FCC TEST REPORT

According to

FCC CFR Title 47 Part 15 Subpart C

Applicant	:	Zhejiang Dahua Vision Technology Co., Ltd.
Address	:	The 1st floor, building F, No.1199 Bin'an road, Changhe Street, Binjiang District, Hangzhou, P.R. China.
Manufacturer	:	Zhejiang Dahua Vision Technology Co., Ltd.
Address	:	The 1st floor, building F, No.1199 Bin'an road, Changhe Street, Binjiang District, Hangzhou, P.R. China.
Equipment	:	IP CAMERA
Model No.	:	IPC-HDBW1000Ex-y-z, DH-IPC-HDBW1000Ex-y-z, IPC-HDBW1200Ex-y-z, DH-IPC-HDBW1200Ex-y-z, ("x" can be P OR N, "y" can be W, WAS or WS, "z" can be 0280B,0360B,0600B)
FCC ID	:	SVNHDBWABCDE-WXY

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Document history

■ ORIGINAL.

☐Additional attachment as following record:

Attachment No.	Date	Description

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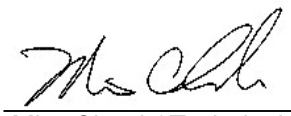
FCC ID	:	SVNHDBWABCDE-WXY

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2009** and the energy emitted by this equipment was ***passed*** **CISPR PUB. 22 and FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Feb 26,2015 at ***Cerpass Technology (Suzhou) Co., Ltd***

Signature



Miro Chueh/ Technical director

1. Report of Measurements and Examinations

1.1 List of Measurements and Examinations

FCC Rule	. Description of Test	Result
15.203	. Antenna Requirement	Pass
15.207	. Conducted Emission	Pass
15.209 15.247(d)	. Radiated Emission	Pass
15.247(a)(2)	. 6dB Bandwidth	Pass
15.247(b)	. Maximum Peak Output Power	Pass
15.247(d)	. 100kHz Bandwidth of Frequency Band Edges	Pass
15.247(e)	. Power Spectral Density	Pass
1.1307 1.1310 2.1091 2.1093	. RF Exposure Compliance	Pass

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Modle No.	IPC-HDBW1000Ex-y-z, DH-IPC-HDBW1000Ex-y-z, IPC-HDBW1200Ex-y-z, DH-IPC-HDBW1200Ex-y-z, ("x" can be P OR N, "y" can be W, WAS or WS, "z" can be 0280B,0360B,0600B)
Remark	1) **IPC-HDBW1200E-W** was selected as the test models and its data have been recorded in this report. 2) Models difference: IPC-HDBW1200E-W uses the main chip of 368 platform with sensor AR0330; IPC-HDBW1000E-W uses the main chip of Hisilicon with sensor OV9712.
WLAN Module	AR9271
Spreading	802.11b: CCK, DQPSK, DBPSK 802.11g: 64 QAM, 16 QAM, QPSK, BPSK 802.11n: BPSK, QPSK,16QAM, 64QAM
Frequency Range	802.11b/g/n(20MHz): 2412-2462MHz 802.11n(40MHz): 2422-2452MHz
Number of Channels	802.11b/g/n (20MHz):11 802.11n (40MHz): 7
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0~MCS7
Antenna	Antenna name：F2420S Antenna type：FPC Antenna PIFA Antenna：3.5dBi

2.2 Carrier Frequency of Channels

For 2.4G 802.11b, 802.11g, 802.11n (20MHz)

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

For 2.4G 802.11n (40MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
01	---	08	2447
02	---	09	2452
03	2422	---	---
04	2427	---	---
05	2432	---	---
06	2437	---	---
07	2442	---	---

2.3 Test Manner

Test Manner	
a	During testing, the interface cables and equipment positions were varied according to 47 CFR, Part 2, Part 15
b	Adjust the EUT at the test mode and the test channel. Then test.

The test modes:

The EUT transmitting and receiving with one antenna working at b/g mode,and with two antennas working at n mode.

The chip set AR9271 supports 802.11 b/g/n configuration was finally used in this report.

The worst-case data rates are determined to be as follows for each mode based on investigation by measuring the average power, peak power and PPSD across all data rates, bandwidths, and modulations.

The worst-case data rates:

IEEE802.11b mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11gn Standard-20 MHz Channel mode: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with MCS0 data rate were chosen for full testing.

IEEE 802.11gn Wide-40 MHz Channel mode: Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with MCS0 data rate were chosen for full testing.

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items.

2.4 Description of Test System

No	Device	Manufacturer	Model No.	Description
1	NB	Lenovo	7673	R33B65
2	Iphoe	SAMSUNG	I9300	N/A

Use Cable:

No.	Cable	Quantity	Description
A	LAN Cable	1	>=3m

2.5 General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co., Ltd
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz

2.6 Measurement Uncertainty

Measurement Item	Measurement Frequency	Polarization	Uncertainty
Conducted Emission	9 kHz ~ 30 MHz	LINE/NEUTRAL	±2.71 dB
Radiated Emission	30 MHz ~ 25GHz	Vertical	±4.11 dB
		Horizontal	±4.10 dB
Occupied Bandwidth	---	---	±7500 Hz
Maximum Peak Output Power	---	---	±1.4 dB
Band Edges	---	---	±2.2 dB
Power Spectral Density	---	---	±2.2 dB

3. Antenna Requirements

3.1 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Antenna Construction and Directional Gain

Antenna : F2420S
Antenna type: FPC Antenna
Antenna Gain: 3.5dBi

4. Test of Conducted Emission

4.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

4.2 Test Procedures

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

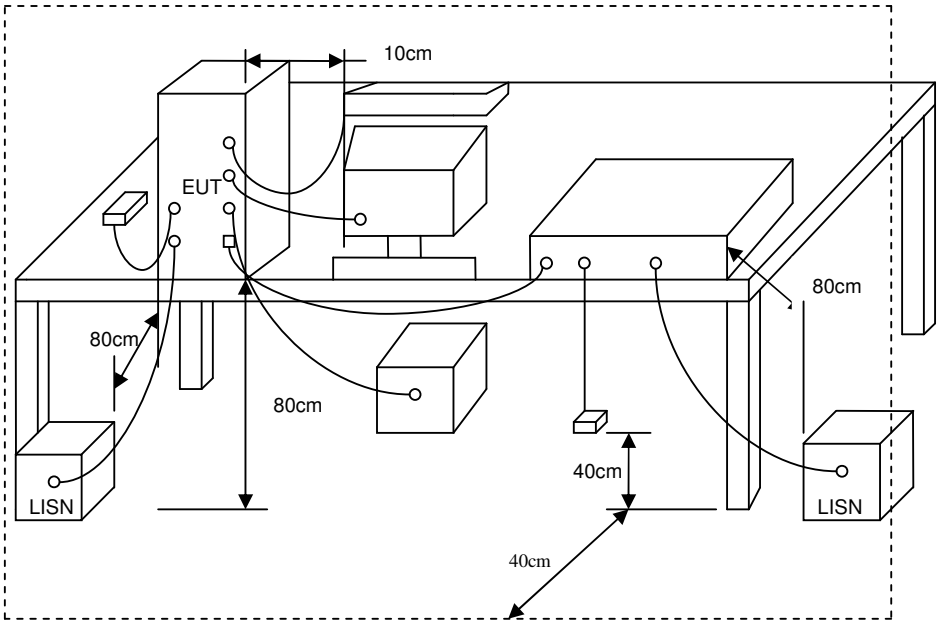
The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

4.3 Typical Test Setup

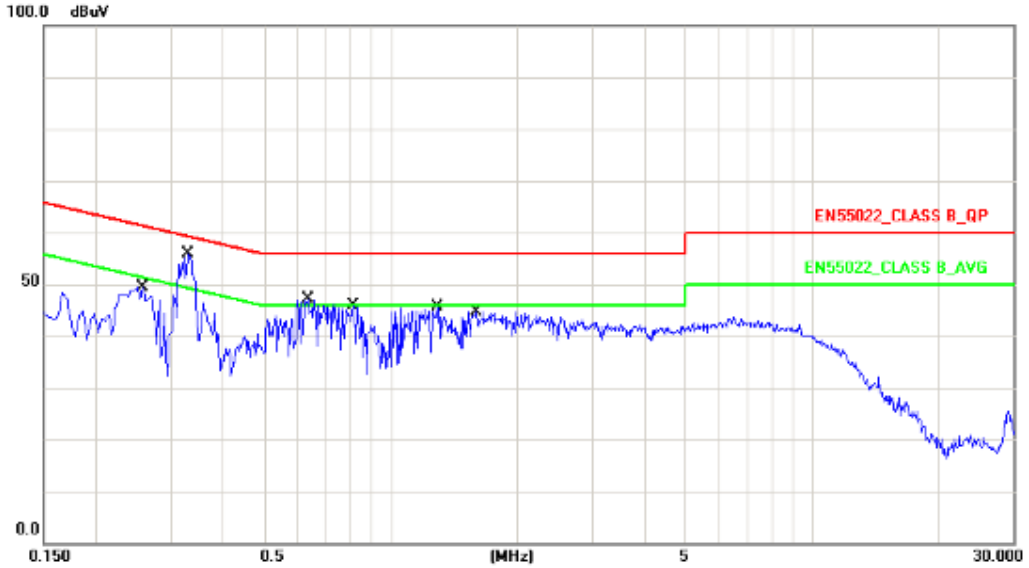


4.4 Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100565	2014.03.24	2015.03.23
AMN	R&S	ESH2-Z5	100182	2014.09.04	2015.09.03
ISN	FCC	FCC-TLISN-T2-02	20379	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T4-02	20380	2014.03.24	2015.03.23
ISN	FCC	FCC-TLISN-T8-02	20381	2014.03.24	2015.03.23
ISN	TESEQ	ISN ST08	30175	2014.03.24	2015.03.23
Current Probe	R&S	EZ-17	100303	2014.04.04	2015.04.03
Passive Voltage Probe	R&S	ESH2-Z3	100026	2014.03.24	2015.03.23
Pulse Limiter	R&S	ESH3-Z2	100529	2014.03.24	2015.03.23
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2014.03.31	2015.03.30
EZ-EMC	Fala	Ver CT3A1	N/A	N/A	N/A

4.5 Test Result and Data

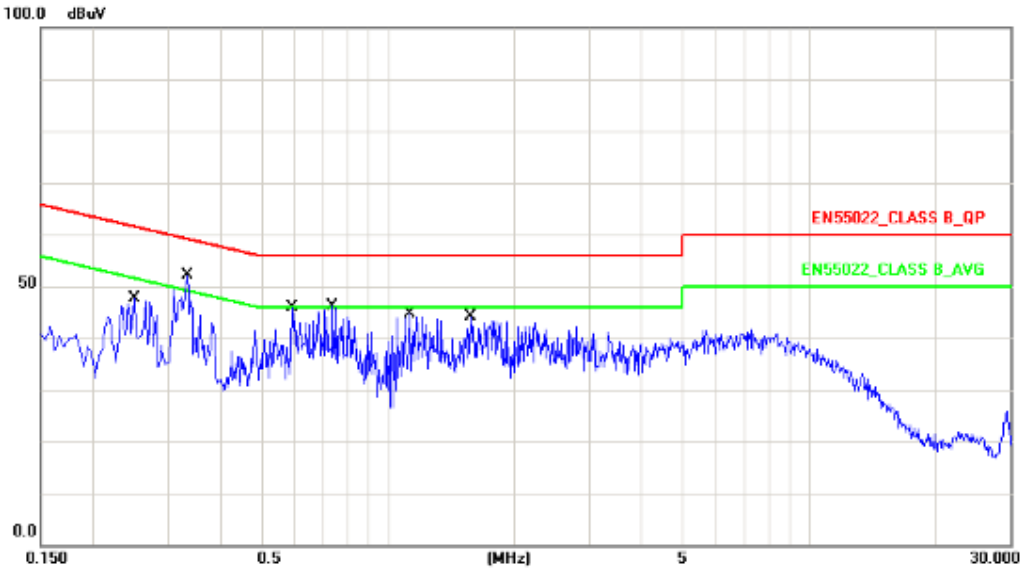
Test Mode :	Normal Operation for IPC-HDBW1200E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	LINE
Equipment :	IP CAMERA	Model No :	IPC-HDBW1200E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2580	10.13	36.52	46.65	61.49	-14.84	QP
2	0.2580	10.13	21.57	31.70	51.49	-19.79	AVG
3	0.3300	10.14	43.65	53.79	59.45	-5.66	QP
4	0.3300	10.14	29.79	39.93	49.45	-9.52	AVG
5	0.6340	10.15	33.67	43.82	56.00	-12.18	QP
6	0.6340	10.15	18.61	28.76	46.00	-17.24	AVG
7	0.8139	10.15	31.18	41.33	56.00	-14.67	QP
8	0.8139	10.15	18.13	28.28	46.00	-17.72	AVG
9	1.2940	10.16	32.04	42.20	56.00	-13.80	QP
10	1.2940	10.16	17.59	27.75	46.00	-18.25	AVG
11	1.5940	10.17	29.74	39.91	56.00	-16.09	QP
12	1.5940	10.17	14.57	24.74	46.00	-21.26	AVG

Note: Measurement Level = Reading Level + Correct Factor

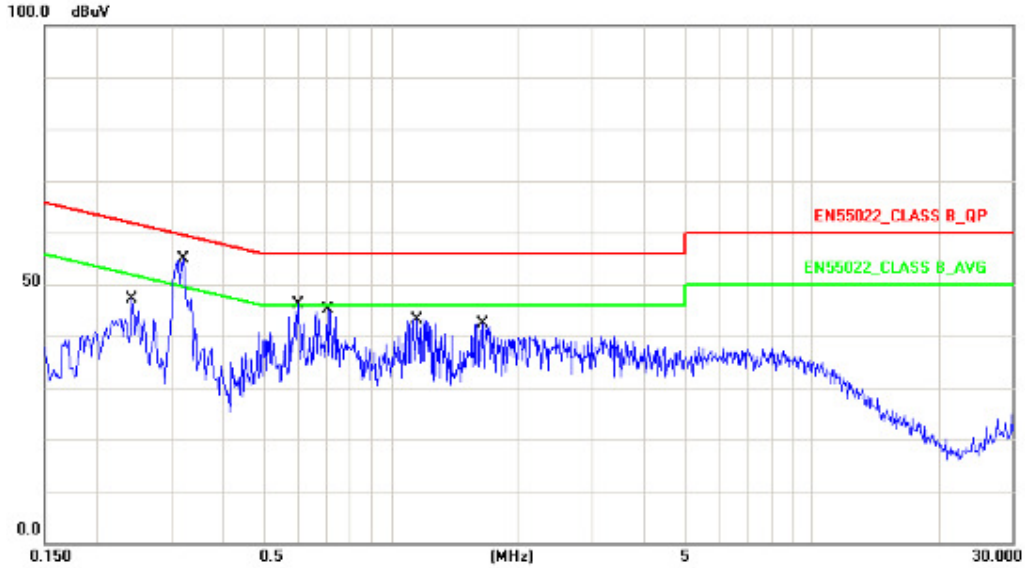
Test Mode :	Mode 1: Normal Operation for IPC-HDBW1200E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Equipment :	IP CAMERA	Model No :	IPC-HDBW1200E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2500	10.13	29.81	39.94	61.75	-21.81	QP
2	0.2500	10.13	17.82	27.95	51.75	-23.80	AVG
3	0.3339	10.14	36.42	46.56	59.35	-12.79	QP
4	0.3339	10.14	26.49	36.63	49.35	-12.72	AVG
5	0.5940	10.15	26.84	36.99	56.00	-19.01	QP
6	0.5940	10.15	12.61	22.76	46.00	-23.24	AVG
7	0.7420	10.16	27.21	37.37	56.00	-18.63	QP
8	0.7420	10.16	16.38	26.54	46.00	-19.46	AVG
9	1.1260	10.18	24.58	34.76	56.00	-21.24	QP
10	1.1260	10.18	14.53	24.71	46.00	-21.29	AVG
11	1.5740	10.18	22.89	33.07	56.00	-22.93	QP
12	1.5740	10.18	10.15	20.33	46.00	-25.67	AVG

Note: Measurement Level = Reading Level + Correct Factor

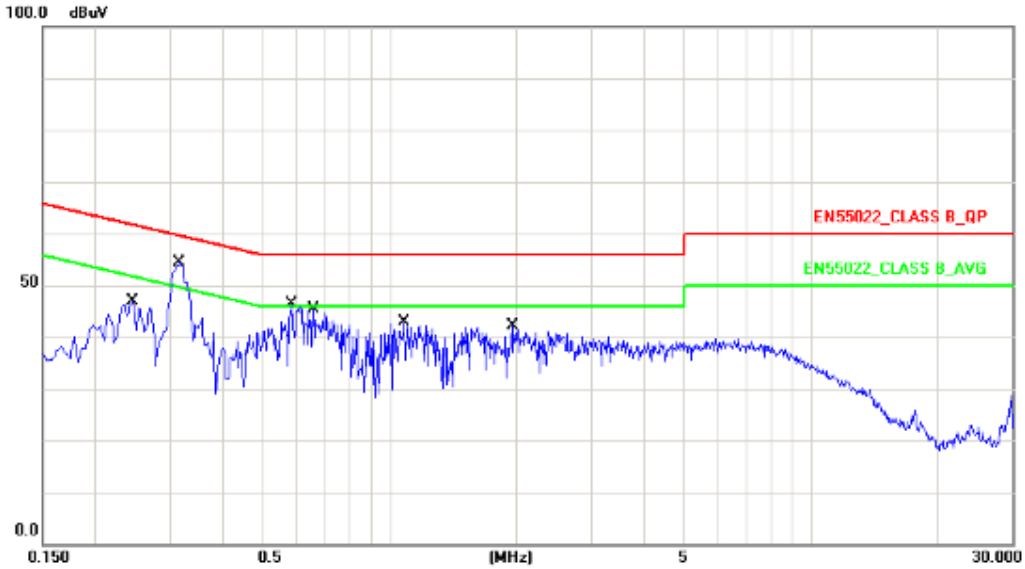
Test Mode :	Mode 2: Normal Operation for IPC-HDBW1000E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	LINE
Equipment :	IP CAMERA	Model No :	IPC-HDBW1000E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2420	10.12	27.17	37.29	62.02	-24.73	QP
2	0.2420	10.12	15.22	25.34	52.02	-26.68	AVG
3	0.3199	10.14	43.65	53.79	59.71	-5.92	QP
4	0.3199	10.14	29.67	39.81	49.71	-9.90	AVG
5	0.6020	10.15	25.43	35.58	56.00	-20.42	QP
6	0.6020	10.15	13.14	23.29	46.00	-22.71	AVG
7	0.7100	10.15	24.56	34.71	56.00	-21.29	QP
8	0.7100	10.15	12.79	22.94	46.00	-23.06	AVG
9	1.1539	10.16	22.49	32.65	56.00	-23.35	QP
10	1.1539	10.16	11.55	21.71	46.00	-24.29	AVG
11	1.6580	10.17	20.61	30.78	56.00	-25.22	QP
12	1.6580	10.17	8.80	18.97	46.00	-27.03	AVG

Note: Measurement Level = Reading Level + Correct Factor

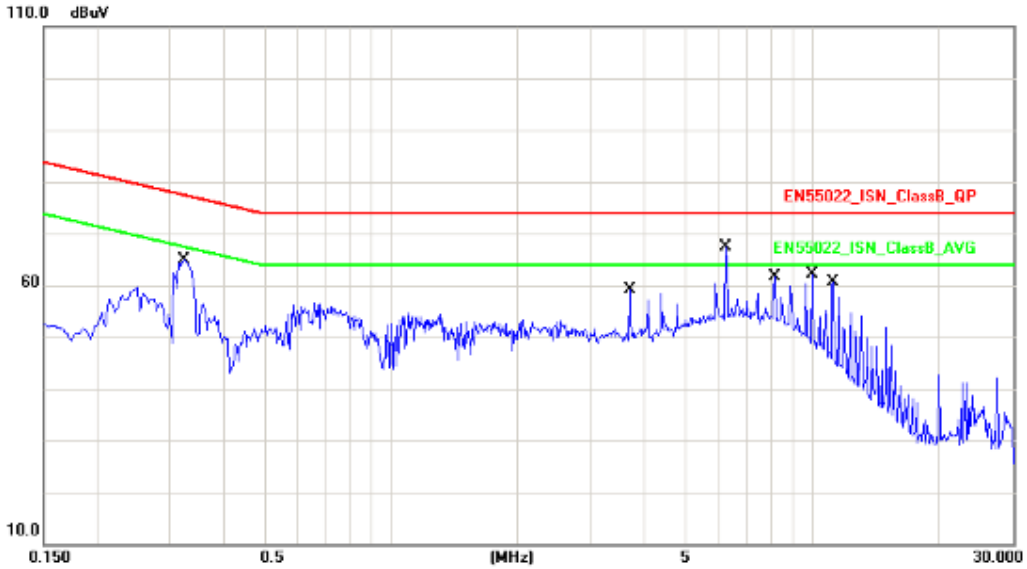
Test Mode :	Mode 2: Normal Operation for IPC-HDBW1000E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	NEUTRAL
Equipment :	IP CAMERA	Model No :	IPC-HDBW1000E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2460	10.13	33.77	43.90	61.89	-17.99	QP
2	0.2460	10.13	21.31	31.44	51.89	-20.45	AVG
3	0.3180	10.14	41.65	51.79	59.76	-7.97	QP
4	0.3180	10.14	28.65	38.79	49.76	-10.97	AVG
5	0.5860	10.15	32.80	42.95	56.00	-13.05	QP
6	0.5860	10.15	19.05	29.20	46.00	-16.80	AVG
7	0.6580	10.16	31.58	41.74	56.00	-14.26	QP
8	0.6580	10.16	18.95	29.11	46.00	-16.89	AVG
9	1.0859	10.18	28.65	38.83	56.00	-17.17	QP
10	1.0859	10.18	16.82	27.00	46.00	-19.00	AVG
11	1.9580	10.18	26.78	36.96	56.00	-19.04	QP
12	1.9580	10.18	13.32	23.50	46.00	-22.50	AVG

Note: Measurement Level = Reading Level + Correct Factor

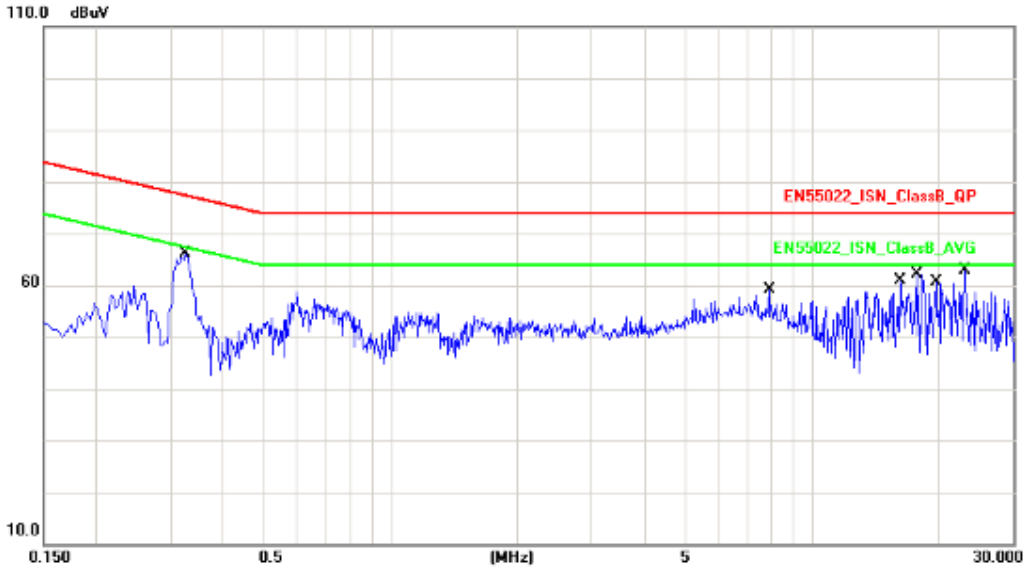
Test Mode :	Mode 1: Normal Operation for IPC-HDBW1200E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	10M
Equipment :	IP CAMERA	Model No :	IPC-HDBW1200E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3220	19.70	43.55	63.25	79.08	-15.83	QP
2	0.3220	19.70	30.14	49.84	69.08	-19.24	AVG
3	3.6980	19.64	30.65	50.29	74.00	-23.71	QP
4	3.6980	19.64	22.60	42.24	64.00	-21.76	AVG
5	6.2500	19.66	40.23	59.89	74.00	-14.11	QP
6	6.2500	19.66	32.56	52.22	64.00	-11.78	AVG
7	8.1540	19.70	34.49	54.19	74.00	-19.81	QP
8	8.1540	19.70	26.98	46.68	64.00	-17.32	AVG
9	10.0060	19.78	31.79	51.57	74.00	-22.43	QP
10	10.0060	19.78	20.50	40.28	64.00	-23.72	AVG
11	11.1980	19.76	32.74	52.50	74.00	-21.50	QP
12	11.1980	19.76	25.15	44.91	64.00	-19.09	AVG

Note: Measurement Level = Reading Level + Correct Factor

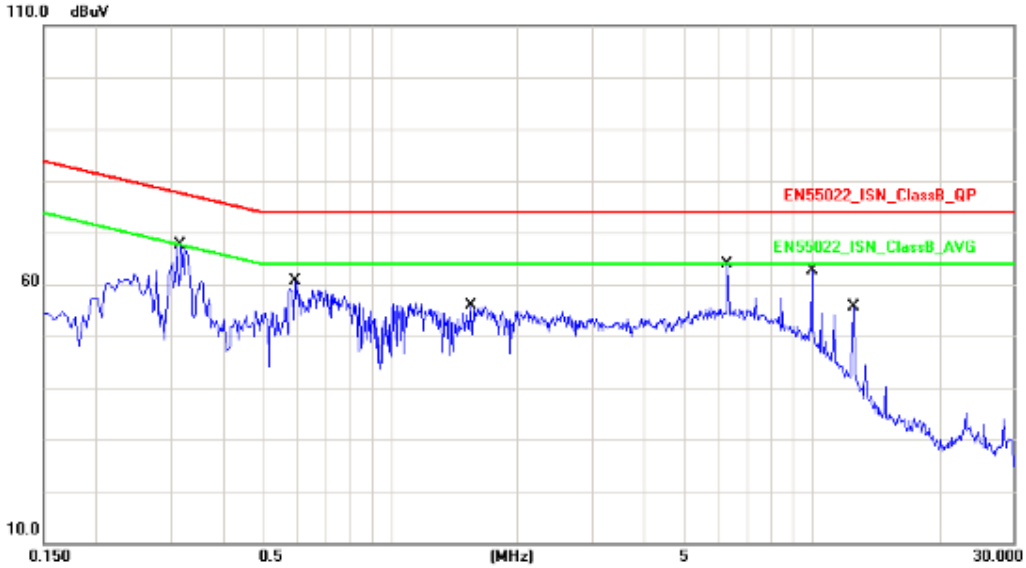
Test Mode :	Mode 1: Normal Operation for IPC-HDBW1200E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	100M
Equipment :	IP CAMERA	Model No :	IPC-HDBW1200E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3260	19.70	43.68	63.38	78.97	-15.59	QP
2	0.3260	19.70	30.91	50.61	68.97	-18.36	AVG
3	7.9220	19.69	35.88	55.57	74.00	-18.43	QP
4	7.9220	19.69	32.44	52.13	64.00	-11.87	AVG
5	16.1660	19.74	40.30	60.04	74.00	-13.96	QP
6	16.1660	19.74	37.67	57.41	64.00	-6.59	AVG
7	17.6940	19.77	41.65	61.42	74.00	-12.58	QP
8	17.6940	19.77	38.89	58.66	64.00	-5.34	AVG
9	19.7099	19.81	40.21	60.02	74.00	-13.98	QP
10	19.7099	19.81	37.46	57.27	64.00	-6.73	AVG
11	23.1299	19.81	41.72	61.53	74.00	-12.47	QP
12	23.1299	19.81	38.99	58.80	64.00	-5.20	AVG

Note: Measurement Level = Reading Level + Correct Factor

Test Mode :	Mode 2: Normal Operation for IPC-HDBW1000E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	10M
Equipment :	IP CAMERA	Model No :	IPC-HDBW1000E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3180	19.70	46.95	66.65	79.20	-12.55	QP
2	0.3180	19.70	34.51	54.21	69.20	-14.99	AVG
3	0.5940	19.62	37.47	57.09	74.00	-16.91	QP
4	0.5940	19.62	24.00	43.62	64.00	-20.38	AVG
5	1.5540	19.62	32.45	52.07	74.00	-21.93	QP
6	1.5540	19.62	19.12	38.74	64.00	-25.26	AVG
7	6.3019	19.66	39.28	58.94	74.00	-15.06	QP
8	6.3019	19.66	31.64	51.30	64.00	-12.70	AVG
9	9.9938	19.78	31.96	51.74	74.00	-22.26	QP
10	9.9938	19.78	21.24	41.02	64.00	-22.98	AVG
11	12.5739	19.75	29.14	48.89	74.00	-25.11	QP
12	12.5739	19.75	20.04	39.79	64.00	-24.21	AVG

Note: Measurement Level = Reading Level + Correct Factor

Test Mode :	Mode 2: Normal Operation for IPC-HDBW1000E-W by Wifi connection notebook PC		
AC Power :	AC 120V/60Hz	Phase :	100M
Equipment :	IP CAMERA	Model No :	IPC-HDBW1000E-W
Temperature :	23℃	Humidity :	50%
Pressure(mbar) :	1002	Date :	2014/12/07

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.3100	19.71	46.50	66.21	79.43	-13.22	QP
2	0.3100	19.71	34.29	54.00	69.43	-15.43	AVG
3	7.9220	19.69	37.30	56.99	74.00	-17.01	QP
4	7.9220	19.69	33.68	53.37	64.00	-10.63	AVG
5	16.2260	19.74	40.39	60.13	74.00	-13.87	QP
6	16.2260	19.74	37.31	57.05	64.00	-6.95	AVG
7	18.2420	19.78	41.04	60.82	74.00	-13.18	QP
8	18.2420	19.78	38.16	57.94	64.00	-6.06	AVG
9	19.7099	19.81	40.07	59.88	74.00	-14.12	QP
10	19.7099	19.81	37.12	56.93	64.00	-7.07	AVG
11	23.1299	19.81	41.40	61.21	74.00	-12.79	QP
12	23.1299	19.81	38.93	58.74	64.00	-5.26	AVG

Note: Measurement Level = Reading Level + Correct Factor

Test engineer:_____

5. Test of Radiated Emission

5.1 Test Limit

Radiated emissions from 9 KHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2003. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

Frequency (MHz)	Distance Meters	Radiated (dB μ V/ m)
30-230	10	30
230-1000	10	37

5.2 Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.

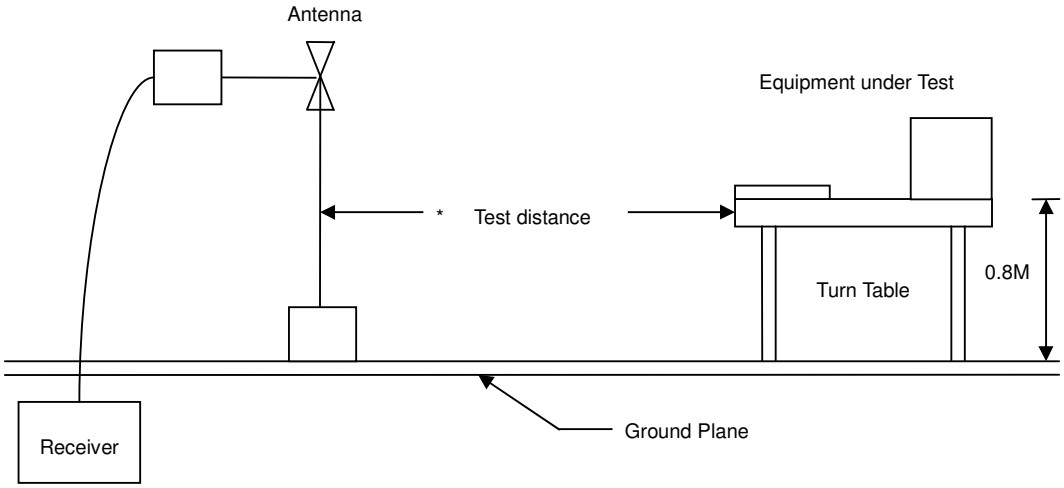
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

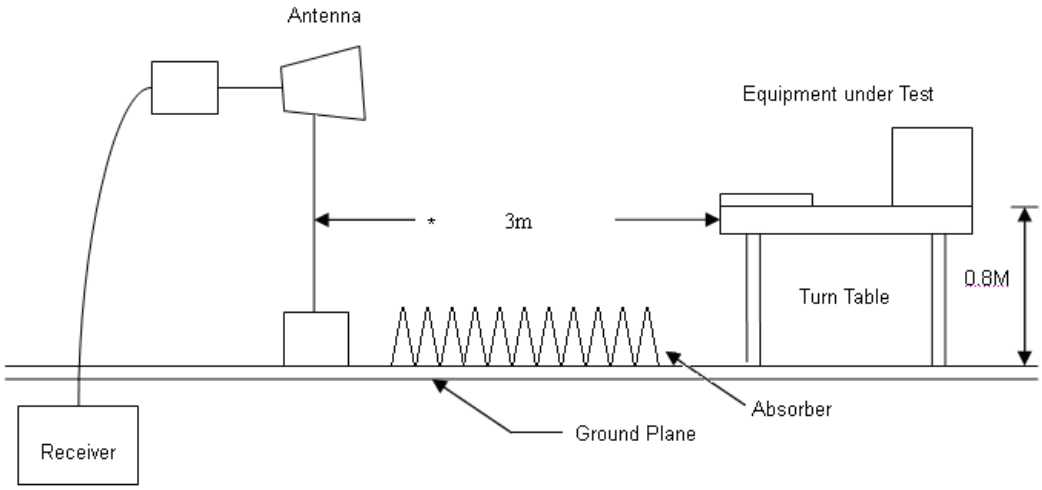
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.3 Typical Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



5.4 Measurement Equipment

Instrument	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
EMI Test Receiver	R&S	ESCI	100563	2014.02.10	2015.02.09
H64 Preamplifier	HP	8447F	3113A05582	2014.03.24	2015.03.23
Preamplifier	Agilent	8449B	3008A02342	2014.03.24	2015.03.23
Ultra Broadband Antenna	R&S	HL562	100362	2014.08.05	2015.08.04
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2014.05.24	2015.05.23
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	9170-348	2014.11.04	2015.11.03
Spectrum Analyzer	FSP40	R&S	100324	2014.03.23	2015.03.24
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2014.03.31	2015.03.30

5.5 Test Result and Data

The 9kHz-30MHz spurious emission is under limit 20dB more.

5.5.1 Test Result and Data of Transmitter

Under 1G:

Engineer :Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Normal Link**

Frequency (MHz)	AntPol. H/V	Correct Factor (dB)	Reading level (dBuV)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector mode (PK/QP)
252.6326	H	-8.74	44.25	35.51	46	-10.49	QP
357.461	H	-4.41	48.41	44.00	46	-2.00	QP
377.5232	H	-4.95	47.05	42.10	46	-3.90	QP
480.7941	H	-1.1	40.14	41.24	46	-5.86	QP
602.6456	H	-1.05	39.86	38.81	46	-7.19	QP
962.321	H	-3.17	37.35	40.52	54	-13.48	QP
						0	
56.5965	V	-16.94	51.92	34.98	40	-5.02	QP
251.7164	V	-8.74	47.15	38.41	46	-7.59	QP
361.841	V	-4.41	46.27	41.86	46	-4.14	QP
482.0361	V	-1.1	43.26	42.16	46	-3.84	QP
499.794	V	-2.2	41.08	38.88	46	-7.12	QP
603.4535	V	-1.05	43.26	42.21	46	-3.79	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Above 1G:

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11b (2412MHz)**

					(dBuV/m	(dBuV/m)				
4824.31	V	47.34	36.53	6.53	53.87	43.06	74.00	54.00	-10.94	average
7236.44	V	6.57	27.86	15.48	22.05	43.34	74.00	54.00	-10.66	average
4824.33	H	46.58	35.35	6.53	53.11	41.88	74.00	54.00	-12.12	average
7236.12	H	37.71	25.95	15.48	53.19	41.43	74.00	54.00	-12.57	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11b (2437MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4874.26	V	43.53	35.99	6.85	50.38	42.84	74.00	54.00	-11.16	average
7314.32	V	44.52	25.76	15.52	60.04	41.28	74.00	54.00	-12.72	average
4875.21	H	45.71	35.51	6.85	52.56	42.36	74.00	54.00	-11.64	average
7314.06	H	32.75	24.45	15.48	48.23	39.93	74.00	54.00	-14.07	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11b (2462MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4925.46	V	47.71	36.53	6.99	54.70	43.52	74.00	54.00	-10.48	average
7383.54	V	37.81	29.33	15.60	53.41	44.93	74.00	54.00	-9.07	average
4925.67	H	43.85	34.53	6.84	50.69	41.37	74.00	54.00	-12.63	average
7384.97	H	38.84	24.61	15.60	54.44	40.21	74.00	54.00	-13.79	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11g (2412MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4824.36	V	47.63	36.55	6.53	54.16	43.08	74.00	54.00	-10.92	average
7234.27	V	42.38	30.47	15.48	57.86	45.95	74.00	54.00	-8.05	average
4827.65	H	44.52	36.61	6.53	51.05	43.14	74.00	54.00	-10.86	average
7235.79	H	41.74	29.80	15.48	57.22	45.28	74.00	54.00	-8.72	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11g (2437MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4877.31	V	45.85	36.84	6.85	52.70	43.69	74.00	54.00	-10.31	average
7317.54	V	37.65	28.33	15.52	53.17	43.85	74.00	54.00	-10.15	average
4875.65	H	44.72	36.75	6.85	51.57	43.60	74.00	54.00	-10.40	average
7317.95	H	36.54	28.83	15.52	52.06	44.35	74.00	54.00	-9.65	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11g (2462MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4924.15	V	46.79	36.66	6.99	53.78	43.65	74.00	54.00	-10.35	average
7383.46	V	36.14	30.94	15.60	51.74	46.54	74.00	54.00	-7.46	average
4925.97	H	46.17	35.84	6.99	53.16	42.83	74.00	54.00	-11.17	average
7387.61	H	37.91	28.48	15.60	53.51	44.08	74.00	54.00	-9.92	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11n (20MHz) (2412MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4827.11	V	48.52	38.10	6.53	55.05	44.63	74.00	54.00	-9.37	average
7234.18	V	39.72	27.45	15.48	55.20	42.93	74.00	54.00	-11.07	average
4826.54	H	47.08	36.11	6.53	53.61	42.64	74.00	54.00	-11.36	average
7236.46	H	38.56	26.85	15.48	54.04	42.33	74.00	54.00	-11.67	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11n (20MHz) (2437MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4775.01	V	46.76	37.79	6.85	53.61	44.64	74.00	54.00	-9.36	average
7318.17	V	37.11	29.51	15.52	52.63	45.03	74.00	54.00	-8.97	average
4876.46	H	46.14	37.43	6.85	52.99	44.28	74.00	54.00	-9.72	average
7312.31	H	37.84	27.59	15.52	53.36	43.11	74.00	54.00	-10.89	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11n (20MHz) (2462MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4926.24	V	46.74	37.43	6.99	53.73	44.42	74.00	54.00	-9.58	average
7387.31	V	40.65	27.35	15.61	56.26	42.96	74.00	54.00	-11.04	average
4926.31	H	45.64	36.59	6.99	52.63	43.58	74.00	54.00	-10.42	average
7385.45	H	38.45	26.46	15.61	54.06	42.07	74.00	54.00	-11.93	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11n (40MHz) (2422MHz)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m)	AV (dBuV/m)				
4844.03	V	45.12	34.99	6.61	51.73	41.60	74.00	54.00	-12.40	average
7267.34	V	37.39	25.89	15.50	52.89	41.39	74.00	54.00	-12.61	average
4847.31	H	42.16	34.20	6.61	48.77	40.81	74.00	54.00	-13.19	average
7266.21	H	33.28	25.77	15.50	48.78	41.27	74.00	54.00	-12.73	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11n (40MHz) (2437MHz)**

(MHz)	H/V	Reading (dBuV)	Reading (dBuV)	CF (dB)	Peak (dBuV/m	AV (dBuV/m)	Limit (dBuV/m	Limit (dBuV/m)	(dB)	Mode (PK/QP)
4875.23	V	47.61	37.51	6.85	54.46	44.36	74.00	54.00	-9.64	average
7312.12	V	38.35	25.17	15.52	53.87	40.69	74.00	54.00	-13.31	average
4876.64	H	45.68	35.51	6.85	52.53	42.36	74.00	54.00	-11.64	average
7311.25	H	37.44	25.36	15.52	52.96	40.88	74.00	54.00	-13.12	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Engineer : Matt	
Site : EMC Lab AC 102	**Time : 2014-12-15**
Limit : FCC_15_03M_PK	**Margin : 6**
EUT : IP CAMERA	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Transmit by 802.11n (40MHz) (2452MH)**

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m	AV Limit (dBuV/m)	Safe Margin (dB)	Detector Mode (PK/QP)
					Peak (dBuV/m	AV (dBuV/m)				
4907.24	V	46.78	36.67	6.92	53.70	43.59	74.00	54.00	-10.41	average
7357.34	V	36.61	27.60	15.57	52.18	43.17	74.00	54.00	-10.83	average
4906.21	H	46.37	35.56	6.92	53.29	42.48	74.00	54.00	-11.52	average
7355.10	H	36.49	25.89	15.57	52.06	41.46	74.00	54.00	-12.54	average

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

6. Occupied Bandwidth

6.1 Test Limit

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725- 5850 MHz band. The minimum 6 dB bandwidth shall be at least 500 kHz.

6.2 Test Procedures

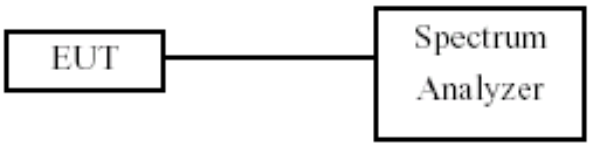
a. The transmitter output was connected to the spectrum analyzer.

b. Set RBW of spectrum analyzer to 1~5% of the emission bandwidth and VBW ≥ 3x RBW.

c. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

d. The 6dB Bandwidth was measured and recorded.

6.3 Test Setup Layout



6.4 Measurement Equipment

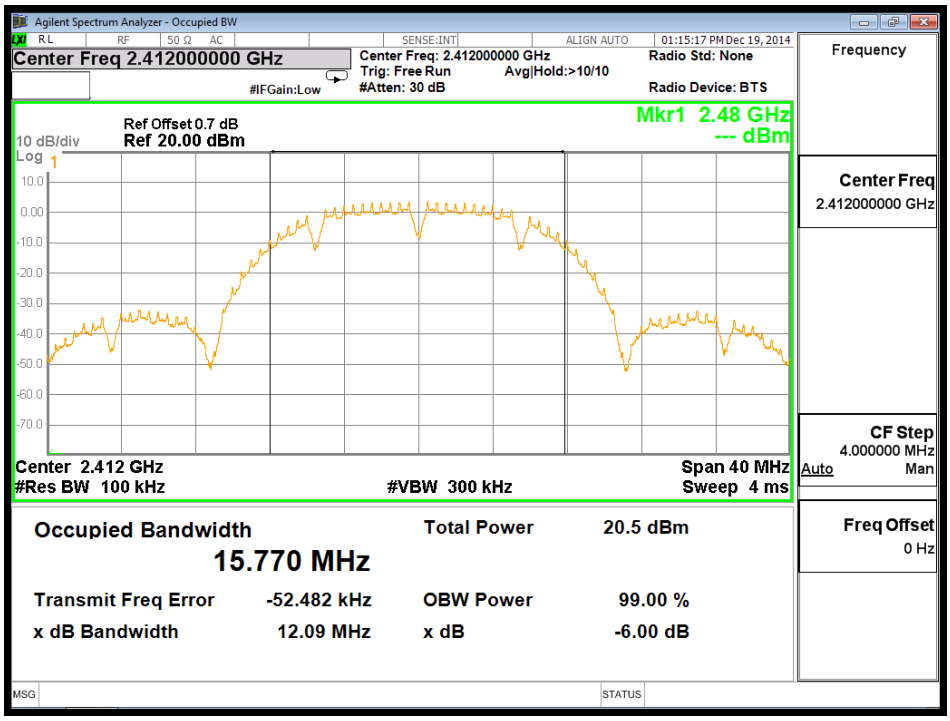
Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28

6.5 Test Result and Data

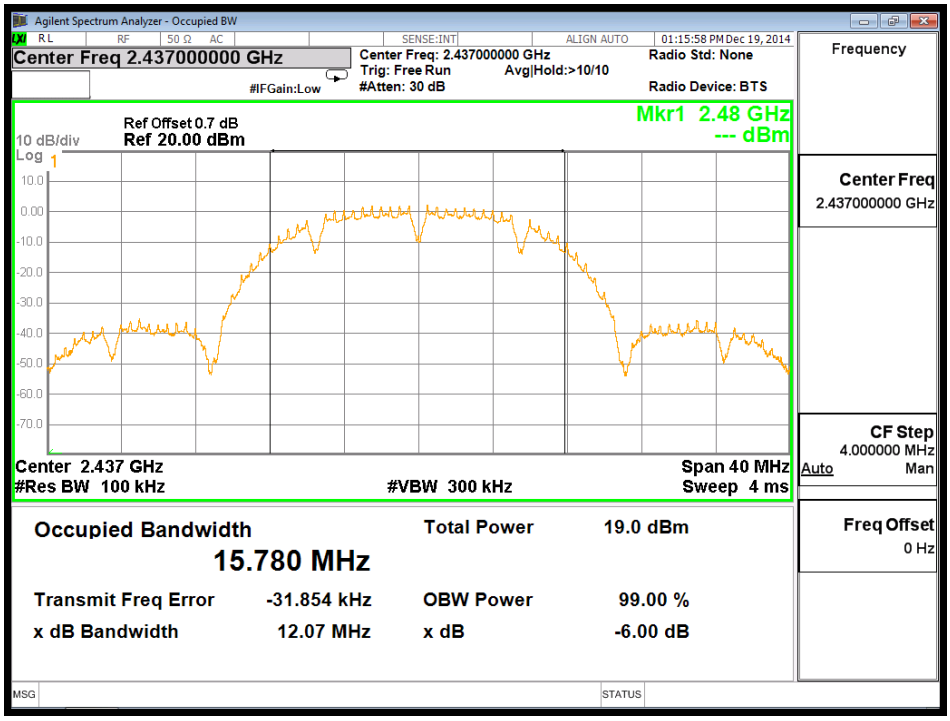
Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11b
Test Date	2014-12-15

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	12090	500	Pass
06	2437	12070	500	Pass
11	2462	12080	500	Pass

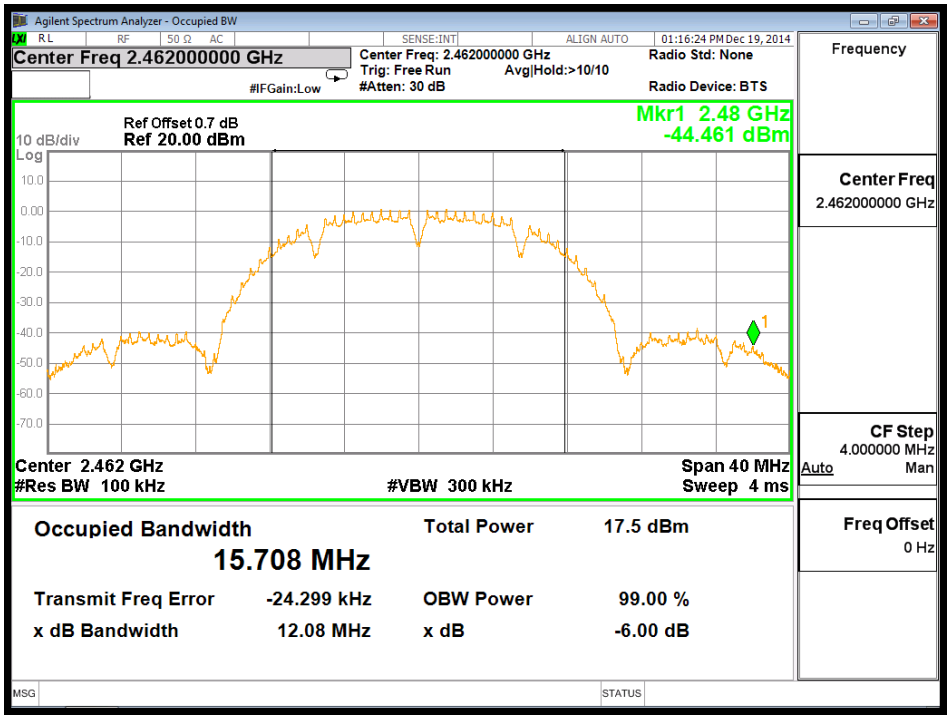
Channel 01 (2412MHz)



Channel 06 (2437MHz)



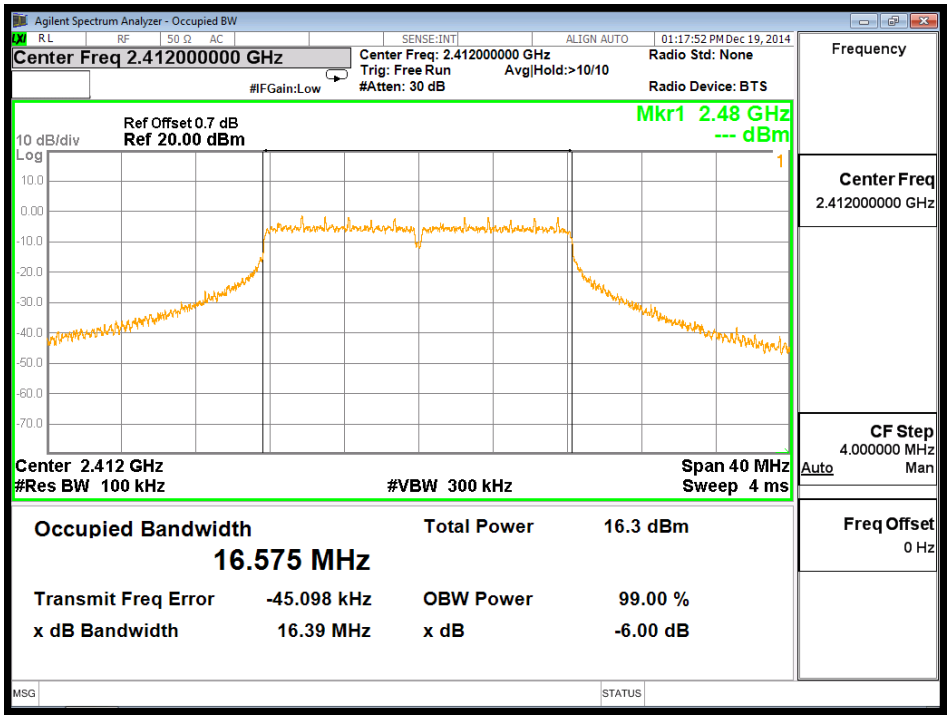
Channel11(2462MHz)



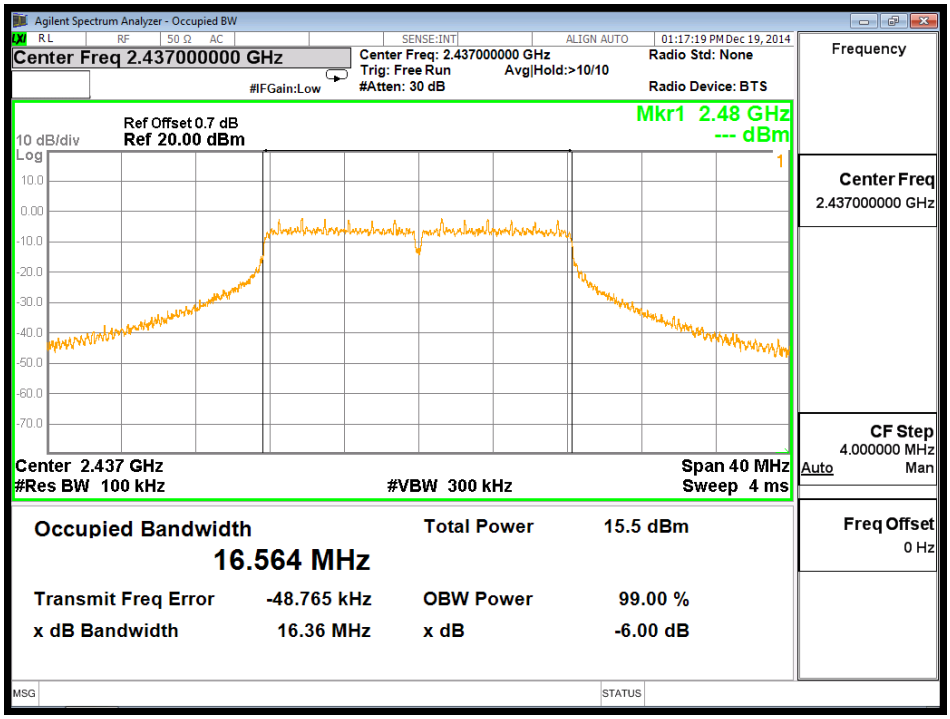
Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11g
Test Date	2014-12-15

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16390	500	Pass
06	2437	16360	500	Pass
11	2462	16360	500	Pass

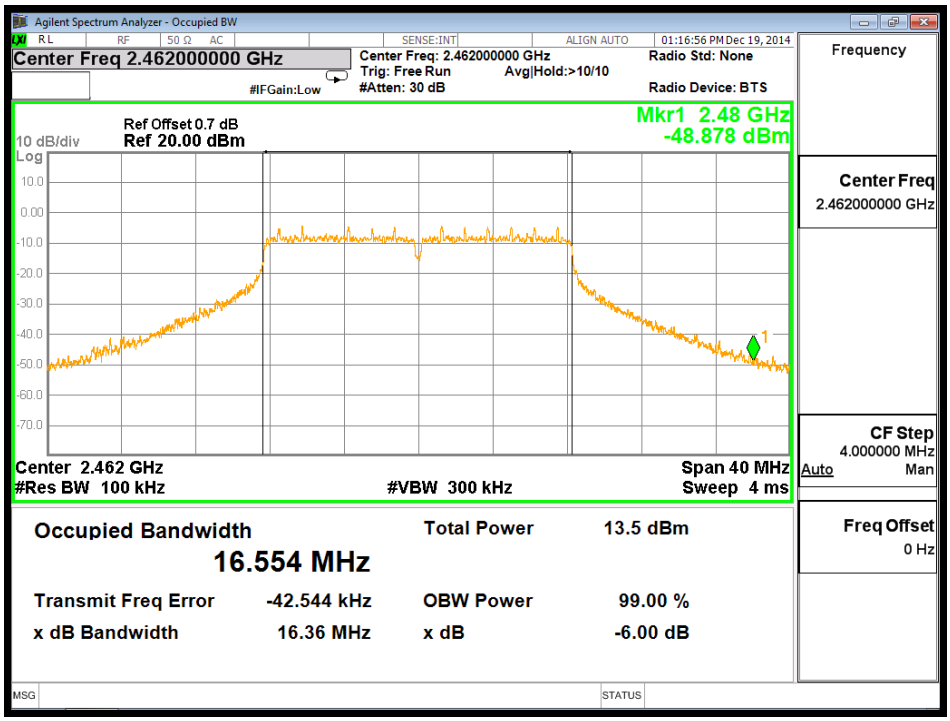
Channel 01 (2412MHz)



Channel 06 (2437MHz)



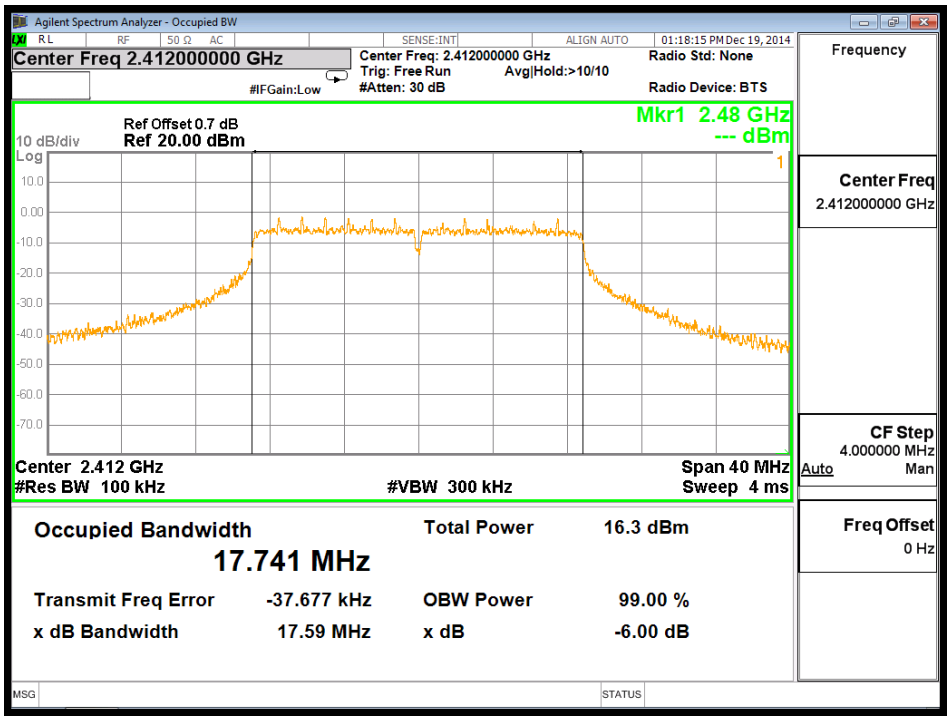
Channel 11 (2462MHz)



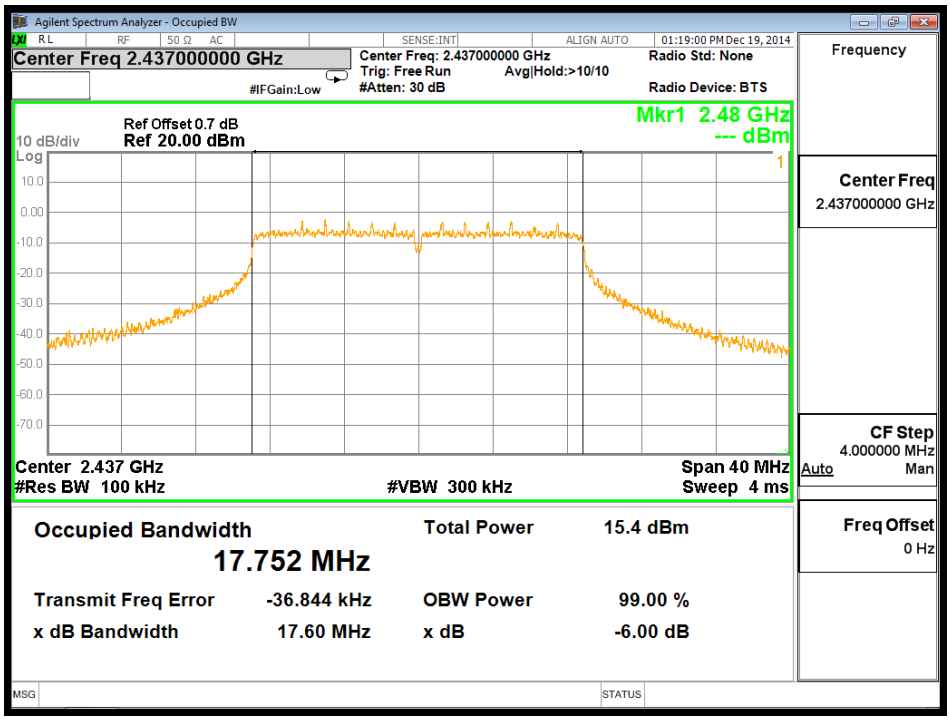
Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11n (20MHz)
Test Date	2014-12-15

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17590	500	Pass
06	2437	17600	500	Pass
11	2462	17590	500	Pass

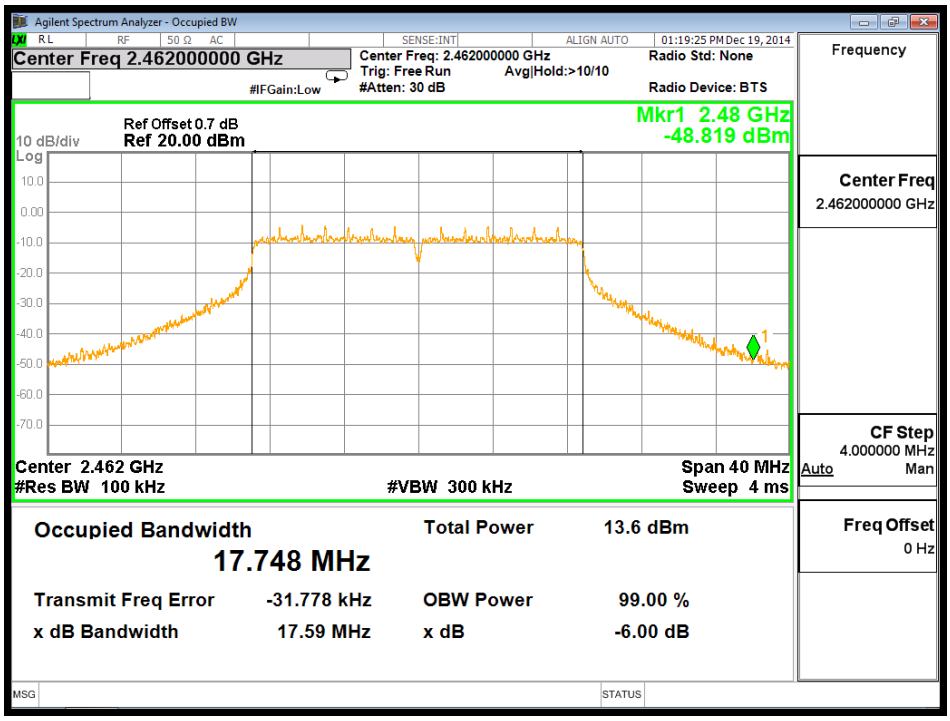
Channel 01 (2412MHz)



Channel 06 (2437MHz)



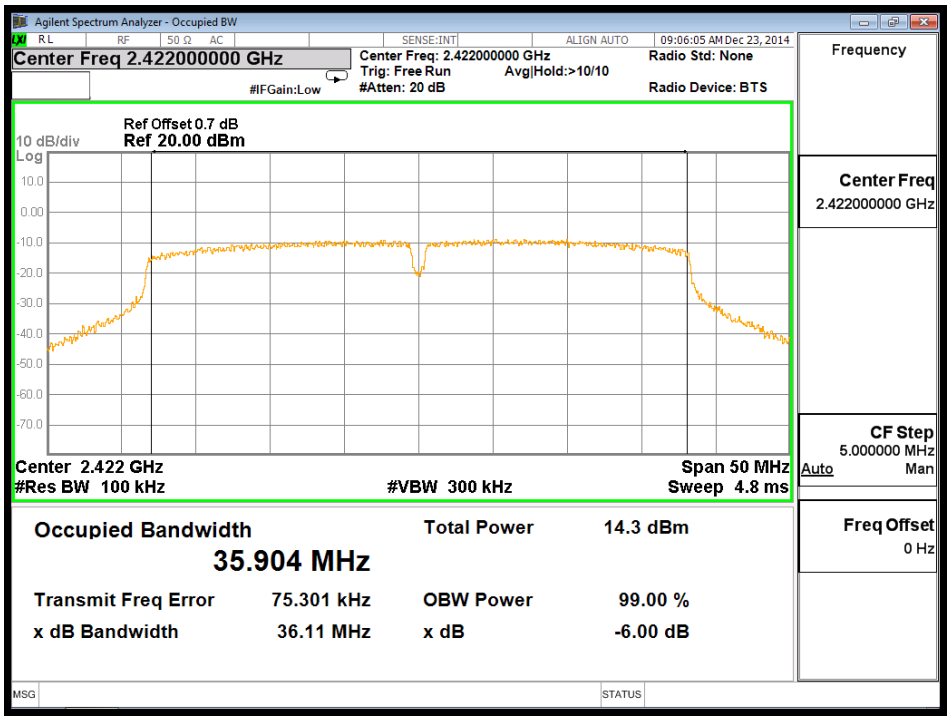
Channel 11 (2462MHz)



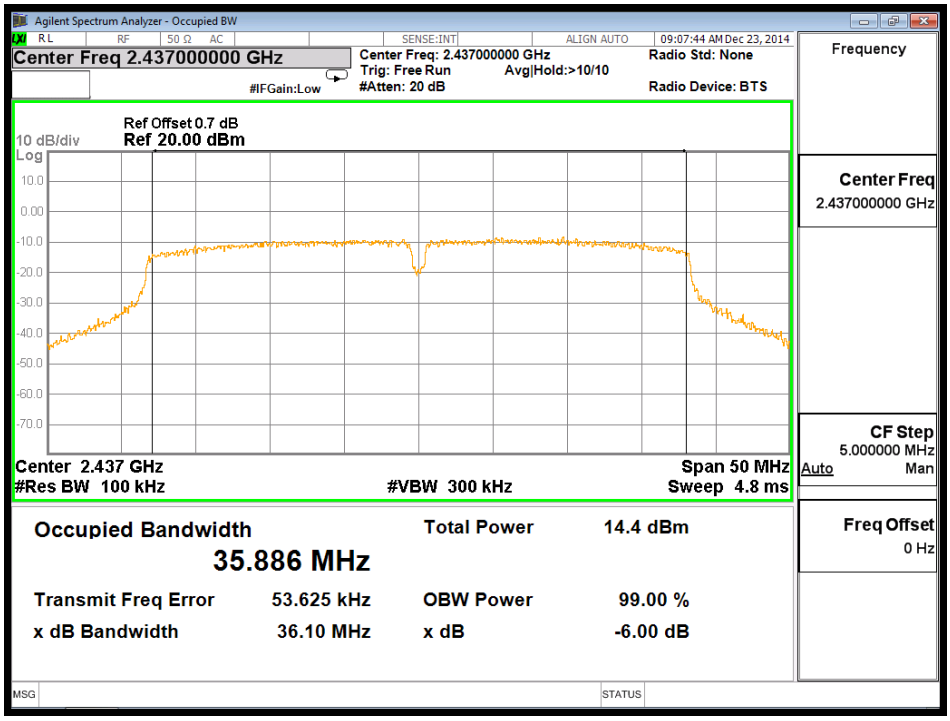
Test Item	Occupied Bandwidth
Test Mode	Transmit by 802.11n (40MHz)
Test Date	2014-12-15

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36110	500	Pass
06	2437	36100	500	Pass
09	2452	36070	500	Pass

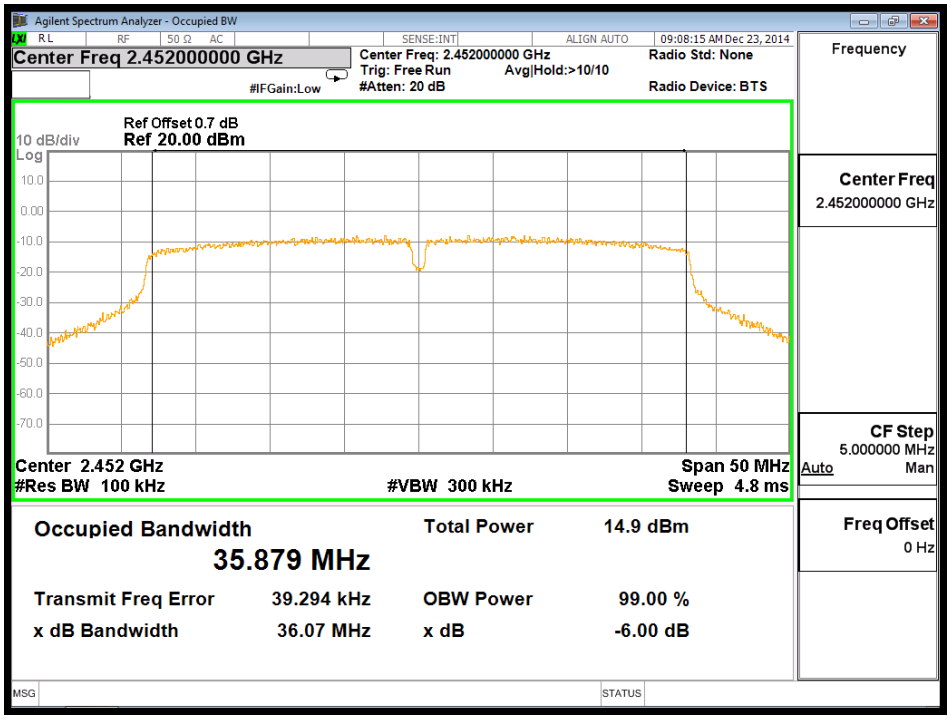
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 9 (2452MHz)



7. Maximum Peak Output Power

7.1 Test Limit

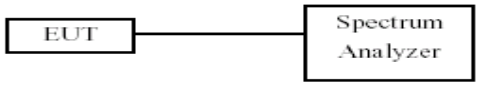
The maximum peak power shall be less 1Watt (30dBm).

The conducted output power limits specified in §15.247(b) are based on the use of transmit antennae with directional gains that do not exceed 6 dBi. If transmit antennae with an effective directional gain greater than 6 dBi are used, then the conducted output power from the EUT shall be reduced as specified in §15.247(b) and (c).

7.2 Test Procedure

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a spectrum analyzer. Transmitter output power was read from the spectrum analyzer in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the spectrum analyzer reading.

7.3 Test Setup Layout



7.4 Measurement Equipment

Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.28
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2014.03.31	2015.03.30

7.5 Test Result and Data

Test Item	Maximum Peak Output Power
Test Mode	Transmit by 802.11b
Duty cycle	99%
Test Date	2014-12-31

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit (dBm)	Result
		Peak		
01	2412	16.2	30	Pass
06	2437	15.49	30	Pass
11	2462	13.17	30	Pass

Test Item	Maximum Peak Output Power
Test Mode	Transmit by 802.11g
Duty cycle	99%
Test Date	2014-12-31

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit (dBm)	Result
		Peak		
01	2412	14.23	30	Pass
06	2437	13.83	30	Pass
11	2462	11.91	30	Pass

Test Item	Maximum Peak Output Power
Test Mode	Transmit by 802.11n (20MHz)
Duty cycle	99%
Test Date	2014-12-31

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit (dBm)	Result
		Peak		
01	2412	14.83	30	Pass
06	2437	13.82	30	Pass
11	2462	11.87	30	Pass

Test Item	Maximum Peak Output Power
Test Mode	Transmit by 802.11n (40MHz)
Duty cycle	99%
Test Date	2014-12-31

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit (dBm)	Result
		Peak		
03	2422	12.86	30	Pass
06	2437	12.91	30	Pass
09	2452	12.78	30	Pass

8. Band Edges Measurement

8.1 Test Limit

Below –20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

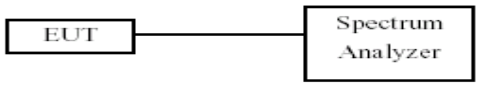
8.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer via a low lose cable.

b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.

c. The band edges was measured and recorded.

8.3 Test Setup Layout



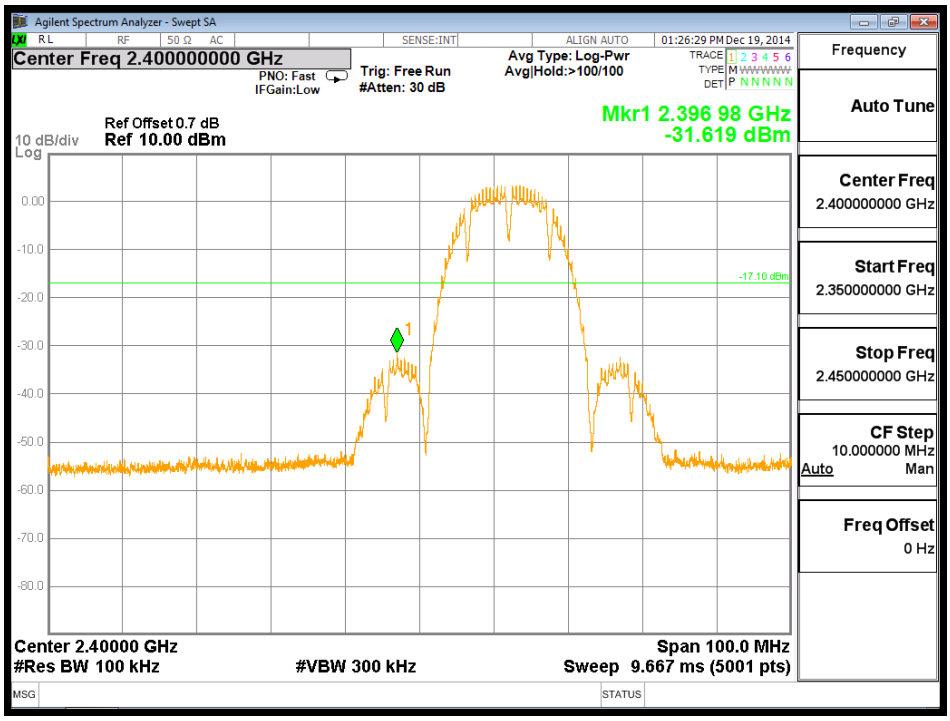
8.4 Measurement Equipment

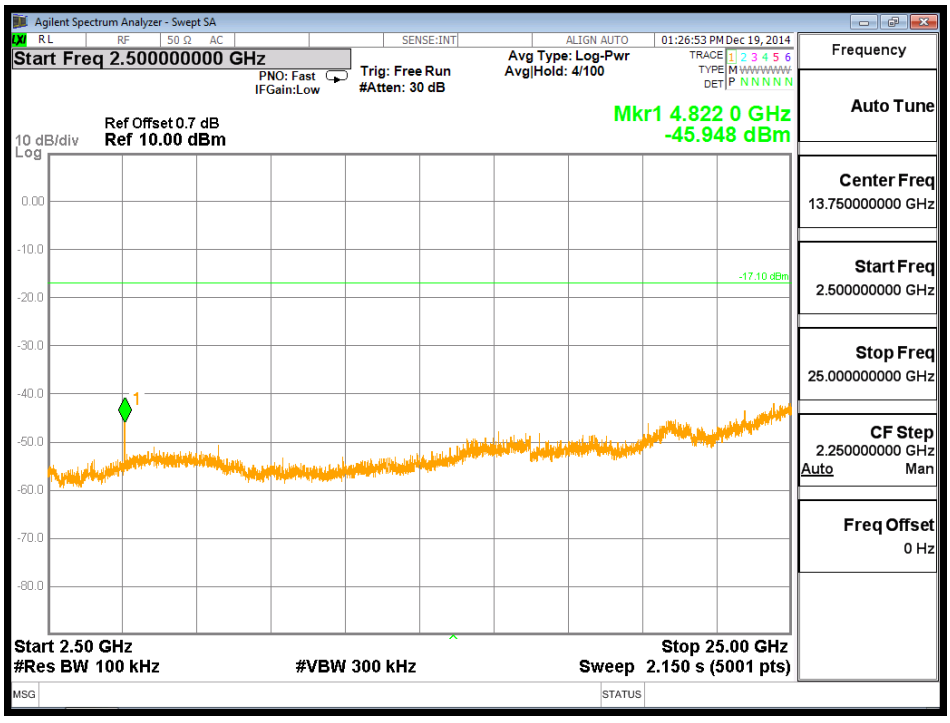
Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.29

8.5 Test Result and Data

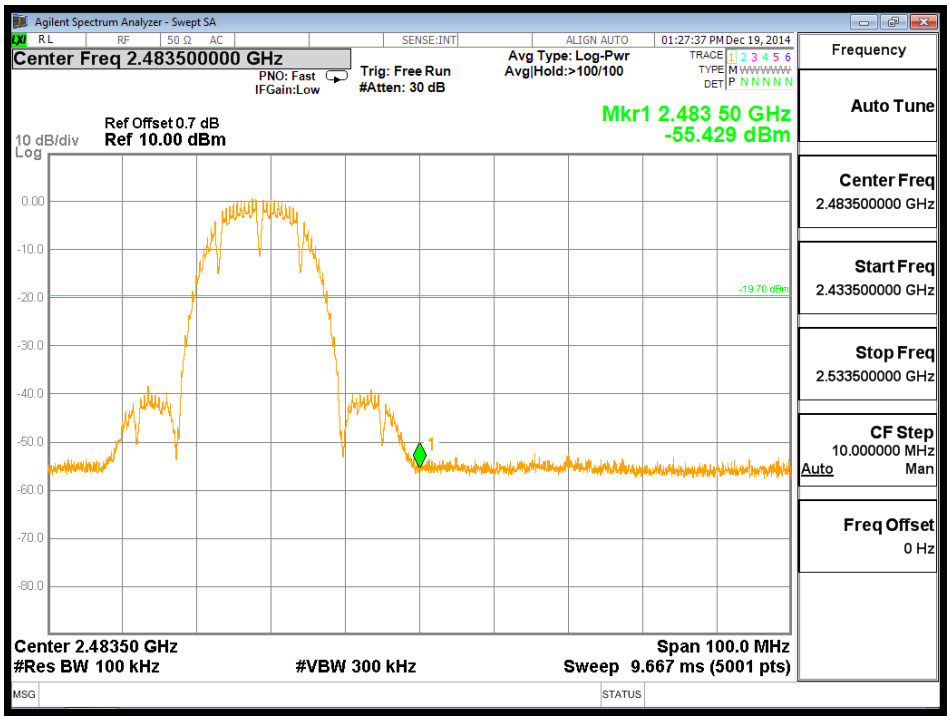
Modulation Standard	Channel	Frequency (MHz)	maximum value in frequency (MHz)	maximum value(dBm)
802.11b	01	2412	2398.00	-15.73
	11	2462	2483.50	-38.67
802.11g	01	2412	2400.00	-24.04
	11	2462	2483.50	-30.73
802.11n HT20	01	2412	2400.00	-21.00
	11	2462	2483.50	-33.24
802.11n HT40	03	2422	2394.50	-28.50
	09	2452	2484.50	-30.42

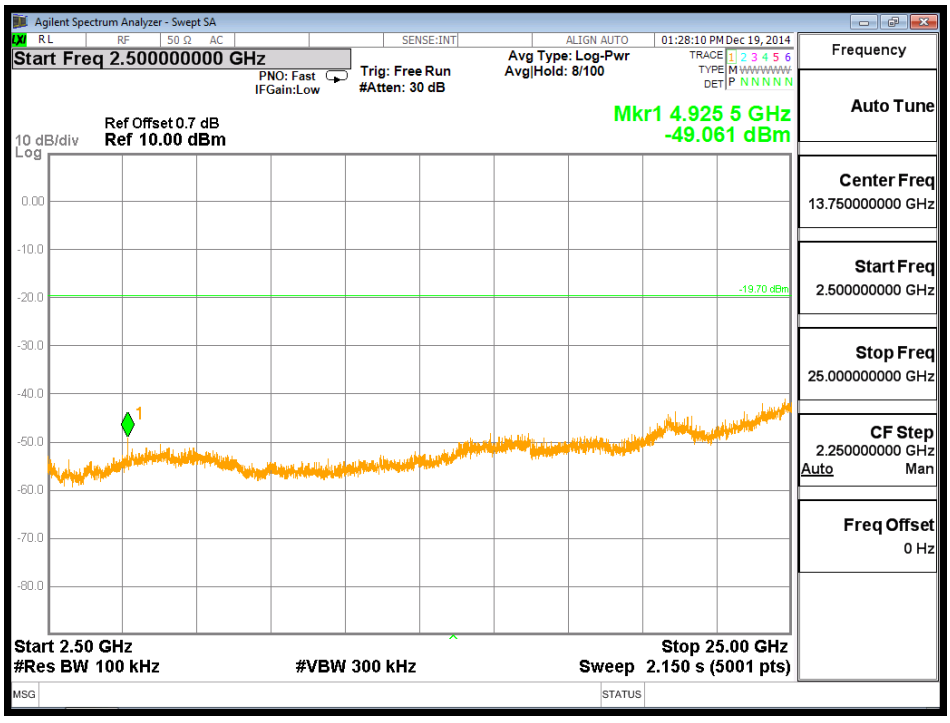
Transmit by 802.11b Channel 1



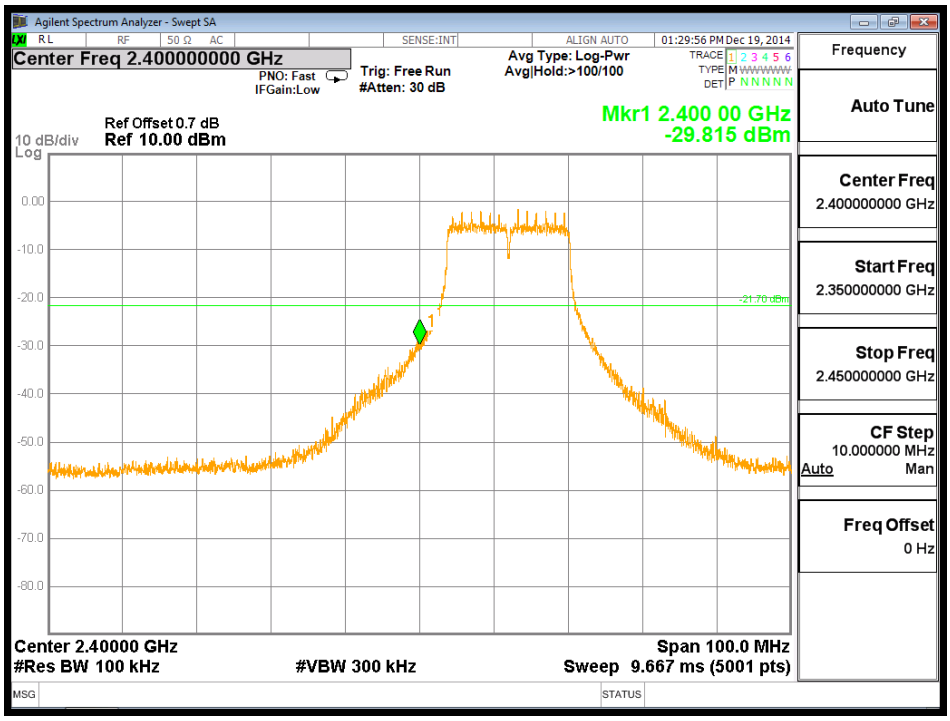


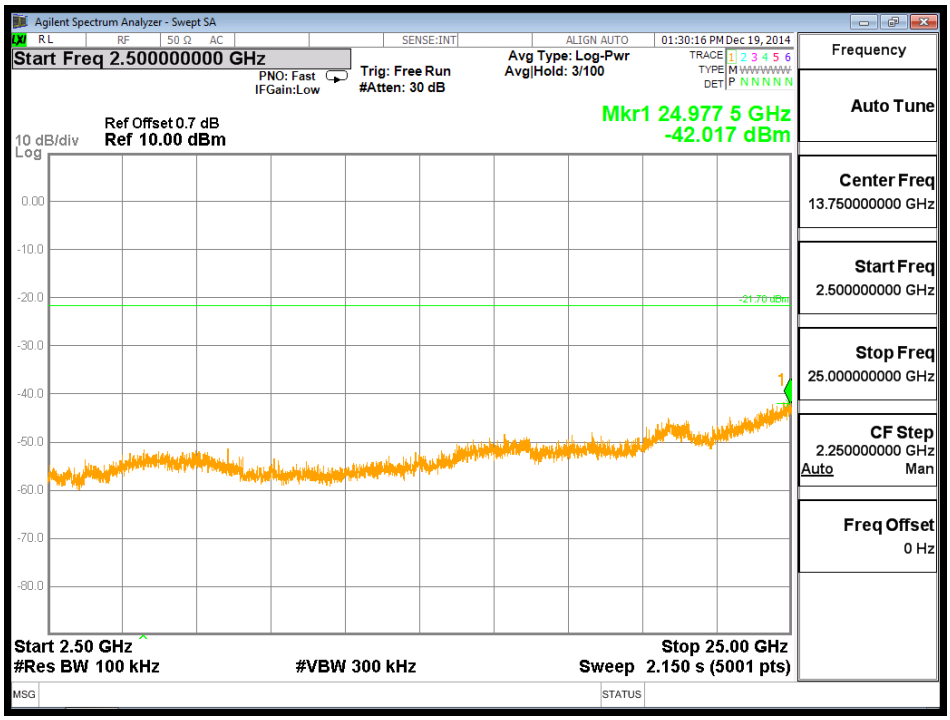
Transmit by 802.11b Channel 11



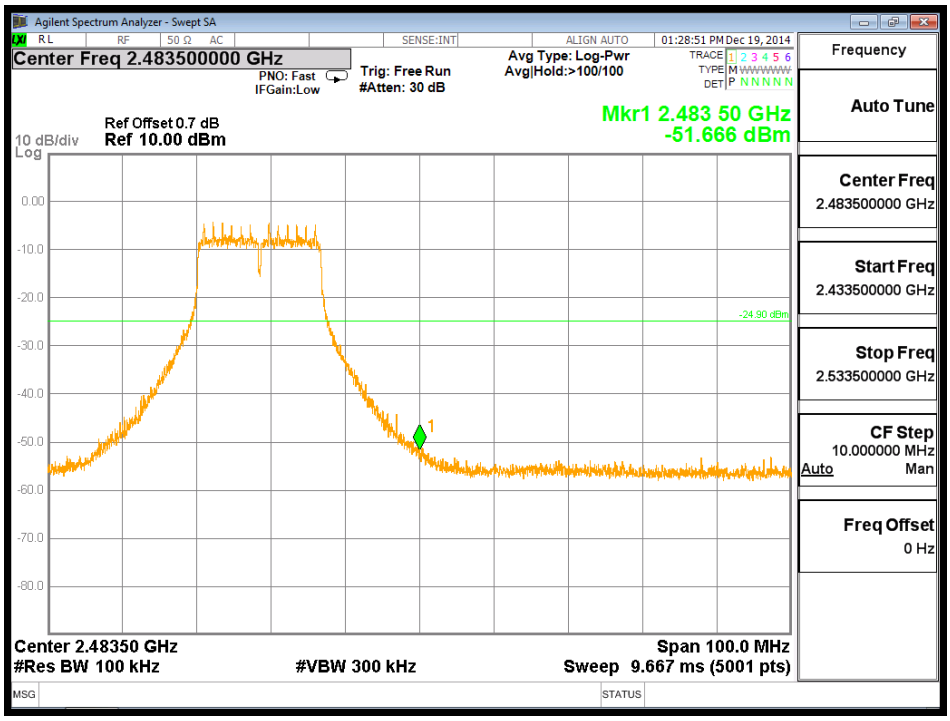


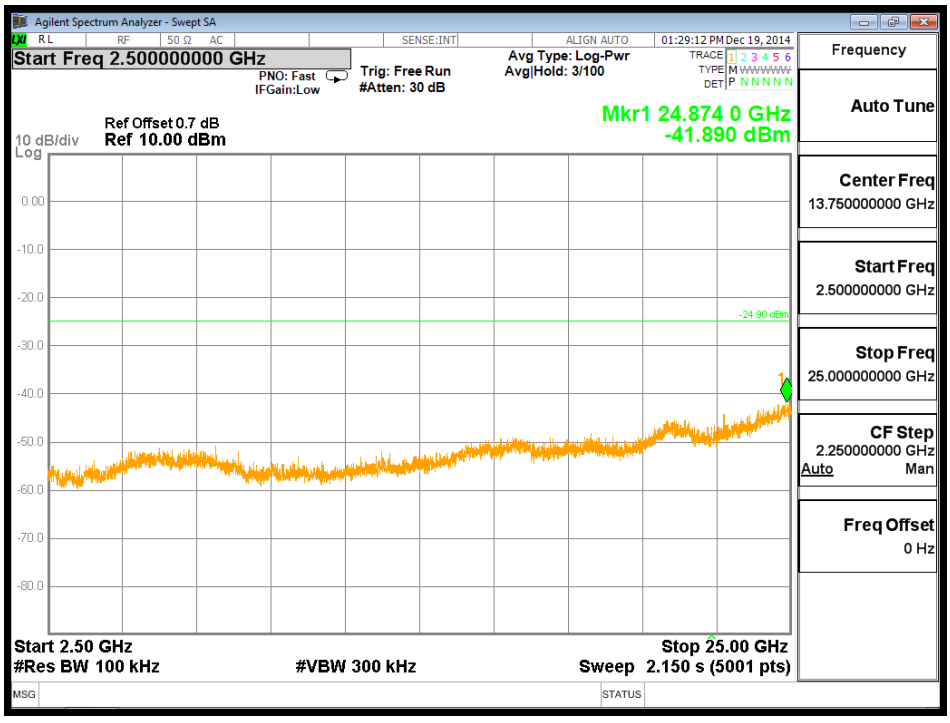
Transmit by 802.11g Channel 1



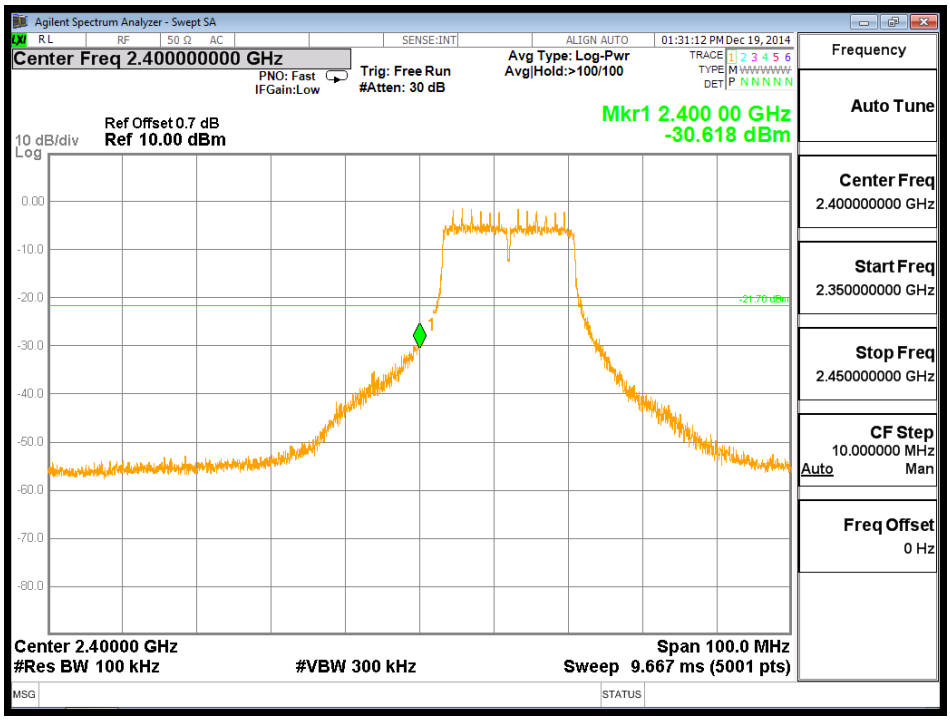


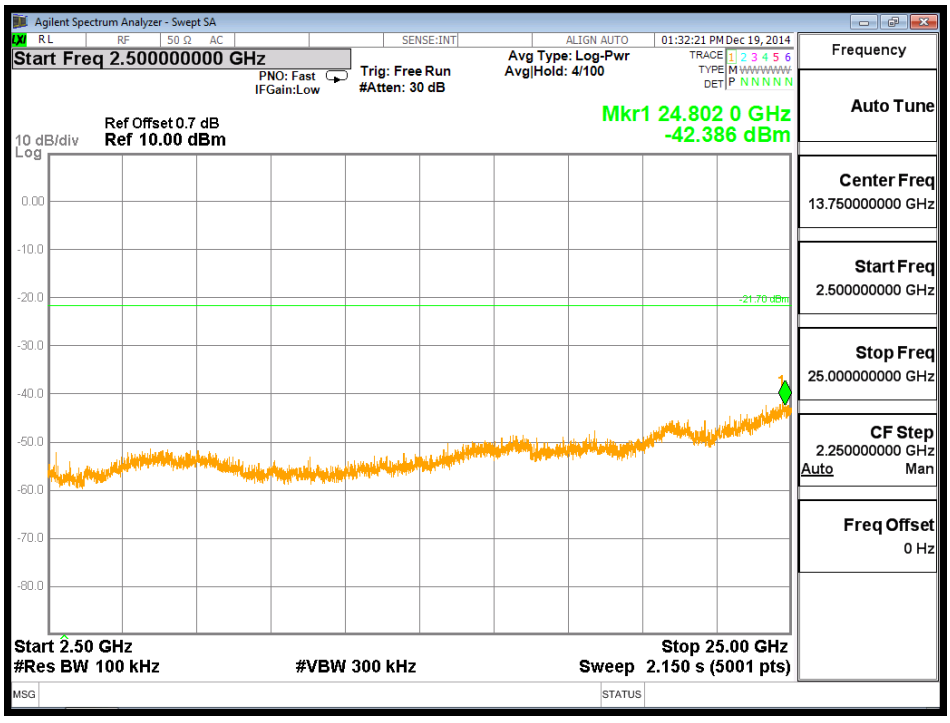
Transmit by 802.11g Channel 11



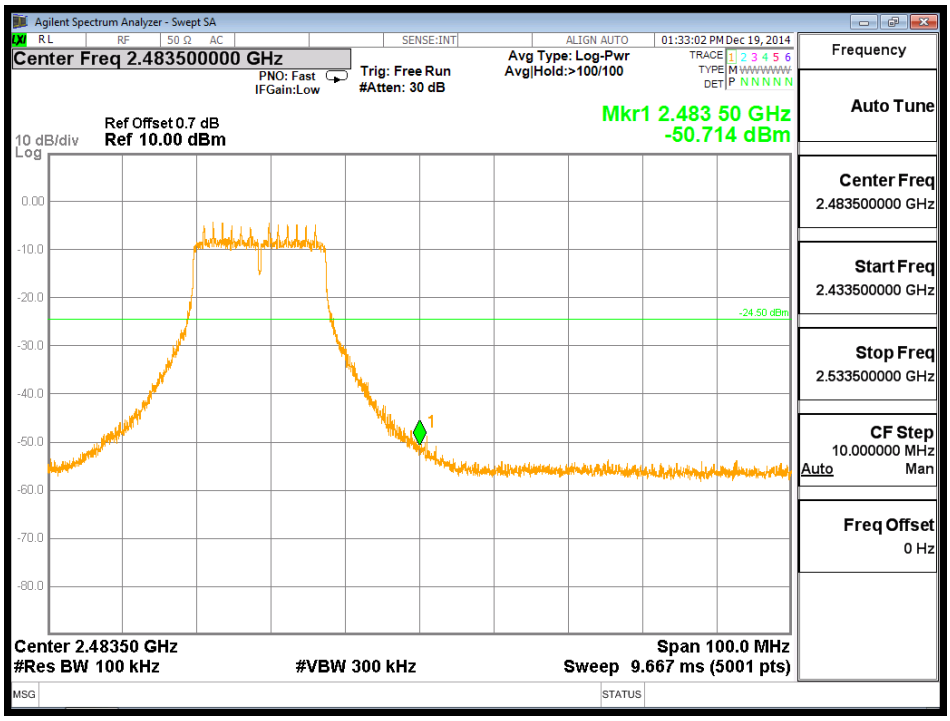


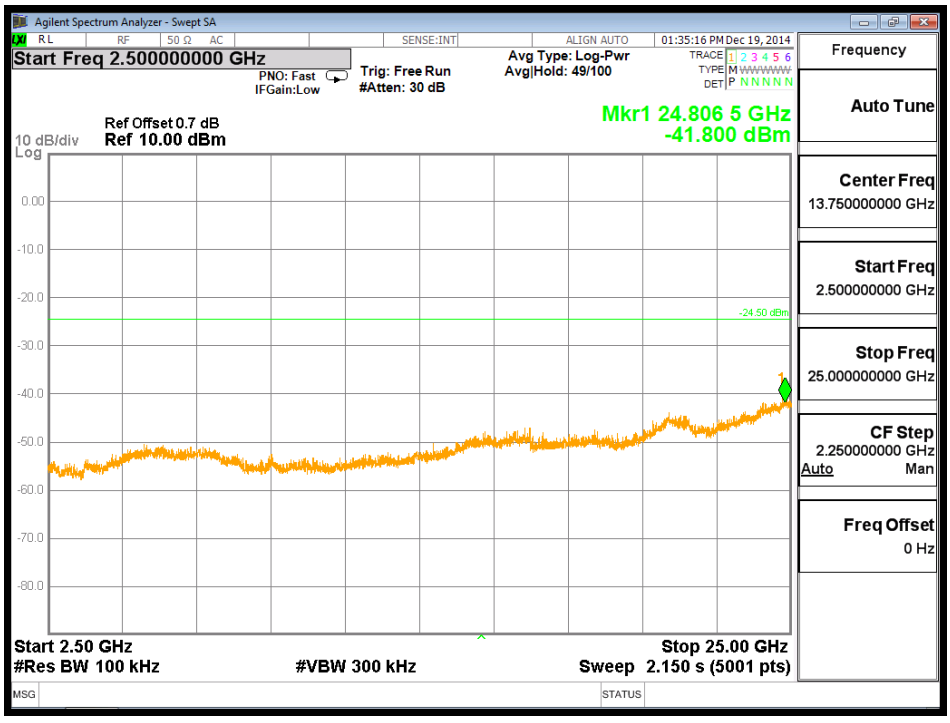
Transmit by 802.11n HT20 Channel 1



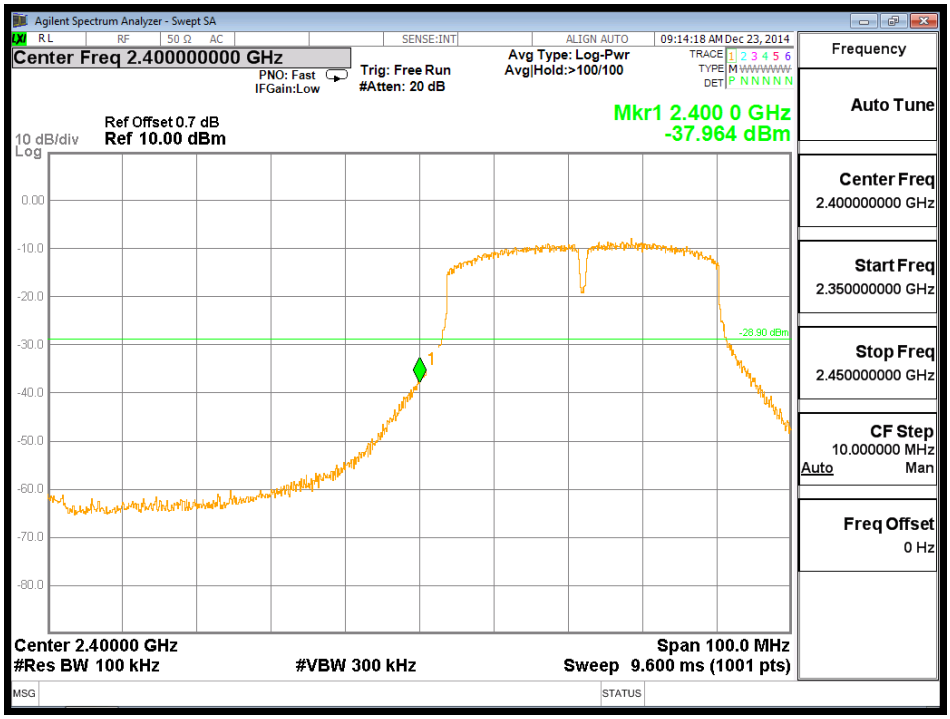


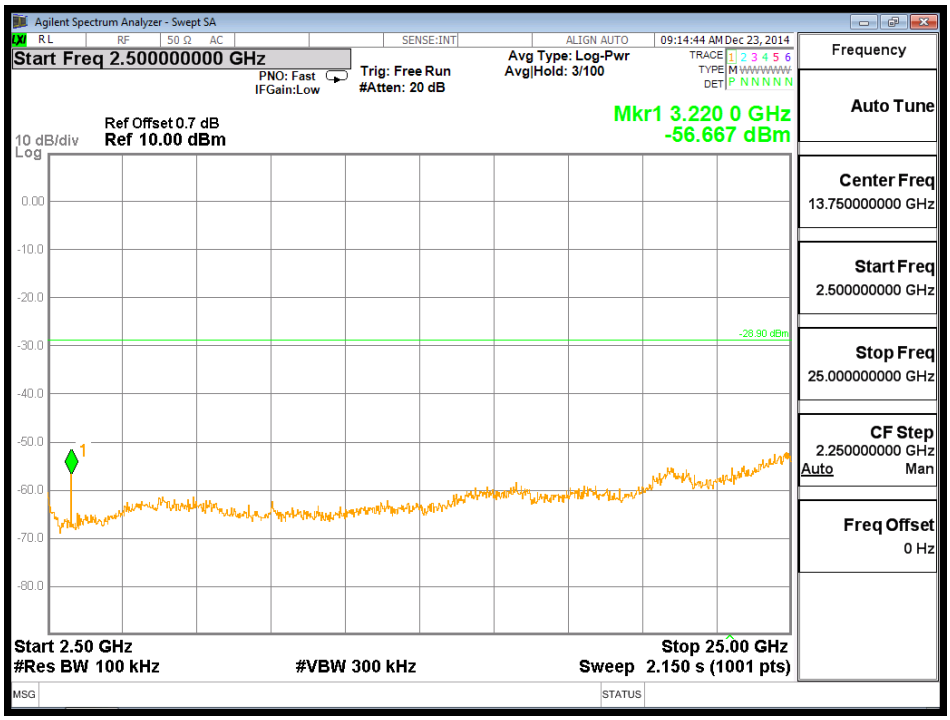
Transmit by 802.11n HT20 Channel 11



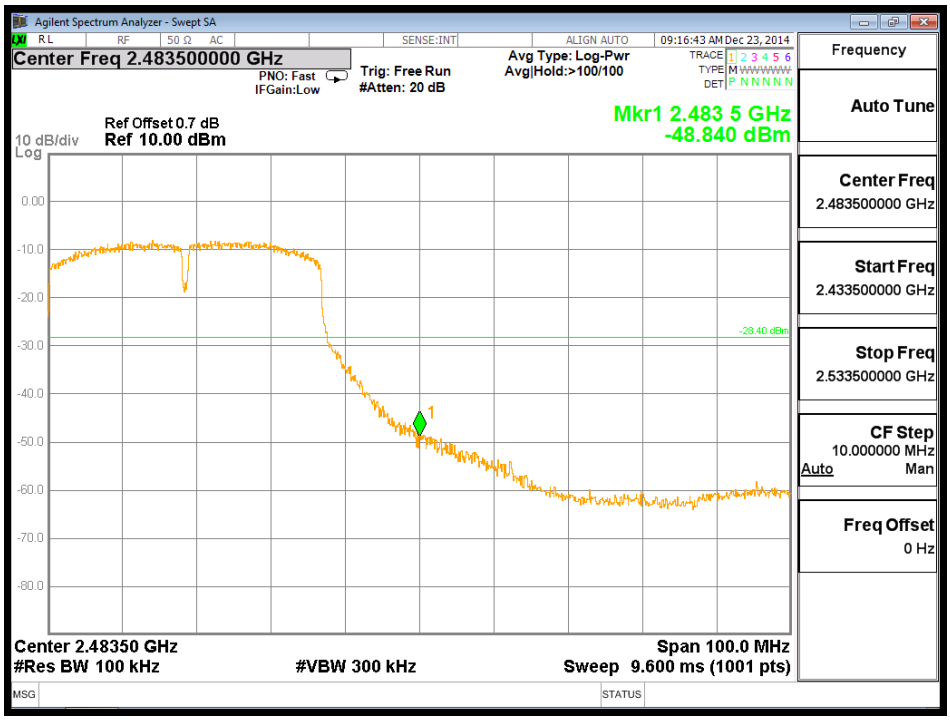


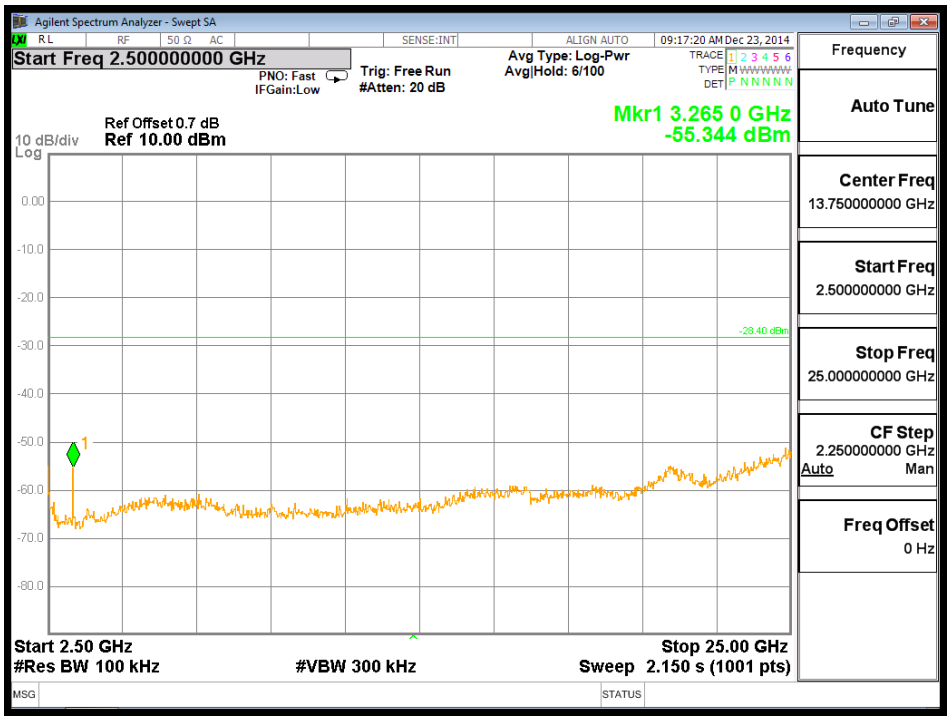
Transmit by 802.11n HT40 Channel 3





Transmit by 802.11n HT40 Channel 9





8.6 Restrict Band Emission Measurement Data

Test Date : 2014-12-15
Temperature : 24 ℃
Humidity : 52 %
Atmospheric Pressure : 1023 hPa

Modulation Standard: IEEE 802.11b

Channel 1										Fundamental Frequency: 2412 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (cm)
						Peak	Ave.			
2390.00	H	42.13	10.60	52.73	Peak	74	54	-21.27	348	200
2390.00	H	30.34	10.60	40.94	Ave	74	54	-13.06	348	200
2390.00	V	50.81	10.98	61.79	Peak	74	54	-12.21	360	100
2390.00	V	36.63	10.98	47.61	Ave	74	54	-6.39	360	100
Channel 11										Fundamental Frequency: 2462 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (cm)
						Peak	Ave.			
2483.50	H	41.85	10.78	52.63	Peak	74	54	-21.37	249	200
2483.50	H	31.98	10.78	42.76	Ave	74	54	-11.24	249	200
2483.50	V	48.41	11.02	59.43	Peak	74	54	-14.57	251	100
2483.50	V	37.10	11.02	48.12	Ave	74	54	-5.88	251	100

Modulation Standard: IEEE 802.11g

Channel 1										Fundamental Frequency: 2412 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (Cm)
						Peak	Ave.			
2390.00	H	48.68	10.54	59.22	Peak	74	54	-14.78	147	200
2390.00	H	34.88	10.54	45.42	Ave	74	54	-8.58	147	200
2390.00	V	55.06	10.98	66.04	Peak	74	54	-7.96	126	100
2390.00	V	40.03	10.98	51.01	Ave	74	54	-2.99	126	100
Channel 11										Fundamental Frequency: 2462 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (Cm)
						Peak	Ave.			
2483.50	H	47.36	10.72	58.08	Peak	74	54	-15.92	360	200
2483.50	H	33.08	10.72	43.80	Ave	74	54	-10.20	263	200
2483.50	V	57.94	11.02	68.96	Peak	74	54	-5.04	100	100
2483.50	V	40.49	11.02	51.51	Ave	74	54	-2.49	100	100

Modulation Standard: IEEE 802.11n HT20

Channel 1										Fundamental Frequency: 2412 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (cm)
						Peak	Ave.			
2390.00	H	56.81	10.55	67.36	Peak	74	54	-6.64	75	200
2390.00	H	40.69	10.55	51.24	Ave	74	54	-2.76	75	200
2390.00	V	52.31	10.99	63.30	Peak	74	54	-10.70	159	100
2390.00	V	36.55	10.99	47.54	Ave	74	54	-6.46	159	100
Channel 11										Fundamental Frequency: 2462 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (cm)
						Peak	Ave.			
2483.50	H	43.28	10.71	53.99	Peak	74	54	-20.01	327	200
2483.50	H	31.6	10.71	42.31	Ave	74	54	-11.69	327	200
2483.50	V	53.96	11.01	64.97	Peak	74	54	-9.03	320	100
2483.50	V	38.84	11.01	49.85	Ave	74	54	-4.15	320	100

Modulation Standard: IEEE 802.11n HT40

Channel 3										Fundamental Frequency: 2422 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (cm)
						Peak	Ave.			
2390.00	H	46.33	10.53	56.86	Peak	74	54	-17.14	76	200
2390.00	H	33.56	10.53	44.09	Ave	74	54	-9.91	76	200
2390.00	V	56.63	10.97	67.60	Peak	74	54	-6.40	63	100
2390.00	V	41.51	10.97	52.48	Ave	74	54	-1.52	63	100
Channel 9										Fundamental Frequency: 2452 MHz
Frequency (MHz)	Ant-Pol H/V	Meter Reading	Corrected Factor	Result (dBuV/m)	Remark	Limit@3m (dBuV/m)		Margin (dB)	Table (Deg.)	Ant High (cm)
						Peak	Ave.			
2483.50	H	45.31	10.7	56.01	Peak	74	54	-17.99	106	200
2483.50	H	31.76	10.7	42.46	Ave	74	54	-11.54	106	200
2483.50	V	53.64	11.01	64.65	Peak	74	54	-9.35	216	100
2483.50	V	36.74	11.01	47.75	Ave	74	54	-6.25	216	100

Notes:1. Result = Meter Reading + Factor

2. Factor = Antenna Factor + Cable Loss – Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz.

9. Power Spectral Density

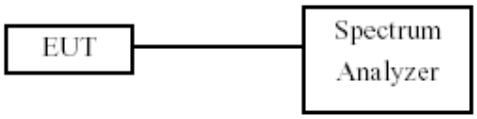
9.1 Test Limit

The Maximum of Power Spectral Density Measurement is 8dBm.

9.2 Test Procedure

a. The transmitter output was connected to spectrum analyzer.
b. The spectrum analyzer's resolution bandwidth were set at 3KHz RBW and 10KHz VBW as that of the fundamental frequency. Set the sweep time=auto couple.
c. The power spectral density was measured and recorded.

9.3 Test Setup Layout



9.4 Measurement Equipment

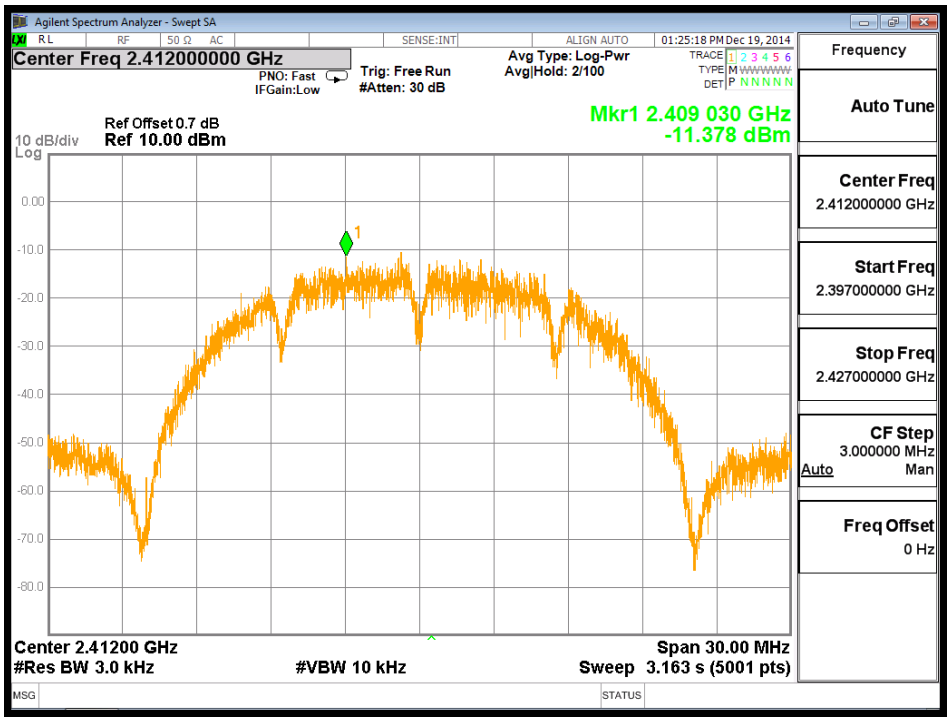
Instrument/Ancillary	Model No.	Manufacturer	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	N9010A	Agilent	MY51350515	2014.09.29	2015.09.29

9.5 Test Result and Data

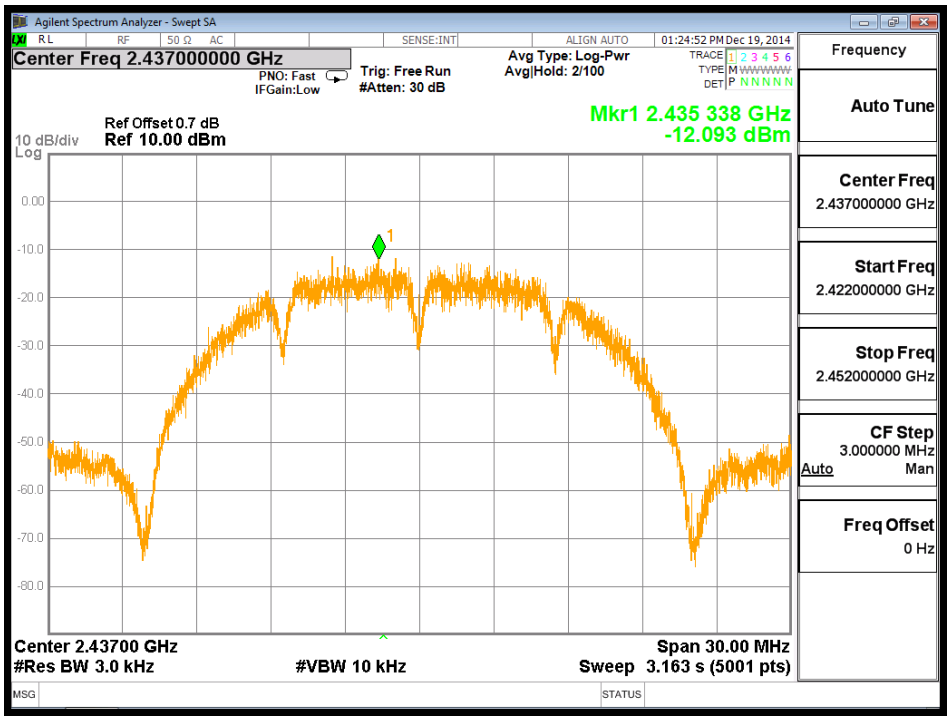
Test Item	Power Spectral Density
Test Mode	Transmit by 802.11b
Test Date	2014-12-31

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
01	2412	-11.378	8	Pass
06	2437	-12.093	8	Pass
11	2462	-14.192	8	Pass

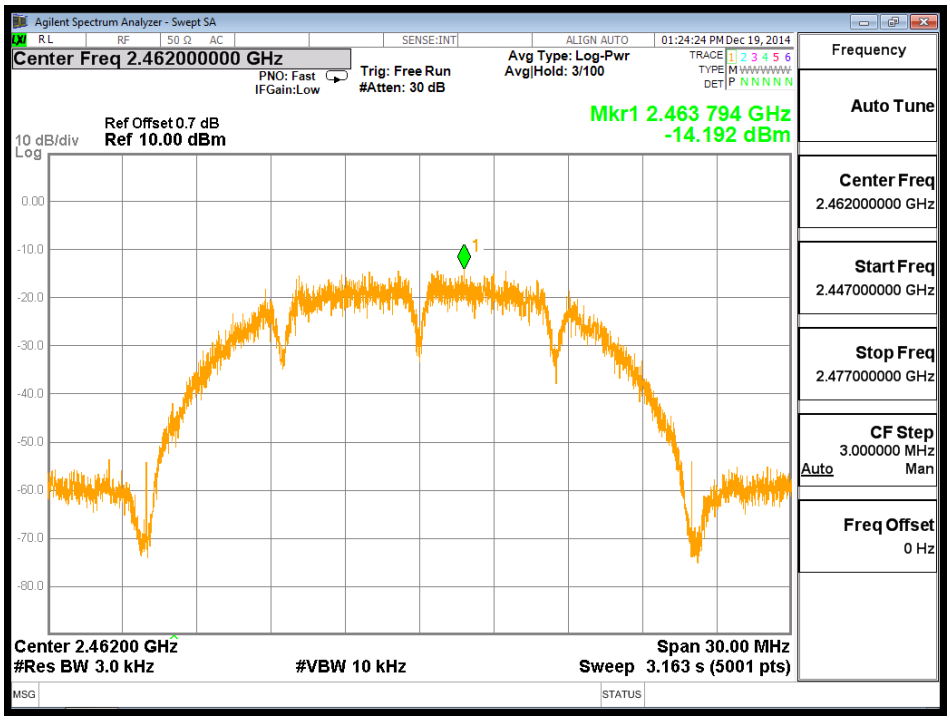
Channel 01 (2412MHz)



Channel 06 (2437MHz)



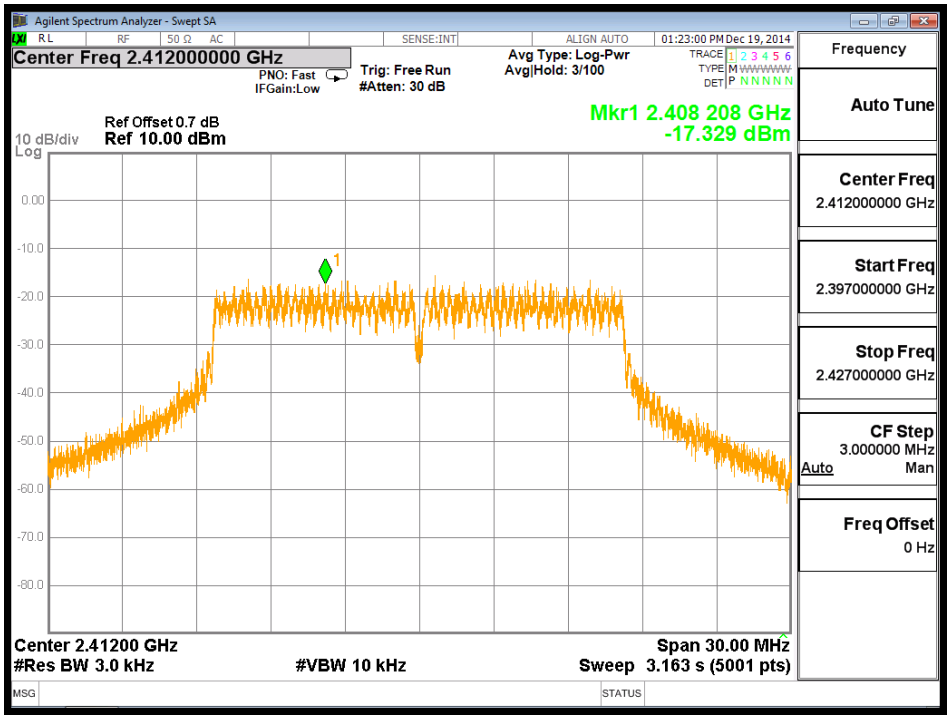
Channel 11 (2462MHz)



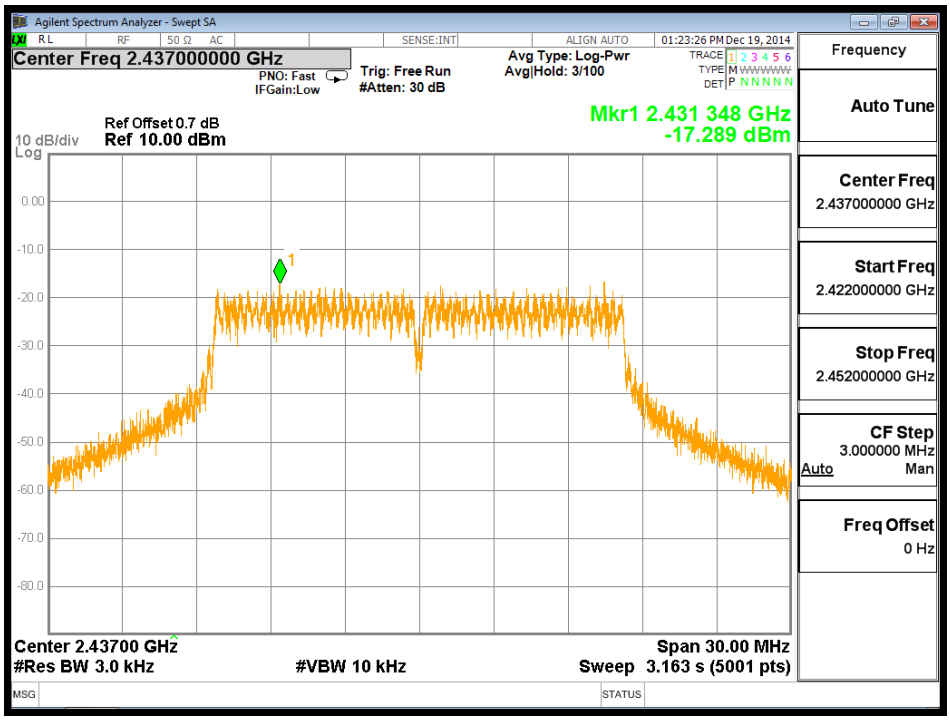
Test Item	Power Spectral Density
Test Mode	Transmit by 802.11g
Test Date	2014-12-31

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
01	2412	-17.329	8	Pass
06	2437	-17.289	8	Pass
11	2462	-18.955	8	Pass

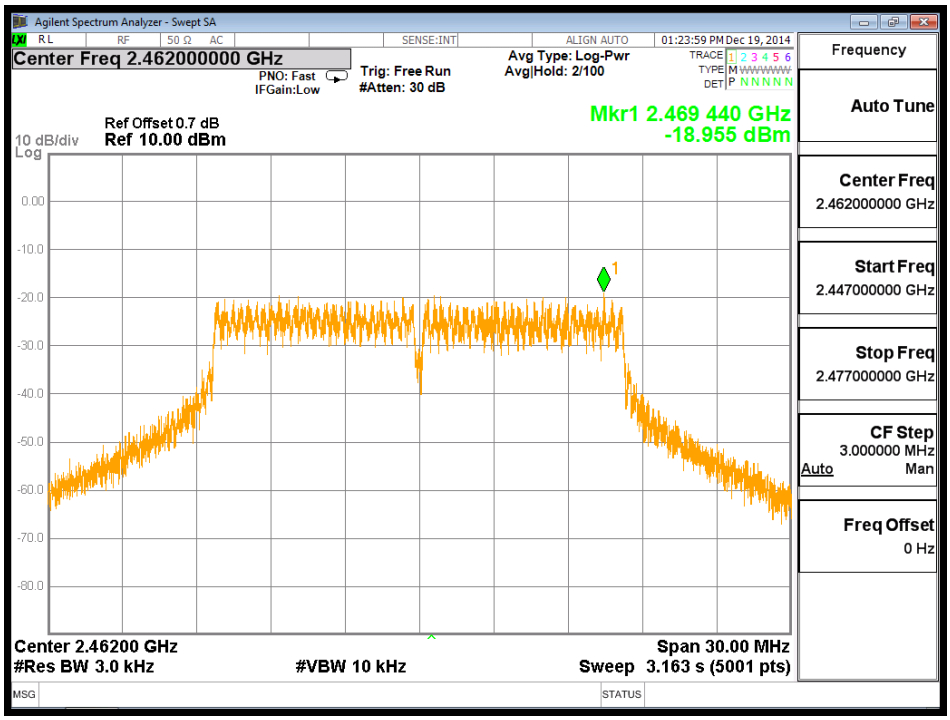
Channel 01 (2412MHz)



Channel 06 (2437MHz)



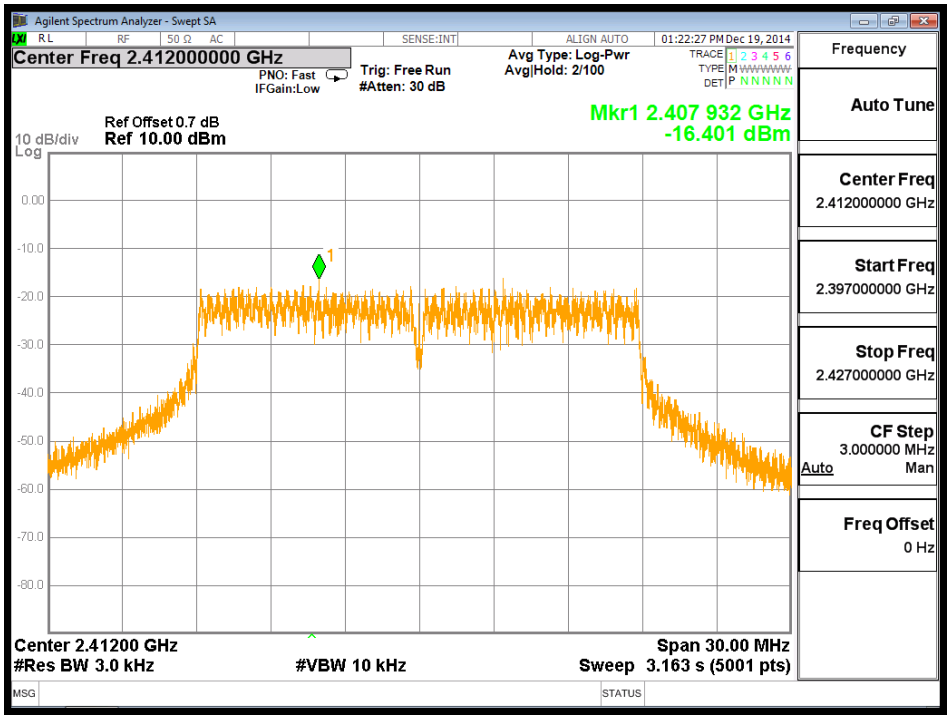
Channel 11 (2462MHz)



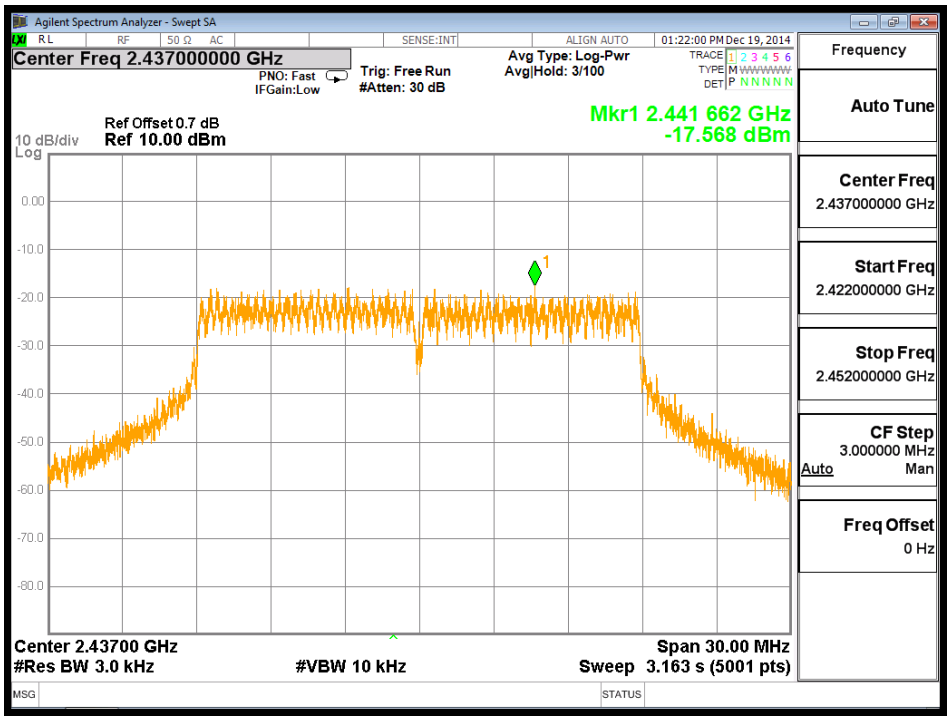
Test Item	Power Spectral Density
Test Mode	Transmit by 802.11n (20MHz)
Test Date	2014-12-31

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
01	2412	-16.401	8	Pass
06	2437	-17.568	8	Pass
11	2462	-18.728	8	Pass

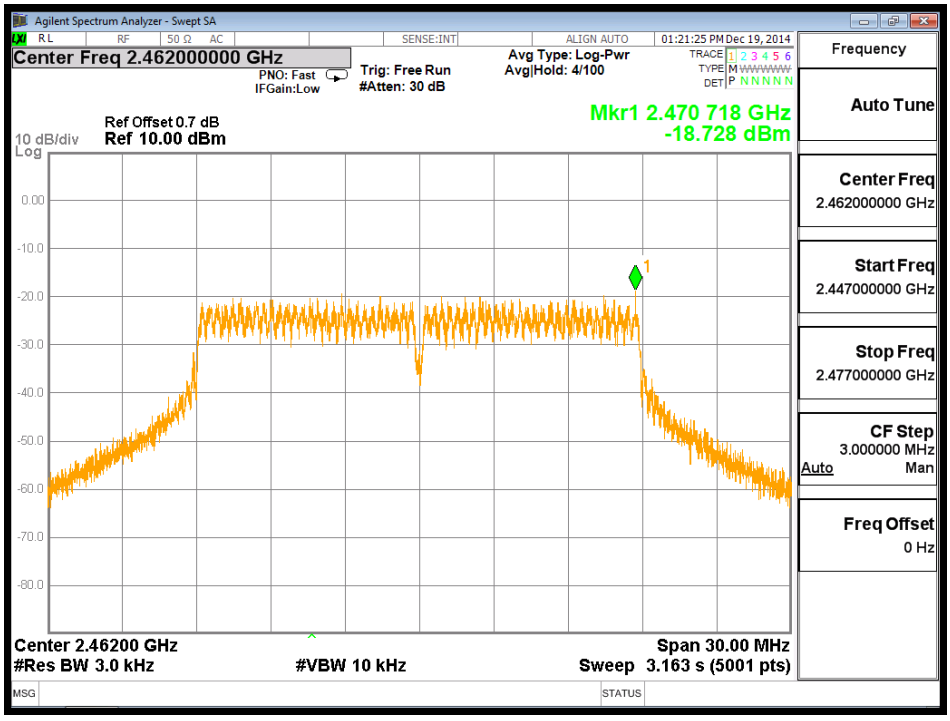
Channel 01 (2412MHz)



Channel 06 (2437MHz)



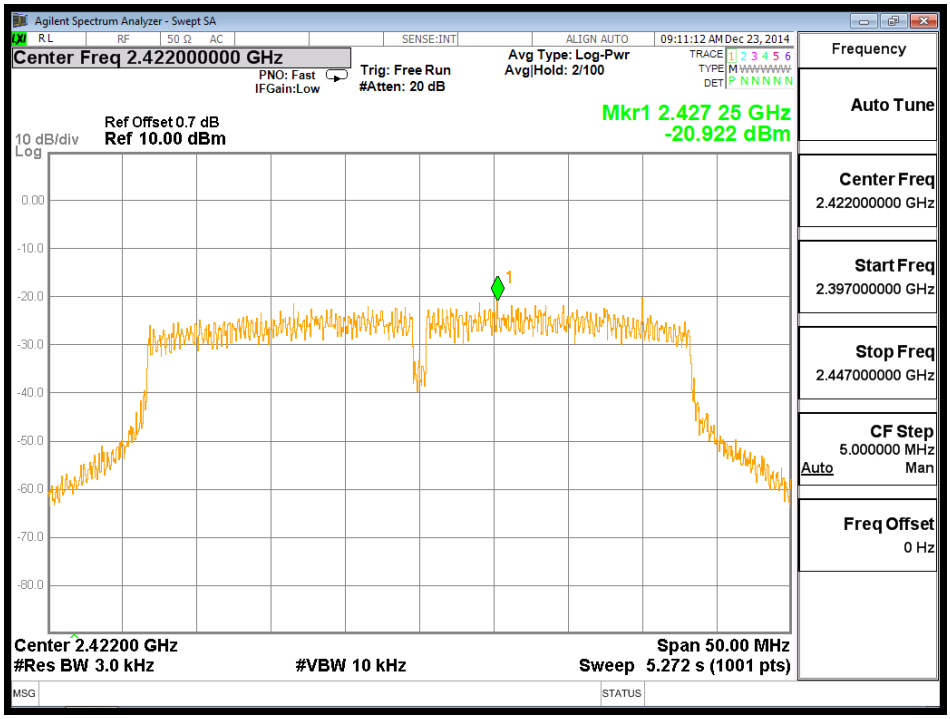
Channel 11 (2462MHz)



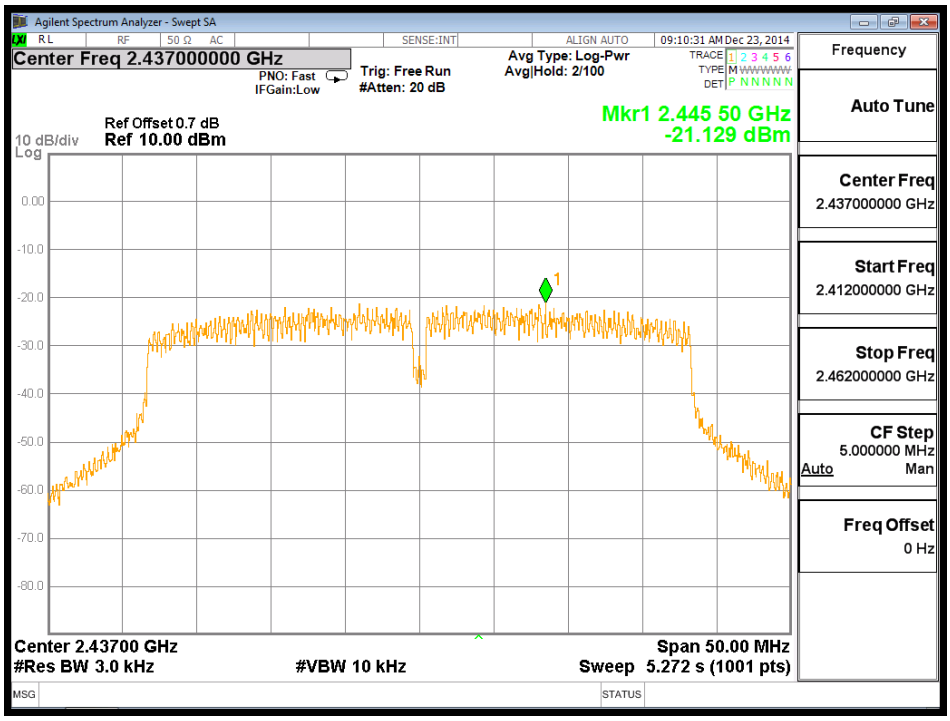
Test Item	Power Spectral Density
Test Mode	Transmit by 802.11n (40MHz)
Test Date	2014-12-31

Channel	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
03	2422	-20.922	8	Pass
06	2437	-21.129	8	Pass
09	2452	-19.777	8	Pass

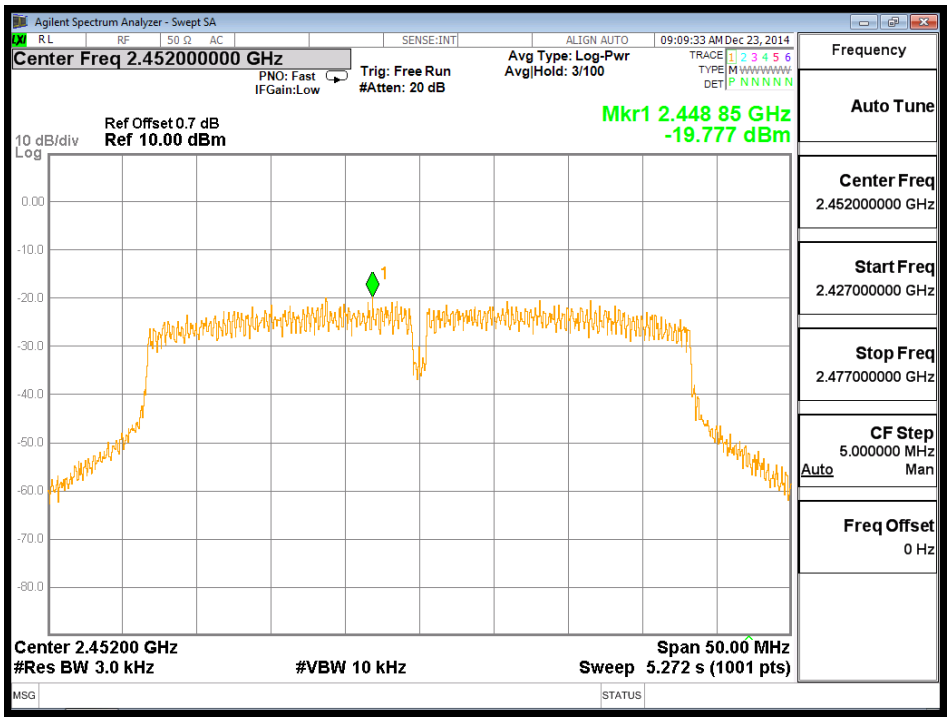
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)



10. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

10.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.