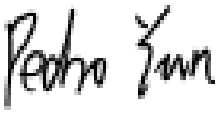
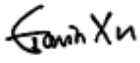
NVLAP LAB CODE 600341-0

TEST REPORT

Applicant:	**Xiamen Milesight IoT Co., Ltd.**
Address:	**Building C09, Software Park Phase III, Xiamen 361024, Fujian, China**
Product Name:	**Radar Fall Detection Sensor**
FCC ID:	**2AYHY-VS373**
Standard(s):	**47 CFR Part 15, Subpart C(15.255)** **ANSI C63.10-2020 +Cor.1-2023**
Report Number:	**2402A108617E-RF-00B**
Report Date:	**2025/6/17**

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).





Reviewed By: **Pedro Yun** Title: **Project Engineer**

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CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2402A108617E-RF-00B	Original Report	2025/6/17

1. GENERAL INFORMATION

1.1 General Description of Equipment under Test

EUT Name:	Radar Fall Detection Sensor
EUT Model:	VS373-915M
Multiple Models:	NF373-915M
Operation Frequency Range:	61.01-61.49 GHz
Maximum Peak EIRP:	12.23 dBm
Modulation Type:	FMCW
Chirp Time▲:	1000 μs
Emission Designator:	N0N
Rated Input Voltage▲:	5Vdc from adapter
Serial Number:	2VKT-1
EUT Received Date:	2024/12/9
EUT Received Status:	Good
Note: The multiple models are electrically identical with the test model. The difference is only the enclosure. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
Adapter	HUIZHOU FUJIA APPLIANCE TECH. CO., LTD.	FJ-SW618P20U	Input: 100-240Vac~50/60Hz 0.6A Max Output: 5Vdc 3 A Max or 9Vdc 2.22A Max or 12Vdc 1.67A Max

1.3 Antenna Information Detail▲

Antenna Type	input impedance (Ohm)	Antenna Gain	Frequency Range
Array	50	5dBi	61.01-61.49GHz
The design of compliance with §15.203:			
☒ Unit uses a permanently attached antenna.			
☐ Unit uses a unique coupling to the intentional radiator.			
☐ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.			

1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

2. SUMMARY OF TEST RESULTS

Standard(s)/Rule(s)	Description of Test	Result
§15.207(a)	AC Line Conducted Emissions	Compliant
§15.255(c)(2)(ii)	Peak EIRP and Transmitter Off-times	Compliant
§15.215, §15.255 (e)	Occupied Bandwidth	Compliant
§15.205, §15.209, §15.255(d)	Radiated Spurious Emissions	Compliant
§15.255 (f)	Frequency Stability	Compliant
§15.255 (h)	Group Installation	Compliant
§15.203	Antenna Requirement	Compliant

3. DESCRIPTION OF TEST CONFIGURATION

3.1 EUT Operation Condition

The system was configured for testing in production version with highest transmitter activity (on time), which was provided by the manufacturer. According to 15.31(c) and KDB 364244 D01 Meas 15.255 Radars v01r01, the device tested at Swept mode for FMCW modulation.

3.2 EUT Exercise Software

No software was used in test. The EUT transmit when EUT was power up.

3.3 Support Equipment List and Details

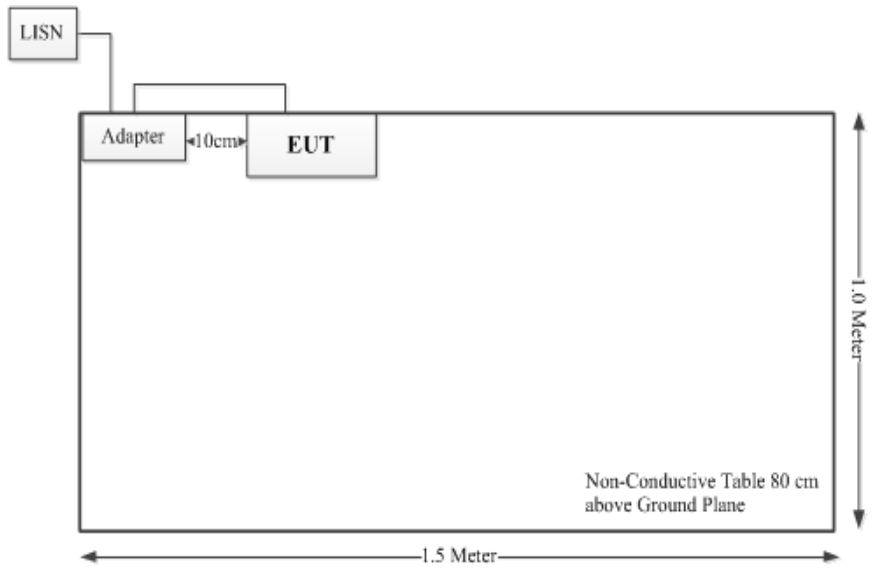
Manufacturer	Description	Model	Serial Number
/	/	/	/

3.4 Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	no	no	2	Adapter	EUT

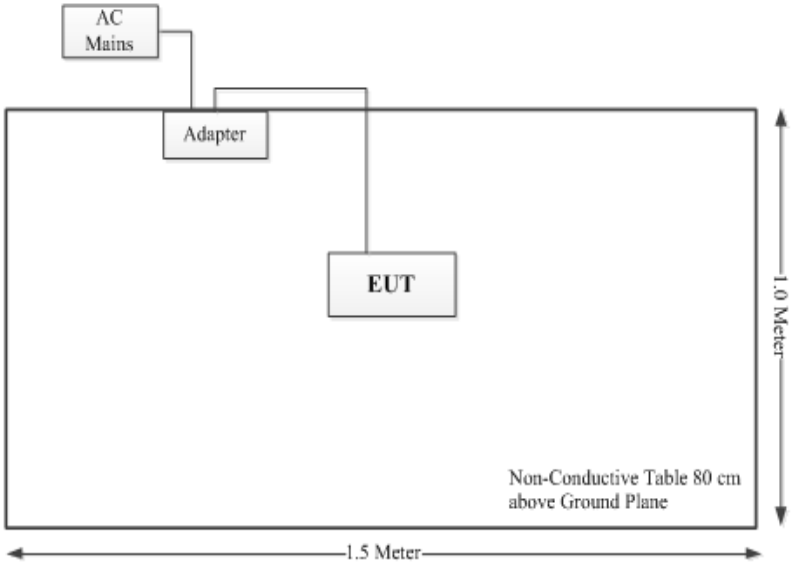
3.5 Block Diagram of Test Setup

AC line conducted emissions:

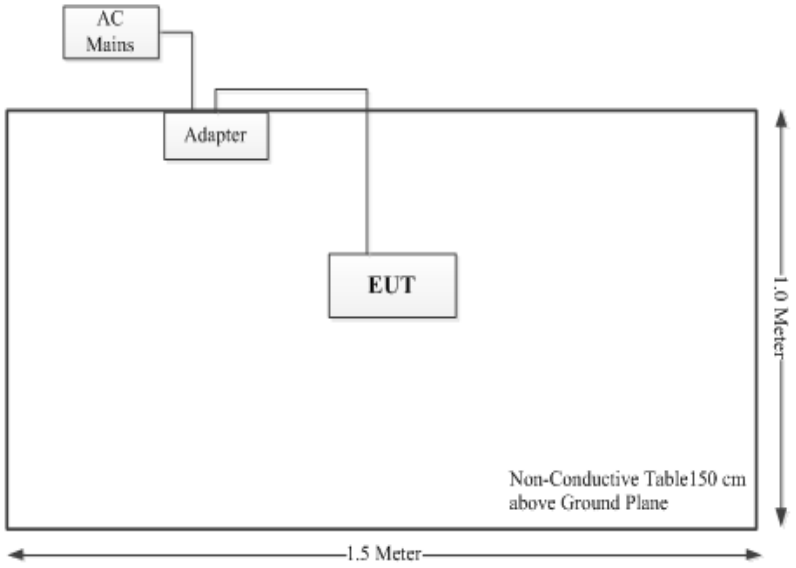


Spurious Emissions:

Below 1GHz:



Above 1GHz:



3.6 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

3.7 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
Unwanted Emissions, radiated	9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz:5.47 dB, 26.5GHz~40GHz:5.63 dB 40~60G: 4.83dB, 60G~90G: 4.94dB, 90G-140G: 5.46dB, 140G-220G: 6.00dB, 220G-325G: 7.35dB
EIRP	4.94dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

4. REQUIREMENTS TEST RESULTS

4.1 AC Line Conducted Emissions

4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

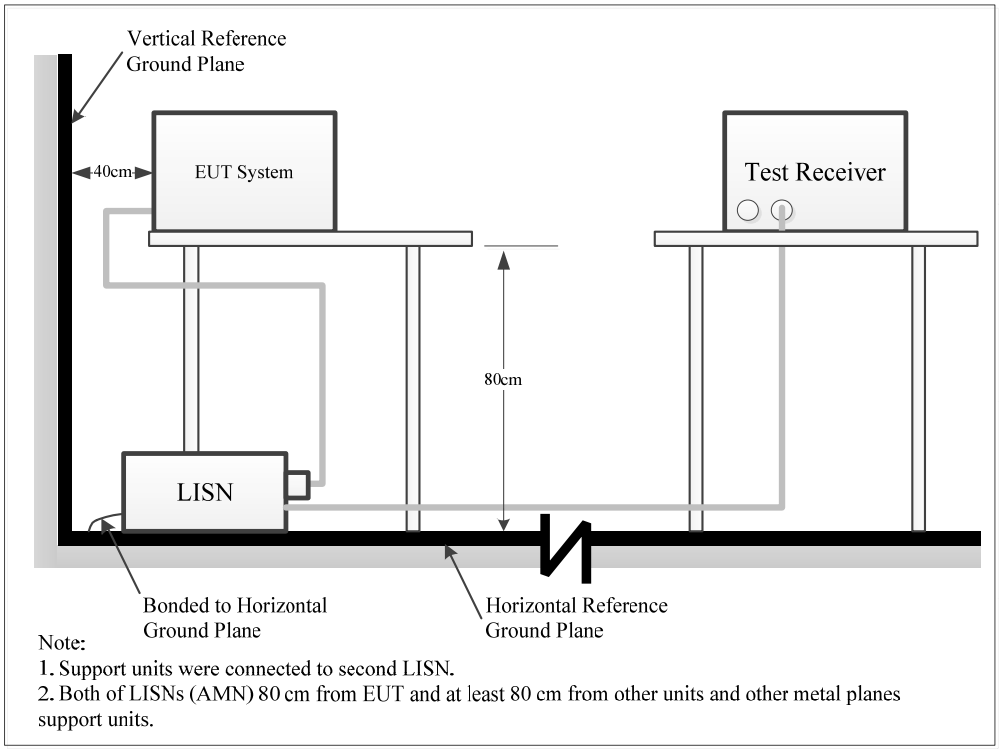
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

4.1.2 EUT Setup



Note:
1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

3.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

4.1.4 Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the first LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = attenuation caused by cable loss + voltage division factor of AMN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.1.6 Test Data

Serial Number:	2VKT-1	Test Date:	2025/2/26
Test Site:	CE	Test Mode:	Transmitting
Tester:	Yukin Qiu	Test Result:	Pass

Environmental Conditions:

Temperature: (℃)	20.7	Relative Humidity: (%)	62	ATM Pressure: (kPa)	101.9

Test Equipment List and Details:

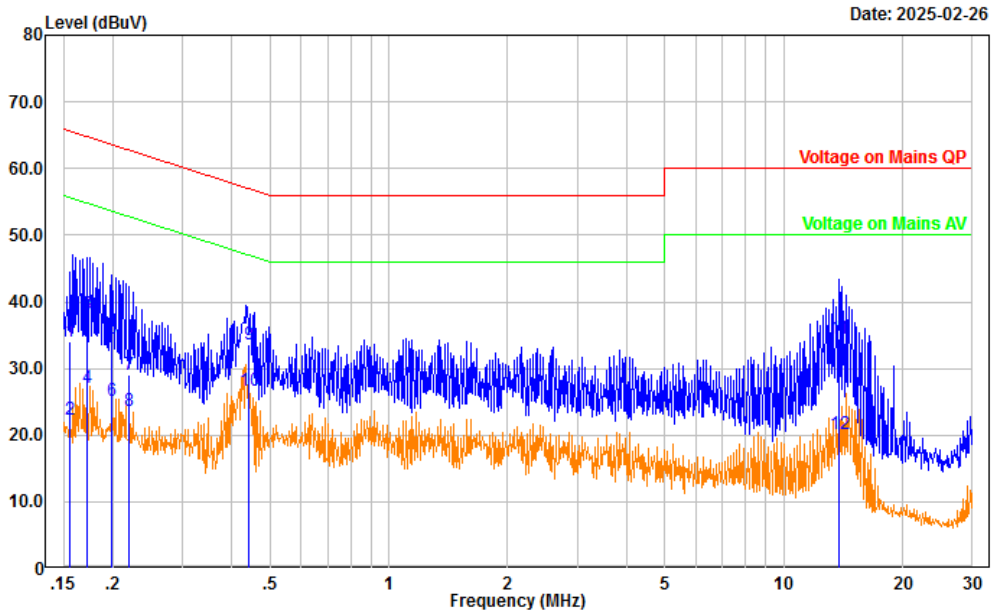
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101614	2024/9/5	2025/9/4
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2024/9/5	2025/9/4
R&S	EMI Test Receiver	ESCI	100035	2024/8/26	2025/8/25
Audix	Test Software	E3	191218 V9	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Project No.: 2402A108617E-RF
Port: Line
Test Mode: Transmitting
IF B/W 9kHz PK/AV

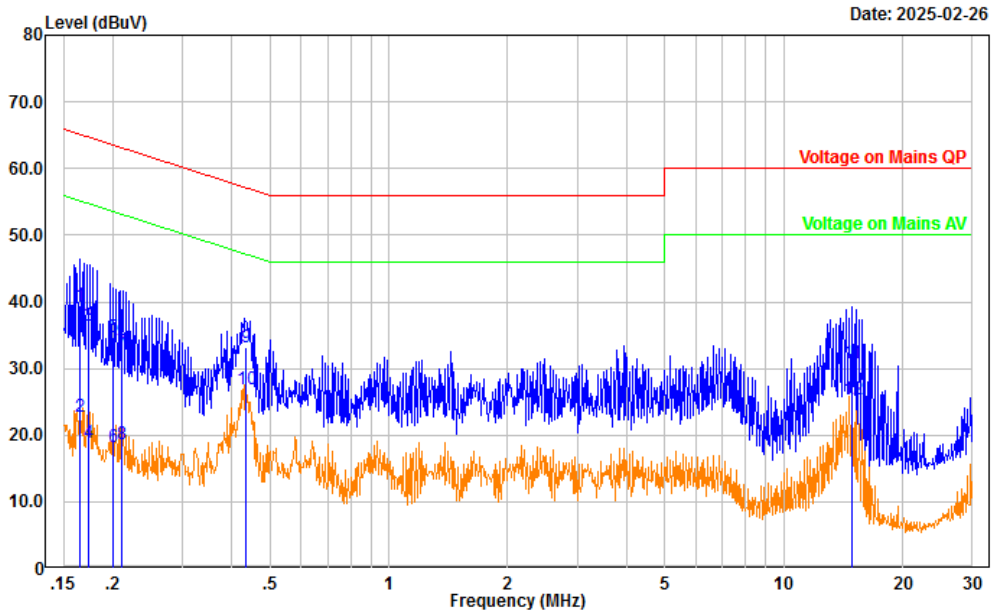
Serial No.: 2VKT-1
Tester: Yukin Qiu



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.156	23.38	10.76	34.14	65.69	31.55	QP
2	0.156	11.54	10.76	22.30	55.69	33.39	Average
3	0.172	27.31	10.79	38.10	64.85	26.75	QP
4	0.172	16.30	10.79	27.09	54.85	27.76	Average
5	0.199	23.64	10.85	34.49	63.64	29.15	QP
6	0.199	14.36	10.85	25.21	53.64	28.43	Average
7	0.221	18.13	10.84	28.97	62.79	33.82	QP
8	0.221	12.75	10.84	23.59	52.79	29.20	Average
9	0.441	22.80	10.84	33.64	57.04	23.40	QP
10	0.441	15.78	10.84	26.62	47.04	20.42	Average
11	13.801	23.55	10.84	34.39	60.00	25.61	QP
12	13.801	9.25	10.84	20.09	50.00	29.91	Average

Project No.: 2402A108617E-RF
Port: neutral
Test Mode: Transmitting
IF B/W 9kHz PK/AV

Serial No.: 2VKT-1
Tester: Yukin Qiu



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.166	28.64	10.85	39.49	65.18	25.69	QP
2	0.166	11.98	10.85	22.83	55.18	32.35	Average
3	0.174	25.56	10.85	36.41	64.78	28.37	QP
4	0.174	8.09	10.85	18.94	54.78	35.84	Average
5	0.201	23.81	10.85	34.66	63.58	28.92	QP
6	0.201	7.39	10.85	18.24	53.58	35.34	Average
7	0.211	21.61	10.85	32.46	63.17	30.71	QP
8	0.211	7.70	10.85	18.55	53.17	34.62	Average
9	0.435	22.37	10.76	33.13	57.16	24.03	QP
10	0.435	16.17	10.76	26.93	47.16	20.23	Average
11	14.825	19.83	10.86	30.69	60.00	29.31	QP
12	14.825	14.49	10.86	25.35	50.00	24.65	Average

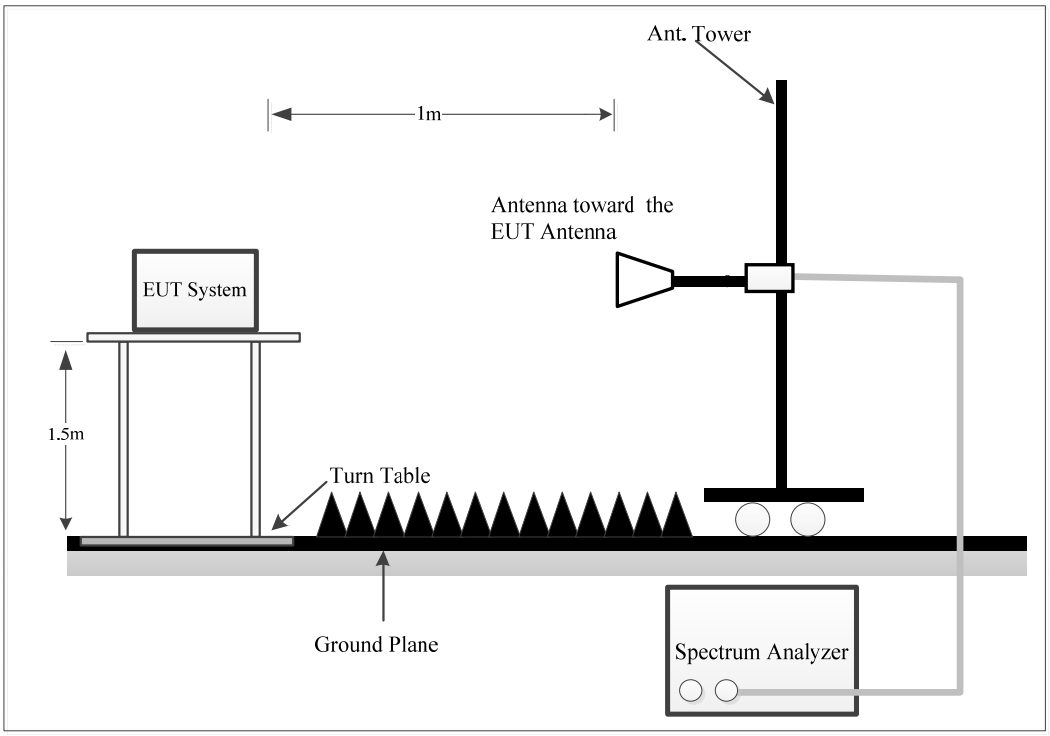
4.2 Peak EIRP And Transmitter Off-times

4.2.1 Applicable Standard

FCC §15.255(c)(2)(ii)

57.0-61.56 GHz: the peak EIRP shall not exceed 3 dBm except that the peak EIRP shall not exceed 20 dBm if the sum of continuous transmitter off-times of at least two milliseconds equals at least 16.5 milliseconds within any contiguous interval of 33 milliseconds;

4.2.2 EUT Setup



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. The EIRP test was performed at 1m distance, which was larger than the minimum test distance, please refer to section 4.4.4 for more detail.

4.2.3 Test Procedure

Refer to ANSI C63.10-2020 Clause 9.8

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).

$$EIRP = 21.98 - 20\log(\lambda) + 20\log(d_{Meas}) + P - G \quad (22)$$

where

$EIRP$	is the equivalent isotropic radiated power, in dBm
λ	is the wavelength of the emission under investigation [300/f(MHz)], in m
d_{Meas}	is the measurement distance, in m
P	is the power measured at the output of the measurement antenna, in dBm
G	is the gain of the measurement antenna, in dBi

NOTE—The measured power P includes all applicable instrument correction factors up to the connection to the measurement antenna.

5) Where applicable, calculate conducted output power from the EIRP using Equation (27).

For FMCW emissions, the procedures in 4.1.5.2.8 and Annex L shall be used.

4.2.4 Test Result

Serial Number:	2VKT-1	Test Date:	2024/12/26
Test Site:	Chamber B	Test Mode:	Transmitting
Tester:	Bill Yang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	20.8	Relative Humidity: (%)	47	ATM Pressure: (kPa)	102.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Waveguide Mixer	11970V	2521A011767	2023/2/16	2026/2/15
Flann Micowave	Horn Antenna	861V/385	736	2023/2/27	2026/2/26
Resenberger	Coaxial Cable	LU7-022-1000	0031	2024/3/1	2025/2/28
Resenberger	Coaxial Cable	LU7-022-1000	0032	2024/3/1	2025/2/28
Agilent	Spectrum Analyzer	E4440A	MY44303352	2024/10/22	2025/10/21

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Chirps Time (μs)	BW_{Chirp} (MHz)	RBW (MHz)	Chirps Correction Factor (dB)
1000	478.97	1	0.09

Refer to ANSI C63.10-2020/cor 1-2023Annex L.1. The chirps correction factor was calculated using the formula:

$$\alpha = \frac{1}{\left(1+\left[\left(\frac{2\times\ln(2)}{\pi}\right)^2\times\left(\frac{BW_{Chirp}}{T_{Chirp}\times RBW^2}\right)^2\right]\right)^{0.25}}$$

where

α	is the reduction in amplitude
BW_{Chirp}	is the FMCW Chirp Bandwidth
T_{Chirp}	is the FMCW Chirp Time

EIRP:

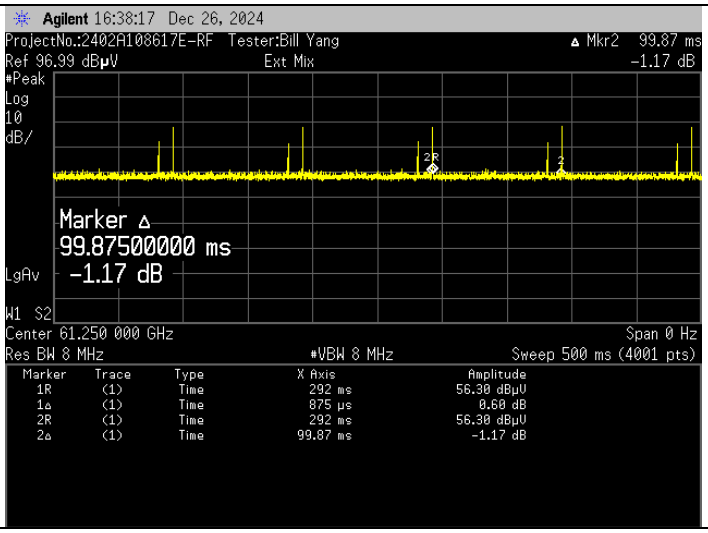
Test Frequency (GHz)	Reading (dBµV)	Detector	Polar (H/V)	Chirps Correction Factor (dB)	Factor (dB/m)	E-Field@1m (dBµV/m)	EIRP (dBm)	Limit (dBm)
61.25	74.83	PK	V	0.09	42.11	117.03	12.23	20.00

The Mixers and it`s RF cables is compose a system for calibration and already added into the reading.
E-Field = Reading + Chirps Correction Factor + Antenna Factor
EIRP = E-Field + 20log(Measurement distance) - 104.8
Measurement distance = 1m
The test data recorded was the maximum polarization.

Transmitter Off-times

Transmitter On (ms)	Observation Time (ms)	sum of continuous transmitter off-times (ms)	Limit (ms)
0.875	33	32.125	≥16.5
Note: Sum of Continuous Transmitter Off-times= Observation Time(33ms) - Ton			

Transmitter On Time=0.875ms



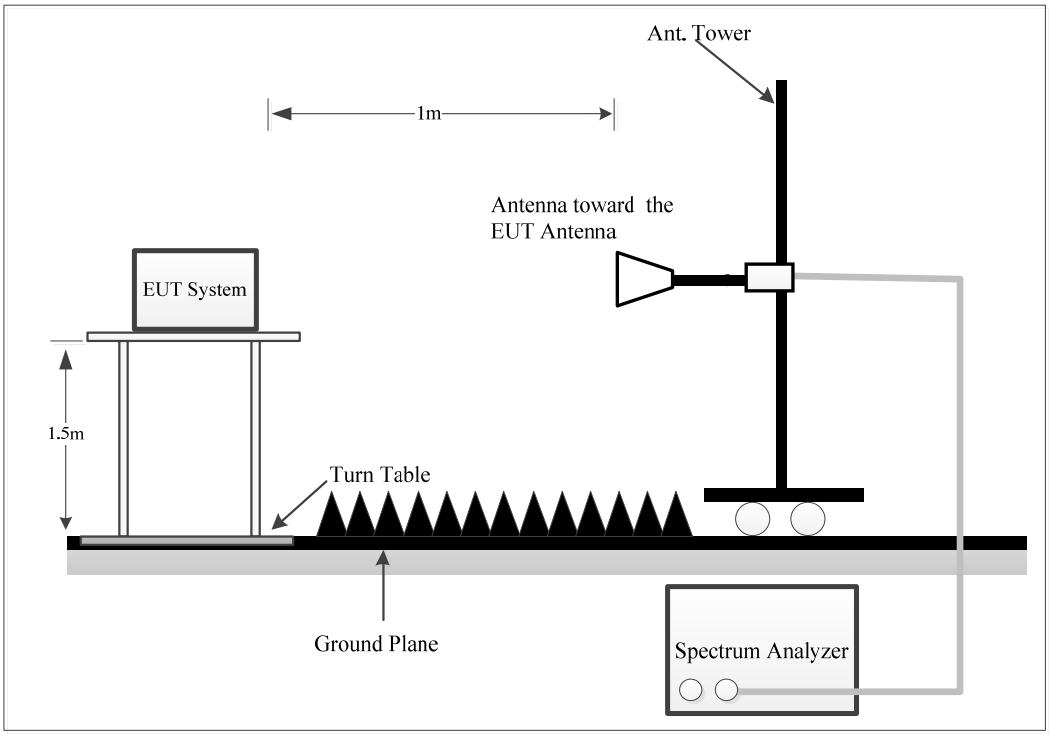
4.3 Emission Bandwidth:

4.3.1 Applicable Standard

KDB 364244 D01 Meas 15.255 Radars v01r01

For other than pulsed radar transmitters, the fundamental emission bandwidth is presumed to be "…*the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage β/2 of the total mean power of a given emission. Unless otherwise specified in an ITU–R Recommendation for the appropriate class of emission, the value of β/2 should be taken as 0.5%,"* as defined in §2.1(c) of the FCC rules. This is also known as the 99% occupied bandwidth (OBW).

4.3.2 EUT Setup



Place the measurement antenna in the main beam of the EUT then maximize the fundamental emission, noting that multiple peaks can be found at different beam orientations and/or polarizations.

4.3.3 Test Procedure

KDB 364244 D01 Meas 15.255 Radars v01r01

Clauses 9.3 and 9.4 of C63.10-2020 provide standardized procedures recognized by the FCC for measuring both the relative (-10 dB) bandwidth and the 99% OBW.

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 × 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.
b) The EUT shall be transmitting at its maximum data rate. Allow the trace to stabilize.
c) If the instrument does not have a 99% OBW function, recover the trace data points and sum directly in linear power terms. Place the recovered amplitude data points, beginning at the lowest frequency, in a running sum until 0.5% of the total is reached. Record that frequency as the lower OBW frequency. Repeat the process until 99.5% of the total is reached and record that frequency as the upper OBW frequency. The 99% power OBW can be determined by computing the difference these two frequencies.
d) The OBW shall be reported and plot(s) of the measuring instrument display shall be provided with the test report. The frequency and amplitude axis and scale shall be clearly labeled. Tabular data can be reported in addition to the plot(s).
e) Repeat this test for each modulation scheme using the guidance of 5.6.2.1.

4.3.4 Test Data

Serial Number:	2VKT-1	Test Date:	2024/12/26
Test Site:	Chamber B	Test Mode:	Sweep
Tester:	Bill Yang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	20.8	Relative Humidity: (%)	47	ATM Pressure: (kPa)	102.3

Test Equipment List and Details:

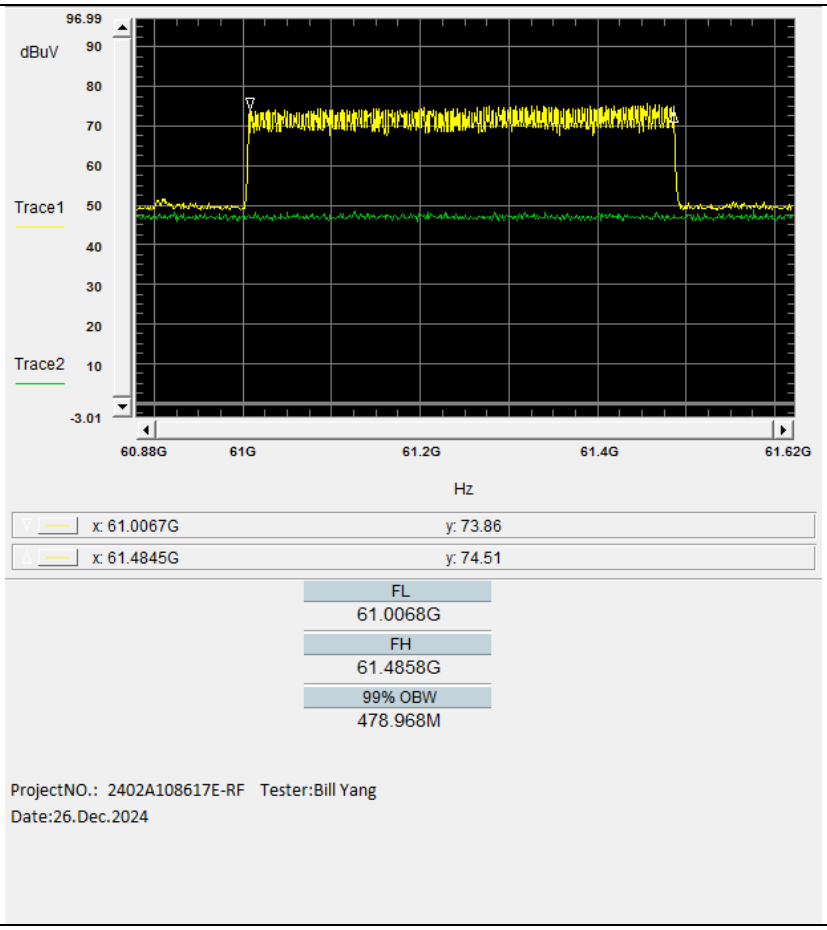
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Waveguide Mixer	11970V	2521A011767	2023/2/16	2026/2/15
Flann Micowave	Horn Antenna	861V/385	736	2023/2/27	2026/2/26
Agilent	Spectrum Analyzer	E4440A	MY44303352	2024/10/22	2025/10/21
Resenberger	Coaxial Cable	LU7-022-1000	0031	2024/3/1	2025/2/28
Resenberger	Coaxial Cable	LU7-022-1000	0032	2024/3/1	2025/2/28

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Test Mode	99% Occupied Bandwidth (MHz)	F_L (GHz)	Limit F_L (GHz)	F_H (GHz)	Limit F_H (GHz)
Sweep	478.968	61.0068	57	61.4858	61.56

99% Occupied Bandwidth



4.4 Radiated Emissions

4.4.1 Applicable Standard

FCC §15.255(d)
Limits on spurious emissions:

(1) The power density of any emissions outside the 57-71 GHz band shall consist solely of spurious emissions.

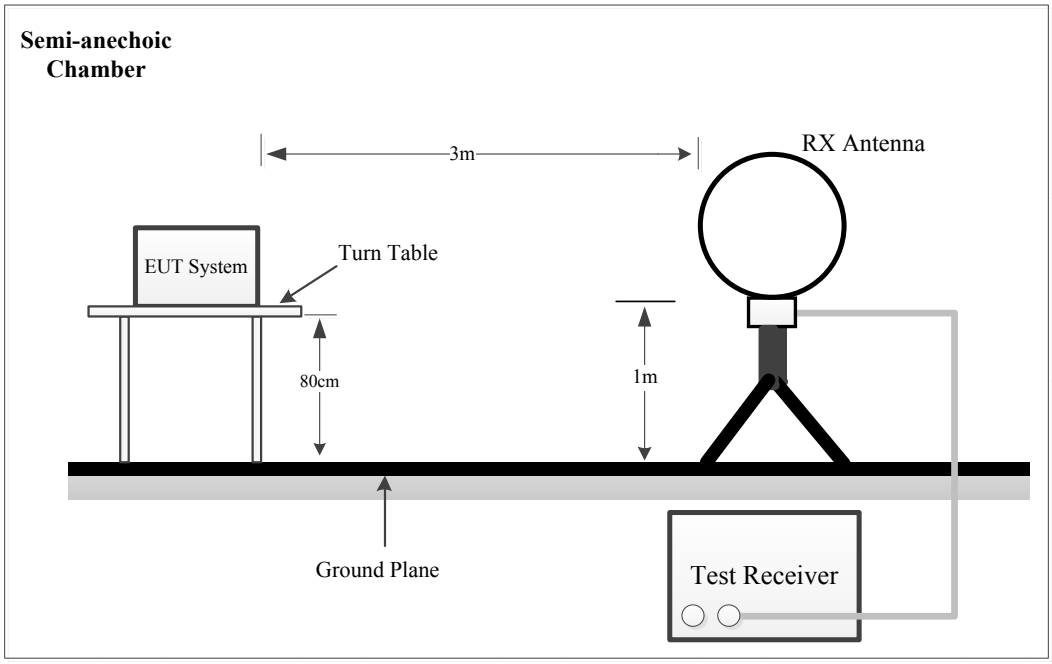
(2) Radiated emissions below 40 GHz shall not exceed the general limits in § 15.209.

(3) Between 40 GHz and 200 GHz, the level of these emissions shall not exceed 90 pW/cm^2 at a distance of 3 meters.

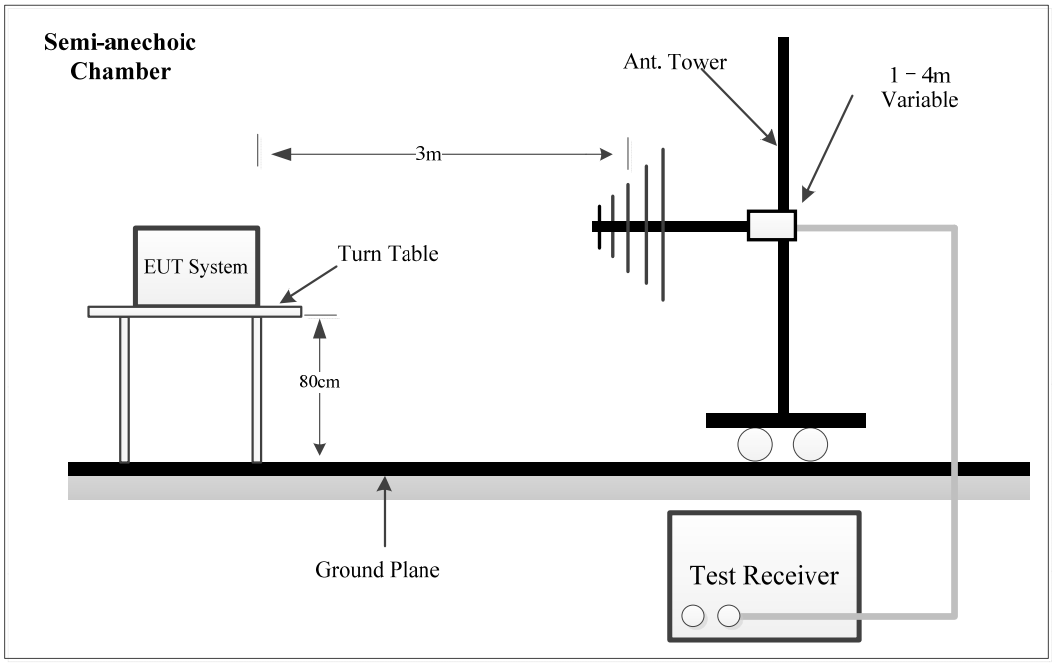
(4) The levels of the spurious emissions shall not exceed the level of the fundamental emission.

4.4.2 EUT Setup

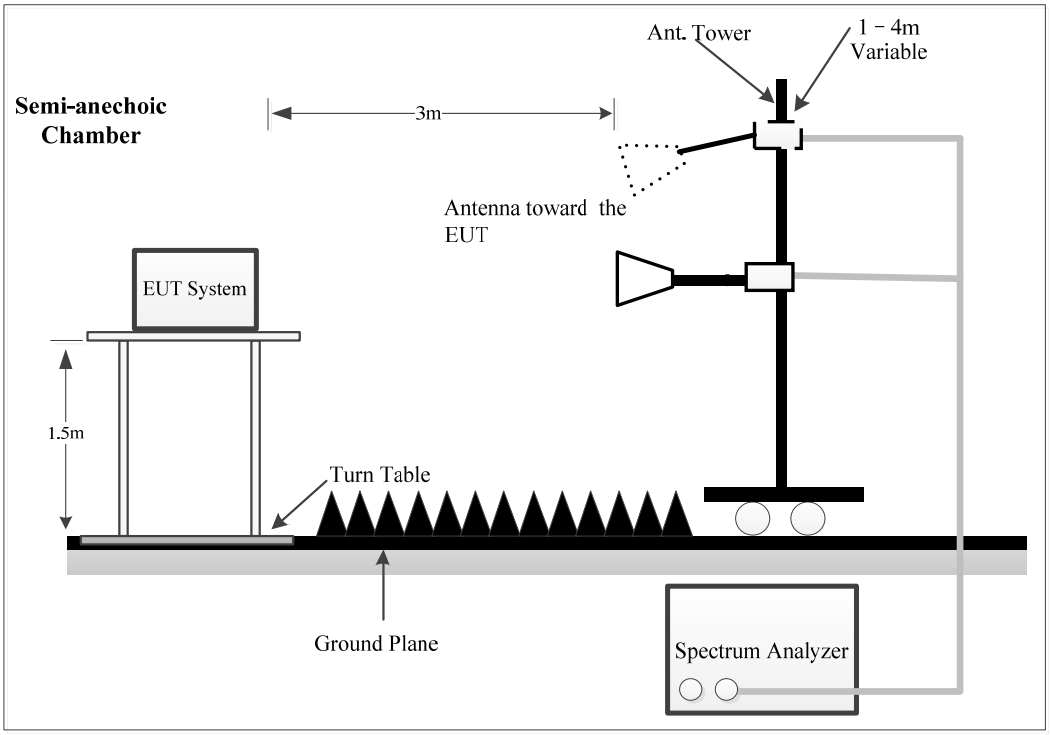
9kHz-30MHz:



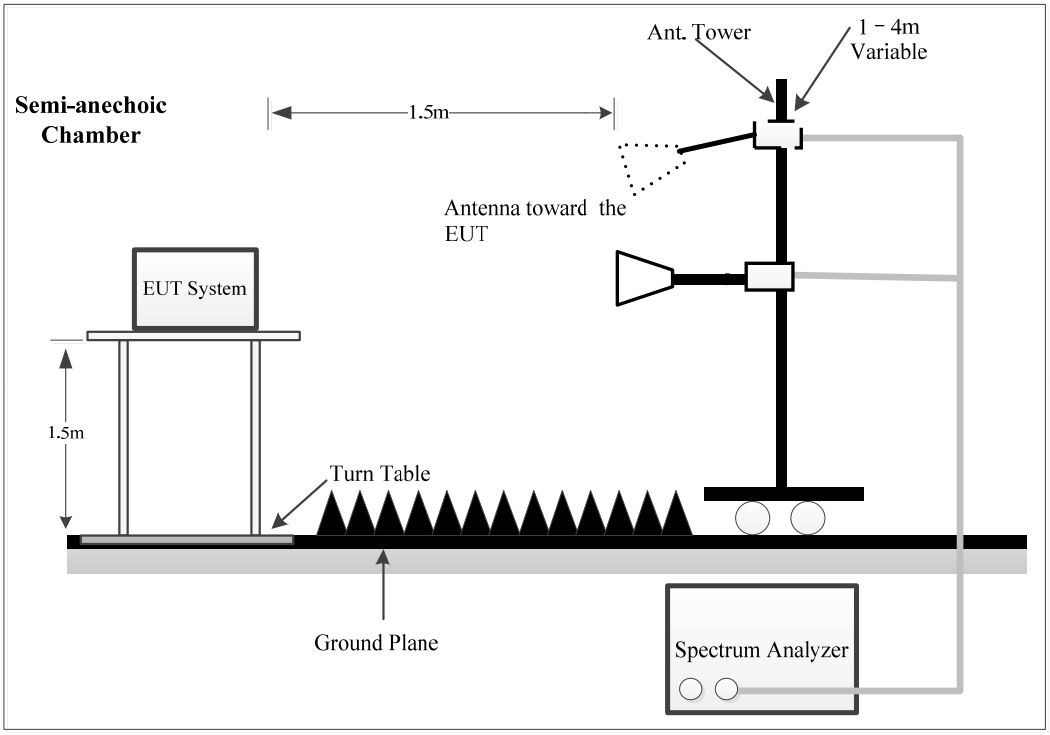
30MHz~1GHz:



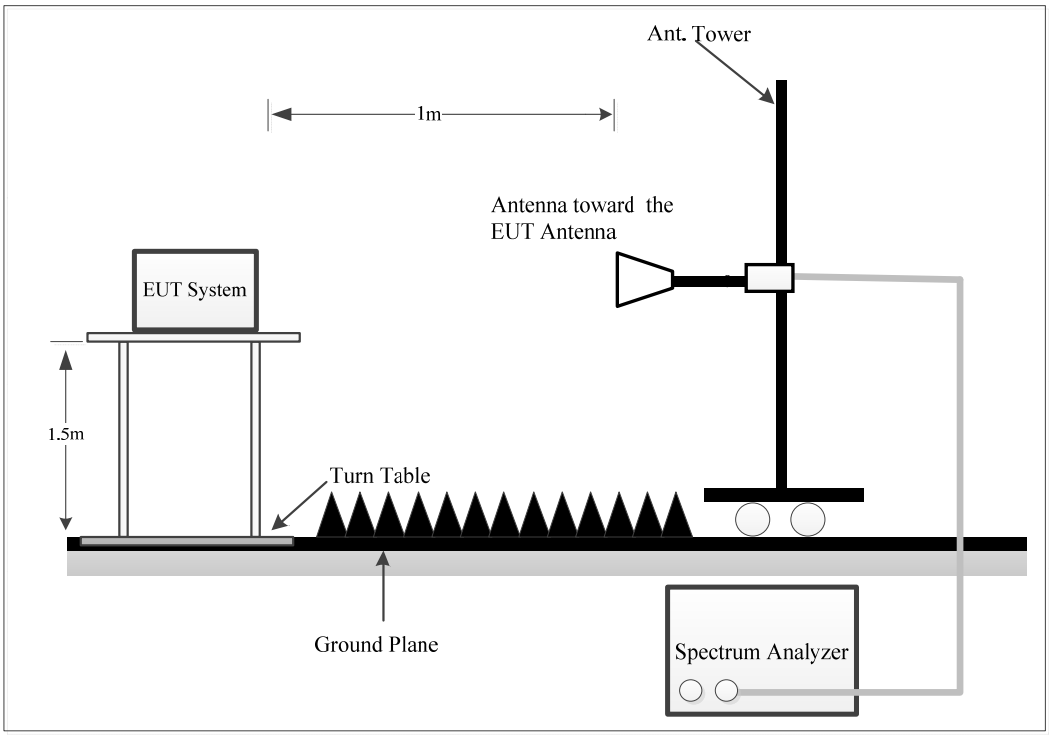
1~26.5 GHz:



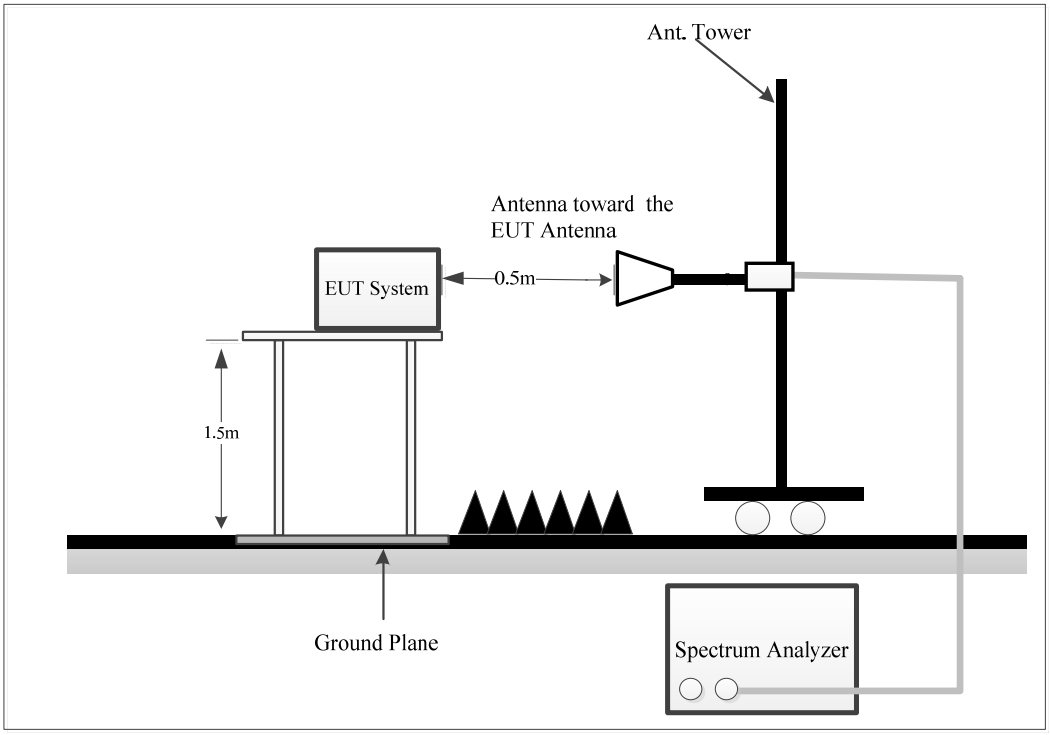
26.5~40 GHz:



40~90 GHz:



90~200 GHz:



Above 40GHz:

The antenna is scanned around the entire perimeter surface of the EUT, in both horizontal and vertical polarizations, at the distance of 1.0 m from 40 GHz to 90 GHz, and 0.5 m from 90 GHz to 200 GHz.

The radiated emission and out of band emission tests were performed in the 3 meters chamber, using the setup accordance with the ANSI C63.10-2020 The specification used was the FCC 15.209/15.205/15.255 limits.

4.4.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9kHz to 200 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:
9kHz-1000MHz:

Frequency Range	RBW	Video B/W	IF B/W	Measurement	Detector
9 kHz – 150 kHz	300 Hz	1 kHz	200 Hz	QP/Average	QP/Average
150 kHz – 30 MHz	10 kHz	30 kHz	9 kHz	QP/Average	QP/Average
30 MHz – 1000 MHz	/	/	120 kHz	QP	QP
	100 kHz	300 kHz	/	PK	PK

1-40GHz:
Pre-scan:

Frequency Range	Measurement	RBW	Video B/W	Detector
1-40 GHz	Peak	1MHz	3 MHz	PK
	AV	1MHz	5kHz	PK

Final measurement for emission identified during the pre-scan:

Frequency Range	Measurement	RBW	Video B/W	Detector
1-40 GHz	Peak	1MHz	3 MHz	PK
	AV	1MHz	10Hz	PK

Above 40GHz:

Frequency Range	Measurement	RBW	Video B/W	Detector
Above 40GHz	AV	1MHz	3MHz	AV

Note: Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz-30MHz except 9 – 90 kHz, 110 – 490 kHz, employing an average detector.

4.4.4 Test Procedure

Refer to ANSI C63.10-2020 Clauses 9.10, and 9.11.

A Maximizing procedure was performed to ensure that the highest emissions from the EUT were actually measured in all of the Test Arrangements of the EUT and Local Support Equipment.

All emissions under the average limit and under the noise floor have not recorded in the report.
According to C63.10, the 26.5-40GHz test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m

Distance extrapolation factor =20 log (specific distance [3m]/test distance [1.5m]) dB= 6.0 dB

For above 40GHz:

External harmonic mixers are utilized. The antenna is scanned around the entire perimeter surface of the EUT, in both horizontal and vertical polarizations. The Mixers and it`s RF cables is compose a system for calibration, the conversion factor was added into the test Spectrum Analyzer in testing.

The far-field boundary is given in ANSI C63.10-2020:

$$R_m = 2D^2 / \lambda$$

Where:
D is the largest dimension of the antenna aperture in m and
λ is the free-space wavelength in m at the frequency of measurement.

The minimum test distance for the frequency range 40GHz-200GHz determine as below:

Model	Frequency Range (GHz)	Largest Dimension of the Horn Antenna (mm)	Minimum Test Distance R_m (m)
M19RH	40-60	46.3	0.86
861/385	50-75	43.7	0.95
M12RH	60-90	30.02	0.54
M08RH	90-140	19.7	0.36
M05RH	140-220	12.5	0.23

Note: the test distances used were 1.0 m from 40 GHz to 90 GHz, and 0.5 m from 90 GHz to 200GHz, it can be seen that the EUT was always in the Far-field of the Receive Antenna during all Radiated Emissions Tests.

4.4.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

For 9kHz-26.5GHz:
Result = Reading + Factor

For 26.5GHz-40GHz
Result = Reading + Factor-Distance extrapolation Factor

Note: the antenna JB3 was calibrated with 6dB Attenuator, the antenna factor includes the insertion loss of the Attenuator.

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.4.6 Test Data

Serial Number:	2VKT-1	Test Date:	Below 1GHz: 2024/12/30 Above 1GHz: 2025/2/18-2025/6/16
Test Site:	Chamber B, Chamber A	Test Mode:	Transmitting
Tester:	Bill Yang, Jayce Wang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	20.2~27.8	Relative Humidity: (%)	33~51	ATM Pressure: (kPa)	100.1~102.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
9kHz~1000MHz					
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/25	2026/10/24
Sunol Sciences	Hybrid Antenna	JB3	A060611-2	2024/4/16	2027/4/15
Narda	Coaxial Attenuator	757C-6dB	34010	2024/4/16	2027/4/15
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2024/7/1	2025/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2024/7/1	2025/6/30
Sonoma	Amplifier	310N	372193	2024/8/16	2025/8/15
R&S	EMI Test Receiver	ESR3	102453	2024/8/26	2025/8/25
Audix	Test Software	E3	191218 V9	N/A	N/A
Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2026/9/6
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2023/2/22	2026/2/21
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2023/2/22	2026/2/21
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10M	20231117004 #0001	2024/11/17	2025/11/16
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J-2.92/J-6M-A	20231208001 #0001	2024/12/9	2025/12/8
AH	Preamplifier	PAM-0118P	469	2024/4/15	2025/4/14
AH	Preamplifier	PAM-1840VH	191	2024/9/5	2025/9/4
R&S	Spectrum Analyzer	FSV40	101944	2024/9/6	2025/9/5
Audix	Test Software	E3	191218 V9	N/A	N/A
Decentest	Multiplex Switch Test Control Set & Filter Switch Unit	DT7220SCU & DT7220FCU	DC79902 & DC79905	2024/8/27	2025/8/26
OML	Waveguide Mixer	WR19/M19HWD	U60313-1	2023/2/16	2026/2/15
OML	Horn Antenna	M19RH	11648-01	2023/2/27	2026/2/26

OML	Waveguide Mixer	WR12/M12HWD	E60120-1	2023/2/16	2026/2/15
OML	Horn Antenna	M12RH	E60120-2	2023/2/27	2026/2/26
OML	Waveguide Mixer	WR08/M08HWD	F60313-1	2023/2/16	2026/2/15
OML	Horn Antenna	M08RH	F60313-2	2023/2/27	2026/2/26
OML	Waveguide Mixer	WR05/M05HWD	G60106-1	2023/2/16	2026/2/15
OML	Horn Antenna	M05RH	G60106-2	2023/2/27	2026/2/26
Resenberger	Coaxial Cable	LU7-022-1000	0031	2024/3/1	2025/2/28

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

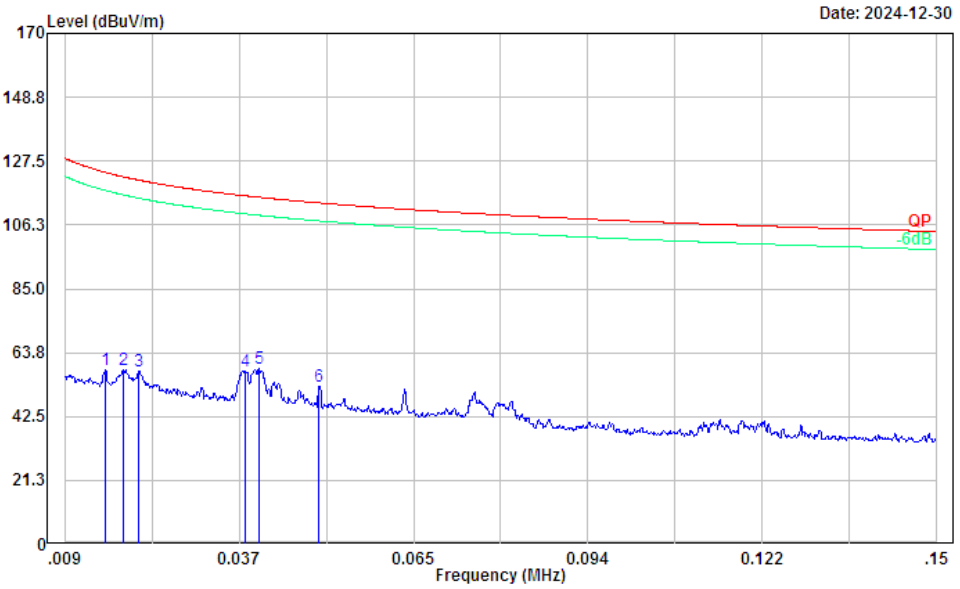
Test Data:

Please refer to the below table and plots.

1) 9kHz~30MHz

Three antenna orientations (parallel, perpendicular, and ground-parallel) was measured, the worst orientations was below:

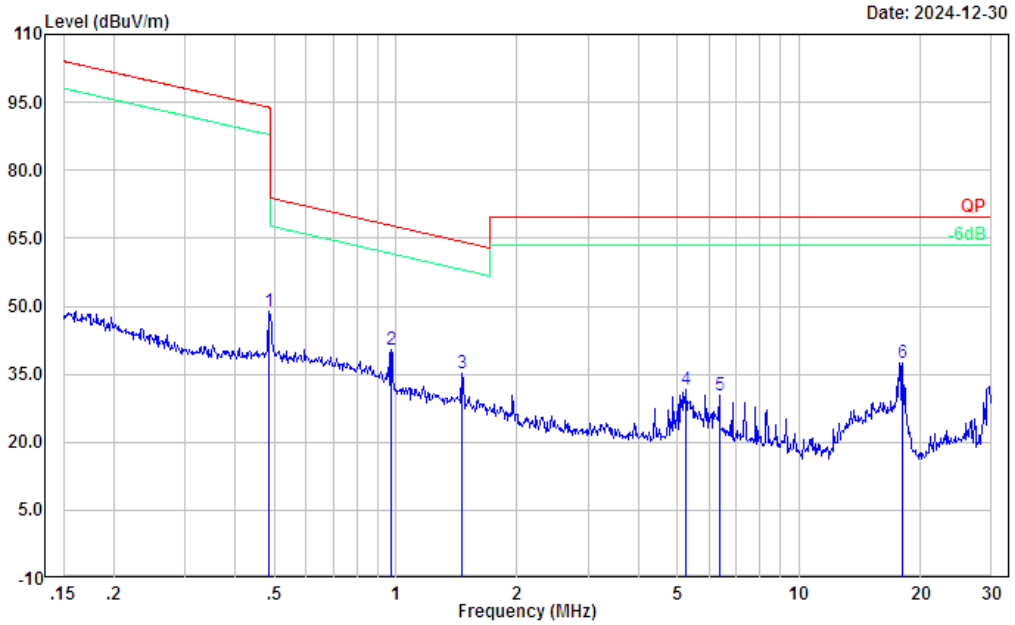
```
Project No.: 2402A108617E-RF          Serial No.: 2VKT-1
Polarization: Parallel                    Tester: Jayce Wang
   Test Mode: Transmitting
           : RBW:300Hz,VWB:1KHz
```



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	0.016	8.14	50.12	58.26	123.73	65.47	Peak
2	0.018	8.72	49.40	58.12	122.29	64.17	Peak
3	0.021	8.87	48.77	57.64	121.17	63.53	Peak
4	0.038	12.27	45.26	57.53	115.97	58.44	Peak
5	0.040	13.69	44.86	58.55	115.47	56.92	Peak
6	0.050	9.13	43.41	52.54	113.60	61.06	Peak

Project No.: 2402A108617E-RF
Polarization: Parallel
Test Mode: Transmitting
: RBW:10KHz,VWB:30KHz

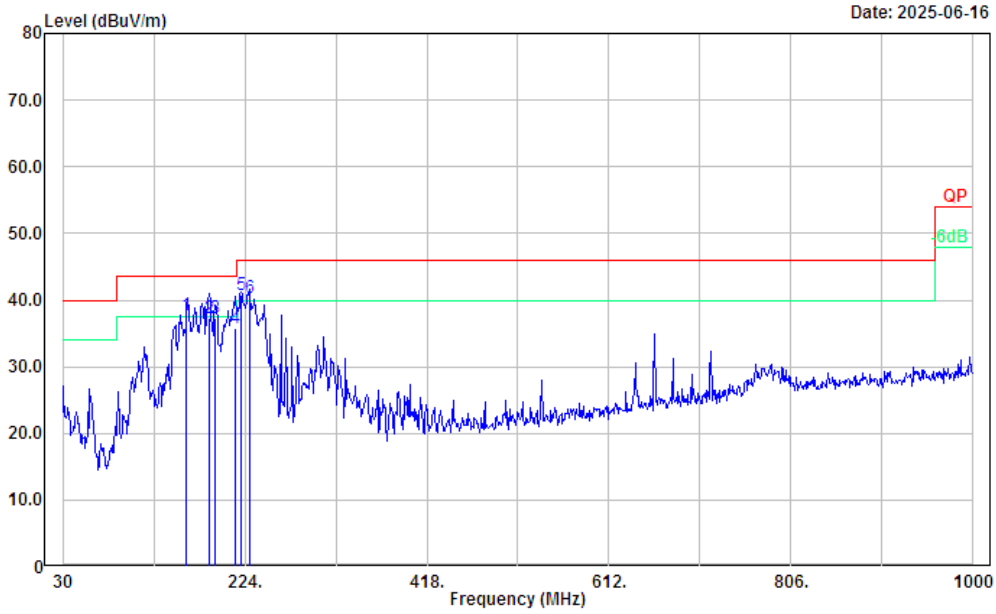
Serial No.: 2VKT-1
Tester: Jayce Wang



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	0.486	26.24	22.67	48.91	93.87	44.96	Peak
2	0.974	24.01	16.26	40.27	67.71	27.44	Peak
3	1.464	21.78	13.53	35.31	64.09	28.78	Peak
4	5.249	26.22	5.53	31.75	69.54	37.79	Peak
5	6.352	25.23	5.04	30.27	69.54	39.27	Peak
6	18.039	33.72	3.78	37.50	69.54	32.04	Peak

2) 30MHz-1GHz

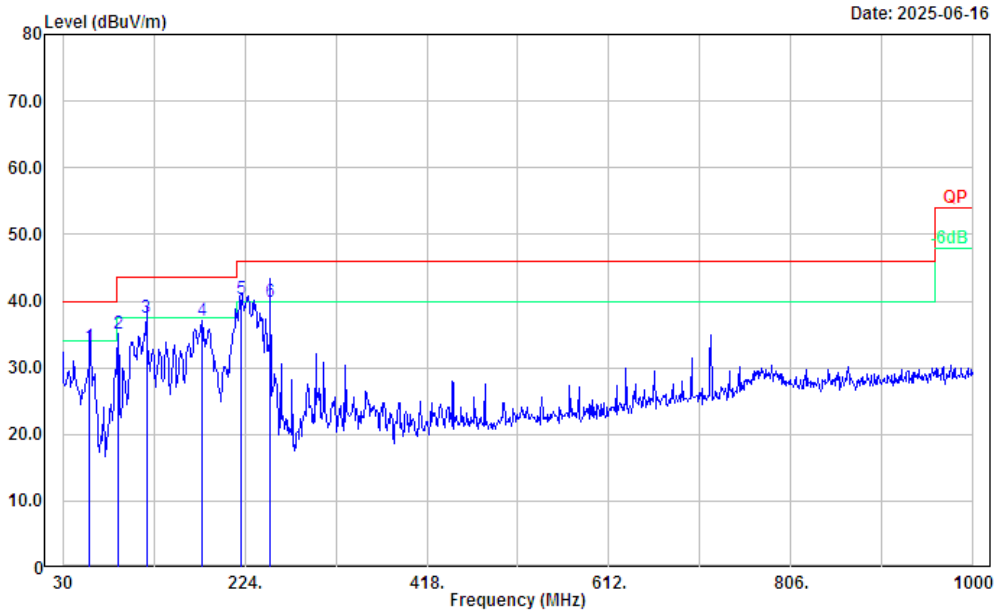
Project No.: 2402A108617E-RF Serial No.: 2VKT-1
Polarization: Horizontal Tester: Jayce Wang
Test Mode: Transmitting
Note: RBW:100KHz,VBW:300KHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	161.92	49.20	-11.51	37.69	43.50	5.81	QP
2	186.17	49.60	-12.25	37.35	43.50	6.15	QP
3	191.99	49.40	-12.10	37.30	43.50	6.20	QP
4	213.33	46.80	-11.01	35.79	43.50	7.71	QP
5	220.12	51.60	-10.92	40.68	46.00	5.32	QP
6	228.85	51.41	-11.09	40.32	46.00	5.68	QP

Project No.: 2402A108617E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: RBW:100KHz,VBW:300KHz

Serial No.: 2VKT-1
Tester: Jayce Wang

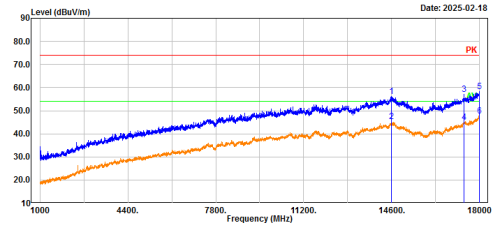


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Measurement
1	59.10	50.50	-17.27	33.23	40.00	6.77	QP
2	89.17	51.82	-16.77	35.05	43.50	8.45	Peak
3	119.24	47.70	-10.09	37.61	43.50	5.89	QP
4	178.41	49.08	-12.09	36.99	43.50	6.51	Peak
5	220.12	51.20	-10.92	40.28	46.00	5.72	QP
6	251.16	51.20	-11.23	39.97	46.00	6.03	QP

2) 1GHz-40GHz:

Horizontal

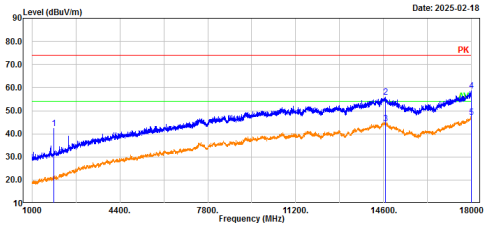
Project No.: 2402A108617E-RF Serial No.: 2VKT-1
Polarization: Horizontal Tester: Bill Yang
Test Mode: Transmitting
Note:
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	14576.20	49.18	7.15	56.33	74.00	17.67	Peak
2	14576.20	38.19	7.15	45.34	54.00	8.66	Average
3	17401.60	50.23	6.95	57.18	74.00	16.82	Peak
4	17401.60	38.16	6.95	45.11	54.00	8.89	Average
5	17986.40	47.65	10.67	58.32	74.00	15.68	Peak
6	17986.40	36.92	10.67	47.59	54.00	6.41	Average

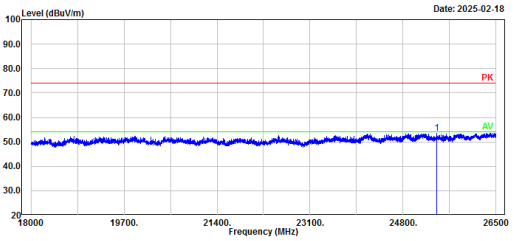
Vertical

Project No.: 2402A108617E-RF Serial No.: 2VKT-1
Polarization: Vertical Tester: Bill Yang
Test Mode: Transmitting
Note:
Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz



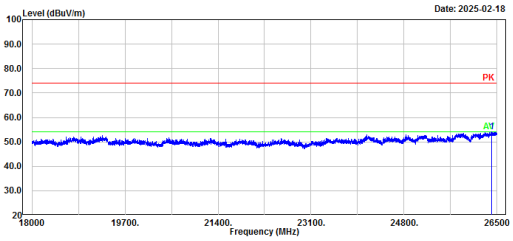
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	1850.00	58.05	-15.75	42.30	74.00	31.70	Peak
2	14664.60	49.22	6.71	55.93	74.00	18.07	Peak
3	14664.60	37.84	6.71	44.55	54.00	9.45	Average
4	17993.20	47.98	10.70	58.68	74.00	15.32	Peak
5	17993.20	36.57	10.70	47.27	54.00	6.73	Average

Project No.: 2402A108617E-RF Serial No.: 2VKT-1
Polarization: Horizontal Tester: Bill Yang
Test Mode: Transmitting
Note:
Peak:RBW:1MHz,VBW:3MHz



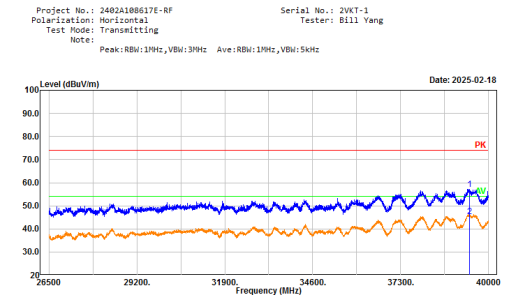
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	25415.40	43.64	9.91	53.55	74.00	20.45	Peak

Project No.: 2402A108617E-RF Serial No.: 2VKT-1
Polarization: Vertical Tester: Bill Yang
Test Mode: Transmitting
Note:
Peak:RBW:1MHz,VBW:3MHz

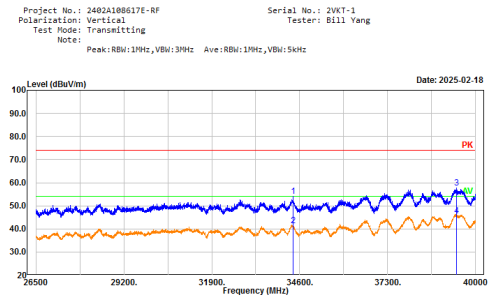


No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	26403.10	41.09	12.88	53.97	74.00	20.03	Peak

Horizontal	Vertical



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	39414.10	44.09	13.14	57.23	74.00	16.77	Peak
2	39414.10	32.35	13.14	45.49	54.00	8.51	Average



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	34400.20	47.28	6.70	53.98	74.00	20.02	Peak
2	34400.20	34.85	6.70	41.55	54.00	12.45	Average
3	39422.20	44.54	13.11	57.65	74.00	16.35	Peak
4	39422.20	32.59	13.11	45.70	54.00	8.30	Average

3) 40GHz-200GHz:

Frequency (GHz)	Receiver Reading (dBμV)	Polar (H/V)	Factor (dB/m)	Field Strength (dBμV/m)	Power Density (pW/cm^2)	Limit (pW/cm^2)
40.650	52.49	H	38.89	81.84	40.52	90.00
40.550	53.26	V	38.88	82.60	48.27	90.00
90.980	53.26	H	45.23	82.93	52.08	90.00
90.170	53.47	V	45.13	83.04	53.41	90.00
140.350	50.68	H	48.91	84.03	67.09	90.00
140.870	50.49	V	48.93	83.86	64.51	90.00

Note:
Factor = Antenna Factor
Field Strength = Reading + Factor + 20log($d_{Meas}/d_{SpecLimit}$)
d_{Meas} is the measurement distance, in m
$d_{SpecLimit}$ is the distance specified by the limit, in m

$$PD = \frac{E_{SpecLimit}^2}{377}$$

where

PD is the power density at the distance specified by the limit, in W/m^2
$E_{SpecLimit}$ is the field strength at the distance specified by the limit, in V/m

The Specified distance is 3m.

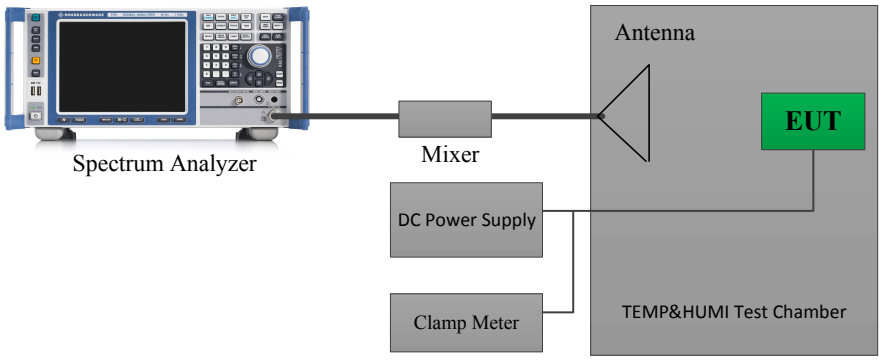
4.5 Frequency Stability

4.5.1 Applicable Standard

FCC §15.255(f)

(f) Frequency stability. 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.

4.5.2 EUT Setup Block Diagram



4.5.3 Test Procedure

Refer to ANSI C63.10-2020 Clauses 9.5.

The following procedure shall be used for determining frequency stability of millimeter-wave systems:

a) Arrange EUT and test equipment as shown in Figure 21. Some temperature chambers have a window or other opening that permits locating the receive antenna outside the chamber.

b) With the EUT at ambient temperature (approximately 25 °C) and voltage source set to the EUT nominal operating voltage (100%), record the spectrum mask of the EUT emission on the spectrum analyzer.

c) Vary EUT power supply between 85% and 115% of nominal, and record the frequency excursion of the EUT emission mask.

d) Set the power supply to 100% nominal setting, and raise EUT operating temperature to 50 °C. Record the frequency excursion of the EUT emission mask.

e) Repeat step d) at each 10 °C increment down to −20 °C.

4.5.3 Test Result

Serial Number:	2VKT-1	Test Date:	2024/12/26
Test Site:	RF	Test Mode:	Transmitting
Tester:	Bill Yang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	21.8	Relative Humidity: (%)	57	ATM Pressure: (kPa)	102.3

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Waveguide Mixer	11970V	2521A011767	2023/2/16	2026/2/15
Flann Micowave	Horn Antenna	861V/385	736	2023/2/27	2026/2/26
Agilent	Spectrum Analyzer	E4440A	MY44303352	2024/10/22	2025/10/21
Resenberger	Coaxial Cable	LU7-022-1000	0031	2024/3/1	2025/2/28
Resenberger	Coaxial Cable	LU7-022-1000	0032	2024/3/1	2025/2/28
BACL	TEMP&HUMI Test Chamber	BTH-150-40	30173	2024/9/6	2025/9/5
All-sun	Clamp Meter	EM305A	8348897	2024/8/16	2025/8/15
TDK-Lambda	DC Power Supply	Z+60-14	F-08-EM038-1	N/A	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Temperature	Voltage	Frequency (GHz)			
℃	V_{DC}	f_L	f_H	f_L Limit	f_H Limit
0	5	61.0067	61.4855	57	61.56
10	5	61.0064	61.4857	57	61.56
20	5	61.0068	61.4858	57	61.56
30	5	61.0067	61.4856	57	61.56
40	5	61.0065	61.4859	57	61.56
50	5	61.0066	61.4858	57	61.56
20	4.25	61.0067	61.4855	57	61.56
20	5.75	61.0065	61.4857	57	61.56

Note: The Voltage range was declared by manufacturer▲.

4.6 Group Installtion

4.6.1 Applicable Standard

§15.255 (h)

Any transmitter that has received the necessary FCC equipment authorization under the rules of this chapter may be mounted in a group installation for simultaneous operation with one or more other transmitter(s) that have received the necessary FCC equipment authorization, without any additional equipment authorization. However, no transmitter operating under the provisions of this section may be equipped with external phase-locking inputs that permit beam-forming arrays to be realized.

4.6.2 Judgment

The frequency, amplitude and phase of the transmit signal are set within the EUT. There are no external phase-locking inputs or any other means of combining two or more units together to realize a beam-forming array

4.7 Antenna Requirement

4.7.1 Applicable Standard

FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

4.7.2 Judgment

Please refer to the Antenna Information detail in Section 1.3.

EXHIBIT A - EUT PHOTOGRAPHS

Please refer to the attachment 2402A108617E-RF-EXP EUT external photographs and 2402A108617E-RF-INP EUT internal photographs.

EXHIBIT B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2402A108617E-RF-00B-TSP test setup photographs.

******* END OF REPORT *******