No.: GJWSZ2023-0314-SAR2

TEST REPORT

NAME OF SAMPLE	:	Nofio wireless adapter
CLIENT	:	Nofio Pty Ltd
CLASSIFICATION OF TEST	:	N/A
FCC ID	:	N/A
Max. SAR (1g):	:	Head: **0.52** W/kg

CVC Testing Technology (Shenzhen) Co., Ltd.

威凯（深圳）检测技术有限公司 检验检测专用章

Applicant	**Name:** Nofio Pty Ltd **Address:** 55 Barry Parade Fortitude Valley QLD 4006 AUSTRALIA		
Manufacturer	**Name:** Nofio Pty Ltd **Address:** 55 Barry Parade Fortitude Valley QLD 4006 AUSTRALIA		
Equipment Under Test	**Name:**Nofio wireless adapter **Model/Type:** P008H **Trade mark:** N/A **SerialNO.:** N/A **Sampe NO.:** REG SET 01		
Date of Receipt.	2023.10.27	Date of Testing	2023.11.06
Test Specification		**Test Result**	
ANSI/IEEE Std. C95.1; FCC 47 CFR Part 2 (2.1093); IEEE 1528: 2013		Pass	
Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. **Seal of CVC** **Issue Date: 2023.11.17**		
Tested by: Liang Jiatong **Liang Jiatong** Name Signature	Reviewed by: Huang Meng **Huang Meng** Name Signature	Approved by: **Dong Sanbi** Name Signature	
Other Aspects: NONE.			
Abbreviations: Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
GJWSZ2023-0314-SAR2	Original release	2023.11.17

1 GENERAL INFORMATION

1.1 GENERAL PRODUCT INFORMATION

PRODUCT	Nofio wireless adapter
BRAND	N/A
MODEL	P008H
ADDITIONAL MODEL	N/A
POWER SUPPLY	Lithium Battery for Head
MODULATION MODE	6G:OFDM/1024-QAM,256-QAM,64-QAM,16-QAM,QPSK,BPSK
OPERATING FREQUENCY	6025 MHz to 6985 MHz
Battery	Model: zoo781-a300 Capacity: 5000mAh/54Wh Input: 30W(max) Output: 45W(max)
ANTENNA TYPE	FPC Antenna
Operating Mode	Maximum continuous output

Remark:

1. For more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.
2. Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, CVC is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.
3. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power

1.2 DESCRIPTION OF ACCESSORIES

Adapter	
BRAND	BLACKTECH
Model No.:	10010308
Input:	100-240 V~50/60 Hz 1.2A
Output:	12V=3A;15V=3A0V=2.25A
AC Cable:	N/A
DC Cable:	Shielded with two ferrite

1.3 TEST Environment

Ambient conditions in the SAR laboratory:

Items	Required
Temperature (℃)	22.5℃
Humidity (%RH)	61%

1.4 TEST Location

The tests and measurements refer to this report were performed by testing Lab of CVC Testing Technology (Shenzhen) Co., Ltd.

Lab Address: No. 1301, Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province 518110 P.R.China

Post Code：518110 Tel：0755-23763060-8805
Fax：0755-23763060 E-mail：sz-kf@cvc.org.cn
FCC(Test firm designation number：CN1363)
IC(Test firm CAB identifier number：CN0137)
CNAS(Test firm designation number：L16091)

1.5 TEST Standards and Limits

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
2	ANSI/IEEE Std. C95.1-1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
3	IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
4	FCC KDB 447498 D01 v06	Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
5	FCC KDB 447498 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
6	FCC KDB 865664 D01 v01r04	SAR Measurement 100 MHz to 6 GHz
7	FCC KDB 865664 D02 v01r02	RF Exposure Reporting
8	FCC KDB 941225 D06 v02r01	SAR EVALUATION PROCEDURES FOR PORTABLE DEVICES WITH WIRELESS ROUTER CAPABILITIES

(A). Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

NOTE: Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1 gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

Population/Uncontrolled Environments:
Are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Occupational/Controlled Environments:
Are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

NOTE
GENERAL POPULATION/UNCONTROLLED EXPOSURE
PARTIAL BODY LIMIT
1.6 W/kg

Statement of Compliance

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

Mode	**Antenna**	**Highest Reported Head SAR_{1g} (2.5 cm Gap) (W/kg)**	**Highest Reported psAPD (W/cm2)**
802.11 ax HE 160	Ant 0	0.35	2.27
	Ant 1	0.17	1.46
	Ant 0+Ant 1	**0.52**	**3.73**

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

2 SAR Measurement System

2.1 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:

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

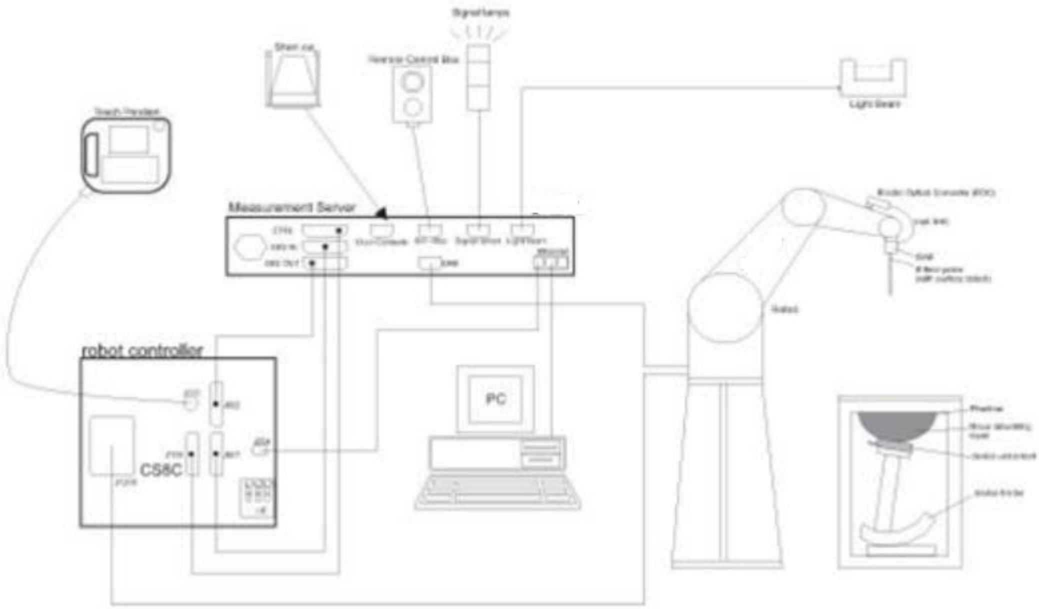
SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

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

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

2.2 SAR System

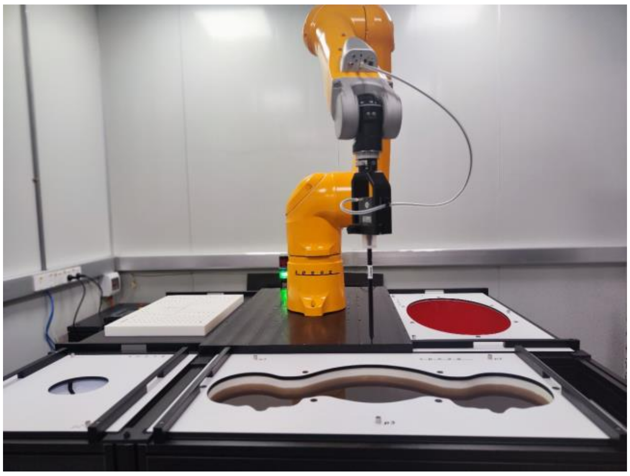
DASY System Diagram:



DASY is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The DASY system consists of the following items:

- Main computer to control all the system
- 6 axis robot
- Data acquisition Electronics
- Miniature E-field probe
- Phone holder
- Head simulating tissue

The following figure shows the system.



The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The Open SAR software computes the results to give a SAR value in a 1g or 10g mass.

2.3 Probe

EX3DV4 – Smallest isotropic dosimetric probe for high precision SAR measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 10 GHz with a precision of better than 30%
- Frequency range: 4 MHz – 10 GHz
-Dynamic range: 0.01 W/kg – >100 W/kg
-Tip diameter: 2.5 mm
-Scanning distance: ≥1.4 mm

Figure 1-Speag COMOSAR Dosimetric E field Dipole

2.4 Date Acquisition Electronics 4 (DAE4)

High precision 3-channel differential voltmeter for use with SPEAG's field, SAR, and temperature probes. Serial optical link for communication with the DASY8 measurement server. Two-step probe touch detector for mechanical surface detection and emergency robot stop.
- Measurement range: -100 – +300 mV (16-bit resolution and two range settings: 4 mV, 400 mV)
- Input offset voltage: <5 µV (with auto zero)
- Input resistance: 200 MOhm
- Input bias current: <50 fA
- Battery power: >10 hours of operation (with two 9.6 V NiMH batteries)
- Dimensions (L × W × H): 60 × 60 × 68 mm
- Calibration: ISO/IEC 17025 calibration service available.

2.4.1 SAM-Twin Phantom

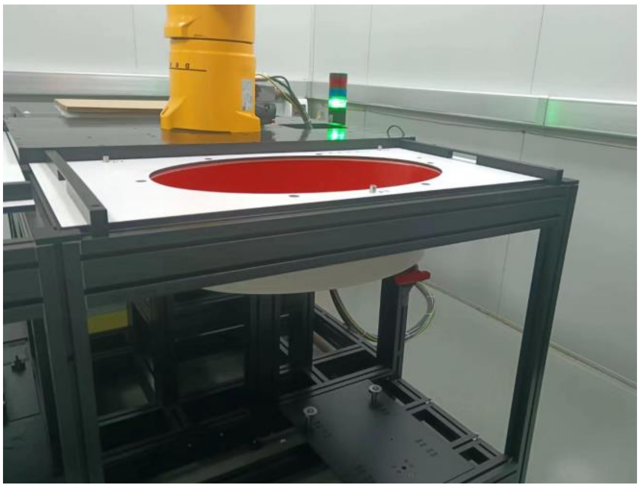
The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEC/IEEE 62209-1528. It enables the dosimetric evaluation of left and right hand phone usage as well as body-mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.SAM-Twin V5.0 and higher has the same shell geometry and is manufactured from the same material as SAM-Twin V4.0 but with reinforced top structure.

- Material: Vinyl ester, fiberglass 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

2.4.2 ELI Phantom

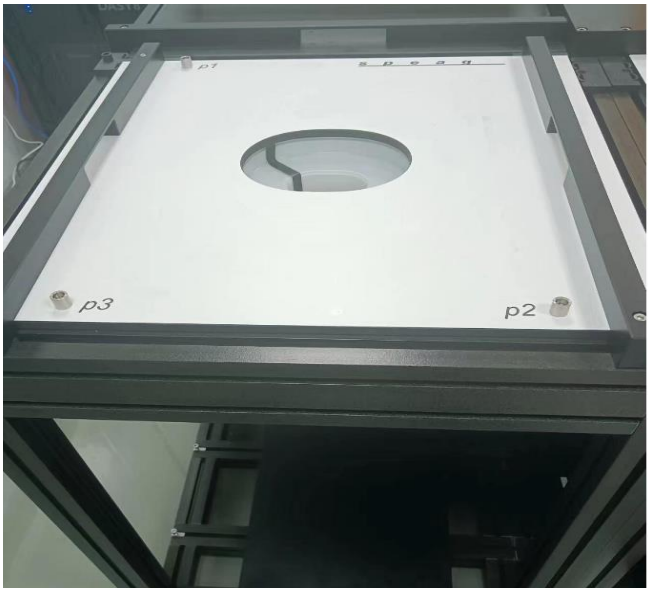
The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 4 MHz to 10 GHz. ELI is fully compatible with the IEC/IEEE 62209-1528 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated 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.The latest ELI V8.0 phantom shell has optimized pretension in the bottom surface during production, such that the phantom is more robust and with reduced sagging.

- Material:Vinyl ester, fiberglass 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.



2.5 Wrist Phantom

The Wrist Phantom V10 is shape-compatible with the CTIA approved OTA GFPC-V1 and optimized for specific absorption rate evaluation of watches and other wireless hand accessories.
- Material:Photosensitive epoxy acrylates
- Shell Thickness:2 ± 0.2 mm
- Wrist Shape:Design compatible with CTIA forearm.



2.6 Device Holder

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5 mm distance, a positioning uncertainty of ± 0.5 mm would produce a SAR uncertainty of ± 20 %. Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

System Validation Dipoles

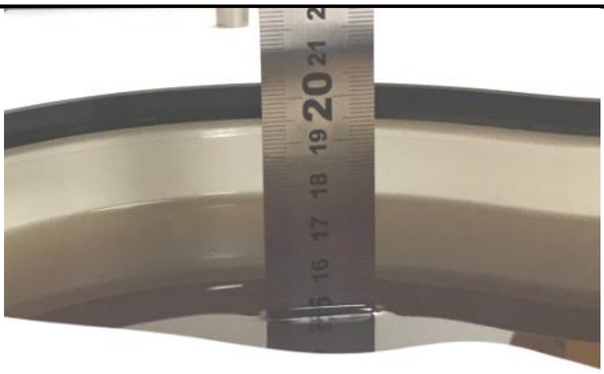
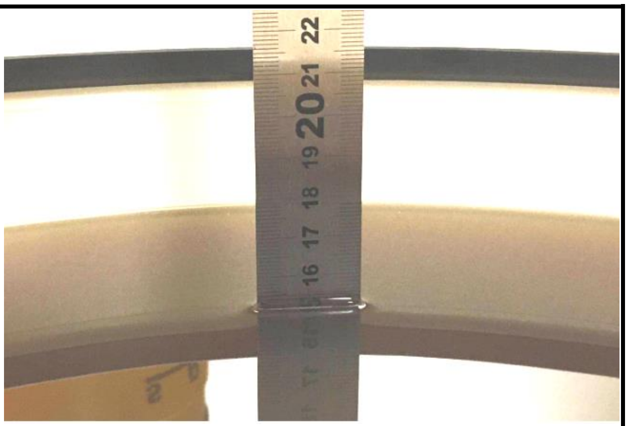
Symmetrical dipole with l/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.

- Frequency: 300 MHz to 10 GHz
- Return loss: >20 dB
- Power capability: >40 W

3 Tissue Simulating Liquids

3.1 Simulating Liquids Parameter Check

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.

	
Liquid Height for Head Position	**Liquid Height for Body Position**

The dielectric properties of the 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.

Dielectric properties of Tissue Simulating Liquid

Frequency (MHz)	Target Permittivity	Target Conductivity
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1640	40.3	1.29
1750	40.1	1.37
1800	40.0	1.40
1900	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2300	39.5	1.67
2450	39.2	1.80
2600	39.0	1.96
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5300	35.9	4.76
5500	35.6	4.96
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48
6500	34.5	6.07
7000	33.9	6.65

3.2 Liquids Measurement Results

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

Tissue Type	Frequency (MHz)	Measured Conductivity (σ)	Measured Permittivity (ε_r)	Target Conductivity (σ)	Target Permittivity (ε_r)	Conductivity Deviation (%)	Permittivity Deviation (%)	Test Date
H6500	6500	5.78	34.64	6.07	34.46	-4.84	0.52	Nov. 06, 2023

Note:

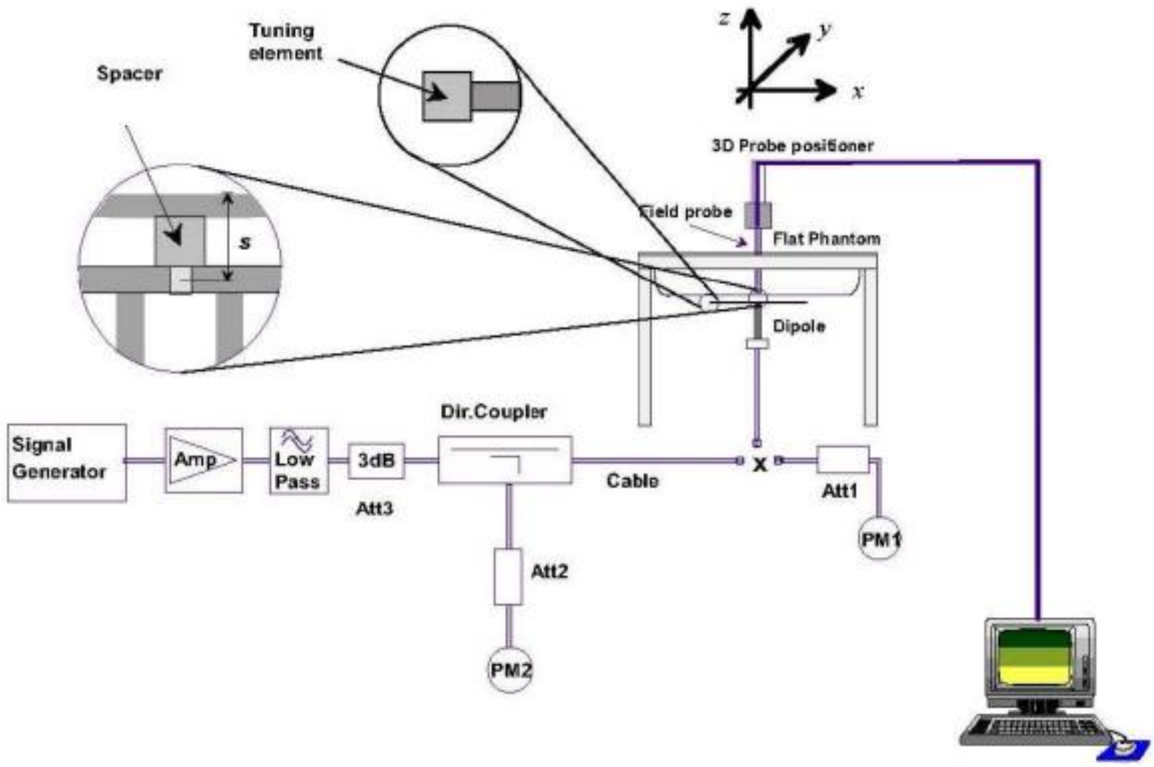
1. The dielectric properties of the tissue simulating liquid must be measured within 24 hours before the SAR testing and within ±5% of the target values. Liquid temperature during the SAR testing must be within ±2 ℃.
2. Since the maximum deviation of dielectric properties of the tissue simulating liquid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

4 SAR System Validation

4.1 Validation System

Each DASY system is equipped with one or more system validation kits. These units, together with the predefined measurement procedures within the DASY software, enable the user to conduct the system performance check and system validation. System kit includes a dipole, and dipole device holder.

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



4.2 System Validation Result

The measuring result for system verification is tabulated as below.

Test Date	Mode	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
Nov. 06, 2023	Head	6500	283.00	27.80	278.00	-1.77	1075	3820	1725

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.

5 SAR Evaluation Procedures

The procedure for assessing the average SAR value consists of the following steps:

-Establish a call with the maximum output power with a base station simulator. The connection between the mobile and the base station simulator is established via air interface.

-Measurement of the local E-field value at a fixed location. This value serves as a reference value for calculating a possible power drift.

-Measurement of the SAR distribution with a grid of 8 to 16mm * 8 to16 mm and a constant distance to the inner surface of the phantom. Since the sensors cannot directly measure at the inner phantom surface, the values between the sensors and the inner phantom surface are extrapolated. With these values the area of the maximum SAR is calculated by an interpolation scheme.

-Around this point, a cube of 30 * 30 * 30 mm or 32 * 32 * 32 mm is assessed by measuring 5 or 8 * 5 or 8*4 or 5 mm. With these data, the peak spatial-average SAR value can be calculated.

Area Scan & Zoom Scan:

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. Area scan and zoom scan resolution setting follows KDB 865664 D01 quoted below.

When the 1-g SAR of the highest peak is within 2 dB of the SAR limit, additional zoom scans are required for other peaks within 2 dB of the highest peak that have not been included in any zoom scan to ensure there is no increase in SAR.

6 SAR Measurement Evaluation

6.1 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.

6.1.1 Head Exposure Conditions

This is an accessory product for a VR headset, wireless video transmitter and receiver for video transfer of VR Headset data. Plastic Enclosure thickness is about 1.2mm. The antenna will attach to this surface, on the side that faces the user's head. Antenna Distance from Head is about 25mm from the closest part of the antenna, and 40mm from the furthest. SAR evaluation is required on one sides of Antenna, at 25 mm separation from a flat phantom.

7 Maximum Output Power

7.1 Maximum Conducted Power

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

Mode	Antenna	U-NII-5	U-NII-6	U-NII-7	U-NII-8
802.11ax HE160	Ant 0	12.0	12.0	12.0	8.0
	Ant 1	13.0	12.0	12.0	9.0
	MIMO	15.5	15.0	15.0	11.5

Measured Conducted Power Result

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

<WIFI 6.5 GHz>

Mode	**802.11ax HE160(6.5bps)**		
Channel / Frequency (MHz)	**15 (6025)**	**47 (6185)**	**79 (6345)**
Ant 0 Average Power	11.15	10.52	10.43
Ant 1 Average Power	12.89	12.86	12.67
MIMO Power	15.12	14.86	14.70
Channel / Frequency (MHz)	**111 (6505)**	**143 (6665)**	**175 (6825)**
Ant 0 Average Power	10.71	12.00	11.12
Ant 1 Average Power	10.97	10.96	11.93
MIMO Power	13.85	14.52	14.55
Channel / Frequency (MHz)	**207 (6985)**		
Ant 0 Average Power	7.31		
Ant 1 Average Power	8.68		
MIMO Power	11.06		

8 SAR Testing Results

8.1 SAR Test Reduction Considerations

<KDB 447498 D01, General RF Exposure Guidance>

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

(1) ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz

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

(3) ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

<KDB 941225 D01, 3G SAR Measurement Procedures>

The mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ 1/4 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

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

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

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

(2) QPSK with 100% RB allocation

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

(3) Higher order modulations

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

(4) Other channel bandwidth

SAR is required when the highest maximum output power of the smaller channel bandwidth is > 1/2 dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

<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.

(4) For WLAN MIMO mode, the power-based standalone SAR test exclusion or the sum of SAR provision in KDB 447498 to determine simultaneous transmission SAR test exclusion should be applied. Otherwise, SAR for MIMO mode will be measured with all applicable antennas transmitting simultaneously at the specified maximum output power of MIMO operation.

8.2 SAR Results for Head Exposure Condition

Mode	Test Position	Separation Distance (cm)	Ch.	Antenna	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled 1g SAR (W/kg)	Scaled 1g SAR (W/kg) Ant 0+ Ant 1	psAPD 4cm2 W/cm2	psAPD 4cm2 W/cm2 Ant 0 + Ant 1
802.11 ax HE 160	Front Face	2.5	15	Ant 0	12.0	11.15	1.22	-0.05	0.18	0.22	0.41	1.67	3.33
				Ant 1	13.0	12.89	1.03	-0.05	0.19	0.19		1.66	
802.11 ax HE 160	Front Face	2.5	47	Ant 0	12.0	10.52	1.41	-0.15	0.25	0.35	**0.52**	2.27	**3.73**
				Ant 1	13.0	12.86	1.03	-0.06	0.16	0.17		1.46	
802.11 ax HE 160	Front Face	2.5	79	Ant 0	12.0	10.43	1.44	-0.06	0.18	0.26	0.41	1.69	2.93
				Ant 1	13.0	12.67	1.08	-0.02	0.14	0.15		1.24	
802.11 ax HE 160	Front Face	2.5	111	Ant 0	12.0	10.71	1.35	0.05	0.18	0.24	0.45	1.63	3.14
				Ant 1	12.0	10.97	1.27	-0.08	0.17	0.21		1.51	
802.11 ax HE 160	Front Face	2.5	143	Ant 0	12.0	12.00	1.00	-0.06	0.16	0.16	0.29	1.39	2.38
				Ant 1	12.0	10.96	1.27	-0.06	0.10	0.13		0.99	
802.11 ax HE 160	Front Face	2.5	175	Ant 0	12.0	11.12	1.22	-0.03	0.18	0.22	0.38	1.53	2.93
				Ant 1	12.0	11.93	1.02	-0.02	0.16	0.16		1.40	
802.11 ax HE 160	Front Face	2.5	207	Ant 0	8.0	7.31	1.17	-0.08	0.13	0.15	0.29	1.10	1.72
				Ant 1	9.0	8.68	1.08	0.00	0.13	0.14		0.62	

8.3 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.

Since all the measured SAR are less than 0.8 W/kg, the repeated measurement is not required.

9 Equitpment List

Equipment	Manufacturer	Model	SN	Cal. Data	Cal. interval
System Validation Dipole	SPEAG	D6.5GHzV2	1075	May. 24, 2022	3 years
Dosimetric E-Field Probe	SPEAG	EX3DV4	3820	Jun. 23, 2023	1 year
Data Acquisition Electronics	SPEAG	DAE4	1725	Oct. 26, 2023	1 year
Signal Analyzer	R&S	FSV	104408	May. 22, 2023	1 year
Vector Network Analyzer	R&S	ZNB 40	101544	May. 26, 2023	1 year
Dielectric assessment Kit	SPEAG	DAK-3.5	1327	Oct. 22, 2022	N/A
Signal Generator	R&S	SMB 100A	181882	Apr. 11, 2023	1 year
Power Sensor	R&S	NRP18S-10	101843	Sep. 25, 2023	1 year
Power Sensor	R&S	NRP18S-10	101845	Sep. 25, 2023	1 year
DC Power Supply	Topward	3303D	810984	Sep. 25, 2023	1 year
Cavity Coupler	/	/	LS0300103	Jan. 17, 2023	1 year
Directional Couper	/	SHX-DC04/12-20N	2206171042	Jan. 17, 2023	1 year
Coaxial attenuator	R&S	8491A	1424.6721k02-101845-HX	Sep. 25, 2023	1 year
Coaxial attenuator	R&S	8491A	1424.6721K02-101843-aM	Sep. 25, 2023	1 year
Digital Thermometer	LKM	DTM3000	3946	Jan. 15, 2023	1 year
Power Amplifier Mini circuit	mini-circuits	ZVA-183W-S+	726202215	Jan. 17, 2023	1 year
PHANTOM	SPEAG	ELI V8.0	2171	N/A	N/A
PHANTOM	SPEAG	SAM-Twin V8.0	2097	N/A	N/A

10 Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Symbol	Source of Uncertainty	Tolerance (± %)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)	Vi Veff
Measurement System Errors									
CF	Probe Calibration	±18.6%	Normal (k=2)	2	1	1	± 9.30 %	± 9.30 %	∞
CF_{drift}	Probe Calibration Drift	±1.7%	Rectangular	√3	1	1	±1.0%	±1.0%	∞
LIN	Probe Linearity	±4.7%	Rectangular	√3	1	1	±2.7%	±2.7%	∞
BBS	Broadband Signal	±0%	Rectangular	√3	1	1	±0%	±0%	∞
ISO	Probe Isotropy	±4.7%	Rectangular	√3	1	1	±2.7%	±2.7%	∞
DAE	Other Probe + Electronic	±2.4%	Normal	1	1	1	±2.4%	±2.4%	∞
AMB	RF Ambient	±0.6%	Normal	1	1	1	±0.6%	±0.6%	∞
Δsys	Probe Positioning	±0.5%	Normal	1	0.50	0.50	±0.2%	±0.2%	∞
DAT	Data Processing	±0%	Normal	1	1	1	±0%	±0%	∞
Phantom and Device Errors									
LIQ(σ)	Conductivity (meas.)DAK	±2.5%	Normal	1	0.78	0.71	±2.0%	±1.8%	100
LIQ(Tσ)	Conductivity (temp.)BB	±3.4%	Rectangular	√3	0.78	0.71	±1.5%	±1.4%	∞
EPS	Phantom Permittivity	±14.0%	Rectangular	√3	0.5	0.5	±4.0%	±4.0%	∞
DIS	Distance DUT – TSL	±2.6%	Normal	1	2	2	±5.3%	±5.3%	∞
MOD	DUT Modulationm	±0%	Rectangular	√3	1	1	±0%	±0%	∞
TAS	Time-average SAR	±0%	Rectangular	√3	1	1	±0%	±0%	∞
VAL	Val Antenna Unc.val	±3.2%	Normal	1	1	1	±3.2%	±3.2%	
Pin	Accepted power	±2.0%	Normal	1	1	1	±2.0%	±2.0%	
Correction to the SAR results									
C(ε,σ)	Deviation to Target	±1.9%	Normal	1	1	0.84	±1.9%	±1.6%	
u(ΔSAR)	Combined Standard Uncertainty (K = 1)						±13.3%	±13.2%	
U	**Expanded Uncertainty (K = 2)**						**±26.6%**	**±26.4%**	

11 Appendixes

Appendix A. System Validation Plots

System Performance check Data (6500 MHz)

System Performance Check Report

Summary

Dipole	Frequency [MHz]	TSL	Power [dBm]	Dev. 1g [%]	Dev. 10g [%]	Dev. Peak [%]	Iso. Error [%]
D6.5GHzV2 - SN1075	6500.0	HSL	20.0	-1.7	4.4	-15.5	3.4

Exposure Conditions

Phantom Section, TSL	Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HBBL 5-10000MHz	5		, 0--	6500.0, 0	5.0	5.78	34.6

Hardware Setup

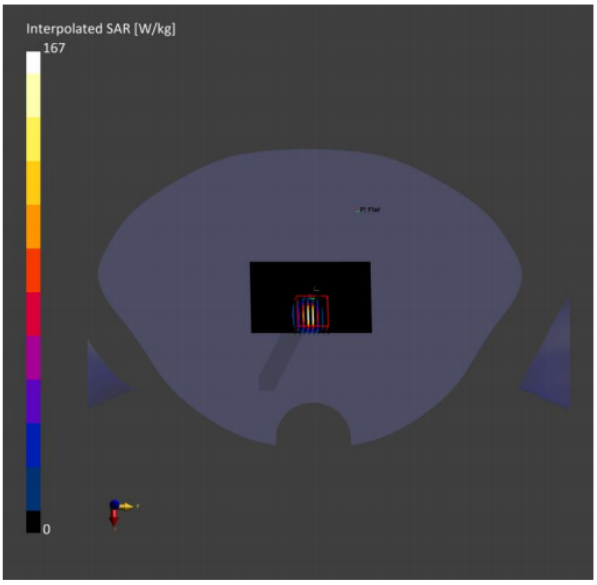
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2097	HBBL 5-10000MHz , 2023-Nov-06	EX3DV4 - SN3820, 2023-06-23	DAE4 Sn1725, 2023-10-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	51.0 x 85.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-11-06	2023-11-06
psSAR1g [W/Kg]	21.3	27.8
psSAR10g [W/Kg]	5.01	5.46
Power Drift [dB]	0.03	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction



Appendix B. SAR Test Plots

Measurement Report for Device, FRONT, U-NII-5, UID 10755 AAC, Antenna 0, Channel 47 (6185.0MHz)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	130.0 x 75.0 x 35.0		Nofio wireless adapter

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HBBL 5-10000MHz	FRONT, 25.00	U-NII-5	WLAN, 10755-AAC	6185.0, 47	5.0	5.46	35.2

Hardware Setup

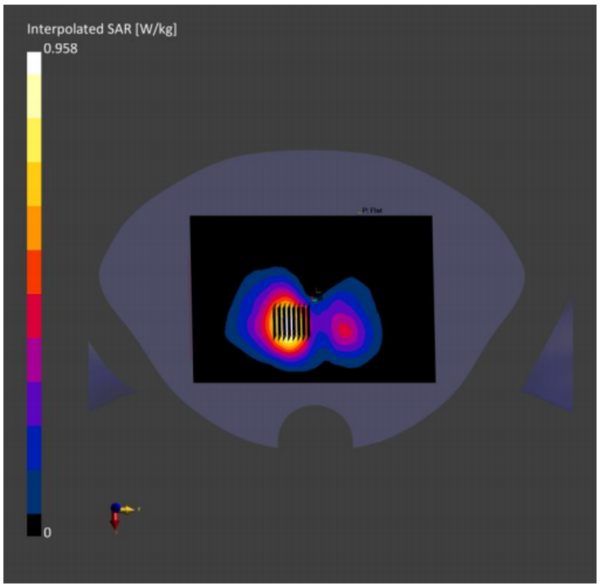
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2097	HBBL 5-10000MHz , 2023-Nov-06	EX3DV4 - SN3820, 2023-06-23	DAE4 Sn1725, 2023-10-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 170.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	Y
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-11-06	2023-11-06
psSAR1g [W/kg]	0.223	0.249
psSAR10g [W/kg]	0.090	0.102
Power Drift [dB]	0.06	-0.15
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		55.7
Dist 3dB Peak [mm]		14.2



Measurement Report for Device, FRONT, U-NII-5, UID 10755 AAC, Antenna 1, Channel 47 (6185.0MHz)

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	130.0 x 75.0 x 35.0		Nofio wireless adapter

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HBBL 5-10000MHz	FRONT, 25.00	U-NII-5	WLAN, 10755-AAC	6185.0, 47	5.0	5.46	35.2

Hardware Setup

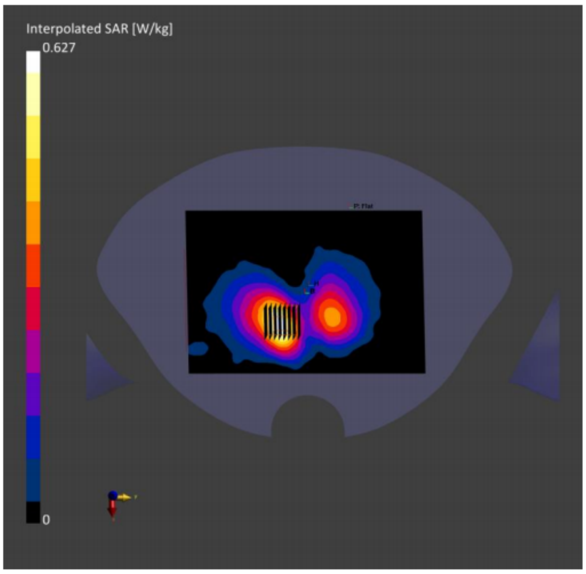
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2097	HBBL 5-10000MHz , 2023-Nov-06	EX3DV4 - SN3820, 2023-06-23	DAE4 Sn1725, 2023-10-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	119.0 x 170.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	Yes	Yes
Grading Ratio	1.5	1.4
MAIA	Y	Y
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2023-11-06	2023-11-06
psSAR1g [W/kg]	0.153	0.162
psSAR10g [W/kg]	0.062	0.066
Power Drift [dB]	-0.09	-0.06
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		52.4
Dist 3dB Peak [mm]		13.5



Appendix C. Probe Calibration and Dipole Calibration Report

Refer the appendix Calibration Report.

Appendix D. Photographs of EUT and setup

------ End of the Report ------

Important

(1) The test report is valid without the official stamp of CVC;

(2) Any part photocopies of the test report are forbidden without the written permission from CVC;

(3) The test report is invalid without the signatures of Approval and Reviewer;

(4) The test report is invalid if altered;

(5) Objections to the test report must be submitted to CVC within 15 days.

(6) Generally, commission test is responsible for the tested samples only.

(7) As for the test result "-" or "N" means "not applicable", "/" means "not test", "P" means "pass" and "F" means "fail"

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

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