

FCC TEST REPORT

Client Name : Anker Innovations Limited

Address : Room 1318-19, Hollywood Plaza, 610 Nathan Road,
Mongkok, Kowloon, Hongkong

Product Name : Solo Doorbell S20 (Battery) Kit

Date : Jul. 19, 2021

Shenzhen Anbotech Compliance Laboratory Limited



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TEST REPORT

Applicant : Anker Innovations Limited
Manufacturer : Anker Innovations Limited
Product Name : Solo Doorbell S20 (Battery) Kit
Model No. : T8222
Trade Mark : eufy SECURITY
Rating(s) : Input: DC 5V, 1A (with DC 3.63V, 4850mAh Battery inside)

Test Standard(s) : FCC Part15 Subpart C 2019, Section 15.247

Test Method(s) : ANSI C63.10: 2020, KDB558074 D01 DTS Meas Guidance v05r02

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

Jun. 29, 2021

Date of Test

Jun. 29~Jul. 07, 2021

Prepared by

Ella Liang

(Ella Liang)

Approved & Authorized Signer

Kingkong Jin

(Kingkong Jin)



1. General Information

1.1. Client Information

Applicant	:	Anker Innovations Limited
Address	:	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong
Manufacturer	:	Anker Innovations Limited
Address	:	Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong

1.2. Description of Device (EUT)

Product Name	:	Solo Doorbell S20 (Battery) Kit
Model No.	:	T8222
Trade Mark	:	eufy SECURITY
Test Power Supply	:	AC 120V, 60Hz for adapter / AC 240V, 60Hz for adapter DC 3.63V Battery inside
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Product Description	Operation Frequency:	802.11b/ g/ n(HT20) 2412-2462MHz
	Number of Channel:	11 Channels for 802.11b/ g/ n(HT20)
	Modulation Type:	802.11b CCK; 802.11g/n OFDM
	Antenna Type:	LDS 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

Adapter	:	Manufacturer: ZTE M/N: STC-A2050I1000USBA-C S/N: 201202102100876 Input: 100-240V~ 50/60Hz, 0.3A Output: DC 5V, 1000mA
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1.4. Description of Test Modes

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

RADIATED EMISSION TEST (BELOW 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Test Channel	Modulation Tech.	Data Rate (Mbps)
802.11n HT20	1 to 11	1, 6, 11	OFDM	6.5

For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Test Channel	Modulation Tech.	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	6.5

POWER LINE CONDUCTED EMISSION TEST:

The EUT was tested with the following mode

Mode	Available Channel	Test Channel	Modulation Tech.	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	6.5

BANDEDGE MEASUREMENT:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Test Channel	Modulation Tech.	Data Rate (Mbps)
802.11b	1 to 11	1, 11	CCK	1.0
802.11g	1 to 11	1, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 11	OFDM	6.5

ANTENNA PORT CONDUCTED MEASUREMENT:

This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

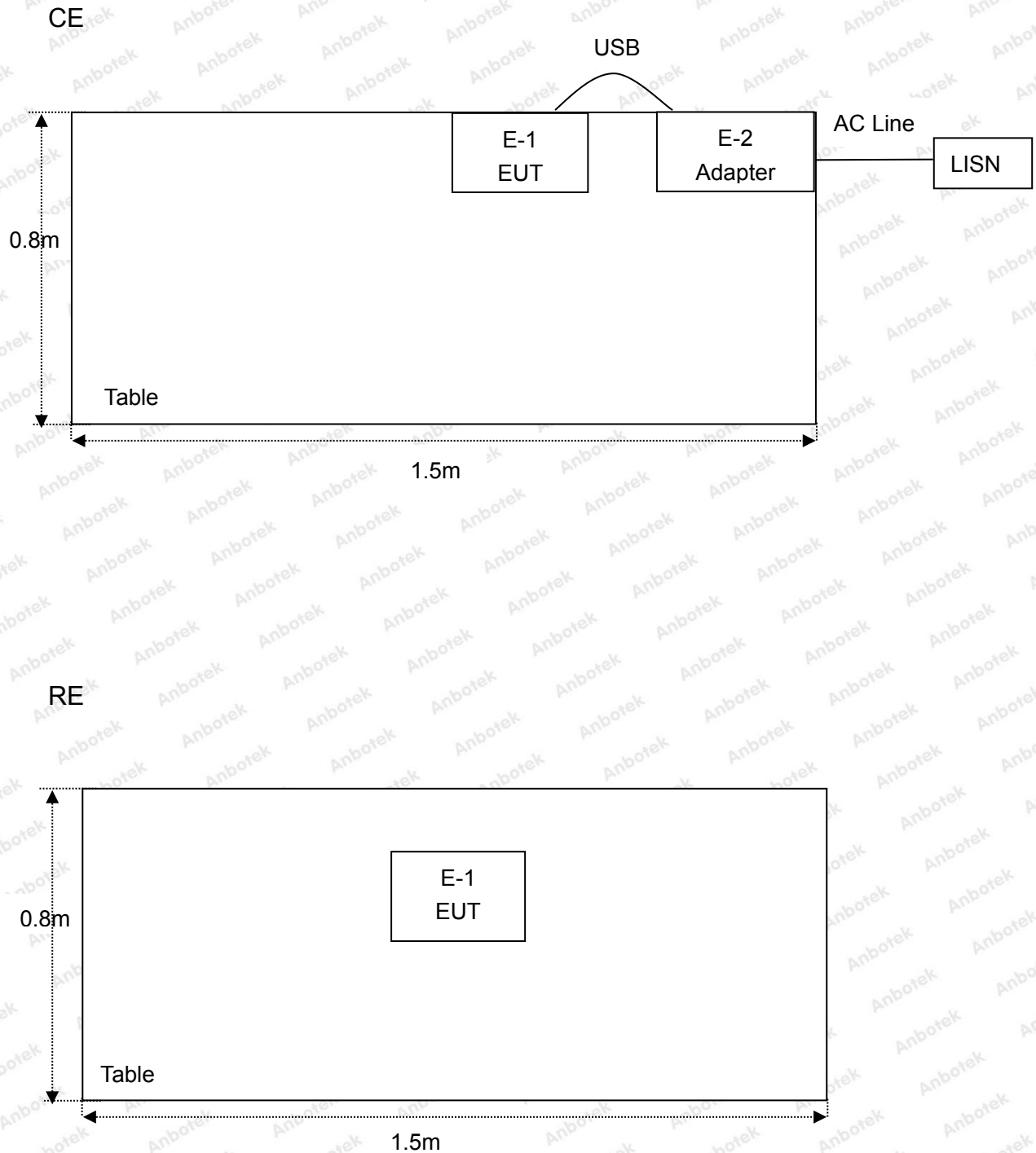
Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Test Channel	Modulation Tech.	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	6.5

1.5. List of channels

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

1.6. Description Of Test Setup



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.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Oct. 26, 2020	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	Oct. 26, 2020	1 Year
4.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Oct. 26, 2020	1 Year
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Oct. 26, 2020	1 Year
7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 02, 2020	2 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 02, 2020	2 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 02, 2020	2 Year
10.	Horn Antenna	A-INFO	LB-180400- KF	J211060628	Nov. 02, 2020	2 Year
11.	Pre-amplifier	SONOMA	310N	186860	Oct. 26, 2020	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Oct. 26, 2020	1 Year
14.	Power Sensor	DAER	RPR3006W	15100041SN045	Oct. 26, 2020	1 Year
15.	Power Sensor	DAER	RPR3006W	15100041SN046	Oct. 26, 2020	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Oct. 26, 2020	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Oct. 26, 2020	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Oct. 26, 2020	1 Year
19.	DC Power Supply	IVYTECH	IV3605	1804D360510	Oct. 26, 2020	1 Year

1.8. Measurement Uncertainty**Shenzhen Anbotech Compliance Laboratory Limited**

Code:AB-RF-05-a

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@anbotech.com



Hotline
400-003-0500
www.anbotech.com

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 Anbotech 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, September 30, 2020.

ISED-Registration No.: 8058A

Shenzhen Anbotech 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, September 30, 2020.

Test Location

Shenzhen Anbotech 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
15.207	Conducted Emission	PASS
15.205/15.209	Spurious Emission	PASS
15.247(b)(3)	Conducted Peak Output Power	PASS
Remark: "N/A" is an abbreviation for Not Applicable.		

Remark: This is a Class II application of the device, the difference between the original device and current one described as following:

- (1) Changing the IC chip "Hi3518ERNVCV300" to "T31".
- (2) Changing the model name to "T8222".
- (3) Changing the Product Name to "Solo Doorbell S20 (Battery) Kit".
- (4) Changing the PIR PCB layout.

Based on the change made to the device, the spurious emission test items were performed and the conducted power quotes the data of the original report 18220WC00072101.



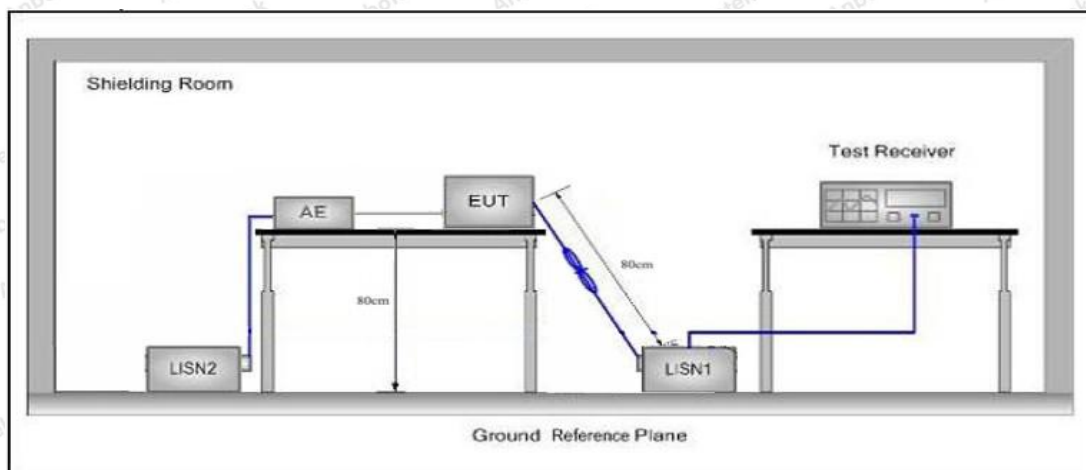
3. Conducted Emission Test

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.

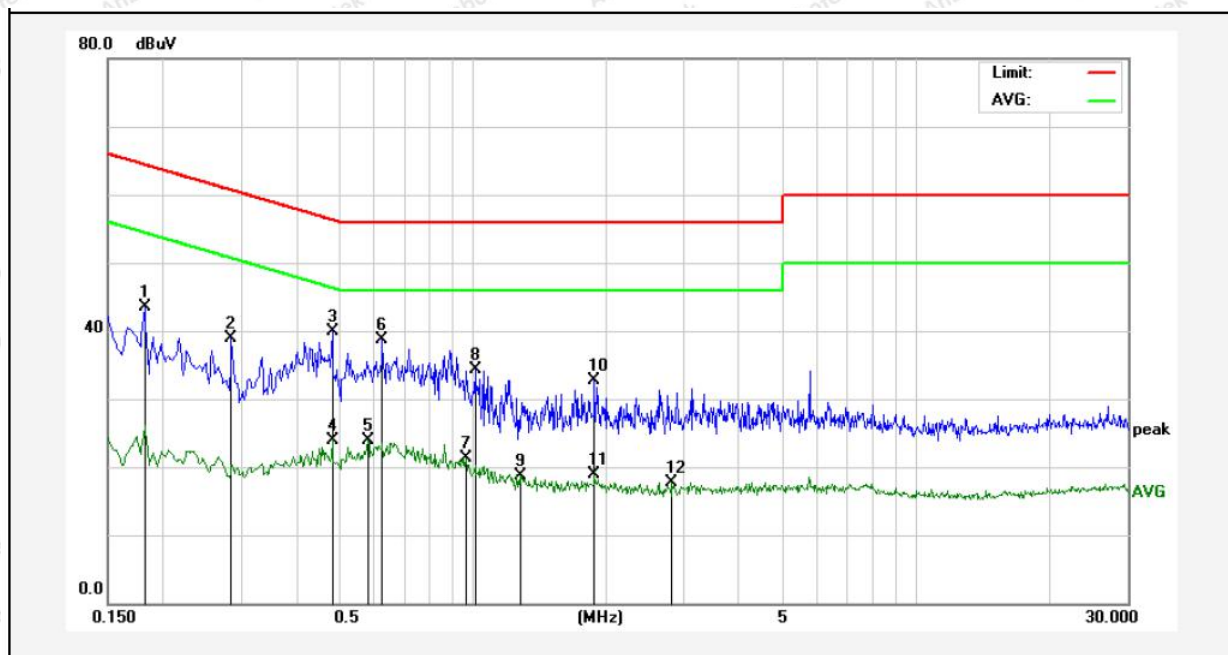
The frequency range from 150kHz to 30MHz is checked.

3.4. Test Data

During the test, pre-scan all modes, and found the 802.11n HT20 CH11 which is the worst case, only the worst case is recorded in the report.

Conducted Emission Test Data

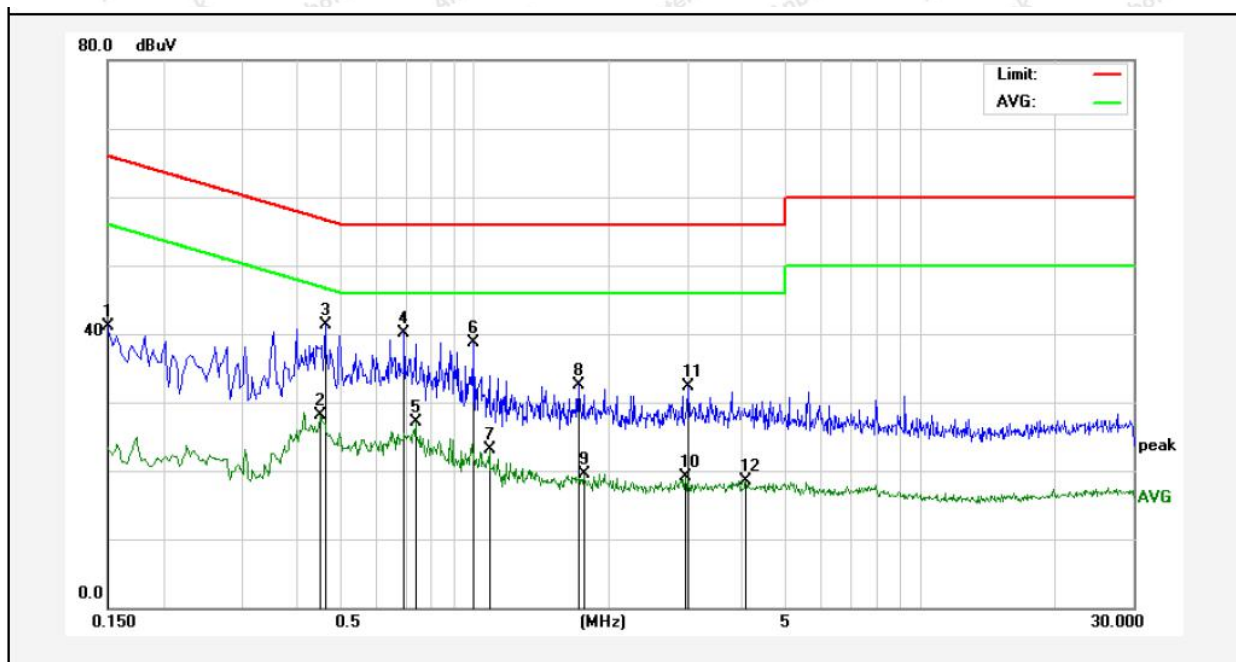
Test Site: 1# Shielded Room
Operating Condition: 802.11n HT20 CH11
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.: 22.5°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1819	23.64	19.90	43.54	64.39	-20.85	QP	
2	0.2860	19.05	19.89	38.94	60.64	-21.70	QP	
3	0.4820	19.93	19.97	39.90	56.30	-16.40	QP	
4	0.4820	4.03	19.97	24.00	46.30	-22.30	AVG	
5	0.5820	3.94	20.00	23.94	46.00	-22.06	AVG	
6	0.6260	18.62	20.02	38.64	56.00	-17.36	QP	
7	0.9660	1.21	20.11	21.32	46.00	-24.68	AVG	
8	1.0140	14.21	20.12	34.33	56.00	-21.67	QP	
9	1.2820	-1.36	20.13	18.77	46.00	-27.23	AVG	
10	1.8780	12.51	20.14	32.65	56.00	-23.35	QP	
11	1.8780	-1.17	20.14	18.97	46.00	-27.03	AVG	
12	2.8140	-2.41	20.16	17.75	46.00	-28.25	AVG	

Conducted Emission Test Data

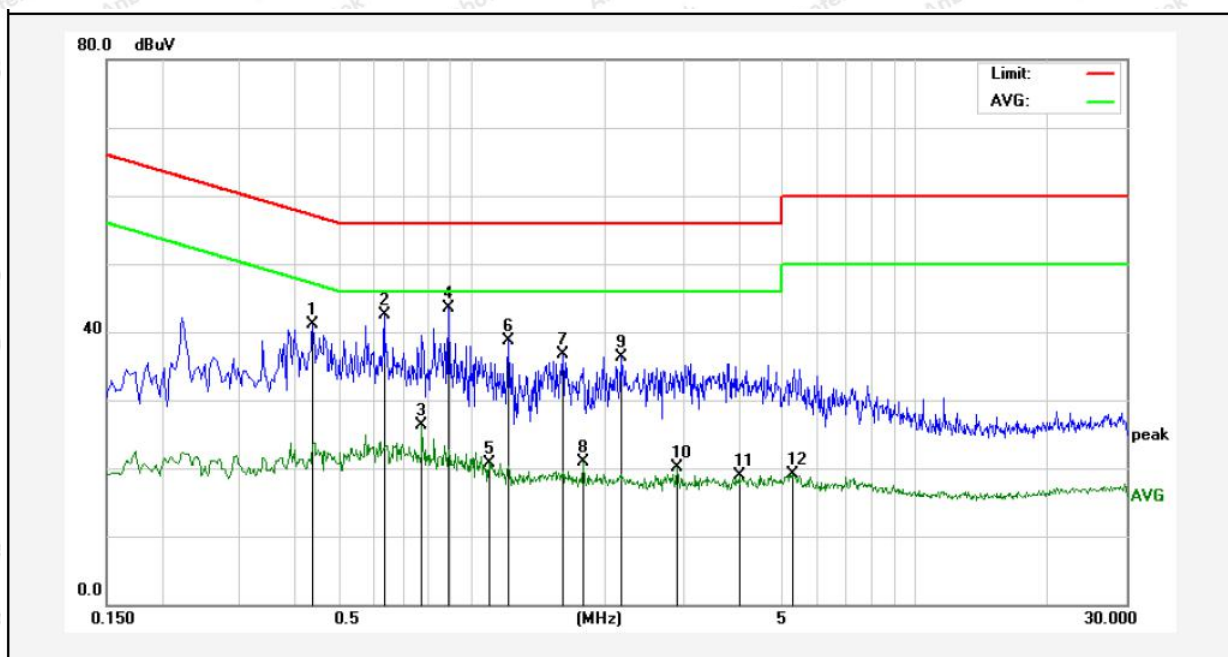
Test Site: 1# Shielded Room
 Operating Condition: 802.11n HT20 CH11
 Test Specification: AC 120V, 60Hz for adapter
 Comment: Neutral Line
 Tem.: 22.5°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	21.19	19.90	41.09	65.99	-24.90	QP	
2	0.4500	8.23	19.96	28.19	46.87	-18.68	AVG	
3	0.4620	21.35	19.96	41.31	56.66	-15.35	QP	
4	0.6940	20.15	20.04	40.19	56.00	-15.81	QP	
5	0.7380	7.07	20.05	27.12	46.00	-18.88	AVG	
6	0.9980	18.55	20.12	38.67	56.00	-17.33	QP	
7	1.0780	2.94	20.12	23.06	46.00	-22.94	AVG	
8	1.7100	12.37	20.13	32.50	56.00	-23.50	QP	
9	1.7540	-0.57	20.14	19.57	46.00	-26.43	AVG	
10	2.9700	-0.97	20.16	19.19	46.00	-26.81	AVG	
11	3.0180	12.18	20.16	32.34	56.00	-23.66	QP	
12	4.0540	-1.65	20.18	18.53	46.00	-27.47	AVG	

Conducted Emission Test Data

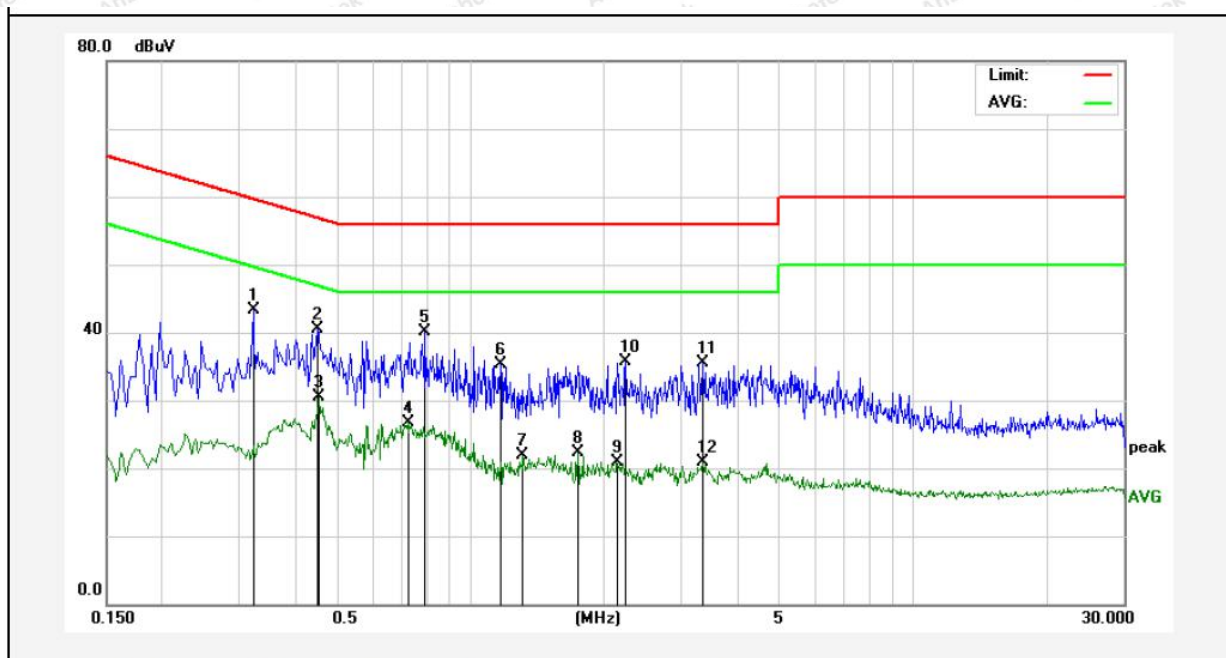
Test Site: 1# Shielded Room
Operating Condition: 802.11n HT20 CH11
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.: 22.5°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.4380	21.12	19.95	41.07	57.10	-16.03	QP	
2	0.6340	22.51	20.02	42.53	56.00	-13.47	QP	
3	0.7740	6.21	20.06	26.27	46.00	-19.73	AVG	
4	0.8860	23.45	20.09	43.54	56.00	-12.46	QP	
5	1.0940	0.61	20.12	20.73	46.00	-25.27	AVG	
6	1.2100	18.66	20.12	38.78	56.00	-17.22	QP	
7	1.6100	16.54	20.13	36.67	56.00	-19.33	QP	
8	1.7900	0.67	20.14	20.81	46.00	-25.19	AVG	
9	2.1700	16.20	20.14	36.34	56.00	-19.66	QP	
10	2.9140	-0.09	20.16	20.07	46.00	-25.93	AVG	
11	4.0180	-1.25	20.18	18.93	46.00	-27.07	AVG	
12	5.2860	-1.03	20.21	19.18	50.00	-30.82	AVG	

Conducted Emission Test Data

Test Site: 1# Shielded Room
Operating Condition: 802.11n HT20 CH11
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.: 22.5°C Hum.: 60%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.3220	23.36	19.90	43.26	59.65	-16.39	QP	
2	0.4500	20.45	19.96	40.41	56.87	-16.46	QP	
3	0.4540	10.58	19.96	30.54	46.80	-16.26	AVG	
4	0.7220	6.66	20.05	26.71	46.00	-19.29	AVG	
5	0.7900	20.04	20.06	40.10	56.00	-15.90	QP	
6	1.1660	15.14	20.12	35.26	56.00	-20.74	QP	
7	1.3099	1.78	20.13	21.91	46.00	-24.09	AVG	
8	1.7460	2.24	20.13	22.37	46.00	-23.63	AVG	
9	2.1380	0.84	20.14	20.98	46.00	-25.02	AVG	
10	2.2420	15.57	20.14	35.71	56.00	-20.29	QP	
11	3.3460	15.39	20.17	35.56	56.00	-20.44	QP	
12	3.3460	0.78	20.17	20.95	46.00	-25.05	AVG	

4. Radiation Spurious 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.

4.2. Test Setup

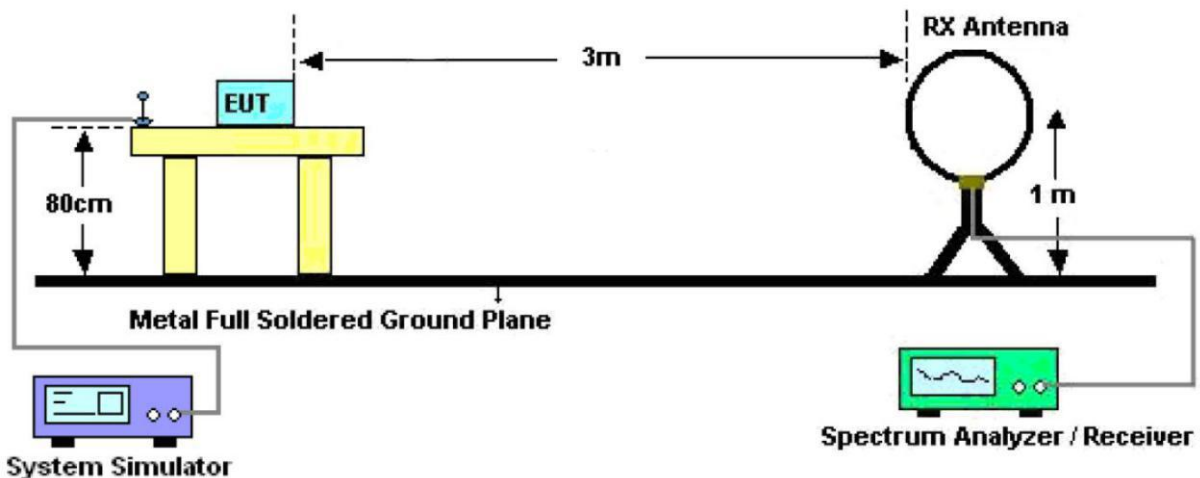


Figure 1. Below 30MHz

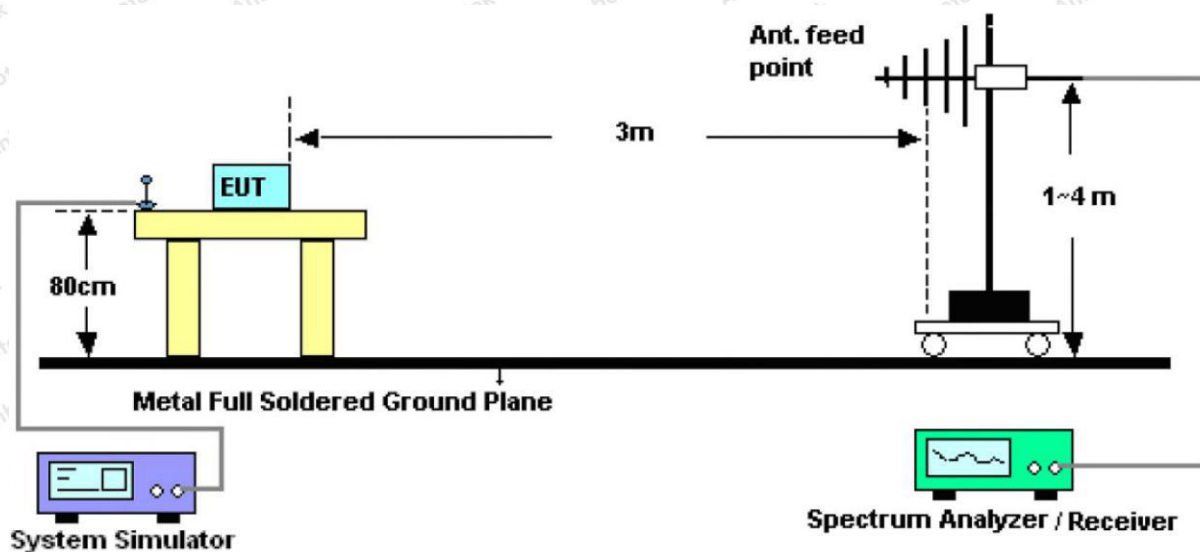


Figure 2. 30MHz to 1GHz

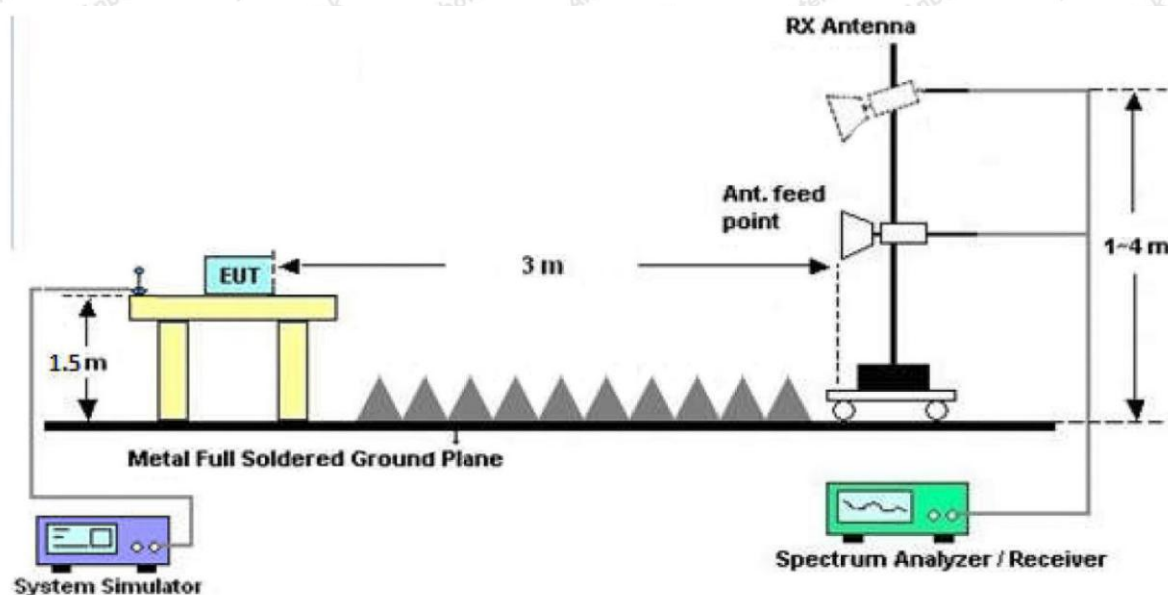


Figure 3. Above 1 GHz

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 modes, and found the 802.11n HT20 CH11 which is the worst case, only the worst case is recorded in the report.



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FCC ID: 2AOKB-T8220

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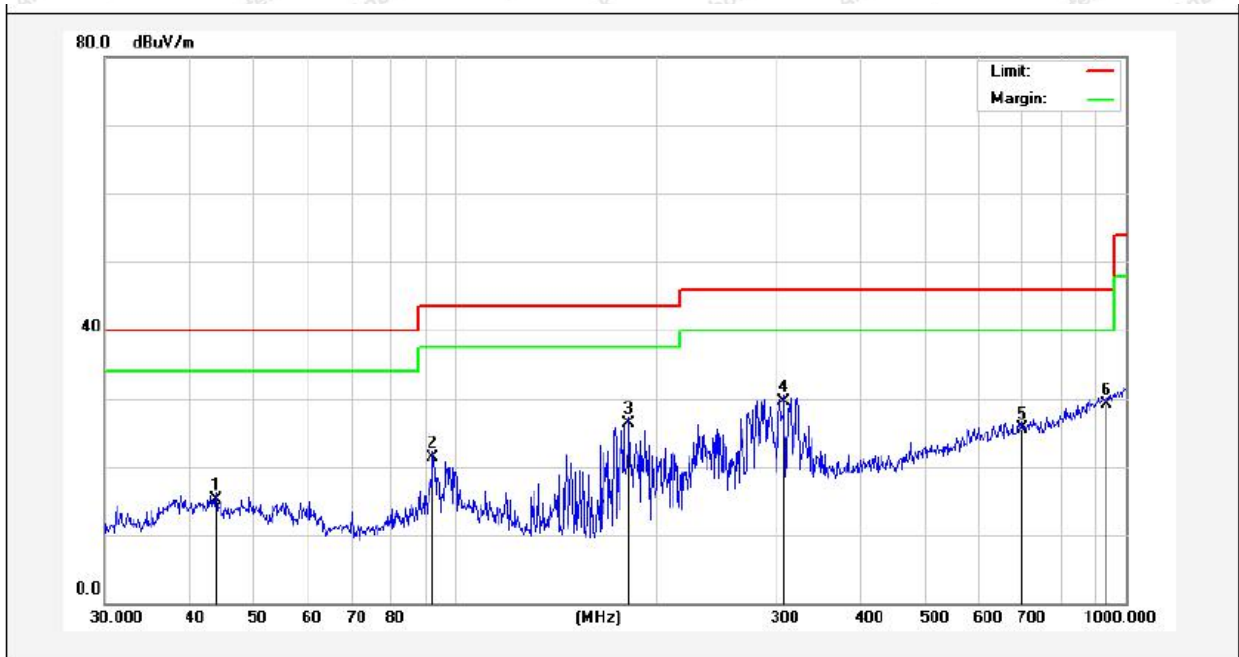
Test Results (30~1000MHz)

Test Mode: 802.11n HT20 CH11

Temp.(°C)/Hum.(%RH): 25.7°C/49%RH

Polarization: Horizontal

Power Source: DC 3.63V Battery inside



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	43.9658	29.51	-14.42	15.09	40.00	-24.91	QP	100	360	
2	92.4624	41.49	-20.27	21.22	43.50	-22.28	QP	100	0	
3	181.2834	47.09	-20.77	26.32	43.50	-17.18	QP	100	360	
4	308.9126	43.63	-14.07	29.56	46.00	-16.44	QP	100	0	
5	699.3046	31.57	-6.01	25.56	46.00	-20.44	QP	100	360	
6	932.2715	30.33	-1.14	29.19	46.00	-16.81	QP	100	0	



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Test Results (30~1000MHz)

Test Mode: 802.11n HT20 CH11

Temp.(°C)/Hum.(%RH): 25.7°C/49%RH

Polarization: Vertical

Power Source: DC 3.63V Battery inside



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.0245	36.19	-14.10	22.09	40.00	-17.91	QP	100	360	
2	92.1388	35.11	-15.60	19.51	43.50	-23.99	QP	100	0	
3	132.6850	39.29	-19.58	19.71	43.50	-23.79	QP	100	360	
4	180.0165	39.98	-18.25	21.73	43.50	-21.77	QP	100	0	
5	302.4812	38.19	-13.33	24.86	46.00	-21.14	QP	100	360	
6	576.6443	38.22	-7.34	30.88	46.00	-15.12	QP	100	0	



Test Results (Above 1000MHz)

Test Mode: 802.11n HT20 Mode					Test channel: Lowest			
Peak Value								
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.
4824.00	40.50	34.13	6.61	34.09	47.15	74.00	-26.85	V
7236.00	34.35	37.14	7.74	34.51	44.72	74.00	-29.28	V
9648.00	32.81	39.35	9.26	34.80	46.62	74.00	-27.38	V
12060.00	*					74.00		V
14472.00	*					74.00		V
16884.00	*					74.00		V
4824.00	39.14	34.13	6.61	34.09	45.79	74.00	-28.21	H
7236.00	34.08	37.14	7.74	34.51	44.45	74.00	-29.55	H
9648.00	32.38	39.35	9.26	34.80	46.19	74.00	-27.81	H
12060.00	*					74.00		H
14472.00	*					74.00		H
16884.00	*					74.00		H
Average Value								
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.
4824.00	29.57	34.13	6.61	34.09	36.22	54.00	-17.78	V
7236.00	23.21	37.14	7.74	34.51	33.58	54.00	-20.42	V
9648.00	23.15	39.35	9.26	34.80	36.96	54.00	-17.04	V
12060.00	*					54.00		V
14472.00	*					54.00		V
16884.00	*					54.00		V
4824.00	28.66	34.13	6.61	34.09	35.31	54.00	-18.69	H
7236.00	22.66	37.14	7.74	34.51	33.03	54.00	-20.97	H
9648.00	22.12	39.35	9.26	34.80	35.93	54.00	-18.07	H
12060.00	*					54.00		H
14472.00	*					54.00		H
16884.00	*					54.00		H



Test Results (Above 1000MHz)

Test Mode: 802.11n HT20 Mode					Test channel: Middle			
Peak Value								
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.
4874.00	39.52	34.35	6.67	34.09	46.45	74.00	-27.55	V
7311.00	34.40	37.21	7.77	34.53	44.85	74.00	-29.15	V
9748.00	33.81	39.45	9.33	34.80	47.79	74.00	-26.21	V
12185.00	*					74.00		V
14622.00	*					74.00		V
17059.00	*					74.00		V
4874.00	39.97	34.35	6.67	34.09	46.90	74.00	-27.10	H
7311.00	33.02	37.21	7.77	34.53	43.47	74.00	-30.53	H
9748.00	33.69	39.45	9.33	34.80	47.67	74.00	-26.33	H
12185.00	*					74.00		H
14622.00	*					74.00		H
17059.00	*					74.00		H
Average Value								
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.
4874.00	30.36	34.35	6.67	34.09	37.29	54.00	-16.71	V
7311.00	22.71	37.21	7.77	34.53	33.16	54.00	-20.84	V
9748.00	23.06	39.45	9.33	34.80	37.04	54.00	-16.96	V
12185.00	*					54.00		V
14622.00	*					54.00		V
17059.00	*					54.00		V
4874.00	30.08	34.35	6.67	34.09	37.01	54.00	-16.99	H
7311.00	22.11	37.21	7.77	34.53	32.56	54.00	-21.44	H
9748.00	23.40	39.45	9.33	34.80	37.38	54.00	-16.62	H
12185.00	*					54.00		H
14622.00	*					54.00		H
17059.00	*					54.00		H



Test Results (Above 1000MHz)

Test Mode: 802.11n HT20 Mode					Test channel: Highest			
Peak Value								
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.
4924.00	45.17	34.57	6.74	34.09	52.39	74.00	-21.61	V
7386.00	35.15	37.29	7.80	34.55	45.69	74.00	-28.31	V
9848.00	37.16	39.55	9.41	34.81	51.31	74.00	-22.69	V
12310.00	*					74.00		V
14772.00	*					74.00		V
17234.00	*					74.00		V
4924.00	44.43	34.57	6.74	34.09	51.65	74.00	-22.35	H
7386.00	34.03	37.29	7.80	34.55	44.57	74.00	-29.43	H
9848.00	33.32	39.55	9.41	34.81	47.47	74.00	-26.53	H
12310.00	*					74.00		H
14772.00	*					74.00		H
17234.00	*					74.00		H
Average Value								
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.
4924.00	36.06	34.57	6.74	34.09	43.28	54.00	-10.72	V
7386.00	25.06	37.29	7.80	34.55	35.60	54.00	-18.40	V
9848.00	25.66	39.55	9.41	34.81	39.81	54.00	-14.19	V
12310.00	*					54.00		V
14772.00	*					54.00		V
17234.00	*					54.00		V
4924.00	34.78	34.57	6.74	34.09	42.00	54.00	-12.00	H
7386.00	23.41	37.29	7.80	34.55	33.95	54.00	-20.05	H
9848.00	22.58	39.55	9.41	34.81	36.73	54.00	-17.27	H
12310.00	*					54.00		H
14772.00	*					54.00		H
17234.00	*					54.00		H

Remark:

1. During the test, pre-scan the 802.11b,g,n(HT20N) mode, and found the 802.11n HT20 mode is worse case , the report only record this mode.
2. Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
3. “*”, means this data is the too weak instrument of signal is unable to test.



Radiated Band Edge:

Test Mode: 802.11b Mode					Test channel: Lowest			
Peak Value								
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.
2390.00	52.96	29.15	3.41	34.01	51.51	74.00	-22.49	H
2400.00	62.41	29.16	3.43	34.01	60.99	74.00	-13.01	H
2390.00	54.73	29.15	3.41	34.01	53.28	74.00	-20.72	V
2400.00	64.56	29.16	3.43	34.01	63.14	74.00	-10.86	V
Average Value								
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.
2390.00	39.34	29.15	3.41	34.01	37.89	54.00	-16.11	H
2400.00	47.78	29.16	3.43	34.01	46.36	54.00	-7.64	H
2390.00	41.27	29.15	3.41	34.01	39.82	54.00	-14.18	V
2400.00	49.00	29.16	3.43	34.01	47.58	54.00	-6.42	V

Test Mode: 802.11b Mode					Test channel: Highest			
Peak Value								
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.
2483.50	54.18	29.28	3.53	34.03	52.96	74.00	-21.04	H
2500.00	49.58	29.30	3.56	34.03	48.41	74.00	-25.59	H
2483.50	56.70	29.28	3.53	34.03	55.48	74.00	-18.52	V
2500.00	52.34	29.30	3.56	34.03	51.17	74.00	-22.83	V
Average Value								
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.
2483.50	39.90	29.28	3.53	34.03	38.68	54.00	-15.32	H
2500.00	35.76	29.30	3.56	34.03	34.59	54.00	-19.41	H
2483.50	41.97	29.28	3.53	34.03	40.75	54.00	-13.25	V
2500.00	37.69	29.30	3.56	34.03	36.52	54.00	-17.48	V

Remark:

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

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Radiated Band Edge:

Test Mode: 802.11g Mode					Test channel: Lowest			
Peak Value								
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.
2390.00	51.59	27.53	5.47	33.92	50.67	74.00	-23.33	H
2400.00	60.58	27.55	5.49	29.93	63.69	74.00	-10.31	H
2390.00	53.26	27.53	5.47	33.92	52.34	74.00	-21.66	V
2400.00	62.36	27.55	5.49	29.93	65.47	74.00	-8.53	V
Average Value								
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.
2390.00	38.37	27.53	5.47	33.92	37.45	54.00	-16.55	H
2400.00	46.65	27.55	5.49	29.93	49.76	54.00	-4.24	H
2390.00	40.18	27.53	5.47	33.92	39.26	54.00	-14.74	V
2400.00	47.77	27.55	5.49	29.93	50.88	54.00	-3.12	V

Test Mode: 802.11g Mode					Test channel: Highest			
Peak Value								
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.
2483.50	52.22	29.28	3.53	34.03	51.00	74.00	-23.00	H
2500.00	48.06	29.30	3.56	34.03	46.89	74.00	-27.11	H
2483.50	54.46	29.28	3.53	34.03	53.24	74.00	-20.76	V
2500.00	50.56	29.30	3.56	34.03	49.39	74.00	-24.61	V
Average Value								
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.
2483.50	38.72	29.28	3.53	34.03	37.50	54.00	-16.50	H
2500.00	34.83	29.30	3.56	34.03	33.66	54.00	-20.34	H
2483.50	40.66	29.28	3.53	34.03	39.44	54.00	-14.56	V
2500.00	36.71	29.30	3.56	34.03	35.54	54.00	-18.46	V

Remark:

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



Radiated Band Edge:

Test Mode: 802.11n20 Mode					Test channel: Lowest			
Peak Value								
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.
2390.00	51.16	27.53	5.47	33.92	50.24	74.00	-23.76	H
2400.00	60.01	27.55	5.49	29.93	63.12	74.00	-10.88	H
2390.00	52.81	27.53	5.47	33.92	51.89	74.00	-22.11	V
2400.00	61.68	27.55	5.49	29.93	64.79	74.00	-9.21	V
Average Value								
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.
2390.00	38.06	27.53	5.47	33.92	37.14	54.00	-16.86	H
2400.00	46.31	27.55	5.49	29.93	49.42	54.00	-4.58	H
2390.00	39.85	27.53	5.47	33.92	38.93	54.00	-15.07	V
2400.00	47.39	27.55	5.49	29.93	50.50	54.00	-3.50	V

Test Mode: 802.11n20 Mode					Test channel: Highest			
Peak Value								
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.
2483.50	51.61	29.28	3.53	34.03	50.39	74.00	-23.61	H
2500.00	47.59	29.30	3.56	34.03	46.42	74.00	-27.58	H
2483.50	53.77	29.28	3.53	34.03	52.55	74.00	-21.45	V
2500.00	50.01	29.30	3.56	34.03	48.84	74.00	-25.16	V
Average Value								
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.
2483.50	38.36	29.28	3.53	34.03	37.14	54.00	-16.86	H
2500.00	34.55	29.30	3.56	34.03	33.38	54.00	-20.62	H
2483.50	40.26	29.28	3.53	34.03	39.04	54.00	-14.96	V
2500.00	36.41	29.30	3.56	34.03	35.24	54.00	-18.76	V

Remark:

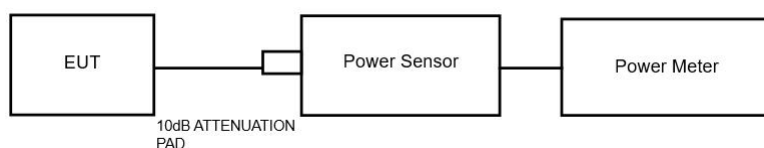
1. Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

5. Maximum Peak Output Power Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (b)(3)
Test Limit	30dBm

5.2. Test Setup



5.3. Test Procedure

1. The Transmitter output (antenna port) was connected to the power meter.
2. Turn on the EUT and power meter and then record the power value.
3. Repeat above procedures on all channels needed to be tested.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.

5.4. Test Data

Test Item	:	Max. peak output power
Test Voltage	:	DC 3.63V Battery inside
Test Result	:	PASS

Test Mode	:	CH Low ~ CH High
Temperature	:	24℃
Humidity	:	55%RH

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power (PK) (dBm)	Limit dBm	Results
TX 802.11b Mode				
CH01	2412	14.60	30	PASS
CH06	2437	14.45	30	PASS
CH11	2462	14.26	30	PASS
TX 802.11g Mode				
CH01	2412	14.97	30	PASS
CH06	2437	14.83	30	PASS
CH11	2462	14.82	30	PASS
TX 802.11n(20) Mode				
CH01	2412	15.01	30	PASS
CH06	2437	14.89	30	PASS
CH11	2462	14.89	30	PASS

Note:

1. For power test the duty cycle is 100% in continuous transmitting mode.

Please see the plot of next page

2. For pre-scan, the power is the same as the data in the original report 18220WC00072101.



APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files for Test Setup Photos of the EUT.

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files for External Photos of the EUT.

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files for Internal Photos of the EUT.

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

