TEST REPORT

Product	:	seeed studio reCamera 2002 Series
Trade mark	:	Seeed Studio
Model/Type reference	:	See section 4.2
Serial Number	:	N/A
Report Number	:	EED32Q81957302
FCC ID	:	Z4T-RECAMERA2002W
Date of Issue	:	Dec. 19, 2024
Test Standards	:	47 CFR Part 15 Subpart C
Test result	:	PASS

Prepared for:

Seeed Technology Co., Ltd
9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen

Prepared by:

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Compiled by:	Frazer Li	Reviewed by:	Tom Chen
Approved by:	Aaron Ma	Date:	Dec. 19, 2024

Check No.: 9744271124

1 Contents

2 Version

Version No.	Date	Description
00	Dec. 19, 2024	Original

3 Test Summary

Test Item	Test Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	PASS
Maximum Conducted Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(1)	NOTE
20dB Emission Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	NOTE
Carrier Frequency Separation	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	NOTE
Number of Hopping Channels	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	NOTE
Time of Occupancy	47 CFR Part 15, Subpart C Section 15.247 (a)(1)	NOTE
Pseudorandom Frequency Hopping Sequence	47 CFR Part 15, Subpart C Section 15.247(b)(4)	NOTE
Band Edge Measurements	47 CFR Part 15, Subpart C Section 15.247(d)	NOTE
Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	NOTE
Radiated Spurious emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	PASS
Restricted bands around fundamental frequency	47 CFR Part 15, Subpart C Section 15.205/15.209	PASS

Remark:
NOTE: The test data refer to the report of No.RFBECO-WTW-P22120330-2.(The module's FCC ID:TLZ-AM497617)
Company Name and Address shown on Report, the sample(s) and sample Information were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

Model No.: reCamera 2002w 64GB, reCamera 2002w 8GB, reCamera Core 2002w 64GB, reCamera Core 2002w 8GB
Only the model reCamera Core 2002w 64GB was tested. The following description shows the difference between each model and the reCamera 2002w 64GB.

Model	EMMC	Difference description
reCamera 2002w 64GB	64GB	Normal
reCamera 2002w 8GB	8GB	The emmc sizes are different
reCamera Core 2002w 64GB	64GB	No lens board and interface board and supporting structural parts
reCamera Core 2002w 8GB	8GB	The emmc sizes are different and no lens board and interface board and supporting structural parts

4 General Information

4.1 Client Information

Applicant:	Seeed Technology Co., Ltd
Address of Applicant:	9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen
Manufacturer:	Seeed Technology Co., Ltd
Address of Manufacturer:	9F, G3 Building, TCL International E City, Zhongshanyuan Road, Nanshan District, Shenzhen
Factory:	Shenzhen Xinxian Technology Co.,Limited
Address of Factory:	F5, Building B17, Hengfeng Industrial City,No. 739 Zhoushi Rd, Baoan District, Shenzhen,Guangdong, P.R.C.

4.2 General Description of EUT

Product Name:	seeed studio reCamera 2002 Series	
Model No.:	reCamera 2002w 64GB, reCamera 2002w 8GB, reCamera Core 2002w 64GB, reCamera Core 2002w 8GB	
Test Model No.:	reCamera Core 2002w 64GB	
Trade Mark:	Seeed Studio	
Product Type:	☐ Mobile ☐ Portable ☒ Fixed Location	
Operation Frequency:	2402MHz~2480MHz	
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)	
Modulation Type:	GFSK, π/4DQPSK, 8DPSK	
Number of Channel:	79	
Hopping Channel Type:	Adaptive Frequency Hopping systems	
Antenna Type:	PIFA antenna	
Antenna Gain:	-1.06dBi	
Power Supply:	USB port:	DC 5.0V
Test Voltage:	DC 5.0V	
Sample Received Date:	Dec. 03, 2024	
Sample tested Date:	Dec. 03, 2024 to Dec. 13, 2024	

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel	2402MHz
The Middle channel	2441MHz
The Highest channel	2480MHz

4.3 Test Configuration

EUT Test Software Settings:	
Software:	MobaXterm_Personal_22.1.exe
EUT Power Grade:	Default (Power level is built-in set parameters and cannot be changed and selected)
Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.	

Mode	Channel	Frequency(MHz)
DH1/DH3/DH5	CH0	2402
	CH39	2441
	CH78	2480
2DH1/2DH3/2DH5	CH0	2402
	CH39	2441
	CH78	2480
3DH1/3DH3/3DH5	CH0	2402
	CH39	2441
	CH78	2480

4.4 Test Environment

Operating Environment:	
Radiated Spurious Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
Conducted 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 with associated equipment below.

1）support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Netbook	HP	DESKTOP-H31GDCQ	FCC&CE	CTI
AC adapter	MI	MDY-14-EU	FCC&CE	CTI

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	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-40GHz)
3	Radiated Spurious emission test	3.3dB (9kHz-30MHz)
		4.3dB (30MHz-1GHz)
		4.5dB (1GHz-18GHz)
		3.4dB (18GHz-40GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

4.8 Equipment List

Conducted disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Receiver	R&S	ESCI	100435	04-18-2024	04-17-2025
Temperature/ Humidity Indicator	Defu	TH128	/	04-25-2024	04-24-2025
LISN	R&S	ENV216	100098	09-19-2024	09-18-2025
Barometer	changchun	DYM3	1188	---	---
Test software	Fara	EZ-EMC	EMC-CON 3A1.1	---	---
Capacitive voltage probe	Schwarzbeck	CVP 9222C	00124	06-18-2024	06-17-2025
ISN	TESEQ	ISN T800	30297	12/14/2023 12/05/2024	12/13/2024 12/04/2025

3M Semi-anechoic Chamber (2)- Radiated disturbance Test					
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
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-618	05/22/2022	05/21/2025
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04/16/2024	04/15/2025
Microwave Preamplifier	Tonscend	EMC051845SE	980380	12/14/2023 12/05/2024	12/13/2024 12/04/2025
Horn Antenna	A.H.SYSTEMS	SAS-574	374	07/02/2023	07/01/2026
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04/16/2024	04/15/2025
Preamplifier	Agilent	11909A	12-1	03/22/2024	03/21/2025
Preamplifier	CD	PAP-1840-60	6041.6042	06/19/2024	06/18/2025
Test software	Fara	EZ-EMC	EMEC-3A1-Pre	---	---
Cable line	Fulai(7M)	SF106	5219/6A	05/22/2022	05/21/2025
Cable line	Fulai(6M)	SF106	5220/6A	05/22/2022	05/21/2025
Cable line	Fulai(3M)	SF106	5216/6A	05/22/2022	05/21/2025
Cable line	Fulai(3M)	SF106	5217/6A	05/22/2022	05/21/2025

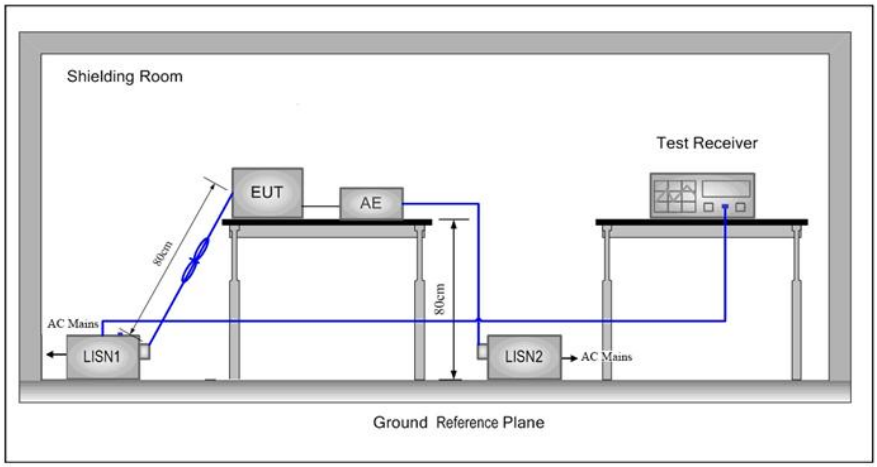
3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2024	01-08-2027
Receiver	Keysight	N9038A	MY57290136	01-09-2024	01-08-2025
Spectrum Analyzer	Keysight	N9020B	MY57111112	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 12-05-2024	12-13-2024 12-04-2025
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	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	05/22/2022	05/21/2025
Cable line	Times	EMC104-NMNM-1000	SN160710	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	05/22/2022	05/21/2025
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	05/22/2022	05/21/2025
Cable line	Times	HF160-KMKM-3.00M	393493-0001	05/22/2022	05/21/2025

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
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, 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. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
EUT Antenna:	Please see Internal photos
The antenna is PIFA antenna. The best case gain of the antenna is -1.06dBi.	

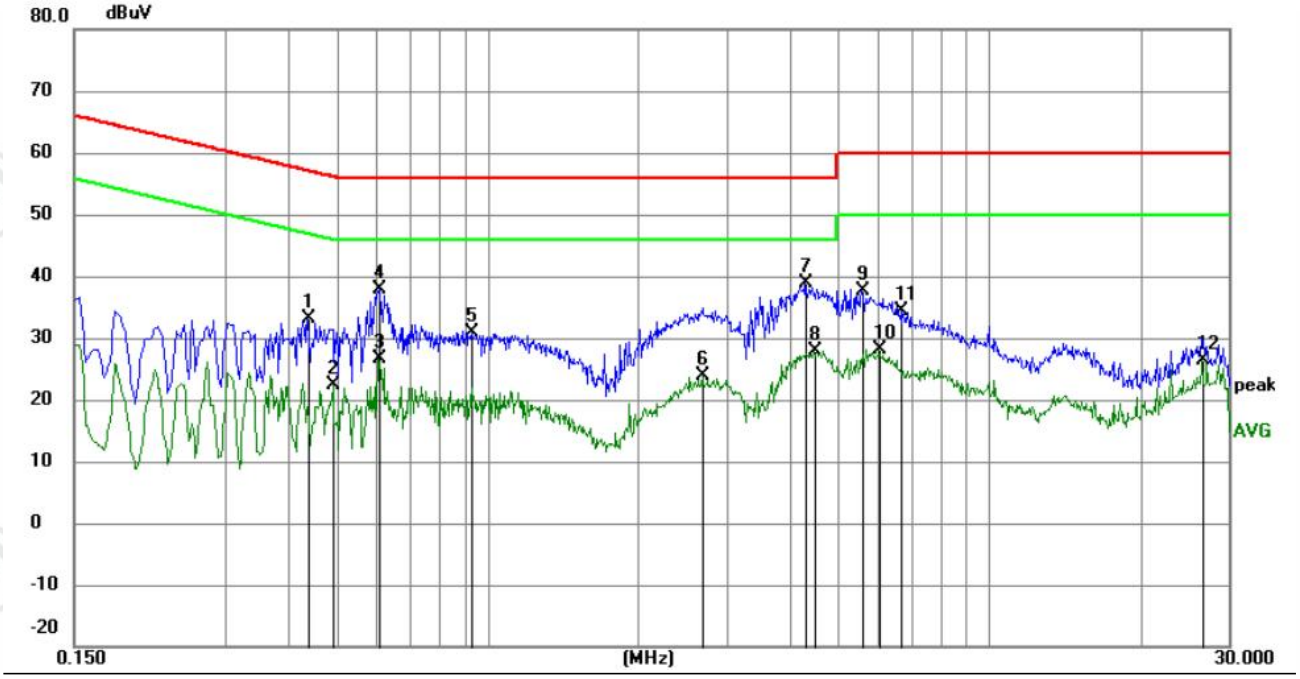
5.2 AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): 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.
Test Setup:	
Test Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of

	equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type at the lowest, middle, high channel.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation at the lowest channel is the worst case. Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Live line:

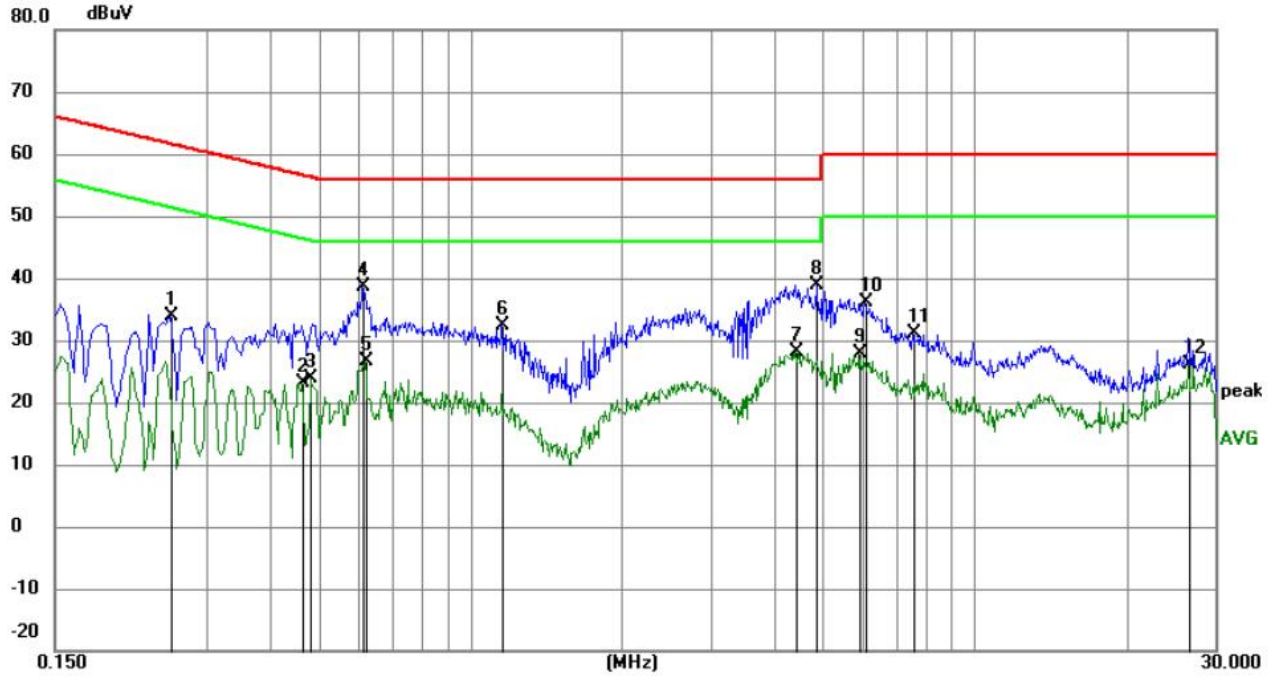


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4380	23.13	10.09	33.22	57.10	-23.88	QP	
2		0.4920	12.23	10.08	22.31	46.13	-23.82	AVG	
3		0.6045	16.42	10.10	26.52	46.00	-19.48	AVG	
4		0.6090	27.89	10.10	37.99	56.00	-18.01	QP	
5		0.9330	20.78	10.17	30.95	56.00	-25.05	QP	
6		2.6880	13.67	10.14	23.81	46.00	-22.19	AVG	
7	*	4.3080	28.68	10.09	38.77	56.00	-17.23	QP	
8		4.4925	17.92	10.08	28.00	46.00	-18.00	AVG	
9		5.5860	27.57	10.05	37.62	60.00	-22.38	QP	
10		6.0360	18.01	10.04	28.05	50.00	-21.95	AVG	
11		6.6840	24.30	10.03	34.33	60.00	-25.67	QP	
12		26.6100	16.50	9.81	26.31	50.00	-23.69	AVG	

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2535	23.64	10.17	33.81	61.64	-27.83	QP	
2		0.4650	13.12	10.08	23.20	46.60	-23.40	AVG	
3		0.4830	13.71	10.08	23.79	46.29	-22.50	AVG	
4		0.6134	28.49	10.10	38.59	56.00	-17.41	QP	
5		0.6180	16.42	10.11	26.53	46.00	-19.47	AVG	
6		1.1535	22.31	10.18	32.49	56.00	-23.51	QP	
7		4.4250	18.16	10.08	28.24	46.00	-17.76	AVG	
8	*	4.8659	28.89	10.06	38.95	56.00	-17.05	QP	
9		5.9055	17.93	10.05	27.98	50.00	-22.02	AVG	
10		6.0765	26.02	10.04	36.06	60.00	-23.94	QP	
11		7.5390	21.08	10.02	31.10	60.00	-28.90	QP	
12		26.6100	16.25	9.81	26.06	50.00	-23.94	AVG	

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Radiated Spurious Emission & Restricted bands

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Peak	100 kHz	300kHz	Peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10kHz	Average

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-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Setup:	

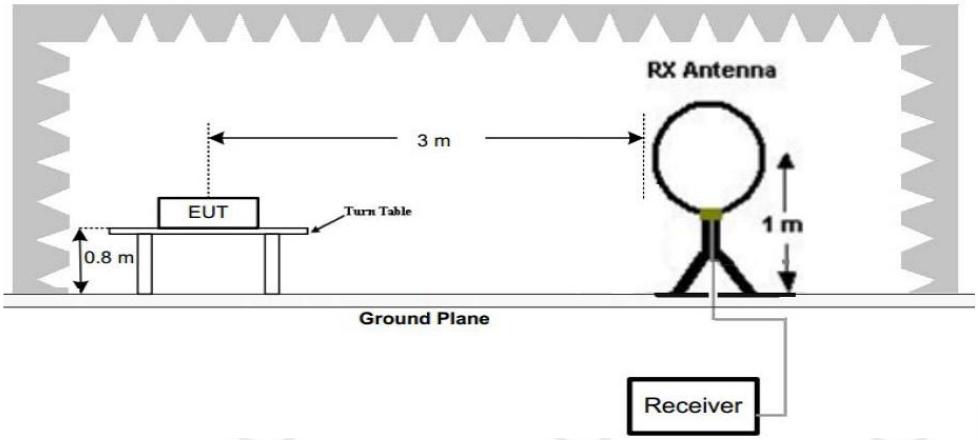


Figure 1. Below 30MHz

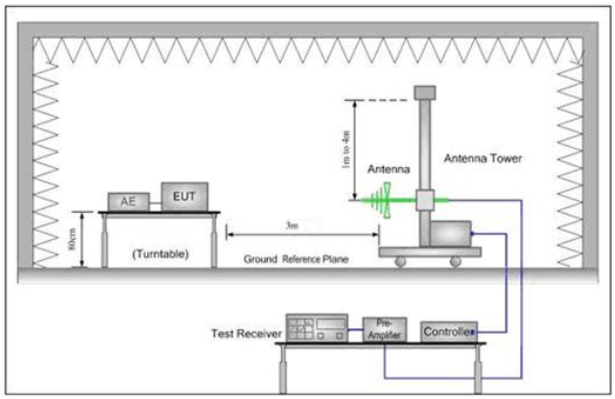


Figure 2. 30MHz to 1GHz

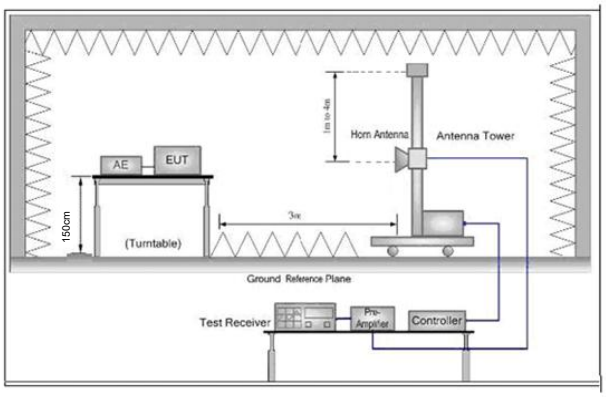


Figure 3. Above 1 GHz

Test Procedure:	a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 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. 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

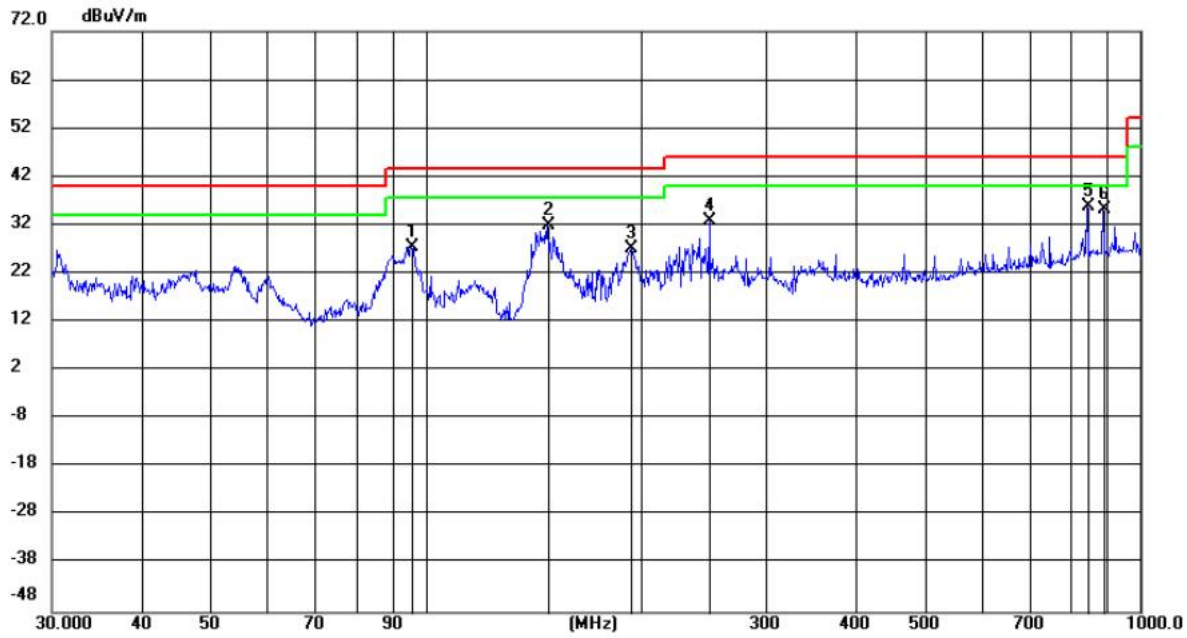
	measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel (2402MHz),the middle channel (2441MHz),the Highest channel (2480MHz) h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. Pretest the EUT at Transmitting mode, For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.
Test Results:	Pass

Radiated Spurious Emission below 1GHz:

During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes, only the worst case lowest channel of DH5 for GFSK was recorded in the report.

Horizontal:

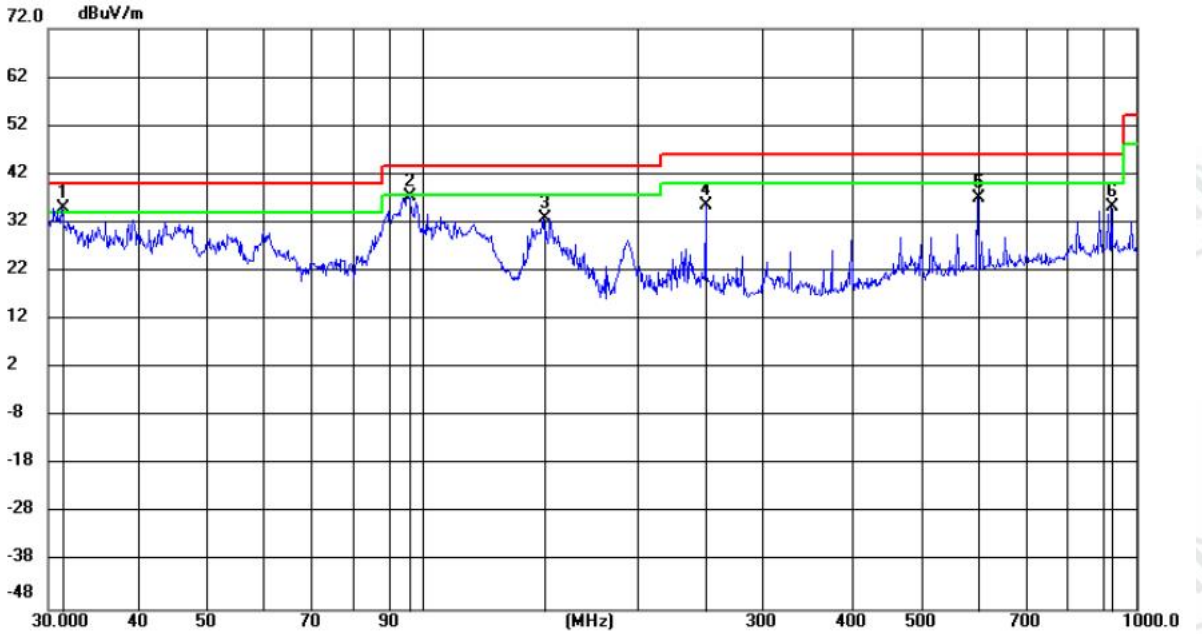
Test Graph



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		95.7118	15.03	12.53	27.56	43.50	-15.94	QP	200	179	
2		148.1290	22.79	9.17	31.96	43.50	-11.54	QP	200	39	
3		193.8407	15.02	12.11	27.13	43.50	-16.37	QP	100	352	
4		249.9941	18.61	14.26	32.87	46.00	-13.13	QP	200	7	
5	*	843.9032	10.84	25.12	35.96	46.00	-10.04	QP	100	96	
6		890.7277	9.49	25.79	35.28	46.00	-10.72	QP	100	245	

Vertical:

Test Graph



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	*	31.4653	22.66	12.44	35.10	40.00	-4.90	QP	100	169	
2		95.7958	24.91	12.54	37.45	43.50	-6.05	QP	100	147	
3		148.1290	23.68	9.17	32.85	43.50	-10.65	QP	100	115	
4		249.9942	21.21	14.26	35.47	46.00	-10.53	QP	100	83	
5		600.0573	14.70	22.26	36.96	46.00	-9.04	QP	100	190	
6		925.5940	9.07	26.07	35.14	46.00	-10.86	QP	100	40	

Radiated Spurious Emission above 1GHz:

Mode:		GFSK Transmitting				Channel:		2402 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1148.0099	10.35	38.95	49.30	74.00	24.70	Pass	H	PK
2	1640.576	11.95	37.77	49.72	74.00	24.28	Pass	H	PK
3	3203.0135	-14.45	62.03	47.58	74.00	26.42	Pass	H	PK
4	4290.086	-9.91	50.41	40.50	74.00	33.50	Pass	H	PK
5	5876.1917	-7.61	48.20	40.59	74.00	33.41	Pass	H	PK
6	7534.3023	-4.60	46.62	42.02	74.00	31.98	Pass	H	PK
7	1147.2098	10.32	39.06	49.38	74.00	24.62	Pass	V	PK
8	1620.8414	11.81	37.04	48.85	74.00	25.15	Pass	V	PK
9	3203.0135	-14.45	62.83	48.38	74.00	25.62	Pass	V	PK
10	4506.1004	-8.64	49.54	40.90	74.00	33.10	Pass	V	PK
11	6113.2075	-5.96	47.08	41.12	74.00	32.88	Pass	V	PK
12	7956.3304	-2.15	44.36	42.21	74.00	31.79	Pass	V	PK

Mode:		GFSK Transmitting				Channel:		2441 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1135.209	9.93	38.91	48.84	74.00	25.16	Pass	H	PK
2	1613.3742	11.75	37.64	49.39	74.00	24.61	Pass	H	PK
3	3255.017	-14.01	63.01	49.00	74.00	25.00	Pass	H	PK
4	4244.0829	-10.88	50.04	39.16	74.00	34.84	Pass	H	PK
5	5798.1865	-7.51	47.67	40.16	74.00	33.84	Pass	H	PK
6	7609.3073	-3.69	45.94	42.25	74.00	31.75	Pass	H	PK
7	1171.7448	9.69	38.72	48.41	74.00	25.59	Pass	V	PK
8	1651.7768	12.05	38.46	50.51	74.00	23.49	Pass	V	PK
9	3255.017	-14.01	62.86	48.85	74.00	25.15	Pass	V	PK
10	4495.0997	-8.88	48.54	39.66	74.00	34.34	Pass	V	PK
11	6395.2263	-5.47	46.96	41.49	74.00	32.51	Pass	V	PK
12	9047.4032	0.36	44.93	45.29	74.00	28.71	Pass	V	PK

Mode:		GFSK Transmitting				Channel:		2480 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1172.0115	9.68	38.48	48.16	74.00	25.84	Pass	H	PK
2	1605.507	11.69	38.31	50.00	74.00	24.00	Pass	H	PK
3	3307.0205	-13.24	62.16	48.92	74.00	25.08	Pass	H	PK
4	4484.0989	-9.94	50.08	40.14	74.00	33.86	Pass	H	PK
5	6537.2358	-6.12	46.22	40.10	74.00	33.90	Pass	H	PK
6	9111.4074	0.11	44.80	44.91	74.00	29.09	Pass	H	PK
7	1149.7433	10.40	38.22	48.62	74.00	25.38	Pass	V	PK
8	1592.9729	11.55	36.88	48.43	74.00	25.57	Pass	V	PK
9	3307.0205	-13.24	61.88	48.64	74.00	25.36	Pass	V	PK
10	4396.0931	-10.24	49.43	39.19	74.00	34.81	Pass	V	PK
11	6300.22	-6.75	47.18	40.43	74.00	33.57	Pass	V	PK
12	8751.3834	-0.85	44.31	43.46	74.00	30.54	Pass	V	PK

Mode:		π/4DQPSK Transmitting				Channel:		2402 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1154.0103	10.27	38.99	49.26	74.00	24.74	Pass	H	PK
2	1663.3776	12.26	37.38	49.64	74.00	24.36	Pass	H	PK
3	3203.0135	-14.45	62.61	48.16	74.00	25.84	Pass	H	PK
4	4691.1127	-9.23	49.16	39.93	74.00	34.07	Pass	H	PK
5	6692.2462	-5.57	45.96	40.39	74.00	33.61	Pass	H	PK
6	9289.4193	1.35	44.46	45.81	74.00	28.19	Pass	H	PK
7	1174.6783	9.59	38.28	47.87	74.00	26.13	Pass	V	PK
8	1613.5076	11.75	37.47	49.22	74.00	24.78	Pass	V	PK
9	3203.0135	-14.45	61.89	47.44	74.00	26.56	Pass	V	PK
10	4322.0881	-10.88	50.33	39.45	74.00	34.55	Pass	V	PK
11	6160.2107	-6.57	47.64	41.07	74.00	32.93	Pass	V	PK
12	8432.3622	-2.50	45.38	42.88	74.00	31.12	Pass	V	PK

Mode:		π/4DQPSK Transmitting				Channel:		2441 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1129.742	9.74	38.19	47.93	74.00	26.07	Pass	H	PK
2	1701.5134	12.92	37.30	50.22	74.00	23.78	Pass	H	PK
3	3255.017	-14.01	63.46	49.45	74.00	24.55	Pass	H	PK
4	4830.122	-10.40	50.08	39.68	74.00	34.32	Pass	H	PK
5	6901.2601	-4.11	45.63	41.52	74.00	32.48	Pass	H	PK
6	10043.4696	3.57	41.95	45.52	74.00	28.48	Pass	H	PK
7	1148.1432	10.35	37.96	48.31	74.00	25.69	Pass	V	PK
8	1621.6414	11.81	37.66	49.47	74.00	24.53	Pass	V	PK
9	3255.017	-14.01	63.39	49.38	74.00	24.62	Pass	V	PK
10	4685.1123	-9.42	49.34	39.92	74.00	34.08	Pass	V	PK
11	6791.2528	-5.10	46.33	41.23	74.00	32.77	Pass	V	PK
12	10040.4694	3.45	42.42	45.87	74.00	28.13	Pass	V	PK

Mode:		π/4DQPSK Transmitting				Channel:		2480 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1152.6768	10.32	38.12	48.44	74.00	25.56	Pass	H	PK
2	1640.7094	11.95	38.42	50.37	74.00	23.63	Pass	H	PK
3	3307.0205	-13.24	61.69	48.45	74.00	25.55	Pass	H	PK
4	4893.1262	-9.59	48.37	38.78	74.00	35.22	Pass	H	PK
5	6681.2454	-5.94	46.94	41.00	74.00	33.00	Pass	H	PK
6	10135.4757	1.75	43.56	45.31	74.00	28.69	Pass	H	PK
7	1171.7448	9.69	38.74	48.43	74.00	25.57	Pass	V	PK
8	1652.5768	12.07	37.53	49.60	74.00	24.40	Pass	V	PK
9	3307.0205	-13.24	62.82	49.58	74.00	24.42	Pass	V	PK
10	4503.1002	-8.52	48.88	40.36	74.00	33.64	Pass	V	PK
11	6312.2208	-6.89	48.43	41.54	74.00	32.46	Pass	V	PK
12	9582.4388	1.93	43.35	45.28	74.00	28.72	Pass	V	PK

Mode:		8DPSK Transmitting				Channel:		2402 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1172.0115	9.68	38.22	47.90	74.00	26.10	Pass	H	PK
2	1715.1143	12.96	37.09	50.05	74.00	23.95	Pass	H	PK
3	3203.0135	-14.45	62.66	48.21	74.00	25.79	Pass	H	PK
4	4855.1237	-10.27	49.68	39.41	74.00	34.59	Pass	H	PK
5	6905.2604	-4.26	46.75	42.49	74.00	31.51	Pass	H	PK
6	9601.4401	2.65	43.53	46.18	74.00	27.82	Pass	H	PK
7	1156.2771	10.21	37.53	47.74	74.00	26.26	Pass	V	PK
8	1681.3788	12.59	38.07	50.66	74.00	23.34	Pass	V	PK
9	3203.0135	-14.45	62.37	47.92	74.00	26.08	Pass	V	PK
10	4302.0868	-9.82	50.14	40.32	74.00	33.68	Pass	V	PK
11	5951.1967	-6.53	46.86	40.33	74.00	33.67	Pass	V	PK
12	9638.4426	2.19	43.79	45.98	74.00	28.02	Pass	V	PK

Mode:		8DPSK Transmitting				Channel:		2441 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1172.1448	9.68	38.28	47.96	74.00	26.04	Pass	H	PK
2	1687.2458	12.69	36.98	49.67	74.00	24.33	Pass	H	PK
3	3255.017	-14.01	63.06	49.05	74.00	24.95	Pass	H	PK
4	4882.1255	-9.79	48.83	39.04	74.00	34.96	Pass	H	PK
5	7083.2722	-5.17	46.67	41.50	74.00	32.50	Pass	H	PK
6	9808.4539	3.28	43.69	46.97	74.00	27.03	Pass	H	PK
7	1172.0115	9.68	38.73	48.41	74.00	25.59	Pass	V	PK
8	1640.4427	11.95	37.55	49.50	74.00	24.50	Pass	V	PK
9	3255.017	-14.01	62.75	48.74	74.00	25.26	Pass	V	PK
10	4699.1133	-8.98	49.11	40.13	74.00	33.87	Pass	V	PK
11	6687.2458	-5.74	46.49	40.75	74.00	33.25	Pass	V	PK
12	9611.4408	2.52	43.74	46.26	74.00	27.74	Pass	V	PK

Mode:		8DPSK Transmitting				Channel:		2480 MHz	
NO	Freq. [MHz]	Factor [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	1172.0115	9.68	38.31	47.99	74.00	26.01	Pass	H	PK
2	1619.908	11.80	37.29	49.09	74.00	24.91	Pass	H	PK
3	3307.0205	-13.24	62.38	49.14	74.00	24.86	Pass	H	PK
4	4662.1108	-10.14	49.61	39.47	74.00	34.53	Pass	H	PK
5	6205.2137	-6.91	46.98	40.07	74.00	33.93	Pass	H	PK
6	9152.4102	0.32	45.00	45.32	74.00	28.68	Pass	H	PK
7	1171.8781	9.69	39.47	49.16	74.00	24.84	Pass	V	PK
8	1607.6405	11.71	37.95	49.66	74.00	24.34	Pass	V	PK
9	3307.0205	-13.24	62.24	49.00	74.00	25.00	Pass	V	PK
10	4296.0864	-9.79	51.14	41.35	74.00	32.65	Pass	V	PK
11	5875.1917	-7.59	47.94	40.35	74.00	33.65	Pass	V	PK
12	8725.3817	-1.26	44.89	43.63	74.00	30.37	Pass	V	PK

Remark:

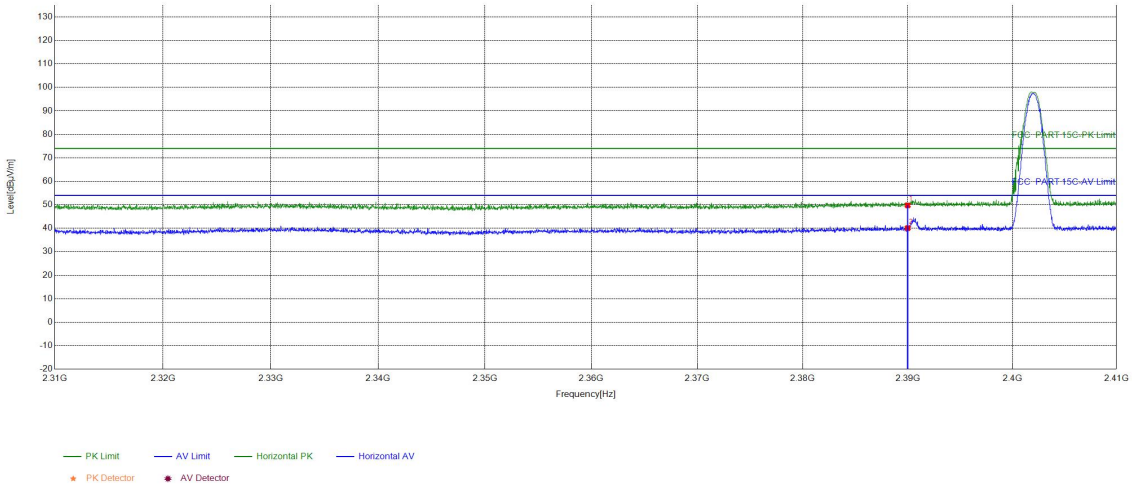
1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
2) Scan from 9kHz to 25GHz, the disturbance above 10GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

Restricted bands:

Test plot as follows:

EUT_Name		Test_Model	
Test_Mode	GFSK Transmitting	Test_Frequency	2402MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

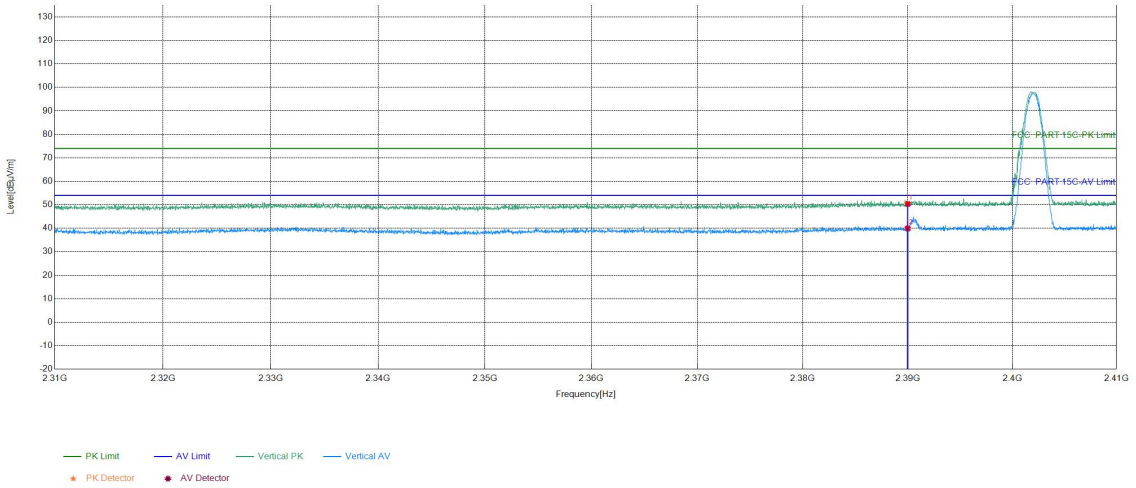
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	34.43	49.74	74.00	24.26	PASS	Horizontal	PK
2	2390	15.31	24.75	40.06	54.00	13.94	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	GFSK Transmitting	Test_Frequency	2402MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

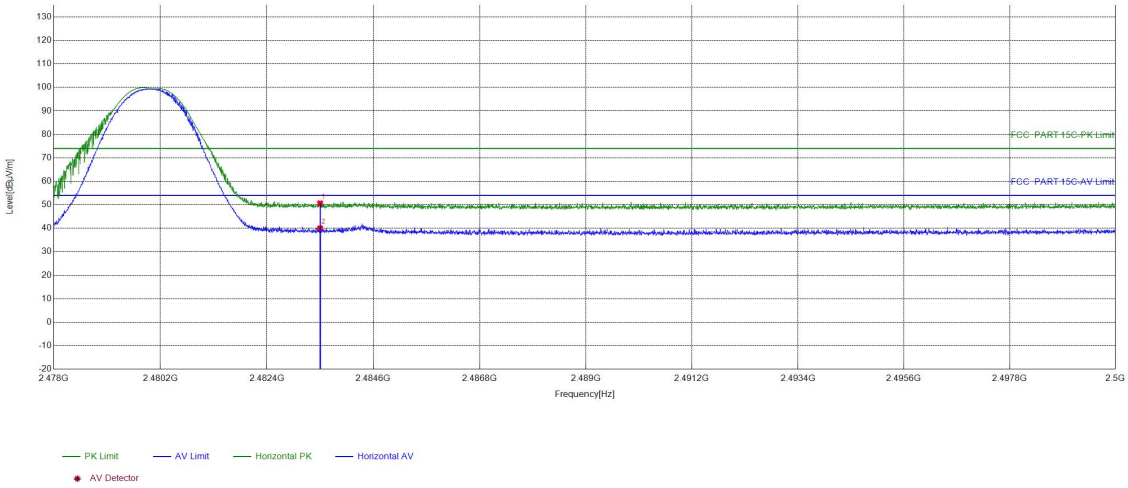
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	35.05	50.36	54.00	3.64	PASS	Vertical	PK
2	2390	15.31	24.61	39.92	54.00	14.08	PASS	Vertical	AV

EUT_Name		Test_Model	
Test_Mode	GFSK Transmitting	Test_Frequency	2480MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

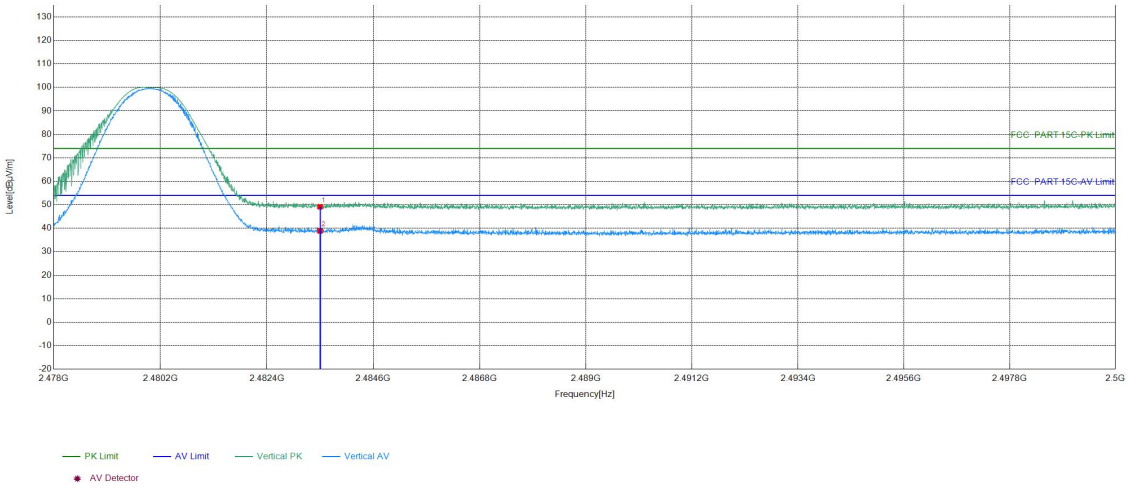
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	35.51	50.67	74.00	23.33	PASS	Horizontal	PK
2	2483.5	15.16	24.84	40.00	54.00	14.00	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	GFSK Transmitting	Test_Frequency	2480MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

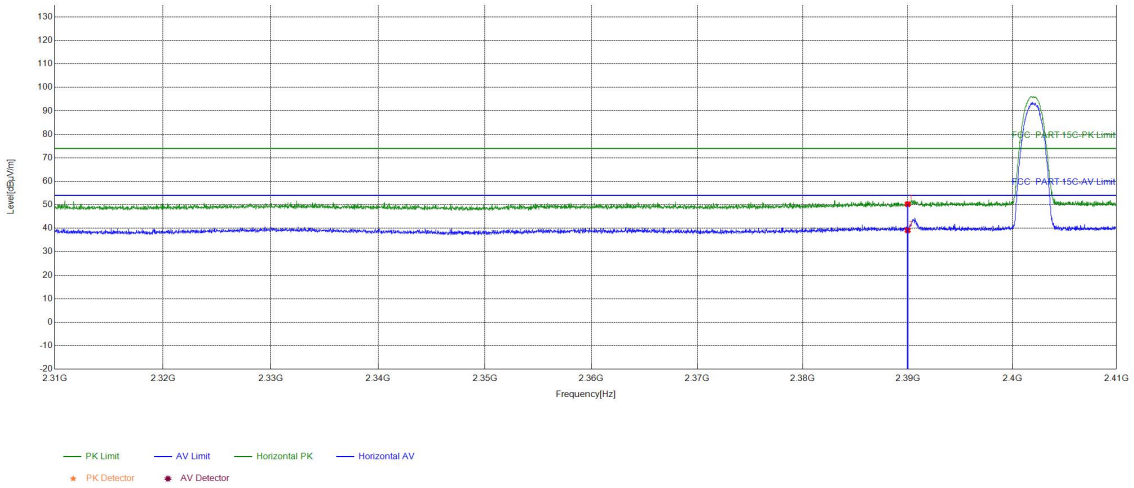
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	33.99	49.15	74.00	24.85	PASS	Vertical	PK
2	2483.5	15.16	23.69	38.85	54.00	15.15	PASS	Vertical	AV

EUT_Name		Test_Model	
Test_Mode	GFSK Transmitting	Test_Frequency	2402MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

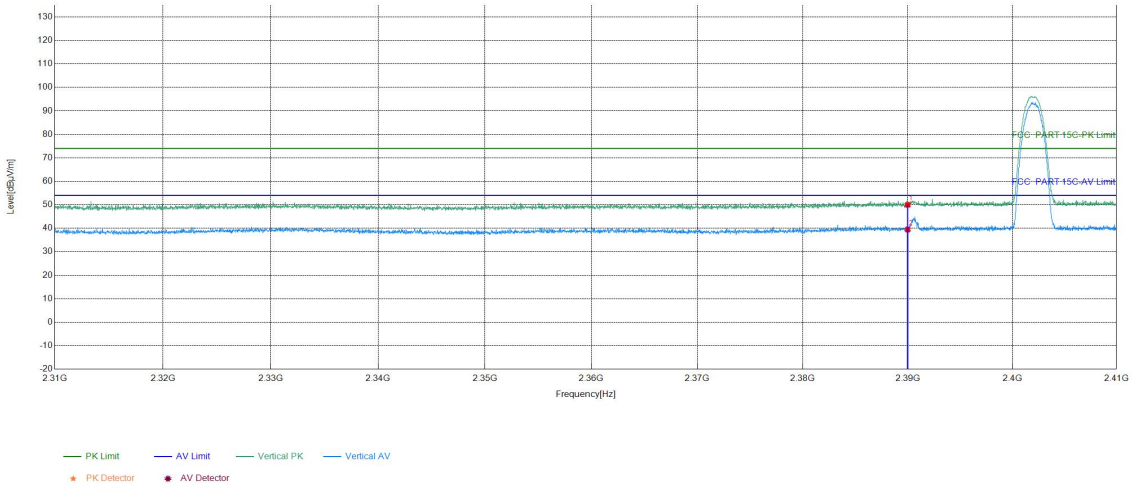
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	34.96	50.27	74.00	23.73	PASS	Horizontal	PK
2	2390	15.31	23.85	39.16	54.00	14.84	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	GFSK Transmitting	Test_Frequency	2402MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

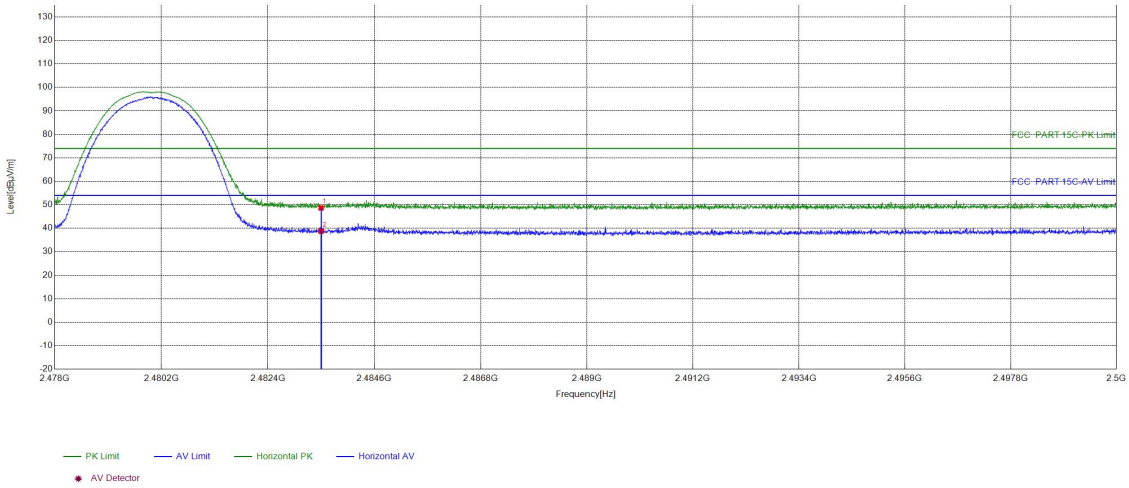
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	34.67	49.98	74.00	24.02	PASS	Vertical	PK
2	2390	15.31	24.15	39.46	54.00	14.54	PASS	Vertical	AV

EUT_Name		Test_Model	
Test_Mode	π/4DQPSK Transmitting	Test_Frequency	2480MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

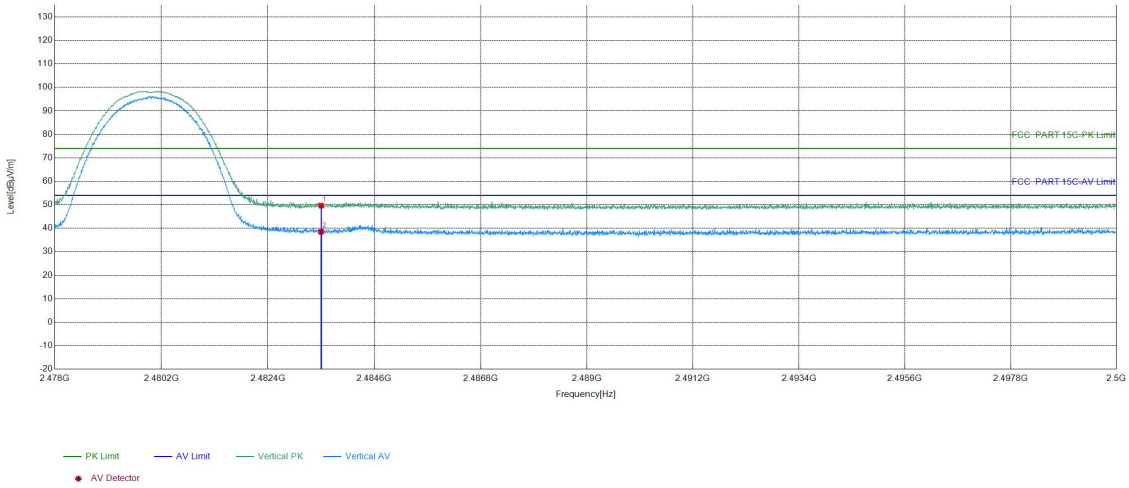
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	33.51	48.67	74.00	25.33	PASS	Horizontal	PK
2	2483.5	15.16	23.60	38.76	54.00	15.24	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	π/4DQPSK Transmitting	Test_Frequency	2480MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

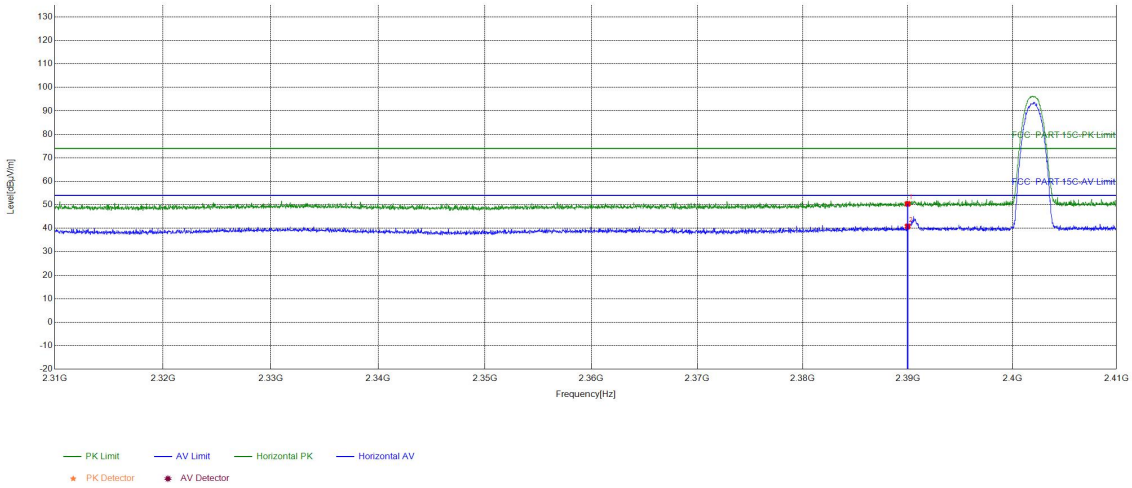
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	34.55	49.71	74.00	24.29	PASS	Vertical	PK
2	2483.5	15.16	23.33	38.49	54.00	15.51	PASS	Vertical	AV

EUT_Name		Test_Model	
Test_Mode	8DPSK Transmitting	Test_Frequency	2402MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

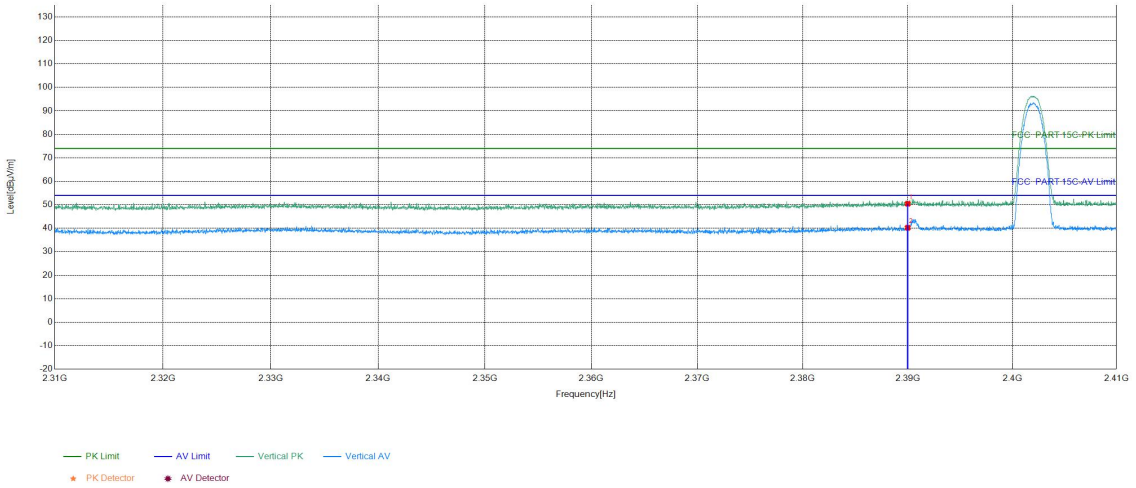
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	35.08	50.39	74.00	23.61	PASS	Horizontal	PK
2	2390	15.31	25.49	40.80	54.00	13.20	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	8DPSK Transmitting	Test_Frequency	2402MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

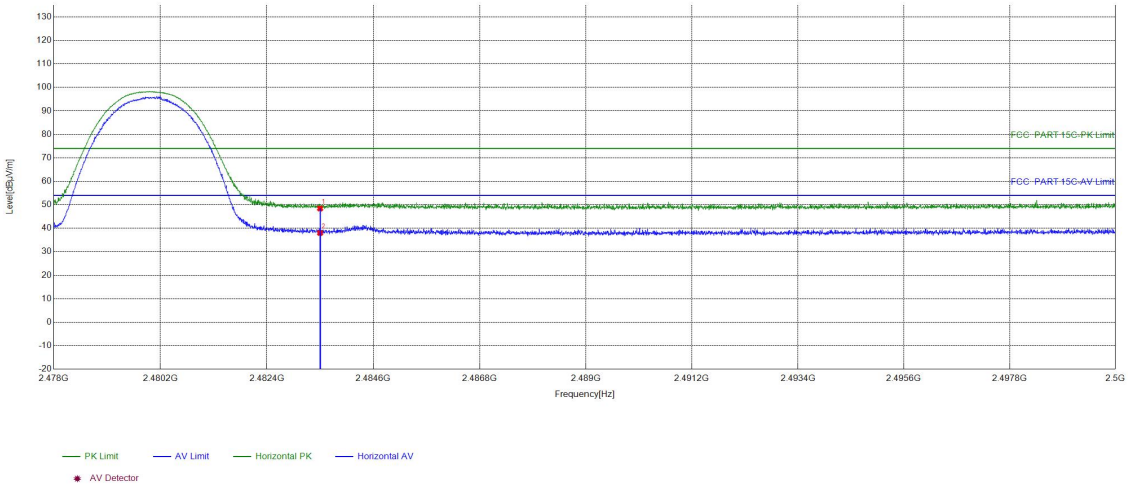
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2390	15.31	35.13	50.44	74.00	23.56	PASS	Vertical	PK
2	2390	15.31	24.91	40.22	54.00	13.78	PASS	Vertical	AV

EUT_Name		Test_Model	
Test_Mode	8DPSK Transmitting	Test_Frequency	2480MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

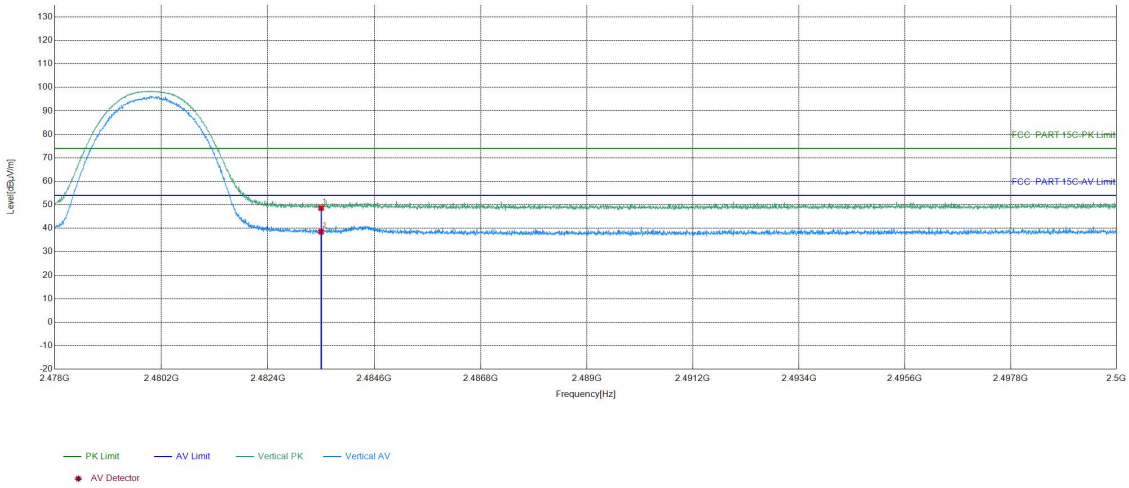
Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	33.27	48.43	74.00	25.57	PASS	Horizontal	PK
2	2483.5	15.16	22.84	38.00	54.00	16.00	PASS	Horizontal	AV

EUT_Name		Test_Model	
Test_Mode	8DPSK Transmitting	Test_Frequency	2480MHz
Tset_Engineer	Aiden.wang	Test_Date	2024/12/11
Remark	23.5°C56.9%\		

Test Graph



Suspected List									
NO	Freq. [MHz]	Factor [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	2483.5	15.16	33.45	48.61	74.00	25.39	PASS	Vertical	PK
2	2483.5	15.16	23.37	38.53	54.00	15.47	PASS	Vertical	AV

Note:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading - Correct Factor
Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

7 PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32Q81957301 for EUT external and internal photos.

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***