

HEARING AID COMPATIBILITY RF EMISSIONS TEST REPORT

FCC ID : IHDT56AX9
Equipment : Mobile Cellular Phone
Brand Name : Motorola
Model Name : XT2715-1, XT2715-2, XT2715-3, XT2715V
WD Emission Result : PASS
Applicant : Motorola Mobility LLC
222 W. Merchandise Mart Plaza, Chicago, IL 60654, USA
Manufacturer : Motorola Mobility LLC
222 W. Merchandise Mart Plaza, Chicago, IL 60654, USA
Standard : FCC 47 CFR §20.19
ANSI C63.19-2019

The product was received on Aug. 25, 2026 and testing was started from Sep. 21, 2026 and completed on Sep. 21, 2026. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in ANSI C63.19-2019 / 47 CFR Part 20.19 and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager



Sporton International Inc. Wensan Laboratory
No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010



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History of this test report

Report No.	Version	Description	Issued Date
HA672115A	Rev. 01	Initial issue of report	Sep. 24, 2026
HA672115A	Rev. 02	Updated the Frequency Range of 5GNR n77 Part 27O. This report is an updated version, replacing the report issued on Sep. 24, 2026.	Oct. 14, 2026



1. General Information

Product Feature & Specification	
Applicant Name	Motorola Mobility LLC
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2715-1, XT2715-2, XT2715-3, XT2715V
FCC ID	IHDT56AX9
EUT Stage	Identical Prototype
Frequency Band	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n2: 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n12: 699 MHz ~ 716 MHz 5G NR n13: 777 MHz ~ 787 MHz 5G NR n14: 788 MHz ~ 798 MHz 5G NR n25: 1850 MHz ~ 1915 MHz 5G NR n26: 814 MHz ~ 849 MHz 5G NR n30: 2305 MHz ~ 2315 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n48: 3550 MHz ~ 3700 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n70: 1695 MHz ~ 1710 MHz 5G NR n71: 663 MHz ~ 698 MHz 5G NR n77: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3980 MHz 5G NR n78: 3450 MHz ~ 3550 MHz, 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN 2.4GHz 802.11b/g/n/ax HT20/HT40/HE20/HE40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 WLAN 5GHz 802.11ax HE20/HE40/HE80 Bluetooth BR/EDR/LE NFC: ASK
Remark:	



1. The different model names XT2715-1, XT2715-2, XT2715-3, XT2715V are only for market segment purpose, there is no other difference.
2. There are three samples. The differences between them are described in the XT2715-1, XT2715-2, XT2715-3, XT2715V_Operational Description of Product Equality Declaration, which is provided separately. According to the differences, only sample 1 was chosen to perform full testing.

Reviewed by: Jason Wang

Report Producer: Carlie Tsai

2. Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3786) and the FCC designation No. TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010 TEL: +886-3-327-0838 FAX: +886-3-327-0855
Test Site No.	Sporton Site No.: SAR015-HY

3. Applied Standards

- FCC CFR47 Part 20.19
- ANSI C63.19-2019
- FCC KDB 285076 D01 HAC Guidance v06r04
- FCC KDB 285076 D03 HAC FAQ v01r07

4. Air Interfaces

Air Interface	Band MHz	Type	C63.19 RF _{AIL} Tested	Simultaneous Transmitter	Name of Voice Service	Power State Compliance
GSM	GSM850	VO	No ⁽¹⁾	WLAN, BT	CMRS Voice	Pmax ⁽²⁾
	GSM1900			WLAN, BT		
	EDGE850	VD	No ⁽¹⁾	WLAN, BT	Google Meet	
	EDGE1900			WLAN, BT		
WCDMA	Band II	VO	No ⁽¹⁾	WLAN, BT	CMRS Voice	Pmax ⁽²⁾
	Band IV			WLAN, BT		
	Band V			WLAN, BT		
	HSPA	VD	No ⁽¹⁾	WLAN, BT	Google Meet	
LTE FDD	Band 2	VD	No ⁽¹⁾	5G NR, WLAN, BT	VoLTE / Google Meet	Pmax ⁽²⁾
	Band 4			5G NR, WLAN, BT		
	Band 5			5G NR, WLAN, BT		
	Band 7			5G NR, WLAN, BT		
	Band 12			5G NR, WLAN, BT		
	Band 13			5G NR, WLAN, BT		
	Band 14			5G NR, WLAN, BT		
	Band 17			5G NR, WLAN, BT		
	Band 25			5G NR, WLAN, BT		
	Band 26			5G NR, WLAN, BT		
	Band 30			5G NR, WLAN, BT		
	Band 66			5G NR, WLAN, BT		
	Band 71			5G NR, WLAN, BT		
	LTE TDD			Band 38		
Band 41		5G NR, WLAN, BT				
Band 48		5G NR, WLAN, BT				
5G NR	n2	VD	No ⁽¹⁾	LTE, WLAN, BT	VoNR / Google Meet	Pmax ⁽²⁾
	n5			LTE, WLAN, BT		
	n7			LTE, WLAN, BT		
	n12			LTE, WLAN, BT		
	n13			LTE, WLAN, BT		
	n14			LTE, WLAN, BT		
	n25			LTE, WLAN, BT		
	n26			LTE, WLAN, BT		
	n30			LTE, WLAN, BT		
	n48			LTE, WLAN, BT		
	n66			LTE, WLAN, BT		
	n70			LTE, WLAN, BT		
	n71			LTE, WLAN, BT		
	n78			LTE, WLAN, BT		
	n41			Yes		
	n77	LTE, WLAN, BT				
Wi-Fi	2450	VD	No ⁽¹⁾	GSM, WCDMA, LTE, 5G NR	VoWiFi / Google Meet	Full
	5200			GSM, WCDMA, LTE, 5G NR, BT		
	5300			GSM, WCDMA, LTE, 5G NR, BT		
	5500			GSM, WCDMA, LTE, 5G NR, BT		
	5800			GSM, WCDMA, LTE, 5G NR, BT		
BT	2450	DT	No	GSM, WCDMA, LTE, 5G NR, 5GHz WLAN	NA	NA
Type Transport: VO= Voice only DT= Digital Transport only (no voice) VD= CMRS and IP Voice Service over Digital Transport						
Remark: 1. The air interface max power plus MIF is complies with ANSI C63.19-2019 Table 4.1 RF _{AIPL} 2. This product supports the time-average SAR feature only for 2G/3G/4G/5G. Therefore, GSM/UMTS/LTE/5G FR1 HAC testing was performed at Pmax (maximum power). However, since Wi-Fi operation does not support the time-average SAR feature, Wi-Fi operation was assessed at maximum power to ensure HAC RF compliance						

5. WD Emission Requirements

The WD's conducted power must be at or below either the stated RFAIPL (Table 4.1) or the stated peak power level (Table 4.2), or the average near-field emissions over the measurement area must be at or below the stated RFAIL (Table 4.3), or the stated peak field strength (Table 4.4). The WD may demonstrate compliance by meeting any of these four requirements, but it must do so in each of its operating bands at its established worst-case normal speech-mode operating condition.

Table 4.1 - Wireless device RF audio interference power level	
Frequency range (MHz)	RF _{AIPL} (dBm)
< 960	29
960 - 2000	26
> 2000	25

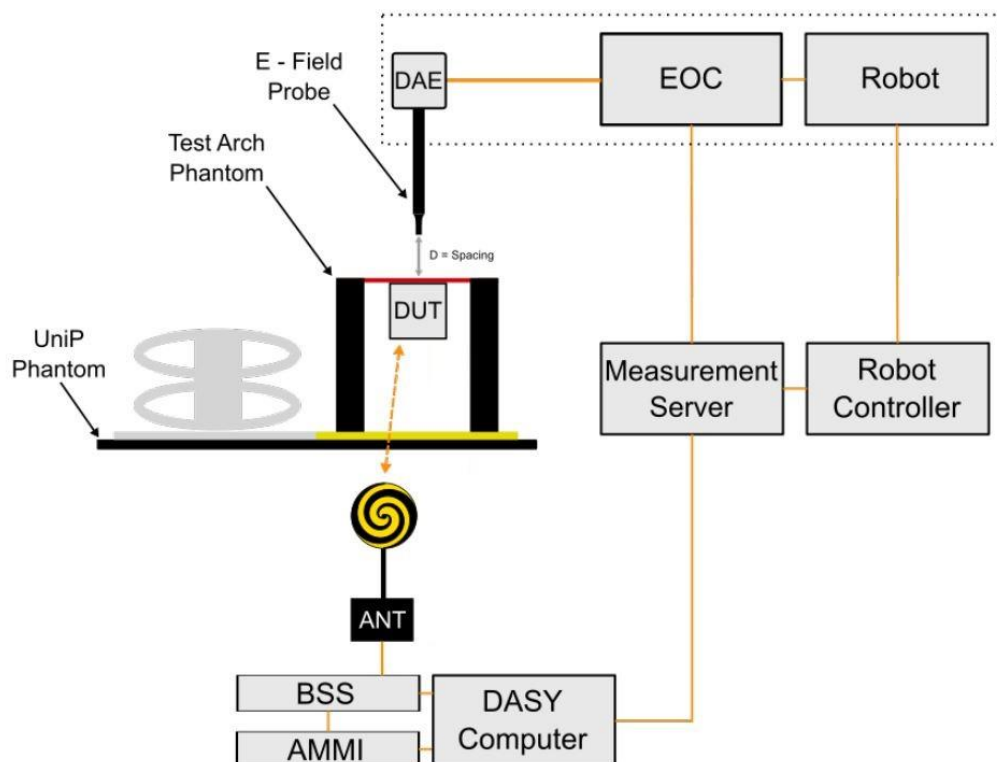
Table 4.2 - Wireless device RF peak power level	
Frequency range (MHz)	RF _{Peak Power} (dBm)
< 960	35
960 - 2000	32
> 2000	31

Table 4.3 - Wireless device RF audio interference level	
Frequency range (MHz)	RF _{AIL} [dB(V/m)]
< 960	39
960 - 2000	36
> 2000	35

Table 4.4 - Wireless device RF peak near-field level	
Frequency range (MHz)	RF _{Peak} [dB(V/m)]
< 960	45
960 - 2000	42
> 2000	41

6. System Description and Operation

<System Components>



Remark:

A typical al DASY system for HAC measurements consists of

- 6-axis robotic arm (Staubli TX2-60L/ TX2-90XL) for positioning the probe
- Mounting Platform for keeping the phantoms at a field location relative to the robot
- Measurement Server for handling all time-critical tasks, such as measurement data acquisition and supervision of safety features
- EOC (Electrical to Optical Converter) for converting the optical signal from the Data Acquisition Electronics (DAE) to electrical before being transmitted to the measurement server
- LB (Light Beam unit) for probe alignment (measurement of the exact probe length and eccentricity)
- Test Arch for Device Under Test (DUT) testing
- DAE that reads the probe voltages and transmits them to the DASY PC. It is also used to detect probe touch and collision signals
- Device Holder for positioning the DUT beneath the phantom
- ANT (wideband Antenna) for broadcasting the downlink signals emitted by base station simulators (BSS) to the WD
- Operator PC for running the DASY software to define/execute the measurements.

The following components are needed for RFail measurements only:

- Modulation Interference Factor (MIF)
- Isotropic E-field, free-space probe (e.g., EF3DVx)
- Radiofrequency (RF) emission calibration dipoles for system check / validation purposes.

<EF3DV3 E-Field Probe Specification>

Construction	One dipole parallel, two dipoles normal to probe axis Interleaved sensors Built-in shielding against static charges PEEK enclosure material
Calibration	In air from 30 MHz to 6.0 GHz (absolute accuracy $\pm 5.1\%$, $k=2$)
Frequency	30 MHz – 6 GHz Linearity: ± 0.2 dB (100 MHz – 3 GHz)
Directivity	± 0.2 dB in air (rotation around probe axis) ± 0.4 dB in air (rotation normal to probe axis)
Dynamic Range	2 – >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 Sensor displacement to probe's calibration point: <0.7 mm

Voltage to E-field Conversion

The measured voltage is first linearized to a quantity proportional to the square of the E-field using the (a, b, c, d) set of parameters specific to the communication system and sensor :

$$V_{\text{comp}i} = U_i + U_i^2 \cdot \frac{10^{\frac{d}{10}}}{\text{dcp}_i}$$

where $V_{\text{comp}i}$ = compensated signal of channel i (μV) ($i = x, y, z$)
 U_i = input signal of channel i (μV) ($i = x, y, z$)
 d = PMR factor d (dB) (Probe parameter)
 dcp_i = diode compression point of channel i (μV) (Probe parameter, $i = x, y, z$)

$$V_{\text{comp}i}^{\text{dB}\sqrt{\mu\text{V}}} = 10 + \log_{10}(V_{\text{comp}i})$$

$$\text{corr}_i = a_i \cdot e - \left(\frac{V_{\text{comp}i}^{\text{dB}\sqrt{\mu\text{V}}} - b_i}{c_i} \right)^2$$

where corr_i = correction factor of channel i (dB) ($i = x, y, z$)
 $V_{\text{comp}i}^{\text{dB}\sqrt{\mu\text{V}}}$ = compensated voltage of channel i ($\text{dB}\sqrt{\mu\text{V}}$) ($i = x, y, z$)
 a_i = PMR factor a of channel i (dB) (Probe parameter, $i = x, y, z$)
 b_i = PMR factor b of channel i ($\text{dB}\sqrt{\mu\text{V}}$) (Probe parameter, $i = x, y, z$)
 c_i = PMR factor c of channel i (Probe parameter, $i = x, y, z$)

The voltage $V_{i\text{dB}\sqrt{\mu\text{V}}}$ is the linearized voltage in $\text{dB}\sqrt{\mu\text{V}}$:

$$V_{i\text{dB}\sqrt{\mu\text{V}}} = V_{\text{comp}i}^{\text{dB}\sqrt{\mu\text{V}}} - \text{corr}_i$$

where $V_{i\text{dB}\sqrt{\mu\text{V}}}$ = linearized voltage of channel i ($\text{dB}\sqrt{\mu\text{V}}$) ($i = x, y, z$)
 $V_{\text{comp}i}^{\text{dB}\sqrt{\mu\text{V}}}$ = compensated voltage of channel i ($\text{dB}\sqrt{\mu\text{V}}$) ($i = x, y, z$)
 Corr_i = correction factor of channel i (dB) ($i = x, y, z$)

Finally, the linearized voltage is converted in μV :

$$V_i = 10^{\frac{V_{i\text{ dB}\mu V}}{10}}$$

where V_i = linearized voltage of channel i (μV) ($i = x, y, z$)

$V_{i\text{ dB}\mu V}$ = linearized voltage of channel i (dB μV) ($i = x, y, z$)

The E-field data for each channel are calculated using the linearized voltage :

$$\text{E-field Probes : } E_i = \sqrt{\frac{V_i}{\text{Norm}_i \cdot \text{ConvF}}}$$

where V_i = compensated signal of channel i , ($i = x, y, z$)

Norm_i = sensor sensitivity ($\mu V/(V/m)^2$) of channel i ($i = x, y, z$)

ConvF = sensitivity enhancement in solution

E_i = electric field strength of channel i in V/m

The RMS value of the field components gives the total field strength (Hermitian magnitude) :

$$E_{\text{tot}} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

Averaged E-field Calculation

The averaged E-field is defined by

$$E_{\text{avg}} = \frac{1}{n} \cdot \sum_{i=1}^n E_i$$

where n = the number of measurement grid point

E_i = the E-field measured at point i

RFail Calculation

The RFail is finally computed with

$$RFail[dB(V/m)] = 20 \cdot \log_{10}(E_{\text{avg}}) + MIF$$

where RFail = the Radio Frequency Audio Interference Level in dB(V/m)

E_{avg} = the averaged E-field in (V/m) calculated

MIF = the Modulation Interference Factor in dB.

7. RF Emissions Test Procedure

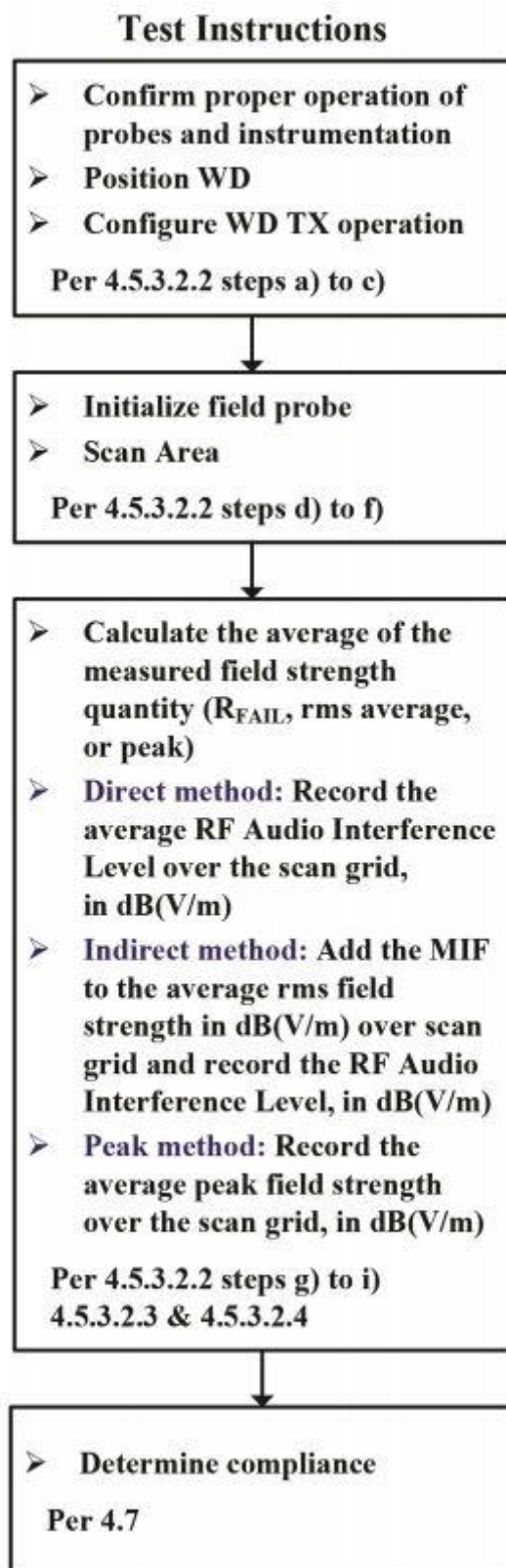
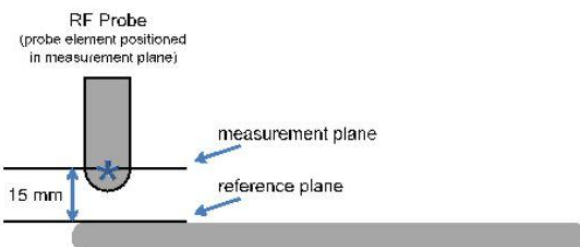
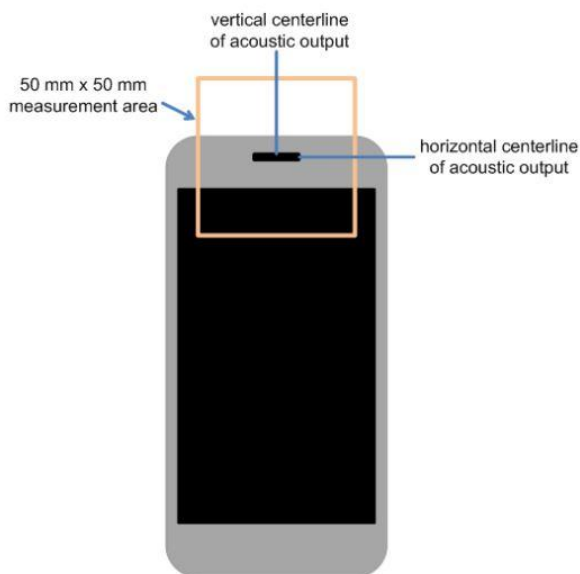
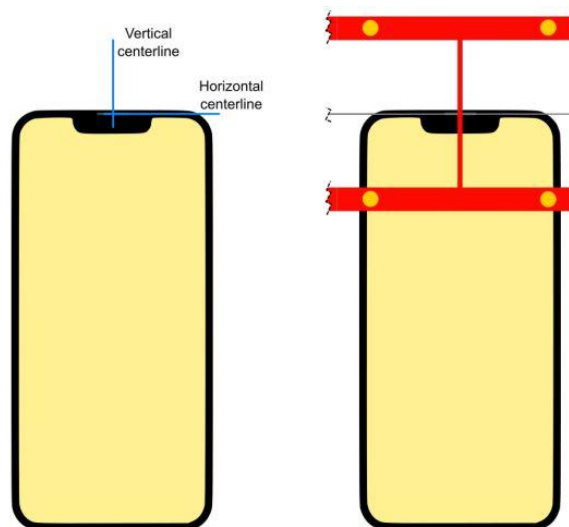


Figure of WD near-field emission scan flowchart according to ANSI C63.19:2019



The references and reference plane that shall be used in the WD emissions measurement



Device Under Test Positioning under the Test Arch

Test procedure: Indirect measurement—preferred

- The measurement procedure using a probe and instrumentation chain with a response of <10 kHz (see ANSI C63.19-2019 section 4.5.1) is identical to the direct measurement method of ANSI C63.19-2019 section 4.5.3.2.2; however, because of the bandwidth limitations, it cannot include the direct use of the spectral and temporal weighting functions. The output of such measurement systems must be readings of steady state rms field strength in dB(V/m).
- The RF audio interference level in dB(V/m) is obtained by adding the Modulation Interference Factor (in decibels) to the average steady state rms field strength reading over the measurement area, in dB(V/m), from Step c). Use this result to determine the WD's compliance per ANSI C63.19-2019 section 4.7.
- Scan the entire 50 mm by 50 mm measurement area in equally spaced step sizes and record the reading at each measurement point. The step size shall meet the specification for step size in ANSI C63.19:2019 section 4.5.3.
- Calculate the average of the measurements taken in Step c)
- Convert the average value found in Step d) to RF audio interference level, in volts per meter, by taking the square root of the reading and then dividing it by the measurement system transfer function, as established in ANSI C63.19:2019 section 4.5.3.2.1 pre-test procedure. Convert the result to dB(V/m) by taking the base-10 logarithm and multiplying it by 20. Expressed as a formula

RF audio interference level in dB(V/M) $20 * \log(R_{ave}^{1/2} / TF)$

where

R_{ave} is the average reading

- Compare this RF audio interference level to the limits in ANSI C63.19:2019 section 4.7 and record the result
- Per ANSI C63.19-2019 section 4.6, WDs capable of operating multiple transmitters shall be subject to emissions requirements for all such transmitters expected to be operated when the WD is in voice mode operation positioned at a user's ear. Each qualified transmitter is tested individually using the method of Clause 4. Other WD transmitters shall be temporarily disabled or reduced in power level such that their average antenna input power is at least 6 dB lower than the average antenna input power of the transmitter under test. The transmitter under test is set to the fixed and repeatable combination of power and modulation characteristic that is representative of the worst case (highest interference potential) likely to be encountered while the WD is experiencing normal voice mode operation. The limiting measurement for device qualification is the highest RF audio interference potential measured for any of the WD transmitters. If the highest interference measurement is from a transmitter that is not required for normal voice mode operation, a secondary rating may be given that applies when that transmitter is disabled



8. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	2600Mhz Calibration Dipole	CD2600V3	1018	Aug. 20, 2024	Aug. 17, 2027
SPEAG	3500Mhz Calibration Dipole	CD3500V3	1009	Mar. 17, 2026	Mar. 16, 2027
SPEAG	Data Acquisition Electronics	DAE4	316	Jan. 15, 2026	Jan. 14, 2027
SPEAG	Isotropic E-Field Probe	EF3DV3	4047	Dec. 03, 2025	Dec. 02, 2026
Testo	Hygro meter	608-H1	45196600	Nov. 04, 2025	Nov. 03, 2026
R&S	Wideband Radio Communication Tester	CMW500	169351	Jul. 16, 2026	Jul. 15, 2027
R&S	Wideband Radio Communication Tester	CMW500	115793	Nov. 26, 2025	Nov. 25, 2026
R&S	Wideband Radio Communication Tester	CMX500	101931	Jun. 08, 2026	Jun. 07, 2027
R&S	Wideband Radio Communication Tester	CMX500	101866	Apr. 08, 2026	Apr. 07, 2027
SPEAG	Test Arch Phantom	N/A	N/A	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Signal Generator	MG3710A	6201502524	Sep. 24, 2025	Sep. 23, 2026
Anritsu	Power Meter	ML2496A	2119003	Jul. 23, 2026	Jul. 22, 2027
Anritsu	Power Sensor	MA2411B	1911333	Jul. 30, 2026	Jul. 29, 2027
R&S	Power Sensor	NRP8S	103999	May. 22, 2026	May. 21, 2027
ATM	Dual Directional Coupler	C122H-10	P610410z-02	NCR	NCR
Woken	Attenuator	WK0602-XX	N/A	NCR	NCR
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jul. 06, 2026	Jul. 05, 2027
Mini-Circuits	Power Amplifier	ZVE-8G+	D120604	Oct. 17, 2025	Oct. 16, 2026
Mini-Circuits	Power Amplifier	ZHL-42W+	QA1344002	Oct. 17, 2025	Oct. 16, 2026

Note:

1. NCR: "No-Calibration Required"
2. The dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

9. System Validation

Obtaining accurate measurements and relevant quantities in Module HAC depends on the proper functioning of many components and the correct parameter settings. Faulty results due to drift, failures, or incorrect parameters might not be recognized, as the differences might not be obvious in the measurements.

SPEAG DASY incorporates a system check, also called system verification procedure, to test for the proper functioning of the system based on the tests described in ANSI C63.19-2019: the RF interference potential test setup is verified with RF Emission Calibration Dipoles.

<Test Setup>

1. Set the RF signal generator for either CW. Set its output power so the peak power applied to the antenna is equal to that recorded for the real or emulated signal using the WD modulation format
2. Average input power $P = 100 \text{ mW}$ (20 dBm) after adjustment for return loss. An input power that generates field levels similar to those from the WD or other suitable level may also be used
3. The test fixture should meet the two-wavelength separation criterion
4. The probe-to-dipole separation, which is measured from closest surface of the dipole to the center point of the probe sensor element, should be 15 mm

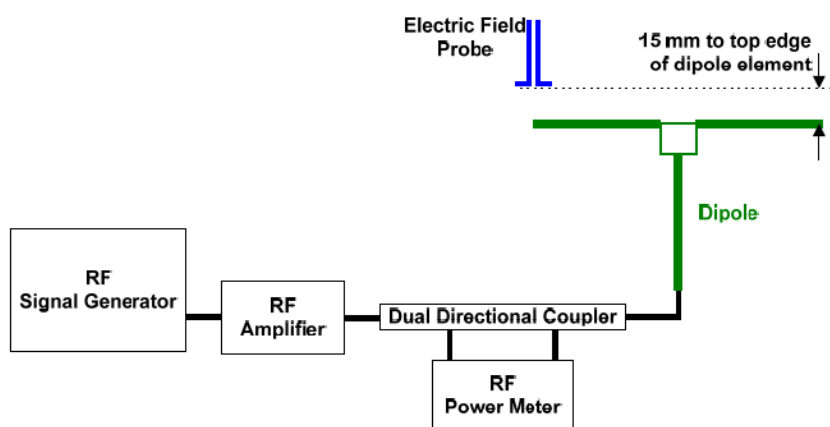


Figure of Setup Diagram

<Validation Procedure>

Place a dipole antenna meeting the requirements given in ANSI C63.19: 2019 D.11 in the position normally occupied by the WD. The dipole antenna serves as a known source for an electrical and magnetic output. Position the E-field probe so that:

- a. The probe and its cable are parallel to the coaxial feed of the dipole antenna
- b. The probe cable and the coaxial feed of the dipole antenna approach the measurement area from opposite directions; and
- c. The center point of the probe element(s) is 15 mm from the closest surface of the dipole elements

Scan the length of the dipole with the E-field probe and record the two maximum values found near the dipole ends.

Average the two readings and compare the reading to expected value in the calibration certificate or expected value in this standard.

Frequency (MHz)	Input Power (dBm)	Target Value (V/m)	E-Field (V/m)	Deviation (%)	Date
2600	100	84.8	87.9	3.66	Sep. 21, 2026
3500	100	85.2	88.7	4.11	Sep. 21, 2026



10. Modulation Interference Factor

For any specific fixed and repeatable modulated signal, a Modulation Interference Factor (MIF, expressed in decibels) may be developed that relates its interference potential to its steady state rms signal level or average power level. This factor is a function only of the audio frequency amplitude modulation characteristics of the signal and is the same for field strength or conducted power measurements. It is important to emphasize that the MIF is valid only for a specific repeatable audio frequency amplitude modulation characteristic. Any change in modulation characteristic requires determination and application of a new MIF.

MIF may be determined using a radiated RF field, a conducted RF signal, or, in a preliminary stage, a mathematical analysis of a modeled RF signal.

- a. Verify the slope accuracy and dynamic range capability over the desired operating frequency band of a fast probe or sensor, square-law detector, as specified in ANSI C63.19: 2019 D.3, and weighting system as specified in ANSI C63.19: 2019 D.4 and ANSI C63.19: 2019 D.5. For the probe and instrumentation included in the measurement of MIF, additional calibration and application of calibration factors are not required.
- b. Using RF illumination, or conducted coupling, apply the specific modulated signal in question to the measurement system at a level within its confirmed operating dynamic range
- c. Measure the steady-state rms level at the output of the fast probe or sensor
- d. Measure the steady-state average level at the weighting output
- e. Without changing the square-law detector or weighting system, and using RF illumination, or conducted coupling, substitute for the specific modulated signal a 1 kHz, 80% amplitude modulated carrier at the same frequency and adjust its strength until the level at the weighting output equals the Step d) measurement
- f. Without changing the carrier level from Step e), remove the 1 kHz modulation and again measure the steady-state rms level indicated at the output of the fast probe or sensor.
- g. The MIF for the specific modulation characteristic is given by the ratio of the Step f) measurement to the Step c) measurement, expressed in decibels ($20 \cdot \log(\text{step6}/\text{step3})$)

In practice, Step e) and Step f) need not be repeated for each MIF determination if the relationship between the two measurements has been pre-established for the measurement system over the operating frequency and dynamic ranges. In such cases, only the modulation characteristic being tested needs to be available during WD testing. Since indirect measurement procedure was using for RF audio interference power level evaluation, the 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 determine the Wireless device RF audio interference power level.



UID	Communication System Name	MIF(dB)
10021	GSM-FDD(TDMA,GMSK)	3.63
10023	GPRS-FDD (TDMA, GMSK, TN 0)	3.8
10024	GPRS-FDD (TDMA, GMSK, TN 0-1)	1.15
10027	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	-0.67
10028	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	-2.05
10025	EDGE-FDD (TDMA, 8PSK, TN 0)	3.75
10026	EDGE-FDD (TDMA, 8PSK, TN 0-1)	1.23
10029	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	-0.52
10058	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	-1.82
10460	UMTS-FDD(WCDMA, AMR)	-25.43
10225	UMTS-FDD (HSPA+)	-20.39
10170	LTE-FDD(SC-FDMA,1RB,20MHz,16-QAM)	-9.76
10173	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	-1.44
10769	5G NR 100% duty (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	-12.08
10973	5G NR 40% duty ((DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	-1.64
10061	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	-2.02
10077	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	0.12
10427	IEEE 802.11n (HT Greeneld, 150 Mbps, 64-QAM)	-13.44
10069	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	-3.15
10616	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	-5.57
10671	IEEE 802.11ax (20MHz, MCS0, 90pc duty cycle)	-5.58
11026	IEEE 802.11be (320MHz, MCS0, 99pc duty cycle)	-28.73
*NA	5G NR 90% PC3(DFT-s-OFDM, 1 RB, 100MHz,BPSK, 30kHz)	-9.26
*NA	5G NR 80% PC3(DFT-s-OFDM, 1 RB, 100MHz,BPSK, 30kHz)	-5.07
*NA	5G NR 70% PC3(DFT-s-OFDM, 1 RB, 100MHz,BPSK, 30kHz)	-3.78
*NA	5G NR 60% PC3(DFT-s-OFDM, 1 RB, 100MHz,BPSK, 30kHz)	-2.24

Remark:

Refer to appendix E for RFE UID specifications summary provided by SPEAG

*Refer to appendix F for MIF measurements conducted by test lab for 5G NR TDD power class 1.5.

11. Evaluation of WD RF interference potential

General Note:

1. The following table is according to ANSI C63.19:2019 section 4.4 indirect measurement procedure to evaluation max average conducted power from each air interface plus MIF to evaluate whether it complies with ANSI C63.19-2019 Table 4.1 RF_{AIPL} , compliance with table 4.1 means compliance with WD emission requirements.
2. To demonstrate compliance with ANSI C63.19-2019 requirement, HAC RF evaluations were performed using the Pmax average power level for technologies that support the TAS feature, including GSM, UMTS, LTE, FR1, and Wi-Fi.
3. If certain air interfaces did not meet the requirements specified in ANSI C63.19-2019 Table 4.1, they were further evaluated according to the RF_{AIL} criteria in Table 4.3 of the same standard. The results of the RF_{AIL} evaluation can be found in Section 11.1.

<WWAN operation>

Air Interface	Ant 0						
	Max Burst	Duty Cycle	Max Average	Worst Case	$RF_{AIPL}(dBm)$	RF_{AIPL} Limit(dBm)	RF_{AIPL}
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
GSM850	33.50	12.5%	24.50	3.63	28.13	29	Pass
GPRS850 - 1TX	33.50	12.5%	24.50	3.8	28.30	29	Pass
GPRS850 - 2TX	32.50	25.0%	26.50	1.15	27.65	29	Pass
GPRS850 - 3TX	30.50	37.5%	26.20	-0.67	25.53	29	Pass
GPRS850 - 4TX	29.50	50.0%	26.50	-2.05	24.45	29	Pass
EDGE850 - 1TX	28.50	12.5%	19.50	3.75	23.25	29	Pass
EDGE850 - 2TX	27.00	25.0%	21.00	1.23	22.23	29	Pass
EDGE850 - 3TX	25.00	37.5%	20.70	-0.52	20.18	29	Pass
EDGE850 - 4TX	23.50	50.0%	20.50	-1.82	18.68	29	Pass
GSM1900	30.50	12.5%	21.50	3.63	25.13	26	Pass
GPRS1900 - 1TX	30.50	12.5%	21.50	3.8	25.30	26	Pass
GPRS1900 - 2TX	29.50	25.0%	23.50	1.15	24.65	26	Pass
GPRS1900 - 3TX	27.50	37.5%	23.20	-0.67	22.53	26	Pass
GPRS1900 - 4TX	26.00	50.0%	23.00	-2.05	20.95	26	Pass
EDGE1900 - 1TX	27.50	12.5%	18.50	3.75	22.25	26	Pass
EDGE1900 - 2TX	26.00	25.0%	20.00	1.23	21.23	26	Pass
EDGE1900 - 3TX	24.00	37.5%	19.70	-0.52	19.18	26	Pass
EDGE1900 - 4TX	22.50	50.0%	19.50	-1.82	17.68	26	Pass
WCDMA	24.00	100.0%	24.00	-25.43	-1.43	26	Pass
WCDMA - HSPA	24.00	100.0%	24.00	-20.39	3.61	26	Pass
LTE - FDD	24.00	100.0%	24.00	-9.76	14.24	25	Pass
5G FR1 - FDD	24.00	100.0%	24.00	-12.08	11.92	25	Pass



Ant 1							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
LTE - FDD	24.00	100.0%	24.00	-9.76	14.24	25	Pass
LTE - TDD_PC2/PC3	27.00	43.3%	23.40	-1.44	21.96	25	Pass
5G FR1 - FDD	24.00	100.0%	24.00	-12.08	11.92	25	Pass
5G NR - TDD_PC3	24.00	100.0%	24.00	-12.08	11.92	25	Pass
5G NR - TDD PC3	24.00	90.0%	23.50	-9.26	14.24	25	Pass
5G NR - TDD PC3	24.00	80.0%	23.00	-5.07	17.93	25	Pass
5G NR - TDD PC3	24.00	70.0%	22.50	-3.78	18.72	25	Pass
5G NR - TDD PC3	24.00	60.0%	21.80	-2.24	19.56	25	Pass
5G NR - TDD_PC2	27.00	50.0%	24.00	-1.64	22.36	25	Pass
5G NR - TDD_PC1.5	27.00	50.0%	24.00	-1.64	22.36	25	Pass

Ant 2							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
5G NR - TDD_PC3	21.00	100.0%	21.00	-12.08	8.92	25	Pass
5G NR - TDD PC3	21.00	90.0%	20.50	-9.26	11.24	25	Pass
5G NR - TDD PC3	21.00	80.0%	20.00	-5.07	14.93	25	Pass
5G NR - TDD PC3	21.00	70.0%	19.50	-3.78	15.72	25	Pass
5G NR - TDD PC3	21.00	60.0%	18.80	-2.24	16.56	25	Pass
5G NR - TDD_PC2	24.00	50.0%	21.00	-1.64	19.36	25	Pass
5G NR - TDD_PC1.5	24.00	50.0%	21.00	-1.64	19.36	25	Pass

Ant 3							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
5G NR - TDD_PC3	20.00	100.00%	20.00	-12.08	7.92	25	Pass
5G NR - TDD PC3	20.00	90.00%	19.50	-9.26	10.24	25	Pass
5G NR - TDD PC3	20.00	80.00%	19.00	-5.07	13.93	25	Pass
5G NR - TDD PC3	20.00	70.00%	18.50	-3.78	14.72	25	Pass
5G NR - TDD PC3	20.00	60.00%	17.80	-2.24	15.56	25	Pass
5G NR - TDD_PC2	22.00	50.00%	19.00	-1.64	17.36	25	Pass
5G NR - TDD_PC1.5	27.00	50.00%	24.00	-1.64	22.36	25	Pass

Ant 4							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
LTE - FDD	24.00	100.0%	24.00	-9.76	14.24	25	Pass
5G FR1 - FDD	24.00	100.0%	24.00	-12.08	11.92	25	Pass
5G NR - TDD_PC3	24.00	100.00%	24.00	-12.08	11.92	25	Pass
5G NR - TDD PC3	24.00	90.00%	23.50	-9.26	14.24	25	Pass
5G NR - TDD PC3	24.00	80.00%	23.00	-5.07	17.93	25	Pass
5G NR - TDD PC3	24.00	70.00%	22.50	-3.78	18.72	25	Pass
5G NR - TDD PC3	24.00	60.00%	21.80	-2.24	19.56	25	Pass
5G NR - TDD_PC2	27.00	50.00%	24.00	-1.64	22.36	25	Pass
5G NR - TDD_PC1.5	27.00	50.00%	24.00	-1.64	22.36	25	Pass

Ant 5							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
LTE – TDD_PC2/PC3	24.00	43.3%	20.40	-1.44	18.96	25	Pass
5G NR - TDD_PC3	24.00	100.00%	24.00	-12.08	11.92	25	Pass
5G NR - TDD PC3	24.00	90.00%	23.50	-9.26	14.24	25	Pass
5G NR - TDD PC3	24.00	80.00%	23.00	-5.07	17.93	25	Pass
5G NR - TDD PC3	24.00	70.00%	22.50	-3.78	18.72	25	Pass
5G NR - TDD PC3	24.00	60.00%	21.80	-2.24	19.56	25	Pass
5G NR - TDD_PC2	27.00	50.00%	24.00	-1.64	22.36	25	Pass
5G NR - TDD_PC1.5	27.00	50.00%	24.00	-1.64	22.36	25	Pass

Ant 7							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
5G NR - TDD_PC3	21.00	100.00%	21.00	-12.08	8.92	25	Pass
5G NR - TDD PC3	21.00	90.00%	20.50	-9.26	11.24	25	Pass
5G NR - TDD PC3	21.00	80.00%	20.00	-5.07	14.93	25	Pass
5G NR - TDD PC3	21.00	70.00%	19.50	-3.78	15.72	25	Pass
5G NR - TDD PC3	21.00	60.00%	18.80	-2.24	16.56	25	Pass
5G NR - TDD_PC2	24.00	50.00%	21.00	-1.64	19.36	25	Pass

Ant 8							
Air Interface	Max Burst	Duty Cycle	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit(dBm)	RFAIPL
	Antenna Input	(%)	Antenna Input	MIF (dB)			
	Power (dBm)		Power (dBm)				
5G NR - TDD_PC3	25.00	100.00%	25.00	-12.08	12.92	25	Pass
5G NR - TDD PC3	25.00	90.00%	24.50	-9.26	15.24	25	Pass
5G NR - TDD PC3	25.00	80.00%	24.00	-5.07	18.93	25	Pass
5G NR - TDD PC3	25.00	70.00%	23.50	-3.78	19.72	25	Pass
5G NR - TDD PC3	25.00	60.00%	22.80	-2.24	20.56	25	Pass
5G NR - TDD_PC2	26.00	50.00%	23.00	-1.64	21.36	25	Pass

Air Interface	Max Burst	Duty	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit (dBm)	RFAIPL
	Antenna Input	Cycle	Antenna Input	MIF (dB)			
	Power (dBm)	(%)	Power (dBm)				
5G FR1 - FDD_PC2 UL MIMO (Ant 1+4)	27.00	100.00%	27.00	-12.08	14.92	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 1+4)	27.00	90.00%	26.50	-9.26	17.24	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 1+4)	27.00	80.00%	26.00	-5.07	20.93	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 1+4)	27.00	70.00%	25.50	-3.78	21.72	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 1+4)	27.00	60.00%	24.80	-2.24	22.56	25	Pass
5G FR1 - TDD_PC1.5 UL MIMO (Ant 1+4)	30.00	50.00%	27.00	-1.64	25.36	25	Testing



Air Interface	Max Burst	Duty	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit (dBm)	RFAIPL
	Antenna Input	Cycle	Antenna Input	MIF (dB)			
	Power (dBm)	(%)	Power (dBm)				
5G FR1 - FDD_PC2 UL MIMO (Ant 7+2)	24.00	100.00%	24.00	-12.08	11.92	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 7+2)	24.00	90.00%	23.50	-9.26	14.24	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 7+2)	24.00	80.00%	23.00	-5.07	17.93	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 7+2)	24.00	70.00%	22.50	-3.78	18.72	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 7+2)	24.00	60.00%	21.80	-2.24	19.56	25	Pass
5G FR1 - TDD_PC1.5 UL MIMO (Ant 7+2)	27.00	50.00%	24.00	-1.64	22.36	25	Pass

Air Interface	Max Burst	Duty	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit (dBm)	RFAIPL
	Antenna Input	Cycle	Antenna Input	MIF (dB)			
	Power (dBm)	(%)	Power (dBm)				
5G FR1 - FDD_PC2 UL MIMO (Ant 5+3)	27.00	100.00%	27.00	-12.08	14.92	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 5+3)	27.00	90.00%	26.50	-9.26	17.24	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 5+3)	27.00	80.00%	26.00	-5.07	20.93	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 5+3)	27.00	70.00%	25.50	-3.78	21.72	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 5+3)	27.00	60.00%	24.80	-2.24	22.56	25	Pass
5G FR1 - TDD_PC1.5 UL MIMO (Ant 5+3)	30.00	50.00%	27.00	-1.64	25.36	25	Testing

Air Interface	Max Burst	Duty	Max Average	Worst Case	RFAIPL(dBm)	RFAIPL Limit (dBm)	RFAIPL
	Antenna Input	Cycle	Antenna Input	MIF (dB)			
	Power (dBm)	(%)	Power (dBm)				
5G FR1 - FDD_PC2 UL MIMO (Ant 8+1)	27.50	100.00%	27.50	-12.08	15.42	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 8+1)	27.50	90.00%	27.00	-9.26	17.74	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 8+1)	27.50	80.00%	26.50	-5.07	21.43	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 8+1)	27.50	70.00%	26.00	-3.78	22.22	25	Pass
5G FR1 - FDD_PC2 UL MIMO (Ant 8+1)	27.50	60.00%	25.30	-2.24	23.06	25	Pass
5G FR1 - TDD_PC1.5 UL MIMO (Ant 8+1)	29.50	50.00%	26.50	-1.64	24.86	25	Pass

Note: The above UL MIMO power is a conservative linear sum of the worst-case maximum allowed powers for the MIMO antennas. And For conservative RFAIPL calculation, the maximum RF output tune-up power for UL MIMO modes among all WWAN bands was selected.



<WLAN operation>

Ant 6									
Air Interface		Max Burst Antenna Input Power (dBm)	Duty cycle	Time average calculation	Max Average Antenna Input Power (dBm)	Worst Case MIF (dB)	RF _{AIPL} (dBm)	RF _{AIPL} Limit(dBm)	RF _{AIPL}
2.4GHz WLAN	802.11b	19.00	100.0%	0.0	19.00	-2.02	16.98	25	Pass
	802.11g	19.00	100.0%	0.0	19.00	0.12	19.12	25	Pass
	802.11n-HT20	19.00	100.0%	0.0	19.00	-13.44	5.56	25	Pass
	802.11ac-VHT20	19.00	100.0%	0.0	19.00	-5.57	13.43	25	Pass
	802.11ax-HE20	19.00	100.0%	0.0	19.00	-5.58	13.42	25	Pass
	802.11be-EHT20	19.00	100.0%	0.0	19.00	-28.73	-9.73	25	Pass

Ant 9									
Air Interface		Max Burst Antenna Input Power (dBm)	Duty cycle	Time average calculation	Max Average Antenna Input Power (dBm)	Worst Case MIF (dB)	RF _{AIPL} (dBm)	RF _{AIPL} Limit(dBm)	RF _{AIPL}
5/6GHz WLAN	802.11a	15.50	100.0%	0.0	15.50	-3.15	12.35	25	Pass
	802.11n-HT20	15.50	100.0%	0.0	15.50	-13.44	2.06	25	Pass
	802.11n-HT40	15.50	100.0%	0.0	15.50	-13.44	2.06	25	Pass
	802.11ac-VHT20	15.50	100.0%	0.0	15.50	-5.57	9.93	25	Pass
	802.11ac-VHT40	15.50	100.0%	0.0	15.50	-5.57	9.93	25	Pass
	802.11ac-VHT80	15.50	100.0%	0.0	15.50	-5.57	9.93	25	Pass
	802.11ax-HE20	15.50	100.0%	0.0	15.50	-5.58	9.92	25	Pass
	802.11ax-HE40	15.50	100.0%	0.0	15.50	-5.58	9.92	25	Pass
	802.11ax-HE80	15.50	100.0%	0.0	15.50	-5.58	9.92	25	Pass

**11.1 Evaluation RF_{AIL}** **General Note:**

1. The HAC measurement system applies MIF value onto the measured RMS E-field, which is indirect method in ANSI C63.19-2019 version, and reports the RF audio interference level.
2. Phone Condition: Mute on; Backlight off; Max Volume

Plot No.	Air Interface	Radio Configuration	Channel	Transmit Ant.	Average Antenna Input Power (dBm)	MIF	RF_{AIL} (dBV/m)
1	FR1 n41	100M/QPSK/1/1	518598	Ant 1+4	28.34	-1.64	26.11
3	FR1 n77	100M/QPSK/1/1	633332	Ant 5+3	28.85	-1.64	28.16
5	FR1 n77	100M/QPSK/1/1	661334	Ant 5+3	28.98	-1.64	28.80

Test Engineer : Willy Yu, Lev Lo, Barry Chen

12. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances. Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is showed below Table..

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (E)	Standard Uncertainty (E)
Measurement System					
Probe Calibration	5.1	Normal	1	1	± 5.1 %
Axial Isotropy	4.7	Rectangular	√3	1	± 2.7 %
Sensor Displacement	16.5	Rectangular	√3	1	± 9.5 %
Boundary Effects	2.4	Rectangular	√3	1	± 1.4 %
Phantom Boundary Effects	7.2	Rectangular	√3	1	± 4.1 %
Linearity	4.7	Rectangular	√3	1	± 2.7 %
Scaling with PMR Calibration	10.0	Rectangular	√3	1	± 5.77 %
System Detection Limit	1.0	Rectangular	√3	1	± 0.6 %
Readout Electronics	0.3	Normal	1	1	± 0.3 %
Response Time	0.8	Rectangular	√3	1	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	± 1.5 %
RF Ambient Conditions	3.0	Rectangular	√3	1	± 1.7 %
RF Reflections	12.0	Rectangular	√3	1	± 6.9 %
Probe Positioner	1.2	Rectangular	√3	1	± 0.7 %
Probe Positioning	4.7	Rectangular	√3	1	± 2.7 %
Extrap. and Interpolation	1.0	Rectangular	√3	1	± 0.6 %
Test Sample Related					
Device Positioning Vertical	4.7	Rectangular	√3	1	± 2.7 %
Device Positioning Lateral	1.0	Rectangular	√3	1	± 0.6 %
Device Holder and Phantom	2.4	Rectangular	√3	1	± 1.4 %
Power Drift	5.0	Rectangular	√3	1	± 2.9 %
Phantom and Setup Related					
Phantom Thickness	2.4	Rectangular	√3	1	± 1.4 %
Combined Standard Uncertainty					± 16.30 %
Coverage Factor for 95 %					K = 2
Combined Std. Uncertainty					± 16.30 %
Coverage Factor for 95 %					K = 2
Expanded STD Uncertainty					± 32.6 %
Declaration of Conformity: The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.					
Comments and Explanations: The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.					

Uncertainty Budget of HAC free field assessment



13. References

- [1] ANSI C63.19:2019, "American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids", Aug. 2019.
- [2] FCC KDB 285076 D01v06r04, "Equipment Authorization Guidance for Hearing Aid Compatibility", Sep 2023.
- [3] FCC KDB 285076 D03v01r07, "Hearing aid compatibility frequently asked questions", Dec. 2024
- [4] SPEAG DASY System Handbook

Appendixes

Please refer to separated files for the following appendixes

Appendix A. Plots of System Performance Check

Appendix B. Plots of RF Emission Measurement

Appendix C. DASY Calibration Certificate

Appendix D. Test Setup Photos

Appendix E. UID specifications for HAC RFE

Appendix F. Modulation Interference Factor (MIF) Measurements

-----THE END-----