TEST REPORT

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1. Client

- Name : CoachComm LLC
- Address : 205 Technology Pkwy Auburn Alabama 36830, United States
- Date of Receipt : 2023-06-15

2. Use of Report : Certification

3. Name of Product and Model : 900MHz Wireless Headset
- Model Name : 00005220
- Manufacturer and Country of Origin : Maytel Co., Ltd / Korea

4. FCC ID : 2AX9C-00005220

5. Date of Test : 2023-06-26

6. Location of Test : ■ Permanent Testing Lab □ On Site Testing
(Address: 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

7. Test Standards : IEEE 1528-2013, ANSI/IEEE C95.1, KDB Publication

8. Test Results : Refer to the test result in the test report

Affirmation	Tested by Name : Hyeoncheol Park (Signature)	Technical Manager Name : Jongwon Ma (Signature)

2023-06-28

Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2023-06-28	Originally issued	-

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

1. Identification when information is provided by the customer: Information marked " # " is provided by the customer. - Disclaimer: This information is provided by the customer and can affect the validity of results.

CONTENTS

1. General information

Client	:	CoachComm LLC
Address	:	205 Technology Pkwy Auburn Alabama 36830, United States ea
Manufacturer	:	Maytel Co., Ltd
Address	:	#417 Doosan Venture Digm 126-1, Pyeongchon-dong,Dongan-gu, Anyang-si, Gyeonggi-do, Republic of Korea
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-3327, G-198, C-3706, T-1849 CAB Identifier: KR0040, ISED Number: 8035A KOLAS No.: KT231

1.1 Report Overview

This report details the results of testing carried out on the samples listed in section 2, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this test report is used in any configuration other than that detailed in the test report, the manufacturer must ensure the new configuration complies with all relevant standards and certification requirements. Any mention of Eurofins KCTL Co.,Ltd. Wireless lab or testing done by Eurofins KCTL Co.,Ltd. Wireless lab made in connection with the distribution or use of the tested product must be approved in writing by Eurofins KCTL Co.,Ltd. Wireless lab.

2. Device information

2.1 Basic description

Product Name		900MHz Wireless Headset		
Product Model Name		00005220		
Derivative Model		00005219, PMC-HS900XR, CCB-PLA1, CP-HSDR10-900		
Product Manufacturer		Maytel Co., Ltd		
Product Serial Number	Radiation	R-00005220-#1		
Device Overview		Mode	Operating Modes	Tx Frequency (㎒)
		GFSK	FHSS	902.5 ~ 927.0

2.2 Summary of SAR Test Results

Mode	Highest Reported
	1g SAR (W/kg)
	Head
GFSK	**0.15**
Simultaneous SAR KDB 690783 D01v01r03	N/A

2.3 #Maximum Tune-up power

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D04v01.

Mode	Operating Modes	Channel	Output Power(dBm)			
			Burst Target	Burst Max. Allowed	Frame Target	Frame Max. Allowed
GFSK	FHSS	All Channel	24.00	**25.00**	**16.00**	**17.00**

2.4 SAR Test Methods and Procedures

The tests documented in this report were performed in accordance with IEEE 1528-2013 and the following published KDB procedures:

- IEEE 1528-2013
- 447498 D04 General RF Exposure Guidance v01
- 865664 D01 SAR measurement 100 ㎒ to 6 ㎓ v01r04
- 865664 D02 RF Exposure Reporting v01r02
- April 2019 TCB Workshop Notes (Tissue Simulating Liquids)

3. Specific Absorption Rate

3.1 Introduction

The 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.

3.2 SAR Definition

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

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

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

$$SAR = C\left(\frac{\delta T}{\delta t}\right)$$

Where: C is the specific head capacity, δT is the temperature rise and δt is the exposure duration, or related to the electrical field in the tissue by

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

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength. However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

4. SAR Measurement Procedures

4.1 SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The Minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 1.4 mm. This distance cannot be smaller than the Distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan & Zoom Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot and Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing1 g and 10 g of simulated tissue. If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly. Area Scan & Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	½·δ·ln(2) mm 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details. * When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 3: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

5. RF Exposure Limits

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

CONTROLLED ENVIRONMENTS are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Partial Peak SAR [1] (Partial)	1.60 ㎽/g	8.00 ㎽/g
Partial Average SAR [2] (Whole Body)	0.08 ㎽/g	0.40 ㎽/g
Partial Peak SAR [3] (Hands/Feet/Ankle/Wrist)	4.00 ㎽/g	20.00 ㎽/g

1) The spatial Peak value of the SAR averaged over any 1g gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2) The spatial Average value of the SAR averaged over the whole body.
3) The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

6. FCC SAR General Measurement Procedures

6.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D04v01, When SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as reported SAR. Test highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

7. RF Average Conducted Output Power

7.1 Average Conducted Output Power

The source-based frame-averaged output power was evaluated for all modulation configurations. The configuration with the highest target frame averaged output power was evaluated for SAR.

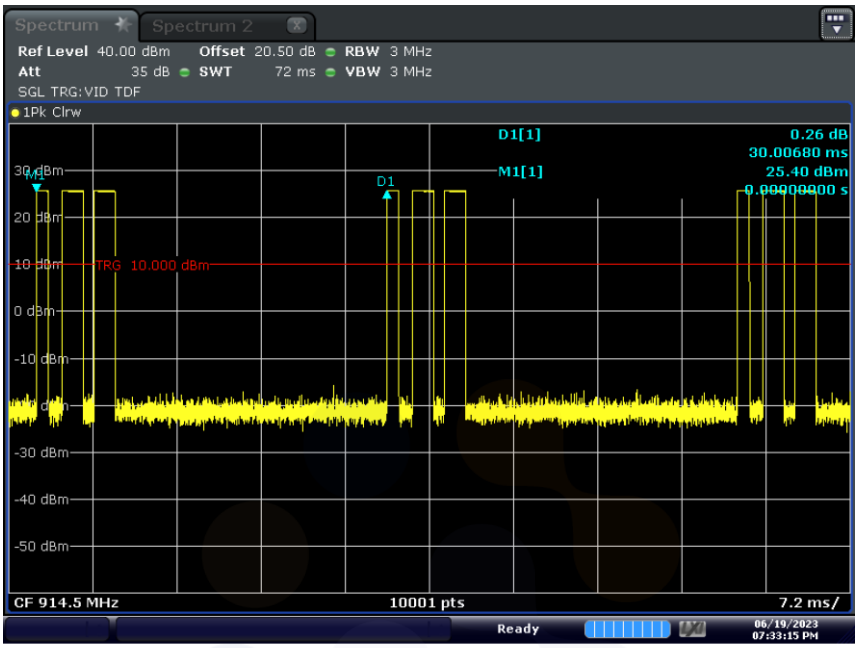
Mode	Operating Modes	Freq. [㎒]	Channel	Burst Conducted Power (dB m)	Duty Cycle (%)	Duty Correction Factor (dB)	Frame Conducted Power (dB m)
GFSK	FHSS	902.5	1	24.24	15.50	8.10	16.14
		914.5	20	24.46			**16.36**
		927.0	40	24.42			16.32

Note:
1. Duty Correction Factor = 10*log(Duty Cycle/100)
2. Frame Conducted Power = Burst Conducted Power - Duty Correction Factor

Power Measurement Setup

7.2 Wireless Band Duty Cycle

Mode	On Time (ms)	On-Off Time (ms)	Duty Cycle (%)	Crest Factor
GFSK	4.65	30.00	15.50	6.46



8. System Verification

8.1 Measurement date and environment

Shield room	Date	Environment	
		Temperature (ºC)	Humidity (%)
8F – 2	2023-06-26	22.5 ~ 22.7	55.6

8.2 Tissue Verification

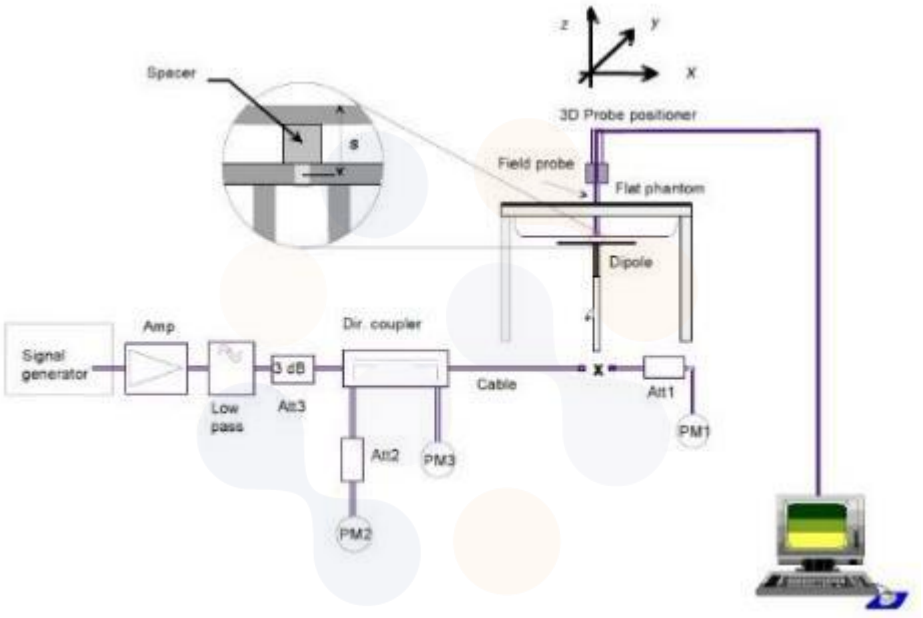
The dielectric properties for this Tissue Simulant Liquids were measured by using the SPEAG Model DAK3.5 Dielectric Probe in conjunction with Agilent E5071B Network Analyzer (300 ㎑ – 8 500 ㎒). The Conductivity (σ) and Permittivity (ρ) are listed in Table 1.For the SAR measurement given in this report. The temperature variation of the Tissue Simulant Liquids was (22 ± 2) ℃.

Freq. (㎒)	Limit/Measured		Permittivity (ρ)	Conductivity (σ)	Temp. (°C)
900.0	Recommended Limit		41.50 ± 5 % (39.43~43.58)	0.97 ± 5 % (0.92~1.02)	22 ± 2
	Measured	2023-06-26	42.36	0.99	20.89

<Table 1. Measurement result of Tissue electric parameters>

8.3 Test System Verification

The microwave circuit arrangement for system verification is sketched below picture.
The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within ± 10% from the t arget SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the Table 2. During the tests, the ambient temperature of the laboratory was in the range (22 ± 2) ℃, th e relative humidity was in the range(50 ± 20)% and the liquid depth Above the ear/grid refer ence points was above 15 ㎝ in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



Verification Kit	Probe S/N	Frequency (㎒)	Tissue Type	Limit/Measured (Normalized to 1 W)		
D900V2 SN: 1d216	EX3DV4 SN: 7540	900.0	HSL	Recommended Limit 1g (Normalized)		10.90 ± 10 % (9.81~11.99)
				Measured	2023-06-26	10.36

<Table 2. System Verification>

9. SAR Test Results

RF Exposure Conditions	Mode	Distance (㎜)	Frequency (㎒)	Measured Conducted Power (dBm)	Max. Tune-up Power (dBm)	Power Scaling Factor	Measured 1 g SAR (W/kg)	Reported 1 g SAR (W/kg)	Plot No.
Head	GFSK	0	914.5	16.36	17.00	1.159	0.127	**0.147**	1

General Notes:

1. According to test procedures specified in IEEE1528-2013 and FCC KDB publication 447498 D04v01, the DUT was tested in all operating configurations, but only worst-case SAR values were reported
2. Only standard batteries were used for all tests and fully charged.
3. The depth of tissue-equivalent liquids in the phantom was at least 15cm.
4. The manufacturer guarantees that the tested devices have same physical, mechanical and thermal characteristics and meet the requirements for expected operational tolerances.
5. Measured SAR values were scaled up by applying the power scaling factor to comply FCC KDB publication 447498 D04v01.

10. SAR Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1) **Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg.**
2) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
3) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

11. Measurement Uncertainty

Per KDB 865664 D01 SAR measurement 100㎒ to 6㎓, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Standard 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

12. Test Equipment Information

Test Platform	SPEAG DASY5 System			
Version	DASY52: 52.10.4.1535 / SEMCAD: 14.6.14 (7501)			
Location	Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea			
Manufacture	SPEAG			
Hardware Reference				
Equipment	Model	Serial Number	Date of Calibration	Due date of next Calibration
Shield Room	-	8F - 2	-	-
DASY5 Robot	TX90XL	F12/5L7FA1/A/01	-	-
Phantom	Twin SAM Phantom	1728	-	-
Mounting Device	Mounting Device	-	-	-
DAE	DAE4	1567	2023-03-22	2024-03-22
Probe	EX3DV4	7540	2023-05-04	2024-05-04
ESG Vector Signal Generator	E4438C	MY42080486	2023-04-25	2024-04-25
Dual Power Meter	E4419B	GB43312301	2023-02-09	2024-02-09
Power Sensor	8481H	3318A19379	2023-02-09	2024-02-09
	8481H	3318A19377	2023-02-09	2024-02-09
Attenuator	8491B 3dB	17387	2023-04-26	2024-04-26
	8491B 10dB	29425	2023-04-26	2024-04-26
	8491B-6dB	MY39270294	2023-04-26	2024-04-26
Power Amplifier	GRF5039	1062	2023-02-09	2024-02-09
Dual Directional Coupler	778D	17236	2023-04-26	2024-04-26
Low Pass Filter	LA-15N	36543	2023-02-09	2024-02-09
Dipole Validation Kits	D900V2	1d216	2022-10-26	2024-10-26
ENA Series Network Analyzer	E5071B	MY42403524	2023-02-09	2024-02-09
Dielectric Assessment Kit	DAK-3.5	1078	2023-05-24	2024-05-24
Humidity/Temp	MHB-382SD	25737	2023-05-03	2024-05-03
Spectrum Analyzer	FSP7	100289	2022-12-08	2023-12-08

13. Test System Verification Results

Date: 2023-06-26

Test Laboratory: Eurofins KCTL Co.,Ltd.
File Name: 900 MHz Verification Input Power 250 mW 2023-06-26.da52:0

DUT: Dipole 900 MHz D900V2, Type: D900V2, Serial: D900V2 - SN:1d216

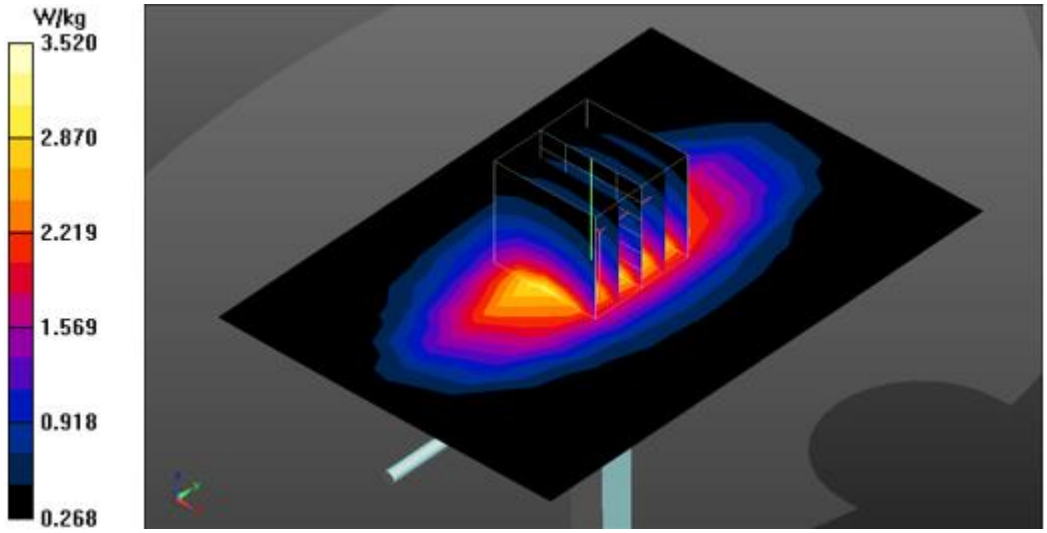
Communication System: UID 0, CW (0); Frequency: 900 MHz; Duty Cycle: 1:1
Medium parameters used: f = 900 MHz; σ = 0.987 S/m; ε_r = 42.361; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7540;ConvF(9.5, 9.5, 9.5) @ 900 MHz; Calibrated: 2023-05-04
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1567; Calibrated: 2023-03-22
- Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1728
- Measurement SW: DASY52, Version 52.10 (4);

Configuration/900 MHz Verification Input Power 250 mW 2023-06-26/Area Scan (8x11x1):
Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.22 W/kg

Configuration/900 MHz Verification Input Power 250 mW 2023-06-26/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 61.66 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.00 W/kg
SAR(1 g) = 2.59 W/kg; SAR(10 g) = 1.67 W/kg
Maximum value of SAR (measured) = 3.52 W/kg



14. Test Results

1)

Date: 2023-06-26

Test Laboratory: Eurofins KCTL Co.,Ltd.
File Name: 1. GFSK_0.9G_Head.da53:0

DUT: 00005220, Type: Headset, Serial: R-00005220-#1

Communication System: UID 0, FHSS (0); Frequency: 914.5 MHz; Duty Cycle: 1:6.45654
Medium parameters used (interpolated): f = 914.5 MHz; σ = 0.991 S/m; ε_r = 42.344; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY5 Configuration:

- Probe: EX3DV4 - SN7540;ConvF(9.5, 9.5, 9.5) @ 914.5 MHz; Calibrated: 2023-05-04
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1567; Calibrated: 2023-03-22
- Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1728
- Measurement SW: DASY52, Version 52.10 (4);

Configuration/FHSS CH20 Head Cheek 0 mm/Area Scan (12x12x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.163 W/kg

Configuration /FHSS CH20 Head Cheek 0 mm/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.11 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.185 W/kg
SAR(1 g) = 0.127 W/kg; SAR(10 g) = 0.084 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.161 W/kg

Appendixes List

Appendix A	A.1 Probe Calibration certificate (EX3DV4_7540) A.2 Dipole Calibration certificate (D900V2_1d216)
Appendix B	SAR Tissue Specification
Appendix C	#Antenna Location & Distance
Appendix D	EUT Photo
Appendix E	Test Setup Photo