

TEST REPORT

Applicant: Xiamen ZiFiSense InfoTech Co., Ltd

Address of Applicant: Room 803, Building A-05, Software Park Phase III, Jimei District, Xiamen, China

Manufacturer: Xiamen ZiFiSense InfoTech Co., Ltd

Address of Manufacturer: Room 803, Building A-05, Software Park Phase III, Jimei District, Xiamen, China

Equipment Under Test (EUT)

Product Name: ZETA AP

Model No.: APTG-MO01, APTG-MO10

Trade Mark: N/A

FCC ID: 2AY22-APTG-MO01

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249

Date of sample receipt: Mar. 10, 2021

Date of Test: Mar. 10, 2021 - Mar. 17, 2021

Date of report issued: Mar. 17, 2021

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

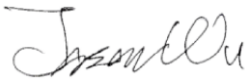
A handwritten signature in black ink is written over a circular blue ink stamp. The stamp contains the text "GTS GLOBAL TESTING SERVICES CO., LTD." around the perimeter and "GLOBAL TESTING" in the center.

Robinson Lo
Laboratory Manager


This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	Mar. 17, 2021	Original

Prepared By:  **Date:** Mar. 17, 2021

Project Engineer

Check By:  **Date:** Mar. 17, 2021

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Field strength of the fundamental signal	15.249 (a)	Pass
Spurious emissions	15.249 (a) (d)/15.209	Pass
Band edge	15.249 (d)/15.205	Pass
20dB Occupied Bandwidth	15.215 (c)	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark: Test according to ANSI C63.10:2013.

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	ZETA AP
Model No.:	APTG-MO01, APTG-MO10
Serial No.:	N/A
Hardware Version:	HV01
Software Version:	SV01
Test sample(s) ID:	GTSL202103000095F01
Sample(s) Status	Engineered sample
Frequency Band:	920-925MHz
Operation Frequency:	920.20MHz~922.60MHz
Channel numbers:	61
Channel separation:	0.04MHz
Modulation type:	FSK(FHSS)
Antenna Type:	External Monopole Antenna
Antenna gain:	5.0dBi
EIRP Power:	Less than 50mW
Power supply:	DC 3.7V from battery DC 5V-12V from adapter
Adapter:	Model: BX-0502000 I/P: AC 100-240V~ 50/60Hz O/P: DC 5V 2A

Operation Frequency each of channel							
Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz
1	920.20	21	921.00	41	921.80	61	922.60
2	920.24	22	921.04	42	921.84		
3	920.28	23	921.08	43	921.88		
4	920.32	24	921.12	44	921.92		
5	920.36	25	921.16	45	921.96		
6	920.40	26	921.20	46	922.00		
7	920.44	27	921.24	47	922.04		
8	920.48	28	921.28	48	922.08		
9	920.52	29	921.32	49	922.12		
10	920.56	30	921.36	50	922.16		
11	920.60	31	921.40	51	922.20		
12	920.64	32	921.44	52	922.24		
13	920.68	33	921.48	53	922.28		
14	920.72	34	921.52	54	922.32		
15	920.76	35	921.56	55	922.36		
16	920.80	36	921.60	56	922.40		
17	920.84	37	921.64	57	922.44		
18	920.88	38	921.68	58	922.48		
19	920.92	39	921.72	59	922.52		
20	920.96	40	921.76	60	922.56		

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	Mode
The lowest channel	920.20MHz	FSK
The middle channel	921.40MHz	
The Highest channel	922.60MHz	

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC —Registration No.: 381383 Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 381383. ● IC —Registration No.: 9079A The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A ● NVLAP (LAB CODE:600179-0) Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0d by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0
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5.7 Test Location

All tests were performed at:
<p>Global United Technology Services Co., Ltd. No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102 Tel: 0755-27798480 Fax: 0755-27798960</p>

5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	Default

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 25 2020	June. 24 2021
4	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June. 25 2020	June. 24 2021
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 25 2020	June. 24 2021
8	Absorbing clamp	Elektronik- Feinmechanik	MDS21	GTS229	June. 25 2020	June. 24 2021
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 25 2020	June. 24 2021

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
<p>15.203 requirement:</p> <p>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.</p> <p>15.247(c) (1)(i) requirement:</p> <p>(i) 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 6dBi.</p>	
EUT Antenna:	
<p><i>The antenna is external monopole antenna, the customer uses an anti-helical antenna, and the best case gain of the antenna is 5.0dBi, reference to the appendix II for details.</i></p> <p><i>The product had two antenna, but only used one antenna, the another is a decorative item, and it is only required for the appearance design.</i></p>	

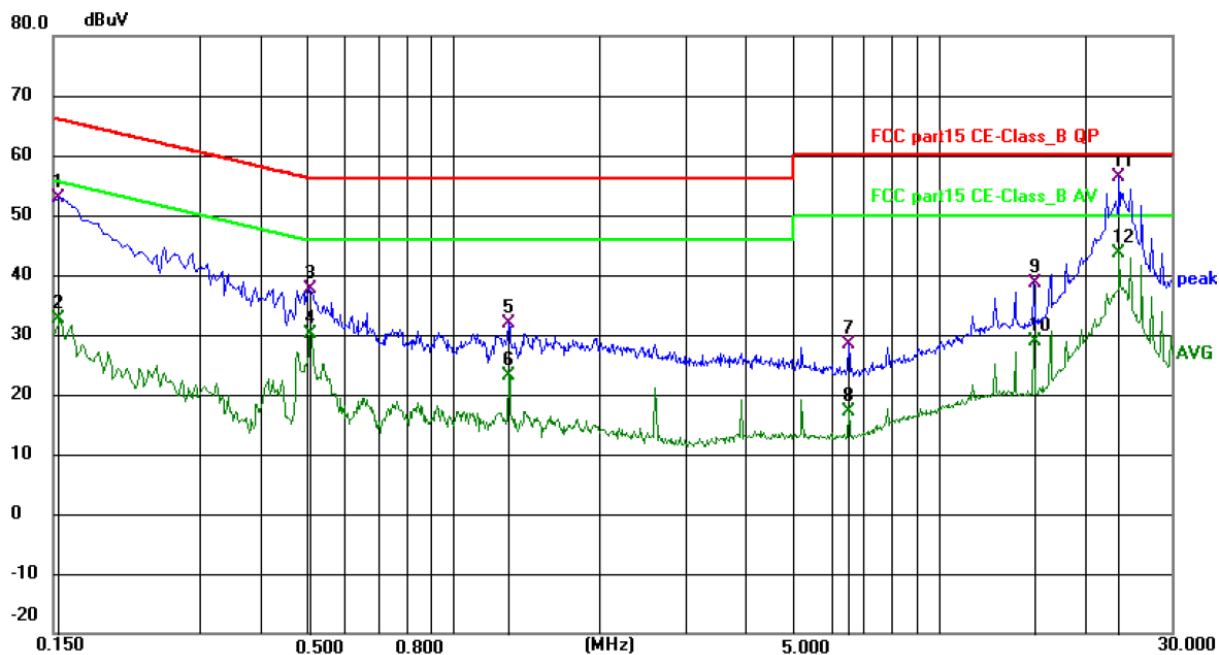
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9KHz, VBW=30KHz, 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:	<p><i>Remark</i> E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>					
Test procedure:	<ol style="list-style-type: none"> 1. The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. 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. 					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test results:	Pass					

Remark: Both high and low voltages have been tested to show only the worst low voltages test data.

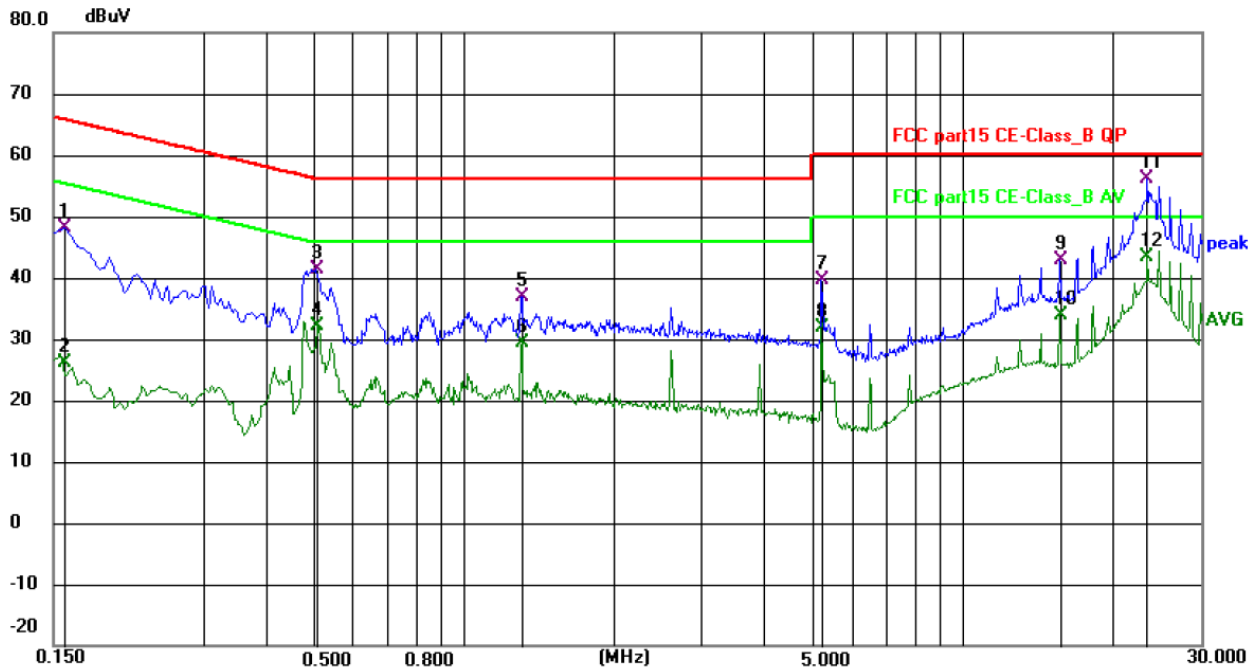
Measurement data

Line:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1544	42.41	10.51	52.92	65.76	12.84	QP	P	
2	0.1544	22.23	10.51	32.74	55.76	23.02	AVG	P	
3	0.5055	28.24	9.28	37.52	56.00	18.48	QP	P	
4	0.5055	20.92	9.28	30.20	46.00	15.80	AVG	P	
5	1.3018	21.85	9.93	31.78	56.00	24.22	QP	P	
6	1.3018	13.11	9.93	23.04	46.00	22.96	AVG	P	
7	6.5220	18.26	10.17	28.43	60.00	31.57	QP	P	
8	6.5220	6.86	10.17	17.03	50.00	32.97	AVG	P	
9	15.6480	27.98	10.56	38.54	60.00	21.46	QP	P	
10	15.6480	18.26	10.56	28.82	50.00	21.18	AVG	P	
11 *	23.4465	44.98	11.39	56.37	60.00	3.63	QP	P	
12	23.4465	32.26	11.39	43.65	50.00	6.35	AVG	P	

Neutral:

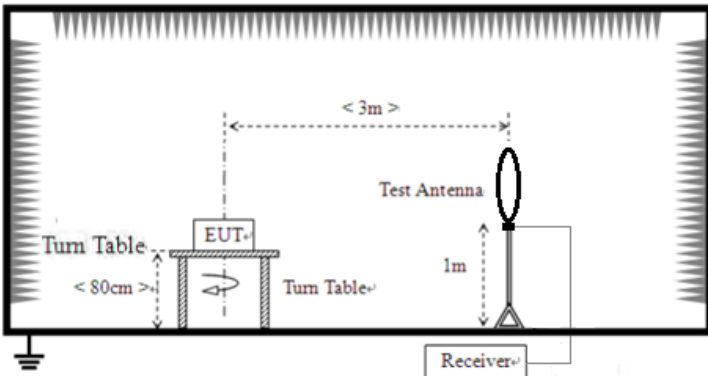


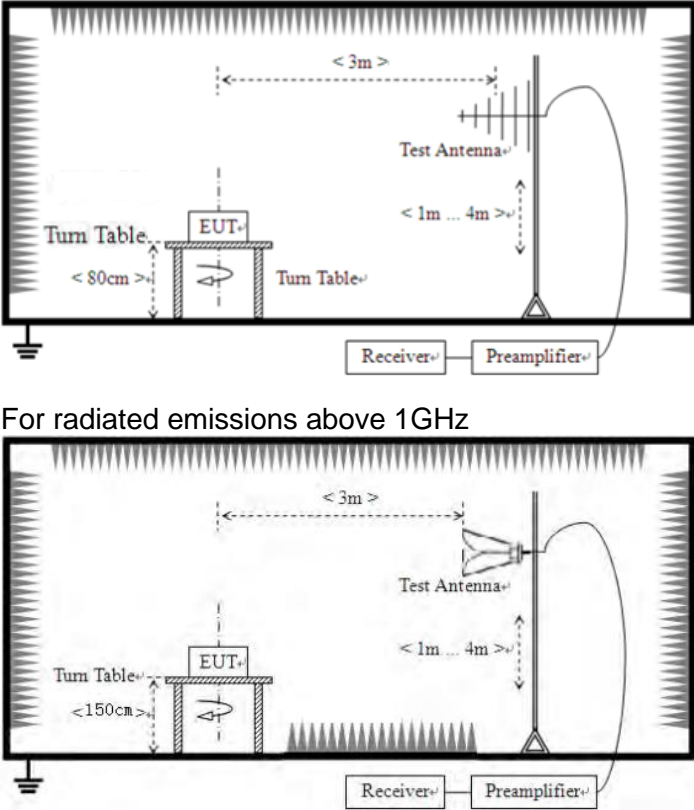
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	37.92	10.18	48.10	65.52	17.42	QP	P	
2	0.1590	15.90	10.18	26.08	55.52	29.44	AVG	P	
3	0.5055	31.91	9.46	41.37	56.00	14.63	QP	P	
4	0.5055	22.74	9.46	32.20	46.00	13.80	AVG	P	
5	1.3064	26.81	10.02	36.83	56.00	19.17	QP	P	
6	1.3064	19.41	10.02	29.43	46.00	16.57	AVG	P	
7	5.2170	29.27	10.26	39.53	60.00	20.47	QP	P	
8	5.2170	21.61	10.26	31.87	50.00	18.13	AVG	P	
9	15.6480	32.22	10.69	42.91	60.00	17.09	QP	P	
10	15.6480	23.23	10.69	33.92	50.00	16.08	AVG	P	
11 *	23.4375	44.76	11.40	56.16	60.00	3.84	QP	P	
12	23.4375	32.05	11.40	43.45	50.00	6.55	AVG	P	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + Factor(LISN Factor + Cable Loss)
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

7.3 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Peak		1MHz	10Hz	Average Value	
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	902MHz-928MHz	94.00		QP Value	
Limit: (Spurious Emissions)	Frequency	Limit (uV/m)		Remark	
	0.009MHz-0.490MHz	2400/F(kHz) @300m		Quasi-peak Value	
	0.490MHz-1.705MHz	24000/F(kHz) @30m		Quasi-peak Value	
	1.705MHz-30.0MHz	30 @30m		Quasi-peak Value	
	30MHz-88MHz	100 @3m		Quasi-peak Value	
	88MHz-216MHz	150 @3m		Quasi-peak Value	
	216MHz-960MHz	200 @3m		Quasi-peak Value	
	960MHz-1GHz	500 @3m		Quasi-peak Value	
Above 1GHz	500 @3m		Average Value		
	5000 @3m		Peak Value		
Limit: (band edge)	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.				
Test setup:	<p>For radiated emissions from 9kHz to 30MHz</p>  <p>For radiated emissions from 30MHz to 1GHz</p>				

	 <p>For radiated emissions above 1GHz</p>						
<p>Test Procedure:</p>	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. 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. 						
<p>Test Instruments:</p>	<p>Refer to section 6.0 for details</p>						
<p>Test mode:</p>	<p>Refer to section 5.2 for details</p>						
<p>Test environment:</p>	<table border="1"> <tr> <td>Temp.:</td> <td>25 °C</td> <td>Humid.:</td> <td>52%</td> <td>Press.:</td> <td>1012mbar</td> </tr> </table>	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar		
<p>Test voltage:</p>	<p>AC 120V, 60Hz</p>						
<p>Test results:</p>	<p>Pass</p>						

Measurement data:**7.3.1 Field Strength of The Fundamental Signal****QP value:**

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
902.20	96.79	21.23	1.43	35.18	84.27	94	-9.73	Vertical
902.20	94.82	21.23	1.43	35.18	82.30	94	-11.70	Horizontal
921.40	94.65	21.23	1.43	35.18	82.13	94	-11.87	Vertical
921.40	93.74	21.23	1.43	35.18	81.22	94	-12.78	Horizontal
922.60	94.82	21.23	1.43	35.18	82.30	94	-11.70	Vertical
922.60	93.67	21.23	1.43	35.18	81.15	94	-12.85	Horizontal

7.3.2 Spurious emissions

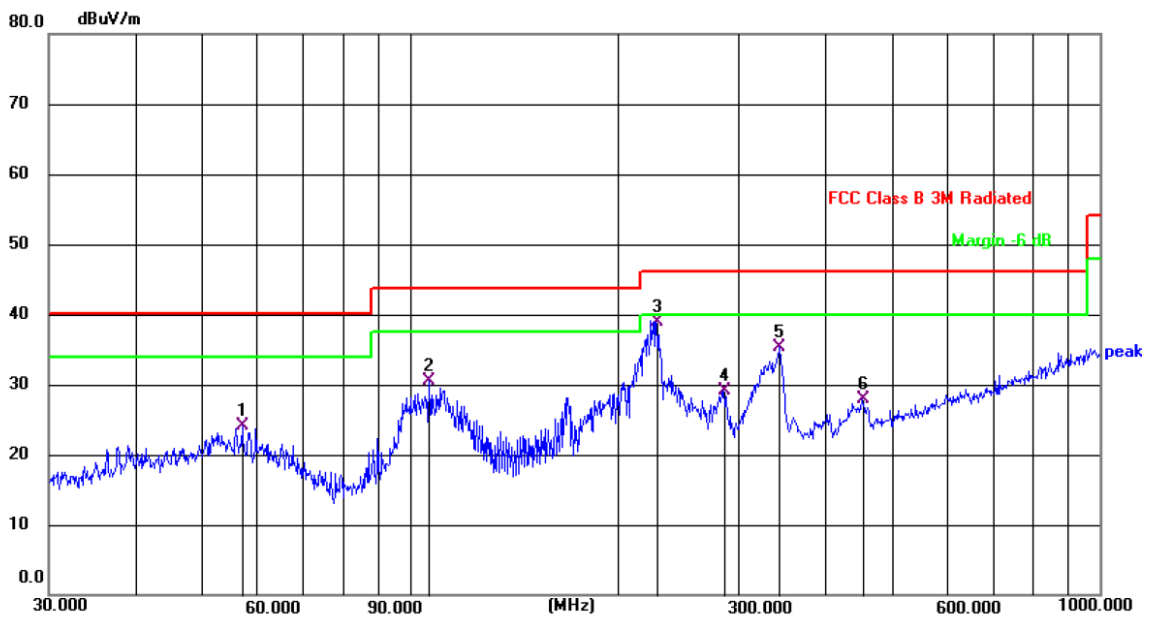
■ Below 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

■ Below 1GHz

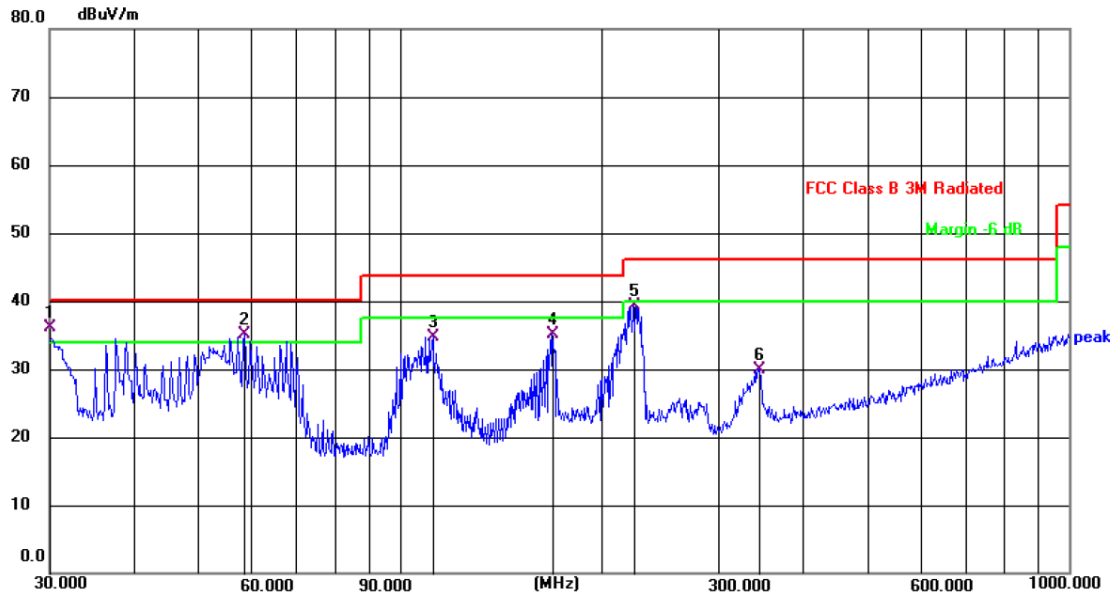
We pretest all mode, the low channel was worst mode, and the data recording in the report.

Horizontal:



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Margin dB	Detector	Comment
1		57.1914	38.58	-14.40	24.18	40.00	15.82	QP	
2		106.7587	46.92	-16.44	30.48	43.50	13.02	QP	
3	*	227.6906	53.63	-14.73	38.90	46.00	7.10	QP	
4		284.9767	42.42	-13.30	29.12	46.00	16.88	QP	
5		343.1800	47.22	-11.95	35.27	46.00	10.73	QP	
6		452.7197	37.59	-9.63	27.96	46.00	18.04	QP	

Vertical:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV/m	dB/m	dB		
1	*	30.0000	52.60	-16.54	36.06	40.00	3.94	QP	
2	!	58.6126	49.60	-14.58	35.02	40.00	4.98	QP	
3		112.1305	51.78	-16.98	34.80	43.50	8.70	QP	
4		169.0054	52.90	-17.84	35.06	43.50	8.44	QP	
5		223.7334	54.08	-14.87	39.21	46.00	6.79	QP	
6		344.3855	41.88	-11.92	29.96	46.00	16.04	QP	

■ Above 1GHz

Test channel:	Lowest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1840.40	39.10	31.78	6.32	31.14	46.06	74	-27.94	Vertical
2760.60	38.25	33.14	8.65	31.36	48.68	74	-25.32	Vertical
3680.80	31.30	33.45	9.74	31.62	42.87	74	-31.13	Vertical
4601.00	30.36	35.03	10.41	31.74	44.06	74	-29.94	Vertical
5521.20	29.95	37.72	11.26	31.82	47.11	74	-26.89	Vertical
1840.40	39.67	31.78	6.32	31.14	46.63	74	-27.37	Horizontal
2760.60	38.37	33.14	8.65	31.36	48.80	74	-25.20	Horizontal
3680.80	30.41	33.45	9.74	31.62	41.98	74	-32.02	Horizontal
4601.00	30.43	35.03	10.41	31.74	44.13	74	-29.87	Horizontal
5521.20	29.48	37.72	11.26	31.82	46.64	74	-27.36	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1840.40	29.01	31.78	6.32	31.14	35.97	54	-18.03	Vertical
2760.60	27.20	33.14	8.65	31.36	37.63	54	-16.37	Vertical
3680.80	29.89	33.45	9.74	31.62	41.46	54	-12.54	Vertical
4601.00	20.61	35.03	10.41	31.74	34.31	54	-19.69	Vertical
5521.20	20.21	37.72	11.26	31.82	37.37	54	-16.63	Vertical
1840.40	23.88	31.78	6.32	31.14	30.84	54	-23.16	Horizontal
2760.60	25.22	33.14	8.65	31.36	35.65	54	-18.35	Horizontal
3680.80	20.89	33.45	9.74	31.62	32.46	54	-21.54	Horizontal
4601.00	29.01	35.03	10.41	31.74	42.71	54	-11.29	Horizontal
5521.20	27.20	37.72	11.26	31.82	44.36	54	-9.64	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. “*”, means this data is the too weak instrument of signal is unable to test.

Test channel:	Middle channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1842.80	39.04	31.78	6.32	31.14	46.00	74	-28.00	Vertical
2764.20	38.21	33.14	8.65	31.36	48.64	74	-25.36	Vertical
3685.60	32.06	33.42	9.73	31.62	43.59	74	-30.41	Vertical
4607.00	30.67	35.03	10.45	31.71	44.44	74	-29.56	Vertical
5528.40	30.36	37.75	11.22	31.86	47.47	74	-26.53	Vertical
1842.80	39.46	31.78	6.32	31.14	46.42	74	-27.58	Horizontal
2764.20	38.82	33.14	8.65	31.36	49.25	74	-24.75	Horizontal
3685.60	30.63	33.45	9.74	31.62	42.20	74	-31.80	Horizontal
4607.00	30.44	35.03	10.41	31.74	44.14	74	-29.86	Horizontal
5528.40	30.23	37.72	11.26	31.82	47.39	74	-26.61	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1842.80	28.79	31.78	6.32	31.14	35.75	54	-18.25	Vertical
2764.20	27.39	33.14	8.65	31.36	37.82	54	-16.18	Vertical
3685.60	29.54	33.42	9.73	31.62	41.07	54	-12.93	Vertical
4607.00	20.74	35.03	10.45	31.71	34.51	54	-19.49	Vertical
5528.40	20.42	37.75	11.22	31.86	37.53	54	-16.47	Vertical
1842.80	23.66	31.78	6.32	31.14	30.62	54	-23.38	Horizontal
2764.20	25.54	33.14	8.65	31.36	35.97	54	-18.03	Horizontal
3685.60	20.55	33.45	9.74	31.62	32.12	54	-21.88	Horizontal
4607.00	20.43	35.03	10.41	31.74	34.13	54	-19.87	Horizontal
5528.40	20.24	37.72	11.26	31.82	37.40	54	-16.60	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. “**”, means this data is the too weak instrument of signal is unable to test.

Test channel:	Highest channel
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1845.20	39.49	31.79	6.32	31.54	46.06	74	-27.94	Vertical
2767.80	38.32	33.21	8.67	31.57	48.63	74	-25.37	Vertical
3690.40	31.31	33.55	9.78	31.73	42.91	74	-31.09	Vertical
4613.00	30.74	35.32	10.53	31.89	44.70	74	-29.30	Vertical
5535.60	30.35	37.54	11.27	32.67	46.49	74	-27.51	Vertical
1845.20	39.31	31.79	6.32	31.54	45.88	74	-28.12	Horizontal
2767.80	38.22	33.21	8.67	31.57	48.53	74	-25.47	Horizontal
3690.40	30.44	33.55	9.78	31.73	42.04	74	-31.96	Horizontal
4613.00	30.19	35.32	10.53	31.89	44.15	74	-29.85	Horizontal
5535.60	30.11	37.54	11.27	32.67	46.25	74	-27.75	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1845.20	28.68	31.79	6.32	31.54	35.25	54	-18.75	Vertical
2767.80	27.58	33.21	8.67	31.57	37.89	54	-16.11	Vertical
3690.40	28.36	33.55	9.78	31.73	39.96	54	-14.04	Vertical
4613.00	21.23	35.32	10.53	31.89	35.19	54	-18.81	Vertical
5535.60	20.35	37.54	11.27	32.67	36.49	54	-17.51	Vertical
1845.20	27.51	31.79	6.32	31.54	34.08	54	-19.92	Horizontal
2767.80	25.46	33.21	8.67	31.57	35.77	54	-18.23	Horizontal
3690.40	20.90	33.55	9.78	31.73	32.50	54	-21.50	Horizontal
4613.00	20.84	35.32	10.53	31.89	34.80	54	-19.20	Horizontal
5535.60	20.46	37.54	11.27	32.67	36.60	54	-17.40	Horizontal

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.
3. “*”, means this data is the too weak instrument of signal is unable to test.

7.3.3 Bandedge emissions

Test channel:	Lowest channel
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QP value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
614.00	44.27	20.59	1.21	35.05	31.02	46	-14.98	Horizontal
614.00	44.65	20.59	1.21	35.05	31.40	46	-14.60	Vertical

Test channel:	Highest channel
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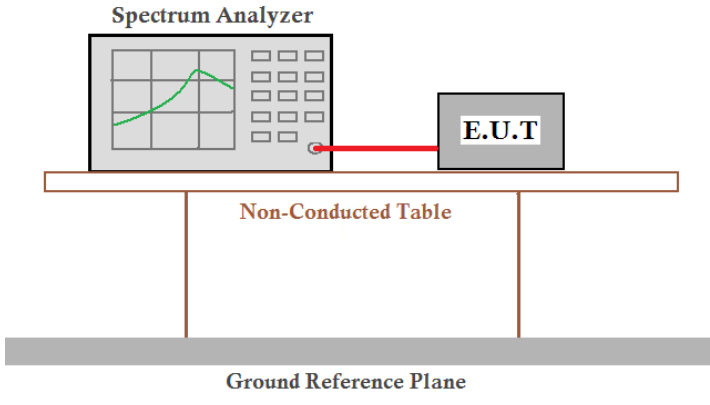
QP value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
960.00	44.31	20.65	1.47	35.09	31.34	46	-14.66	Horizontal
960.00	44.66	20.65	1.47	35.09	31.69	46	-14.31	Vertical

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*

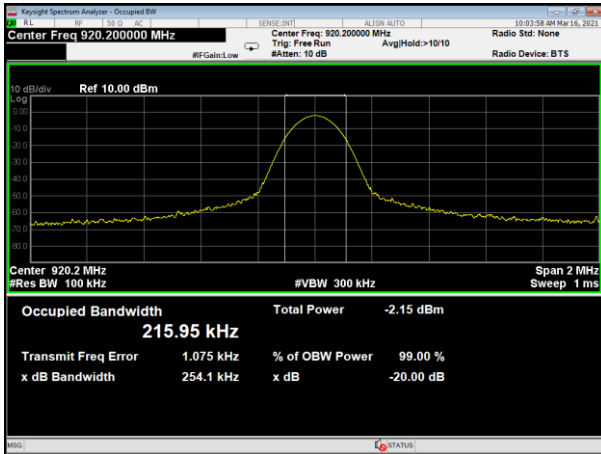
7.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215
Test Method:	ANSI C63.10:2013
Limit:	Operation Frequency range 2400MHz~2483.5MHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

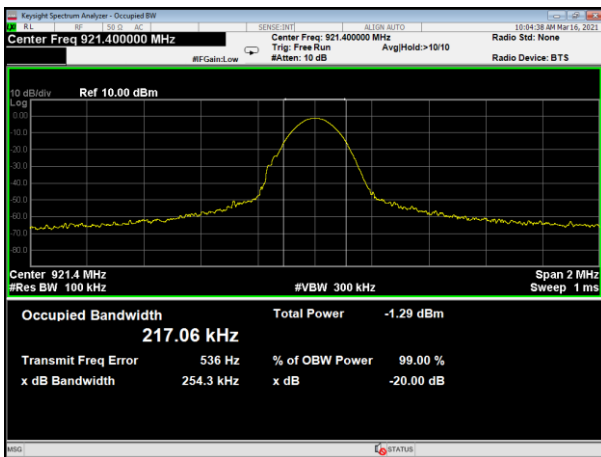
Measurement Data

Mode	Test channel	20dB bandwidth(kHz)	Result
FSK	Lowest	254.1	Pass
	Middle	254.3	Pass
	Highest	254.0	Pass

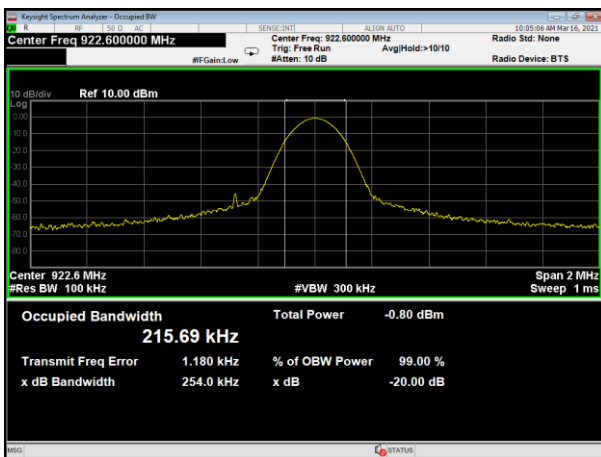
Test plot as follows:



Lowest channel

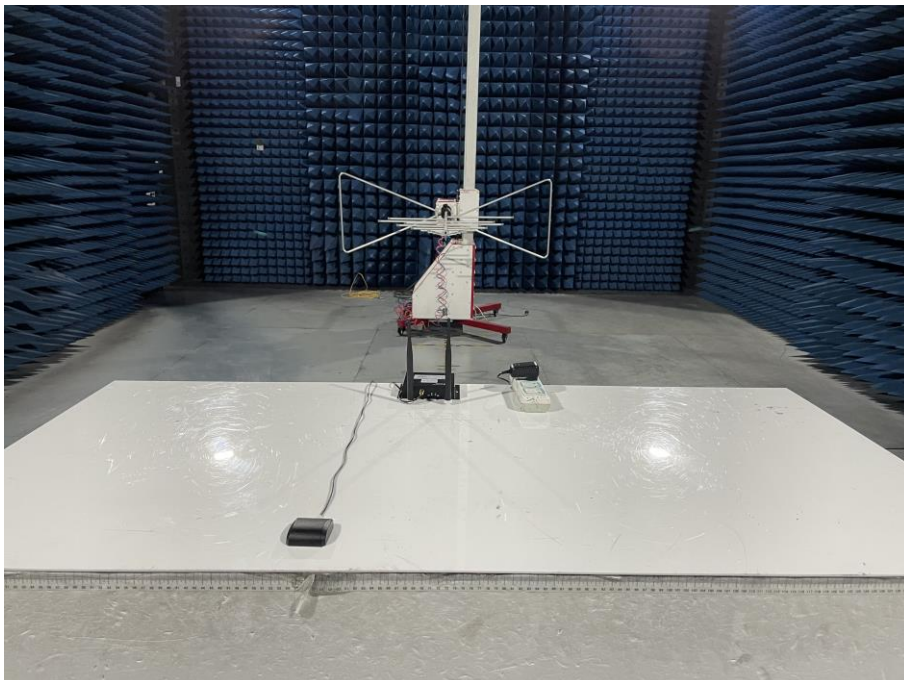
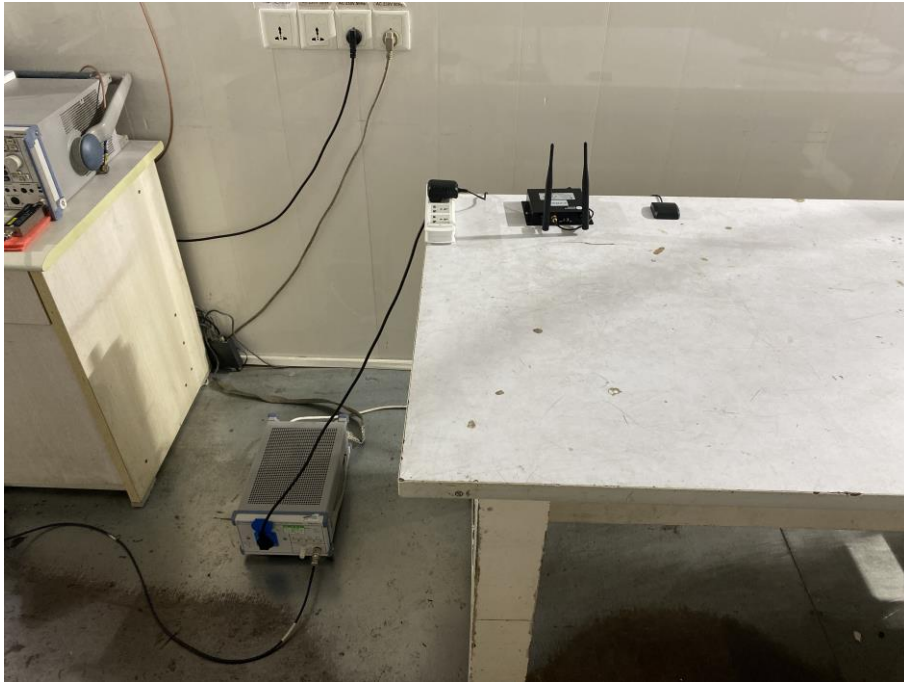


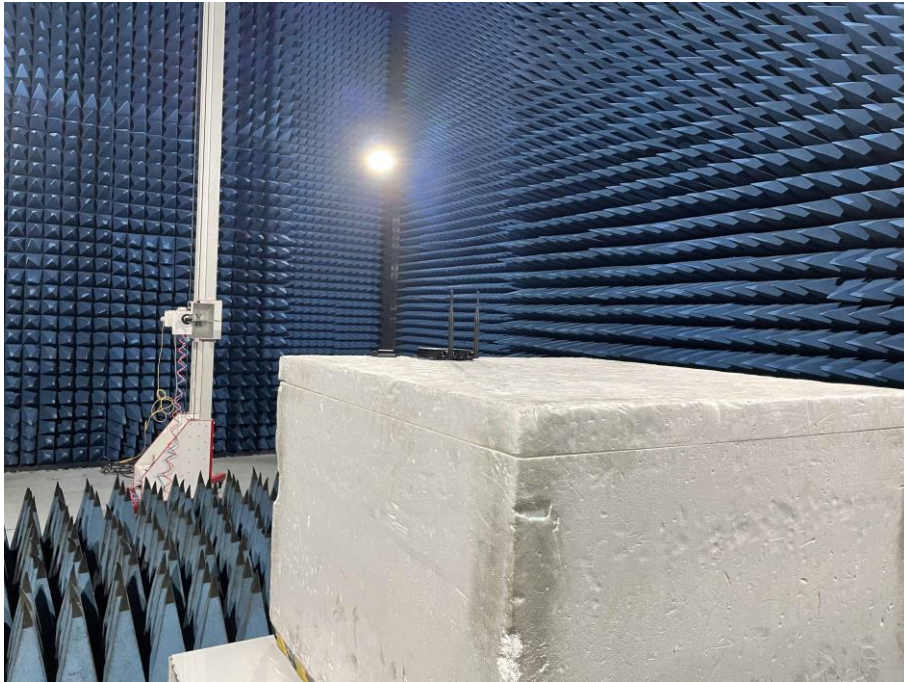
Middle channel



Highest channel

8 Test Setup Photo





9 EUT Constructional Details





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