Prüfbericht - Produkte
Test Report - Products

Prüfbericht-Nr.: *Test report no.:*	**CN258N6G 004**	**Auftrags-Nr.:** *Order no.:*	168530962	
Kunden-Referenz-Nr.: *Client reference no.:*	N/A	**Auftragsdatum:** *Order date:*	2025-01-15	

Auftraggeber: *Client:*	**SZ DJI Osmo Technology Co., Ltd.** Room S11, Floor 23, Tower 1, DJI Sky City, No. 55 Xianyuan Road, Xili Community, Xili Street, Nanshan District, Shenzhen, China.
Prüfgegenstand: *Test item:*	DJI Mic 3 Receiver
Bezeichnung / Typ-Nr.: *Identification / Type no.:*	DMR03 (Trademark: DJI)
Auftrags-Inhalt: *Order content:*	Test Report
Prüfgrundlage: *Test specification:*	47 CFR FCC Part 2.1093 RSS-102 Issue 6: December 2023

Wareneingangsdatum: *Date of sample receipt:*	2025-03-24	Please refer to Photo Document
Prüfmuster-Nr.: *Test sample no:*	A003953823-001	
Prüfzeitraum: *Testing period:*	2025-04-15 - 2025-04-18	
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:	X Hardy Suo	**genehmigt von:** *authorized by:*	X Lin Lin
Datum: *Date:* 2025-04-21		**Ausstellungsdatum:** *Issue date:* 2025-04-21	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges / *Other:* FCC ID: 2ANDR-DMR03, IC: 23060-DMR03, HVIN: DMR03

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*

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. *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.*
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4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2021, 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 bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. *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 115:2021, 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.*

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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:

Operating Mode		Highest Body SAR_{1g} (0.5 cm Gap) (W/kg)	Highest Reported Extremity SAR_{10g} (0 cm Gap) (W/kg)
2.4GHz SDR	**ANT0**	0.18	0.59
	ANT1	0.15	
5.2GHz SDR	**ANT0**	1.08	0.90
	ANT1	0.41	
5.3GHz SDR	**ANT0**	0.96	0.74
	ANT1	0.52	
5.6GHz SDR	**ANT0**	1.41	**1.66**
	ANT1	1.04	
5.8GHz SDR	**ANT0**	0.80	1.29
	ANT1	**1.43**	
2.4GHz WLAN	**ANT0**	0.23	0.58
	ANT1	0.19	
5.8GHz WLAN	**ANT0**	0.61	0.94
	ANT1	1.42	
Bluetooth	**ANT0**	0.05	0.13
	ANT1	0.05	

Note:

1) 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 IC RSS-102 Issue 6: 2023, and had been tested in accordance with the measurement methods and procedures specified in IEEE 62209-1528 and FCC KDB publications.
2) Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi share the same one ANT
3) 2.4GHz SDR and 5GHz SDR share the same one ANT
4) Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi cannot transmit simultaneously with 2.4GHz SDR and 5GHz SDR, when EUT works in Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi modes, 2.4GHz SDR and 5GHz SDR will unavailable, vice-versa.

1.2. Equipment Under Test (EUT) Information

1.2.1. General Information

The Product is a DJI Mic 3 Receiver which supports Bluetooth LE mode, 2.4/5GHz SDR and 2.4/5.8GHz Wi-Fi functions.
*Remark: SDR means specific defined radio and cannot changes radio specification via software/firmware by end-users.

For details refer to the User Manual, Technical Description and Circuit Diagram.

General Information of EUT	Value
Kind of Equipment:	DJI Mic 3 Receiver
Type Designation:	DMR03
Trademark:	DJI
FCC ID:	2ANDR-DMR03
IC:	23060-DMR03
HVIN:	DMR03
Operating Voltage:	Built-in battery DC 3.87V, or Charging by Type-C port DC 5V, or Charging by DJI Mic 3 Charging Case (MN: DMC03) DC 5V
Testing Voltage:	Fully charged battery
Operating Temperature Range:	-10 °C ~ +45 °C
Radiofrequency operating mode:	1) Bluetooth: operating within 2400-2483.5MHz, Bluetooth BLE (1Mbps&2Mbps) 2) 2.4GHz SDR: operating within 2400-2483.5MHz, supports 10MHz and 20MHz Bandwidth 3) 2.4GHz Wi-Fi: operating within 2400-2483.5MHz, supports 802.11b/g/n20/ax20 4) 5GHz SDR: operating within 5150-5250MHz, 5250-5350MHz, 5470-5725MHz, 5725-5875MHz supports 10MHz and 20MHz Bandwidth 5) 5.8GHz Wi-Fi: operating within 5725-5875MHzMHz, supports 802.11a/n20/ac20/ax20
Technical Specification of Bluetooth (LE mode)	
Operating Frequency:	2402 MHz to 2480 MHz
Type of Modulation:	GFSK
Channel Number:	Low Energy mode:40 channels
Channel Separation:	Low Energy mode:2MHz
Data Rate:	Low Energy mode: 1Mbps, 2Mbps
Antenna Type:	Integral Antenna
Antenna Number:	1Tx1Rx (ANT0 or ANT1)
Antenna Gain:	1.23 dBi for ANT0 -0.08 dBi for ANT1 (Provided by the Client)
The type of wideband data transmission equipment:	Non-FHSS
Technical Specification of 2.4GHz SDR	
Operating Frequency:	2408 MHz to 2478 MHz
Type of Modulation:	OFDM(BPSK/QPSK/16QAM/64QAM)
Channel Number:	15 channels for 10MHz bandwidth

	13 channels for 20MHz bandwidth
Channel Separation:	5MHz
Data Rate:	2Mbps
Antenna Type:	Integral Antenna
Antenna Number:	1Tx1Rx (ANT0 or ANT1)
Antenna Gain:	1.23 dBi for ANT0 -0.08 dBi for ANT1 (Provided by the Client)
The type of wideband data transmission equipment:	Non-FHSS
Technical Specification of 2.4GHz Wi-Fi	
Operating Frequency:	2412 – 2462 MHz for 802.11b/g/n(HT20)/ax20
Type of Modulation:	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Channel Number:	11 channels
Channel Separation:	5MHz
Data Rate:	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n(HT20)/ax20
Multi-RU:	No, full RU
Antenna Type:	Integral Antenna
Antenna Number:	1Tx1Rx (ANT0 or ANT1)
Antenna Gain:	1.23 dBi for ANT0 -0.08 dBi for ANT1 (Provided by the Client)
The type of wideband data transmission equipment:	Non-FHSS
Technical Specification of 5.2GHz&5.3GHz&5.6GHz&5.8GHz SDR	
Operating Frequency:	5176-5236MHz for 5.2GHz SDR 10MHz Bandwidth 5181-5241MHz for 5.2GHz SDR 20MHz Bandwidth 5256-5326MHz for 5.3GHz SDR 10MHz Bandwidth 5261-5321MHz for 5.3GHz SDR 20MHz Bandwidth 5496-5706MHz for 5.6GHz SDR 10MHz Bandwidth 5500-5700MHz for 5.6GHz SDR 20MHz Bandwidth 5741-5821MHz for 5.8GHz SDR 10MHz Bandwidth 5746-5826MHz for 5.8GHz SDR 20MHz Bandwidth
Type of Modulation:	OFDM(BPSK/QPSK/16QAM/64QAM)
Channel Number:	5150-5250MHz: 7 channels@10MHz BW; 4 channels@20MHz 5250-5350MHz: 8 channels@10MHz BW; 4 channels@20MHz 5470-5725MHz: 22 channels@10MHz BW; 11 channels@20MHz 5725-5850MHz: 9 channels@10MHz BW; 5 channels@20MHz
Channel Separation:	10MHz and 20MHz
Type of Product	Master Device
TX Power Control (TPC)	Supported
Antenna Type:	Integral Antenna
Antenna Number:	1Tx1Rx (ANT0 or ANT1)
Antenna Gain:	ANT0 5150-5250MHz: 0.29 dBi 5250-5350MHz: 0.29 dBi 5470-5725MHz: 1.02 dBi 5725-5850MHz: 1.07 dBi

	ANT1 5150-5250MHz: -0.58 dBi 5250-5350MHz: 0.01 dBi 5470-5725MHz: 0.57 dBi 5725-5850MHz: 0.11 dBi (Provided by the Client)
The type of wideband data transmission equipment:	Non-FHSS
Technical Specification of 5.8GHz Wi-Fi	
Operating Frequency	5745–5825MHz for 802.11 a/n20/ac20/ax20
Type of Modulation	OFDM (QPSK, 16QAM, 64QAM)
Channel Number	5 channels
Channel Separation	20MHz
Multi-RU	No, full RU only
Antenna Type	Integral Antenna
Antenna Number	1Tx1Rx (ANT0 or ANT1)
Antenna Gain	1.07 dBi for ANT0 0.11 dBi for ANT1 (Provided by the Client)
The type of wideband data transmission equipment	Non-FHSS

Remark:
1) Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi share the same one ANT,
2) 2.4GHz SDR and 5GHz SDR share the same one ANT,
3) Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi cannot transmit simultaneously with 2.4GHz SDR and 5GHz SDR, when EUT works in Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi modes, 2.4GHz SDR and 5GHz SDR will unavailable, vice-versa.

Table 1: RF Channel and Frequency of Bluetooth LE

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Table 2: RF Channel and Frequency of 2.4GHz SDR

RF Channel	2.4GHz SDR, 10MHz BW	2.4GHz SDR, 20MHz BW
	Frequency (MHz)	Frequency (MHz)
01	2408	2413
02	2413	2418
03	2418	2423
04	2423	2428

05	2428	2433
06	2433	2438
07	2438	2443
08	2443	2448
09	2448	2453
10	2453	2458
11	2458	2463
12	2463	2468
13	2468	2473
14	2473	
15	2478	

Table 3: RF Channel and Frequency of 2.4GHz Wi-Fi

RF Channel	802.11 b/g/n(HT20)/ax20
	Frequency (MHz)
01	2412
02	2417
03	2422
04	2427
05	2432
06	2437
07	2442
08	2447
09	2452
10	2457
11	2462

Table 4: RF Channel and Frequency of 5.2/5.3/5.6/5.8GHz SDR

5.2GHz SDR, 10MHz Bandwidth (5150MHz-5250MHz)		5.2GHz SDR, 20MHz Bandwidth (5150MHz-5250MHz)
Channel	Frequency (MHz)	Frequency (MHz)
1	5176	5181
2	5186	5201
3	5196	5221
4	5206	5241
5	5216	
6	5226	
7	5236	

5.3GHz, SDR 10MHz Bandwidth (5250MHz-5350MHz)		5.3GHz SDR 20MHz Bandwidth (5250MHz-5350MHz)
Channel	Frequency (MHz)	Frequency (MHz)
1	5256	5261
2	5266	5281
3	5276	5301
4	5286	5321
5	5296	

6	5306	
7	5316	
8	5326	

5.6GHz SDR, 10MHz Bandwidth (5470MHz-5725MHz)		5.6GHz SDR, 20MHz Bandwidth (5470MHz-5725MHz)
Channel	Frequency (MHz)	Frequency (MHz)
1	5496	5500
2	5506	5520
3	5516	5540
4	5526	5560
5	5536	5580
6	5546	5600
7	5556	5620
8	5566	5640
9	5576	5660
10	5586	5680
11	5596	5700
12	5606	
13	5616	
14	5626	
15	5636	
16	5646	
17	5656	
18	5666	
19	5676	
20	5686	
21	5696	
22	5706	

5.8GHz SDR, 10MHz Bandwidth (5725MHz-5850MHz)		5.8GHz SDR, 20MHz Bandwidth (5725MHz-5850MHz)
Channel	Frequency (MHz)	Frequency (MHz)
1	5741	5746
2	5751	5766
3	5761	5786
4	5771	5806
5	5781	5826
6	5791	
7	5801	
8	5811	
9	5821	

Table 5: RF Channel and Frequency of 5.8GHz Wi-Fi

20MHz Bandwidth	
Channel	**Frequency (MHz)**
149	5745
153	5765
157	5785
161	5805
165	5825

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 Certificate Number: 5162.01

2.2. Ambient Condition

Ambient Temperature	21.3°C – 22.3°C
Relative Humidity	45% - 64%

2.3. List of Test and Measurement Instruments

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D2450V2	1014	Jun. 06, 2024	3 years
System Validation Dipole	SPEAG	D5GHzV2	1280	Jun. 06, 2024	3 years
Dosimetric E-Field Probe	SPEAG	EX3DV4	7506	Nov. 12, 2024	1 year
Data Acquisition Electronics	SPEAG	DAE4	1557	Oct. 08, 2024	1 year
Signal Analyzer	R&S	FSV 7	103665	Sep. 29, 2024	1 year
Vector Network Analyzer	R&S	ZNB 8	107040	Sep. 29, 2024	1 year
Dielectric assessment Kit	SPEAG	DAK-3.5	1269	Oct. 09, 2024	1 year
Signal Generator	R&S	SMB 100A	180840	Sep. 29, 2024	1 year
EPM Series Power Meter	Keysight	N1914A	MY58240005	Oct. 29, 2024	1 year
Power Sensor	Keysight	N8481H	MY58250002	Oct. 29, 2024	1 year
Power Sensor	Keysight	N8481H	MY58250006	Oct. 29, 2024	1 year
DC Power Supply	Topward	3303D	809332	Oct. 29, 2024	1 year
Coaxial Directional Couper	Keysight	773D	MY52180552	Oct. 29, 2024	1 year
Coaxial Directional Couper	shhuaxiang	DTO-0.4/3.9-10	18052101	Oct. 29, 2024	1 year
Coaxial attenuator	Keysight	8491A	MY52463219	Oct. 29, 2024	1 year
Coaxial attenuator	Keysight	8491A	MY52463210	Oct. 29, 2024	1 year
Coaxial attenuator	Keysight	8491A	MY52463222	Oct. 29, 2024	1 year
Digital Thermometer	LKM	DTM3000	3116	Nov. 04, 2024	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	±13.3%	Normal (k=2)	2	1	1	± 6.65 %	± 6.65 %	∞
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

Source of Uncertainty	Tolerance (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi Veff
Measurement System Errors								
Probe Calibration	±13.1%	Normal (k=2)	2	1	1	± 7.0 %	± 7.0 %	∞
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	±2.6%	Rectangular	√3	1	1	±1.5%	±1.5%	∞
Probe Isotropy	±7.6%	Rectangular	√3	1	1	±4.4%	±4.4%	∞
Other Probe + Electronic	±1.2%	Normal	1	1	1	±1.2%	±1.2%	∞
RF Ambient	±1.8%	Normal	1	1	1	±1.8%	±1.8%	∞
Probe Positioning	±0.005mm	Normal	1	0.29	0.29	±0.15%	±0.15%	∞
Data Processing	±2.3%	Normal	1	1	1	±2.3%	±2.3%	∞
Phantom and Device Errors								
Conductivity (meas.)[DAK]	±2.5%	Normal	1	0.78	0.71	±2.0%	±1.8%	60
Conductivity (temp.)[BB]	±3.3%	Rectangular	√3	0.78	0.71	±1.5%	±1.4%	∞
Phantom Permittivity	±14.0%	Rectangular	√3	0.25	0.25	±2%	±2%	∞
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								
Deviation to Target	±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)						±12.8%	±12.7%	
Expanded Uncertainty (K = 2)						±25.6%	±25.4%	

Uncertainty budget for frequency range 3 GHz to 6 GHz

4. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance

- IC RSS-102 Issue 6: December 2023 Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
- 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)
- IEEE 1528:2013
- KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- KDB 865664 D02 RF Exposure Reporting v01r02
- KDB 248227 D01 802 11 Wi-Fi SAR v02r02
- KDB 447498 D04 Interim General RF Exposure Guidance v01

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:

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

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

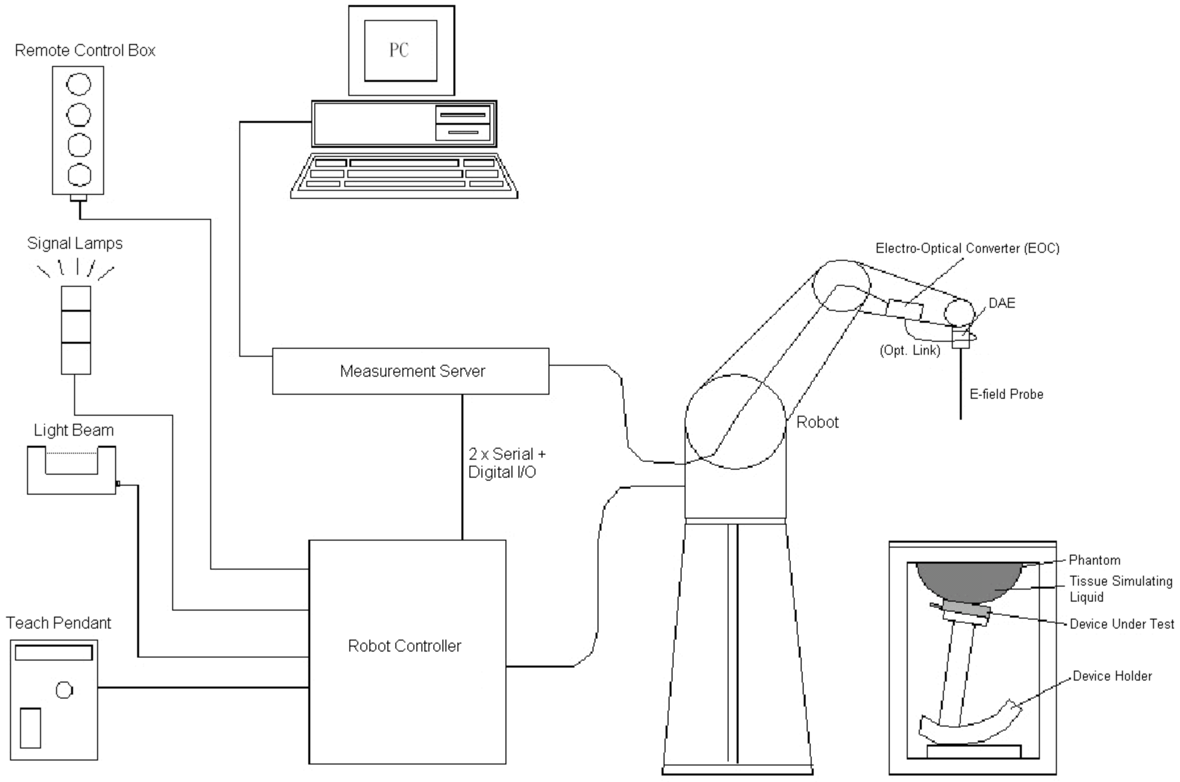
SAR measurement can be related to the electrical field in the tissue by

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

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

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 form the optical into digital electric signal of the DAE and transfers data to the PC.

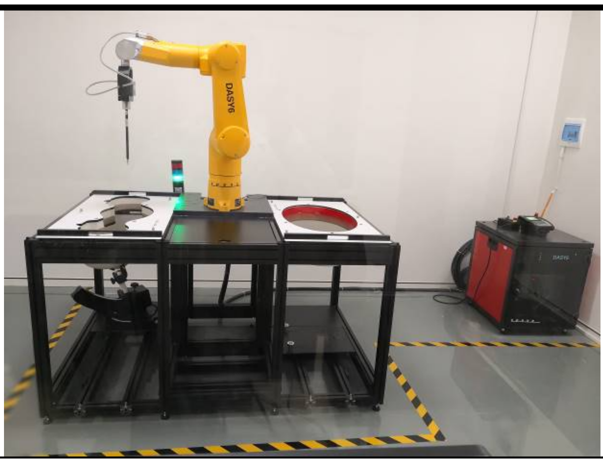


DASY System Setup

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)



DASY6

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 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

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	< 5µV (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

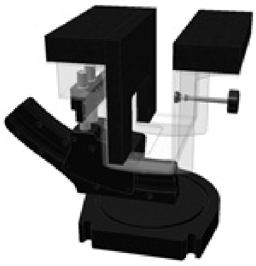
Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance 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 l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.
Frequency	750 MHz to 5800 MHz
Return Loss	> 20 dB
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)

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

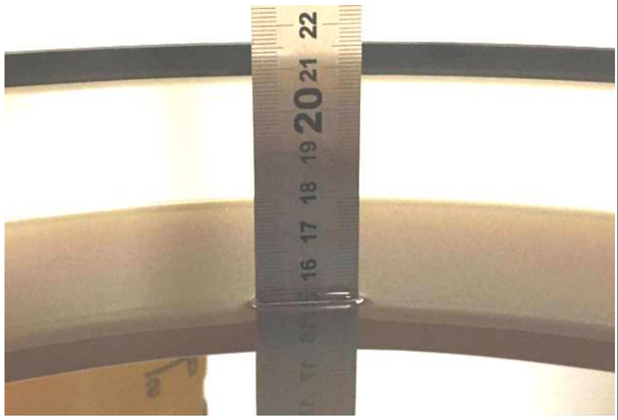


Photo of Liquid Height for Body Position

The dielectric properties of the head tissue simulating liquids are defined in IEC 62209-1528. 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 ±5%	Target Conductivity	Range of ±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

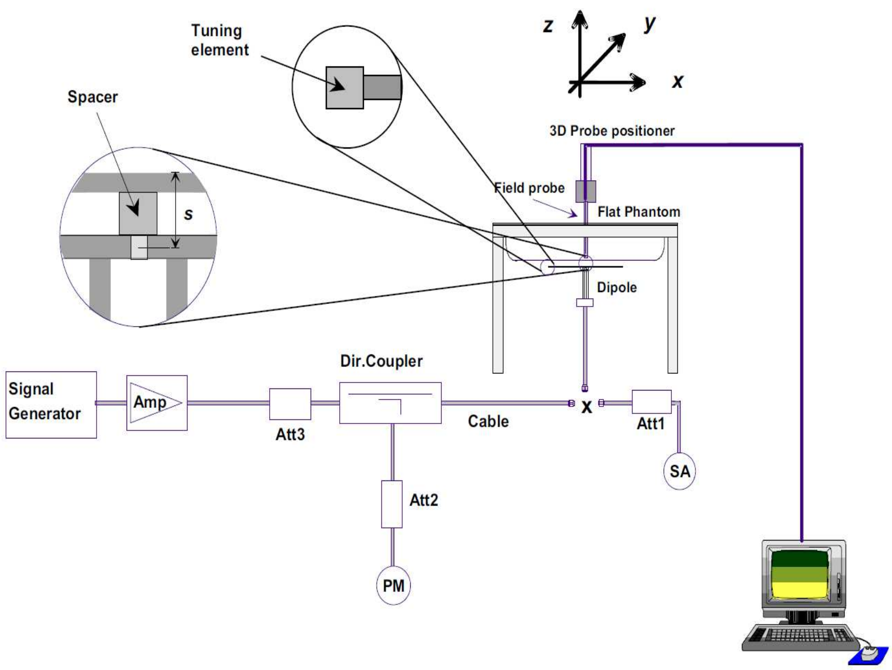
Tissue Type	Bactericide	DGBE	HEC	NaCl	Sucrose	Triton X-100	Water	Diethylene Glycol Mono-hexylether
H750	0.2	-	0.2	1.5	56.0	-	42.1	-
H835	0.2	-	0.2	1.5	57.0	-	41.1	-
H900	0.2	-	0.2	1.4	58.0	-	40.2	-
H1450	-	43.3	-	0.6	-	-	56.1	-
H1640	-	45.8	-	0.5	-	-	53.7	-
H1750	-	47.0	-	0.4	-	-	52.6	-
H1800	-	44.5	-	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.



System Verification Setup

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 (Δx, Δy)	<= 15 mm	<= 12 mm	<= 12 mm	<= 10 mm	<= 10 mm
Zoom Scan (Δx, Δy)	<= 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 Δx / Δy (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 form 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 WLAN for Setup and Testing>

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

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

Initial Test Configuration

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

Subsequent Test Configuration

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. Additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. When the highest reported SAR for the initial test configuration according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.

SAR Test Configuration and Channel Selection

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

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

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

<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.

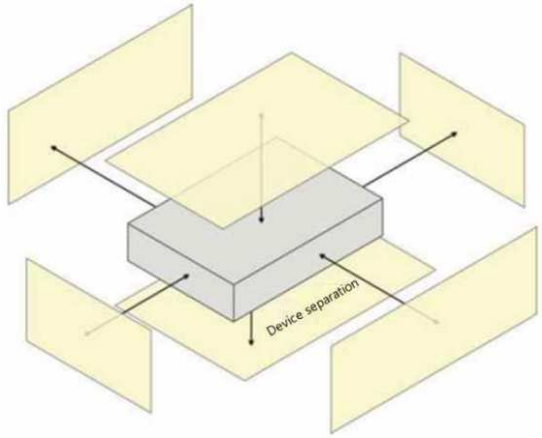
<Considerations Related to SDR for Setup and Testing>

This device has installed SDR engineering testing software which can provide continuous transmitting RF signal. During SDR 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, SAR evaluation is required on all sides and edges with a transmitting antenna within 25 mm from that surface or edge, at 5 mm separation from a flat phantom, for the data modes, wireless technologies and frequency bands supported by the device to determine SAR compliance, and add Worst Case at 0 mm separation from a flat phantom, Next to the Hand exposure requires 10-g SAR.



7.3. Simultaneous Transmission Possibilities

The simultaneous transmission possibilities for this device:
N/A

Note:
1. Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi share the same one ANT
2. 2.4GHz SDR and 5GHz SDR share the same one ANT
3. Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi cannot transmit simultaneously with 2.4GHz SDR and 5GHz SDR, when EUT works in Bluetooth (LE), 2.4GHz Wi-Fi and 5.8GHz Wi-Fi modes, 2.4GHz SDR and 5GHz SDR will unavailable, vice-versa.

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 (%)
Apr. 15, 2025	H2450	2450	1.845	39.398	1.80	39.20	2.50	0.51
		2412	1.804	39.560	1.77	39.27	2.09	0.74
		2440	1.834	39.440	1.79	39.22	2.40	0.56
		2443	1.837	39.427	1.79	39.21	2.45	0.55
Apr. 16, 2025	H5G	5250	4.561	37.438	4.71	35.90	-3.16	4.28
		5201	4.518	37.570	4.66	36.00	-3.05	4.36
		5241	4.554	37.462	4.70	35.96	-3.11	4.18
		5261	4.576	37.414	4.72	35.94	-3.05	4.10
		5321	4.632	37.322	4.72	35.94	-1.86	3.85
Apr. 17, 2025	H5G	5600	4.938	36.734	5.07	35.50	-2.60	3.48
		5496	4.814	36.997	4.96	35.61	-2.85	3.89
		5500	4.825	36.980	4.96	35.60	-2.72	3.88
		5596	4.929	36.735	5.06	35.50	-2.67	3.48
		5700	5.069	36.700	5.17	35.40	-1.95	3.67
		5706	5.071	36.680	5.18	35.39	-2.01	3.65
Apr. 18, 2025	H5G	5800	5.145	36.469	5.27	35.30	-2.37	3.31
		5741	5.094	36.595	5.21	35.36	-2.23	3.49
		5745	5.099	36.588	5.22	35.35	-2.22	3.50
		5746	5.099	36.588	5.22	35.35	-2.22	3.50
		5781	5.130	36.499	5.25	35.32	-2.29	3.34
		5785	5.129	36.496	5.26	35.31	-2.40	3.36
		5786	5.129	36.496	5.26	35.31	-2.40	3.36
		5821	5.171	36.391	5.29	35.28	-2.27	3.15
		5825	5.176	36.387	5.30	35.27	-2.27	3.17
		5826	5.178	36.382	5.30	35.27	-2.23	3.15

Note:
The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.

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

Apr. 15, 2025	7506	Head	2450	1.845	39.398	Pass	Pass	Pass	OFDM	N/A	Pass
Apr. 16, 2025	7506	Head	5250	4.561	37.438	Pass	Pass	Pass	OFDM	N/A	Pass
Apr. 17, 2025	7506	Head	5600	4.938	36.734	Pass	Pass	Pass	OFDM	N/A	Pass
Apr. 18, 2025	7506	Head	5800	5.145	36.469	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
Apr. 15, 2025	2450	53.40	5.09	50.90	-4.68	1014	7506	1557
Apr. 16, 2025	5250	79.30	8.24	82.40	3.91	1280	7506	1557
Apr. 17, 2025	5600	83.30	8.36	83.60	0.36	1280	7506	1557
Apr. 18, 2025	5800	80.70	7.83	78.30	-2.97	1280	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) and including tune-up tolerance is shown as below.

<Bluetooth>

Mode	Bluetooth LE 1M		
Channel / Frequency (MHz)	0 (2402)	19 (2440)	39 (2480)
average	6.93	7.03	6.97
Tune-Up	7.5		
Mode	**Bluetooth LE 2M**		
Channel / Frequency (MHz)	**0 (2402)**	**19 (2440)**	**39 (2480)**
average	6.92	7.08	7.01
Tune-Up	7.5		

<2.4GHz SDR>

Mode	SDR 10M		
Channel / Frequency (MHz)	0 (2408)	8 (2448)	14 (2478)
average	16.81	16.8	16.81
Tune-Up	**17.0**		
Mode	**SDR 20M**		
Channel / Frequency (MHz)	**1 (2412)**	**7 (2442)**	**13 (2472)**
average	14.76	**16.81**	14.41
Tune-Up	**15.0**	**17.0**	**15.0**

< 2.4GHz Wi-Fi>

Mode	802.11b (1Mbps)		
Channel / Frequency (MHz)	1 (2412)	6 (2437)	11 (2462)
average	**17.05**	16.89	16.87
Tune-Up	**17.5**		
Mode	**802.11g (6Mbps)**		
Channel / Frequency (MHz)	**1 (2412)**	**6 (2437)**	**11 (2462)**
average	16.65	16.56	16.61
Tune-Up	17.0		
Mode	**802.11n (HT20) (MCS0)**		
Channel / Frequency (MHz)	**1 (2412)**	**6 (2437)**	**11 (2462)**
average	16.62	16.63	16.78
Tune-Up	17.0		
Mode	**802.11ax20**		
Channel / Frequency (MHz)	**1 (2412)**	**6 (2437)**	**11 (2462)**
average	16.59	16.65	16.71
Tune-Up	17.0		

<5.2GHz SDR>

Mode	SDR 10M		
Channel / Frequency (MHz)	35 (5176)	41 (5206)	47 (5236)
average	16.87	16.65	16.94
Tune-Up	**17.0**		
Mode	**SDR 20M**		
Channel / Frequency (MHz)	**36 (5180)**	**40 (5201)**	**48 (5241)**
average	16.66	**16.83**	16.81
Tune-Up	**17.0**		

<5.3GHz SDR>

Mode	SDR 10M		
Channel / Frequency (MHz)	**51 (5256)**	**57 (5286)**	**65 (5326)**
average	16.56	16.97	16.87
Tune-Up	**17.5**		
Mode	**SDR 20M**		
Channel / Frequency (MHz)	**52 (5261)**	**56 (5281)**	**64 (5321)**
average	16.95	16.82	16.93
Tune-Up	**17.5**		

<5.6GHz SDR>

Mode	SDR 10M		
Channel / Frequency (MHz)	**99 (5496)**	**119 (5596)**	**141 (5706)**
average	16.60	**16.62**	16.60
Tune-Up	**17.0**		
Mode	**SDR 20M**		
Channel / Frequency (MHz)	**100 (5500)**	**120 (5600)**	**140 (5700)**
average	**16.90**	16.82	16.88
Tune-Up	**17.0**		

<5.8GHz SDR>

Mode	SDR 10M		
Channel / Frequency (MHz)	**148 (5741)**	**156 (5781)**	**164 (5821)**
average	12.48	12.22	12.09
Tune-Up	**12.5**		
Mode	**SDR 20M**		
Channel / Frequency (MHz)	**149 (5746)**	**157 (5786)**	**165 (5826)**
average	12.48	12.29	12.12
Tune-Up	**12.5**		

<5.8GHz Wi-Fi >

Mode	802.11a (6Mbps)		
Channel / Frequency (MHz)	**149 (5745)**	**157 (5785)**	**165 (5825)**
average	12.22	12.41	12.23
Tune-Up	**13.0**		
Mode	**802.11n (HT20) (MCS0)**		
Channel / Frequency (MHz)	**149 (5745)**	**157 (5785)**	**165 (5825)**
average	12.43	12.34	12.18
Tune-Up	13.0		
Mode	**802.11ax20**		
Channel / Frequency (MHz)	**149 (5745)**	**157 (5785)**	**165 (5825)**
average	12.51	12.18	12.09
Tune-Up	13.0		

8.2. SAR Testing Results

8.2.1. 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 248227 D01, SAR Guidance for Wi-Fi Transmitters>

(1) For handsets operating next to ear, hotspot mode or mini-tablet configurations, the initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When the reported SAR of initial test position is <= 0.4 W/kg, SAR testing for remaining test positions is not required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is <= 0.8 W/kg or all test positions are measured.

(2) For WLAN 2.4 GHz, the highest measured maximum output power channel for DSSS was selected for SAR measurement. When the reported SAR is <= 0.8 W/kg, no further SAR testing is required. Otherwise, SAR is evaluated at the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel. For OFDM modes (802.11g/n), SAR is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and it is <= 1.2 W/kg.

(3) For WLAN 5 GHz, the initial test configuration was selected according to the transmission mode with the highest maximum output power. When the reported SAR of initial test configuration is > 0.8 W/kg, SAR is required for the subsequent highest measured output power channel until the reported SAR result is <= 1.2 W/kg or all required channels are measured. For other transmission modes, SAR is not required when the highest reported SAR for initial test configuration is adjusted by the ratio of subsequent test configuration to initial test configuration specified maximum output power and it is <= 1.2 W/kg.

8.2.2.SAR Results for Body Exposure Condition (Separation Distance is 0.5 cm Gap)

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Fre.	ANT.	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)
	2.4GHz SDR	20MHz	Front Face	0.5	7	2443	0	17.0	16.810	1.04	0.09	0.082	0.09
	2.4GHz SDR	20MHz	Rear Face	0.5	7	2443	0	17.0	16.810	1.04	0.05	0.106	0.11
1	2.4GHz SDR	20MHz	Right Side	0.5	7	2443	0	17.0	16.810	1.04	-0.05	0.175	**0.18**
	2.4GHz SDR	20MHz	Top Side	0.5	7	2443	0	17.0	16.810	1.04	-0.04	0.020	0.02
	2.4GHz SDR	20MHz	Bottom Side	0.5	7	2443	0	17.0	16.810	1.04	0.02	0.078	0.08
	2.4GHz SDR	20MHz	Front Face	0.5	7	2443	1	17.0	16.810	1.04	-0.12	0.066	0.07
	2.4GHz SDR	20MHz	Rear Face	0.5	7	2443	1	17.0	16.810	1.04	0.05	0.084	0.09
	2.4GHz SDR	20MHz	Left Side	0.5	7	2443	1	17.0	16.810	1.04	0.06	0.140	0.15
	2.4GHz SDR	20MHz	Top Side	0.5	7	2443	1	17.0	16.810	1.04	-0.01	0.064	0.07
	2.4GHz SDR	20MHz	Bottom Side	0.5	7	2443	1	17.0	16.810	1.04	-0.02	0.042	0.04
	5.2GHz SDR	20MHz	Front Face	0.5	40	5201	0	17.0	16.830	1.04	0.09	0.197	0.20
	5.2GHz SDR	20MHz	Rear Face	0.5	40	5201	0	17.0	16.830	1.04	0.05	0.237	0.25
2	5.2GHz SDR	20MHz	Right Side	0.5	40	5201	0	17.0	16.830	1.04	-0.04	1.040	**1.08**
	5.2GHz SDR	20MHz	Top Side	0.5	40	5201	0	17.0	16.830	1.04	0.05	0.095	0.10
	5.2GHz SDR	20MHz	Bottom Side	0.5	40	5201	0	17.0	16.830	1.04	-0.01	0.387	0.40
	5.2GHz SDR	20MHz	Front Face	0.5	40	5201	1	17.0	16.830	1.04	0.03	0.354	0.37
	5.2GHz SDR	20MHz	Rear Face	0.5	40	5201	1	17.0	16.830	1.04	-0.08	0.255	0.27
	5.2GHz SDR	20MHz	Left Side	0.5	40	5201	1	17.0	16.830	1.04	-0.11	0.394	0.41
	5.2GHz SDR	20MHz	Top Side	0.5	40	5201	1	17.0	16.830	1.04	-0.01	0.167	0.17
	5.2GHz SDR	20MHz	Bottom Side	0.5	40	5201	1	17.0	16.830	1.04	0.05	0.147	0.15
	5.2GHz SDR	20MHz	Right Side	0.5	48	5241	0	17.0	16.810	1.04	0.06	0.924	0.97
	5.2GHz SDR	20MHz	Right Side	0.5	40	5201	0	17.0	16.830	1.04	-0.04	1.020	1.06
	5.3GHz SDR	20MHz	Front Face	0.5	52	5261	0	17.5	16.950	1.14	0.09	0.160	0.18
	5.3GHz SDR	20MHz	Rear Face	0.5	52	5261	0	17.5	16.950	1.14	-0.05	0.193	0.22
3	5.3GHz SDR	20MHz	Right Side	0.5	52	5261	0	17.5	16.950	1.14	-0.06	0.845	**0.96**
	5.3GHz SDR	20MHz	Top Side	0.5	52	5261	0	17.5	16.950	1.14	0.04	0.077	0.09
	5.3GHz SDR	20MHz	Bottom Side	0.5	52	5261	0	17.5	16.950	1.14	-0.02	0.308	0.35
	5.3GHz SDR	20MHz	Front Face	0.5	52	5261	1	17.5	16.950	1.14	0.04	0.412	0.47
	5.3GHz SDR	20MHz	Rear Face	0.5	52	5261	1	17.5	16.950	1.14	0.06	0.297	0.34
	5.3GHz SDR	20MHz	Left Side	0.5	52	5261	1	17.5	16.950	1.14	-0.08	0.459	0.52
	5.3GHz SDR	20MHz	Top Side	0.5	52	5261	1	17.5	16.950	1.14	-0.03	0.195	0.22
	5.3GHz SDR	20MHz	Bottom Side	0.5	52	5261	1	17.5	16.950	1.14	0.04	0.172	0.20
	5.3GHz SDR	20MHz	Right Side	0.5	64	5321	0	17.5	16.930	1.14	0.06	0.811	0.92
	5.3GHz SDR	20MHz	Right Side	0.5	52	5261	0	17.5	16.950	1.14	0.08	0.827	0.94
	5.6GHz SDR	20MHz	Front Face	0.5	100	5500	0	17.0	16.900	1.02	0.06	0.261	0.27
	5.6GHz SDR	20MHz	Rear Face	0.5	100	5500	0	17.0	16.900	1.02	-0.05	0.315	0.32
4	5.6GHz SDR	20MHz	Right Side	0.5	100	5500	0	17.0	16.900	1.02	-0.13	1.380	**1.41**
	5.6GHz SDR	20MHz	Top Side	0.5	100	5500	0	17.0	16.900	1.02	0.04	0.126	0.13
	5.6GHz SDR	20MHz	Bottom Side	0.5	100	5500	0	17.0	16.900	1.02	0.05	0.378	0.39
	5.6GHz SDR	20MHz	Front Face	0.5	100	5500	1	17.0	16.900	1.02	0.06	0.622	0.64
	5.6GHz SDR	20MHz	Rear Face	0.5	100	5500	1	17.0	16.900	1.02	0.04	0.545	0.56
	5.6GHz SDR	20MHz	Left Side	0.5	100	5500	1	17.0	16.900	1.02	-0.16	1.020	1.04
	5.6GHz SDR	20MHz	Top Side	0.5	100	5500	1	17.0	16.900	1.02	-0.03	0.330	0.34
	5.6GHz SDR	20MHz	Bottom Side	0.5	100	5500	1	17.0	16.900	1.02	0.04	0.335	0.34
	5.6GHz SDR	20MHz	Right Side	0.5	120	5600	0	17.0	16.820	1.04	-0.11	1.230	1.28
	5.6GHz SDR	20MHz	Right Side	0.5	140	5700	0	17.0	16.880	1.03	0.02	1.110	1.14
	5.6GHz SDR	20MHz	Left Side	0.5	140	5700	1	17.0	16.880	1.03	0.05	0.974	1.00
	5.6GHz SDR	10MHz	Right Side	0.5	119	5596	0	17.0	16.620	1.09	0.09	1.240	1.35
	5.6GHz SDR	10MHz	Right Side	0.5	99	5496	0	17.0	16.600	1.10	0.09	1.100	1.21
	5.6GHz SDR	10MHz	Right Side	0.5	140	5706	0	17.0	16.600	1.10	0.04	0.997	1.09
	5.6GHz SDR	20MHz	Right Side	0.5	100	5500	0	17.0	16.900	1.02	-0.12	1.330	1.36
	5.8GHz SDR	20MHz	Front Face	0.5	149	5746	0	12.5	12.480	1.00	0.06	0.151	0.15
	5.8GHz SDR	20MHz	Rear Face	0.5	149	5746	0	12.5	12.480	1.00	-0.05	0.182	0.18
	5.8GHz SDR	20MHz	Right Side	0.5	149	5746	0	12.5	12.480	1.00	-0.06	0.797	0.80
	5.8GHz SDR	20MHz	Top Side	0.5	149	5746	0	12.5	12.480	1.00	0.04	0.073	0.07
	5.8GHz SDR	20MHz	Bottom Side	0.5	149	5746	0	12.5	12.480	1.00	0.02	0.196	0.20
	5.8GHz SDR	20MHz	Front Face	0.5	149	5746	1	12.5	12.480	1.00	0.08	0.535	0.54

	5.8GHz SDR	20MHz	Rear Face	0.5	149	5746	1	12.5	12.480	1.00	0.06	0.376	0.38
	5.8GHz SDR	20MHz	Left Side	0.5	149	5746	1	12.5	12.480	1.00	-0.08	1.130	1.14
	5.8GHz SDR	20MHz	Top Side	0.5	149	5746	1	12.5	12.480	1.00	0.04	0.246	0.25
	5.8GHz SDR	20MHz	Bottom Side	0.5	149	5746	1	12.5	12.480	1.00	0.07	0.239	0.24
	5.8GHz SDR	20MHz	Right Side	0.5	149	5746	0	12.5	12.290	1.05	-0.08	0.764	0.80
	5.8GHz SDR	20MHz	Left Side	0.5	157	5786	1	12.5	12.290	1.05	0.06	1.210	1.27
5	5.8GHz SDR	20MHz	Left Side	0.5	165	5826	1	12.5	12.120	1.09	-0.07	1.310	**1.43**
	5.8GHz SDR	10MHz	Left Side	0.5	148	5741	1	12.5	12.480	1.00	0.06	1.240	1.25
	5.8GHz SDR	10MHz	Left Side	0.5	156	5781	1	12.5	12.220	1.07	0.01	1.080	1.15
	5.8GHz SDR	10MHz	Left Side	0.5	164	5821	1	12.5	12.090	1.10	0.05	0.994	1.09
	5.8GHz SDR	20MHz	Left Side	0.5	165	5826	1	12.5	12.120	1.09	-0.08	1.270	1.39
	802.11b	-	Front Face	0.5	1	2412	0	17.5	17.050	1.11	-0.04	0.093	0.10
	802.11b	-	Rear Face	0.5	1	2412	0	17.5	17.050	1.11	-0.06	0.105	0.12
6	802.11b	-	Right Side	0.5	1	2412	0	17.5	17.050	1.11	-0.06	0.210	**0.23**
	802.11b	-	Top Side	0.5	1	2412	0	17.5	17.050	1.11	-0.05	0.024	0.03
	802.11b	-	Bottom Side	0.5	1	2412	0	17.5	17.050	1.11	0.01	0.085	0.09
	802.11b	-	Front Face	0.5	1	2412	1	17.5	17.050	1.11	-0.05	0.091	0.10
	802.11b	-	Rear Face	0.5	1	2412	1	17.5	17.050	1.11	-0.03	0.086	0.10
	802.11b	-	Left Side	0.5	1	2412	1	17.5	17.050	1.11	-0.06	0.171	0.19
	802.11b	-	Top Side	0.5	1	2412	1	17.5	17.050	1.11	-0.06	0.023	0.03
	802.11b	-	Bottom Side	0.5	1	2412	1	17.5	17.050	1.11	0.02	0.021	0.02
	802.11a	-	Front Face	0.5	157	5785	0	13.0	12.410	1.15	0.06	0.102	0.12
	802.11a	-	Rear Face	0.5	157	5785	0	13.0	12.410	1.15	-0.05	0.121	0.14
	802.11a	-	Right Side	0.5	157	5785	0	13.0	12.410	1.15	-0.02	0.530	0.61
	802.11a	-	Top Side	0.5	157	5785	0	13.0	12.410	1.15	0.05	0.049	0.06
	802.11a	-	Bottom Side	0.5	157	5785	0	13.0	12.410	1.15	0.02	0.188	0.22
	802.11a	-	Front Face	0.5	157	5785	1	13.0	12.410	1.15	0.04	0.473	0.54
	802.11a	-	Rear Face	0.5	157	5785	1	13.0	12.410	1.15	-0.02	0.332	0.38
	802.11a	-	Left Side	0.5	157	5785	1	13.0	12.410	1.15	-0.09	0.999	1.14
	802.11a	-	Top Side	0.5	157	5785	1	13.0	12.410	1.15	0.06	0.217	0.25
	802.11a	-	Bottom Side	0.5	157	5785	1	13.0	12.410	1.15	0.04	0.211	0.24
	802.11a	-	Left Side	0.5	149	5745	1	13.0	12.220	1.20	-0.01	1.100	1.32
7	802.11a	-	Left Side	0.5	165	5825	1	13.0	12.230	1.19	-0.09	1.190	**1.42**
	802.11n	20MHz	Left Side	0.5	149	5745	1	13.0	12.430	1.14	0.09	1.010	1.15
	802.11n	20MHz	Left Side	0.5	157	5785	1	13.0	12.340	1.16	0.04	1.050	1.22
	802.11n	20MHz	Left Side	0.5	165	5825	1	13.0	12.180	1.21	0.05	1.130	1.36
	802.11ax	20MHz	Left Side	0.5	149	5745	1	13.0	12.510	1.12	0.03	0.984	1.10
	802.11ax	20MHz	Left Side	0.5	157	5785	1	13.0	12.180	1.21	0.04	1.020	1.23
	802.11ax	20MHz	Left Side	0.5	165	5825	1	13.0	12.090	1.23	0.05	1.090	1.34
	802.11a	-	Left Side	0.5	165	5825	1	13.0	12.230	1.19	0.09	1.150	1.37
	BLE	2MHz	Front Face	0.5	19	2440	0	7.5	7.080	1.10	0.03	0.025	0.03
	BLE	2MHz	Rear Face	0.5	19	2440	0	7.5	7.080	1.10	0.04	0.028	0.03
8	BLE	2MHz	Right Side	0.5	19	2440	0	7.5	7.080	1.10	-0.11	0.048	**0.05**
	BLE	2MHz	Top Side	0.5	19	2440	0	7.5	7.080	1.10	0.06	0.00601	0.01
	BLE	2MHz	Bottom Side	0.5	19	2440	0	7.5	7.080	1.10	0.01	0.021	0.02
	BLE	2MHz	Front Face	0.5	19	2440	1	7.5	7.080	1.10	0.05	0.022	0.02
	BLE	2MHz	Rear Face	0.5	19	2440	1	7.5	7.080	1.10	0.08	0.021	0.02
	BLE	2MHz	Left Side	0.5	19	2440	1	7.5	7.080	1.10	0.03	0.045	0.05
	BLE	2MHz	Top Side	0.5	19	2440	1	7.5	7.080	1.10	0.01	0.00634	0.01
	BLE	2MHz	Bottom Side	0.5	19	2440	1	7.5	7.080	1.10	0.04	0.00628	0.01

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

Plot No.	Band	Mode	Test Position	Separation Distance (cm)	Ch.	Fre.	ANT.	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-10g (W/kg)	Scaled SAR-10g (W/kg)
9	2.4GHz SDR	20M	Right Side	0	7	2443	0	17.0	16.810	1.04	-0.02	0.567	**0.59**
10	5.2GHz SDR	20M	Right Side	0	40	5201	0	17.0	16.830	1.04	0.13	0.865	**0.90**
11	5.3GHz SDR	20M	Right Side	0	52	5261	0	17.0	16.950	1.01	-0.03	0.733	**0.74**
12	5.6GHz SDR	20M	Right Side	0	100	5500	0	17.5	16.900	1.15	-0.04	1.450	**1.66**
13	5.8GHz SDR	20M	Left Side	0	165	5726	1	12.5	12.120	1.09	0.14	1.180	**1.29**

14	802.11b	-	Right Side	0	1	2412	0	17.5	17.050	1.11	-0.16	0.523	**0.58**
15	802.11a	-	Left Side	0	165	5825	1	12.5	12.230	1.06	-0.11	0.887	**0.94**
16	BLE	2M	Right Side	0	19	2440	0	7.5	7.080	1.10	-0.04	0.121	**0.13**

8.2.4.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	Ch.	Fre.	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
5.2GHz SDR	20MHz	Right Side	40	5201	1.040	1.020	1.02	N/A	N/A	N/A	N/A
5.3GHz SDR	20MHz	Right Side	52	5261	0.845	0.827	1.02	N/A	N/A	N/A	N/A
5.6GHz SDR	20MHz	Right Side	100	5500	1.380	1.330	1.04	N/A	N/A	N/A	N/A
5.8GHz SDR	20MHz	Left Side	165	5826	1.310	1.270	1.03	N/A	N/A	N/A	N/A
802.11a	-	Left Side	165	5825	1.190	1.150	1.03	N/A	N/A	N/A	N/A

8.2.5.Simultaneous Multi-band Transmission Evaluation

N/A.

Appendixes

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

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

Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

System Check-D2450V2_H2450

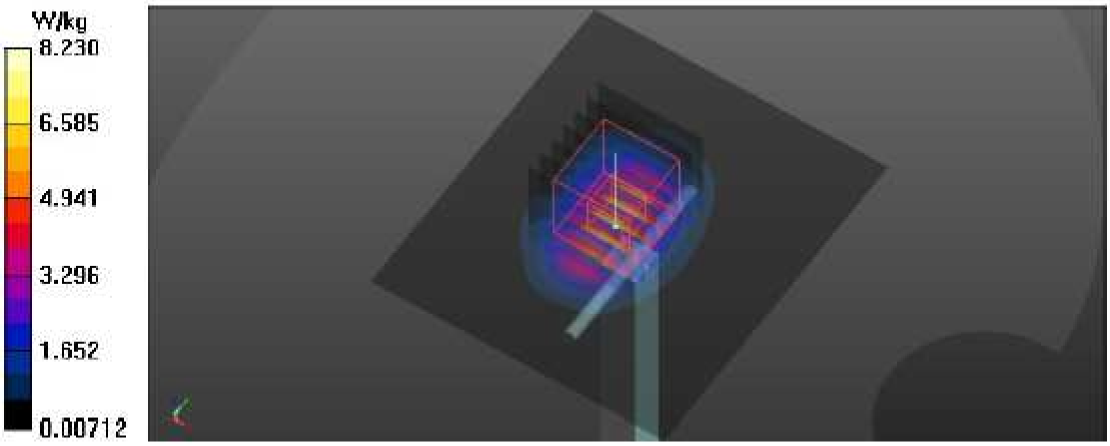
DUT: Dipole 2450 MHz D2450V2 SN:1014

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: H2450 Medium parameters used: f = 2450 MHz; σ = 1.845 S/m; ε_r = 39.398; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2450 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100 mW/Area Scan (71x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 8.23 W/kg

Pin=100 mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 67.60 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 9.48 W/kg
SAR(1 g) = 5.09 W/kg; SAR(10 g) = 2.46 W/kg
Smallest distance from peaks to all points 3 dB below = 8.9 mm
Ratio of SAR at M2 to SAR at M1 = 54.6%
Maximum value of SAR (measured) = 8.03 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/16

System Check-D5GHz_H5250

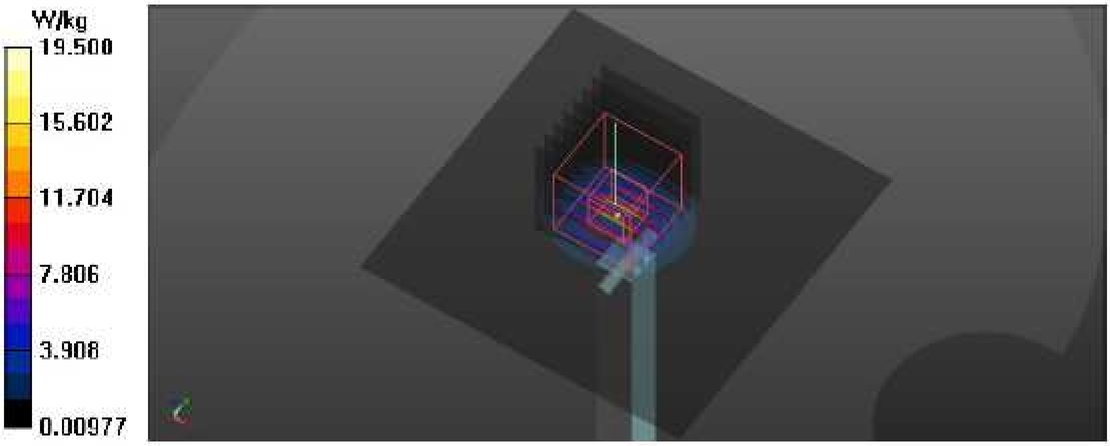
DUT: Dipole D5GHzV2 SN:1280

Communication System: UID 0, CW; Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5250 MHz; $\sigma = 4.561$ S/m; $\varepsilon_r = 37.438$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.63, 6, 5.58) @ 5250 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.5 W/kg

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.25 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 32.9 W/kg
SAR(1 g) = 8.24 W/kg; SAR(10 g) = 2.38 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 64.9%
Maximum value of SAR (measured) = 18.7 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/17

System Check-D5GHz_H5600

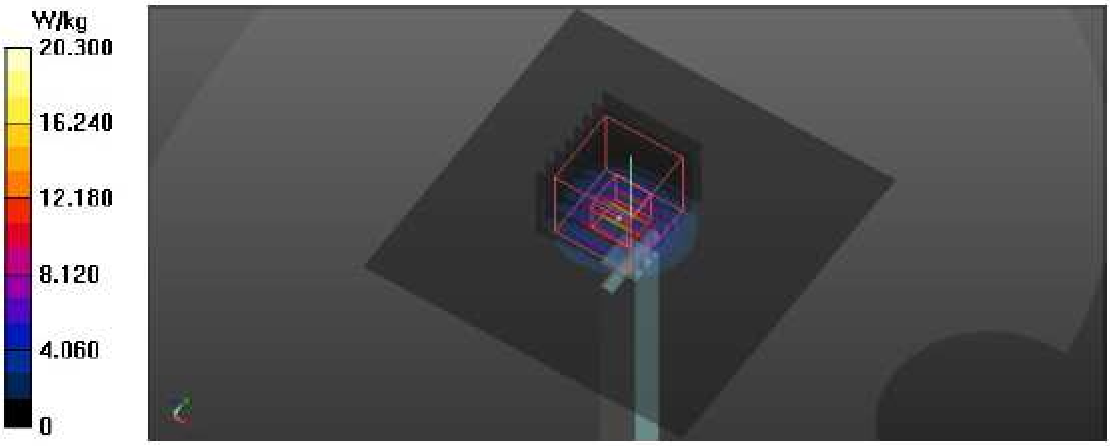
DUT: Dipole D5GHzV2 SN:1280

Communication System: UID 0, CW; Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5600 MHz; $\sigma = 4.938$ S/m; $\varepsilon_r = 36.734$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.26, 5.6, 5.22) @ 5600 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 20.3 W/kg

Pin=100mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.33 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 36.8 W/kg
SAR(1 g) = 8.36 W/kg; SAR(10 g) = 2.37 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 62.2%
Maximum value of SAR (measured) = 19.9 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/18

System Check-D5GHz_H5800

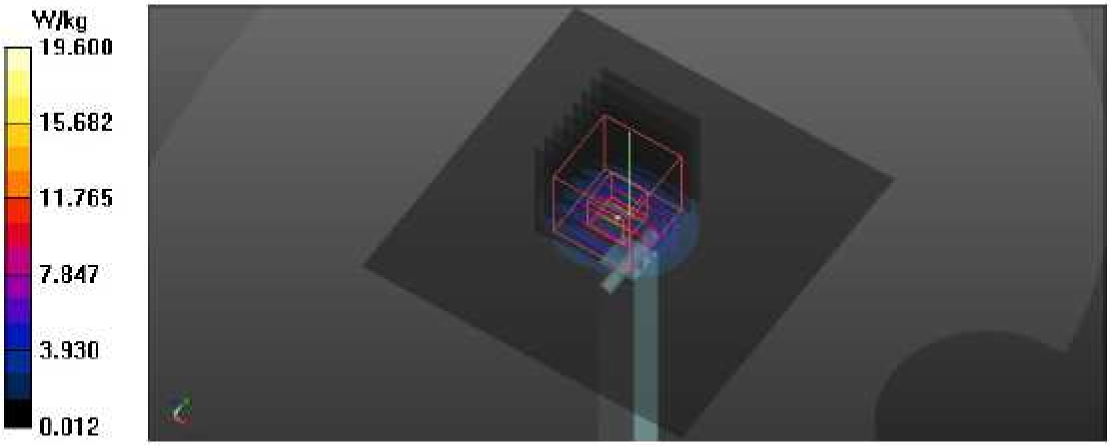
DUT: Dipole D5GHzV2 SN:1280

Communication System: UID 0, CW; Frequency: 5800 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5800 MHz; σ = 5.145 S/m; ε_r = 36.469; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.12, 5.45, 5.08) @ 5800 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 19.6 W/kg

Pin=100mW/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 62.74 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 35.9 W/kg
SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.22 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 60.8%
Maximum value of SAR (measured) = 18.8 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

P01 SDR-2.4G_20M_Right Side_0.5cm_Ch7_Ant 0

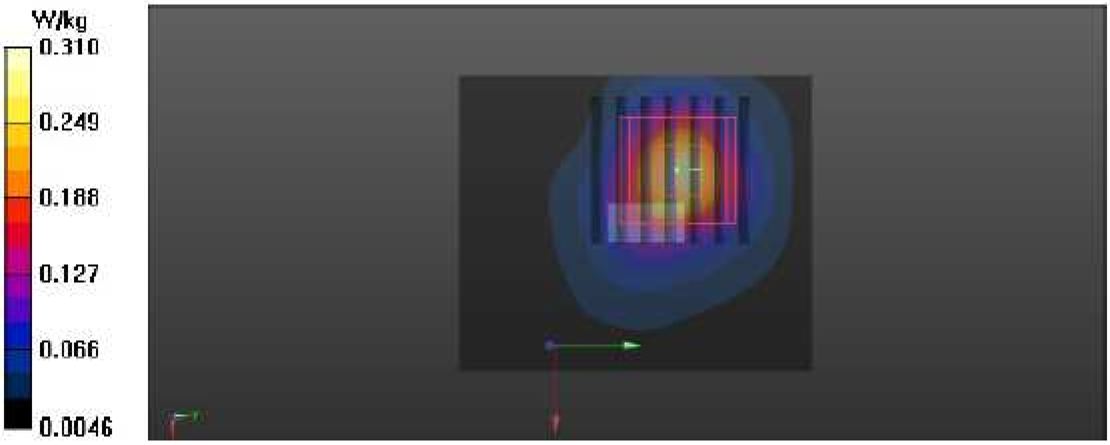
DUT: EUT

Communication System: UID 0, SDR; Frequency: 2443 MHz;Duty Cycle: 1:1
Medium: H2450 Medium parameters used: f = 2443 MHz; $\sigma = 1.837$ S/m; $\varepsilon_r = 39.427$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2443 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.310 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.331 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.357 W/kg
SAR(1 g) = 0.175 W/kg; SAR(10 g) = 0.079 W/kg
Smallest distance from peaks to all points 3 dB below = 8.1 mm
Ratio of SAR at M2 to SAR at M1 = 49.6%
Maximum value of SAR (measured) = 0.286 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/16

P02 SDR-5.2G_20M_Right Side_0.5cm_Ch40_Ant 0

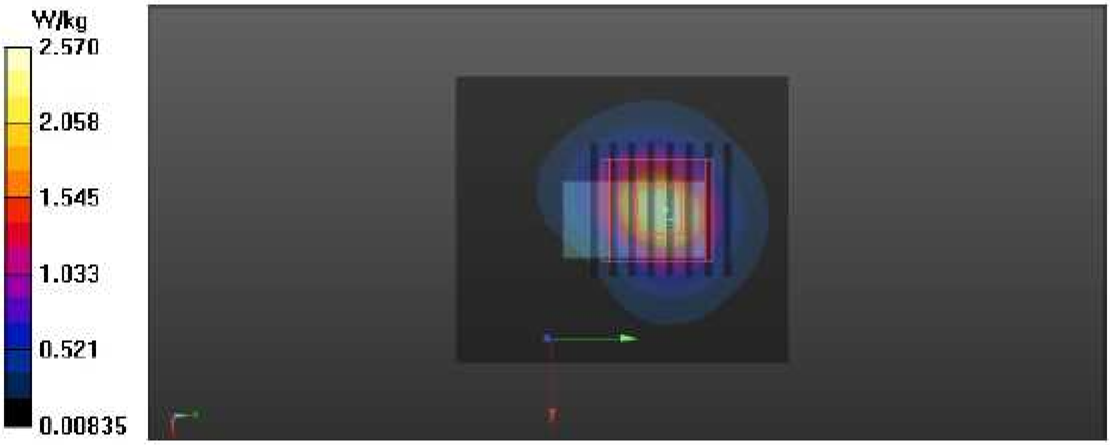
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5201 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5201 MHz; σ = 4.518 S/m; ε_r = 37.57; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.63, 6, 5.58) @ 5201 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 2.57 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 18.81 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 4.48 W/kg
SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.332 W/kg
Smallest distance from peaks to all points 3 dB below = 7.5 mm
Ratio of SAR at M2 to SAR at M1 = 61.1%
Maximum value of SAR (measured) = 2.43 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/16

P03 SDR-5.3G_20M_Right Side_0.5cm_Ch52_Ant 0

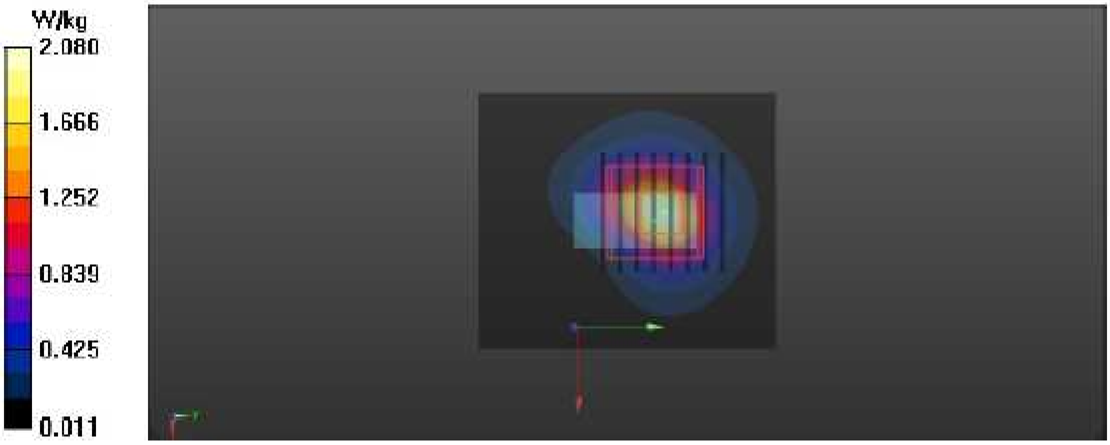
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5261 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5261 MHz; σ = 4.576 S/m; ε_r = 37.414; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.63, 6, 5.58) @ 5261 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 2.08 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 16.91 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 0.845 W/kg; SAR(10 g) = 0.271 W/kg
Smallest distance from peaks to all points 3 dB below = 8.5 mm
Ratio of SAR at M2 to SAR at M1 = 61.3%
Maximum value of SAR (measured) = 1.97 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/17

P04 SDR-5.6G_20M_Right Side_0.5cm_Ch100_Ant 0

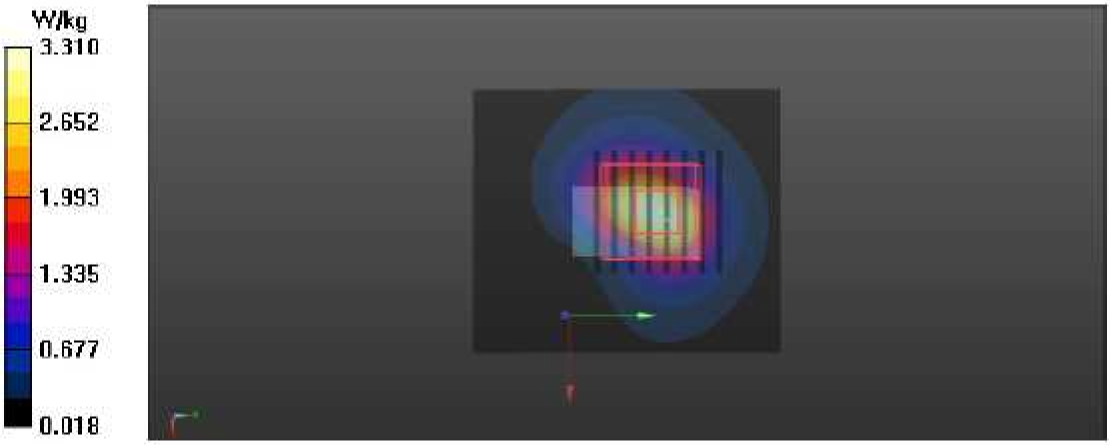
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5500 MHz; $\sigma = 4.825$ S/m; $\varepsilon_r = 36.98$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.26, 5.6, 5.22) @ 5500 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 3.31 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 23.10 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 6.32 W/kg
SAR(1 g) = 1.38 W/kg; SAR(10 g) = 0.476 W/kg
Smallest distance from peaks to all points 3 dB below = 8.2 mm
Ratio of SAR at M2 to SAR at M1 = 58.4%
Maximum value of SAR (measured) = 3.34 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/18

P05 SDR-5.8G_20M_Left Side_0.5cm_Ch165_Ant 1

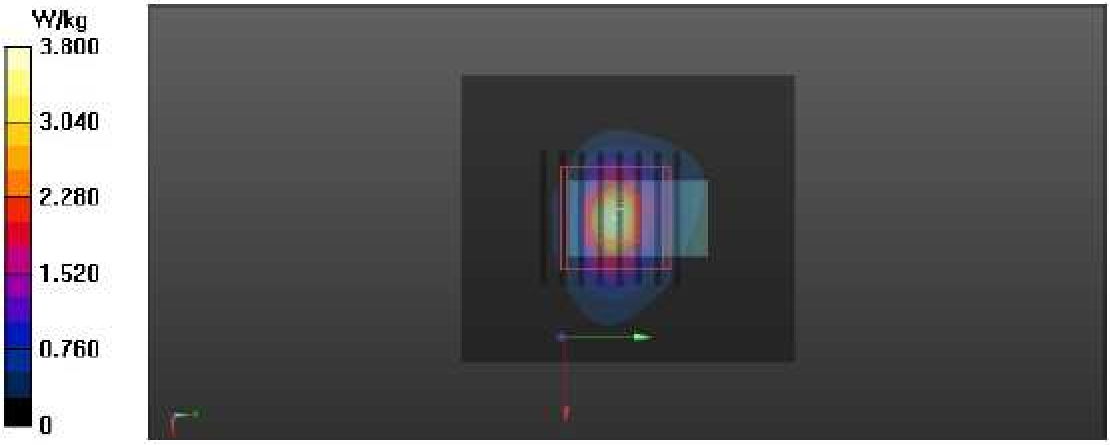
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5826 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5826 MHz; σ = 5.178 S/m; ε_r = 36.382; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.12, 5.45, 5.08) @ 5826 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 3.80 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 27.88 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 7.21 W/kg
SAR(1 g) = 1.31 W/kg; SAR(10 g) = 0.336 W/kg
Smallest distance from peaks to all points 3 dB below = 6.1 mm
Ratio of SAR at M2 to SAR at M1 = 56.4%
Maximum value of SAR (measured) = 3.39 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

P06 802.11b_Right Side_0.5cm_Ch1_Ant 0

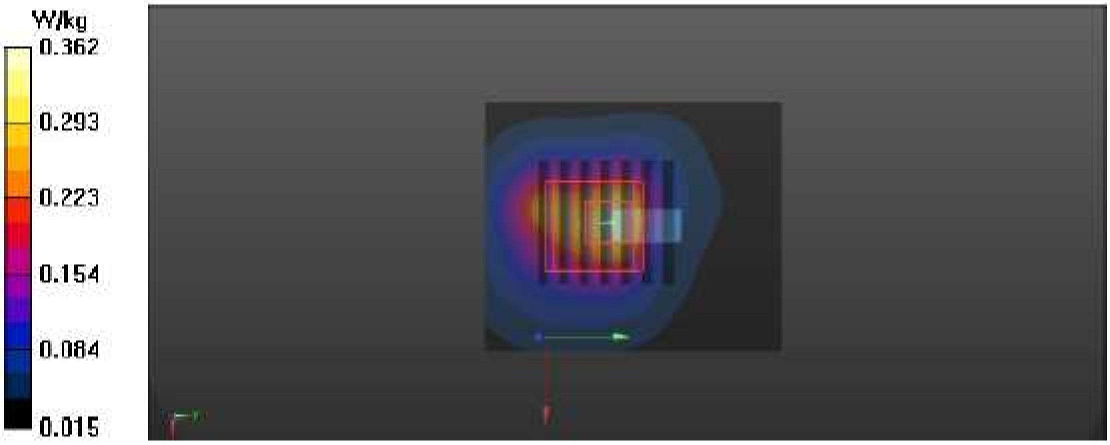
DUT: EUT

Communication System: UID 0, 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: H2450 Medium parameters used: f = 2412 MHz; $\sigma = 1.804$ S/m; $\varepsilon_r = 39.56$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2412 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.362 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.91 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.420 W/kg
SAR(1 g) = 0.210 W/kg; SAR(10 g) = 0.102 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 50.9%
Maximum value of SAR (measured) = 0.346 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/18

P07 802.11a_Left Side_0.5cm_Ch165_Ant 1

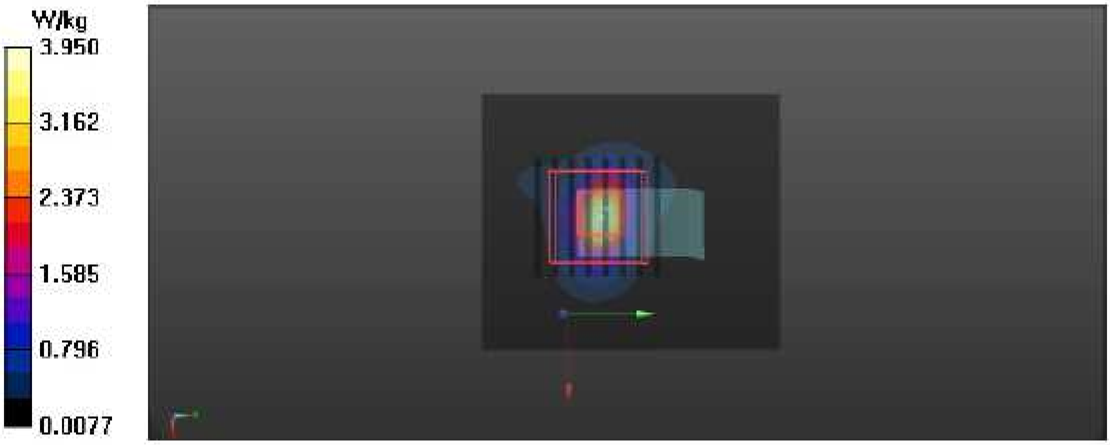
DUT: EUT

Communication System: UID 0, 802.11a; Frequency: 5825 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5825 MHz; σ = 5.176 S/m; ε_r = 36.387; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.12, 5.45, 5.08) @ 5825 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 3.95 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 19.15 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 7.46 W/kg
SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.331 W/kg
Smallest distance from peaks to all points 3 dB below = 6.1 mm
Ratio of SAR at M2 to SAR at M1 = 57.1%
Maximum value of SAR (measured) = 3.62 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

P08 BLE_2M_Right Side_0.5cm_Ch19_Ant 0

DUT: EUT

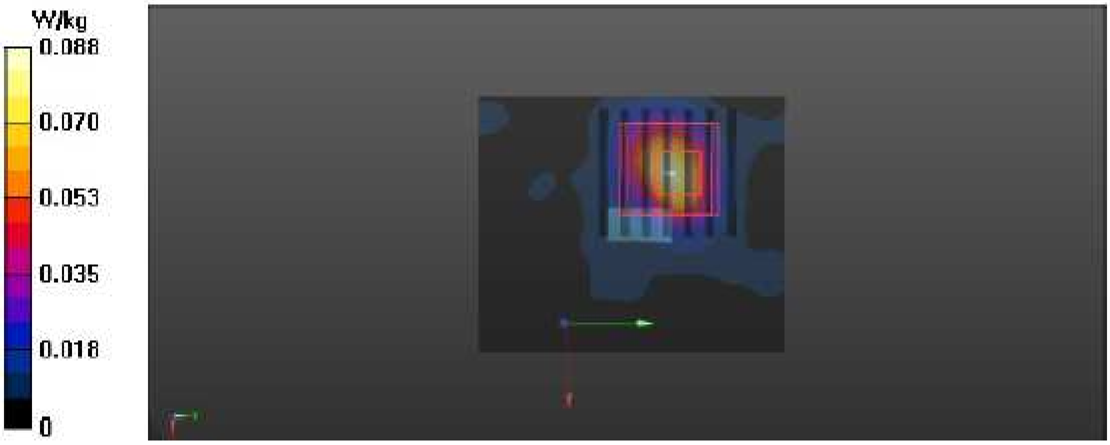
Communication System: UID 0, BT; Frequency: 2440 MHz;Duty Cycle: 1:1

Medium: H2450 Medium parameters used: f = 2440 MHz; σ = 1.834 S/m; ε_r = 39.44; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2440 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.0881 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.264 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.108 W/kg
SAR(1 g) = 0.048 W/kg; SAR(10 g) = 0.017 W/kg
Smallest distance from peaks to all points 3 dB below: Larger than measurement grid
Ratio of SAR at M2 to SAR at M1 = 44.1%
Maximum value of SAR (measured) = 0.0868 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

P09 SDR-2.4G_20M_Right Side_0cm_Ch7_Ant 0

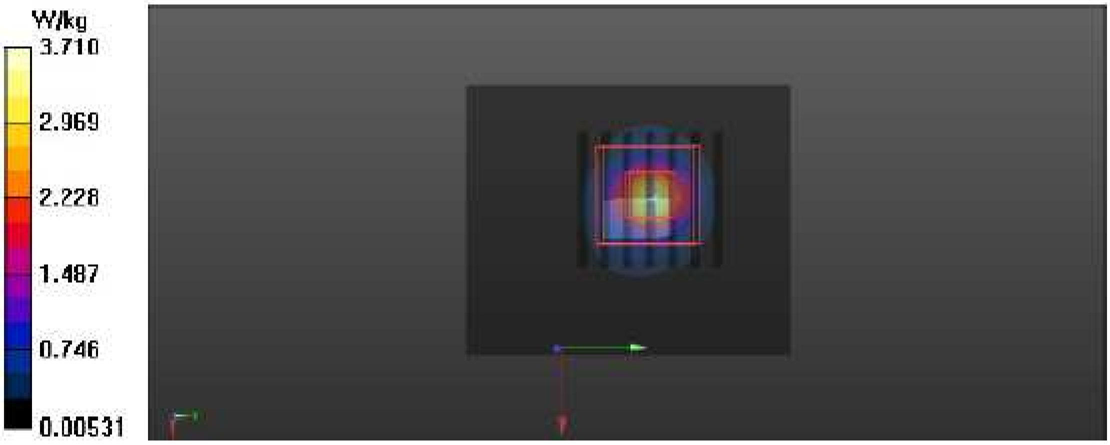
DUT: EUT

Communication System: UID 0, SDR; Frequency: 2443 MHz;Duty Cycle: 1:1
Medium: H2450 Medium parameters used: f = 2443 MHz; $\sigma = 1.837$ S/m; $\varepsilon_r = 39.427$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2443 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.71 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.72 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.28 W/kg
SAR(1 g) = 1.45 W/kg; SAR(10 g) = 0.567 W/kg
Smallest distance from peaks to all points 3 dB below = 7 mm
Ratio of SAR at M2 to SAR at M1 = 46.6%
Maximum value of SAR (measured) = 2.48 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/16

P10 SDR-5.2G_20M_Right Side_0cm_Ch40_Ant 0

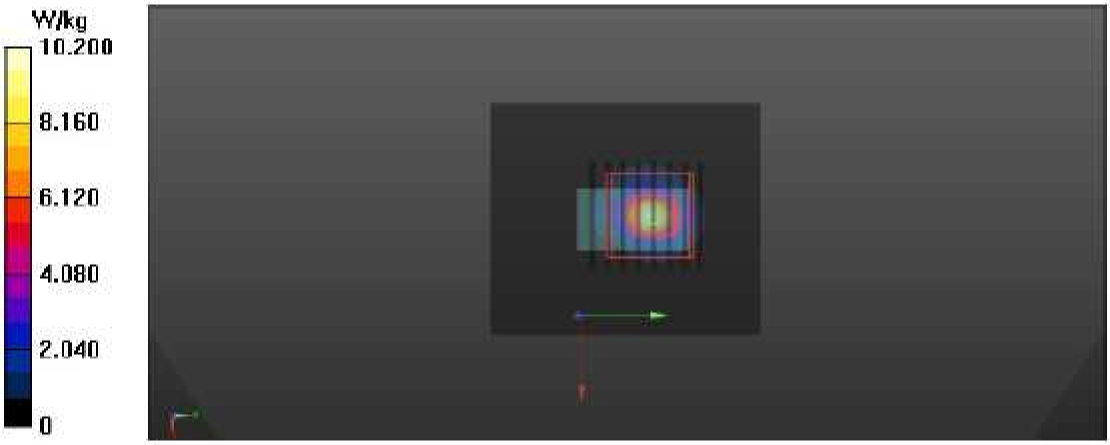
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5201 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5201 MHz; σ = 4.518 S/m; ε_r = 37.57; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.63, 6, 5.58) @ 5201 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.2 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 28.01 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 26.4 W/kg
SAR(1 g) = 4.15 W/kg; SAR(10 g) = 0.865 W/kg
Smallest distance from peaks to all points 3 dB below = 4.7 mm
Ratio of SAR at M2 to SAR at M1 = 57.9%
Maximum value of SAR (measured) = 12.7 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/16

P11 SDR-5.3G_20M_Right Side_0cm_Ch52_Ant 0

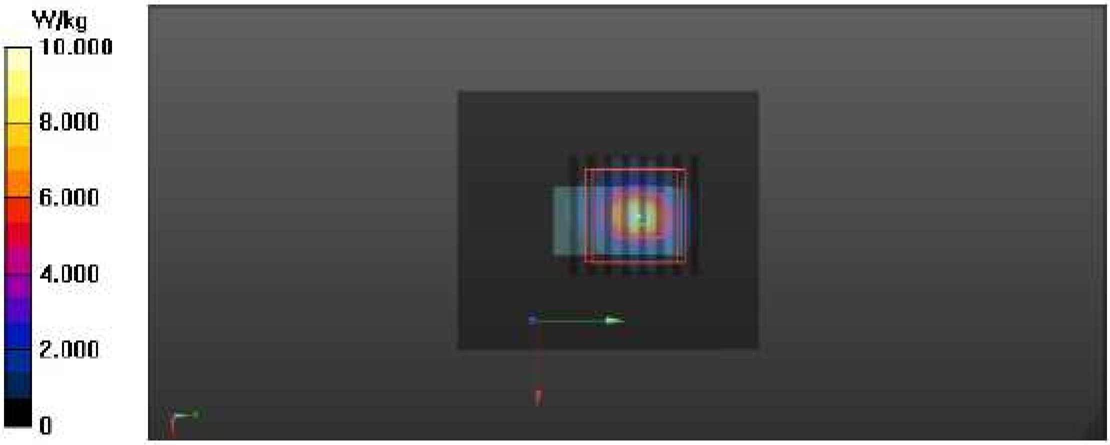
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5261 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5261 MHz; σ = 4.576 S/m; ε_r = 37.414; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.63, 6, 5.58) @ 5261 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.0 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 31.52 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 22.8 W/kg
SAR(1 g) = 3.5 W/kg; SAR(10 g) = 0.733 W/kg
Smallest distance from peaks to all points 3 dB below = 4.5 mm
Ratio of SAR at M2 to SAR at M1 = 56.7%
Maximum value of SAR (measured) = 10.8 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/17

P12 SDR-5.6G_20M_Right Side_0cm_Ch100_Ant 0

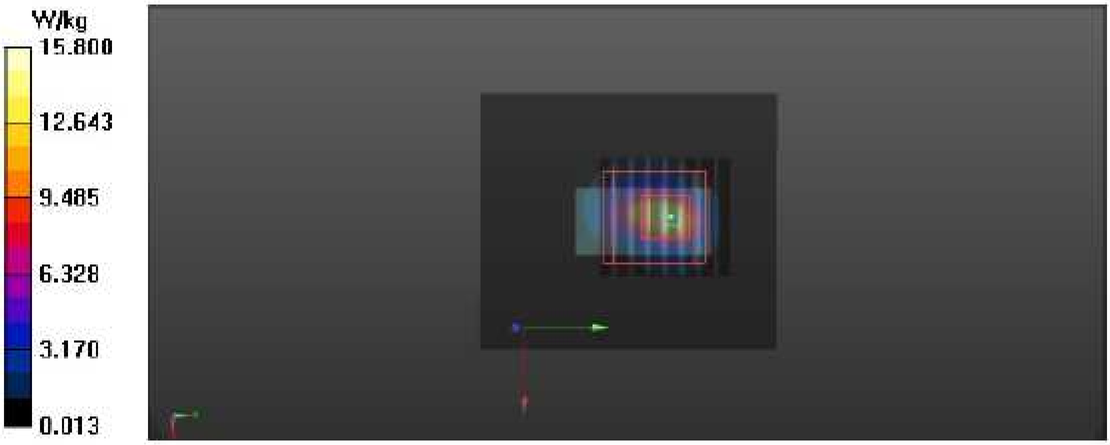
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5500 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5500 MHz; σ = 4.825 S/m; ε_r = 36.98; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.26, 5.6, 5.22) @ 5500 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.8 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 36.20 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 44.3 W/kg
SAR(1 g) = 6.45 W/kg; SAR(10 g) = 1.45 W/kg
Smallest distance from peaks to all points 3 dB below = 4.7 mm
Ratio of SAR at M2 to SAR at M1 = 54.7%
Maximum value of SAR (measured) = 18.3 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/18

P13 SDR-5.8G_20M_Left Side_0cm_Ch165_Ant 1

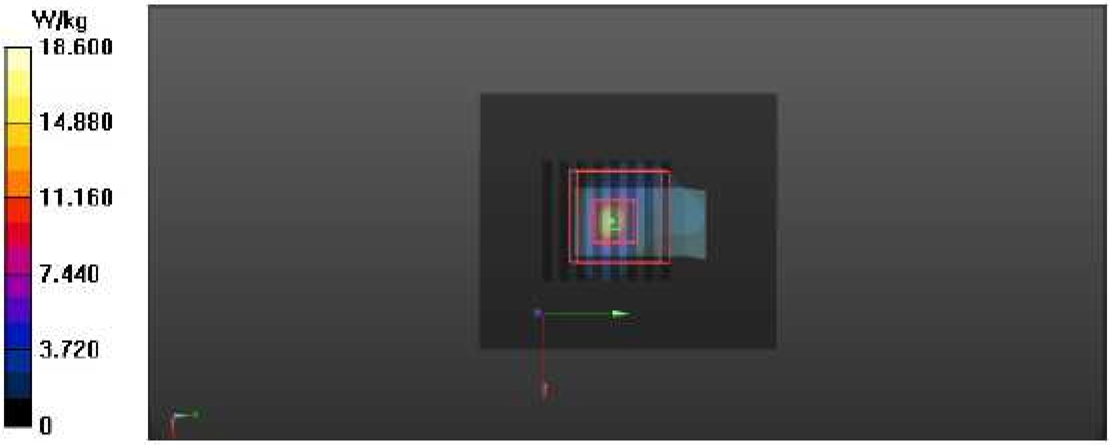
DUT: EUT

Communication System: UID 0, SDR; Frequency: 5826 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5826 MHz; σ = 5.178 S/m; ε_r = 36.382; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.12, 5.45, 5.08) @ 5826 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 18.6 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.93 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 45.8 W/kg
SAR(1 g) = 5.99 W/kg; SAR(10 g) = 1.18 W/kg
Smallest distance from peaks to all points 3 dB below = 4.2 mm
Ratio of SAR at M2 to SAR at M1 = 54.7%
Maximum value of SAR (measured) = 17.8 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

P14 802.11b_Right Side_0cm_Ch1_Ant 0

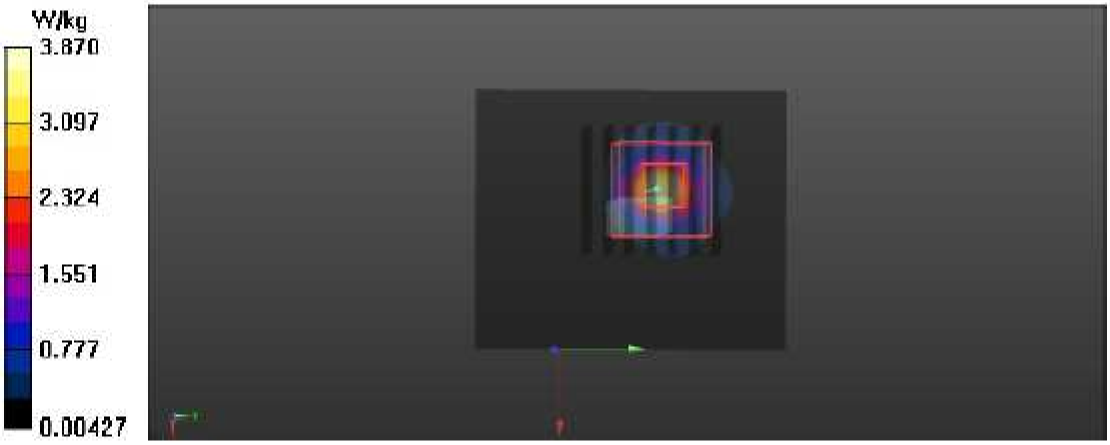
DUT: EUT

Communication System: UID 0, 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: H2450 Medium parameters used: f = 2412 MHz; σ = 1.804 S/m; ε_r = 39.56; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2412 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.87 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.32 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 3.48 W/kg
SAR(1 g) = 1.38 W/kg; SAR(10 g) = 0.523 W/kg
Smallest distance from peaks to all points 3 dB below = 6.7 mm
Ratio of SAR at M2 to SAR at M1 = 39.9%
Maximum value of SAR (measured) = 2.63 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/18

P15 802.11a_Left Side_0cm_Ch165_Ant 1

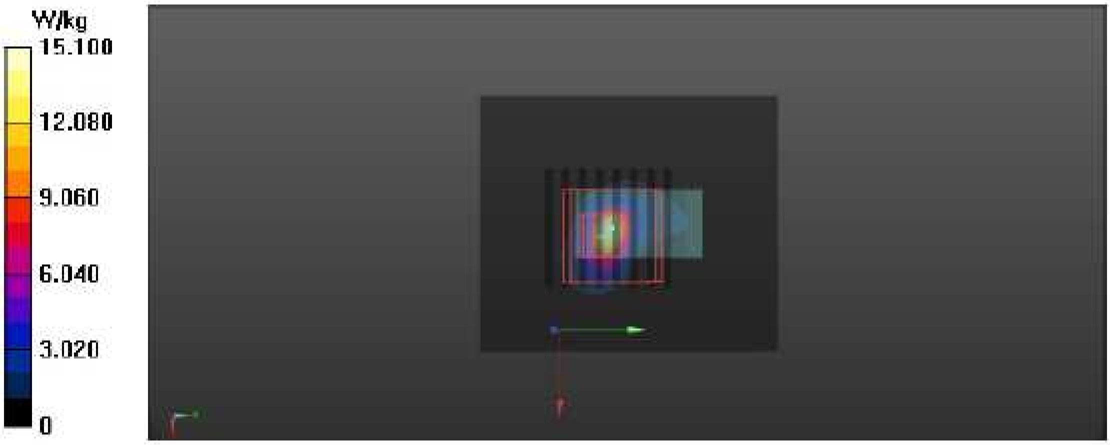
DUT: EUT

Communication System: UID 0, 802.11a; Frequency: 5825 MHz;Duty Cycle: 1:1
Medium: H5G Medium parameters used: f = 5825 MHz; $\sigma = 5.176$ S/m; $\varepsilon_r = 36.387$; $\rho = 1000$ kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(5.12, 5.45, 5.08) @ 5825 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (61x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.1 W/kg

- **Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 42.03 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 4.54 W/kg; SAR(10 g) = 0.887 W/kg
Smallest distance from peaks to all points 3 dB below = 4.1 mm
Ratio of SAR at M2 to SAR at M1 = 54.7%
Maximum value of SAR (measured) = 15.4 W/kg



Test Laboratory: TÜV Rheinland (Shenzhen) Co., Ltd. Date: 2025/4/15

P16 BLE_2M_Right Side_0cm_Ch19_Ant 0

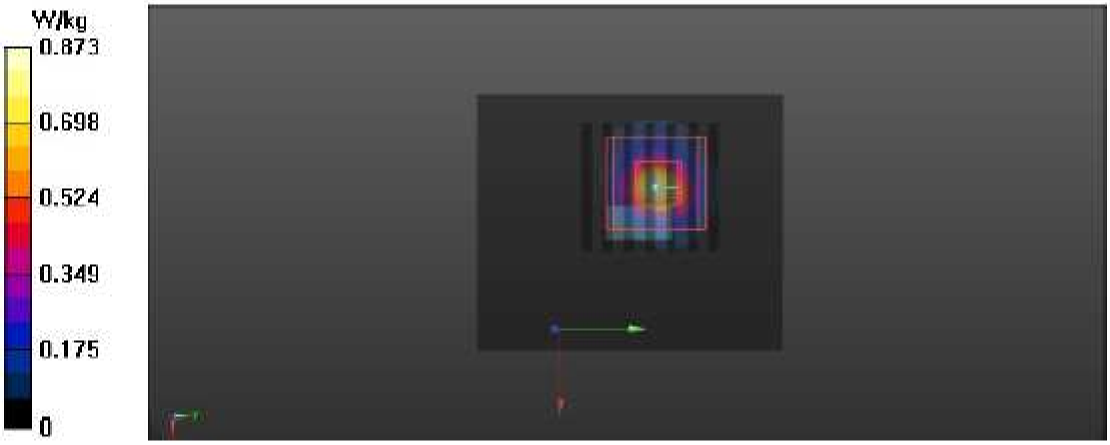
DUT: EUT

Communication System: UID 0, BT; Frequency: 2440 MHz;Duty Cycle: 1:1
Medium: H2450 Medium parameters used: f = 2440 MHz; σ = 1.834 S/m; ε_r = 39.44; ρ = 1000 kg/m^3

DASY5 Configuration:
- Probe: EX3DV4 - SN7506; ConvF(6.78, 7.22, 6.73) @ 2440 MHz; Calibrated: 2024/11/12
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1557; Calibrated: 2024/10/8
- Phantom: SAM 1; Type: QD 000 P40 CB; Serial: 1961
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

- **Area Scan (51x61x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.873 W/kg

- **Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.818 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.808 W/kg
SAR(1 g) = 0.324 W/kg; SAR(10 g) = 0.121 W/kg
Smallest distance from peaks to all points 3 dB below = 6.3 mm
Ratio of SAR at M2 to SAR at M1 = 39.5%
Maximum value of SAR (measured) = 0.594 W/kg



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Accreditation No.: **SCS 0108**

Client **TUV**
Shenzhen

Certificate No. **D2450V2-1014_Jun24**

CALIBRATION CERTIFICATE

Object: D2450V2 - SN:1014

Calibration procedure(s): QA CAL-05.v12
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: June 06, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z91	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
Power sensor NRP-Z91	SN: 103245	26-Mar-24 (No. 217-04037)	Mar-25
Reference 20 dB Attenuator	SN: BH9394 (20k)	26-Mar-24 (No. 217-04046)	Mar-25
Type-N mismatch combination	SN: 310982 / 06327	26-Mar-24 (No. 217-04047)	Mar-25
Reference Probe EX3DV4	SN: 7349	03-Nov-23 (No. EX3-7349_Nov23)	Nov-24
DAE4	SN: 601	22-May-24 (No. DAE4-601_May24)	May-25

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-22)	In house check: Oct-24
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by:	Joanna Lleshaj	Laboratory Technician	
Approved by:	Sven Kühn	Technical Manager	

Issued: June 7, 2024

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

c) DASY System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.0 ± 6 %	1.88 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.0 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.1 Ω + 0.5 jΩ
Return Loss	- 28.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.147 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 06.06.2024

Test Laboratory: SPEAG, Zurich, Switzerland

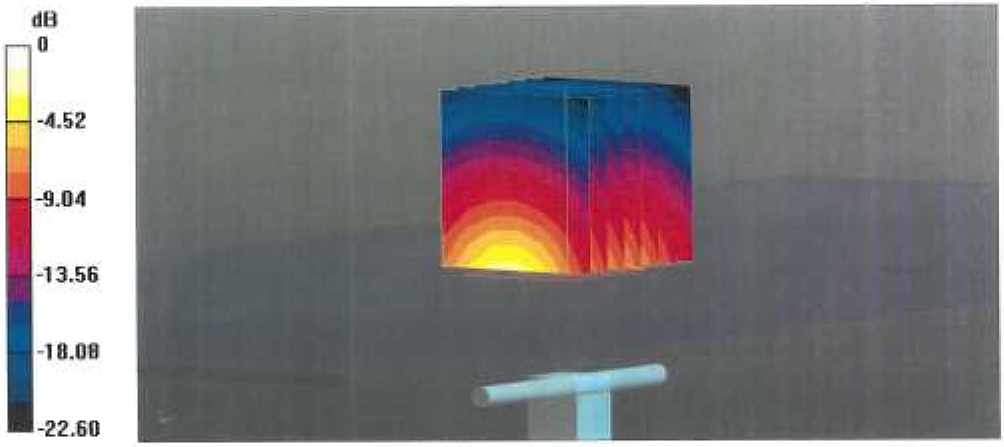
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:1014

Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.88 S/m; ε_r = 38.0; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

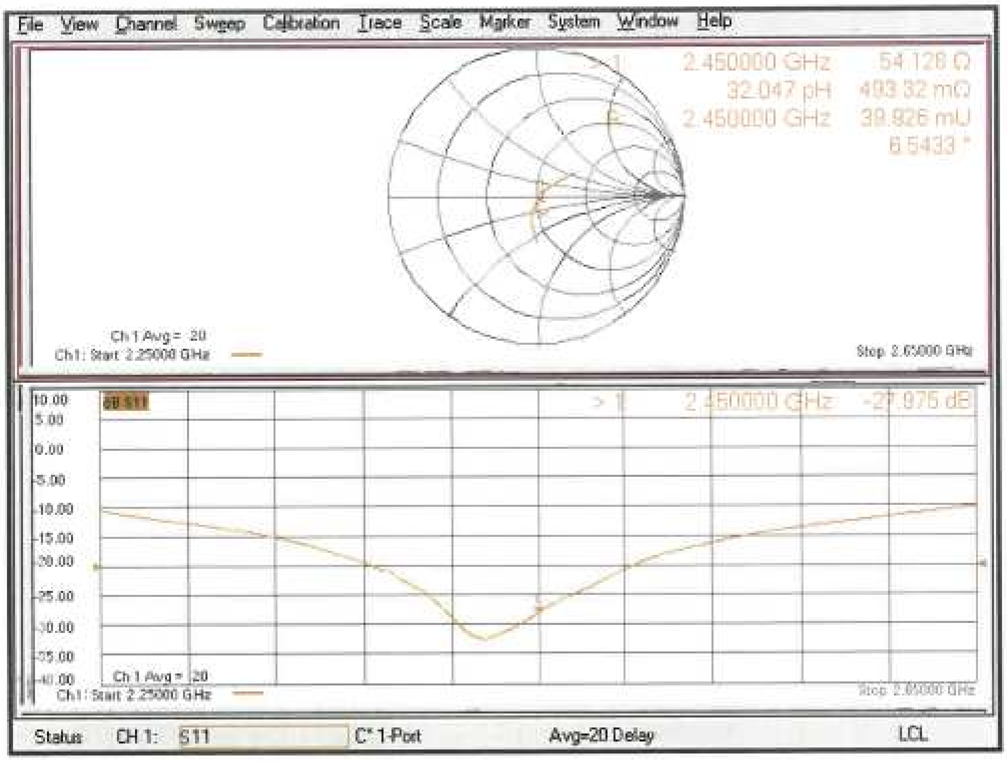
- Probe: EX3DV4 - SN7349; ConvF(7.96, 7.96, 7.96) @ 2450 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 22.05.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 117.3 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.35 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 50.4%
Maximum value of SAR (measured) = 22.0 W/kg



0 dB = 22.0 W/kg = 13.41 dBW/kg

Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 0108**

Client **TUV**
Shenzhen

Certificate No. **D5GHzV2-1280_Jun24**

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN:1280
Calibration procedure(s)	QA CAL-22.v7 Calibration Procedure for SAR Validation Sources between 3-10 GHz
Calibration date:	June 06, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z91	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
Power sensor NRP-Z91	SN: 103245	26-Mar-24 (No. 217-04037)	Mar-25
Reference 20 dB Attenuator	SN: BH9394 (20k)	26-Mar-24 (No. 217-04046)	Mar-25
Type-N mismatch combination	SN: 310982 / 06327	26-Mar-24 (No. 217-04047)	Mar-25
Reference Probe EX3DV4	SN: 3503	07-Mar-24 (No. EX3-3503_Mar24)	Mar-25
DAE4	SN: 601	22-May-24 (No. DAE4-601_May24)	May-25

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
Power sensor HP 8481A	SN: MY41093315	07-Oct-15 (in house check Oct-22)	In house check: Oct-24
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-22)	In house check: Oct-24
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-22)	In house check: Oct-24

	Name	Function	Signature
Calibrated by:	Joanna Lleshaj	Laboratory Technician	
Approved by:	Sven Kühn	Technical Manager	

Issued: June 6, 2024

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Accreditation No.: **SCS 0108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices - Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

c) DASY System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5250 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5250 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.71 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.0 ± 6 %	4.57 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5250 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.93 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.3 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.27 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.7 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.3 ± 6 %	4.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.35 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**83.3 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.7 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	5.15 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**80.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.29 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.8 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5250 MHz

Impedance, transformed to feed point	48.2 Ω - 2.7 jΩ
Return Loss	- 29.5 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	50.6 Ω + 1.5 jΩ
Return Loss	- 35.7 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	53.2 Ω + 4.5 jΩ
Return Loss	- 25.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.188 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG

DASY5 Validation Report for Head TSL

Date: 06.06.2024

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1280

Communication System: UID 0 - CW; Frequency: 5250 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5250 MHz; σ = 4.57 S/m; ε_r = 36; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.94 S/m; ε_r = 35.3; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5800 MHz; σ = 5.15 S/m; ε_r = 35.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

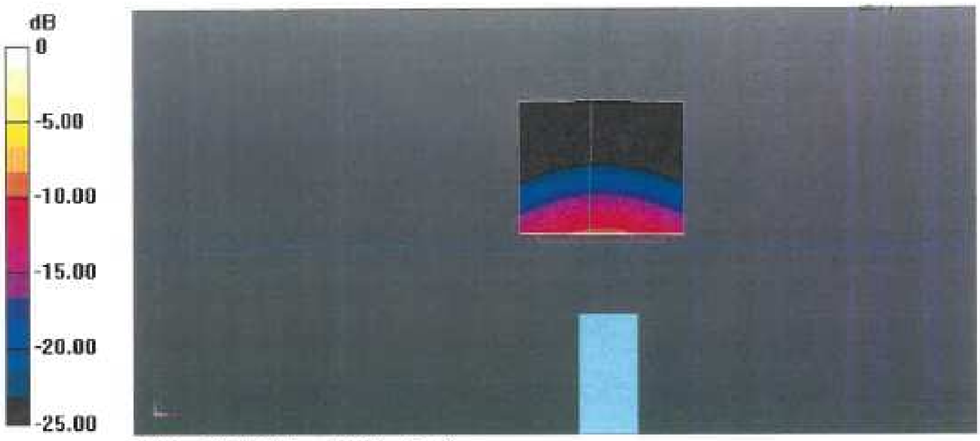
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.39, 5.39, 5.39) @ 5250 MHz, ConvF(5, 5, 5) @ 5600 MHz, ConvF(4.86, 4.86, 4.86) @ 5800 MHz; Calibrated: 07.03.2024
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 22.05.2024
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 76.44 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 26.9 W/kg
SAR(1 g) = 7.93 W/kg; SAR(10 g) = 2.27 W/kg
Smallest distance from peaks to all points 3 dB below = 6.9 mm
Ratio of SAR at M2 to SAR at M1 = 70.5%
Maximum value of SAR (measured) = 17.6 W/kg

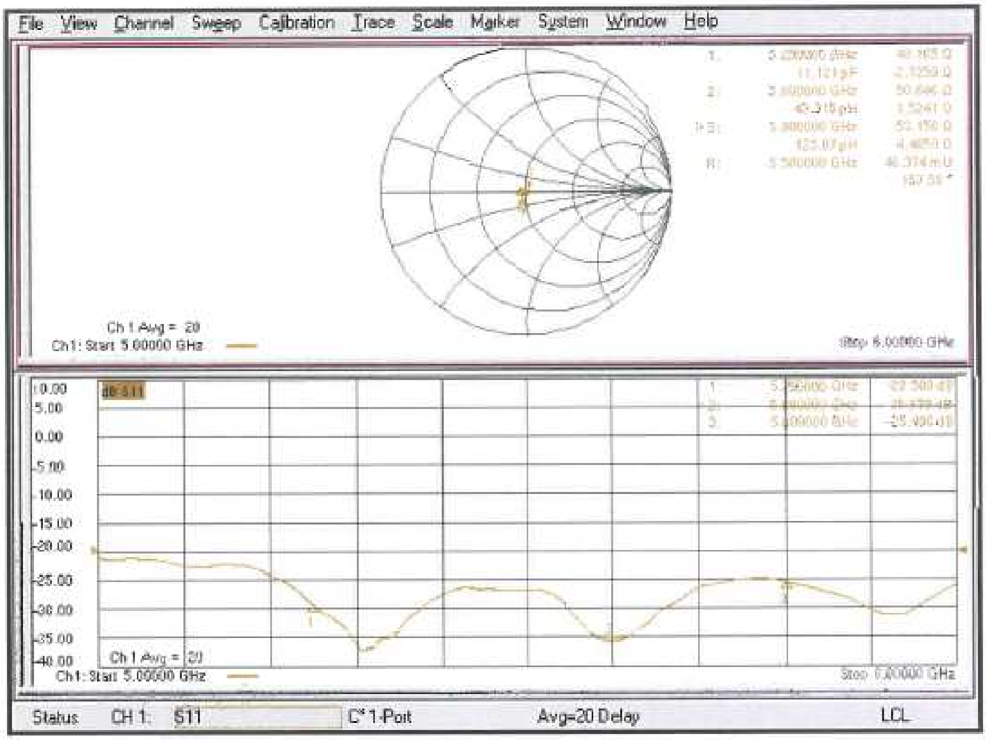
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 76.25 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 30.8 W/kg
SAR(1 g) = 8.35 W/kg; SAR(10 g) = 2.38 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 67.7%
Maximum value of SAR (measured) = 19.1 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 74.03 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 31.7 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.29 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.8%
Maximum value of SAR (measured) = 18.9 W/kg



0 dB = 19.1 W/kg = 12.81 dBW/kg

Impedance Measurement Plot for Head TSL



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Accreditation No.: **SCS 0108**

Client **TUV**
Shenzhen

Certificate No. **EX-7506_Nov24**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7506
Calibration procedure(s)	QA CAL-01.v10, QA CAL-12.v10, QA CAL-14.v7, QA CAL-23.v6, QA CAL-25.v8 Calibration procedure for dosimetric E-field probes
Calibration date	November 12, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP2	SN: 104778	26-Mar-24 (No. 217-04036/04037)	Mar-25
Power sensor NRP-Z91	SN: 103244	26-Mar-24 (No. 217-04036)	Mar-25
OCP DAK-3.5 (weighted)	SN: 1249	23-Sep-24 (OCP-DAK3.5-1249_Sep24)	Sep-25
OCP DAK-12	SN: 1016	24-Sep-24 (OCP-DAK12-1016_Sep24)	Sep-25
Reference 20 dB Attenuator	SN: CC2552 (20x)	26-Mar-24 (No. 217-04046)	Mar-25
DAE4	SN: 660	23-Feb-24 (No. DAE4-660_Feb24)	Feb-25
Reference Probe EX3DV4	SN: 7349	03-Jun-24 (No. EX3-7349_Jun24)	Jun-25

Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-24)	In house check: Jun-26
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-24)	In house check: Jun-26
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-24)	In house check: Jun-26
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-24)	In house check: Jun-26
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Sep-24)	In house check: Sep-26

	Name	Function	Signature
Calibrated by	Krešimir Franjić	Laboratory Technician	
Approved by	Sven Kühn	Technical Manager	i. A.

Issued: November 12, 2024

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Accreditation No.: SCS 0108

Glossary

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEC/IEEE 62209-1528, "Measurement Procedure For The Assessment Of Specific Absorption Rate Of Human Exposure To Radio Frequency Fields From Hand-Held And Body-Worn Wireless Communication Devices – Part 1528: Human Models, Instrumentation And Procedures (Frequency Range of 4 MHz to 10 GHz)", October 2020.
b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal. DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

Parameters of Probe: EX3DV4 - SN:7506

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc ($k = 2$)
Norm ($\mu V/(V/m)^2$) A	0.59	0.62	0.56	±10.1%
DCP (mV) B	103.8	104.2	108.4	±4.7%

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B $dB\sqrt{\mu V}$	C	D dB	VR mV	Max dev.	Max Unc E $k = 2$
0	CW	X	0.00	0.00	1.00	0.00	132.9	±2.4%	±4.7%
		Y	0.00	0.00	1.00		149.2		
		Z	0.00	0.00	1.00		135.9		

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

A The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 5).
B Linearization parameter uncertainty for maximum specified field strength.
E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Parameters of Probe: EX3DV4 - SN:7506

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle	37.9°
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Note: Measurement distance from surface can be increased to 3–4 mm for an *Area Scan* job.

Parameters of Probe: EX3DV4 - SN:7506

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz)[C]	Relative Permittivity[F]	Conductivity[F] (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unc[H] ($k = 2$)
450	43.5	0.87	10.72	10.72	10.72	0.16	1.30	±13.3%
750	41.9	0.89	9.35	9.96	9.27	0.38	1.27	±11.0%
835	41.5	0.90	9.12	9.72	9.05	0.38	1.27	±11.0%
900	41.5	0.97	8.98	9.56	8.91	0.38	1.27	±11.0%
1450	40.5	1.20	8.04	8.56	7.97	0.37	1.27	±11.0%
1750	40.1	1.37	7.70	8.21	7.64	0.37	1.27	±11.0%
1900	40.0	1.40	7.37	7.85	7.31	0.37	1.27	±11.0%
2000	40.0	1.40	7.27	7.75	7.21	0.37	1.27	±11.0%
2300	39.5	1.67	7.01	7.47	6.95	0.36	1.27	±11.0%
2450	39.2	1.80	6.78	7.22	6.73	0.36	1.27	±11.0%
2600	39.0	1.96	6.70	7.14	6.64	0.36	1.27	±11.0%
3500	37.9	2.91	6.40	6.82	6.35	0.35	1.27	±13.1%
3700	37.7	3.12	6.18	6.58	6.13	0.34	1.27	±13.1%
5250	35.9	4.71	5.63	6.00	5.58	0.31	1.27	±13.1%
5600	35.5	5.07	5.26	5.60	5.22	0.28	1.27	±13.1%
5800	35.3	5.27	5.12	5.45	5.08	0.26	1.27	±13.1%

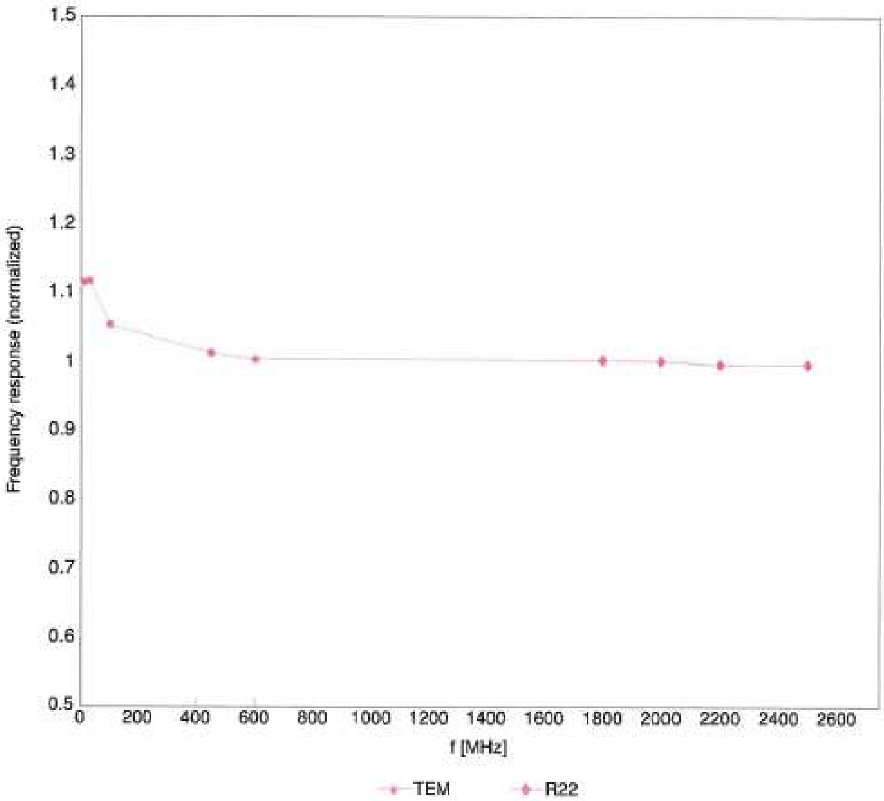
[C] Frequency validity above 300 MHz of ±100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ±50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4–9 MHz, and ConvF assessed at 13 MHz is 9–19 MHz. Above 5 GHz frequency validity can be extended to ±110 MHz.
[F] The probes are calibrated using tissue simulating liquids (TSL) that deviate for ε and σ by less than ±5% from the target values (typically better than ±3%) and are valid for TSL with deviations of up to ±10% if SAR correction is applied.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for frequencies between 3–6 GHz at any distance larger than half the probe tip diameter from the boundary.
[H] The stated uncertainty is the total calibration uncertainty ($k = 2$) of Norm-ConvF. This is equivalent to the uncertainty component with the symbol CF in Table 9 of IEC/IEEE 62209-1528:2020.

EX3DV4 - SN:7506

November 12, 2024

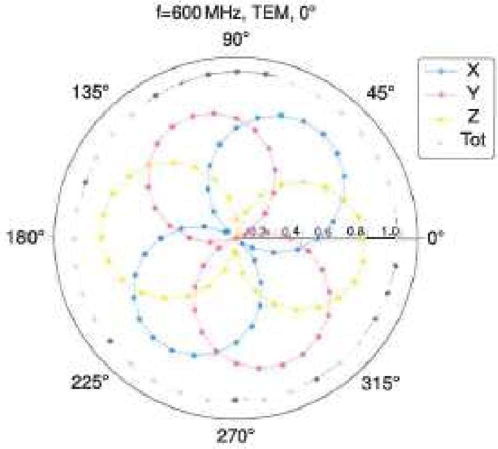
Frequency Response of E-Field

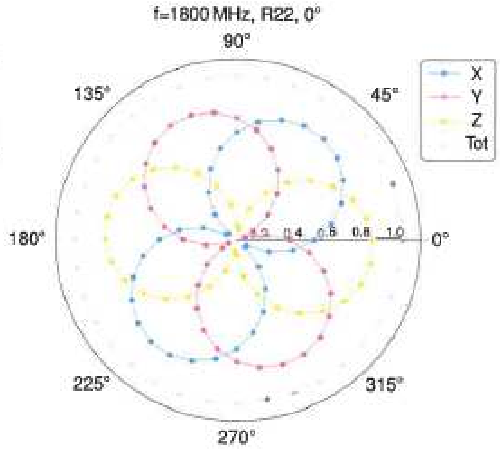
(TEM-Cell:ifi110 EXX, Waveguide:R22)

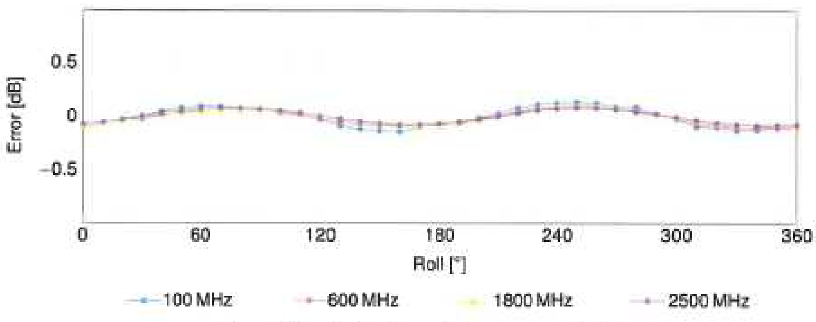


Uncertainty of Frequency Response of E-field: ±6.3% (k=2)

Receiving Pattern (ϕ), $\theta = 0°$



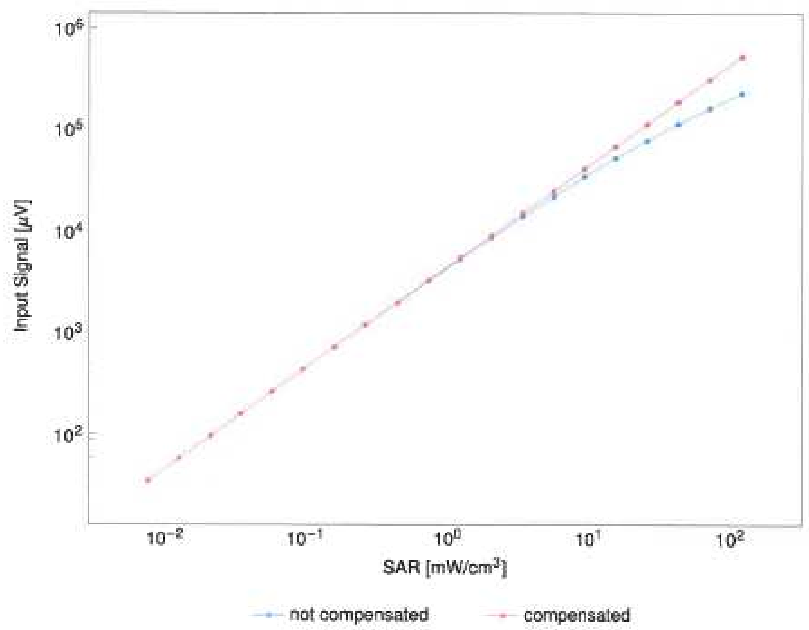


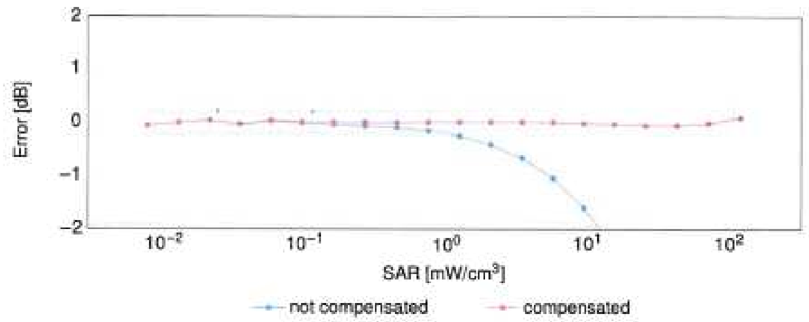


Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)

Dynamic Range f(SAR_{head})

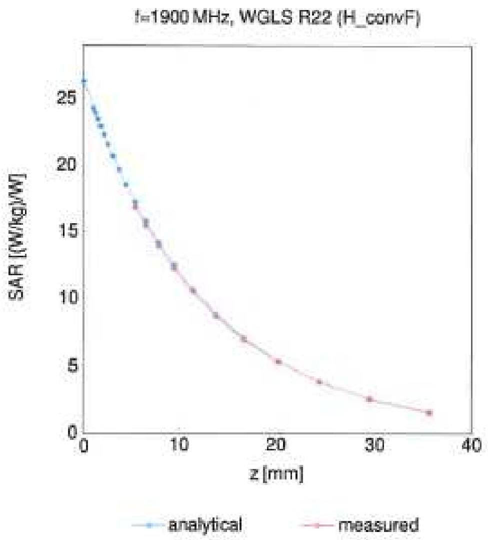
(TEM cell, f_{eval} = 1900 MHz)



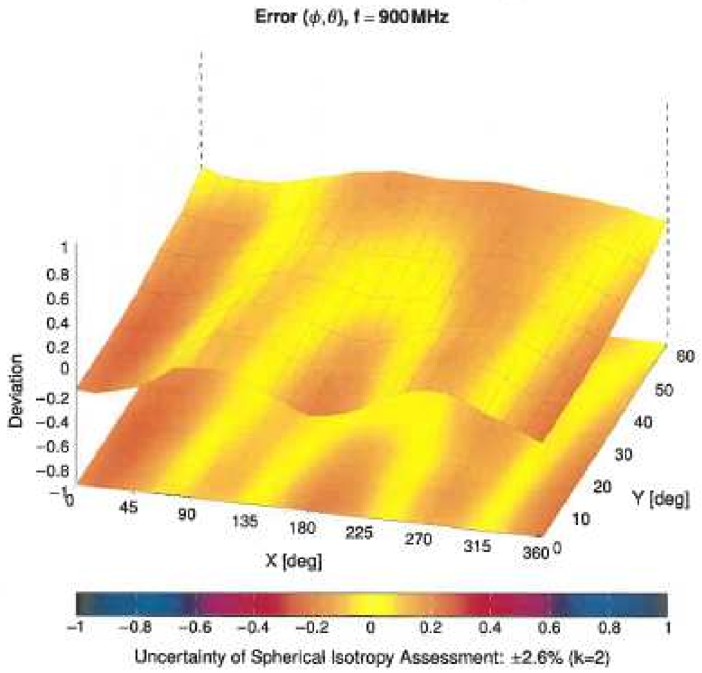


Uncertainty of Linearity Assessment: ±0.6% (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid



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IMPORTANT NOTICE

USAGE OF THE DAE4

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE4 unit is closed using a screw, over tightening the screw may cause the threads inside the DAE to wear out.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration, remove the batteries and pack the DAE in an antistatic bag. This antistatic bag shall then be packed into a larger box or container which protects the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, the customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

DASY Configuration Files: Since the exact values of the DAE input resistances, as measured during the calibration procedure of a DAE unit, are not used by the DASY software, a nominal value of 200 MOhm is given in the corresponding configuration file.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the calibration procedure.

Important Note:
To prevent damage of the DAE probe connector pins, use great care when installing the probe to the DAE. Carefully connect the probe with the connector notch oriented in the mating position. Avoid any rotational movement of the probe body versus the DAE while turning the locking nut of the connector. The same care shall be used when disconnecting the probe from the DAE.

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client TUV
Shenzhen

Certificate No: DAE4-1557_Oct24

CALIBRATION CERTIFICATE

Object	DAE4 - SD 000 D04 BN - SN: 1557
Calibration procedure(s)	QA CAL-06.v30 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	October 08, 2024

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	27-Aug-24 (No:40547)	Aug-25
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	23-Jan-24 (in house check)	In house check: Jan-25
Calibrator Box V2.1	SE UMS 006 AA 1002	23-Jan-24 (in house check)	In house check: Jan-25

	Name	Function	Signature
Calibrated by:	Adrian Gehring	Laboratory Technician	
Approved by:	Sven Kühn	Technical Manager	i.V.

Issued: October 8, 2024

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Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement:* Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal
High Range: 1LSB = 6.1μV , full range = -100...+300 mV
Low Range: 1LSB = 61nV , full range = -1.......+3mV
DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	405.027 ± 0.02% (k=2)	404.694 ± 0.02% (k=2)	404.784 ± 0.02% (k=2)
Low Range	3.97303 ± 1.50% (k=2)	4.00504 ± 1.50% (k=2)	3.99067 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	52.5 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	199998.64	2.42	0.00
Channel X	+ Input	20004.22	1.33	0.01
Channel X	- Input	-19998.68	3.45	-0.02
Channel Y	+ Input	199997.78	1.71	0.00
Channel Y	+ Input	20002.60	-0.05	-0.00
Channel Y	- Input	-20002.53	-0.09	0.00
Channel Z	+ Input	199997.83	1.48	0.00
Channel Z	+ Input	20000.83	-1.79	-0.01
Channel Z	- Input	-20002.41	0.05	-0.00

Low Range		Reading (μV)	Difference (μV)	Error (%)
Channel X	+ Input	2001.16	-0.00	-0.00
Channel X	+ Input	202.26	0.97	0.48
Channel X	- Input	-197.33	1.15	-0.58
Channel Y	+ Input	2001.07	-0.02	-0.00
Channel Y	+ Input	200.67	-0.49	-0.24
Channel Y	- Input	-199.11	-0.64	0.32
Channel Z	+ Input	2001.03	-0.01	-0.00
Channel Z	+ Input	200.51	-0.64	-0.32
Channel Z	- Input	-199.71	-1.07	0.54

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	0.08	-2.12
	- 200	4.52	2.85
Channel Y	200	4.23	4.10
	- 200	-5.11	-5.78
Channel Z	200	2.94	2.93
	- 200	-5.29	-5.31

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-1.30	-1.62
Channel Y	200	5.72	-	0.28
Channel Z	200	10.64	2.33	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	15803	16236
Channel Y	15752	14466
Channel Z	16034	16152

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	0.84	0.22	1.36	0.23
Channel Y	-1.95	-3.47	-1.17	0.33
Channel Z	-2.19	-3.07	-1.00	0.41

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9