FCC TEST REPORT

Client Name	:	Smart Devices Ltd.
Address	:	room 10, floor 2, ul. 1905 goda, b. 10Ac1, Moscow, 123022 Russian Federation
Product Name	:	RaZberry 7 - Z-Wave shield for Raspberry Pi
Date	:	Nov. 03, 2021

Shenzhen Anbotek Compliance Laboratory Limited

Contents

TEST REPORT

Applicant	:	Smart Devices Ltd.
Manufacturer	:	Smart Devices Ltd.
Product Name	:	RaZberry 7 - Z-Wave shield for Raspberry Pi
Model No.	:	ZME_RAZBERRY7
Trade Mark	:	Z-Wave.Me
Rating(s)	:	Input: DC 3V The current consumption is 15 mA in receiving mode and 45-50 mA in transmission mode.
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 Aug. 26, 2021

Date of Test Aug. 26~Sept. 23, 2021

Prepared by

(Ella Liang)

Approved & Authorized Signer

(Kingkong Jin)

1. General Information

1.1. Client Information

Applicant	:	Smart Devices Ltd.
Address	:	room 10, floor 2, ul. 1905 goda, b. 10Ac1, Moscow, 123022 Russian Federation
Manufacturer	:	Smart Devices Ltd.
Address	:	room 10, floor 2, ul. 1905 goda, b. 10Ac1, Moscow, 123022 Russian Federation
Factory	:	Smart Devices Ltd.
Address	:	room 10, floor 2, ul. 1905 goda, b. 10Ac1, Moscow, 123022 Russian Federation

1.2. Description of Device (EUT)

Product Name	:	RaZberry 7 - Z-Wave shield for Raspberry Pi	
Model No.	:	ZME_RAZBERRY7	
Trade Mark	:	Z-Wave.Me	
Test Power Supply	:	DC 3V via MacBook Air	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	908MHz, 912MHz, 916MHz, 920MHz
		Number of Channel:	4 Channel
		Antenna Type:	PCB Antenna
		Modulation Type:	FSK on 908MHz and 916MHz DSSS OQPSK on 912MHz and 920MHz
		Antenna Gain(Peak):	1dBi
		Adapter:	N.A.
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

MacBook Air	:	Model: A1466 Input: 14.85V/3.05A CMIIT ID:C02HXB48DRVC
Adapter		Input: AC 100-240V, 1A, 50-60Hz Output: 14.85V/3.05A

1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH01
Mode 2	CH02
Mode 3	CH03
Mode 4	CH04

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH02
Mode 3	CH03
Mode 4	CH04

Note:

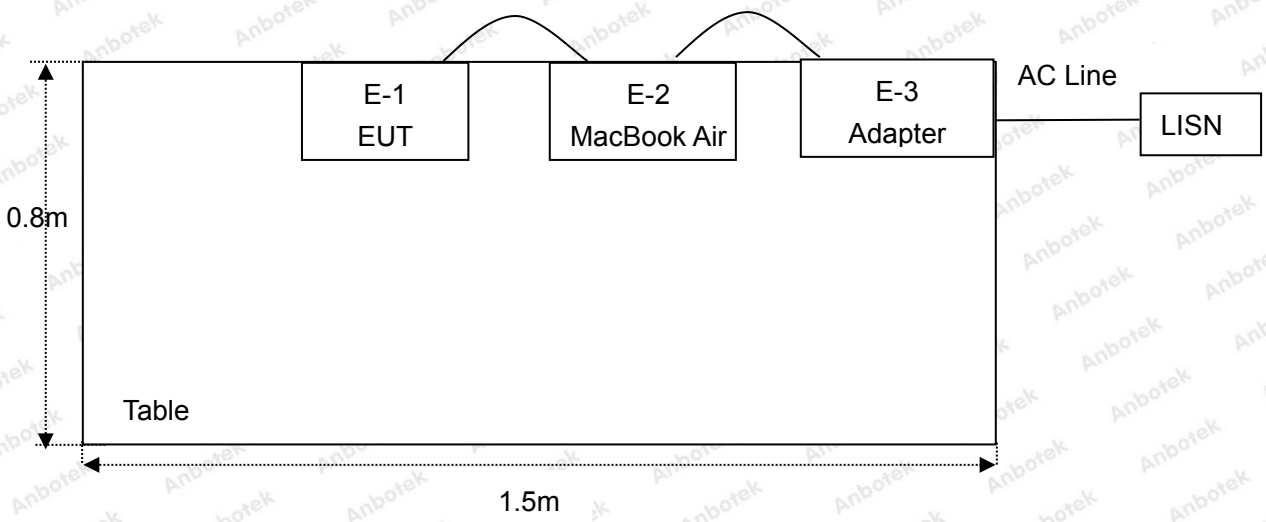
1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.

1.5. List of Channels

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
1	908	/	/	/	/	/	/
2	912	/	/	/	/	/	/
3	916	/	/	/	/	/	/
4	920	/	/	/	/	/	/

1.6. Description of Test Setup

CE



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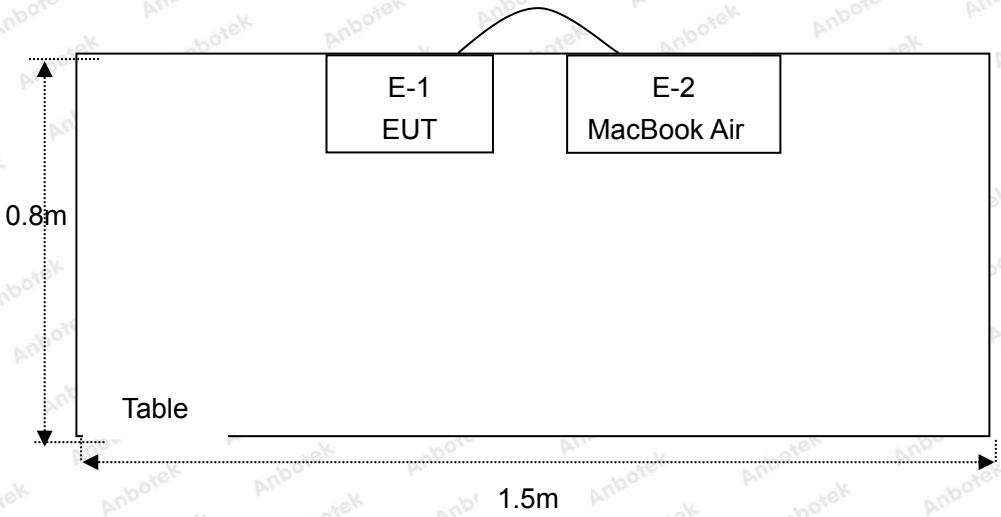


1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Oct. 26, 2020	1 Year
2.	Three Phase V-type Artificial Power Network	CYBERTEK	EM5040DT	E215040DT001	Jul 05, 2021	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 26, 2020	1 Year
4.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 26, 2020	1 Year
5.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 26, 2020	1 Year
6.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
7.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Oct. 26, 2020	1 Year
8.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 02, 2020	2 Year
9.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 02, 2020	2 Year
10.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 02, 2020	2 Year
11.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Nov. 02, 2020	2 Year
12.	Pre-amplifier	SONOMA	310N	186860	Oct. 26, 2020	1 Year
13.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
14.	RF Test Control System	YIHENG	YH3000	2017430	Oct. 26, 2020	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN045	Oct. 26, 2020	1 Year
16.	Power Sensor	DAER	RPR3006W	15I00041SN046	Oct. 26, 2020	1 Year
17.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
18.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 26, 2020	1 Year
19.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 26, 2020	1 Year
20.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 26, 2020	1 Year
21	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Oct. 26, 2020	1 Year

1.8. Measurement Uncertainty

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

1.9. 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

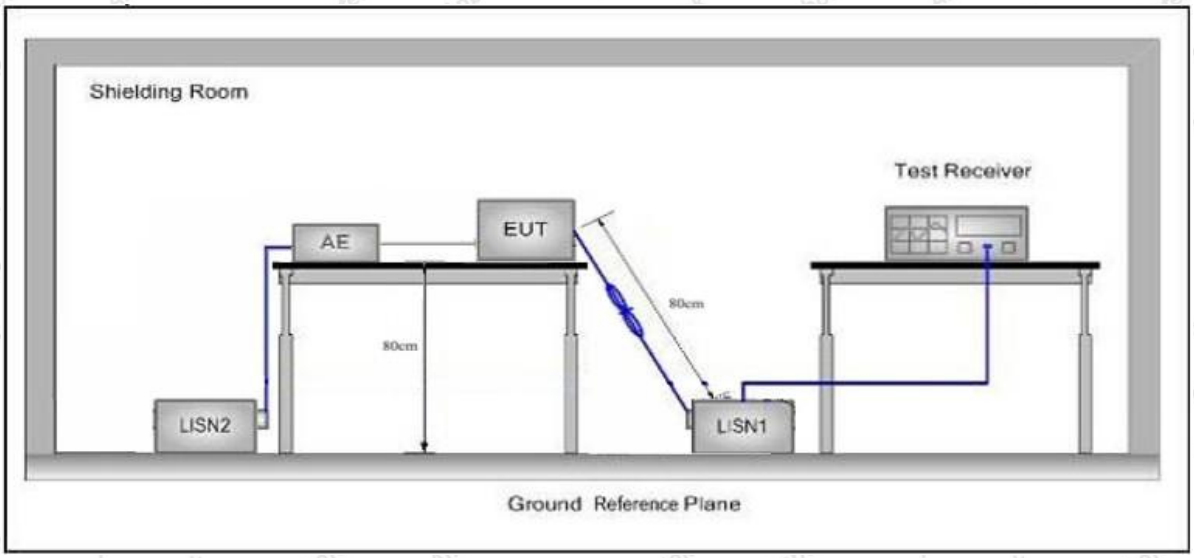
Standard Section	Test Item	Result
15.203	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.249	Radiated Emission	PASS
15.215(c)	20dB Bandwidth	PASS
15.249(c)	Band Edge	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

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.

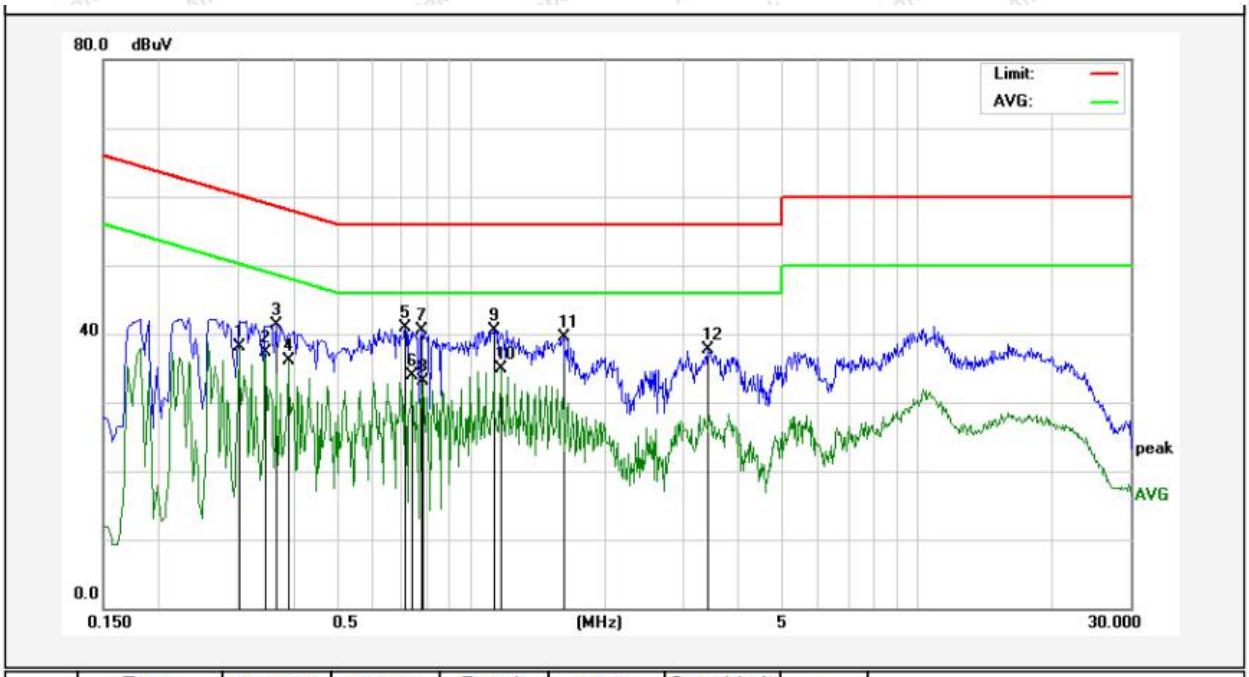
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

During the test, pre-scan all modes, and found the CH01 of which is the worst case, only the worst case is recorded in the report.

Conducted Emission Test Data

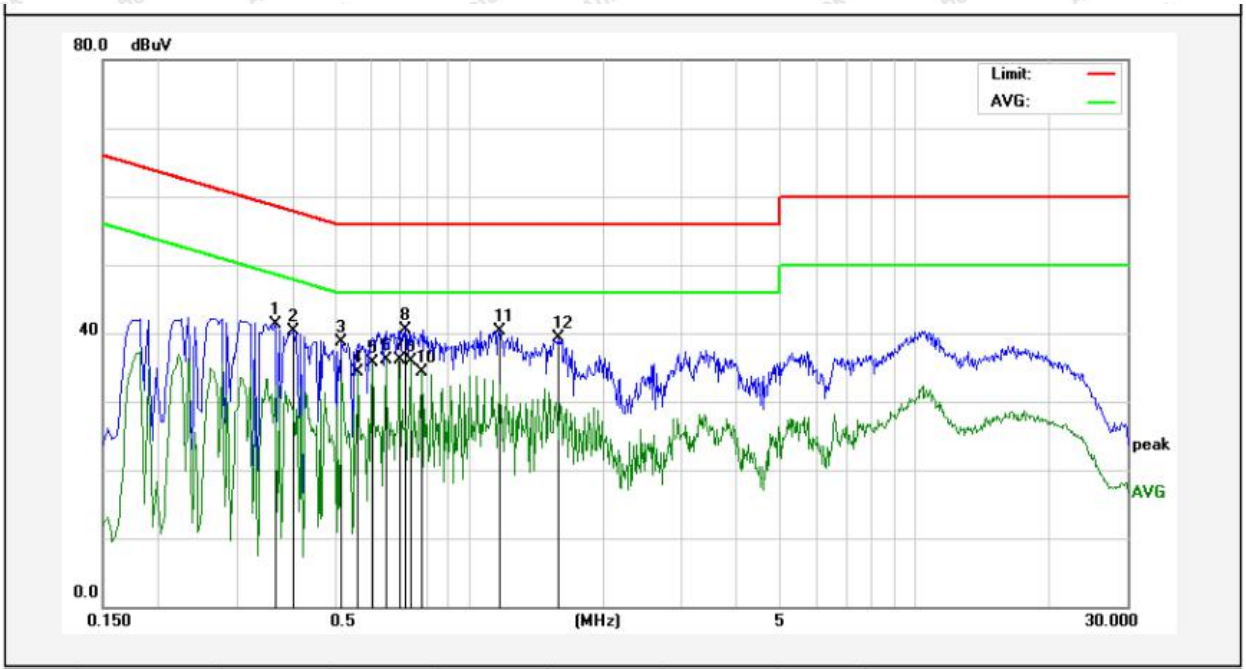
Test Site:	1# Shielded Room
Operating Condition:	CH01
Test Specification:	DC 3V via MacBook Air
Comment:	Live Line
	Tem.: 24.2℃ Hum.: 48%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.3020	27.96	10.13	38.09	50.19	-12.10	AVG	
2	0.3460	27.12	10.12	37.24	49.06	-11.82	AVG	
3	0.3660	31.12	10.12	41.24	58.59	-17.35	QP	
4	0.3899	26.01	10.11	36.12	48.06	-11.94	AVG	
5	0.7140	30.66	10.15	40.81	56.00	-15.19	QP	
6	0.7380	23.70	10.15	33.85	46.00	-12.15	AVG	
7	0.7780	30.35	10.15	40.50	56.00	-15.50	QP	
8	0.7820	23.04	10.15	33.19	46.00	-12.81	AVG	
9	1.1300	30.43	10.15	40.58	56.00	-15.42	QP	
10	1.1700	24.76	10.14	34.90	46.00	-11.10	AVG	
11	1.6180	29.41	10.13	39.54	56.00	-16.46	QP	
12	3.3980	27.59	10.12	37.71	56.00	-18.29	QP	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: CH01
Test Specification: DC 3V via MacBook Air
Comment: Neutral Line
Tem.: 24.2℃ Hum.: 48%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.3660	31.23	10.12	41.35	58.59	-17.24	QP	
2	0.4020	30.11	10.11	40.22	57.81	-17.59	QP	
3	0.5180	28.55	10.15	38.70	56.00	-17.30	QP	
4	0.5620	24.15	10.15	34.30	46.00	-11.70	AVG	
5	0.6060	25.47	10.15	35.62	46.00	-10.38	AVG	
6	0.6500	25.98	10.15	36.13	46.00	-9.87	AVG	
7	0.6940	25.97	10.15	36.12	46.00	-9.88	AVG	
8	0.7180	30.45	10.15	40.60	56.00	-15.40	QP	
9	0.7380	25.78	10.15	35.93	46.00	-10.07	AVG	
10	0.7820	24.18	10.15	34.33	46.00	-11.67	AVG	
11	1.1700	30.17	10.14	40.31	56.00	-15.69	QP	
12	1.5900	29.13	10.13	39.26	56.00	-16.74	QP	

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)
	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

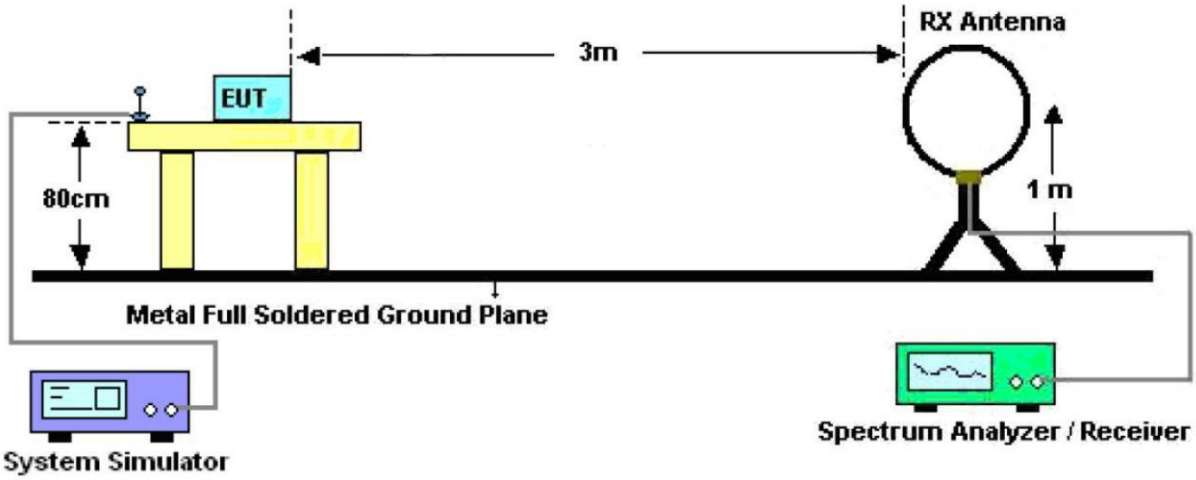


Figure 2. 30MHz to 1GHz

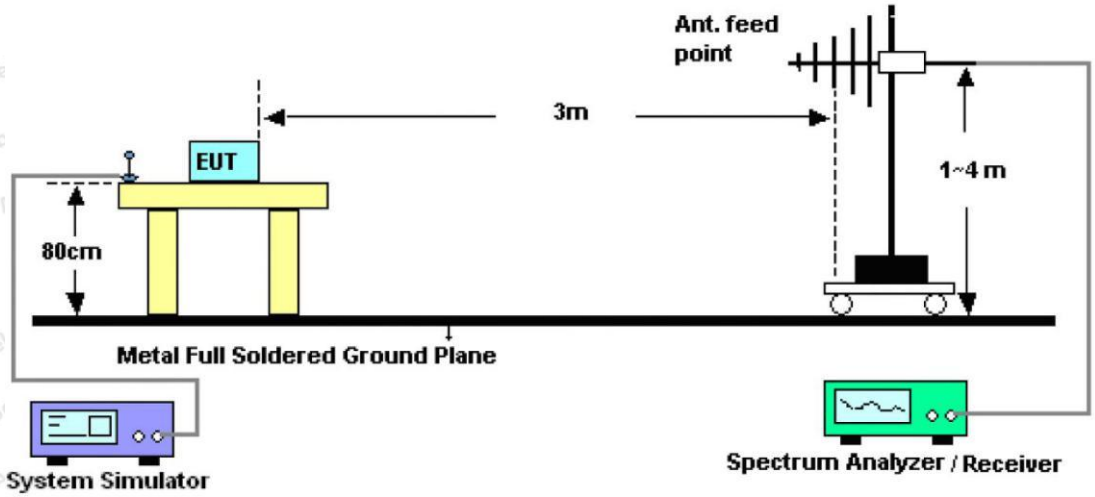
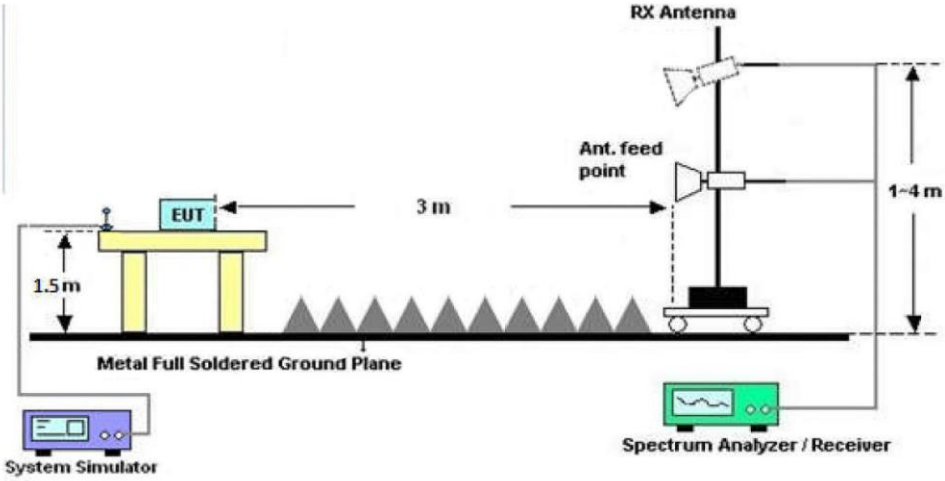


Figure 3. Above 1 GHz



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.

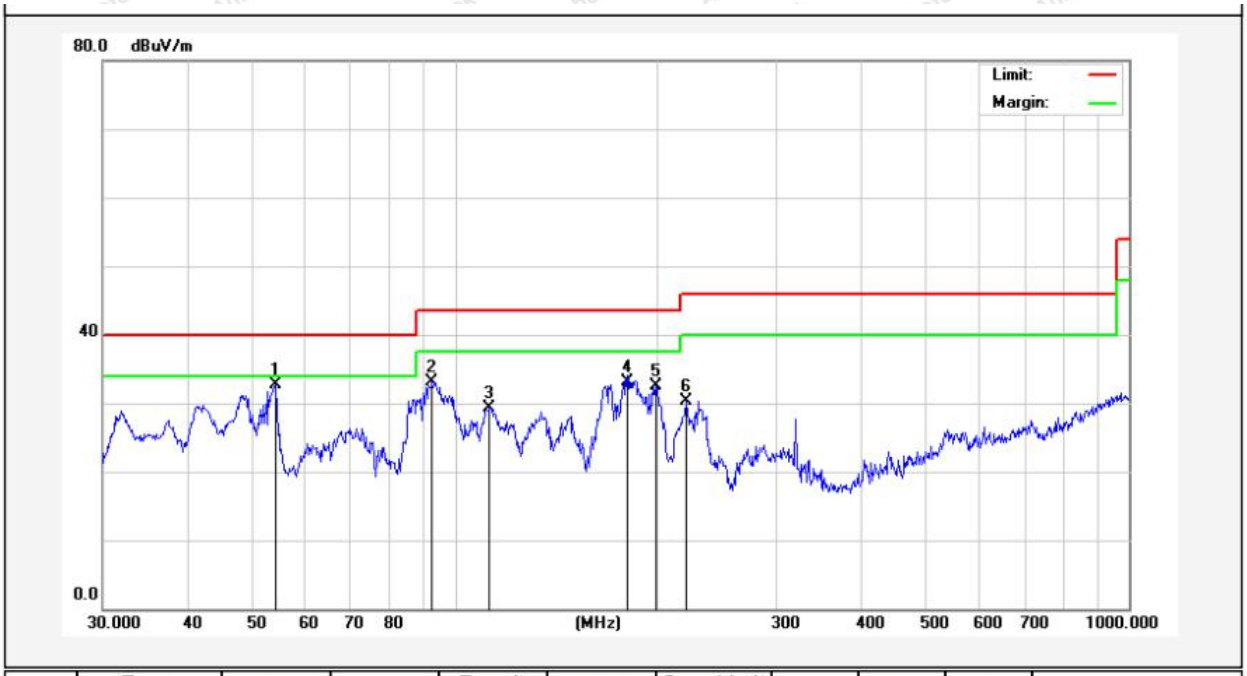
Test Results (30~1000MHz)

Test Mode: CH01

Power Source: DC 3V via MacBook Air

Polarization: Vertical

Temp.(℃)/Hum.(%RH): 22.9℃/49%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	54.0711	48.91	-16.21	32.70	40.00	-7.30	QP	100	0	
2	92.4624	48.68	-15.56	33.12	43.50	-10.38	QP	100	360	
3	112.5241	45.97	-16.66	29.31	43.50	-14.19	QP	100	0	
4	180.0165	51.43	-18.25	33.18	43.50	-10.32	QP	100	360	
5	198.5877	49.87	-17.27	32.60	43.50	-10.90	QP	100	0	
6	219.8446	46.81	-16.44	30.37	46.00	-15.63	QP	100	360	

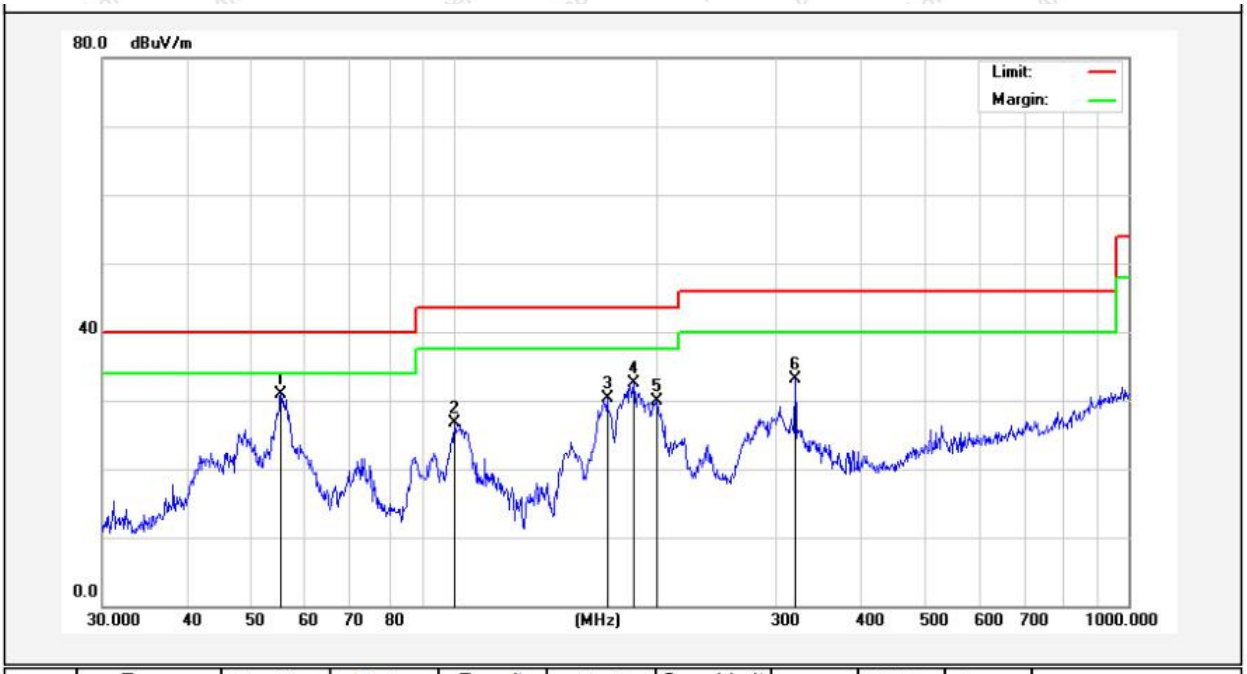
Test Results (30~1000MHz)

Test Mode: CH01

Power Source: DC 3V via MacBook Air

Polarization: Horizontal

Temp.(℃)/Hum.(%RH): 22.9℃/49%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	55.2207	47.43	-16.51	30.92	40.00	-9.08	QP	100	0	
2	99.8777	46.06	-19.39	26.67	43.50	-16.83	QP	100	360	
3	168.4138	51.68	-21.39	30.29	43.50	-13.21	QP	100	0	
4	184.4898	53.18	-20.61	32.57	43.50	-10.93	QP	100	360	
5	199.9856	49.72	-19.87	29.85	43.50	-13.65	QP	100	0	
6	319.9370	46.81	-13.78	33.03	46.00	-12.97	QP	100	360	

Fundamental

Frequency (MHz)	Antenna Pol.	Reading (dBuV/m)	Factor (dB)	Results (dBuV/m)	Limits (dBuV/m)	Det. Mode
908	H	92.36	-1.57	90.79	94	QP
908	V	91.78	-1.57	90.21	94	QP
912	H	90.26	-1.49	88.77	94	QP
912	V	87.31	-1.49	85.82	94	QP
916	H	94.17	-1.43	92.74	94	QP
916	V	92.69	-1.43	91.26	94	QP
920	H	91.84	-1.34	90.5	94	QP
920	V	91.09	-1.34	89.75	94	QP

Note:

1. Level =Receiver Read level + Factor

Test Results (1GHz-25GHz)

Test Mode: 908MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1816.8000	50.67	7.39	28.73	26.31	60.48	74	-13.52	H	Peak
1816.8000	39.63	7.39	28.73	26.31	49.44	54	-4.56	H	AVG
2725.2000	48.37	8.10	29.71	27.01	59.17	74	-14.83	H	Peak
2725.2000	37.68	8.10	29.71	27.01	48.48	54	-5.52	H	AVG
3633.6000	--	--	--	--		--	--	H	Peak
3633.6000	--	--	--	--		--	--	H	AVG
1816.8000	45.54	7.39	28.73	26.31	55.35	74	-18.65	V	Peak
1816.8000	38.42	7.39	28.73	26.31	48.23	54	-5.77	V	AVG
2725.2000	46.18	8.10	29.71	27.01	56.98	74	-17.02	V	Peak
2725.2000	38.09	8.10	29.71	27.01	48.89	54	-5.11	V	AVG
3633.6000	--	--	--	--		--	--	V	Peak
3633.6000	--	--	--	--		--	--	V	AVG

Test Mode: 912MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1824.0000	50.31	7.39	28.73	26.31	60.12	74	-13.88	H	Peak
1824.0000	39.63	7.39	28.73	26.31	49.44	54	-4.56	H	AVG
2736.0000	48.18	8.10	29.71	27.01	58.98	74	-15.02	H	Peak
2736.0000	37.30	8.10	29.71	27.01	48.10	54	-5.90	H	AVG
3648.0000	--	--	--	--		--	--	H	Peak
3648.0000	--	--	--	--		--	--	H	AVG
1824.0000	45.31	7.39	28.73	26.31	55.12	74	-18.88	V	Peak
1824.0000	37.74	7.39	28.73	26.31	47.55	54	-6.45	V	AVG
2736.0000	46.86	8.10	29.71	27.01	57.66	74	-16.34	V	Peak
2736.0000	38.88	8.10	29.71	27.01	49.68	54	-4.32	V	AVG
3648.0000	--	--	--	--		--	--	V	Peak
3648.0000	--	--	--	--		--	--	V	AVG

Test Mode: 916MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detector
1832.0000	50.31	7.39	28.73	26.31	60.12	74	-13.88	H	Peak
1832.0000	40.42	7.39	28.73	26.31	50.23	54	-3.77	H	AVG
2748.0000	48.47	8.10	29.71	27.01	59.27	74	-14.73	H	Peak
2748.0000	37.69	8.10	29.71	27.01	48.49	54	-5.51	H	AVG
3664.0000	--	--	--	--		--	--	H	Peak
3664.0000	--	--	--	--		--	--	H	AVG
1832.0000	45.87	7.39	28.73	26.31	55.68	74	-18.32	V	Peak
1832.0000	38.02	7.39	28.73	26.31	47.83	54	-6.17	V	AVG
2748.0000	46.70	8.10	29.71	27.01	57.50	74	-16.50	V	Peak
2748.0000	38.68	8.10	29.71	27.01	49.48	54	-4.52	V	AVG
3664.0000	--	--	--	--		--	--	V	Peak
3664.0000	--	--	--	--		--	--	V	AVG

Test Mode: 920MHz									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detecto r
1840.0000	50.91	7.39	28.73	26.31	60.72	74	-13.28	H	Peak
1840.0000	39.96	7.39	28.73	26.31	49.77	54	-4.23	H	AVG
2760.0000	48.45	8.10	29.71	27.01	59.25	74	-14.75	H	Peak
2760.0000	37.69	8.10	29.71	27.01	48.49	54	-5.51	H	AVG
3680.0000	--	--	--	--		--	--	H	Peak
3680.0000	--	--	--	--		--	--	H	AVG
1840.0000	46.05	7.39	28.73	26.31	55.86	74	-18.14	V	Peak
1840.0000	38.04	7.39	28.73	26.31	47.85	54	-6.15	V	AVG
2760.0000	45.97	8.10	29.71	27.01	56.77	74	-17.23	V	Peak
2760.0000	38.27	8.10	29.71	27.01	49.07	54	-4.93	V	AVG
3680.0000	--	--	--	--		--	--	V	Peak
3680.0000	--	--	--	--		--	--	V	AVG

Note:

1. Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

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

Radiated Band Edge:

Frequency (MHz)	Read Level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Det.
902.0000	37.67	-1.67	36.00	46.00	-10.00	H	QP
928.0000	37.69	-1.22	36.47	46.00	-9.53	H	QP
902.0000	40.34	-1.67	38.67	46.00	-7.33	V	QP
928.0000	39.69	-1.22	38.47	46.00	-7.53	V	QP

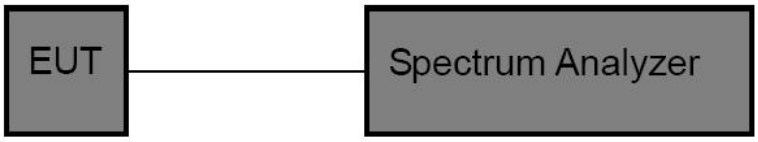
Remark:
1. Level =Receiver Read level + Factor

5. 20dB Bandwidth Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.249

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≥3*RBW =100kHz,

Detector= Average

Trace mode= Max hold.

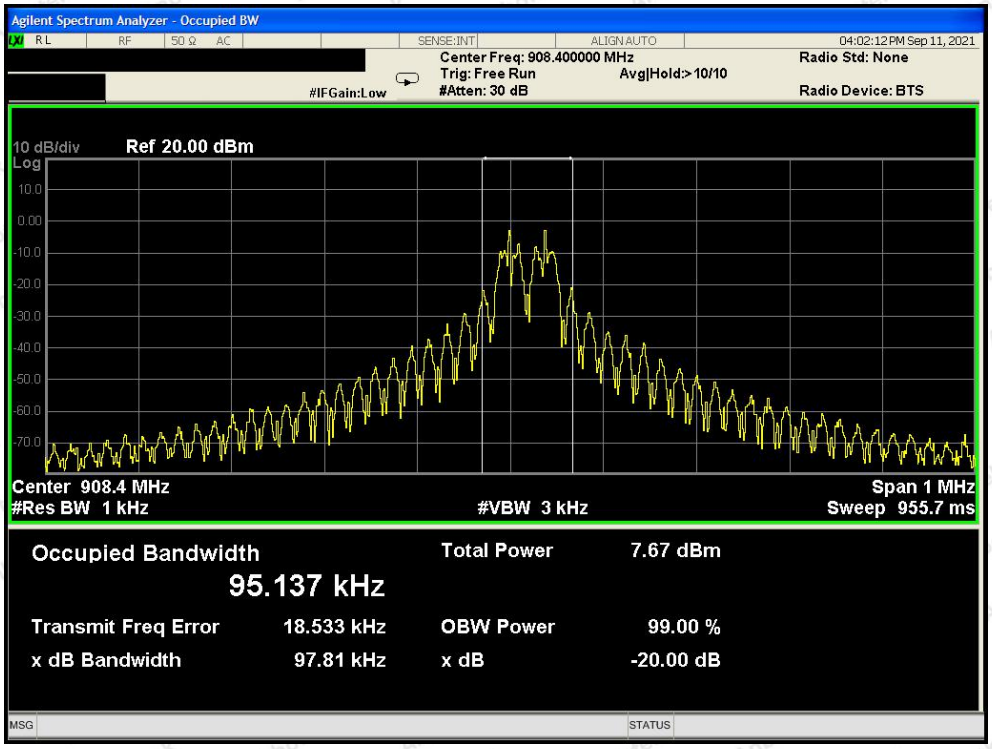
Sweep- auto couple.

4. Mark the peak frequency and –20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

5.4. Test Data

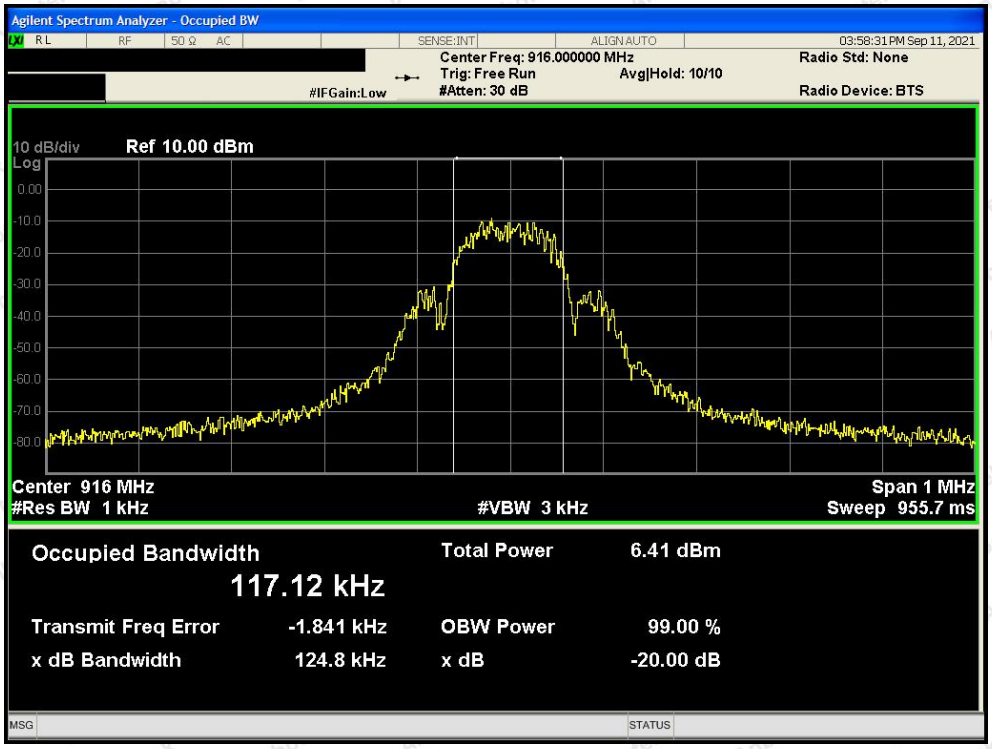
Test Item	:	20dB Bandwidth	Test Mode	:	Mode 1
Test Voltage	:	DC 3V via MacBook Air	Temperature	:	22.4℃
Test Result	:	PASS	Humidity	:	55%RH

Frequency (MHz)	Bandwidth (kHz)	Result
908	97.81	PASS
912	1038	PASS
916	124.8	PASS
920	1050	PASS



908MHz

912MHz



916MHz

920MHz

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

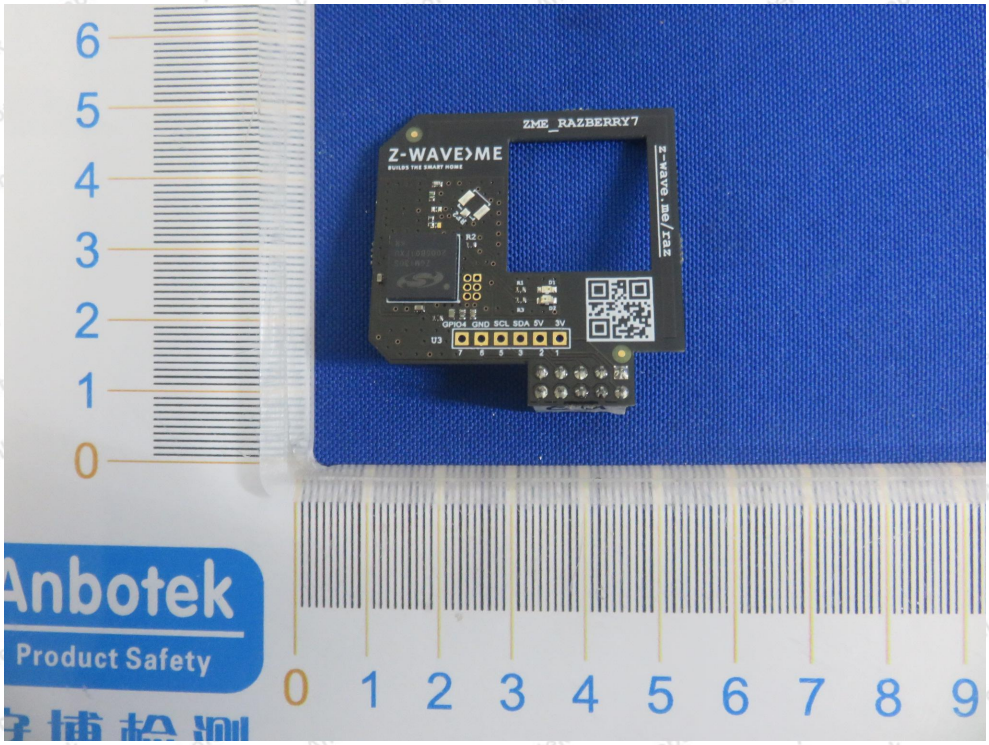
The antenna is a PCB Antenna which permanently attached, and the best case gain of the antenna is 1 dBi. It complies with the standard requirement.

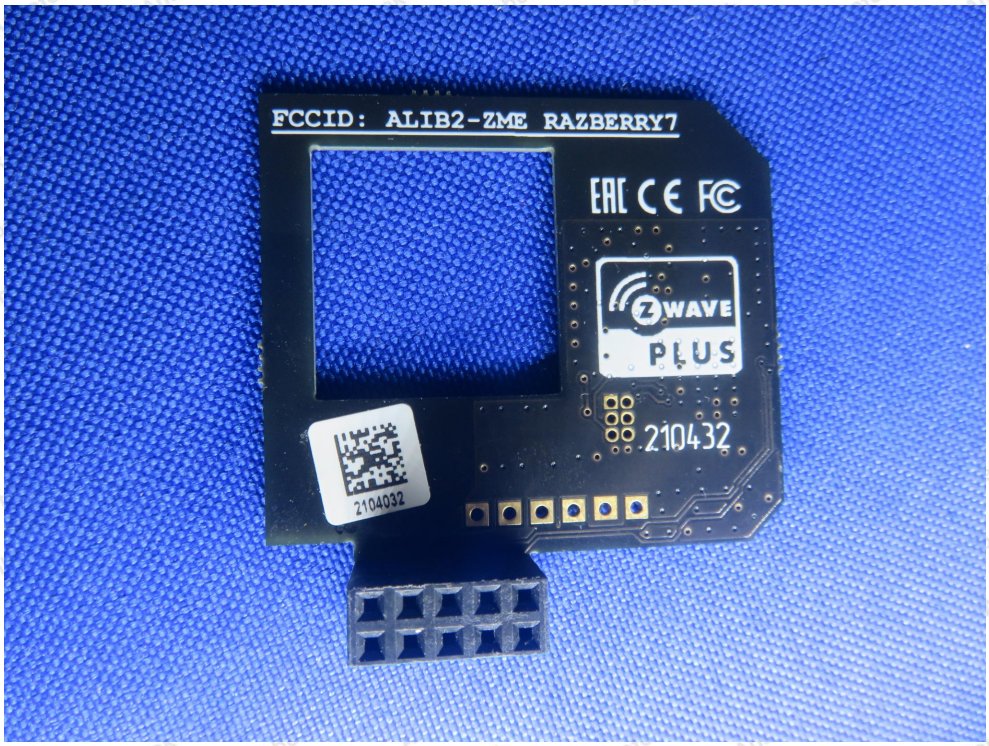
APPENDIX I -- TEST SETUP PHOTOGRAPH

Photo of Power Line Conducted Emission Test

Photo of Radiation Emission Test

APPENDIX II -- EUT PHOTOGRAPH





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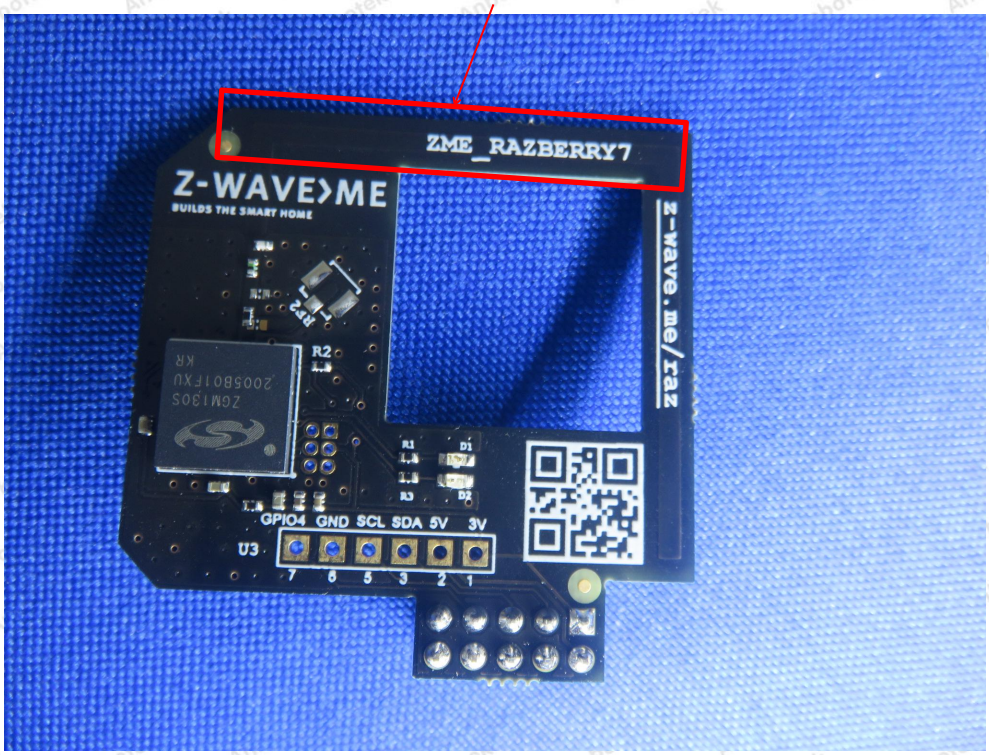

---------- End of Report ----------