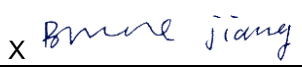
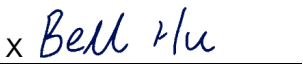


Prüfbericht-Nr.: Test report no.:	CN254WZ3 004	Auftrags-Nr.: Order no.:	168543097	Seite 1 von 42 Page 1 of 42	
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2025-03-13		
Auftraggeber: Client:	Dongguan Jiasheng Industrial Co., Ltd No. 18 Dongke North Road, Dongcheng Street, Dongguan City, Guangdong Province				
Prüfgegenstand: Test item:	Dogness smart GPS Tracker				
Bezeichnung / Typ-Nr.: Identification / Type no.:	C9 (Trademark: Dogness)				
Auftrags-Inhalt: Order content:	Test Report				
Prüfgrundlage: Test specification:	FCC 47 CFR § 2.1093 IEEE Std 1528-2013 Published RF exposure KDB procedures				
Wareneingangsdatum: Date of sample receipt:	2025-04-30	Please refer to Photo Document			
Prüfmuster-Nr.: Test sample no.:	A004015294-001				
Prüfzeitraum: Testing period:	2025-09-27 - 2025-09-30				
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.				
Prüfergebnis*: Test result*:	Pass				
geprüft von: tested by:			genehmigt von: authorized by:		
Datum: Date:	2026-01-12	Signed by: Breeze Jiang		Ausstellungsdatum: Issue date:	2026-01-12
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert	
Sonstiges / Other:	FCC ID: 2AU5-C9 This report is for Bluetooth dual mode.				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged				
* Legende:	P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet				
* Legend:	P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

Prüfbericht-Nr.: CN254WZ3 004
Test report no.:

Seite 2 von 42
Page 2 of 42

Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. <i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i>

Table of Contents

1.	GENERAL INFORMATION	5
1.1.	STATEMENT OF COMPLIANCE.....	5
1.2.	EQUIPMENT UNDER TEST (EUT) INFORMATION.....	6
1.2.1.	General Information.....	6
1.2.2.	Wireless Technologies	6
2.	TEST SITES.....	7
2.1.	TEST FACILITIES.....	7
2.2.	AMBIENT CONDITION.....	7
2.3.	LIST OF TEST AND MEASUREMENT INSTRUMENTS	8
3.	MEASUREMENT UNCERTAINTY	9
4.	TEST SPECIFICATION, METHODS AND PROCEDURES.....	10
5.	SAR MEASUREMENT SYSTEM	11
5.1.	DEFINITION OF SPECIFIC ABSORPTION RATE (SAR).....	11
5.2.	SPEAG DASY SYSTEM	11
5.2.1.	Robot.....	12
5.2.2.	Probes	13
5.2.3.	Data Acquisition Electronics (DAE).....	13
5.2.4.	Phantoms.....	14
5.2.5.	Device Holder	15
5.2.6.	System Validation Dipoles.....	15
5.2.7.	Tissue Simulating Liquids.....	16
5.2.8.	SAR System Verification	18
6.	SAR MEASUREMENT PROCEDURE	19
6.1.	AREA & ZOOM SCAN PROCEDURE	19
6.2.	VOLUME SCAN PROCEDURE	19
6.3.	POWER DRIFT MONITORING.....	20
6.4.	SPATIAL PEAK SAR EVALUATION.....	20
6.5.	SAR AVERAGED METHODS	20
7.	SAR MEASUREMENT EVALUATION.....	21
7.1.	EUT CONFIGURATION AND SETTING.....	21
7.2.	EUT TESTING POSITION.....	22
7.2.1.	Exposure Conditions	22
7.3.	SIMULTANEOUS TRANSMISSION POSSIBILITIES	23
7.4.	TISSUE VERIFICATION	24
7.5.	SYSTEM VALIDATION	24
7.6.	SYSTEM VERIFICATION.....	24
8.	SAR MEASUREMENT EVALUATION.....	25

Prüfbericht - Nr.: CN254WZ3 004

Test Report No.

Seite 4 von 42

Page 4 of 42

8.1.	MAXIMUM CONDUCTED POWER.....	25
8.2.	MEASURED CONDUCTED POWER RESULT	26
8.3.	SAR TESTING RESULTS.....	34
8.3.1.	<i>SAR Test Reduction Considerations.....</i>	<i>34</i>
8.3.2.	<i>SAR Results for Body Exposure Condition (Separation Distance is 1 cm Gap)</i>	<i>35</i>
8.3.3.	<i>SAR Results for Extremity Exposure Condition (Separation Distance is 0 cm Gap).....</i>	<i>37</i>
8.3.4.	<i>SAR Measurement Variability.....</i>	<i>38</i>
8.3.5.	<i>Simultaneous Multi-band Transmission Evaluation</i>	<i>39</i>
APPENDIXES.....		42

Appendix A: SAR Plots of System Verification

Appendix B: SAR Plots of SAR Measurement

Appendix C: Calibration Certificate for probe and Dipole

Appendix D: Photographs of EUT and setup

1. General Information

1.1. Statement of Compliance

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

Equipment Class	Mode	Highest Reported Body SAR _{1g} (1.0 cm Gap) (W/kg)	Highest Reported Extremity SAR _{10g} (0 cm Gap) (W/kg)
PCB	LTE 2	0.44	0.99
	LTE 4	1.40	2.74
	LTE 5	0.38	0.57
	LTE 12	0.06	0.39
	LTE 13	0.13	0.54
	LTE 66	0.94	2.58
DSS	Bluetooth	0.06	0.14
Highest Simultaneous Transmission SAR		Body (W/kg)	Extremity (W/kg)
PCB + DSS		1.46	2.88

Note:

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6W/kg as averaged over any 1 gram of tissue; 10-gram SAR for Product Specific 10g SAR, limit: 4.0W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

1.2. Equipment Under Test (EUT) Information

1.2.1. General Information

Equipment Name	Dogness smart GPS Tracker
FCC ID	2AUJ5-C9 contains FCC ID: XMR2023EG915QNA
Brand Name	Dogness
Model Name	C9
Antenna Type	FPC Antenna
EUT Stage	Production Unit

1.2.2. Wireless Technologies

Wireless Technology and Frequency Range	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Uplink Modulations	LTE: QPSK, 16QAM Bluetooth® GFSK, $\pi/4$ -DQPSK, 8-DPSK, LE

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

2. Test Sites

2.1. Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, People's Republic of China

A2LA Cert. No.: 5162.01

FCC Registration No.: 694916

IC Registration No.: 25069

2.2. Ambient Condition

Ambient Temperature	21.1°C – 22.5°C
Relative Humidity	38% - 60%

2.3. List of Test and Measurement Instruments

Equipment ↴	Manufacturer ↴	Model ↴	SN ↴	Cal. Date ↴	Cal. Interval ↴
System Validation Dipole ↴	SPEAG ↴	D750V3 ↴	1109 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D835V2 ↴	4d242 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D900V2 ↴	1d200 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D1750V2 ↴	1166 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D1800V2 ↴	2d219 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D1900V2 ↴	5d229 ↴	Jun. 06, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D2000V2 ↴	1089 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D2300V2 ↴	1087 ↴	Jun. 07, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D2450V2 ↴	1014 ↴	Jun. 06, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D2600V2 ↴	1153 ↴	Jun. 06, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D3500V2 ↴	1063 ↴	Jun. 06, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D3700V2 ↴	1020 ↴	Jun. 06, 2024 ↴	3 years ↴
System Validation Dipole ↴	SPEAG ↴	D5GHzV2 ↴	1280 ↴	Jun. 06, 2024 ↴	3 years ↴
Dosimetric E-Field Probe ↴	SPEAG ↴	EX3DV4 ↴	7506 ↴	Nov. 28, 2025 ↴	1 year ↴
Data Acquisition Electronics ↴	SPEAG ↴	DAE4 ↴	1725 ↴	Nov. 21, 2025 ↴	1 year ↴
Wideband Radio Communication Tester ↴	R&S ↴	CMW500 ↴	166305 ↴	Sep. 23, 2025 ↴	1 year ↴
Signal Analyzer ↴	R&S ↴	FSV 7 ↴	103665 ↴	Sep. 23, 2025 ↴	1 year ↴
Vector Network Analyzer ↴	R&S ↴	ZNB 8 ↴	107040 ↴	Sep. 23, 2025 ↴	1 year ↴
Dielectric assessment Kit ↴	SPEAG ↴	DAK-3.5 ↴	1269 ↴	Oct. 09, 2024 ↴	3 years ↴
Signal Generator ↴	R&S ↴	SMB 100A ↴	180840 ↴	Sep. 23, 2025 ↴	1 year ↴
EPM Series Power Meter ↴	Keysight ↴	N1914A ↴	MY58240005 ↴	Oct. 27, 2025 ↴	1 year ↴
Power Sensor ↴	Keysight ↴	N8481H ↴	MY58250002 ↴	Oct. 27, 2025 ↴	1 year ↴
Power Sensor ↴	Keysight ↴	N8481H ↴	MY58250006 ↴	Oct. 27, 2025 ↴	1 year ↴
DC Power Supply ↴	Topward ↴	3303D ↴	809332 ↴	Oct. 27, 2025 ↴	1 year ↴
Coaxial Directional Coupler ↴	Keysight ↴	773D ↴	MY52180552 ↴	Oct. 27, 2025 ↴	1 year ↴
Coaxial Directional Coupler ↴	shhuaxiang ↴	DTO-0.4/3.9-10 ↴	18052101 ↴	Oct. 27, 2025 ↴	1 year ↴
Coaxial attenuator ↴	Keysight ↴	8491A ↴	MY52463219 ↴	Oct. 27, 2025 ↴	1 year ↴
Coaxial attenuator ↴	Keysight ↴	8491A ↴	MY52463210 ↴	Oct. 27, 2025 ↴	1 year ↴
Coaxial attenuator ↴	Keysight ↴	8491A ↴	MY52463222 ↴	Oct. 27, 2025 ↴	1 year ↴
Digital Thermometer ↴	LKM ↴	DTM3000 ↴	3116 ↴	Oct. 27, 2025 ↴	1 year ↴
Power Amplifier Mini circuit ↴	mini-circuits ↴	ZHL-42W ↴	SN002101809 ↴	N/A ↴	N/A ↴
Power Amplifier Mini circuit ↴	mini-circuits ↴	ZVE-8G ↴	SN070501814 ↴	N/A ↴	N/A ↴
PHANTOM ↴	SPEAG ↴	ELI V8.0 ↴	2094 ↴	N/A ↴	N/A ↴
PHANTOM ↴	SPEAG ↴	SAM-Twin V8.0 ↴	1961 ↴	N/A ↴	N/A ↴

3. Measurement Uncertainty

Source of Uncertainty	Tolerance (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi Veff
Measurement System Errors								
Probe Calibration	±12.7%	Normal (k=2)	2	1	1	± 6.35 %	± 6.35 %	∞
Probe Calibration Drift	±1.7%	Rectangular	√3	1	1	±1.0%	±1.0%	∞
Probe Linearity	±4.7%	Rectangular	√3	1	1	±2.7%	±2.7%	∞
Broadband Signal	±3.0%	Rectangular	√3	1	1	±1.7%	±1.7%	∞
Probe Isotropy	±7.6%	Rectangular	√3	1	1	±4.4%	±4.4%	∞
Other Probe + Electronic	±0.7%	Normal	1	1	1	±0.7%	±0.7%	∞
RF Ambient	±1.8%	Normal	1	1	1	±1.8%	±1.8%	∞
Probe Positioning	±0.006mm	Normal	1	0.14	0.14	±0.10%	±0.10%	∞
Data Processing	±1.2%	Normal	1	1	1	±1.2%	±1.2%	∞
Phantom and Device Errors								
Conductivity (meas.) ^{DAK}	±2.5%	Normal	1	0.78	0.71	±2.0%	±1.8%	100
Conductivity (temp.) ^{BB}	±3.3%	Rectangular	√3	0.78	0.71	±1.5%	±1.4%	∞
Phantom Permittivity	±14.0%	Rectangular	√3	0	0	±0%	±0%	∞
Distance DUT – TSL	±2.0%	Normal	1	2	2	±4.0%	±4.0%	∞
Device Positioning	±2.4%/±2.8%	Normal	1	1	1	±2.8%	±2.8%	30
Device Holder	±3.4%/±3.5%	Normal	1	1	1	±3.5%	±3.5%	30
DUT Modulation ^m	±2.4%	Rectangular	√3	1	1	±1.4%	±1.4%	∞
Time-average SAR	±1.7%	Rectangular	√3	1	1	±1.0%	±1.0%	∞
DUT drift	±2.5%	Normal	1	1	1	±2.5%	±2.5%	30
Val Antenna Unc. ^{val}	±0.0%	Normal	1	1	1	±0%	±0%	
Unc. Input Power ^{val}	±0.0%	Normal	1	1	1	±0%	±0%	
Correction to the SAR results								
C(ε,σ)	±1.9%	Normal	1	1	0.84	±1.9%	±1.6%	
SAR scaling ^p	±0.0%	Rectangular	√3	1	1	±0%	±0%	
Combined Standard Uncertainty (K = 1)						±12.54%	±12.44%	
Expanded Uncertainty (K = 2)						±25.1%	±24.9%	

Uncertainty budget for frequency range 300 MHz to 3 GHz

4. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528- 2013, the following FCC Published RF exposure KDB procedures & manufacturer KDB inquiries:

- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 447498 D04 Interim General RF Exposure Guidance v01
- KDB 941225 D05 SAR for LTE Devices v02r05

In addition to the above, the following information was used:

- [TCB workshop](#) April, 2019; Page 19, Tissue Simulating Liquids(TSL)

5. SAR Measurement System

5.1. Definition of Specific Absorption Rate (SAR)

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

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

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

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

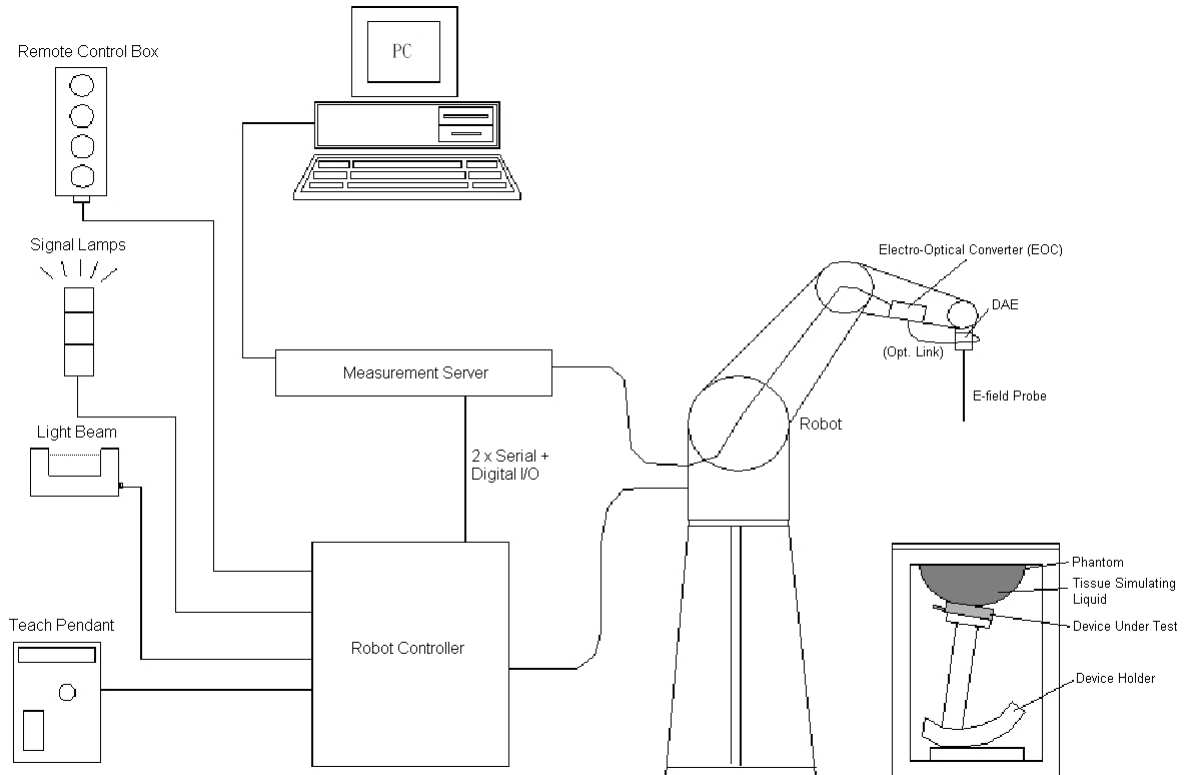
SAR measurement can be related to the electrical field in the tissue by

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

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

5.2. SPEAG DASY System

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

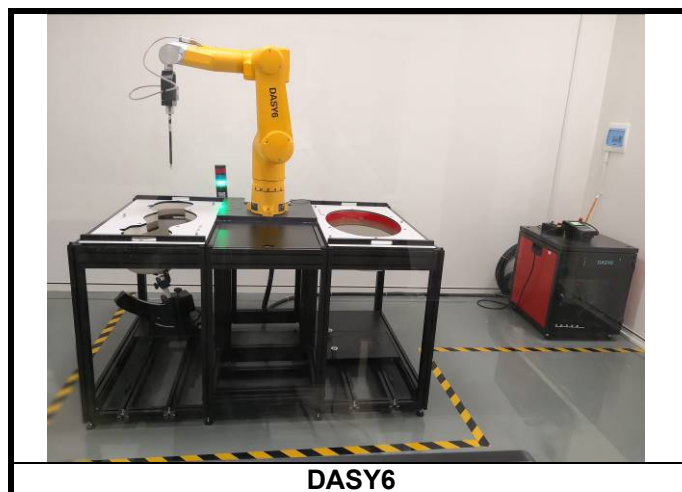


DASY System Setup

5.2.1. Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ± 0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)



5.2.2. Probes

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

Model	EX3DV4
Construction	Symmetrical design with triangular core. Built-in shielding against static charges. PEEK enclosure material (resistant to organic solvents, e.g., DGBE).
Frequency	4 MHz – 10 GHz Linearity: ± 0.2 dB (30 MHz – 10 GHz)
Directivity	± 0.1 dB in TSL (rotation around probe axis) ± 0.3 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: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm



5.2.3. Data Acquisition Electronics (DAE)

Model	DAE4
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch 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	< 5 μ V (with auto zero)
Input Bias Current	< 50 fA
Dimensions	60 x 60 x 68 mm



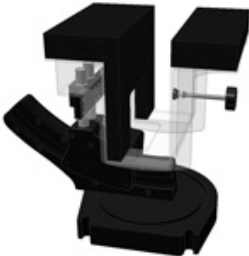
5.2.4. Phantoms

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

Model	ELI	
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all of SPEAG's dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

5.2.5. Device Holder

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

Model	Laptop Extensions Kit	
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-1528 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.	
Material	POM, Acrylic glass, Foam	

5.2.6. System Validation Dipoles

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

5.2.7. Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed.

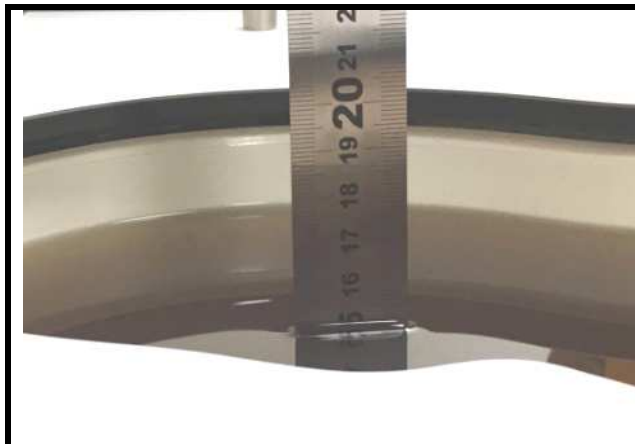


Photo of Liquid Height for Head Position

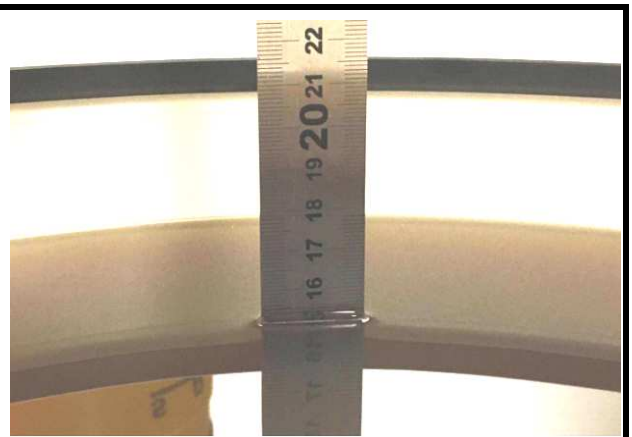


Photo of Liquid Height for Body Position

The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using a dielectric assessment kit and a network analyzer.

Targets of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Range of $\pm 5\%$	Target Conductivity	Range of $\pm 5\%$
For Head				
750	41.9	39.8 ~ 44.0	0.89	0.85 ~ 0.93
835	41.5	39.4 ~ 43.6	0.90	0.86 ~ 0.95
900	41.5	39.4 ~ 43.6	0.97	0.92 ~ 1.02
1450	40.5	38.5 ~ 42.5	1.20	1.14 ~ 1.26
1640	40.3	38.3 ~ 42.3	1.29	1.23 ~ 1.35
1750	40.1	38.1 ~ 42.1	1.37	1.30 ~ 1.44
1800	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
1900	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2000	40.0	38.0 ~ 42.0	1.40	1.33 ~ 1.47
2300	39.5	37.5 ~ 41.5	1.67	1.59 ~ 1.75
2450	39.2	37.2 ~ 41.2	1.80	1.71 ~ 1.89
2600	39.0	37.1 ~ 41.0	1.96	1.86 ~ 2.06
3500	37.9	36.0 ~ 39.8	2.91	2.76 ~ 3.06
5200	36.0	34.2 ~ 37.8	4.66	4.43 ~ 4.89
5300	35.9	34.1 ~ 37.7	4.76	4.52 ~ 5.00
5500	35.6	33.8 ~ 37.4	4.96	4.71 ~ 5.21
5600	35.5	33.7 ~ 37.3	5.07	4.82 ~ 5.32
5800	35.3	33.5 ~ 37.1	5.27	5.01 ~ 5.53

The following table gives the recipes for tissue simulating liquids.

Recipes of Tissue Simulating Liquid

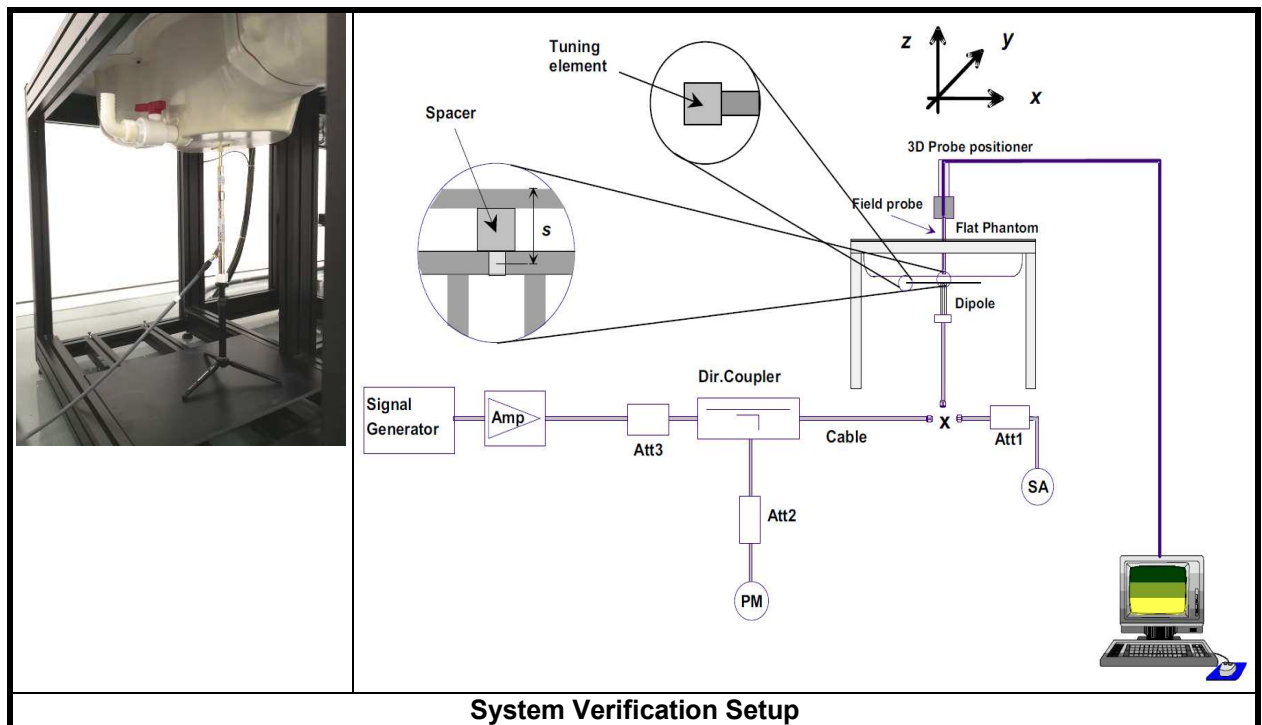
Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	0.3	-	-	55.2	-
H1900	-	44.5	-	0.2	-	-	55.3	-
H2000	-	44.5	-	0.1	-	-	55.4	-
H2300	-	44.9	-	0.1	-	-	55.0	-
H2450	-	45.0	-	0.1	-	-	54.9	-
H2600	-	45.1	-	0.1	-	-	54.8	-
H3500	-	8.0	-	0.2	-	20.0	71.8	-
H5G	-	-	-	-	-	17.2	65.5	17.3

Simulating Head Liquid (HBBL600-6000MHz), Manufactured by SPEAG:

Water (% by weight)	Esters, Emulsifiers, Inhibitors (% by weight)	Sodium salt (% by weight)
50 - 65%	10 - 30%	8 - 25%

5.2.8.SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.



The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The spectrum analyzer measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 2 GHz, 100 mW is used for 2 GHz to 6 GHz) at the dipole connector and the power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

6. SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

- (a) Make EUT to transmit maximum output power
- (b) Measure conducted output power through RF cable
- (c) Place the EUT in the specific position of phantom
- (d) Perform SAR testing steps on the DASY system
- (e) Record the SAR value

6.1. Area & Zoom Scan Procedure

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g. According to KDB 865664 D01, the resolution for Area and Zoom scan is specified in the table below.

Items	<= 2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan ($\Delta x, \Delta y$)	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan ($\Delta x, \Delta y$)	<= 8 mm	<= 5 mm	<= 5 mm	<= 4 mm	<= 4 mm
Zoom Scan (Δz)	<= 5 mm	<= 5 mm	<= 4 mm	<= 3 mm	<= 2 mm
Zoom Scan Volume	>= 30 mm	>= 30 mm	>= 28 mm	>= 25 mm	>= 22 mm

Note:

When zoom scan is required and report SAR is <= 1.4 W/kg, the zoom scan resolution of $\Delta x / \Delta y$ (2-3GHz: <= 8 mm, 3-4GHz: <= 7 mm, 4-6GHz: <= 5 mm) may be applied.

6.2. Volume Scan Procedure

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

6.3. Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

6.4. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

6.5. SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5 mm.

7. SAR Measurement Evaluation

7.1. EUT Configuration and Setting

<Considerations Related to LTE for Setup and Testing>

This device contains LTE transmitter which follows 3GPP standards, is category 3, supports both QPSK and 16QAM modulations, and supported LTE band and channel bandwidth is listed in below. The output power was tested per 3GPP TS 36.521-1 maximum transmit procedures for both QPSK and 16QAM modulation. The results please refer to section 4.6 of this report.

EUT Supported LTE Band and Channel Bandwidth						
LTE Band	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz
2	V	V	V	V	V	V
4	V	V	V	V	V	V
5	V	V	V	V		
12	V	V	V	V		
13			V	V		
66	V	V	V	V	V	V

The LTE maximum power reduction (MPR) in accordance with 3GPP TS 36.101 is active all times during LTE operation. The allowed MPR for the maximum output power is specified in below.

Modulation	Channel Bandwidth / RB Configurations						LTE MPR Setting (dB)
	BW 1.4 MHz	BW 3 MHz	BW 5 MHz	BW 10 MHz	BW 15 MHz	BW 20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	1
16QAM	<= 5	<= 4	<= 8	<= 12	<= 16	<= 18	1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	2

Note: MPR is according to the standard and implemented in the circuit (mandatory).

In addition, the device is compliant with additional maximum power reduction (A-MPR) requirements defined in 3GPP TS 36.101 section 6.2.4 that was disabled for all FCC compliance testing.

During LTE SAR testing, the related parameters of operating band, channel bandwidth, uplink channel number, modulation type, and RB was set in base station simulator. When the EUT has registered and communicated to base station simulator, the simulator set to make EUT transmitting the maximum radiated power.

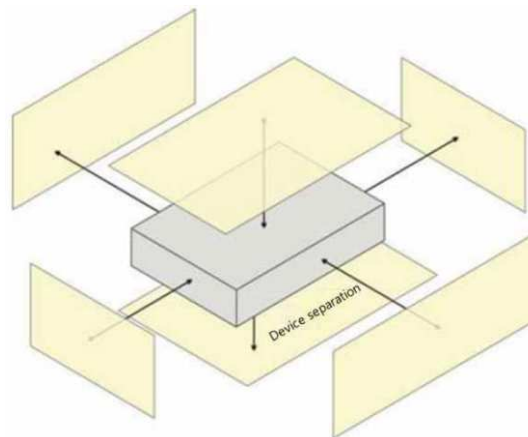
<Considerations Related to Bluetooth for Setup and Testing>

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

7.2. EUT Testing Position

7.2.1. Exposure Conditions

For this device is used on pets, SAR evaluation is required on all sides and edges with a transmitting antenna within 25 mm from that surface or edge, at 10 mm separation from a flat phantom, Next to the Body exposure requires 1-g SAR, and Worst Case at 0 mm separation from a flat phantom, Next to the Hand exposure requires 10-g SAR. for the data modes, wireless technologies and frequency bands supported by the device to determine SAR compliance.



Based on the antenna location shown on Appendix D, the SAR testing required for Body mode is listed as below.

Antenna	Front Face	Rear Face	Left Side	Right Side	Top Side	Bottom Side
WWAN	V	V	V	V	V	V
BT	V	V	V	V	V	V

7.3. Simultaneous Transmission Possibilities

The simultaneous transmission possibilities for this device are listed as below.

Simultaneous TX Combination	Capable Transmit Configurations	Body Exposure Condition
1	LTE 2 (Data) + BT (Data)	Yes
2	LTE 4 (Data) + BT (Data)	Yes
3	LTE 5 (Data) + BT (Data)	Yes
4	LTE 12 (Data) + BT (Data)	Yes
5	LTE 13 (Data) + BT (Data)	Yes
6	LTE 66 (Data) + BT (Data)	Yes

7.4. Tissue Verification

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

Test Date	Tissue Type	Frequency (MHz)	Measured Conductivity (σ)	Measured Permittivity (ϵ_r)	Target Conductivity (σ)	Target Permittivity (ϵ_r)	Conductivity Deviation (%)	Permittivity Deviation (%)
Sep. 28, 2025	H750	750	0.895	41.512	0.89	41.90	0.56	-0.93
Sep. 27, 2025	H835	835	0.926	41.229	0.90	41.50	2.89	-0.65
Sep. 29, 2025	H1750	1750	1.374	40.153	1.37	40.10	0.29	0.13
Sep. 30, 2025	H1900	1900	1.448	39.937	1.40	40.00	3.43	-0.16
Sep. 28, 2025	H2450	2450	1.827	37.969	1.80	39.20	1.50	-3.14

Note:

The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within $\pm 5\%$ of the target values. Liquid temperature during the SAR testing must be within $\pm 2^\circ\text{C}$.

7.5. System Validation

The SAR measurement system was validated according to procedures in KDB 865664 D01. The validation status in tabulated summary is as below.

Test Date	Probe S/N	Calibration Point		Measured Conductivity (σ)	Measured Permittivity (ϵ_r)	Validation for CW			Validation for Modulation		
						Sensitivity Range	Probe Linearity	Probe Isotropy	Modulation Type	Duty Factor	PAR
Sep. 28, 2025	7506	Head	750	0.895	41.512	Pass	Pass	Pass	N/A	N/A	N/A
Sep. 27, 2025	7506	Head	835	0.926	41.229	Pass	Pass	Pass	N/A	N/A	N/A
Sep. 29, 2025	7506	Head	1750	1.374	40.153	Pass	Pass	Pass	N/A	N/A	N/A
Sep. 30, 2025	7506	Head	1900	1.448	39.937	Pass	Pass	Pass	N/A	N/A	N/A
Sep. 28, 2025	7506	Head	2450	1.827	37.969	Pass	Pass	Pass	OFDM	N/A	Pass

7.6. System Verification

The measuring result for system verification is tabulated as below.

Test Date	Frequency (MHz)	1W Target SAR-1g (W/kg)	Measured SAR-1g (W/kg)	Normalized to 1W SAR-1g (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N
Sep. 28, 2025	750	8.53	2.14	8.56	0.35	1109	7506	1557
Sep. 27, 2025	835	9.75	2.43	9.72	-0.31	4d242	7506	1557
Sep. 29, 2025	1750	36.20	9.40	37.60	3.87	1166	7506	1557
Sep. 30, 2025	1900	40.10	10.20	40.80	1.75	5d229	7506	1557
Sep. 28, 2025	2450	53.40	5.21	52.10	-2.43	1014	7506	1557

Note:

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

8. SAR Measurement Evaluation

8.1. Maximum Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

Mode	LTE 2	LTE 4	LTE 5
QPSK / 16QAM	24.0	24.0	24.0

Mode	LTE 12	LTE 13	LTE 66
QPSK / 16QAM	24.0	24.0	24.0

Mode	2.4G Bluetooth
GFSK	7.5
8DPSK	7.0
LE 1M	9.0

8.2. Measured Conducted Power Result

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18607	Mid CH 18900	High CH 19193		Low CH 18607	Mid CH 18900	High CH 19193	
			1850.7 MHz	1880.0 MHz	1909.3 MHz		1850.7 MHz	1880.0 MHz	1909.3 MHz	
2 / 1.4M	1	0	23.33	23.19	22.99	0	22.39	22.18	22.14	1
	1	2	23.12	23.12	22.93	0	22.29	22.06	21.92	1
	1	5	23.15	22.89	22.87	0	22.14	22.10	21.81	1
	3	0	23.42	23.23	23.04	0	22.46	22.20	22.16	1
	3	1	23.34	23.12	23.10	0	22.43	22.22	22.11	1
	3	3	23.44	23.25	23.10	0	22.47	22.36	22.29	1
	6	0	22.33	22.35	22.22	1	21.39	21.42	21.12	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18615	Mid CH 18900	High CH 19185		Low CH 18615	Mid CH 18900	High CH 19185	
			1851.5 MHz	1880.0 MHz	1908.5 MHz		1851.5 MHz	1880.0 MHz	1908.5 MHz	
2 / 3M	1	0	23.19	23.09	22.91	0	22.40	22.18	21.98	1
	1	7	23.06	23.05	22.88	0	22.21	22.12	21.90	1
	1	14	22.99	22.90	22.74	0	22.05	22.12	21.92	1
	8	0	22.32	22.22	22.14	1	21.35	21.31	21.15	2
	8	3	22.30	22.27	22.04	1	21.39	21.29	21.08	2
	8	7	22.32	22.35	22.24	1	21.53	21.38	21.29	2
	15	0	22.32	22.21	22.17	1	21.52	21.25	21.22	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18625	Mid CH 18900	High CH 19175		Low CH 18625	Mid CH 18900	High CH 19175	
			1852.5 MHz	1880.0 MHz	1907.5 MHz		1852.5 MHz	1880.0 MHz	1907.5 MHz	
2 / 5M	1	0	23.34	23.11	22.98	0	22.33	22.11	21.99	1
	1	12	23.17	22.95	22.93	0	22.11	22.16	21.98	1
	1	24	23.10	22.89	22.83	0	22.07	21.96	21.95	1
	12	0	22.25	22.18	22.15	1	21.45	21.35	21.06	2
	12	6	22.37	22.20	22.00	1	21.31	21.27	21.20	2
	12	13	22.49	22.29	22.13	1	21.56	21.27	21.29	2
	25	0	22.42	22.25	22.16	1	21.49	21.30	21.24	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18650	Mid CH 18900	High CH 19150		Low CH 18650	Mid CH 18900	High CH 19150	
			1855.0 MHz	1880.0 MHz	1905.0 MHz		1855.0 MHz	1880.0 MHz	1905.0 MHz	
2 / 10M	1	0	23.28	23.13	23.03	0	22.28	22.20	22.16	1
	1	24	23.22	22.98	22.89	0	22.12	22.01	22.01	1
	1	49	23.06	23.05	22.81	0	22.05	21.95	21.92	1
	25	0	22.40	22.15	22.07	1	21.33	21.36	21.22	2
	25	12	22.31	22.20	22.03	1	21.40	21.31	21.04	2
	25	25	22.38	22.26	22.18	1	21.49	21.40	21.18	2
	50	0	22.37	22.34	22.22	1	21.35	21.32	21.24	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18675	Mid CH 18900	High CH 19125		Low CH 18675	Mid CH 18900	High CH 19125	

			1857.5 MHz	1880.0 MHz	1902.5 MHz		1857.5 MHz	1880.0 MHz	1902.5 MHz	
2 / 15M	1	0	23.27	23.18	22.98	0	22.26	22.19	22.11	1
	1	37	23.04	23.09	22.88	0	22.28	22.08	22.01	1
	1	74	23.17	23.05	22.80	0	22.19	22.00	21.87	1
	36	0	22.37	22.30	22.04	1	21.41	21.33	21.20	2
	36	19	22.29	22.22	22.10	1	21.27	21.29	21.08	2
	36	39	22.37	22.34	22.15	1	21.55	21.44	21.27	2
	75	0	22.29	22.33	22.11	1	21.34	21.24	21.22	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 18700	Mid CH 18900	High CH 19100		Low CH 18700	Mid CH 18900	High CH 19100	
			1860.0 MHz	1880.0 MHz	1900.0 MHz		1860.0 MHz	1880.0 MHz	1900.0 MHz	
2 / 20M	1	0	23.35	23.24	23.10	0	22.41	22.30	22.16	1
	1	50	23.24	23.13	22.99	0	22.30	22.19	22.05	1
	1	99	23.18	23.07	22.93	0	22.24	22.13	21.99	1
	50	0	22.45	22.34	22.20	1	21.51	21.40	21.26	2
	50	25	22.40	22.29	22.15	1	21.46	21.35	21.21	2
	50	50	22.52	22.41	22.27	1	21.58	21.47	21.33	2
	100	0	22.48	22.37	22.23	1	21.54	21.43	21.29	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19957	Mid CH 20175	High CH 20393		Low CH 19957	Mid CH 20175	High CH 20393	
			1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz	
4 / 1.4M	1	0	22.99	23.36	23.56	0	22.34	22.35	22.71	1
	1	2	23.00	23.22	23.43	0	22.17	22.16	22.42	1
	1	5	23.25	23.21	23.59	0	22.24	22.42	22.53	1
	3	0	23.39	23.42	23.63	0	22.43	22.39	22.75	1
	3	1	23.34	23.34	23.72	0	22.43	22.44	22.73	1
	3	3	23.28	23.31	23.56	0	22.31	22.42	22.75	1
	6	0	22.36	22.60	22.87	1	21.42	21.67	21.77	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19965	Mid CH 20175	High CH 20385		Low CH 19965	Mid CH 20175	High CH 20385	
			1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz	
4 / 3M	1	0	22.85	23.26	23.48	0	22.35	22.35	22.55	1
	1	7	22.94	23.15	23.38	0	22.09	22.22	22.40	1
	1	14	23.09	23.22	23.46	0	22.15	22.44	22.64	1
	8	0	22.29	22.41	22.73	1	21.32	21.50	21.74	2
	8	3	22.30	22.49	22.66	1	21.39	21.51	21.70	2
	8	7	22.16	22.41	22.70	1	21.37	21.44	21.75	2
	15	0	22.35	22.46	22.82	1	21.55	21.50	21.87	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19975	Mid CH 20175	High CH 20375		Low CH 19975	Mid CH 20175	High CH 20375	
			1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz	
4 / 5M	1	0	23.00	23.28	23.55	0	22.28	22.28	22.56	1
	1	12	23.05	23.05	23.43	0	21.99	22.26	22.48	1
	1	24	23.20	23.21	23.55	0	22.17	22.28	22.67	1

	12	0	22.22	22.37	22.74	1	21.42	21.54	21.65	2
	12	6	22.37	22.42	22.62	1	21.31	21.49	21.82	2
	12	13	22.33	22.35	22.59	1	21.40	21.33	21.75	2
	25	0	22.45	22.50	22.81	1	21.52	21.55	21.89	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20000	Mid CH 20175	High CH 20350		Low CH 20000	Mid CH 20175	High CH 20350	
			1715.0 MHz	1732.5 MHz	1750.0 MHz		1715.0 MHz	1732.5 MHz	1750.0 MHz	
4 / 10M	1	0	22.94	23.30	23.60	0	22.23	22.37	22.73	1
	1	24	23.10	23.08	23.39	0	22.00	22.11	22.51	1
	1	49	23.16	23.37	23.53	0	22.15	22.27	22.64	1
	25	0	22.37	22.34	22.66	1	21.30	21.55	21.81	2
	25	12	22.31	22.42	22.65	1	21.40	21.53	21.66	2
	25	25	22.22	22.32	22.64	1	21.33	21.46	21.64	2
	50	0	22.40	22.59	22.87	1	21.38	21.57	21.89	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20025	Mid CH 20175	High CH 20325		Low CH 20025	Mid CH 20175	High CH 20325	
			1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz	
4 / 15M	1	0	22.93	23.35	23.55	0	22.21	22.36	22.68	1
	1	37	22.92	23.19	23.38	0	22.16	22.18	22.51	1
	1	74	23.27	23.37	23.52	0	22.29	22.32	22.59	1
	36	0	22.34	22.49	22.63	1	21.38	21.52	21.79	2
	36	19	22.29	22.44	22.72	1	21.27	21.51	21.70	2
	36	39	22.21	22.40	22.61	1	21.39	21.50	21.73	2
	75	0	22.32	22.58	22.76	1	21.37	21.49	21.87	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20050	Mid CH 20175	High CH 20300		Low CH 20050	Mid CH 20175	High CH 20300	
			1720.0 MHz	1732.5 MHz	1745.0 MHz		1720.0 MHz	1732.5 MHz	1745.0 MHz	
4 / 20M	1	0	23.01	23.41	23.67	0	22.36	22.47	22.73	1
	1	50	23.12	23.23	23.49	0	22.18	22.29	22.55	1
	1	99	23.28	23.39	23.65	0	22.34	22.45	22.71	1
	50	0	22.42	22.53	22.79	1	21.48	21.59	21.85	2
	50	25	22.40	22.51	22.77	1	21.46	21.57	21.83	2
	50	50	22.36	22.47	22.73	1	21.42	21.53	21.79	2
	100	0	22.51	22.62	22.88	1	21.57	21.68	21.94	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20407	Mid CH 20525	High CH 20643		Low CH 20407	Mid CH 20525	High CH 20643	
			824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz	
5 / 1.4M	1	0	23.37	23.53	23.44	0	22.57	22.56	22.55	1
	1	2	23.26	23.17	23.27	0	22.18	22.20	22.24	1
	1	5	23.38	23.51	23.47	0	22.51	22.51	22.46	1
	3	0	23.50	23.73	23.68	0	22.67	22.73	22.67	1
	3	1	23.57	23.62	23.52	0	22.61	22.63	22.63	1
	3	3	23.65	23.58	23.78	0	22.68	22.75	22.69	1
	6	0	22.66	22.63	22.73	1	21.68	21.72	21.70	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20415	Mid CH 20525	High CH 20635		Low CH 20415	Mid CH 20525	High CH 20635	
			825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz	
5 / 3M	1	0	23.44	23.55	23.53	0	22.41	22.44	22.51	1
	1	7	23.13	23.19	23.17	0	22.28	22.37	22.42	1
	1	14	23.47	23.45	23.45	0	22.54	22.52	22.49	1
	8	0	22.58	22.59	22.66	1	21.55	21.70	21.76	2
	8	3	22.54	22.51	22.62	1	21.54	21.62	21.58	2
	8	7	22.57	22.59	22.62	1	21.65	21.80	21.71	2
	15	0	22.61	22.64	22.67	1	21.75	21.75	21.82	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20425	Mid CH 20525	High CH 20625		Low CH 20425	Mid CH 20525	High CH 20625	
			826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz	
5 / 5M	1	0	23.34	23.43	23.61	0	22.51	22.50	22.48	1
	1	12	23.20	23.25	23.27	0	22.29	22.23	22.41	1
	1	24	23.45	23.50	23.53	0	22.52	22.55	22.57	1
	12	0	22.64	22.68	22.59	1	21.63	21.71	21.73	2
	12	6	22.47	22.65	22.56	1	21.64	21.56	21.69	2
	12	13	22.63	22.67	22.64	1	21.71	21.70	21.76	2
	25	0	22.51	22.65	22.78	1	21.58	21.76	21.83	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20450	Mid CH 20525	High CH 20600		Low CH 20450	Mid CH 20525	High CH 20600	
			829.0 MHz	836.5 MHz	844.0 MHz		829.0 MHz	836.5 MHz	844.0 MHz	
5 / 10M	1	0	23.52	23.58	23.61	0	22.58	22.64	22.67	1
	1	24	23.28	23.34	23.37	0	22.34	22.40	22.43	1
	1	49	23.49	23.55	23.58	0	22.55	22.61	22.64	1
	25	0	22.67	22.73	22.76	1	21.73	21.79	21.82	2
	25	12	22.63	22.69	22.72	1	21.69	21.75	21.78	2
	25	25	22.69	22.75	22.78	1	21.75	21.81	21.84	2
	50	0	22.71	22.77	22.80	1	21.77	21.83	21.86	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23017	Mid CH 23095	High CH 23173		Low CH 23017	Mid CH 23095	High CH 23173	
			699.7 MHz	707.5 MHz	715.3 MHz		699.7 MHz	707.5 MHz	715.3 MHz	
12 / 1.4M	1	0	23.41	23.52	23.53	0	22.38	22.46	22.74	1
	1	2	23.18	23.35	23.44	0	22.21	22.41	22.59	1
	1	5	23.01	23.35	23.49	0	22.22	22.34	22.44	1
	3	0	23.26	23.51	23.70	0	22.35	22.51	22.71	1
	3	1	23.38	23.59	23.64	0	22.48	22.50	22.68	1
	3	3	23.34	23.54	23.53	0	22.28	22.59	22.59	1
	6	0	22.34	22.57	22.66	1	21.54	21.72	21.74	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23025	Mid CH 23095	High CH 23165		Low CH 23025	Mid CH 23095	High CH 23165	
			700.5 MHz	707.5 MHz	714.5 MHz		700.5 MHz	707.5 MHz	714.5 MHz	

12 / 3M	1	0	23.33	23.57	23.67	0	22.45	22.59	22.76	1
	1	7	23.10	23.34	23.39	0	22.21	22.45	22.58	1
	1	14	23.17	23.29	23.35	0	22.19	22.28	22.54	1
	8	0	22.38	22.53	22.61	1	21.38	21.58	21.63	2
	8	3	22.37	22.43	22.72	1	21.39	21.64	21.61	2
	8	7	22.27	22.54	22.52	1	21.28	21.61	21.73	2
	15	0	22.41	22.62	22.76	1	21.55	21.59	21.75	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23035	Mid CH 23095	High CH 23155		Low CH 23035	Mid CH 23095	High CH 23155	
			701.5 MHz	707.5 MHz	713.5 MHz		701.5 MHz	707.5 MHz	713.5 MHz	
12 / 5M	1	0	23.34	23.39	23.51	0	22.35	22.56	22.62	1
	1	12	23.09	23.41	23.53	0	22.22	22.48	22.47	1
	1	24	23.20	23.22	23.33	0	22.13	22.33	22.36	1
	12	0	22.44	22.60	22.57	1	21.44	21.60	21.78	2
	12	6	22.36	22.52	22.64	1	21.37	21.61	21.78	2
	12	13	22.24	22.56	22.65	1	21.35	21.54	21.58	2
	25	0	22.42	22.56	22.72	1	21.52	21.64	21.70	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23060	Mid CH 23095	High CH 23130		Low CH 23060	Mid CH 23095	High CH 23130	
			704.0 MHz	707.5 MHz	711.0 MHz		704.0 MHz	707.5 MHz	711.0 MHz	
12 / 10M	1	0	23.42	23.58	23.71	0	22.48	22.64	22.77	1
	1	24	23.28	23.44	23.57	0	22.34	22.50	22.63	1
	1	49	23.21	23.37	23.50	0	22.27	22.43	22.56	1
	25	0	22.45	22.61	22.74	1	21.51	21.67	21.80	2
	25	12	22.44	22.60	22.73	1	21.50	21.66	21.79	2
	25	25	22.40	22.56	22.69	1	21.46	21.62	21.75	2
	50	0	22.51	22.67	22.80	1	21.57	21.73	21.86	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23205	Mid CH 23230	High CH 23255		Low CH 23205	Mid CH 23230	High CH 23255	
			779.5 MHz	782.0 MHz	784.5 MHz		779.5 MHz	782.0 MHz	784.5 MHz	
13 / 5M	1	0	23.34	23.37	23.28	0	22.45	22.48	22.39	1
	1	12	23.11	23.14	23.05	0	22.31	22.34	22.25	1
	1	24	23.27	23.30	23.21	0	22.34	22.37	22.28	1
	12	0	23.44	23.47	23.38	1	22.56	22.59	22.50	2
	12	6	23.49	23.52	23.43	1	22.47	22.50	22.41	2
	12	13	23.44	23.47	23.38	1	22.47	22.50	22.41	2
	25	0	23.55	23.58	23.49	1	22.53	22.56	22.47	2

LTE Band / BW	RB Size	RB Offset	QPSK	3GPP MPR (dB)	16QAM	3GPP MPR (dB)
			Mid CH 23230		Mid CH 23230	
			782.0 MHz		782.0 MHz	
13 / 10M	1	0	23.48	0	22.54	1
	1	24	23.34	0	22.40	1
	1	49	23.41	0	22.47	1
	25	0	23.62	1	22.68	2
	25	12	23.55	1	22.61	2

Produkte
Products

Prüfbericht - Nr.: CN254WZ3 004

Test Report No.

Seite 31 von 42
Page 31 of 42

	25	25	23.51	1	22.57	2
	50	0	23.64	1	22.70	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 131979	Mid CH 132322	High CH 132665		Low CH 131979	Mid CH 132322	High CH 132665	
			1710.7 MHz	1745 MHz	1779.3 MHz		1710.7 MHz	1745 MHz	1779.3 MHz	
66 / 1.4M	1	0	23.39	23.43	23.58	0	22.45	22.42	22.73	1
	1	2	23.10	23.28	23.44	0	22.27	22.22	22.43	1
	1	5	23.25	23.17	23.50	0	22.24	22.38	22.44	1
	3	0	23.49	23.48	23.64	0	22.53	22.45	22.76	1
	3	1	23.51	23.47	23.80	0	22.60	22.57	22.81	1
	3	3	23.34	23.33	23.53	0	22.37	22.44	22.72	1
	6	0	22.43	22.63	22.85	1	21.49	21.70	21.75	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 131987	Mid CH 132322	High CH 132657		Low CH 131987	Mid CH 132322	High CH 132657	
			1711.5 MHz	1745 MHz	1778.5 MHz		1711.5 MHz	1745 MHz	1778.5 MHz	
66 / 3M	1	0	23.25	23.33	23.50	0	22.46	22.42	22.57	1
	1	7	23.04	23.21	23.39	0	22.19	22.28	22.41	1
	1	14	23.09	23.18	23.37	0	22.15	22.40	22.55	1
	8	0	22.39	22.47	22.74	1	21.42	21.56	21.75	2
	8	3	22.47	22.62	22.74	1	21.56	21.64	21.78	2
	8	7	22.22	22.43	22.67	1	21.43	21.46	21.72	2
	15	0	22.42	22.49	22.80	1	21.62	21.53	21.85	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 131997	Mid CH 132322	High CH 132647		Low CH 131997	Mid CH 132322	High CH 132647	
			1712.5 MHz	1745 MHz	1777.5 MHz		1712.5 MHz	1745 MHz	1777.5 MHz	
66 / 5M	1	0	23.40	23.35	23.57	0	22.39	22.35	22.58	1
	1	12	23.15	23.11	23.44	0	22.09	22.32	22.49	1
	1	24	23.20	23.17	23.46	0	22.17	22.24	22.58	1
	12	0	22.32	22.43	22.75	1	21.52	21.60	21.66	2
	12	6	22.54	22.55	22.70	1	21.48	21.62	21.90	2
	12	13	22.39	22.37	22.56	1	21.46	21.35	21.72	2
	25	0	22.52	22.53	22.79	1	21.59	21.58	21.87	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 132022	Mid CH 132322	High CH 132622		Low CH 132022	Mid CH 132322	High CH 132622	
			1715 MHz	1745 MHz	1775 MHz		1715 MHz	1745 MHz	1775 MHz	
66 / 10M	1	0	23.34	23.37	23.62	0	22.34	22.44	22.75	1
	1	24	23.20	23.14	23.40	0	22.10	22.17	22.52	1
	1	49	23.16	23.33	23.44	0	22.15	22.23	22.55	1
	25	0	22.47	22.40	22.67	1	21.40	21.61	21.82	2
	25	12	22.48	22.55	22.73	1	21.57	21.66	21.74	2
	25	25	22.28	22.34	22.61	1	21.39	21.48	21.61	2
	50	0	22.47	22.62	22.85	1	21.45	21.60	21.87	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 132047	Mid CH 132322	High CH 132597		Low CH 132047	Mid CH 132322	High CH 132597	

			1717.5 MHz	1745 MHz	1772.5 MHz		1717.5 MHz	1745 MHz	1772.5 MHz	
66 / 15M	1	0	23.33	23.42	23.57	0	22.32	22.43	22.70	1
	1	37	23.02	23.25	23.39	0	22.26	22.24	22.52	1
	1	74	23.27	23.33	23.43	0	22.29	22.28	22.50	1
	36	0	22.44	22.55	22.64	1	21.48	21.58	21.80	2
	36	19	22.46	22.57	22.80	1	21.44	21.64	21.78	2
	36	39	22.27	22.42	22.58	1	21.45	21.52	21.70	2
	75	0	22.39	22.61	22.74	1	21.44	21.52	21.85	2

LTE Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 132072	Mid CH 132322	High CH 132572		Low CH 132072	Mid CH 132322	High CH 132572	
			1720 MHz	1745 MHz	1770 MHz		1720 MHz	1745 MHz	1770 MHz	
66 / 20M	1	0	23.41	23.48	23.69	0	22.47	22.54	22.75	1
	1	50	23.22	23.29	23.50	0	22.28	22.35	22.56	1
	1	99	23.28	23.35	23.56	0	22.34	22.41	22.62	1
	50	0	22.52	22.59	22.80	1	21.58	21.65	21.86	2
	50	25	22.57	22.64	22.85	1	21.63	21.70	21.91	2
	50	50	22.42	22.49	22.70	1	21.48	21.55	21.76	2
	100	0	22.58	22.65	22.86	1	21.64	21.71	21.92	2

All Rate have been tested, the Worst average power (Unit: dBm) is shown as below.

<Bluetooth>

Mode	Bluetooth GFSK		
Channel / Frequency (MHz)	0 (2402)	39 (2441)	78 (2480)
Average Power	5.40	5.80	7.00
Mode	Bluetooth 8DPSK		
Channel / Frequency (MHz)	0 (2402)	39 (2441)	78 (2480)
Average Power	5.10	5.30	6.80
Mode	Bluetooth LE		
Channel / Frequency (MHz)	0 (2402)	19 (2440)	39 (2480)
Average Power	8.30	8.40	6.90

8.3. SAR Testing Results

8.3.1. SAR Test Reduction Considerations

<KDB 447498 D01, General RF Exposure Guidance>

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

- (1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- (2) ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- (3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

<KDB 941225 D05, SAR Evaluation Considerations for LTE Devices>

- (1) QPSK with 1 RB and 50% RB allocation

Start with the largest channel bandwidth and measure SAR, using the RB offset and required test channel combination with the highest maximum output power among 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; 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 100% RB allocation

SAR is not required when the highest maximum output power for 100% RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

- (3) Higher order modulations

SAR is required only when the highest maximum output power for the configuration in the higher order modulation is $> 1/2$ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

- (4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is $> 1/2$ 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.

8.3.2.SAR Results for Body Exposure Condition (Separation Distance is 1 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	LTE 2	QPSK20M	Front Face	1	18700	1	0	-	24.0	23.35	1.16	-0.07	0.305	0.35
	LTE 2	QPSK20M	Rear Face	1	18700	1	0	-	24.0	23.35	1.16	-0.06	0.085	0.10
	LTE 2	QPSK20M	Left Side	1	18700	1	0	-	24.0	23.35	1.16	-0.06	0.061	0.07
	LTE 2	QPSK20M	Right Side	1	18700	1	0	-	24.0	23.35	1.16	-0.02	0.178	0.21
	LTE 2	QPSK20M	Top Side	1	18700	1	0	-	24.0	23.35	1.16	-0.06	0.047	0.05
1	LTE 2	QPSK20M	Bottom Side	1	18700	1	0	-	24.0	23.35	1.16	-0.08	0.382	0.44
	LTE 2	QPSK20M	Front Face	1	18700	50	50	-	23.0	22.52	1.12	0.05	0.244	0.27
	LTE 2	QPSK20M	Rear Face	1	18700	50	50	-	23.0	22.52	1.12	0.04	0.068	0.08
	LTE 2	QPSK20M	Left Side	1	18700	50	50	-	23.0	22.52	1.12	0.08	0.048	0.05
	LTE 2	QPSK20M	Right Side	1	18700	50	50	-	23.0	22.52	1.12	0.04	0.141	0.16
	LTE 2	QPSK20M	Top Side	1	18700	50	50	-	23.0	22.52	1.12	0.05	0.037	0.04
	LTE 2	QPSK20M	Bottom Side	1	18700	50	50	-	23.0	22.52	1.12	0.09	0.313	0.35
2	LTE 4	QPSK20M	Front Face	1	20300	1	0	-	24.0	23.67	1.08	0.11	1.30	1.40
	LTE 4	QPSK20M	Rear Face	1	20300	1	0	-	24.0	23.67	1.08	-0.10	0.346	0.37
	LTE 4	QPSK20M	Left Side	1	20300	1	0	-	24.0	23.67	1.08	-0.06	0.335	0.36
	LTE 4	QPSK20M	Right Side	1	20300	1	0	-	24.0	23.67	1.08	-0.04	0.432	0.47
	LTE 4	QPSK20M	Top Side	1	20300	1	0	-	24.0	23.67	1.08	-0.18	0.15	0.16
	LTE 4	QPSK20M	Bottom Side	1	20300	1	0	-	24.0	23.67	1.08	-0.04	0.899	0.97
	LTE 4	QPSK20M	Front Face	1	20300	50	0	-	23.0	22.79	1.05	0.05	1.04	1.09
	LTE 4	QPSK20M	Rear Face	1	20300	50	0	-	23.0	22.79	1.05	0.08	0.277	0.29
	LTE 4	QPSK20M	Left Side	1	20300	50	0	-	23.0	22.79	1.05	0.04	0.268	0.28
	LTE 4	QPSK20M	Right Side	1	20300	50	0	-	23.0	22.79	1.05	-0.06	0.345	0.36
	LTE 4	QPSK20M	Top Side	1	20300	50	0	-	23.0	22.79	1.05	0.05	0.121	0.13
	LTE 4	QPSK20M	Bottom Side	1	20300	50	0	-	23.0	22.79	1.05	0.04	0.719	0.75
	LTE 4	QPSK20M	Front Face	1	20050	1	0	-	24.0	23.01	1.26	-0.05	0.97	1.22
	LTE 4	QPSK20M	Front Face	1	20175	1	0	-	24.0	23.41	1.15	0.06	1.11	1.27
	LTE 4	QPSK20M	Bottom Side	1	20050	1	0	-	24.0	23.01	1.26	-0.03	0.492	0.62
	LTE 4	QPSK20M	Bottom Side	1	20175	1	0	-	24.0	23.10	1.23	-0.02	0.635	0.78
	LTE 4	QPSK20M	Front Face	1	20050	50	0	-	23.0	22.42	1.14	-0.05	0.776	0.89
	LTE 4	QPSK20M	Front Face	1	20175	50	0	-	23.0	22.53	1.11	0.06	0.887	0.99
	LTE 4	QPSK20M	Front Face	1	20300	100	0	-	23.0	22.88	1.03	0.06	1.04	1.07
	LTE 4	QPSK20M	Bottom Side	1	20300	100	0	-	23.0	22.88	1.03	0.02	0.824	0.85
	LTE 4	QPSK20M	Front Face	1	20300	1	0	-	24.0	23.67	1.08	0.06	1.27	1.37
	LTE 5	QPSK10M	Front Face	1	20600	1	0	-	24.0	23.61	1.09	0.09	0.193	0.21
	LTE 5	QPSK10M	Rear Face	1	20600	1	0	-	24.0	23.61	1.09	0.12	0.348	0.38
	LTE 5	QPSK10M	Left Side	1	20600	1	0	-	24.0	23.61	1.09	0.05	0.039	0.04
	LTE 5	QPSK10M	Right Side	1	20600	1	0	-	24.0	23.61	1.09	0.02	0.068	0.07
	LTE 5	QPSK10M	Top Side	1	20600	1	0	-	24.0	23.61	1.09	0.01	0.173	0.19
3	LTE 5	QPSK10M	Bottom Side	1	20600	1	0	-	24.0	23.61	1.09	-0.09	0.35	0.38
	LTE 5	QPSK10M	Front Face	1	20600	25	25	-	23.0	22.78	1.05	0.06	0.156	0.16
	LTE 5	QPSK10M	Rear Face	1	20600	25	25	-	23.0	22.78	1.05	0.01	0.282	0.30
	LTE 5	QPSK10M	Left Side	1	20600	25	25	-	23.0	22.78	1.05	0.08	0.031	0.03
	LTE 5	QPSK10M	Right Side	1	20600	25	25	-	23.0	22.78	1.05	0.04	0.055	0.06
	LTE 5	QPSK10M	Top Side	1	20600	25	25	-	23.0	22.78	1.05	0.02	0.141	0.15
	LTE 5	QPSK10M	Bottom Side	1	20600	25	25	-	23.0	22.78	1.05	0.09	0.284	0.30
	LTE 12	QPSK10M	Front Face	1	23130	1	0	-	24.0	23.71	1.07	0.00	0.00921	0.01
	LTE 12	QPSK10M	Rear Face	1	23130	1	0	-	24.0	23.71	1.07	0.00	0.036	0.04
	LTE 12	QPSK10M	Left Side	1	23130	1	0	-	24.0	23.71	1.07	0.04	0.024	0.03
	LTE 12	QPSK10M	Right Side	1	23130	1	0	-	24.0	23.71	1.07	0.00	0.00736	0.01
	LTE 12	QPSK10M	Top Side	1	23130	1	0	-	24.0	23.71	1.07	0.00	0.00158	0.00
4	LTE 12	QPSK10M	Bottom Side	1	23130	1	0	-	24.0	23.71	1.07	0.15	0.052	0.06
	LTE 12	QPSK10M	Front Face	1	23130	50	0	-	24.0	23.74	1.06	0.06	0.00755	0.01
	LTE 12	QPSK10M	Rear Face	1	23130	50	0	-	24.0	23.74	1.06	0.01	0.029	0.03
	LTE 12	QPSK10M	Left Side	1	23130	50	0	-	24.0	23.74	1.06	-0.05	0.019	0.02
	LTE 12	QPSK10M	Right Side	1	23130	50	0	-	24.0	23.74	1.06	0.05	0.00603	0.01
	LTE 12	QPSK10M	Top Side	1	23130	50	0	-	24.0	23.74	1.06	0.04	0.00129	0.00

	LTE 12	QPSK10M	Bottom Side	1	23130	50	0	-	24.0	23.74	1.06	0.09	0.043	0.05
	LTE 13	QPSK10M	Front Face	1	23230	1	0	-	24.0	23.48	1.13	-0.01	0.02	0.02
	LTE 13	QPSK10M	Rear Face	1	23230	1	0	-	24.0	23.48	1.13	0	0.078	0.09
	LTE 13	QPSK10M	Left Side	1	23230	1	0	-	24.0	23.48	1.13	-0.05	0.053	0.06
	LTE 13	QPSK10M	Right Side	1	23230	1	0	-	24.0	23.48	1.13	-0.08	0.016	0.02
	LTE 13	QPSK10M	Top Side	1	23230	1	0	-	24.0	23.48	1.13	0.05	0.00345	0.00
5	LTE 13	QPSK10M	Bottom Side	1	23230	1	0	-	24.0	23.48	1.13	-0.01	0.113	0.13
	LTE 13	QPSK10M	Front Face	1	23230	1	0	-	24.0	23.62	1.09	-0.05	0.016	0.02
	LTE 13	QPSK10M	Rear Face	1	23230	1	0	-	24.0	23.62	1.09	0.04	0.064	0.07
	LTE 13	QPSK10M	Left Side	1	23230	1	0	-	24.0	23.62	1.09	0.07	0.043	0.05
	LTE 13	QPSK10M	Right Side	1	23230	1	0	-	24.0	23.62	1.09	-0.09	0.013	0.01
	LTE 13	QPSK10M	Top Side	1	23230	1	0	-	24.0	23.62	1.09	0.12	0.00281	0.00
	LTE 13	QPSK10M	Bottom Side	1	23230	1	0	-	24.0	23.62	1.09	0.06	0.092	0.10
	LTE 66	QPSK10M	Front Face	1	132572	1	0	-	24.0	23.69	1.07	-0.05	0.818	0.88
	LTE 66	QPSK10M	Rear Face	1	132572	1	0	-	24.0	23.69	1.07	-0.05	0.218	0.23
	LTE 66	QPSK10M	Left Side	1	132572	1	0	-	24.0	23.69	1.07	0.06	0.211	0.23
	LTE 66	QPSK10M	Right Side	1	132572	1	0	-	24.0	23.69	1.07	0.11	0.272	0.29
	LTE 66	QPSK10M	Top Side	1	132572	1	0	-	24.0	23.69	1.07	0.17	0.094	0.10
	LTE 66	QPSK10M	Bottom Side	1	132572	1	0	-	24.0	23.69	1.07	0.06	0.72	0.77
	LTE 66	QPSK10M	Front Face	1	132572	50	25	-	23.0	22.85	1.04	0.06	0.673	0.70
	LTE 66	QPSK10M	Rear Face	1	132572	50	25	-	23.0	22.85	1.04	0.02	0.179	0.19
	LTE 66	QPSK10M	Left Side	1	132572	50	25	-	23.0	22.85	1.04	0.04	0.173	0.18
	LTE 66	QPSK10M	Right Side	1	132572	50	25	-	23.0	22.85	1.04	0.08	0.224	0.23
	LTE 66	QPSK10M	Top Side	1	132572	50	25	-	23.0	22.85	1.04	0.03	0.077	0.08
	LTE 66	QPSK10M	Bottom Side	1	132572	50	25	-	23.0	22.85	1.04	0.04	0.591	0.61
6	LTE 66	QPSK10M	Front Face	1	132072	1	0	-	24.0	23.41	1.15	-0.13	0.819	0.94
	LTE 66	QPSK10M	Front Face	1	132322	1	0	-	24.0	23.48	1.13	0.02	0.811	0.91
	LTE 66	QPSK10M	Front Face	1	132072	100	0	-	23.0	22.86	1.03	0.08	0.655	0.68
	LTE 66	QPSK10M	Front Face	1	132072	1	0	-	24.0	23.41	1.15	0.05	0.812	0.93
7	BLE	1M	Front Face	1	19	-	-	78.8%	9.0	8.40	1.15	-0.01	0.043	0.06
	BLE	1M	Rear Face	1	19	-	-	78.8%	9.0	8.40	1.15	0.06	0.039	0.06
	BLE	1M	Left Side	1	19	-	-	78.8%	9.0	8.40	1.15	-0.02	0.042	0.06
	BLE	1M	Right Side	1	19	-	-	78.8%	9.0	8.40	1.15	-0.06	0.03	0.04
	BLE	1M	Top Side	1	19	-	-	78.8%	9.0	8.40	1.15	-0.03	0.012	0.02
	BLE	1M	Bottom Side	1	19	-	-	78.8%	9.0	8.40	1.15	-0.08	0.019	0.03
	BT	DH5	Front Face	1	78	-	-	76.9%	7.5	7.00	1.12	0.05	0.032	0.05

8.3.3.SAR Results for Extremity Exposure Condition (Separation Distance is 0 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	RB#	RB Offset	Duty Cycle	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
8	LTE 2	QPSK20M	Bottom Side	0	18700	1	0	-	24.0	23.35	1.16	-0.04	0.856	0.99
9	LTE 4	QPSK20M	Front Face	0	20300	1	0	-	24.0	23.67	1.08	-0.01	2.54	2.74
10	LTE 5	QPSK10M	Bottom Side	0	20600	1	0	-	24.0	23.61	1.09	-0.14	0.518	0.57
11	LTE 12	QPSK10M	Bottom Side	0	23130	1	0	-	24.0	23.71	1.07	-0.06	0.365	0.39
12	LTE 13	QPSK10M	Bottom Side	0	23230	1	0	-	24.0	23.48	1.13	-0.09	0.477	0.54
13	LTE 66	QPSK10M	Front Face	0	132072	1	0	-	24.0	23.41	1.15	-0.05	2.25	2.58
14	BLE	1M	Front Face	0	19	-	-	78.8%	9.0	8.40	1.15	0.05	0.098	0.14

8.3.4. SAR Measurement Variability

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

SAR repeated measurement procedure:

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

Band	Mode	Test Position	Separation Distance (cm)	Ch.	Original Measured SAR-1g (W/kg)	1st Repeated SAR-1g (W/kg)	L/S Ratio	2nd Repeated SAR-1g (W/kg)	L/S Ratio	3rd Repeated SAR-1g (W/kg)	L/S Ratio
LTE 4	QPSK20M 1RB OS0	Front Face	1	20300	1.30	1.27	1.02	N/A	N/A	N/A	N/A
LTE 66	QPSK20M 1RB OS0	Front Face	1	132072	0.819	0.812	1.01	N/A	N/A	N/A	N/A

8.3.5. Simultaneous Multi-band Transmission Evaluation
<SAR Summation Analysis>

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

No.	Conditions (SAR1 + SAR2)	Exposure Condition	Test Position	Max. SAR1	Max. SAR2	SAR Summation	SPLSR Analysis
1	LTE 2 + BT (DSS)	Body	Front Face	0.35	0.06	0.41	Σ SAR < 1.6, Not required
			Rear Face	0.10	0.06	0.16	Σ SAR < 1.6, Not required
			Left Side	0.07	0.06	0.13	Σ SAR < 1.6, Not required
			Right Side	0.21	0.04	0.25	Σ SAR < 1.6, Not required
			Top Side	0.05	0.02	0.07	Σ SAR < 1.6, Not required
			Bottom Side	0.44	0.03	0.47	Σ SAR < 1.6, Not required
		Extremity	/	0.99	0.14	1.13	Σ SAR < 4.0, Not required
2	LTE 4 + BT (DSS)	Body	Front Face	1.40	0.06	1.46	Σ SAR < 1.6, Not required
			Rear Face	0.37	0.06	0.43	Σ SAR < 1.6, Not required
			Left Side	0.36	0.06	0.42	Σ SAR < 1.6, Not required
			Right Side	0.47	0.04	0.51	Σ SAR < 1.6, Not required
			Top Side	0.16	0.02	0.18	Σ SAR < 1.6, Not required
			Bottom Side	0.97	0.03	1.00	Σ SAR < 1.6, Not required
		Extremity	/	2.74	0.14	2.88	Σ SAR < 4.0, Not required
3	LTE 5 + BT (DSS)	Body	Front Face	0.21	0.06	0.27	Σ SAR < 1.6, Not required
			Rear Face	0.38	0.06	0.44	Σ SAR < 1.6, Not required
			Left Side	0.04	0.06	0.10	Σ SAR < 1.6, Not required
			Right Side	0.07	0.04	0.11	Σ SAR < 1.6, Not required
			Top Side	0.19	0.02	0.21	Σ SAR < 1.6, Not required
			Bottom Side	0.38	0.03	0.41	Σ SAR < 1.6, Not required
		Extremity	/	0.57	0.14	0.71	Σ SAR < 4.0, Not required
4	LTE 12 + BT (DSS)	Body	Front Face	0.01	0.06	0.07	Σ SAR < 1.6, Not required
			Rear Face	0.04	0.06	0.10	Σ SAR < 1.6, Not required
			Left Side	0.03	0.06	0.09	Σ SAR < 1.6, Not required
			Right Side	0.01	0.04	0.05	Σ SAR < 1.6, Not required
			Top Side	0.00	0.02	0.02	Σ SAR < 1.6, Not required

			Bottom Side	0.06	0.03	0.09	Σ SAR < 1.6, Not required
		Extremity	/	0.39	0.14	0.53	Σ SAR < 4.0, Not required
5	LTE 13 + BT (DSS)	Body	Front Face	0.02	0.06	0.08	Σ SAR < 1.6, Not required
			Rear Face	0.09	0.06	0.15	Σ SAR < 1.6, Not required
			Left Side	0.06	0.06	0.12	Σ SAR < 1.6, Not required
			Right Side	0.02	0.04	0.06	Σ SAR < 1.6, Not required
			Top Side	0.00	0.02	0.02	Σ SAR < 1.6, Not required
			Bottom Side	0.13	0.03	0.16	Σ SAR < 1.6, Not required
		Extremity	/	0.54	0.14	0.68	Σ SAR < 4.0, Not required
6	LTE 66 + BT (DSS)	Body	Front Face	0.94	0.06	1.00	Σ SAR < 1.6, Not required
			Rear Face	0.23	0.06	0.29	Σ SAR < 1.6, Not required
			Left Side	0.23	0.06	0.29	Σ SAR < 1.6, Not required
			Right Side	0.29	0.04	0.33	Σ SAR < 1.6, Not required
			Top Side	0.10	0.02	0.12	Σ SAR < 1.6, Not required
			Bottom Side	0.77	0.03	0.80	Σ SAR < 1.6, Not required
		Extremity	/	2.58	0.14	2.72	Σ SAR < 4.0, Not required

<SAR to Peak Location Separation Ratio Analysis>

The simultaneous transmitting antennas in each operating mode and exposure condition combination are considered one pair at a time to determine the SPLSR. When SAR is measured for both antennas in the pair, the peak location separation distance is computed by the following formula.

$$\text{Peak Location Separation Distance} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$$

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

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

The SPLSR is determined by the following formula.

$$\text{SPLSR} = \frac{(\text{SAR}_1 + \text{SAR}_2)^{1.5}}{R_i}$$

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

When the SPLSR is ≤ 0.04 , the simultaneous transmission SAR is not required. Otherwise, the enlarged zoom scan and volume scan post-processing procedures will be performed.

Test Engineer: Warren Xiong

Appendixes

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: SAR Plots of System Verification

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

Appendix B: SAR Plots of SAR Measurement

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

Appendix C: Calibration Certificate for probe and Dipole

Appendix D: Photographs of EUT and setup