# FCC HAC (RF Emission) Test Report

| | |
|---|---|
| **Report No.** | **: PSU-QSU2306120115SA03_** |
| **Applicant** | **: Unplugged Technologies Ltd.** |
| **Address** | **: 3 Hakidma St., Yokneam 2066731, Israel** |
| **Product** | **: UP Phone 1** |
| **FCC ID** | **: 2BBBCUP01** |
| **Brand** | **: UP Phone** |
| **Model No.** | **: UP01** |
| **Standards** | **: FCC 47 CFR Part 20.19 / ANSI C63.19-2011**<br>**KDB 285076 D01 v06r04 / KDB 285076 D02 v04** |
| **Sample Received Date** | **: Jul. 03, 2023** |
| **Date of Testing** | **: Jul. 23, 2023 ~ Aug. 05, 2023** |
| **Summary M-Rating** | **: M3** |
| **FCC Designation No.** | **: CN1325** **FCC Site Registration No. : 434559** |

**CERTIFICATION:** The above equipment have been tested by **Huarui 7layers High Technology (Suzhou) Co., Ltd.**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's HAC characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement any government agencies.

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Peibo Sun / Manager

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# Release Control Record

| Report No. | Reason for Change | Date Issued |
|---|---|---|
| PSU-QSU2306120115SA03 | Initial release | Oct. 12, 2023 |
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# 1. Summary of Maximum M-Rating

| Mode | Band | Maximum Audio Interference Level (dBV/m) | M-Rating |
|---|---|---|---|
| GSM CMRS Voice | GSM850 | 33.57 | M4 |
| | GSM1900 | 27.39 | M4 |
| UMTS CMRS Voice | Band II | N/A | M4 |
| | Band IV | N/A | M4 |
| | Band V | N/A | M4 |
| VoLTE | Band 7 | N/A | M4 |
| | Band 12/17 | N/A | M4 |
| | Band 13 | N/A | M4 |
| | Band 25/2 | N/A | M4 |
| | Band 26/5 | N/A | M4 |
| | Band 66/4 | N/A | M4 |
| | Band 71 | N/A | M4 |
| | Band 38 | 26.85 | M4 |
| | Band 41 | 24.51 | M4 |
| | Band 42 (Part27Q) | 33.79 | M3 |
| | Band 42 (Part96) | 30.96 | M3 |
| | Band 43 | 30.94 | M3 |
| | Band 48 | 33.71 | M3 |
| VoNR | n5 | N/A | M4 |
| | n7 | N/A | M4 |
| | n12 | N/A | M4 |
| | n25/2 | N/A | M4 |
| | n66 | N/A | M4 |
| | n71 | N/A | M4 |
| | n38 | N/A | M4 |
| | n41 | 34.00 | M3 |
| | n48 | N/A | M4 |
| | n77/78 (Part27Q) | 34.58 | M3 |
| | n77/78 (Part27O) | 34.75 | M3 |
| VoWiFi | 2.4G | 17.66 | M3 |
| | 5.2G | N/A | M4 |
| | 5.3G | N/A | M4 |
| | 5.6G | N/A | M4 |
| Summary | M3 | | |

**Note:**

1. The HAC RF emission limit **(M-rating Category M3)** is specified in FCC 47 CFR part 20.19 and ANSI C63.19.
2. The device RF emission rating is determined by the minimum rating.

## 2. Description of Equipment Under Test

| | |
|---|---|
| **EUT Type** | UP Phone 1 |
| **FCC ID** | 2BBBCUP01 |
| **Brand Name** | UP Phone |
| **Model Name** | UP01 |
| **IMEI Code** | 358496270586413 |
| **HW Version** | M156-MUB-V2 |
| **SW Version** | NR_D011.13_N_UP01_1.000.01 |
| **Tx Frequency Bands (Unit: MHz)** | GSM850 : 824.2 ~ 848.8<br>GSM1900 : 1850.2 ~ 1909.8<br>WCDMA Band II : 1852.4 ~ 1907.6<br>WCDMA Band IV : 1712.4 ~ 1752.6<br>WCDMA Band V : 826.4 ~ 846.6<br>LTE Band 2 : 1850.7 ~ 1909.3<br>LTE Band 4 : 1710.7 ~ 1754.3<br>LTE Band 5 : 824.7 ~ 848.3<br>LTE Band 7 : 2502.5 ~ 2567.5<br>LTE Band 12 : 699.7 ~ 715.3<br>LTE Band 13 : 779.5 ~ 784.5<br>LTE Band 17 : 706.5 ~ 713.5<br>LTE Band 25 : 1850.7~ 1914.3<br>LTE Band 26 : 814.7 ~ 848.3<br>LTE Band 38 : 2572.5 ~ 2617.5<br>LTE Band 41 : 2498.5 ~ 2687.5<br>LTE Band 42 : 3452.5 ~ 3547.5, 3552.5 ~ 3597.5<br>LTE Band 43 : 3602.5 ~ 3697.5<br>LTE Band 48 : 3552.5 ~ 3697.5<br>LTE Band 66 : 1710.7 ~ 1779.3<br>LTE Band 71 : 665.5 ~ 695.5<br>NR Band n2 : 1852.5~ 1907.5<br>NR Band n5 : 826.5~ 846.5<br>NR Band n7 : 2502.5 ~ 2567.5<br>NR Band n12 : 701.5~ 713.5<br>NR Band n25 : 1852.5~ 1912.5<br>NR Band n38 : 2582.52 ~ 2607.48<br>NR Band n41 : 2506.02 ~ 2679.99<br>NR Band n48 : 3555 ~ 3694.98<br>NR Band n66 : 1712.5~ 1777.5<br>NR Band n71 : 665.5 ~ 695.5<br>NR Band n77 : 3460.02 ~ 3540, 3710.01 ~ 3969.99<br>NR Band n78 : 3460.02 ~ 3540, 3710.01 ~ 3789.99<br>WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5745 ~ 5825<br>Bluetooth : 2402 ~ 2480<br>NFC : 13.56 |
| **Uplink Modulations** | GSM & GPRS & EDGE : GMSK, 8PSK<br>WCDMA : QPSK<br>LTE : QPSK, 16QAM, 64QAM<br>NR : Pi/2 BPSK (DFT-s-OFDM), QPSK (DFT-s-OFDM, CP-OFDM), 16QAM (DFT-s-OFDM, CP-OFDM), 64QAM (DFT-s-OFDM, CP-OFDM), 256QAM DFT-s-OFDM, CP-OFDM)<br>802.11b : DSSS<br>802.11a/g/n/ac : OFDM<br>802.11ax : OFDMA<br>Bluetooth : GFSK, π/4-DQPSK, 8-DPSK<br>NFC : ASK |
| **Subcarrier Spacing** | 15 kHz（FDD）/ 30 kHz（TDD） |
| **Antenna Type** | WWAN: Fixed Internal Antenna<br>WLAN: PIFA Antenna |
| **EUT Stage** | Identical Prototype |

**Note:**

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

## Air Interface and Operational Mode:

| Air Interface | Bands | Transport Type | ANSI C63.19 | Simultaneous But Not Tested | Name of Voice Service | Power Reduction |
|---|---|---|---|---|---|---|
| GSM | 850 | VO | Yes | N/A | CMRS Voice(1) | No |
| | 1900 | | | | | No |
| | EGPRS | VD | Yes | N/A | N/A | No |
| UMTS | II | VO | No | N/A | CMRS Voice(1) | No |
| | IV | | | | | No |
| | V | | | | | No |
| | HSPA | VD | No | N/A | N/A | No |
| LTE (FDD) | 2 | VD | No | N/A | VoLTE(1) | No |
| | 4 | | | | | No |
| | 5 | | | | | No |
| | 12 | | | | | No |
| | 13 | | | | | No |
| | 17 | | | | | No |
| | 25 | | | | | No |
| | 26 | | | | | No |
| | 66 | | | | | No |
| | 71 | | | | | No |
| LTE (TDD) | 38 | VD | Yes | N/A | VoLTE(1) | No |
| | 41 | | | | | No |
| | 42 | | | | | No |
| | 43 | | | | | No |
| | 48 | | | | | No |
| 5G NR (FDD) | n2 | VD | No | N/A | VoNR(1) | No |
| | n5 | | | | | No |
| | n7 | | | | | No |
| | n12 | | | | | No |
| | n25 | | | | | No |
| | n66 | | | | | No |
| | n71 | | | | | No |
| 5G NR (TDD) | n38 | VD | No | N/A | VoNR(1) | No |
| | n41 | | Yes | | | No |
| | n48 | | No | | | No |
| | n77 | | Yes | | | No |
| | n78 | | Yes | | | No |
| WLAN | 2.4G | VD | No | N/A | VoWiFi(1) | No |
| | 5.2G | VD | No | N/A | VoWiFi(1) | No |
| | 5.3G | | | | | No |
| | 5.8G | | | | | No |
| Bluetooth | 2.4G | DT | No | N/A | N/A | No |

**Transport Type:**
VO = Voice Service
DT = Digital Transport Only (No Voice)
VD = IP Voice Service over Digital Transport

**Note:**

1. The air interface is exempted from testing by low power exemption that its average antenna input power plus its MIF is 17 dBm, and is rated as M4.
2. The device have similar frequency in some 5G NR FR1 bands: 5G NR n77/78 since the supported frequency spans for the smaller 5G NR FR1 bands are completely cover by the large 5G NR FR1 bands, therefore, only larger 5G NR FR1 bands were required to be tested for hearing-aid compliance.
3. For 5GNR n77/n78/n41 HPUE. 5GNR n77/n41 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during testing. For 5C NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform evaluation.

# 3. HAC RF Emission Measurement System

## 3.1 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.

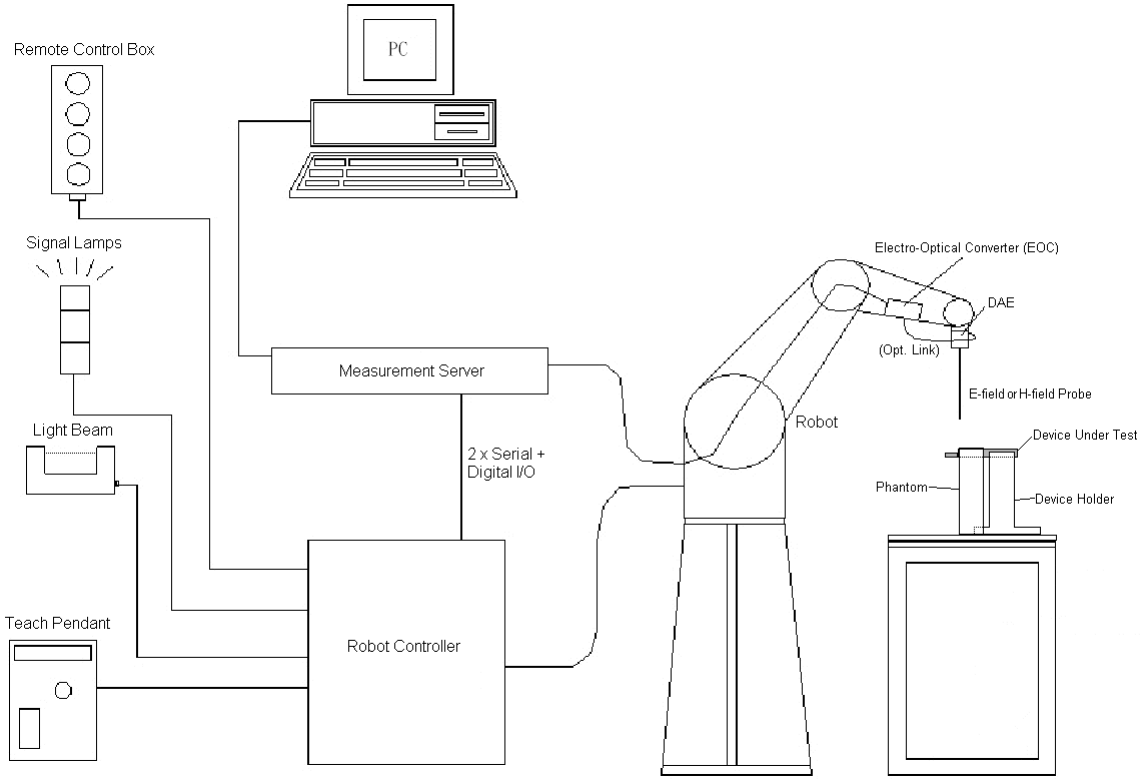



**Fig-3.1 DASY System Setup**

### 3.1.1 Robot

The DASY system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY6: 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)

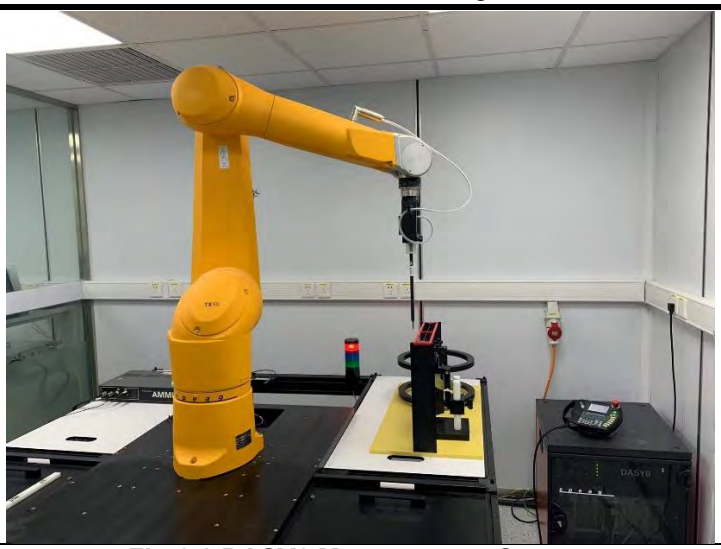


**Fig-3.2 DASY6 Measurement System**

### 3.1.2 Probes

| | | |
|---|---|---|
| **Model** | ER3DV6 | |
| **Construction** | One dipole parallel, two dipoles normal to probe axis<br>Built-in shielding against static charges | |
| **Frequency** | 40 MHz to 3 GHz<br>Linearity: ± 0.2 dB | |
| **Directivity** | ± 0.2 dB in air (rotation around probe axis)<br>± 0.4 dB in air (rotation normal to probe axis) | |
| **Dynamic Range** | 2 V/m to 1000 V/m<br>Linearity: ± 0.2 dB | |
| **Dimensions** | Overall length: 337 mm (Tip: 16 mm)<br>Tip diameter: 8 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 2.5 mm | |

| | | |
|---|---|---|
| **Model** | EF3DV3 | |
| **Construction** | One dipole parallel, two dipoles normal to probe axis<br>Built-in shielding against static charges | |
| **Frequency** | 40 MHz to 6 GHz<br>Linearity: ± 0.2 dB | |
| **Directivity** | ± 0.2 dB in air (rotation around probe axis)<br>± 0.4 dB in air (rotation normal to probe axis) | |
| **Dynamic Range** | 2 V/m to 1000 V/m<br>Linearity: ± 0.2 dB | |
| **Dimensions** | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 3.9 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 1.5 mm | |

### 3.1.3 Data Acquisition Electronics (DAE)

| | | |
|---|---|---|
| **Model** | DAE3, 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 | |

### 3.1.4 Phantoms

| | | |
|---|---|---|
| **Model** | Test Arch | |
| **Construction** | Enables easy and well defined positioning of the phone and validation dipoles as well as simple teaching of the robot. | |
| **Dimensions** | Length : 370 mm<br>Width : 370 mm<br>Height : 370 mm | |

### 3.1.5 Device Holder

| | | |
|---|---|---|
| **Model** | Mounting Device | |
| **Construction** | 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 ANSI C63.19. | |
| **Material** | POM | |

### 3.1.6 RF Emission Calibration Dipoles

| | | |
|---|---|---|
| **Model** | CD-Serial | |
| **Construction** | Free space antenna<br>Hearing Aid susceptibility measurements according to ANSI C63.19. Validation of Hearing Aid RF setup for wireless device emission measurements according to ANSI C63.19 | |
| **Frequency** | CD700V3 : 698 ~ 806 MHz<br>CD835V3 : 800 ~ 960 MHz<br>CD1880V3 : 1710 ~ 2000 MHz<br>CD2450V3 : 2250 ~ 2650 MHz<br>CD2600V3 : 2450 ~ 2750 MHz<br>CD3500V3 : 3300 ~ 3950 MHz<br>CD5500V3 : 5000 ~ 5900 MHz | |
| **Return Loss** | CD700V3 : > 15 dB (750 MHz > 20 dB)<br>CD835V3 : > 15 dB (835 MHz > 25 dB)<br>CD1880V3 : > 18 dB (1880 MHz > 20 dB)<br>CD2450V3 : > 18 dB (2450 MHz > 25 dB)<br>CD2600V3 : > 18 dB (2600 MHz > 20 dB)<br>CD3500V3 : > 16 dB (3500 MHz > 20 dB)<br>CD5500V3 : > 18 dB (5500 MHz > 20 dB) | |
| **Power Capability** | > 40 W continuous | |

## 3.2 DASY System Verification

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

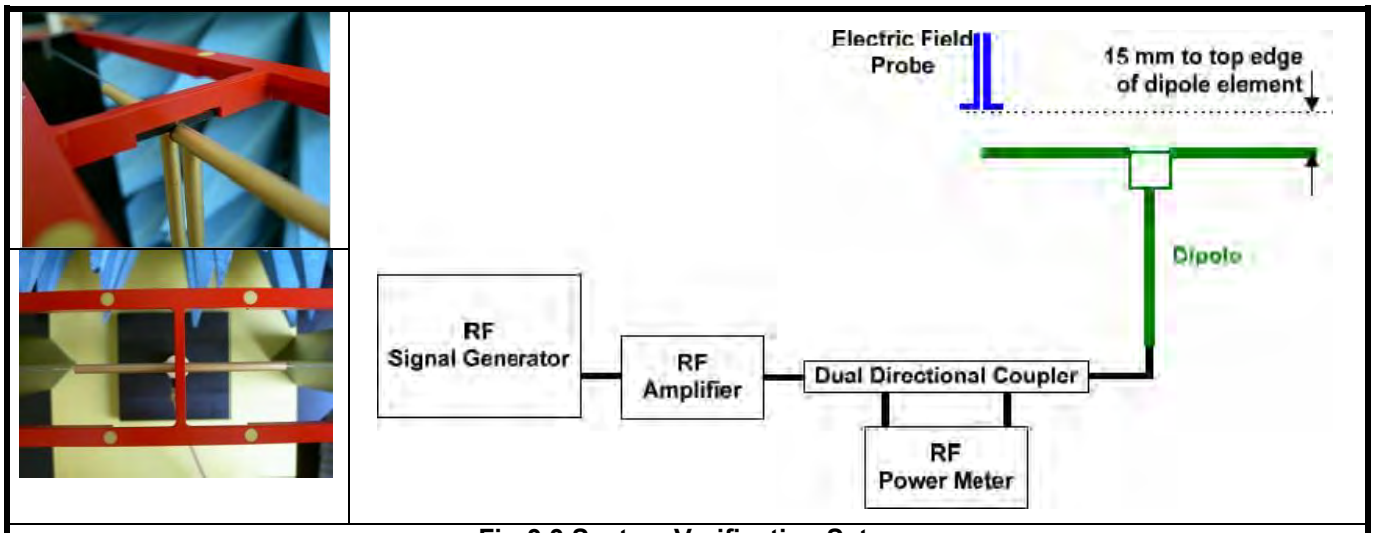



**Fig-3.3 System Verification Setup**

The validation dipole is placed beneath the center of arch phantom. The power meter measures the forward power at the location of the system check dipole connector. The signal generator is adjusted for the desired forward power, 100 mW (20 dBm) at the dipole connector and the RF power meter is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at RF power meter.

After system check testing, the E-field result will be compared with the reference value derived from validation dipole certificate report. The deviation of system check should be within 25 %.

The result of system verification is shown in section 4.3 of this report.

## 3.3 EUT Measurements Reference and Plane

The EUT is mounted in the device holder. The acoustic output of the EUT will coincide with the center point of the area formed by the dielectric wire and the middle bar of the arch's top frame. Then EUT will be moved vertically upwards until it touches the frame.

Fig-3.4 and Fig-3.5 illustrate the references and reference plane that is used in the RF emissions measurement.

(a) The grid is 50 mm by 50 mm area that is divided into nine evenly sized blocks or sub-grids.

(b) The grid is centered on the audio frequency output transducer of the EUT.

(c) The grid is in a reference plane, which is defined as the planar area that contains the highest point in the area of the phone that normally rests against the user's ear. It is parallel to the centerline of the receiver area of the phone and is defined by the points of the receiver-end of the EUT handset, which in normal handset use rest against the ear.

(d) The measurement plane is parallel to and 15 mm in front of the reference plane.

**Fig-3.4 EUT Reference and Plane**

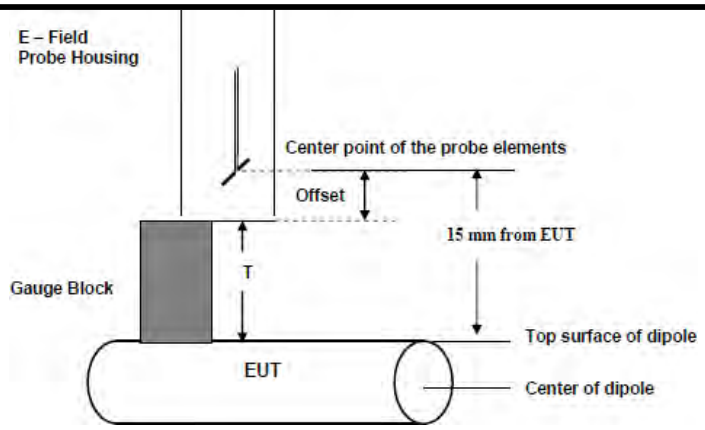



**Fig-3.5 Gauge Block for Setting Measurement Distance to Probe**

## 3.4 HAC RF Emission Measurement Procedure

The RF emissions test procedure for wireless communications device is as below.

1. Confirm the proper operation of the field probe, probe measurement system, and other instrumentation and the positioning system.
2. Position the WD in its intended test position.
3. Set the WD to transmit a fixed and repeatable combination of signal power and modulation characteristic that is representative of the worst case (highest interference potential) encountered in normal use. Transiently occurring start-up, changeover, or termination conditions, or other operations likely to occur less than 1% of the time during normal operation, may be excluded from consideration.
4. The center sub-grid shall be centered on the T-Coil mode perpendicular measurement point or the acoustic output, as appropriate. Locate the field probe at the initial test position in the 50 mm by 50 mm grid, which is contained in the measurement plane, illustrated in Fig-3.4. If the field alignment method is used, align the probe for maximum field reception.
5. Record the reading at the output of the measurement system.
6. Scan the entire 50 mm by 50 mm region in equally spaced increments and record the reading at each measurement point. The distance between measurement points shall be sufficient to assure the identification of the maximum reading.
7. Identify the five contiguous sub-grids around the center sub-grid whose maximum reading is the lowest of all available choices. This eliminates the three sub-grids with the maximum readings. Thus, the six areas to be used to determine the WD's highest emissions are identified.
8. Identify the maximum reading within the non-excluded sub-grids identified in step 7.
9. Indirect Measurement Method: The RF audio interference level in dB(V/m) is obtained by adding the MIF (in dB) to the maximum steady-state rms field-strength reading, in dB(V/m), from step 8. Use this result to determine the category rating.

10. Compare this RF audio interference level with the categories in section 4.1 and record the resulting WD category rating.

11 For the T-Coil mode M-rating assessment, determine whether the chosen perpendicular measurement point is contained in an included sub-grid of the first can. If so, then a second scan is not necessary. The first scan and resultant category rating may be used for the T-Coil mode M-rating. Otherwise, repeat step 1 through step 9, with the grid shifted so that it is centered on the perpendicular measurement point. Record the WD category rating.

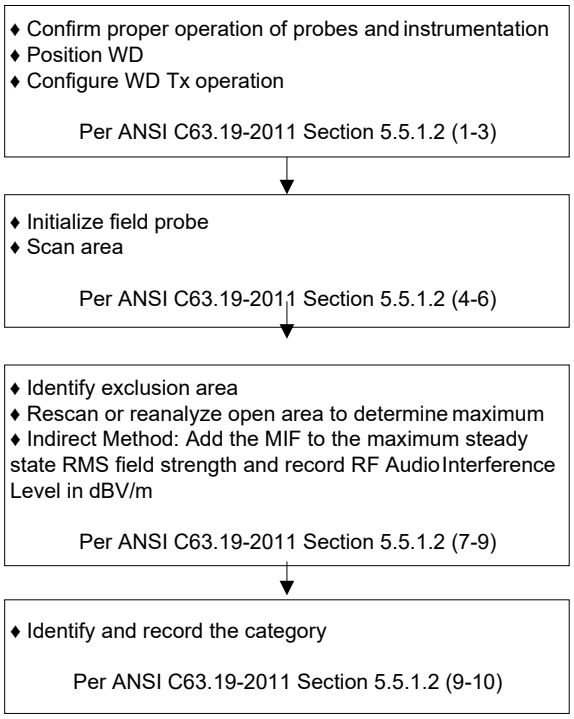



**Fig-3.6 WD Near-Field Emission Test Flowchart**

## 3.5 Modulation Interference Factor

The HAC Standard ANSI C63.19-2011 defines a new scaling using the Modulation Interference Factor (MIF) which replaces the need for the Articulation Weighting Factor (AWF) during the evaluation and is applicable to any modulation scheme.

The Modulation Interference Factor (MIF, in dB) is added to the measured average E-field (in dBV/m) and converts it to the RF audio interference potential (in dBV/m). This level considers the audible amplitude modulation components in the RF E-field. CW fields without amplitude modulation are assumed to not interfere with the hearing aid electronics. Modulations without time slots and low fluctuations at low frequencies have low MIF values, TDMA modulations with narrow transmission slots and repetition rates of few 100 Hz have high MIF values and give similar classification as ANSI C63.19-2007.

ER3D E-field probe have a bandwidth <10 kHz and can therefore not evaluate the RF envelope in the full audio band. DASY52 is therefore using the “indirect" measurement method according to ANSI C63.19-2011 which is the primary method. This near field probe read the averaged E-field. Especially for the new high peak-to-average (PAR) signal types, the probes shall be linearized by PMR calibration in order to not overestimate the field reading.

The evaluation method for the MIF is defined in ANSI C63.19-2011 section D.7. An RMS demodulated RF signal is fed to a spectral filter (similar to an A weighting filter) and forwarded to a temporal filter acting as a quasi-peak detector. The averaged output of these filtering is scaled to a 1 kHz 80% AM signal as reference. It may alternatively be determined through analysis and simulation, because it is constant and characteristic for a communication signal. DASY52 uses well-defined signals for PMR calibration. The MIF of these signals has been determined numerically. It allows a precise scaling and is therefore automatically applied.

The following table lists the MIF values evaluated by DASY manufacturer (SPEAG), and the test result will be calculated with the MIF parameter automatically. The detailed parameters for E-field probe can be found in the probe calibration report in appendix C.

MIF values applied in this test report were provided by the HAC equipment provider of SPEAG, and the worst values for all air interface are listed below to be determine the Low-power Exemption, For UID 10973 is applicable only for 5GNR TDD PC2 with 50% Duty Cycle, and all other 5GNR modes are applicable with UID 10769 more conservatively.

| UID | Reversion | Communication System Name | MIF (dB) |
|---|---|---|---|
| 10021 | DAC | GSM-FDD (TDMA, GMSK) | 3.63 |
| 10025 | DAC | EDGE-FDD (TDMA, 8PSK, TN 0) | 3.75 |
| 10460 | AAA | UMTS-FDD (WCDMA, AMR) | -25.43 |
| 10225 | CAB | UMTS-FDD (HSPA+) | -20.39 |
| 10081 | CAB | CDMA2000 (1xRTT, RC3) | -19.71 |
| 10295 | AAB | CDMA2000, RC1, SO3, 1/8th Rate 25 fr. | 3.26 |
| 10403 | AAB | CDMA2000 (1xEV-DO, Rev. 0) | -17.67 |
| 10170 | CAE | LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM) | -9.76 |
| 10172 | CAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK) | -1.62 |
| 10173 | CAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM) | -1.44 |
| 10174 | CAG | LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM) | -1.54 |
| 10769 | AAD | 5G NR (CP-OFDM, 1 RB, 15 MHZ, QPSK, 15 kHz) | -12.08 |
| 10973 | AAB | 5G NR (DFT-S-OFDM, 1 RB, 100 MHZ, QPSK, 30 kHz) | -1.64 |
| 10061 | CAB | IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps) | -2.02 |
| 10077 | CAB | IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps) | 0.12 |
| 10427 | AAB | IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM) | -13.44 |
| 10069 | CAC | IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps) | -3.15 |
| 10616 | AAB | IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle) | -5.57 |
| 10671 | AAC | IEEE 802.11ax (20MHz, MCSO, 90pc duty cycle) | -5.58 |

The MIF measurement uncertainty listed in following table is estimated by SPEAG.

| MIF (dB) | MIF Measurement Uncertainty (dB) |
|---|---|
| -7 to +5 | 0.2 |
| -13 to +11 | 0.5 |
| > -20 | 1.0 |

# 4. HAC Measurement Evaluation

## 4.1 M-Rating Category

The HAC Standard ANSI C63.19-2011 represents performance requirements for acceptable interoperability of hearing aids with wireless communications devices. When these parameters are met, a hearing aid operates acceptably in close proximity to a wireless communications device.

| Emission Categories | E-Field Emissions < 960 MHz (dB V/m) | E-Field Emissions > 960 MHz (dB V/m) |
|---|---|---|
| Category M1 | 50 - 55 | 40 - 45 |
| Category M2 | 45 - 50 | 35 - 40 |
| Category M3 | 40 - 45 | 30 - 35 |
| Category M4 | < 40 | < 30 |

## 4.2 EUT Configuration and Setting

For HAC RF emission testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by air link. The distance between the EUT and the communicating antenna of the emulator is larger than 50 cm and the output power radiated from the emulator antenna is at least 30 dB smaller than the output power of EUT. The EUT was set from the emulator to radiate maximum output power during HAC testing.

## 4.3 System Verification

The measuring results for system check are shown as below.

| Frequency (MHz) | Input Power (dBm) | Target Value (V/m) | E-Field 1 (V/m) | E-Field 2 (V/m) | Average E-Field (V/m) | Deviation (%) | Test Date |
|---|---|---|---|---|---|---|---|
| 835 | 20 | 105.00 | 108.50 | 106.40 | 107.45 | -2.33 | Jul. 23, 2023 |
| 1880 | 20 | 86.30 | 87.48 | 86.93 | 87.21 | -1.05 | Jul. 23, 2023 |
| 2450 | 20 | 84.80 | 85.80 | 84.41 | 85.11 | -0.36 | Jul. 23, 2023 |
| 2600 | 20 | 83.80 | 83.50 | 82.24 | 82.87 | 1.11 | Jul. 23, 2023 |
| 2600 | 20 | 83.80 | 84.18 | 82.57 | 83.38 | 0.51 | Aug. 05, 2023 |
| 3500 | 20 | 82.60 | 83.63 | 80.96 | 82.30 | 0.37 | Jul. 23, 2023 |
| 3500 | 20 | 82.60 | 84.68 | 81.76 | 83.22 | -0.75 | Aug. 05, 2023 |

**Note:**

1. Comparing to the reference target value provided by SPEAG, the validation data should be within its specification of 25 %. The result indicates the system check can meet the variation criterion and the plots can be referred to Appendix A of this report.
2. For E-Field, the deviation is **[(E-Field 1 + E-Field 2) / 2 – Target Value] / Target Value x 100%**

## 4.4 Maximum Target Conducted Power

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

| Air Interface | | Max. Tune-up Power |
|---|---|---|
| GSM | GSM850 | 34.00 |
| | EDGE850 | 28.50 |
| | GSM1900 | 31.00 |
| | EDGE1900 | 26.50 |
| WCDMA | Band II | 24.00 |
| | Band IV | 24.00 |
| | Band V | 24.00 |
| LTE FDD | Band 2 | 24.50 |
| | Band 4 | 23.50 |
| | Band 5 | 24.50 |
| | Band 7 | 25.00 |
| | Band 12 | 24.50 |
| | Band 13 | 22.50 |
| | Band 17 | 24.50 |
| | Band 25 | 24.50 |
| | Band 26 | 24.50 |
| | Band 66 | 23.50 |
| | Band 71 | 24.50 |
| LTE TDD | Band 38 | 24.50 |
| | Band 41 PC3 | 22.50 |
| | Band 41 PC2 | 25.50 |
| | Band 42 | 22.50 |
| | Band 43 | 22.50 |
| | Band 48 | 23.00 |
| 5G NR FDD | n2 | 25.00 |
| | n5 | 24.50 |
| | n7 | 25.00 |
| | n12 | 24.50 |
| | n25 | 25.00 |
| | n66 | 24.50 |
| | n71 | 24.50 |
| 5G NR TDD | n38 | 25.00 |
| | n41 PC3 | 23.50 |
| | n41 PC2 | 25.50 |
| | n48 | 23.00 |
| | n77 PC3 | 23.00 |
| | n77 PC2 | 25.50 |
| | n78 PC3 | 23.00 |
| | n78 PC2 | 25.50 |

**<WLAN Ant-7>**

| Air Interface | | Max. Tune-up Power |
|---|---|---|
| WALN2.4G | 802.11b | 16.50 |
| | 802.11g | 13.50 |
| | 802.11n HT20 | 13.50 |
| | 802.11n HT40 | 14.00 |
| | 802.11ax HE20 | 15.50 |
| | 802.11ax HE40 | 15.50 |
| WLAN5.2G | 802.11a | 16.00 |
| | 802.11n HT20 | 16.00 |
| | 802.11n HT40 | 18.00 |
| | 802.11ac VHT20 | 16.00 |
| | 802.11ac VHT40 | 18.00 |
| | 802.11ac VHT80 | 18.00 |
| | 802.11ax HE20 | 16.50 |
| | 802.11ax HE40 | 16.50 |
| | 802.11ax HE80 | 16.00 |
| WLAN5.3G | 802.11a | 15.50 |
| | 802.11n HT20 | 15.50 |
| | 802.11n HT40 | 17.00 |
| | 802.11ac VHT20 | 15.50 |
| | 802.11ac VHT40 | 17.00 |
| | 802.11ac VHT80 | 17.00 |
| | 802.11ax HE20 | 16.00 |
| | 802.11ax HE40 | 16.00 |
| | 802.11ax HE80 | 15.00 |
| WLAN5.8G | 802.11a | 15.00 |
| | 802.11n HT20 | 15.00 |
| | 802.11n HT40 | 16.00 |
| | 802.11ac VHT20 | 15.00 |
| | 802.11ac VHT40 | 16.00 |
| | 802.11ac VHT80 | 16.00 |
| | 802.11ax HE20 | 15.00 |
| | 802.11ax HE40 | 15.00 |
| | 802.11ax HE80 | 14.00 |

**<WLAN Ant-8>**

| Air Interface | | Max. Tune-up Power |
|---|---|---|
| WALN2.4G | 802.11b | 16.50 |
| | 802.11g | 13.50 |
| | 802.11n HT20 | 13.50 |
| | 802.11n HT40 | 13.50 |
| | 802.11ax HE20 | 15.00 |
| | 802.11ax HE40 | 15.00 |
| WLAN5.2G | 802.11a | 15.00 |
| | 802.11n HT20 | 15.00 |
| | 802.11n HT40 | 17.00 |
| | 802.11ac VHT20 | 15.00 |
| | 802.11ac VHT40 | 17.00 |
| | 802.11ac VHT80 | 17.00 |
| | 802.11ax HE20 | 15.00 |
| | 802.11ax HE40 | 15.00 |
| | 802.11ax HE80 | 15.00 |
| WLAN5.3G | 802.11a | 15.50 |
| | 802.11n HT20 | 15.50 |
| | 802.11n HT40 | 17.00 |
| | 802.11ac VHT20 | 15.50 |
| | 802.11ac VHT40 | 17.00 |
| | 802.11ac VHT80 | 17.00 |
| | 802.11ax HE20 | 15.50 |
| | 802.11ax HE40 | 15.50 |
| | 802.11ax HE80 | 14.50 |
| WLAN5.8G | 802.11a | 15.00 |
| | 802.11n HT20 | 15.00 |
| | 802.11n HT40 | 16.50 |
| | 802.11ac VHT20 | 15.00 |
| | 802.11ac VHT40 | 16.50 |
| | 802.11ac VHT80 | 16.50 |
| | 802.11ax HE20 | 15.00 |
| | 802.11ax HE40 | 14.50 |
| | 802.11ax HE80 | 14.50 |

**<WLAN Ant-7+8>**

| Air Interface | | Max. Tune-up Power |
|---|---|---|
| WALN2.4G | 802.11b | 19.50 |
| | 802.11g | 16.50 |
| | 802.11n HT20 | 17.00 |
| | 802.11n HT40 | 17.00 |
| | 802.11ax HE20 | 18.50 |
| | 802.11ax HE40 | 18.50 |
| WLAN5.2G | 802.11a | 19.00 |
| | 802.11n HT20 | 19.00 |
| | 802.11n HT40 | 20.00 |
| | 802.11ac VHT20 | 19.00 |
| | 802.11ac VHT40 | 20.00 |
| | 802.11ac VHT80 | 20.00 |
| | 802.11ax HE20 | 19.00 |
| | 802.11ax HE40 | 19.00 |
| | 802.11ax HE80 | 18.00 |
| WLAN5.3G | 802.11a | 19.00 |
| | 802.11n HT20 | 19.00 |
| | 802.11n HT40 | 19.50 |
| | 802.11ac VHT20 | 19.00 |
| | 802.11ac VHT40 | 19.50 |
| | 802.11ac VHT80 | 19.50 |
| | 802.11ax HE20 | 18.50 |
| | 802.11ax HE40 | 18.50 |
| | 802.11ax HE80 | 17.50 |
| WLAN5.8G | 802.11a | 17.50 |
| | 802.11n HT20 | 17.50 |
| | 802.11n HT40 | 19.50 |
| | 802.11ac VHT20 | 17.50 |
| | 802.11ac VHT40 | 19.50 |
| | 802.11ac VHT80 | 19.50 |
| | 802.11ax HE20 | 18.00 |
| | 802.11ax HE40 | 18.00 |
| | 802.11ax HE80 | 17.00 |

## 4.5 Low Power Exemption Evaluation

According to ANSI C63.19-2011 section 4, RF air interface technologies that have low power have been found to produce sufficiently low RF interference potential, so it is possible to exempt them from the product testing. An RF air interface technology of a device is exempt from testing when its average antenna input power plus its worst-case MIF is ≤ 17 dBm for any of its operating modes. If a device supports multiple RF air interfaces, each RF air interface shall be evaluated individually. An RF air interface technology that is exempted from testing by above method could be rated as M4.

The low power exemption for this device is analyzed in below.

| Air Interface | | Max. Tune-up Power | Worst Case MIF (dB) | Power + MIF (dB) | C63.19 Testing Required |
|---|---|---|---|---|---|
| GSM | GSM850 | 34.00 | 3.63 | 37.63 | **Yes** |
| | EDGE850 | 28.50 | 3.75 | 32.25 | No |
| | GSM1900 | 31.00 | 3.63 | 34.63 | **Yes** |
| | EDGE1900 | 26.50 | 3.75 | 30.25 | No |
| WCDMA | AMR | 24.00 | -25.43 | -1.43 | No |
| LTE | LTE - FDD | 25.00 | -9.76 | 15.24 | No |
| | LTE - TDD | 25.50 | -1.44 | 24.06 | **Yes** |
| NR | 5G NR - FDD | 25.00 | -12.08 | 12.92 | No |
| | 5G NR - TDD | 25.00 | -12.08 | 12.92 | No |
| | 5G NR – TDD (50%) | 25.50 | -1.64 | 23.86 | **Yes** |
| 2.4GHz WLAN | 802.11b | 19.50 | -2.02 | 17.48 | **Yes** |
| | 802.11g | 16.50 | 0.12 | 16.62 | No |
| | 802.11n HT20 | 17.00 | -13.44 | 3.56 | No |
| | 802.11n HT40 | 17.00 | -13.44 | 3.56 | No |
| | 802.11ax HE20 | 18.50 | -5.58 | 12.92 | No |
| | 802.11ax HE40 | 18.50 | -5.58 | 12.92 | No |
| 5GHz WLAN | 802.11a | 19.00 | -3.15 | 15.85 | No |
| | 802.11n HT20 | 19.00 | -13.44 | 5.56 | No |
| | 802.11n HT40 | 20.00 | -13.44 | 6.56 | No |
| | 802.11ac VHT20 | 19.00 | -5.57 | 13.43 | No |
| | 802.11ac VHT40 | 20.00 | -5.57 | 14.43 | No |
| | 802.11ac VHT80 | 20.00 | -5.57 | 14.43 | No |
| | 802.11ax HE20 | 19.00 | -5.58 | 13.42 | No |
| | 802.11ax HE40 | 19.00 | -5.58 | 13.42 | No |
| | 802.11ax HE80 | 18.00 | -5.58 | 12.42 | No |

**Note:**

1. The EDGE data modes were considered but not tested because GSM voice mode was worst case for the GSM air interface.
2. The TDD-LTE 16QAM/64QAM data modes were considered but not tested because QPSK mode was worst case for the TDD-LTE air interface.
3. The 5G NR - TDD Pi/2 BPSK (DFT-s-OFDM)/QPSK (CP-OFDM)/16QAM (DFT-s-OFDM, CP-OFDM)/64QAM (DFT-s-OFDM, CP-OFDM)/256QAM (DFT-s-OFDM, CP-OFDM) data modes were considered but not tested because QPSK (DFT-s-OFDM) mode was worst case for the 5G NR - TDD air interface.

## 4.6 Measured Conducted Power Results

The measuring conducted average power (Unit: dBm) are shown as below.

**<GSM>**

| Band | GSM850 | | | GSM1900 | | |
|---|---|---|---|---|---|---|
| Channel | 128 | 189 | 251 | 512 | 661 | 810 |
| Frequency | 824.2 | 836.4 | 848.8 | 1850.2 | 1880 | 1909.8 |
| GSM (GMSK, 1 Tx Slot) | 32.63 | 32.75 | 32.68 | 29.91 | 29.96 | 29.83 |

**<LTE>**

| LTE Band 38 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 37850 | 38000 | 38150 |
| | | Frequency (MHz) | | 2580 | 2595 | 2610 |
| 20M | QPSK | 1 | 0 | 23.87 | 23.80 | 23.69 |

| LTE Band 41 PC3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Low Mid | Mid | High Mid | High |
| | | Channel | | 39750 | 40185 | 40620 | 41055 | 41490 |
| | | Frequency (MHz) | | 2506 | 2549.5 | 2593 | 2636.5 | 2680 |
| 20M | QPSK | 1 | 0 | 21.63 | 21.70 | 21.83 | 21.62 | 21.58 |

| LTE Band 41 PC3 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Low Mid | Mid | High Mid | High |
| | | Channel | | 39750 | 40185 | 40620 | 41055 | 41490 |
| | | Frequency (MHz) | | 2506 | 2549.5 | 2593 | 2636.5 | 2680 |
| 20M | QPSK | 1 | 0 | 24.65 | 24.75 | 24.85 | 24.68 | 24.64 |

| LTE Band 42 Part27Q | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 42190 | 42590 | 42990 |
| | | Frequency (MHz) | | 3460 | 3500 | 3540 |
| 20M | QPSK | 1 | 0 | 20.98 | 20.92 | 20.88 |

| LTE Band 42 Part96 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 43190 | 43340 | 43490 |
| | | Frequency (MHz) | | 3560 | 3575 | 3590 |
| 20M | QPSK | 1 | 0 | 21.25 | 21.28 | 21.35 |

| LTE Band 43 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 43690 | 44090 | 44490 |
| | | Frequency (MHz) | | 3610 | 3650 | 3690 |
| 20M | QPSK | 1 | 0 | 21.21 | 21.30 | 20.93 |

| LTE Band 48 | | | | | | | |
|---|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Low Mid | High Mid | High |
| | | Channel | | 55340 | 55830 | 56150 | 56640 |
| | | Frequency (MHz) | | 3560 | 3609 | 3641 | 3690 |
| 20M | QPSK | 1 | 0 | 21.15 | 21.64 | 22.24 | 22.31 |

| n41 (SCS 30 kHz) PC2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 509202 | 518598 | 528000 |
| | | Frequency (MHz) | | 2546.01 | 2592.99 | 2640 |
| 100M | DFT-s-OFDM QPSK | 1 | 1 | 24.21 | 24.05 | 23.77 |

**<NR>**

| Part27Q n77 (SCS 30 kHz) PC2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | | 633334 | |
| | | Frequency (MHz) | | | 3500.01 | |
| 100M | DFT-s-OFDM QPSK | 1 | 1 | | 24.16 | |

| Part27O n77 (SCS 30 kHz) PC2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 650000 | 656000 | 662000 |
| | | Frequency (MHz) | | 3750 | 3840 | 3930 |
| 100M | DFT-s-OFDM QPSK | 1 | 1 | 23.58 | 23.80 | 23.11 |

| Part27Q n78 (SCS 30 kHz) PC2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | | 633334 | |
| | | Frequency (MHz) | | | 3500.01 | |
| 100M | DFT-s-OFDM QPSK | 1 | 1 | | 23.97 | |

| Part27O n78 (SCS 30 kHz) PC2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | | 650000 | |
| | | Frequency (MHz) | | | 3750 | |
| 100M | DFT-s-OFDM QPSK | 1 | 1 | | 23.14 | |

**<WLAN>**

| 2.4GHz WLAN | Mode | Channel | Frequency (MHz) | Average power (dBm) |
|---|---|---|---|---|
| | 802.11b 1Mbps | 1 | 2412 | 18.59 |
| | | 6 | 2437 | 18.61 |
| | | 11 | 2462 | 18.26 |

## 4.7 HAC RF Emission Testing Results

| Plot No. | Air Interface | Modulation/Mode | Channel | MIF | E-Field (V/m) | Margin to FCC M3 limit (dB) | E-Field M Rating |
|---|---|---|---|---|---|---|---|
| P01 | GSM850 | Voice | 128 | 3.63 | 32.59 | 12.41 | M4 |
| P02 | GSM850 | Voice | 189 | 3.63 | 33.44 | 11.56 | M4 |
| P03 | GSM850 | Voice | 251 | 3.63 | 33.57 | 11.43 | M4 |
| P04 | GSM1900 | Voice | 512 | 3.63 | 26.45 | 8.55 | M4 |
| P05 | GSM1900 | Voice | 661 | 3.63 | 26.06 | 8.94 | M4 |
| P06 | GSM1900 | Voice | 810 | 3.63 | 27.39 | 7.61 | M4 |
| P07 | LTE 38 | 20M_QPSK_1RB_OS0 | 37850 | -1.44 | 26.85 | 8.15 | M4 |
| P08 | LTE 38 | 20M_QPSK_1RB_OS0 | 38000 | -1.44 | 26.11 | 8.89 | M4 |
| P09 | LTE 38 | 20M_QPSK_1RB_OS0 | 38150 | -1.44 | 25.80 | 9.20 | M4 |
| P10 | LTE 41_PC3 | 20M_QPSK_1RB_OS0 | 39750 | -1.44 | 23.69 | 11.31 | M4 |
| P11 | LTE 41_PC3 | 20M_QPSK_1RB_OS0 | 40185 | -1.44 | 24.51 | 10.49 | M4 |
| P12 | LTE 41_PC3 | 20M_QPSK_1RB_OS0 | 40620 | -1.44 | 24.24 | 10.76 | M4 |
| P13 | LTE 41_PC3 | 20M_QPSK_1RB_OS0 | 41055 | -1.44 | 22.96 | 12.04 | M4 |
| P14 | LTE 41_PC3 | 20M_QPSK_1RB_OS0 | 41490 | -1.44 | 18.97 | 16.03 | M4 |
| P15 | LTE 41_PC2 | 20M_QPSK_1RB_OS0 | 39750 | -1.44 | 20.45 | 14.55 | M4 |
| P16 | LTE 41_PC2 | 20M_QPSK_1RB_OS0 | 40185 | -1.44 | 20.95 | 14.05 | M4 |
| P17 | LTE 41_PC2 | 20M_QPSK_1RB_OS0 | 40620 | -1.44 | 20.83 | 14.17 | M4 |
| P18 | LTE 41_PC2 | 20M_QPSK_1RB_OS0 | 41055 | -1.44 | 19.74 | 15.26 | M4 |
| P19 | LTE 41_PC2 | 20M_QPSK_1RB_OS0 | 41490 | -1.44 | 16.07 | 18.93 | M4 |
| P20 | LTE 42_Part27Q | 20M_QPSK_1RB_OS0 | 42190 | -1.44 | 33.79 | 1.21 | M3 |
| P21 | LTE 42_Part27Q | 20M_QPSK_1RB_OS0 | 42590 | -1.44 | 33.74 | 1.26 | M3 |
| P22 | LTE 42_Part27Q | 20M_QPSK_1RB_OS0 | 42990 | -1.44 | 33.48 | 1.52 | M3 |
| P23 | LTE 42_Part96 | 20M_QPSK_1RB_OS0 | 43190 | -1.44 | 30.96 | 4.04 | M3 |
| P24 | LTE 42_Part96 | 20M_QPSK_1RB_OS0 | 43340 | -1.44 | 30.96 | 4.04 | M3 |
| P25 | LTE 42_Part96 | 20M_QPSK_1RB_OS0 | 43490 | -1.44 | 30.89 | 4.11 | M3 |
| P26 | LTE 43 | 20M_QPSK_1RB_OS0 | 43690 | -1.44 | 30.91 | 4.09 | M3 |
| P27 | LTE 43 | 20M_QPSK_1RB_OS0 | 44090 | -1.44 | 30.94 | 4.06 | M3 |
| P28 | LTE 43 | 20M_QPSK_1RB_OS0 | 44490 | -1.44 | 30.88 | 4.12 | M3 |
| P29 | LTE 48 | 20M_QPSK_1RB_OS0 | 55340 | -1.44 | 33.71 | 1.29 | M3 |
| P30 | LTE 48 | 20M_QPSK_1RB_OS0 | 55830 | -1.44 | 33.65 | 1.35 | M3 |
| P31 | LTE 48 | 20M_QPSK_1RB_OS0 | 56150 | -1.44 | 33.66 | 1.34 | M3 |
| P32 | LTE 48 | 20M_QPSK_1RB_OS0 | 56640 | -1.44 | 33.39 | 1.61 | M3 |
| P33 | NR n41_PC2 | QPSK | 509202 | -1.64 | 32.84 | 2.16 | M3 |
| P34 | NR n41_PC2 | QPSK | 518598 | -1.64 | 31.81 | 3.19 | M3 |
| P35 | NR n41_PC2 | QPSK | 528000 | -1.64 | 34.00 | 1.00 | M3 |
| P36 | Part27O_NR n77_PC2 | QPSK | 650000 | -1.64 | 33.62 | 1.38 | M3 |
| P37 | Part27O_NR n77_PC2 | QPSK | 656000 | -1.64 | 34.28 | 0.72 | M3 |
| P38 | Part27O_NR n77_PC2 | QPSK | 662000 | -1.64 | 34.75 | 0.25 | M3 |
| P39 | Part27Q_NR n77_PC2 | QPSK | 633334 | -1.64 | 34.58 | 0.42 | M3 |
| P40 | WLAN2.4GHz | 802.11b 1Mbps | 1 | -2.02 | 17.14 | 17.86 | M4 |
| P41 | WLAN2.4GHz | 802.11b 1Mbps | 6 | -2.02 | 17.53 | 17.47 | M4 |
| P42 | WLAN2.4GHz | 802.11b 1Mbps | 11 | -2.02 | 17.66 | 17.34 | M4 |

**Test Engineer:** Chang Gao and Zixiao Xia

# 5. Calibration of Test Equipment

| Equipment | Manufacturer | Model | SN | Cal. Date | Cal. Interval |
|---|---|---|---|---|---|
| System Validation Dipole | SPEAG | CD835V3 | 1213 | Sep. 17, 2020 | 3 Years |
| System Validation Dipole | SPEAG | CD1880V3 | 1203 | Sep. 17, 2020 | 3 Years |
| System Validation Dipole | SPEAG | CD2450V3 | 1189 | Sep. 15, 2020 | 3 Years |
| System Validation Dipole | SPEAG | CD2600V3 | 1026 | Sep. 17, 2020 | 3 Years |
| System Validation Dipole | SPEAG | CD3500V3 | 1014 | Sep. 16, 2020 | 3 Years |
| Dosimetric E-field Probe | SPEAG | EF3DV3 | 4075 | Feb.17, 2023 | 1 Year |
| Data Acquisition Electronics | SPEAG | DAE4 | 1633 | Feb. 08, 2023 | 1 Year |
| Wideband Radio Communication Tester | Rohde&Schwarz | CMW500 | 169210 | Jun. 27, 2022 | 2 Year |
| Wideband Radio Communication Tester | Rohde&Schwarz | CMX500 | 101873 | Oct. 08, 2023 | 2 Year |
| Power Meter | Rohde&Schwarz | NRX | NRX | Feb. 14, 2022 | 2 Year |
| Power Sensor | Rohde&Schwarz | NRP6A | NRP6A | Feb. 14, 2022 | 2 Year |
| Power Sensor | Rohde&Schwarz | NRP6A | NRP6A | Feb. 14, 2022 | 2 Year |
| ESG Analog Signal Generator | Rohde&Schwarz | SMB100A03 | SMB100A03 | Feb. 15, 2022 | 2 Year |
| Coupler | Woken | 0110A056020-10 | COM27RW1A3 | May. 10, 2023 | 1 Year |
| Temp.&Humi.Recorder | ANYMETRE | JR912 | SZ01 | Jun. 19, 2022 | 2 Year |
| Test Arch Phantom | SPEAG | Arch | N/A | N/A | N/A |

# 6. Measurement Uncertainty

| HAC Uncertainty Budget for RF 2011 version According to ANSI C63.19 | | | | | | |
|---|---|---|---|---|---|---|
| **Error Description** | **Uncertainty Value (±%)** | **Probability** | **Divisor** | **(Ci) E** | **(Ci) H** | **Standard Uncertainty (E) (±%)** |
| **Measurement System** | | | | | | |
| Probe Calibration | 5.1 | N | 1 | 1 | 1 | 5.1 |
| Axial Isotropy | 4.7 | R | 1.732 | 1 | 1 | 2.7 |
| Sensor Displacement | 16.5 | R | 1.732 | 1 | 0.145 | 9.5 |
| Boundary Effects | 2.4 | R | 1.732 | 1 | 1 | 1.4 |
| Phantom Boundary Effect | 7.2 | R | 1.732 | 1 | 0 | 4.2 |
| Linearity | 4.7 | R | 1.732 | 1 | 1 | 2.7 |
| Scaling with PMR calibration | 10.0 | R | 1.732 | 1 | 1 | 5.8 |
| System Detection Limit | 1.0 | R | 1.732 | 1 | 1 | 0.6 |
| Readout Electronics | 0.3 | N | 1 | 1 | 1 | 0.3 |
| Response Time | 2.6 | R | 1.732 | 1 | 1 | 1.5 |
| Integration Time | 2.6 | R | 1.732 | 1 | 1 | 1.5 |
| RF Ambient Conditions | 3.0 | R | 1.732 | 1 | 1 | 1.7 |
| RF Reflections | 12.0 | R | 1.732 | 1 | 1 | 6.9 |
| Probe Positioner | 1.2 | R | 1.732 | 1 | 0.67 | 0.7 |
| Probe Positioning | 4.7 | R | 1.732 | 1 | 0.67 | 2.7 |
| Extrap. and Interpolation | 1.0 | R | 1.732 | 1 | 1 | 0.6 |
| **Test Sample Related** | | | | | | |
| Device Positioning Vertical | 4.7 | R | 1.732 | 1 | 0.67 | 2.7 |
| Device Positioning Lateral | 1.0 | R | 1.732 | 1 | 1 | 0.6 |
| Device Holder and Phantom | 2.4 | R | 1.732 | 1 | 1 | 1.4 |
| Power Drift | 5.0 | R | 1.732 | 1 | 1 | 2.9 |
| **Phantom and Setup Related** | | | | | | |
| Phantom Thickness | 2.4 | R | 1.732 | 1 | 0.67 | 1.4 |
| **Combined Std. Uncertainty** | | | | | | 16.4% |
| **Coverage Factor for 95 %** | | | | | | K=2 |
| **Expanded STD Uncertainty** | | | | | | 32.7% |

**Uncertainty budget for HAC RF Emission**

# 7. Information of the Testing Laboratories

We, Huarui 7layers High Technology (Suzhou) Co., Ltd., were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation.

If you have any comments, please feel free to contact us at the following:

Add: Tower N, Innovation Center, 88 Zuyi Road, High-tech District, Suzhou City, Anhui Province
Tel: +86 (0557) 368 1008

The road map of all our labs can be found in our web site also
Web: http://www.7Layers.com

**---END---**

# Appendix A. Plots of System Verification

## System Check_E-Field_835MHz_230723

### DUT: HAC-Dipole 835 MHz

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

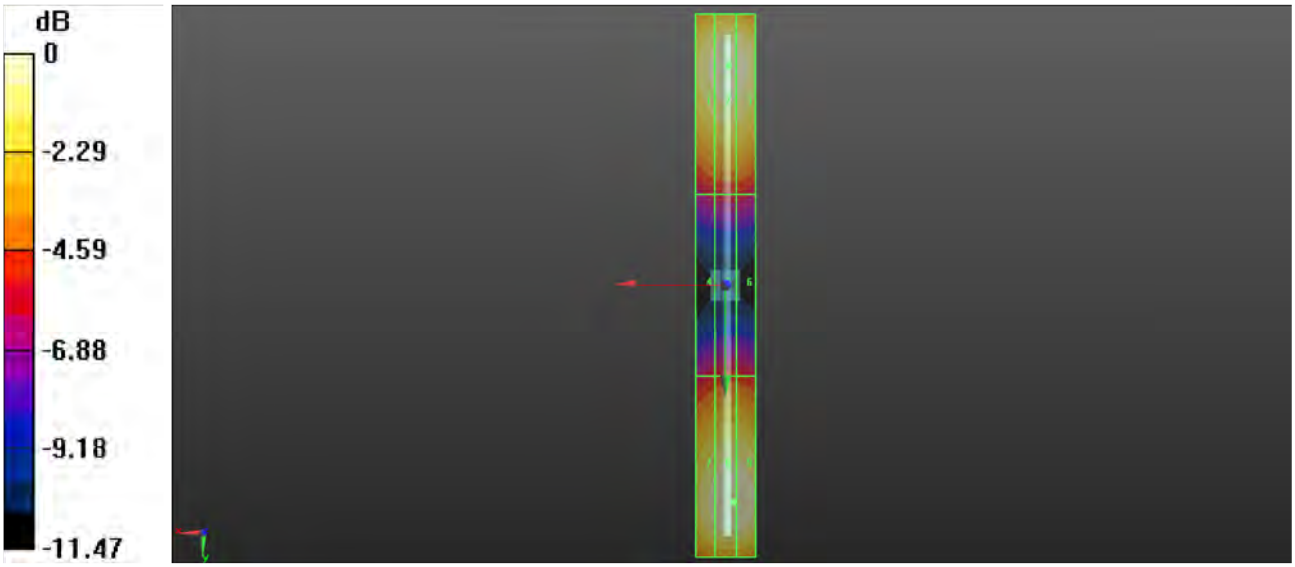
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 835 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD835 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x361x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 117.6 V/m; Power Drift = 0.01 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 108.5 V/m
Average value os Total=(108.5+106.4)/2=107.45 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M4**<br>**103.1 V/m** | Grid 2 **M4**<br>**106.4 V/m** | Grid 3 **M4**<br>**105.6 V/m** |
| Grid 4 **M4**<br>**58.63 V/m** | Grid 5 **M4**<br>**61.08 V/m** | Grid 6 **M4**<br>**60.84 V/m** |
| Grid 7 **M4**<br>**103.9 V/m** | Grid 8 **M4**<br>**108.5 V/m** | Grid 9 **M4**<br>**108.3 V/m** |

**Cursor:**
Total = 108.5 V/m
E Category: M4
Location: -2.5, 72, 8.7 mm




0 dB = 108.5 V/m = 40.71 dBV/m

## System Check_E-Field_1880MHz_230723

**DUT: HAC Dipole 1880 MHz**

Communication System: CW; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

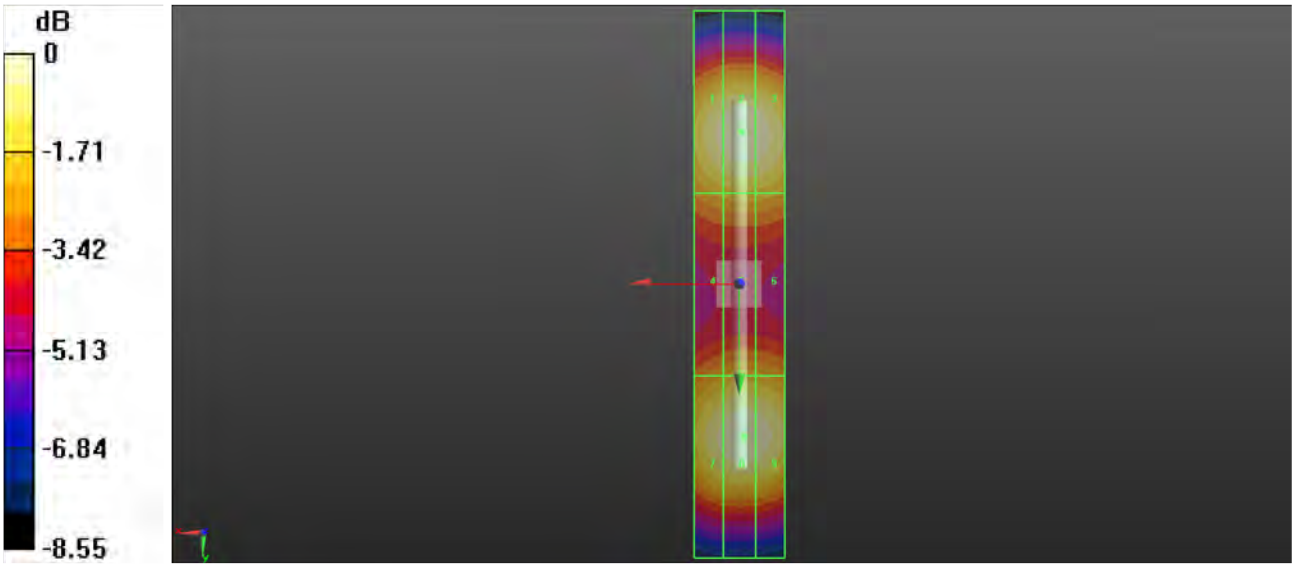
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 1880 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD835 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x241x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 143.5 V/m; Power Drift = -0.03 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 87.48 V/m
Average value os Total=(87.48+86.93)/2=87.205 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3**<br>**84.62 V/m** | Grid 2 **M3**<br>**87.48 V/m** | Grid 3 **M3**<br>**86.43 V/m** |
| Grid 4 **M3**<br>**69.50 V/m** | Grid 5 **M3**<br>**70.61 V/m** | Grid 6 **M3**<br>**70.53 V/m** |
| Grid 7 **M3**<br>**84.10 V/m** | Grid 8 **M3**<br>**86.93 V/m** | Grid 9 **M3**<br>**86.11 V/m** |

**Cursor:**
Total = 87.48 V/m
E Category: M3
Location: -0.5, -33.5, 8.7 mm




0 dB = 87.48 V/m = 38.84 dBV/m

## System Check_E-Field_2450MHz_230805

### DUT: HAC Dipole 2450 MHz

Communication System: CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3°C

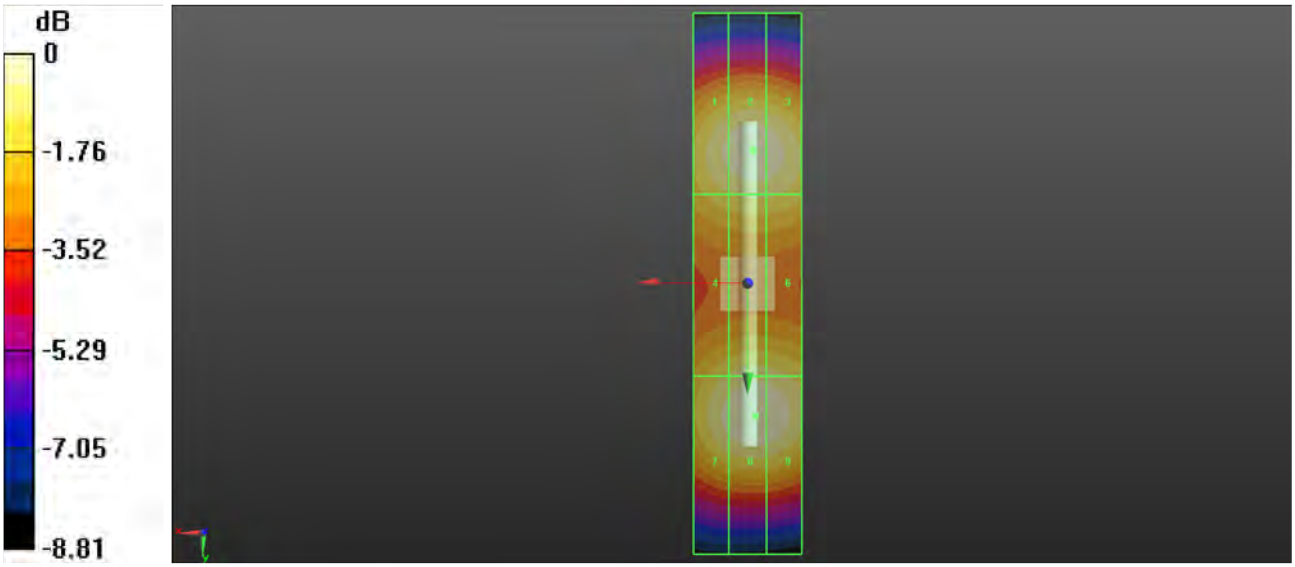
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD2450 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x201x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 73.62 V/m; Power Drift = 0.01 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 85.80 V/m
Average value os Total=(85.80+84.41)/2=85.105 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3**<br>**81.66 V/m** | Grid 2 **M3**<br>**84.41 V/m** | Grid 3 **M3**<br>**83.72 V/m** |
| Grid 4 **M3**<br>**75.35 V/m** | Grid 5 **M3**<br>**78.31 V/m** | Grid 6 **M3**<br>**77.90 V/m** |
| Grid 7 **M3**<br>**82.34 V/m** | Grid 8 **M3**<br>**85.80 V/m** | Grid 9 **M3**<br>**85.23 V/m** |

**Cursor:**
Total = 85.80 V/m
E Category: M3
Location: -1.5, 24.5, 8.7 mm




0 dB = 85.80 V/m = 38.67 dBV/m

## System Check_E-Field_2600MHz_230723

### DUT: HAC Dipole 2600 MHz

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

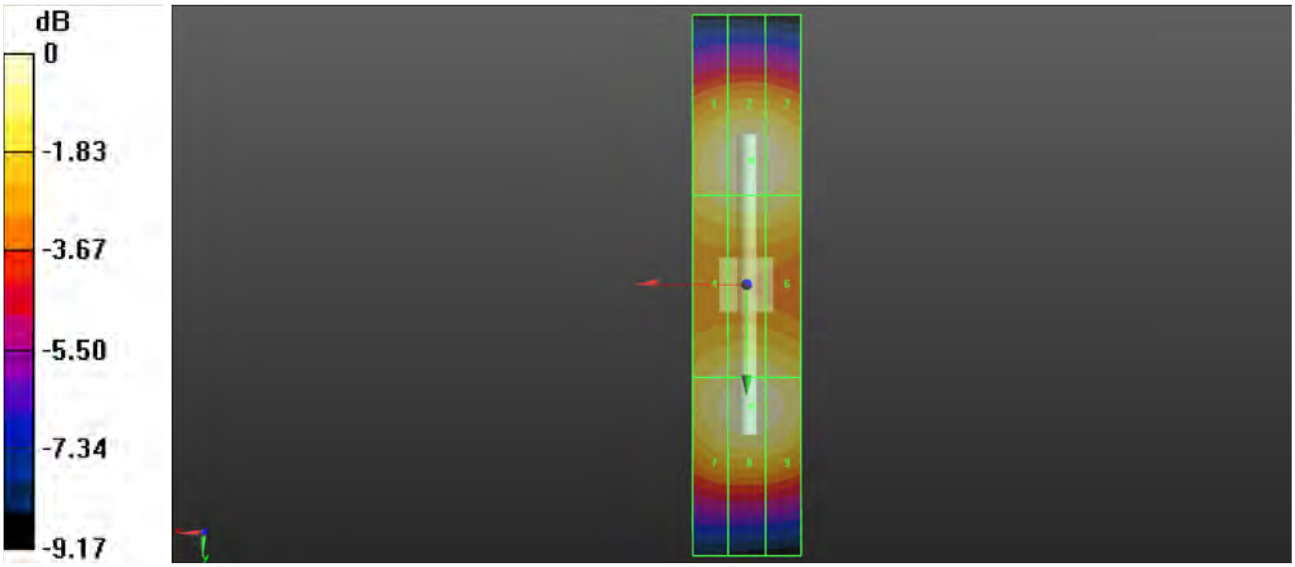
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2600 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD2600 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x201x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 60.18 V/m; Power Drift = 0.00 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 83.50 V/m
Average value os Total=(83.50+82.24)/2=82.87 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **80.81 V/m** | Grid 2 **M3** **83.50 V/m** | Grid 3 **M3** **82.67 V/m** |
| Grid 4 **M3** **76.15 V/m** | Grid 5 **M3** **77.95 V/m** | Grid 6 **M3** **77.55 V/m** |
| Grid 7 **M3** **79.87 V/m** | Grid 8 **M3** **82.24 V/m** | Grid 9 **M3** **81.29 V/m** |

**Cursor:**
Total = 83.50 V/m
E Category: M3
Location: -1, -23, 8.7 mm




0 dB = 83.50 V/m = 38.43 dBV/m

## System Check_E-Field_2600MHz_230805

**DUT: HAC Dipole 2600 MHz**

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

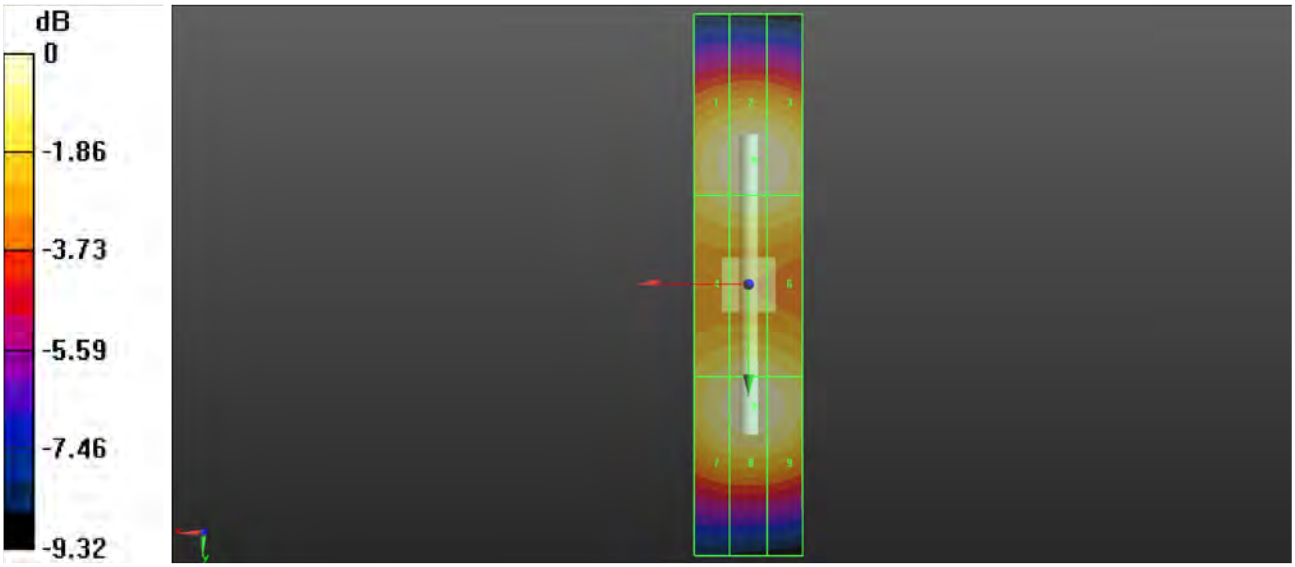
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2600 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD2600 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x201x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 60.52 V/m; Power Drift = 0.00 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 84.18 V/m
Average value os Total=(84.18+82.57)/2=83.375 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **81.51 V/m** | Grid 2 **M3** **84.18 V/m** | Grid 3 **M3** **83.33 V/m** |
| Grid 4 **M3** **76.86 V/m** | Grid 5 **M3** **78.48 V/m** | Grid 6 **M3** **78.17 V/m** |
| Grid 7 **M3** **80.16 V/m** | Grid 8 **M3** **82.57 V/m** | Grid 9 **M3** **81.67 V/m** |

**Cursor:**
Total = 84.18 V/m
E Category: M3
Location: -1, -23, 8.7 mm




0 dB = 84.18 V/m = 38.50 dBV/m

## System Check_E-Field_3500MHz_230723

**DUT: HAC Dipole 3500 MHz**

Communication System: CW; Frequency: 3500 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

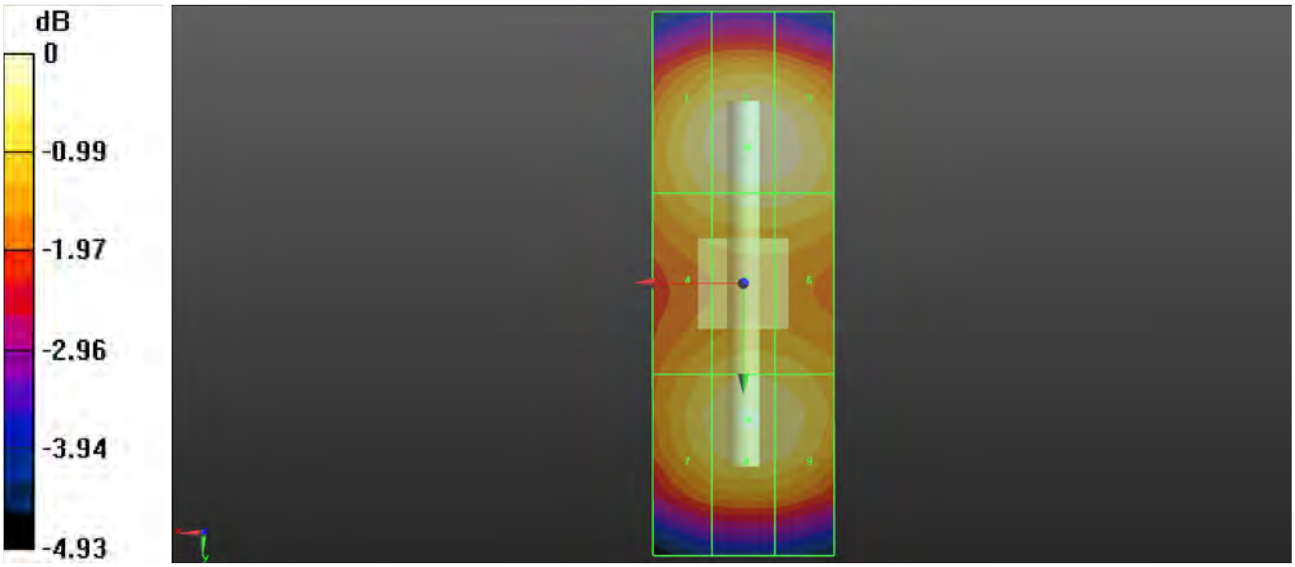
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3500 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD3500 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x121x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 33.64 V/m; Power Drift = 0.01 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 83.63 V/m
Average value os Total=(83.63+80.96)/2=82.295 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3**<br>**81.40 V/m** | Grid 2 **M3**<br>**83.63 V/m** | Grid 3 **M3**<br>**82.90 V/m** |
| Grid 4 **M3**<br>**77.97 V/m** | Grid 5 **M3**<br>**79.59 V/m** | Grid 6 **M3**<br>**79.38 V/m** |
| Grid 7 **M3**<br>**78.48 V/m** | Grid 8 **M3**<br>**80.96 V/m** | Grid 9 **M3**<br>**80.04 V/m** |

**Cursor:**
Total = 83.63 V/m
E Category: M3
Location: -0.5, -15, 8.7 mm




0 dB = 83.63 V/m = 38.45 dBV/m

## System Check_E-Field_3500MHz_230805

**DUT: HAC Dipole 3500 MHz**

Communication System: CW; Frequency: 3500 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

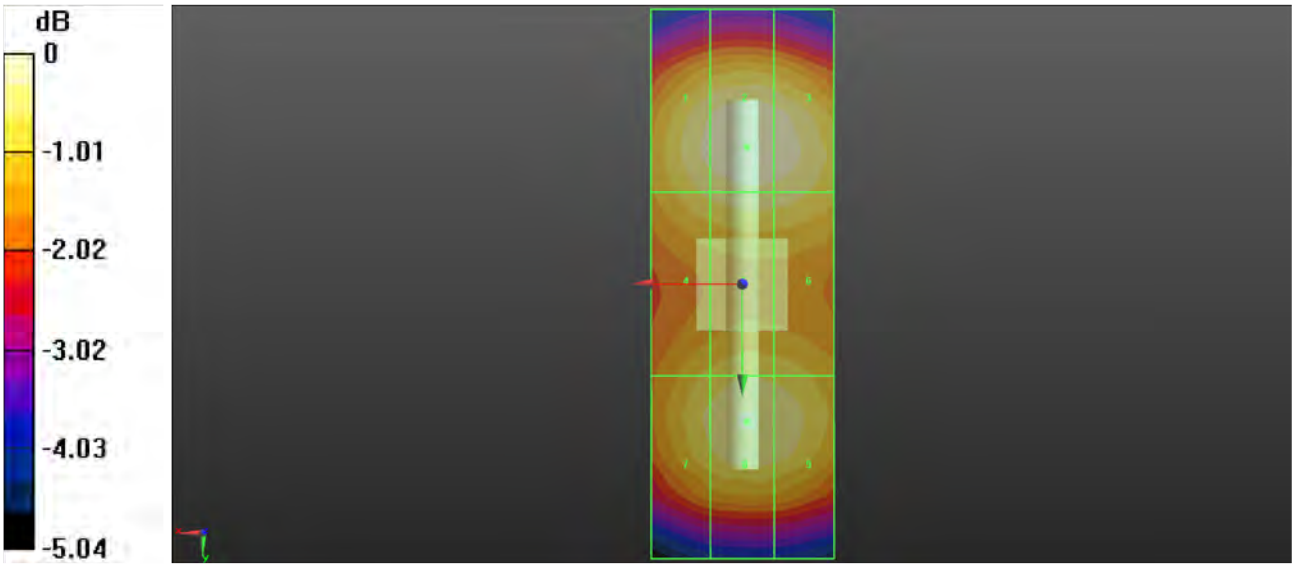
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3500 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**E Scan - measurement distance from the probe sensor center to CD3500 = 10mm & 15mm/Hearing Aid Compatibility Test at 15mm distance (41x121x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 33.81 V/m; Power Drift = 0.06 dB
PMR not calibrated. PMF = 1.000 is applied.
E-field emissions = 84.68 V/m
Average value os Total=(84.68+81.76)/2=83.22 V/m

PMF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **82.52 V/m** | Grid 2 **M3** **84.68 V/m** | Grid 3 **M3** **83.85 V/m** |
| Grid 4 **M3** **79.14 V/m** | Grid 5 **M3** **80.72 V/m** | Grid 6 **M3** **80.40 V/m** |
| Grid 7 **M3** **79.21 V/m** | Grid 8 **M3** **81.76 V/m** | Grid 9 **M3** **80.90 V/m** |

**Cursor:**
Total = 84.68 V/m
E Category: M3
Location: -0.5, -15, 8.7 mm




0 dB = 84.68 V/m = 38.56 dBV/m

# Appendix B. Plots of HAC RF Emission Measurement

## P01 RF_E_Field_GSM850_Ch128_Voice

Communication System: GSM; Frequency: 824.2 MHz;Duty Cycle: 1:8.3
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

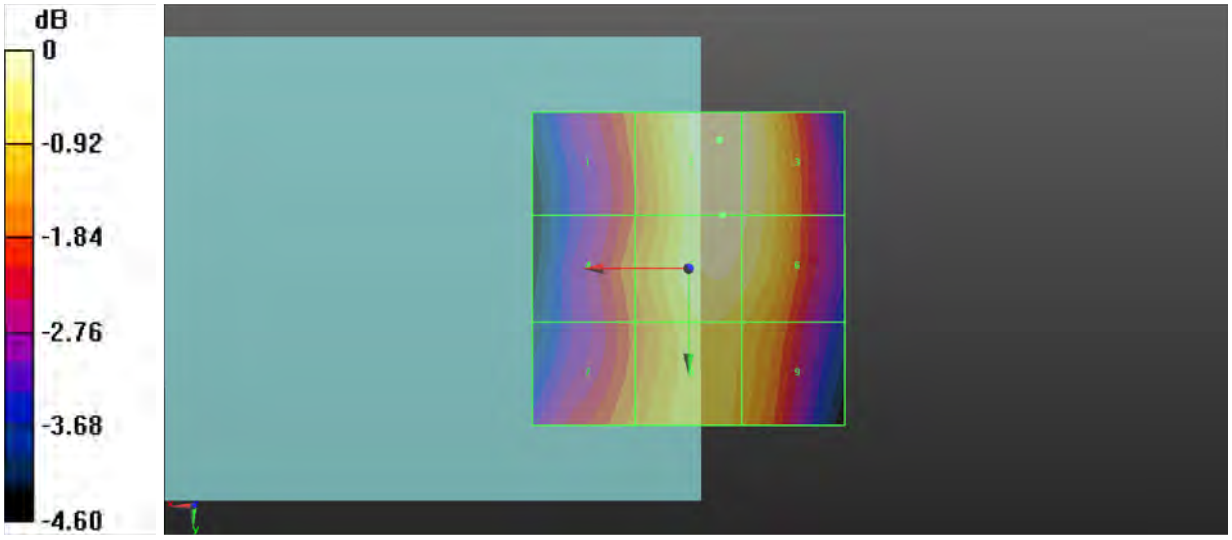
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 824.2 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 53.81 V/m; Power Drift = 0.00 dB
Applied MIF = 0.00 dB
RF audio interference level = 32.59 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**31.06 dBV/m** | Grid 2<br>**32.59 dBV/m** | Grid 3<br>**32.49 dBV/m** |
| Grid 4<br>**31.13 dBV/m** | Grid 5<br>**32.44 dBV/m** | Grid 6<br>**32.36 dBV/m** |
| Grid 7<br>**31.22 dBV/m** | Grid 8<br>**32 dBV/m** | Grid 9<br>**31.75 dBV/m** |

**Cursor:**
Total = 32.59 dBV/m
E Category: M4
Location: -5, -20.5, 7.7 mm




0 dB = 42.61 V/m = 32.59 dBV/m

## P02 RF_E_Field_GSM850_Ch189_Voice

Communication System: GSM; Frequency: 836.4 MHz;Duty Cycle: 1:8.3
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

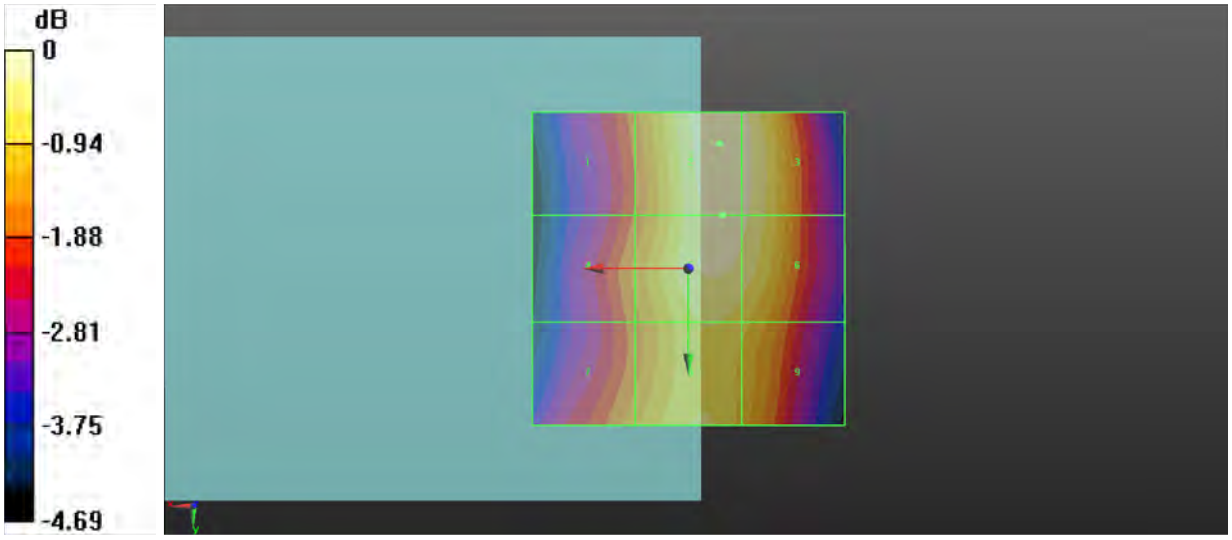
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 836.4 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 59.16 V/m; Power Drift = -0.02 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.44 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**31.79 dBV/m** | Grid 2<br>**33.44 dBV/m** | Grid 3<br>**33.33 dBV/m** |
| Grid 4<br>**32 dBV/m** | Grid 5<br>**33.3 dBV/m** | Grid 6<br>**33.23 dBV/m** |
| Grid 7<br>**32.14 dBV/m** | Grid 8<br>**32.86 dBV/m** | Grid 9<br>**32.63 dBV/m** |

**Cursor:**
Total = 33.44 dBV/m
E Category: M4
Location: -5, -20, 7.7 mm




0 dB = 47.01 V/m = 33.44 dBV/m

## P03 RF_E_Field_GSM850_Ch251_Voice

Communication System: GSM; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

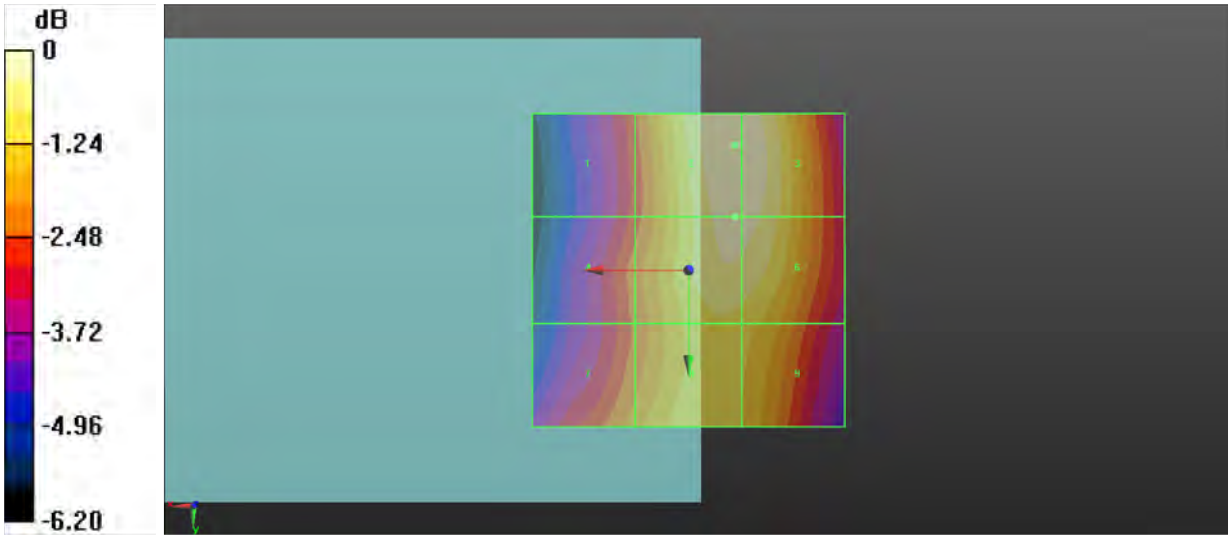
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 848.8 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 57.54 V/m; Power Drift = 0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.57 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**31.05 dBV/m** | Grid 2<br>**33.57 dBV/m** | Grid 3<br>**33.54 dBV/m** |
| Grid 4<br>**31.34 dBV/m** | Grid 5<br>**33.35 dBV/m** | Grid 6<br>**33.34 dBV/m** |
| Grid 7<br>**31.78 dBV/m** | Grid 8<br>**32.67 dBV/m** | Grid 9<br>**32.55 dBV/m** |

**Cursor:**
Total = 33.57 dBV/m
E Category: M4
Location: -7.5, -20, 7.7 mm




0 dB = 47.67 V/m = 33.56 dBV/m

## P04 RF_E_Field_GSM1900_Ch512_Voice

Communication System: GSM; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

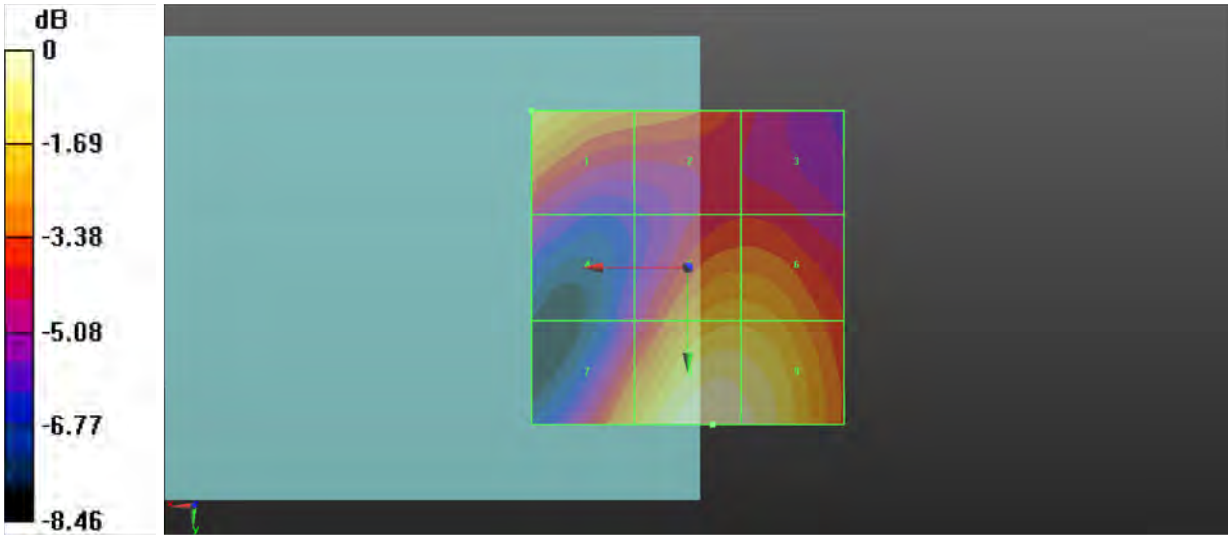
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 1850.2 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 17.55 V/m; Power Drift = 0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 26.45 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**25.42 dBV/m** | Grid 2<br>**23.66 dBV/m** | Grid 3<br>**22.45 dBV/m** |
| Grid 4<br>**22.01 dBV/m** | Grid 5<br>**24.68 dBV/m** | Grid 6<br>**24.67 dBV/m** |
| Grid 7<br>**24.63 dBV/m** | Grid 8<br>**26.45 dBV/m** | Grid 9<br>**26.16 dBV/m** |

**Cursor:**
Total = 26.45 dBV/m
E Category: M4
Location: -4, 25, 7.7 mm




0 dB = 21.02 V/m = 26.45 dBV/m

## P05 RF_E_Field_GSM1900_Ch661_Voice

Communication System: GSM; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

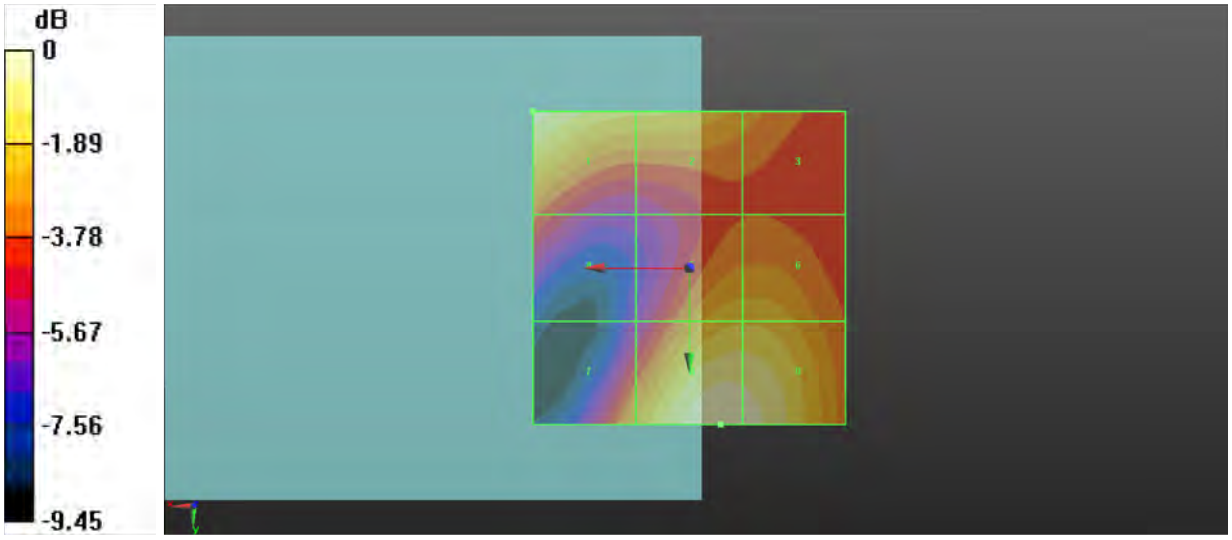
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 1880 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 15.21 V/m; Power Drift = -0.00 dB
Applied MIF = 0.00 dB
RF audio interference level = 26.06 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**25.84 dBV/m** | Grid 2<br>**24.34 dBV/m** | Grid 3<br>**23.31 dBV/m** |
| Grid 4<br>**22.5 dBV/m** | Grid 5<br>**24.1 dBV/m** | Grid 6<br>**24.11 dBV/m** |
| Grid 7<br>**23.66 dBV/m** | Grid 8<br>**26.06 dBV/m** | Grid 9<br>**25.82 dBV/m** |

**Cursor:**
Total = 26.06 dBV/m
E Category: M4
Location: -5, 25, 7.7 mm




0 dB = 20.09 V/m = 26.06 dBV/m

## P06 RF_E_Field_GSM1900_Ch810_Voice

Communication System: GSM; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

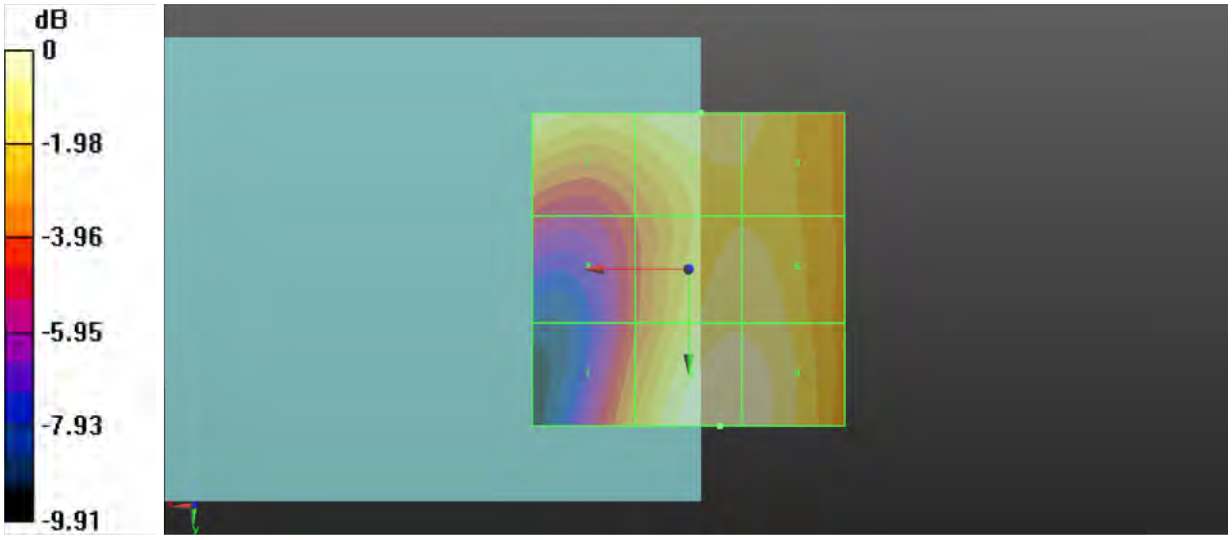
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 1909.8 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 24.14 V/m; Power Drift = 0.10 dB
Applied MIF = 0.00 dB
RF audio interference level = 27.39 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**26.76 dBV/m** | Grid 2<br>**26.77 dBV/m** | Grid 3<br>**26.45 dBV/m** |
| Grid 4<br>**23.48 dBV/m** | Grid 5<br>**26.63 dBV/m** | Grid 6<br>**26.62 dBV/m** |
| Grid 7<br>**24.92 dBV/m** | Grid 8<br>**27.39 dBV/m** | Grid 9<br>**27.24 dBV/m** |

**Cursor:**
Total = 27.39 dBV/m
E Category: M4
Location: -5, 25, 7.7 mm




0 dB = 23.42 V/m = 27.39 dBV/m

## P07 RF_E_Field_LTE 38_QPSK20M_1RB_OS0_Ch37850

Communication System: LTE_TDD; Frequency: 2580 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

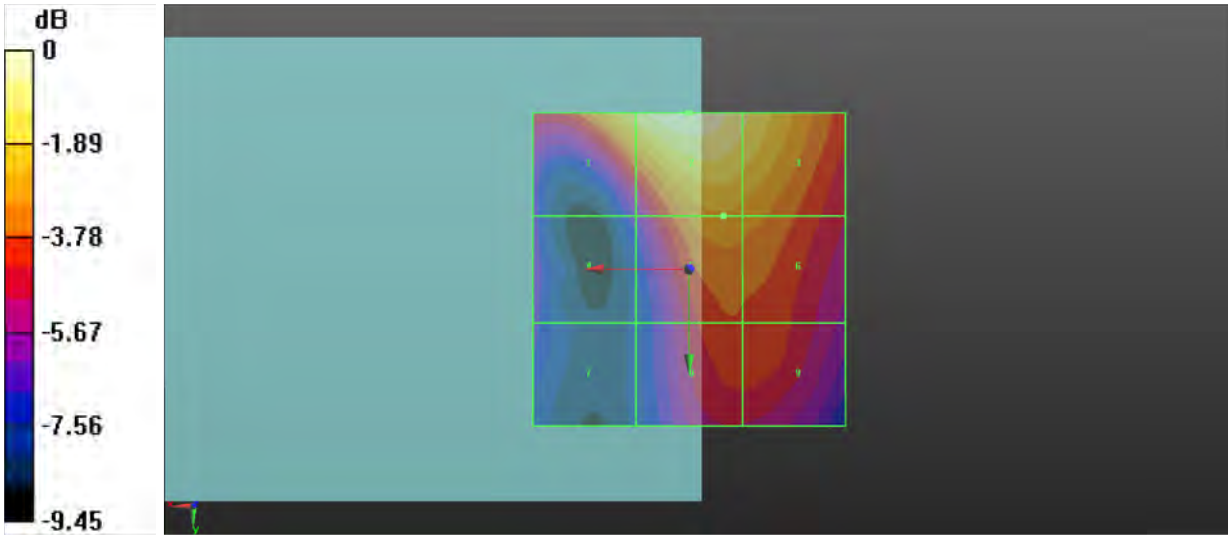
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2580 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 18.22 V/m; Power Drift = 0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 26.85 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**25.85 dBV/m** | Grid 2<br>**26.85 dBV/m** | Grid 3<br>**25.81 dBV/m** |
| Grid 4<br>**20.75 dBV/m** | Grid 5<br>**24.25 dBV/m** | Grid 6<br>**24.08 dBV/m** |
| Grid 7<br>**20.38 dBV/m** | Grid 8<br>**23.04 dBV/m** | Grid 9<br>**23.02 dBV/m** |

**Cursor:**
Total = 26.85 dBV/m
E Category: M4
Location: 0, -25, 7.7 mm




0 dB = 21.99 V/m = 26.84 dBV/m

## P08 RF_E_Field_LTE 38_QPSK20M_1RB_OS0_Ch38000

Communication System: LTE_TDD; Frequency: 2595 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

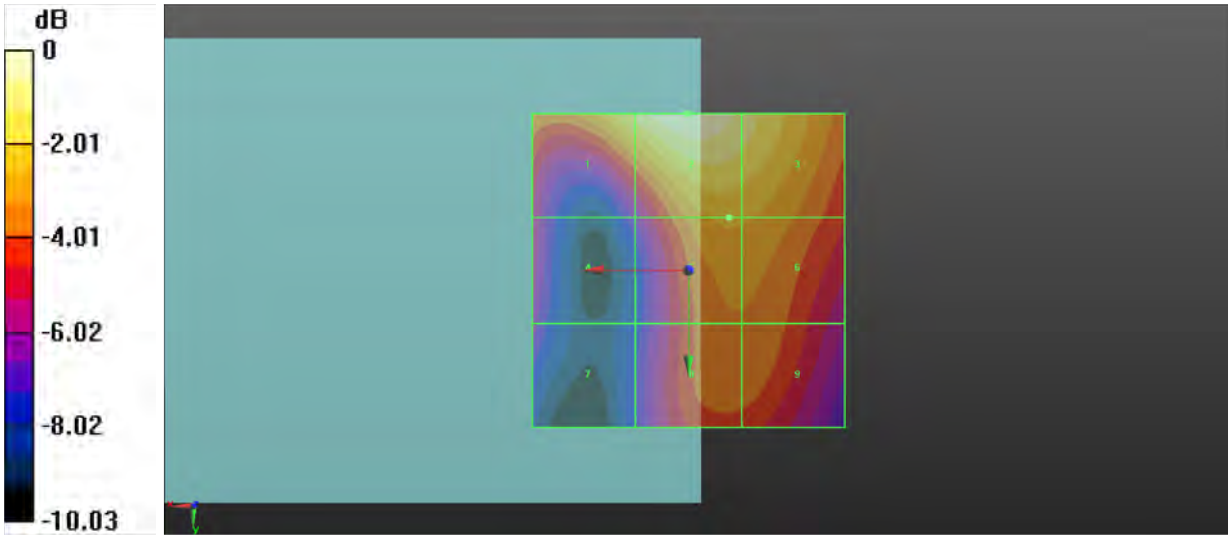
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2595 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 17.33 V/m; Power Drift = 0.05 dB
Applied MIF = 0.00 dB
RF audio interference level = 26.11 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**25.05 dBV/m** | Grid 2<br>**26.11 dBV/m** | Grid 3<br>**25.22 dBV/m** |
| Grid 4<br>**20.88 dBV/m** | Grid 5<br>**23.6 dBV/m** | Grid 6<br>**23.54 dBV/m** |
| Grid 7<br>**19.92 dBV/m** | Grid 8<br>**22.75 dBV/m** | Grid 9<br>**22.72 dBV/m** |

**Cursor:**
Total = 26.11 dBV/m
E Category: M4
Location: 0, -25, 7.7 mm




0 dB = 20.21 V/m = 26.11 dBV/m

## P09 RF_E_Field_LTE 38_QPSK20M_1RB_OS0_Ch38150

Communication System: LTE_TDD; Frequency: 2610 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

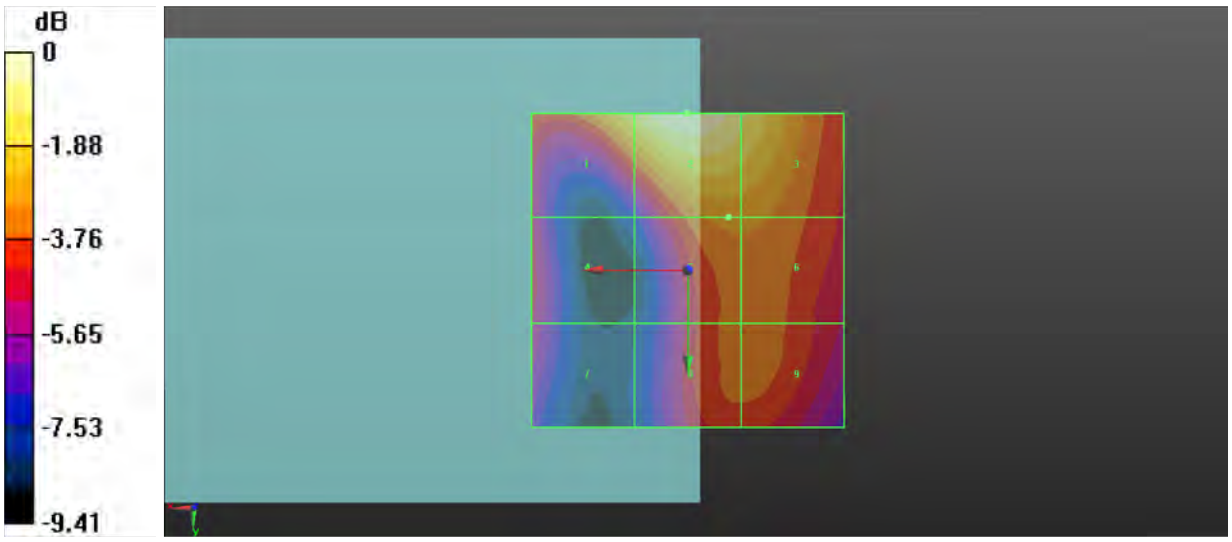
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2610 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 15.26 V/m; Power Drift = 0.06 dB
Applied MIF = 0.00 dB
RF audio interference level = 25.80 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**24.69 dBV/m** | Grid 2<br>**25.8 dBV/m** | Grid 3<br>**24.77 dBV/m** |
| Grid 4<br>**21.18 dBV/m** | Grid 5<br>**22.93 dBV/m** | Grid 6<br>**22.88 dBV/m** |
| Grid 7<br>**20.86 dBV/m** | Grid 8<br>**22.35 dBV/m** | Grid 9<br>**22.38 dBV/m** |

**Cursor:**
Total = 25.80 dBV/m
E Category: M4
Location: 0, -25, 7.7 mm




0 dB = 19.49 V/m = 25.80 dBV/m

## P10 RF_E_Field_LTE 41_PC3_QPSK20M_1RB_OS0_Ch39750

Communication System: LTE_TDD; Frequency: 2506 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

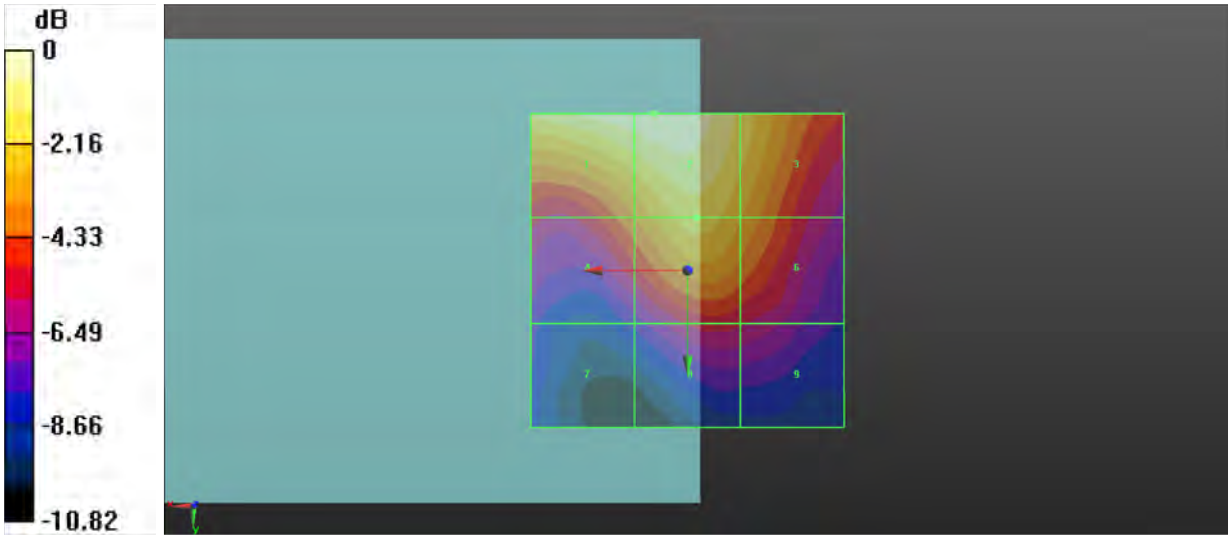
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2506 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 14.22 V/m; Power Drift = 0.02 dB
Applied MIF = 0.00 dB
RF audio interference level = 23.69 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**23.59 dBV/m** | Grid 2<br>**23.69 dBV/m** | Grid 3<br>**21.99 dBV/m** |
| Grid 4<br>**20.11 dBV/m** | Grid 5<br>**21.85 dBV/m** | Grid 6<br>**20.87 dBV/m** |
| Grid 7<br>**16.15 dBV/m** | Grid 8<br>**18.3 dBV/m** | Grid 9<br>**18.02 dBV/m** |

**Cursor:**
Total = 23.69 dBV/m
E Category: M4
Location: 5.5, -25, 7.7 mm




0 dB = 15.30 V/m = 23.69 dBV/m

## P11 RF_E_Field_LTE 41_PC3_QPSK20M_1RB_OS0_Ch40185

Communication System: LTE_TDD; Frequency: 2549.5 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

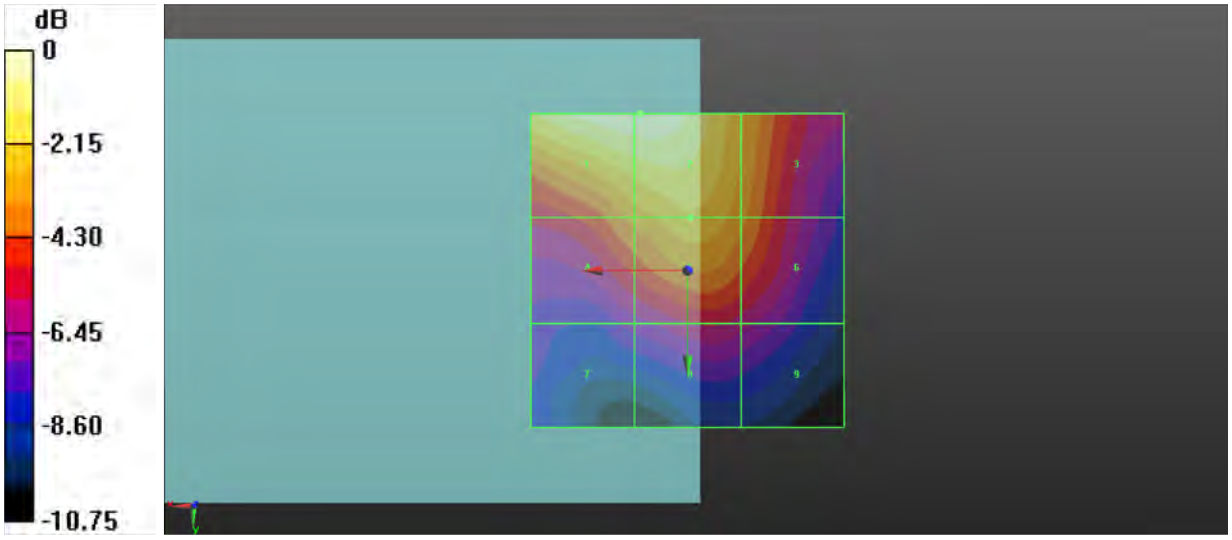
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2549.5 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 14.29 V/m; Power Drift = -0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 24.51 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**24.5 dBV/m** | Grid 2<br>**24.51 dBV/m** | Grid 3<br>**21.79 dBV/m** |
| Grid 4<br>**21.23 dBV/m** | Grid 5<br>**22.22 dBV/m** | Grid 6<br>**21.18 dBV/m** |
| Grid 7<br>**17.73 dBV/m** | Grid 8<br>**18.9 dBV/m** | Grid 9<br>**18.42 dBV/m** |

**Cursor:**
Total = 24.51 dBV/m
E Category: M4
Location: 7.5, -25, 7.7 mm




0 dB = 16.81 V/m = 24.51 dBV/m

## P12 RF_E_Field_LTE 41_PC3_QPSK20M_1RB_OS0_Ch40620

Communication System: LTE_TDD; Frequency: 2593 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

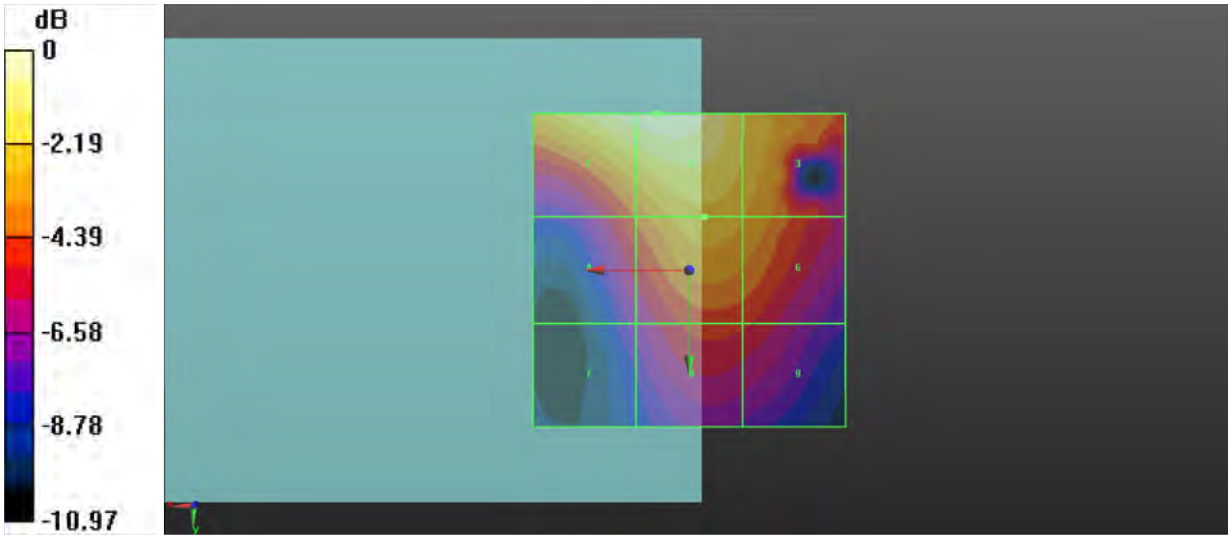
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2593 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 13.86 V/m; Power Drift = -0.02 dB
Applied MIF = 0.00 dB
RF audio interference level = 24.24 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**24.01 dBV/m** | Grid 2<br>**24.24 dBV/m** | Grid 3<br>**22.17 dBV/m** |
| Grid 4<br>**20.03 dBV/m** | Grid 5<br>**21.84 dBV/m** | Grid 6<br>**21.38 dBV/m** |
| Grid 7<br>**17.45 dBV/m** | Grid 8<br>**19.52 dBV/m** | Grid 9<br>**19.29 dBV/m** |

**Cursor:**
Total = 24.24 dBV/m
E Category: M4
Location: 5, -25, 7.7 mm




0 dB = 16.30 V/m = 24.24 dBV/m

## P13 RF_E_Field_LTE 41_PC3_QPSK20M_1RB_OS0_Ch41055

Communication System: LTE_TDD; Frequency: 2636.5 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

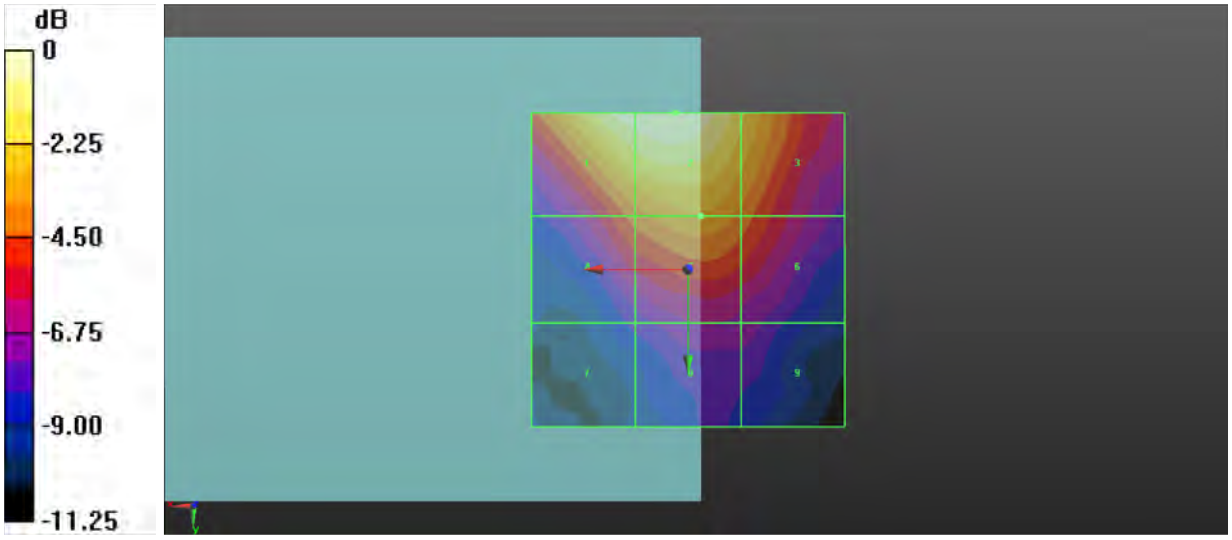
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2636.5 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 10.25 V/m; Power Drift = -0.05 dB
Applied MIF = 0.00 dB
RF audio interference level = 22.96 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**22.84 dBV/m** | Grid 2<br>**22.96 dBV/m** | Grid 3<br>**20.92 dBV/m** |
| Grid 4<br>**18.82 dBV/m** | Grid 5<br>**19.81 dBV/m** | Grid 6<br>**18.94 dBV/m** |
| Grid 7<br>**15.02 dBV/m** | Grid 8<br>**16.28 dBV/m** | Grid 9<br>**16.01 dBV/m** |

**Cursor:**
Total = 22.96 dBV/m
E Category: M4
Location: 2, -25, 7.7 mm




0 dB = 14.06 V/m = 22.96 dBV/m

## P14 RF_E_Field_LTE 41_PC3_QPSK20M_1RB_OS0_Ch41490

Communication System: LTE_TDD; Frequency: 2680 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

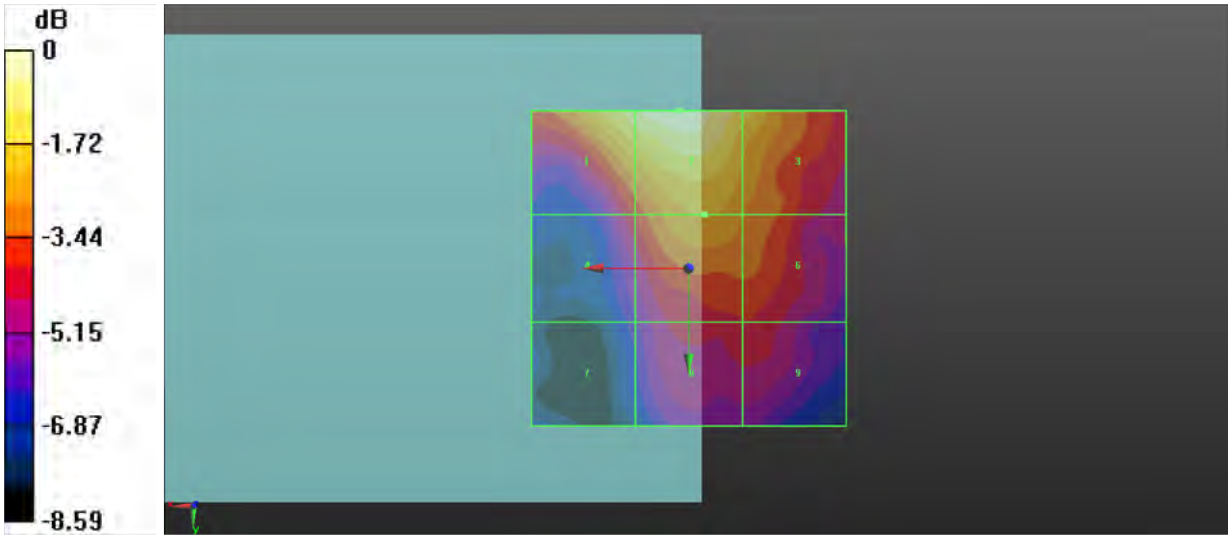
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2680 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 7.698 V/m; Power Drift = -0.41 dB
Applied MIF = 0.00 dB
RF audio interference level = 18.97 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**18.29 dBV/m** | Grid 2<br>**18.97 dBV/m** | Grid 3<br>**17.68 dBV/m** |
| Grid 4<br>**15.07 dBV/m** | Grid 5<br>**16.73 dBV/m** | Grid 6<br>**16.19 dBV/m** |
| Grid 7<br>**13.13 dBV/m** | Grid 8<br>**14.94 dBV/m** | Grid 9<br>**14.97 dBV/m** |

**Cursor:**
Total = 18.97 dBV/m
E Category: M4
Location: 1.5, -25, 7.7 mm




0 dB = 8.883 V/m = 18.97 dBV/m

## P15 RF_E_Field_LTE 41_PC2_QPSK20M_1RB_OS0_Ch39750

Communication System: LTE_TDD; Frequency: 2506 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

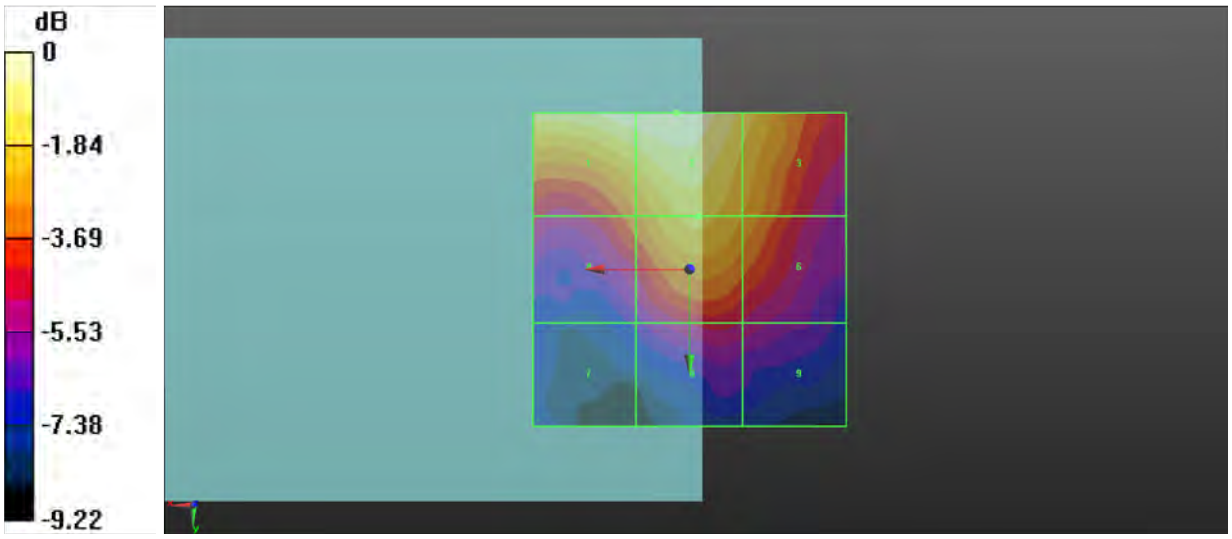
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2506 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 10.05 V/m; Power Drift = 0.05 dB
Applied MIF = 0.00 dB
RF audio interference level = 20.45 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**20.44 dBV/m** | Grid 2<br>**20.45 dBV/m** | Grid 3<br>**19 dBV/m** |
| Grid 4<br>**17.28 dBV/m** | Grid 5<br>**18.78 dBV/m** | Grid 6<br>**17.97 dBV/m** |
| Grid 7<br>**14.01 dBV/m** | Grid 8<br>**15.86 dBV/m** | Grid 9<br>**15.46 dBV/m** |

**Cursor:**
Total = 20.45 dBV/m
E Category: M4
Location: 2, -25, 7.7 mm




0 dB = 10.54 V/m = 20.46 dBV/m

## P16 RF_E_Field_LTE 41_PC2_QPSK20M_1RB_OS0_Ch40185

Communication System: LTE_TDD; Frequency: 2549.5 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

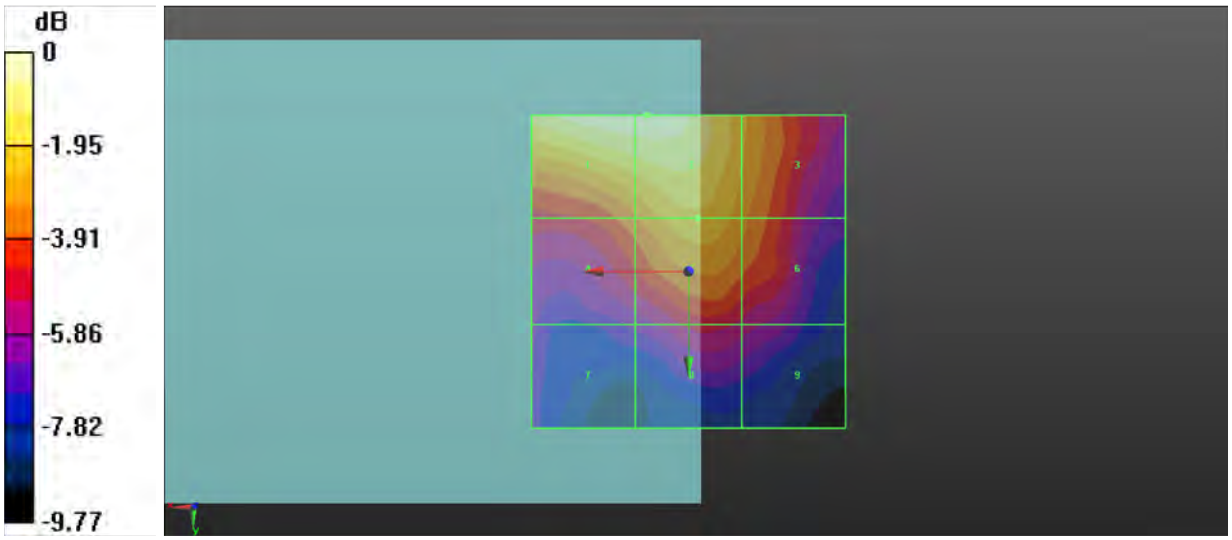
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2549.5 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 9.846 V/m; Power Drift = -0.02 dB
Applied MIF = 0.00 dB
RF audio interference level = 20.95 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**20.9 dBV/m** | Grid 2<br>**20.95 dBV/m** | Grid 3<br>**18.54 dBV/m** |
| Grid 4<br>**17.59 dBV/m** | Grid 5<br>**18.83 dBV/m** | Grid 6<br>**17.92 dBV/m** |
| Grid 7<br>**14.72 dBV/m** | Grid 8<br>**16.06 dBV/m** | Grid 9<br>**15.53 dBV/m** |

**Cursor:**
Total = 20.95 dBV/m
E Category: M4
Location: 6.5, -25, 7.7 mm




0 dB = 11.15 V/m = 20.95 dBV/m

## P17 RF_E_Field_LTE 41_PC2_QPSK20M_1RB_OS0_Ch40620

Communication System: LTE_TDD; Frequency: 2593 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

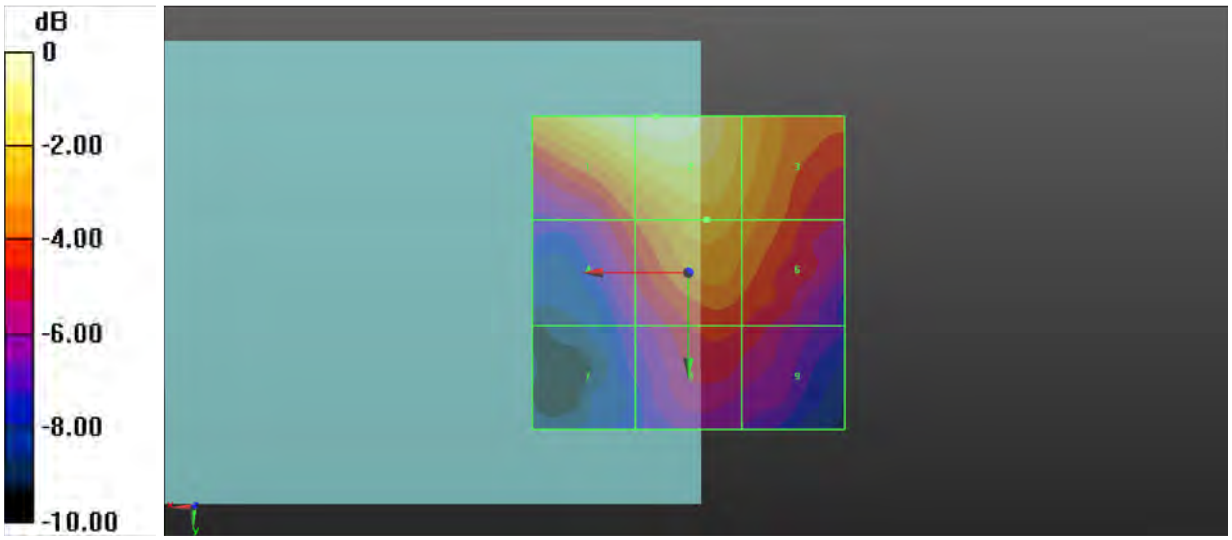
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2593 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 9.324 V/m; Power Drift = 0.05 dB
Applied MIF = 0.00 dB
RF audio interference level = 20.83 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**20.71 dBV/m** | Grid 2<br>**20.83 dBV/m** | Grid 3<br>**18.82 dBV/m** |
| Grid 4<br>**16.92 dBV/m** | Grid 5<br>**18.6 dBV/m** | Grid 6<br>**17.98 dBV/m** |
| Grid 7<br>**14.38 dBV/m** | Grid 8<br>**16.46 dBV/m** | Grid 9<br>**16.2 dBV/m** |

**Cursor:**
Total = 20.83 dBV/m
E Category: M4
Location: 5, -25, 7.7 mm




0 dB = 11.01 V/m = 20.84 dBV/m

## P18 RF_E_Field_LTE 41_PC2_QPSK20M_1RB_OS0_Ch41055

Communication System: LTE_TDD; Frequency: 2636.5 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

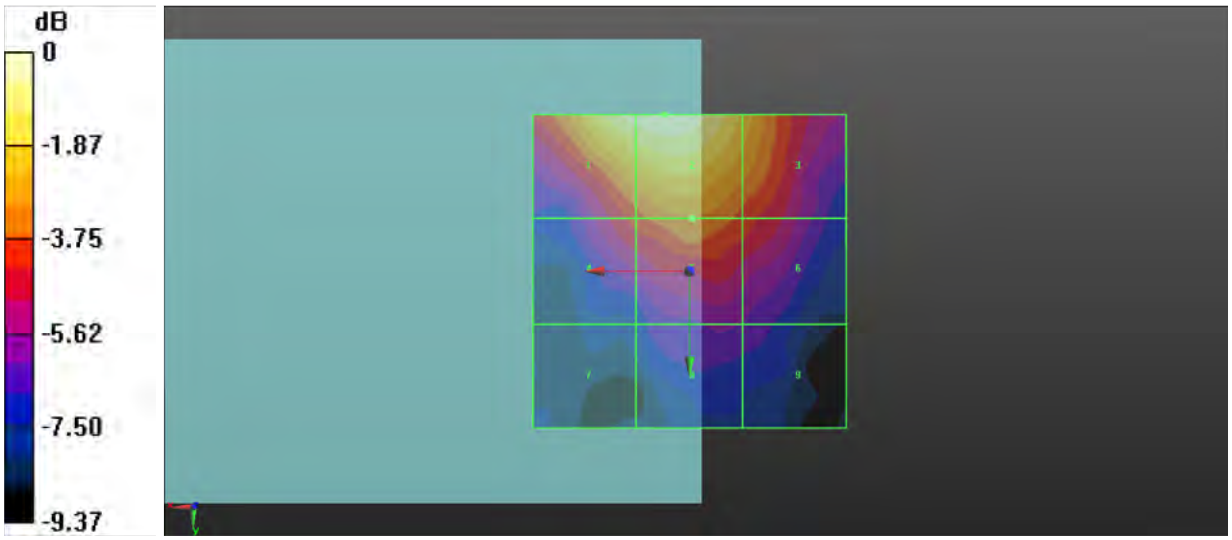
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2636.5 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 7.114 V/m; Power Drift = -0.09 dB
Applied MIF = 0.00 dB
RF audio interference level = 19.74 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**19.52 dBV/m** | Grid 2<br>**19.74 dBV/m** | Grid 3<br>**17.71 dBV/m** |
| Grid 4<br>**15.71 dBV/m** | Grid 5<br>**16.59 dBV/m** | Grid 6<br>**15.76 dBV/m** |
| Grid 7<br>**12.29 dBV/m** | Grid 8<br>**13.67 dBV/m** | Grid 9<br>**13.48 dBV/m** |

**Cursor:**
Total = 19.74 dBV/m
E Category: M4
Location: 4, -25, 7.7 mm




0 dB = 9.709 V/m = 19.74 dBV/m

## P19 RF_E_Field_LTE 41_PC2_QPSK20M_1RB_OS0_Ch41490

Communication System: LTE_TDD; Frequency: 2680 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

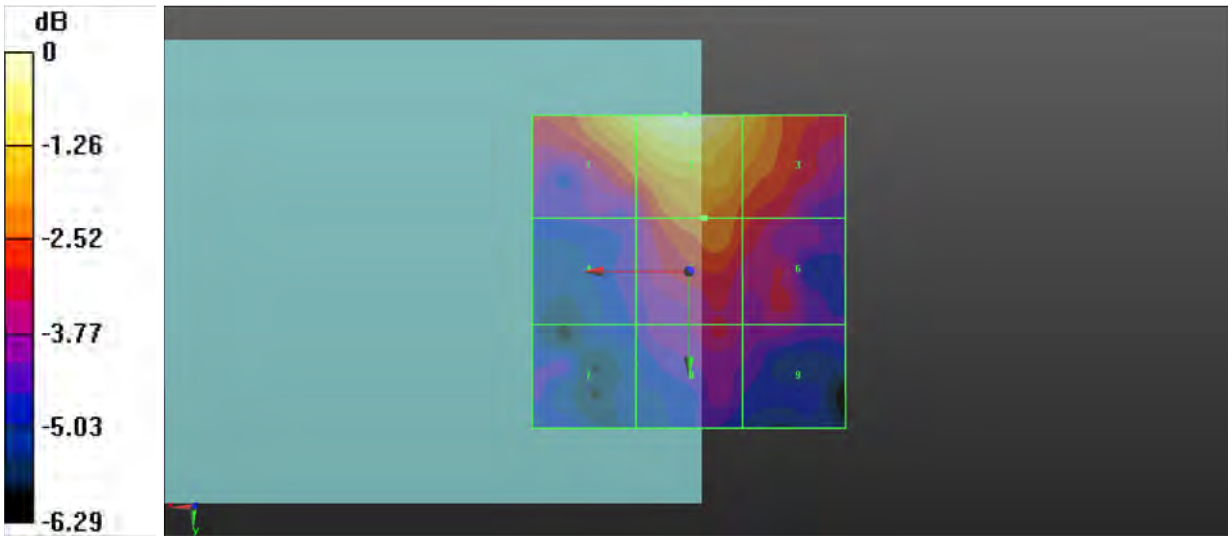
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2680 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 5.807 V/m; Power Drift = -0.17 dB
Applied MIF = 0.00 dB
RF audio interference level = 16.07 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**15.45 dBV/m** | Grid 2<br>**16.07 dBV/m** | Grid 3<br>**14.92 dBV/m** |
| Grid 4<br>**12.1 dBV/m** | Grid 5<br>**13.97 dBV/m** | Grid 6<br>**13.37 dBV/m** |
| Grid 7<br>**11.69 dBV/m** | Grid 8<br>**12.84 dBV/m** | Grid 9<br>**12.3 dBV/m** |

**Cursor:**
Total = 16.07 dBV/m
E Category: M4
Location: 0.5, -25, 7.7 mm




0 dB = 6.358 V/m = 16.07 dBV/m

## P20 RF_E_Field_LTE 42_Part27Q_QPSK20M_1RB_OS0_Ch42190

Communication System: LTE_TDD; Frequency: 3460 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

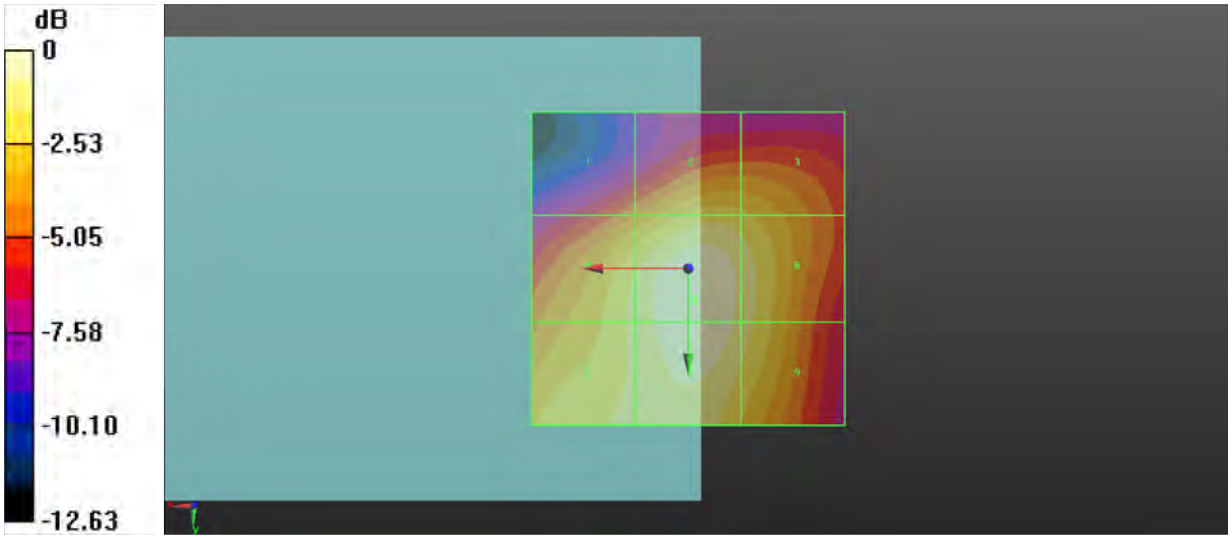
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3460 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 72.10 V/m; Power Drift = -0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.79 dBV/m
**Emission category: M4**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**29.6 dBV/m** | Grid 2<br>**31.77 dBV/m** | Grid 3<br>**31.49 dBV/m** |
| Grid 4<br>**32.37 dBV/m** | Grid 5<br>**33.79 dBV/m** | Grid 6<br>**32.75 dBV/m** |
| Grid 7<br>**32.36 dBV/m** | Grid 8<br>**33.65 dBV/m** | Grid 9<br>**32.6 dBV/m** |

**Cursor:**
Total = 33.79 dBV/m
E Category: M3
Location: -1, 5, 7.7 mm




0 dB = 48.93 V/m = 33.79 dBV/m

## P21 RF_E_Field_LTE 42_Part27Q_QPSK20M_1RB_OS0_Ch42590

Communication System: LTE_TDD; Frequency: 3500 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

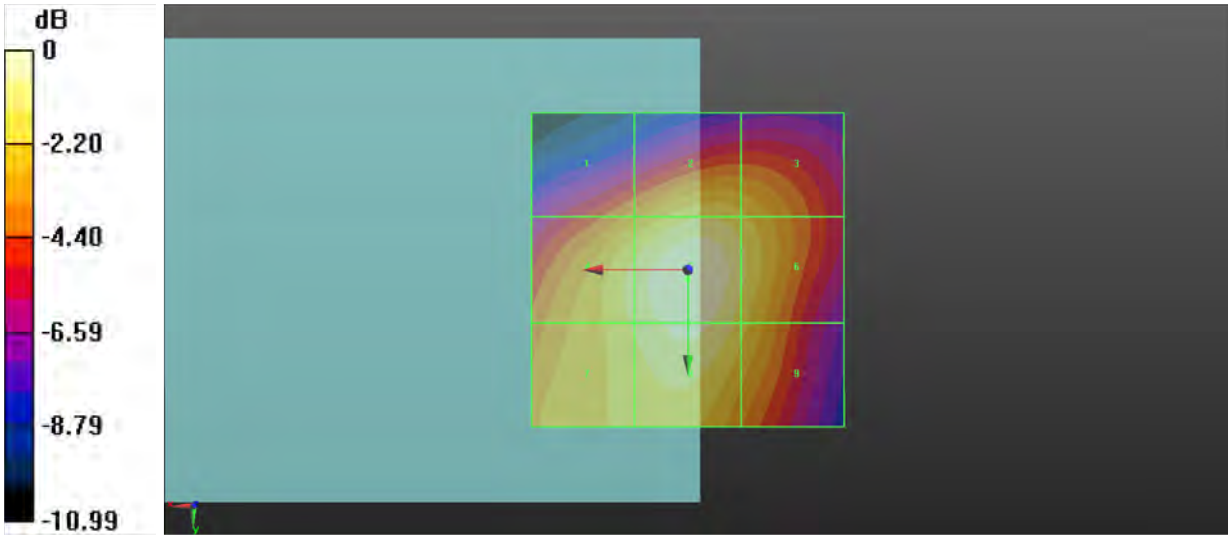
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3500 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 74.34 V/m; Power Drift = -0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.74 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**30.55 dBV/m** | Grid 2<br>**32.22 dBV/m** | Grid 3<br>**31.73 dBV/m** |
| Grid 4<br>**32.63 dBV/m** | Grid 5<br>**33.74 dBV/m** | Grid 6<br>**32.45 dBV/m** |
| Grid 7<br>**32.39 dBV/m** | Grid 8<br>**33.3 dBV/m** | Grid 9<br>**31.86 dBV/m** |

**Cursor:**
Total = 33.74 dBV/m
E Category: M3
Location: 0, 1.5, 7.7 mm




0 dB = 48.62 V/m = 33.74 dBV/m

## P22 RF_E_Field_LTE 42_Part27Q_QPSK20M_1RB_OS0_Ch42990

Communication System: LTE_TDD; Frequency: 3540 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

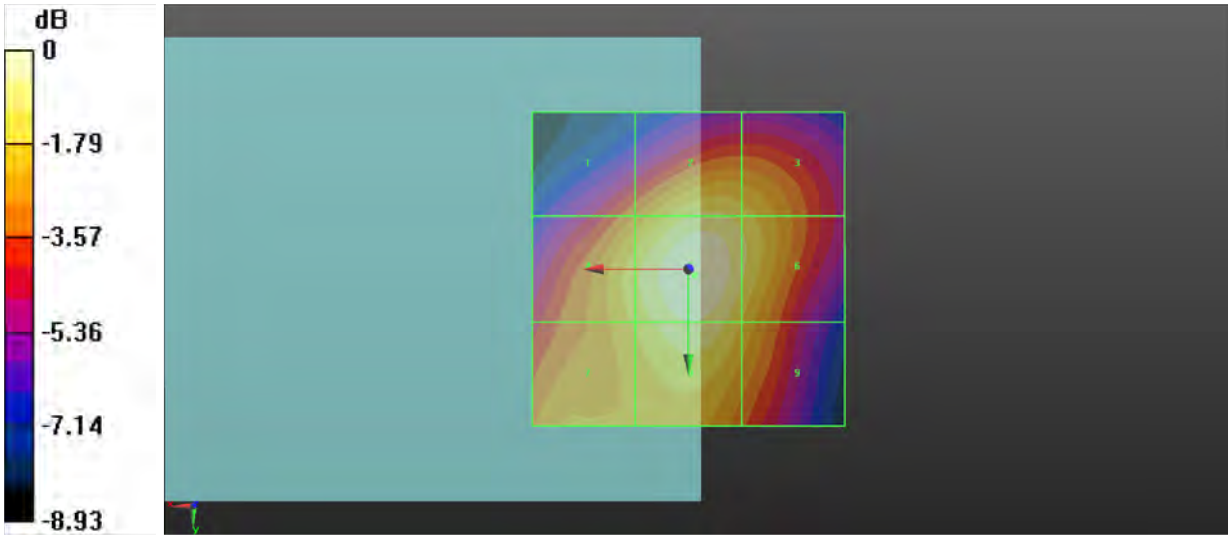
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3540 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 71.96 V/m; Power Drift = -0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.48 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**30.55 dBV/m** | Grid 2<br>**32.44 dBV/m** | Grid 3<br>**32.03 dBV/m** |
| Grid 4<br>**32.16 dBV/m** | Grid 5<br>**33.48 dBV/m** | Grid 6<br>**32.48 dBV/m** |
| Grid 7<br>**31.81 dBV/m** | Grid 8<br>**32.88 dBV/m** | Grid 9<br>**31.68 dBV/m** |

**Cursor:**
Total = 33.48 dBV/m
E Category: M3
Location: -1, 1, 7.7 mm




0 dB = 47.18 V/m = 33.48 dBV/m

## P23 RF_E_Field_LTE 42_Part27Q_QPSK20M_1RB_OS0_Ch43190

Communication System: LTE_TDD; Frequency: 3560 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

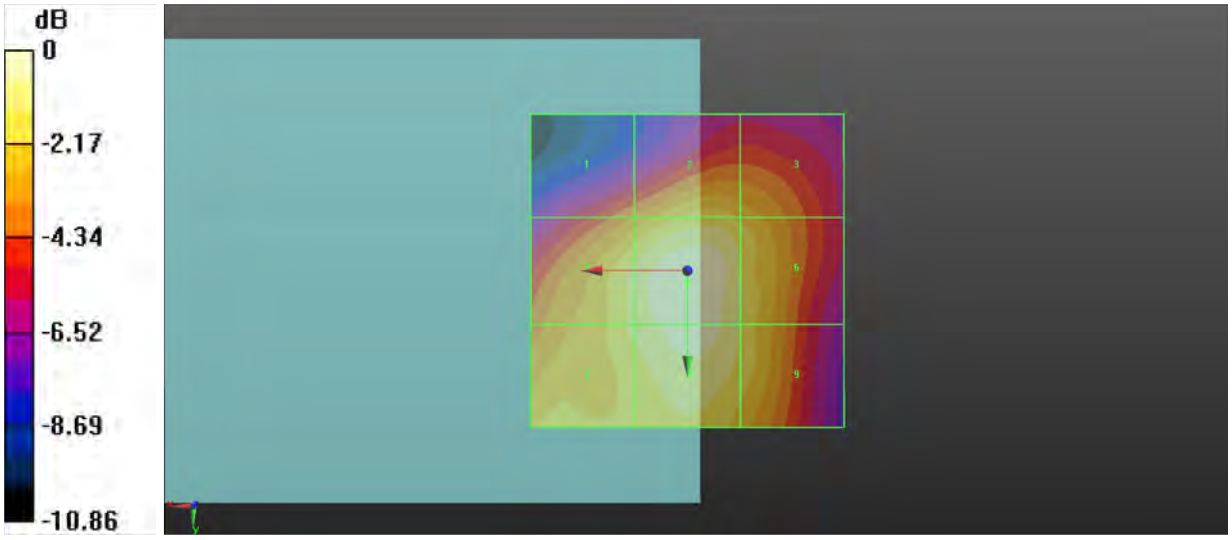
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3560 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 53.06 V/m; Power Drift = 0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 30.96 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**27.49 dBV/m** | Grid 2<br>**29.2 dBV/m** | Grid 3<br>**28.65 dBV/m** |
| Grid 4<br>**29.81 dBV/m** | Grid 5<br>**30.96 dBV/m** | Grid 6<br>**29.6 dBV/m** |
| Grid 7<br>**29.69 dBV/m** | Grid 8<br>**30.67 dBV/m** | Grid 9<br>**29.48 dBV/m** |

**Cursor:**
Total = 30.96 dBV/m
E Category: M3
Location: 0, 2, 7.7 mm




0 dB = 35.34 V/m = 30.97 dBV/m

## P24 RF_E_Field_LTE 42_Part27Q_QPSK20M_1RB_OS0_Ch43340

Communication System: LTE_TDD; Frequency: 3575 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

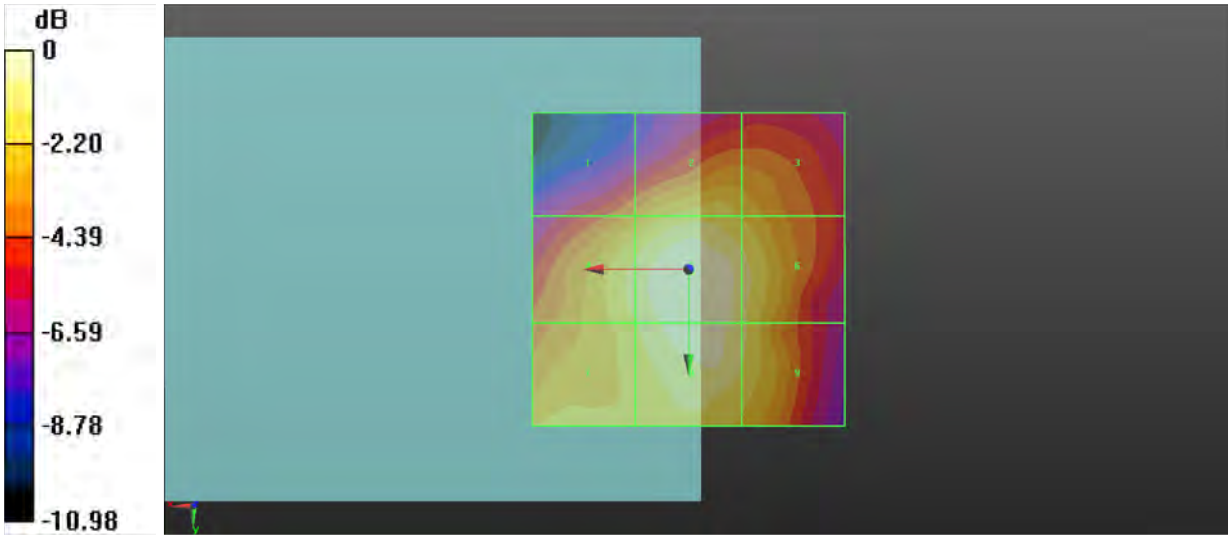
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3575 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 53.27 V/m; Power Drift = -0.27 dB
Applied MIF = 0.00 dB
RF audio interference level = 30.96 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**27.7 dBV/m** | Grid 2<br>**29.35 dBV/m** | Grid 3<br>**28.7 dBV/m** |
| Grid 4<br>**29.86 dBV/m** | Grid 5<br>**30.96 dBV/m** | Grid 6<br>**29.91 dBV/m** |
| Grid 7<br>**29.43 dBV/m** | Grid 8<br>**30.61 dBV/m** | Grid 9<br>**29.75 dBV/m** |

**Cursor:**
Total = 30.96 dBV/m
E Category: M3
Location: -0.5, 0.5, 7.7 mm




0 dB = 35.30 V/m = 30.96 dBV/m

## P25 RF_E_Field_LTE 42_Part27Q_QPSK20M_1RB_OS0_Ch43490

Communication System: LTE TDD; Frequency: 3590 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

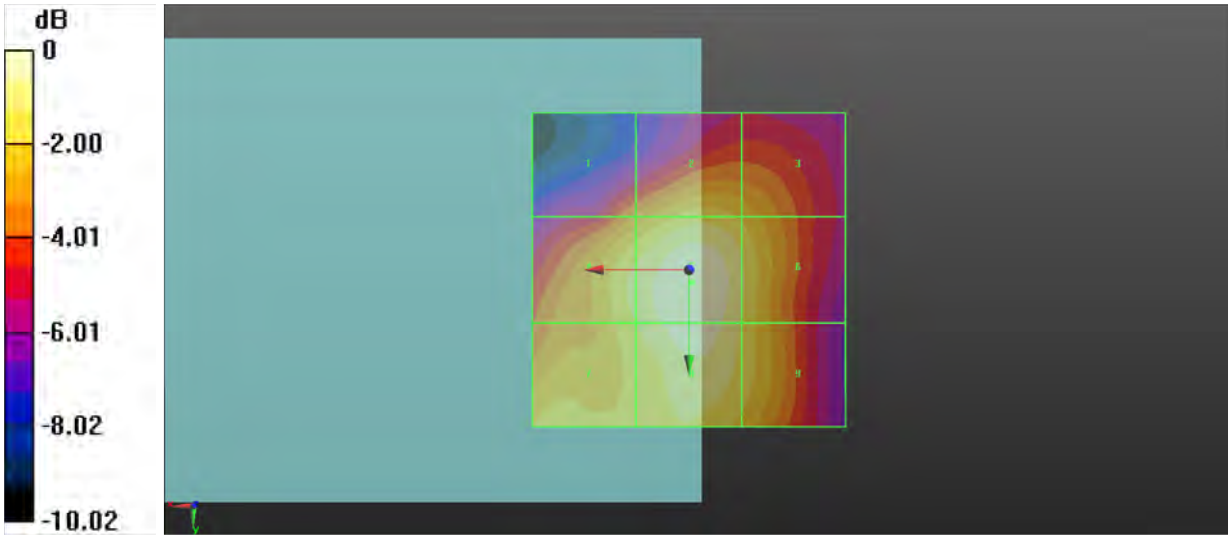
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3590 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 43.23 V/m; Power Drift = 1.72 dB
Applied MIF = 0.00 dB
RF audio interference level = 30.89 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**27.74 dBV/m** | Grid 2<br>**29.28 dBV/m** | Grid 3<br>**28.72 dBV/m** |
| Grid 4<br>**29.8 dBV/m** | Grid 5<br>**30.89 dBV/m** | Grid 6<br>**29.64 dBV/m** |
| Grid 7<br>**29.54 dBV/m** | Grid 8<br>**30.7 dBV/m** | Grid 9<br>**29.45 dBV/m** |

**Cursor:**
Total = 30.89 dBV/m
E Category: M3
Location: -0.5, 2, 7.7 mm




0 dB = 35.02 V/m = 30.89 dBV/m

## P26 RF_E_Field_LTE 43_QPSK20M_1RB_OS0_Ch43690

Communication System: LTE TDD; Frequency: 3610 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.5℃

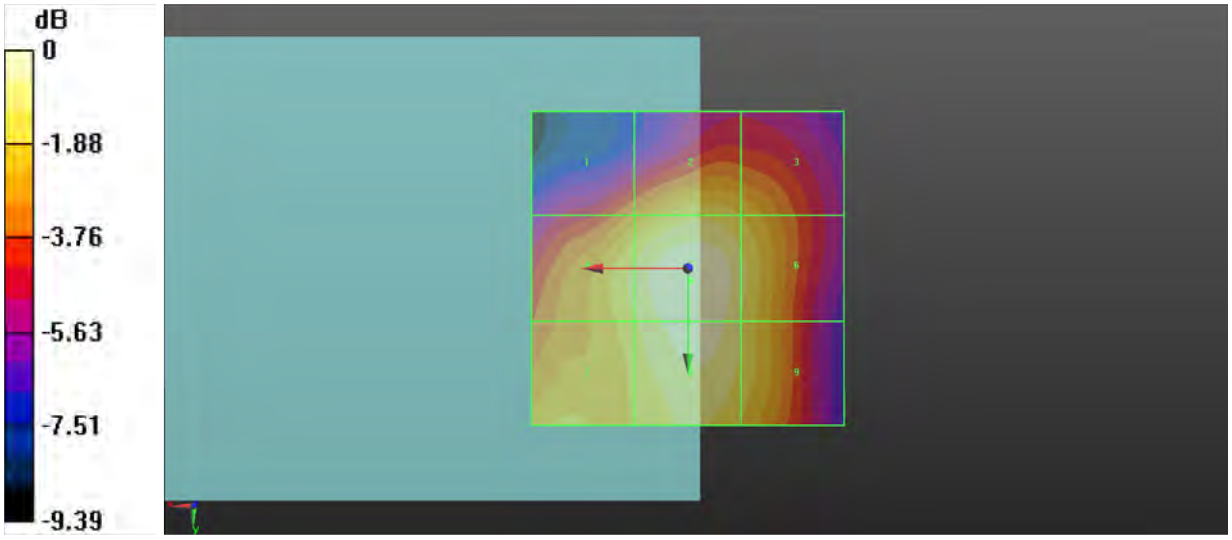
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3610 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 53.10 V/m; Power Drift = -0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 30.91 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**28.02 dBV/m** | Grid 2<br>**29.52 dBV/m** | Grid 3<br>**29 dBV/m** |
| Grid 4<br>**29.88 dBV/m** | Grid 5<br>**30.91 dBV/m** | Grid 6<br>**29.85 dBV/m** |
| Grid 7<br>**29.57 dBV/m** | Grid 8<br>**30.68 dBV/m** | Grid 9<br>**29.69 dBV/m** |

**Cursor:**
Total = 30.91 dBV/m
E Category: M3
Location: -0.5, 2, 7.7 mm




0 dB = 35.10 V/m = 30.91 dBV/m

## P27 RF_E_Field_LTE 43_QPSK20M_1RB_OS0_Ch44090

Communication System: LTE_TDD; Frequency: 3650 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

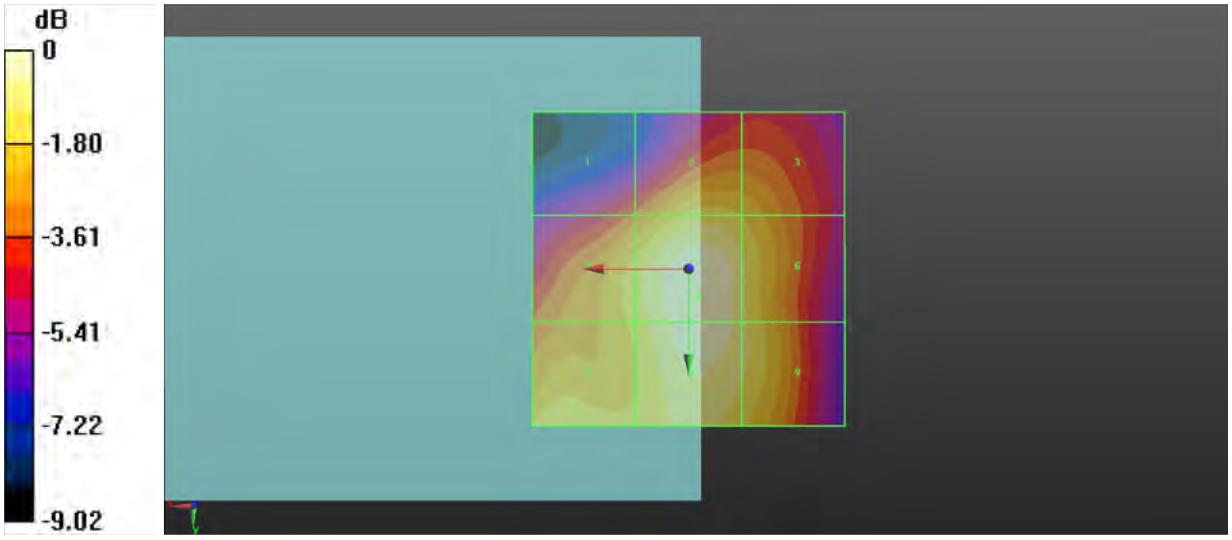
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3650 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 52.47 V/m; Power Drift = -0.18 dB
Applied MIF = 0.00 dB
RF audio interference level = 30.94 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**27.6 dBV/m** | Grid 2<br>**29.49 dBV/m** | Grid 3<br>**29.13 dBV/m** |
| Grid 4<br>**29.54 dBV/m** | Grid 5<br>**30.94 dBV/m** | Grid 6<br>**29.95 dBV/m** |
| Grid 7<br>**29.72 dBV/m** | Grid 8<br>**30.82 dBV/m** | Grid 9<br>**29.95 dBV/m** |

**Cursor:**
Total = 30.94 dBV/m
E Category: M3
Location: -1.5, 4.5, 7.7 mm




0 dB = 35.25 V/m = 30.94 dBV/m

## P28 RF_E_Field_LTE 43_QPSK20M_1RB_OS0_Ch44490

Communication System: LTE_TDD; Frequency: 3690 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

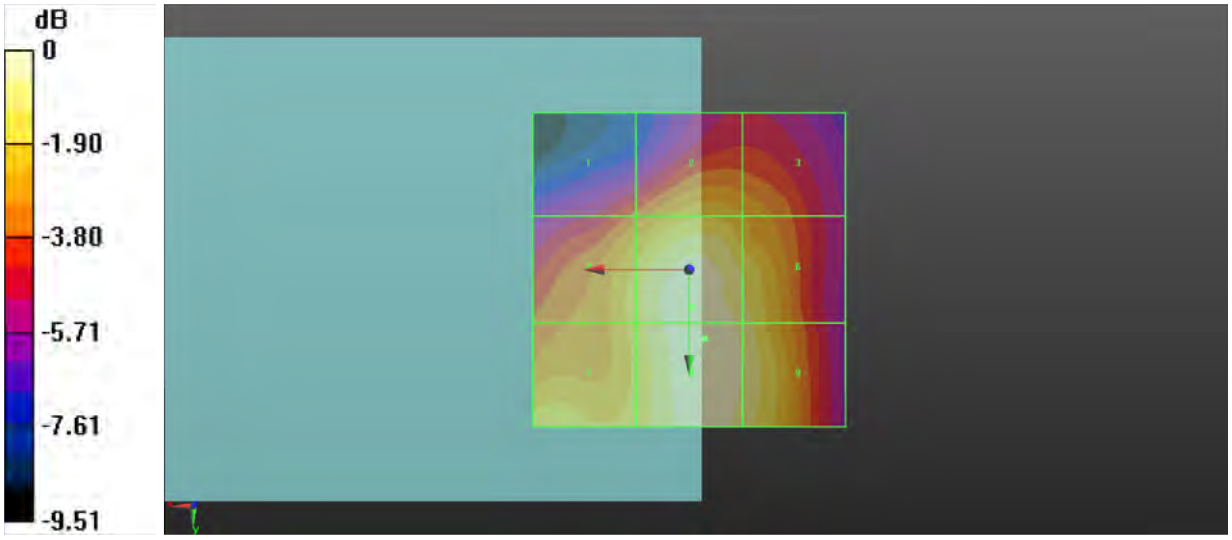
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3690 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 51.24 V/m; Power Drift = -0.41 dB
Applied MIF = 0.00 dB
RF audio interference level = 30.88 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**27.36 dBV/m** | Grid 2<br>**28.96 dBV/m** | Grid 3<br>**28.4 dBV/m** |
| Grid 4<br>**29.41 dBV/m** | Grid 5<br>**30.87 dBV/m** | Grid 6<br>**29.99 dBV/m** |
| Grid 7<br>**29.49 dBV/m** | Grid 8<br>**30.88 dBV/m** | Grid 9<br>**30.21 dBV/m** |

**Cursor:**
Total = 30.88 dBV/m
E Category: M3
Location: -2.5, 11, 7.7 mm




0 dB = 34.98 V/m = 30.88 dBV/m

## P29 RF_E_Field_LTE 48_QPSK20M_1RB_OS0_Ch55340

Communication System: LTE_TDD; Frequency: 3560 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

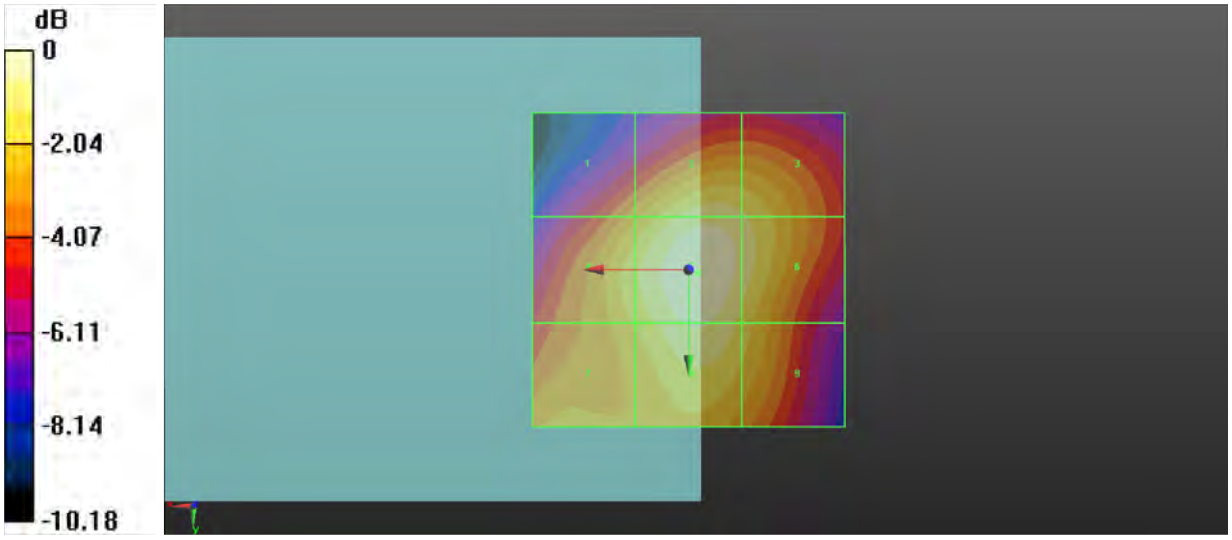
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3560 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 72.11 V/m; Power Drift = 0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.71 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**30.83 dBV/m** | Grid 2<br>**32.83 dBV/m** | Grid 3<br>**32.47 dBV/m** |
| Grid 4<br>**32.25 dBV/m** | Grid 5<br>**33.71 dBV/m** | Grid 6<br>**32.85 dBV/m** |
| Grid 7<br>**31.75 dBV/m** | Grid 8<br>**33.12 dBV/m** | Grid 9<br>**32.14 dBV/m** |

**Cursor:**
Total = 33.71 dBV/m
E Category: M3
Location: -1.5, 0.5, 7.7 mm




0 dB = 48.50 V/m = 33.71 dBV/m

## P30 RF_E_Field_LTE 48_QPSK20M_1RB_OS0_Ch55830

Communication System: LTE_TDD; Frequency: 3609 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

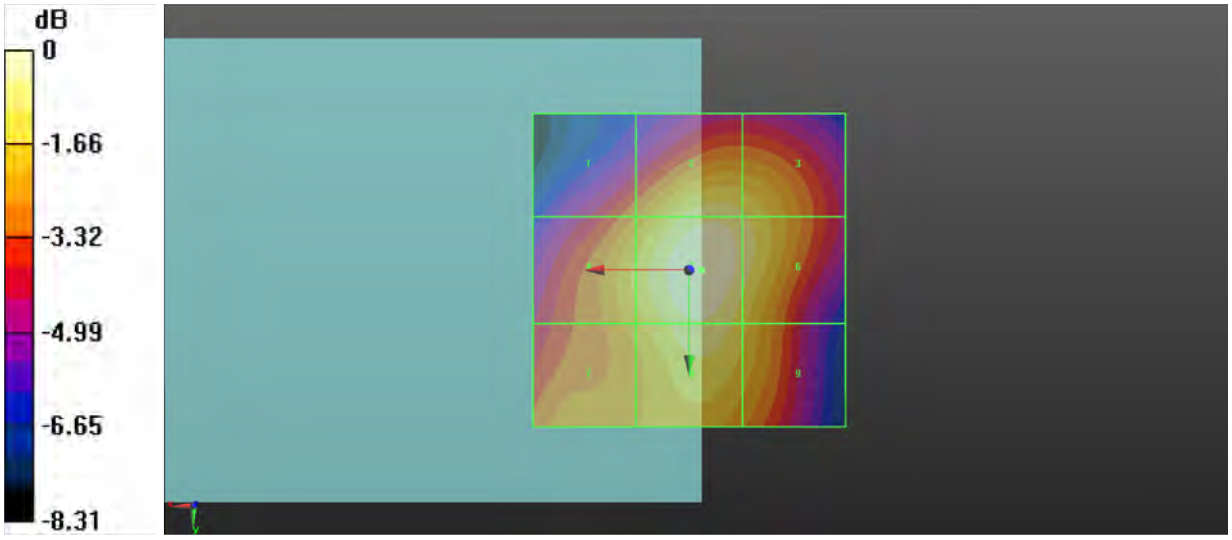
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3609 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 71.65 V/m; Power Drift = 0.00 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.65 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**30.95 dBV/m** | Grid 2<br>**32.97 dBV/m** | Grid 3<br>**32.65 dBV/m** |
| Grid 4<br>**32.18 dBV/m** | Grid 5<br>**33.65 dBV/m** | Grid 6<br>**32.95 dBV/m** |
| Grid 7<br>**31.72 dBV/m** | Grid 8<br>**33.05 dBV/m** | Grid 9<br>**32.2 dBV/m** |

**Cursor:**
Total = 33.65 dBV/m
E Category: M3
Location: -2, 0, 7.7 mm




0 dB = 48.15 V/m = 33.65 dBV/m

## P31 RF_E_Field_LTE 48_QPSK20M_1RB_OS0_Ch56150

Communication System: LTE_TDD; Frequency: 3641 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

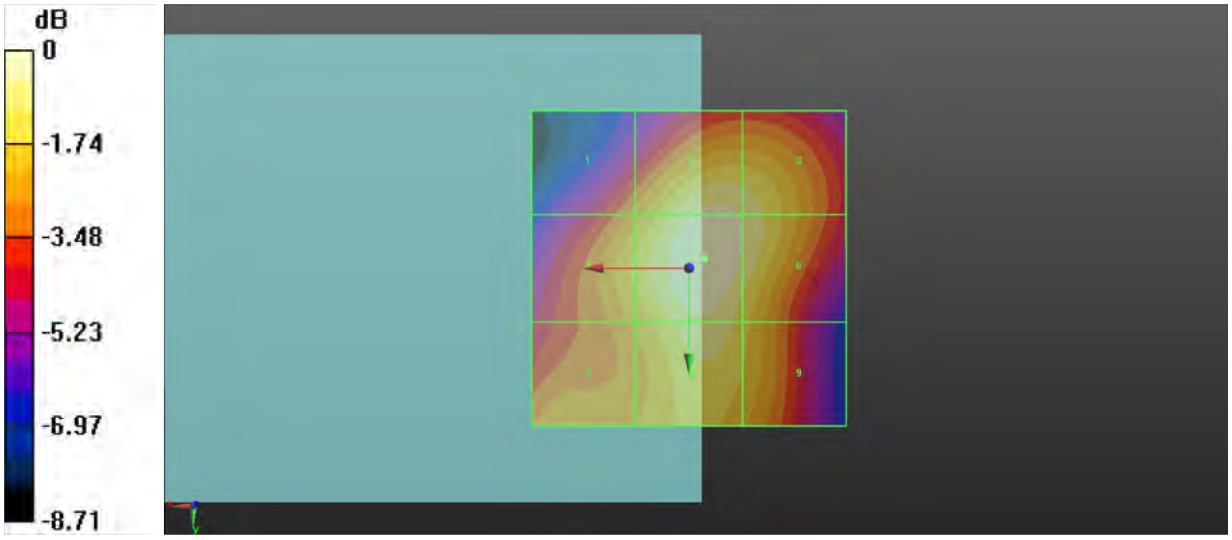
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3641 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 70.61 V/m; Power Drift = 0.07 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.66 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**31.08 dBV/m** | Grid 2<br>**33.28 dBV/m** | Grid 3<br>**33 dBV/m** |
| Grid 4<br>**32.1 dBV/m** | Grid 5<br>**33.66 dBV/m** | Grid 6<br>**33.12 dBV/m** |
| Grid 7<br>**31.47 dBV/m** | Grid 8<br>**32.95 dBV/m** | Grid 9<br>**32.2 dBV/m** |

**Cursor:**
Total = 33.66 dBV/m
E Category: M3
Location: -2.5, -1.5, 7.7 mm




0 dB = 48.21 V/m = 33.66 dBV/m

## P32 RF_E_Field_LTE 48_QPSK20M_1RB_OS0_Ch56640

Communication System: LTE_TDD; Frequency: 3690 MHz;Duty Cycle: 1:1.59
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.6℃

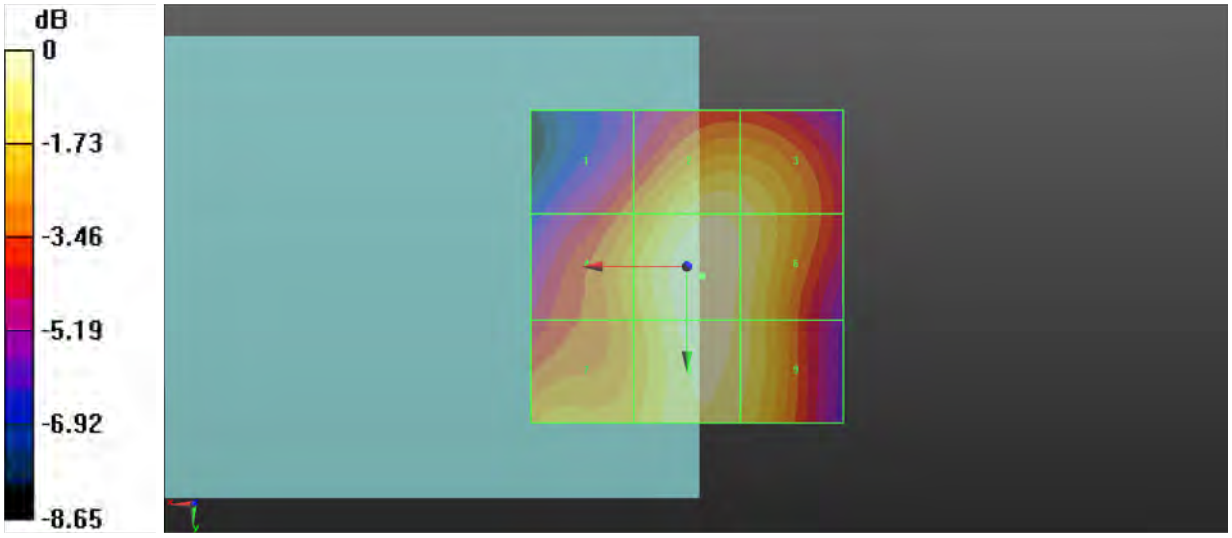
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3690 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 68.00 V/m; Power Drift = 0.04 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.39 dBV/m
**Emission category: M3**

E-field without scaling

| | | |
|---|---|---|
| Grid 1<br>**30.52 dBV/m** | Grid 2<br>**32.77 dBV/m** | Grid 3<br>**32.56 dBV/m** |
| Grid 4<br>**31.62 dBV/m** | Grid 5<br>**33.39 dBV/m** | Grid 6<br>**32.82 dBV/m** |
| Grid 7<br>**31.63 dBV/m** | Grid 8<br>**33.2 dBV/m** | Grid 9<br>**32.59 dBV/m** |

**Cursor:**
Total = 33.39 dBV/m
E Category: M3
Location: -2.5, 1.5, 7.7 mm




0 dB = 46.71 V/m = 33.39 dBV/m

## P33 RF_E_Field_NR n41_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch509202

Communication System: NR; Frequency: 2546.01 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

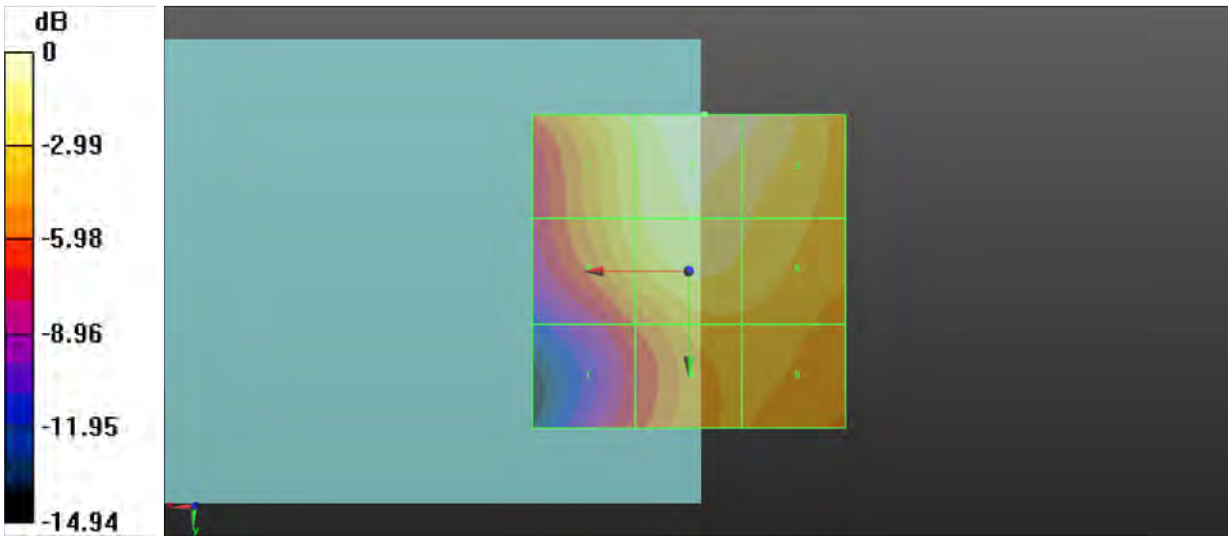
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2546.01 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 53.94 V/m; Power Drift = 0.00 dB
Applied MIF = 0.00 dB
RF audio interference level = 32.84 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **31.43 dBV/m** | Grid 2 **M3** **32.84 dBV/m** | Grid 3 **M3** **32.41 dBV/m** |
| Grid 4 **M3** **30.56 dBV/m** | Grid 5 **M3** **31.8 dBV/m** | Grid 6 **M3** **31.04 dBV/m** |
| Grid 7 **M4** **27 dBV/m** | Grid 8 **M4** **29.67 dBV/m** | Grid 9 **M4** **29.65 dBV/m** |

**Cursor:**
Total = 32.84 dBV/m
E Category: M3
Location: -2.5, -25, 7.7 mm




0 dB = 43.84 V/m = 32.84 dBV/m

## P34 RF_E_Field_NR n41_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch518598

Communication System: NR; Frequency: 2592.99 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

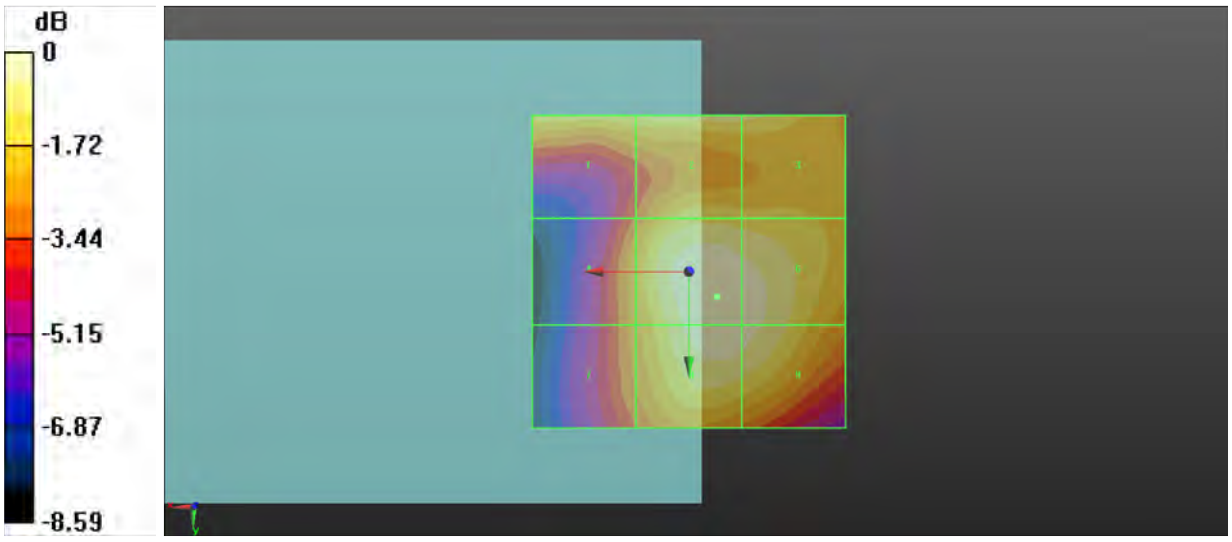
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2592.99 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 57.80 V/m; Power Drift = -0.04 dB
Applied MIF = 0.00 dB
RF audio interference level = 31.81 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **30.79 dBV/m** | Grid 2 **M3** **31.12 dBV/m** | Grid 3 **M3** **30.97 dBV/m** |
| Grid 4 **M4** **29.62 dBV/m** | Grid 5 **M3** **31.81 dBV/m** | Grid 6 **M3** **31.6 dBV/m** |
| Grid 7 **M4** **29.36 dBV/m** | Grid 8 **M3** **31.68 dBV/m** | Grid 9 **M3** **31.52 dBV/m** |

**Cursor:**
Total = 31.81 dBV/m
E Category: M3
Location: -4.5, 4, 7.7 mm




0 dB = 38.93 V/m = 31.81 dBV/m

Test Laboratory: ritt 7 Layers SAR/HAC Testing Lab Date: 2023/08/05

## P35 RF_E_Field_NR n41_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch528000

Communication System: NR; Frequency: 2640 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

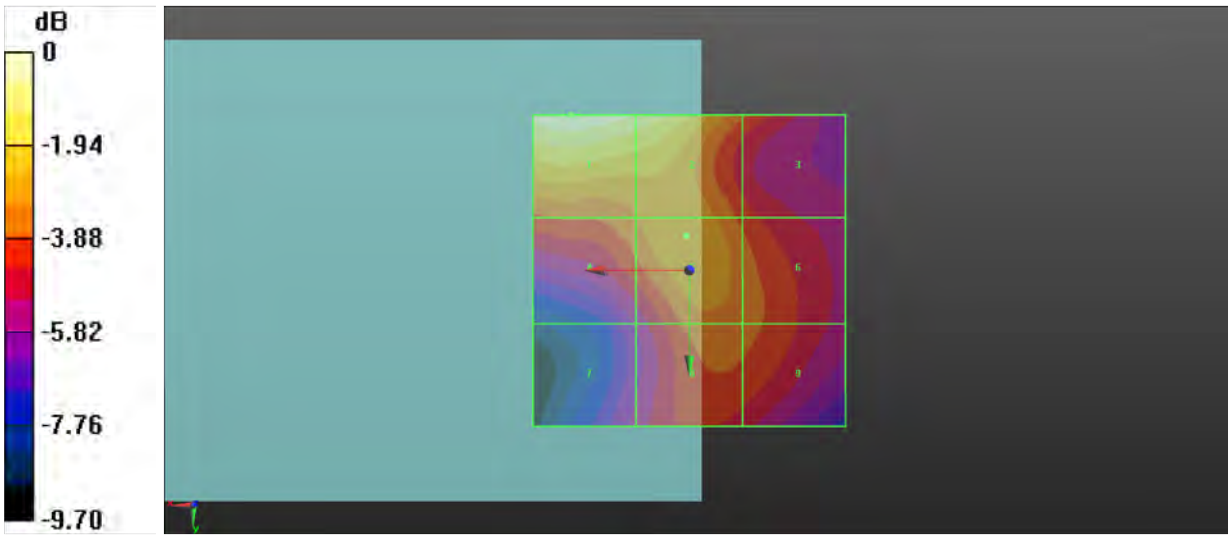
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2640 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 58.72 V/m; Power Drift = 0.05 dB
Applied MIF = 0.00 dB
RF audio interference level = 34.00 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **34 dBV/m** | Grid 2 **M3** **33.33 dBV/m** | Grid 3 **M3** **30.37 dBV/m** |
| Grid 4 **M3** **30.73 dBV/m** | Grid 5 **M3** **31.42 dBV/m** | Grid 6 **M3** **30.51 dBV/m** |
| Grid 7 **M4** **28.48 dBV/m** | Grid 8 **M3** **30.6 dBV/m** | Grid 9 **M3** **30.41 dBV/m** |

**Cursor:**
Total = 34.00 dBV/m
E Category: M3
Location: 19, -25, 7.7 mm




0 dB = 50.13 V/m = 34.00 dBV/m

## P36 RF_E_Field_NR n77_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch650000

Communication System: NR; Frequency: 3750 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

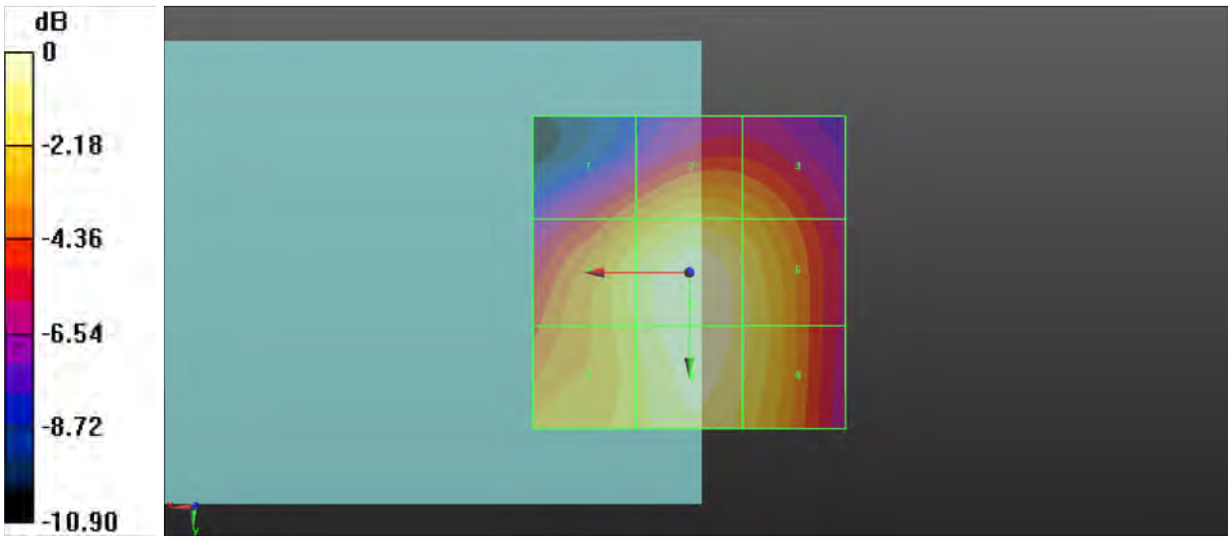
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3750 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 69.85 V/m; Power Drift = 0.03 dB
Applied MIF = 0.00 dB
RF audio interference level = 33.62 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **30.38 dBV/m** | Grid 2 **M3** **31.85 dBV/m** | Grid 3 **M3** **31.16 dBV/m** |
| Grid 4 **M3** **32.39 dBV/m** | Grid 5 **M3** **33.62 dBV/m** | Grid 6 **M3** **32.49 dBV/m** |
| Grid 7 **M3** **32.21 dBV/m** | Grid 8 **M3** **33.5 dBV/m** | Grid 9 **M3** **32.47 dBV/m** |

**Cursor:**
Total = 33.62 dBV/m
E Category: M3
Location: -0.5, 5, 7.7 mm




0 dB = 48.00 V/m = 33.62 dBV/m

## P37 RF_E_Field_NR n77_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch656000

Communication System: NR; Frequency: 3840 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

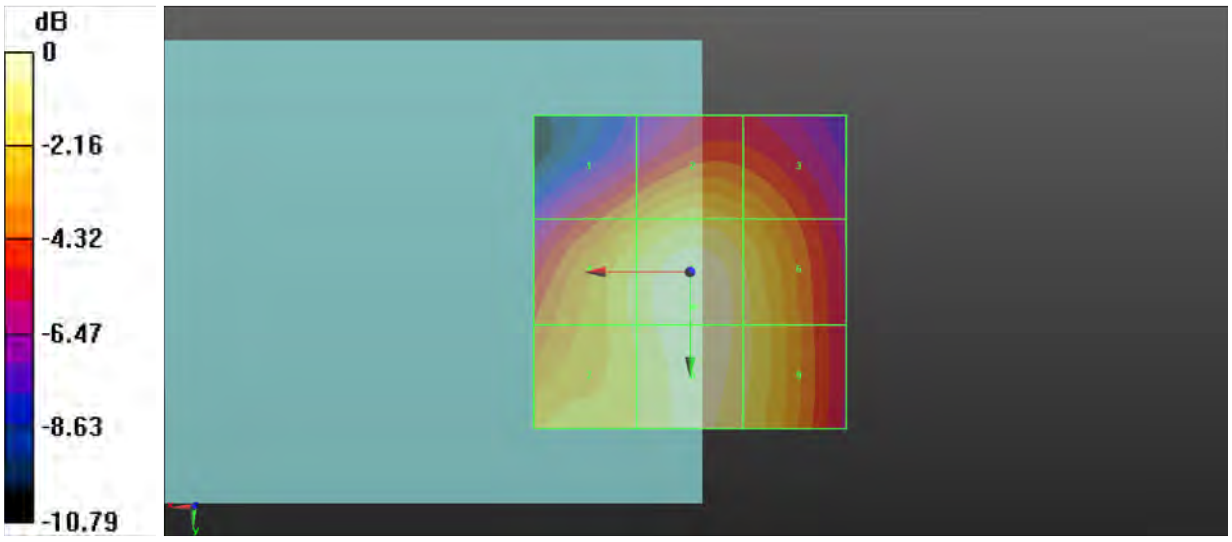
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3840 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 74.13 V/m; Power Drift = 0.05 dB
Applied MIF = 0.00 dB
RF audio interference level = 34.28 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **31.3 dBV/m** | Grid 2 **M3** **32.6 dBV/m** | Grid 3 **M3** **31.84 dBV/m** |
| Grid 4 **M3** **33.17 dBV/m** | Grid 5 **M3** **34.28 dBV/m** | Grid 6 **M3** **33.15 dBV/m** |
| Grid 7 **M3** **33.03 dBV/m** | Grid 8 **M3** **34.18 dBV/m** | Grid 9 **M3** **33.15 dBV/m** |

**Cursor:**
Total = 34.28 dBV/m
E Category: M3
Location: -0.5, 5.5, 7.7 mm




0 dB = 51.76 V/m = 34.28 dBV/m

## P38 RF_E_Field_NR n77_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch662000

Communication System: NR; Frequency: 3930 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

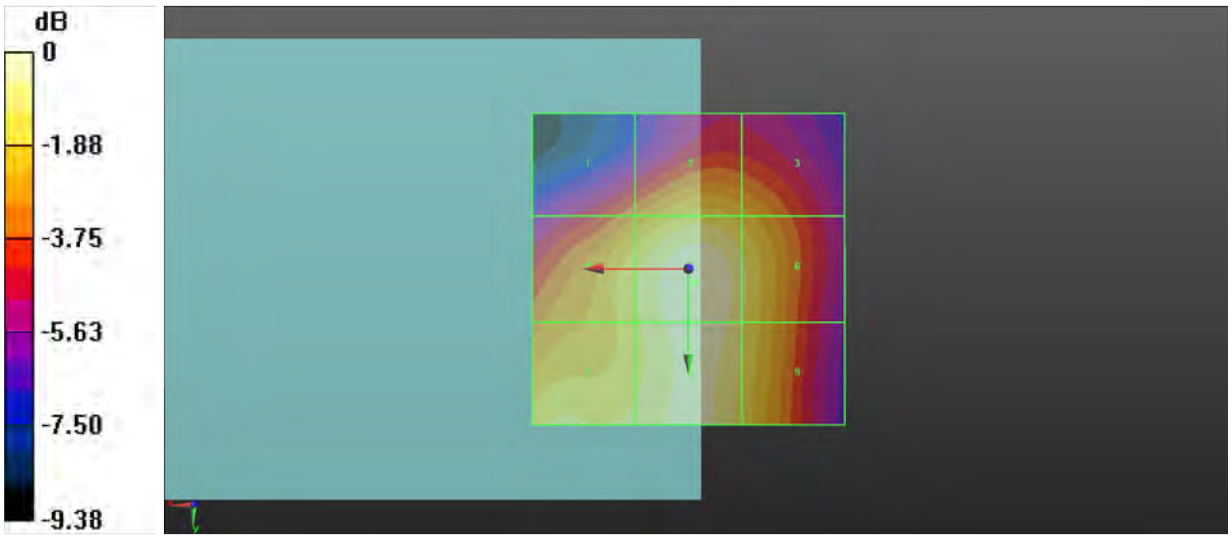
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3930 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 81.96 V/m; Power Drift = 0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 34.75 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **31.64 dBV/m** | Grid 2 **M3** **33.2 dBV/m** | Grid 3 **M3** **32.61 dBV/m** |
| Grid 4 **M3** **33.51 dBV/m** | Grid 5 **M3** **34.75 dBV/m** | Grid 6 **M3** **33.73 dBV/m** |
| Grid 7 **M3** **33.69 dBV/m** | Grid 8 **M3** **34.55 dBV/m** | Grid 9 **M3** **33.61 dBV/m** |

**Cursor:**
Total = 34.75 dBV/m
E Category: M3
Location: -1, 2, 7.7 mm




0 dB = 54.64 V/m = 34.75 dBV/m

## P39 RF_E_Field_NR n77_PC2_DFT-s-OFDM_QPSK100M_1RB_OS0_Ch633334

Communication System: NR; Frequency: 3500 MHz;Duty Cycle: 1:2.33
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

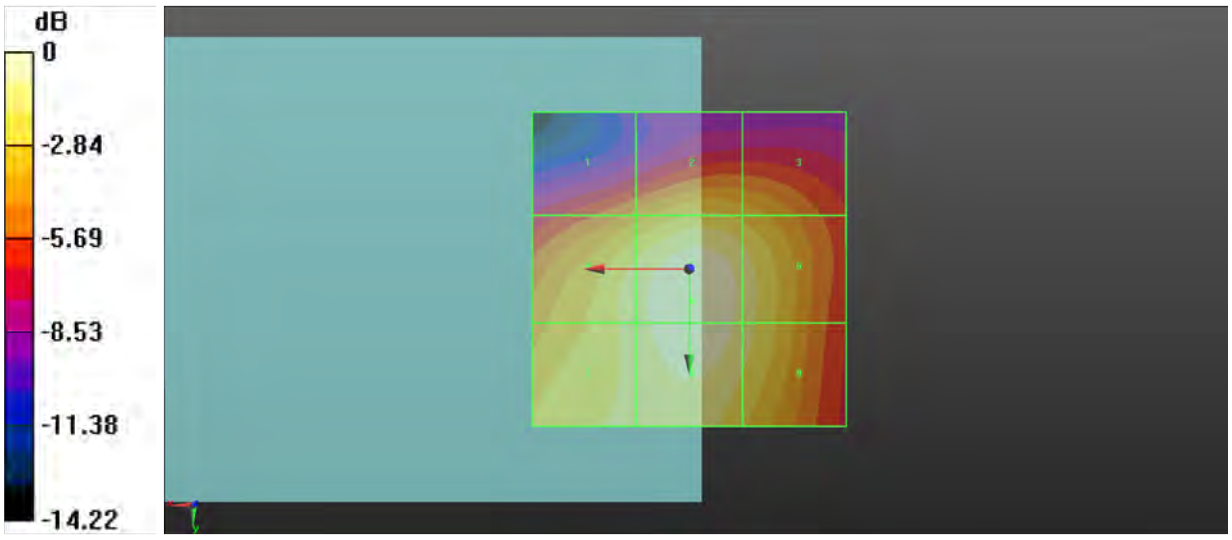
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 3500 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 78.17 V/m; Power Drift = 0.01 dB
Applied MIF = 0.00 dB
RF audio interference level = 34.58 dBV/m
**Emission category: M3**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M3** **30.3 dBV/m** | Grid 2 **M3** **31.98 dBV/m** | Grid 3 **M3** **31.47 dBV/m** |
| Grid 4 **M3** **33.3 dBV/m** | Grid 5 **M3** **34.58 dBV/m** | Grid 6 **M3** **33.35 dBV/m** |
| Grid 7 **M3** **33.22 dBV/m** | Grid 8 **M3** **34.38 dBV/m** | Grid 9 **M3** **33.25 dBV/m** |

**Cursor:**
Total = 34.58 dBV/m
E Category: M3
Location: -0.5, 5, 7.7 mm




0 dB = 53.55 V/m = 34.58 dBV/m

## P40 RF_E_Field_WIFI2.4G_802.11b 1Mbps_Ch1

Communication System: 802.11b; Frequency: 2412 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

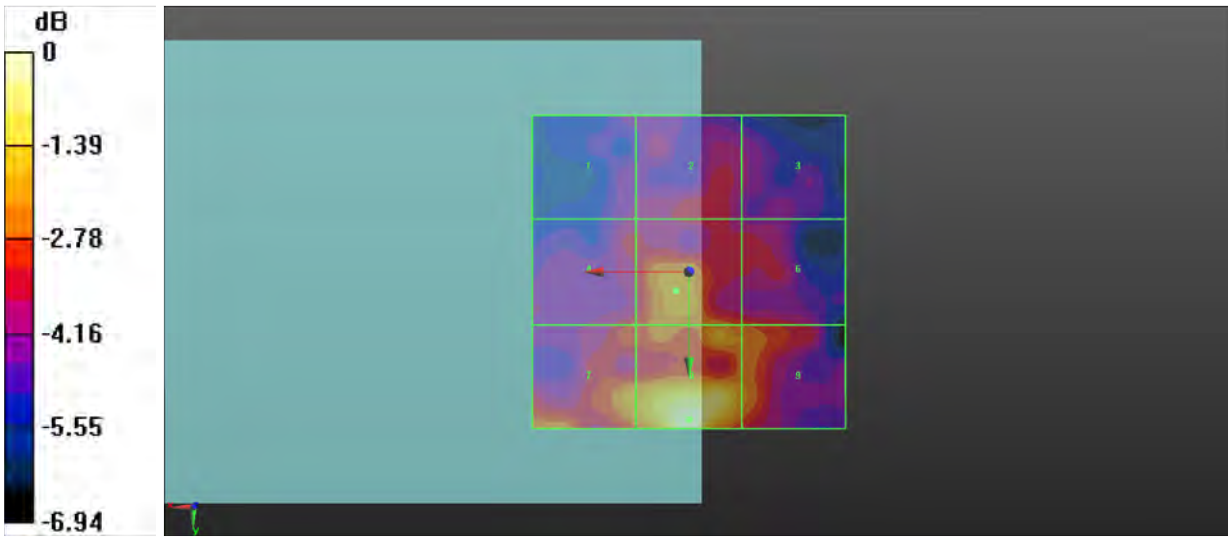
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2412 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 7.087 V/m; Power Drift = 0.22 dB
Applied MIF = 0.00 dB
RF audio interference level = 17.14 dBV/m
**Emission category: M4**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M4** **13.21 dBV/m** | Grid 2 **M4** **13.92 dBV/m** | Grid 3 **M4** **13.17 dBV/m** |
| Grid 4 **M4** **14.05 dBV/m** | Grid 5 **M4** **15.2 dBV/m** | Grid 6 **M4** **14.32 dBV/m** |
| Grid 7 **M4** **15.18 dBV/m** | Grid 8 **M4** **17.14 dBV/m** | Grid 9 **M4** **15.06 dBV/m** |

**Cursor:**
Total = 17.14 dBV/m
E Category: M4
Location: 0, 23.5, 7.7 mm




0 dB = 7.198 V/m = 17.14 dBV/m

## P41 RF_E_Field_WIFI2.4G_802.11b 1Mbps_Ch6

Communication System: 802.11b; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

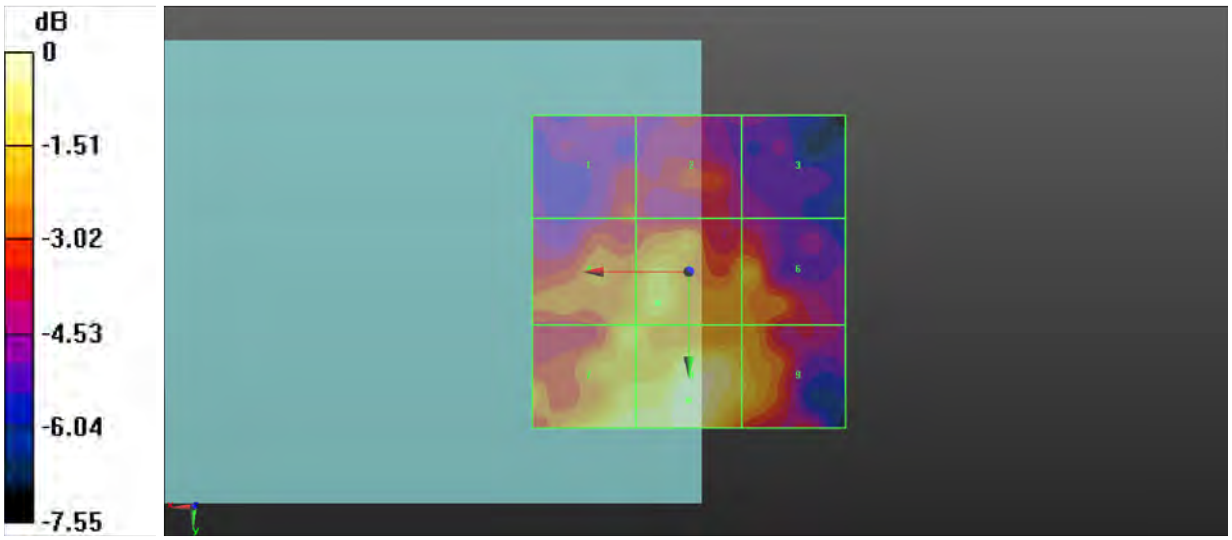
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2437 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 8.050 V/m; Power Drift = -0.31 dB
Applied MIF = 0.00 dB
RF audio interference level = 17.53 dBV/m
**Emission category: M4**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M4** **14.18 dBV/m** | Grid 2 **M4** **14.26 dBV/m** | Grid 3 **M4** **13.22 dBV/m** |
| Grid 4 **M4** **16.01 dBV/m** | Grid 5 **M4** **16.44 dBV/m** | Grid 6 **M4** **15.79 dBV/m** |
| Grid 7 **M4** **17.09 dBV/m** | Grid 8 **M4** **17.53 dBV/m** | Grid 9 **M4** **16.17 dBV/m** |

**Cursor:**
Total = 17.53 dBV/m
E Category: M4
Location: 0, 20.5, 7.7 mm




0 dB = 7.527 V/m = 17.53 dBV/m

## P42 RF_E_Field_WIFI2.4G_802.11b 1Mbps_Ch11

Communication System: 802.11b; Frequency: 2462 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 0$ kg/m$^3$
Ambient Temperature：23.3℃

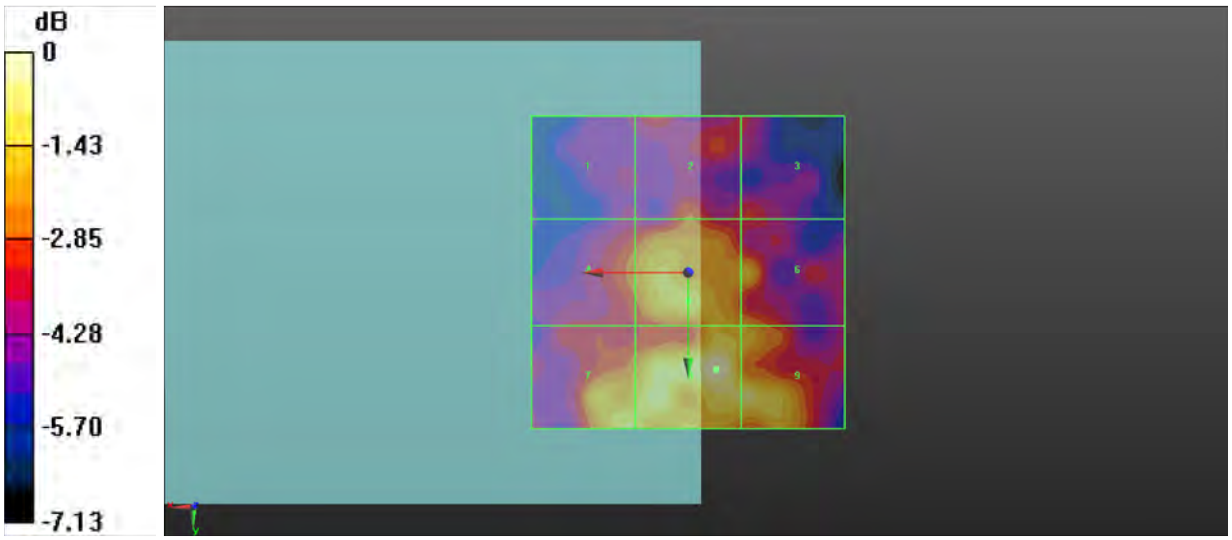
DASY5 Configuration:
- Probe: EF3DV3 - SN4075; ConvF(1, 1, 1) @ 2462 MHz; Calibrated: 2023/02/17
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn1633; Calibrated: 2023/02/08
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

**Hearing Aid Compatibility Test (101x101x1):** Interpolated grid: dx=0.5000 mm, dy=0.5000 mm
Device Reference Point: 0, 0, -6.3 mm
Reference Value = 7.408 V/m; Power Drift = -0.76 dB
Applied MIF = 0.00 dB
RF audio interference level = 17.66 dBV/m
**Emission category: M4**

MIF scaled E-field

| | | |
|---|---|---|
| Grid 1 **M4** **13.66 dBV/m** | Grid 2 **M4** **14.88 dBV/m** | Grid 3 **M4** **14.4 dBV/m** |
| Grid 4 **M4** **15.23 dBV/m** | Grid 5 **M4** **16.69 dBV/m** | Grid 6 **M4** **15.99 dBV/m** |
| Grid 7 **M4** **16.81 dBV/m** | Grid 8 **M4** **17.66 dBV/m** | Grid 9 **M4** **16.88 dBV/m** |

**Cursor:**
Total = 17.66 dBV/m
E Category: M4
Location: -4.5, 15.5, 7.7 mm




0 dB = 7.634 V/m = 17.66 dBV/m