

FCC Test Report

Client Name : Xiamen Milesight IoT Co., Ltd.

Client Address : Building C09, Software Park Phase III,
Xiamen 361024, Fujian, China

Product Name : 3D ToF People Counting Sensor

Report Date : Oct. 21, 2022

Shenzhen Anbotek Compliance Laboratory Limited



Contents

1. General Information	6
1.1. Client Information	6
1.2. Description of Device (EUT)	6
1.3. Auxiliary Equipment Used During Test	7
1.4. Description of Test Configuration	7
1.5. Description Of Test Setup	8
1.6. Test Equipment List	9
1.7. Measurement Uncertainty	10
1.8. Description of Test Facility	10
2. Summary of Test Results	11
3. Conducted Emission Test	12
3.1. Test Standard and Limit	12
3.2. Test Setup	12
3.3. Test Procedure	12
3.4. Test Data	12
4. Radiation Spurious Emission and Band Edge	15
4.1. Test Standard and Limit	15
4.2. Test Setup	15
4.3. Test Procedure	16
4.4. Test Data	17
5. Maximum Peak Output Power Test	23
5.1. Test Standard and Limit	23
5.2. Test Setup	23
5.3. Test Procedure	23
5.4. Test Data	23
6. 6DB Occupy Bandwidth Test	25
6.1. Test Standard and Limit	25
6.2. Test Setup	25
6.3. Test Procedure	25
6.4. Test Data	25
7. Power Spectral Density Test	27
7.1. Test Standard and Limit	27
7.2. Test Setup	27
7.3. Test Procedure	27
7.4. Test Data	27
8. 100kHz Bandwidth of Frequency Band Edge Requirement	29



8.1. Test Standard and Limit	29
8.2. Test Setup	29
8.3. Test Procedure	29
8.4. Test Data	29
9. Antenna Requirement	34
9.1. Test Standard and Requirement	34
9.2. Antenna Connected Construction	34
APPENDIX I -- TEST SETUP PHOTOGRAPH	35
APPENDIX II -- EXTERNAL PHOTOGRAPH	35
APPENDIX III -- INTERNAL PHOTOGRAPH	35



TEST REPORT

Applicant : Xiamen Milesight IoT Co., Ltd.
Manufacturer : Xiamen Milesight IoT Co., Ltd.
Product Name : 3D ToF People Counting Sensor
Model No. : VS132-915M, VS132-9M, VS132-915M(AS923), VS132-915M[AS923],
NF132-915M
Trade Mark : Milesight
Rating(s) : Input: 12V= 2A

Test Standard(s) : FCC Part15 Subpart, Section 15.247

Test Method(s) : ANSI C63.10: 2020, KDB558074 D01 DTS Meas Guidance v05r02

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of receipt

Sept. 19, 2022

Date of Test

Sept. 19~28, 2022

Prepared By

Ella Liang

(Ella Liang)

Approved & Authorized Signer

Kingkong Jin

(Kingkong Jin)



Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Oct. 21, 2022



1. General Information

1.1. Client Information

Applicant	:	Xiamen Milesight IoT Co., Ltd.
Address	:	Building C09, Software Park Phase III, Xiamen 361024, Fujian, China
Manufacturer	:	Xiamen Milesight IoT Co., Ltd.
Address	:	Building C09, Software Park Phase III, Xiamen 361024, Fujian, China
Factory	:	Xiamen Milesight IoT Co., Ltd.
Address	:	Factory 401 & 501, No. 890, Tong Long Er Road, Factory Area, Xiamen Torch Development Zone for High Tech Industries (Xiang'an)

1.2. Description of Device (EUT)

Product Name	:	3D ToF People Counting Sensor
Model No.	:	VS132-915M, VS132-9M, VS132-915M(AS923), VS132-915M[AS923], NF132-915M (Note: All samples are the same except the model number, so we prepare "VS132-915M" for test only.)
Trade Mark	:	Milesight
Test Power Supply	:	AC 120V, 60Hz for adapter
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	MODEL:FJ-SW126G1202000N INPUT:100-240V~50/60Hz 0.6A Max OUTPUT:12V= 2000mA

RF Specification

Support Technology	:	☒ LoRa
Operation Mode	:	☒ DSSS ☐ FHSS
Support Bandwidth	:	☐ 125KHz ☐ 250KHz ☒ 500KHz
Operation Frequency	:	902~928MHz
Number of Channel	:	13 Channels
Modulation Type	:	LoRa Chirp Spread Spectrum
Antenna Type	:	PCB antenna
Antenna Gain(Peak)	:	-15.65 dBi

Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
--	--

1.4. Description of Test Configuration

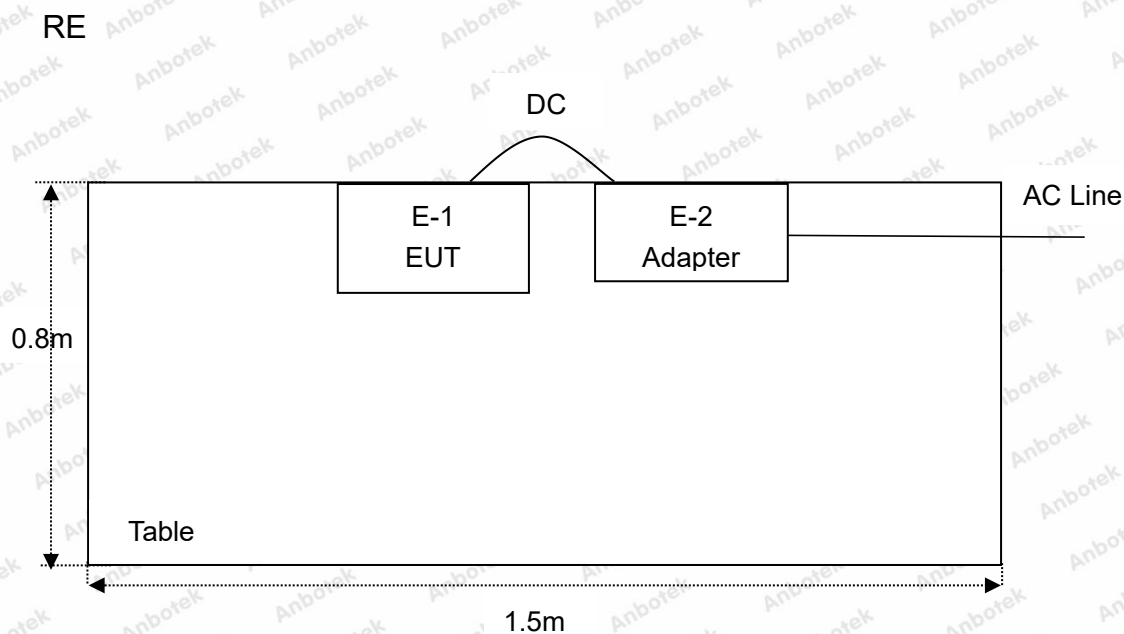
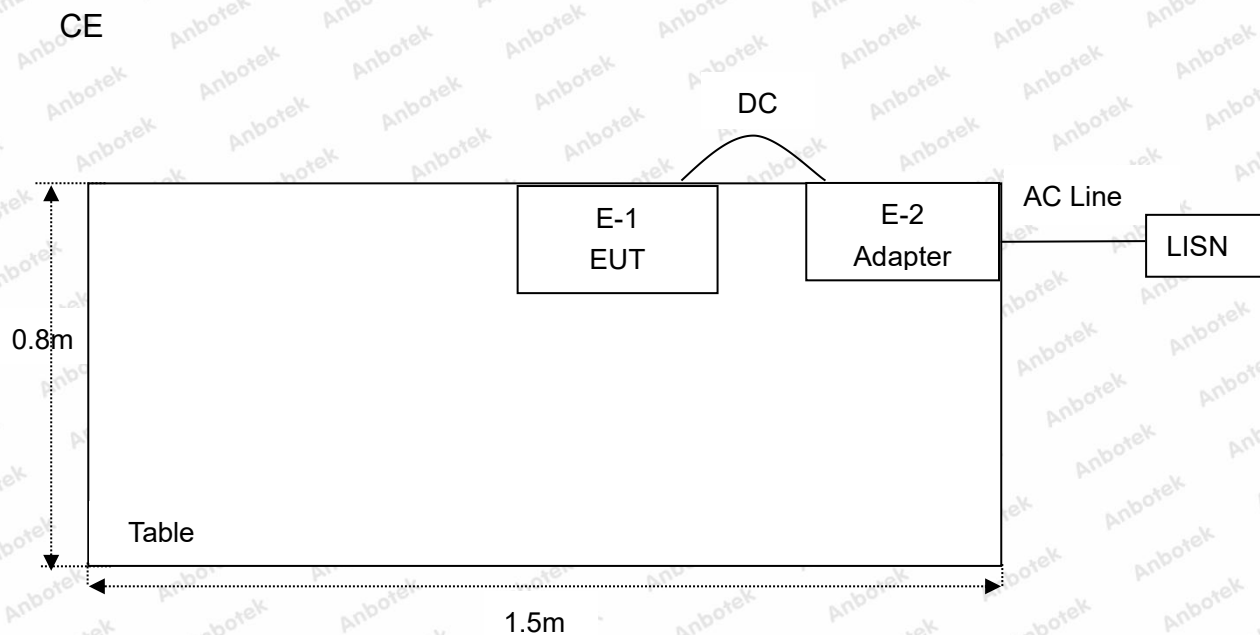
Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	903.0	9	923.3
2	904.6	10	923.9
3	906.2	11	924.5
4	907.8	12	925.1
5	909.4	13	925.7
6	911.0		
7	912.6		
8	914.2		

Note:

1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
2. EUT was tested with Channel 1, 7 and 13.



1.5. Description Of Test Setup



1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Schwarzbeck	NSLK 8127	8127386	Sept. 7, 2022	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Sept. 7, 2022	1 Year
3.	Spectrum Analysis	Keysight	N9020A	MY53100616	Nov.11 , 2021	1 Year
4.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Oct. 25, 2021	1 Year
5.	Pre-amplifier	EMtrace	RP01A	50017	Sept. 7, 2022	1 Year
6.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 02, 2020	2 Year
7.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	01417	Nov. 02, 2020	2 Year
8.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 02, 2020	2 Year
9.	Test Software	Ferrari Technology	EZ-EMC	N/A	N/A	N/A
10.	Switch box	Meike	/	/	Nov. 10, 2021	1 Year
11.	Power Sensor box	Meike	/	/	Oct. 23, 2021	1 Year
12.	MXG RF Vector Signal Generator	Agilent	N5182A	MY47420822	Feb. 28, 2022	1 Year
13.	Signal Generator	Agilent	E4425B	GB39340038	Oct. 23, 2021	1 Year
14.	DC Power Supply	Longwei	TPR-6420D	020215240	N/A	N/A



1.7. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Horizontal)
		Ur = 3.8 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4 dB

1.8. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102



2. Summary of Test Results

Standard Section	Test Item	Result
15.203/15.247(c)	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.205/15.209	Spurious Emission	PASS
15.247(b)(3)	Conducted Peak Output Power	PASS
15.247(a)(2)	6dB Occupied Bandwidth	PASS
15.247(e)	Power Spectral Density	PASS
15.247(d)	Band Edge	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		



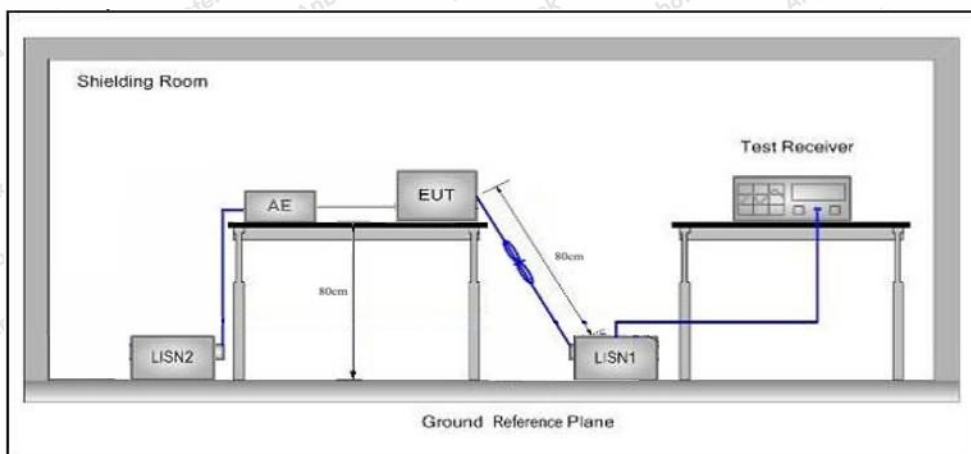
3. Conducted Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50

Remark: (1) *Decreasing linearly with logarithm of the frequency.
(2) The lower limit shall apply at the transition frequency.

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10: 2020 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

During the test, pre-scan all modes, and found the Low CH (903.0MHz) which is the worst case, only the worst case is recorded in the report.

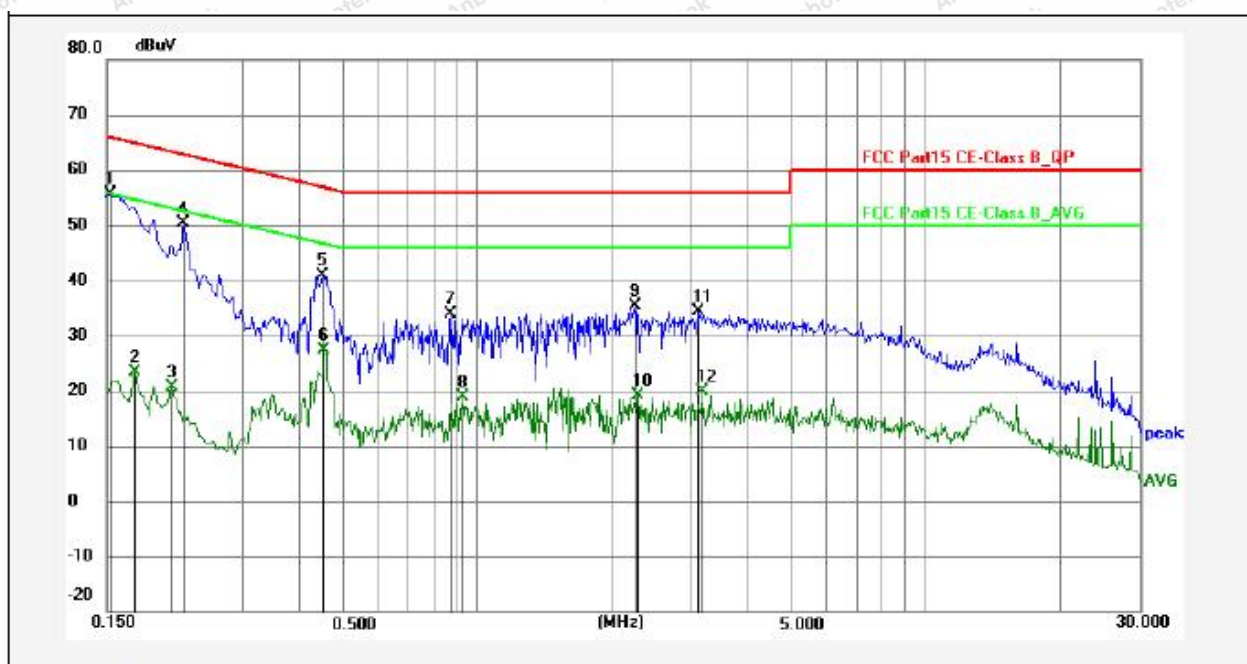
AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/60Hz modes, recorded worst case AC 120V/60Hz.

Please to see the following pages.



Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Low CH (903.0MHz)
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Temp.(°C)/Hum.(%RH): 25.6°C/54%RH

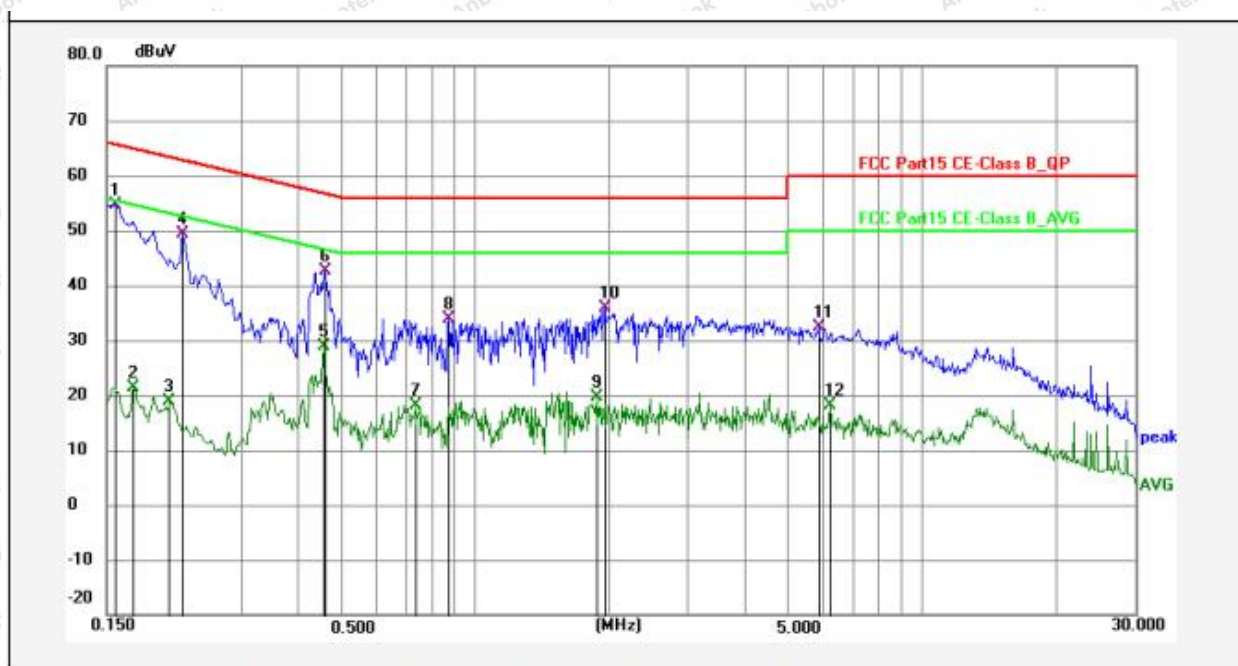


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1524	54.84	0.77	55.61	65.87	-10.26	peak	
2	0.1723	22.61	0.76	23.37	54.85	-31.48	AVG	
3	0.2084	19.94	0.75	20.69	53.27	-32.58	AVG	
4	0.2220	49.70	0.76	50.46	62.74	-12.28	peak	
5	0.4515	40.11	0.79	40.90	56.85	-15.95	peak	
6	0.4560	26.64	0.79	27.43	46.77	-19.34	AVG	
7	0.8745	33.15	0.79	33.94	56.00	-22.06	peak	
8	0.9375	18.02	0.79	18.81	46.00	-27.19	AVG	
9	2.2559	34.45	0.82	35.27	56.00	-20.73	peak	
10	2.2964	18.38	0.82	19.20	46.00	-26.80	AVG	
11	3.1379	33.58	0.83	34.41	56.00	-21.59	peak	
12	3.1875	19.07	0.83	19.90	46.00	-26.10	AVG	



Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: Low CH (903.0MHz)
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Temp.(°C)/Hum.(%RH): 25.6°C/54%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1572	53.83	0.77	54.60	65.61	-11.01	QP	
2	0.1720	20.70	0.76	21.46	54.86	-33.40	AVG	
3	0.2071	18.15	0.75	18.90	53.32	-34.42	AVG	
4	0.2220	48.70	0.76	49.46	62.74	-13.28	QP	
5	0.4586	28.00	0.79	28.79	46.72	-17.93	AVG	
6	0.4605	41.72	0.79	42.51	56.68	-14.17	QP	
7	0.7347	17.25	0.78	18.03	46.00	-27.97	AVG	
8	0.8745	33.15	0.79	33.94	56.00	-22.06	QP	
9	1.8730	18.82	0.81	19.63	46.00	-26.37	AVG	
10	1.9590	35.10	0.81	35.91	56.00	-20.09	QP	
11	5.8875	31.59	0.86	32.45	60.00	-27.55	QP	
12	6.2339	17.17	0.85	18.02	50.00	-31.98	AVG	



4. Radiation Spurious Emission and Band Edge

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.209 and 15.205				
Test Limit	Frequency (MHz)	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	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	74.0	Peak	3

Remark:

(1)The lower limit shall apply at the transition frequency.

(2) 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.

4.2. Test Setup

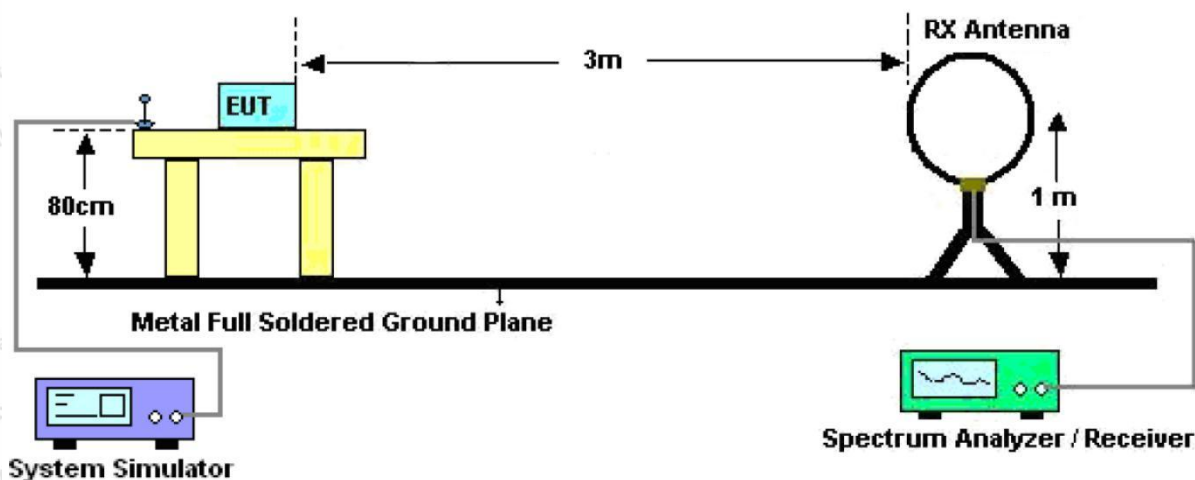


Figure 1. Below 30MHz



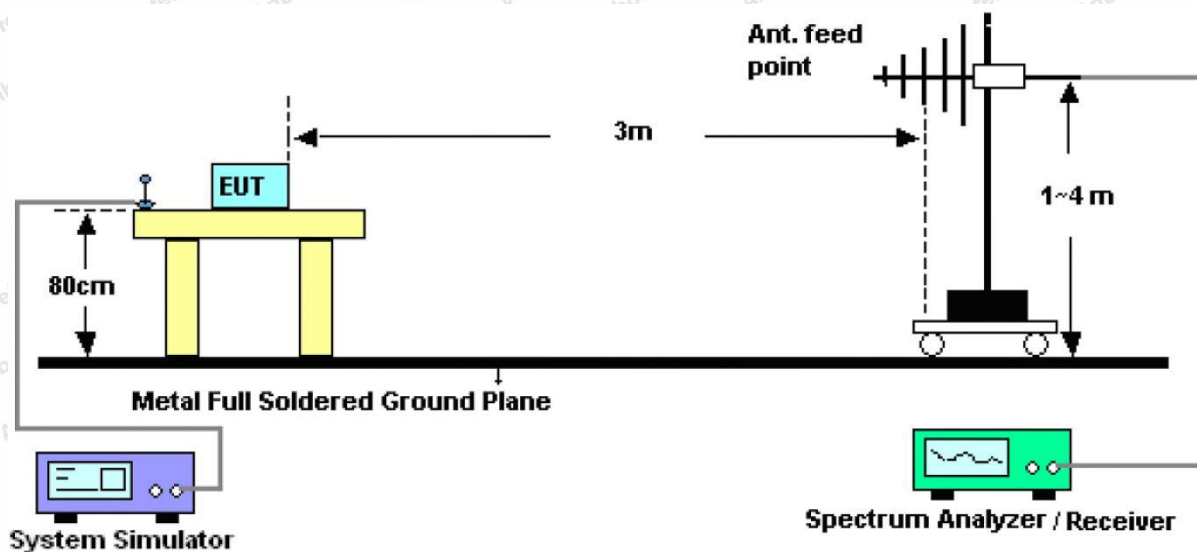


Figure 2. 30MHz to 1GHz

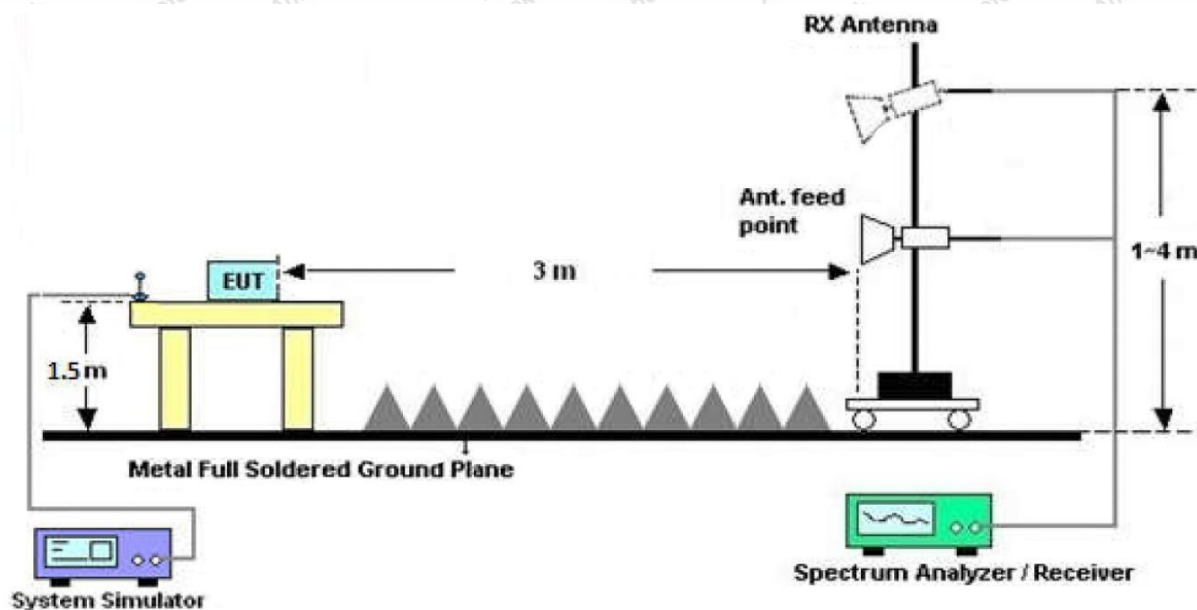


Figure 3. Above 1 GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.



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.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz, Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

4.4. Test Data

PASS

During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

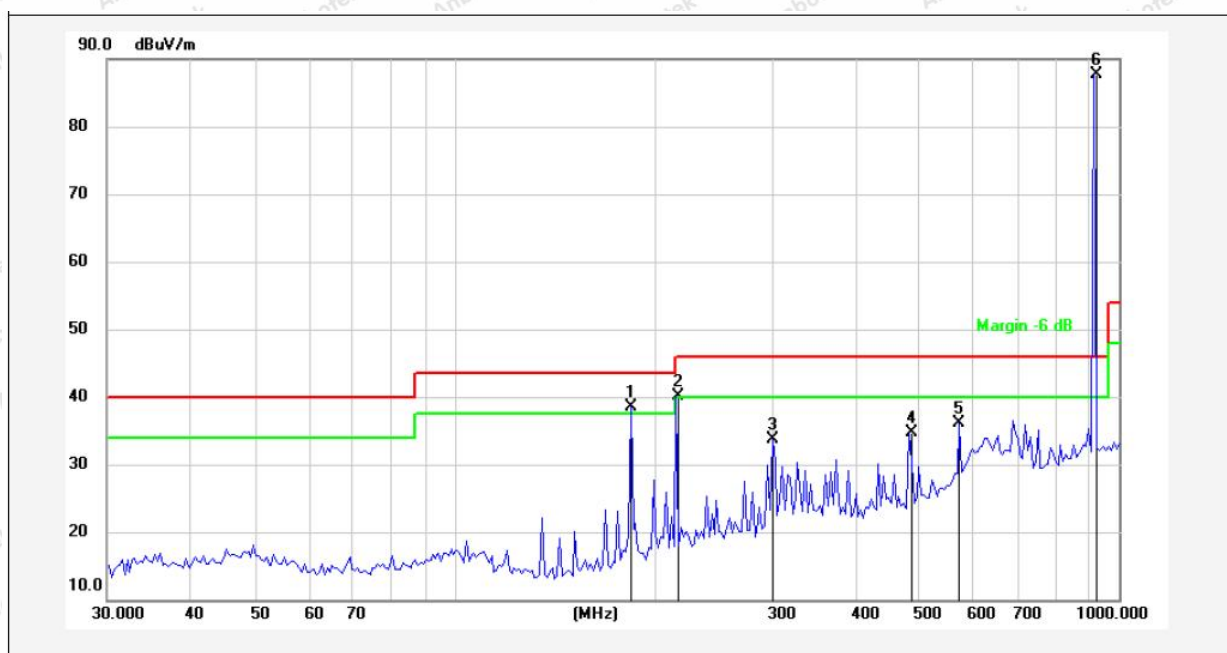
The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all the modes, and found the Low CH (903.0MHz) which is the worst case, only the worst case is recorded in the report.



Test Results (30~1000MHz)

Test Mode: Low CH (903.0MHz)
Power Source: AC 120V, 60Hz for adapter
Polarization: Horizontal
Temp.(°C)/Hum.(%RH): 25.2°C/55%RH

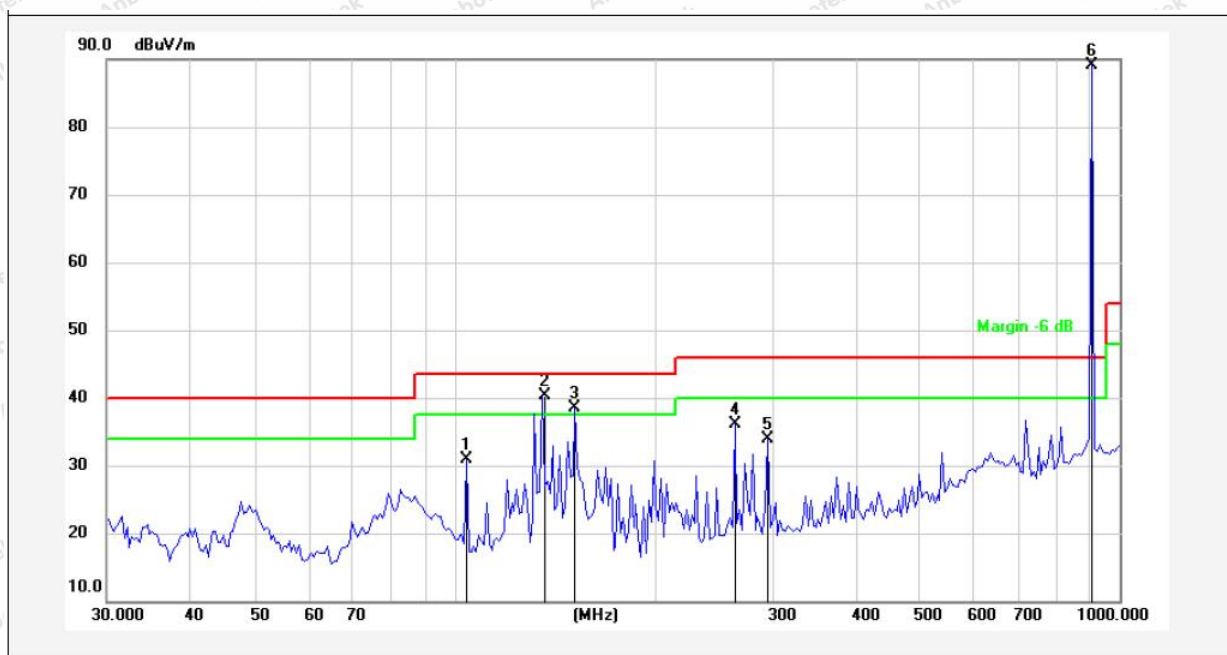


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	184.1666	53.06	-14.47	38.59	43.50	-4.91	QP			
2	215.6456	52.70	-12.55	40.15	43.50	-3.35	QP			
3	300.8942	44.65	-10.85	33.80	46.00	-12.20	QP			
4	483.0618	40.65	-5.99	34.66	46.00	-11.34	QP			
5	575.6341	38.19	-2.11	36.08	46.00	-9.92	QP			
6	903.0000	83.25	4.55	87.80	N/A	N/A	QP			



Test Results (30~1000MHz)

Test Mode: Low CH (903.0MHz)
Power Source: AC 120V, 60Hz for adapter
Polarization: Vertical
Temp.(°C)/Hum.(%RH): 25.2°C/55%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	104.1701	45.56	-14.56	31.00	43.50	-12.50	QP			
2	135.5062	57.13	-16.74	40.39	43.50	-3.11	QP			
3	151.8632	54.63	-16.05	38.58	43.50	-4.92	QP			
4	263.8190	47.12	-10.92	36.20	46.00	-9.80	QP			
5	295.6648	44.77	-10.90	33.87	46.00	-12.13	QP			
6	903.0000	84.66	4.35	89.01	N/A	N/A	QP			



Test Results (1GHz-25GHz)

Test channel: Lowest

Peak value:

Frequency (MHz)	Antenna Pol.	Reading (dBuV/m)	Cable Loss (dB)	Ant Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Det. Mode
1806.00	H	44.23	7.39	28.73	26.31	54.04	74.00	-19.96	PK
1806.00	H	35.36	7.39	28.73	26.31	45.17	54.00	-8.83	AV
2709.00	H	42.62	8.10	29.71	27.01	53.42	74.00	-20.58	PK
2709.00	H	33.78	8.10	29.71	27.01	44.58	54.00	-9.42	AV
3612.00	H	*	--	--	--	--	--	--	PK
3612.00	H	*	--	--	--	--	--	--	AV
1806.00	V	43.49	7.39	28.73	26.31	53.30	74.00	-20.70	PK
1806.00	V	35.83	7.39	28.73	26.31	45.64	54.00	-8.36	AV
2709.00	V	41.63	8.10	29.71	27.01	52.43	74.00	-21.57	PK
2709.00	V	35.05	8.10	29.71	27.01	45.85	54.00	-8.15	AV
3612.00	V	*	--	--	--	--	--	--	PK
3612.00	V	*	--	--	--	--	--	--	AV



Test Results (1GHz-25GHz)

Test channel: Middle

Peak value:

Frequency (MHz)	Antenna Pol.	Reading (dBuV/m)	Cable Loss (dB)	Ant Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Det. Mode
1825.20	H	47.64	7.39	28.73	26.31	57.45	74.00	-16.55	PK
1825.20	H	37.53	7.39	28.73	26.31	47.34	54.00	-6.66	AV
2737.80	H	46.83	8.10	29.71	27.01	57.63	74.00	-16.37	PK
2737.80	H	35.23	8.10	29.71	27.01	46.03	54.00	-7.97	AV
3650.40	H	*	--	--	--	--	--	--	PK
3650.40	H	*	--	--	--	--	--	--	AV
1825.20	V	47.45	7.39	28.73	26.31	57.26	74.00	-16.74	PK
1825.20	V	37.59	7.39	28.73	26.31	47.40	54.00	-6.60	AV
2737.80	V	46.16	8.10	29.71	27.01	56.96	74.00	-17.04	PK
2737.80	V	35.37	8.10	29.71	27.01	46.17	54.00	-7.83	AV
3650.40	V	*	--	--	--	--	--	--	PK
3650.40	V	*	--	--	--	--	--	--	AV



Test Results (1GHz-25GHz)

Test channel: Highest

Peak value:

Frequency (MHz)	Antenna Pol.	Reading (dBuV/m)	Cable Loss (dB)	Ant Factor (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Det. Mode
1851.40	H	48.22	7.39	28.73	26.31	58.03	74.00	-15.97	PK
1851.70	H	36.79	7.39	28.73	26.31	46.60	54.00	-7.40	AV
2777.10	H	46.24	8.10	29.71	27.01	57.04	74.00	-16.96	PK
2777.10	H	36.24	8.10	29.71	27.01	47.04	54.00	-6.96	AV
3702.80	H	*	--	--	--	--	--	--	PK
3702.80	H	*	--	--	--	--	--	--	AV
1851.40	V	48.20	7.39	28.73	26.31	58.01	74.00	-15.99	PK
1851.70	V	35.95	7.39	28.73	26.31	45.76	54.00	-8.24	AV
2777.10	V	46.62	8.10	29.71	27.01	57.42	74.00	-16.58	PK
2777.10	V	35.81	8.10	29.71	27.01	46.61	54.00	-7.39	AV
3702.80	V	*	--	--	--	--	--	--	PK
3702.80	V	*	--	--	--	--	--	--	AV

Remark:

1. Level = Reading + Cable Loss + Ant Factor - Preamp Factor
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

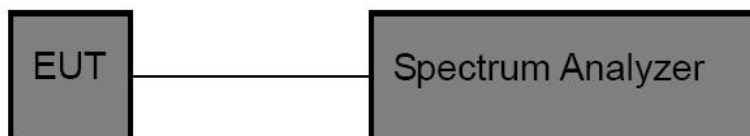


5. Maximum Peak Output Power Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (b)(3)
Test Limit	1W (30dBm)

5.2. Test Setup



5.3. Test Procedure

This procedure shall be used when the measurement instrument has available a resolution bandwidth that is greater than the DTS bandwidth.

1. Set the RBW $\geq$ DTS bandwidth.
2. Set the VBW $\geq 3 \times$ RBW.
3. Set the span $\geq 3 \times$ RBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use peak marker function to determine the peak amplitude level.

5.4. Test Data

Test Item	:	Max. peak output power	Test Mode	:	CH Low ~ CH High
Test Voltage	:	AC 120V, 60Hz for adapter	Temperature	:	23.6℃
Test Result	:	PASS	Humidity	:	53 %

Test Channel	Peak Power output (dBm)	Limit (dBm)	Results
Low	1.034	30	PASS
Middle	0.959	30	PASS
High	0.902	30	PASS





Low Channel

Mid Channel



High Channel

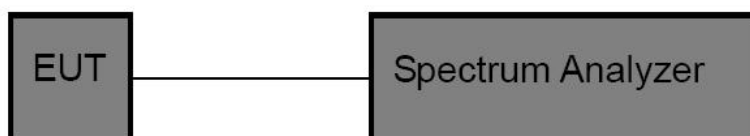


6. 6DB Occupy Bandwidth Test

6.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(2)
Test Limit	>500kHz

6.2. Test Setup



6.3. Test Procedure

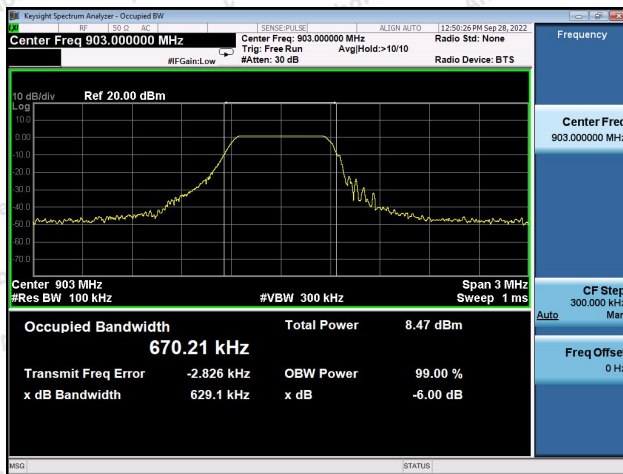
1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
 RBW = 100kHz, VBW $\geq$ 3*RBW
 Detector= Peak
 Trace mode= Max hold.
 Sweep- auto couple.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

6.4. Test Data

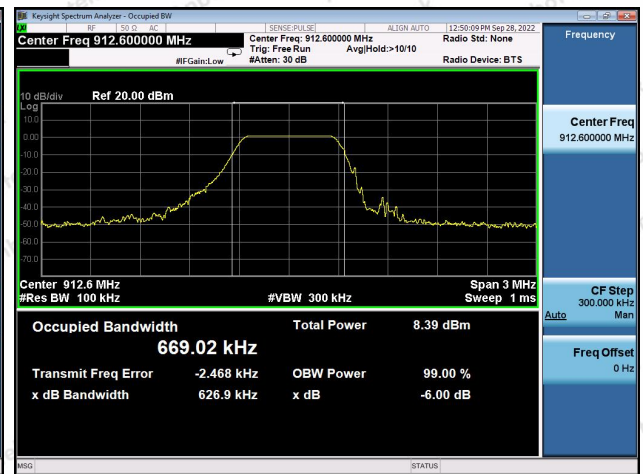
Test Item	: 6dB Bandwidth	Test Mode	: CH Low ~ CH High
Test Voltage	: AC 120V, 60Hz for adapter	Temperature	: 23.6°C
Test Result	: PASS	Humidity	: 53 %

Channel	Bandwidth (kHz)	Limit (kHz)	Results
Low	629.1	>500	PASS
Middle	626.9	>500	PASS
High	636.6	>500	PASS

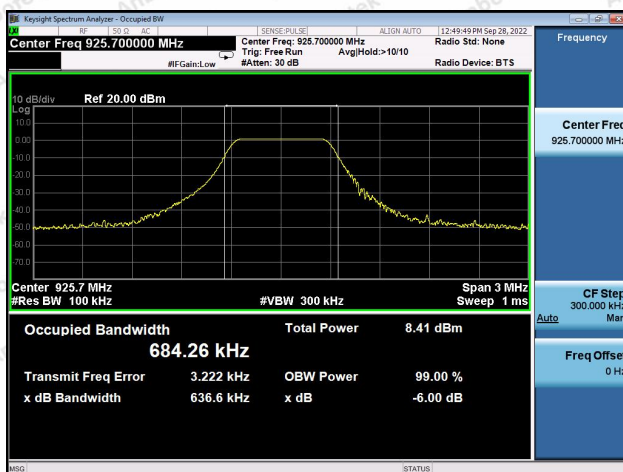




Low Channel



Mid Channel



High Channel

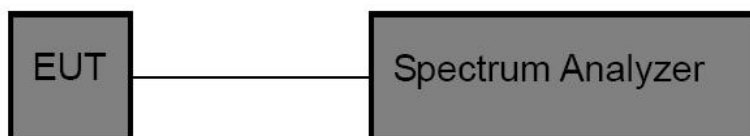


7. Power Spectral Density Test

7.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (e)
Test Limit	8dBm/3KHz

7.2. Test Setup



7.3. Test Procedure

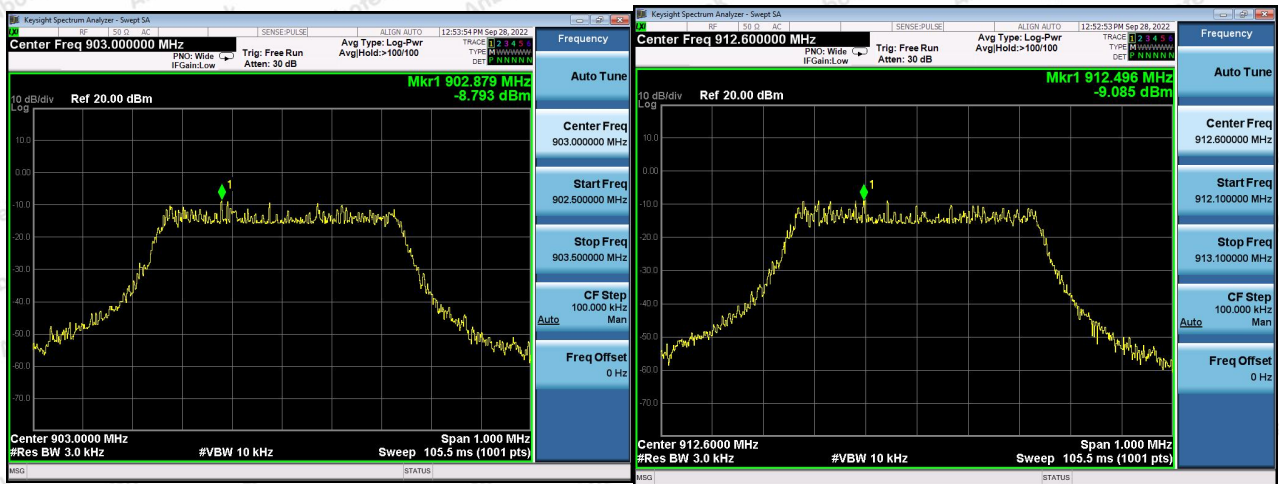
1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5xDTS BW
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

7.4. Test Data

Test Item	:	Power Spectral Density	Test Mode	:	CH Low ~ CH High
Test Voltage	:	AC 120V, 60Hz for adapter	Temperature	:	23.6℃
Test Result	:	PASS	Humidity	:	53 %

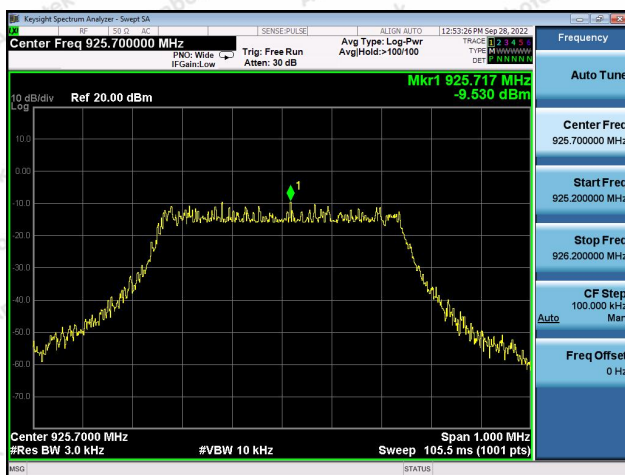
Channel	PSD (dBm/3KHz)	Limit (dBm/3KHz)	Results
Low	-8.793	8.00	PASS
Middle	-9.085	8.00	PASS
High	-9.530	8.00	PASS





Low Channel

Mid Channel



High Channel

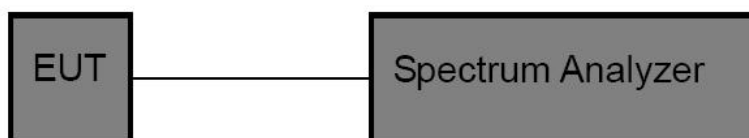


8. 100kHz Bandwidth of Frequency Band Edge Requirement

8.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (d)
Test Limit	in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

8.2. Test Setup



8.3. Test Procedure

Using the following spectrum analyzer setting:

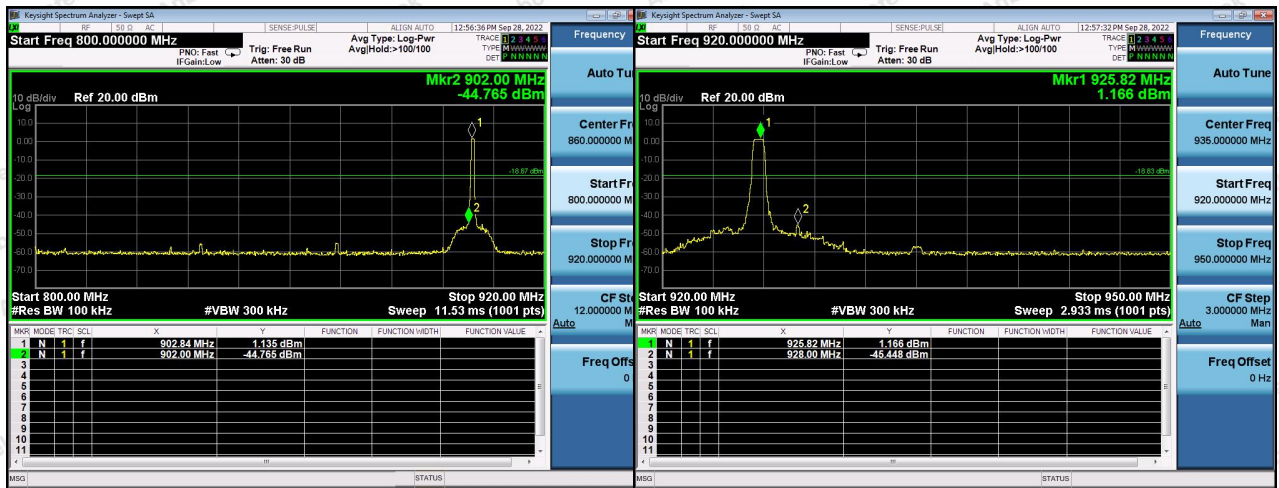
1. Set the RBW = 100KHz.
2. Set the VBW = 300KHz.
3. Sweep time = auto couple.
4. Detector function = peak.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.

8.4. Test Data

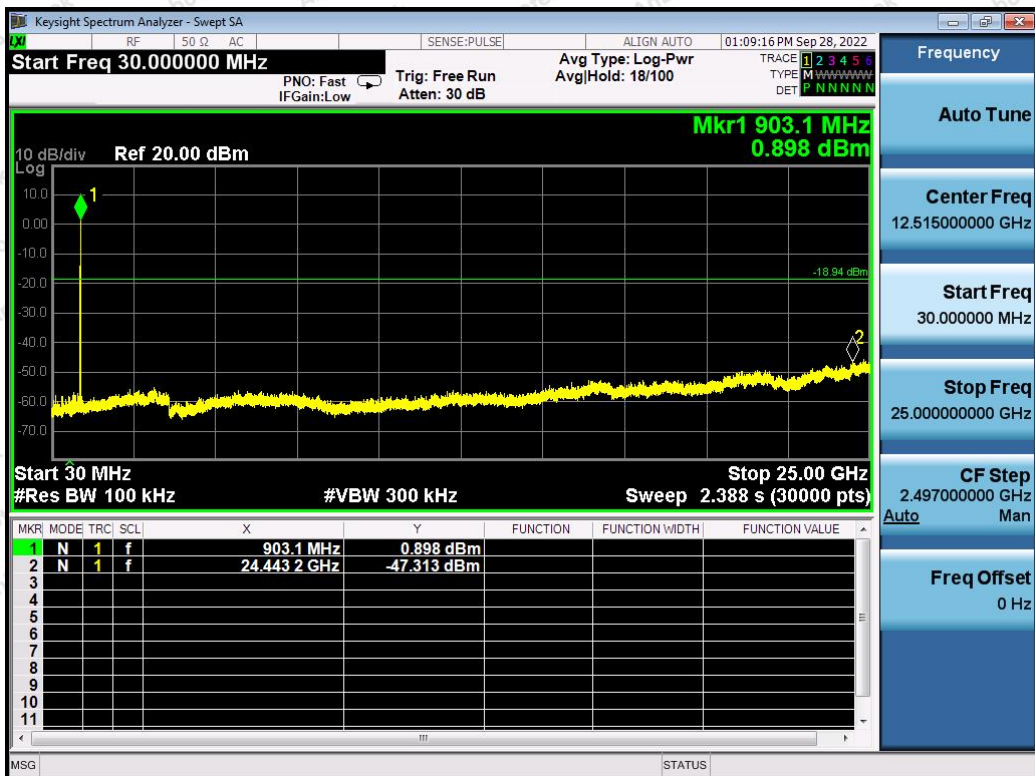
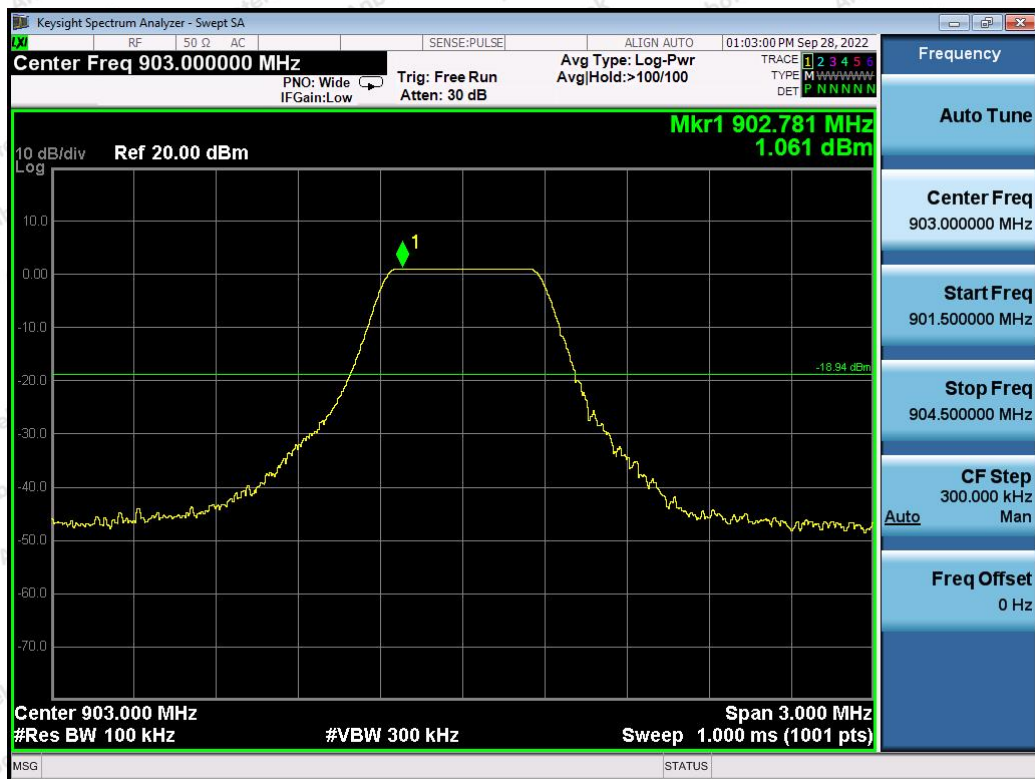
Test Item	:	Band edge	Test Mode	:	CH Low ~ CH High
Test Voltage	:	AC 120V, 60Hz for adapter	Temperature	:	23.6℃
Test Result	:	PASS	Humidity	:	53 %



Band edge measurements

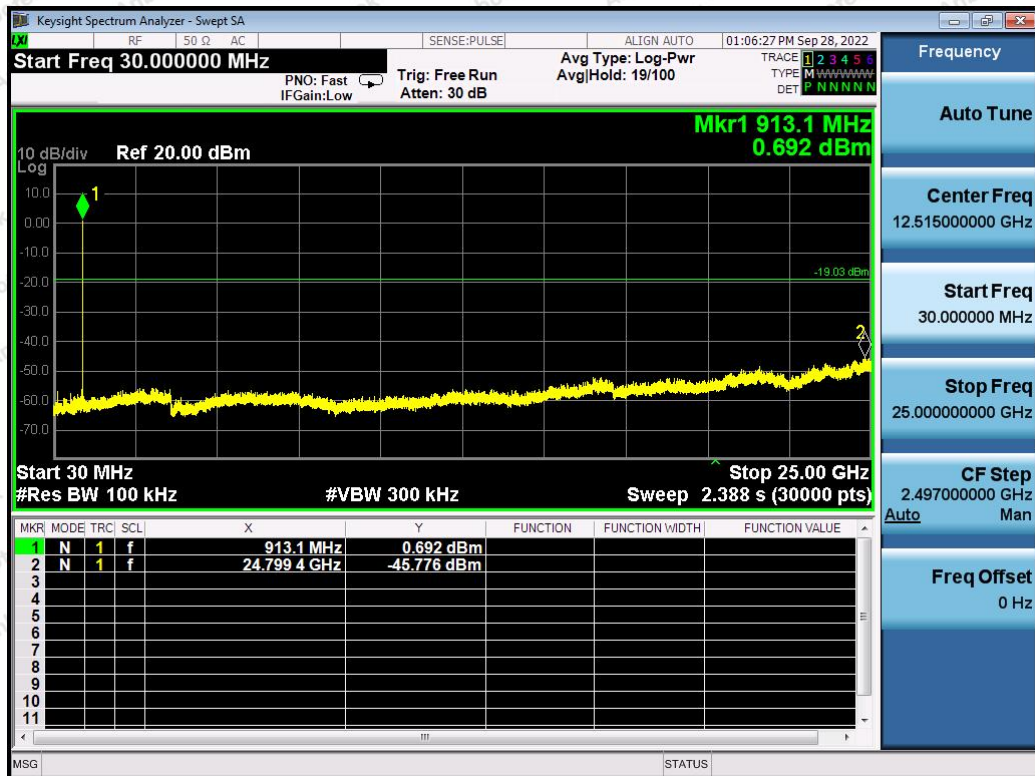
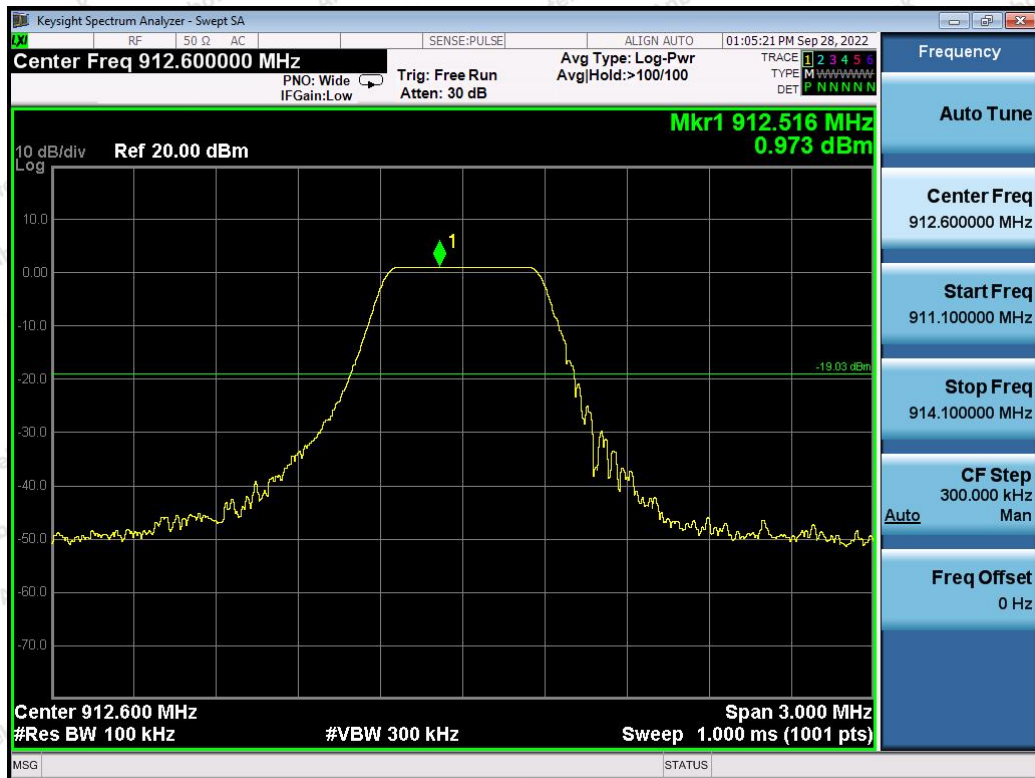


Conducted Emission Method



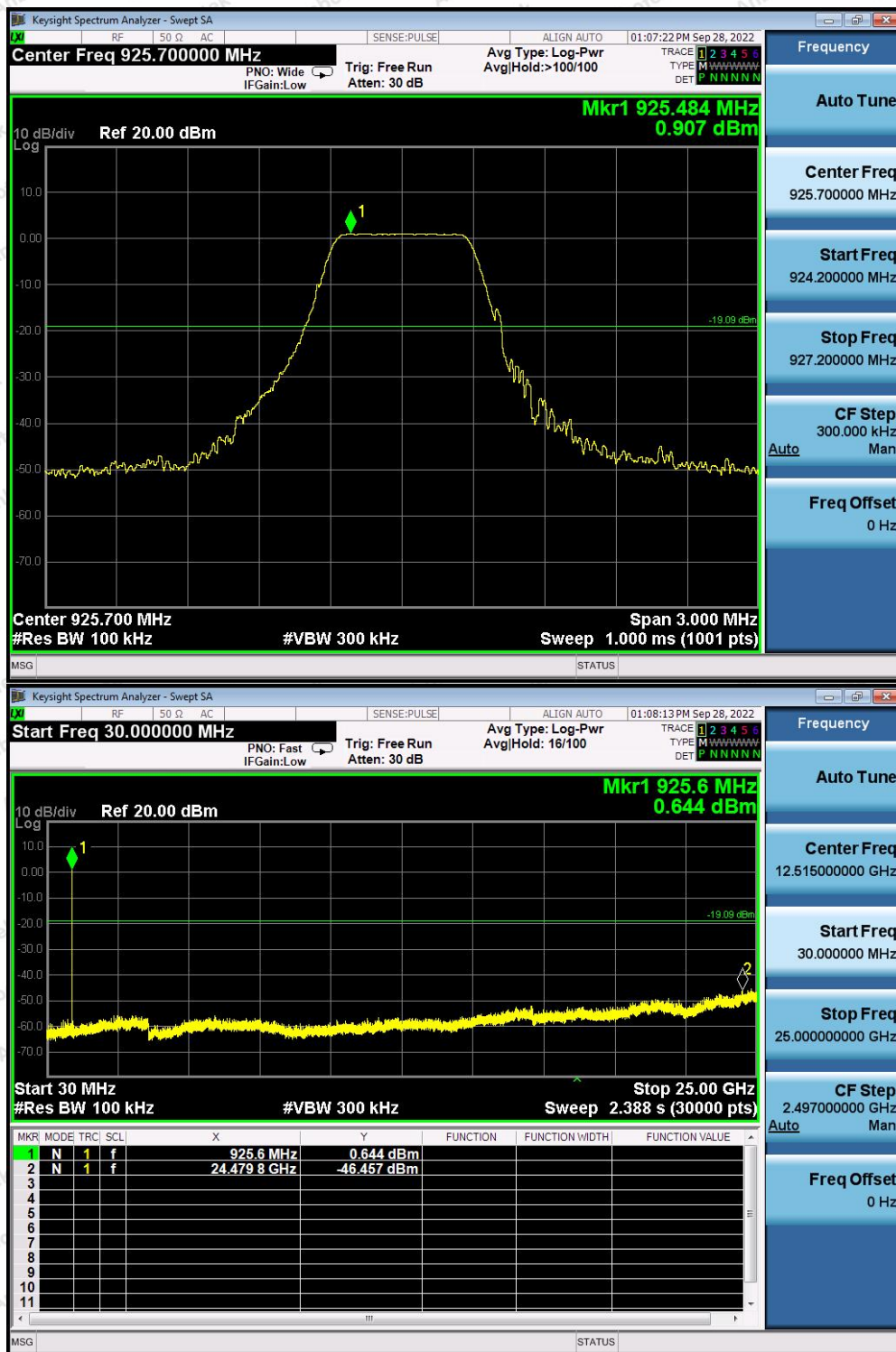
Low Channel





Mid Channel





High Channel



9. Antenna Requirement

9.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /247(c)
Requirement	1) 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. 2) 15.247(c) (1)(i) requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

9.2. Antenna Connected Construction

The antenna is a PCB antenna which permanently attached, and the best case gain of the antenna is -15.65 dBi. It complies with the standard requirement.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

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

