

Variant FCC HAC (RF Emission) Test Report

Report No. : SA171218C14B-1
Applicant : HTC Corporation
Address : 88 Section 3, Zhongxing Road, Xindian District, New Taipei City 231, Taiwan
Product : Smartphone
FCC ID : NM82Q55200
Brand : HTC
Model No. : 2Q55200
Standards : FCC 47 CFR Part 20.19, ANSI C63.19-2011
 KDB 285076 D01 v05, KDB 285076 D02 v03
Sample Received Date : Jan. 24, 2018
Date of Testing : Jan. 26, 2018 ~ Mar. 21, 2018
Summary M-Rating : M3
Lab Address : No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location : No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch – Lin Kou Laboratories**, 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 by TAF or any government agencies.

This report is issued as a supplementary report to BV CPS report no.: SA171218C14-1.

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FCC Accredited No.: TW0003

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Release Control Record

Report No.	Reason for Change	Date Issued
SA171218C14B-1	Initial release	Jun. 07, 2018

1. Summary of Maximum M-Rating

Mode	Band	Maximum Audio Interference Level (dBV/m)	M-Rating
GSM	GSM850	33.72	M4
	GSM1900	31.57	M3
WCDMA	Band II	N/A	M4
	Band IV	N/A	M4
	Band V	N/A	M4
FDD-LTE	Band 2	N/A	M4
	Band 4	N/A	M4
	Band 5	N/A	M4
	Band 7	N/A	M4
	Band 12	N/A	M4
	Band 13	N/A	M4
	Band 17	N/A	M4
	Band 66	N/A	M4
	Band 41	21.18	M4
WLAN	2.4G	26.07	M4
	5.2G	N/A	M4
	5.3G	N/A	M4
	5.6G	N/A	M4
	5.8G	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	Smartphone
FCC ID	NM82Q55200
Brand Name	HTC
Model Name	2Q55200
Tx Frequency Bands (Unit: MHz)	<p>GSM GSM850 : 824.2 ~ 848.8 GSM1900 : 1850.2 ~ 1909.8</p> <p>WCDMA Band II : 1852.4 ~ 1907.6 Band IV : 1712.4 ~ 1752.6 Band V : 826.4 ~ 846.6</p> <p>FDD-LTE Band 2 : 1850.7 ~ 1909.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) Band 4 : 1710.7 ~ 1754.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) Band 5 : 824.7 ~ 848.3 (BW: 1.4M, 3M, 5M, 10M) Band 7 : 2502.5 ~ 2567.5 (BW: 5M, 10M, 15M, 20M) Band 12 : 699.7 ~ 715.3 (BW: 1.4M, 3M, 5M, 10M) Band 13 : 779.5 ~ 784.5 (BW: 5M, 10M) Band 17 : 706.5 ~ 713.5 (BW: 5M, 10M) Band 46 : 5150 ~ 5925 (Rx only) Band 66 : 1710.7 ~ 1779.3 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M)</p> <p>TDD-LTE LTE Band 41 : 2498.5 ~ 2687.5 (BW: 5M, 10M, 15M, 20M)</p> <p>WLAN 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5700, 5745 ~ 5825</p> <p>Bluetooth 2402 ~ 2480</p>
Modulations Supported in Uplink	<p>GSM & GPRS : GMSK EDGE : 8PSK WCDMA : QPSK LTE : QPSK, 16QAM, 64QAM 802.11b : DSSS 802.11a/g/n/ac : OFDM Bluetooth : GFSK, $\pi/4$-DQPSK, 8-DPSK</p>
Antenna Type	Fixed Internal Antenna
EUT Stage	Production Unit

Note:

1. This report is issued as a supplementary report to BV CPS report no.: SA171218C14-1.
2. 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.

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Air Interface and Operational Mode:

Air Interface	Bands	Transport Type	HAC Tested	Simultaneous But Not Tested	Name of Voice Service	Power Reduction
GSM	850	VO	YES	WLAN or BT	CMRS Voice	No
	1900					No
	EGPRS	VD	No	WLAN or BT	Google Duo	No
WCDMA	II	VO	No ⁽¹⁾	WLAN or BT	CMRS Voice	No
	IV					No
	V					No
	HSPA	VD	No ⁽¹⁾	WLAN or BT	Google Duo	No
FDD-LTE	2	VD	No ⁽¹⁾	WLAN or BT	VoLTE Google Duo	No
	4					No
	5					No
	7					No
	12					No
	13					No
	17					No
	66					No
TDD-LTE	41	VD	YES	WLAN or BT	VoLTE Google Duo	No
WLAN	2.4G	VD	YES	WWAN	VoLTE Google Duo	No
	5.2G	VD	No ⁽¹⁾		VoLTE Google Duo	No
	5.3G					No
	5.6G					No
	5.8G					No
Bluetooth	2.4G	DT	No	WWAN	N/A	No
Transport Type VO = Legacy Cellular Voice Service DT = Digital Transport Only (No Voice) VD = IP Voice Service over Digital Transport			Note 1. It applies the low power exemption per ANSI C63.19-2011.			

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

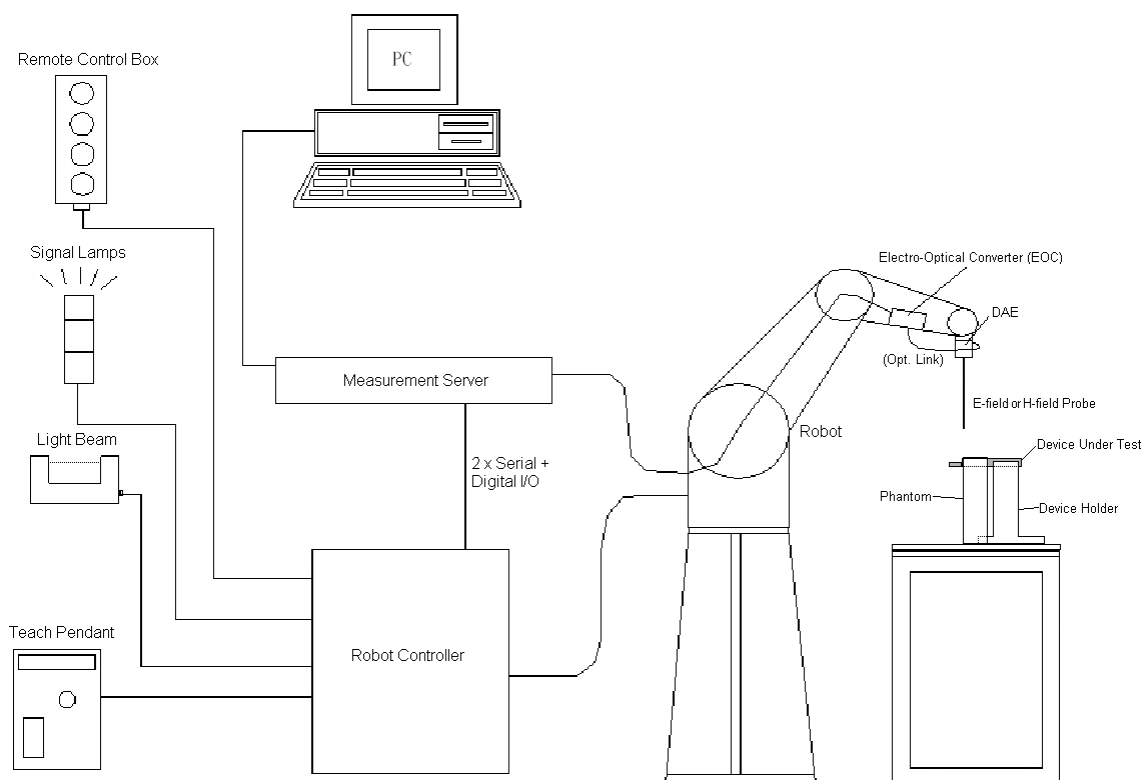


Fig-3.1 DASY System Setup

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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 (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:


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



Fig-3.2 DASY5 Measurement System


3.1.2 Probes

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

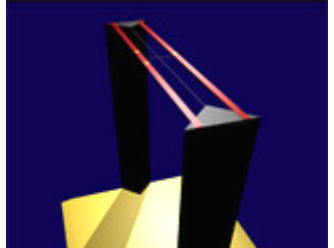
Model	EF3DV3	
Construction	One dipole parallel, two dipoles normal to probe axis Built-in shielding against static charges	
Frequency	40 MHz to 6 GHz Linearity: ± 0.2 dB	
Directivity	± 0.2 dB in air (rotation around probe axis) ± 0.4 dB in air (rotation normal to probe axis)	
Dynamic Range	2 V/m to 1000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

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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 Width : 370 mm 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 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 CD835V3 : 800 ~ 960 MHz CD1880V3 : 1710 ~ 2000 MHz CD2450V3 : 2250 ~ 2650 MHz CD2600V3 : 2450 ~ 2750 MHz CD3500V3 : 3300 ~ 3950 MHz CD5500V3 : 5000 ~ 5900 MHz	
Return Loss	CD700V3 : > 15 dB (750 MHz > 20 dB) CD835V3 : > 15 dB (835 MHz > 25 dB) CD1880V3 : > 18 dB (1880 MHz > 20 dB) CD2450V3 : > 18 dB (2450 MHz > 25 dB) CD2600V3 : > 18 dB (2600 MHz > 20 dB) CD3500V3 : > 16 dB (3500 MHz > 20 dB) CD5500V3 : > 18 dB (5500 MHz > 20 dB)	
Power Capability	> 40 W continuous	

3.2 DASYS 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.

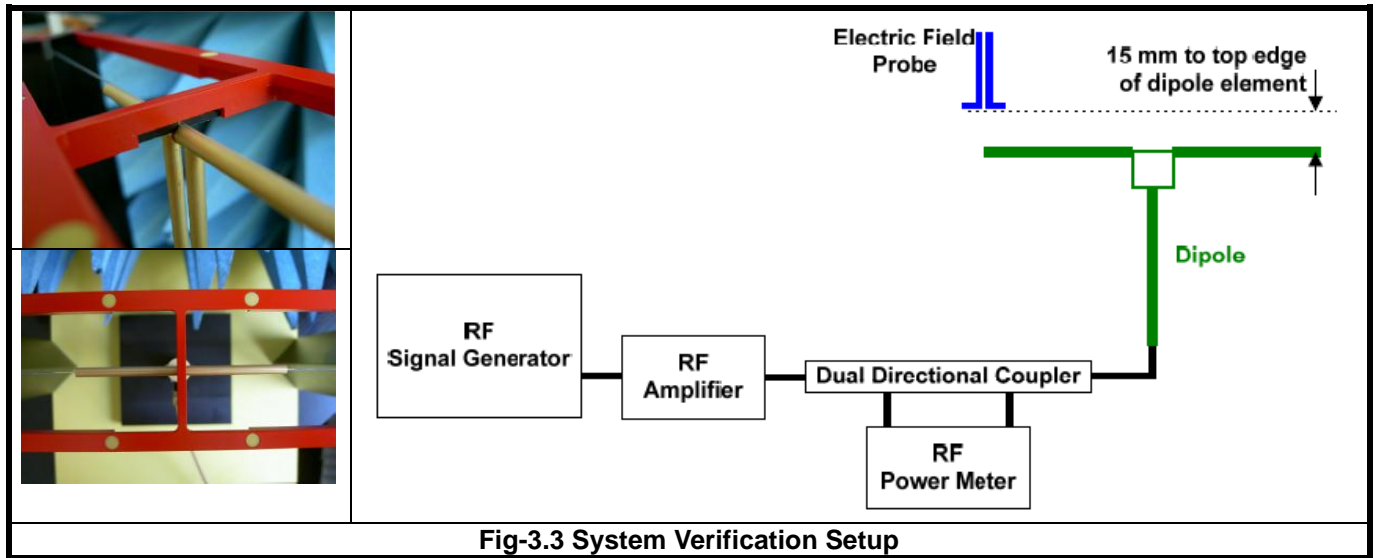


Fig-3.3 System Verification Setup

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

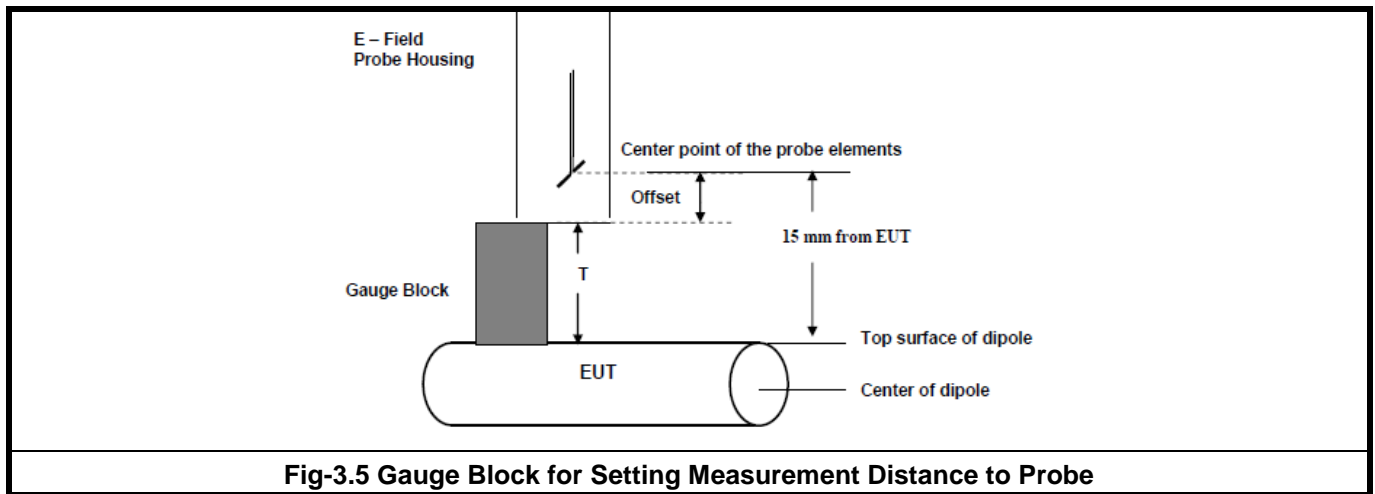


Fig-3.5 Gauge Block for Setting Measurement Distance to Probe

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.

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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.

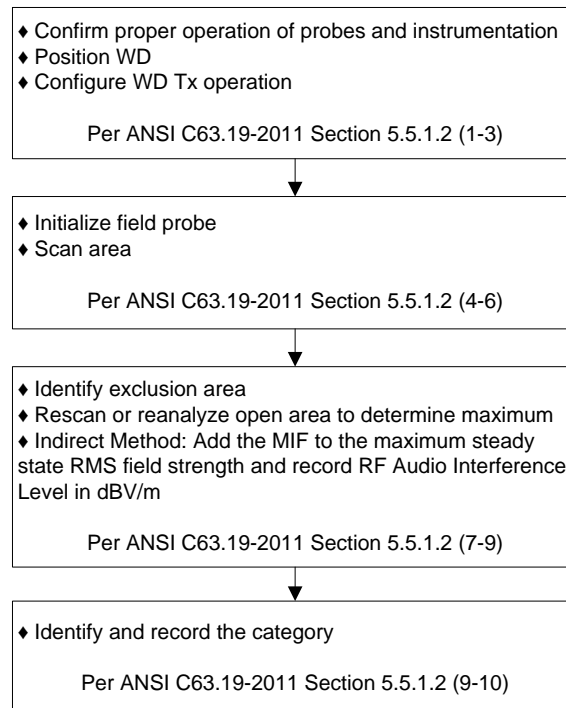


Fig-3.6 WD Near-Field Emission Test Flowchart

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.

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	CAD	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	-9.76
10172	CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	-1.62
10173	CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	-1.44
10174	CAD	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	-1.54
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

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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	20.0	107.6	113.3	114.5	113.9	5.86	Jan. 26, 2018
835	20.0	107.6	110.2	111.6	110.9	3.07	Mar. 02, 2018
1880	20.0	91.0	94.93	97.25	96.09	5.59	Jan. 26, 2018
1880	20.0	91.0	89.03	89.07	89.05	-2.14	Mar. 02, 2018
2450	20.0	88.3	86.73	92.19	89.46	1.31	Jan. 27, 2018
2450	20.0	88.3	83.42	87.22	85.32	-3.37	Mar. 21, 2018
2600	20.0	86.2	87.2	93.78	90.49	4.98	Jan. 26, 2018
2600	20.0	86.2	87.96	91.43	89.695	4.05	Mar. 02, 2018

Note:

- 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.
- For E-Field, the deviation is $[(E\text{-Field } 1 + E\text{-Field } 2) / 2 - \text{Target Value}] / \text{Target Value} \times 100\%$

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	
		ANT 1	ANT 2
GSM	GSM850	34.0	34.0
	EDGE850	27.0	27.0
	GSM1900	31.0	31.0
	EDGE1900	26.0	26.0
WCDMA	Band II	25.0	25.0
	Band IV	25.0	25.0
	Band V	25.0	25.0
FDD-LTE	Band 2	25.0	25.0
	Band 4	25.0	25.0
	Band 5	25.5	25.5
	Band 7	25.0	25.0
	Band 12	25.5	25.5
	Band 13	25.5	25.5
	Band 17	25.5	25.5
	Band 66	25.0	25.0
TDD-LTE	Band 41	25.0	25.0
		24.0	24.0
		23.0	23.0

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Air Interface		Max. Tune-up Power		
		ANT 1	ANT 2	ANT 1+2
WLAN 2.4G	802.11b	20.0	20.0	N/A
	802.11g	18.5	18.5	N/A
	802.11n HT20	18.5	18.5	21.5
	802.11n HT40	18.0	18.0	21.5
	802.11ac VHT20	18.5	18.5	21.5
	802.11ac VHT40	18.0	18.0	21.5
WLAN 5.2G	802.11a	18.5	18.5	N/A
	802.11n HT20	18.5	18.5	21.5
	802.11n HT40	18.5	18.5	21.5
	802.11ac VHT20	18.5	18.5	21.5
	802.11ac VHT40	18.5	18.5	21.5
	802.11ac VHT80	18.5	18.5	18.5
WLAN 5.3G	802.11a	18.5	18.5	N/A
	802.11n HT20	18.5	18.5	21.5
	802.11n HT40	18.5	18.5	21.5
	802.11ac VHT20	18.5	18.5	21.5
	802.11ac VHT40	18.5	18.5	21.5
	802.11ac VHT80	18.5	18.5	18.0
WLAN 5.6G	802.11a	18.5	18.5	N/A
	802.11n HT20	18.5	18.5	21.5
	802.11n HT40	18.5	18.5	21.5
	802.11ac VHT20	18.5	18.5	21.5
	802.11ac VHT40	18.5	18.5	21.5
	802.11ac VHT80	18.5	18.5	21.5
WLAN 5.8G	802.11a	18.5	18.5	N/A
	802.11n HT20	18.5	18.5	21.5
	802.11n HT40	18.5	18.5	21.5
	802.11ac VHT20	18.5	18.5	21.5
	802.11ac VHT40	18.5	18.5	21.5
	802.11ac VHT80	18.5	18.5	21.5

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 (dBm)	Worst Case MIF (dB)	Power + MIF (dB)	C63.19 Testing Required	
GSM	GSM850	34.0	3.63	37.63	YES	
	EDGE850	27.0	3.75	30.75	No	
	GSM1900	31.0	3.63	34.63	YES	
	EDGE1900	26.0	3.75	29.75	No	
WCDMA	AMR	25.0	-25.43	-0.43	No	
	HSPA	25.0	-20.39	4.61	No	
FDD-LTE		25.5	-9.76	15.74	No	
TDD-LTE	QPSK	25.0	-1.62	23.38	YES	
	16QAM	24.0	-1.44	22.56	No	
	64QAM	23.0	-1.54	21.46	No	
WLAN 2.4G	802.11b	ANT 1	20.0	-2.02	17.98	No
		ANT 2	20.0	-2.02	17.98	No
	802.11g	ANT 1	18.5	0.12	18.62	YES
		ANT 2	18.5	0.12	18.62	No
	802.11ac VHT20	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT40	ANT 1	18.0	-5.57	12.43	No
		ANT 2	18.0	-5.57	12.43	No
ANT 1+2		21.5	-5.57	15.93	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 802.11b modes were considered but not tested because 802.11g mode was worst case for the WLAN 2.4G air interface.

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Air Interface		Max. Tune-up Power (dBm)	Worst Case MIF (dB)	Power + MIF (dB)	C63.19 Testing Required	
WLAN 5.2G	802.11a	ANT 1	18.5	-3.15	15.35	No
		ANT 2	18.5	-3.15	15.35	No
	802.11n HT20	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11n HT40	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11ac VHT20	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT40	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT80	ANT 1	18.5	-5.57	12.93	No
ANT 2		18.5	-5.57	12.93	No	
ANT 1+2		18.5	-5.57	12.93	No	
WLAN 5.3G	802.11a	ANT 1	18.5	-3.15	15.35	No
		ANT 2	18.5	-3.15	15.35	No
	802.11n HT20	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11n HT40	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11ac VHT20	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT40	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT80	ANT 1	18.5	-5.57	12.93	No
ANT 2		18.5	-5.57	12.93	No	
ANT 1+2		18.0	-5.57	12.43	No	

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Air Interface		Max. Tune-up Power (dBm)	Worst Case MIF (dB)	Power + MIF (dB)	C63.19 Testing Required	
WLAN 5.6G	802.11a	ANT 1	18.5	-3.15	15.35	No
		ANT 2	18.5	-3.15	15.35	No
	802.11n HT20	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11n HT40	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11ac VHT20	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT40	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT80	ANT 1	18.5	-5.57	12.93	No
ANT 2		18.5	-5.57	12.93	No	
ANT 1+2		21.5	-5.57	15.93	No	
WLAN 5.8G	802.11a	ANT 1	18.5	-3.15	15.35	No
		ANT 2	18.5	-3.15	15.35	No
	802.11n HT20	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11n HT40	ANT 1	18.5	-13.44	5.06	No
		ANT 2	18.5	-13.44	5.06	No
		ANT 1+2	21.5	-13.44	8.06	No
	802.11ac VHT20	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT40	ANT 1	18.5	-5.57	12.93	No
		ANT 2	18.5	-5.57	12.93	No
		ANT 1+2	21.5	-5.57	15.93	No
	802.11ac VHT80	ANT 1	18.5	-5.57	12.93	No
ANT 2		18.5	-5.57	12.93	No	
ANT 1+2		21.5	-5.57	15.93	No	

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4.6 Measured Conducted Power Results

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

Band	GSM850			GSM1900		
Channel	128	189	251	512	661	810
Frequency (MHz)	824.2	836.4	848.8	1850.2	1880.0	1909.8
GSM (GMSK, 1 Tx Slot)	32.33	32.47	32.49	29.24	29.27	29.14

Band	LTE Band 41							
BW	Modulation	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	23.57	23.47	23.77	23.68	23.75
		1	50	23.47	23.37	23.65	23.58	23.67
		1	99	23.44	23.34	23.62	23.55	23.64
		50	0	22.60	22.50	22.78	22.71	22.77
		50	25	22.58	22.48	22.76	22.69	22.77
		50	50	22.51	22.41	22.69	22.62	22.71
		100	0	22.57	22.47	22.75	22.68	22.74

Band	WLAN 2.4G					
Mode	Data Rate	Channel	Frequency (MHz)	Power ANT1	Power ANT2	Power ANT1+2
802.11g	6Mbps	1	2412	18.43	18.42	-
		6	2437	18.48	18.47	-
		11	2462	18.42	18.43	-

4.7 HAC RF Emission Testing Results

Plot No.	Band	Mode	Channel	Sample	Transmit Antenna	Audio Interference Level (dB V/m)	FCC Limit (dB V/m)	FCC Margin (dB)	M-Rating
	GSM850	GSM Voice	128	Main	0	26.84	45	-18.16	M4
	GSM850	GSM Voice	189	Main	0	25.07	45	-19.93	M4
	GSM850	GSM Voice	251	Main	0	24.88	45	-20.12	M4
01	GSM850	GSM Voice	128	Main	1	33.72	45	-11.28	M4
	GSM850	GSM Voice	189	Main	1	33.65	45	-11.35	M4
	GSM850	GSM Voice	251	Main	1	33.21	45	-11.79	M4
	GSM850	GSM Voice	128	2nd	1	32.05	45	-12.95	M4
	GSM1900	GSM Voice	512	Main	0	18.29	35	-16.71	M4
	GSM1900	GSM Voice	661	Main	0	19.27	35	-15.73	M4
	GSM1900	GSM Voice	810	Main	0	19.24	35	-15.76	M4
	GSM1900	GSM Voice	512	Main	1	30.80	35	-4.20	M3
02	GSM1900	GSM Voice	661	Main	1	31.57	35	-3.43	M3
	GSM1900	GSM Voice	810	Main	1	31.14	35	-3.86	M3
	GSM1900	GSM Voice	661	2nd	1	30.85	35	-4.15	M3
	LTE B41	20M, QPSK, 1RB, OS0	39750	Main	0	19.43	35	-15.57	M4
	LTE B41	20M, QPSK, 1RB, OS0	40185	Main	0	19.35	35	-15.65	M4
	LTE B41	20M, QPSK, 1RB, OS0	40620	Main	0	19.22	35	-15.78	M4
	LTE B41	20M, QPSK, 1RB, OS0	41055	Main	0	18.82	35	-16.18	M4
	LTE B41	20M, QPSK, 1RB, OS0	41490	Main	0	19.06	35	-15.94	M4
03	LTE B41	20M, QPSK, 1RB, OS0	39750	Main	1	21.18	35	-13.82	M4
	LTE B41	20M, QPSK, 1RB, OS0	40185	Main	1	20.90	35	-14.10	M4
	LTE B41	20M, QPSK, 1RB, OS0	40620	Main	1	21.15	35	-13.85	M4
	LTE B41	20M, QPSK, 1RB, OS0	41055	Main	1	20.80	35	-14.20	M4
	LTE B41	20M, QPSK, 1RB, OS0	41490	Main	1	20.39	35	-14.61	M4
	LTE B41	20M, QPSK, 1RB, OS0	39750	2nd	1	19.23	35	-15.77	M4
	WLAN 2.4G	802.11g	1	Main	0	23.36	35	-11.64	M4
04	WLAN 2.4G	802.11g	6	Main	0	26.07	35	-8.93	M4
	WLAN 2.4G	802.11g	11	Main	0	24.07	35	-10.93	M4
	WLAN 2.4G	802.11g	1	Main	1	22.17	35	-12.83	M4
	WLAN 2.4G	802.11g	6	Main	1	22.19	35	-12.81	M4
	WLAN 2.4G	802.11g	11	Main	1	22.14	35	-12.86	M4
	WLAN 2.4G	802.11g	6	2nd	0	22.24	35	-12.76	M4

Test Engineer : Eric Wu

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
835MHz Calibration Dipole	SPEAG	CD835V3	1041	Mar. 20, 2017	2 Years
1880MHz Calibration Dipole	SPEAG	CD1880V3	1032	Apr. 25, 2017	2 Years
2450MHz Calibration Dipole	SPEAG	CD2450V3	1033	Apr. 25, 2017	2 Years
2600MHz Calibration Dipole	SPEAG	CD2600V3	1005	Mar. 17, 2016	2 Years
Isotropic E-Field Probe	SPEAG	ER3DV6	4049	Dec. 05, 2017	1 Year
Data Acquisition Electronics	SPEAG	DAE3	579	Aug. 17, 2017	1 Year
Data Acquisition Electronics	SPEAG	DAE3	914	Dec. 19, 2017	1 Year
Wireless Communication Test Set	Agilent	E5515C	MY50266628	Dec. 06, 2017	1 Year
Universal Radio Communication Tester	R&S	CMU200	104484	Sep. 22, 2017	1 Year
Universal Radio Communication Tester	R&S	CMW500	152443	Sep. 20, 2017	1 Year
MXG Analog Signal Generator	Agilent	N5181A	MY50143868	Jul. 10, 2017	1 Year
Power Meter	Anritsu	ML2495A	1218009	Jul. 12, 2017	1 Year
Power Sensor	Anritsu	MA2411B	1207252	Jul. 12, 2017	1 Year
Test Arch Phantom	SPEAG	Arch	N/A	N/A	N/A
Directional Coupler	Woken	0110A056020-10	11122702	Sep. 15, 2017	1 Year
Power Amplifier	AR	5S1G4	0339656	Sep. 20, 2017	1 Year

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6. Measurement Uncertainty

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (E)	Ci (H)	Standard Uncertainty (E)
Measurement System						
Probe Calibration	5.1	Normal	1	1	1	± 5.1 %
Axial Isotropy	4.7	Rectangular	√3	1	1	± 2.7 %
Sensor Displacement	16.5	Rectangular	√3	1	0.145	± 9.5 %
Boundary Effects	2.4	Rectangular	√3	1	1	± 1.4 %
Phantom Boundary Effect	7.2	Rectangular	√3	1	0	± 4.1 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %
Scaling with PMR Calibration	10.0	Rectangular	√3	1	1	± 5.8 %
System Detection Limit	1.0	Rectangular	√3	1	1	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %
RF Ambient Conditions	3.0	Rectangular	√3	1	1	± 1.7 %
RF Reflections	12.0	Rectangular	√3	1	1	± 6.9 %
Probe Positioner	1.2	Rectangular	√3	1	0.67	± 0.7 %
Probe Positioning	4.7	Rectangular	√3	1	0.67	± 2.7 %
Extrap. and Interpolation	1.0	Rectangular	√3	1	1	± 0.6 %
Test Sample Related						
Device Positioning Vertical	4.7	Rectangular	√3	1	0.67	± 2.7 %
Device Positioning Lateral	1.0	Rectangular	√3	1	1	± 0.6 %
Device Holder and Phantom	2.4	Rectangular	√3	1	1	± 1.4 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %
Phantom and Setup Related						
Phantom Thickness	2.4	Rectangular	√3	1	0.67	± 1.4 %
Combined Standard Uncertainty						± 16.3 %
Coverage Factor for 95 %						K = 2
Expanded Uncertainty						± 32.6 %

Uncertainty budget for HAC RF Emission

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7. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

Taiwan HwaYa EMC/RF/Safety/Telecom Lab:

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The road map of all our labs can be found in our web site also.

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Appendix A. Plots of System Verification

The plots for system verification are shown as follows.

System Check_E-Field_835_180126

DUT: HAC Dipole 835 MHz; Type: CD835V3; SN: 1041

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used: $\sigma = 0 \text{ S/m}$, $\epsilon_r = 1$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.6 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

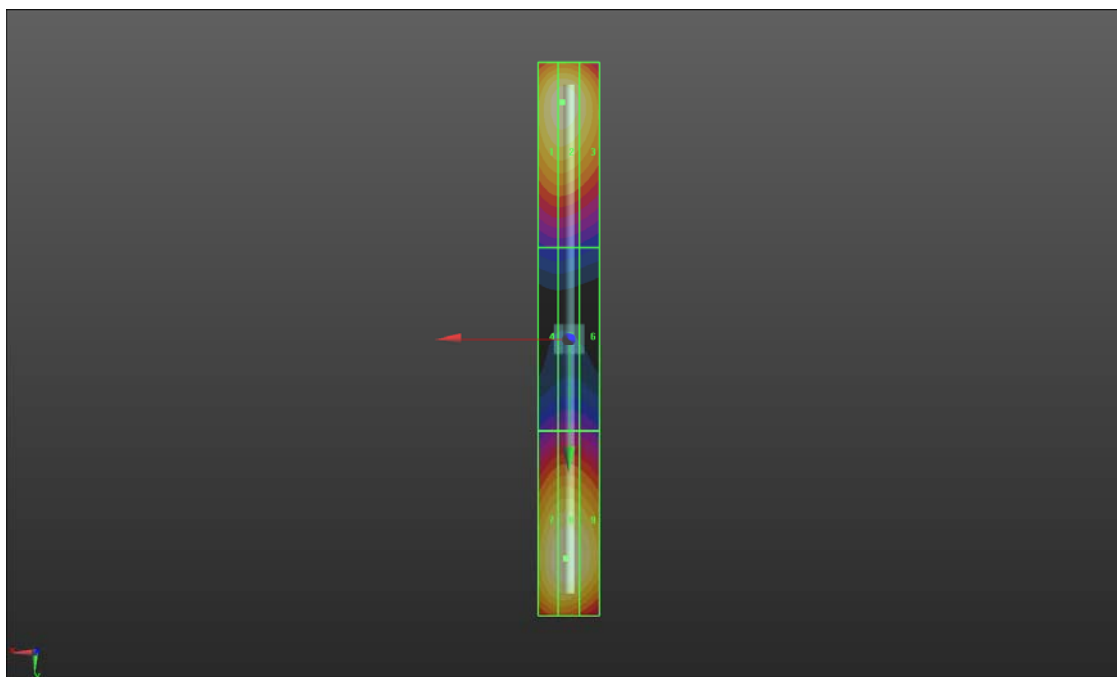
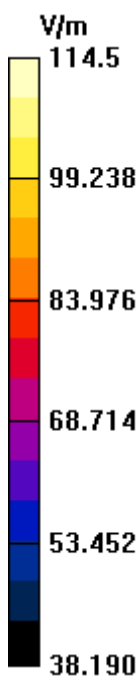
Hearing Aid Compatibility (41x361x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 132.7 V/m; Power Drift = -0.04 dB

E-field emissions = 114.5 V/m

Grid 1 M4 112.7 V/m	Grid 2 M4 113.3 V/m	Grid 3 M4 108.7 V/m
Grid 4 M4 67.27 V/m	Grid 5 M4 68.14 V/m	Grid 6 M4 66.83 V/m
Grid 7 M4 113.3 V/m	Grid 8 M4 114.5 V/m	Grid 9 M4 111.0 V/m



System Check_E-Field_1880_180126

DUT: HAC Dipole 1880 MHz; Type: CD1880V3; SN: 1032

Communication System: CW; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used: $\sigma = 0 \text{ S/m}$, $\epsilon_r = 1$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.6 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

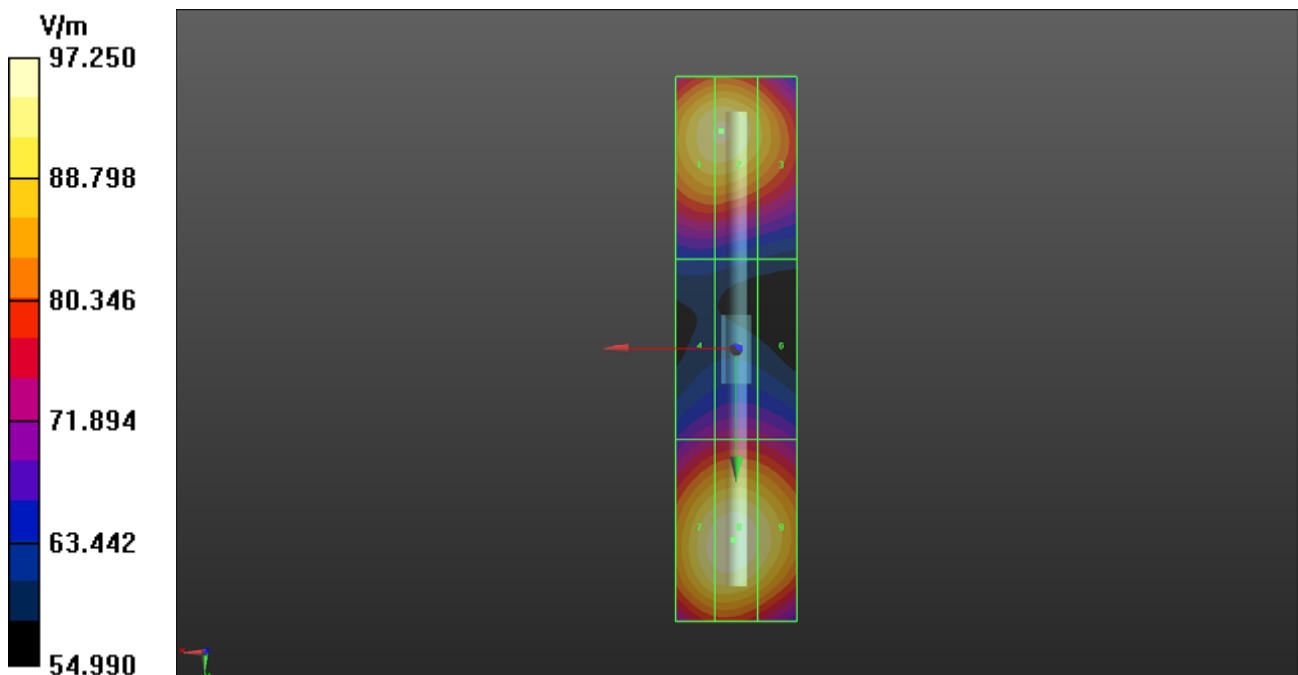
Hearing Aid Compatibility (41x181x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 152.0 V/m; Power Drift = 0.02 dB

E-field emissions = 97.25 V/m

Grid 1 M3 94.76 V/m	Grid 2 M3 94.93 V/m	Grid 3 M3 90.07 V/m
Grid 4 M3 73.50 V/m	Grid 5 M3 74.95 V/m	Grid 6 M3 74.16 V/m
Grid 7 M3 96.14 V/m	Grid 8 M3 97.25 V/m	Grid 9 M3 94.70 V/m



System Check_E-Field_2450_180321

DUT: HAC Dipole 2450 MHz; Type: CD2450V3; SN: 1033

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used: $\sigma = 0 \text{ S/m}$, $\epsilon_r = 1$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.8 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE3 Sn579; Calibrated: 2017/08/17
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

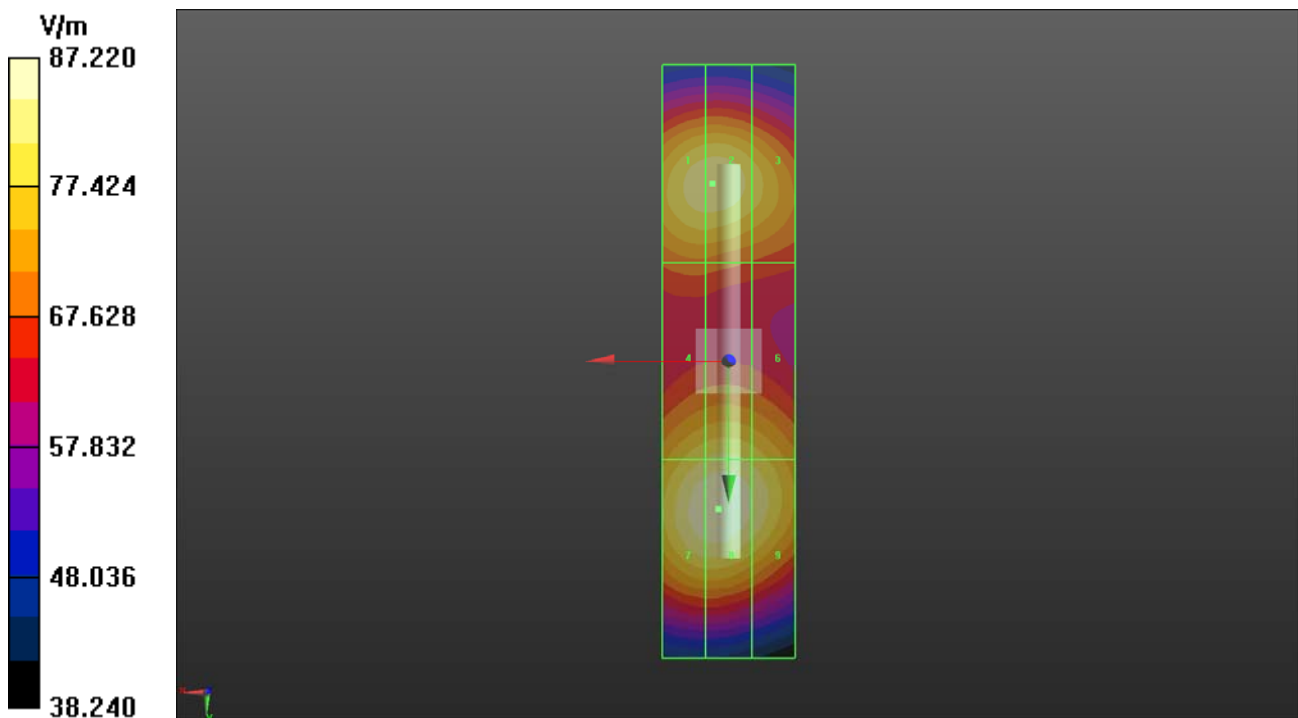
Hearing Aid Compatibility (41x181x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 78.93 V/m; Power Drift = -0.01 dB

E-field emissions = 87.22 V/m

Grid 1 M3 83.23 V/m	Grid 2 M3 83.42 V/m	Grid 3 M3 79.60 V/m
Grid 4 M3 80.93 V/m	Grid 5 M3 81.88 V/m	Grid 6 M3 79.98 V/m
Grid 7 M3 86.61 V/m	Grid 8 M3 87.22 V/m	Grid 9 M3 84.11 V/m



System Check_E-Field_2600_180126

DUT: HAC Dipole 2600 MHz; Type: CD2600V3; SN:1005

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: Air Medium parameters used: $\sigma = 0 \text{ S/m}$, $\epsilon_r = 1$; $\rho = 0 \text{ kg/m}^3$

Ambient Temperature : 23.6 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

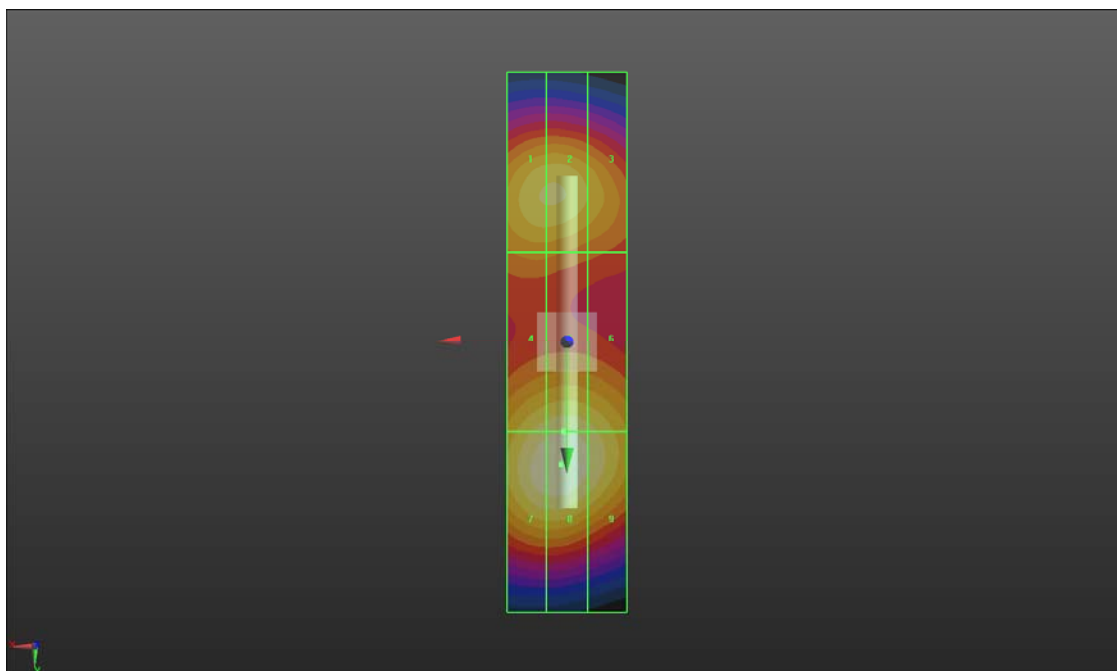
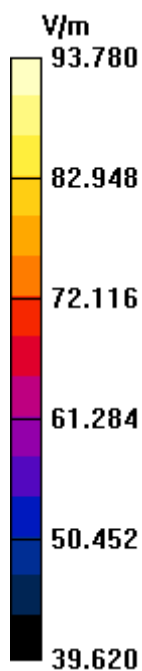
Hearing Aid Compatibility (41x181x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 72.38 V/m; Power Drift = 0.01 dB

E-field emissions = 93.78 V/m

Grid 1 M3 87.09 V/m	Grid 2 M3 87.20 V/m	Grid 3 M3 83.00 V/m
Grid 4 M3 89.05 V/m	Grid 5 M3 90.32 V/m	Grid 6 M3 88.28 V/m
Grid 7 M3 92.92 V/m	Grid 8 M3 93.78 V/m	Grid 9 M3 90.67 V/m





Appendix B. Plots of HAC RF Emission Measurement

The plots for HAC measurement are shown as follows.

P01 RF_E-Field_GSM850_GSM_Ch128_Ant1

DUT: 171218C14

Communication System: GSM-FDD (TDMA, GMSK); Frequency: 824.2 MHz; Duty Cycle: 1:8.69

Medium: Air Medium parameters used: $\sigma = 0 \text{ S/m}$, $\epsilon_r = 1$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.6 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- Hearing Aid Compatibility (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

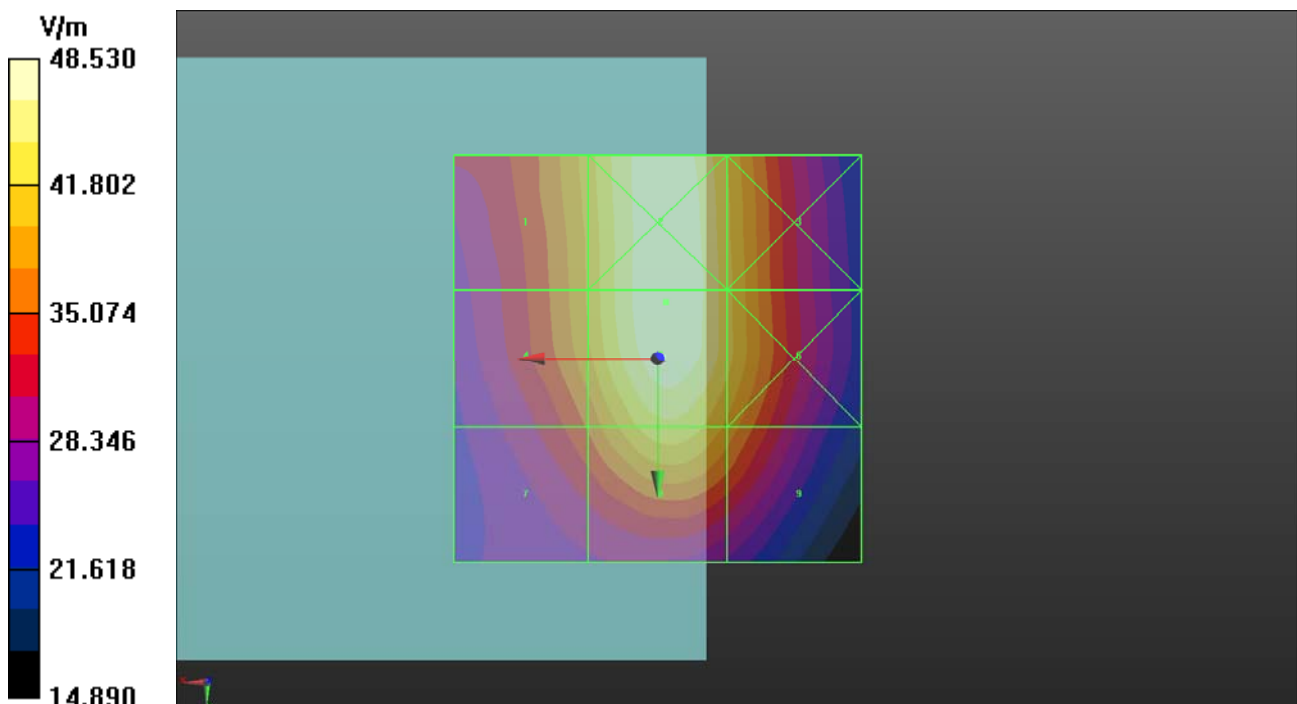
Reference Value = 55.33 V/m; Power Drift = -0.12 dB

MIF = 3.63 dB

RF audio interference level = 33.72 dBV/m

Emission category: M4

Grid 1 M4 32.22 dBV/m	Grid 2 M4 33.71 dBV/m	Grid 3 M4 32.62 dBV/m
Grid 4 M4 32.03 dBV/m	Grid 5 M4 33.72 dBV/m	Grid 6 M4 32.64 dBV/m
Grid 7 M4 30.99 dBV/m	Grid 8 M4 32.76 dBV/m	Grid 9 M4 31.8 dBV/m



P02 RF_E-Field_GSM1900_GSM_Ch661_Ant1

DUT: 171218C14

Communication System: GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz; Duty Cycle: 1:8.69

Medium: Air Medium parameters used: $\sigma = 0 \text{ S/m}$, $\epsilon_r = 1$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.6 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- Hearing Aid Compatibility (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

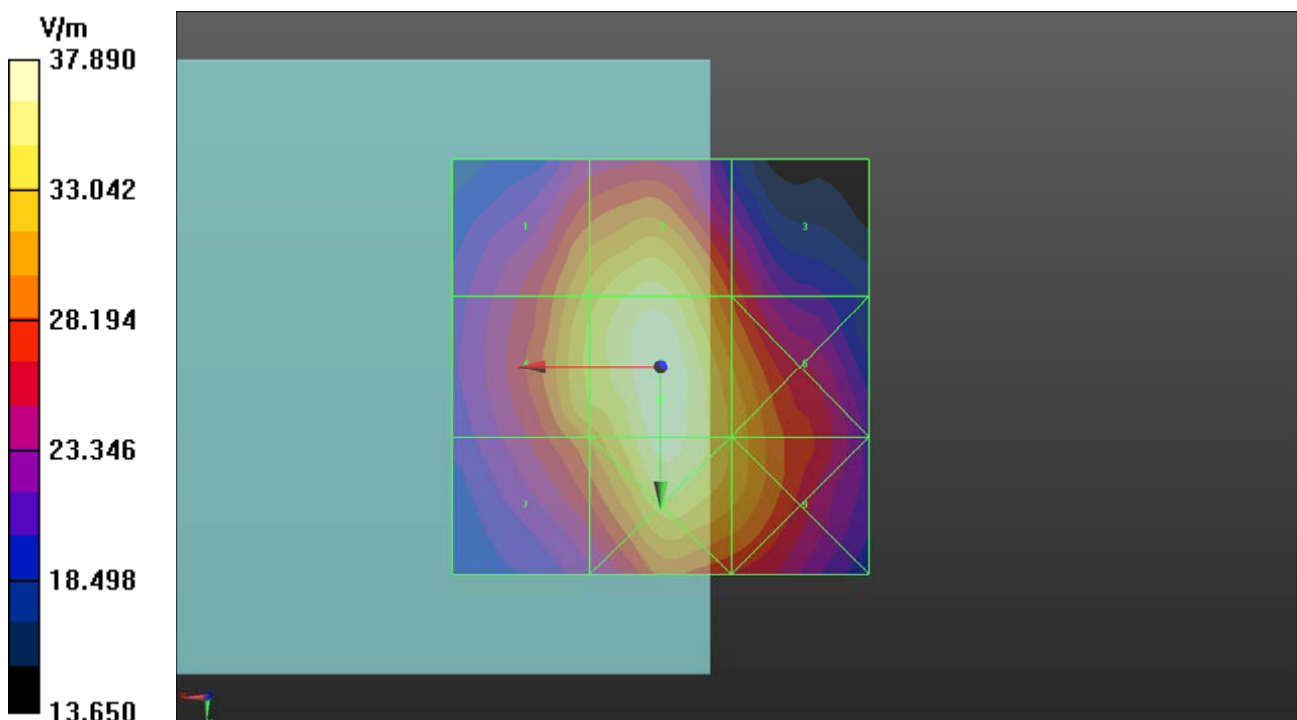
Reference Value = 39.58 V/m; Power Drift = 0.00 dB

MIF = 3.63 dB

RF audio interference level = 31.57 dBV/m

Emission category: M3

Grid 1 M3 30.17 dBV/m	Grid 2 M3 31.05 dBV/m	Grid 3 M4 28.98 dBV/m
Grid 4 M3 30.55 dBV/m	Grid 5 M3 31.57 dBV/m	Grid 6 M3 30.34 dBV/m
Grid 7 M4 29.64 dBV/m	Grid 8 M3 31.38 dBV/m	Grid 9 M3 30.34 dBV/m



P03 RF_E-Field_LTE 41_QPSK20M_Ch39750_Ant1_1RB_OS0

DUT: 171218C14

Communication System: LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 2506 MHz; Duty Cycle: 1:8.34

Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.6 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7373)

- Hearing Aid Compatibility (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

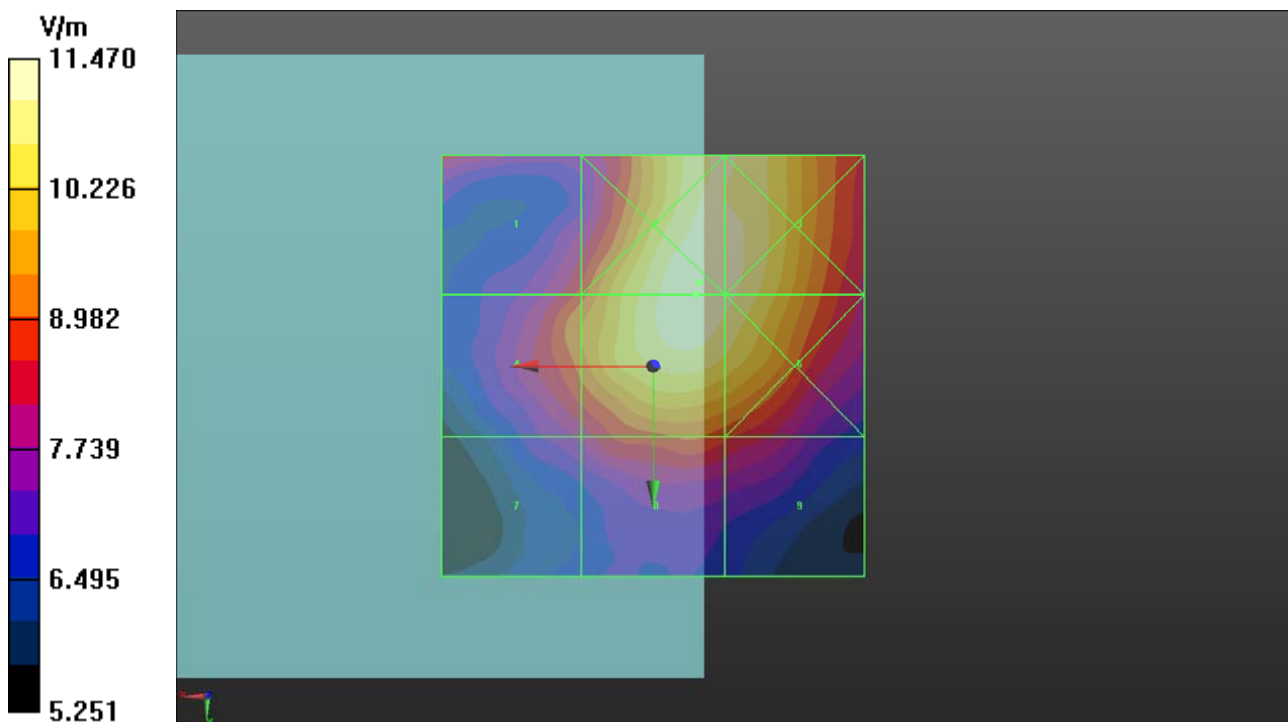
Reference Value = 19.46 V/m; Power Drift = 0.06 dB

MIF = -1.62 dB

RF audio interference level = 21.18 dBV/m

Emission category: M4

Grid 1 M4 18.9 dBV/m	Grid 2 M4 21.19 dBV/m	Grid 3 M4 21.06 dBV/m
Grid 4 M4 19.49 dBV/m	Grid 5 M4 21.18 dBV/m	Grid 6 M4 21 dBV/m
Grid 7 M4 17.95 dBV/m	Grid 8 M4 19.13 dBV/m	Grid 9 M4 18.77 dBV/m



P04 RF_E-Field_2.4G WLAN_802.11g_Ch6_Ant0

DUT: 171218C14

Communication System: IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps); Frequency: 2437 MHz; Duty Cycle: 1:12.59

Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\epsilon_r = 1$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.8 °C

DASY5 Configuration:

- Probe: EF3DV3 - SN4049; ConvF(1, 1, 1); Calibrated: 2017/12/05;
- Sensor-Surface: (Fix Surface)
- Electronics: DAE4 Sn914; Calibrated: 2017/12/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7373)

- Hearing Aid Compatibility (101x101x1): Interpolated grid: dx=0.5000 mm, dy=0.5000 mm

Device Reference Point: 0, 0, -6.3 mm

Reference Value = 28.96 V/m; Power Drift = 0.04 dB

MIF = 0.12 dB

RF audio interference level = 26.07 dBV/m

Emission category: M4

Grid 1 M4 22.91 dBV/m	Grid 2 M4 24.93 dBV/m	Grid 3 M4 24.61 dBV/m
Grid 4 M4 24.92 dBV/m	Grid 5 M4 26.07 dBV/m	Grid 6 M4 25.59 dBV/m
Grid 7 M4 25.48 dBV/m	Grid 8 M4 26.56 dBV/m	Grid 9 M4 26.56 dBV/m

