FCC TEST REPORT

Client Name	:	Shenzhen iSurpass Technology Co.,Ltd
Address	:	Room 908, A, Building Zhantao Technology, Minzhi Blvd, LongHua District, Shenzhen, GuangDong, China
Product Name	:	iSurpass Smart Gateway
Date	:	Jun. 10, 2020

Shenzhen Anbotek Compliance Laboratory Limited

Contents

1. General Information....4
1.1. Client Information....4
1.2. Description of Device (EUT)....4
1.3. Auxiliary Equipment Used During Test....5
1.4. Description of Test Modes....5
1.5. List of Channels....6
1.6. Description of Test Setup....7
1.7. Test Equipment List....8
1.8. Measurement Uncertainty....9
1.9. 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....12
4. Radiated Emission and Band Edge....17
4.1. Test Standard and Limit....17
4.2. Test Setup....17
4.3. Test Procedure....19
4.4. Test Data....20
5. 20dB Bandwidth Test....26
5.1. Test Standard and Limit....26
5.2. Test Setup....26
5.3. Test Procedure....26
5.4. Test Data....26
6. Antenna Requirement....29
6.1. Test Standard and Requirement....29
6.2. Antenna Connected Construction....29
APPENDIX I -- PHOTOGRAPH....30

TEST REPORT

Applicant	:	Shenzhen iSurpass Technology Co.,Ltd
Manufacturer	:	Shenzhen iSurpass Technology Co.,Ltd
Product Name	:	iSurpass Smart Gateway
Model No.	:	J2004, 1723, J1723W, J1726F, J1726W, J1723A, J1726L, J1726M
Trade Mark	:	iSurpass
Rating(s)	:	Input: DC 5V, 2A

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	Apr. 15, 2020
Date of Test	Apr. 15~May 15, 2020
Prepared by	(Engineer / Dolly Mo)
Reviewer	(Supervisor / Bibo Zhang)
Approved & Authorized Signer	(Manager / Tom Chen)

1. General Information

1.1. Client Information

Applicant	:	Shenzhen iSurpass Technology Co.,Ltd
Address	:	Room 908, A, Building Zhantao Technology, Minzhi Blvd, LongHua District, Shenzhen, GuangDong, China
Manufacturer	:	Shenzhen iSurpass Technology Co.,Ltd
Address	:	Room 908, A, Building Zhantao Technology, Minzhi Blvd, LongHua District, Shenzhen, GuangDong, China
Factory	:	Shenzhen iSurpass Technology Co.,Ltd
Address	:	Room 908, A, Building Zhantao Technology, Minzhi Blvd, LongHua District, Shenzhen, GuangDong, China

1.2. Description of Device (EUT)

Product Name	:	iSurpass Smart Gateway	
Model No.	:	J2004, 1723, J1723W, J1726F, J1726W, J1723A, J1726L, J1726M (Note: All samples are the same except the appearance color, so we prepare "J2004" for test only.)	
Trade Mark	:	iSurpass	
Test Power Supply	:	AC 120V, 60Hz for adapter / AC 240V, 60Hz for adapter	
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)	
Product Description	:	Operation Frequency:	WiFi: 802.11b/ g/ n(HT20) 2412-2462MHz BLE: 2402-2480MHz 908.4MHz, 908.42MHz, 916MHz
		Number of Channel:	WiFi: 11 Channels for 802.11b/ g/ n(HT20) BLE: 40 Channels 908.4MHz, 908.42MHz, 916MHz: 3 Channels
		Modulation Type:	WiFi: 802.11b CCK; 802.11g/n OFDM BLE: GFSK FSK (908.4MHz & 908.42MHz) GFSK (916MHz)
		Antenna Type:	PCB Antenna
		Antenna Gain(Peak):	WiFi & BLE: 1 dBi 908.4MHz, 908.42MHz, 916MHz: 5.14 dBi
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2)This report is for 908.4MHz module.			

1.3. Auxiliary Equipment Used During Test

Adapter	:	Manufacturer: Samsung
		M/N: ETA-U90CBC S/N: RT6FB17ZS/B-E Input: 100-240V~ 50-60Hz, 0.35A Output: DC 5V, 2A

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

For Conducted Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH02
Mode 3	CH03

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

Note:

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

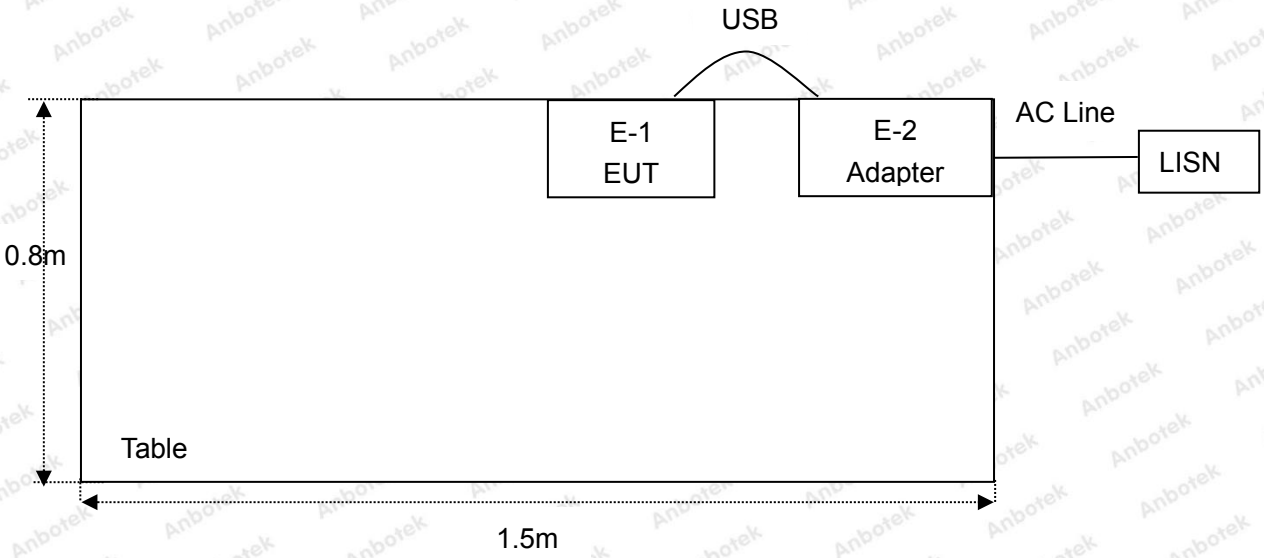
1.5. List of Channels

Channel	Frequency (MHz)
01	908.40
02	908.42
03	916.00

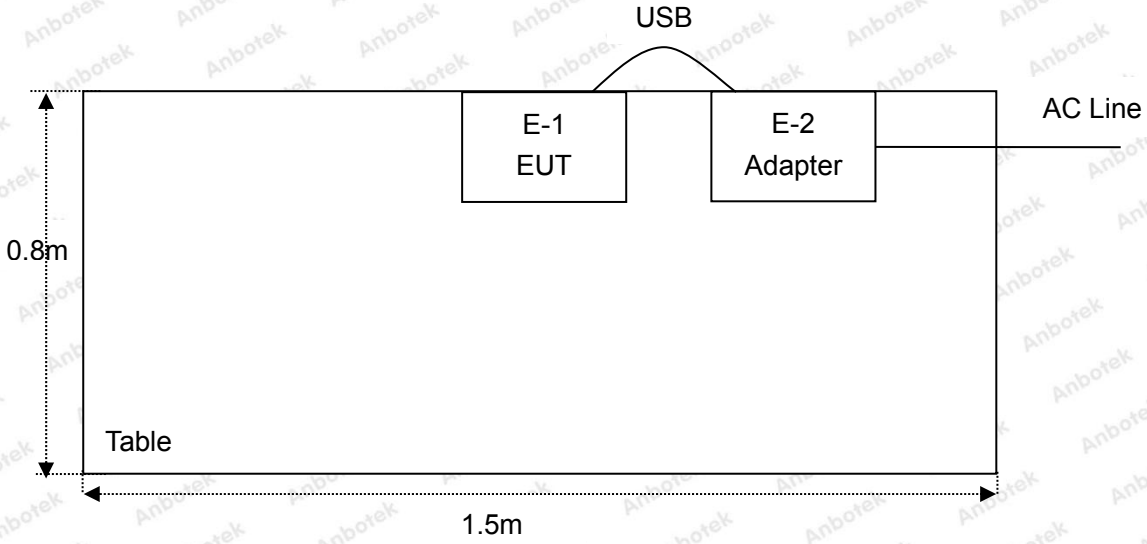
Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.
Tel:(86) 755-26066440 Fax: (86) 755-26014772 Email: service@anbotek.com
Hotline 400-003-0500
www.anbotek.com

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

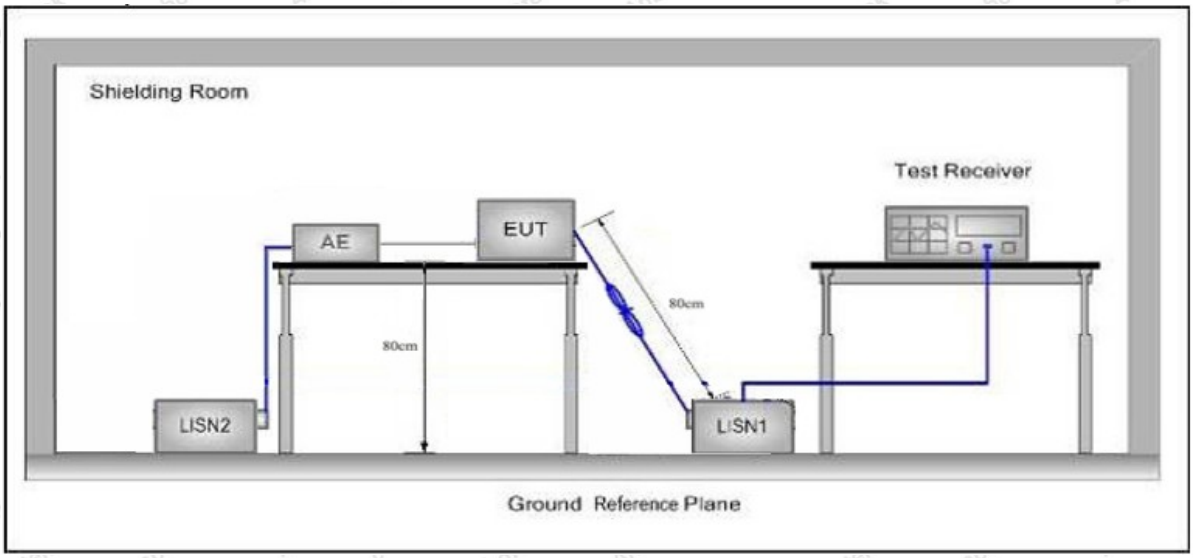
Standard Section	Test Item	Result
15.203	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.249	Radiated Emission	PASS
15.215(c)	20dB Bandwidth	PASS
15.249(c)	Band Edge	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

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 iSurpass Smart Gateway (ESCI) set at 9kHz.

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

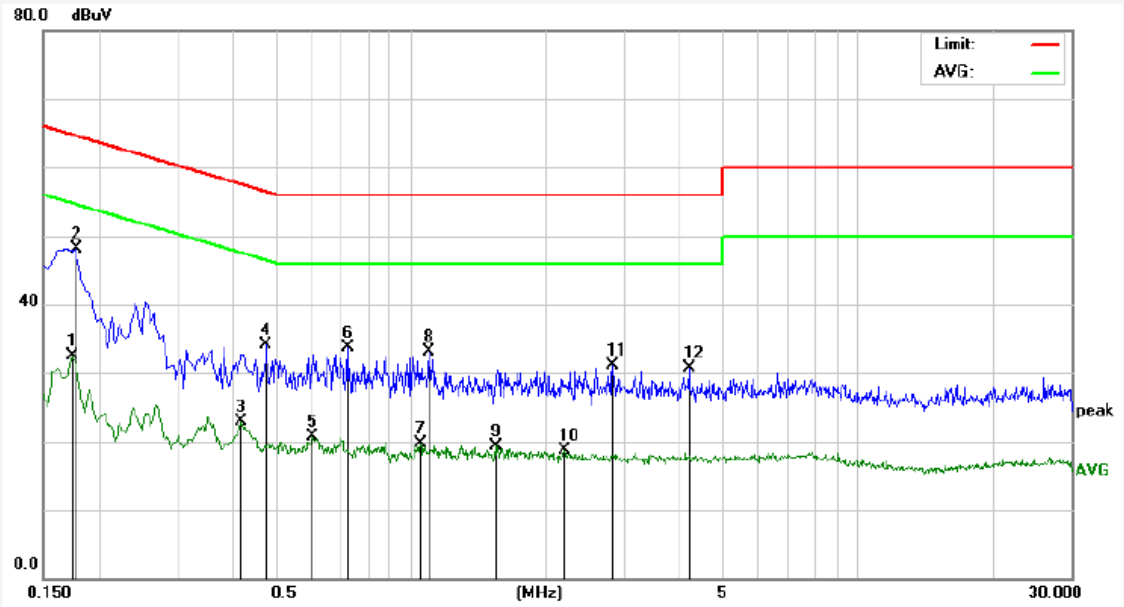
3.4. Test Data

PASS

During the test, pre-scan all the modes, and found the CH 01 channel which is the worst case, only the worst case is recorded in the report.

Conducted Emission Test Data

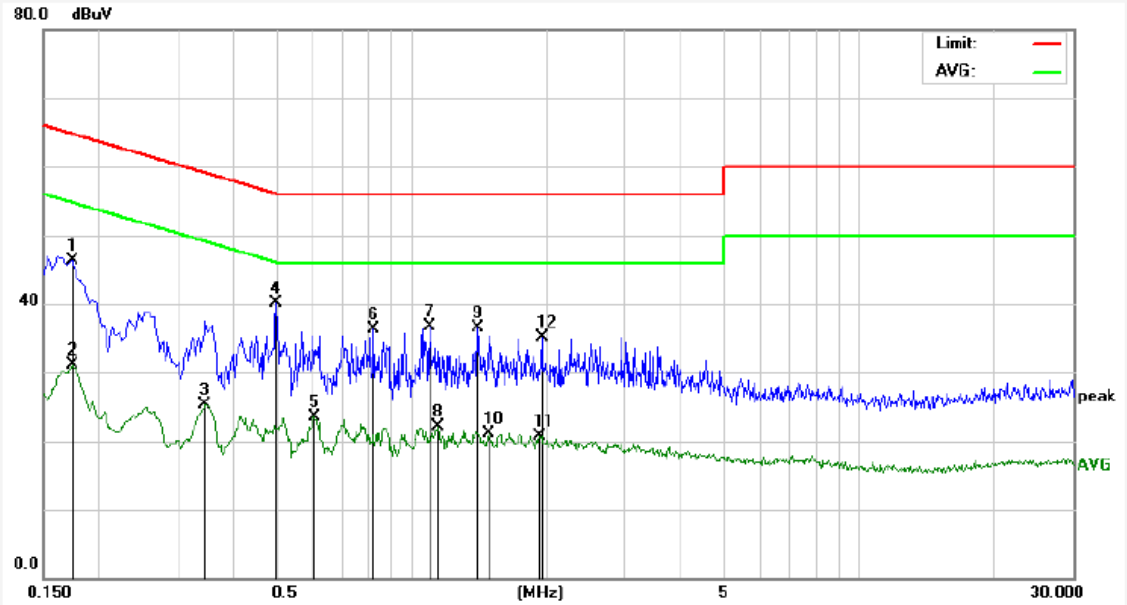
Test Site: 1# Shielded Room
Operating Condition: CH 01
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.: 23.6℃ Hum.: 58%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1740	12.68	19.90	32.58	54.76	-22.18	AVG	
2	0.1780	28.22	19.90	48.12	64.57	-16.45	QP	
3	0.4180	3.00	19.94	22.94	47.49	-24.55	AVG	
4	0.4740	14.08	19.97	34.05	56.44	-22.39	QP	
5	0.6020	0.67	20.01	20.68	46.00	-25.32	AVG	
6	0.7220	13.65	20.05	33.70	56.00	-22.30	QP	
7	1.0500	-0.39	20.12	19.73	46.00	-26.27	AVG	
8	1.0940	12.92	20.12	33.04	56.00	-22.96	QP	
9	1.5500	-0.79	20.13	19.34	46.00	-26.66	AVG	
10	2.2060	-1.53	20.14	18.61	46.00	-27.39	AVG	
11	2.8260	11.01	20.16	31.17	56.00	-24.83	QP	
12	4.1940	10.51	20.19	30.70	56.00	-25.30	QP	

Conducted Emission Test Data

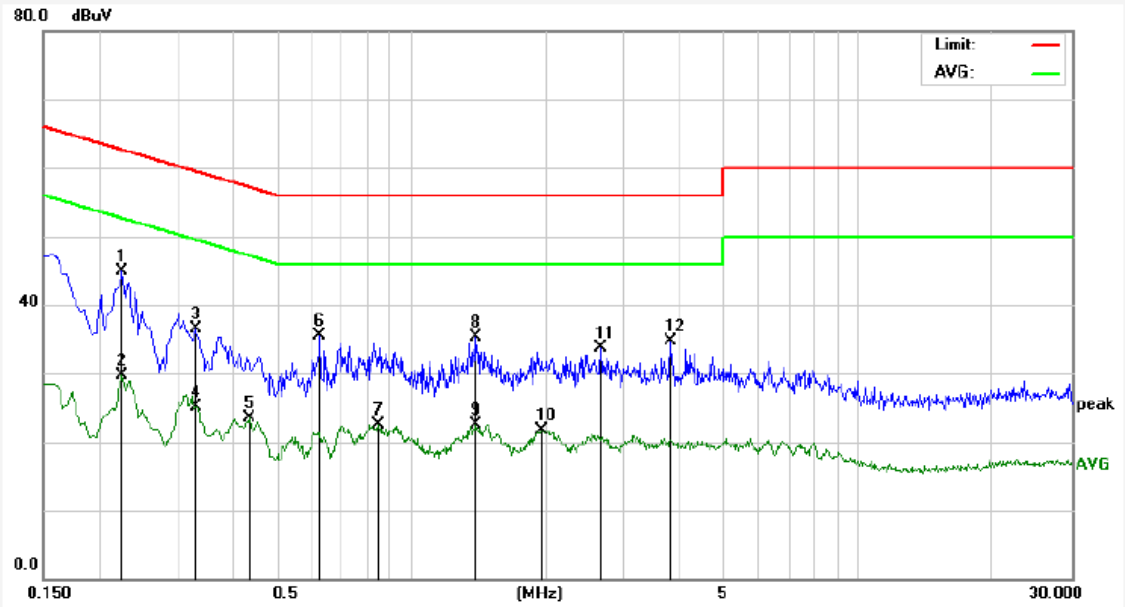
Test Site: 1# Shielded Room
Operating Condition: CH 01
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.: 23.6℃ Hum.: 58%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1740	26.48	19.90	46.38	64.76	-18.38	QP	
2	0.1740	11.17	19.90	31.07	54.76	-23.69	AVG	
3	0.3460	5.32	19.91	25.23	49.06	-23.83	AVG	
4	0.4980	20.17	19.98	40.15	56.03	-15.88	QP	
5	0.6060	3.53	20.01	23.54	46.00	-22.46	AVG	
6	0.8220	16.19	20.07	36.26	56.00	-19.74	QP	
7	1.0940	16.55	20.12	36.67	56.00	-19.33	QP	
8	1.1460	1.89	20.12	22.01	46.00	-23.99	AVG	
9	1.4060	16.39	20.13	36.52	56.00	-19.48	QP	
10	1.4819	0.99	20.13	21.12	46.00	-24.88	AVG	
11	1.9340	0.63	20.14	20.77	46.00	-25.23	AVG	
12	1.9580	14.94	20.14	35.08	56.00	-20.92	QP	

Conducted Emission Test Data

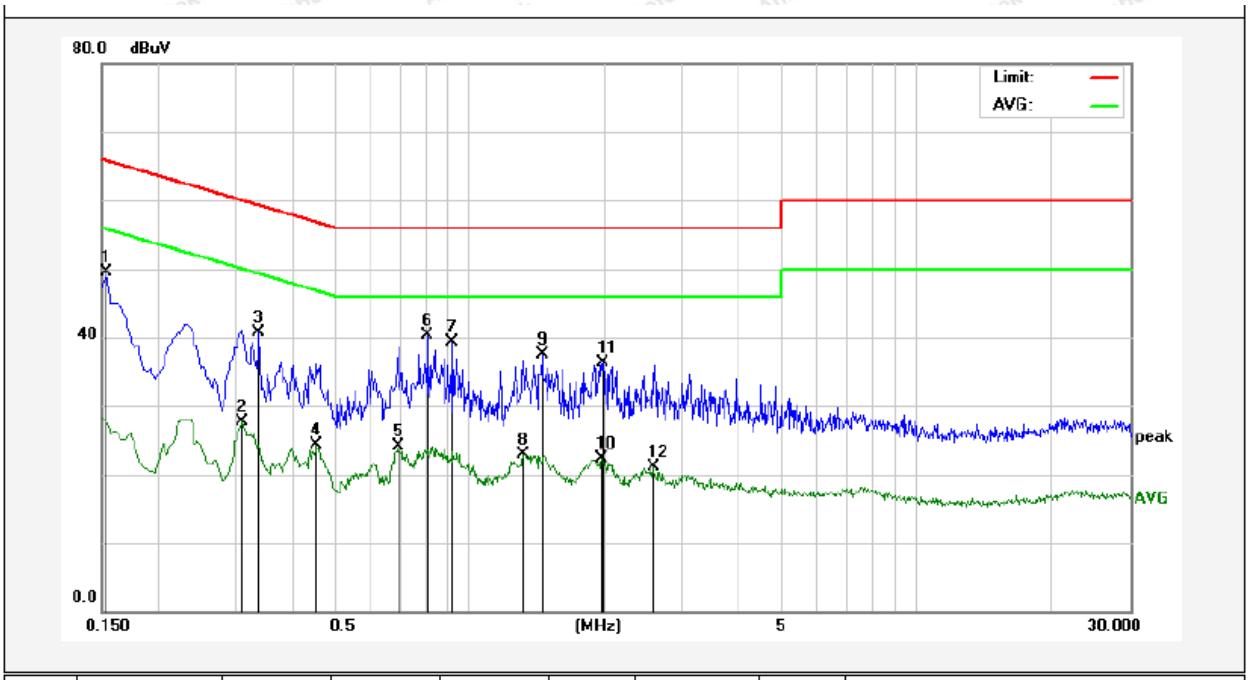
Test Site: 1# Shielded Room
Operating Condition: CH 01
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.: 23.6℃ Hum.: 58%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.2260	24.93	19.89	44.82	62.59	-17.77	QP	
2	0.2260	9.76	19.89	29.65	52.59	-22.94	AVG	
3	0.3300	16.65	19.90	36.55	59.45	-22.90	QP	
4	0.3300	5.28	19.90	25.18	49.45	-24.27	AVG	
5	0.4340	3.59	19.95	23.54	47.18	-23.64	AVG	
6	0.6260	15.43	20.02	35.45	56.00	-20.55	QP	
7	0.8460	2.37	20.08	22.45	46.00	-23.55	AVG	
8	1.3980	15.21	20.13	35.34	56.00	-20.66	QP	
9	1.3980	2.38	20.13	22.51	46.00	-23.49	AVG	
10	1.9660	1.56	20.14	21.70	46.00	-24.30	AVG	
11	2.6580	13.57	20.15	33.72	56.00	-22.28	QP	
12	3.8180	14.43	20.18	34.61	56.00	-21.39	QP	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: CH 01
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.: 23.6℃ Hum.: 58%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1539	29.51	19.90	49.41	65.78	-16.37	QP	
2	0.3100	7.72	19.89	27.61	49.97	-22.36	AVG	
3	0.3379	20.81	19.91	40.72	59.25	-18.53	QP	
4	0.4540	4.42	19.96	24.38	46.80	-22.42	AVG	
5	0.6900	4.10	20.04	24.14	46.00	-21.86	AVG	
6	0.8059	20.24	20.07	40.31	56.00	-15.69	QP	
7	0.9140	19.25	20.10	39.35	56.00	-16.65	QP	
8	1.3220	2.77	20.13	22.90	46.00	-23.10	AVG	
9	1.4500	17.37	20.13	37.50	56.00	-18.50	QP	
10	1.9740	2.19	20.14	22.33	46.00	-23.67	AVG	
11	1.9820	16.17	20.14	36.31	56.00	-19.69	QP	
12	2.5780	0.96	20.15	21.11	46.00	-24.89	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)
	902~908	50	-	94.0	Quasi-pea	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

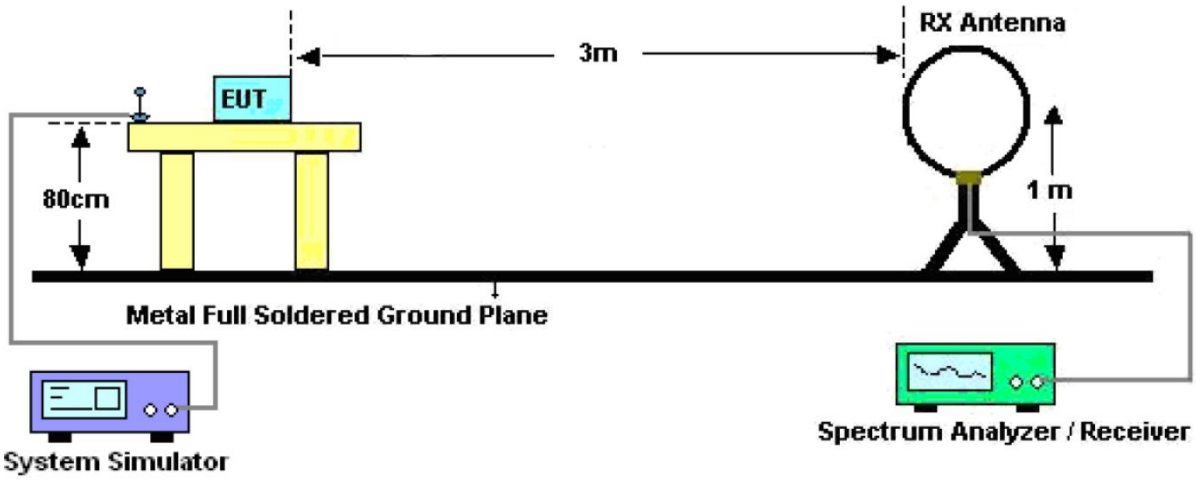


Figure 2. 30MHz to 1GHz

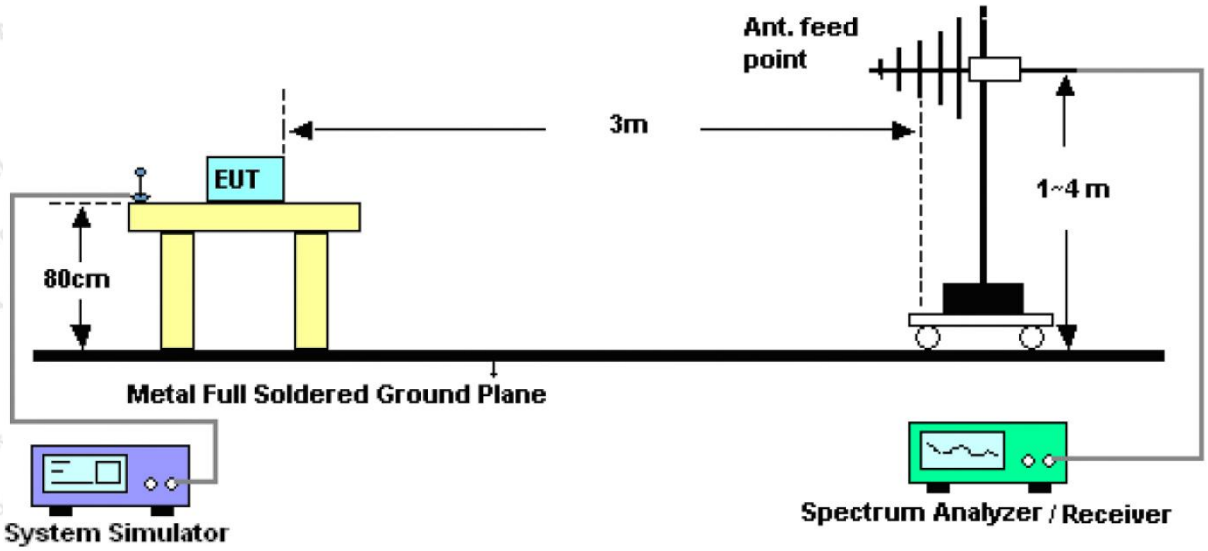
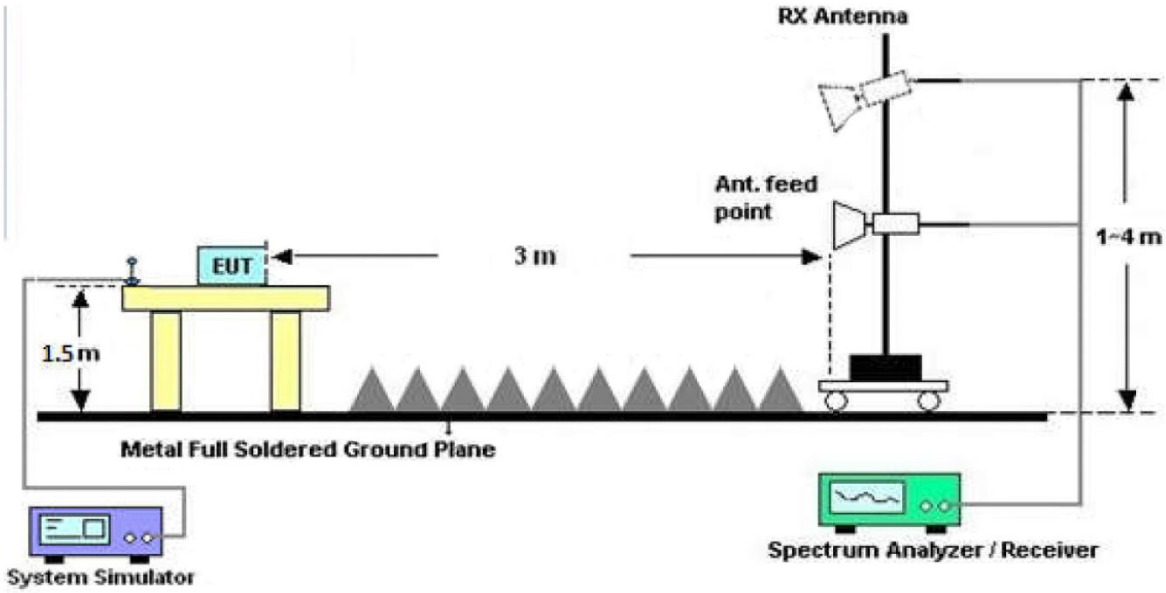


Figure 3. Above 1 GHz



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, and found the CH 01 channel which is the worst case, only the worst case is recorded in the report

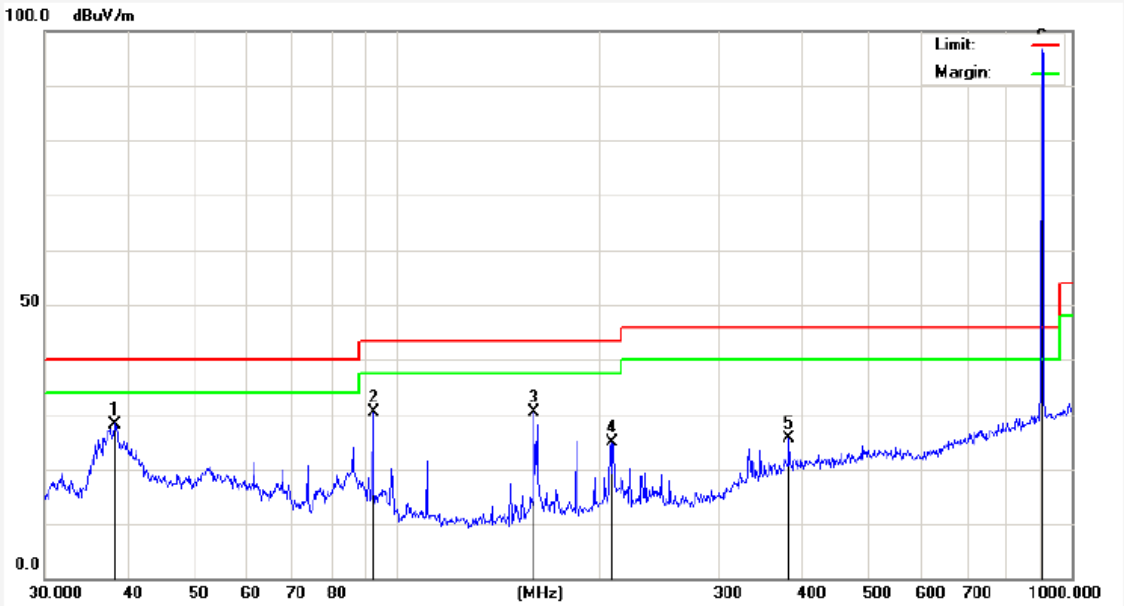
Test Results (30~1000MHz)

Test Mode: CH01

Power Source: AC 120V, 60Hz for adapter

Polarization: Vertical

Temp.(℃)/Hum.(%RH): 22.6℃/56%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	38.2120	42.59	-14.34	28.25	40.00	-11.75	QP	300	0	
2	92.1388	47.66	-17.40	30.26	43.50	-13.24	QP	300	74	
3	159.7844	48.38	-17.88	30.50	43.50	-13.00	QP	300	124	
4	208.5803	40.54	-15.63	24.91	43.50	-18.59	QP	300	196	
5	381.2487	38.11	-12.43	25.68	46.00	-20.32	QP	300	251	
6	908.4494	96.16	-3.71	92.45	94.00	-1.55	QP	300	360	

Test Results (30~1000MHz)

Test Mode:	CH01
Power Source:	AC 120V, 60Hz for adapter
Polarization:	Horizontal
Temp.(℃)/Hum.(%RH):	22.6℃/56%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	92.1388	56.38	-17.40	38.98	43.50	-4.52	QP	300	0	
2	98.1419	46.72	-15.94	30.78	43.50	-12.72	QP	300	54	
3	110.5687	42.73	-15.66	27.07	43.50	-16.43	QP	300	125	
4	159.7844	46.83	-17.88	28.95	43.50	-14.55	QP	300	196	
5	207.1226	45.15	-15.67	29.48	43.50	-14.02	QP	300	254	
6	908.5094	95.26	-3.71	91.55	94.00	-2.45	QP	300	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	49.50	7.39	28.73	26.31	59.31	74	-14.69	PK
1816.8000	H	40.64	7.39	28.73	26.31	50.45	54	-3.55	AV
2725.2000	H	48.97	8.10	29.71	27.01	59.77	74	-14.23	PK
2725.2000	H	37.70	8.10	29.71	27.01	48.50	54	-5.50	AV
3633.6000	H	--	--	--	--	--	--	--	PK
3633.6000	H	--	--	--	--	--	--	--	AV
1816.8000	V	45.13	7.39	28.73	26.31	54.94	74	-19.06	PK
1816.8000	V	38.77	7.39	28.73	26.31	48.58	54	-5.42	AV
2725.2000	V	45.89	8.10	29.71	27.01	56.69	74	-17.31	PK
2725.2000	V	37.03	8.10	29.71	27.01	47.83	54	-6.17	AV
3633.6000	V	--	--	--	--	--	--	--	PK
3633.6000	V	--	--	--	--	--	--	--	AV

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Hotline 400-003-0500
www.anbotek.com

CH02(908.42MHz)

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
1816.8400	H	50.41	7.39	28.73	26.31	60.22	74	-13.78	PK
1816.8400	H	39.44	7.39	28.73	26.31	49.25	54	-4.75	AV
2725.2600	H	48.73	8.10	29.71	27.01	59.53	74	-14.47	PK
2725.2600	H	38.64	8.10	29.71	27.01	49.44	54	-4.56	AV
3633.6800	H	--	--	--	--	--	--	--	PK
3633.6800	H	--	--	--	--	--	--	--	AV
1816.8400	V	45.93	7.39	28.73	26.31	55.74	74	-18.26	PK
1816.8400	V	39.03	7.39	28.73	26.31	48.84	54	-5.16	AV
2725.2600	V	46.10	8.10	29.71	27.01	56.90	74	-17.10	PK
2725.2600	V	38.45	8.10	29.71	27.01	49.25	54	-4.75	AV
3633.6800	V	--	--	--	--	--	--	--	PK
3633.6800	V	--	--	--	--	--	--	--	AV

Remark:

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

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CH03(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	50.34	7.39	28.73	26.31	60.15	74	-13.85	PK
1832.0000	H	39.90	7.39	28.73	26.31	49.71	54	-4.29	AV
2748.0000	H	48.11	8.10	29.71	27.01	58.91	74	-15.09	PK
2748.0000	H	37.51	8.10	29.71	27.01	48.31	54	-5.69	AV
3664.0000	H	--	--	--	--	--	--	--	PK
3664.0000	H	--	--	--	--	--	--	--	AV
1832.0000	V	45.48	7.39	28.73	26.31	55.29	74	-18.71	PK
1832.0000	V	37.98	7.39	28.73	26.31	47.79	54	-6.21	AV
2748.0000	V	46.34	8.10	29.71	27.01	57.14	74	-16.86	PK
2748.0000	V	38.45	8.10	29.71	27.01	49.25	54	-4.75	AV
3664.0000	V	--	--	--	--	--	--	--	PK
3664.0000	V	--	--	--	--	--	--	--	AV

Remark:

3. Level = Reading + Cable Loss+Ant Factor-Amplifier
4. 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.
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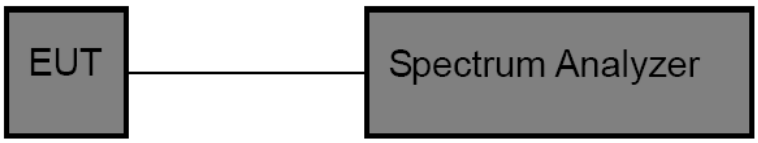
5. 20dB Bandwidth Test

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.

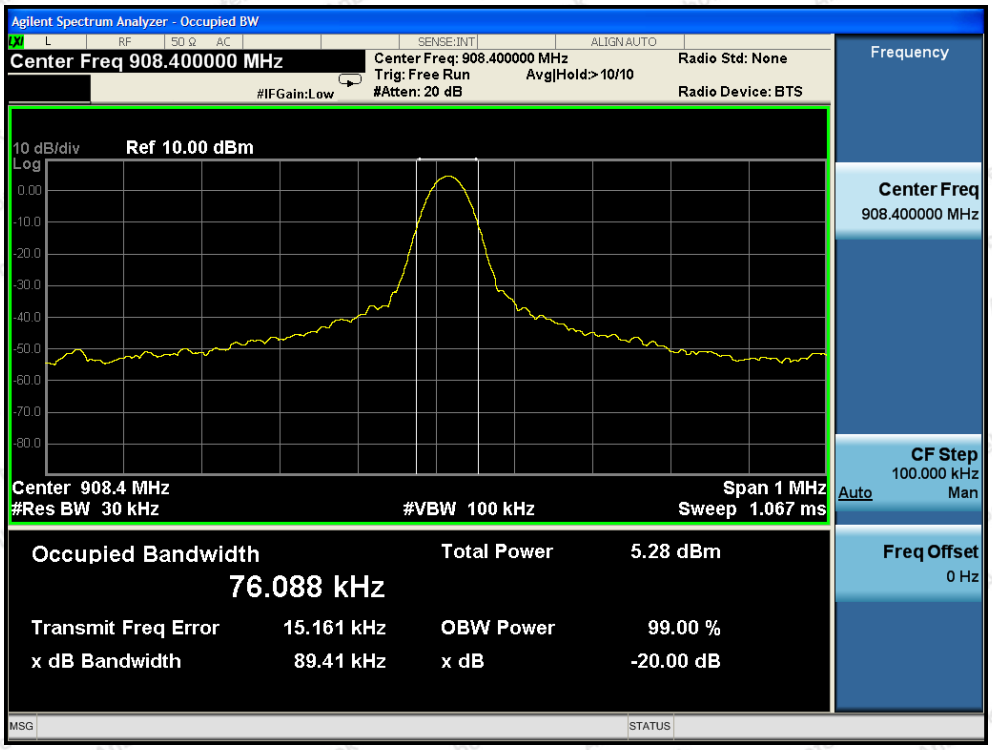
Sweep- auto couple.

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

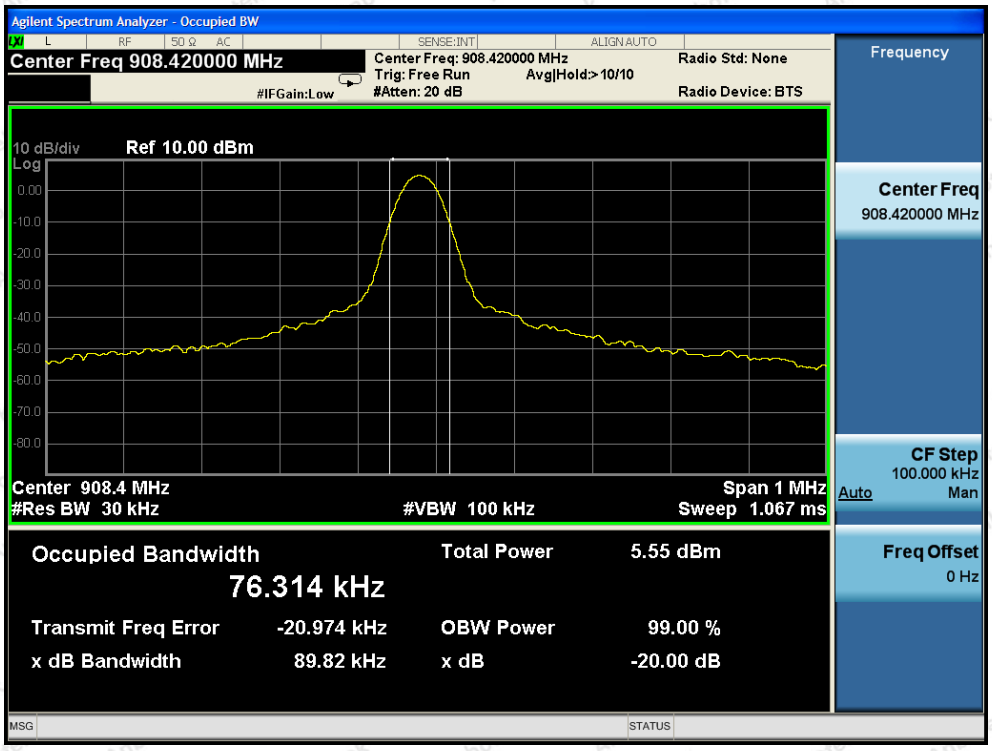
5.4. Test Data

Test Item	:	20dB Bandwidth	Test Mode	:	Mode 1
Test Voltage	:	AC 120V, 60Hz for adapter	Temperature	:	22.4℃
Test Result	:	PASS	Humidity	:	55%RH

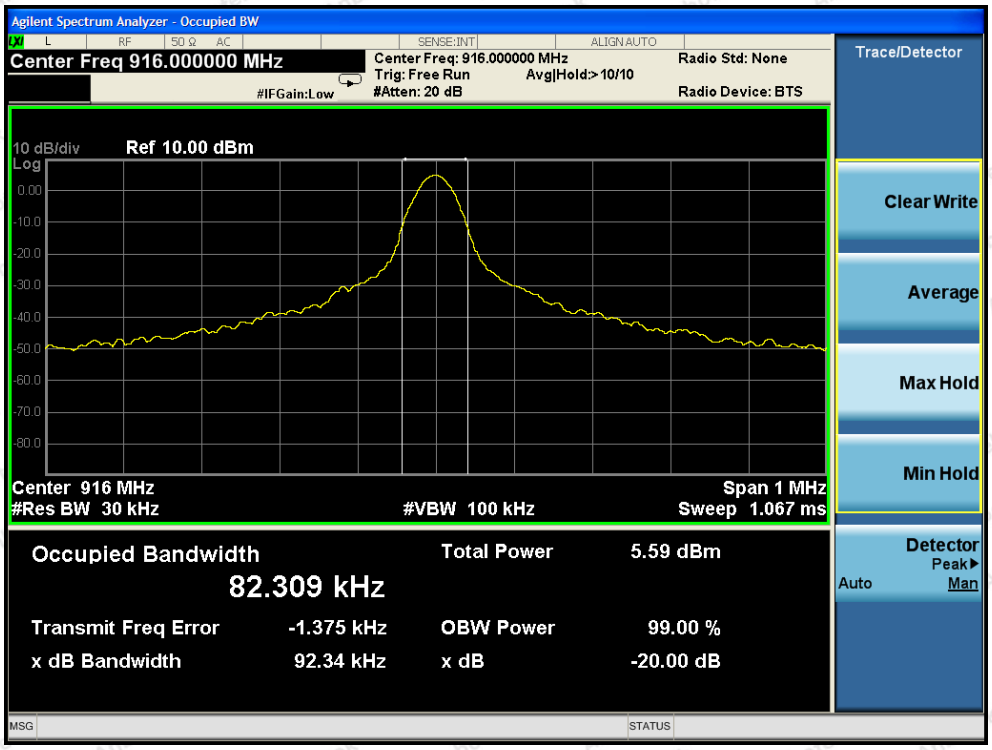
Test Modulation	Frequency (MHz)	Bandwidth (kHz)	Result
FSK	908.4MHz	89.41	PASS
FSK	908.42MHz	89.82	PASS
GFSK	916MHz	92.34	PASS



Test Mode: Low



Test Mode: Middle



Test Mode: High

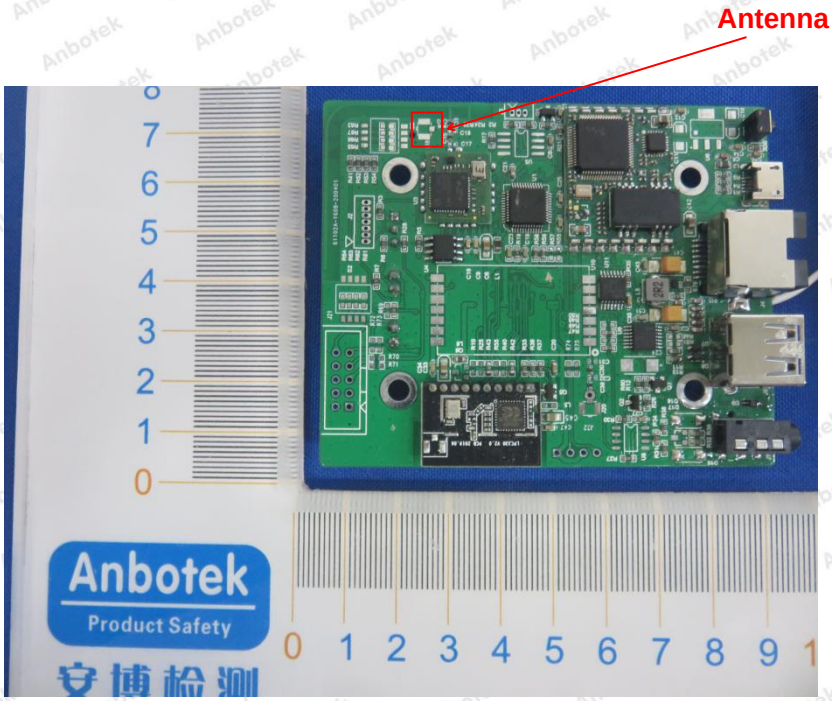
6. Antenna Requirement

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 5.14 dBi. It complies with the standard requirement.



APPENDIX I -- PHOTOGRAPH

Reference to the test report 18220WC00035101.

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