

# FCC TEST REPORT

Client Name : Anker Innovations Limited  
Address : Room 1318-19, Hollywood Plaza, 610 Nathan Road,  
Mongkok, Kowloon, Hongkong  
Product Name : Video Doorbell 1080p (Battery-Powered)  
Date : Mar. 09, 2021



**Shenzhen Anbotek Compliance Laboratory Limited**

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# TEST REPORT

Applicant : Anker Innovations Limited  
Manufacturer : Anker Innovations Limited  
Product Name : Video Doorbell 1080p (Battery-Powered)  
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: 2013, 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 Jan. 21, 2021  
Date of Test Jan. 21~Feb. 26, 2021

Prepared by



(Engineer / Yilia Zhong)

Reviewer



(Supervisor / Bibo Zhang)

Approved & Authorized Signer



(Manager / 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	:	Video Doorbell 1080p (Battery-Powered)	
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-A205011000USBA-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 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.

**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.	Modulation Type	Data Rate (Mbps)
802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	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.	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	CCK	DBPSK	1.0
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	BPSK	6.5

**POWER LINE CONDUCTED EMISSION TEST:**

The EUT was tested with the following mode

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

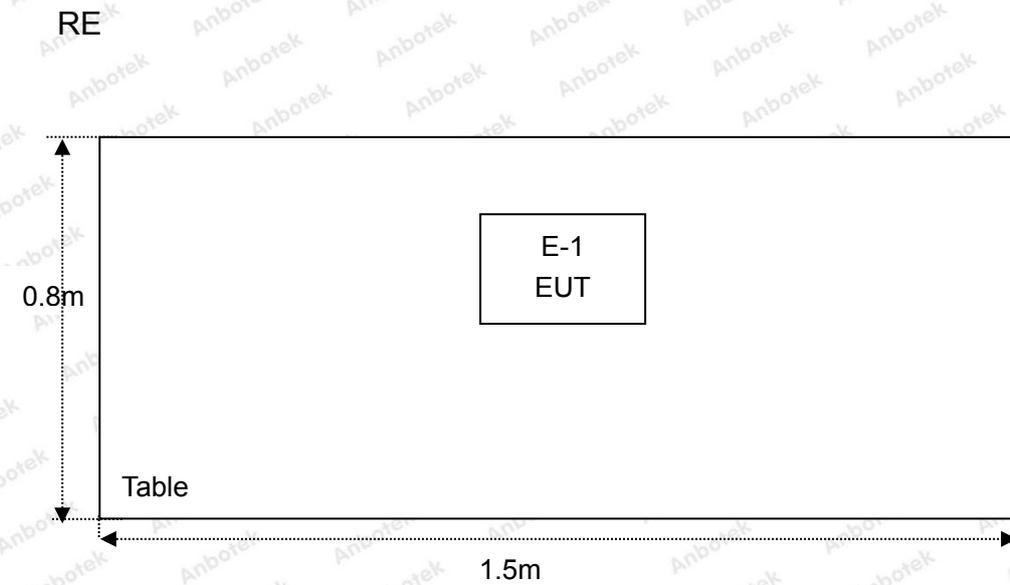
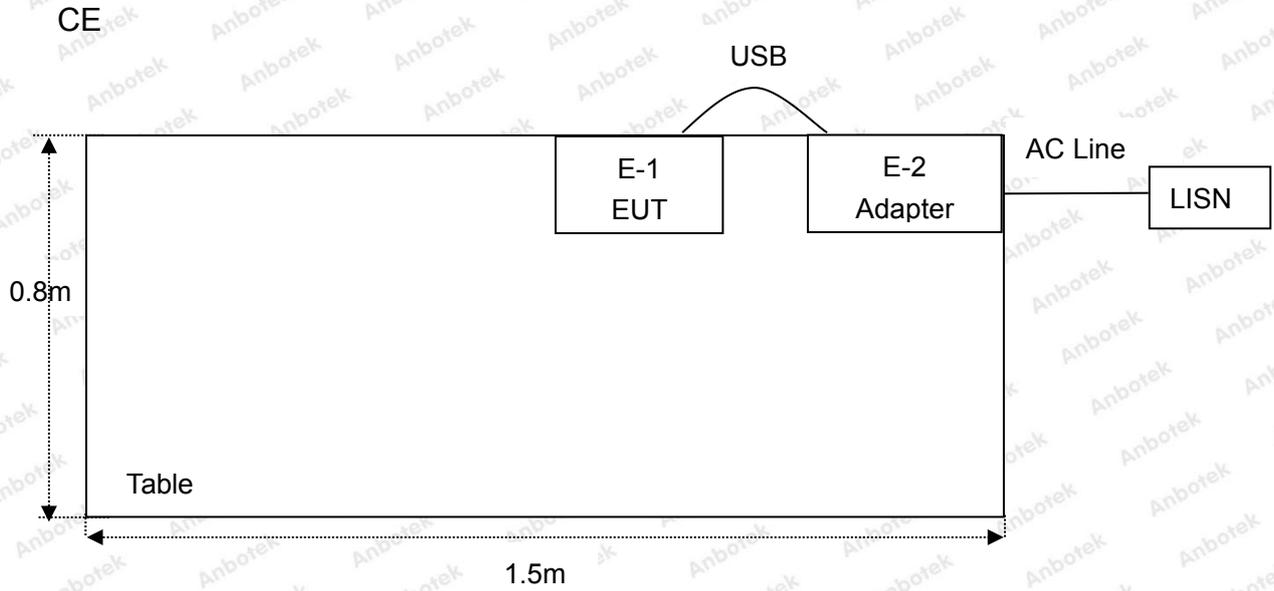
Following channel(s) was (were) selected for the final test as listed below.

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

**1.5. List of channels**

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	BK1G18G30D	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-K F	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	15I00041SN045	Oct. 26, 2020	1 Year
15.	Power Sensor	DAER	RPR3006W	15I00041SN046	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
20.	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, September 30, 2020.

**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, September 30, 2020.

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

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

- (1) Changing the appearance.
- (2) Changing the Product Name to "Video Doorbell 1080p (Battery-Powered)".
- (3) Changing the model name "T8220" to "T8222".
- (4) Changing the Layout of the of the PIR board frame.
- (5) Changing the Master chip "HiSilicon HI 3518\_ERNCV300" to "Ingenic T31".

Based on the change made to the device, the spurious emission test items were performed.

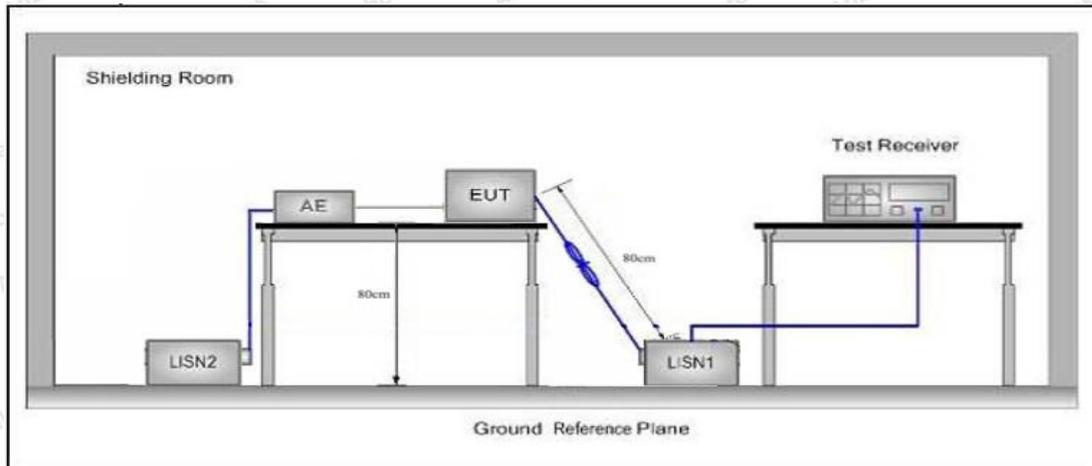
## 3. Conducted Emission Test

### 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 receiver (ESCI) set at 9kHz.

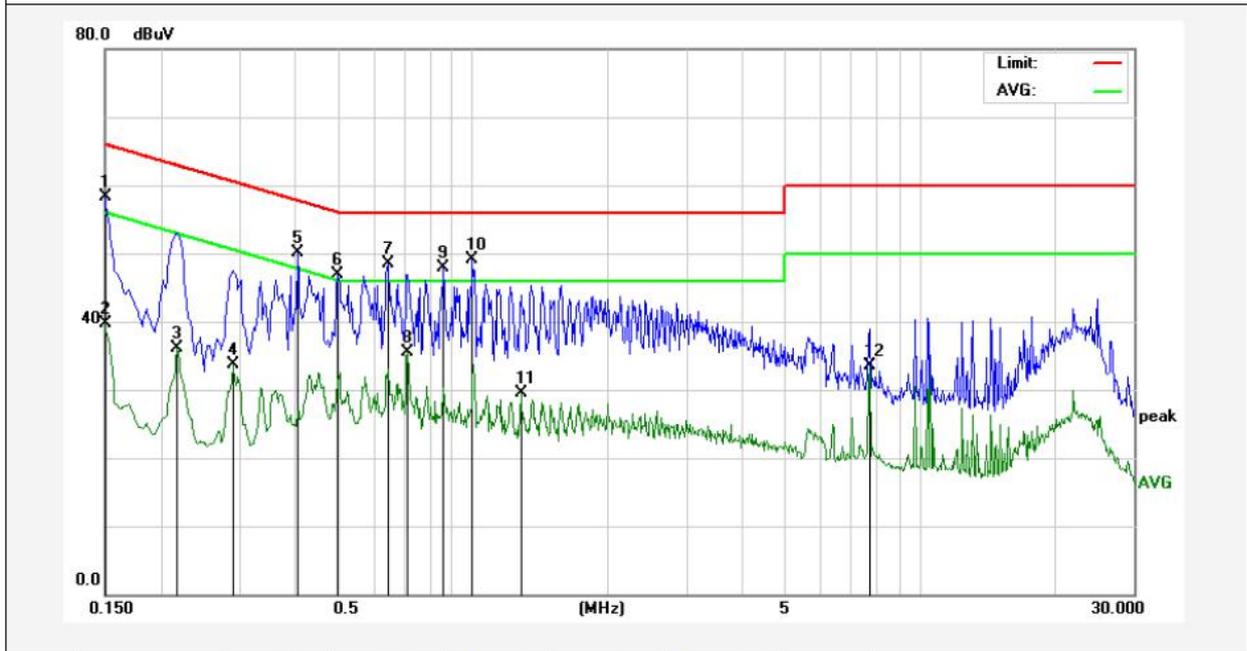
The frequency range from 150kHz to 30MHz is checked.

### 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**

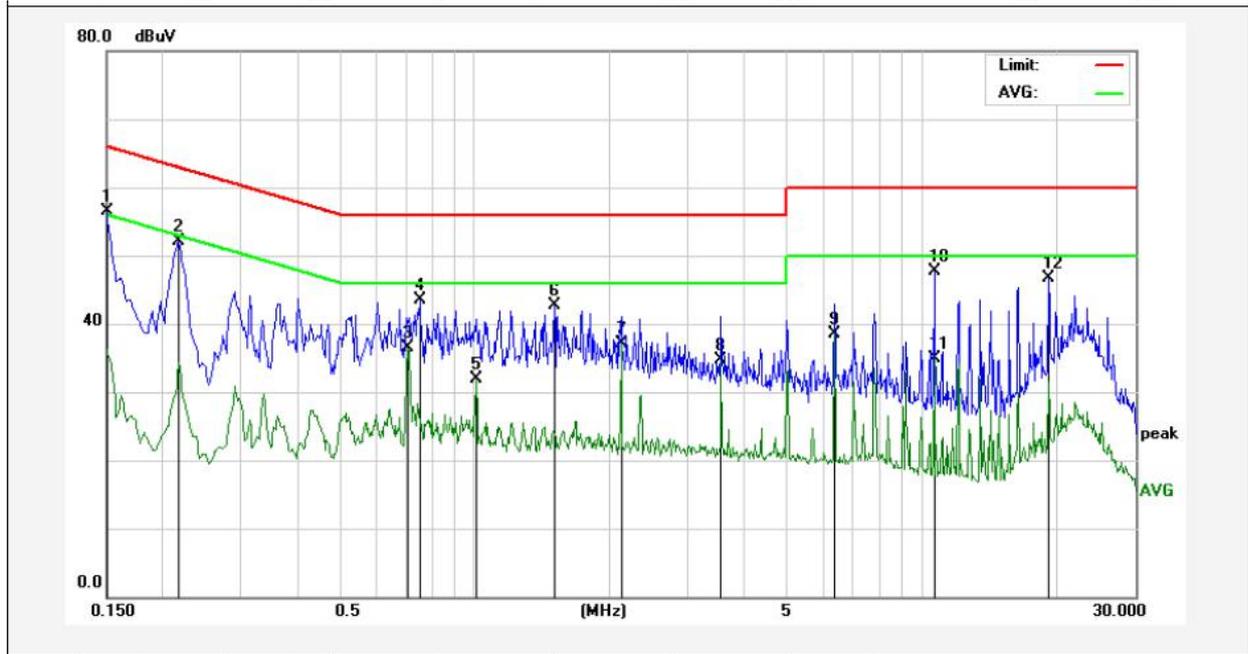
Test Site: 1# Shielded Room  
 Operating Condition: 802.11n HT20 CH11  
 Test Specification: AC 120V, 60Hz for adapter  
 Comment: Live Line  
 Tem.: 22.4°C Hum.: 49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	38.36	19.90	58.26	65.99	-7.73	QP	
2	0.1500	19.72	19.90	39.62	55.99	-16.37	AVG	
3	0.2180	16.20	19.90	36.10	52.89	-16.79	AVG	
4	0.2900	13.76	19.89	33.65	50.52	-16.87	AVG	
5	0.4060	30.09	19.94	50.03	57.73	-7.70	QP	
6	0.4980	26.84	19.98	46.82	56.03	-9.21	QP	
7	0.6460	28.45	20.02	48.47	56.00	-7.53	QP	
8	0.7140	15.49	20.04	35.53	46.00	-10.47	AVG	
9	0.8580	27.81	20.08	47.89	56.00	-8.11	QP	
10	0.9980	29.02	20.12	49.14	56.00	-6.86	QP	
11	1.2820	9.38	20.13	29.51	46.00	-16.49	AVG	
12	7.6900	13.24	20.28	33.52	50.00	-16.48	AVG	

**Conducted Emission Test Data**

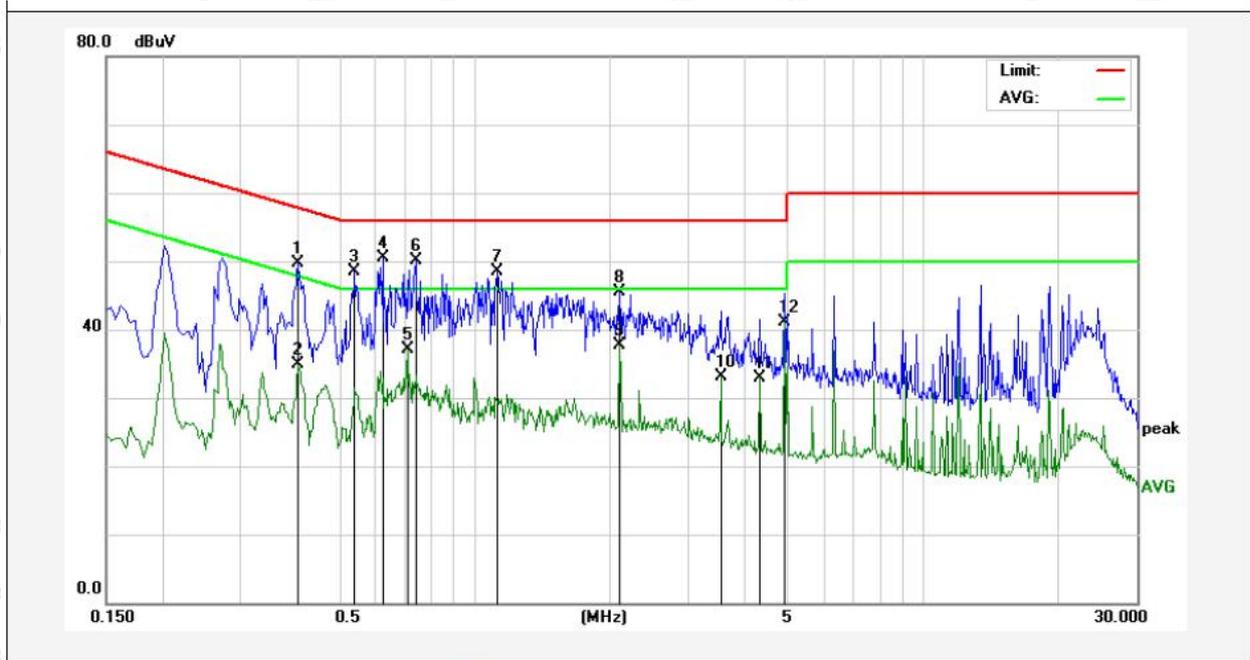
Test Site: 1# Shielded Room  
 Operating Condition: 802.11n HT20 CH11  
 Test Specification: AC 120V, 60Hz for adapter  
 Comment: Neutral Line  
 Tem.: 22.4°C Hum.: 49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.1500	36.60	19.90	56.50	65.99	-9.49	QP	
2	0.2180	32.14	19.90	52.04	62.89	-10.85	QP	
3	0.7060	16.52	20.04	36.56	46.00	-9.44	AVG	
4	0.7539	23.42	20.05	43.47	56.00	-12.53	QP	
5	1.0100	11.80	20.12	31.92	46.00	-14.08	AVG	
6	1.5060	22.63	20.13	42.76	56.00	-13.24	QP	
7	2.1260	16.99	20.14	37.13	46.00	-8.87	AVG	
8	3.5580	14.58	20.17	34.75	46.00	-11.25	AVG	
9	6.3620	18.26	20.24	38.50	50.00	-11.50	AVG	
10	10.6380	27.35	20.33	47.68	60.00	-12.32	QP	
11	10.6380	14.57	20.33	34.90	50.00	-15.10	AVG	
12	19.2060	26.29	20.33	46.62	60.00	-13.38	QP	

**Conducted Emission Test Data**

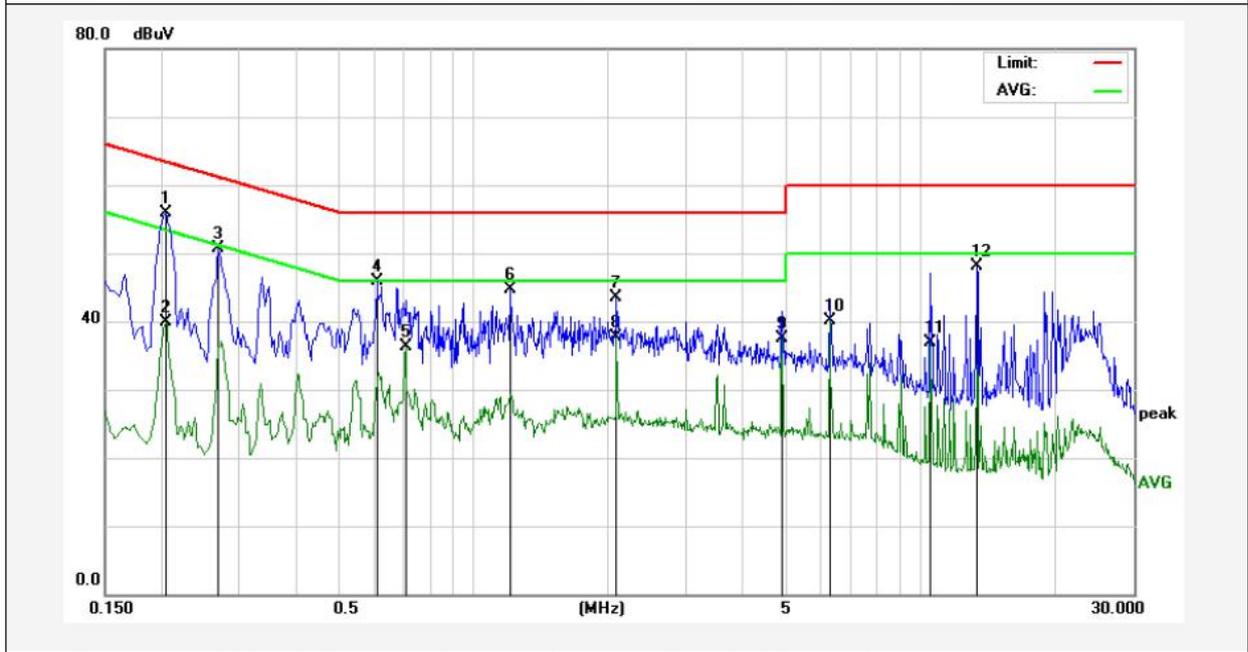
Test Site: 1# Shielded Room  
 Operating Condition: 802.11n HT20 CH11  
 Test Specification: AC 240V, 60Hz for adapter  
 Comment: Live Line  
 Tem.: 22.4°C Hum.: 49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.4020	29.82	19.94	49.76	57.81	-8.05	QP	
2	0.4020	15.05	19.94	34.99	47.81	-12.82	AVG	
3	0.5380	28.51	19.99	48.50	56.00	-7.50	QP	
4	0.6220	30.56	20.02	50.58	56.00	-5.42	QP	
5	0.7060	17.03	20.04	37.07	46.00	-8.93	AVG	
6	0.7380	30.14	20.05	50.19	56.00	-5.81	QP	
7	1.1180	28.33	20.12	48.45	56.00	-7.55	QP	
8	2.1099	25.46	20.14	45.60	56.00	-10.40	QP	
9	2.1099	17.60	20.14	37.74	46.00	-8.26	AVG	
10	3.5340	12.94	20.17	33.11	46.00	-12.89	AVG	
11	4.3260	12.81	20.19	33.00	46.00	-13.00	AVG	
12	4.9060	20.83	20.20	41.03	46.00	-4.97	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.: 22.4°C Hum.: 49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2060	35.97	19.90	55.87	63.36	-7.49	QP	
2	0.2060	19.94	19.90	39.84	53.36	-13.52	AVG	
3	0.2700	30.78	19.89	50.67	61.12	-10.45	QP	
4	0.6100	25.83	20.01	45.84	56.00	-10.16	QP	
5	0.7060	16.24	20.04	36.28	46.00	-9.72	AVG	
6	1.2100	24.61	20.12	44.73	56.00	-11.27	QP	
7	2.0940	23.31	20.14	43.45	56.00	-12.55	QP	
8	2.0940	17.52	20.14	37.66	46.00	-8.34	AVG	
9	4.9020	17.35	20.20	37.55	46.00	-8.45	AVG	
10	6.2780	19.80	20.24	40.04	50.00	-9.96	AVG	
11	10.5500	16.56	20.33	36.89	50.00	-13.11	AVG	
12	13.4020	27.90	20.29	48.19	60.00	-11.81	QP	

## 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

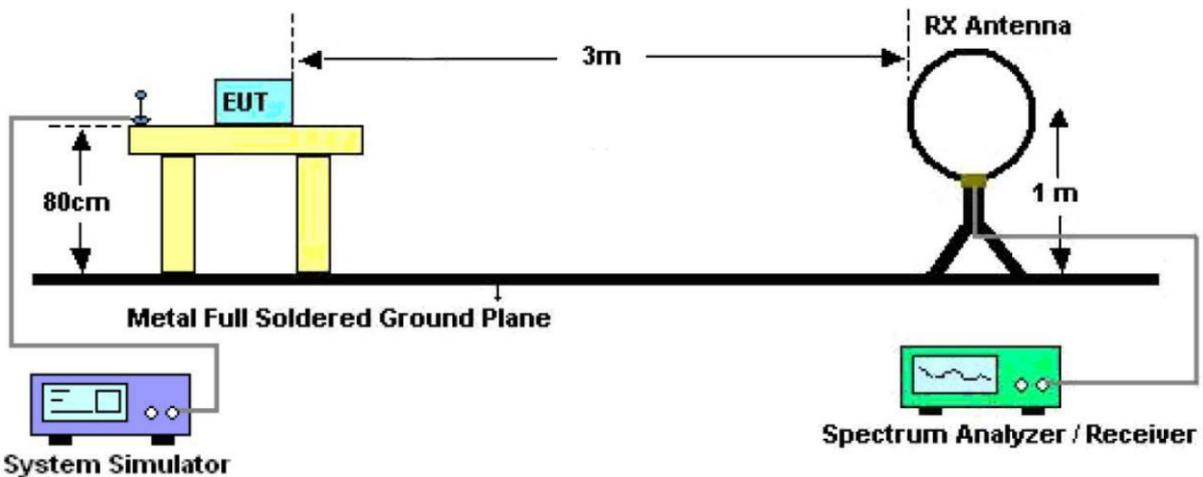


Figure 1. Below 30MHz

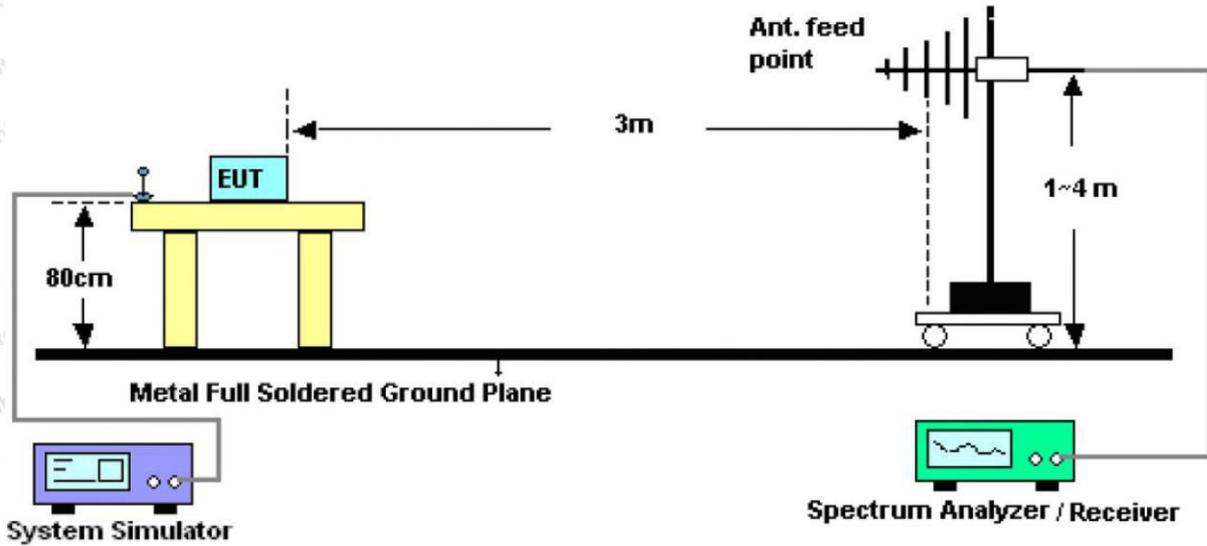


Figure 2. 30MHz to 1GHz

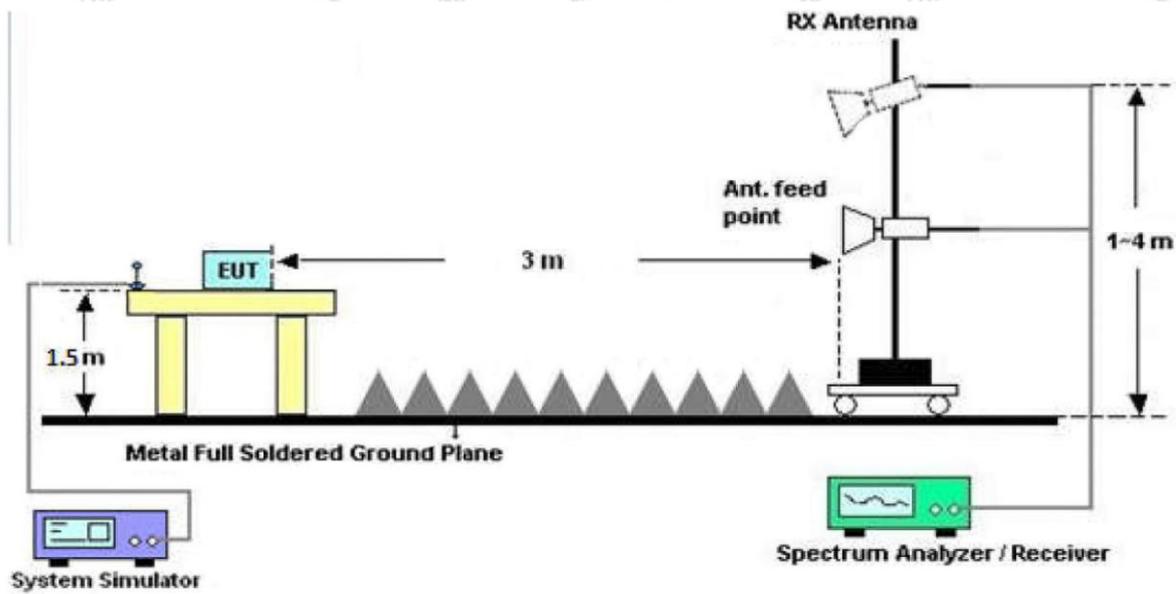


Figure 3. Above 1 GHz

### 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.

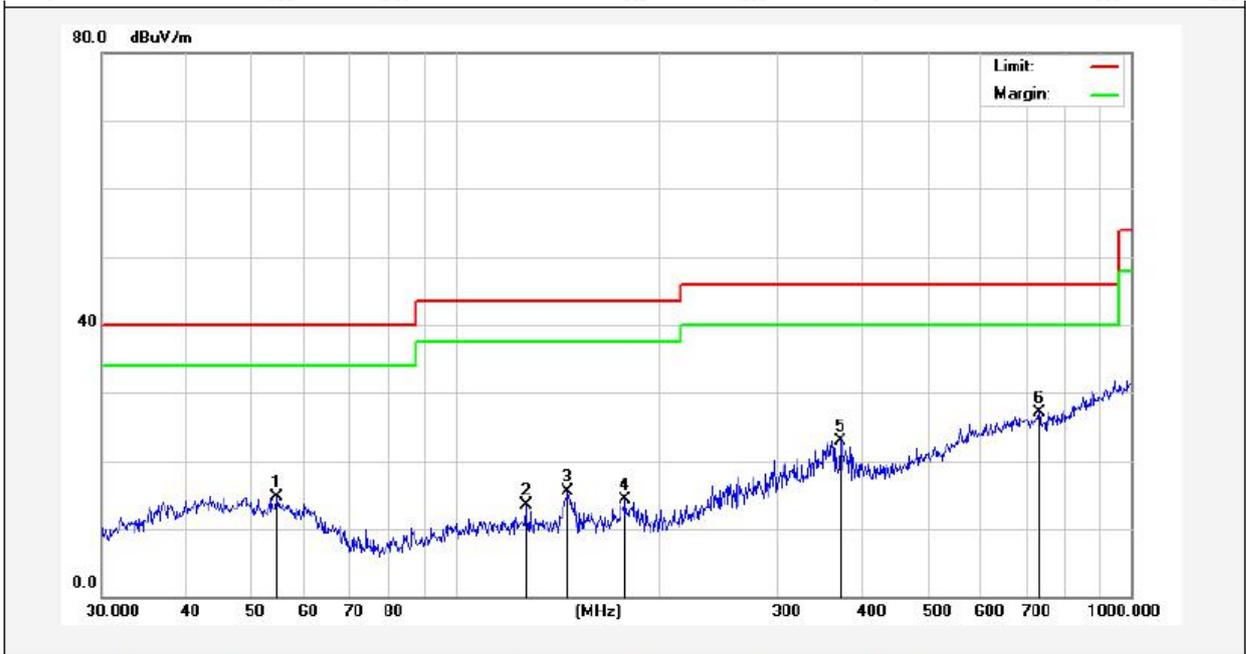
The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

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.



**Test Results (30~1000MHz)**

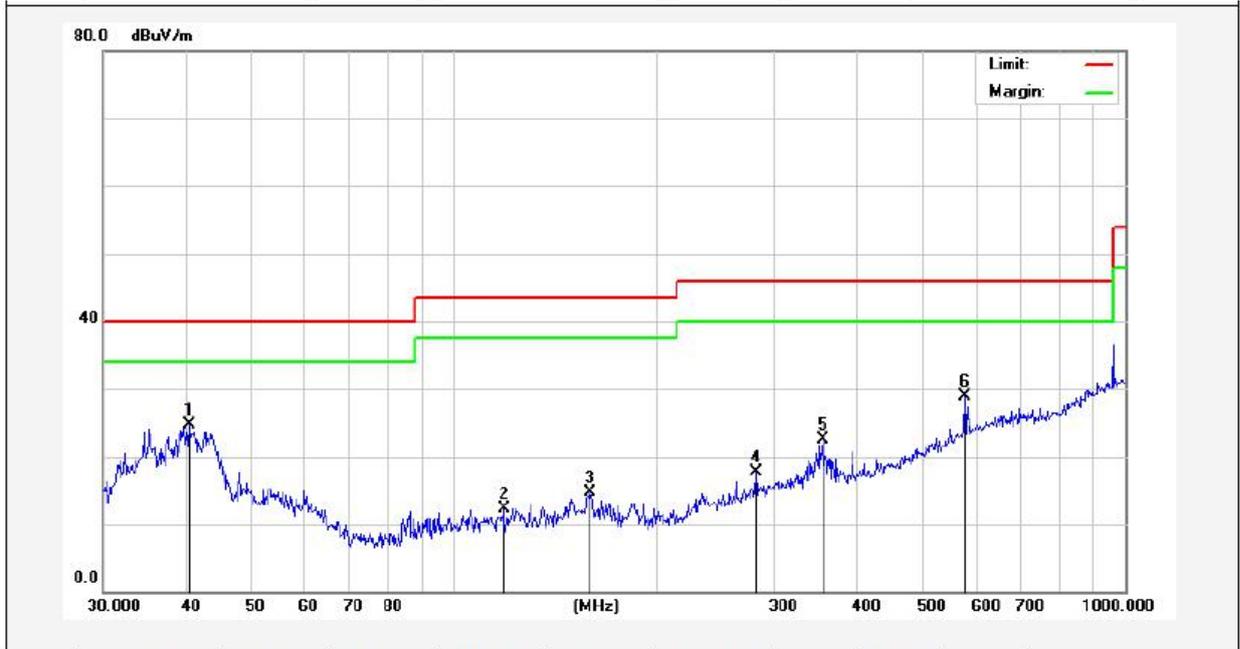
Test Mode: 802.11n HT20 CH11  
 Polarization: Horizontal  
 Temp.(°C)/Hum.(%RH): 22.5°C/50%RH  
 Power Source: DC 3.63V Battery inside



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	54.4515	31.10	-16.34	14.76	40.00	-25.24	QP	100	360	
2	127.2176	34.31	-20.85	13.46	43.50	-30.04	QP	100	0	
3	146.8876	36.33	-20.75	15.58	43.50	-27.92	QP	100	360	
4	178.7583	35.10	-20.89	14.21	43.50	-29.29	QP	100	0	
5	372.0045	35.84	-12.99	22.85	46.00	-23.15	QP	100	360	
6	731.9202	32.58	-5.51	27.07	46.00	-18.93	QP	100	0	

**Test Results (30~1000MHz)**

Test Mode: 802.11n HT20 CH11  
 Polarization: Vertical  
 Temp.(°C)/Hum.(%RH): 22.5°C/50%RH  
 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	40.2757	38.31	-13.61	24.70	40.00	-15.30	QP	100	0	
2	118.6014	30.05	-17.68	12.37	43.50	-31.13	QP	100	360	
3	159.2251	34.16	-19.45	14.71	43.50	-28.79	QP	100	0	
4	281.9946	31.82	-14.08	17.74	46.00	-28.26	QP	100	360	
5	354.1831	34.51	-11.92	22.59	46.00	-23.41	QP	100	0	
6	576.6443	36.31	-7.34	28.97	46.00	-17.03	QP	100	360	

**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	39.51	34.13	6.61	34.09	46.16	74.00	-27.84	V
7236.00	33.72	37.14	7.74	34.51	44.09	74.00	-29.91	V
9648.00	32.36	39.35	9.26	34.80	46.17	74.00	-27.83	V
12060.00	*					74.00		V
14472.00	*					74.00		V
16884.00	*					74.00		V
4824.00	38.30	34.13	6.61	34.09	44.95	74.00	-29.05	H
7236.00	33.53	37.14	7.74	34.51	43.90	74.00	-30.10	H
9648.00	31.97	39.35	9.26	34.80	45.78	74.00	-28.22	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	28.65	34.13	6.61	34.09	35.30	54.00	-18.70	V
7236.00	22.61	37.14	7.74	34.51	32.98	54.00	-21.02	V
9648.00	22.72	39.35	9.26	34.80	36.53	54.00	-17.47	V
12060.00	*					54.00		V
14472.00	*					54.00		V
16884.00	*					54.00		V
4824.00	27.88	34.13	6.61	34.09	34.53	54.00	-19.47	H
7236.00	22.13	37.14	7.74	34.51	32.50	54.00	-21.50	H
9648.00	21.72	39.35	9.26	34.80	35.53	54.00	-18.47	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	38.70	34.13	6.61	34.09	45.35	74.00	-28.65	V
7311.00	33.88	37.14	7.74	34.51	44.25	74.00	-29.75	V
9748.00	33.44	39.35	9.26	34.80	47.25	74.00	-26.75	V
12185.00	*					74.00		V
14622.00	*					74.00		V
17059.00	*					74.00		V
4874.00	39.28	34.13	6.61	34.09	45.93	74.00	-28.07	H
7311.00	32.57	37.14	7.74	34.51	42.94	74.00	-31.06	H
9748.00	33.35	39.35	9.26	34.80	47.16	74.00	-26.84	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	29.61	34.13	6.61	34.09	36.26	54.00	-17.74	V
7311.00	22.21	37.14	7.74	34.51	32.58	54.00	-21.42	V
9748.00	22.70	39.35	9.26	34.80	36.51	54.00	-17.49	V
12185.00	*					54.00		V
14622.00	*					54.00		V
17059.00	*					54.00		V
4874.00	29.43	34.13	6.61	34.09	36.08	54.00	-17.92	H
7311.00	21.67	37.14	7.74	34.51	32.04	54.00	-21.96	H
9748.00	23.08	39.35	9.26	34.80	36.89	54.00	-17.11	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	43.76	34.57	6.74	34.09	50.98	74.00	-23.02	V
7386.00	34.26	37.29	7.80	34.55	44.80	74.00	-29.20	V
9848.00	36.52	39.55	9.41	34.81	50.67	74.00	-23.33	V
12310.00	*					74.00		V
14772.00	*					74.00		V
17234.00	*					74.00		V
4924.00	43.24	34.57	6.74	34.09	50.46	74.00	-23.54	H
7386.00	33.25	37.29	7.80	34.55	43.79	74.00	-30.21	H
9848.00	32.73	39.55	9.41	34.81	46.88	74.00	-27.12	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	34.76	34.57	6.74	34.09	41.98	54.00	-12.02	V
7386.00	24.20	37.29	7.80	34.55	34.74	54.00	-19.26	V
9848.00	25.05	39.55	9.41	34.81	39.20	54.00	-14.80	V
12310.00	*					54.00		V
14772.00	*					54.00		V
17234.00	*					54.00		V
4924.00	33.66	34.57	6.74	34.09	40.88	54.00	-13.12	H
7386.00	22.66	37.29	7.80	34.55	33.20	54.00	-20.80	H
9848.00	22.01	39.55	9.41	34.81	36.16	54.00	-17.84	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	53.20	29.15	3.41	34.01	51.75	74.00	-22.25	H
2400.00	62.73	29.16	3.43	34.01	61.31	74.00	-12.69	H
2390.00	54.99	29.15	3.41	34.01	53.54	74.00	-20.46	V
2400.00	64.94	29.16	3.43	34.01	63.52	74.00	-10.48	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	39.51	29.15	3.41	34.01	38.06	54.00	-15.94	H
2400.00	47.98	29.16	3.43	34.01	46.56	54.00	-7.44	H
2390.00	41.46	29.15	3.41	34.01	40.01	54.00	-13.99	V
2400.00	49.22	29.16	3.43	34.01	47.80	54.00	-6.20	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	54.52	29.28	3.53	34.03	53.30	74.00	-20.70	H
2500.00	49.85	29.30	3.56	34.03	48.68	74.00	-25.32	H
2483.50	57.09	29.28	3.53	34.03	55.87	74.00	-18.13	V
2500.00	52.65	29.30	3.56	34.03	51.48	74.00	-22.52	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	40.11	29.28	3.53	34.03	38.89	54.00	-15.11	H
2500.00	35.92	29.30	3.56	34.03	34.75	54.00	-19.25	H
2483.50	42.20	29.28	3.53	34.03	40.98	54.00	-13.02	V
2500.00	37.86	29.30	3.56	34.03	36.69	54.00	-17.31	V

Remark:

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

**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	51.66	27.53	5.47	33.92	50.74	74.00	-23.26	H
2400.00	60.67	27.55	5.49	29.93	63.78	74.00	-10.22	H
2390.00	53.34	27.53	5.47	33.92	52.42	74.00	-21.58	V
2400.00	62.47	27.55	5.49	29.93	65.58	74.00	-8.42	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	38.41	27.53	5.47	33.92	37.49	54.00	-16.51	H
2400.00	46.71	27.55	5.49	29.93	49.82	54.00	-4.18	H
2390.00	40.24	27.53	5.47	33.92	39.32	54.00	-14.68	V
2400.00	47.83	27.55	5.49	29.93	50.94	54.00	-3.06	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	52.31	29.28	3.53	34.03	51.09	74.00	-22.91	H
2500.00	48.14	29.30	3.56	34.03	46.97	74.00	-27.03	H
2483.50	54.57	29.28	3.53	34.03	53.35	74.00	-20.65	V
2500.00	50.65	29.30	3.56	34.03	49.48	74.00	-24.52	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	38.78	29.28	3.53	34.03	37.56	54.00	-16.44	H
2500.00	34.88	29.30	3.56	34.03	33.71	54.00	-20.29	H
2483.50	40.73	29.28	3.53	34.03	39.51	54.00	-14.49	V
2500.00	36.76	29.30	3.56	34.03	35.59	54.00	-18.41	V

Remark:

- 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	51.22	27.53	5.47	33.92	50.30	74.00	-23.70	H
2400.00	60.08	27.55	5.49	29.93	63.19	74.00	-10.81	H
2390.00	52.87	27.53	5.47	33.92	51.95	74.00	-22.05	V
2400.00	61.76	27.55	5.49	29.93	64.87	74.00	-9.13	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	38.10	27.53	5.47	33.92	37.18	54.00	-16.82	H
2400.00	46.35	27.55	5.49	29.93	49.46	54.00	-4.54	H
2390.00	39.89	27.53	5.47	33.92	38.97	54.00	-15.03	V
2400.00	47.44	27.55	5.49	29.93	50.55	54.00	-3.45	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	51.69	29.28	3.53	34.03	50.47	74.00	-23.53	H
2500.00	47.65	29.30	3.56	34.03	46.48	74.00	-27.52	H
2483.50	53.86	29.28	3.53	34.03	52.64	74.00	-21.36	V
2500.00	50.08	29.30	3.56	34.03	48.91	74.00	-25.09	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	38.40	29.28	3.53	34.03	37.18	54.00	-16.82	H
2500.00	34.59	29.30	3.56	34.03	33.42	54.00	-20.58	H
2483.50	40.31	29.28	3.53	34.03	39.09	54.00	-14.91	V
2500.00	36.45	29.30	3.56	34.03	35.28	54.00	-18.72	V

Remark:

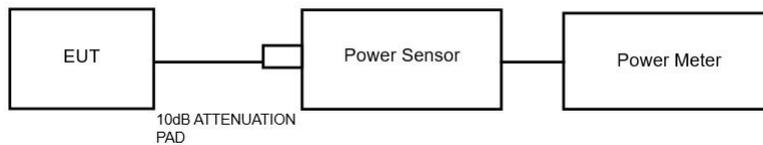
- Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

## 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 Mode	: CH Low ~ CH High
Test Voltage	: DC 3.63V Battery inside	Temperature	: 24°C
Test Result	: PASS	Humidity	: 55%RH

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

