CERT #5473.03

Test Report No.:
GJWSZ2025-0147

RF Test Report

FCC ID	:	**2AKIT-WSK05D**
NAME OF SAMPLE	:	**Presence Dimmer H2 US**
APPLICANT	:	**Lumi United Technology Co., Ltd**
CLASSIFICATION OF TEST	:	**N/A**

CVC Testing Technology (Shenzhen) Co., Ltd.

Applicant	**Name: Lumi United Technology Co., Ltd** **Address: B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen 518000, China**
Manufacturer	**Name: Lumi United Technology Co., Ltd** **Address: B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen 518000, China**
Equipment Under Test	**Name: Presence Dimmer H2 US** **Model/Type: WS-K05D** **Brand: Aqara** **Serial No.: N/A** **Sampe No.: 1-1**

Date of Receipt.	**Mar.13,2025**	Date of Testing	**Mar.13,2025～Apr.10,2025**

Test Specification	**Test Result**
FCC Part 15, Subpart C, Section 15.249	PASS

Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC **Issue Date: Apr.11,2025**

Compiled by:	Reviewed by:	Approved by:
Liang Jiatong	Mo Xianbiao	Dong Sanbi
Name Signature	Name Signature	Name Signature

Other Aspects: NONE.

Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
GJWSZ2025-0147	Original release	Apr.11,2025

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit
15.249(a) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
15.249(a) 15.249(d)	Field Strength & Out of band emissions	PASS	Meet the requirement of limit.
15.215(c)	20dB bandwidth	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Meet the requirement of limit.

1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial Number	Cal. interval	Cal. Due
Radiation Spurious(Above 1GHz)					/
Signal&Spectrum Analyzer	Rohde&Schwarz	FSV 40	101898	1 year	2025.4.28
EMI Test Receiver	Rohde&Schwarz	ESR3	102693	1 year	2025.5.24
Antenna(30MHz~1001MHz)	SCHWARZBECK	VULB 9168	1133	1 year	2026.1.22
Horn antenna(1GHz-18GHz)	ETS	3117	227611	1 year	2026.3.28
Horn antenna(18GHz-40GHz)	QMS	QMS-00880	22051	1 year	2026.3.21
3m anechoic chamber	MORI	966	CS0300011	3 year	2026.5.18
Filter group(RSE-BT/WiFi)	Rohde&Schwarz	WiFi /BT Variant 1	100820	1 year	2025.4.28
Filter group(RSE-Cellular)	Rohde&Schwarz	Cellular Variant 1	100768	1 year	2025.4.28
Preamplifier(1GHz-18GHz)	Rohde&Schwarz	SCU-18F	100799	1 year	2025.4.28
Preamplifier(1GHz-18GHz)	Rohde&Schwarz	SCU-18F	100801	1 year	2025.4.28
Preamplifier(18Gz-40GHz)	Rohde&Schwarz	SCU-40A	101209	1 year	2025.4.28
#2 control room	MORI	433	CS0200059	3 year	2026.5.16
Coax	/	30MHz-1GHz	RF-RSE-007	1 year	2025.4.11
Coax	/	30MHz-40GHz	RF-RSE-009	1 year	2025.4.28
Coax	/	30MHz-18GHz	RF-RSE-005	1 year	2025.4.11
Temperature and humidity meter	/	C193561517	C193561517	1 year	2025.4.27
CE Test - 3M Chamber					
EMI Test Receiver	Rohde&Schwarz	ESR3	102693	1 year	2025.5.24
limiter（10 dB）	Rohde&Schwarz	ESH3-Z2	102824	1 year	2025.5.15
Voltage probe	Rohde&Schwarz	CVP9222C	28	1 year	2025.4.27
Current probe	Rohde&Schwarz	EZ-17	101442	1 year	2025.4.28
ISN network	Rohde&Schwarz	ENV 81	100401	1 year	2025.4.28
ISN network	Rohde&Schwarz	ENV 81 Cat6	101896	1 year	2025.4.28
#1Shielding room	MORI	854	N/A	3 year	2026.5.16
Coax	/	9KHz-3GHz	CS0200082		2025.4.11
LISN	SCHWARZBECK	NSLK 8129	5021	1 year	2025.4.27
Temperature and humidity meter	/	C193561430	C193561430	1 year	2025.4.27
RE Test - 3M Chamber(Below 1GHz)					
EMI Test Receiver	Rohde&Schwarz	ESR 26	101718	1 year	2025.5.24
Loop antenna（8.3k~30MHz）	Rohde&Schwarz	HFH2-Z2E	100951	1 year	2025.6.03
Antenna(30MHz~1000MHz)	SCHWARZBECK	VULB 9168	1132	1 year	2026.1.12
3m anechoic chamber	MORI	966	N/A	1 year	2026.5.18
Preamplifier(10kHz-1GHz)	Rohde&Schwarz	SCU-01F	100298	1 year	2025.4.28
Attenuator	boyang	BY--N-2W-5dB	/	1 year	2026.1.22
Coax	/	9KHz-1GHz	CS0200079	1 year	2026.4.11
#1 control room	MORI	433	/	1 year	2026.5.16
Temperature and humidity meter	/	C193561473	C193561473	1 year	2025.4.27
Radiation Spurious(Above 40GHz)					/
Equipment	Manufacturer	Model No.	Serial Number	Cal. interval	Cal. Due
3m anechoic chamber	MORI	966	CS0300011	3 year	2026.5.18
#2 control room	MORI	433	CS0300028	3 year	2026.5.16
Temperature and humidity meter	/	C193561517	C193561517	1 year	2025.4.28
Signal&Spectrum Analyzer	keysight	N9040B	CS0300074	1 year	2025.9.24
Coax	/	30MHz-40GHz	RF-RSE-008	1 year	2025.4.28
SA Expansion Module(40-60GHz)	VDI	N9029AV19	CS0300075	3 year	2025.9.14
SA Expansion Module(60-90GHz)	VDI	N9029AV12	CS0300076	3 year	2025.9.14
SA Expansion Module(90-140GHz)	VDI	N9029AV08	CS0300077	3 year	2025.9.14
Horn antenna(40-60GHz)	CMI	HO19R	CS0300086	3 year	2025.9.14
Horn antenna(60-90GHz)	CMI	HO12R	CS0300088	3 year	2025.9.14

Equipment	Manufacturer	Model No.	Serial Number	Cal. interval	Cal. Due
Horn antenna(90-140GHz)	CMI	HO08R	CS0300090	3 year	2025.9.14

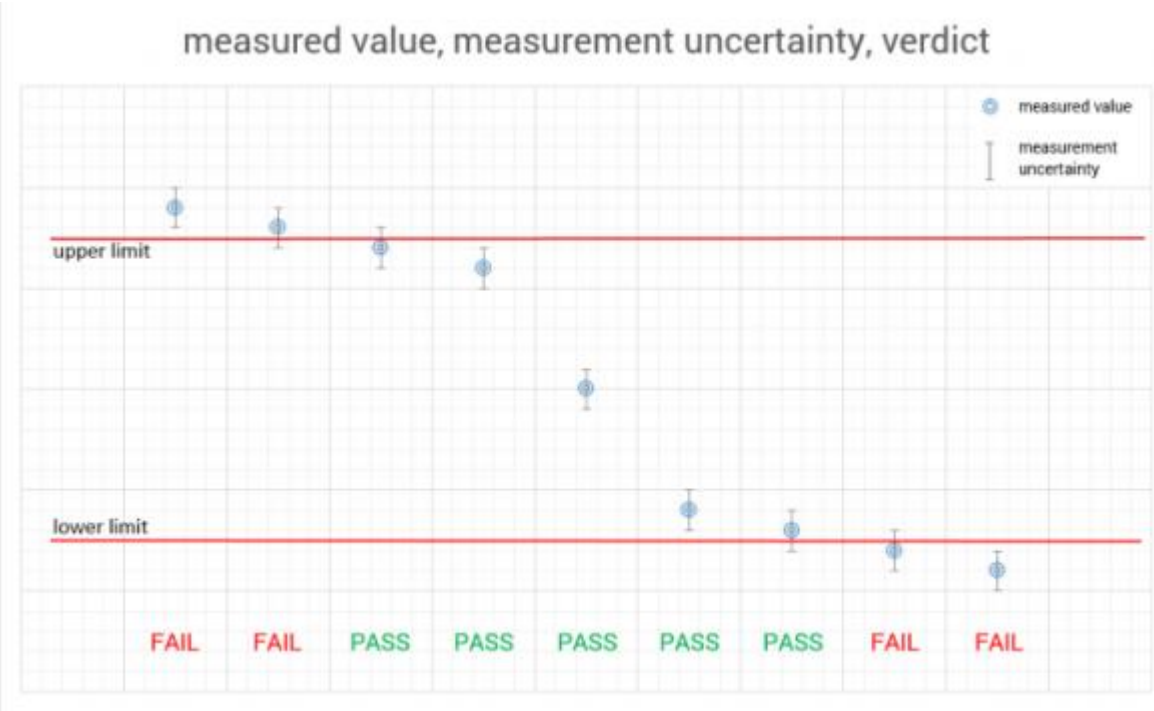
1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	Item	Measurement Uncertainty
1	Conducted emission test	+/-2.7 dB
2	Radiated emission 9kHz-30MHz	+/-5.6 dB
3	Radiated emission 30MHz-1GHz	+/-4.6 dB
4	Radiated emission 1GHz-18GHz	+/-4.4 dB
5	Radiated emission 18GHz-40GHz	+/-5.1 dB
6	Radiated Emissions(40GHz-60GHz)	±4.8dB
7	Radiated Emissions(60GHz-90GHz)	±4.8dB
8	Radiated Emissions(90GHz-140GHz)	±5.0dB
9	Radiated Emissions(140GHz-220GHz)	±5.1dB
10	Radiated Emissions(220GHz-300GHz)	±4.8dB
11	RF power	+/-0.9 dB
12	Power Spectral Density	+/-0.8 dB
13	Conducted spurious emissions	+/-2.7 dB
14	Transmission Time	+/-0.27%
15	Occupied Bandwidth	+/-1.86%
Remark: 95% Confidence Levels, k=2.		

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed.

The measurement uncertainty is mentioned in this test report, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.



1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology (Shenzhen) Co., Ltd.

Lab Address: No. 1301-14&16, Guanguang Road, Xinlan Community, Guanlan Subdistrict, Longhua District, Shenzhen, Guangdong,China
Post Code：518110 Tel：0755-23763060-8805
Fax：0755-23763060 E-mail：sz-kf@cvc.org.cn
FCC(Test firm designation number：CN1363)
IC(Test firm CAB identifier number：CN0137)
CNAS(Test firm designation number：L16091)

2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	Presence Dimmer H2 US
BRAND	Aqara
MODEL	WS-K05D
ADDITIONAL MODEL	N/A
POWER SUPPLY	AC 120V/60Hz
MODULATION TYPE	FMCW
OPERATING FREQUENCY	24GHz-24.25GHz
NUMBER OF CHANNEL	1
PEAK OUTPUT POWER	102.64dBuV/m
ANTENNA TYPE (Remark 3)	Patch Antenna
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

Remark:

1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the antenna report.

2.2 OTHER INFORMATION

The EUT only have one channel.

CHANNEL	FREQUENCY (GHz)
1	24-24.25

2.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, xyz axis and antenna ports

EUT CONFIGURE MODE	APPLICABLE TEST ITEMS				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	√	√	Radar

Where **RE<1G:** Radiated Emission below 1GHz **RE≥1G:** Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **BW:** 20db bandwidth

RADIATED EMISSION TEST :

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.

☒ The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	DATA RATE
A	1	1	FMCW	default

For the test results, only the worst case was shown in test report.

20DB BANDWIDTH MEASUREMENT:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TYPE	DATA RATE
A	1	1	FMCW	default

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	25.5deg. C, 55%RH	AC 120V/60Hz	Wang Zhiming
RE≥1G	24.5deg. C, 55%RH	AC 120V/60Hz	Wang Zhiming
PLC	25.5deg. C, 55%RH	AC 120V/60Hz	Zhou Ye
APCM	25.1deg. C, 54%RH	AC 120V/60Hz	Liu Yuan

2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, Subpart C. Section 15.249
ANSI C63.10-2020

All test items have been performed and recorded as per the above standards

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support Equipment					
NO	Description	Brand	Model No.	Serial Number	Supplied by
1	N/A	N/A	N/A	N/A	N/A

Support Cable							
NO	Description	Quantity (Number)	Length (cm)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION

3.1.1 Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
NOTE: 1. The lower limit shall apply at the transition frequencies. NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.		

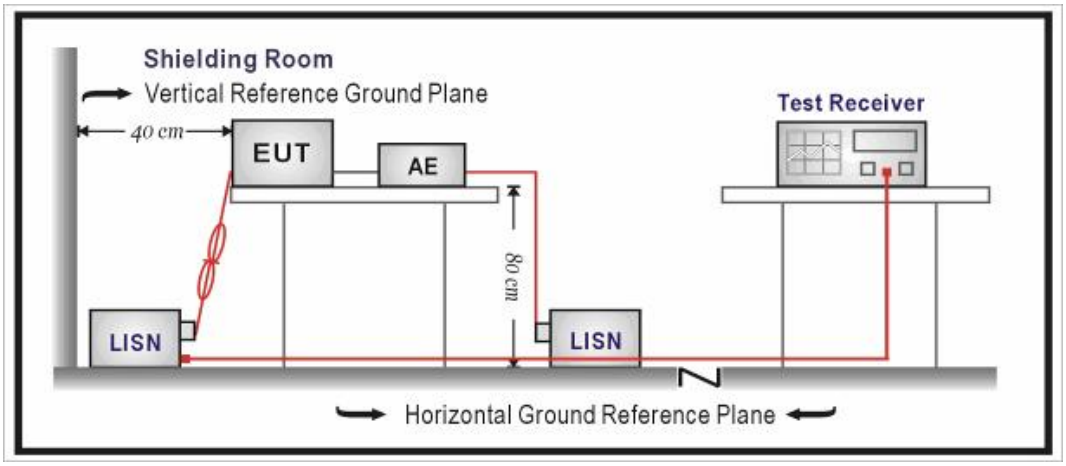
3.1.2 Test Procedures

a. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the Test photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.The equipment under test shall be placed on a support of non-metallic material, the height of which shall be1.5m above the ground,

b. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

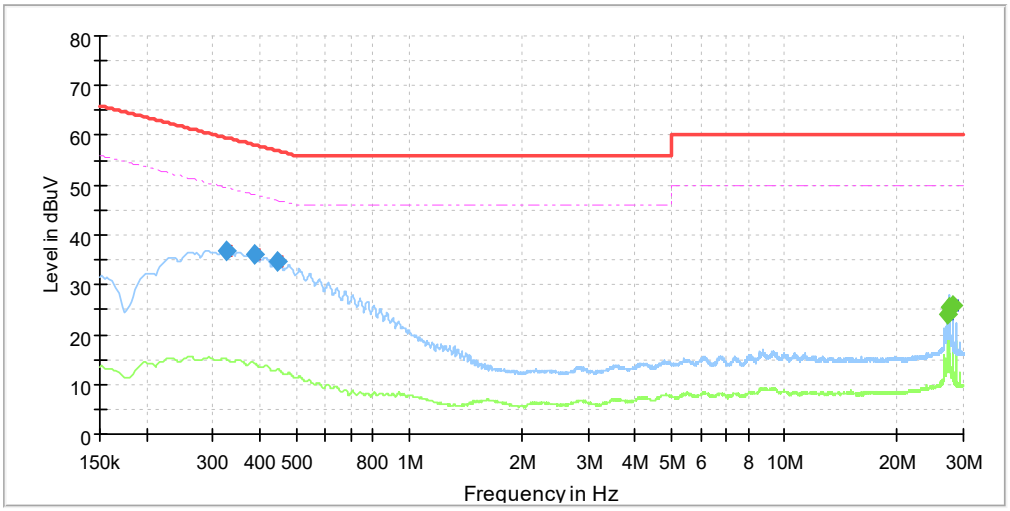
c. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.1.3 Test setup



3.1.4 Test Results

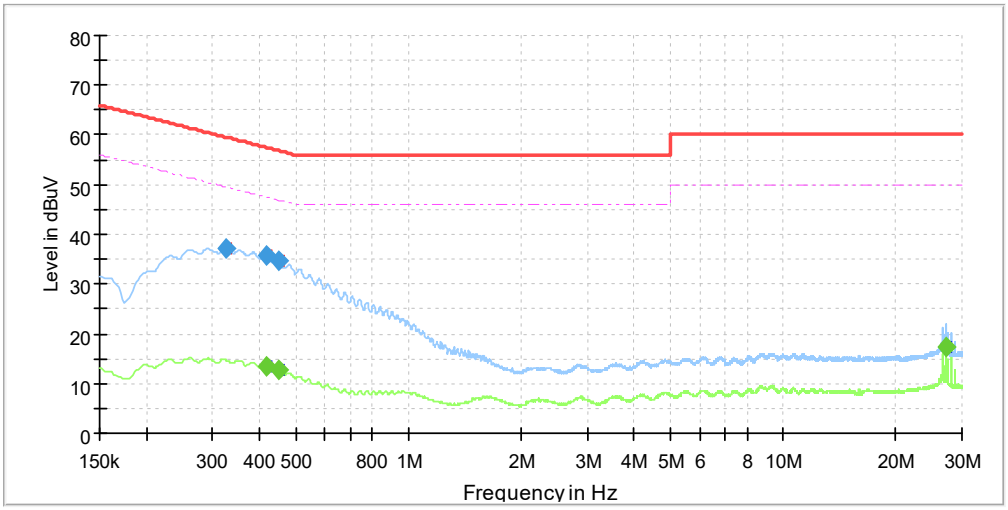
Test Mode	Radar	Frequency Range	150KHz ~ 30MHz
Test Voltage	AC 120V/60Hz	PHASE	Line (L)
Environmental Conditions	25.2deg. C, 55%RH	Tested By	Zhou Ye



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.326	36.8	---	59.6	22.8	L1	20.2
2	0.386	36.0	---	58.1	22.1	L1	20.2
3	0.445	34.7	---	57.0	22.3	L1	20.2
4	27.105	---	23.9	50.0	26.1	L1	23.9
5	27.652	---	25.7	50.0	24.3	L1	24.0
6	28.201	---	25.7	50.0	24.3	L1	24.0

Remark: The emission levels of other frequencies were very low against the limit.

Test Mode	Radar	Frequency Range	150KHz ~ 30MHz
Test Voltage	AC 120V/60Hz	PHASE	Line (N)
Environmental Conditions	25.2deg. C, 55%RH	Tested By	Zhou Ye



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.326	37.1	---	59.6	22.4	N	20.2
2	0.420	35.6	---	57.4	21.8	N	20.2
3	0.420	---	13.4	47.4	34.0	N	20.2
4	0.449	34.8	---	56.9	22.1	N	20.2
5	0.449	---	12.9	46.9	34.0	N	20.2
6	27.105	---	17.3	50.0	32.7	N	23.9

Remark: The emission levels of other frequencies were very low against the limit.

3.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

3.2.1 Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (Microvolts/Meter)	MEASUREMENT DISTANCE (Meters)
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

NOTE: 1. The lower limit shall apply at the transition frequencies.
NOTE: 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
NOTE: 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 Measurement procedure

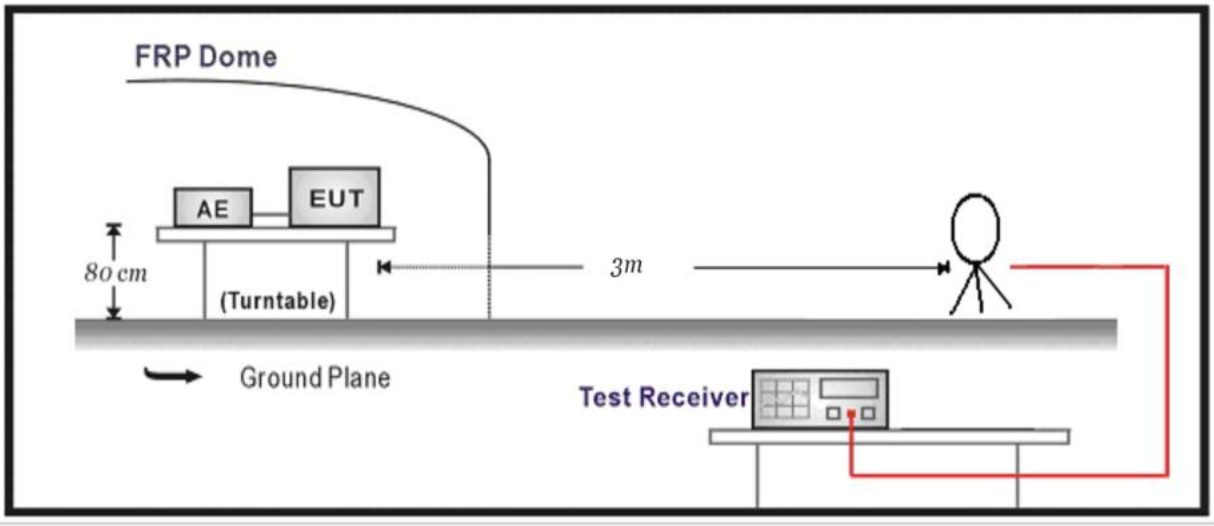
a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

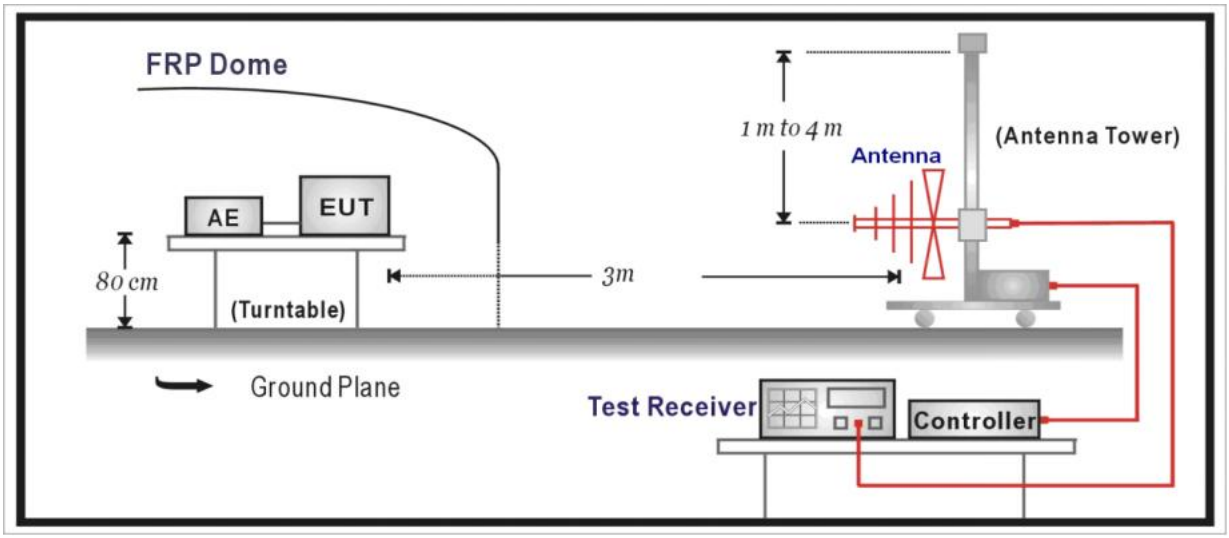
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ⩾ 1/T (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.2.3 Test setup

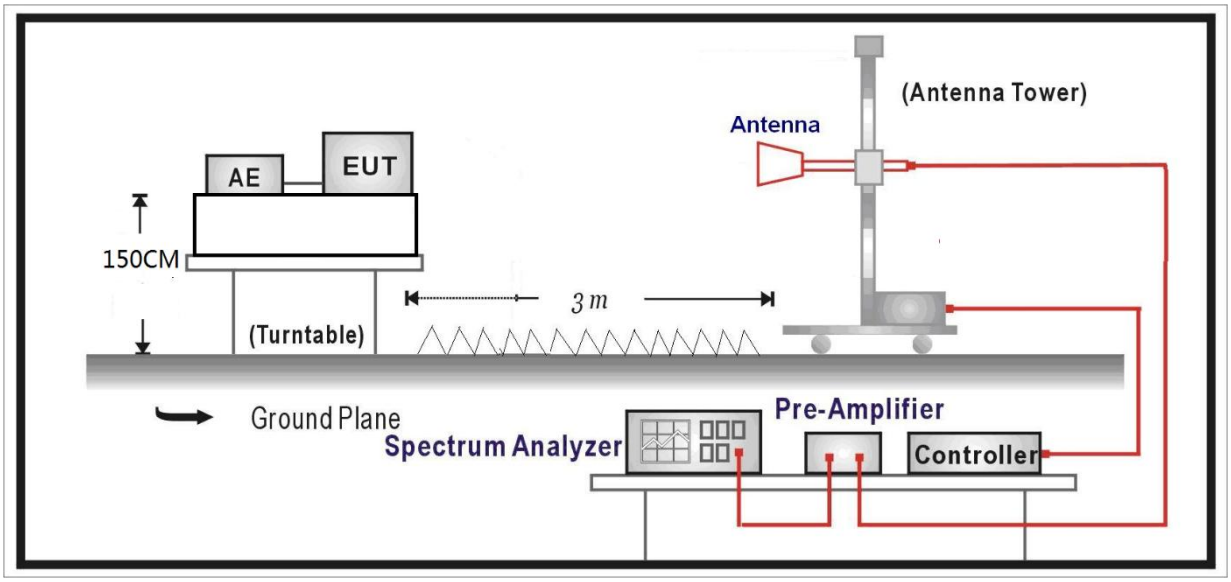
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



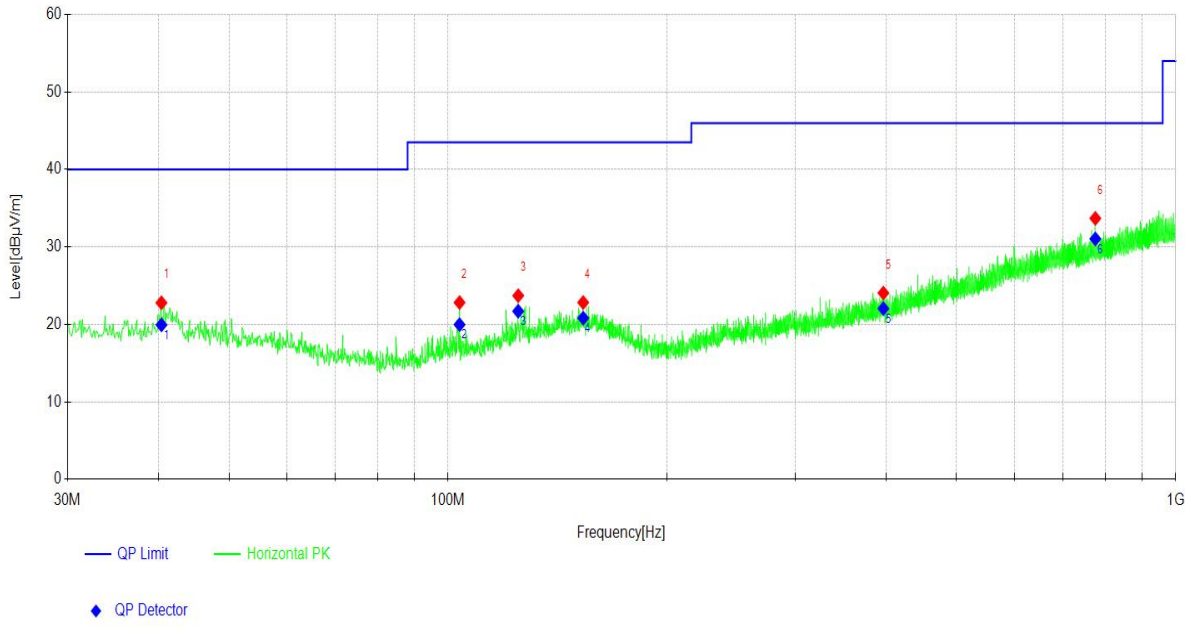
3.2.4 Test results(9kHz-30MHz)

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

3.2.5 Test results(30MHz-1GHz)

Mode	Radar	Modulation	FMCW
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Horizontal

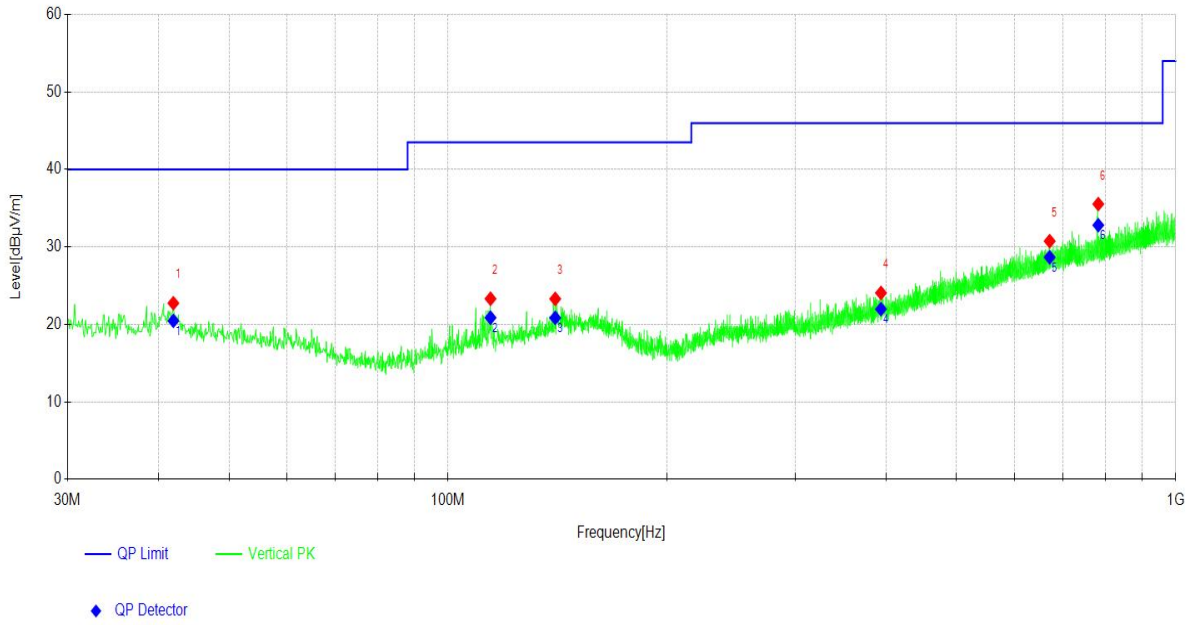


NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	40.380	0.05	19.89	19.94	40.00	20.06	200	139
2	103.727	2.85	17.12	19.97	43.50	23.53	100	161
3	124.875	2.6	19.10	21.70	43.50	21.80	200	6
4	153.396	0.18	20.63	20.81	43.50	22.69	200	225
5	396.600	0.19	21.85	22.04	46.00	23.96	200	310
6	775.617	2.65	28.39	31.04	46.00	14.96	100	268

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit(dBuV/m) - Level (dBuV/m)

Mode	Radar	**Modulation**	FMCW
Frequency Range	30MHz ~ 1GHz	**Detector Function**	Quasi-Peak (QP)

Vertical

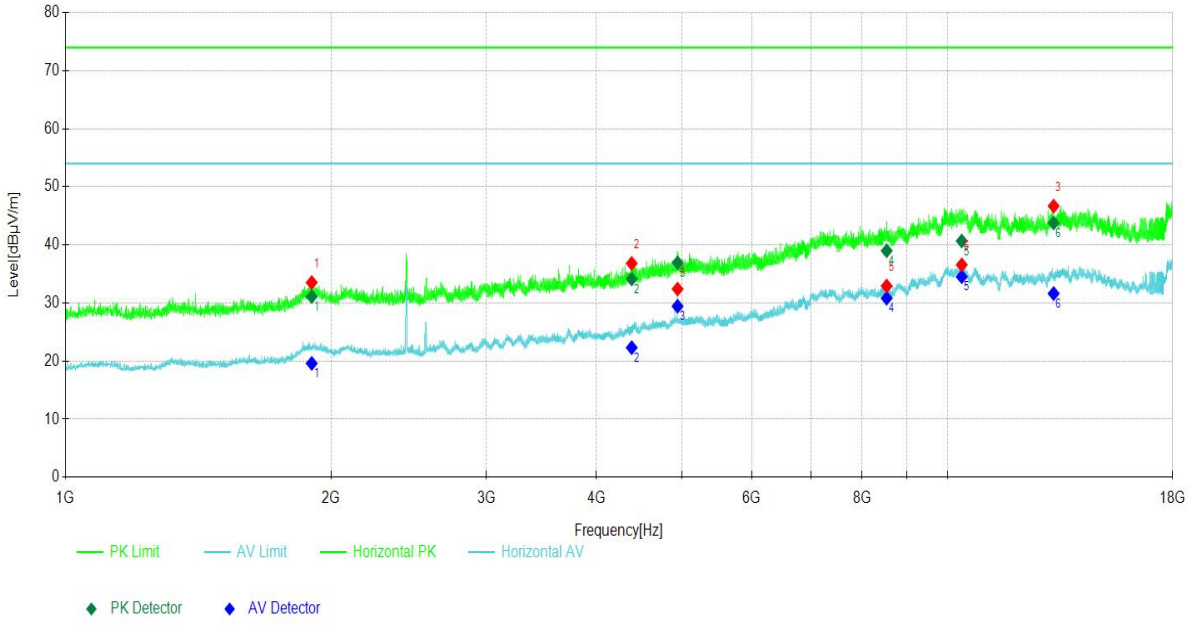


NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	41.932	0.58	19.88	20.46	40.00	19.54	200	235
2	114.398	2.69	18.18	20.87	43.50	22.63	200	324
3	140.397	0.8	20.05	20.85	43.50	22.65	100	96
4	393.592	0.18	21.79	21.97	46.00	24.03	200	0
5	671.234	1.6	27.06	28.66	46.00	17.34	200	333
6	782.892	4.44	28.37	32.81	46.00	13.19	100	308

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit(dBuV/m) - Level (dBuV/m)

3.2.6 Test results(1GHz-18GHz)

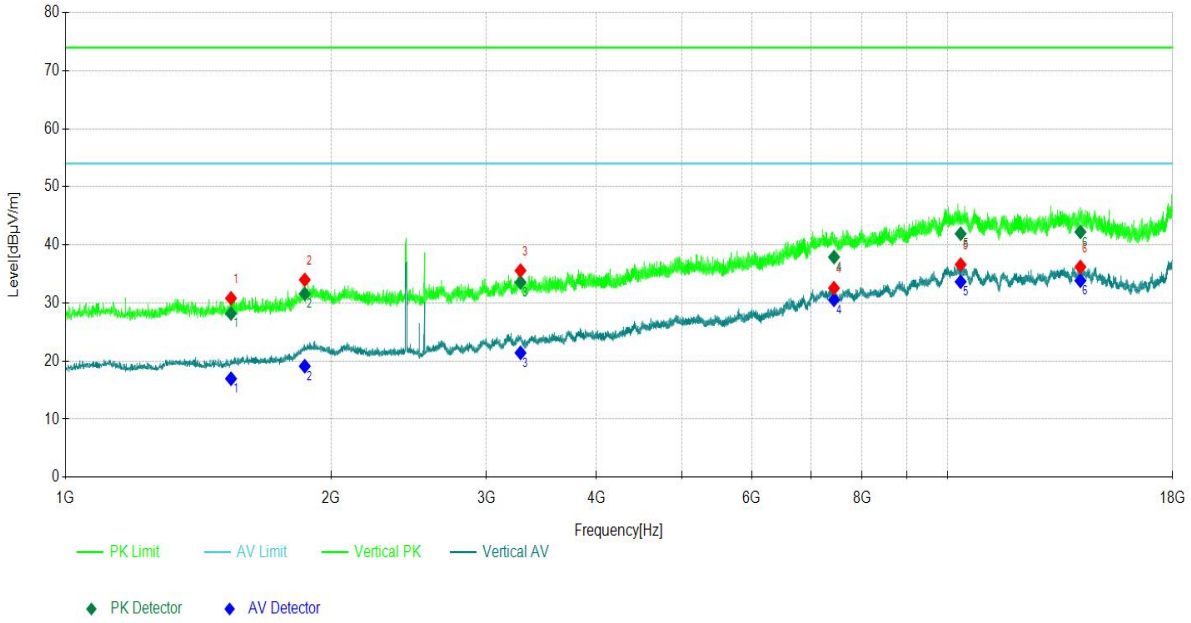
Mode	Radar	Modulation	FMCW
Frequency Range	1GHz~18G	Detector Function	PK/AV



Frequency [MHz]	Factor [dB/m]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1901.890	-20.32	31.11	74.00	42.89	19.61	54.00	34.39	200	2	Horizon
4384.938	-14.24	34.15	74.00	39.85	22.31	54.00	31.69	200	128	Horizon
4942.994	-12.04	36.94	74.00	37.06	29.45	54.00	24.55	200	257	Horizon
8531.353	-4.37	39.00	74.00	35.00	30.83	54.00	23.17	200	352	Horizon
10378.438	-0.79	40.68	74.00	33.32	34.53	54.00	19.47	100	229	Horizon
13191.419	0.53	43.79	74.00	30.21	31.63	54.00	22.37	200	306	Horizon

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBuV/m] - Level [dBuV/m]

Mode	Radar	**Modulation**	FMCW
Frequency Range	1GHz~18G	**Detector Function**	PK/AV

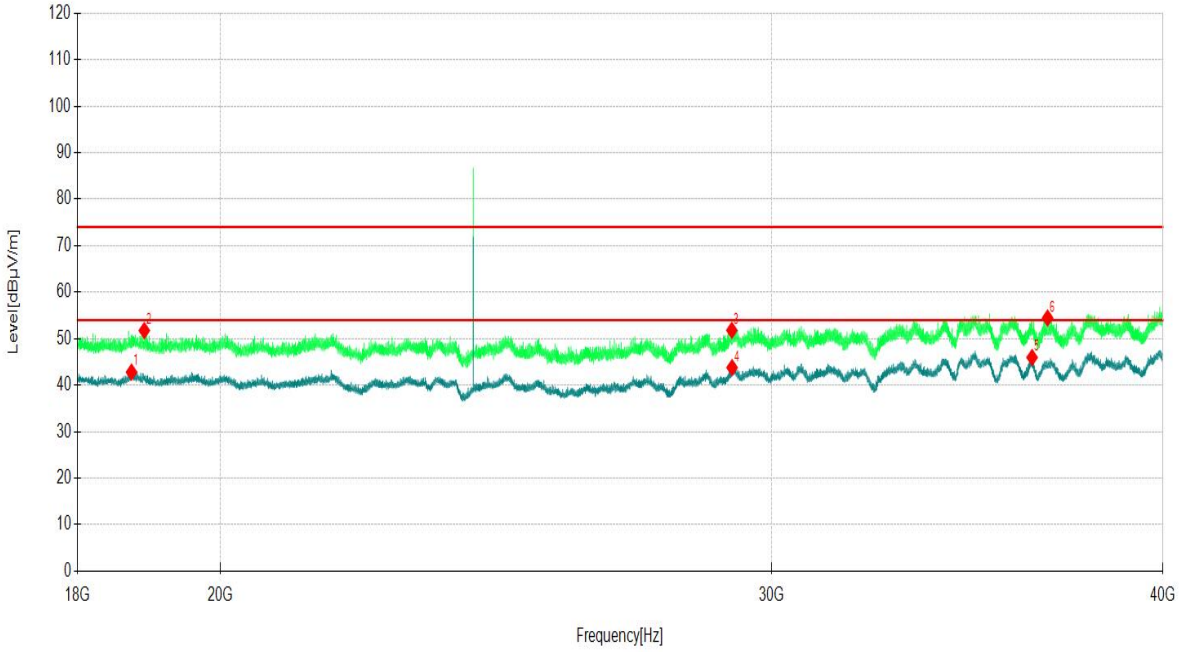


Frequency [MHz]	Factor [dB/m]	PK Value [dBµV/m]	PK Limit [dBµV/m]	PK Margin [dB]	AV Value [dBµV/m]	AV Limit [dBµV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1540.654	-23.10	28.20	74.00	45.80	16.97	54.00	37.03	100	351	Vertical
1867.687	-20.62	31.58	74.00	42.42	19.13	54.00	34.87	100	160	Vertical
3280.228	-17.18	33.56	74.00	40.44	21.42	54.00	32.58	100	120	Vertical
7435.644	-5.81	37.92	74.00	36.08	30.55	54.00	23.45	200	0	Vertical
10348.735	-0.72	41.93	74.00	32.07	33.66	54.00	20.34	200	23	Vertical
14146.315	1.32	42.24	74.00	31.76	33.86	54.00	20.14	100	119	Vertical

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBuV/m] - Level [dBuV/m]

3.2.7 Test results(18GHz-40GHz)

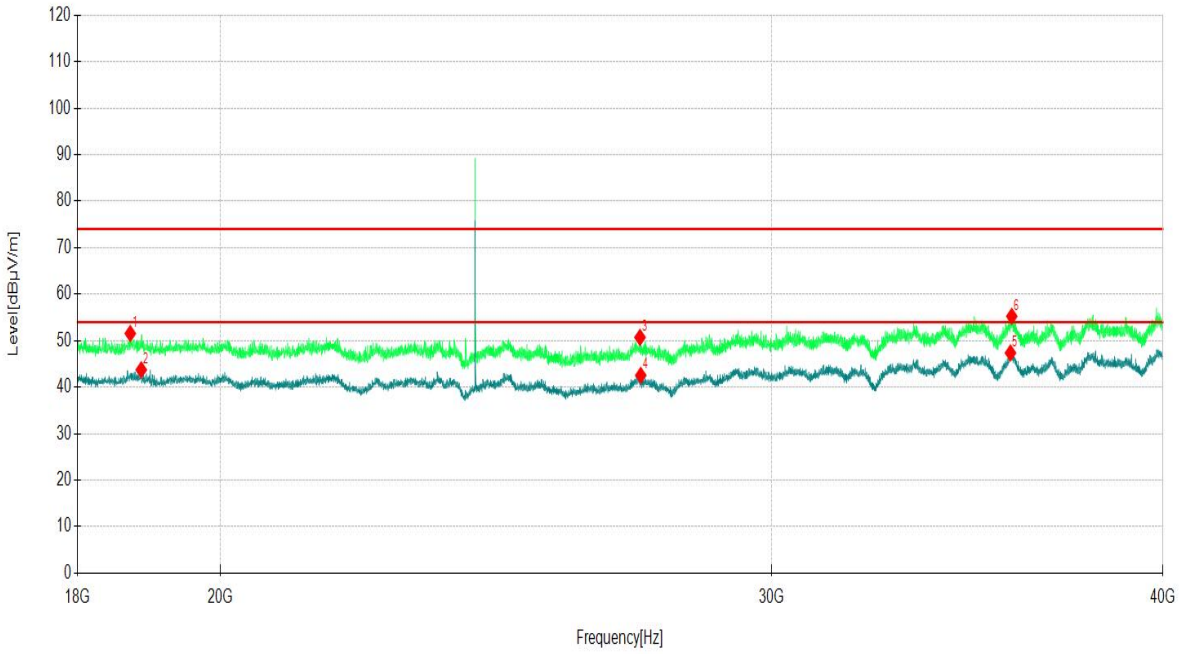
Mode	Radar	Modulation	FMCW
Frequency Range	18GHz~40G	Detector Function	PK/AV



NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	18732.03	49.41	-6.60	42.81	54.00	11.19	AV	Horizontal
2	18909.04	58.98	-7.23	51.75	74.00	22.25	PK	Horizontal
3	29130.51	54.15	-2.35	51.80	74.00	22.20	PK	Horizontal
4	29135.51	46.11	-2.33	43.78	54.00	10.22	AV	Horizontal
5	36329.83	49.50	-3.54	45.96	54.00	8.04	AV	Horizontal
6	36747.85	56.51	-2.06	54.45	74.00	19.55	PK	Horizontal

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBuV/m] - Level [dBuV/m]

Mode	Radar	**Modulation**	FMCW
Frequency Range	18GHz~40G	**Detector Function**	PK/AV



NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	18715.07	58.30	-6.76	51.54	74.00	22.46	PK	Vertical
2	18866.89	50.82	-7.08	43.74	54.00	10.26	AV	Vertical
3	27227.72	53.88	-3.17	50.71	74.00	23.29	PK	Vertical
4	27243.12	45.65	-3.10	42.55	54.00	11.45	AV	Vertical
5	35755.78	48.76	-1.40	47.36	54.00	6.64	AV	Vertical
6	35790.98	56.77	-1.53	55.24	74.00	18.76	PK	Vertical

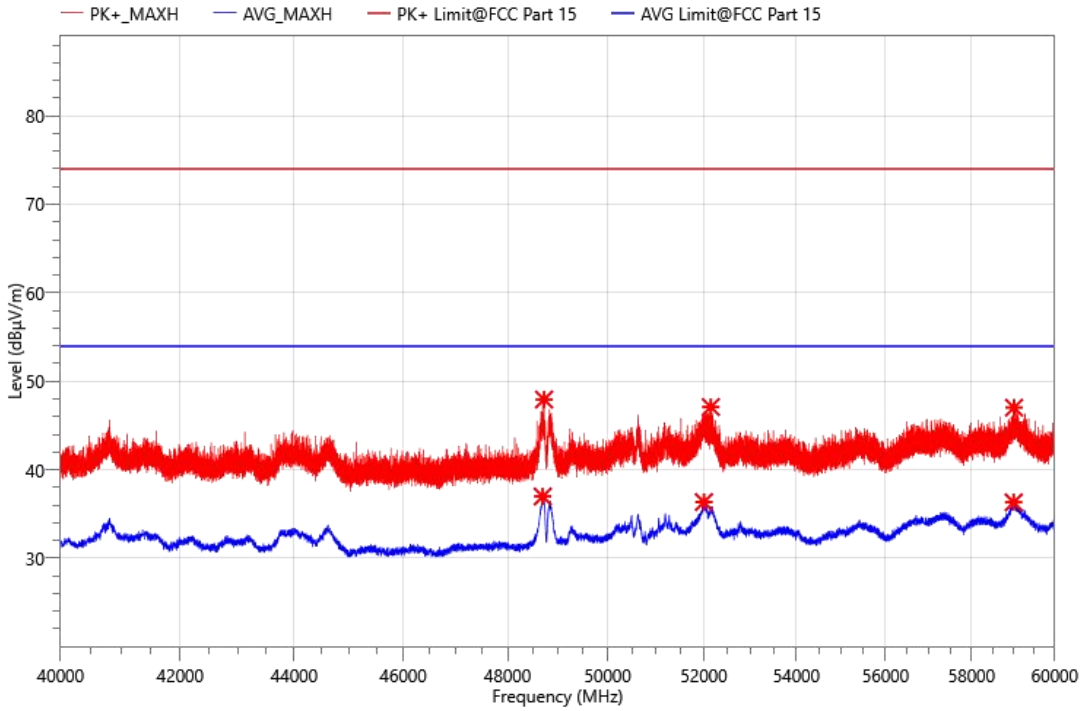
Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBuV/m] - Level [dBuV/m]

3.2.8 Test results(40GHz-100GHz)

Only showing the highest value, "worst case" (Vertical polarity)

Mode	Radar	Modulation	FMCW
Frequency Range	40GHz~60GHz	Detector Function	PK/AV

Horizontal



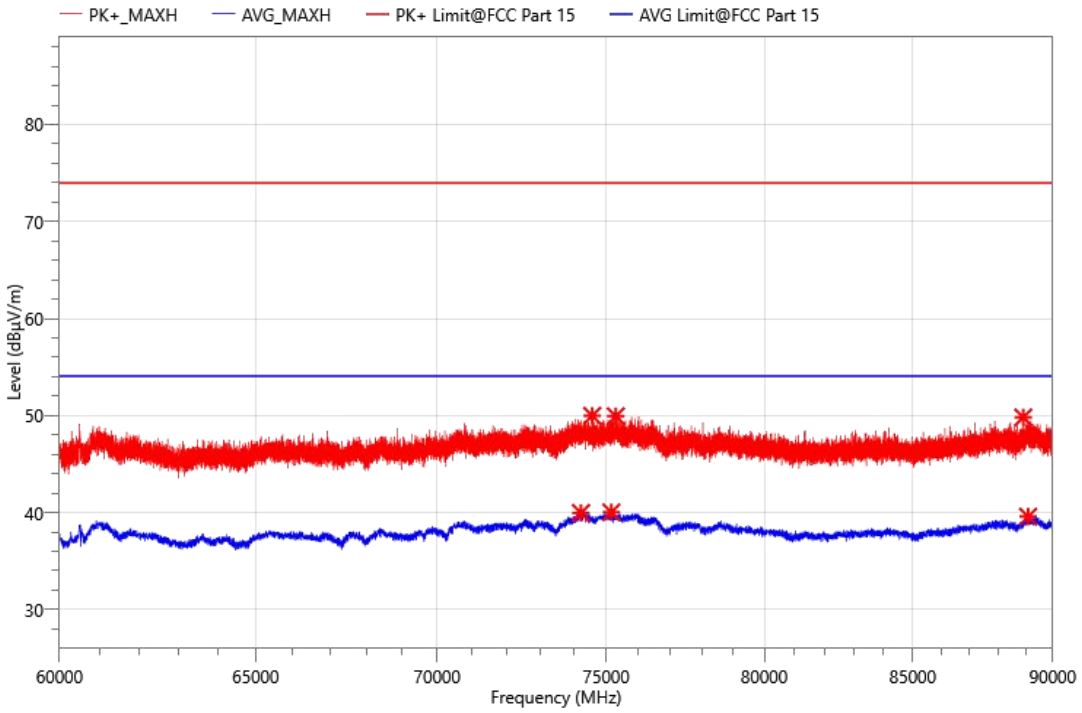
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector
1	48692.5	20.04	16.94	36.98	54	17.02	AVG
2	48719.5	30.96	16.98	47.94	74	26.06	PK+
3	52001	15.63	20.72	36.35	54	17.65	AVG
4	52147	27.24	19.85	47.09	74	26.91	PK+
5	59003.5	15.1	21.22	36.32	54	17.68	AVG
6	59012.5	25.84	21.18	47.02	74	26.98	PK+

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Only showing the highest value, "worst case" (Vertical polarity)

Mode	Radar	Modulation	FMCW
Frequency Range	60GHz~90GHz	Detector Function	PK/AV

Horizontal



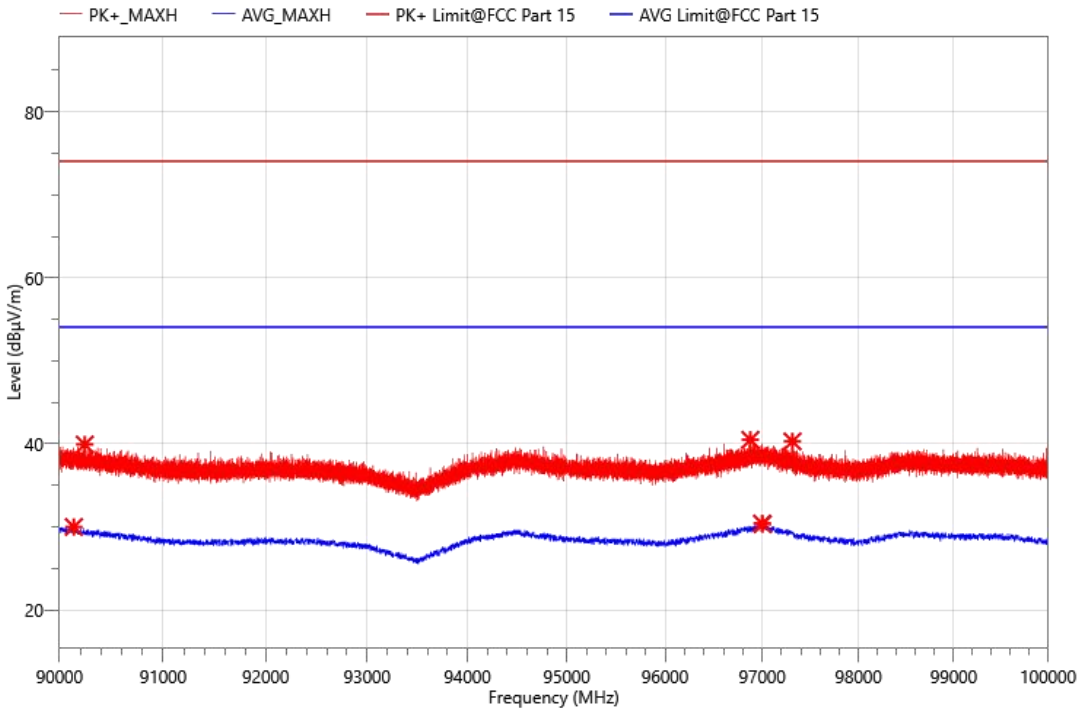
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector
1	74233.5	15.79	24.17	39.96	54	14.04	AVG
2	74575.5	25.89	24.09	49.98	74	24.02	PK+
3	75160.5	15.69	24.34	40.03	54	13.97	AVG
4	75297	25.63	24.3	49.93	74	24.07	PK+
5	88923	24.64	25.17	49.81	74	24.19	PK+
6	89100	14.06	25.52	39.58	54	14.42	AVG

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

Only showing the highest value, "worst case" (Vertical polarity)

Mode	Radar	**Modulation**	FMCW
Frequency Range	90GHz~100GHz	**Detector Function**	PK/AV

Horizontal



NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector
1	90137.25	2.36	27.63	29.99	54	24.01	AVG
2	90242.25	12.43	27.5	39.93	74	34.07	PK+
3	96877.25	12.61	27.88	40.49	74	33.51	PK+
4	96998.75	2.27	28.14	30.41	54	23.59	AVG
5	97003.25	2.2	28.13	30.33	54	23.67	AVG
6	97312.75	13.02	27.28	40.3	74	33.7	PK+

Remark: 1. The emission levels of other frequencies were greater than 20dB margin.
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]

3.3 20DB BANDWIDTH MEASUREMENT

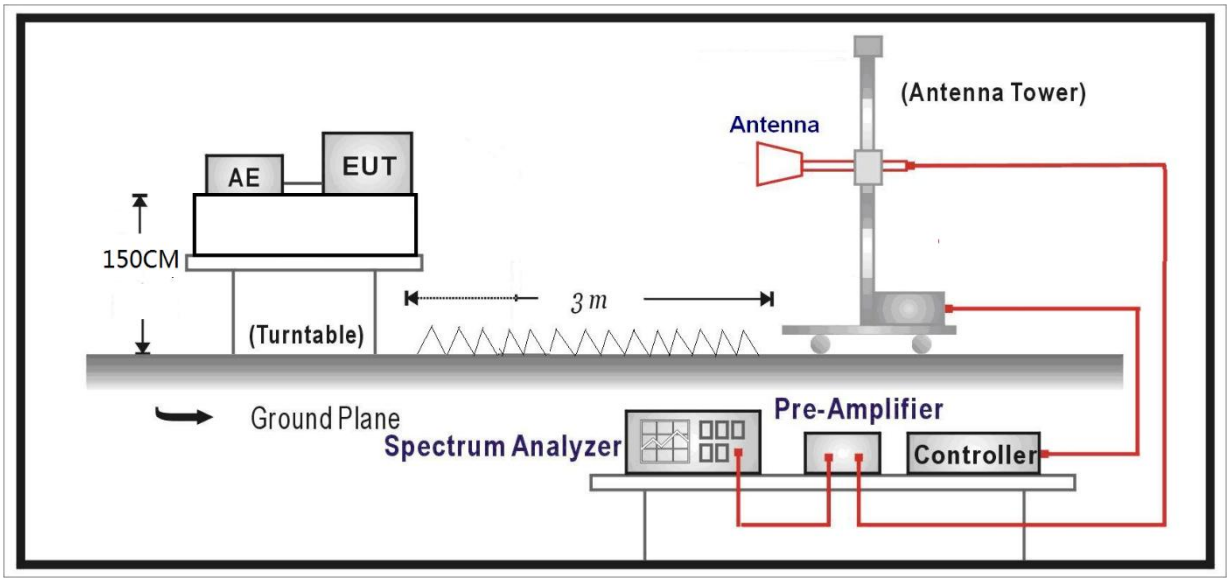
3.3.1 Limits

This section is for reporting purpose only, there is on restriction limit of bandwidth

3.3.2 Measurement procedure

a. Set resolution bandwidth (RBW) = 3MHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

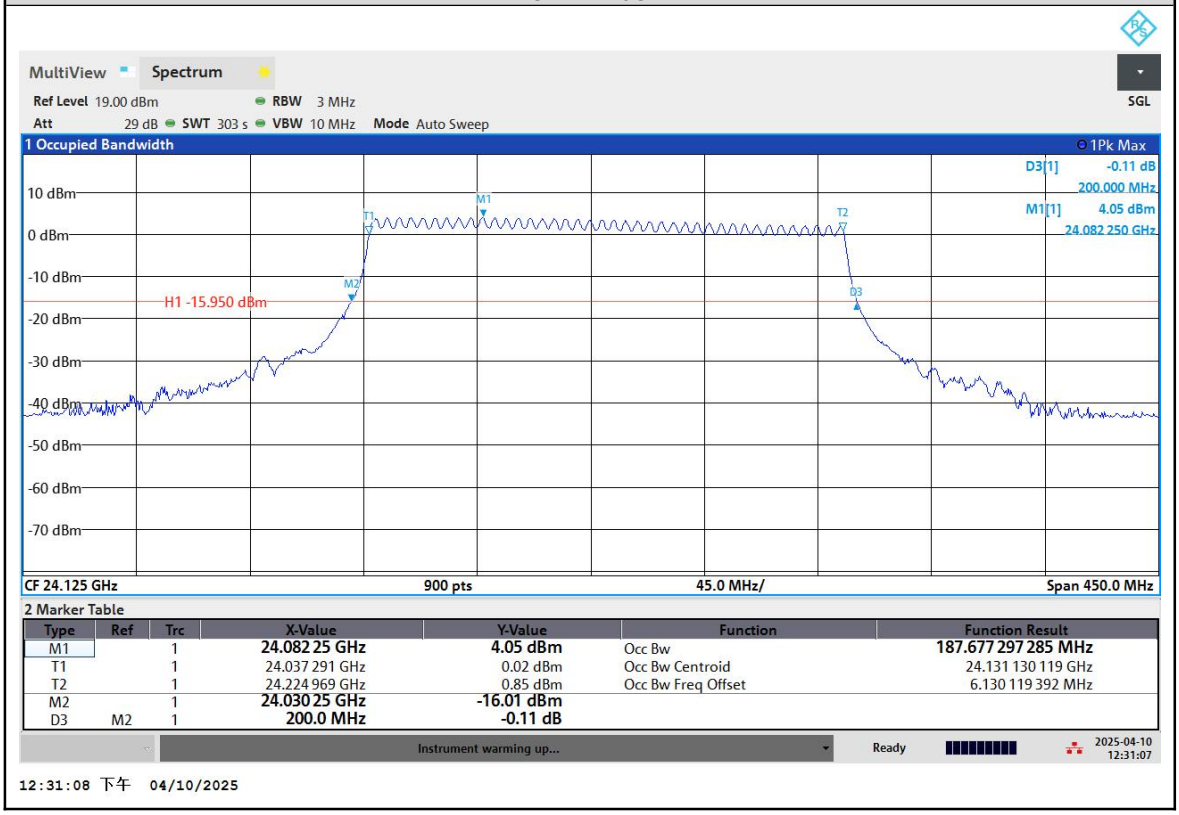
3.3.3 Test setup



3.3.4 Test result

Mode	Frequency	20dB Bandwidth (MHz)	Limit (MHz)
FMCW	24GHz-24.25GHz	200	N/A

24GHz-24.25GHz



3.4 FIELD STRENGTH & OUT OF BAND EMISSION MEASUREMENT

3.4.1 Limits

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

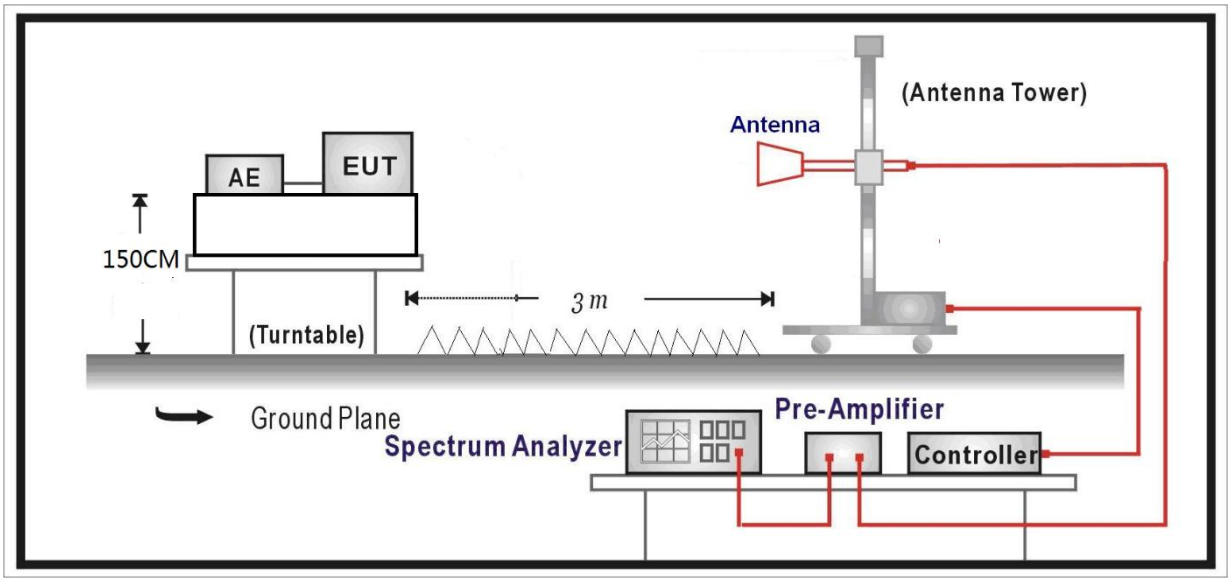
Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

3.4.2 Measurement procedure

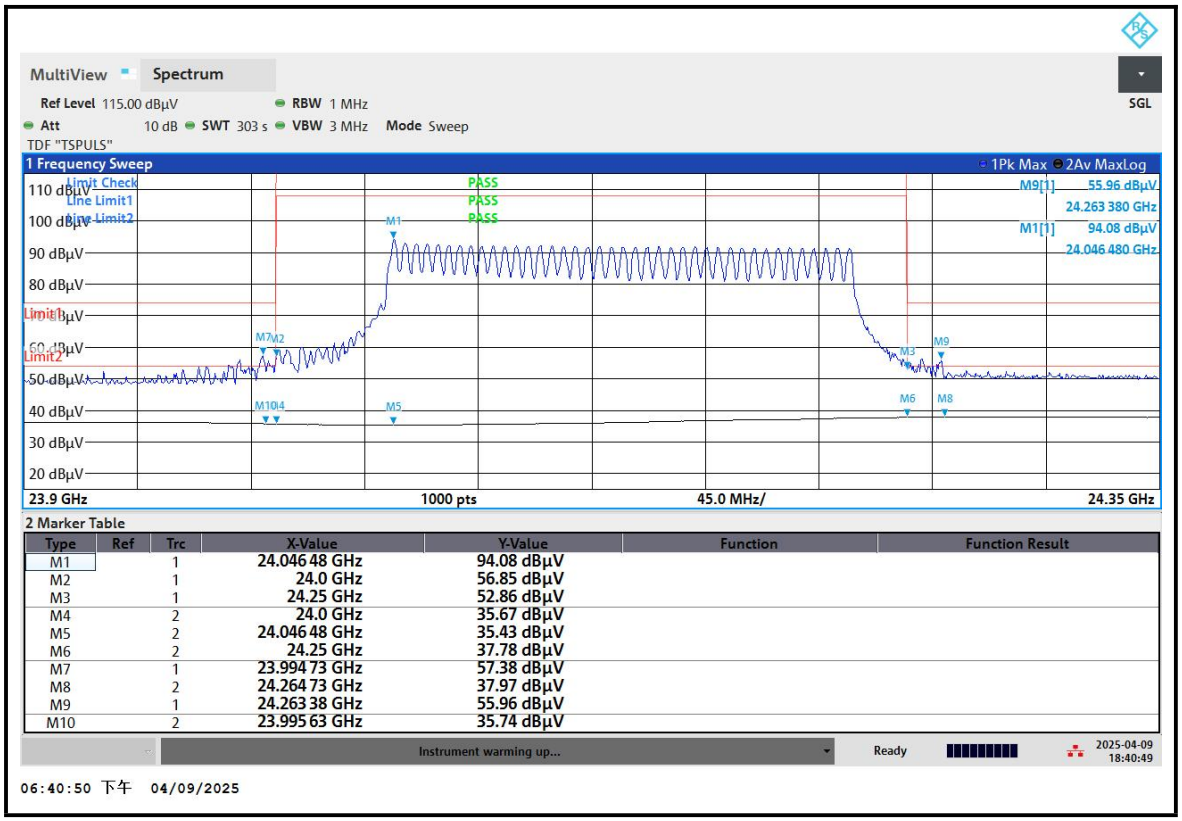
a. The EUT is placed on a turntable, which is 1.5m above ground plane.
b. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
c. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find outthe highest emissions.
d. The spectrum analyzer or receiver is set as: (1) Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto (2) Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto
e. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
f. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

3.4.3 Test setup



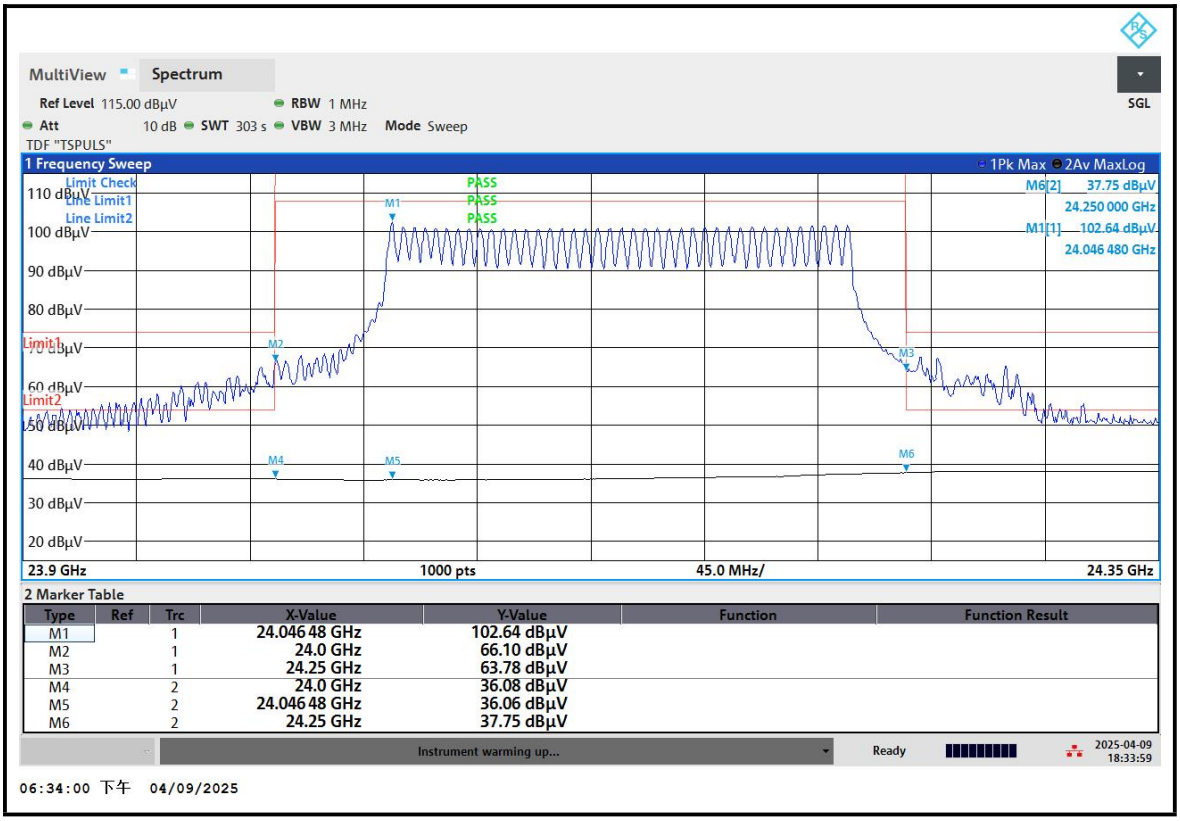
3.4.4 Test result

Mode	Radar	Modulation	FMCW
Frequency Range	24GHz-24.25GHz	Detector Function	PK/AV



NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	23994.73	57.38	74.00	16.62	PK	Horizontal
2	24000.00	56.85	74.00	17.15	PK	Horizontal
3	24046.48	94.08	128.00	33.92	PK	Horizontal
4	24250.00	52.86	74.00	21.14	PK	Horizontal
5	24263.38	55.96	74.00	18.04	PK	Horizontal
6	23995.63	33.74	54.00	20.26	AV	Horizontal
7	24000.00	33.67	54.00	20.33	AV	Horizontal
8	24046.45	34.43	108.00	73.57	AV	Horizontal
9	24250.00	37.78	54.00	16.22	AV	Horizontal
10	24264.73	37.97	54.00	16.03	AV	Horizontal

Mode	Radar	Modulation	FMCW
Frequency Range	24GHz-24.25GHz	Detector Function	PK/AV



NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Detector	Polarity
1	24000.00	63.10	74.00	10.9	PK	Vertical
2	24000.00	36.08	54.00	17.92	AV	Vertical
3	24046.48	102.64	128.00	25.36	PK	Vertical
4	24046.48	36.06	108.00	71.94	AV	Vertical
5	24250.00	63.78	74.00	10.22	PK	Vertical
6	24250.00	37.75	54.00	16.25	AV	Vertical

3.5 ANTENNA REQUIREMENT

3.5.1 LIMITS OFFREQUENCY STABILITY

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b) , if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.5.2 ANTENNA ANTI-REPLACEMENT CONSTRUCTION

The antenna used for this product is Patch Antenna and that no antenna other than that furnished by the responsible party shall be used with the device

4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Setup Photo).

------ End of the Report ------

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Important

(1) The test report is invalid without the official stamp of CVC;

(2) Any part photocopies of the test report are forbidden without the written permission from CVC;

(3) The test report is invalid without the signatures of Approval and Reviewer;

(4) The test report is invalid if altered;

(5) Objections to the test report must be submitted to CVC within 15 days.

(6) Generally, commission test is responsible for the tested samples only.

(7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

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