

HAC RF-Emission Test Report

Report No. : HFBCUN-WTW-P25020520

Applicant : Askey Computer Corporation

Address : 10F, NO.119, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY, TAIWAN

Product : Mobile Computer

FCC ID : H8NPCTE020

Brand : Askey

Model No. : RC40

FCC Rule Part : CFR §20.19

Standards : ANSI C63.19-2019, KDB 285076 D01 v06r02, KDB 285076 D02 v04, KDB 285076 D03 v01r06,
RSS-HAC-2022 ISSUE2 AMENDMENT

Sample Received Date : Mar. 11, 2025

Date of Testing : Jun. 23, 2025

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Test Location : No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City, Taiwan

FCC Accredited No. : TW0003

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.

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Release Control Record

Report No.	Reason for Change	Date Issued
HFBCUN-WTW-P25020520	Initial release	Jul. 04, 2025

1. Description of Equipment Under Test

EUT Type	Mobile Computer
FCC ID	H8NPCTE020
Brand Name	Askey
Model Name	RC40
Tx Frequency Bands (Unit: MHz)	WCDMA Band II : 1852.4 ~ 1907.6 WCDMA Band IV : 1712.4 ~ 1752.6 WCDMA Band V : 826.4 ~ 846.6 LTE Band 2 : 1850 ~ 1900 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 4 : 1710 ~ 1755 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 5 : 824 ~ 849 (BW: 1.4M, 3M, 5M, 10M) LTE Band 12 : 699 ~ 716 (BW: 1.4M, 3M, 5M, 10M) LTE Band 13 : 777 ~ 787 (BW: 5M, 10M) LTE Band 14 : 788 ~ 798 (BW: 5M, 10M) LTE Band 17 : 704 ~ 716 (BW: 5M, 10M) LTE Band 25 : 1850 ~ 1915 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 26 : 814 ~ 849 (BW: 1.4M, 3M, 5M, 10M, 15M) LTE Band 30 : 2305 ~ 2315 (BW: 5M, 10M) LTE Band 38 : 2570~ 2620 (BW: 5M, 10M, 15M, 20M) LTE Band 41 : 2496 ~ 2690 (BW: 5M, 10M, 15M, 20M) LTE Band 42 : 3450 ~ 3600 (BW: 5M, 10M, 15M, 20M) LTE Band 43 : 3600 ~ 3700 (BW: 5M, 10M, 15M, 20M) LTE Band 48 : 3550 ~ 3700 (BW: 5M, 10M, 15M, 20M) LTE Band 53 : 2483.5 ~ 2495 (BW: 1.4M, 3M, 5M, 10M) LTE Band 66 : 1710 ~ 1780 (BW: 1.4M, 3M, 5M, 10M, 15M, 20M) LTE Band 70 : 1695 ~ 1710 (BW: 5M, 10M, 15M) LTE Band 71 : 663 ~ 698 (BW: 5M, 10M, 15M, 20M) 5G NR-n2 : 1850 ~ 1910 (BW: 5M, 10M, 15M, 20M) 5G NR-n5 : 824 ~ 849 (BW: 5M, 10M, 15M, 20M) 5G NR-n7 : 2500 ~ 2570 (BW: 5M, 10M, 15M, 20M) 5G NR-n12 : 699 ~ 716 (BW: 5M, 10M, 15M) 5G NR-n13 : 777 ~ 787 (BW: 5M, 10M) 5G NR-n14 : 788 ~ 798 (BW: 5M, 10M) 5G NR-n25 : 1850 ~ 1915 (BW: 5M, 10M, 15M, 20M) 5G NR-n26 : 814 ~ 849 (BW: 5M, 10M, 15M, 20M) 5G NR-n30 : 2305 ~ 2315 (BW: 10M) 5G NR-n38 : 2570 ~ 2620 (BW: 15M, 20M, 30M, 40M) 5G NR-n41 : 2496 ~ 2690 (BW: 20M, 30M, 40M, 50M, 60M, 70M, 80M, 90M, 100M) 5G NR-n48 : 3550 ~ 3700 (BW: 20M, 40M) 5G NR-n53 : 2483.5 ~ 2495 (BW: 10M) 5G NR-n66 : 1710 ~ 1780 (BW: 5M, 10M, 15M, 20M) 5G NR-n70 : 1695 ~ 1710 (BW: 15M) 5G NR-n71 : 663 ~ 698 (BW: 5M, 10M, 15M, 20M) 5G NR-n77 : 3450 ~ 3550, 3700 ~ 3980 (BW: 20M, 30M, 40M, 60M, 80M, 100M) 5G NR-n78 : 3450 ~ 3550, 3700 ~ 3800(BW: 20M, 30M, 40M, 60M, 80M, 100M) WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5720, 5745 ~ 5825, 5955 ~ 6415, 6435 ~ 6515, 6535 ~ 6855, 6875 ~ 7115 Bluetooth : 2402 ~ 2480 NFC : 13.56

Modulations Supported in Uplink	WCDMA : QPSK LTE : QPSK, 16QAM, 64QAM, 256QAM 5G NR: Pi/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11b : DSSS 802.11a/g/n/ac : OFDM 802.11ax : OFDMA Bluetooth : GFSK, $\pi/4$ -DQPSK, 8-DPSK
Antenna Type	PIFA Antenna
EUT Stage	Engineering Sample

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.

List of Accessory:

Battery	Brand Name	Askey
	Model Name	RC40-BR-SBL500
	Nominal Voltage	3.85V
	Nominal Capacity	5000mAh 19.25Wh
	Rated Capacity	4900mAh 18.865Wh
	Limited Charging Voltage	4.4V

Air Interface	Bands	Transport Type	HAC Tested	Simultaneous But Not Tested	Name of Voice Service	Power Reduction			
WCDMA	II	VO	No ⁽¹⁾	WLAN, BT	CMRS Voice	No			
	IV					No			
	V					No			
	HSPA	VD	No ⁽¹⁾		Google Meet	No			
FDD-LTE	2	VD	No ⁽¹⁾			VoLTE Google Meet	No		
	4						No		
	5						No		
	12						No		
	13						No		
	14						No		
	17						No		
	25						No		
	26						No		
	30						No		
	66						No		
	70						No		
	71						No		
TDD-LTE	38	VD	YES				VoLTE Google Meet	No	
	41							No	
	42							No	
	43							No	
	48							No	
	53	DT	No				N/A	No	
FDD-5G FR1	2	DT	No					N/A	No
	5								No
	7								No
	12								No
	13								No
	14								No
	25								No
	26								No
	30								No
	48								No
	66								No
	70								No
	71					No			
TDD-5G FR1	38	DT	No					N/A	No
	41								No
	48								No
	53								No
	77				No				
	78				No				
WLAN	2.4G	DT	No	WWAN, BT	N/A			No	
	5.2G	DT	No		N/A			No	
	5.3G							No	
	5.6G							No	
	5.8G							No	
	6G (UNII 5 ~ 8)	DT	No	WWAN, BT	N/A			No	
Bluetooth	2.4G	DT	No	WWAN, WLAN	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.						

2. HAC RF Emission Measurement System

3.1 SPEAG DASY8 System

The SPEAG DASY8 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 DASY8 software defined. The DASY8 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 Electrical to Optical Converter (EOC). The EOC performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

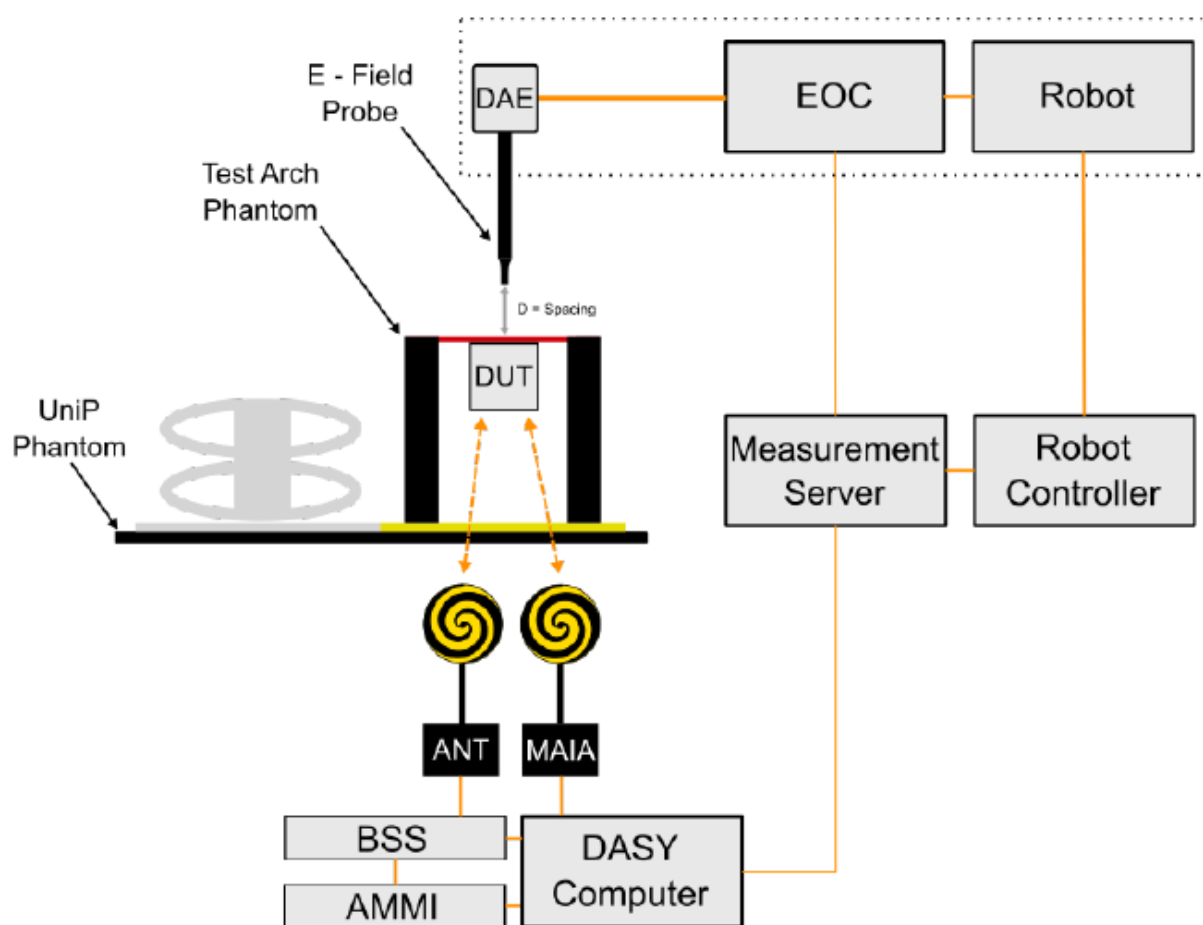


Fig-3.1 SPEAG DASY8 System Setup

2.1.1 Robot

The DASY8 system uses the high-precision industrial robots TX2-60L and TX2-90XL from Stäubli SA (France). The TX2 family of robots provides the ideal combination of speed, rigidity, size, and precision:

- High precision (repeatability ± 0.03 mm)
- High reliability and low maintenance costs (industrial design)
- ELF interference (motor control fields are shielded by the closed metallic construction)
- Hygienic encapsulated 6-axis arm enabled by a hollow shaft gearbox, no external cables.



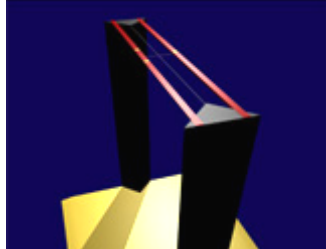
2.1.2 Probes

Model	EF3DVx	
Construction	One dipole parallel, two dipoles normal to probe axis Interleaved sensors Built-in shielding against static charges	
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 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 Sensor displacement to probe's calibration point: < 0.7 mm	

2.1.3 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	

2.1.4 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	

2.1.5 Device Holder

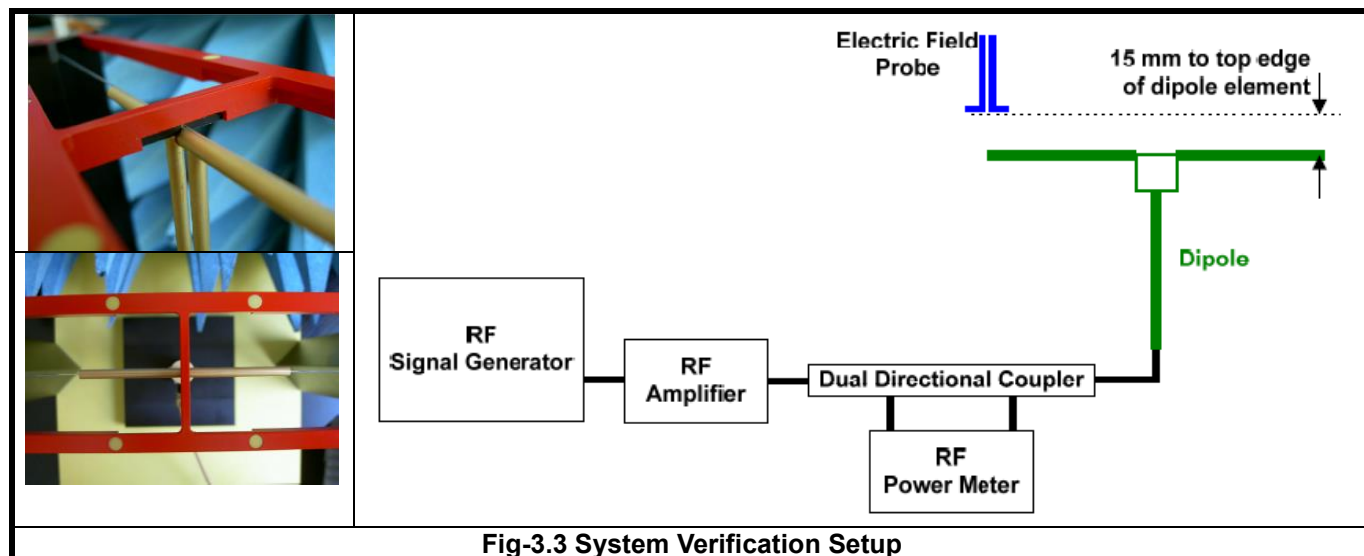
Model	Mounting Device	
Construction	The Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to ANSI C63.19.	
Material	POM	

2.1.6 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 DASY8 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.



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.

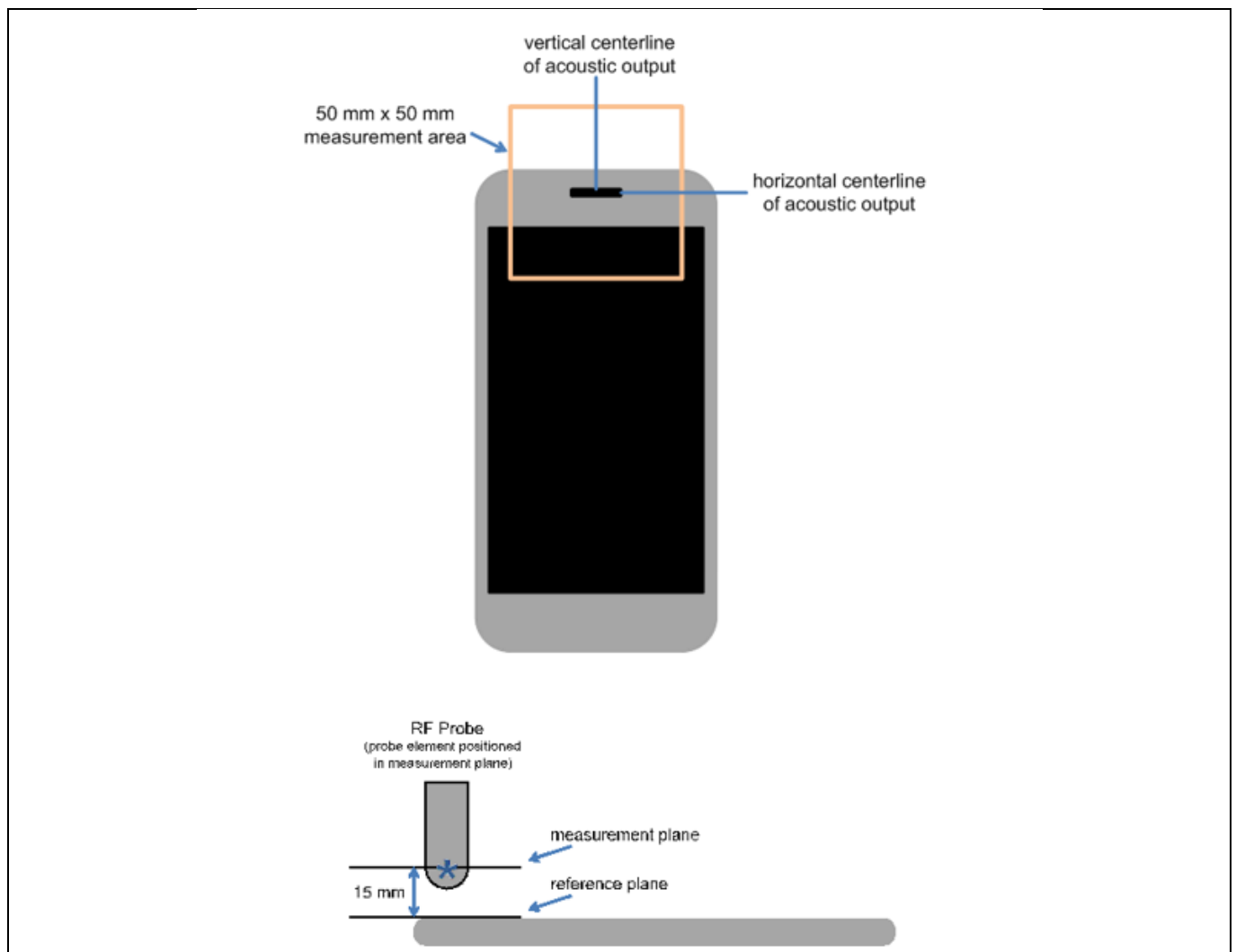


Fig-3.4 EUT Reference and Plane

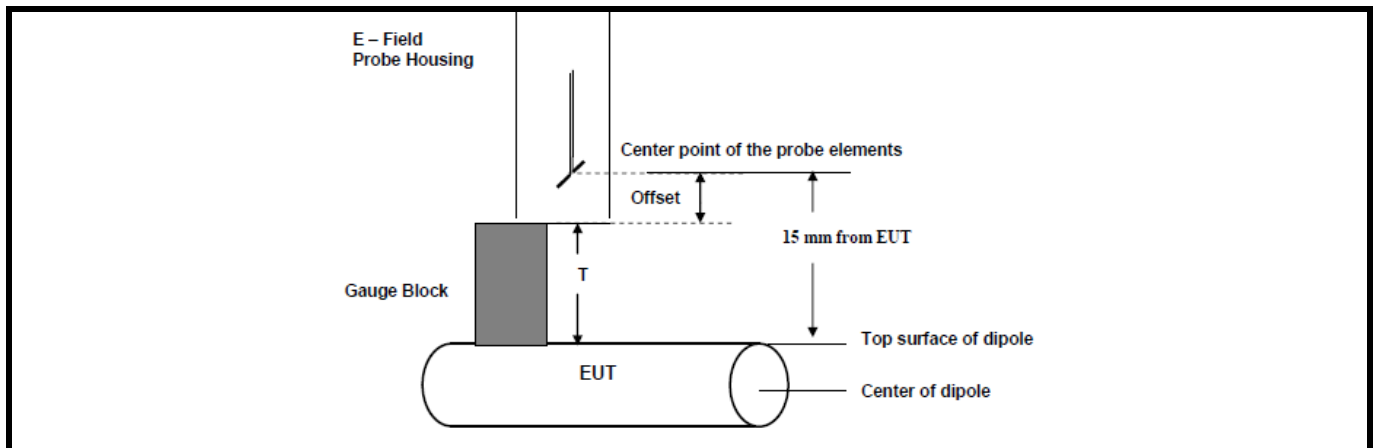


Fig-3.5 Gauge Block for Setting Measurement Distance to Probe

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 measurement area shall be centered on the acoustic output or the T-Coil mode measurement reference point, as appropriate. Locate the field probe at the initial test position in the 50 mm by 50 mm measurement area, which is contained in the measurement plane, described in 4.5.2 and illustrated in Figure A.1. 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 measurement area in equally spaced step sizes and record the reading at each measurement point.
7. Calculate the average of the measurements taken in Step 6.
8. Convert the average value found in Step 7 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. Convert the result to dB(V/m) by taking the base-10 logarithm and multiplying it by 20. Expressed as a formula:

$$\text{RF audio interference level in dB(V/M)} = 20 \times \log(R_{\text{ave}}^{1/2} / \text{TF}) + \text{MIF}$$

where

R_{ave} is the average reading

9. Compare this RF audio interference level to the limits in WD emission requirements and record the result

3.5 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.

1. 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 D.3, and weighting system as specified in D.4 and D.5. For the probe and instrumentation included in the measurement of MIF, additional calibration and application of calibration factors are not required.
2. 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.
3. Measure the steady-state rms level at the output of the fast probe or sensor.
4. Measure the steady-state average level at the weighting output.
5. 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.
6. 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.
7. The MIF for the specific modulation characteristic is given by the ratio of the Step f) measurement to the Step 3 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.

As a check on the procedure, the MIF for the specific modulation consisting of a 1 kHz, 80% AM signal is -1.2 dB, which is the ratio in decibels of the average power of the unmodulated carrier to the average power of the modulated carrier ($10 \cdot \log(P_{\text{unmod}}/P_{\text{mod}})$), or equivalently the ratio in decibels of the rms level of the unmodulated carrier to the rms level of the modulated carrier ($20 \cdot \log(L_{\text{unmod}}/L_{\text{mod}})$). The MIF for a 1/8 duty cycle, 217 Hz pulse-modulated signal (similar to basic GSM) is +3.3 dB. (Actual GSM WD measurements could vary due to differences in implementation or network protocol.) Results for other arbitrary pulse modulation patterns and arbitrary sine wave amplitude modulations are as shown in the following tables:

UID	Reversion	Communication System Name	MIF (dB)
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
10591	AAD	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc duty cycle)	-5.59
10599	AAD	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc duty cycle)	-5.59
10607	AAD	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc duty cycle)	-5.6
10616	AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc duty cycle)	-5.57
10626	AAD	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc duty cycle)	-5.64
10636	AAE	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc duty cycle)	-5.56
10671	AAC	IEEE 802.11ax (20MHz, MCS0, 90pc duty cycle)	-5.58
10695	AAC	IEEE 802.11ax (40MHz, MCS0, 90pc duty cycle)	-6.01
10719	AAC	IEEE 802.11ax (80MHz, MCS0, 90pc duty cycle)	-6.04
10743	AAC	IEEE 802.11ax (160MHz, MCS0, 90pc duty cycle)	-6.6
10069	CAE	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	-3.15
11026	AAB	IEEE 802.11be (320MHz, MCS0, 99pc duty cycle)	-28.73
10021	DAC	GSM-FDD (TDMA, GMSK)	3.63
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	3.8
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	3.75
10460	AAB	UMTS-FDD (WCDMA, AMR)	-25.43
10225	CAC	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	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	-9.76
10169	CAF	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	-15.63
10647	AAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Subframe=2,7)	1.5
10172	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	-1.62
10173	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	-1.44
10174	CAH	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	-1.54
10930	AAA	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz) FDD	-15.06
10769	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz) TDD	-12.08

The version number / version date of the MIF values used per KDB 285076 D01 is July 7, 2023.

The MIF measurement uncertainty is estimated as follows, for modulation frequencies from slotted waveforms with fundamental frequency and at least 2 harmonics within 10 kHz:

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

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

3.6 Evaluation for RF Audio Interference Power Level (RF_{AIPL})

An analysis shall be performed following the guidance of the RF air interface technology being evaluated. Factors that will affect the RF interference potential shall be evaluated, and the worst-case operating mode shall be identified and used in the evaluation. Any factor that can affect the RF interference potential shall be evaluated. Examples of such factors are those that will change the RF signal envelope, such as discontinuous transmission due to data load, power management, or configuration options of the RF air interface technology.

The primary method for establishing the RF interference potential of a WD is based on conducted power to the antenna. The waveform-specific modulation interference factor (MIF) is measured separately and added to the measured average conducted power, in dBm.

The WD's conducted power must be at or below either the stated RF_{AIPL} (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 RF_{AIL} (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	29
960–2000	26
>2000	25

4 Calibration of Test Equipment

4.1 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.

4.2 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	
			Antenna	Max. Tune-up Power
WCDMA	Band II	AMR	0	22.0
		HSPA		21.5
	Band IV	AMR	0	23.5
		HSPA		23.0
	Band V	AMR	0	24.0
		HSPA		23.5
FDD-LTE	2		0	23.0
	4		0	23.5
	5		0	24.0
	12		0	26.2
	13		0	26.2
	14		0	24.0
	17		0	26.2
	25		0	23.0
	26		0	24.0
	30		3	21.5
	66		0	23.5
	70		2	25.0
	71		0	26.2
TDD-LTE	38	QPSK	3	22.0
		16QAM		21.0
		64QAM		20.0
	41	QPSK	3	22.0
		16QAM		21.0
		64QAM		20.0

TDD-LTE	42	QPSK	4	23.0
		16QAM		22.0
		64QAM		21.0
TDD-LTE	43	QPSK	4	23.0
		16QAM		22.0
		64QAM		21.0
	48	QPSK	4	22.0
		16QAM		21.0
		64QAM		20.0
	53	QPSK	1	20.0
		16QAM		19.0
		64QAM		18.0

4.3 Measured Conducted Power Results

Band	LTE Band 38					
BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		37850	38000	38150
		Frequency (MHz)		2580	2595	2610
20M	QPSK	1	0	21.29	21.35	21.38
		1	50	21.25	21.29	21.35
		1	99	21.21	21.22	21.28
		50	0	20.27	20.31	20.35
		50	25	20.23	20.29	20.33
		50	50	20.14	20.21	20.28
		100	0	20.15	20.16	20.26

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	20.57	21.41	21.92	21.84	21.09
		1	50	20.55	21.39	21.90	21.82	21.07
		1	99	20.53	21.37	21.88	21.80	21.05
		50	0	19.65	20.71	20.88	20.80	20.41
		50	25	19.62	20.68	20.85	20.77	20.38
		50	50	19.60	20.66	20.83	20.75	20.36
		100	0	19.58	20.64	20.81	20.73	20.34

Band	LTE Band 42							
BW	Modulation	RB Size	RB Offset	Low	Low-Mid	Mid	High-Mid	High
		Channel		42190	42840	43190	43340	43490
		Frequency (MHz)		3460	3525	3560	3575	3590
20M	QPSK	1	0	22.98	22.82	22.96	22.87	22.99
		1	50	22.96	22.79	22.91	22.80	22.96
		1	99	22.93	22.75	22.84	22.77	22.91
		50	0	21.93	21.76	21.89	21.81	21.95
		50	25	21.84	21.74	21.76	21.75	21.90
		50	50	21.83	21.73	21.76	21.72	21.88
		100	0	21.77	21.70	21.75	21.68	21.86

Band	LTE Band 43						
BW	Modulation	RB Size	RB Offset	Low	Low	Low-Mid	High
		Channel		43690	44090	44490	44590
		Frequency (MHz)		3610	3650	3690	3700
20M	QPSK	1	0	22.95	22.90	22.55	22.45
		1	50	22.91	22.88	22.53	22.41
		1	99	22.82	22.82	22.50	22.37
		50	0	21.82	21.78	21.54	21.43
		50	25	21.76	21.72	21.45	21.36
		50	50	21.77	21.75	21.51	21.32
		100	0	21.72	21.70	21.47	21.40

Band	LTE Band 48						
BW	Modulation	RB Size	RB Offset	Low	Low-Mid	Mid	High-Mid
		Channel		55340	55780	56210	56640
		Frequency (MHz)		3560	3603	3647	3690
20M	QPSK	1	0	20.71	21.15	21.09	20.45
		1	50	20.55	21.04	21.02	20.27
		1	99	20.68	21.05	20.96	20.28
		50	0	19.59	20.08	19.92	19.36
		50	25	19.66	20.07	20.05	19.35
		50	50	19.69	19.99	19.98	19.33
		100	0	19.62	20.05	19.94	19.38

4.4 Test Exclusion Analysis for HAC RF-Emission

Air Interface		Max. Tune-up Power (dBm)	Worst Case MIF (dB)	Power + MIF (dB)	C63.19 Testing Required
WCDMA	AMR	24	-25.43	-1.43	No
	HSPA	23.5	-20.39	3.11	No
FDD-LTE		26.2	-9.76	16.44	No
TDD-LTE	QPSK	23	-1.62	21.38	YES
	16QAM	22	-1.44	20.56	No
	64QAM	21	-1.54	19.46	No

4.5 HAC RF Emission Testing Results

RF Near-field Test Results (RF Audio Interference Level, RF_{AIL})

Plot No.	Band	Mode	Channel	Transmit Antenna	Results* (dB V/m)	Results plus 0.2dB uncertainty (dB V/m)	RF _{AIL} Limit (dB V/m)	FCC Margin (dB)	RF _{AIL} Pass/Fail
P01	LTE B38	20M, QPSK, 1RB, OS0	37850	Ant 3	17.26	17.46	35	-17.54	Pass
	LTE B38	20M, QPSK, 1RB, OS0	38000	Ant 3	19.14	19.34	35	-15.66	Pass
	LTE B38	20M, QPSK, 1RB, OS0	38150	Ant 3	19.11	19.31	35	-15.69	Pass
P02	LTE B41	20M, QPSK, 1RB, OS0	39750	Ant 3	14	14.2	35	-20.8	Pass
	LTE B41	20M, QPSK, 1RB, OS0	40185	Ant 3	15.01	15.21	35	-19.79	Pass
	LTE B41	20M, QPSK, 1RB, OS0	40620	Ant 3	16.46	16.66	35	-18.34	Pass
	LTE B41	20M, QPSK, 1RB, OS0	41055	Ant 3	18.06	18.26	35	-16.74	Pass
	LTE B41	20M, QPSK, 1RB, OS0	41490	Ant 3	16.63	16.83	35	-18.17	Pass
P03	LTE B42	20M, QPSK, 1RB, OS0	42190	Ant 4	22.99	23.19	35	-11.81	Pass
	LTE B42	20M, QPSK, 1RB, OS0	42840	Ant 4	22.42	22.62	35	-12.38	Pass
	LTE B42	20M, QPSK, 1RB, OS0	43190	Ant 4	22.49	22.69	35	-12.31	Pass
	LTE B42	20M, QPSK, 1RB, OS0	43340	Ant 4	22.55	22.75	35	-12.25	Pass
	LTE B42	20M, QPSK, 1RB, OS0	43490	Ant 4	22.87	23.07	35	-11.93	Pass
P04	LTE B43	20M, QPSK, 1RB, OS0	43690	Ant 4	23.43	23.63	35	-11.37	Pass
	LTE B43	20M, QPSK, 1RB, OS0	44090	Ant 4	23.2	23.4	35	-11.6	Pass
	LTE B43	20M, QPSK, 1RB, OS0	44490	Ant 4	23.05	23.25	35	-11.75	Pass
	LTE B43	20M, QPSK, 1RB, OS0	44590	Ant 4	23.34	23.54	35	-11.46	Pass
P05	LTE B48	20M, QPSK, 1RB, OS0	55340	Ant 4	23.1	23.3	35	-11.7	Pass
	LTE B48	20M, QPSK, 1RB, OS0	55780	Ant 4	23.3	23.5	35	-11.5	Pass
	LTE B48	20M, QPSK, 1RB, OS0	56210	Ant 4	23.75	23.95	35	-11.05	Pass
	LTE B48	20M, QPSK, 1RB, OS0	56640	Ant 4	23.49	23.69	35	-11.31	Pass

4.6 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.

4.7 System Verification

The measuring results for system check are shown as below.

Frequency (MHz)	Input Power (dBm)	Target Value (V/m)	E _{max} (V/m)	Deviation (%)	Test Date	Dipole S/N	Probe S/N	DAE S/N
2600	20.0	85.7	86.7	1.17	Jun. 23, 2025	1005	4049	1585
3500	20.0	85.4	85.3	-0.12	Jun. 23, 2025	1004	4049	1585

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 $[(E_{\text{max}} - \text{Target Value}) / \text{Target Value} \times 100\%]$

Test Engineer : Ainsley Yang, and Vic Ko

4. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
2600MHz Calibration Dipole	SPEAG	CD2600V3	1005	Mar. 14, 2025	1 Year
3500MHz Calibration Dipole	SPEAG	CD3500V3	1004	Sep. 17, 2024	1 Year
Isotropic E-Field Probe	SPEAG	EF3DV3	4049	Jan. 15, 2025	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1585	May. 19, 2025	1 Year
Universal Radio Communication Tester	Anritsu	MT8821C	6201381727	Aug. 05, 2024	1 Year
Test Arch Phantom	SPEAG	Arch	N/A	N/A	N/A

5. Measurement Uncertainty

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (E)	Standard Uncertainty (E)
Measurement System					
Probe Calibration	5.05	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 Effect	7.2	Rectangular	√3	1	± 4.2 %
Linearity	4.7	Rectangular	√3	1	± 2.7 %
Scaling with PMR Calibration	10.0	Rectangular	√3	1	± 5.8 %
System Detection Limit	0.25	Rectangular	√3	1	± 0.1 %
Readout Electronics	0.3	Normal	1	1	± 0.3 %
Response Time	0.0	Rectangular	√3	1	± 0.0 %
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	2.0	Rectangular	√3	1	± 1.2 %
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					± 16.3 %
Coverage Factor for 95 %					K = 2
Expanded Uncertainty					± 32.6 %

Uncertainty budget for HAC RF Emission

6. Information of 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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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