49.00	23.50	0.41%	1.62%	22.8	2026/6/13
D2450V2_Head	13.10	6.24	52.40	24.96	52.70	24.60	-0.57%	1.46%	22.9	2026/6/15
D2600V2_Head	13.30	6.05	53.20	24.20	55.20	24.70	-3.62%	-2.02%	23.1	2026/6/17
Validation Kit	Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within $\pm 10\%$)		Liquid Temp. (°C)	Test Date
	1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1- g(W/kg)	10- g(W/kg)		
D5GHzV2_5.25G_Head	7.48	2.11	74.80	21.10	77.20	21.90	-3.11%	-3.65%	22.2	2026/6/19
D5GHzV2_5.6G_Head	8.24	2.33	82.40	23.30	81.10	22.80	1.60%	2.19%	22.2	2026/6/21
D5GHzV2_5.75G_Head	7.51	2.12	75.10	21.20	77.80	21.70	-3.47%	-2.30%	22.2	2026/6/23
D6500V2_Head	29.10	5.36	291.00	53.60	297.00	54.30	-2.02%	-1.29%	22.2	2026/6/25

Table 3 : SAR System Check Result

8.2.3 Detailed System Check Results

Please see the Appendix A

9 PD System Verification Procedure

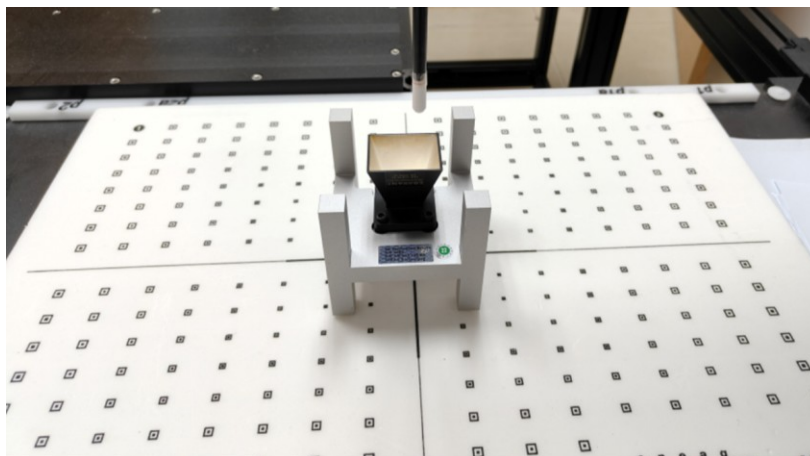
9.1 PD System Check Setting

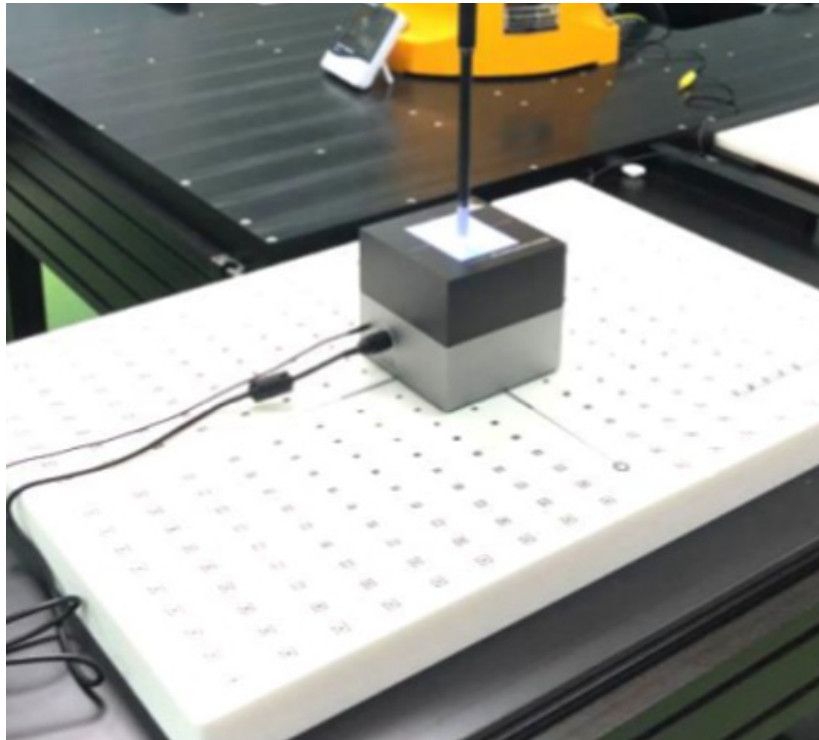
The system was verified to be within ± 0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

Settings for measurement of verification sources

Frequency [GHz]	Grid step	Grid extent X/Y [mm]	Measurement points
10	$0.25 \left(\frac{\lambda}{4}\right)$	120/120	16×16
30	$0.25 \left(\frac{\lambda}{4}\right)$	60/60	24×24
60	$0.25 \left(\frac{\lambda}{4}\right)$	32.5/32.5	26×26
90	$0.25 \left(\frac{\lambda}{4}\right)$	30/30	36×36





System Verification Setup Photo



9.2 PD System Check Results

Frequent	Measured PD W/m ²	Target PD W/m ²	Circular Deviation (Within ±0.66dB)	Liquid Temp. (°C)	Test Date
	4cm ²	4cm ²	4cm ²		
10G HZ Source	193	174	0.45	22.2	2026/6/25

9.3 Detailed System Check Results

Please see the Appendix A

10 Test Configuration

10.1 Operation Configurations

10.1.1 GSM Test Configuration

SAR tests for GSM frequency band, a communication link is set up with a base station by air link. Using Radio Communication Analyzer, the power level is set to “5” or “0” in SAR of GSM frequency band. The tests in the GSM frequency band are performed in the mode of GPRS/EGPRS function.

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units. 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, the higher number time-slot configuration should be tested.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

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

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

No. of timeslots	1	2	3	4
Duty Cycle	1:8.3	1:4.15	1:2.77	1:2.075
Time based avg. power compared to slotted avg. power	-9.19	-6.18	-4.42	-3.17

The frame-averaged power is linearly proportion to the slot number configured and it is linearly scaled the maximum burst-averaged power based on time slots. The calculated method is shown as below:

Frame-averaged power = 10 x log (Burst-averaged power mW x Slot used / 8).

10.1.2 WCDMA Test Configuration

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.

2) Body SAR

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 DPDCHn 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 spreading code or DPDCHn, for the highest reported body-worn accessory exposure SAR configuration in 12.2 kbps RMC. When more than 2 DPDCHn are supported by the handset, it may be necessary to configure additional DPDCHn using FTM (Factory Test Mode) or other chipset based test approaches with parameters similar to those used in 384 kbps and 768 kbps RMC.

3) HSDPA / HSUPA

RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power for production units in HSDPA / HSUPA is $\leq \frac{1}{4}$ dB higher than RMC 12.2Kbps or when the highest measured SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.5 W/kg, SAR measurement is not required for HSDPA / HSUPA.

a) HSDPA

HSDPA is configured according to the applicable UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms and a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors (β_c , β_d), and HS-DPCCH power offset parameters (Δ_{ACK} , Δ_{NACK} , Δ_{CQI}) are set according to values indicated in the following table. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Sub-test	β_c	Bd	β_d (SF)	β_c/β_d	β_{hs}	CM(dB)	MPR (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0	0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 8$ Ahs = $\beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1.A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 8$ (Ahs=30/15) with $\beta_{hs} = 30/15 * \beta_c$, and $\Delta_{CQI} = 7$ (Ahs=24/15) with $\beta_{hs} = 24/15 * \beta_c$.

Note3: CM=1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

Parameter	Value
Nominal average inf. bit rate	534 kbit/s
Inter-TTI Distance	3 TTI"s
Number of HARQ Processes	2 Processes
Information Bit Payload	3202 Bits
MAC-d PDU size	336 Bits
Number Code Blocks	1 Block
Binary Channel Bits Per TTI	4800 Bits
Total Available SMLs in UE	19200 SMLs
Number of SMLs per HARQ Process	9600 SMLs
Coding Rate	0.67
Number of Physical Channel Codes	5

Table 4 : settings of required H-Set 1 QPSK acc. to 3GPP 34.121

HS-DSCH Category	Maximum HS-DSCH Codes Received	Minimum Inter-TTI Interval	Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI	Total Soft Channel Bits
1	5	3	7298	19200
2	5	3	7298	28800
3	5	2	7298	28800
4	5	2	7298	38400
5	5	1	7298	57600
6	5	1	7298	67200
7	10	1	14411	115200
8	10	1	14411	134400
9	15	1	25251	172800
10	15	1	27952	172800
11	5	2	3630	14400
12	5	1	3630	28800
13	15	1	34800	259200
14	15	1	42196	259200
15	15	1	23370	345600
16	15	1	27952	345600

Table 5 : HSDPA UE category

b) HSUPA

Due to inner loop power control requirements in HSUPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSUPA should be configured according to the values indicated below as well as other applicable procedures described in the WCDMA Handset and Release 5 HSUPA Data Device sections of 3G device.

Sub-test ¹	β_c ²	β_d ³	β_d (SF) ³	β_c/β_d ³	$\beta_{hs}(1)$ ³	β_{ac} ³	β_{ad} ³	β_c (SF) ³	β_{ad} (code) ³	CM ² (dB) ³	MP R ³ (dB) ³	AG ⁴ Index ³	E-TFC I ³
1 ³	11/15 ⁽³⁾	15/15 ⁽³⁾	64 ³	11/15 ⁽³⁾	22/15 ³	209/225 ³	1039/225 ³	4 ³	1 ³	1.0 ³	0.0 ³	20 ³	75 ³
2 ³	6/15 ³	15/15 ³	64 ³	6/15 ³	12/15 ³	12/15 ³	94/75 ³	4 ³	1 ³	3.0 ³	2.0 ³	12 ³	67 ³
3 ³	15/15 ³	9/15 ³	64 ³	15/9 ³	30/15 ³	30/15 ³	$\beta_{ad1}: 47/15$ $\beta_{ad2}: 47/15$	4 ³	2 ³	2.0 ³	1.0 ³	15 ³	92 ³
4 ³	2/15 ³	15/15 ³	64 ³	2/15 ³	4/15 ³	2/15 ³	56/75 ³	4 ³	1 ³	3.0 ³	2.0 ³	17 ³	71 ³
5 ³	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64 ³	15/15 ⁽⁴⁾	30/15 ³	24/15 ³	134/15 ³	4 ³	1 ³	1.0 ³	0.0 ³	21 ³	81 ³
Note 1: ΔACK , $\Delta NACK$ and $\Delta CQI = 8$ $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$ Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference ³ Note 3 : For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$ ³ Note 4 : For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$ ³ Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g ³ Note 6: β_{ad} can not be set directly; it is set by Absolute Grant Value. ³													

Table 6 : Subtests for UMTS Release 6 HSUPA

UE E-DCH Category	Maximum E-DCH Codes Transmitted	Number of HARQ Processes	E-DCH TTI(ms)	Minimum Spreading Factor	Maximum E-DCH Transport Block Bits	Max Rate (Mbps)
1	1	4	10	4	7110	0.7296
2	2	8	2	4	2798	1.4592
	2	4	10	4	14484	
3	2	4	10	4	14484	1.4592
4	2	8	2	2	5772	2.9185
	2	4	10	2	20000	2.00
5	2	4	10	2	20000	2.00
6 (No DPDCH)	4	8	10	2SF2&2SF	11484	5.76
	4	4	2	4	20000	2.00
7 (No DPDCH)	4	8	2	2SF2&2SF	22996	?
	4	4	10	4	20000	?

NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4. UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0).

Table 7 : HSUPA UE category

4) 3G SAR Test Reduction Procedure

According to KDB 941225D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

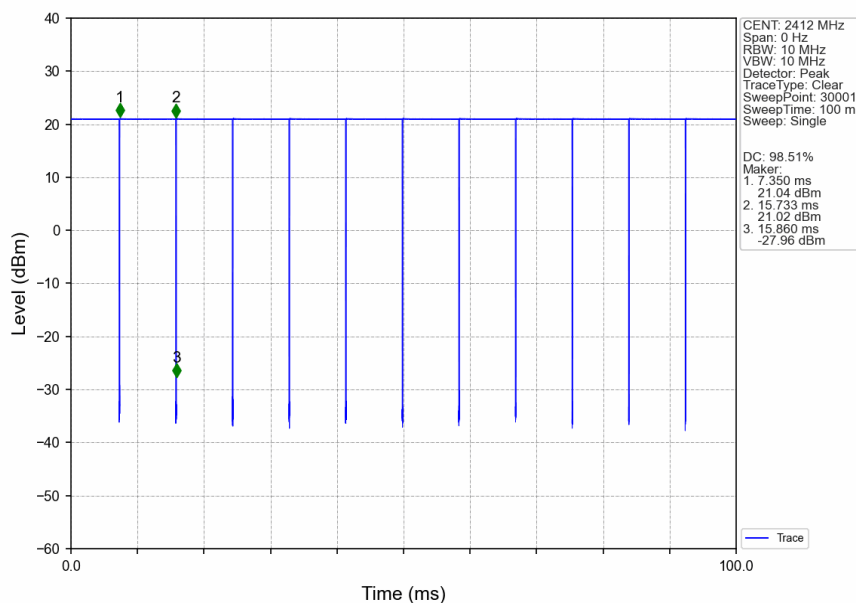
10.1.3 WIFI Test Configuration

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.

10.1.3.1 Duty cycle

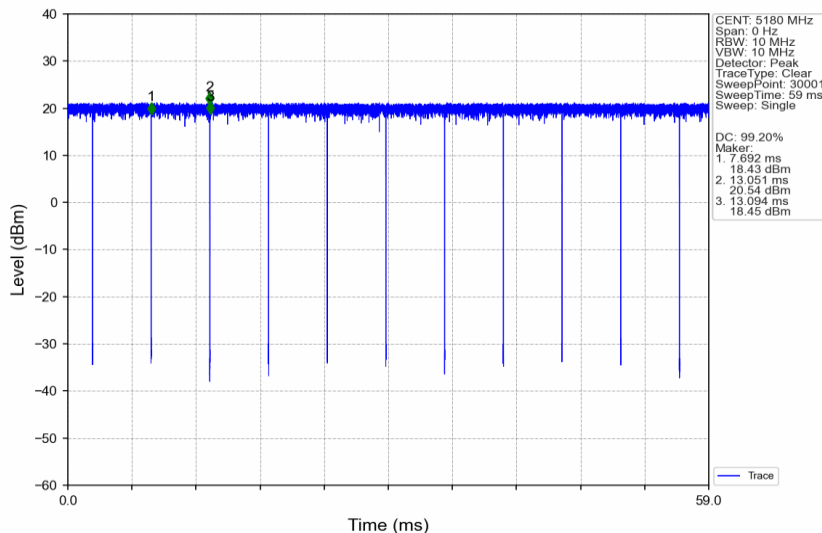
1) Wi-Fi 2.4GHz 802.11b:

Duty cycle=98.51%



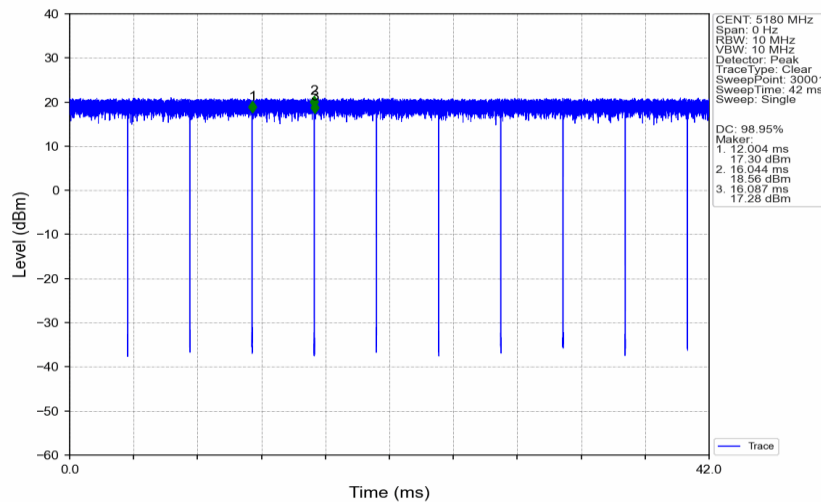
2) Wi-Fi 5GHz 802.11a Ant.2/3:

Duty cycle=99.20%



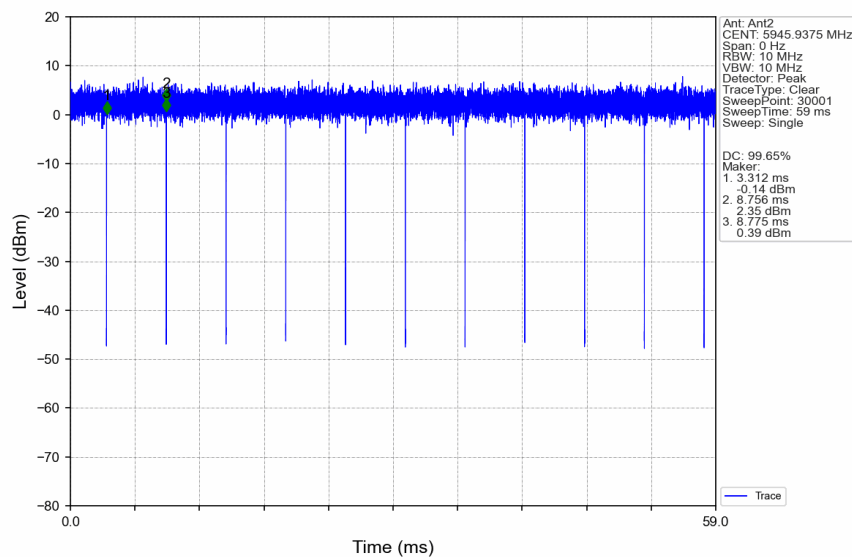
3) Wi-Fi 5GHz 802.11n HT20 MIMO:

Duty cycle=98.95%



3) Wi-Fi 6E 802.11ax HEW80M Ant.2/3/MIMO:

Duty cycle=99.65%



10.1.3.2 Initial Test Position SAR Test Reduction 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.

10.1.3.3 Subsequent Test Configuration Procedures

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. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations. When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

- 1) . When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.
- 2) . When the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), 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.
- 3) . The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.
 - a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.
 - b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the reported SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.
- 4) . SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:
 - a) replace “subsequent test configuration” with “next subsequent test configuration” (i.e., subsequent next highest specified maximum output power configuration)
 - b) replace “initial test configuration” with “all tested higher output power configurations”

10.1.3.4 2.4 GHz WiFi 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. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

- **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 in 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.

- **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, including sub-sections). 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.

- **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.

10.1.3.5 5 GHz WiFi SAR Procedures

- **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.

- **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.

OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

- 1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
- 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
- 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
- 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; 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. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
 - a) The channel closest to mid-band frequency is selected for SAR measurement.
 - b) 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.

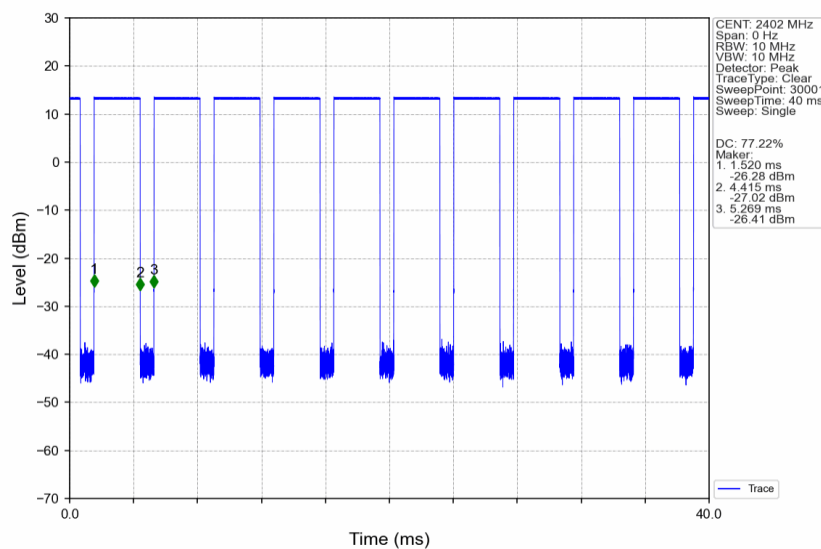
• SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. 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.

10.1.4 BT Test Configuration

For the Bluetooth SAR tests, a communication link is set up with the test mode software for BT mode test. Bluetooth USES frequency hopping technology to divide the transmitted data into packets and transmit the packets respectively through 79 designated Bluetooth channels, frequency hops at 1600 hops/second per the Bluetooth standard, the EUT is operated at the RF continuous emission mode.

BT DH5 Duty Cycle=77.22%



10.1.5 LTE Test Configuration

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The Radio Communication Analyzer was used for LTE output power measurements and SAR testing. Max power control was used so the UE transmits with maximum output power during SAR testing. SAR must be measured with the maximum TTI (transmit time interval) supported by the device in each LTE configuration.

TDD LTE test consideration

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:

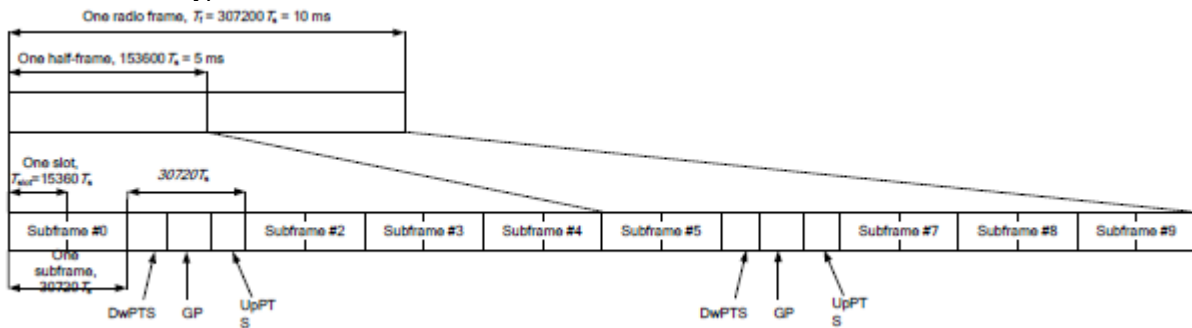


Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

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.Ts	2192.Ts	2560.Ts	7680.Ts	2192.Ts	2560.Ts
1	19760.Ts			20480.Ts		
2	21952.Ts			23040.Ts		
3	24144.Ts			25600.Ts		
4	26336.Ts	4384.Ts	5120.Ts	7680.Ts	4384.Ts	5120.Ts
5	6592.Ts			20480.Ts		
6	19760.Ts			23040.Ts		
7	21952.Ts			25600.Ts		
8	24144.Ts			-	-	-
9	13168.Ts			-	-	-

Table 4.2-2: 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

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

A) 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.

B) 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

C) A-MPR

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

D) Largest channel bandwidth standalone SAR test requirements

1) 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.

2) QPSK with 50% RB allocation

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

3) 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 1) and 2) 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.

4) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections 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 $> \frac{1}{2}$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

E) 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 section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is $> \frac{1}{2}$ 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.

11 Test Result

11.1 DUT Antenna Locations (Back View)

The DUT Antenna Locations can be referred to Appendix D

11.2 Measurement of RF Conducted Power

11.2.1 RF Conducted Power reduction specification

This device uses a single fixed level of power reduction through static table look-up for SAR compliance and it is triggered by a single event or operation

- 1) The proximity sensor is used to indicate when the device is held close to a user's body exposure condition. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes of main antenna to ensure SAR compliance.

11.2.2 RF Conducted Power Data

The detailed power data can be referred to Appendix E Conducted RF Output Power.

11.3 SAR-based Exemption

The following SAR test exclusion Thresholds based on KDB 447498 D04 Interim General RF Exposure Guidance v01 Appendix B B.4

Bnad	Pmax (dBm)	Exposure Condition	f (GHz)	separation distance(cm)					Pmax (mw)	Pth Calculated Value (mw)					SAR Test (Yes or No)				
				Back side	Left side	Right side	Top side	Bottom side		Back side	Left side	Right side	Top side	Bottom side	Back side	Left side	Right side	Top side	Bottom side
GSM850 ANT0	33	Body 0mm	0.835	0.50	9.79	6.75	0.50	12.37	1995.26	9.25	620.42	366.76	9.25	863.61	Yes	Yes	Yes	Yes	Yes
GSM1900 ANT0	30	Body 0mm	1.9	0.50	9.79	6.75	0.50	12.37	1000.00	3.36	818.07	411.71	3.36	1260.09	Yes	Yes	Yes	Yes	No
WCDMA B2 ANT0	24	Body 0mm	1.9	0.50	9.79	6.75	0.50	12.37	251.19	3.36	818.07	411.71	3.36	1260.09	Yes	No	No	Yes	No
WCDMA B4 ANT0	24	Body 0mm	1.75	0.50	9.79	6.75	0.50	12.37	251.19	3.59	828.58	419.77	3.59	1270.95	Yes	No	No	Yes	No
WCDMA B5 ANT0	24	Body 0mm	0.835	0.50	9.79	6.75	0.50	12.37	251.19	9.25	620.42	366.76	9.25	863.61	Yes	No	No	Yes	No
LTE B2 ANT0	24	Body 0mm	1.9	0.50	9.79	6.75	0.50	12.37	251.19	3.36	818.07	411.71	3.36	1260.09	Yes	No	No	Yes	No
LTE B4 ANT0	24	Body 0mm	1.750	0.50	9.79	6.75	0.50	12.37	251.19	3.59	828.58	419.77	3.59	1270.95	Yes	No	No	Yes	No
LTE B5 ANT0	24	Body 0mm	0.835	0.50	9.79	6.75	0.50	12.37	251.19	9.25	620.42	366.76	9.25	863.61	Yes	No	No	Yes	No
LTE B7 ANT0	24	Body 0mm	2.600	0.50	9.79	6.75	0.50	12.37	251.19	2.62	779.23	382.35	2.62	1219.53	Yes	No	No	Yes	No
LTE B12 ANT0	24	Body 0mm	0.750	0.50	9.79	6.75	0.50	12.37	251.19	10.75	585.81	355.42	10.75	802.20	Yes	No	No	Yes	No
LTE B13 ANT0	24	Body 0mm	0.750	0.50	9.79	6.75	0.50	12.37	251.19	10.75	585.81	355.42	10.75	802.20	Yes	No	No	Yes	No
LTE B14 ANT0	24	Body 0mm	0.750	0.50	9.79	6.75	0.50	12.37	251.19	10.75	585.81	355.42	10.75	802.20	Yes	No	No	Yes	No
LTE B17 ANT0	24	Body 0mm	0.75	0.50	9.79	6.75	0.50	12.37	251.19	10.75	585.81	355.42	10.75	802.20	Yes	No	No	Yes	No
LTE B25 ANT0	24	Body 0mm	1.9	0.50	9.79	6.75	0.50	12.37	251.19	3.36	818.07	411.71	3.36	1260.09	Yes	No	No	Yes	No
LTE B26 ANT0	24	Body 0mm	0.835	0.50	9.79	6.75	0.50	12.37	251.19	9.25	620.42	366.76	9.25	863.61	Yes	No	No	Yes	No
LTE B30 ANT0	24	Body 0mm	2.3	0.50	9.79	6.75	0.50	12.37	251.19	2.89	794.19	393.57	2.89	1235.23	Yes	No	No	Yes	No
LTE B66 ANT0	24	Body 0mm	1.75	0.50	9.79	6.75	0.50	12.37	251.19	3.59	828.58	419.77	3.59	1270.95	Yes	No	No	Yes	No
LTE B71 ANT0	24	Body 0mm	0.75	0.50	9.79	6.75	0.50	12.37	251.19	10.75	585.81	355.42	10.75	802.20	Yes	No	No	Yes	No
LTE B38 ANT0	24	Body 0mm	2.600	0.50	9.79	6.75	0.50	12.37	251.19	2.62	779.23	382.35	2.62	1219.53	Yes	No	No	Yes	No
LTE B41 ANT0	24	Body 0mm	2.600	0.50	9.79	6.75	0.50	12.37	251.19	2.62	779.23	382.35	2.62	1219.53	Yes	No	No	Yes	No
WIFI 2.4G ANT2	19.00	Body 0mm	2.450	0.50	15.15	3.26	0.50	12.45	79.43	2.74	1804.44	97.09	2.74	1242.06	Yes	No	No	Yes	No
WIFI 5.2G ANT2	17.00	Body 0mm	5.200	0.50	15.15	3.26	0.50	12.45	50.12	1.50	1724.40	72.18	1.50	1149.48	Yes	No	No	Yes	No
WIFI 5.3G ANT2	17.00	Body 0mm	5.300	0.50	15.15	3.26	0.50	12.45	50.12	1.48	1722.42	71.64	1.48	1147.23	Yes	No	No	Yes	No
WIFI 5.5G ANT2	17.00	Body 0mm	5.500	0.50	15.15	3.26	0.50	12.45	50.12	1.44	1718.57	70.61	1.44	1142.86	Yes	No	No	Yes	No
WIFI 5.8G ANT2	17	Body 0mm	5.8	0.50	15.15	3.26	0.50	12.45	50.12	1.38	1713.08	69.14	1.38	1136.63	Yes	No	No	Yes	No
WIFI 6G ANT2	7	Body 0mm	5.8	0.50	15.15	3.26	0.50	12.45	5.01	1.38	1713.08	69.14	1.38	1136.63	Yes	No	No	Yes	No
WIFI 2.4G ANT3	19.00	Body 0mm	2.450	0.50	6.35	13.18	0.50	12.45	79.43	2.74	345.42	1384.45	2.74	1242.06	Yes	No	No	Yes	No
WIFI 5.2G ANT3	17.00	Body 0mm	5.200	0.50	6.35	13.18	0.50	12.45	50.12	1.50	286.39	1293.26	1.50	1149.48	Yes	No	No	Yes	No
WIFI 5.3G ANT3	17.00	Body 0mm	5.300	0.50	6.35	13.18	0.50	12.45	50.12	1.48	285.04	1291.03	1.48	1147.23	Yes	No	No	Yes	No
WIFI 5.5G ANT3	17.00	Body 0mm	5.500	0.50	6.35	13.18	0.50	12.45	50.12	1.44	282.42	1286.70	1.44	1142.86	Yes	No	No	Yes	No
WIFI 6G ANT3	7	Body 0mm	5.8	0.50	6.35	13.18	0.50	12.45	5.01	1.38	278.71	1280.53	1.38	1136.63	Yes	No	No	Yes	No
BT ANT2	13	Body 0mm	2.45	0.50	6.35	13.18	0.50	12.45	19.95	2.74	345.42	1384.45	2.74	1242.06	Yes	No	No	Yes	No

Note:

- Maximum power is the source-based time-average power and represents the maximum RF output power among production units
- Per KDB 447498 D04, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
- Per KDB 447498 D04, standalone SAR test exclusion threshold is applied; If the distance of the antenna to the user is < 5mm, 5mm is used to determine SAR exclusion threshold
- Per KDB 447498 D04, the 1-g and 10-g SAR test exclusion thresholds for 300 MHz to 6 GHz
This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases} \quad (\text{B.1})$$

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases} \quad (\text{B.2})$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1).

The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

- when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

11.4 Measurement of SAR Data

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph results refer to Appendix B.
- 2) Per KDB 447498 D04, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - $\leq 0.8\text{W/kg}$ for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is $\leq 100\text{MHz}$.
 - $\leq 0.6\text{ W/kg}$ or 1.5 W/kg , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.
 - $\leq 0.4\text{ W/kg}$ or 1.0 W/kg , for 1-g or 10-g respectively, when the transmission band is $\geq 200\text{ MHz}$.
- 3) For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply.
- 4) For WiFi SAR test, as the highest reported SAR is smaller than 1.2 W/kg , and the tune-up of the other 802.11 modes are not higher than SAR measurement mode, therefore the adjusted SAR is $\leq 1.2\text{ W/kg}$ for other 802.11 modes, SAR test for the other 802.11 modes are not required. For Product specific 10gSAR the highest reported SAR is smaller than 3.0 W/kg , SAR test for the other 802.11 modes are also not required.
- 5) WIFI 6E SAR is measured by using 6-7GHz parameters per IEC/IEEE 62209-1528:2020.
- 6) According to TCB workshop (Overlapping LTE Bands): SAR in LTE Band 2/4/5/17/38 is respectively covered by LTE Band 25/66/26/12/41. Because the frequency range is similar, the maximum tuning limit is the same, and the channel bandwidth and other operating parameters for the smaller band is fully supported by the larger band.

11.4.1 SAR Result of GSM850

GSM850 SAR Test Record										
Ant 0 Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on										
Back side	GPRS 2TS	190/836.6	1:4.15	0.665	-0.08	25.01	25.50	1.119	0.744	22.7
Top side	GPRS 2TS	190/836.6	1:4.15	0.496	0.08	25.01	25.50	1.119	0.555	22.7
Body Test data Sensor off										
Back side-32mm	GPRS 2TS	190/836.6	1:4.15	0.097	-0.05	29.53	30.00	1.114	0.108	22.7
Left side-0mm	GPRS 2TS	190/836.6	1:4.15	0.052	0.08	29.53	30.00	1.114	0.058	22.7
Right side-0mm	GPRS 2TS	190/836.6	1:4.15	0.047	-0.15	29.53	30.00	1.114	0.052	22.7
Top side-39mm	GPRS 2TS	190/836.6	1:4.15	0.066	0.17	29.53	30.00	1.114	0.074	22.7
Bottom side-0mm	GPRS 2TS	190/836.6	1:4.15	0.007	0.17	29.53	30.00	1.114	0.008	22.7

11.4.2 SAR Result of GSM1900

GSM1900 SAR Test Record										
Ant 0 Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on										
Back side	EGPRS 2TS	661/1880	1:4.15	0.502	-0.08	18.50	19.00	1.122	0.563	22.4
Top side	EGPRS 2TS	661/1880	1:4.15	0.674	0.04	18.50	19.00	1.122	0.756	22.4
Body Test data Sensor off										
Back side-32mm	GPRS 2TS	661/1880	1:4.15	0.114	-0.13	26.40	27.00	1.148	0.131	22.4
Left side-0mm	GPRS 2TS	190/836.6	1:4.15	0.052	0.08	26.40	27.00	1.148	0.060	22.4
Right side-0mm	GPRS 2TS	190/836.6	1:4.15	0.022	-0.06	26.40	27.00	1.148	0.025	22.4
Top side-39mm	GPRS 2TS	661/1880	1:4.15	0.174	0.13	26.40	27.00	1.148	0.200	22.4

11.4.3 SAR Result of WCDMA Band II

WB2 SAR Test Record										
Ant 0 Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on										
Back side	RMC	9400/1880	1:1	0.282	0.17	11.08	12.50	1.387	0.391	22.4
Top side	RMC	9400/1880	1:1	0.354	0.06	11.08	12.50	1.387	0.491	22.4
Body Test data Sensor off										
Back side-32mm	RMC	9400/1880	1:1	0.243	0.05	22.56	24.00	1.393	0.338	22.4
Top side-39mm	RMC	9400/1880	1:1	0.285	0.14	22.56	24.00	1.393	0.397	22.4

11.4.4 SAR Result of WCDMA Band IV

WB4 SAR Test Record										
Ant 0 Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on										
Back side	RMC	1412/1732.4	1:1	0.422	-0.03	14.36	15.50	1.300	0.549	22.5
Top side	RMC	1412/1732.4	1:1	0.582	0.15	14.36	15.50	1.300	0.757	22.5
Body Test data Sensor off										
Back side-32mm	RMC	1412/1732.4	1:1	0.168	-0.15	22.80	24.00	1.318	0.221	22.5
Top side-39mm	RMC	1412/1732.4	1:1	0.215	-0.16	22.80	24.00	1.318	0.283	22.5

11.4.5 SAR Result of WCDMA Band V

WB5 SAR Test Record										
Ant 0 Test Record										
Test position	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on										
Back side	RMC	4182/836.4	1:1	0.145	0.01	19.22	20.50	1.343	0.195	22.7
Top side	RMC	4182/836.4	1:1	0.124	-0.08	19.22	20.50	1.343	0.167	22.7
Body Test data Sensor off										
Back side-32mm	RMC	4182/836.4	1:1	0.103	-0.02	22.63	24.00	1.371	0.141	22.7
Top side-39mm	RMC	4182/836.4	1:1	0.000	0.10	22.63	24.00	1.371	0.000	22.7

11.4.6 SAR Result of LTE Band 7

LTE Band 7 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1_0	21100/2535	1:1	0.471	-0.13	13.16	14.50	1.361	0.641	23.1
Top side	20	QPSK 1_0	21100/2535	1:1	0.216	0.12	13.16	14.50	1.361	0.294	23.1
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50_0	21100/2535	1:1	0.485	0.16	13.15	14.50	1.365	0.662	23.1
Top side	20	QPSK 50_0	21100/2535	1:1	0.233	-0.15	13.15	14.50	1.365	0.318	23.1
Body Test data(1RB) Sensor off											
Back side-32mm	20	QPSK 1_0	21100/2535	1:1	0.386	-0.15	22.70	24.00	1.349	0.521	23.1
Top side-39mm	20	QPSK 1_0	21100/2535	1:1	0.425	0.08	22.70	24.00	1.349	0.573	23.1
Body Test data(50%RB) Sensor off											
Back side-32mm	20	QPSK 50_0	21100/2535	1:1	0.288	-0.06	21.62	23.00	1.374	0.396	23.1
Top side-39mm	20	QPSK 50_0	21100/2535	1:1	0.316	-0.19	21.62	23.00	1.374	0.434	23.1

11.4.7 SAR Result of LTE Band 12

LTE Band 12 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	10	QPSK 1_0	23095/707.5	1:1	0.532	-0.14	18.21	19.50	1.346	0.716	22.6
Top side	10	QPSK 1_0	23095/707.5	1:1	0.269	-0.06	18.21	19.50	1.346	0.362	22.6
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	10	QPSK 25_0	23095/707.5	1:1	0.505	0.16	18.12	19.50	1.374	0.694	22.6
Top side	10	QPSK 25_0	23095/707.5	1:1	0.213	0.19	18.12	19.50	1.374	0.293	22.6
Body Test data(1RB) Sensor off											
Back side-32mm	10	QPSK 1_0	23095/707.5	1:1	0.155	-0.10	22.75	24.00	1.334	0.207	22.6
Top side-39mm	10	QPSK 1_0	23095/707.5	1:1	0.093	0.18	22.75	24.00	1.334	0.124	22.6
Body Test data(50%RB) Sensor off											
Back side-32mm	10	QPSK 25_0	23095/707.5	1:1	0.071	-0.10	21.73	23.00	1.340	0.095	22.6
Top side-39mm	10	QPSK 25_0	23095/707.5	1:1	0.000	0.05	21.73	23.00	1.340	0.000	22.6

11.4.8 SAR Result of LTE Band 13

LTE Band 13 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	10	QPSK 1_0	23230/782	1:1	0.354	0.04	18.31	19.50	1.315	0.466	22.6
Top side	10	QPSK 1_0	23230/782	1:1	0.233	-0.17	18.31	19.50	1.315	0.306	22.6
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	10	QPSK 25_0	23230/782	1:1	0.302	-0.18	18.23	19.50	1.340	0.405	22.6
Top side	10	QPSK 25_0	23230/782	1:1	0.165	0.06	18.23	19.50	1.340	0.221	22.6
Body Test data(1RB) Sensor off											
Back side-32mm	10	QPSK 1_0	23230/782	1:1	0.091	0.05	22.84	24.00	1.306	0.119	22.6
Top side-39mm	10	QPSK 1_0	23230/782	1:1	0.000	-0.17	22.84	24.00	1.306	0.000	22.6
Body Test data(50%RB) Sensor off											
Back side-32mm	10	QPSK 25_0	23230/782	1:1	0.053	0.18	21.74	23.00	1.337	0.071	22.6
Top side-39mm	10	QPSK 25_0	23230/782	1:1	0.000	-0.06	21.74	23.00	1.337	0.000	22.6

11.4.9 SAR Result of LTE Band 25

LTE Band 25 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1_0	26365/1882.5	1:1	0.240	0.18	11.33	12.00	1.167	0.280	22.4
Top side	20	QPSK 1_0	26365/1882.5	1:1	0.303	0.09	11.33	12.00	1.167	0.354	22.4
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50_0	26365/1882.5	1:1	0.207	-0.01	11.31	12.00	1.172	0.243	22.4
Top side	20	QPSK 50_0	26365/1882.5	1:1	0.262	0.09	11.31	12.00	1.172	0.307	22.4
Body Test data(1RB) Sensor off											
Back side-32mm	20	QPSK 1_0	26365/1882.5	1:1	0.186	0.03	23.34	24.00	1.164	0.217	22.4
Top side-39mm	20	QPSK 1_0	26365/1882.5	1:1	0.232	-0.14	23.34	24.00	1.164	0.270	22.4
Body Test data(50%RB) Sensor off											
Back side-32mm	20	QPSK 50_0	26365/1882.5	1:1	0.131	0.10	22.49	23.00	1.125	0.147	22.4
Top side-39mm	20	QPSK 50_0	26365/1882.5	1:1	0.159	-0.05	22.49	23.00	1.125	0.179	22.4

11.4.10 SAR Result of LTE Band 26

LTE Band 26 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	15	QPSK 1_0	26865/831.5	1:1	0.406	0.07	19.42	20.00	1.143	0.464	22.7
Top side	15	QPSK 1_0	26865/831.5	1:1	0.308	-0.05	19.42	20.00	1.143	0.352	22.7
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	15	QPSK 36_0	26865/831.5	1:1	0.312	-0.14	19.35	20.00	1.161	0.362	22.7
Top side	15	QPSK 36_0	26865/831.5	1:1	0.192	-0.11	19.35	20.00	1.161	0.223	22.7
Body Test data(1RB) Sensor off											
Back side-32mm	15	QPSK 1_0	26865/831.5	1:1	0.097	-0.11	23.46	24.00	1.132	0.110	22.7
Top side-39mm	15	QPSK 1_0	26865/831.5	1:1	0.055	0.01	23.46	24.00	1.132	0.062	22.7
Body Test data(50%RB) Sensor off											
Back side-32mm	15	QPSK 36_0	26865/831.5	1:1	0.053	-0.01	22.31	23.00	1.172	0.062	22.7
Top side-39mm	15	QPSK 36_0	26865/831.5	1:1	0.000	-0.01	22.31	23.00	1.172	0.000	22.7

11.4.11 SAR Result of LTE Band 30

LTE Band 30 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	10	QPSK 1_0	27710/2310	1:1	0.532	0.01	13.14	14.50	1.368	0.728	22.8
Top side	10	QPSK 1_0	27710/2310	1:1	0.423	-0.01	13.14	14.50	1.368	0.579	22.8
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	10	QPSK 25_0	27710/2310	1:1	0.452	-0.08	13.03	14.50	1.403	0.634	22.8
Top side	10	QPSK 25_0	27710/2310	1:1	0.416	0.19	13.03	14.50	1.403	0.584	22.8
Body Test data(1RB) Sensor off											
Back side-32mm	10	QPSK 1_0	27710/2310	1:1	0.349	0.19	22.64	24.00	1.368	0.477	22.8
Top side-39mm	10	QPSK 1_0	27710/2310	1:1	0.371	0.13	22.64	24.00	1.368	0.508	22.8
Body Test data(50%RB) Sensor off											
Back side-32mm	10	QPSK 25_0	27710/2310	1:1	0.184	0.13	22.35	23.00	1.161	0.214	22.8
Top side-39mm	10	QPSK 25_0	27710/2310	1:1	0.187	0.12	22.35	23.00	1.161	0.217	22.8

11.4.12 SAR Result of LTE Band 41

LTE Band 41 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1_0	40620/2593	1:1.58	0.412	-0.18	12.90	14.50	1.445	0.595	23.1
Top side	20	QPSK 1_0	40620/2593	1:1.58	0.200	0.04	12.90	14.50	1.445	0.289	23.1
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50_0	40620/2593	1:1.58	0.485	0.03	12.79	14.50	1.483	0.719	23.1
Back side	20	QPSK 50_0	39750/2506	1:1.58	0.415	0.06	12.77	14.50	1.489	0.618	23.1
Back side	20	QPSK 50_0	40185/2549.5	1:1.58	0.423	-0.01	12.72	14.50	1.507	0.637	23.1
Back side	20	QPSK 50_0	41055/2636.5	1:1.58	0.433	0.08	12.78	14.50	1.486	0.643	23.1
Back side	20	QPSK 50_0	41490/2680	1:1.58	0.429	0.07	12.75	14.50	1.496	0.642	23.1
Top side	20	QPSK 50_0	40620/2593	1:1.58	0.266	0.17	12.79	14.50	1.483	0.394	23.1
Body Test data(Separate 0mm 100%RB) Sensor on											
Back side	20	QPSK 100_0	40620/2593	1:1.58	0.463	0.09	12.78	14.50	1.486	0.688	23.1
Body Test data(1RB) Sensor off											
Back side-32mm	20	QPSK 1_0	40620/2593	1:1.58	0.199	-0.19	22.39	24.00	1.449	0.288	23.1
Top side-39mm	20	QPSK 1_0	40620/2593	1:1.58	0.269	0.04	22.39	24.00	1.449	0.390	23.1
Body Test data(50%RB) Sensor off											
Back side-32mm	20	QPSK 50_0	40620/2593	1:1.58	0.103	0.19	19.61	21.00	1.377	0.142	23.1
Top side-39mm	20	QPSK 50_0	40620/2593	1:1.58	0.128	0.15	19.61	21.00	1.377	0.176	23.1

11.4.13 SAR Result of LTE Band 66

LTE Band 66 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1_0	132322/1745	1:1	0.490	-0.11	14.09	15.50	1.384	0.678	22.5
Top side	20	QPSK 1_0	132322/1745	1:1	0.527	-0.09	14.09	15.50	1.384	0.729	22.5
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50_0	132322/1745	1:1	0.431	-0.10	13.99	15.50	1.416	0.610	22.5
Top side	20	QPSK 50_0	132322/1745	1:1	0.553	0.06	13.99	15.50	1.416	0.783	22.5
Body Test data(1RB) Sensor off											
Back side-32mm	20	QPSK 1_0	132322/1745	1:1	0.222	-0.09	22.57	24.00	1.390	0.309	22.5
Top side-39mm	20	QPSK 1_0	132322/1745	1:1	0.275	-0.12	22.57	24.00	1.390	0.382	22.5
Body Test data(50%RB) Sensor off											
Back side-32mm	20	QPSK 50_0	132322/1745	1:1	0.111	-0.03	21.46	23.00	1.426	0.158	22.5
Top side-39mm	20	QPSK 50_0	132322/1745	1:1	0.118	-0.07	21.46	23.00	1.426	0.168	22.5

11.4.14 SAR Result of LTE Band 71

LTE Band 71 SAR Test Record											
Ant 0 Test Record											
Test position	BW.	Test mode	Test ch./Freq.	Duty Cycle	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm 1RB) Sensor on											
Back side	20	QPSK 1_0	133322/683	1:1	0.652	-0.07	20.41	21.00	1.146	0.747	22.6
Top side	20	QPSK 1_0	133322/683	1:1	0.400	-0.10	20.41	21.00	1.146	0.458	22.6
Body Test data(Separate 0mm 50%RB) Sensor on											
Back side	20	QPSK 50_0	133322/683	1:1	0.512	-0.09	20.25	21.00	1.189	0.609	22.6
Top side	20	QPSK 50_0	133322/683	1:1	0.268	0.08	20.25	21.00	1.189	0.319	22.6
Body Test data(1RB) Sensor off											
Back side-32mm	20	QPSK 1_0	133322/683	1:1	0.101	-0.11	23.40	24.00	1.148	0.116	22.6
Top side-39mm	20	QPSK 1_0	133322/683	1:1	0.000	-0.13	23.40	24.00	1.148	0.000	22.6
Body Test data(50%RB) Sensor off											
Back side-32mm	20	QPSK 50_0	133322/683	1:1	0.069	0.19	22.60	23.00	1.096	0.076	22.6
Top side-39mm	20	QPSK 50_0	133322/683	1:1	0.000	0.10	22.60	23.00	1.096	0.000	22.6

11.4.15 SAR Result of WIFI 2.4G

Wi-Fi 2.4G SAR Test Record											
Ant2 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on											
Back side	802.11b	11/2462	98.51%	1.015	0.254	-0.03	10.48	11.00	1.127	0.291	22.9
Top side	802.11b	11/2462	98.51%	1.015	0.394	-0.02	10.48	11.00	1.127	0.451	22.9
Body Test data Sensor off											
Back side-18mm	802.11b	11/2462	98.51%	1.015	0.305	-0.09	18.52	19.00	1.117	0.346	22.9
Top side-20mm	802.11b	11/2462	98.51%	1.015	0.249	-0.07	18.52	19.00	1.117	0.282	22.9
Ant3 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on											
Back side	802.11b	11/2462	98.51%	1.015	0.185	-0.16	10.96	11.00	1.009	0.189	22.9
Top side	802.11b	11/2462	98.51%	1.015	0.174	-0.13	10.96	11.00	1.009	0.178	22.9
Body Test data Sensor off											
Back side-24mm	802.11b	11/2462	98.51%	1.015	0.057	0.02	18.99	19.00	1.002	0.058	22.9
Top side-25mm	802.11b	11/2462	98.51%	1.015	0.074	0.03	18.99	19.00	1.002	0.075	22.9
Ant Test Record chain MIMO											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm) Sensor on											
Back side	802.11n HT20	1/2412	97.93%	1.021	0.152	-0.04	13.72	14.00	1.068	0.166	22.9
Top side	802.11n HT20	1/2412	97.93%	1.021	0.193	0.08	13.72	14.00	1.068	0.210	22.9
Body Test data Sensor off											
Back side-24mm	802.11n HT20	1/2412	97.93%	1.021	0.111	0.18	19.73	20.00	1.064	0.121	22.9
Top side-25mm	802.11n HT20	1/2412	97.93%	1.021	0.079	0.17	19.73	20.00	1.064	0.086	22.9

11.4.16 SAR Result of WIFI 5G

Wi-Fi 5G SAR Test Record											
Ant2 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test dataof U-NII-2A (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	58/5290	97.75%	1.023	0.215	-0.19	5.83	6.50	1.167	0.257	22.2
Top side	802.11ac VHT80	58/5290	97.75%	1.023	0.277	0.14	5.83	6.50	1.167	0.331	22.2
Body Test dataof U-NII-2C (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	106/5530	97.75%	1.023	0.191	-0.03	4.66	5.50	1.213	0.237	22.2
Top side	802.11ac VHT80	106/5530	97.75%	1.023	0.260	-0.13	4.66	5.50	1.213	0.323	22.2
Body Test dataof U-NII-3 (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	155/5775	97.75%	1.023	0.187	-0.17	8.33	8.50	1.040	0.199	22.2
Top side	802.11ac VHT80	155/5775	97.75%	1.023	0.254	-0.11	8.33	8.50	1.040	0.270	22.2
Body Test dataof U-NII-2A Sensor off											
Back side-18mm	802.11a	60/5300	99.20%	1.008	0.185	-0.11	16.57	17.00	1.104	0.206	22.2
Top side-20mm	802.11a	60/5300	99.20%	1.008	0.250	0.11	16.57	17.00	1.104	0.278	22.2
Body Test dataof U-NII-2C Sensor off											
Back side-18mm	802.11a	116/5580	99.20%	1.008	0.184	0.05	16.23	17.00	1.194	0.221	22.2
Top side-20mm	802.11a	116/5580	99.20%	1.008	0.257	-0.03	16.23	17.00	1.194	0.309	22.2
Body Test dataof U-NII-3 Sensor off											
Back side-18mm	802.11a	157/5785	99.20%	1.008	0.080	0.06	16.27	17.00	1.183	0.095	22.2
Top side-20mm	802.11a	157/5785	99.20%	1.008	0.149	0.13	16.27	17.00	1.183	0.178	22.2
Ant3 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test dataof U-NII-2A (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	58/5290	97.75%	1.023	0.097	-0.01	5.67	6.50	1.211	0.120	22.2
Top side	802.11ac VHT80	58/5290	97.75%	1.023	0.040	-0.09	5.67	6.50	1.211	0.050	22.2
Body Test dataof U-NII-2C (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	106/5530	97.75%	1.023	0.149	0.16	4.33	5.50	1.309	0.200	22.2
Top side	802.11ac VHT80	106/5530	97.75%	1.023	0.052	0.13	4.33	5.50	1.309	0.070	22.2
Body Test dataof U-NII-3 (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	155/5775	97.75%	1.023	0.167	-0.12	9.49	10.00	1.125	0.192	22.2
Top side	802.11ac VHT80	155/5775	97.75%	1.023	0.048	-0.04	9.49	10.00	1.125	0.055	22.2
Body Test dataof U-NII-2A Sensor off											
Back side-24mm	802.11a	60/5300	99.20%	1.008	0.152	-0.14	16.47	17.00	1.130	0.173	22.2
Top side-25mm	802.11a	60/5300	99.20%	1.008	0.113	0.19	16.47	17.00	1.130	0.129	22.2
Body Test dataof U-NII-2C Sensor off											
Back side-24mm	802.11a	116/5580	99.20%	1.008	0.199	0.19	16.20	17.00	1.202	0.241	22.2
Top side-25mm	802.11a	116/5580	99.20%	1.008	0.135	-0.08	16.20	17.00	1.202	0.164	22.2
Body Test dataof U-NII-3 Sensor off											
Back side-24mm	802.11a	157/5785	99.20%	1.008	0.197	0.16	16.06	17.00	1.242	0.247	22.2

Top side-25mm	802.11a	157/5785	99.20%	1.008	0.156	0.12	16.06	17.00	1.242	0.195	22.2
MIMO Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test dataof U-NII-2A (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	58/5290	97.75%	1.023	0.163	-0.17	8.76	9.50	1.185	0.198	22.2
Top side	802.11ac VHT80	58/5290	97.75%	1.023	0.227	-0.18	8.76	9.50	1.185	0.275	22.2
Body Test dataof U-NII-2C (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	106/5530	97.75%	1.023	0.188	0.07	7.51	8.50	1.256	0.242	22.2
Top side	802.11ac VHT80	106/5530	97.75%	1.023	0.222	0.09	7.51	8.50	1.256	0.285	22.2
Body Test dataof U-NII-3 (Separate 0mm) Sensor on											
Back side	802.11ac VHT80	155/5775	97.75%	1.023	0.194	-0.19	11.17	11.50	1.078	0.214	22.2
Top side	802.11ac VHT80	155/5775	97.75%	1.023	0.245	0.10	11.17	11.50	1.078	0.270	22.2
Body Test dataof U-NII-2A Sensor off											
Back side-24mm	802.11n HT20	60/5300	98.95%	1.011	0.205	0.12	19.52	20.00	1.118	0.232	22.2
Top side-25mm	802.11n HT20	60/5300	98.95%	1.011	0.255	0.08	19.52	20.00	1.118	0.288	22.2
Body Test dataof U-NII-2C Sensor off											
Back side-24mm	802.11n HT20	116/5580	98.95%	1.011	0.213	0.09	18.95	20.00	1.273	0.274	22.2
Top side-25mm	802.11n HT20	116/5580	98.95%	1.011	0.226	-0.12	18.95	20.00	1.273	0.291	22.2
Body Test dataof U-NII-3 Sensor off											
Back side-24mm	802.11n HT20	157/5785	98.95%	1.011	0.084	-0.19	19.03	20.00	1.251	0.106	22.2
Top side-25mm	802.11n HT20	157/5785	98.95%	1.011	0.111	-0.18	19.03	20.00	1.251	0.140	22.2

11.4.17 SAR Result of WIFI 6E

Wi-Fi 6E SAR Test Record													
Ant2 Test Record													
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	APD W/m ² (4cm ²)	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Scaled APD W/m ² (4cm ²)	Liquid Temp.(°C)
Body Test dataof U-NII-5 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	7/5985	99.65%	1.004	0.056	0.267	0.14	8.79	9.00	1.050	0.059	0.281	22.2
Top side	802.11ax HEW80M	7/5985	99.65%	1.004	0.105	0.439	0.18	8.79	9.00	1.050	0.111	0.463	22.2
Body Test dataof U-NII-6 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	119/6545	99.65%	1.004	0.032	0.146	-0.07	6.28	7.00	1.180	0.038	0.173	22.2
Top side	802.11ax HEW80M	119/6545	99.65%	1.004	0.066	0.273	-0.10	6.28	7.00	1.180	0.078	0.323	22.2
Body Test dataof U-NII-7 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	135/6625	99.65%	1.004	0.044	0.235	0.10	8.04	9.00	1.247	0.055	0.294	22.2
Top side	802.11ax HEW80M	135/6625	99.65%	1.004	0.087	0.368	-0.08	8.04	9.00	1.247	0.109	0.461	22.2
Body Test dataof U-NII-8 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	199/6945	99.65%	1.004	0.021	0.123	0.14	8.08	10.00	1.556	0.033	0.192	22.2
Top side	802.11ax HEW80M	199/6945	99.65%	1.004	0.054	0.244	-0.12	8.08	10.00	1.556	0.084	0.381	22.2
Top side	802.11ax HEW80M	215/7025	99.65%	1.004	0.044	0.229	0.01	8.06	9.00	1.242	0.055	0.286	22.2
Ant3 Test Record													
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	APD W/m ² (4cm ²)	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Scaled APD W/m ² (4cm ²)	Liquid Temp.(°C)
Body Test dataof U-NII-5 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	7/5985	99.65%	1.004	0.116	0.465	0.07	8.92	9.00	1.019	0.119	0.476	22.2
Top side	802.11ax HEW80M	7/5985	99.65%	1.004	0.095	0.389	0.09	8.92	9.00	1.019	0.097	0.398	22.2
Body Test dataof U-NII-6 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	119/6545	99.65%	1.004	0.104	0.426	0.10	6.61	7.00	1.094	0.114	0.468	22.2
Top side	802.11ax HEW80M	119/6545	99.65%	1.004	0.081	0.359	0.00	6.61	7.00	1.094	0.089	0.394	22.2
Body Test dataof U-NII-7 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	135/6625	99.65%	1.004	0.108	0.413	0.07	8.77	9.00	1.054	0.114	0.437	22.2
Top side	802.11ax HEW80M	135/6625	99.65%	1.004	0.095	0.358	-0.05	8.77	9.00	1.054	0.101	0.379	22.2
Body Test dataof U-NII-8 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	199/6945	99.65%	1.004	0.069	0.284	-0.10	9.49	10.00	1.125	0.078	0.321	22.2
Top side	802.11ax HEW80M	199/6945	99.65%	1.004	0.068	0.277	0.13	9.49	10.00	1.125	0.077	0.313	22.2
Back side	802.11ax HEW80M	215/7025	99.65%	1.004	0.061	0.257	0.05	8.88	9.00	1.028	0.063	0.265	22.2
MIMO Test Record													
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	APD W/m ² (4cm ²)	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Scaled APD W/m ² (4cm ²)	Liquid Temp.(°C)
Body Test dataof U-NII-5 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	7/5985	99.65%	1.004	0.112	0.442	-0.17	11.87	12.00	1.031	0.116	0.458	22.2
Top side	802.11ax HEW80M	7/5985	99.65%	1.004	0.096	0.354	0.14	11.87	12.00	1.031	0.099	0.366	22.2
Body Test dataof U-NII-6 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	119/6545	99.65%	1.004	0.095	0.409	-0.18	9.46	10.00	1.133	0.108	0.465	22.2
Top side	802.11ax HEW80M	119/6545	99.65%	1.004	0.070	0.328	0.05	9.46	10.00	1.133	0.080	0.373	22.2
Body Test dataof U-NII-7 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	135/6625	99.65%	1.004	0.100	0.351	-0.02	11.43	12.00	1.140	0.114	0.402	22.2
Top side	802.11ax HEW80M	135/6625	99.65%	1.004	0.068	0.288	-0.16	11.43	12.00	1.140	0.078	0.330	22.2
Body Test dataof U-NII-8 (Separate 0mm) Sensor on													
Back side	802.11ax HEW80M	199/6945	99.65%	1.004	0.082	0.342	0.01	11.85	13.00	1.302	0.107	0.447	22.2
Top side	802.11ax HEW80M	199/6945	99.65%	1.004	0.054	0.246	0.19	11.85	13.00	1.302	0.071	0.322	22.2
Back side	802.11ax HEW80M	215/7025	99.65%	1.004	0.075	0.318	0.07	11.50	12.00	1.122	0.084	0.358	22.2

11.4.18 SAR Result of BT

Bluetooth SAR Test Record											
Ant2 Test Record											
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Body Test data(Separate 0mm)											
Back side	DH5	39/2441	77.22%	1.295	0.124	0.02	9.68	10.00	1.076	0.173	22.9
Top side	DH5	39/2441	77.22%	1.295	0.198	0.06	9.68	10.00	1.076	0.276	22.9

11.5 Measurement of PD Data

Note:

- 1) The maximum Scaled PD value is marked in bold. Graph results refer to Appendix B.
- 2) Since there is no different PD limit on different exposure conditions, therefore the PD test was performed of a 2mm separation between sensor and EUT surface to cover all exposure conditions of EUT.
- 3) Per equipment manufacturer guidance, power density was measured at $d=2\text{mm}$ and $d=\lambda/5\text{mm}$ using the same grid size and grid step size for some frequencies, surfaces and each antennas. The integrated Power Density (iPD) was calculated based on these measurements. Since iPD ratio between the two distances is $< 1\text{dB}$, the grid step (0.0625) was sufficient for determining compliance at $d=2\text{mm}$.
- 4) According to October 2020 TCB Workshop Interim procedures, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty $> 30\%$. Total expanded uncertainty of 2.67 dB (85%) was used to determine the psPD measurement scaling factor.
- 5) Per October 2020 TCB Workshop Interim procedures, WIFI 6E start instead with a minimum of 5 test channels across the full band.
- 6) Based on the guidelines of the TCB workshop in April 2026, once the worst-case SAR scenario is compliant within the limit, perform an IPD scan for that case only. Device compliance is established if the IPD scan is also within the applicable limit.

11.5.1 PD Result of WIFI 6E

Wi-Fi 6E PD Ant1 Test Record chain0															
Test position	Test mode	Test ch./Freq.	Distance (mm)	Grid Step (A)	Duty Cycle	Duty Cycle Scaled factor	iPDn	iPD ratio	Measured PD 4cm ² (W/m ²)	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor for measurement uncertainty	Tune up Scaled factor	Scaled PD 4cm ² (W/m ²)
Power Density Test DATA															
Top side	199/6945	802.11ax HEW80M	2	0.0625	99.65%	1.004	18.70	-0.20	1.20	0.13	8.08	10.00	1.5493	1.556	2.904
Top side	199/6945	802.11ax HEW80M	8.6	0.0625	99.65%	1.004	19.60		0.862	0.18	8.08	10.00	1.5493	1.556	2.086
Top side	7/5985	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.11	0.16	8.79	9.00	1.5493	1.050	1.813
Top side	119/6545	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.06	0.10	6.28	7.00	1.5493	1.180	1.945
Top side	135/6625	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.46	0.14	8.04	9.00	1.5493	1.247	2.831
Top side	215/7025	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.49	0.10	8.06	9.00	1.5493	1.242	2.878
Wi-Fi 6E PD Ant2 Test Record chain1															
Test position	Test mode	Test ch./Freq.	Distance (mm)	Grid Step (A)	Duty Cycle	Duty Cycle Scaled factor	iPDn	iPD ratio	Measured PD 4cm ² (W/m ²)	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor for measurement uncertainty	Tune up Scaled factor	Scaled PD 4cm ² (W/m ²)
Power Density Test DATA															
Back side	199/6945	802.11ax HEW80M	2	0.0625	99.65%	1.004	20.80	-0.14	1.45	0.16	9.49	10.00	1.5493	1.125	2.537
Back side	199/6945	802.11ax HEW80M	8.6	0.0625	99.65%	1.004	21.50		0.926	0.11	9.49	10.00	1.5493	1.125	1.620
Back side	7/5985	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.29	-0.04	8.92	9.00	1.5493	1.019	2.044
Back side	119/6545	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.08	0.02	6.61	7.00	1.5493	1.094	1.837
Back side	135/6625	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.81	-0.02	8.77	9.00	1.5493	1.054	2.967
Back side	215/7025	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.65	-0.07	8.88	9.00	1.5493	1.028	2.638
Wi-Fi 6E PD Test Record MIMO															
Test position	Test mode	Test ch./Freq.	Distance (mm)	Grid Step (A)	Duty Cycle	Duty Cycle Scaled factor	iPDn	iPD ratio	Measured PD 4cm ² (W/m ²)	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaling Factor for measurement uncertainty	Tune up Scaled factor	Scaled PD 4cm ² (W/m ²)
Power Density Test DATA															
Back side	199/6945	802.11ax HEW80M	2	0.0625	99.65%	1.004	19.50	-0.09	1.31	-0.01	11.85	13.00	1.5493	1.302	2.653
Back side	199/6945	802.11ax HEW80M	8.6	0.0625	99.65%	1.004	19.90		0.888	-0.07	11.85	13.00	1.5493	1.302	1.798
Back side	7/5985	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.15	0.16	11.87	12.00	1.5493	1.031	1.844
Back side	119/6545	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.03	0.18	9.46	10.00	1.5493	1.133	1.815
Back side	135/6625	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.62	0.16	11.43	12.00	1.5493	1.140	2.872
Back side	215/7025	802.11ax HEW80M	2	0.0625	99.65%	1.004	/	/	1.54	0.13	11.50	12.00	1.5493	1.122	2.687

11.6 Multiple Transmitter Evaluation

11.6.1 Simultaneous SAR test evaluation

No.	Simultaneous Tx Combination	Body
1	WWAN + WLAN 2.4GHz Ant2	Yes
2	WWAN + WLAN 2.4GHz Ant3	Yes
3	WWAN + WLAN 2.4GHz MIMO	Yes
4	WLAN 2.4GHz Ant2 + WLAN 2.4GHz Ant3	Yes
5	WLAN 5GHz Ant2 + WLAN 5GHz Ant3 + BT	Yes
6	WWAN + WLAN 5GHz Ant2 + BT	Yes
7	WWAN + WLAN 5GHz Ant3 + BT	Yes
8	WWAN + WLAN 5GHz MIMO + BT	Yes
9	BT+ WLAN 6G Ant2 + WLAN 6G Ant3	Yes
10	WWAN + BT+ WLAN 6G Ant2	Yes
11	WWAN + BT+ WLAN 6G Ant3	Yes
12	WWAN + BT+ WLAN 6G MIMO	Yes

11.6.2 Simultaneous Transmission SAR Summation Scenario

Body:

Test position		SARmax (W/kg)										
		Main Ant0	WiFi 2.4G Ant2	WiFi 2.4G Ant3	WiFi 2.4G MIMO	WiFi 5G Ant2	WiFi 5G Ant3	WiFi 5G MIMO	WiFi 6E Ant2	WiFi 6E Ant3	WiFi 6E MIMO	BT
		1	2	3	4	5	6	7	8	9	10	11
GSM850	Back side	0.744	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.555	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GSM1900	Back side	0.563	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.060	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.756	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA Band II	Back side	0.391	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.491	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA Band IV	Back side	0.549	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.757	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA Band V	Back side	0.195	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.167	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 7	Back side	0.662	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.573	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 12(17)	Back side	0.716	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.362	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 13	Back side	0.466	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.306	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 25	Back side	0.280	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.354	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276

	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 26 (5)	Back side	0.464	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.352	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 30	Back side	0.728	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.584	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 41(Class 3)(38)	Back side	0.719	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.394	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 66(4)	Back side	0.678	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.783	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 71	Back side	0.747	0.346	0.189	0.166	0.257	0.247	0.274	0.059	0.119	0.116	0.173
	Left side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.458	0.451	0.178	0.210	0.331	0.195	0.291	0.111	0.101	0.099	0.276
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Test position		Summed SAR					
		1+2+3	1+4	1+5+6+11	1+7+11	1+8+9+11	1+10+11
GSM850	Back side	1.279	0.910	1.421	1.191	1.095	1.033
	Left side	0.058	0.058	0.058	0.058	0.058	0.058
	Right side	0.052	0.052	0.052	0.052	0.052	0.052
	Top side	1.184	0.765	1.357	1.122	1.043	0.930
	Bottom side	0.008	0.008	0.008	0.008	0.008	0.008
GSM1900	Back side	1.098	0.729	1.240	1.010	0.914	0.852
	Left side	0.060	0.060	0.060	0.060	0.060	0.060
	Right side	0.025	0.025	0.025	0.025	0.025	0.025
	Top side	1.385	0.966	1.558	1.323	1.244	1.131
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA Band II	Back side	0.926	0.557	1.068	0.838	0.742	0.680
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.120	0.701	1.293	1.058	0.979	0.866
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA Band IV	Back side	1.084	0.715	1.226	0.996	0.900	0.838
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.386	0.967	1.559	1.324	1.245	1.132
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
WCDMA Band V	Back side	0.730	0.361	0.872	0.642	0.546	0.484

	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.796	0.377	0.969	0.734	0.655	0.542
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 7	Back side	1.197	0.828	1.339	1.109	1.013	0.951
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.202	0.783	1.375	1.140	1.061	0.948
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 12(17)	Back side	1.251	0.882	1.393	1.163	1.067	1.005
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.991	0.572	1.164	0.929	0.850	0.737
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 13	Back side	1.001	0.632	1.143	0.913	0.817	0.755
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.935	0.516	1.108	0.873	0.794	0.681
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 25	Back side	0.815	0.446	0.957	0.727	0.631	0.569
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.983	0.564	1.156	0.921	0.842	0.729
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 26 (5)	Back side	0.999	0.630	1.141	0.911	0.815	0.753
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	0.981	0.562	1.154	0.919	0.840	0.727
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 30	Back side	1.263	0.894	1.405	1.175	1.079	1.017
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.213	0.794	1.386	1.151	1.072	0.959
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 41(Class 3)(38)	Back side	1.254	0.885	1.396	1.166	1.070	1.008
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.023	0.604	1.196	0.961	0.882	0.769
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 66(4)	Back side	1.213	0.844	1.355	1.125	1.029	0.967
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.412	0.993	1.585	1.350	1.271	1.158
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000
LTE Band 71	Back side	1.282	0.913	1.424	1.194	1.098	1.036
	Left side	0.000	0.000	0.000	0.000	0.000	0.000
	Right side	0.000	0.000	0.000	0.000	0.000	0.000
	Top side	1.087	0.668	1.260	1.025	0.946	0.833
	Bottom side	0.000	0.000	0.000	0.000	0.000	0.000

12 Equipment list

Test Platform		SPEAG DASY Professional				
Software Reference		DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)				
		cDASY8 V18.0.0.7250				
Hardware Reference						
Equipment		Manufacturer	Model	Serial Number	Calibration Date	Due date of calibration
☒	Test Phantom	SPEAG	SAM8	1143	NCR	NCR
☒	Test Phantom	SPEAG	Twin-SAM V8.0	2155	NCR	NCR
☒	Test Phantom	SPEAG	mmWave	1777	NCR	NCR
☒	DAE	SPEAG	DAE4	1245	2025-09-08	2026-09-07
☒	DAE	SPEAG	DAE4ip	1826	2026-04-27	2027-04-26
☒	E-Field Probe	SPEAG	EX3DV4	3793	2026-04-08	2027-04-07
☒	E-Field Probe	SPEAG	EX3DV4	7767	2026-05-28	2027-05-27
☒	E-U Probe	SPEAG	EUmmWV4	9718	2025-08-04	2026-08-03
☒	Validation Kits	SPEAG	D750V3	1214	2025-04-01	2028-03-31
☒	Validation Kits	SPEAG	D835V2	4d161	2023-08-25	2026-08-24
☒	Validation Kits	SPEAG	D1750V2	1105	2023-11-03	2026-11-02
☒	Validation Kits	SPEAG	D1950V3	1138	2025-10-15	2028-10-15
☒	Validation Kits	SPEAG	D2300V2	1096	2025-04-01	2028-03-31
☒	Validation Kits	SPEAG	D2450V2	922	2023-08-28	2026-08-27
☒	Validation Kits	SPEAG	D2600V2	1158	2025-03-31	2028-03-30
☒	Validation Kits	SPEAG	D5GHzV2	1174	2023-08-23	2026-08-22
☒	Validation Kits	SPEAG	D6.5GHzV2	1030	2025-02-13	2028-02-12
☒	5G Verification Source	SPEAG	10GHz	2004	2024-08-20	2027-08-19
☒	Dielectric parameter probes	SPEAG	DAKS-3.5	1120	2025-08-25	2026-08-24
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	50920	2025-08-25	2026-08-24
☒	Universal Radio Communication Tester	R&S	CMW500	111637	2026-01-15	2027-01-14
☒	RF Bi-Directional Coupler	Agilent	86205-60001	MY31400031	NCR	NCR
☒	Signal Generator	R&S	SMB100A	182393	2026-01-14	2027-01-13
☒	Preamplifier	Qiji	YX28980933	202104001	NCR	NCR
☒	Preamplifier	QiJi	YX28982108	K2110F01	NCR	NCR
☒	USB Average Power Sensor	Keysight	U2002H	MY5639004	2025-08-25	2026-08-24
☒	USB Average Power Sensor	Agilent	U2002H	MY48200110	2025-11-20	2026-11-19
☒	Attenuator	SHX	TS2-3dB	30704	NCR	NCR
☒	Coaxial low pass filter	Mini-Circuits	VLF-2500(+)	NA	NCR	NCR
☒	Coaxial low pass filter	Microlab Fxr	LA-F13	NA	NCR	NCR
☒	DC POWER SUPPLY	SAKO	SK1730SL5A	NA	NCR	NCR
☒	Speed reading thermometer	DTM SPEZLAL	DTM3000	NA	2025-09-17	2026-09-16
☒	Humidity and Temperature	ASONE	THA-02L	2201-1017	2025-09-16	2026-09-15



	Indicator					
☒	Humidity and Temperature Indicator	ASONE	THA-01M	2404-22617	2025-09-16	2026-09-15

Note: All the equipment are within the valid period when the tests are performed.



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13 Calibration certificate

Please see the Appendix C

14 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

Appendix E: Conducted RF Output Power

--- End of report ---