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TEST REPORT

FCC PART 15.247

Report Reference No. ..... : **CTL1811027021-WF01**

Compiled by: (position+printed name+signature)	Happy Guo (File administrators)	Happy Guo
Tested by: (position+printed name+signature)	Nice Nong (Test Engineer)	Nice Nong
Approved by: (position+printed name+signature)	Ivan Xie (Manager)	Ivan Xie

Product Name ..... : Portable Wireless IP PHONE

Model/Type reference ..... : FIP16

List Model(s)..... : N/A

Trade Mark..... : Flying Voice

FCC ID..... : **2AL9D-FIP16**

Applicant's name ..... : **Flyingvoice Network Technology Co., Ltd**

Address of applicant ..... : Rm 207-209, Unt B52, Zhong Chuang Industrial Park, Nanshan District, Shenzhen, China

Test Firm..... : **Shenzhen CTL Testing Technology Co., Ltd.**

Address of Test Firm ..... : Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

Test specification..... :

Standard ..... : **FCC Part 15.247:** Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz.

TRF Originator ..... : Shenzhen CTL Testing Technology Co., Ltd.

Master TRF..... : Dated 2011-01

Date of Receipt..... : Nov. 02, 2018

Date of Test Date..... : Nov. 02, 2018–Dec. 19, 2018

Data of Issue..... : Jan. 18, 2019

Result..... : Pass

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TEST REPORT

Test Report No. :	CTL181102702-WF01	Jan. 18, 2019 Date of issue

Equipment under Test	:	Portable Wireless IP PHONE
Model /Type	:	FIP16
Listed Models	:	N/A
Applicant	:	**Flyingvoice Network Technology Co., Ltd**
Address	:	Rm 207-209, Unt B52, Zhong Chuang Industrial Park, Nanshan District, Shenzhen, China
Manufacturer	:	**Flyingvoice Network Technology Co., Ltd**
Address	:	Rm 207-209, Unt B52, Zhong Chuang Industrial Park, Nanshan District, Shenzhen, China

Test result	Pass *

∗ In the configuration tested, the EUT complied with the standards specified page 5.

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

** Modified History **

Revisions	Description	Issued Data	Report No.	Remark
Version 1.0	Initial Test Report Release	2019-01-18	CTL1811027021-WF01	Tracy Qi

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1. SUMMARY

1.1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

ANSI C63.10: 2013: American National Standard for Testing Unlicensed Wireless Devices

KDB558074 D01 V05: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

1.2. Test Description

FCC PART 15.247		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Conducted Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge	PASS
FCC Part 15.203/15.247 (b)	Antenna Requirement	PASS

1.3. Test Facility

1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 399832

Shenzhen CTL Testing Technology Co., Ltd. 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 399832, December 08, 2017.

1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Measurement Uncertainty	Notes
Transmitter power conducted	±0.57 dB	(1)
Transmitter power Radiated	±2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	±2.20 dB	(1)
Occupied Bandwidth	±0.01ppm	(1)
Radiated Emission 30~1000MHz	±4.10dB	(1)
Radiated Emission Above 1GHz	±4.32dB	(1)
Conducted Disturbance0.15~30MHz	±3.20dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. GENERAL INFORMATION

2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25℃
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	Portable Wireless IP PHONE
Model/Type reference:	FIP16
Power supply:	5V/1A, Battery 3.8V 4400mAh
WIFI :	
Supported type:	802.11b/802.11g/802.11n(H20)/802.11n(H40)
Modulation:	802.11b: DSSS 802.11g/802.11n(H20)/802.11n(H40): OFDM
Operation frequency:	802.11b/802.11g/802.11n(H20): 2412MHz~2462MHz 802.11n(H40): 2422MHz~2452MHz
Channel number:	802.11b/802.11g/802.11n(H20): 11 802.11n(H40): 7
Channel separation:	5MHz
Antenna type:	FPC antenna
Antenna gain:	0dBi

Note: For more details, please refer to the user's manual of the EUT.

2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing.

There are 11 channels provided to the EUT and Channel 01/06/11 were selected for WIFI test.

Operation Frequency WIFI：

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	**2412**	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	**11**	**2462**
5	2432		
6	**2437**		
7	2442		

Note: The line display in grey were the channel selected for testing

Data Rate Used:

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	1 Mbps	1/6/11
	11g/OFDM	6 Mbps	1/6/11
	11n(20MHz)/OFDM	6.5Mbps	1/6/11
	11n(40MHz)/OFDM	13.5Mbps	3/6/9
Band Edge	11b/DSSS	1 Mbps	1/11
	11g/OFDM	6 Mbps	1/11
	11n(20MHz)/OFDM	6.5Mbps	1/11
	11n(40MHz)/OFDM	13.5Mbps	3/9

2.4. Equipments Used during the Test

Test Equipment	Manufacturer	Model No.	Serial No.	Calibration Date recent	Calibration Due Date
LISN	R&S	ENV216	3560.6550.12	2018/06/01	2019/05/31
LISN	R&S	ESH2-Z5	860014/010	2018/06/01	2019/05/31
Power Meter	Agilent	U2531A	TW53323507	2018/06/01	2019/05/31
Power Sensor	Agilent	U2021XA	MY5365004	2018/05/20	2019/05/19
EMI Test Receiver	R&S	ESCI	103710	2018/06/01	2019/05/31
Spectrum Analyzer	Agilent	E4407B	MY41440676	2018/05/20	2019/05/19
Spectrum Analyzer	Agilent	N9020	US46220290	2018/01/16	2019/01/15
Controller	EM Electronics	Controller EM 1000	N/A	2018/05/20	2019/05/19
Active Loop Antenna	Daze	ZN30900A	N/A	2018/05/18	2019/05/17
Bilog Antenna	Schwarzbeck	VULB 9168	00824	2018/10/25	2019/10/24
Horn Antenna	Sunol Sciences Corp.	DRH-118	A062013	2018/05/18	2019/05/17
Horn Antenna	SCHWARZBACK	BBHA 9170	BBHA9170184	2018/05/18	2019/05/17
Amplifier	Agilent	8349B	3008A02306	2018/05/18	2019/05/17
Amplifier	Agilent	8447D	2944A10176	2018/05/18	2019/05/17
Temperature/Humidity Meter	Gangxing	CTH-608	02	2018/05/19	2019/05/18
High-Pass Filter	K&L	9SH10-2700/X12750-O/O	N/A	2018/05/19	2019/05/18
High-Pass Filter	K&L	41H10-1375/U12750-O/O	N/A	2018/05/19	2019/05/18
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	2018/06/01	2019/05/31
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2018/06/01	2019/05/31
Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2018/06/01	2019/05/31
RF Cable	Megalon	RF-A303	N/A	2018/06/01	2019/05/31

EMI Test Software	R&S	ES-K1	V1.7.1	2018/06/01	2019/05/31
EMI Test Software	AUDIX	E3	V6.0	2018/06/01	2019/05/31

The calibration interval was one year

2.5. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
ASUS	Notebook PC	FL5900U	9014	FCC ID:PPD-QCNFA335
Delta	AC Adapter	S12B22-120A100-C4	00A99	SDOC

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.7. Modifications

No modifications were implemented to meet testing criteria.

3. TEST CONDITIONS AND RESULTS

3.1. Conducted Emissions Test

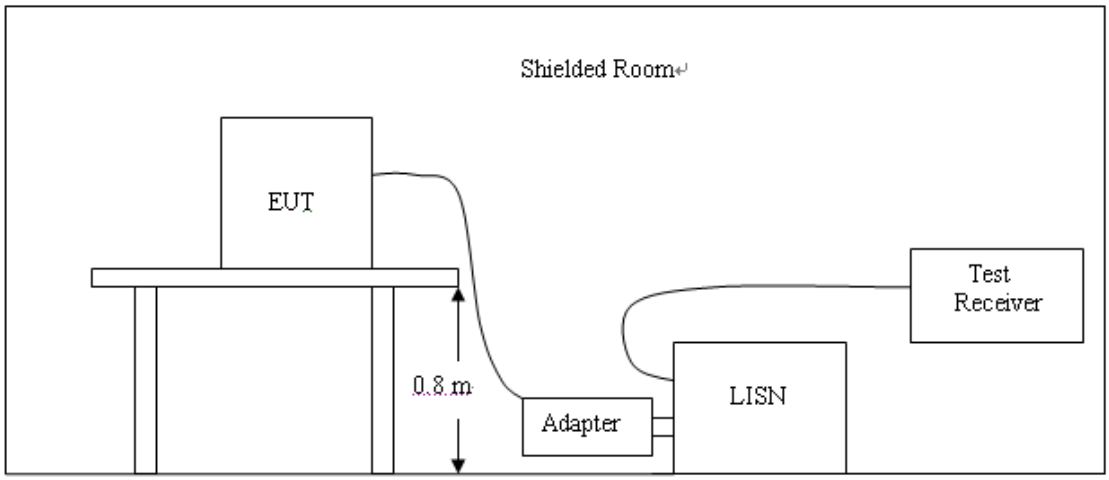
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10:2013.
2. Support equipment, if needed, was placed as per ANSI C63.10:2013.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2013.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST RESULTS

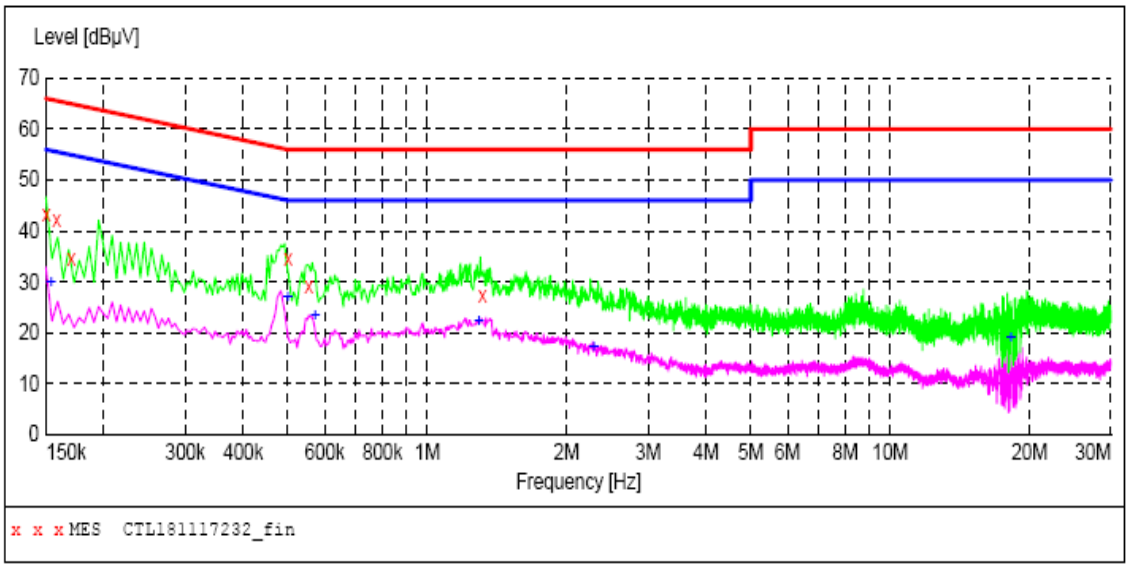
Remark:

1. All modes of 802.11b/g/n were tested at Low, Middle, and High channel; only the worst result of 802.11b CH11 was reported as below:
2. Both 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz power supply have been tested, only the worst result of 120 VAC, 60 Hz was reported as below:

Test Mode	WIFI	Line:	L

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



MEASUREMENT RESULT: "CTL181117232_fin"

2018-11-17 04:41??

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	43.10	10.2	66	22.9	QP	L1	GND
0.158000	42.00	10.2	66	23.6	QP	L1	GND
0.170000	34.60	10.2	65	30.4	QP	L1	GND
0.500000	34.50	10.2	56	21.5	QP	L1	GND
0.554000	29.00	10.2	56	27.0	QP	L1	GND
1.316000	27.40	10.3	56	28.6	QP	L1	GND

MEASUREMENT RESULT: "CTL181117232_fin2"

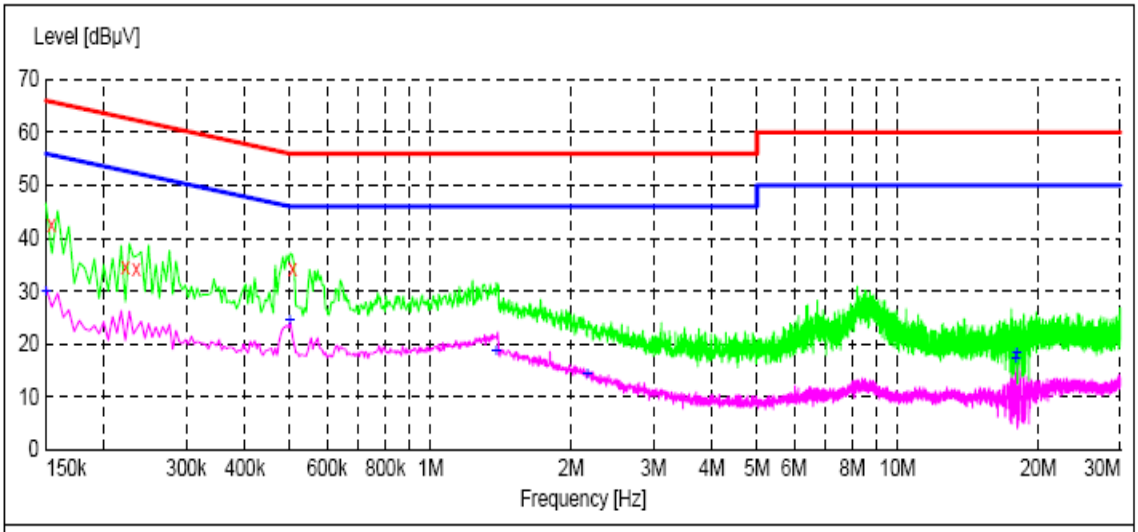
2018-11-17 04:41??

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154000	29.90	10.2	56	25.9	AV	L1	GND
0.500000	27.00	10.2	46	19.0	AV	L1	GND
0.572000	23.50	10.2	46	22.5	AV	L1	GND
1.292000	22.30	10.3	46	23.7	AV	L1	GND
2.288000	17.30	10.4	46	28.7	AV	L1	GND
18.242000	18.90	10.9	50	31.1	AV	L1	GND

Test Mode	WIFI	Line:	N

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage



x x x MES CTL181117233_fin

MEASUREMENT RESULT: "CTL181117233_fin"

2018-11-17 04:43??

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154000	42.60	10.2	66	23.2	QP	N	GND
0.222000	34.60	10.2	63	28.1	QP	N	GND
0.234000	34.10	10.2	62	28.2	QP	N	GND
0.506000	34.00	10.2	56	22.0	QP	N	GND

MEASUREMENT RESULT: "CTL181117233_fin2"

2018-11-17 04:43??

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	29.90	10.2	56	26.1	AV	N	GND
0.500000	24.40	10.2	46	21.6	AV	N	GND
1.382000	18.50	10.3	46	27.5	AV	N	GND
2.168000	14.40	10.4	46	31.6	AV	N	GND
17.924000	17.10	10.8	50	32.9	AV	N	GND
17.996000	18.40	10.8	50	31.6	AV	N	GND

3.2. Radiated Emissions and Band Edge

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

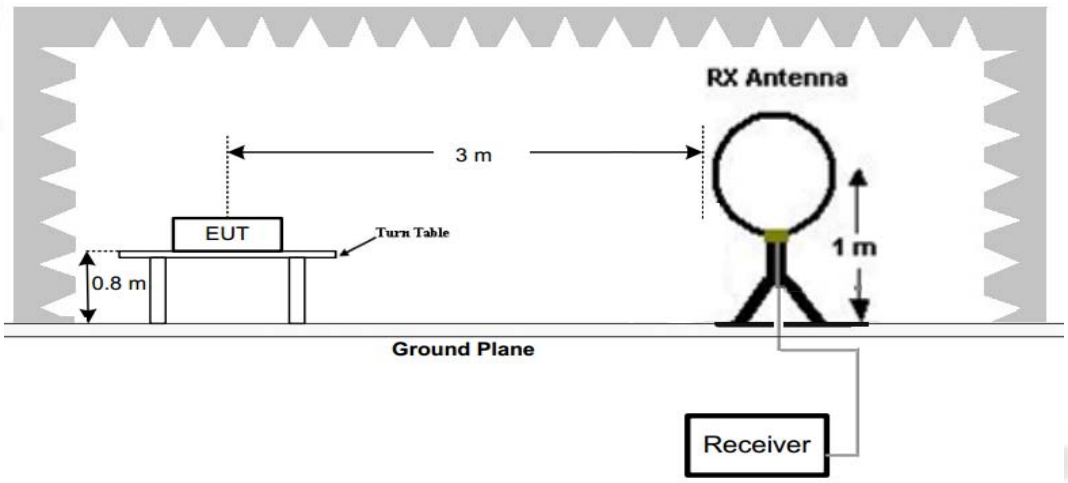
In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

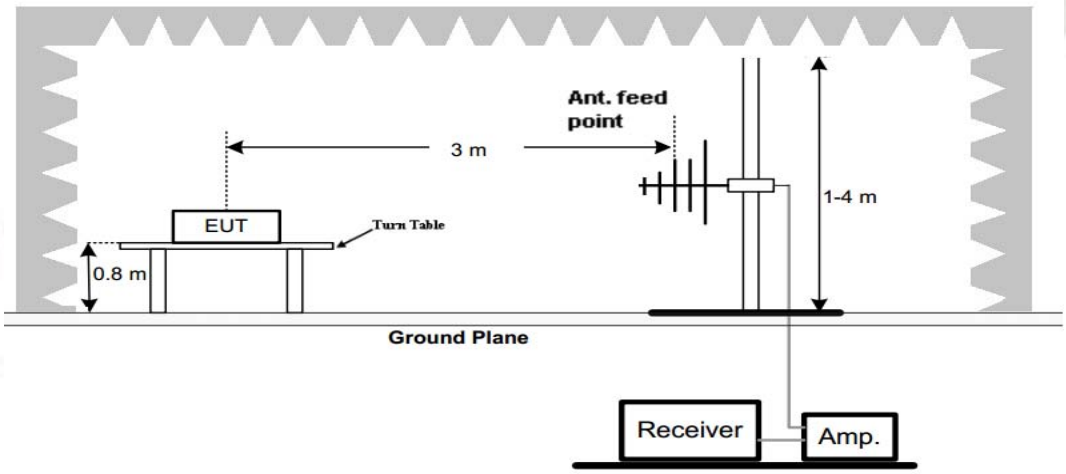
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

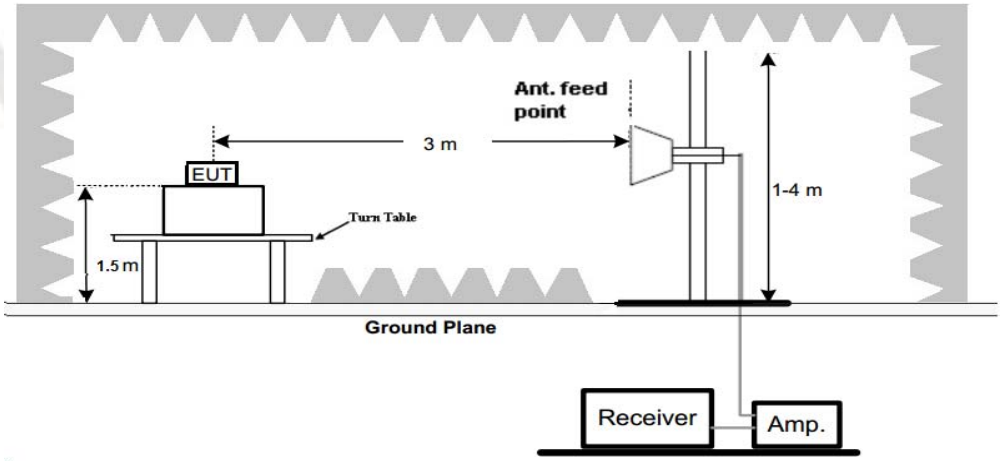
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

TEST RESULTS

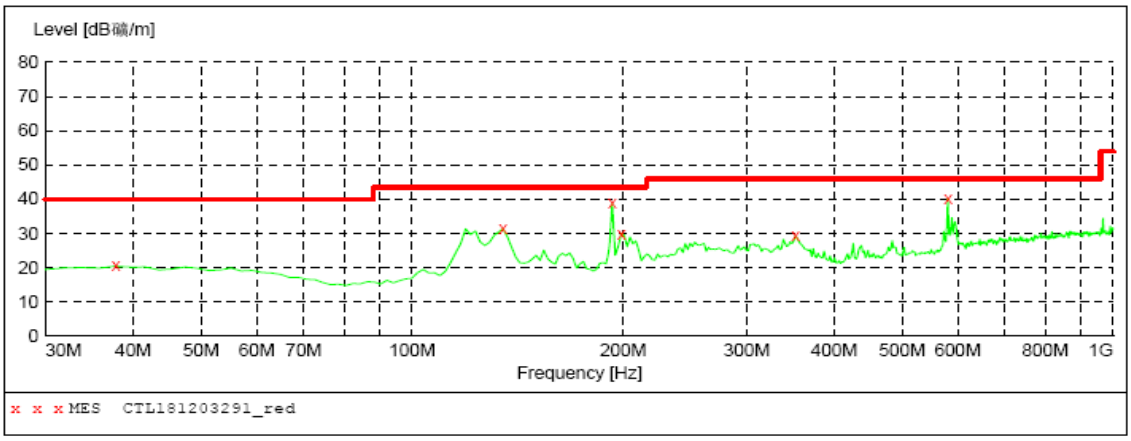
Remark:
1. This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.
2. All three channels (lowest/middle/highest) of each mode were measured below 1GHz and recorded worst case at 802.11b low channel.
3. All three channels (lowest/middle/highest) of each mode were measured above1GHz and recorded worst case at 802.11b mode.
4. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

For 30MHz-1GHz

Test mode:	WIFI	Polarization:	Horizontal

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	200.0 ms	120 kHz	VULB 9168



MEASUREMENT RESULT: "CTL181203291_red"

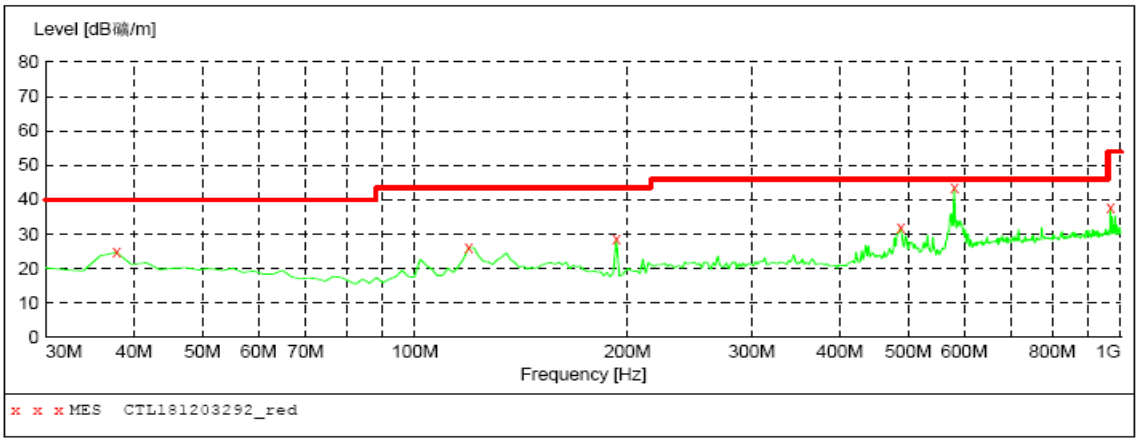
2018-12-4 9:54

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
37.760000	20.50	14.5	40.0	19.5	---	0.0	0.00	HORIZONTAL
134.760000	31.40	14.1	43.5	12.1	---	0.0	0.00	HORIZONTAL
192.960000	38.80	11.4	43.5	4.7	---	0.0	0.00	HORIZONTAL
198.780000	29.90	11.1	43.5	13.6	---	0.0	0.00	HORIZONTAL
352.040000	29.20	15.3	46.0	16.8	---	0.0	0.00	HORIZONTAL
580.960000	40.10	19.7	46.0	5.9	---	0.0	0.00	HORIZONTAL

Test mode:	WIFI	Polarization:	Vertical

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	200.0 ms	120 kHz	VULB 9168



MEASUREMENT RESULT: "CTL181203292_red"

2018-12-4 9:56

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
37.760000	24.70	14.5	40.0	15.3	---	0.0	0.00	VERTICAL
119.240000	26.20	13.1	43.5	17.3	---	0.0	0.00	VERTICAL
192.960000	28.40	11.4	43.5	15.1	---	0.0	0.00	VERTICAL
487.840000	31.90	18.0	46.0	14.1	---	0.0	0.00	VERTICAL
580.960000	43.40	19.7	46.0	2.6	---	0.0	0.00	VERTICAL
967.020000	37.50	24.3	53.9	16.4	---	0.0	0.00	VERTICAL

For 1GHz to 25GHz

802.11b Mode (above 1GHz)

Note: 802.11b/802.11g/802.11n (H20)/802.11n (H40) all have been tested, only worse case 802.11b is reported

Frequency(MHz):			2412		Polarity:			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4824.00	55.47	PK	74	18.53	50.92	33.52	6.92	35.89	4.55
4824.00	48.66	AV	54	5.34	44.11	33.52	6.92	35.89	4.55
6811.00	46.91	PK	74	27.09	37.08	36.01	8.81	34.99	9.83
6811.00	--	AV	54	--	--	--	--	--	--
7236.00	47.50	PK	74	26.50	36.23	37.10	9.19	35.02	11.27
7236.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):			2412		Polarity:			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4824.00	55.10	PK	74	18.90	50.55	33.52	6.92	35.89	4.55
4824.00	47.59	AV	54	6.41	43.04	33.52	6.92	35.89	4.55
5702.00	48.06	PK	74	25.94	40.33	34.79	7.42	34.48	7.73
5702.00	--	AV	54	--	--	--	--	--	--
7236.00	45.70	PK	74	28.30	34.43	37.10	9.19	35.02	11.27
7236.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):			2437		Polarity:			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4874.00	55.51	PK	74	18.49	50.87	33.59	6.95	35.90	4.64
4874.00	48.46	AV	54	5.54	43.82	33.59	6.95	35.90	4.64
6207.00	46.85	PK	74	27.15	38.44	35.19	7.91	34.69	8.41
6207.00	--	AV	54	--	--	--	--	--	--
7311.00	47.30	PK	74	26.70	35.64	37.44	9.22	35.00	11.66
7311.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):			2437		Polarity:			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4874.00	54.68	PK	74	19.32	50.04	33.59	6.95	35.90	4.64
4874.00	46.78	AV	54	7.22	42.14	33.59	6.95	35.90	4.64
6038.00	47.39	PK	74	26.61	39.20	35.15	7.65	34.61	8.19
6038.00	--	AV	54	--	--	--	--	--	--
7311.00	45.12	PK	74	28.88	33.46	37.44	9.22	35.00	11.66
7311.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):			2462		Polarity:			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4924.00	54.85	PK	74	19.15	50.07	33.71	6.98	35.91	4.78
4924.00	47.20	AV	54	6.80	42.42	33.71	6.98	35.91	4.78
6930.00	44.98	PK	74	29.02	34.87	36.16	9.00	35.05	10.11
6930.00	--	AV	54	--	--	--	--	--	--
7386.00	46.15	PK	74	27.85	34.27	37.61	9.25	34.98	11.88
7386.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):			2462		Polarity:			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4924.00	55.08	PK	74	18.92	50.30	33.71	6.98	35.91	4.78
4924.00	47.10	AV	54	6.90	42.32	33.71	6.98	35.91	4.78
5359.00	45.53	PK	74	28.47	37.95	34.70	7.24	34.36	7.58
5359.00	--	AV	54	--	--	--	--	--	--
7386.00	47.49	PK	74	26.51	35.61	37.61	9.25	34.98	11.88
7386.00	--	AV	54	--	--	--	--	--	--

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.

Results of Band Edges Test (Radiated)

Note: 802.11b/802.11g/802.11n (H20)/802.11n (H40) all have been tested, only worse case 802.11b is reported

Frequency(MHz):			2412		Polarity:			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
2412.00	101.98	PK	--	--	68.56	28.80	4.62	0.00	33.42
2412.00	92.15	AV	--	--	58.73	28.80	4.62	0.00	33.42
2373.00	44.83	PK	74	29.17	11.64	28.61	4.58	0.00	33.19
2373.00	--	AV	54	--	--	--	--	--	--
2390.00	46.57	PK	74	27.43	13.25	28.72	4.60	0.00	33.32
2390.00	--	AV	54	--	--	--	--	--	--
2400.00	55.69	PK	74	18.31	22.30	28.78	4.61	0.00	33.39
2400.00	48.46	AV	54	5.54	15.07	28.78	4.61	0.00	33.39

Frequency(MHz):			2412		Polarity:			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
2412.00	101.09	PK	--	--	67.67	28.80	4.62	0.00	33.42
2412.00	91.59	AV	--	--	58.17	28.80	4.62	0.00	33.42
2373.00	43.70	PK	74	30.30	10.51	28.61	4.58	0.00	33.19
2373.00	--	AV	54	--	--	--	--	--	--
2390.00	45.54	PK	74	28.46	12.22	28.72	4.60	0.00	33.32
2390.00	--	AV	54	--	--	--	--	--	--
2400.00	54.08	PK	74	19.92	20.69	28.78	4.61	0.00	33.39
2400.00	46.36	AV	54	7.64	12.97	28.78	4.61	0.00	33.39

Frequency(MHz):			2462		Polarity:			HORIZONTAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
2462.00	100.58	PK	--	--	67.01	28.89	4.68	0.00	33.57
2462.00	92.16	AV	--	--	58.59	28.89	4.68	0.00	33.57
2483.50	54.27	PK	74	19.73	20.64	28.93	4.70	0.00	33.63
2483.50	47.65	AV	54	6.35	14.02	28.93	4.70	0.00	33.63
2492.00	46.51	PK	74	27.49	12.85	28.95	4.71	0.00	33.66
2492.00	--	AV	54	--	--	--	--	--	--
2500.00	42.12	PK	74	31.88	8.44	28.96	4.72	0.00	33.68
2500.00	--	AV	54	--	--	--	--	--	--

Frequency(MHz):			2462		Polarity:			VERTICAL	
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
2462.00	100.06	PK	--	--	66.49	28.89	4.68	0.00	33.57
2462.00	91.58	AV	--	--	58.01	28.89	4.68	0.00	33.57
2483.50	54.02	PK	74	19.98	20.39	28.93	4.70	0.00	33.63
2483.50	46.67	AV	54	7.33	13.04	28.93	4.70	0.00	33.63
2492.00	44.32	PK	74	29.68	10.66	28.95	4.71	0.00	33.66
2492.00	--	AV	54	--	--	--	--	--	--
2500.00	41.87	PK	74	32.13	8.19	28.96	4.72	0.00	33.68
2500.00	--	AV	54	--	--	--	--	--	--

REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.
6. RBW1MHz VBW3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.
7. For fundamental frequency, RBW 3MHz VBW 3MHz Peak detector is for PK Value; RMS detector is for AV value.

3.3. Maximum Conducted Output Power

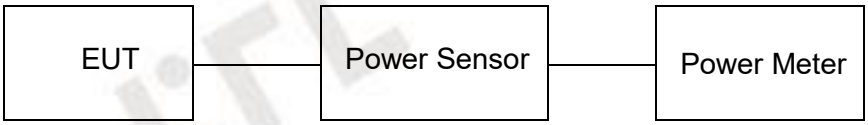
Limit

The Maximum Peak Output Power Measurement is 30dBm.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Test Configuration



Test Results

WIFI

Type	Channel	Output power PK (dBm)	Limit (dBm)	Result
802.11b	01	9.43	30.00	Pass
	06	9.39		
	11	9.03		
802.11g	01	9.21	30.00	Pass
	06	8.79		
	11	8.36		
802.11n(HT20)	01	8.90	30.00	Pass
	06	8.49		
	11	8.08		
802.11n(HT40)	03	7.93	30.00	Pass
	06	8.35		
	09	8.16		

Note: 1.The test results including the cable lose.

3.4. Power Spectral Density

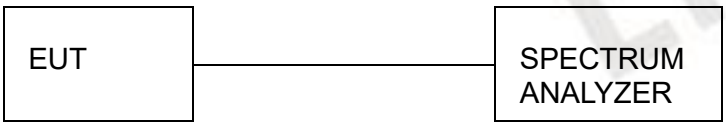
Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW ≥ 3 kHz.
3. Set the VBW ≥ 3× RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

Test Configuration

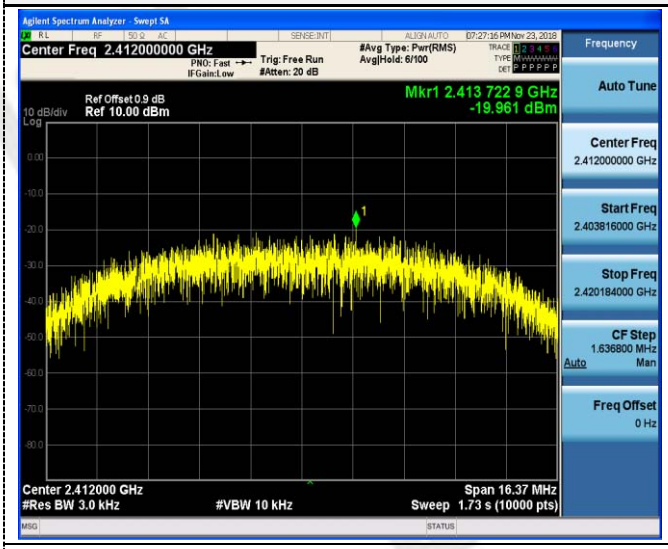
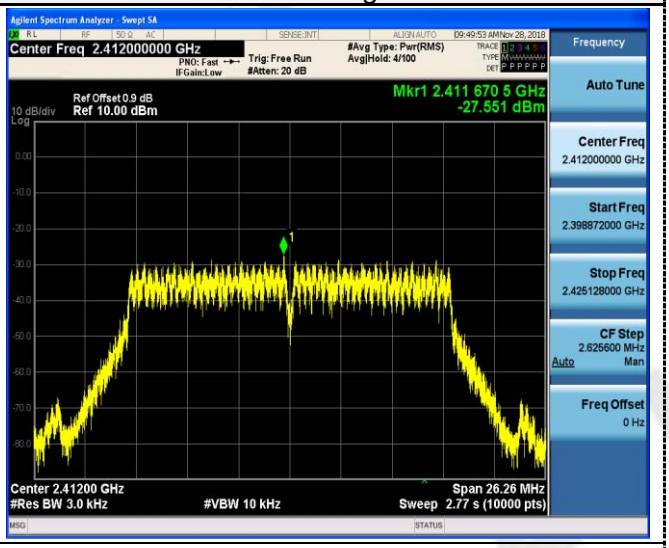
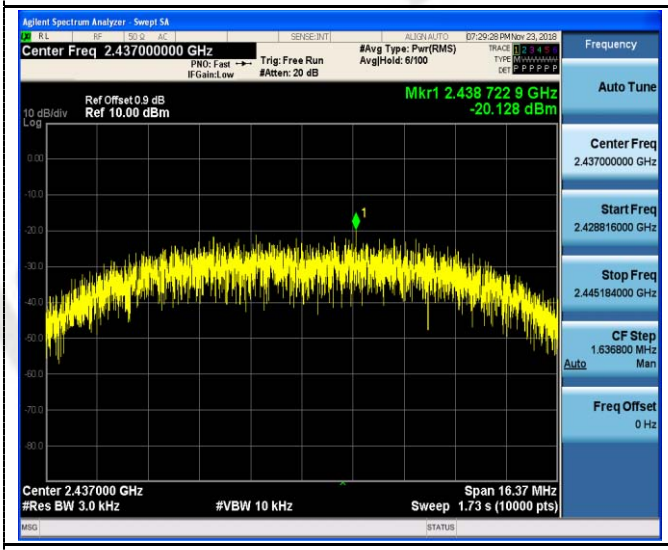
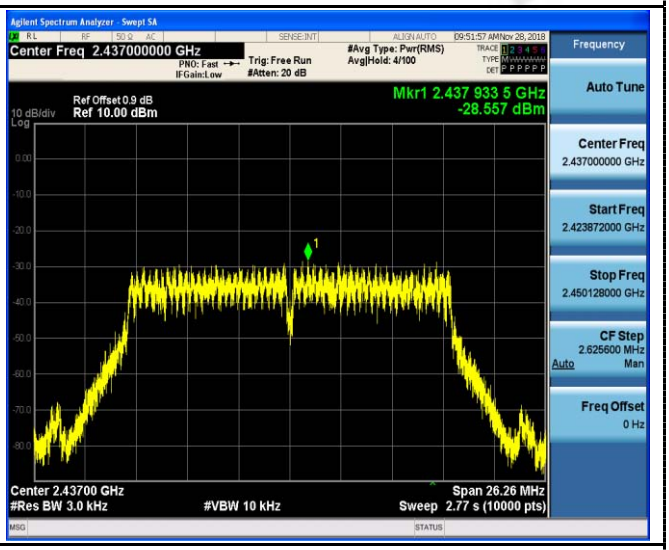
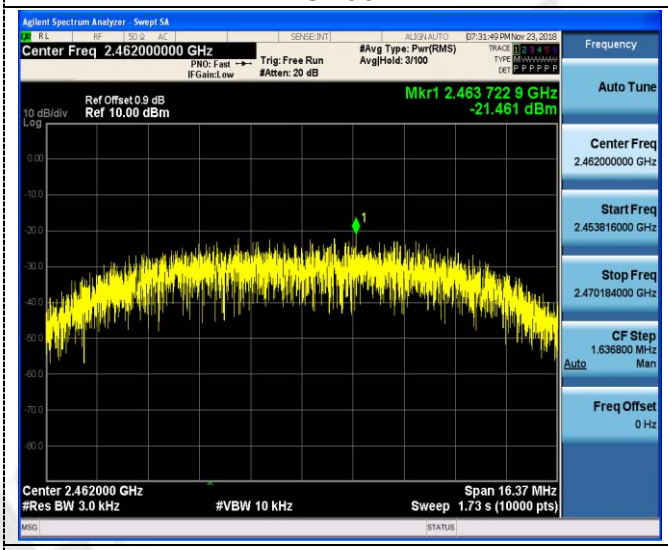
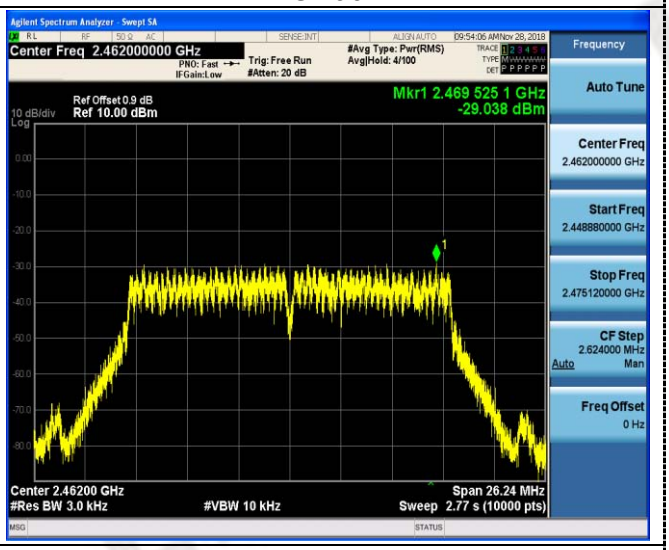


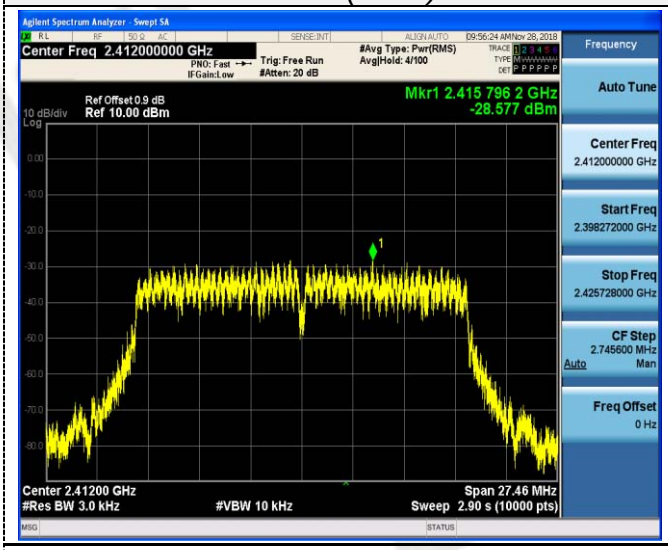
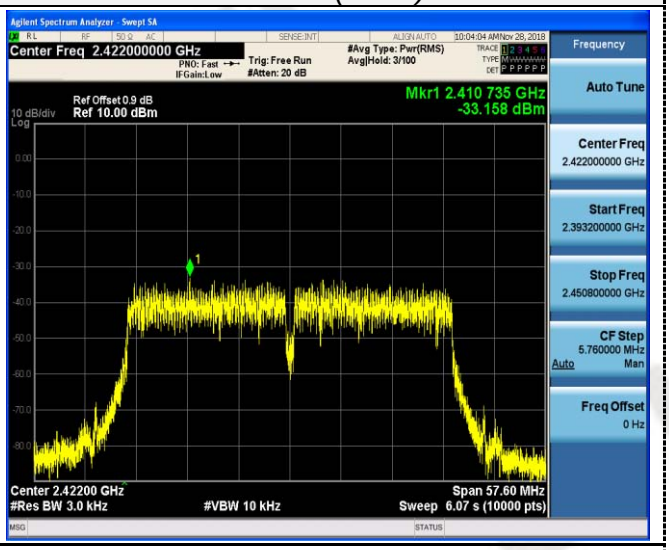
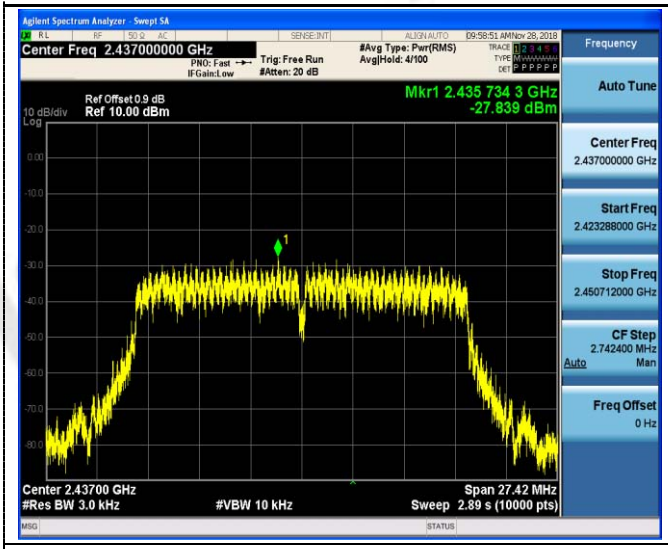
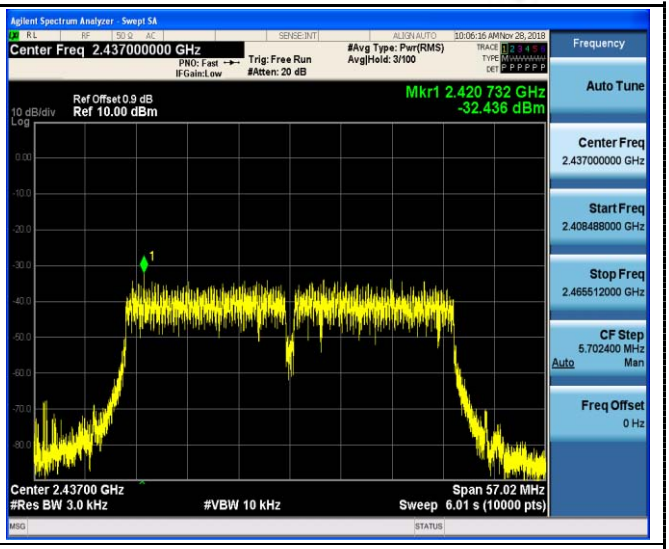
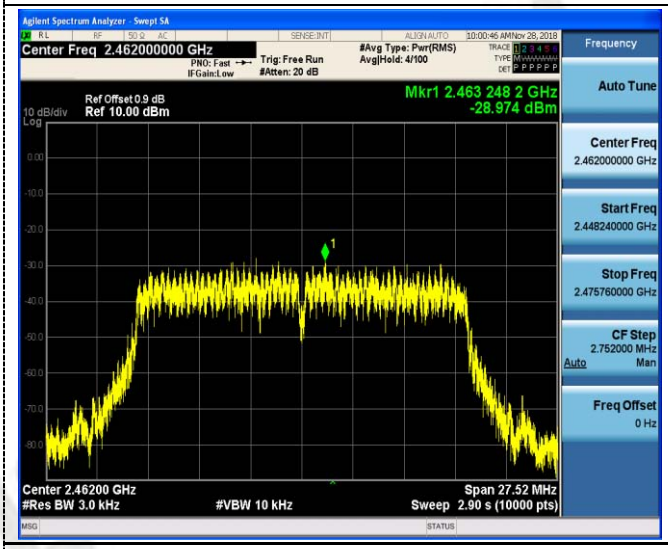
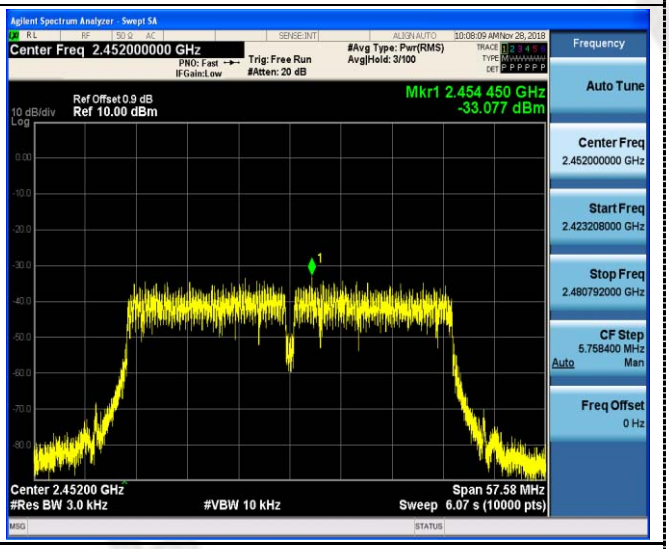
Test Results

WIFI

Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-19.961	8.00	Pass
	06	-20.128		
	11	-21.461		
802.11g	01	-27.551	8.00	Pass
	06	-28.557		
	11	-29.038		
802.11n(HT20)	01	-28.577	8.00	Pass
	06	-27.839		
	11	-28.974		
802.11n(HT40)	03	-33.158	8.00	Pass
	06	-32.436		
	09	-33.077		

Test plot as follows:

802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11n(HT20)	802.11n(HT40)
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

3.5. 6dB Bandwidth

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

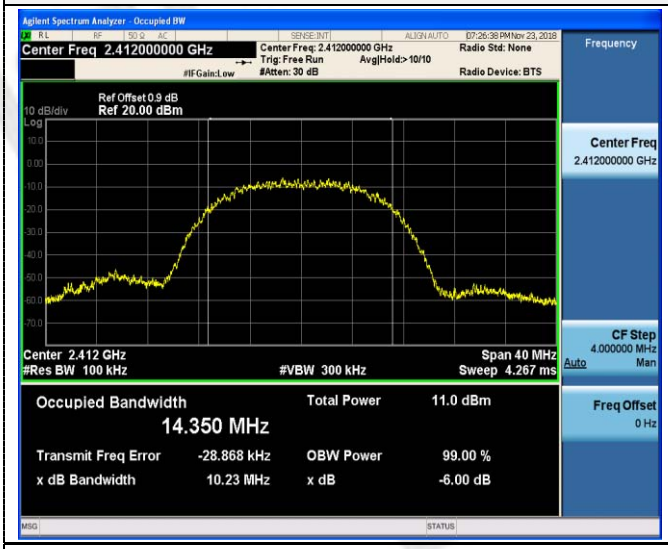
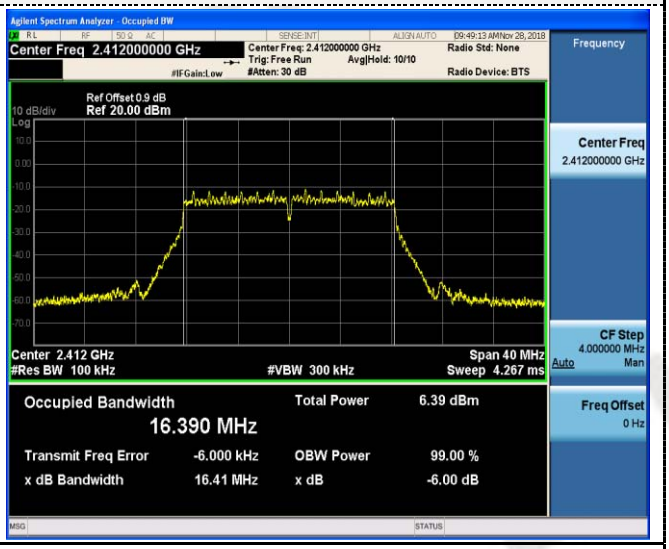
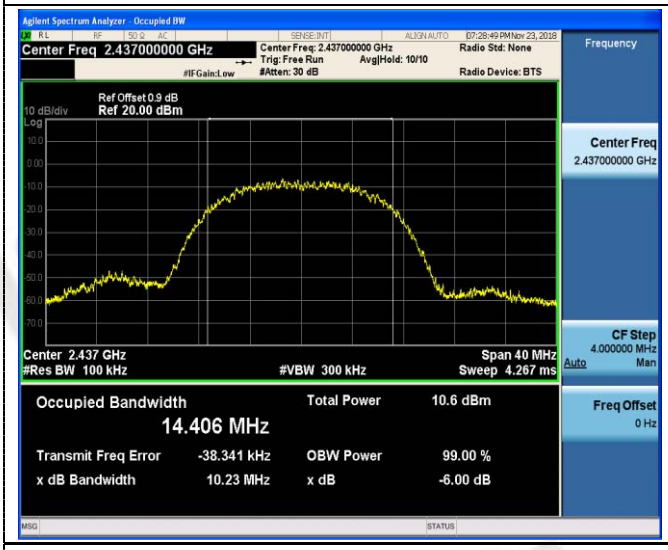
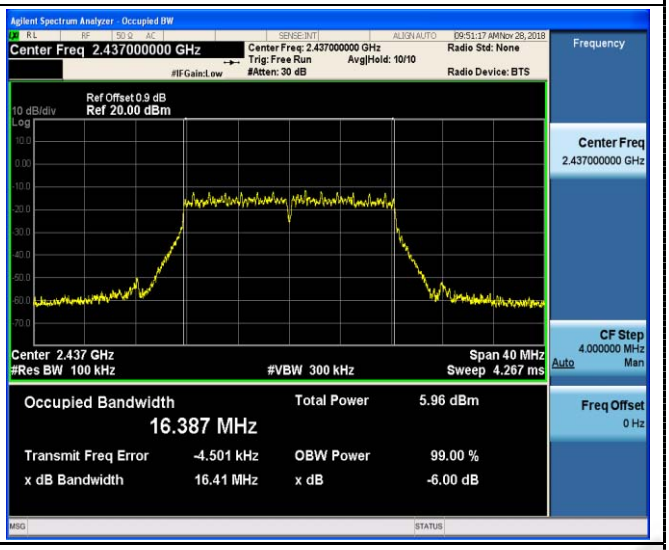
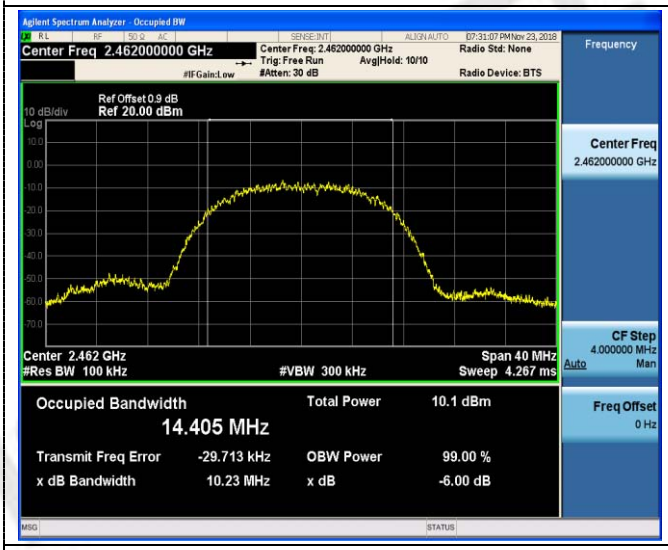
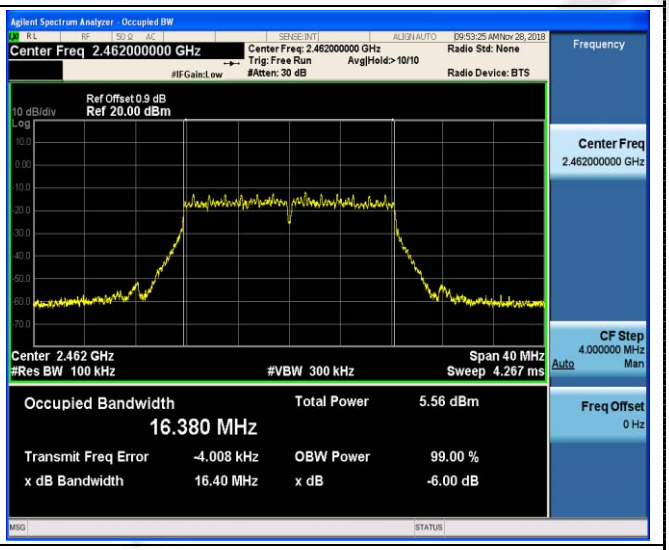
Test Configuration

Test Results

WIFI

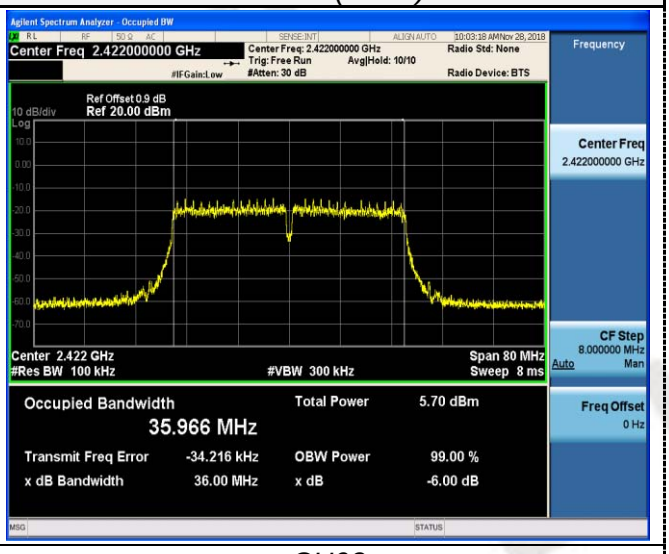
Type	Channel	6dB Bandwidth (MHz)	99% OBW (MHz)	Limit (KHz)	Result
802.11b	01	10.23	14.350	≥500	Pass
	06	10.23	14.406		
	11	10.23	14.405		
802.11g	01	16.41	16.390	≥500	Pass
	06	16.41	16.387		
	11	16.40	16.380		
802.11n(HT20)	01	17.16	17.493	≥500	Pass
	06	17.14	17.478		
	11	17.20	17.498		
802.11n(HT40)	03	36.00	35.966	≥500	Pass
	06	35.64	35.998		
	09	35.99	36.057		

Test plot as follows:

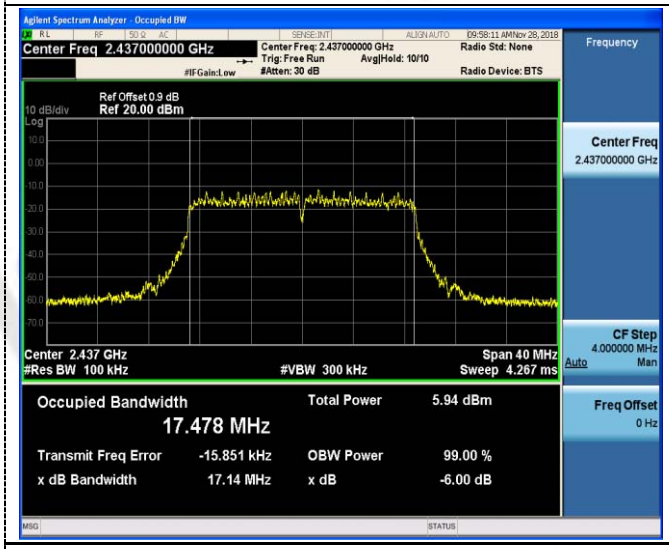
802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11n(HT20)

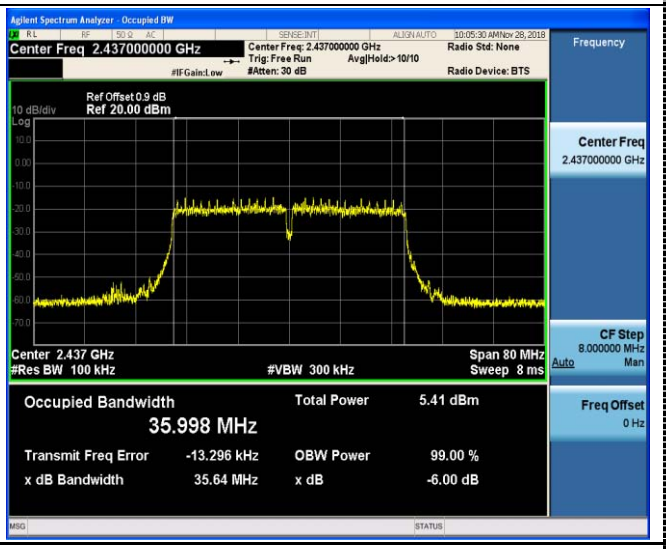
802.11n(HT40)



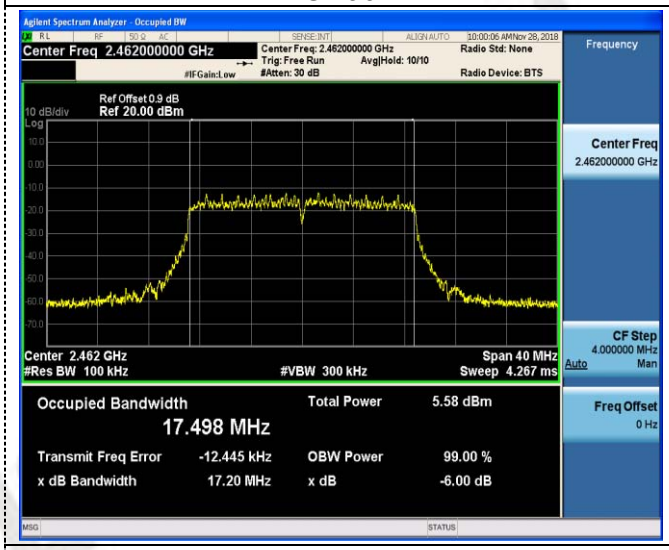
CH01



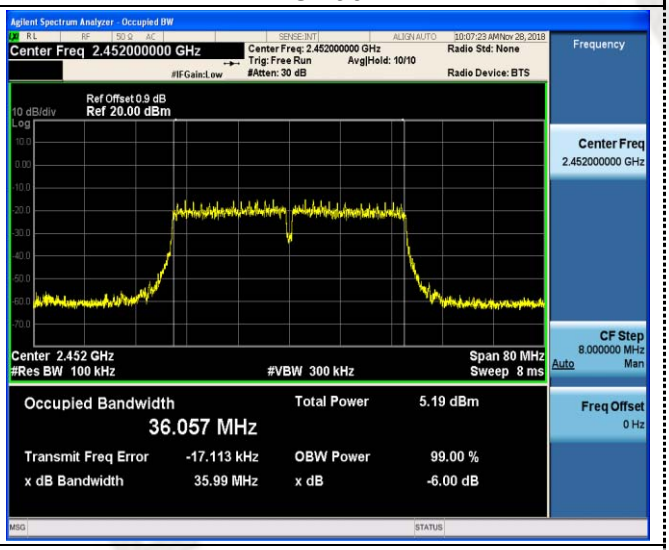
CH03



CH06



CH06



CH11

CH09