

FCC Test Report

Applicant : ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD

Address : ROOM 709,SANJIANG BUILDING, NO.170
NANYANG ROAD,HUIJI DISTRICT,
ZHENGZHOU,HENAN, China

Product Name : Tour Guide System

Report Date : May 27, 2023

Shenzhen Anbotek Compliance Laboratory Limited



Contents

1. General Information	5
1.1. Client Information	5
1.2. Description of Device (EUT)	5
1.3. Auxiliary Equipment Used During Test	6
1.4. Description of Test Configuration	6
1.5. Description of Test Setup	7
1.6. Test Equipment List	8
1.7. Measurement Uncertainty	9
1.8. Description of Test Facility	9
2. Summary of Test Results	10
3. Conducted Emission Test	11
3.1. Test Standard and Limit	11
3.2. Test Setup	11
3.3. Test Procedure	11
3.4. Test Data	11
4. Radiated Emission and Band Edge	14
4.1. Test Standard and Limit	14
4.2. Test Setup	15
4.3. Test Procedure	16
4.4. Test Data	17
5. 20dB Bandwidth Test	24
5.1. Test Standard and Limit	24
5.2. Test Setup	24
5.3. Test Procedure	24
5.4. 5.4. Test Data	24
6. Antenna Requirement	27
6.1. Test Standard and Requirement	27
6.2. Antenna Connected Construction	27
APPENDIX I -- TEST SETUP PHOTOGRAPH	28
APPENDIX II -- EXTERNAL PHOTOGRAPH	28
APPENDIX III -- INTERNAL PHOTOGRAPH	28



TEST REPORT

Applicant : ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Manufacturer : ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Product Name : Tour Guide System
Model No. : TT116
Trade Mark : RETEKES
Rating(s) : Input: 5V= 1A(with DC 3.7V, 1000mAh Battery inside)

Test Standard(s) : FCC Part15 Subpart C, Paragraph 15.249

Test Method(s) : ANSI C63.10: 2020

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

May 05, 2023

Date of Test

May 05~24, 2023

Prepared by

Tu Tu Hong

(TuTu Hong)

Approved & Authorized Signer

Kingkong Jin

(Kingkong Jin)



Revision History

Report Version	Description	Issued Date
R00	Original Issue.	May 27, 2023



1. General Information

1.1. Client Information

Applicant	:	ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Address	:	ROOM 709,SANJIANG BUILDING, NO.170 NANYANG ROAD,HUIJI DISTRICT, ZHENGZHOU,HENAN, China
Manufacturer	:	ZHENGZHOU YSAIR TECHNOLOGY CO.,LTD
Address	:	ROOM 709,SANJIANG BUILDING, NO.170 NANYANG ROAD,HUIJI DISTRICT, ZHENGZHOU,HENAN, China

1.2. Description of Device (EUT)

Product Name	:	Tour Guide System
Model No.	:	TT116
Trade Mark	:	RETEKESS
Test Power Supply	:	AC 120V, 60Hz for adapter/DC 3.7V Battery inside
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A
RF Specification		
Operation Frequency	:	902~928MHz
Number of Channel	:	50 Channels
Modulation Type	:	FM
Antenna Type	:	Monopole Antenna
Antenna Gain(Peak)	:	1.57 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)
Adapter	Model: MDY-11-EX Input: 100-240VAC,50-60Hz, 0.7A Output: 5V= 3A,9V= 3A,12V= 2.25A,20V= 1.35A,11V= 3A

1.4. Description of Test Configuration

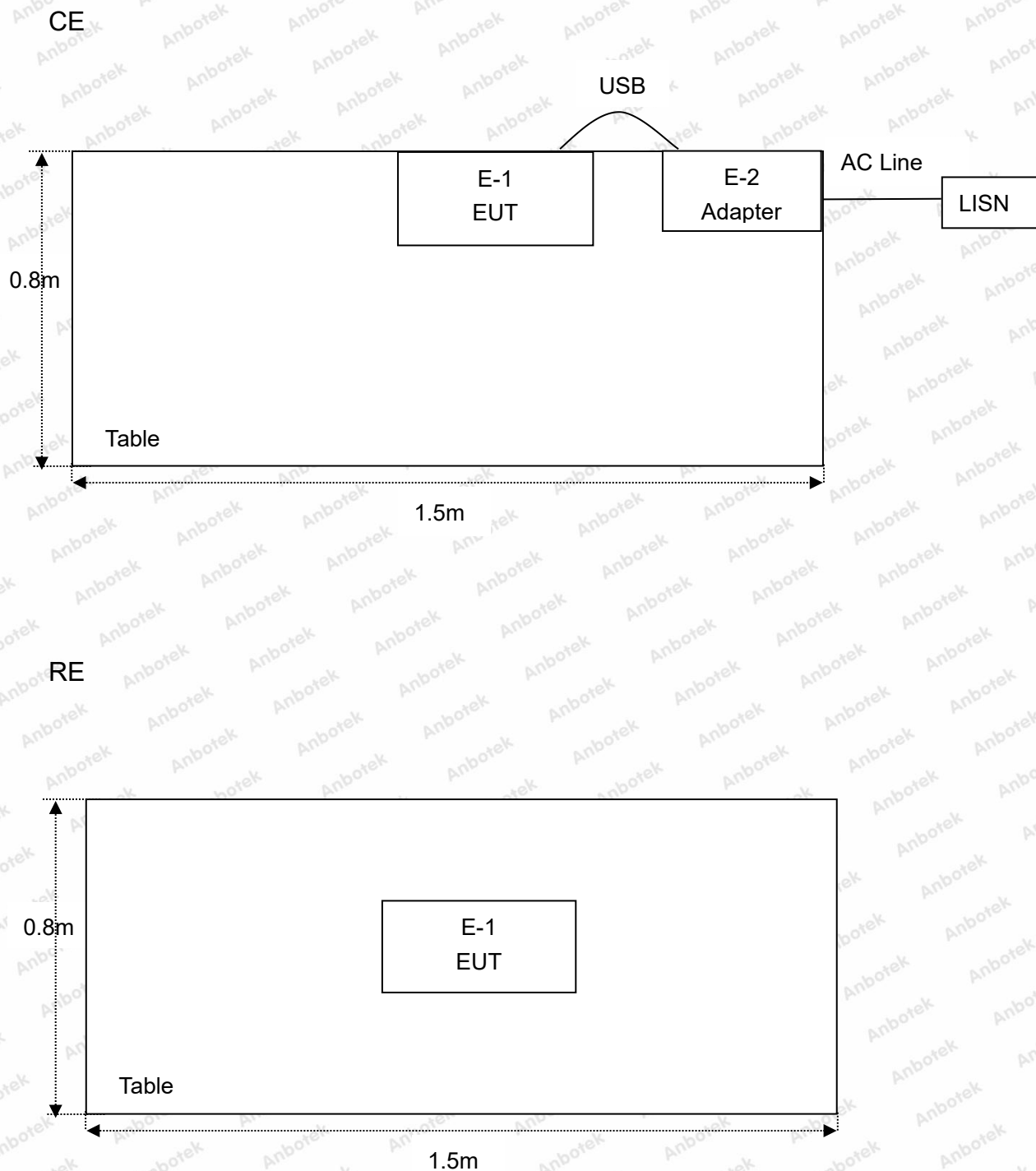
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	902.250MHz	14	915.250MHz	27	903.810MHz	40	919.930MHz
2	905.370MHz	15	918.370MHz	28	906.930MHz	41	923.050MHz
3	908.490MHz	16	921.490MHz	29	910.050MHz	42	926.170MHz
4	911.610MHz	17	924.610MHz	30	913.170MHz	43	904.850MHz
5	914.730MHz	18	927.730MHz	31	916.290MHz	44	907.970MHz
6	917.850MHz	19	903.290MHz	32	919.410MHz	45	911.090MHz
7	920.970MHz	20	906.410MHz	33	922.530MHz	46	914.210MHz
8	924.090MHz	21	909.530MHz	34	925.650MHz	47	917.330MHz
9	927.210MHz	22	912.650MHz	35	904.330MHz	48	920.450MHz
10	902.770MHz	23	915.770MHz	36	907.450MHz	49	923.570MHz
11	905.890MHz	24	918.890MHz	37	910.570MHz	50	926.690MHz
12	909.010MHz	25	922.010MHz	38	913.690MHz		
13	912.130MHz	26	925.130MHz	39	916.810MHz		

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, 5 and 18.



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	Rohde & Schwarz	ENV216	100055	Oct. 23, 2022	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	Jul. 05, 2022	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 13, 2022	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 23, 2022	1 Year
5.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 22, 2022	1 Year
6.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 13, 2022	1 Year
7.	EMI Preamplifier	SKET Electronic	LNPA-0118G -45	SKET-PA-002	Oct. 13, 2022	1 Year
8.	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	Oct. 16, 2022	3 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Oct. 23, 2022	1 Year
10.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Oct. 23, 2022	1 Year
11.	Horn Antenna	A-INFO	LB-180400-K F	J211060628	Oct. 23, 2022	1 Year
12.	Pre-amplifier	SONOMA	310N	186860	Oct. 23, 2022	1 Year
13.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
14.	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY53280032	Oct. 13, 2022	1 Year
15.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 13, 2022	1 Year
16.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 13, 2022	1 Year
17.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 22, 2022	1 Year
18.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80 B	N/A	Oct. 19, 2022	1 Year
19.	Power Meter	Agilent	N1914A	MY50001102	Oct.26, 2022	1 Year



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	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.205/15.209/15.249	Radiated Emission	PASS
15.249(d)	Band Edge	PASS
15.215(c)	20dB Bandwidth	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

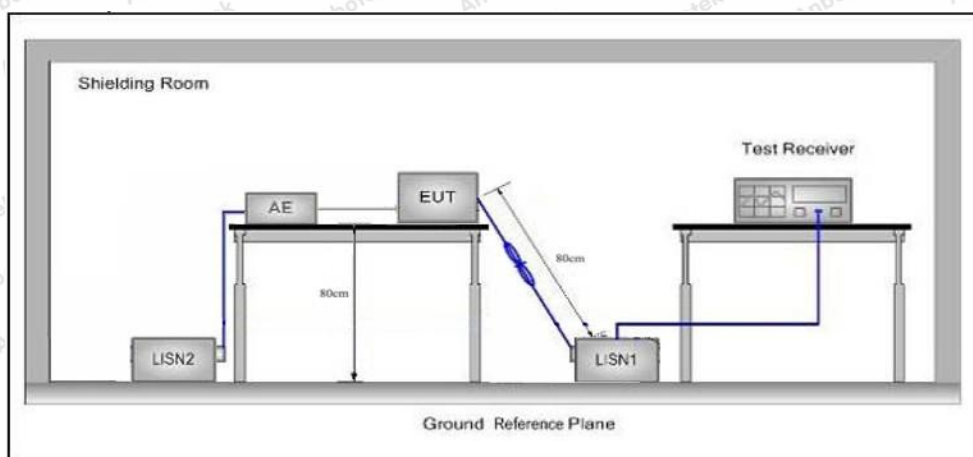


3. Conducted Emission Test

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, only the worst case is recorded in the report.

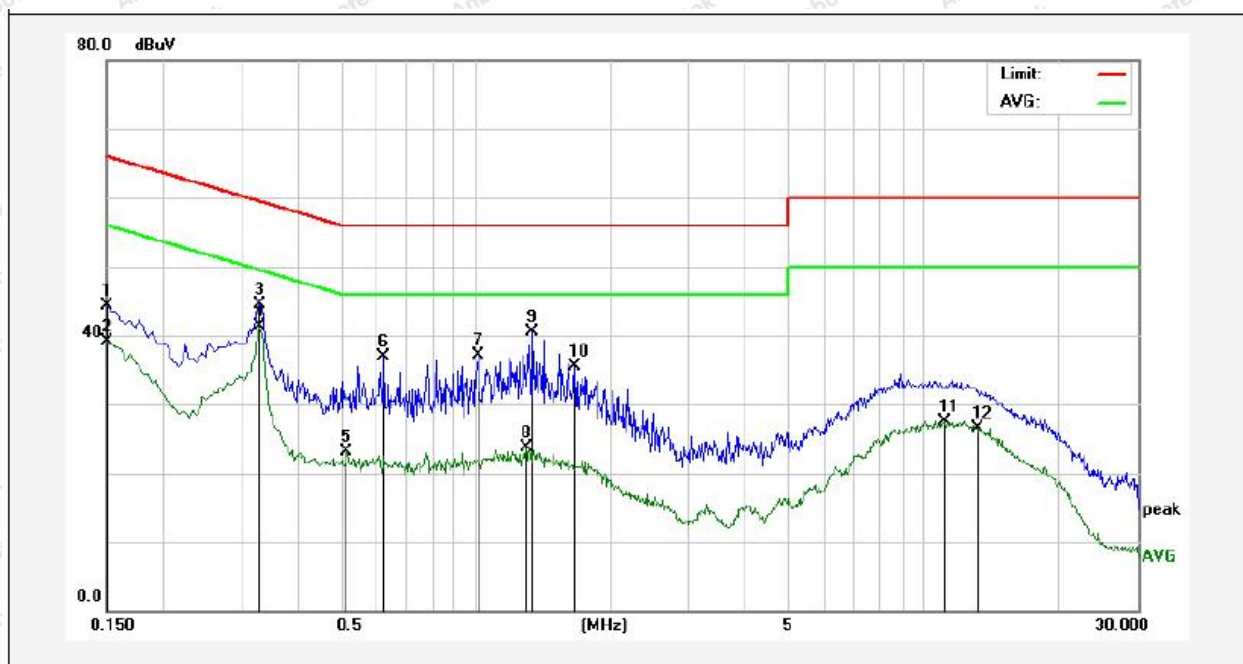
AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/60Hz modes, recorded worst case AC 120V/60Hz.

Please to see the following pages.



Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: 902.250MHz
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Temp.(°C)/Hum.(%RH): 22.1°C/52%RH

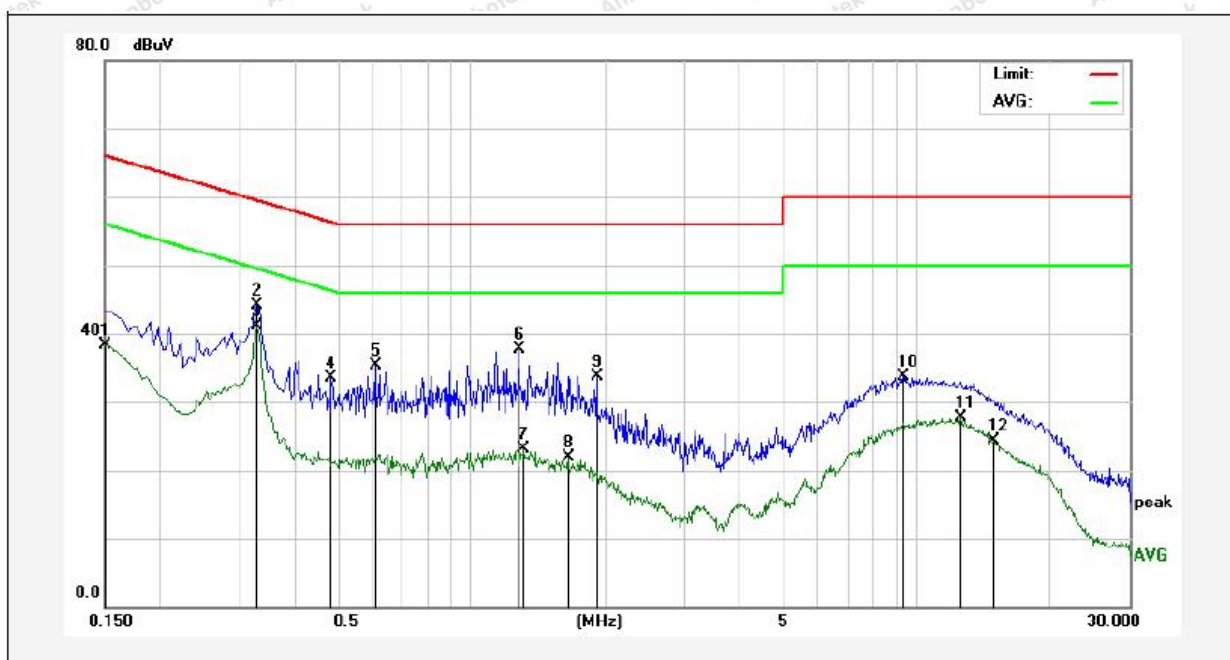


No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	34.58	9.82	44.40	65.99	-21.59	QP	
2	0.1500	29.23	9.82	39.05	55.99	-16.94	AVG	
3	0.3300	34.68	9.83	44.51	59.45	-14.94	QP	
4	0.3300	31.39	9.83	41.22	49.45	-8.23	AVG	
5	0.5180	13.25	9.86	23.11	46.00	-22.89	AVG	
6	0.6260	27.01	9.87	36.88	56.00	-19.12	QP	
7	1.0140	27.28	9.86	37.14	56.00	-18.86	QP	
8	1.2980	13.82	9.86	23.68	46.00	-22.32	AVG	
9	1.3420	30.57	9.86	40.43	56.00	-15.57	QP	
10	1.6660	25.61	9.85	35.46	56.00	-20.54	QP	
11	11.1020	17.55	10.01	27.56	50.00	-22.44	AVG	
12	13.1740	16.52	10.08	26.60	50.00	-23.40	AVG	



Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: 902.250MHz
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Temp.(°C)/Hum.(%RH): 22.1°C/52%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	28.56	9.82	38.38	55.99	-17.61	AVG	
2	0.3300	34.30	9.83	44.13	59.45	-15.32	QP	
3	0.3300	31.25	9.83	41.08	49.45	-8.37	AVG	
4	0.4860	23.70	9.85	33.55	56.24	-22.69	QP	
5	0.6100	25.52	9.87	35.39	56.00	-20.61	QP	
6	1.2820	27.79	9.86	37.65	56.00	-18.35	QP	
7	1.3140	13.29	9.86	23.15	46.00	-22.85	AVG	
8	1.6460	12.01	9.85	21.86	46.00	-24.14	AVG	
9	1.9180	23.87	9.85	33.72	56.00	-22.28	QP	
10	9.3220	23.70	9.96	33.66	60.00	-26.34	QP	
11	12.5820	17.54	10.07	27.61	50.00	-22.39	AVG	
12	14.8380	14.08	10.15	24.23	50.00	-25.77	AVG	



4. Radiated 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.

Test Standard	FCC Part15 C Section 15.249					
Test Limit	Frequency (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	902~928	50	-	94.0	QP	3
	902~928	-	500	74.0	Peak	3
	902~928	-	500	54.0	Average	3
	2400~2483.5	50	-	114.0	Peak	3
	2400~2483.5	50	-	94.0	Average	3
	2400~2483.5	-	500	74.0	Peak	3
	2400~2483.5	-	500	54.0	Average	3

Remark:
 (1) 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

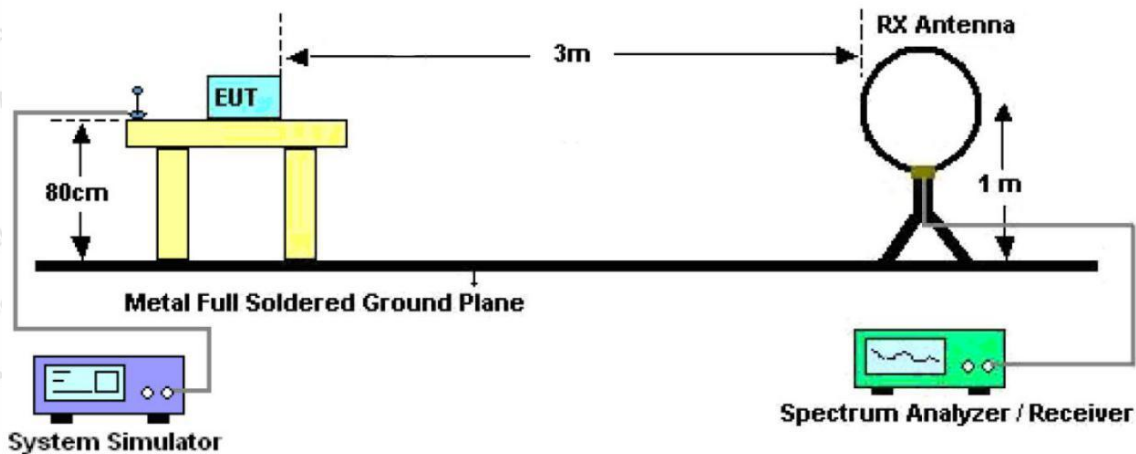


Figure 2. 30MHz to 1GHz

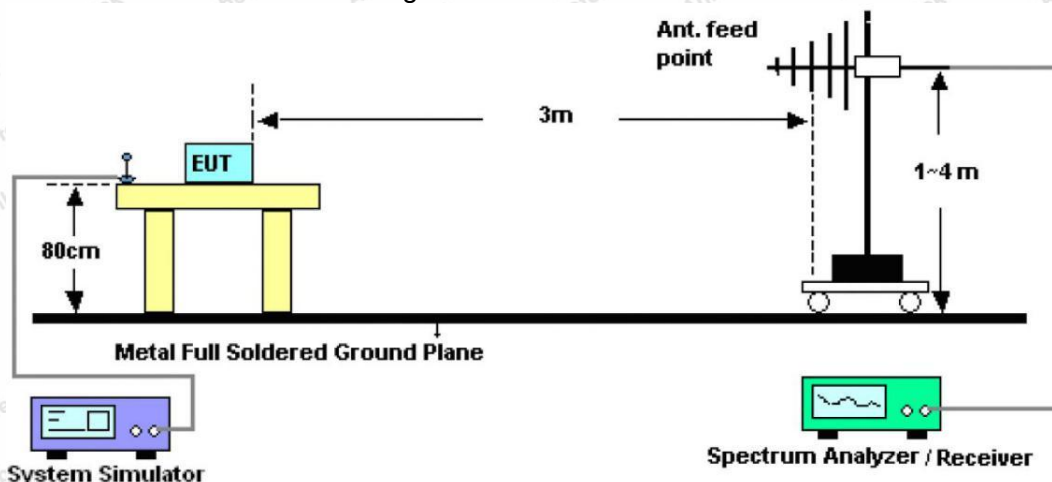
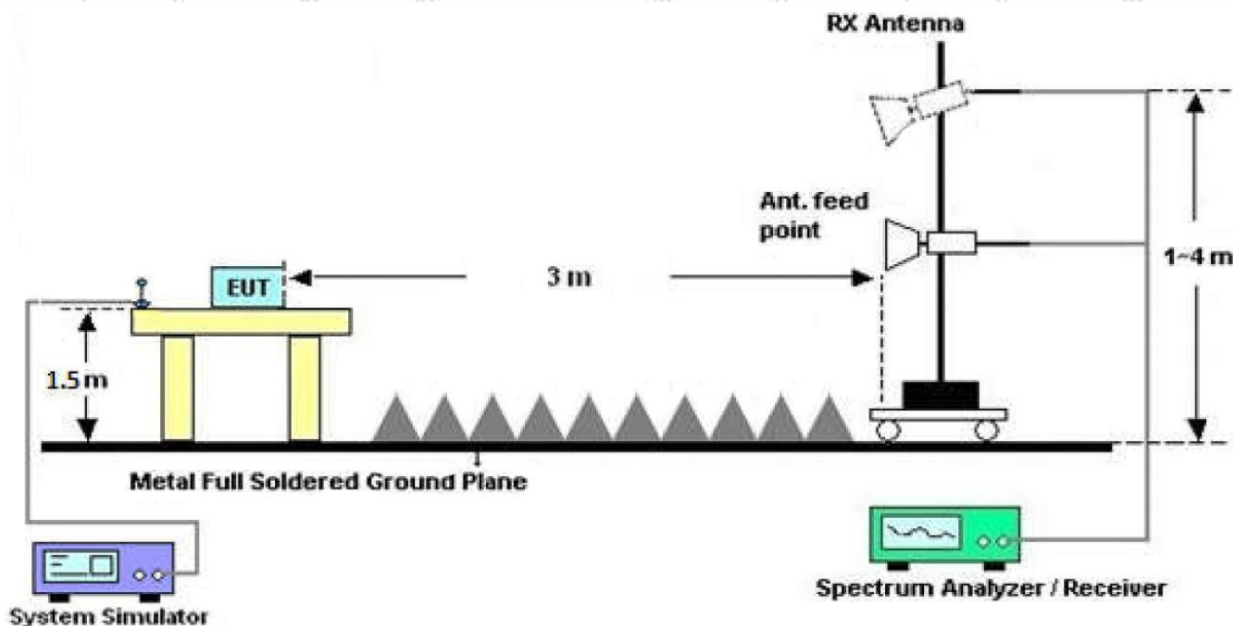


Figure 3. Above 1 GHz





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.

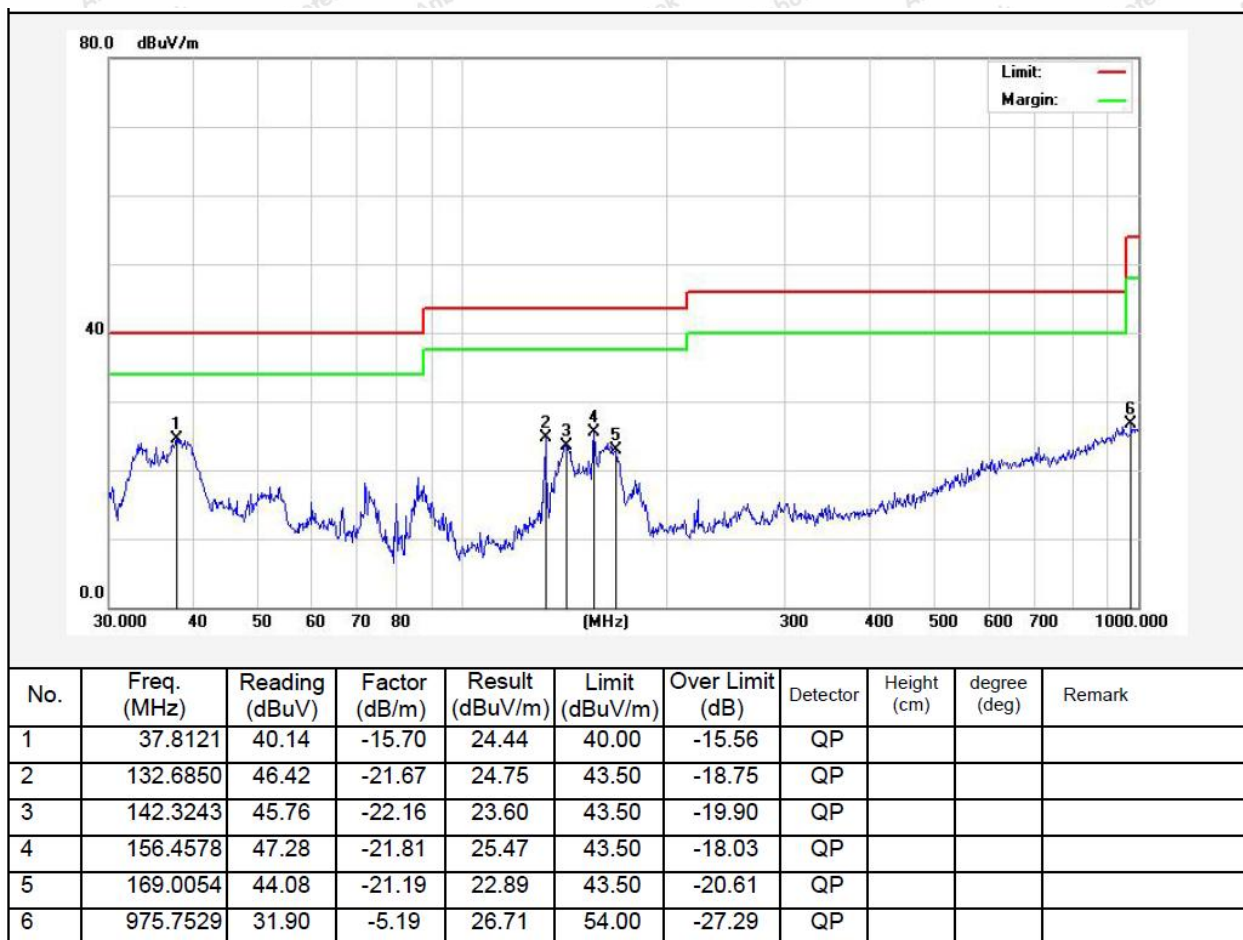
The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all the modes, only the worst case is recorded in the report.



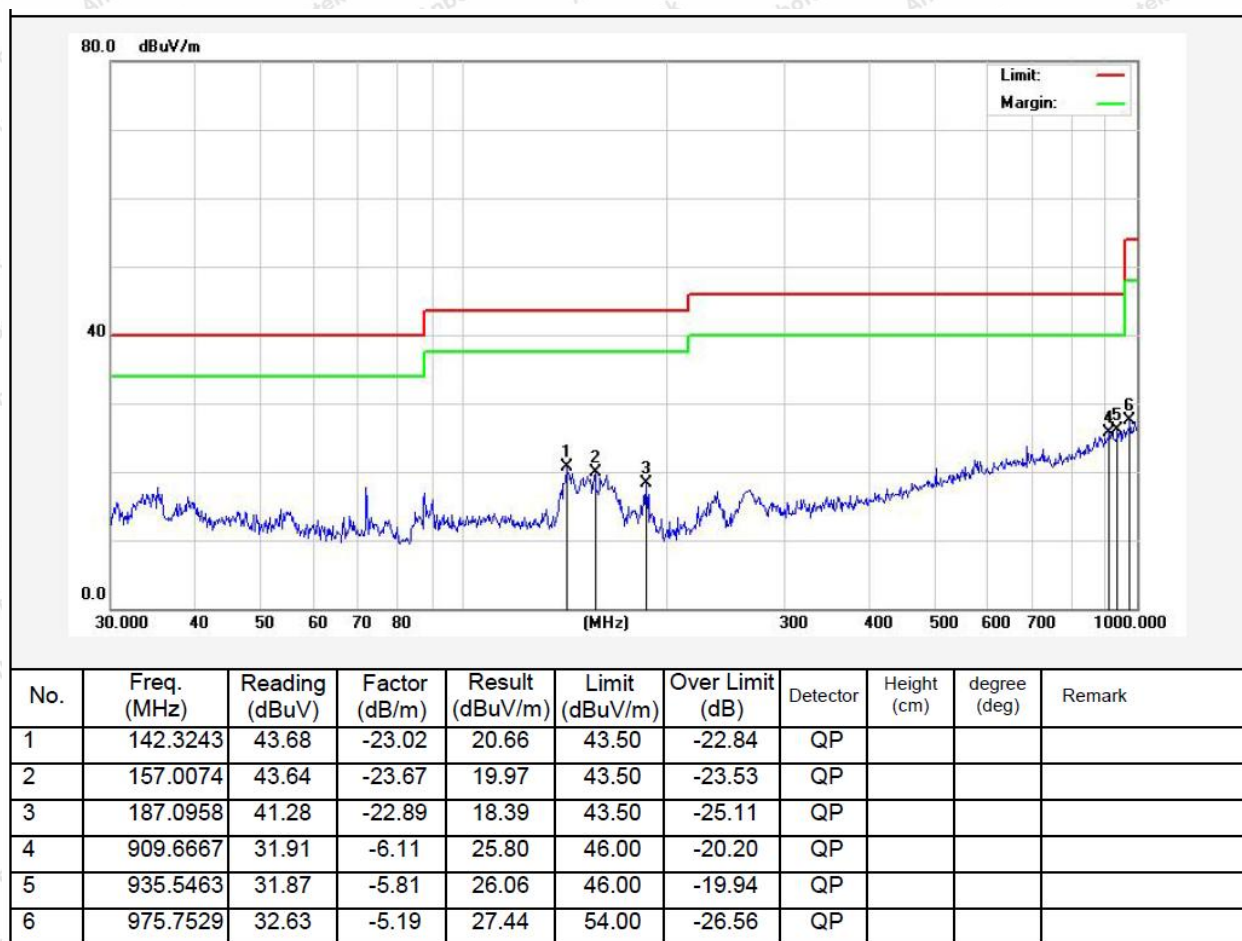
Test Results (30~1000MHz)

Test Mode: 902.250MHz
Power Source: DC 3.7V Battery inside
Polarization: Vertical
Temp.(°C)/Hum.(%RH): 22.5°C/50%RH



Test Results (30~1000MHz)

Test Mode: 902.250MHz
Power Source: DC 3.7V Battery inside
Polarization: Horizontal
Temp.(°C)/Hum.(%RH): 22.5°C/50%RH



Test Results (1GHz-25GHz)

Test channel: Lowest

Peak value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
902.25	81.55	9.75	91.30	114.00	-22.70	Vertical
1804.50	28.23	15.27	43.50	74.00	-30.50	Vertical
2706.75	28.34	18.09	46.43	74.00	-27.57	Vertical
3609.00	29.11	23.76	52.87	74.00	-21.13	Vertical
4511.25	*			74.00		Vertical
5413.50	*			74.00		Vertical
902.25	82.57	9.75	92.32	114.00	-21.68	Horizontal
1804.50	27.92	15.27	43.19	74.00	-30.81	Horizontal
2706.75	28.78	18.09	46.87	74.00	-27.13	Horizontal
3609.00	28.02	23.76	51.78	74.00	-22.22	Horizontal
4511.25	*			74.00		Horizontal
5413.50	*			74.00		Horizontal

Average value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
902.25	71.48	9.75	81.23	94.00	-12.77	Vertical
1804.50	16.50	15.27	31.77	54.00	-22.23	Vertical
2706.75	17.39	18.09	35.48	54.00	-18.52	Vertical
3609.00	18.58	23.76	42.34	54.00	-11.66	Vertical
4511.25	*			54.00		Vertical
5413.50	*			54.00		Vertical
902.25	72.80	9.75	82.55	94.00	-11.45	Horizontal
1804.50	16.25	15.27	31.52	54.00	-22.48	Horizontal
2706.75	17.81	18.09	35.90	54.00	-18.10	Horizontal
3609.00	17.53	23.76	41.29	54.00	-12.71	Horizontal
4511.25	*			54.00		Horizontal
5413.50	*			54.00		Horizontal

Remark:

- 1.Result =Reading + Factor
2. "*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.



Test Results (1GHz-25GHz)

Test channel: Middle

Peak value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
914.73	84.94	9.75	94.69	114.00	-19.31	Vertical
1829.46	26.84	15.27	42.11	74.00	-31.89	Vertical
2744.19	32.26	18.09	50.35	74.00	-23.65	Vertical
3658.92	29.28	23.76	53.04	74.00	-20.96	Vertical
4573.65	*			74.00		Vertical
5488.38	*			74.00		Vertical
914.73	80.74	9.75	90.49	114.00	-23.51	Horizontal
1829.46	26.32	15.27	41.59	74.00	-32.41	Horizontal
2744.19	32.71	18.09	50.80	74.00	-23.20	Horizontal
3658.92	31.46	23.76	55.22	74.00	-18.78	Horizontal
4573.65	*			74.00		Horizontal
5488.38	*			74.00		Horizontal

Average value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
914.73	72.62	9.75	82.37	94.00	-11.63	Vertical
1829.46	18.00	15.27	33.27	54.00	-20.73	Vertical
2744.19	16.03	18.09	34.12	54.00	-19.88	Vertical
3658.92	17.85	23.76	41.61	54.00	-12.39	Vertical
4573.65	*			54.00		Vertical
5488.38	*			54.00		Vertical
914.73	69.63	9.75	79.38	94.00	-14.62	Horizontal
1829.46	13.84	15.27	29.11	54.00	-24.89	Horizontal
2744.19	17.08	18.09	35.17	54.00	-18.83	Horizontal
3658.92	17.76	23.76	41.52	54.00	-12.48	Horizontal
4573.65	*			54.00		Horizontal
5488.38	*			54.00		Horizontal

Remark:

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



Test Results (1GHz-25GHz)

Test channel: Highest

Peak value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
927.73	82.72	9.75	92.47	114.00	-21.53	Vertical
1855.46	31.02	15.27	46.29	74.00	-27.71	Vertical
2783.19	28.16	18.09	46.25	74.00	-27.75	Vertical
3710.92	32.20	23.76	55.96	74.00	-18.04	Vertical
4638.65	*			74.00		Vertical
5566.38	*			74.00		Vertical
927.73	83.37	9.75	93.12	114.00	-20.88	Horizontal
1855.46	26.71	15.27	41.98	74.00	-32.02	Horizontal
2783.19	32.16	18.09	50.25	74.00	-23.75	Horizontal
3710.92	27.81	23.76	51.57	74.00	-22.43	Horizontal
4638.65	*			74.00		Horizontal
5566.38	*			74.00		Horizontal

Average value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
927.73	74.28	9.75	84.03	94.00	-9.97	Vertical
1855.46	15.45	15.27	30.72	54.00	-23.28	Vertical
2783.19	18.60	18.09	36.69	54.00	-17.31	Vertical
3710.92	16.41	23.76	40.17	54.00	-13.83	Vertical
4638.65	*			54.00		Vertical
5566.38	*			54.00		Vertical
927.73	71.74	9.75	81.49	94.00	-12.51	Horizontal
1855.46	14.14	15.27	29.41	54.00	-24.59	Horizontal
2783.19	21.48	18.09	39.57	54.00	-14.43	Horizontal
3710.92	19.31	23.76	43.07	54.00	-10.93	Horizontal
4638.65	*			54.00		Horizontal
5566.38	*			54.00		Horizontal

Remark:

1.Result =Reading + Factor

2. "*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.



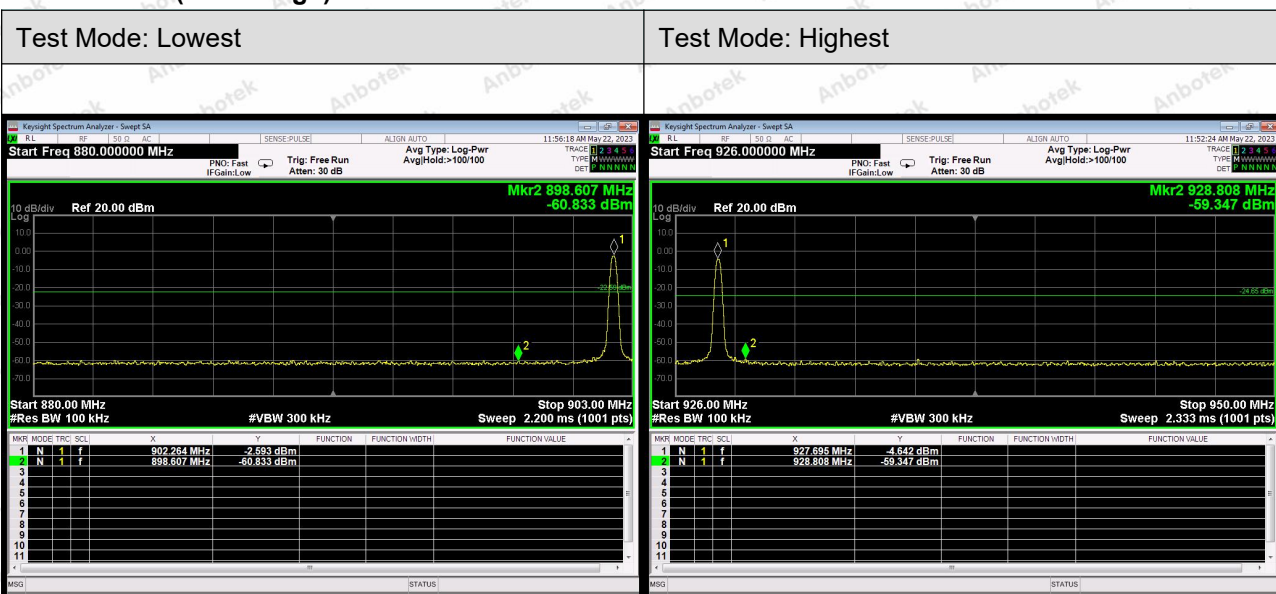
Test Results (Fundamental):

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	polarization
902.250	95.19	-5.96	89.23	94	-4.77	QP	Vertical
914.730	95.43	-5.96	89.47	94	-4.53	QP	Vertical
927.730	95.41	-5.96	89.45	94	-4.55	QP	Vertical
902.250	96.92	-5.96	90.96	94	-3.04	QP	Horizontal
914.730	96.23	-5.96	90.27	94	-3.73	QP	Horizontal
927.730	96.18	-5.96	90.22	94	-3.78	QP	Horizontal

Remark:

1.Result =Reading + Factor

Test Results (Band Edge):

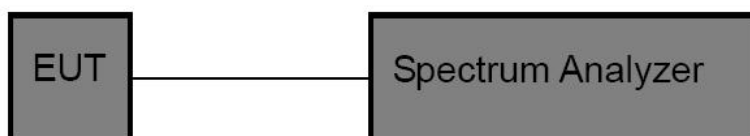


5. 20dB Bandwidth Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.215(c)
Test Limit	N/A

5.2. Test Setup



5.3. Test Procedure

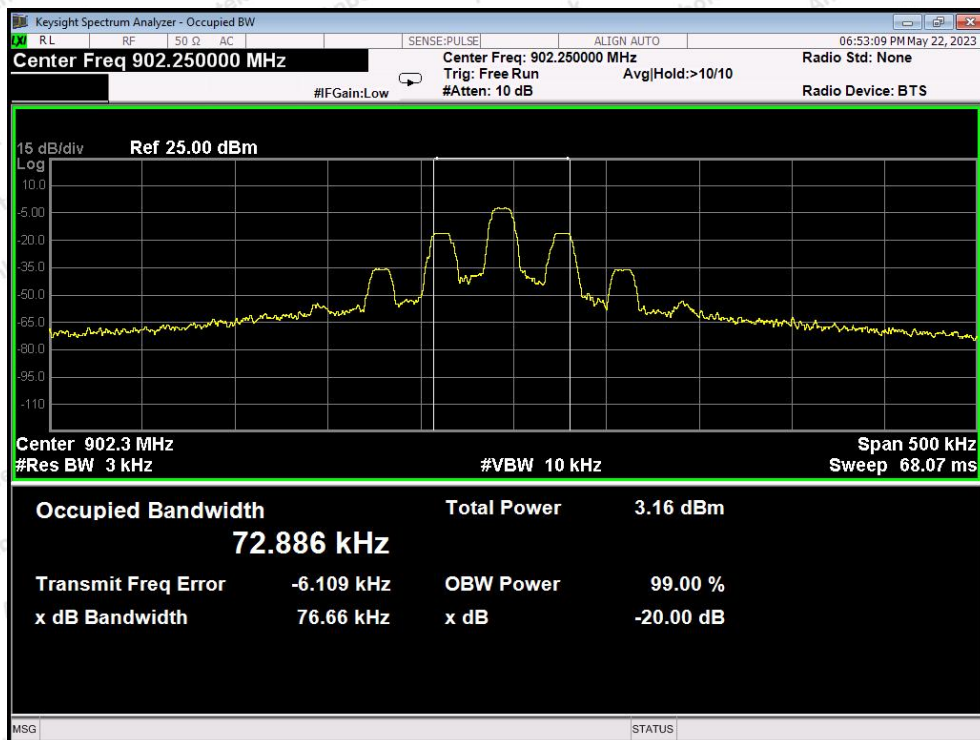
1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as:
RBW = 30kHz, VBW $\geq$ 3*RBW = 100kHz,
Detector= Average
Trace mode= Max hold.
Sweep- auto couple.
4. Mark the peak frequency and -20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

5.4. Test Data

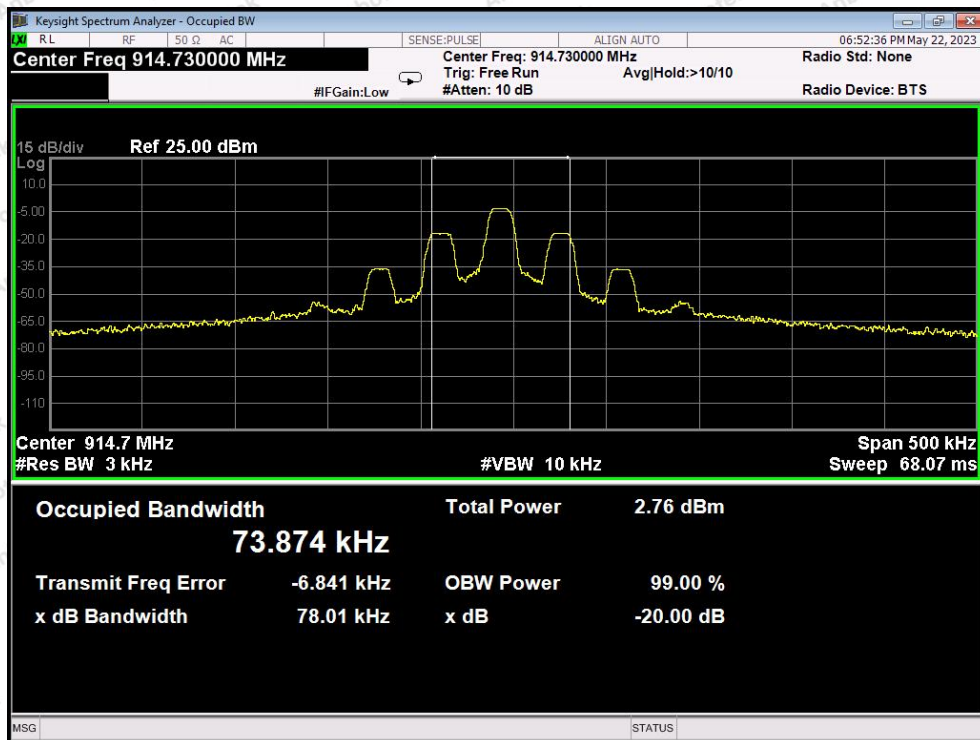
Test Item	: 20dB Bandwidth	Test Mode	: CH Low ~ CH High
Test Voltage	: DC 3V	Temperature	: 22.4℃
Test Result	: PASS	Humidity	: 55%RH

Channel	Bandwidth (kHz)	Result
Low	76.66	PASS
Middle	78.01	PASS
High	77.67	PASS



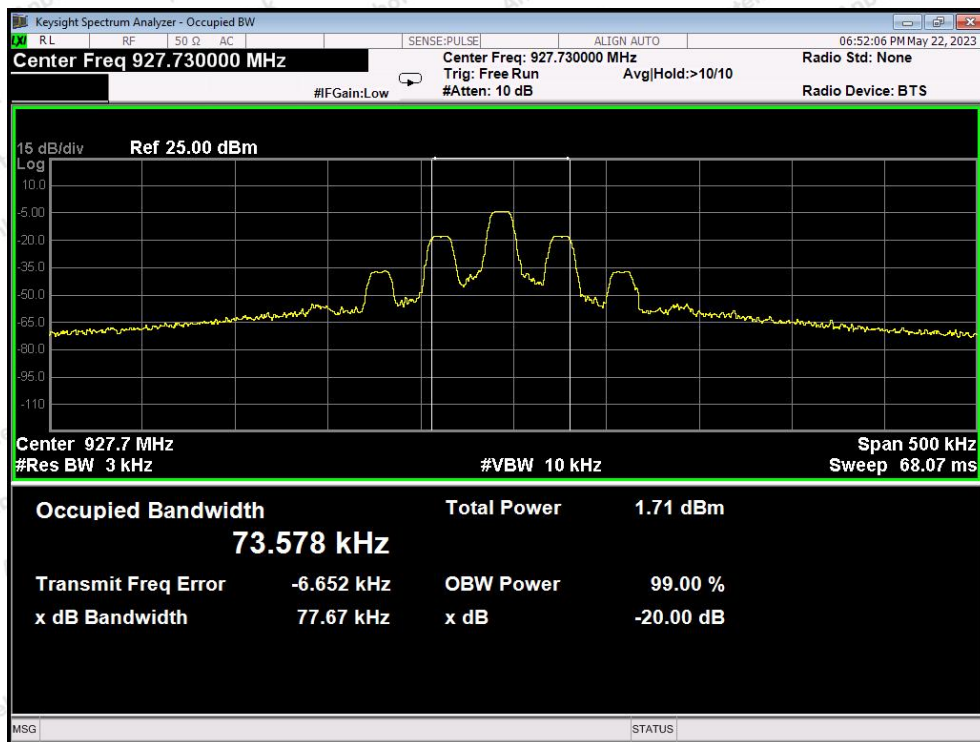


Low Channel



Mid Channel





High Channel



6. Antenna Requirement

6.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
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.

6.2. Antenna Connected Construction

The antenna is a Monopole Antenna which permanently attached, and the best case gain of the antenna is 1.57 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 -----

