TEST REPORT

Product	:	WA02
Trade mark	:	N/A
Model/Type reference	:	WA02
Serial Number	:	N/A
Report Number	:	EED32Q81825702
FCC ID	:	2BFQ6WA02R1
Date of Issue	:	Jan. 09, 2025
Test Standards	:	47 CFR Part 15 Subpart F
Test result	:	PASS

Prepared for:

Iiwari Tracking Solutions Oy
Kidekuja 2 Vuokatti 88610 Finland

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
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Compiled by:	Frazer Li	Reviewed by:	Tom Chen
Approved by:	Aaron Ma	Date:	Jan. 09, 2025

Check No.::7930121124

1 Contents

2 Version

Version No.	Date	Description
00	Jan. 09, 2025	Original

3 Test Summary

Test Item	Test Requirement	Result
Antenna Requirement	47 CFR Part 15 Subpart F Section 15.519(a2) & Section 15.521(b) & Section 15.203	PASS
AC power-line conducted emissions	47 CFR Part 15 Subpart F Section 15.207 & Section 15.505 & Section 15.521(j)	N/A
Cessation Time	47 CFR Part 15 Subpart F Section 15.519(a)(1)	PASS
UWB Bandwidth (-10dB Bandwidth)	47 CFR Part 15 Subpart F Section 15.503 & Section 15.521(e)	PASS
EIRP (Equivalent Isotropic Radiated Power)	47 CFR Part 15 Subpart F Section 15.519 (c)&(e) & Section 15.521(g)	PASS
Spurious Emissions Below 1GHz	47 CFR Part 15 Subpart F Section 15.519(c) & Section 15.209 & Section 15.521(c)&(d)&(h)	PASS
Spurious Emissions Above 1GHz	47 CFR Part 15 Subpart F Section 15.519 (c)&(d) & Section 15.521(d)&(h)	PASS
Remark: N/A : Only battery supply is supported and this item is not considered.		

4 General Information

4.1 Client Information

Applicant:	Iiwari Tracking Solutions Oy
Address of Applicant:	Kidekuja 2 Vuokatti 88610 Finland
Manufacturer:	KKM Technology Company Limited
Address of Manufacturer:	6A-3CDE, Baoneng Science and Technology Industrial Park, Long Hua district, Shenzhen 518109, Guang Dong, China.
Factory:	KKM Technology Company Limited
Address of Factory:	6A-3CDE, Baoneng Science and Technology Industrial Park, Long Hua district, Shenzhen 518109, Guang Dong, China.

4.2 General Description of EUT

Product Name:	WA02
Model No.:	WA02
Trade Mark:	N/A
Product Type:	Hand Held UWB systems
Operation Frequency:	UWB Channels 2: 3993.6MHz, UWB Channels 5 :6489.6MHz
Number of Channels （UWB):	2
Modulation Type:	BPM,BPSK
Test software of EUT:	RF Test
Antenna Type:	PCB Antenna
Antenna gain:	UWB Channels 2: 3.80dBi, UWB Channels 5: 3.93dBi
Power Supply:	Battery DC 3.0V,850mAh
Test Voltage:	DC 3.0V
Sample Received Date:	Nov. 12, 2024
Sample tested Date:	Nov. 12, 2024 to Dec. 03, 2024

4.3 Test Configuration

EUT Test Software Settings:	
Software:	RF Test
EUT Power Grade:	Default (Power level is built-in set parameters and cannot be changed and selected)

4.4 Test Environment

Operating Environment:	
Radiated Spurious Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
RF Conducted:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar

4.5 Description of Support Units

The EUT has been tested independently.

4.6 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd
Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China
Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385
No tests were sub-contracted.
FCC Designation No.: CN1164

4.7 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-40GHz)
2	Radiated Spurious emission test	3.3dB (9kHz-30MHz)
		4.3dB (30MHz-1GHz)
		4.5dB (1GHz-18GHz)
		3.4dB (18GHz-40GHz)
3	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
4	Temperature test	0.64°C
5	Humidity test	3.8%
6	DC power voltages	0.026%

4.8 Equipment List

3M Semi/full-anechoic Chamber(2#)					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-22-2022	05-21-2025
Receiver	R&S	ESCI7	100938-003	09-07-2024	09-06-2025
Spectrum Analyzer	R&S	FSV40	101200	07-18-2024	07-17-2025
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-16-2024	04-15-2025
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	05-18-2024	05-17-2025
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-16-2024	04-15-2025
Horn Antenna	A.H.SYSTEMS	SAS-574	374	07-02-2023	07-01-2026
Preamplifier	Agilent	11909A	12-1	03-22-2024	03-21-2025
Preamplifier	EMCI	EMC051845SE	980380	12-14-2023	12-13-2024
Preamplifier	CD	PAP-1840-60	6041.6042	06-19-2024	06-18-2025
Cable line	Fulai(7M)	SF106	5219/6A	---	---
Cable line	Fulai(6M)	SF106	5220/6A	---	---
Cable line	Fulai(3M)	SF106	5216/6A	---	---
Cable line	Fulai(3M)	SF106	5217/6A	---	---
Test software	Fara	EZ-EMC	EMEC-3A1-Pre	---	---

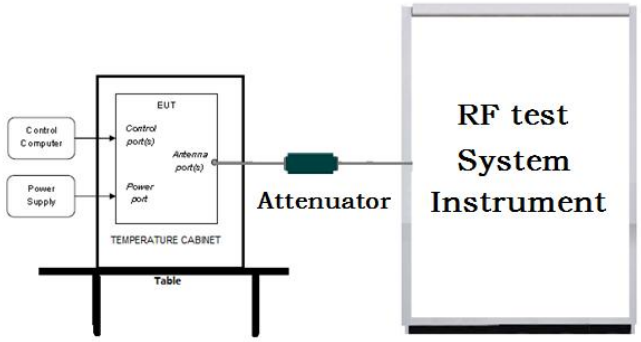
3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2024	01-08-2027
Receiver	Keysight	N9038A	MY57290136	01-09-2024	01-08-2025
Spectrum Analyzer	Keysight	N9020B	MY57111112	01-29-2024	01-28-2025
Spectrum Analyzer	Keysight	N9030B	MY57140871	01-23-2024	01-22-2025
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-28-2024	04-27-2025
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-16-2024	04-15-2025
Horn Antenna	ETS-LINDGREN	3117	57407	07-03-2024	07-02-2025
Preamplifier	EMCI	EMC001330	980563	03-08-2024	03-07-2025
Preamplifier	Tonscend	TAP-011858	AP21B806112	07-18-2024	07-17-2025
Preamplifier	Tonscend	EMC051845SE	980380	12-14-2023	12-13-2024
Communication test set	R&S	CMW500	102898	12-14-2023	12-13-2024
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	04-07-2024	04-06-2025
RSE Automatic test software	JS Tonscend	JS36-RSE	V4.0.0.0	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0001		---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15 Subpart F Section 15.519(a2) & Section 15.521(b) & Section 15.203
15.203 requirement: 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 use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of 15.211, 15.213, 15.217, 15.219, 15.221, or 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded. 15.519 requirement: The use of antennas mounted on outdoor structures, e.g., antennas mounted on the outside of a building or on a telephone pole, or any fixed outdoors infrastructure is prohibited. Antennas may be mounted only on the hand held UWB device.	
EUT Antenna:	Please see Internal photos
The antenna is PCB Antenna. The best case gain of the antenna is UWB Channels 2: 3.80dBi, UWB Channels 5: 3.93dBi	

5.2 Cessation Time

Test Requirement:	47 CFR Part 15 Subpart F Section 15.519(a)(1)
Test Method:	/
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	EUT and receiving pairing device keep UWB normal connection. a. Set RBW of spectrum analyzer to 1 MHz and VBW to 3 MHz. b. Use a video trigger with the trigger level set to enable triggering only on full pulses. c. Set the center frequency on any frequency would be measure and set the frequency span to zero span. d. Measure the maximum time duration of one single pulse.
Limit:	≤10 seconds
Test Mode:	Normal
Test Results:	Pass

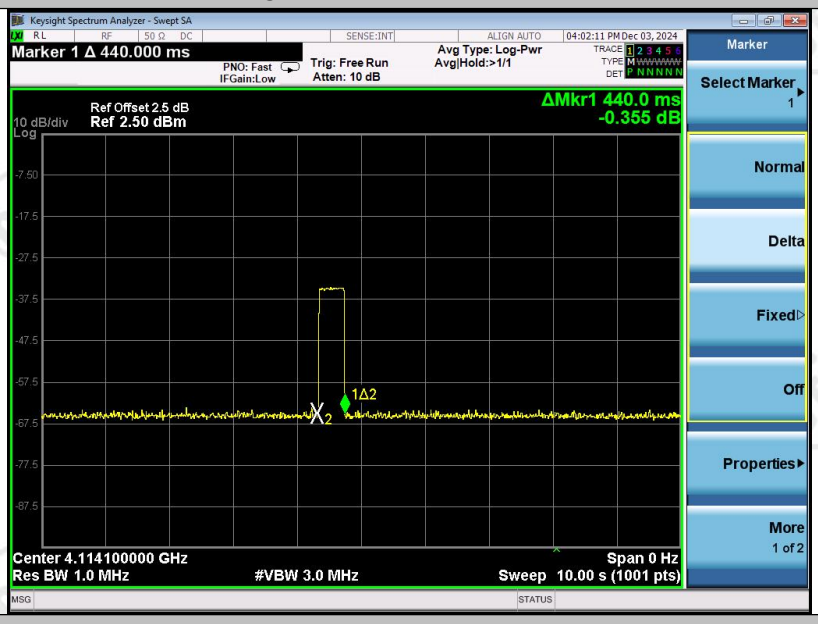
Test Result

Test Channel	Center Frequency (MHz)	Transmit Time (ms)	Transmit Time (s)	Limit (s)	Results
2	4114.1	440	0.44	⩽10	pass
5	6489.2	670	0.67	⩽10	pass

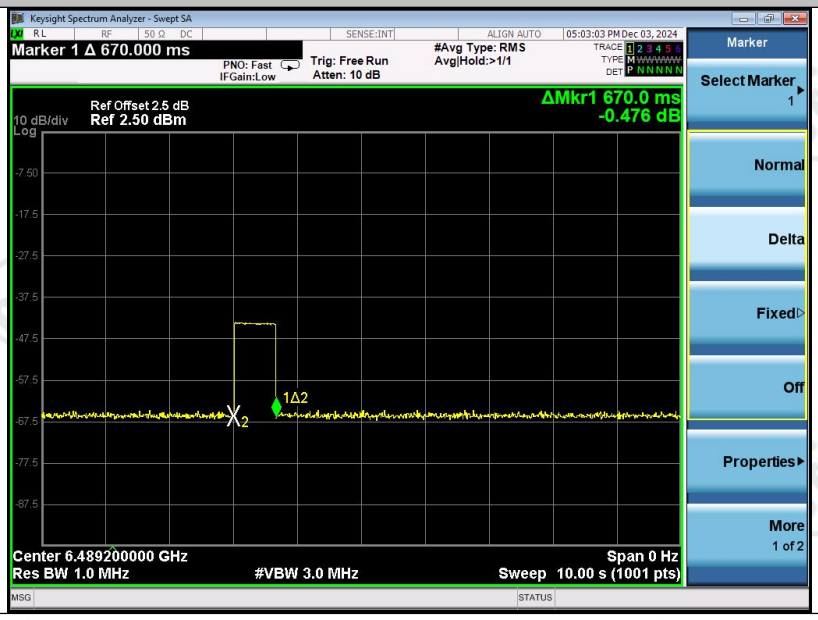
Note:Transmit Time(s)=Transmit Time(ms)/1000;

Test Graph

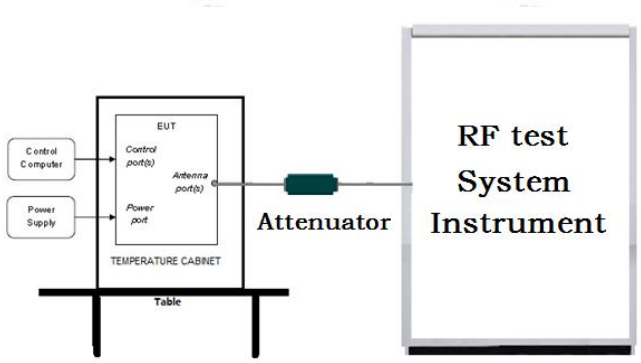
Channel 1 Transmit Time



Channel 2 Transmit Time



5.3 UWB Bandwidth (-10dB Bandwidth)

Test Requirement:	47 CFR Part 15 Subpart F Section 15.503 & Section 15.521(e)
Test Method:	ANSI C63.10:2013 Section 10.1
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	The frequency at which the maximum power level is measured with the peak detector is designated fM. The peak power measurements shall be made using a spectrum analyzer or EMI receiver with a 1 MHz resolution bandwidth and a video bandwidth of 1 MHz or greater. The instrument shall be set to peak detection using the maximum-hold trace mode. The outermost 1 MHz segments above and below fM, where the peak power falls by 10 dB relative to the level at fM, are designated as fH and fL, respectively: b) For the lowest frequency bound fL, the emission is searched from a frequency lower than fM that has, by inspection, a peak power much lower than 10 dB less than the power at fM and increased toward fM until the peak power indicates 10 dB less than the power at fM. The frequency of that segment is recorded. b) This process is repeated for the highest frequency bound fH, beginning at a frequency higher than fM that has, by inspection, a peak power much lower than 10 dB below the power at fM. The frequency of that segment is recorded. c) The two recorded frequencies represent the highest fH and lowest fL bounds of the UWB transmission, and the -10 dB bandwidth (B - 10) is defined as (fH - fL). The center frequency(fc) is mathematically determined from (fH - fL) /2. d) The fractional bandwidth is defined as 2(fH - fL) / (fH + fL).e) Determine whether the -10 dB bandwidth (fH - fL) is ≧500 MHz, or whether the fractional bandwidth 2(fH - fL)/ (fH + fL) is ≧0.2.
Limit:	≧500MHz
Test Mode:	Continuous Tx Mode, Keep the EUT Transmitting with Modulation
Test Results:	Pass

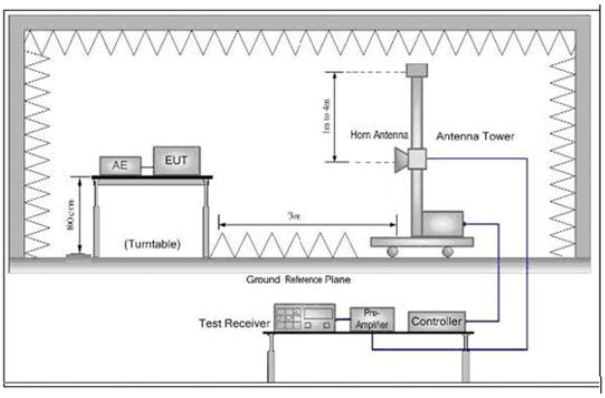
Test Result

Test Channel	FM(MHz)	FL (MHz)	FH (MHz)	10dB bandwidth(MHz)	Limit (MHz)	Results
2	4114	3784	4307	523	≧500	pass
5	6336	6142	6862	720	≧500	pass

Test Graph

Graphs		
Channel 2		
Channel 5		

5.4 EIRP (Equivalent Isotropic Radiated Power)

Test Requirement:	47 CFR Part 15 Subpart F Section 15.519 (c)&(e) & Section 15.521(g)
Test Method:	ANSI C63.10: 2013 Section 10.3
Test Setup:	 Remark: Due to some spectrum analyzer does not support 50MHz RBW setting, RBW set to the maximum value, and add a correction factor is allowed for Max Peak EIRP measurement. According to ANSI 63.10 Clause 10.3.9, the EIRP to field strength at a specified measurement distance of 3 m is below: E (dBuV/m) = EIRP(dBm) + 95.3 For peak power test, the spectrum anylyzer was set to RBW=8MHz, VBW=10MHz, and add a conversion factor of 20*log(50MHz/8MHz)=15.92dB.
Test Procedure:	1) The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semianechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3) The antenna 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. 4) 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 O degrees to 360 degrees to find the maximum reading. 5) The test-receiver system was set to Peak detector with Maximum Hold Mode for Max Peak EIRP measurement and AV detector for Average EIRP measurement. 6) Test the EUT in the lowest channel, the Highest channel 7) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. 8) Repeat above procedures until all frequencies measured was complete. Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Limit:	Measurement Distance: 3m Limit:

Frequency	Limit	Detector	Measurement distance (m)
960MHz-1610MHz	-75.3 dBm (EIRP, RBW=1MHz)	AV	3
1610MHz-1990MHz	-63.3 dBm (EIRP, RBW=1MHz)	AV	3
1990MHz-3100MHz	-61.3 dBm (EIRP, RBW=1MHz)	AV	3
3100MHz-10600MHz	-41.3 dBm (EIRP, RBW=1MHz)	AV	3
Above 10600MHz	-61.3 dBm (EIRP, RBW=1MHz)	AV	3
Fundamental	0 dBm (EIRP, RBW=50MHz)	Peak	3

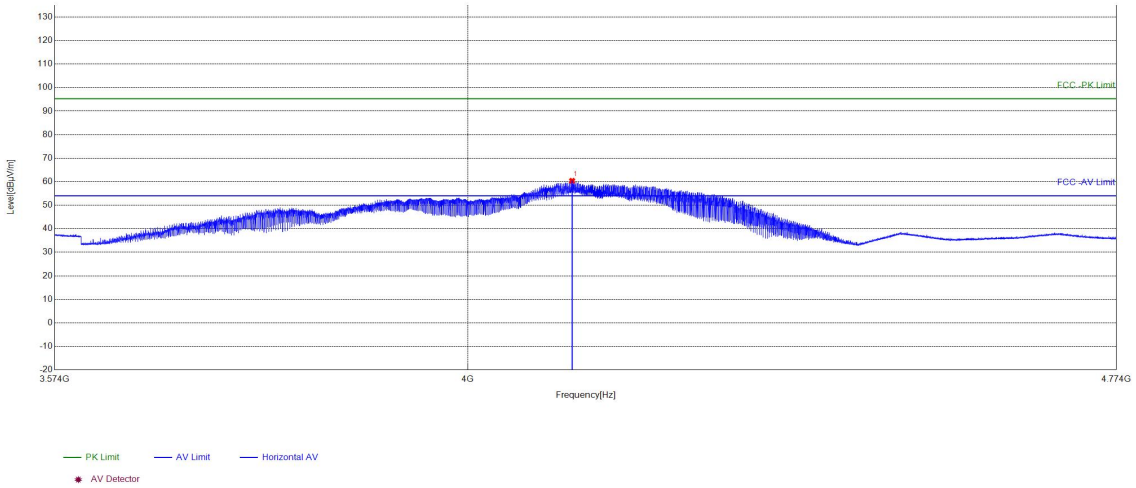
Thus, the field strength limit for the test above 1GHz is below:

Frequency	Limit	Detector	Measurement Distance
	Field Strength (dBuV/m)		
960MHz-1610MHz	20.00	AV	3
1610MHz-1990MHz	32.00	AV	3
1990MHz-3100MHz	34.00	AV	3
3100MHz-10600MHz	54.00	AV	3
Above 10600MHz	34.00	AV	3
Fundamental	95.30	Peak	3

Test Mode:	Continuous Tx Mode, Keep the EUT Transmitting with Modulation
Test Results:	Pass

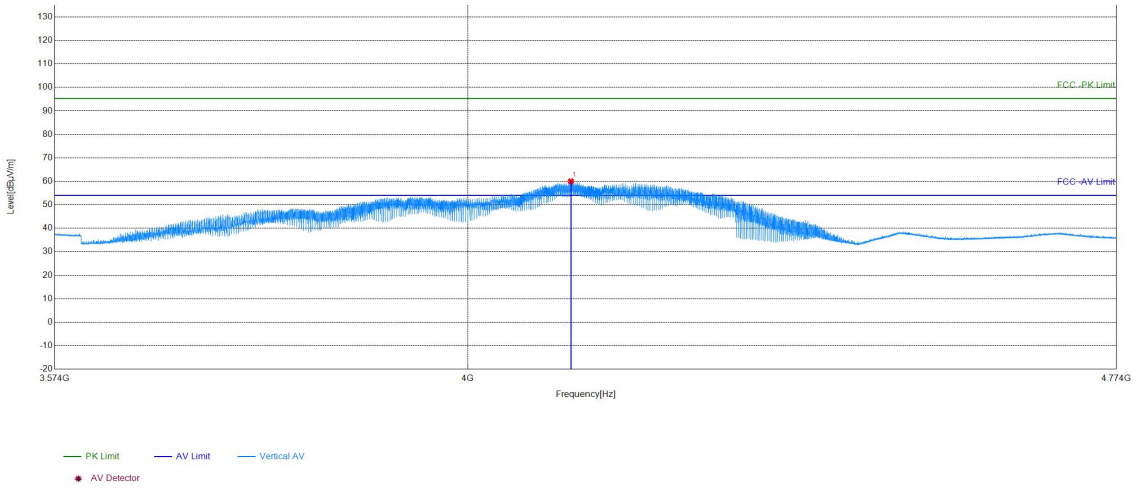
Test Result

(1)Channel 2:



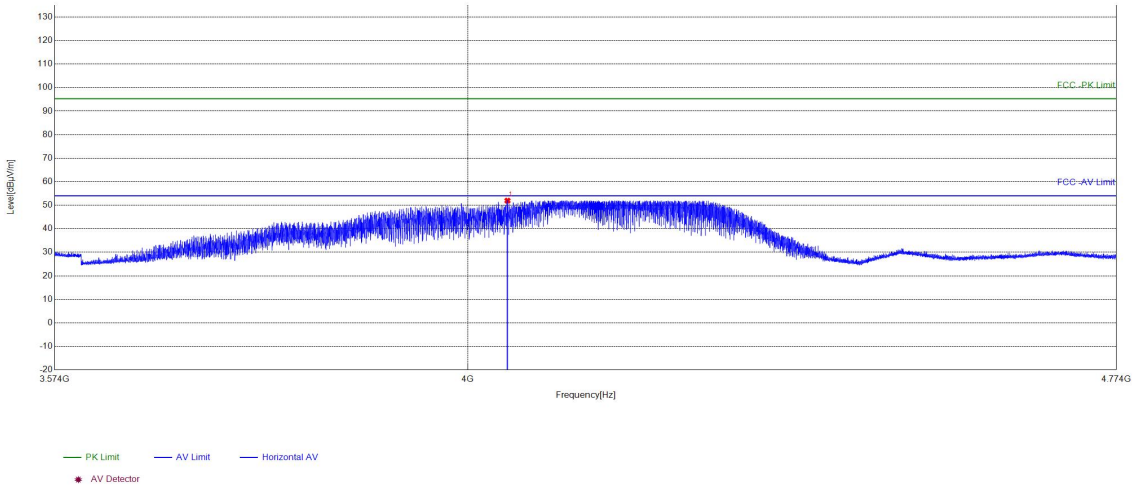
Peak Field Strength for fundamental @ RBW=8MHz					
Freq.[MHz]	Factor[dB]	Reading[dBμV]	Level [dBμV/m]	Polarity	Remark
4115.4761	-11.16	71.53	60.37	Horizontal	PK

Calculated Peak Field Strength of fundamental @ RBW=50MHz						
Freq. [MHz]	Measured Field Strength of fundamental (FSM) (dBuV/m)	Calculated Field Strength of fundamental (FSc) (dBuV/m)	Limit (dBuV/m)	Margin [dB]	Result	Polarity
4115.4761	60.37	76.29	95.30	19.01	pass	Horizontal
Note: FSc = FSM + 20log(50MHz/8MHz) = FSM + 15.92, Margin=Limit-FSc						



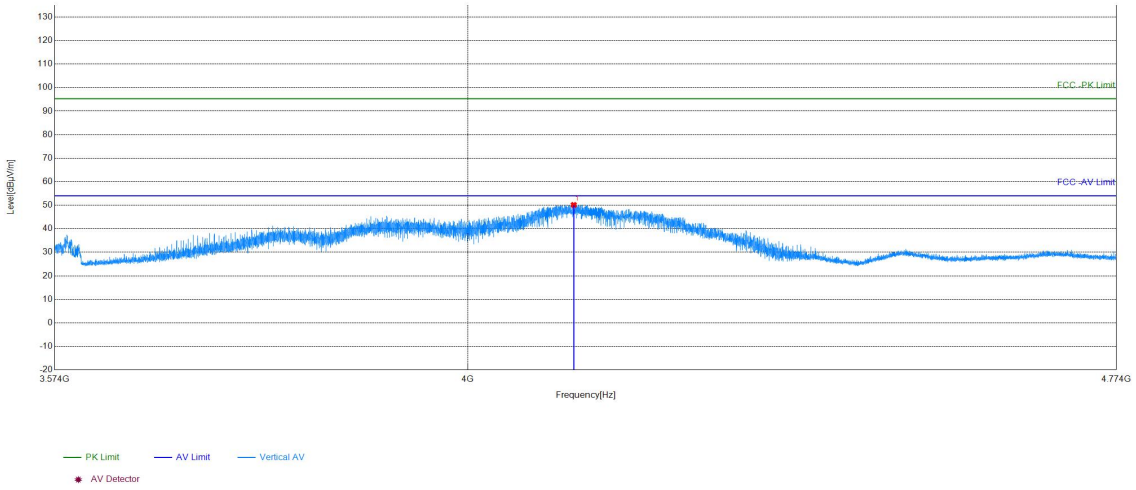
Peak Field Strength for fundamental @ RBW=8MHz					
Freq.[MHz]	Factor[dB]	Reading[dBμV]	Level [dBμV/m]	Polarity	Remark
4114.1160	-11.11	71.10	59.99	Vertical	PK

Calculated Peak Field Strength of fundamental @ RBW=50MHz						
Freq. [MHz]	Measured Field Strength of fundamental (FSM) (dBuV/m)	Calculated Field Strength of fundamental (FSc) (dBuV/m)	Limit (dBuV/m)	Margin [dB]	Result	Polarity
4114.1160	59.99	75.91	95.30	19.39	Pass	Vertical
Note: FSc = FSM + 20log(50MHz/8MHz) = FSM + 15.92, Margin=Limit-FSc						



Average Field Strength for fundamental @ RBW=1 MHz									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	4043.5513	-13.56	65.51	51.95	54.00	2.05	PASS	Horizontal	AV

Note:Margin=Limit-Level;

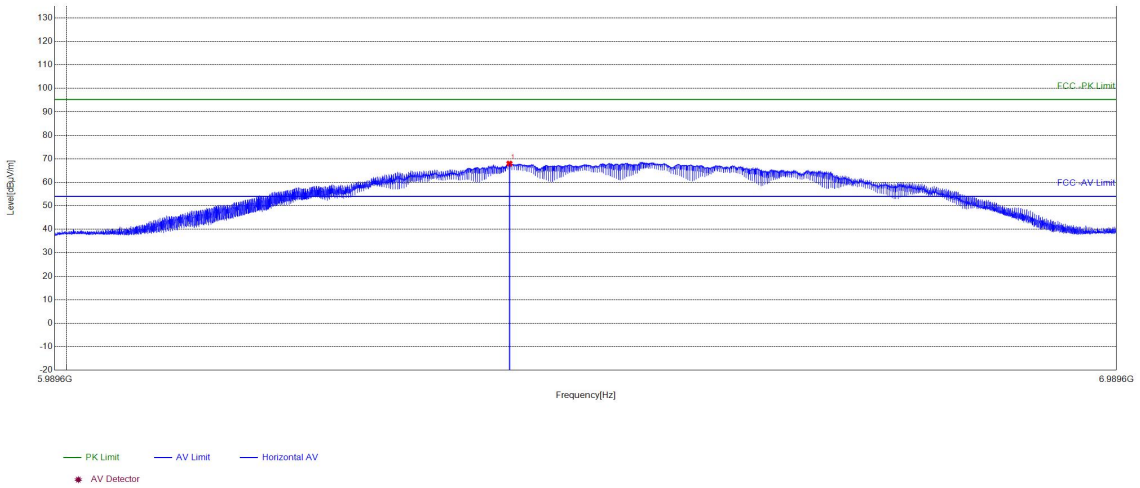


Average Field Strength for fundamental @ RBW=1 MHz									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	4117.3162	-11.23	61.34	50.11	54.00	3.89	PASS	Vertical	AV

Note:Margin=Limit-Level;

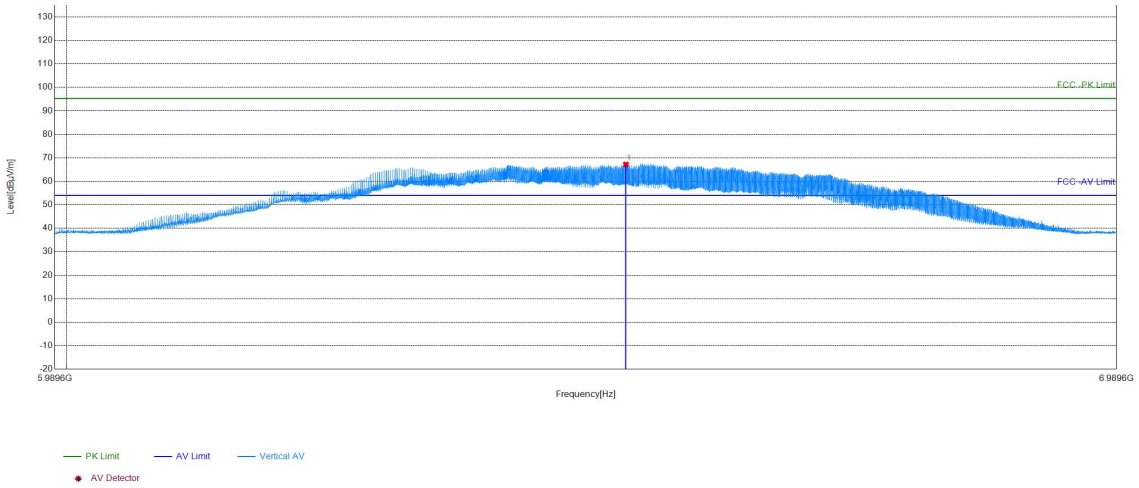
Test Result

(2)Channel 5:



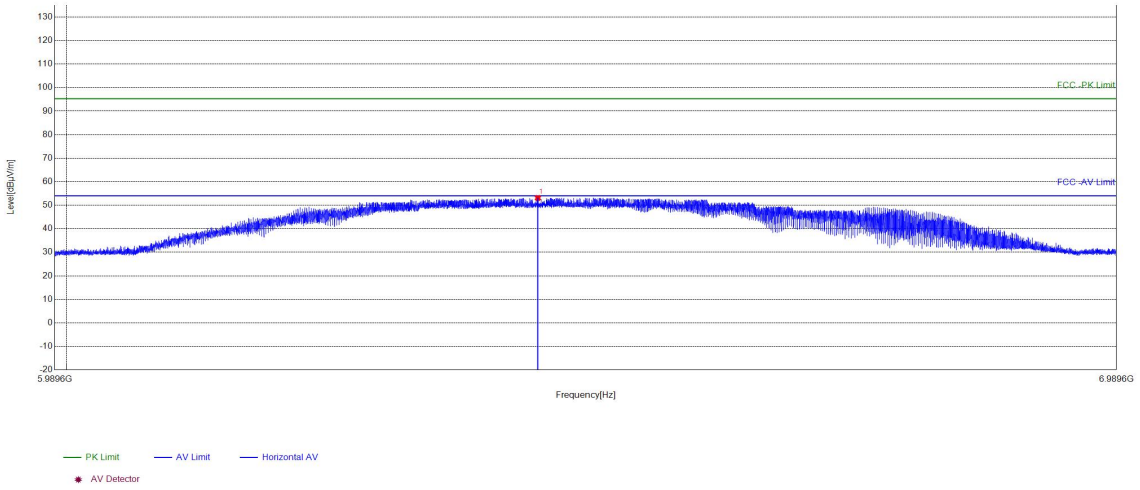
Peak Field Strength for fundamental @ RBW=8MHz					
Freq.[MHz]	Factor[dB]	Reading[dBμV]	Level [dBμV/m]	Polarity	Remark
6399.0273	-5.30	73.26	67.96	Horizontal	PK

Calculated Peak Field Strength of fundamental @ RBW=50MHz						
Freq. [MHz]	Measured Field Strength of fundamental (FSM) (dBuV/m)	Calculated Field Strength of fundamental (FSc) (dBuV/m)	Limit (dBuV/m)	Margin [dB]	Result	Polarity
6399.0273	67.96	83.88	95.30	11.42	pass	Horizontal
Note: FSc = FSM + 20log(50MHz/8MHz) = FSM + 15.92, Margin=Limit-FSc						



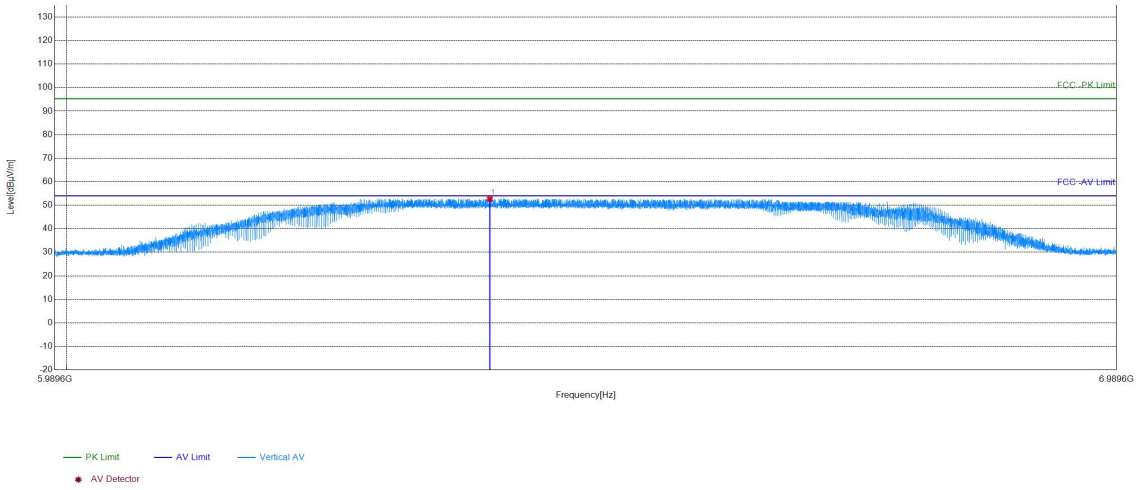
Peak Field Strength for fundamental @ RBW=8MHz					
Freq.[MHz]	Factor[dB]	Reading[dBμV]	Level [dBμV/m]	Polarity	Remark
6508.3679	-6.15	73.31	67.16	Vertical	PK

Calculated Peak Field Strength of fundamental @ RBW=50MHz						
Freq. [MHz]	Measured Field Strength of fundamental (FSM) (dBuV/m)	Calculated Field Strength of fundamental (FSc) (dBuV/m)	Limit (dBuV/m)	Margin [dB]	Result	Polarity
6508.3679	67.16	83.08	95.30	12.22	Pass	Vertical
Note: FSc = FSM + 20log(50MHz/8MHz) = FSM + 15.92, Margin=Limit-FSc						



Average Field Strength for fundamental @ RBW=1 MHz									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	6425.5624	-6.20	59.29	53.09	54.00	0.91	PASS	Horizontal	AV

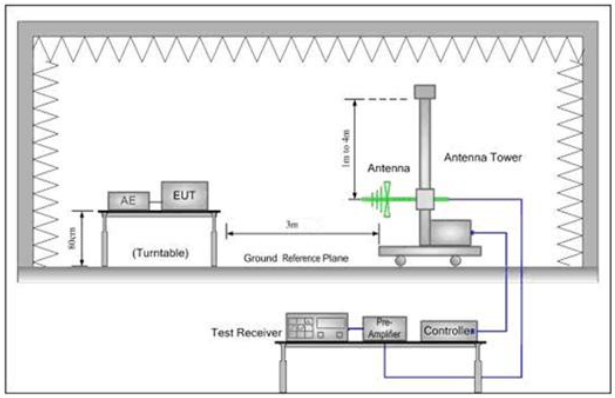
Note:Margin=Limit-Level;



Average Field Strength for fundamental @ RBW=1 MHz									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	6380.8261	-6.14	58.80	52.66	54.00	1.34	PASS	Vertical	AV

Note:Margin=Limit-Level;

5.5 Spurious Emissions Below 1GHz

Test Requirement:	47 CFR Part 15 Subpart F Section 15.519(c) & Section 15.209 & Section 15.521(c)&(d)&(h)
Test Method:	ANSI C63.10: 2013 Section 10.2
Test Setup:	
Test Procedure:	1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3) The antenna 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. 4) 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. 5) The test-receiver system was set to Peak detector with Maximum Hold Mode. And use Quasi-Peak to measure the six highest frequencies. 6) Test the EUT in the lowest channel, the Highest channel and only recorded worst channel--Lowest channel in the test report. 7) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. 8) Repeat above procedures until all frequencies measured was completeRemark 1: Level= Read Level+ Cable Loss+ Antenna Factor-Preamp Factor 2. According to FCC Part 15.521(h), test was performed from 9kHz to 40GHz for the EUT. Emission below 30MHz was very low, so it's not recorded in the test report.
Limit:	

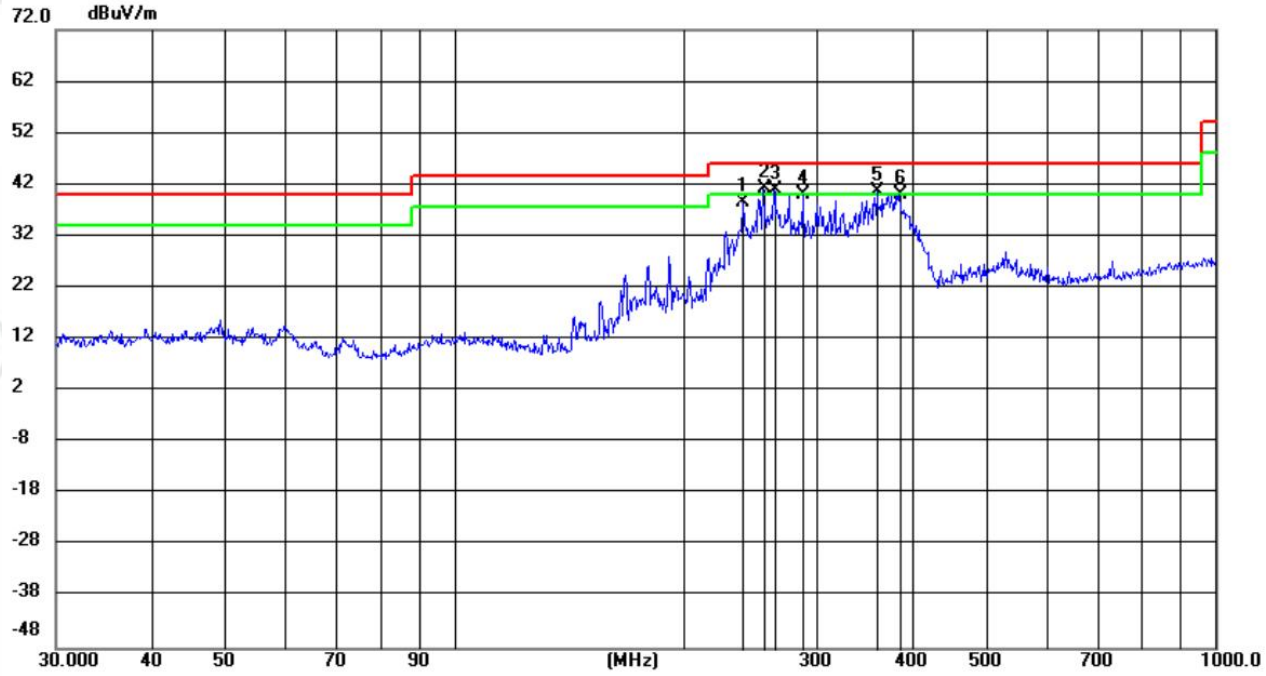
Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1000MHz	-	20	AV	3

Test Mode:	Continuous Tx Mode, Keep the EUT Transmitting with Modulation
Test Results:	Pass

Test Result

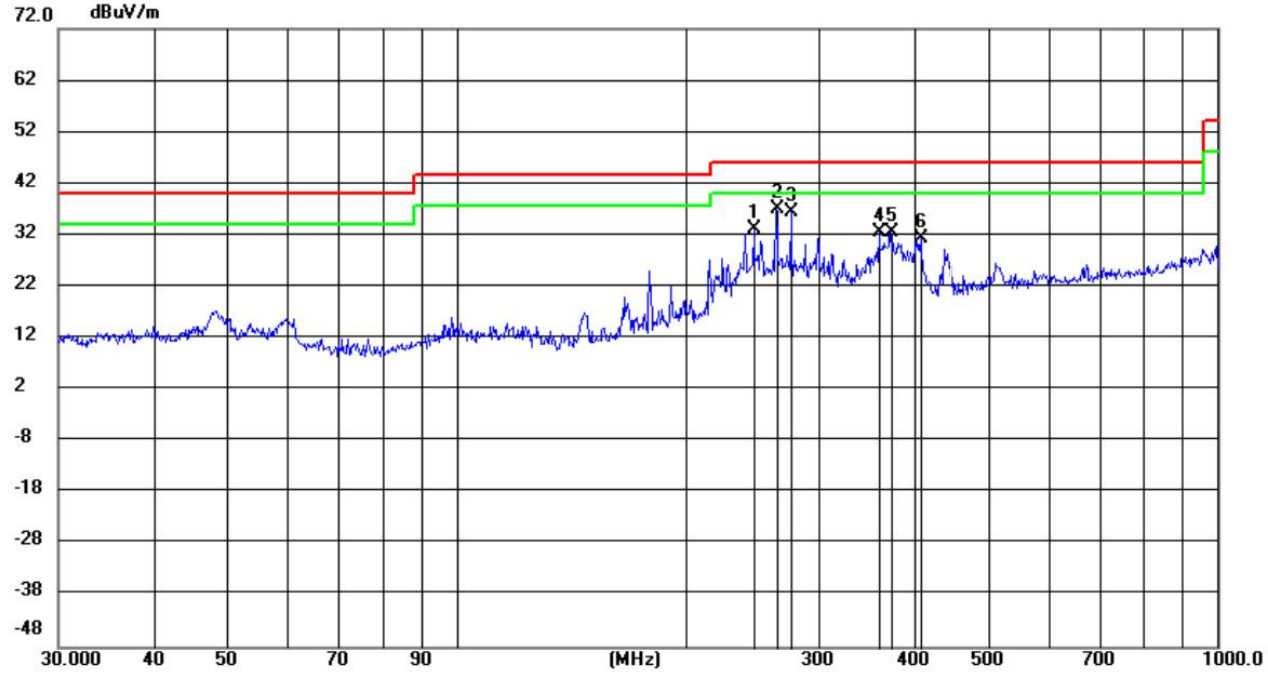
Test Graph

Mode:	Channel 2	Polarization:	Horizontal



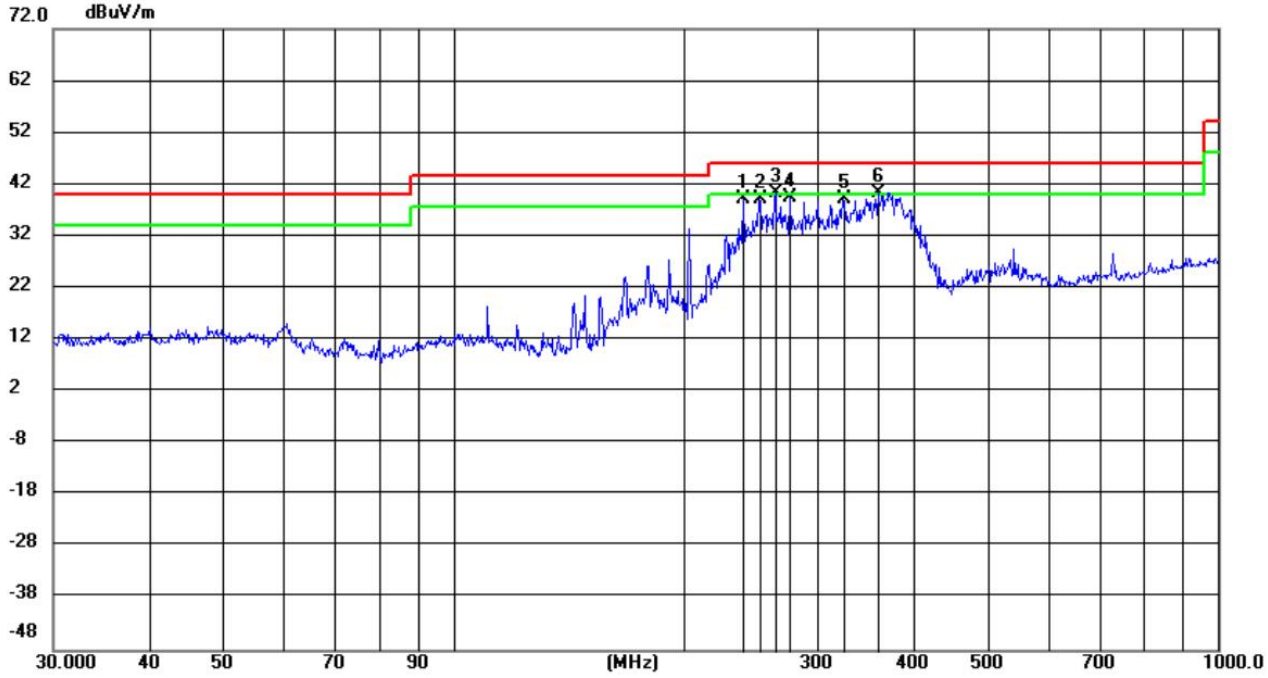
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		239.8611	24.75	13.88	38.63	46.00	-7.37	QP	199	7	
2	*	254.7730	26.73	14.44	41.17	46.00	-4.83	QP	199	7	
3	!	263.7727	26.18	14.78	40.96	46.00	-5.04	QP	199	7	
4	!	287.4859	24.35	15.68	40.03	46.00	-5.97	QP	199	7	
5	!	359.4379	23.43	17.27	40.70	46.00	-5.30	QP	100	198	
6		384.6729	22.16	17.75	39.91	46.00	-6.09	QP	100	168	

Mode:	Channel 2	Polarization:	Vertical



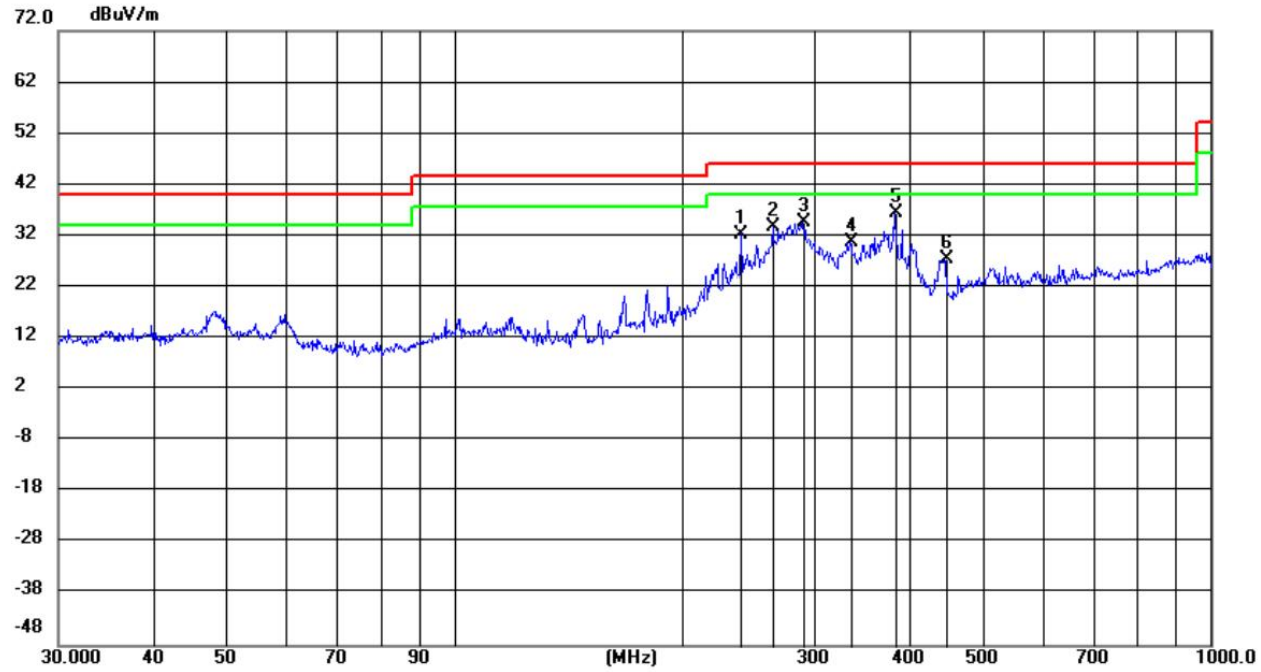
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		246.2962	19.04	14.13	33.17	46.00	-12.83	QP	100	7	
2	*	263.6802	22.24	14.78	37.02	46.00	-8.98	QP	100	154	
3		275.9300	21.08	15.24	36.32	46.00	-9.68	QP	100	7	
4		360.3214	15.12	17.29	32.41	46.00	-13.59	QP	200	145	
5		372.7880	15.14	17.53	32.67	46.00	-13.33	QP	200	135	
6		407.8004	13.30	18.18	31.48	46.00	-14.52	QP	100	165	

Mode:	Channel 5	Polarization:	Horizontal



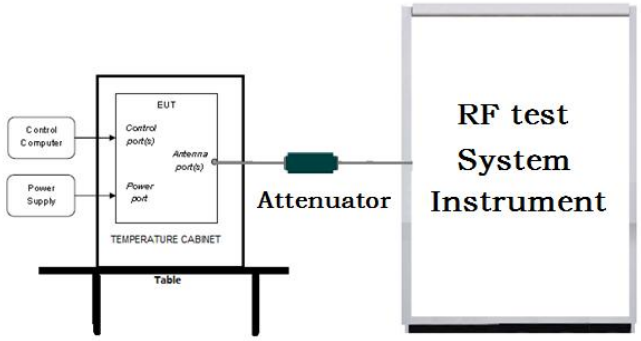
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		239.9032	25.38	13.88	39.26	46.00	-6.74	QP	100	18	
2		251.9743	24.94	14.34	39.28	46.00	-6.72	QP	100	7	
3	*	264.0040	25.66	14.79	40.45	46.00	-5.55	QP	100	7	
4		276.0751	24.24	15.25	39.49	46.00	-6.51	QP	100	7	
5		323.6606	22.41	16.60	39.01	46.00	-6.99	QP	100	39	
6	!	359.4379	23.08	17.27	40.35	46.00	-5.65	QP	100	39	

Mode:	Channel 5	Polarization:	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		239.9453	18.51	13.89	32.40	46.00	-13.60	QP	100	7	
2		264.2356	18.84	14.80	33.64	46.00	-12.36	QP	200	18	
3		289.8647	18.98	15.77	34.75	46.00	-11.25	QP	200	39	
4		334.3895	14.00	16.80	30.80	46.00	-15.20	QP	200	29	
5	*	383.7299	18.77	17.73	36.50	46.00	-9.50	QP	100	50	
6		446.7273	8.44	18.88	27.32	46.00	-18.68	QP	100	176	

5.6 Spurious Emissions Above 1GHz

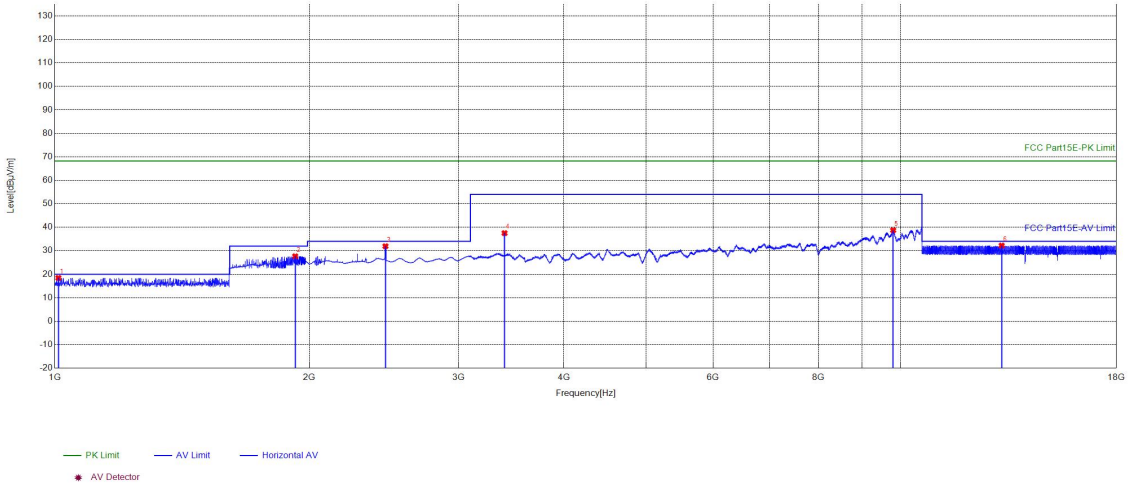
Test Requirement:	47 CFR Part 15 Subpart F Section 15.519 (c)&(d) & Section 15.521(d)&(h)
Test Method:	ANSI C63.10: 2013 Section 10.3
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Test Procedure:	1) The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meters semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3) The antenna 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. 4) 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. 5) The test-receiver system was set to Peak detector with Maximum Hold Mode. 6) Test the EUT in the lowest channel, the Highest channel 7) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. 8) Repeat above procedures until all frequencies measured was complete Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor2; As the EUT operate at 6489.6MHz and 7987.2MHz, according to Part 15.521(h), test was performed at frequency up to 40GHz. For frequency above 18GHz, emission was very low, so it's not recorded in the test report.
Limit:	See table below
Test Mode:	Continuous Tx Mode, Keep the EUT Transmitting with Modulation
Test Results:	Pass

Frequency	Limit (dBuV/m)	RBW	Detector	Measurement distance (m)
1000MHz-1610MHz	20.0	1MHz	AV	3
1610MHz-1990MHz	32.0	1MHz	AV	3
1990MHz-3100MHz	34.0	1MHz	AV	3
3100MHz-10600MHz	54.0	1MHz	AV	3
Above 10600MHz	34.0	1MHz	AV	3
1164MHz-1240MHz	10.0	1KHz	AV	3
1559MHz-1610MHz	10.0	1KHz	AV	3

Test Result

Test_Mode	TX	Test_Frequency	3993.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

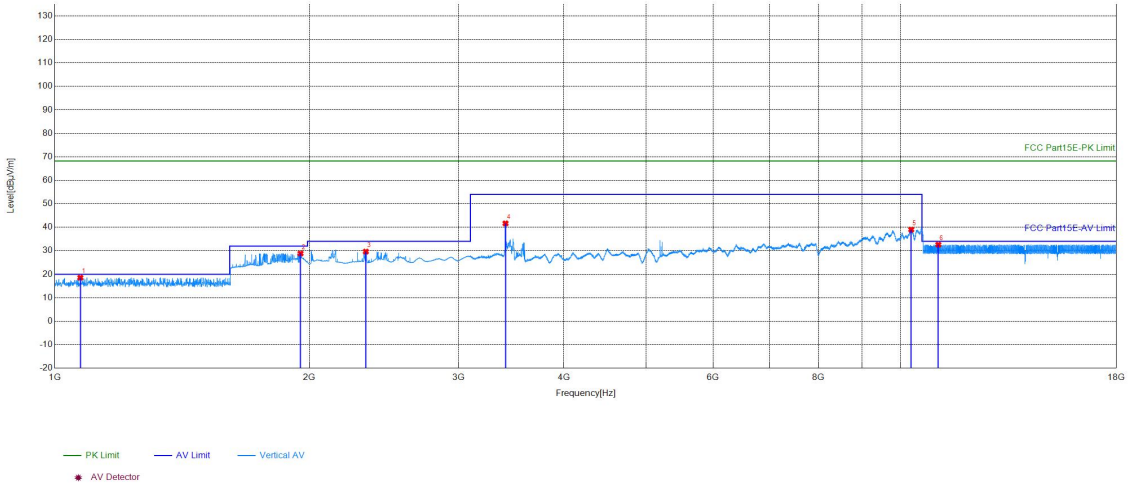
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1009.7698	-22.20	40.64	18.44	20.00	1.56	PASS	Horizontal	AV
2	1924.1942	-16.66	44.32	27.66	32.00	4.34	PASS	Horizontal	AV
3	2460.0000	-16.88	48.81	31.93	34.00	2.07	PASS	Horizontal	AV
4	3402.2802	-13.71	51.21	37.50	54.00	16.50	PASS	Horizontal	AV
5	9801.9202	4.33	34.40	38.73	54.00	15.27	PASS	Horizontal	AV
6	13169.5370	7.02	25.20	32.22	34.00	1.78	PASS	Horizontal	AV

Test_Mode	TX	Test_Frequency	3993.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

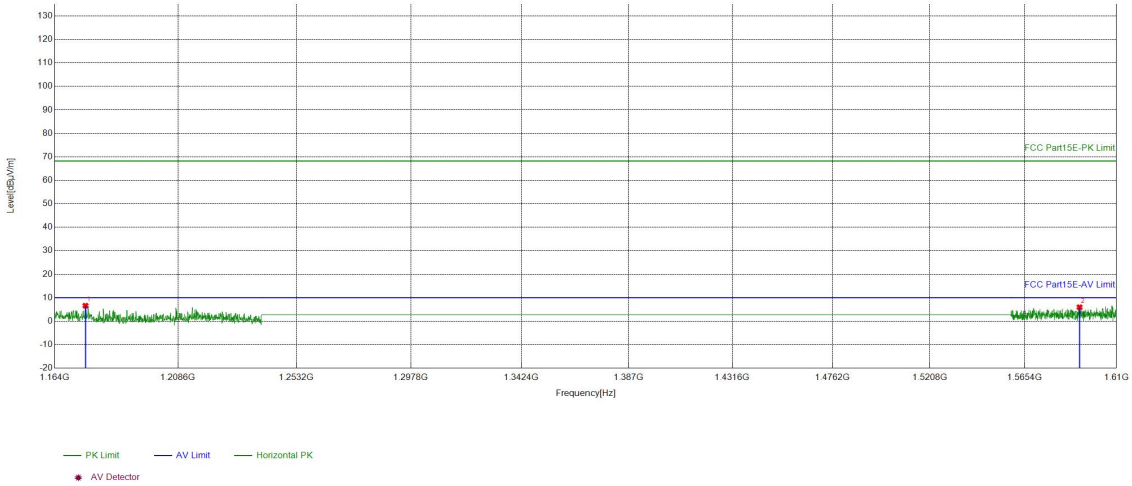
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1072.0521	-23.31	41.85	18.54	20.00	1.46	PASS	Vertical	AV
2	1952.3423	-16.02	44.86	28.84	32.00	3.16	PASS	Vertical	AV
3	2332.2222	-17.99	47.63	29.64	34.00	4.36	PASS	Vertical	AV
4	3411.2811	-13.59	55.25	41.66	54.00	12.34	PASS	Vertical	AV
5	10295.4695	4.26	34.74	39.00	54.00	15.00	PASS	Vertical	AV
6	11084.7485	3.92	28.67	32.59	34.00	1.41	PASS	Vertical	AV

Test_Mode	TX	Test_Frequency	3993.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

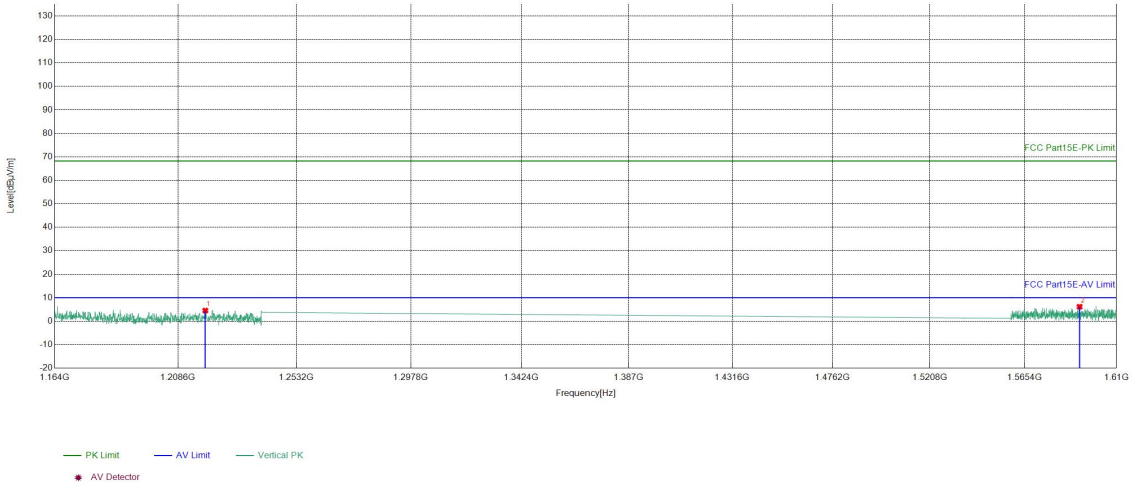
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1174.9550	-23.11	29.71	6.60	10.00	3.40	PASS	Horizontal	AV
2	1591.9790	-21.94	27.89	5.95	10.00	4.05	PASS	Horizontal	AV

Test_Mode	TX	Test_Frequency	3993.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

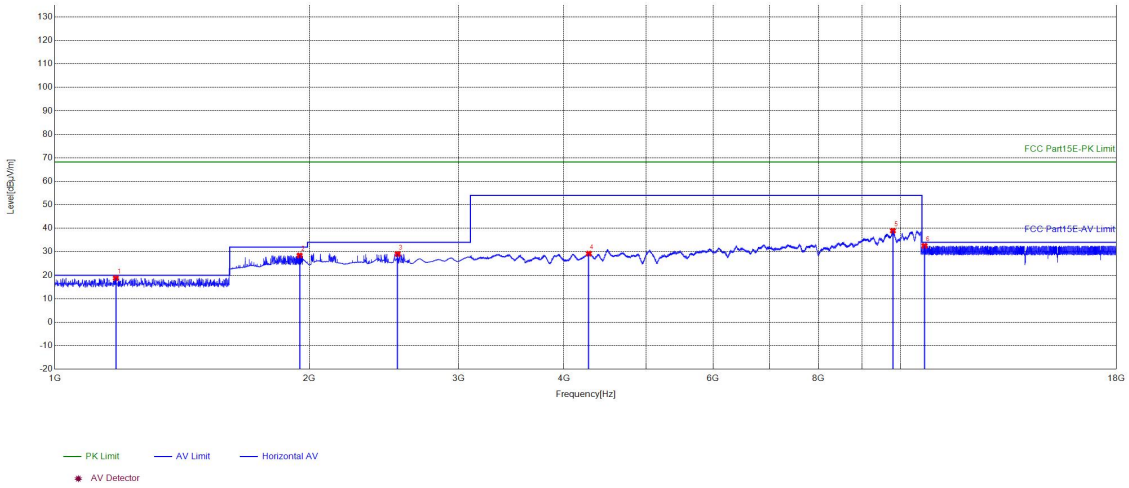
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1218.7748	-23.69	28.21	4.52	10.00	5.48	PASS	Vertical	AV
2	1591.9790	-21.94	28.10	6.16	10.00	3.84	PASS	Vertical	AV

Test_Mode	TX	Test_Frequency	6489.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

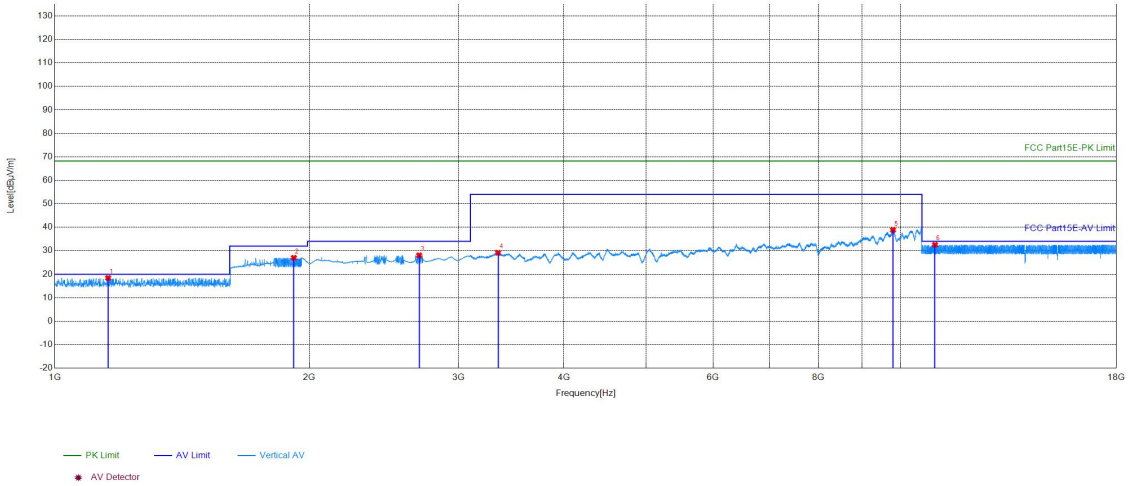
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1180.7407	-23.22	41.98	18.76	20.00	1.24	PASS	Horizontal	AV
2	1947.3974	-15.97	44.41	28.44	32.00	3.56	PASS	Horizontal	AV
3	2543.3333	-16.22	45.24	29.02	34.00	4.98	PASS	Horizontal	AV
4	4279.8680	-10.27	39.48	29.21	54.00	24.79	PASS	Horizontal	AV
5	9795.1695	4.14	34.78	38.92	54.00	15.08	PASS	Horizontal	AV
6	10674.7475	2.91	29.62	32.53	34.00	1.47	PASS	Horizontal	AV

Test_Mode	TX	Test_Frequency	6489.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

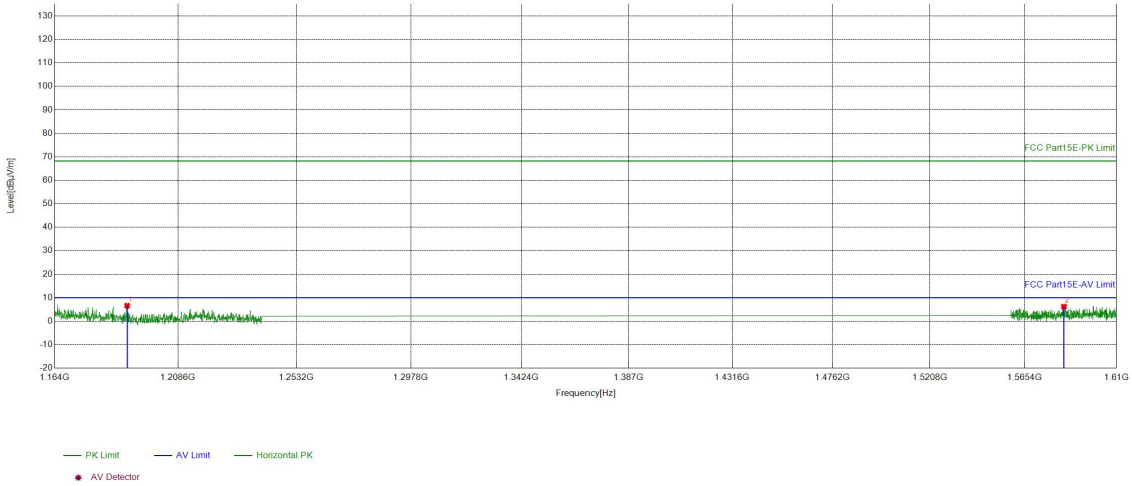
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1156.3163	-22.76	41.16	18.40	20.00	1.60	PASS	Vertical	AV
2	1917.3473	-16.87	43.85	26.98	32.00	5.02	PASS	Vertical	AV
3	2696.6667	-16.13	44.19	28.06	34.00	5.94	PASS	Vertical	AV
4	3343.0243	-13.12	42.26	29.14	54.00	24.86	PASS	Vertical	AV
5	9796.6697	4.21	34.60	38.81	54.00	15.19	PASS	Vertical	AV
6	10984.0984	4.89	27.62	32.51	34.00	1.49	PASS	Vertical	AV

Test_Mode	TX	Test_Frequency	6489.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

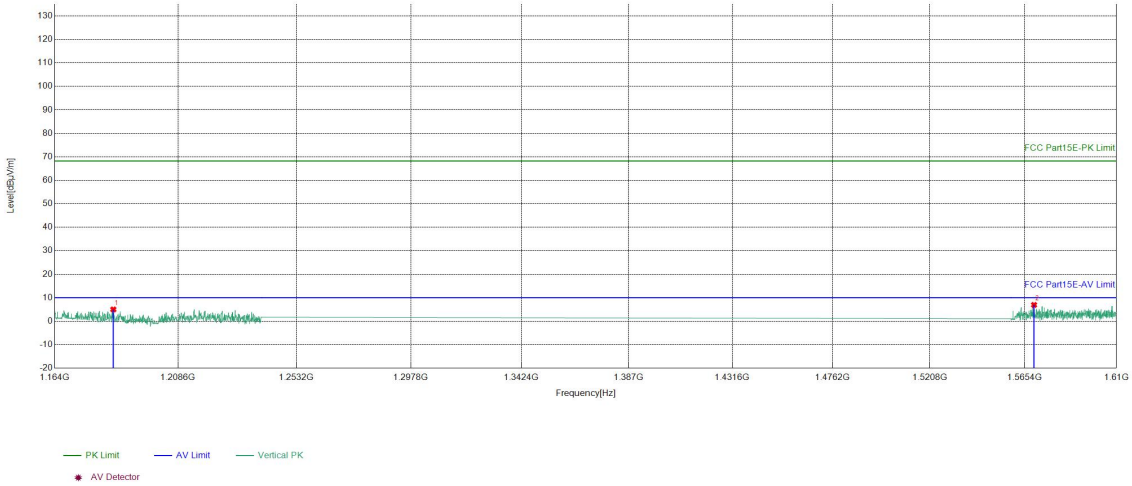
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1190.0180	-23.39	30.01	6.62	10.00	3.38	PASS	Horizontal	AV
2	1584.3724	-22.02	28.23	6.21	10.00	3.79	PASS	Horizontal	AV

Test_Mode	TX	Test_Frequency	6489.6MHz
Tset_Engineer	chenjun	Test_Date	2024/12/02
Remark	21.8°C,59.9%		

Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1184.9970	-23.30	28.30	5.00	10.00	5.00	PASS	Vertical	AV
2	1569.9760	-22.17	29.11	6.94	10.00	3.06	PASS	Vertical	AV

Remark:

1) Scan from 9kHz to 40GHz, disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

7 PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32Q81825701 for EUT external and internal photos.

声明

Statement

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The result(s) shown in this report refer(s) only to the sample(s) tested;

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Unless otherwise stated,the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule stated in ILAC-G8:09/2019/CNAS-GL015:2022;

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*** End of Report ***