FCC TEST REPORT

Client Name	:	SHENZHEN NEO ELECTRONICS CO.,LTD
Address	:	East6/F Building 2,Laobing industry,Baoan District,Shenzhen,518000,China
Product Name	:	Repeater
Date	:	Jan. 16, 2020

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant	:	SHENZHEN NEO ELECTRONICS CO.,LTD
Manufacturer	:	SHENZHEN NEO ELECTRONICS CO.,LTD
Product Name	:	Repeater
Model No.	:	NAS-RP01Z1U
Trade Mark	:	NEO
Rating(s)	:	Input: AC 85-240V, 50/60Hz

Test Standard(s)	**:**	**FCC Part15 Subpart C, Paragraph 15.249**
Test Method(s)	**:**	**ANSI C63.10: 2013**

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 Oct. 17, 2019

Date of Test Oct. 17~Dec. 18, 2019

Prepared by (Engineer / Dolly Mo)

Reviewer (Supervisor / Bibo Zhang)

Approved & Authorized Signer (Manager / Tom Chen)

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1. General Information

1.1. Client Information

Applicant	:	SHENZHEN NEO ELECTRONICS CO.,LTD
Address	:	East6/F Building 2,Laobing industry,Baoan District,Shenzhen,518000,China
Manufacturer	:	SHENZHEN NEO ELECTRONICS CO.,LTD
Address	:	East6/F Building 2,Laobing industry,Baoan District,Shenzhen,518000,China
Factory	:	SHENZHEN NEO ELECTRONICS CO.,LTD
Address	:	East6/F Building 2,Laobing industry,Baoan District,Shenzhen,518000,China

1.2. Description of Device (EUT)

Product Name	:	Repeater	
Model No.	:	NAS-RP01Z1U	
Trade Mark	:	NEO	
Test Power Supply	:	AC 120V, 60Hz	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	908.4 MHz & 916MHz
		Modulation Type:	908.4 MHz: FSK 916 MHz: GFSK
		Antenna Type:	Spring antenna
		Antenna Gain(Peak):	0 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

N/A		

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

For Conducted Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH02

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH02

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)
1	908.4
2	916

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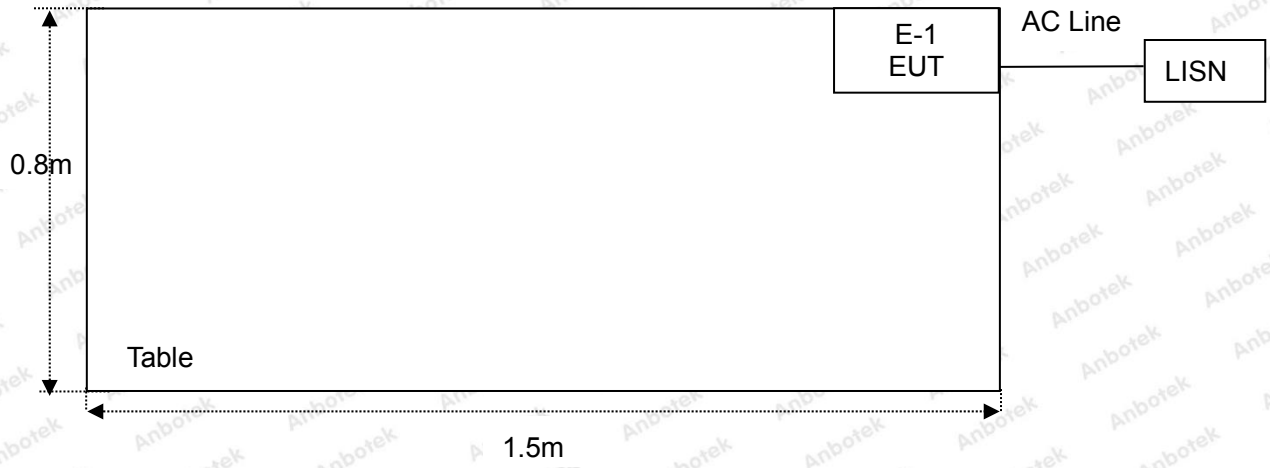
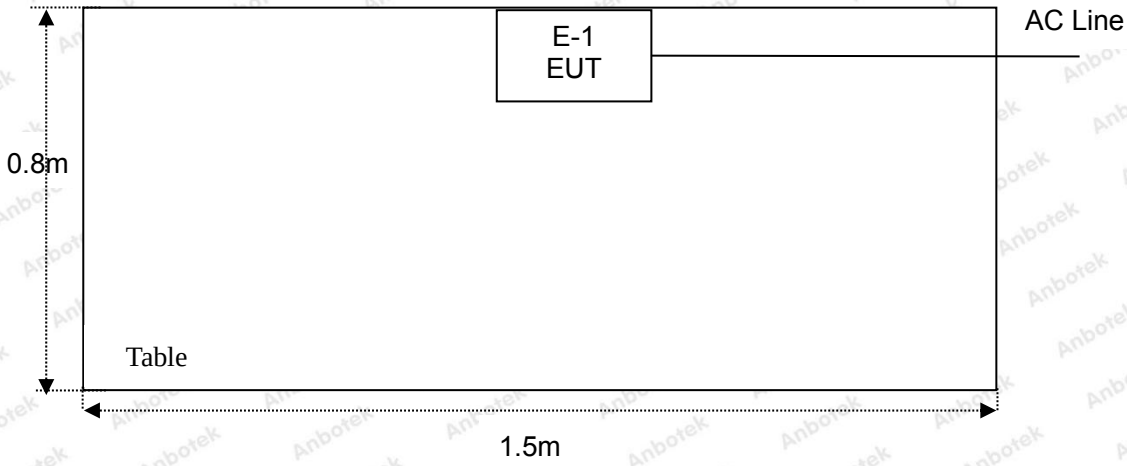
1.6. Description of Test Setup

CE



RE



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	Nov. 04, 2019	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Nov. 04, 2019	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 04, 2019	1 Year
4.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 04, 2019	1 Year
5.	Preamplifier	SKET Electronic	BK1G18G30D	KD17503	Nov. 04, 2019	1 Year
6.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 01, 2019	1 Year
7.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 01, 2019	1 Year
8.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 01, 2019	1 Year
9.	Horn Antenna	A-INFO	LB-180400-KF	J211060628	Nov. 01, 2019	1 Year
10.	Pre-amplifier	SONOMA	310N	186860	Nov. 04, 2019	1 Year
11.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
12.	RF Test Control System	YIHENG	YH3000	2017430	Nov. 04, 2019	1 Year
13.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 04, 2019	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 04, 2019	1 Year
15.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 04, 2019	1 Year
16.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 04, 2019	1 Year
17.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 04, 2019	1 Year
18.	DC Power Supply	LW	TPR-6420D	374470	Nov. 04, 2019	1 Year
19.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80B	N/A	Nov. 04, 2019	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 registed 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, September 27, 2019.

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, March 07, 2019.

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.		

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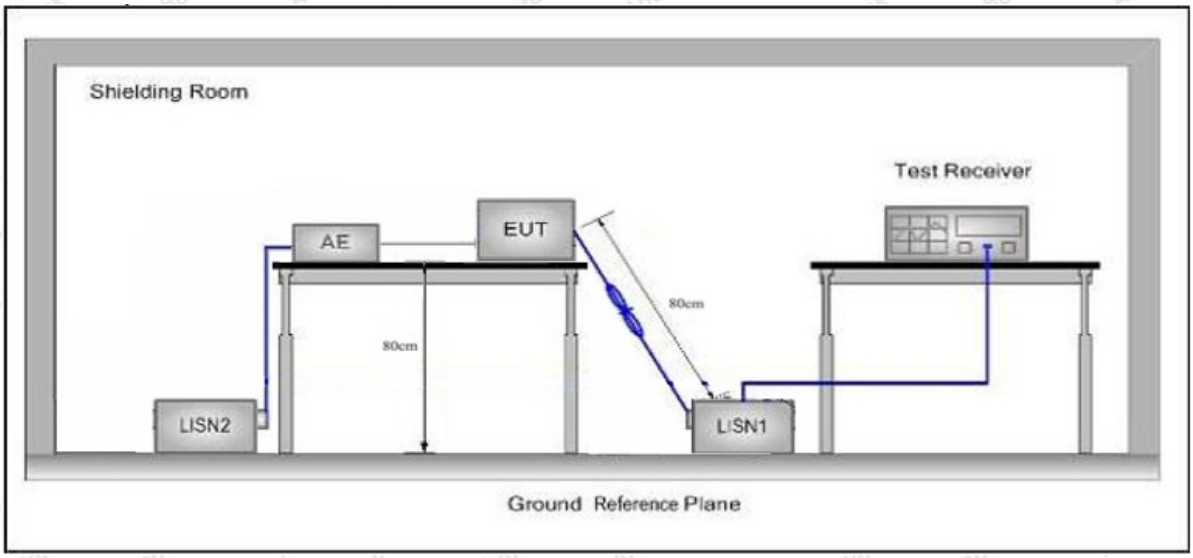
3. Conducted Emission Test

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 C63.10-2013 on Conducted Emission Measurement.

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

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

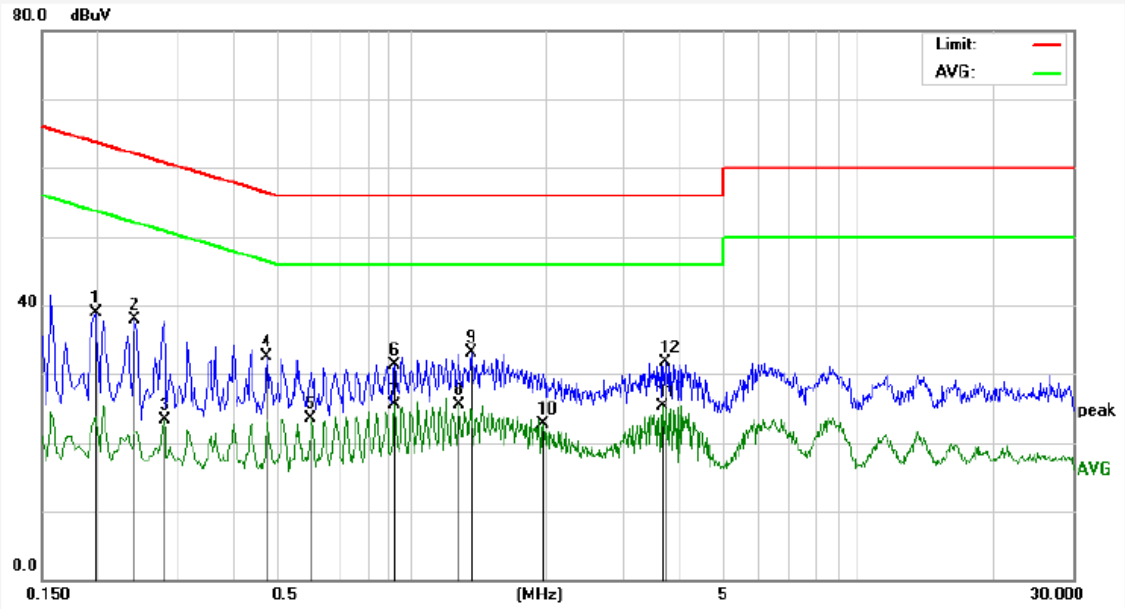
3.4. Test Data

PASS

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

Conducted Emission Test Data

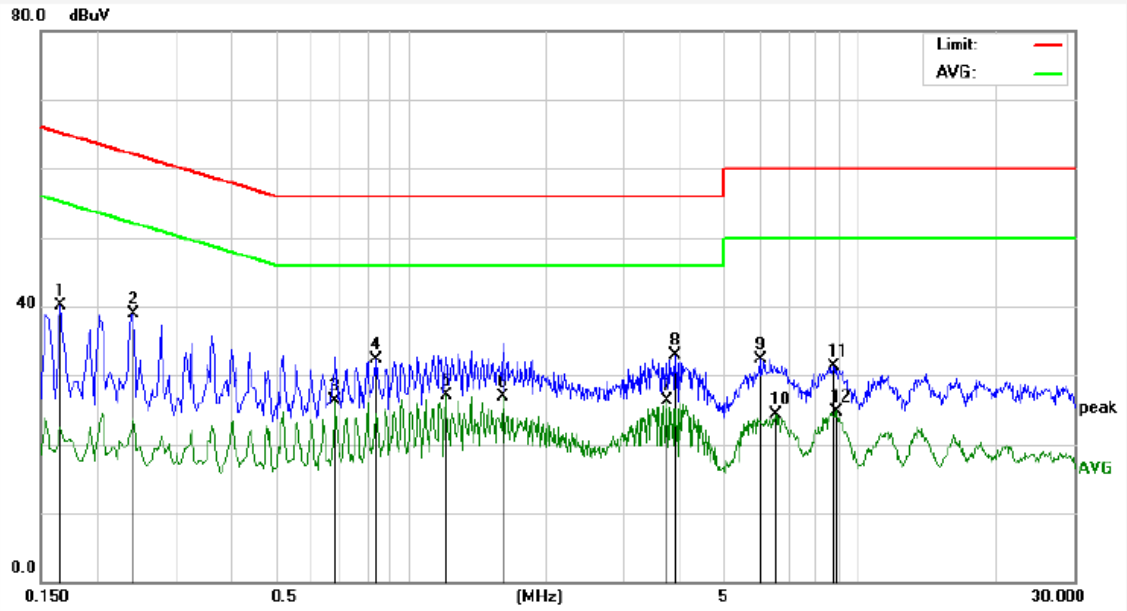
Test Site: 1# Shielded Room
Operating Condition: CH 01
Test Specification: AC 120V, 60Hz
Comment: Live Line
Tem.: 22.5℃ Hum.: 52%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1980	19.07	19.90	38.97	63.69	-24.72	QP	
2	0.2420	18.09	19.89	37.98	62.02	-24.04	QP	
3	0.2819	3.44	19.89	23.33	50.76	-27.43	AVG	
4	0.4780	12.45	19.97	32.42	56.37	-23.95	QP	
5	0.5980	3.42	20.01	23.43	46.00	-22.57	AVG	
6	0.9220	11.27	20.10	31.37	56.00	-24.63	QP	
7	0.9220	5.45	20.10	25.55	46.00	-20.45	AVG	
8	1.2820	5.44	20.13	25.57	46.00	-20.43	AVG	
9	1.3700	12.88	20.13	33.01	56.00	-22.99	QP	
10	1.9780	2.53	20.14	22.67	46.00	-23.33	AVG	
11	3.6540	5.10	20.17	25.27	46.00	-20.73	AVG	
12	3.6980	11.50	20.17	31.67	56.00	-24.33	QP	

Conducted Emission Test Data

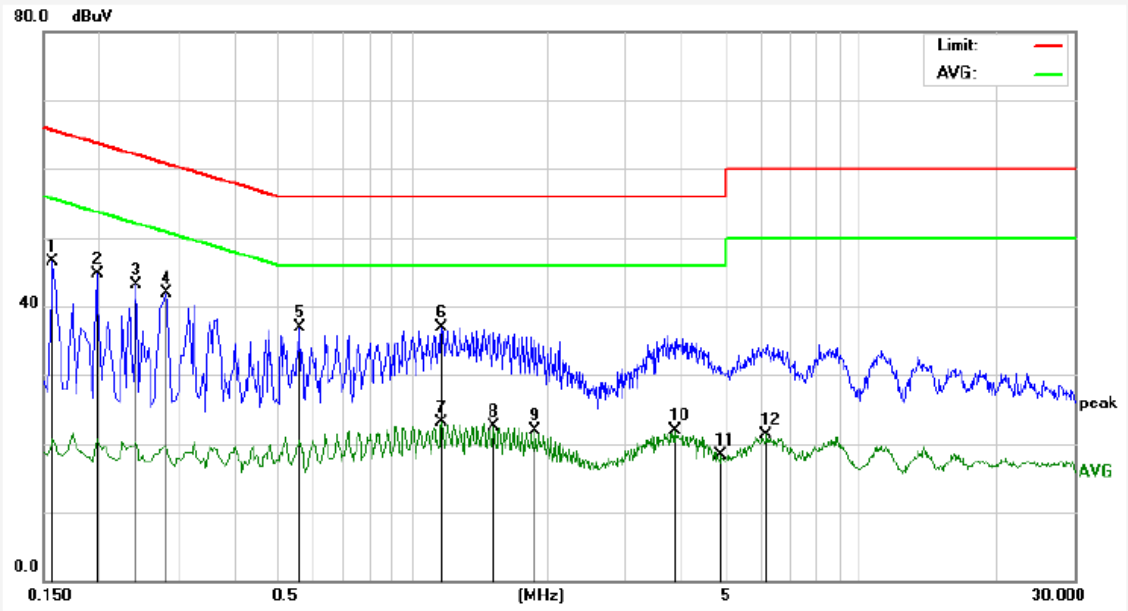
Test Site: 1# Shielded Room
Operating Condition: CH 01
Test Specification: AC 120V, 60Hz
Comment: Neutral Line
Tem.: 22.5℃ Hum.: 52%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1660	20.16	19.90	40.06	65.15	-25.09	QP	
2	0.2420	19.03	19.89	38.92	62.02	-23.10	QP	
3	0.6820	6.32	20.03	26.35	46.00	-19.65	AVG	
4	0.8420	12.19	20.08	32.27	56.00	-23.73	QP	
5	1.2020	6.91	20.12	27.03	46.00	-18.97	AVG	
6	1.6060	6.74	20.13	26.87	46.00	-19.13	AVG	
7	3.7340	6.17	20.17	26.34	46.00	-19.66	AVG	
8	3.8900	12.74	20.18	32.92	56.00	-23.08	QP	
9	6.0220	12.01	20.23	32.24	60.00	-27.76	QP	
10	6.5060	3.98	20.25	24.23	50.00	-25.77	AVG	
11	8.7500	10.91	20.31	31.22	60.00	-28.78	QP	
12	8.9060	4.49	20.31	24.80	50.00	-25.20	AVG	

Conducted Emission Test Data

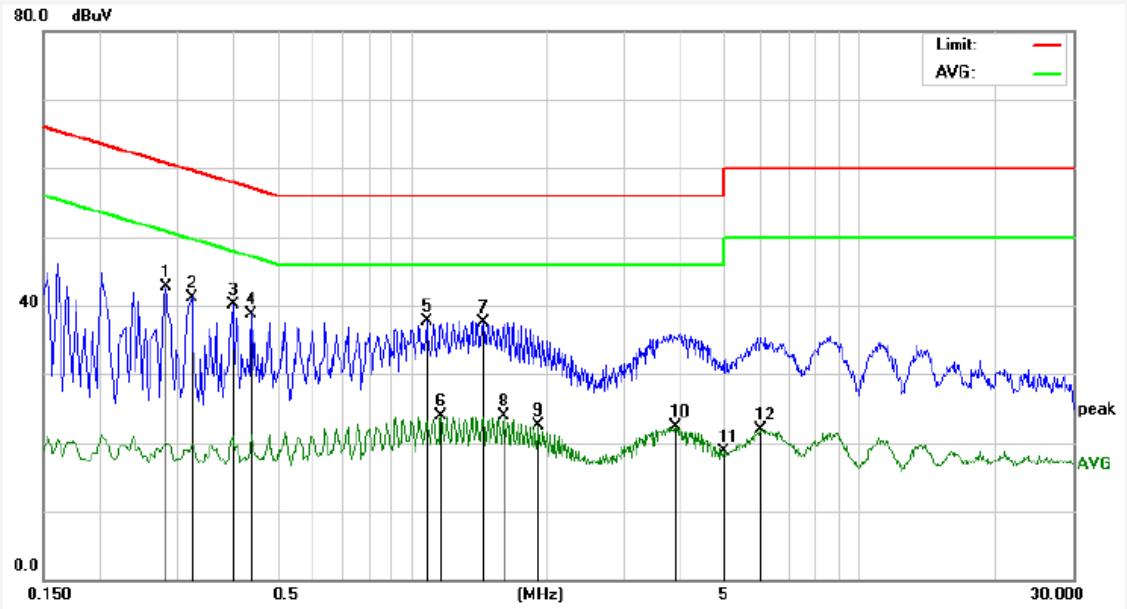
Test Site: 1# Shielded Room
Operating Condition: CH 02
Test Specification: AC 120V, 60Hz
Comment: Live Line
Tem.: 22.5℃ Hum.: 52%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1580	26.67	19.90	46.57	65.56	-18.99	QP	
2	0.1980	24.71	19.90	44.61	63.69	-19.08	QP	
3	0.2420	23.28	19.89	43.17	62.02	-18.85	QP	
4	0.2819	22.01	19.89	41.90	60.76	-18.86	QP	
5	0.5620	16.90	20.00	36.90	56.00	-19.10	QP	
6	1.1620	16.87	20.12	36.99	56.00	-19.01	QP	
7	1.1620	3.00	20.12	23.12	46.00	-22.88	AVG	
8	1.5220	2.28	20.13	22.41	46.00	-23.59	AVG	
9	1.8820	1.82	20.14	21.96	46.00	-24.04	AVG	
10	3.8420	1.72	20.18	21.90	46.00	-24.10	AVG	
11	4.8859	-1.81	20.20	18.39	46.00	-27.61	AVG	
12	6.1579	1.03	20.24	21.27	50.00	-28.73	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: CH 02
Test Specification: AC 120V, 60Hz
Comment: Neutral Line
Tem.: 22.5℃ Hum.: 52%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2819	22.82	19.89	42.71	60.76	-18.05	QP	
2	0.3220	21.30	19.90	41.20	59.65	-18.45	QP	
3	0.3980	20.08	19.93	40.01	57.89	-17.88	QP	
4	0.4380	18.75	19.95	38.70	57.10	-18.40	QP	
5	1.0780	17.68	20.12	37.80	56.00	-18.20	QP	
6	1.1620	3.71	20.12	23.83	46.00	-22.17	AVG	
7	1.4420	17.45	20.13	37.58	56.00	-18.42	peak	
8	1.6019	3.71	20.13	23.84	46.00	-22.16	AVG	
9	1.9220	2.31	20.14	22.45	46.00	-23.55	AVG	
10	3.8860	2.12	20.18	22.30	46.00	-23.70	AVG	
11	4.9620	-1.51	20.21	18.70	46.00	-27.30	AVG	
12	5.9980	1.76	20.23	21.99	50.00	-28.01	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	Fundamental frequency (MHz)	Field Strength	Limit (microvolts/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	902~928	Fundamental	50	94.0	Quasi-peak	3
		Harmonics	500	74.0	Average	3
			-	94.0	Peak	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

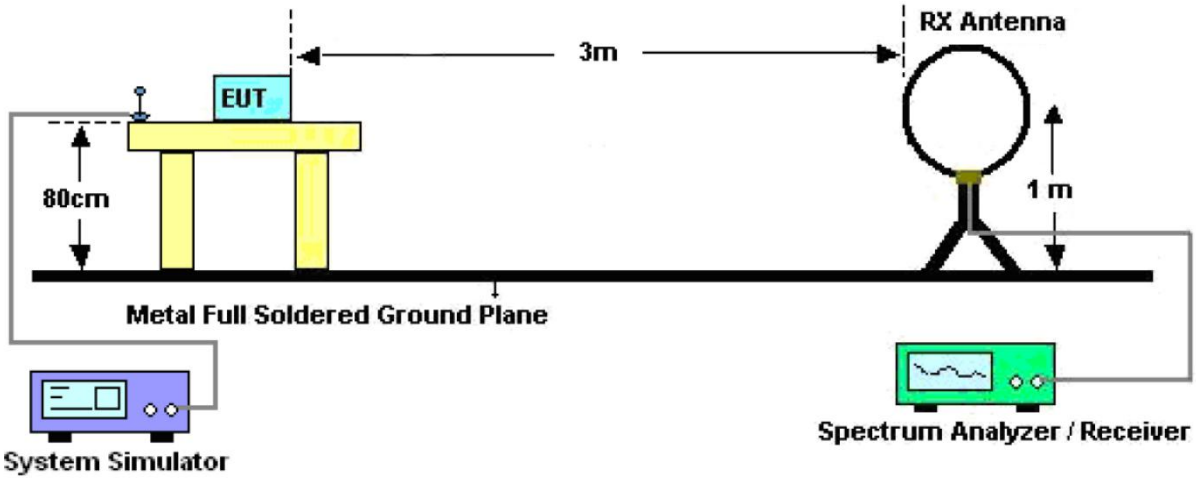


Figure 2. 30MHz to 1GHz

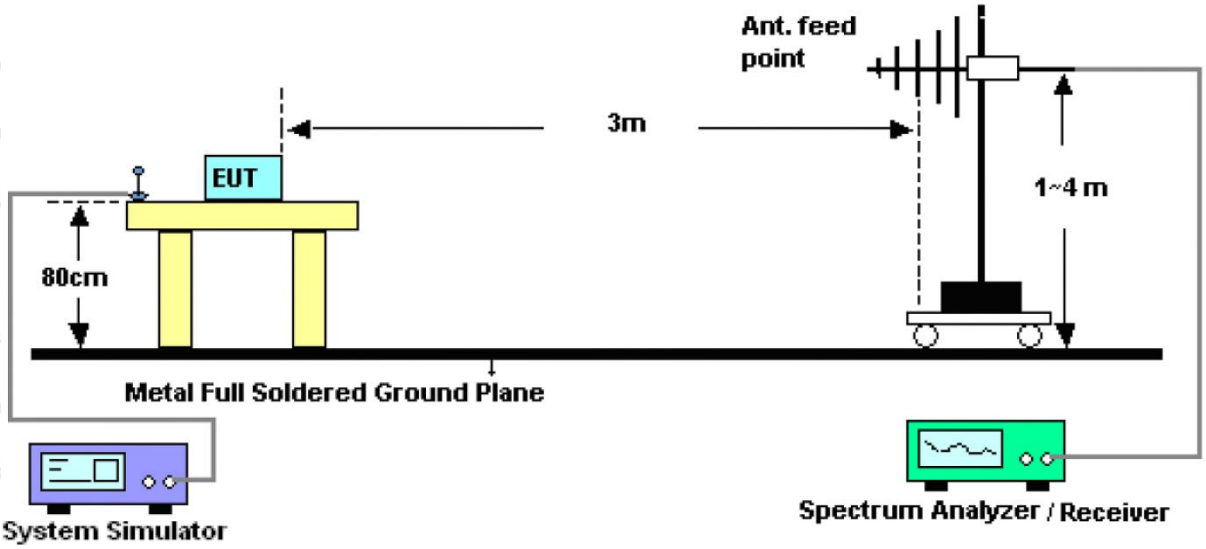
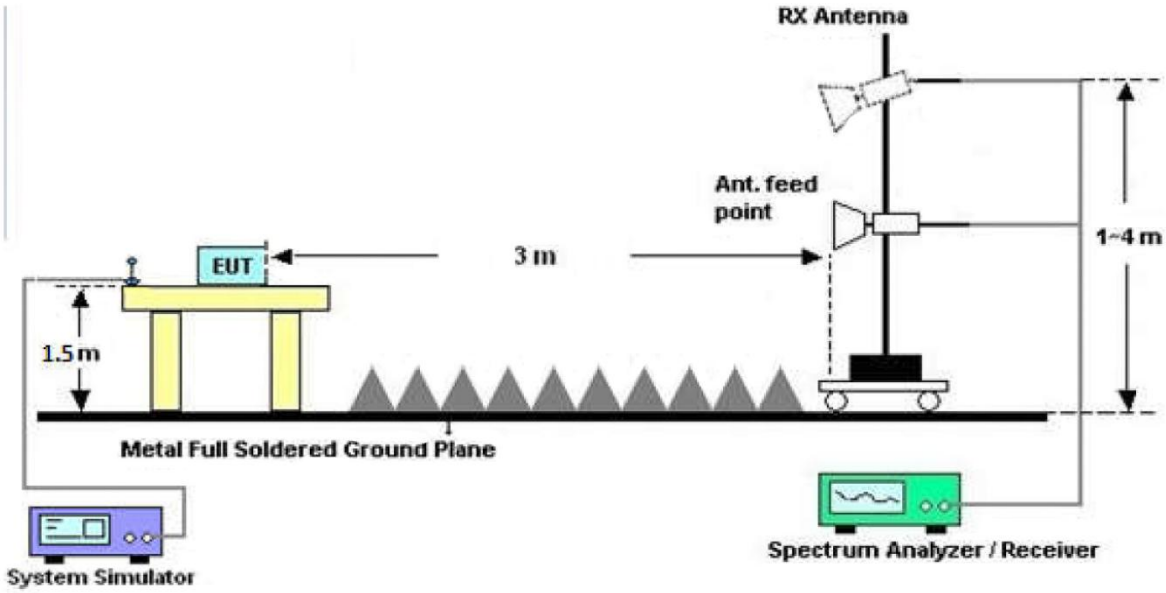


Figure 3. Above 1 GHz



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

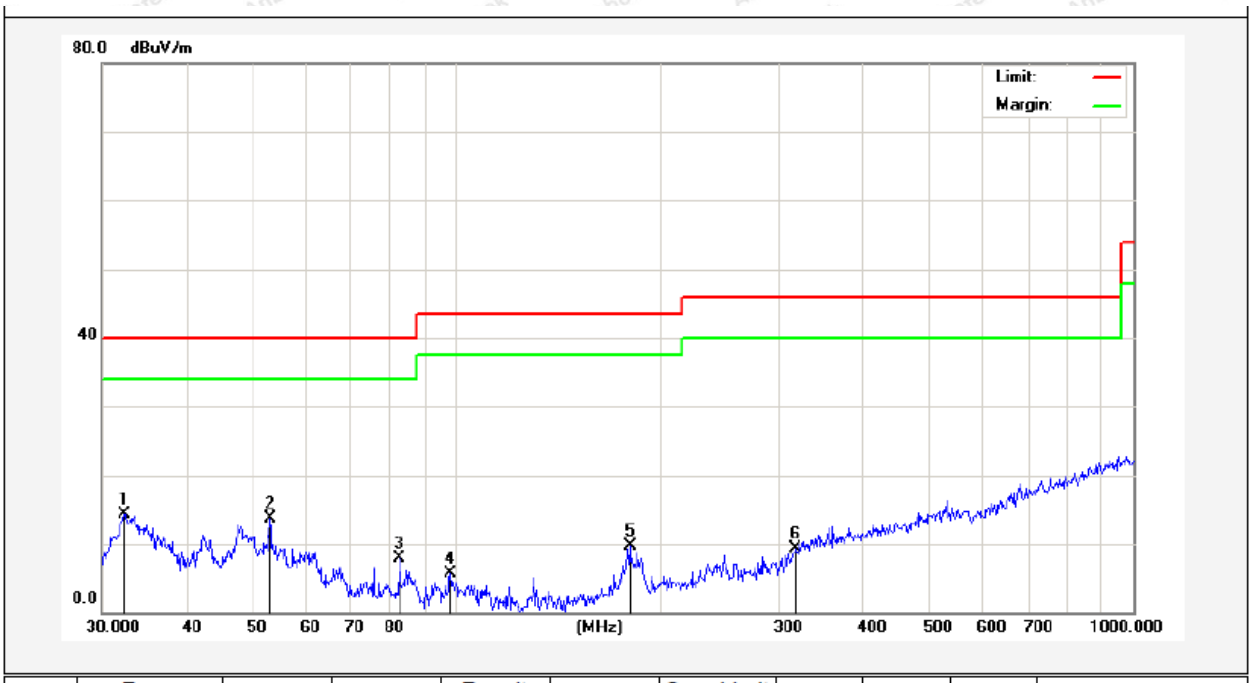
PASS

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)

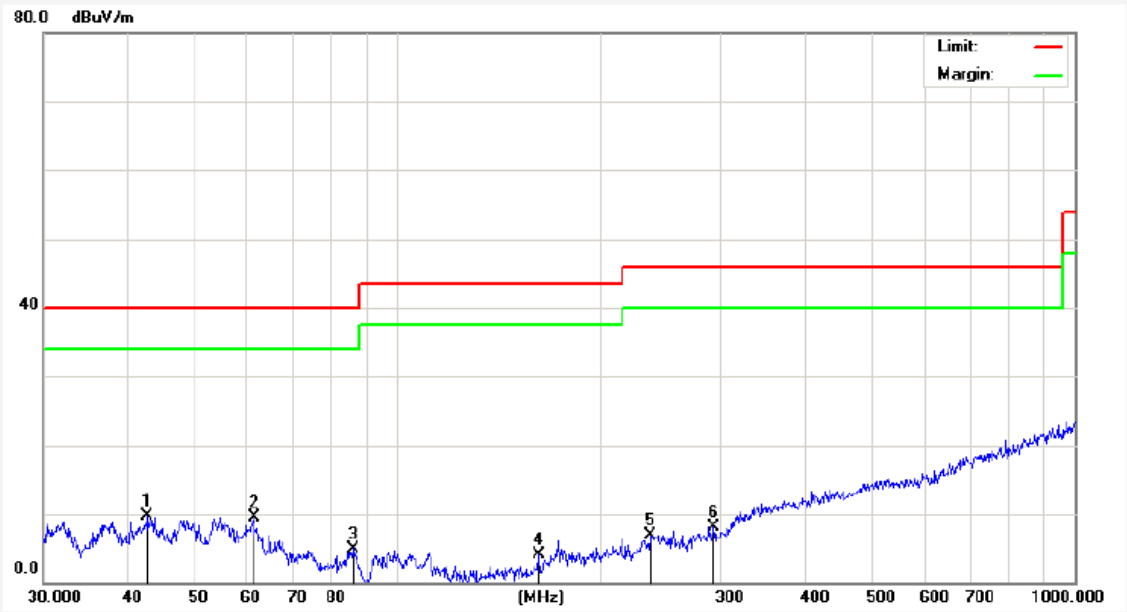
Test Mode:	CH 01
Power Source:	AC 120V, 60Hz
Polarization:	Vertical
Temp.(℃)/Hum.(%RH):	21.9℃/50%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	32.4059	32.56	-18.22	14.34	40.00	-25.66	QP	100	360	
2	53.1313	30.83	-17.17	13.66	40.00	-26.34	QP	100	94	
3	82.6482	28.34	-20.41	7.93	40.00	-32.07	QP	100	0	
4	98.1419	22.28	-16.66	5.62	43.50	-37.88	QP	100	360	
5	180.6488	28.71	-19.10	9.61	43.50	-33.89	QP	100	247	
6	317.7011	25.68	-16.39	9.29	46.00	-36.71	QP	100	0	

Test Results (30~1000MHz)

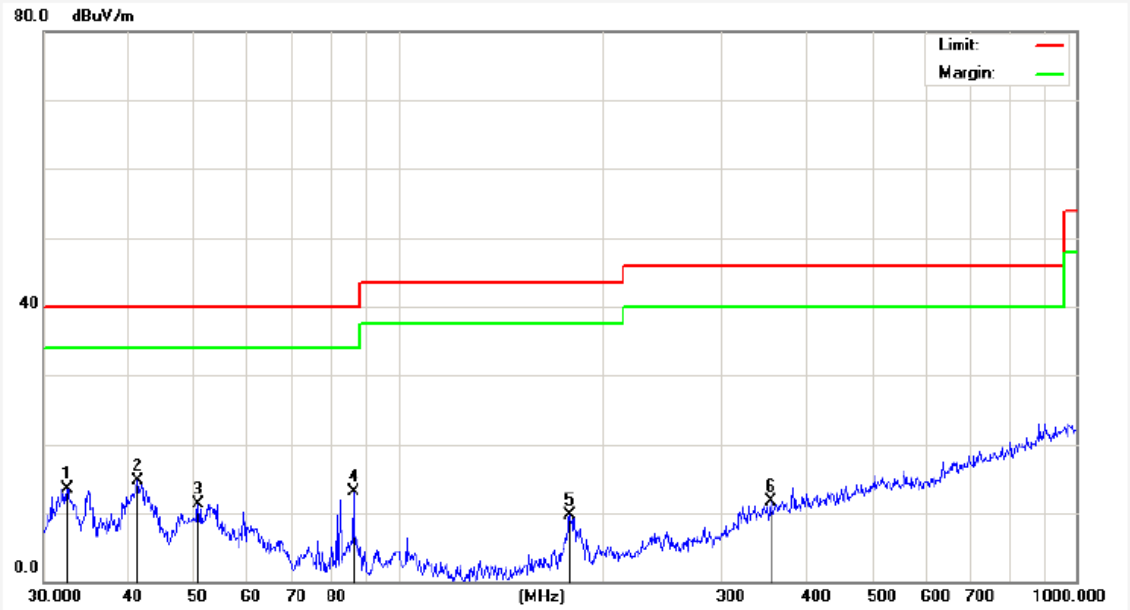
Test Mode:	CH 01
Power Source:	AC 120V, 60Hz
Polarization:	Horizontal
Temp.(℃)/Hum.(%RH):	21.9℃/50%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	42.7496	27.48	-17.79	9.69	40.00	-30.31	QP	100	0	
2	61.3463	28.52	-18.96	9.56	40.00	-30.44	QP	100	56	
3	85.8984	27.95	-22.95	5.00	40.00	-35.00	QP	100	0	
4	161.4742	28.24	-24.18	4.06	43.50	-39.44	QP	300	360	
5	236.6447	27.41	-20.54	6.87	46.00	-39.13	QP	100	264	
6	293.0842	28.07	-19.89	8.18	46.00	-37.82	QP	100	0	

Test Results (30~1000MHz)

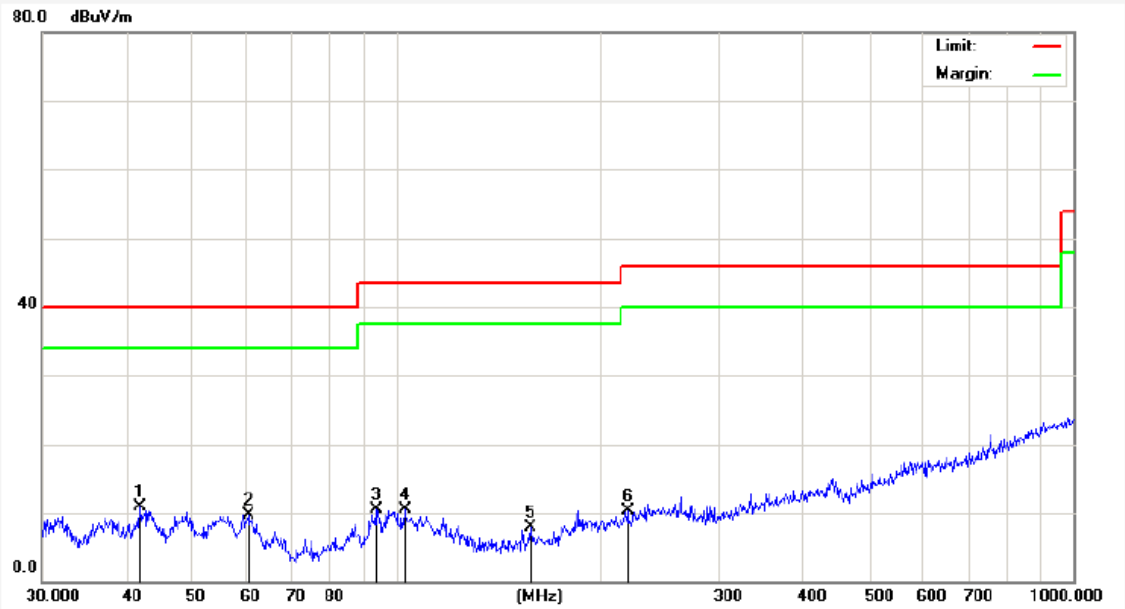
Test Mode:	CH 02
Power Source:	AC 120V, 60Hz
Polarization:	Vertical
Temp.(℃)/Hum.(%RH):	21.9℃/50%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	32.5198	31.83	-18.23	13.60	40.00	-26.40	QP	100	0	
2	41.2765	31.46	-16.78	14.68	40.00	-25.32	QP	100	137	
3	50.7637	28.48	-17.12	11.36	40.00	-28.64	QP	100	0	
4	85.8984	32.53	-19.41	13.12	40.00	-26.88	QP	100	276	
5	179.3863	28.98	-19.21	9.77	43.50	-33.73	QP	300	0	
6	354.1831	26.82	-15.09	11.73	46.00	-34.27	QP	100	360	

Test Results (30~1000MHz)

Test Mode:	CH 02
Power Source:	AC 120V, 60Hz
Polarization:	Horizontal
Temp.(℃)/Hum.(%RH):	21.9℃/50%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	41.8596	28.59	-17.78	10.81	40.00	-29.19	QP	100	360	
2	60.4919	28.39	-18.63	9.76	40.00	-30.24	QP	100	0	
3	93.4402	33.91	-23.50	10.41	43.50	-33.09	QP	100	360	
4	103.0800	33.37	-22.78	10.59	43.50	-32.91	QP	300	0	
5	158.1123	32.46	-24.48	7.98	43.50	-35.52	QP	300	0	
6	219.8449	32.60	-22.26	10.34	46.00	-35.66	QP	100	360	

Harmonics Emissions (CH01: 908.4MHz)

Frequency	Antenna	Reading	Cable Loss	Ant Factor	Amplifier	Level	Limits	Margin	Det.
(MHz)	Pol.	(dBuV/m)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Mode
1816.8000	H	49.85	7.39	28.73	26.31	59.66	74	-14.34	PK
1816.8000	H	40.20	7.39	28.73	26.31	50.01	54	-3.99	AV
2725.2000	H	48.50	8.10	29.71	27.01	59.30	74	-14.70	PK
2725.2000	H	37.85	8.10	29.71	27.01	48.65	54	-5.35	AV
3633.6000	H	--	--	--	--	--	--	--	PK
3633.6000	H	--	--	--	--	--	--	--	AV
1816.8000	V	45.14	7.39	28.73	26.31	54.95	74	-19.05	PK
1816.8000	V	38.91	7.39	28.73	26.31	48.72	54	-5.28	AV
2725.2000	V	45.33	8.10	29.71	27.01	56.13	74	-17.87	PK
2725.2000	V	37.33	8.10	29.71	27.01	48.13	54	-5.87	AV
3633.6000	V	--	--	--	--	--	--	--	PK
3633.6000	V	--	--	--	--	--	--	--	AV

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

CH02(916MHz)

Frequency	Antenna	Reading	Cable Loss	Ant Factor	Amplifier	Level	Limits	Margin	Det.
(MHz)	Pol.	(dBuV/m)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Mode
1832.0000	H	50.67	7.39	28.73	26.31	60.48	74	-13.52	PK
1832.0000	H	39.50	7.39	28.73	26.31	49.31	54	-4.69	AV
2748.0000	H	48.14	8.10	29.71	27.01	58.94	74	-15.06	PK
2748.0000	H	38.02	8.10	29.71	27.01	48.82	54	-5.18	AV
3664.0000	H	--	--	--	--	--	--	--	PK
3664.0000	H	--	--	--	--	--	--	--	AV
1832.0000	V	46.13	7.39	28.73	26.31	55.94	74	-18.06	PK
1832.0000	V	39.25	7.39	28.73	26.31	49.06	54	-4.94	AV
2748.0000	V	46.03	8.10	29.71	27.01	56.83	74	-17.17	PK
2748.0000	V	37.87	8.10	29.71	27.01	48.67	54	-5.33	AV
3664.0000	V	--	--	--	--	--	--	--	PK
3664.0000	V	--	--	--	--	--	--	--	AV

Remark:

1. Level = Reading + Cable Loss+Ant Factor-Amplifier
2. “ -- ” Mark indicated Background Noise Level

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com
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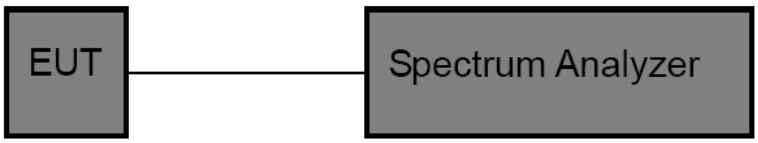
www.anbotek.com

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 = 3kHz, VBW≥3*RBW =10kHz,

Detector= Average

Trace mode= Max hold.

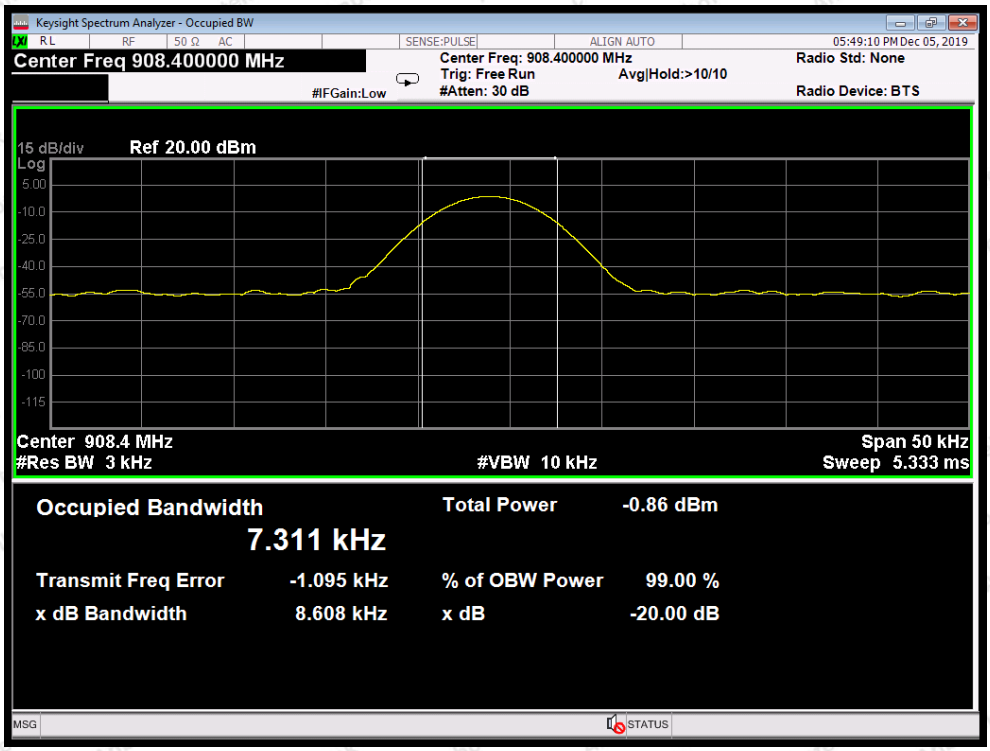
Sweep- auto couple.

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

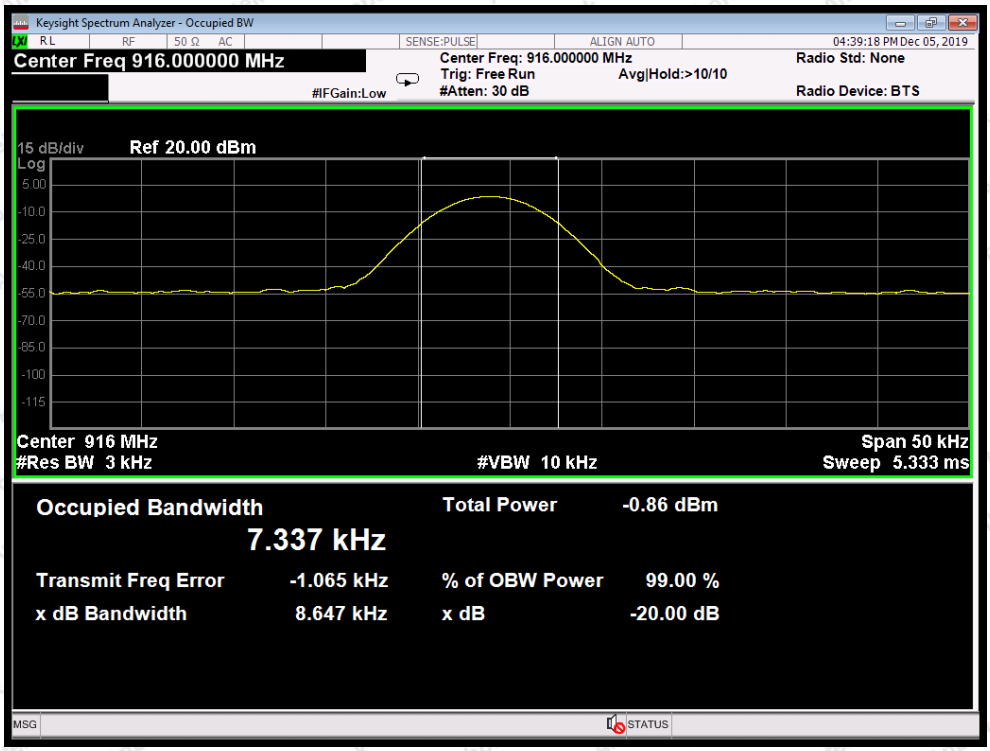
5.4. Test Data

Test Item	:	20dB Bandwidth	Test Mode	:	CH01 & CH02
Test Voltage	:	AC 120V, 60Hz	Temperature	:	22.4℃
Test Result	:	PASS	Humidity	:	55%RH

Test Modulation	Frequency (MHz)	Bandwidth (kHz)	Result
FSK	908.4MHz	8.608	PASS
GFSK	916MHz	8.647	PASS



Test Mode: CH01



Test Mode: CH02

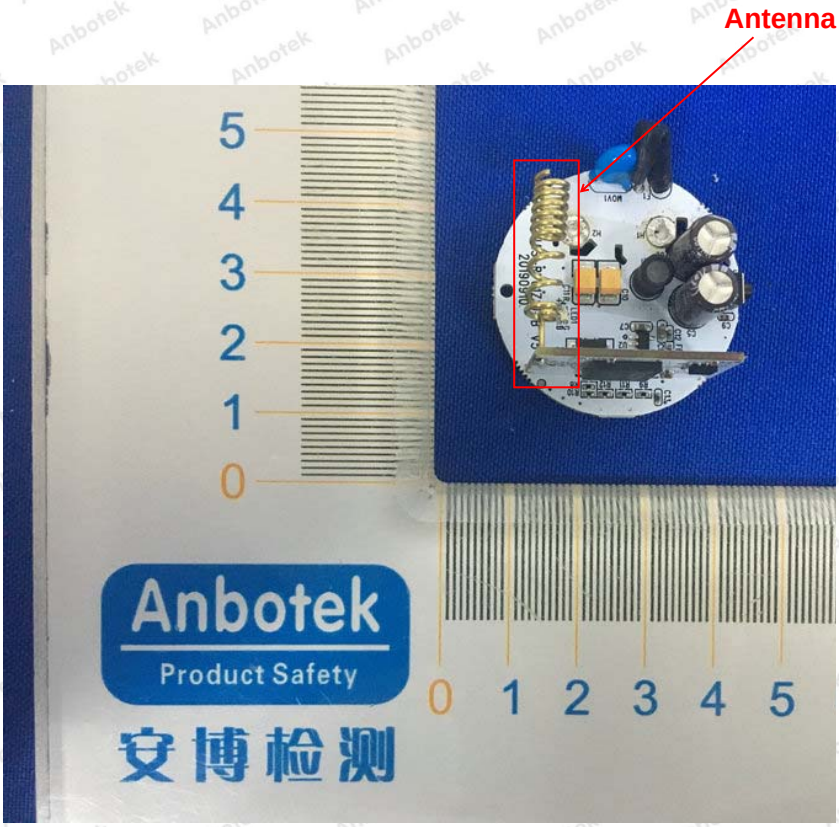
6. Antenna Requirement

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 Spring Antenna which permanently attached, and the best case gain of the antenna is 0 dBi. It complies with the standard requirement.

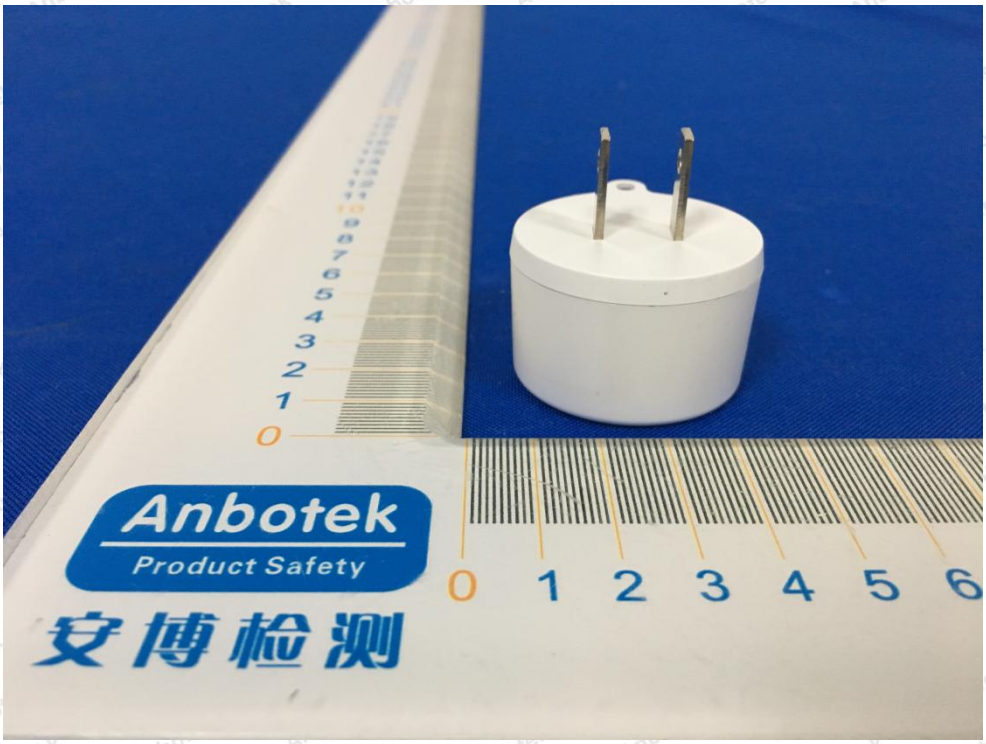


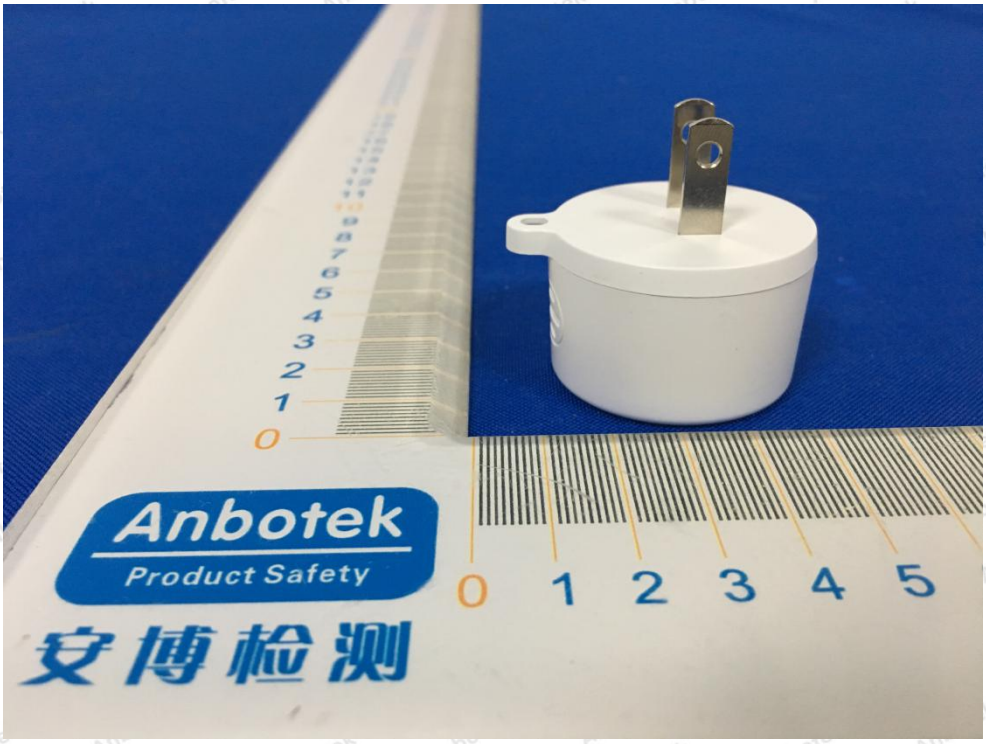
APPENDIX I -- TEST SETUP PHOTOGRAPH

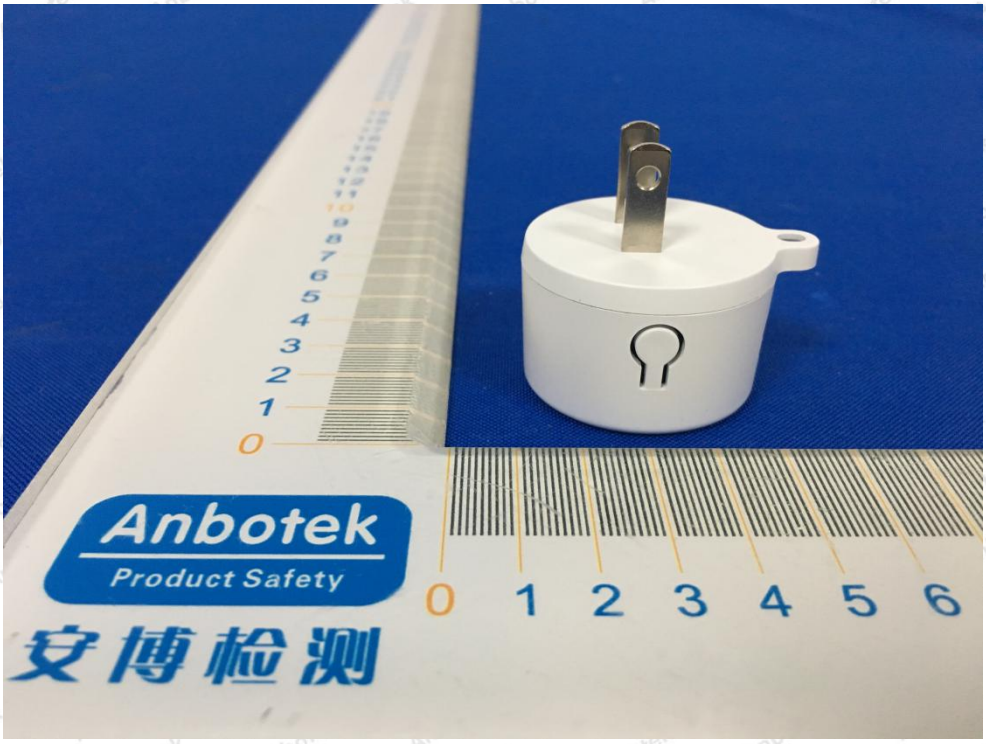
Photo of Conducted Emission Test

Photo of Radiation Emission Test

APPENDIX II -- EXTERNAL PHOTOGRAPH




Anbotek
Product Safety
安博检测
0 1 2 3 4 5


Anbotek
Product Safety
安博检测
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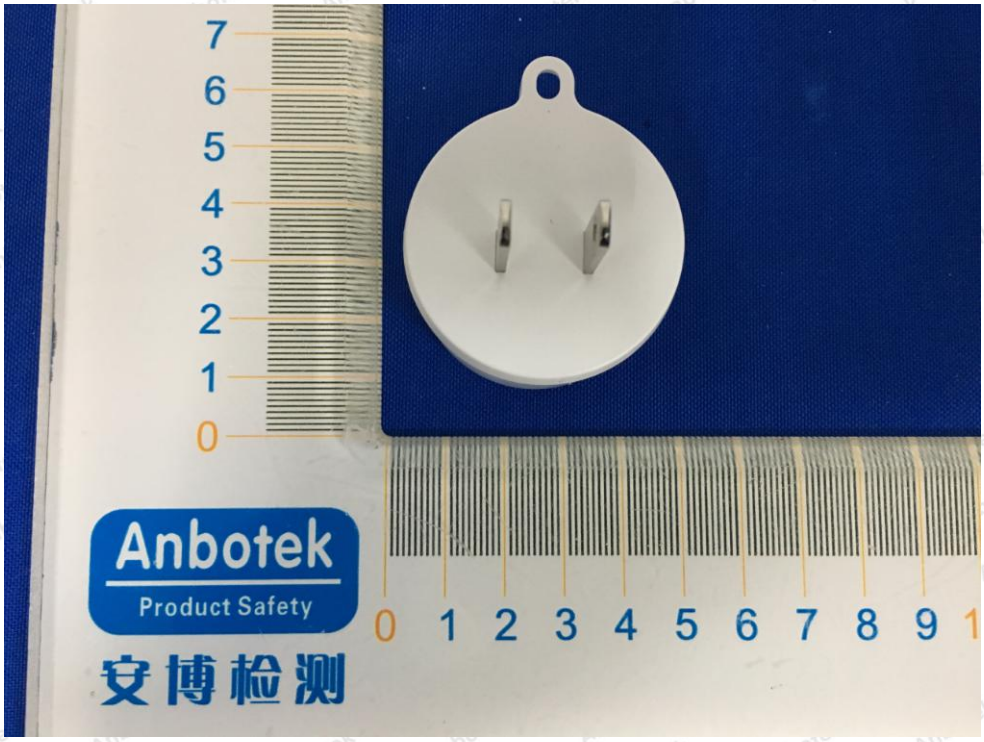
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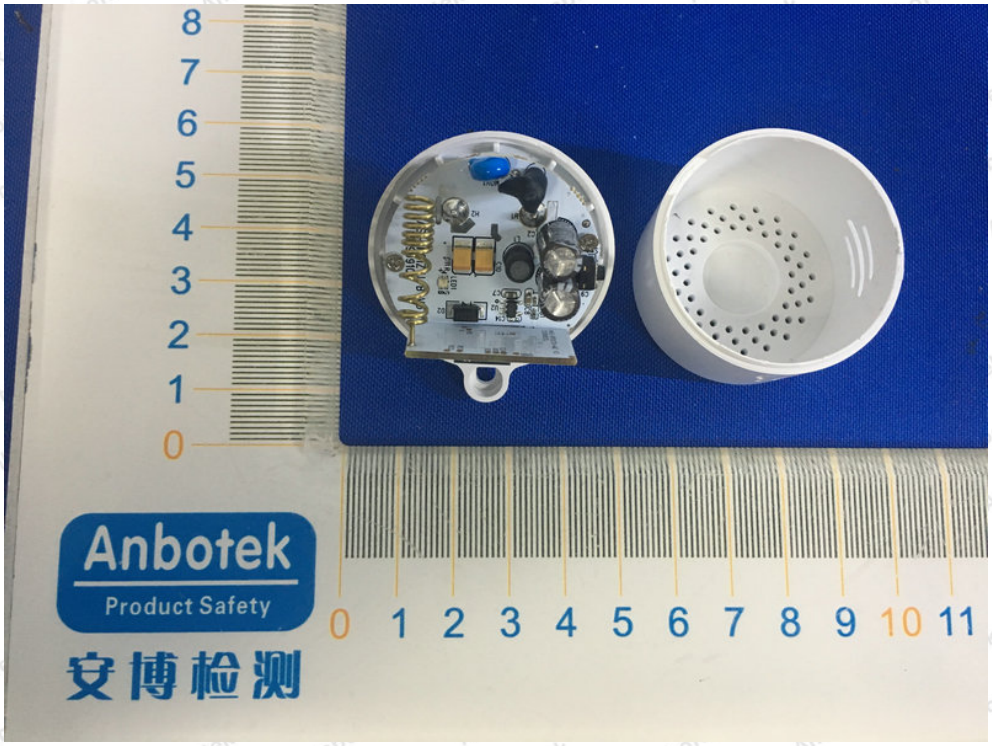
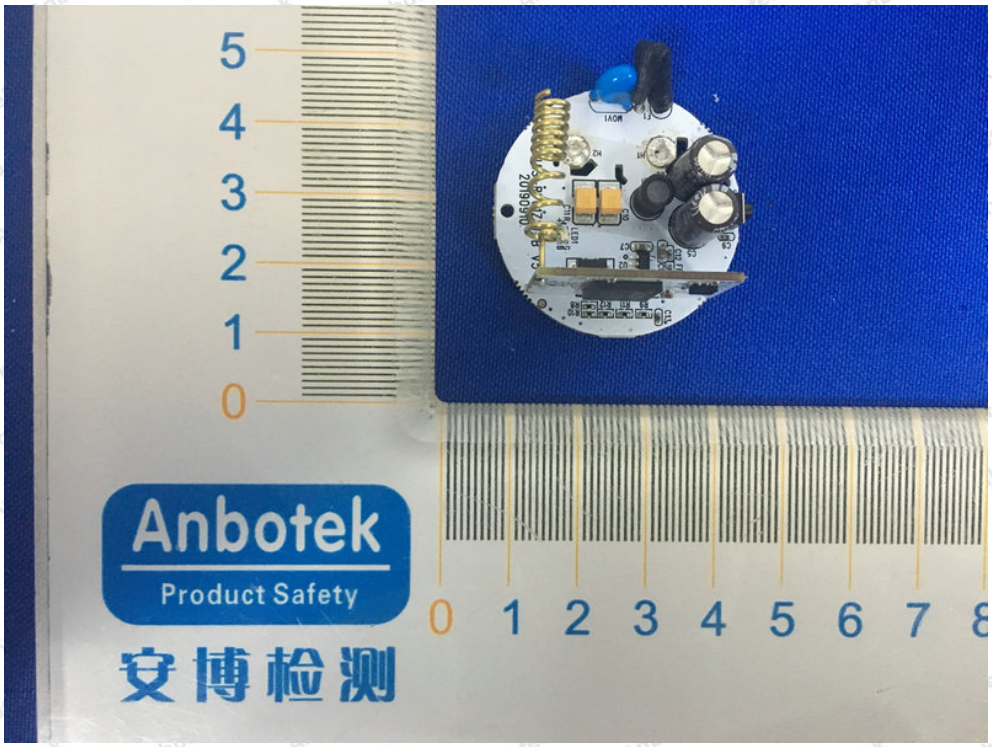
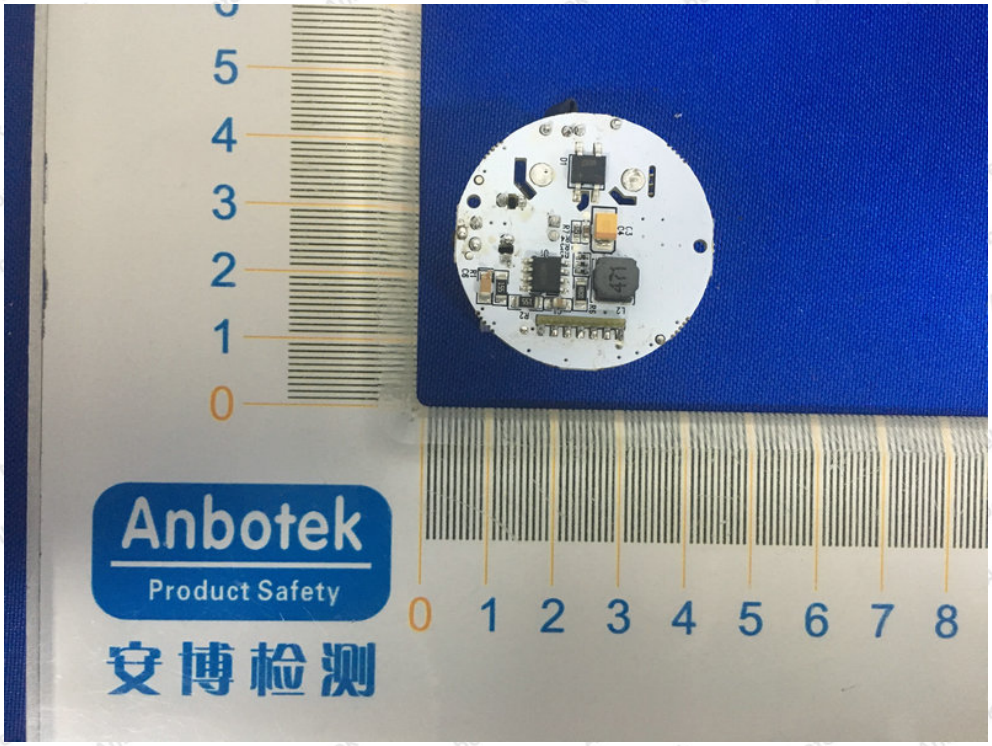
APPENDIX III -- INTERNAL PHOTOGRAPH



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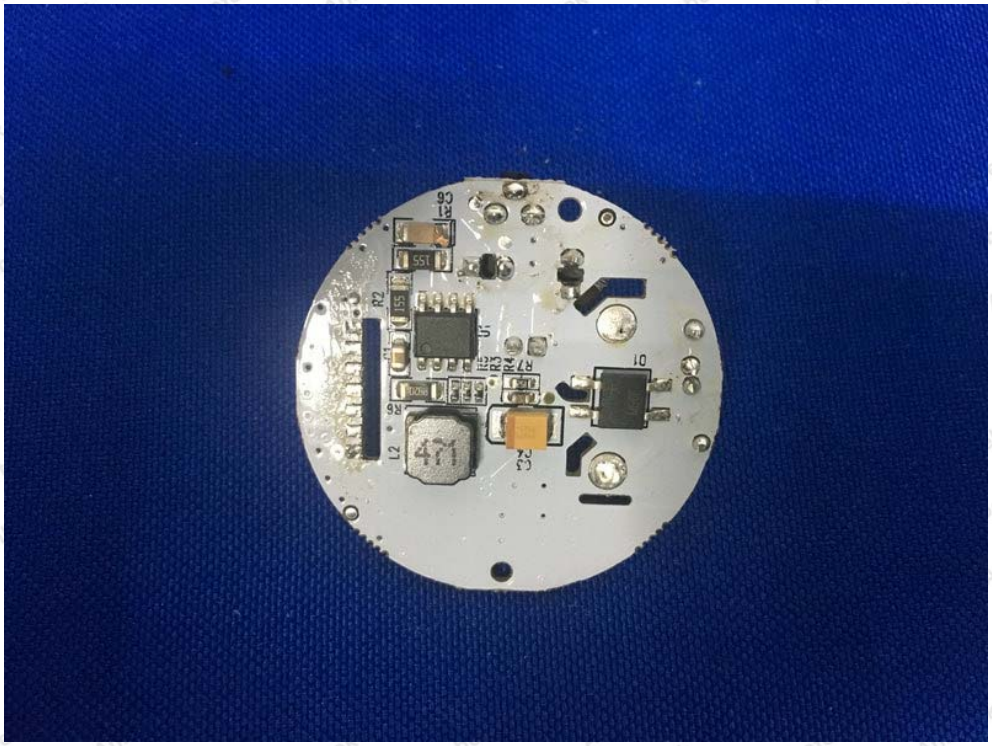
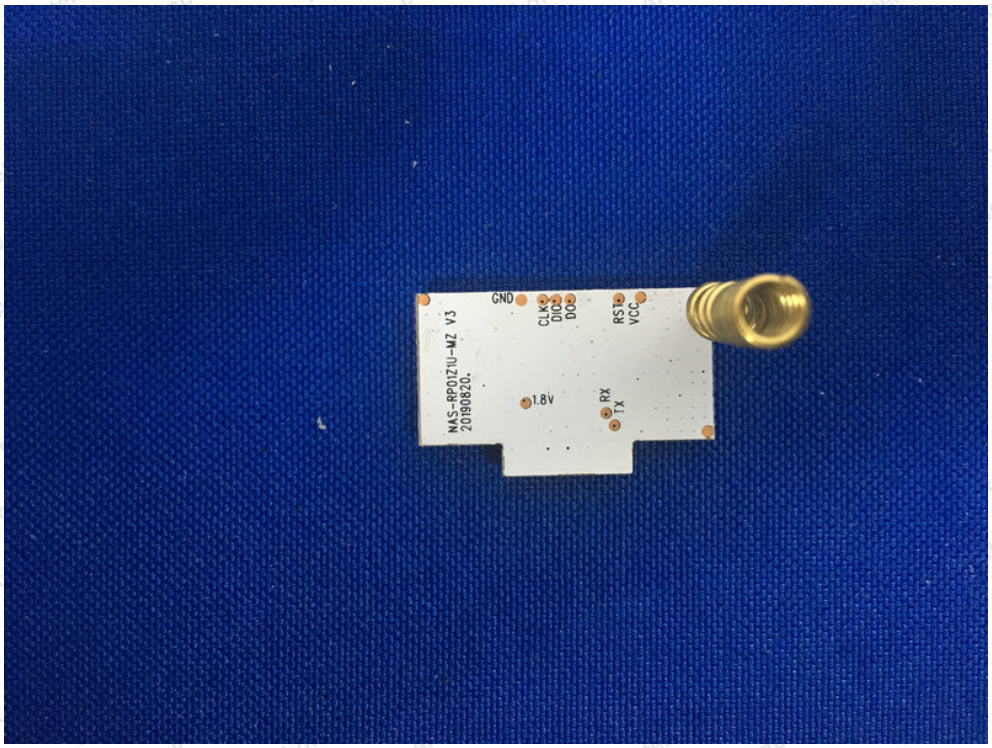
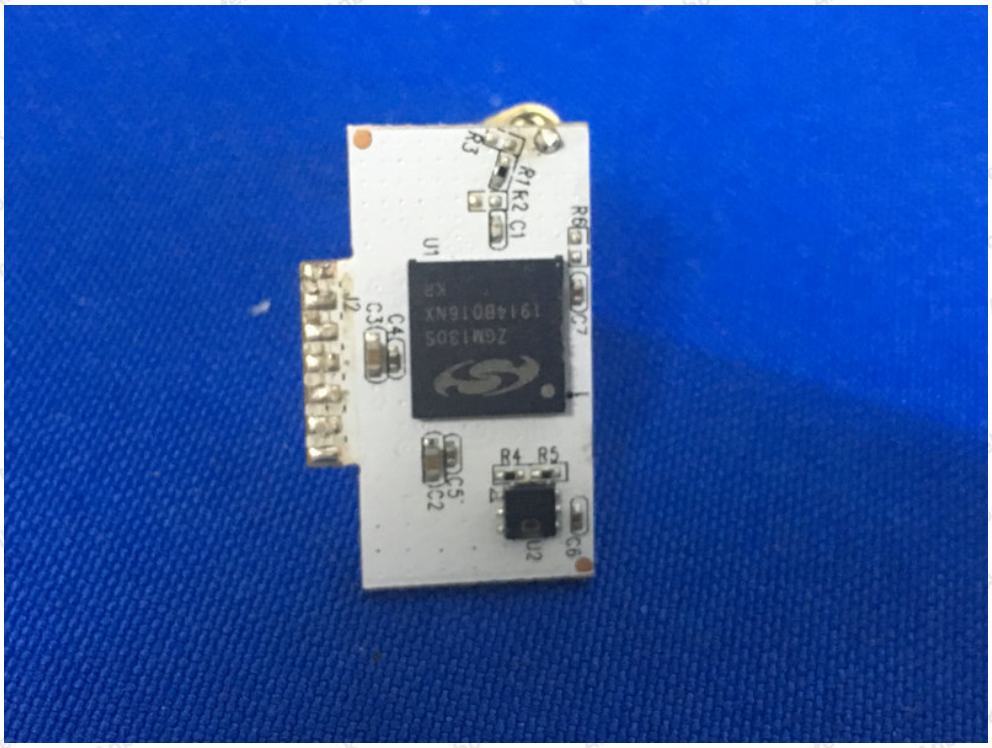
NAS-RP01Z1U-B V5
20190910.




GND
CLK
DIO
DOB
RST
VCC
NAS-RP01Z1U-MZ V3
20190820.
1.8V
RX
TX



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