

TEST REPORT

FCC Test for MAR326A
Certification

APPLICANT
Hyundai Mobis Co., Ltd

REPORT NO.
HCT-RF-2511-FC001-R1

DATE OF ISSUE
December 8, 2025

Tested by
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Accredited by KOLAS, Republic of KOREA

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December 08, 2025

Applicant	Hyundai Mobis Co., Ltd 203, Teheran-ro, Gangnam-gu, Seoul, Republic of Korea
Product Name Model Name	UNIT ASSY-FR RADAR MAR326A
FCC ID	TQ8-MAR326A
Date of Test	September 17, 2025 ~ November 07, 2025
Location of Test	☒ Permanent Testing Lab ☐ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)
Test Standard Used	47 CFR Part 95 Subpart M
Test Results	PASS
Brand	HYUNDAI MOBIS

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	November 10, 2025	Initial Release
1	December 08, 2025	Radiated Power was recalculated by adding DCF.

Notice

Content

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

This test report provides test result(s) under the scope accredited by the Korea Laboratory Accreditation Scheme (KOLAS), which signed the ILAC-MRA.

(KOLAS (KS Q ISO/IEC 17025) Accreditation No. KT197)

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1. EUT DESCRIPTION

Model	MAR326A	
Additional Model	-	
EUT Type	UNIT ASSY-FR RADAR	
EUT Serial Number	N/A	
Power Supply	DC 12.0 V	
Frequency Range	76 GHz ~ 77 GHz	
Modulation Type	FMCW	
Duty Cycle	Max. 38 %	
EIRP	Peak	42.02 dBm
	Average	25.55 dBm
Antenna Specification	Antenna type: PCB Antenna Peak Gain(dBi): 16.08 dBi	
Measurement standards	47 CFR Part 95 Subpart M, ANSI C63.10-2020, KDB 653005 D01	

2. TEST METHODOLOGY

The measurement procedure described in the “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices” (ANSI C63.10-2020) was used for the devices operating under 47 CFR Part 95 Subpart M.

2.1 EUT CONFIGURATION

The EUT configuration for testing is installed on EIRP measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx Frequency that was for the purpose of the measurements.

2.3 GENERAL TEST PROCEDURES

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above the ground plane below 1 GHz and 1.5 m above 1 GHz with absorbers between the EUT and receiving antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set far-field distance away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.10-2020.

2.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

3. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment's, which is traceable to recognized national standards.

Especially, all antennas(Up to 40 GHz) for measurement are calibrated in accordance with the requirements of C63.5 (Version : 2006).

4. FACILITIES AND ACCREDITATIONS

4.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea. The site is constructed in conformance with the requirements of ANSI C63.4-2014 and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated March 11, 2024 (Registration Number: KR0032).

4.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty
Occupied Bandwidth	95 kHz
RF Output Power	0.68 dB
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 dB
Radiated Disturbance (30 MHz ~ 1 GHz)	5.68 dB
Radiated Disturbance (1 GHz ~ 18 GHz)	5.75 dB
Radiated Disturbance (18 GHz ~ 40 GHz)	5.82 dB
Radiated Disturbance (Above 40 GHz)	5.58 dB
Transmitter Frequency Stability	27.94 kHz

Coverage factor $k=2$, Confidence levels of 95 %

6. SUMMARY TEST OF RESULTS

Test Description	FCC Part	Test Limit	Test Condition	Test Result
Occupied Bandwidth	§ 2.1049	N/A	Radiated	PASS
Radiated Power	§ 95.3367(a), (b)	< EIRP 50 dBm (Average) < EIRP 55 dBm (Peak)		PASS
Unwanted emissions	§ 95.3379(a)(1), (a)(2)	0.009 – 0.490 MHz: 2400/F[kHz] 0.490 – 1.705 MHz: 24000/F[kHz] 1.705 – 30.0 MHz: 30 dBµV/m 30 – 88 MHz: 30.0 dBµV/m 88 – 216 MHz: 33.5 dBµV/m 216 – 960 MHz: 36.0 dBµV/m 960 – 40 000 MHz: 54 dBµV/m 40 – 200 GHz: -1.7 dBm 200 – 243 GHz: 0.5 dBm		PASS
Fundamental Emissions (Frequency stability)	§ 95.3379(b)	76 ~ 81 GHz		PASS

Note: The decision rule applies ‘simple acceptance’

6.1 ADDITIONAL DESCRIPTIONS ABOUT TEST

All tests is performed by radiated measurement and applied below conditions.

: Used measurement distance with far field of test such as EIRP, OBW and Band edge are as follow.

$$\text{Wavelength}[m] = \text{Speed of light}[m/s] / \text{Measurement frequency}[Hz] = (3 \times 10^8) / (77 \times 10^9) = 0.0039$$

$$(2 \times (\text{Max antenna length of EUT})^2) / \text{Wavelength} = 2 \times (0.04319)^2 / 0.00389 = 0.96 \text{ m}$$

For fundamental and out-of-band emissions the largest far-field distance of either the EUT antenna or measurement antenna shall be used. ***So, the measurement distance is 1.0 m***

: Spurious emissions measurement distances are shown in the table below. (Far field)

Frequency Range (GHz)	Wavelength (cm)	Far Field Distance (m)	Measured Distance (m)
18 ~ 40	0.75	3.154	3.50
40 ~ 60	0.50	1.354	1.50
60 ~ 90	0.33	0.856	1.00
90 ~ 140	0.21	0.572	1.00
140 ~ 220	0.14	0.365	1.00
220 ~ 243	0.12	0.179	1.00

7. TEST RESULT

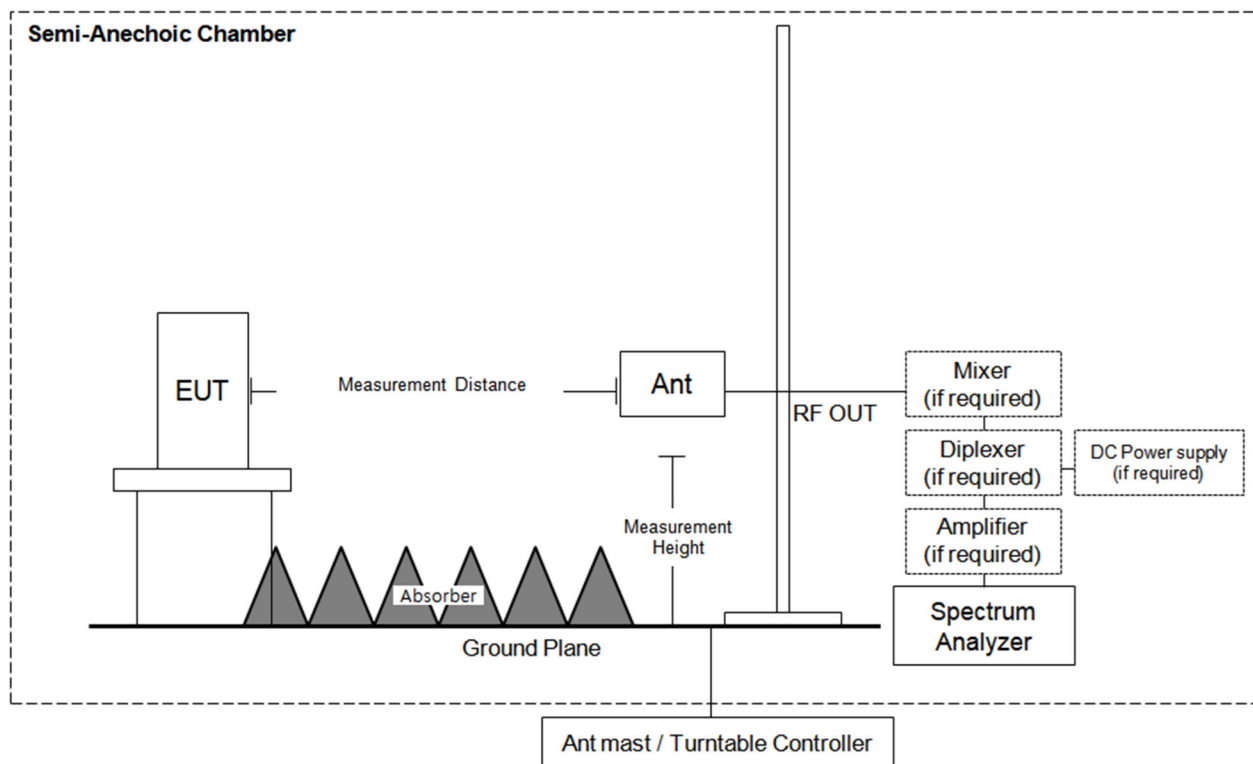
7.1 OCCUPIED BANDWIDTH MEASUREMENT

▣ TEST REQUIREMENTS AND LIMITS

§ 2.1049 Measurements required: Occupied bandwidth.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The test was performed according to Procedure 9.4 in ANSI C63.10-2020.

The occupied bandwidth (OBW) is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

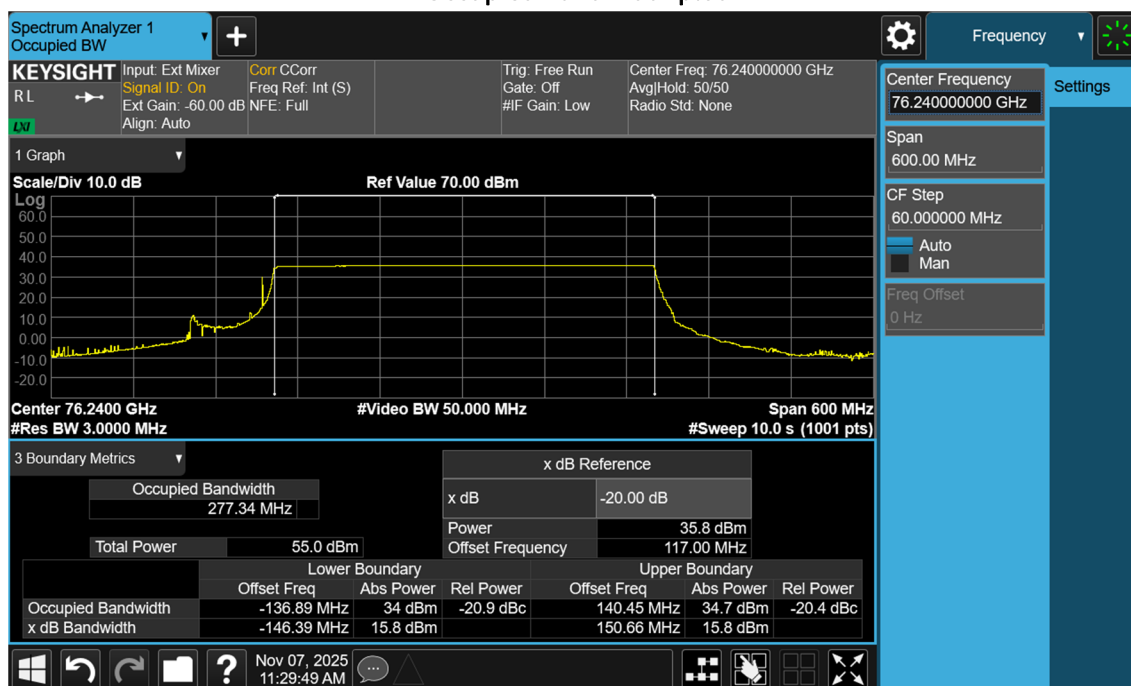
- a) The following procedure shall be used for measuring 99% power bandwidth: Use the following spectrum analyzer settings:
- 1) Span equal to approximately 1.5 times the OBW, centered on the carrier frequency
 - 2) RBW, prefer 1% to 5% of OBW, or a minimum of 1 MHz if this is not possible due to a large OBW
 - 3) VBW approximately $3 \times \text{RBW}$
 - 4) Set the reference level of the instrument as required to reduce the chance of the signal amplitude exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.1.6.
 - 5) Sweep = No faster than coupled (auto) time.
 - 6) Detector function = peak.
 - 7) Trace = max-hold.

TEST RESULTS

TEST CONDITIONS:		Occupied Channel Bandwidth [MHz]
T nom	V nom	277.34

RESULT PLOTS

Occupied Bandwidth plot



7.2 RADIATED POWER

▣ TEST REQUIREMENTS AND LIMITS

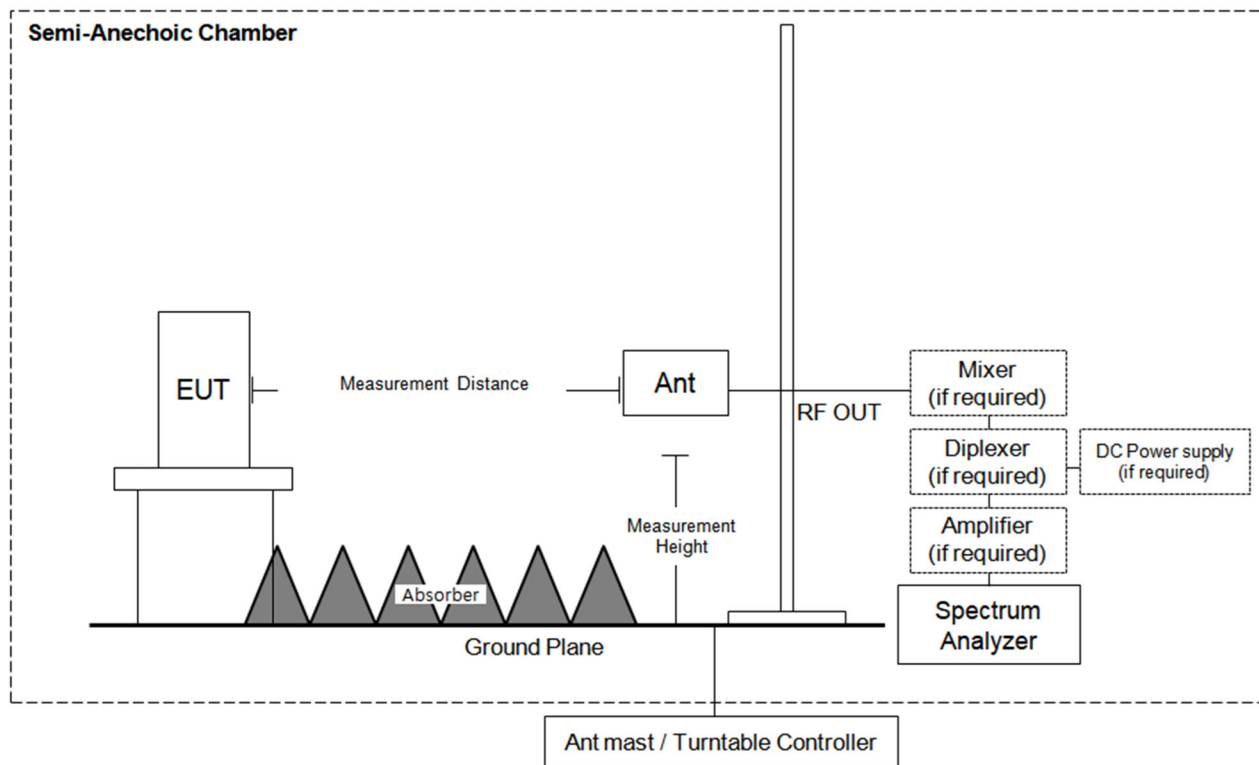
FCC Rules

§ 95.3367 76–81 GHz Band Radar Service radiated power limits.

The fundamental radiated emission limits within the 76-81 GHz band are expressed in terms of Equivalent Isotropically Radiated Power (EIRP) and are as follows:

- The maximum power (EIRP) within the 76-81 GHz band shall not exceed 50 dBm based on measurements employing a power averaging detector with a 1 MHz Resolution Bandwidth (RBW).
- The maximum peak power (EIRP) within the 76-81 GHz band shall not exceed 55 dBm based on measurements employing a peak detector with a 1 MHz RBW.

▣ TEST CONFIGURATION



■ TEST PROCEDURE

The test was performed according to Procedure 9.8 in ANSI C63.10-2020.

Where applicable, the following procedure shall be used for measuring the field strength from millimeter-wave systems:

- a) Set up the test as follows:
 - 1) For conducted measurements, connect the external mixer or spectrum analyzer, with appropriate attenuation as needed to reduce the chance of damage or overload to the measurement instrumentation, to the output port of the EUT.
 - 2) For radiated measurements, connect the measurement antenna for the fundamental frequency band to a spectrum analyzer via an external mixer, or directly to the spectrum analyzer if the instrument supports the required frequency range.
- b) For all measurements
 - 1) For pulsed emissions, the procedures in 4.1.5.2.4 and Annex C shall be used.
 - 2) For FMCW emissions, the procedures in 4.1.5.2.8 and Annex L shall be used.
 - 3) For any other emission, set spectrum analyzer RBW, VBW, detector, span, and so on, to the proper values.
- c) For radiated measurements:
 - 1) Place the measurement antenna at a measurement distance that is in the far-field of the measurement antenna, in the far-field of the EUT antenna, and meets the measurement distance requirements for final radiated measurements as specified in 9.1.4.
 - 2) Place the measurement antenna in the main beam of the EUT then maximize the fundamental emission using the procedures of 9.7, noting that multiple peaks can be found at different beam orientations and/or polarizations.
 - 3) Correct the power reading from the spectrum analyzer for any external gain and/or attenuation between the measurement antenna and the spectrum analyzer. This is the power at the output of the measurement antenna
 - 4) Calculate the EIRP from the power at the output of the measurement antenna using Equation (22), and then convert to linear form using Equation (24).
 - 5) Where applicable, calculate conducted output power from the EIRP using Equation (27).
- d) For conducted measurements:
 - 1) Correct the power reading from the spectrum analyzer for any external gain and/or attenuation between the EUT and the spectrum analyzer. This is the conducted output power of the EUT.
 - 2) Calculate the EIRP from the conducted output power of the EUT using Equation (23), and then convert to linear form using Equation (24).
- e) Repeat the preceding sequence to determine the EIRP and where applicable, conducted power for each detector (peak and average) as required.

Repeat the preceding sequence for every operating configuration supported by the EUT.

Note:

D.C.F Calculation (Desensitization Correction Factor of the FMCW signal)

$$5 * \log \left(1 + K * \left(\frac{BW_{chirp}}{T_{chirp} * RBW} \right)^2 \right)$$

$$K = \frac{2 * \ln 2}{\pi} = 0.1947$$

$$BW_{chirp} = 0.27734 \text{ GHz}$$

$$RBW = 1 \text{ MHz}$$

$$T_{chirp} = 51.2 \text{ us}$$

$$D.C.F = 4.1345 \text{ dB}$$

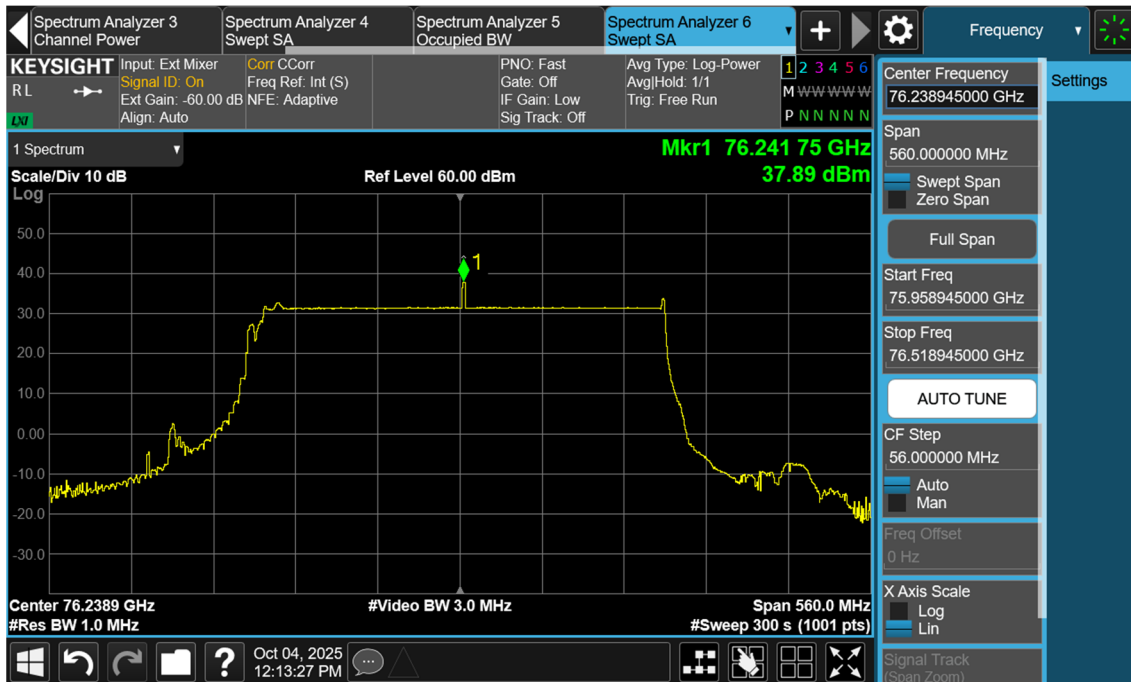
TEST RESULTS

Frequency	Measured Level	D.C.F	Results	Limit	Margin	Measurement Type
[GHz]	[dBm]	[dB]	[dBm]	[dBm]	[dB]	
76.2389	37.89	4.13	42.02	55	12.98	PK
76.2389	25.55	-	25.55	50	24.45	AV

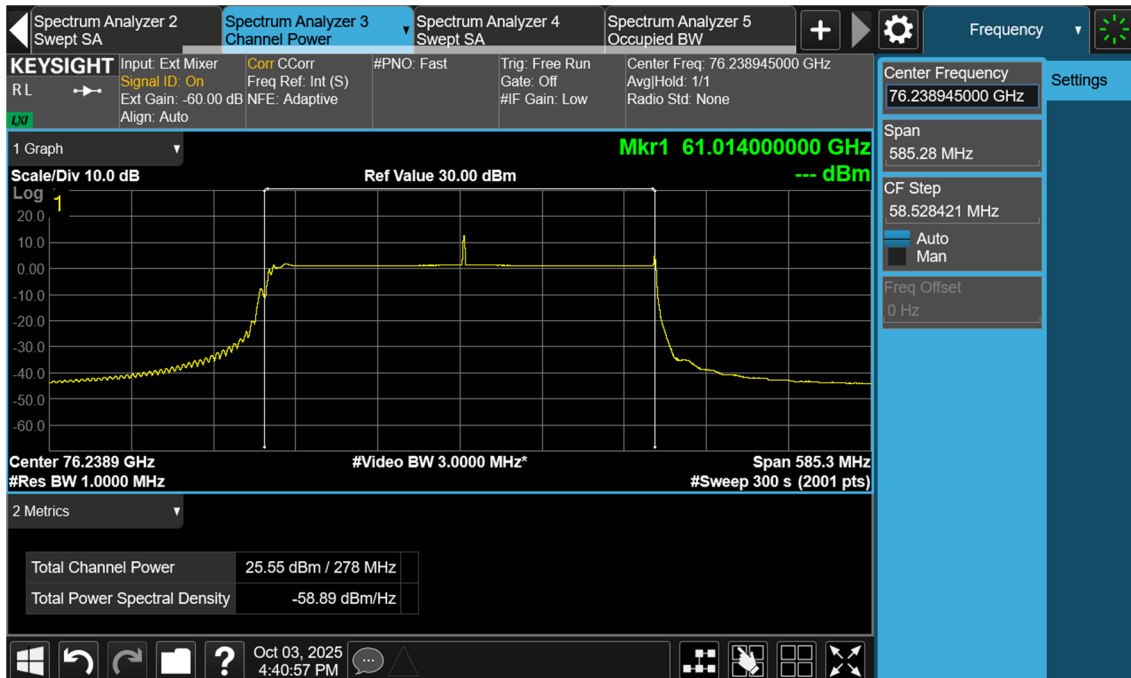
Note: Measurements were performed for the EUT in the X, Y, and Z planes, with both horizontal and vertical polarizations of the detecting antenna.

RESULT PLOTS

Peak



Average



7.3 UNWANTED EMISSIONS

▣ TEST REQUIREMENTS AND LIMITS

§ 95.3379 76–81 GHz Band Radar Service unwanted emissions limits.

(a) The power density of any emissions outside the 76-81 GHz band shall consist solely of spurious emissions and shall not exceed the following:

(1) Radiated emissions below 40 GHz shall not exceed the field strength as shown in the following emissions table.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meter)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

- (i) In the emissions table in paragraph (a)(1) of this section, the tighter limit applies at the band edges.
 - (ii) The limits in the table in paragraph (a)(1) of this section are based on the frequency of the unwanted emissions and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
 - (iii) The emissions limits shown in the table in paragraph (a)(1) of this section are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9.0-90.0 kHz, 110.0-490.0 kHz, and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector with a 1 MHz RBW.
- (2) The power density of radiated emissions outside the 76-81 GHz band above 40.0 GHz shall not exceed the following, based on measurements employing an average detector with a 1 MHz RBW:
- (i) For radiated emissions outside the 76-81 GHz band between 40 GHz and 200 GHz from field disturbance sensors and radar systems operating in the 76-81 GHz band: 600 pW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.
 - (ii) For radiated emissions above 200 GHz from field disturbance sensors and radar systems operating in the 76-81 GHz band: 1000 pW/cm² at a distance of 3 meters from the exterior surface of the radiating structure.
- (3) For field disturbance sensors and radar systems operating in the 76-81 GHz band, the spectrum shall be investigated up to 231.0 GHz.

■ TEST PROCEDURE

For below 40 GHz

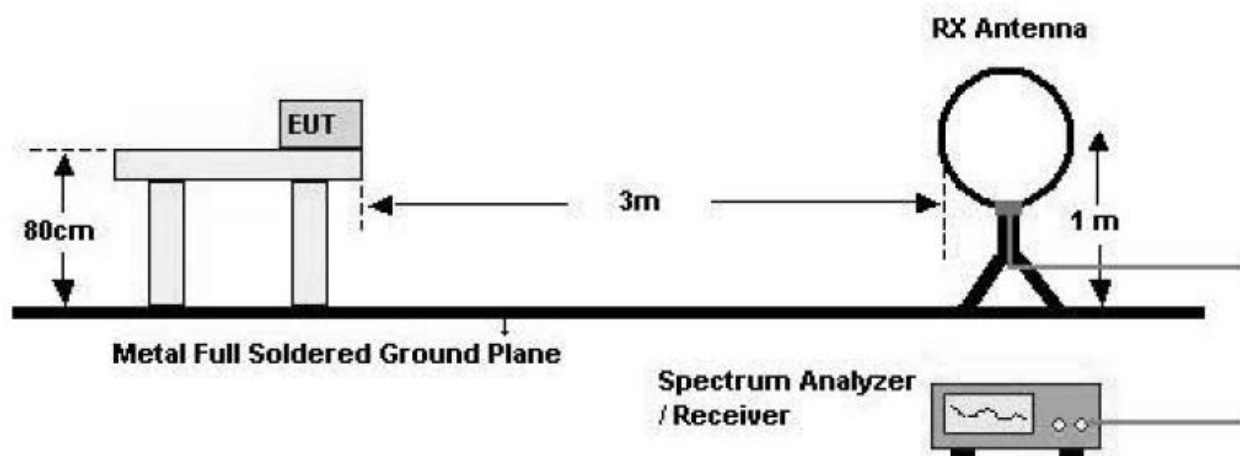
1. The EUT was placed on a turntable, which was 80 cm above the reference ground plane for emissions testing at or below 1 GHz, and 1.5 m above the reference ground plane for emission measurements from 1 GHz to 40 GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until the measurements for all frequencies are complete.

For Above 40 GHz

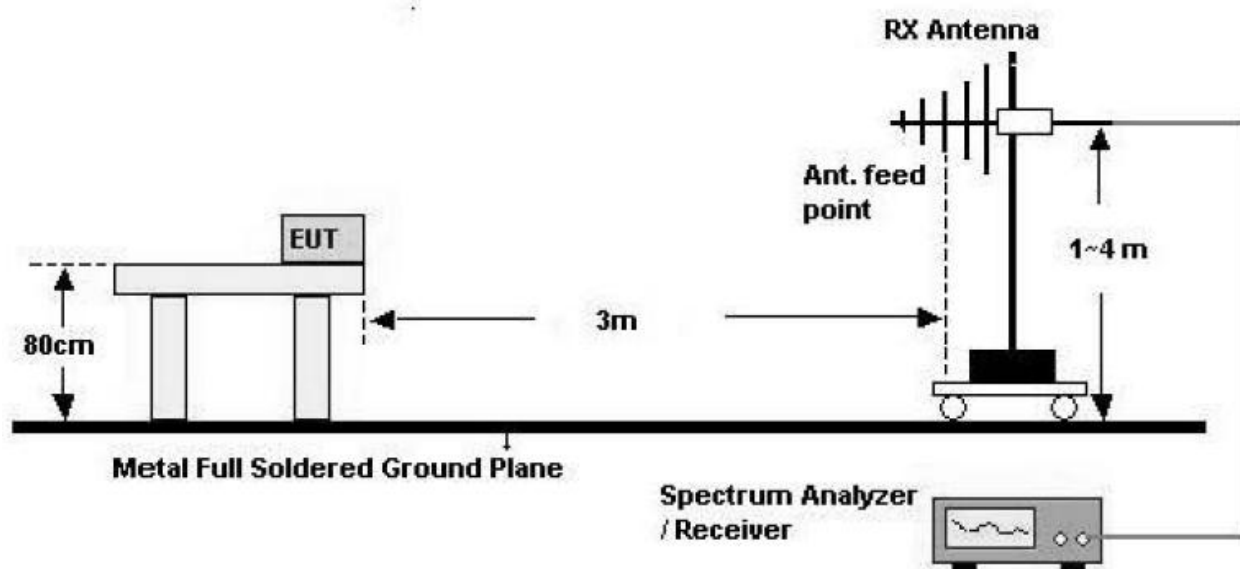
1. Connect the test antenna covering the appropriate frequency range to a spectrum analyzer via an external mixer to the spectrum analyzer.
2. Set spectrum analyzer RBW = 1 MHz, VBW = 3 MHz, average detector.
3. Calculate the distance to the far field boundary and determine the maximum measurement distance.
4. Perform an exploratory search for emissions and determine the approximate direction at which each observed emission emanates from the EUT.
5. Exploratory measurements be made at a closer distance than the validated maximum measurement distance.
6. Perform a final measurement; begin with the test antenna at the approximate position where the maximum level occurred during the exploratory scan.
7. Slowly scan the test antenna around this position, slowly vary the test antenna polarization by rotating through at least 0° to 180°, and slowly vary the orientation of the test antenna to find the final position, polarization, and orientation at which the maximum level of the emission is observed.
8. Record the measured reading with the test antenna fixed at this maximized position, polarization, and orientation. Record the measurement distance.
9. Calculate the maximum field strength of the emission at the measurement distance and the adjusted/corrected power at the output of the test antenna.
10. Calculate the EIRP from the measured field strength and then convert to the linear.
11. Calculate the power density at the distance specified by the limit from the field strength at the distance specified by the limit.
12. Repeat the preceding sequence for every emission observed in the frequency band under investigation.

■ TEST CONFIGURATION

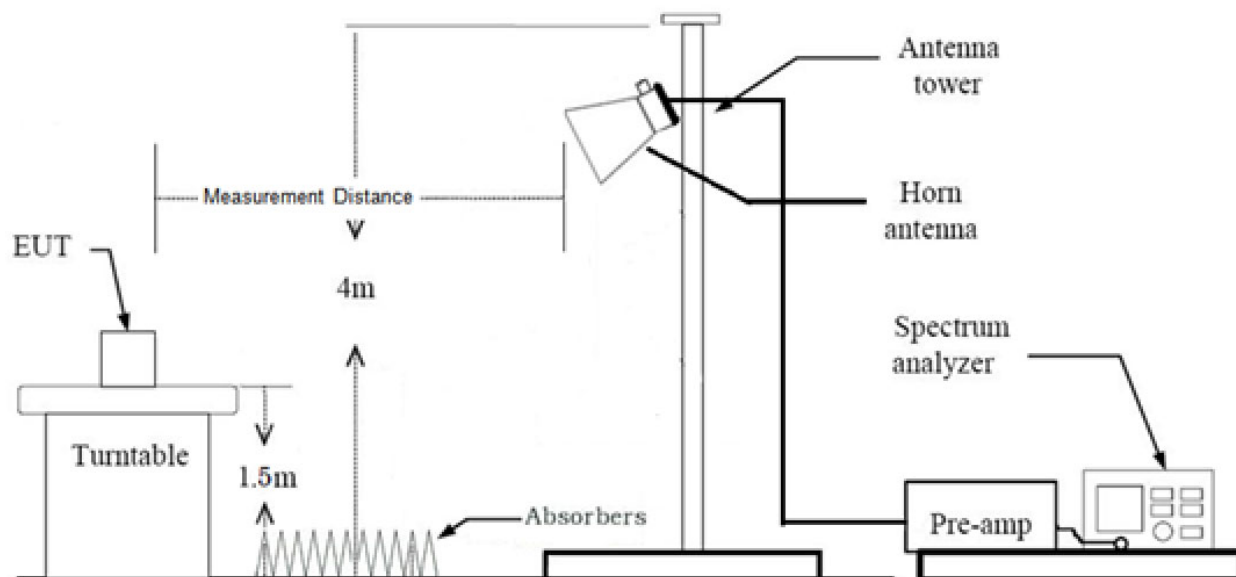
Below 30 MHz



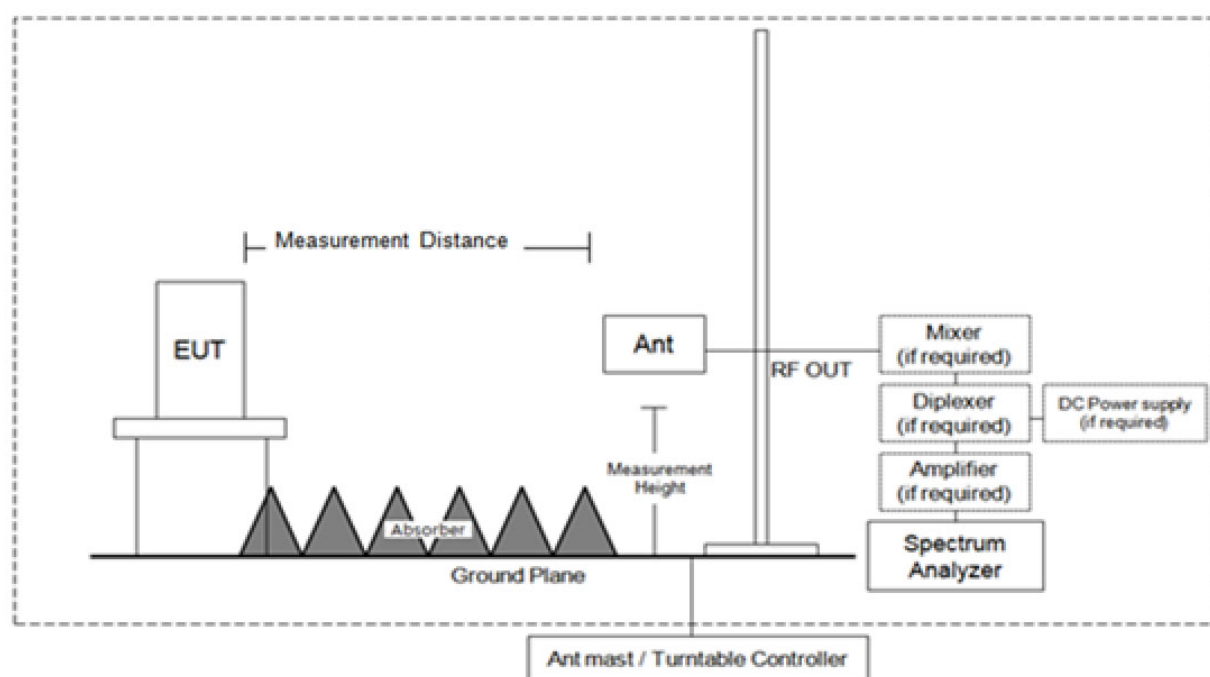
30 MHz - 1 GHz



1 GHz ~ 40 GHz



40 GHz ~ 200 GHz



TEST RESULTS

9 kHz ~ 30 MHz

Frequency	Reading	Ant. Factor	Cable Loss	Ant. Pol.	Total	Limit	Margin
MHz	dBμV	dB/m	dB	(H/V)	dBμV/m	dBμV/m	dB

No Critical peaks found

Notes:

- The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
- Limit line = specific Limits (dBμV) + Distance extrapolation factor
- Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)
- Measurements were performed for the EUT in the X, Y, and Z planes, with both horizontal and vertical polarizations of the detecting antenna.

Below 1 GHz

Frequency	Reading	Ant. Factor	Cable Loss	Ant. Pol.	Total	Limit	Margin
MHz	dBμV	dB/m	dB	(H/V)	dBμV/m	dBμV/m	dB

No Critical peaks found

Notes:

- Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
- Measurements were performed for the EUT in the X, Y, and Z planes, with both horizontal and vertical polarizations of the detecting antenna.

1 GHz ~ 18 GHz

Frequency	Reading	A.F. + C.L. – Amp. G. + D.F.	Ant. Pol.	Total	Limit	Margin
[GHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]

No Critical peaks found

※ A.F.: Antenna Factor, C.L.: Cable Loss, Amp. G.: Amplifier Gain, D.F.: Distance Factor

18 GHz ~ 40 GHz

Frequency	Reading	A.F. + C.L. – Amp. G. + D.F.	Ant. Pol.	Total	Limit	Margin
[GHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]
25.439	56.97	-11.53	H	45.44	54	8.56

※ A.F.: Antenna Factor, C.L.: Cable Loss, Amp. G.: Amplifier Gain, D.F.: Distance Factor

40 GHz ~ 220 GHz

Frequency	Reading	A.F. + C.L. – Amp. G. + D.F.	Ant. Pol.	Total	Limit	Margin
[GHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]

No Critical peaks found

※ A.F.: Antenna Factor, C.L.: Cable Loss, Amp. G.: Amplifier Gain, D.F.: Distance Factor

220 GHz ~ 243 GHz

Frequency	Reading	A.F. + C.L. – Amp. G. + D.F.	Ant. Pol.	Total	Limit	Margin
[GHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/m]	[dB]

No Critical peaks found

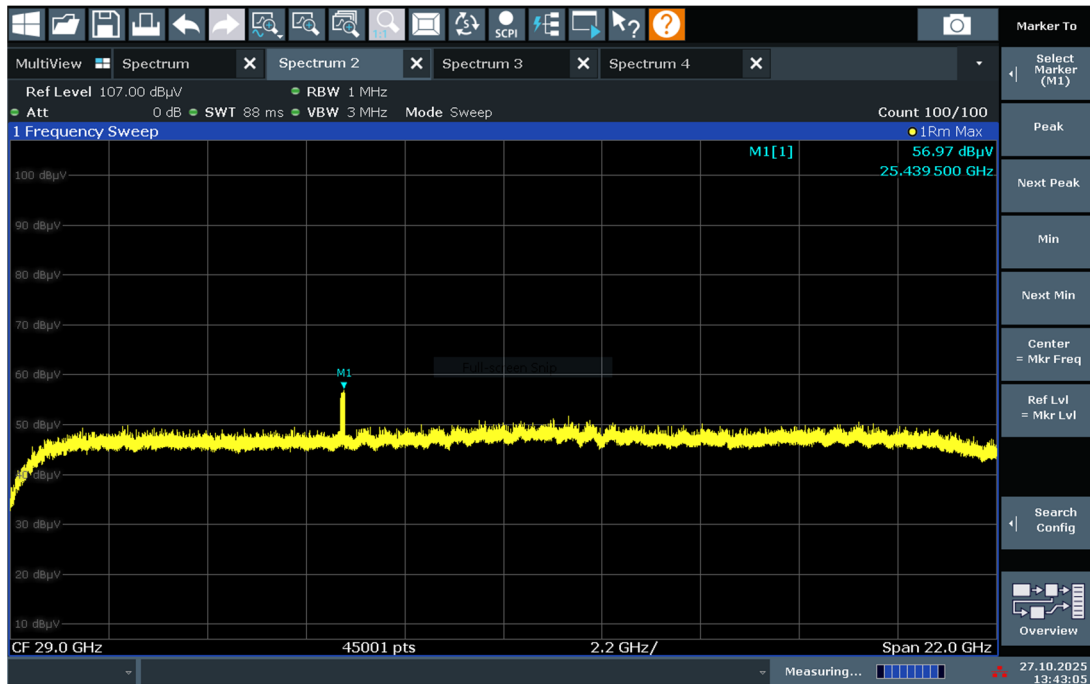
※ A.F.: Antenna Factor, C.L.: Cable Loss, Amp. G.: Amplifier Gain, D.F.: Distance Factor

Notes:

- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1 GHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- Total = Measured Value + Antenna Factor + Cable Loss + Mixer Loss - Amplifier Gain
- Distance extrapolation factor = 20 log (test distance / specific distance) (dB)
- Measurements were performed for the EUT in the X, Y, and Z planes, with both horizontal and vertical polarizations of the detecting antenna.

RESULT PLOTS

Unwanted Emission Plot



Note : Only the worst case plots for Radiated Spurious Emissions.

7.4 FUNDAMENTAL EMISSIONS (FREQUENCY STABILITY)

▣ TEST REQUIREMENTS AND LIMITS

§ 95.3379 76 ~ 81 GHz Band Radar Service unwanted emissions limits.

- (b) Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation. Equipment is presumed to operate over the temperature range –20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.

▣ TEST PROCEDURE

The test was performed according to Procedure 6.8 in ANSI C63.10-2020.

Some unlicensed wireless device requirements specify frequency stability tests with variation of supply voltage and temperature; the requirements can be found in the regulatory specifications for each type of unlicensed wireless device. The procedures listed in 6.8.1 and 6.8.2 shall be used for frequency stability tests.

6.8.1 Frequency stability with respect to ambient temperature

- a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.
- b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or by connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

- c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.
- e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.
- f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 min, 5 min, and 10 min after the EUT is energized. Four measurements in total are made.
- g) Measure the frequency at each of frequencies specified in 5.6.
- h) Switch OFF the EUT but do not switch OFF the oscillator heater.

- i) Lower the chamber temperature by not more than 10 °C, and allow the temperature inside the chamber to stabilize.
- j) Repeat step f) through step i) down to the lowest specified temperature.

6.8.2 Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15 °C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency measuring instrument.
NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.
- b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in 5.6.
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in 5.13.

Notes:

- 1. Frequency stability was investigated at 10 °C intervals from –20 °C to +50 °C after the unit had stabilized, and the readings were recorded in a tabular format.
The voltage supplied to the EUT was 12.0 V, and the reference temperature was set at 20 °C.
- 2. The operating temperature and voltage ranges declared by the manufacturer (temperature: –40°C to 85°C, voltage: DC 9 V to 16 V) are wider than those specified in the standard. However, the test was performed within the limits defined by the standard.
- 3. The EUT is an FMCW radar, which sweeps over a range of frequencies. Since a single reference frequency cannot be used for frequency stability measurement, the frequency was measured at the start and stop frequencies of the operating range to evaluate the frequency stability over the entire sweep.

TEST RESULTS

Voltage (V)	Temp. (°C)	Meas. Time	Frequency (GHz)		Frequency Error (GHz)	
			Start	Stop	Start	Stop
12	+20(Ref)	Startup	76.0936	76.3842	-	-
	-20		76.0941	76.3877	0.0005	0.0035
	-10		76.0943	76.3860	0.0007	0.0018
	0		76.0942	76.3854	0.0006	0.0012
	10		76.0951	76.3849	0.0015	0.0007
	30		76.0950	76.3842	0.0014	0.0000
	40		76.0952	76.3841	0.0016	-0.0001
	50		76.0952	76.3841	0.0016	-0.0001
12	+20(Ref)	2 min	76.0935	76.3844	-	-
	-20		76.0944	76.3874	0.0009	0.0030
	-10		76.0946	76.3857	0.0011	0.0013
	0		76.0940	76.3852	0.0005	0.0008
	10		76.0953	76.3851	0.0018	0.0007
	30		76.0952	76.3843	0.0017	-0.0001
	40		76.0956	76.3839	0.0021	-0.0005
	50		76.0949	76.3842	0.0014	-0.0002
12	+20(Ref)	5 min	76.0933	76.3840	-	-
	-20		76.0937	76.3879	0.0005	0.0038
	-10		76.0944	76.3862	0.0011	0.0021
	0		76.0946	76.3857	0.0013	0.0017
	10		76.0954	76.3847	0.0021	0.0007
	30		76.0952	76.3846	0.0020	0.0005
	40		76.0954	76.3839	0.0021	-0.0001
	50		76.0953	76.3843	0.0020	0.0003
12	+20(Ref)	10 min	76.0939	76.3844	-	-
	-20		76.0938	76.3879	-0.0002	0.0035
	-10		76.0946	76.3862	0.0006	0.0018
	0		76.0944	76.3858	0.0005	0.0014
	10		76.0954	76.3851	0.0015	0.0008
	30		76.0952	76.3844	0.0013	0.0000
	40		76.0949	76.3840	0.0010	-0.0004
	50		76.0951	76.3837	0.0011	-0.0006
10.2	20	-	76.0931	76.3833	-0.0005	-0.0009
13.8	20		76.0973	76.3837	0.0037	-0.0005

8. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Signal Analyzer	FSW85	Rohde&Schwarz	101256	10/16/2026	Annual
PXA Signal Analyzer	N9030B	Keysight	MY57143020	06/18/2026	Annual
Temperature & Humidity Chamber	PL-2KP	ESPEC	14005385	07/04/2026	Annual
Controller(Antenna mast & Turn Table)	CO3000	Innco systems	CO3000/1251/48920320/P	N/A	N/A
Antenna Mast	MA4640	Innco systems	S4AM	08/01/2026	Annual
Turn Table	1060	Innco systems	N/A	N/A	N/A
Turn Table	N/A	Ets	N/A	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	TNM system	TM20090002	N/A	N/A
RF Switching System	FBSR-04C (LNA)	TNM system	S4L4	03/12/2026	Annual
RF Switching System	FBSR-04C (Thru)	TNM system	S4L6	03/12/2026	Annual
Loop Antenna	FMZB1513	SCHWARZBECK	1513-333	06/23/2027	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	9168-0895	08/28/2026	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	9120D-937	02/07/2027	Biennial
Horn Antenna	BBHA 9170	Schwarzbeck	BBHA9170541	10/24/2027	Biennial
Harmonic Mixer	WR-19	VDI	SAX 771	02/15/2026	Annual
Harmonic Mixer	WR-12	VDI	SAX 773	02/15/2026	Annual
Harmonic Mixer	WR-08	VDI	SAX 779	02/15/2026	Annual
Harmonic Mixer	WR-05	VDI	SAX 774	02/15/2026	Annual
Harmonic Mixer	WR-03	OML INC.	M03HWD	09/08/2026	Annual
DC Power Supply	PWR800L	KIKUSUI	RK000880	07/03/2026	Annual

Notes:

- Equipment listed above that calibrated during the testing period was set for test after the calibration.
- Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date, or will be test after the calibration is completed.

9. ANNEX A_TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2511-FC001-P