



TEST REPORT

Test report
On Behalf of
BEIJING ITHINK CHUANGXIANG KEJI CO.,LTD
For
IP Camera

Model No.: Z11, Z10 FCC ID: 2ANBB-Z11

Prepared for: BEIJING ITHINK CHUANGXIANG KEJI CO.,LTD

7F, 1 jia 1 Building, No.10, Caihefang Road, Haidian District, Beijing, 100000, China

Prepared By: Shenzhen HUAK Testing Technology Co., Ltd.

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Date of Test: Oct. 23, 2019 ~ Oct. 30, 2019

Date of Report: Oct. 30, 2019
Report Number: HK1911132885-E





TEST RESULT CERTIFICATION

Applicant's name:	BEIJING ITHINK CHUANGXIANG KEJI CO.,LTD				
Address:	7F, 1 jia 1 Building, No.10, Caihefang Road, Haidian District, Beijing, 100000, China				
	BEIJING ITHINK CHUANGXIANG KEJI CO.,LTD				
Address:	7F, 1 jia 1 Building, No.10,Caihefang Road, Haidian District,Beijing,100000,China				
Product description					
Trade Mark:	N/A				
Product name:	IP Camera				
Model and/or type reference .:	Z11, Z10				
Standards	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013				
the Shenzhen HUAK Testing source of the material. Shenzhe and will not assume liability reproduced material due to its p	:				
Date (s) of performance of tests.	: Oct. 23, 2019 ~ Oct. 30, 2019				
Date of Issue	: Oct. 30, 2019				
Test Result	: Pass				
Testing Engine	eer: Gayl Dianl				
	(Gary Qian)				
Technical Man	ager: Edon Hu				
	(Eden Hu)				
Authorized Sig	natory: Jason Zhou				

(Jason Zhou)



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1. Test Result Summary

1.1. TEST PROCEDURES AND RESULTS

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247 (b)(3) §2.1046	PASS
6dB Emission Bandwidth	§15.247 (a)(2) §2.1049	PASS
Power Spectral Density	§15.247 (e)	PASS
Band Edge	1§5.247(d) §2.1051, §2.1057	PASS
Spurious Emission	§15.205/§15.209 §2.1053, §2.1057	PASS

Note:

- 1. PASS: Test item meets the requirement.
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.
- 4. The test result judgment is decided by the limit of test standard.

1.2. TEST FACILITY

Test Firm : Shenzhen HUAK Testing Technology Co., Ltd.

Address 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai

Street, Bao'an District, Shenzhen City, China

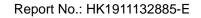




1.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±2.56dB
2	RF power, conducted	±0.12dB
3	Spurious emissions, conducted	±0.11dB
4	All emissions, radiated(<1G)	±3.92dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
7	Humidity	±1.0%

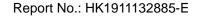




2. EUT Description

2.1. GENERAL DESCRIPTION OF EUT

Equipment	IP Camera
Model Name	Z11
Serial No.	Z10
Model Difference	All model's the function, software and electric circuit are the same, only with a product color, shape and model named different. Test sample model: Z11
Trade Mark	N/A
Antenna Type	External Antenna
Antenna Gain	1dBi
Operation frequency	802.11b/g/n 20:2412~2462 MHz 802.11n 40: 2422~2452MHz
Number of Channels	802.11b/g/n20: 11CH 802.11n 40: 7CH
Modulation Type	CCK/OFDM/DBPSK/DAPSK
Power Source	DC5V 1.5A From Adapter With AC100-240V~50/60Hz 0.4A
Power Rating	DC5V 1.5A From Adapter With AC100-240V~50/60Hz 0.4A





2.2. Carrier Frequency of Channels

	Channel List for 802.11b/802.11g/802.11n (HT20)						
Channel							Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

	Channel List For 802.11n (HT40)						
						Frequency (MHz)	
		04	2427	07	2442		
		05	2432	08	2447		
03	2422	06	2437	09	2452		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2.3. Operation of EUT during testing

Operating Mode

The mode is used: Transmitting mode for 802.11b/802.11g/802.11n (HT20)

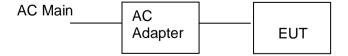
Low Channel: 2412MHz Middle Channel: 2437MHz High Channel: 2462MHz

The mode is used: Transmitting mode for 802.11n (HT40)

Low Channel: 2422MHz Middle Channel: 2437MHz High Channel: 2452MHz

2.4. DESCRIPTION OF TEST SETUP

Operation of EUT during conducted testing and Radiation and Above1GHz Radiation testing:

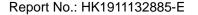


Adapter information

Model: FX2U-050100U

Input: 100-240V~, 50/60Hz, 0.4A Max.

Output: DC 5V 1.5A





3. Genera Information

3.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98.46%)

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. For the full battery state and The output power to the maximum state.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

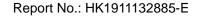
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Data rate
1Mbps
6Mbps
6.5Mbps
13.5Mbps

Final Test Mode:

•	Keep the EUT in continuous transmitting with modulation
	with modulation

- 1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.
- 2.According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20), 13.5Mbps for 802.11(H40). Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations





3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.





4. Test Results and Measurement Data

4.1. Conducted Emission

Test Specification

Test Requirement:	FCC Part15 C Section 15.207				
Test Method:	ANSI C63.10:2013				
Frequency Range:	150 kHz to 30 MHz				
Receiver setup:	RBW=9 kHz, VBW=30	kHz, Sweep time	=auto		
Limits:	Frequency range (MHz) Quasi-peak Average 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50				
Test Setup:	Reference Plane 40cm 80cm Filter AC power E.U.T AC power EMI Receiver Remark EUT: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m				
Test Mode:	Charging + transmitting with modulation				
Test Procedure:	 The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 				
Test Result:	PASS				





Test Instruments

Conducted Emission Shielding Room Test Site (843)						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Receiver	R&S	ESCI 7	HKE-010	Sep. 27, 2020		
LISN	R&S	ENV216	HKE-002	Sep. 27, 2020		
Conducted test software	Tonscend	TS+ Rev 2.5.0.0	HKE-081	N/A		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



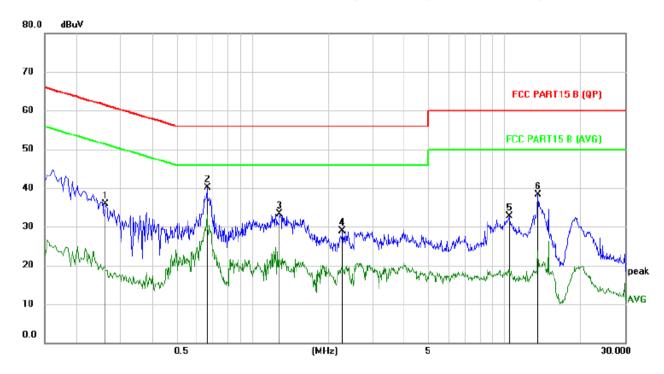


Test data

Remark: We tested three Channels in AC 120V/60Hz and AC 230V/50Hz, the worst case was recorded.

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



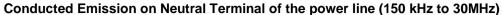
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dΒ	Detector	Comment
1	0.2620	25.93	9.90	35.83	61.37	-25.54	peak	
2 *	0.6620	29.98	10.05	40.03	56.00	-15.97	peak	
3	1.2860	23.38	10.02	33.40	56.00	-22.60	peak	
4	2.2780	18.89	10.09	28.98	56.00	-27.02	peak	
5	10.4180	22.06	10.60	32.66	60.00	-27.34	peak	
6	13.6060	27.60	10.64	38.24	60.00	-21.76	peak	

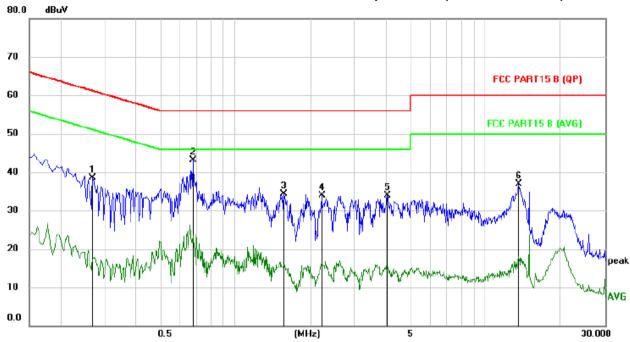
Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Measure – Limit **Notes**:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss
- 4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.









No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		
	MHz	dBuV	dB	dBuV	dBuV	dΒ	Detector	Comment
1	0.2700	28.66	9.89	38.55	61.12	-22.57	peak	
2 *	0.6780	32.97	10.05	43.02	56.00	-12.98	peak	
3	1.5660	24.17	10.07	34.24	56.00	-21.76	peak	
4	2.2220	23.75	10.07	33.82	56.00	-22.18	peak	
5	4.0620	23.60	10.33	33.93	56.00	-22.07	peak	
6	13.6100	26.27	10.64	36.91	60.00	-23.09	peak	

Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Measure - Limit

Notes

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.
- 4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.





4.2. Maximum Conducted Output Power

Test Specification

Toot Boguirement	FCC Double C Continue 15 247 (b)(2)					
Test Requirement:	FCC Part15 C Section 15.247 (b)(3)					
Test Method:	KDB 558074, April 2017					
Limit:	30dBm					
Test Setup:	Power meter FIIT					
	Power meter EUT					
Test Mode:	Transmitting mode with modulation					
Test Procedure:	 The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v04. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Measure the output power and record the results in the test report. 					
Test Result:	PASS					

Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Power meter	Agilent	E4417B	HKE-107	Sep. 27, 2020		
Power Sensor	Agilent	E9327A	HKE-113	Sep. 27, 2020		
RF cable	Times	1-40G	HKE-034	Sep. 27, 2020		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Sep. 27, 2020		

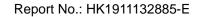
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).





Test Data

	TX 802.11b Mode					
Test	Frequency	Maximum Conducted Output Power	LIMIT			
Channe	(MHz)	(dBm)	dBm			
CH01	2412	15.918	30			
CH06	2437	15.728	30			
CH11	2462	15.950	30			
		TX 802.11g Mode				
CH01	2412	13.291	30			
CH06	2437	13.216	30			
CH11	2462	13.231	30			
		TX 802.11n20 Mode				
CH01	2412	13.426	30			
CH06	2437	13.178	30			
CH11	2462	13.478	30			
	TX 802.11n40 Mode					
CH03	2422	10.736	30			
CH06	2437	10.585	30			
CH09	2452	10.691	30			





4.3. Emission Bandwidth

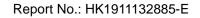
Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)				
Test Method:	KDB 558074, April 2017				
Limit:	>500kHz				
Test Setup:	Spectrum Analyzer EUT				
Test Mode:	Transmitting mode with modulation				
Test Procedure:	 The testing follows FCC KDB Publication No. 558074 DTS D01 Meas. Guidance v04. Set to the maximum power setting and enable the EUT transmit continuously. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. Measure and record the results in the test report. 				
Test Result:	PASS				

Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Sep. 27, 2020		
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Sep. 27, 2020		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Sep. 27, 2020		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).





Test data

Test channel	6dB Emission Bandwidth (MHz)					
rest charmer	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	8.8947	16.3431	17.6942	32.7948		
Middle	9.4682	16.559	17.8095	34.7307		
Highest	10.1317	16.3391	17.2762	35.0485		
Limit:	>500k					
Test Result:		P/	ASS			

Test channel	99% Occupied Bandwidth (MHz)					
rest channel	802.11b	802.11g	802.11n(H20)	802.11n(H40)		
Lowest	12.4351	16.523	17.6831	35.9288		
Middle	12.5328	16.4867	17.6849	35.8796		
Highest	12.4261	16.4956	17.6689	36.025		
Limit:	>500k					
Test Result:		P/	ASS			

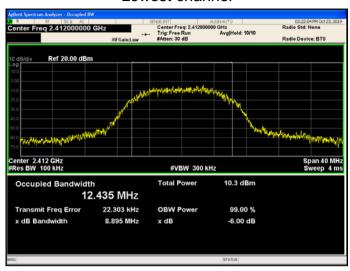
Test plots as follows:



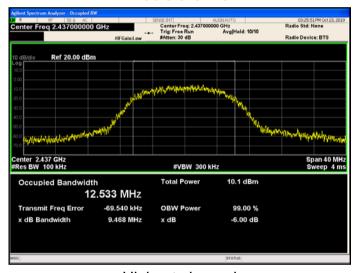


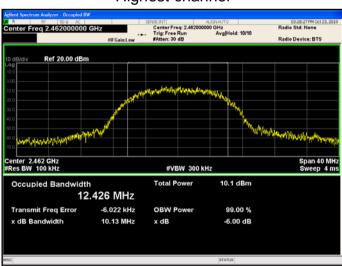
802.11b Modulation

Lowest channel



Middle channel

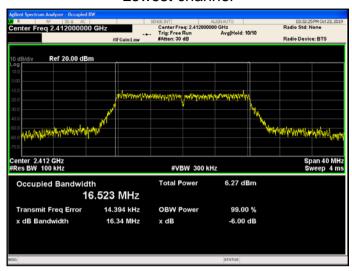




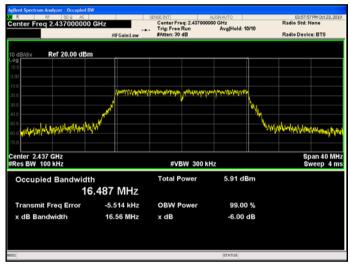


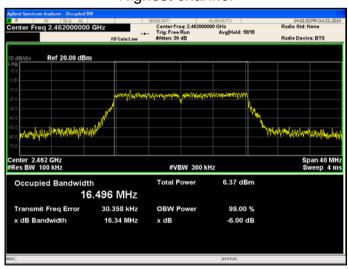
802.11g Modulation

Lowest channel



Middle channel

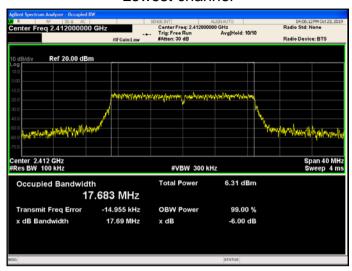




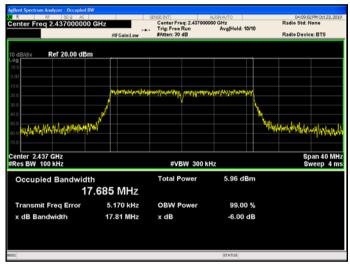


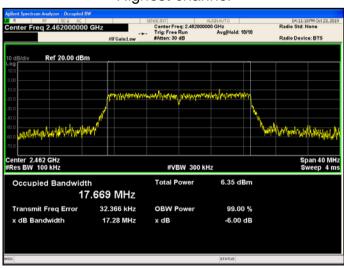
802.11n (HT20) Modulation

Lowest channel



Middle channel

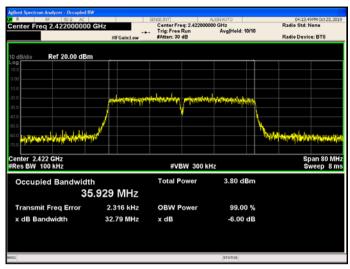




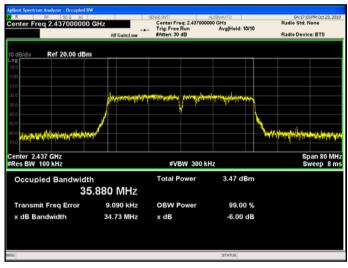


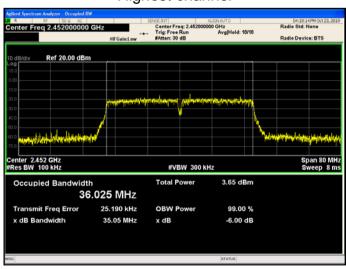
802.11n (HT40) Modulation

Lowest channel



Middle channel









4.4. Power Spectral Density

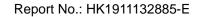
Test Specification

FCC Part15 C Section 15.247 (e)
KDB 558074, April 2017
The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Spectrum Analyzer EUT
Transmitting mode with modulation
 The testing follows Measurement procedure 10.2 method PKPSD of FCC KDB Publication No.558074 D01 DTS Meas. Guidance v04 The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): 3 kHz ≤ RBW ≤ 100 kHz. Video bandwidth VBW ≥ 3 x RBW. Set the span to at least 1.5 times the OBW. Detector = RMS, Sweep time = auto couple. Employ trace averaging (RMS) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. Measure and record the results in the test report.
PASS

Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Sep. 27, 2020		
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Sep. 27, 2020		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Sep. 27, 2020		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

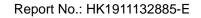




Test data

Test channel	Power Spectral Density (dBm/3kHz)				
rest channel	802.11b	802.11g	802.11n(H20)	802.11n(H40)	
Lowest	-13.383	-20.349	-20.392	-27.158	
Middle	-13.802	-21.794	-21.456	-26.509	
Highest	-13.654	-20.589	-20.309	-27.517	
Limit:	8dBm/3kHz				
Test Result:	PASS				

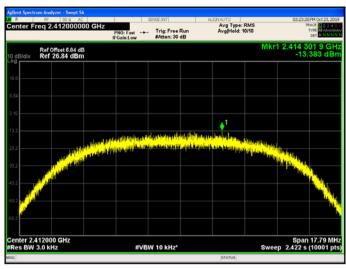
Test plots as follows:



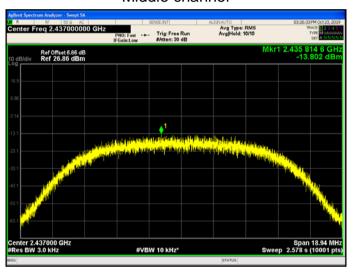


802.11b Modulation

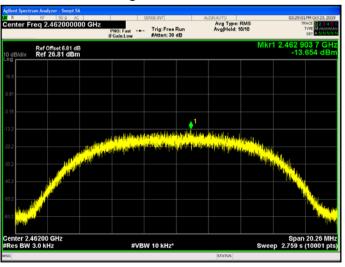
Lowest channel



Middle channel



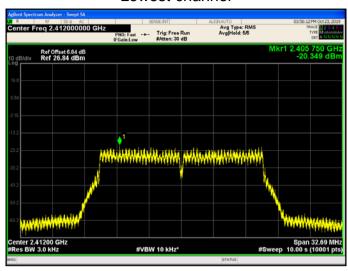
Highest channel



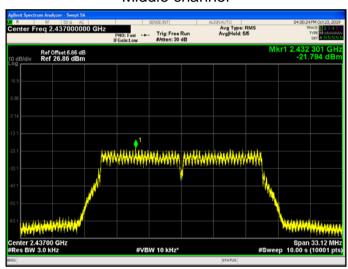


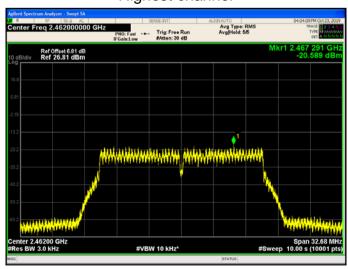
802.11g Modulation

Lowest channel



Middle channel

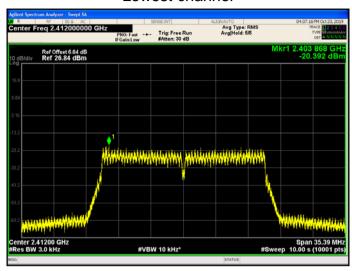




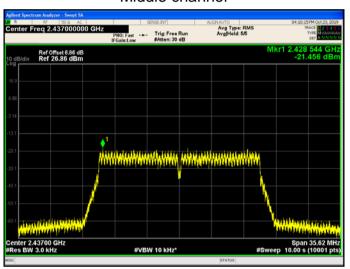


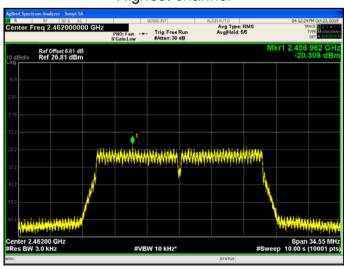
802.11n (HT20) Modulation

Lowest channel



Middle channel

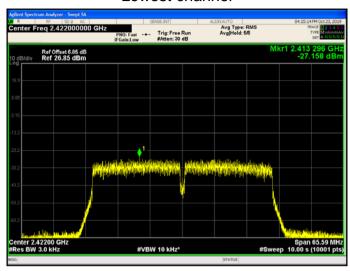




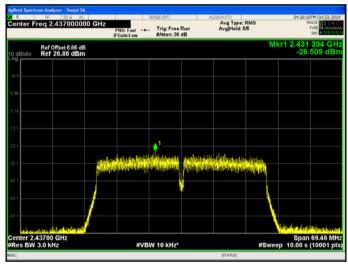


802.11n (HT40) Modulation

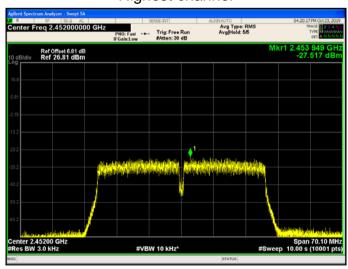
Lowest channel



Middle channel



Highest channel







4.5. Conducted Band Edge and Spurious Emission Measurement

Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (d)		
Test Method:	KDB558074, April 2017		
Limit:	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).		
Test Setup:	Spectrum Analysis EUT		
Test Mode:	Transmitting mode with modulation		
Test Procedure:	 The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v04. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d). Measure and record the results in the test report. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 		
Test Result:	PASS		





Test Instruments

RF Test Room				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-048	Sep. 27, 2020
Signal generator	Agilent	N5183A	HKE-071	Sep. 27, 2020
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Sep. 27, 2020
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Sep. 27, 2020

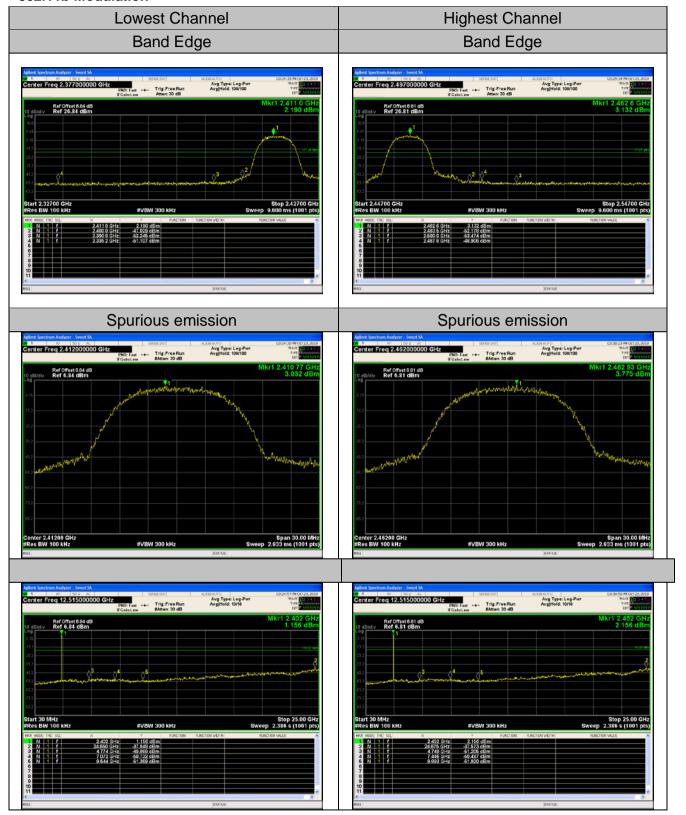
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

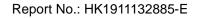




Test Data

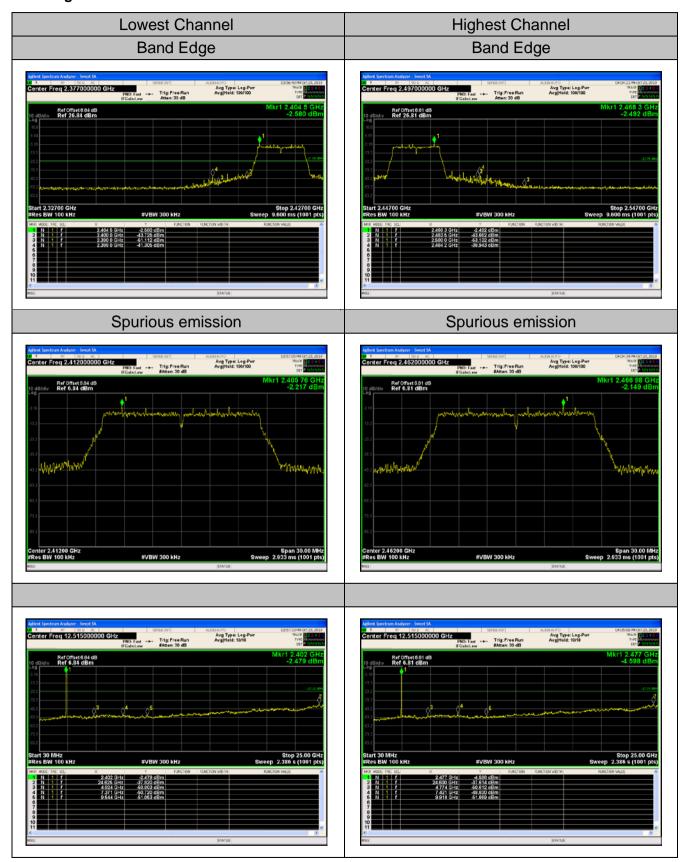
802.11b Modulation

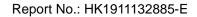






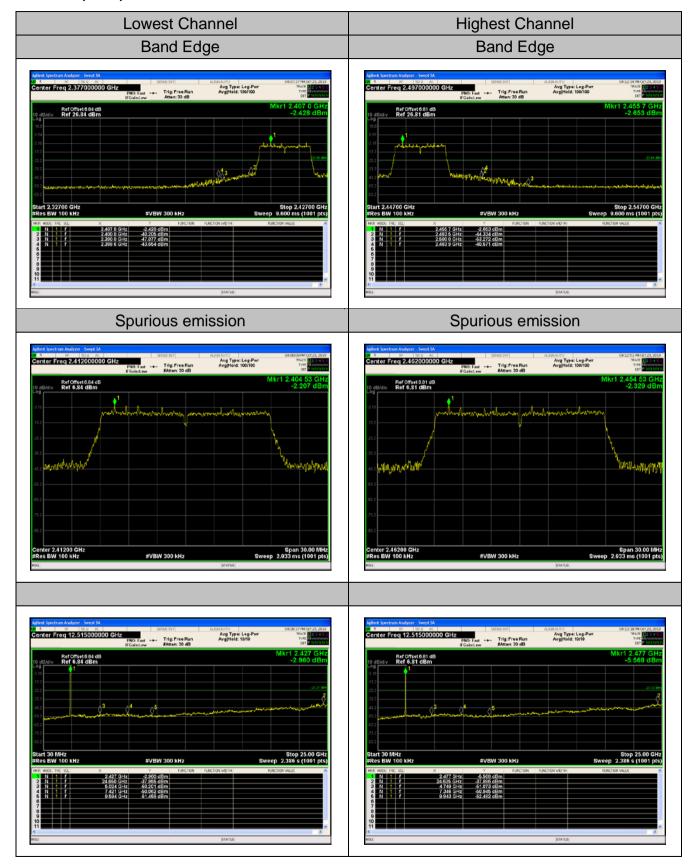
802.11g Modulation

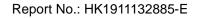






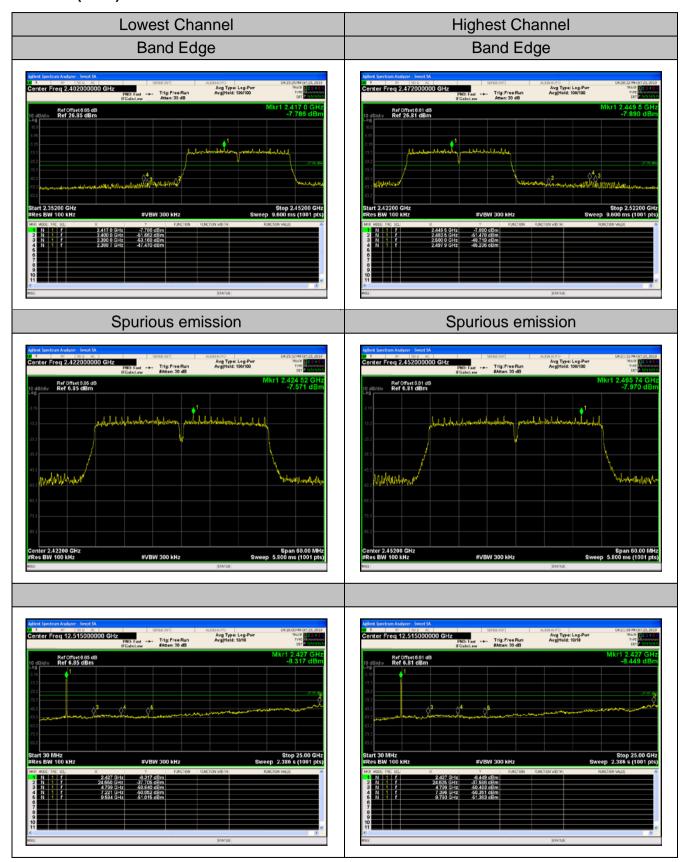
802.11n (HT20) Modulation

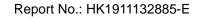






802.11n (HT40) Modulation







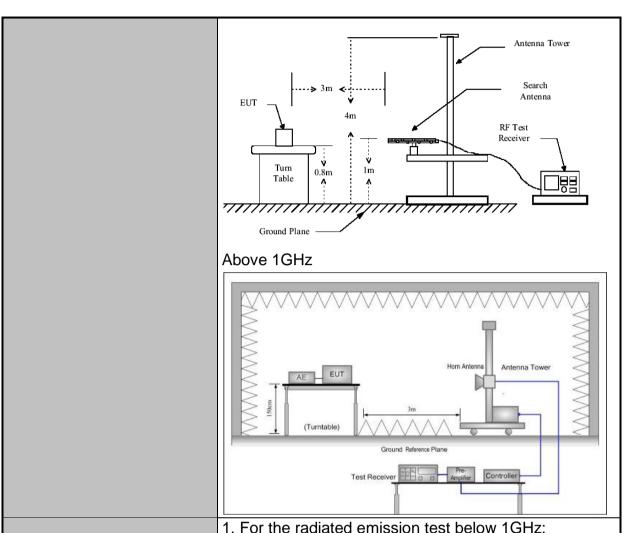
4.6. Radiated Spurious Emission Measurement

Test Specification

Test Requirement:	FCC Part15 C Section 15.209							
Test Method:	ANSI C63.10: 2013							
Frequency Range:	9 kHz to 25 GHz							
Measurement Distance:	3 m							
Antenna Polarization:	Horizontal & Vertical							
Operation mode:	Transmitting mode with modulation							
	Frequency	Detecto				Remark		
Receiver Setup:	9kHz- 150kHz 150kHz- 30MHz	Quasi-pe Quasi-pe		200Hz 9kHz	1kHz 30kHz	Quasi-peak Value Quasi-peak Value		
	30MHz-1GHz	Quasi-pe		120KHz	300KHz		si-peak Value	
	Above 1GHz	Peak Peak		1MHz 1MHz	3MHz 10Hz		eak Value erage Value	
	Frequency			Field Strength (microvolts/meter)		Measurement Distance (meters)		
	0.009-0.490		2400/F(K		,	Disto	300	
	0.490-1.705			24000/F(KHz)		30		
	1.705-30			30 100		30		
	30-88 88-216			150		3		
Limit:	216-960			200		3		
	Above 960 500 3							
	Frequency (r		Field Strength (microvolts/meter)		Measure Distan (meter	се	Detector	
	Above 1GHz		500		3		Average	
		5000		3		Peak		
	For radiated emissions below 30MHz							
Test setup:	Distance = 3m Computer Pre -Amplifier Receiver Ground Plane							
	30MHz to 1G	Hz						

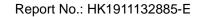






Test Procedure:

The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: Place the measurement antenna on a turntable with 1.5 meter above ground, which is 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. 3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 4. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 5. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured;
	 (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥RBW; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test results:	PASS

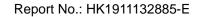




Test Instruments

	Radiated Em	nission Test Si	ite (966)	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Receiver	R&S	ESCI-7	HKE-010	Sep. 27, 2020
Spectrum analyzer	Agilent	N9020A	HKE-048	Sep. 27, 2020
Preamplifier	EMCI	EMC051845 SE	HKE-015	Sep. 27, 2020
Preamplifier	Agilent	83051A	HKE-016	Sep. 27, 2020
Loop antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Sep. 26, 2020
Broadband antenna	Schwarzbeck	VULB 9163	HKE-012	Sep. 26, 2020
Horn antenna	Schwarzbeck	9120D	HKE-013	Sep. 26, 2020
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
Position controller	Taiwan MF	MF7802	HKE-011	Sep. 27, 2020
Radiated test software	Tonscend	TS+ Rev 2.5.0.0	HKE-082	N/A
RF cable (9KHz-1GHz)	Times	381806-001	N/A	N/A
RF cable	Times	1-40G	HKE-034	Sep. 27, 2020

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

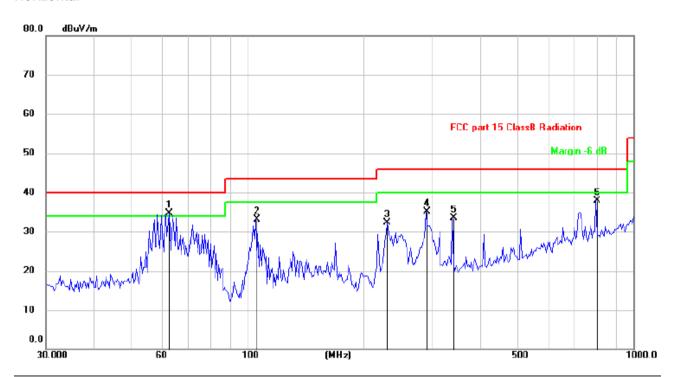




Test Data

Please refer to following diagram for individual Below 1GHz

Horizontal



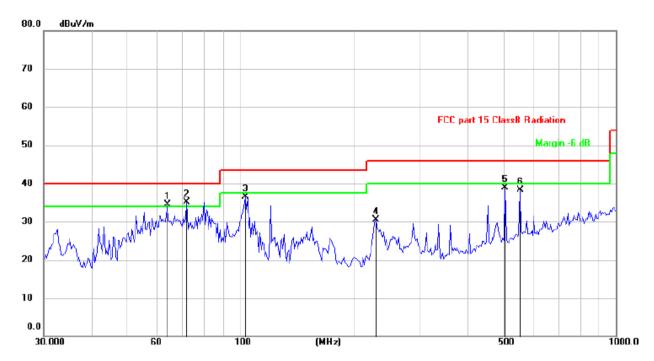
No. N	Иk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dΒ	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1 7	*	62.7432	42.23	-7.47	34.76	40.00	-5.24	peak	100	42	
2		104.7979	42.65	-9.46	33.19	43.50	-10.31	peak	100	124	
3		230.2295	41.30	-8.95	32.35	46.00	-13.65	peak	121	78	
4		290.3170	41.29	-6.12	35.17	46.00	-10.83	peak	101	254	
5		338.8546	38.32	-4.75	33.57	46.00	-12.43	peak	124	263	
6		798.6205	32.68	5.29	37.97	46.00	-8.03	peak	112	254	

Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Measure - Limit



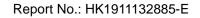


Vertical



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dΒ	dBuV/m	dB/m	dΒ	Detector	cm	degree	Comment
1	İ	63.9827	42.11	-7.66	34.45	40.00	-5.55	peak	120	142	
2	*	72.0843	44.05	-9.04	35.01	40.00	-4.99	peak	101	342	
3		103.0800	46.11	-9.62	36.49	43.50	-7.01	peak	140	153	
4		229.2930	39.53	-9.01	30.52	46.00	-15.48	peak	100	342	
5		506.4790	39.76	-0.94	38.82	46.00	-7.18	peak	102	24	
6		554.8254	37.51	0.71	38.22	46.00	-7.78	peak	100	34	

Remark: Transd = Cable lose + Antenna factor - Pre-amplifier; Margin = Measure - Limit





Above 1GHz

RADIATED EMISSION TEST

LOW CH1 (802.11b Mode)/2412

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4824	63.66	-3.64	60.02	74	-13.98	peak
4824	48.11	-3.64	44.47	54	-9.53	AVG
7236	56.72	-0.95	55.77	74	-18.23	peak
7236	43.79	-0.95	42.84	54	-11.16	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss -	Pre-amplifier.			

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	64.35	-3.64	60.71	74	-13.29	peak
4824	46.84	-3.64	43.20	54	-10.80	AVG
7236	56.04	-0.95	55.09	74	-18.91	peak
7236	42.96	-0.95	42.01	54	-11.99	AVG
Remark: Factor	– Antenna Factor	+ Cable I oss -	Pre-amplifier			

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



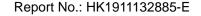


MID CH6 (802.11b Mode)/2437

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	63.46	-3.51	59.95	74	-14.05	peak
4874	47.80	-3.51	44.29	54	-9.71	AVG
7311	57.43	-0.82	56.61	74	-17.39	peak
7311	43.09	-0.82	42.27	54	-11.73	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss -	Pre-amplifier.			

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4874	62.84	-3.51	59.33	74	-14.67	peak
4874	46.59	-3.51	43.08	54	-10.92	AVG
7311	57.51	-0.82	56.69	74	-17.31	peak
7311	42.19	-0.82	41.37	54	-12.63	AVG





HIGH CH11 (802.11b Mode)/2462

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4924	62.05	-3.43	58.62	74	-15.38	peak
4924	45.87	-3.43	42.44	54	-11.56	AVG
7386	57.21	-0.75	56.46	74	-17.54	peak
7386	42.33	-0.75	41.58	54	-12.42	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss -	Pre-amplifier.			

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4924	62.58	-3.43	59.15	74	-14.85	peak
4924	45.77	-3.43	42.34	54	-11.66	AVG
7386	56.26	-0.75	55.51	74	-18.49	peak
7386	41.14	-0.75	40.39	54	-13.61	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.





LOW CH1 (802.11g Mode)/2412

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	63.27	-3.64	59.63	74	-14.37	peak
4824	47.46	-3.64	43.82	54	-10.18	AVG
7236	56.87	-0.95	55.92	74	-18.08	peak
7236	44.11	-0.95	43.16	54	-10.84	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss -	Pre-amplifier.			

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	61.96	-3.64	58.32	74	-15.68	peak
4824	46.36	-3.64	42.72	54	-11.28	AVG
7236	57.74	-0.95	56.79	74	-17.21	peak
7236	42.71	-0.95	41.76	54	-12.24	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss -	Pre-amplifier.			



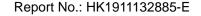


MID CH6 (802.11g Mode)/2437

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	62.43	-3.51	58.92	74	-15.08	peak
4874	46.75	-3.51	43.24	54	-10.76	AVG
7311	57.60	-0.82	56.78	74	-17.22	peak
7311	42.96	-0.82	42.14	54	-11.86	AVG
Remark: Factor	= Antenna Factor	+ Cable Loss -	Pre-amplifier.			

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type			
4874	62.82	-3.51	59.31	74	-14.69	peak			
4874	46.81	-3.51	43.30	54	-10.70	AVG			
7311	56.10	-0.82	55.28	74	-18.72	peak			
7311	41.19	-0.82	40.37	54	-13.63	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								





HIGH CH11 (802.11g Mode)/2462

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4924	62.44	-3.43	59.01	74	-14.99	peak
4924	47.24	-3.43	43.81	54	-10.19	AVG
7386	55.94	-0.75	55.19	74	-18.81	peak
7386	41.25	-0.75	40.50	54	-13.50	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type
4924	61.78	-3.43	58.35	74	-15.65	peak
4924	46.66	-3.43	43.23	54	-10.77	AVG
7386	56.02	-0.75	55.27	74	-18.73	peak
7386	41.18	-0.75	40.43	54	-13.57	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.





LOW CH1 (802.11n/H20 Mode)/2412

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре			
4824	62.46	-3.64	58.82	74	-15.18	peak			
4824	46.37	-3.64	42.73	54	-11.27	AVG			
7236	56.86	-0.95	55.91	74	-18.09	peak			
7236	42.69	-0.95	41.74	54	-12.26	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Type		
4824	62.03	-3.64	58.39	74	-15.61	peak		
4824	46.72	-3.64	43.08	54	-10.92	AVG		
7236	56.43	-0.95	55.48	74	-18.52	peak		
7236	42.03	-0.95	41.08	54	-12.92	AVG		
Damarki Fastar	Pomark: Factor - Antonna Factor - Cable Loca - Dra amplifier							

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.





MID CH6 (802.11n/H20 Mode)/2437

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре			
4874.00	62.05	-3.51	58.54	74.00	-15.46	peak			
4874.00	46.54	-3.51	43.03	54.00	-10.97	AVG			
7311.00	56.06	-0.82	55.24	74.00	-18.76	peak			
7311.00	42.86	-0.82	42.04	54.00	-11.96	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре			
4874.00	61.78	-3.51	58.27	74.00	-15.73	peak			
4874.00	45.66	-3.51	42.15	54.00	-11.85	AVG			
7311.00	56.54	-0.82	55.72	74.00	-18.28	peak			
7311.00	41.43	-0.82	40.61	54.00	-13.39	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								





HIGH CH11 (802.11n/H20 Mode)/2462

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
4924	61.25	-3.43	57.82	74	-16.18	peak		
4924	45.60	-3.43	42.17	54	-11.83	AVG		
7386	56.36	-0.75	55.61	74	-18.39	peak		
7386	41.04	-0.75	40.29	54	-13.71	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.							

Vertical:

Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
62.77	-3.43	59.34	74	-14.66	peak
44.77	-3.43	41.34	54	-12.66	AVG
55.74	-0.75	54.99	74	-19.01	peak
41.15	-0.75	40.40	54	-13.60	AVG
	(dBμV) 62.77 44.77 55.74	(dBμV) (dB) 62.77 -3.43 44.77 -3.43 55.74 -0.75	(dBμV) (dB) (dBμV/m) 62.77 -3.43 59.34 44.77 -3.43 41.34 55.74 -0.75 54.99	(dBμV) (dB) (dBμV/m) (dBμV/m) 62.77 -3.43 59.34 74 44.77 -3.43 41.34 54 55.74 -0.75 54.99 74	(dBμV) (dB) (dBμV/m) (dBμV/m) (dBμV/m) 62.77 -3.43 59.34 74 -14.66 44.77 -3.43 41.34 54 -12.66 55.74 -0.75 54.99 74 -19.01

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.





LOW CH3 (802.11n/H40 Mode)/2422

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Dotostor Typo		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
4844	63.01	-3.63	59.38	74	-14.62	peak		
4844	46.90	-3.63	43.27	54	-10.73	AVG		
7266	57.60	-0.94	56.66	74	-17.34	peak		
7266	44.06	-0.94	43.12	54	-10.88	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.							

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
4844	63.97	-3.63	60.34	74	-13.66	peak		
4844	47.60	-3.63	43.97	54	-10.03	AVG		
7266	57.93	-0.94	56.99	74	-17.01	peak		
7266	43.97	-0.94	43.03	54	-10.97	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							





MID CH6 (802.11n/H40 Mode)/2437

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
4874	62.33	-3.51	58.82	74	-15.18	peak		
4874	46.79	-3.51	43.28	54	-10.72	AVG		
7311	58.01	-0.82	57.19	74	-16.81	peak		
7311	43.63	-0.82	42.81	54	-11.19	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type			
4874	62.32	-3.51	58.81	74	-15.19	peak			
4874	46.47	-3.51	42.96	54	-11.04	AVG			
7311	56.61	-0.82	55.79	74	-18.21	peak			
7311	43.28	-0.82	42.46	54	-11.54	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								





HIGH CH9 (802.11n/H40 Mode)/2452

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
4904	62.24	-3.43	58.81	74	-15.19	peak
4904	46.68	-3.43	43.25	54	-10.75	AVG
7356	55.55	-0.75	54.80	74	-19.20	peak
7356	41.00	-0.75	40.25	54	-13.75	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

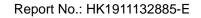
Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
4904	61.74	-3.43	58.31	74	-15.69	peak
4904	45.47	-3.43	42.04	54	-11.96	AVG
7356	56.23	-0.75	55.48	74	-18.52	peak
7356	42.07	-0.75	41.32	54	-12.68	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 25 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.





Test Result of Radiated Spurious at Band edges

Operation Mode: 802.11b Mode TX CH Low (2412MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
2390	56.32	-5.81	50.51	74	-23.49	peak		
2390	/	-5.81	/	54	/	AVG		
2399	63.33	-5.84	57.49	74	-16.51	peak		
2399	47.93	-5.84	42.09	54	-11.91	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

Vertical:

otootor Type	Margin	Limits	Emission Level	Factor	Meter Reading	Frequency
etector Type	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV)	(MHz)
peak	-23.86	74	50.14	-5.81	55.95	2390
AVG	/	54	/	-5.81	/	2390
peak	-18.25	74	55.75	-5.84	61.59	2399
AVG	-13.96	54	40.04	-5.84	45.88	2399
			40.04	-5.84		2399

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.





Operation Mode: TX CH High (2462MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
2483.5	57.93	-5.65	52.28	74	-21.72	peak		
2483.5	/	-5.65	/	54	/	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2483.5	55.32	-5.65	49.67	74	-24.33	peak
2483.5	/	-5.65	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.





Operation Mode: 802.11g Mode TX CH Low (2412MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
2390	57.73	-5.81	51.92	74	-22.08	peak		
2390	/	-5.81	/	54	/	AVG		
2399	61.55	-5.84	55.71	74	-18.29	peak		
2399	45.71	-5.84	39.87	54	-14.13	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type			
2390	55.92	-5.81	50.11	74	-23.89	peak			
2390	/	-5.81	/	54	1	AVG			
2399	61.42	-5.84	55.58	74	-18.42	peak			
2399	45.20	-5.84	39.36	54	-14.64	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								





Operation Mode: TX CH High (2462MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2483.5	56.04	-5.65	50.39	74	-23.61	peak
2483.5	1	-5.65	1	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2483.5	56.23	-5.65	50.58	74	-23.42	peak
2483.5	/	-5.65	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.





Operation Mode: 802.11n/H20 Mode TX CH Low (2412MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type			
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type			
2390	56.00	-5.81	50.19	74	-23.81	peak			
2390	/	-5.81	/	54	/	AVG			
2399	62.02	-5.84	56.18	74	-17.82	peak			
2399	46.90	-5.84	41.06	54	-12.94	AVG			
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.								

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
2390	55.71	-5.81	49.90	74	-24.10	peak		
2390	/	-5.81	1	54	/	AVG		
2399	59.82	-5.84	53.98	74	-20.02	peak		
2399	46.41	-5.84	40.57	54	-13.43	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							





Operation Mode: TX CH High (2462MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type		
2483.5	57.65	-5.65	52.00	74	-22.00	peak		
2483.5	/	-5.65	/	54	/	AVG		
Remark: Factor	Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.							

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2483.5	55.26	-5.65	49.61	74	-24.39	peak
2483.5	/	-5.65	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.





Operation Mode: 802.11n/H40 Mode TX CH Low (2422MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type	
2390	57.40	-5.81	51.59	74	-22.41	peak	
2390	/	-5.81	/	54	/	AVG	
2399	62.21	-5.84	56.37	74	-17.63	peak	
2399	45.59	-5.84	39.75	54	-14.25	AVG	
Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier							

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2390	57.00	-5.81	51.19	74	-22.81	peak
2390	/	-5.81	/	54	/	AVG
2399	60.28	-5.84	54.44	74	-19.56	peak
2399	45.21	-5.84	39.37	54	-14.63	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.





Operation Mode: TX CH High (2452MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type	
2483.5	57.38	-5.65	51.73	74	-22.27	peak	
2483.5	/	-5.65	/	54	/	AVG	
Demarky Factor Antonno Factor y Cable Loop Dra amplifier							

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2483.5	55.21	-5.65	49.56	74	-24.44	peak
2483.5	/	-5.65	/	54	/	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.





4.7. ANTENNA REQUIREMENT

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is aExternal Antenna, The directional gains of antenna used for transmitting is 1dBi.

WIFLANTENNA

