

RF TEST REPORT

Test item : IP Network Camera
Model No. : IPN100HD, IPN100HD-5110PIR, IPN100HD-5110
Order No. : DEMC1208-01366
Date of receipt : 2012-08-03
Test duration : 2012-09-10 ~ 2012-09-25, 2012-10-02 ~ 2012-10-06
Date of issue : 2012-10-08
Use of report : FCC Original Grant

Applicant : UDP Technology, Ltd.

4F Woolim Blue 9 Building, 240-21, Yeomchang-Dong, Gangseo-Gu, Seoul,
157-861, Korea

Test laboratory : Digital EMC Co., Ltd.

683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Kyunggi-Do, 449-080, Korea

Test specification : FCC Part 15 Subpart C 247,
ANSI C63.4-2003, KDB558074

Test environment : See appended test report

Test result : Pass Fail

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DIGITAL EMC CO., LTD.

Tested by:



Engineer
S.K.Ryu

Witnessed by:

N/A

Reviewed by:



Technical Director
Will Lee

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1. GENERAL INFORMATION

Applicant : UDP Technology, Ltd.

Address : 4F Woolim Blue 9 Building, 240-21, Yeomchang-Dong, Gangseo-Gu, Seoul, 157-861, Korea

FCC ID : PIL-IPN100HD

EUT : IP Network Camera

Model : IPN100HD

Additional Model(s) : IPN100HD-5110, IPN100HD-5110PIR

Data of Test : 2012-09-10 ~ 2012-09-25, 2012-10-02 ~ 2012-10-06

Contact person : Harold Yang

2. EUT DESCRIPTION

Product	IP Network Camera
Model Name	IPN100HD-5110PIR, IPN100HD-5110, IPN100HD
Power Supply	AC 120V / 60Hz
Frequency Range	802.11b/g/n(20MHz): 2412 ~ 2462 MHz 802.11n(40MHz): 2422 ~ 2452 MHz
Modulation Type	802.11b: DSSS/CCK 802.11a/g/n: OFDM
Antenna Specification	Antenna Type: Internal PIFA antenna(Gain: 0.77dBi PK)

3. SUMMARY OF TESTS

FCC Part Section(s)	Parameter	Limit	Test Condition	Status Note 1
I. Transmitter Mode (TX)				
15.247(a)	6 dB Bandwidth	> 500 kHz	Conducted	C
15.247(b)	Transmitter Output Power	< 1Watt		C
15.247(c)	Out of Band Emissions / Band Edge	20dBc in any 100kHz BW		NT Note 3
15.247(d)	Transmitter Power Spectral Density	< 8dBm / 3kHz		NT Note 3
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	< FCC 15.209 limits	Radiated	NT Note 2
15.207	AC Conducted Emissions	< FCC 15.207 limits	AC Line Conducted	C
15.203	Antenna Requirements	FCC 15.203	-	C

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable

Note 2: This test item was performed in each axis and the worst case data was reported.

Note 3: This device uses the granted module(FCCID: YZP-TWFMKB304D).

Therefore the radiated test item was performed except 6dB bandwidth and transmitter output power.

The 6dB bandwidth and transmitter output power were performed for comparison with transmitter output power of the granted module.

4. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz(ANSI C63.4-2003) and KDB558074

4.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

4.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version :2003) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version: 2003)

4.4 DESCRIPTION OF TEST MODES

The EUT has been tested with several operating conditions for maximizing the emission characteristics. A test program is used to control the EUT for staying in continuous transmitting mode.

5. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

The open area test site(OATS) or semi anechoic chamber and conducted measurement facility used to collect the radiated and conducted test data are located at the 683-3, Yubang-Dong, Yongin-Si, Gyunggi-Do, 449-080, South Korea. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number : 678747

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and peak, quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

7. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203 & RSS-Gen [7.1.2]:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

* The internal antenna of this E.U.T is uniquely attached on the PCB by soldering.

* Therefore this E.U.T Complies with the requirement of §15.203

8. TEST RESULT

8.1 6dB Bandwidth

Test Requirements and limit, §15.247(a) & RSS-210 [A8.2]

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6dB bandwidth is 500 kHz.

■ TEST CONFIGURATION

Refer to the APPENDIX I.

■ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer and used following test procedure of KDB558074.

1. Set resolution bandwidth (RBW) = 1-5 % of the emission bandwidth (EBW).
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
 For EBW < 20 MHz = RBW:200KHz / VBW:620KHz
 For 20 MHz < EBW < 40 MHz = RBW:390KHz / VBW:1.2MHz
3. Detector = **Peak**.
4. Trace mode = **max hold**.
5. Sweep = **auto couple**.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Compare the resultant bandwidth with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is 1-5 %.

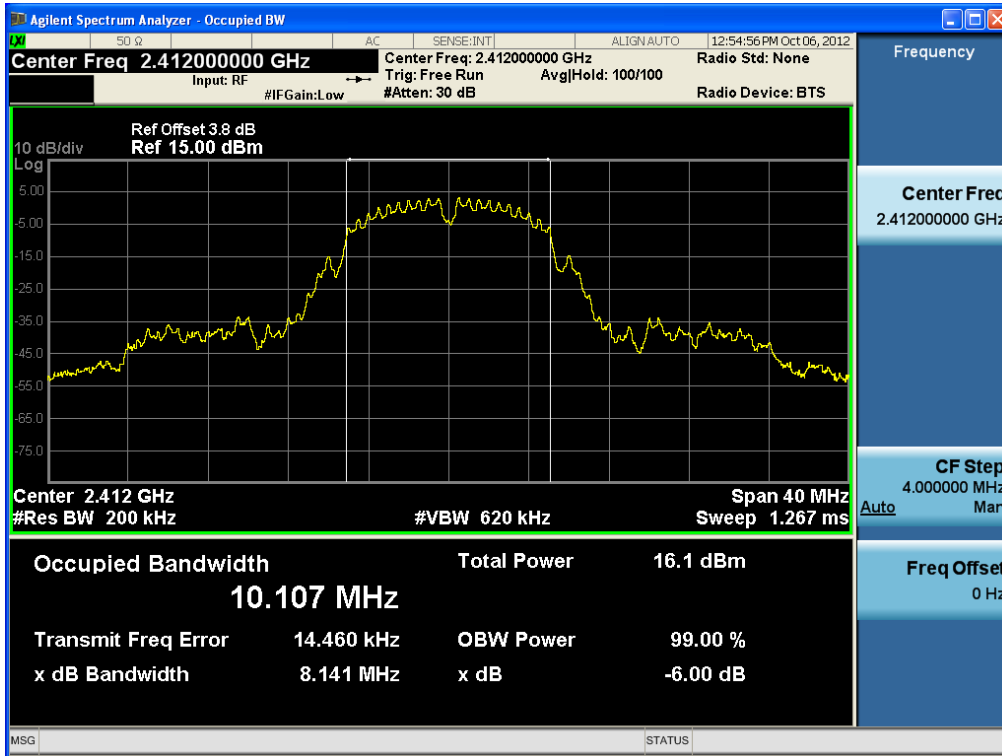
■ TEST RESULTS: **Comply**

Test Mode	Data Rate	Frequency [MHz]	Test Results [MHz]
802.11b	11Mbps	2412	8.141
		2437	8.094
		2462	8.155
802.11g	54Mbps	2412	15.910
		2437	15.860
		2462	15.560
802.11n(HT20)	MCS 7	2412	17.230
		2437	17.230
		2462	17.230
802.11n(HT40)	MCS 7	2422	36.380
		2437	36.290
		2452	36.420

RESULT PLOTS

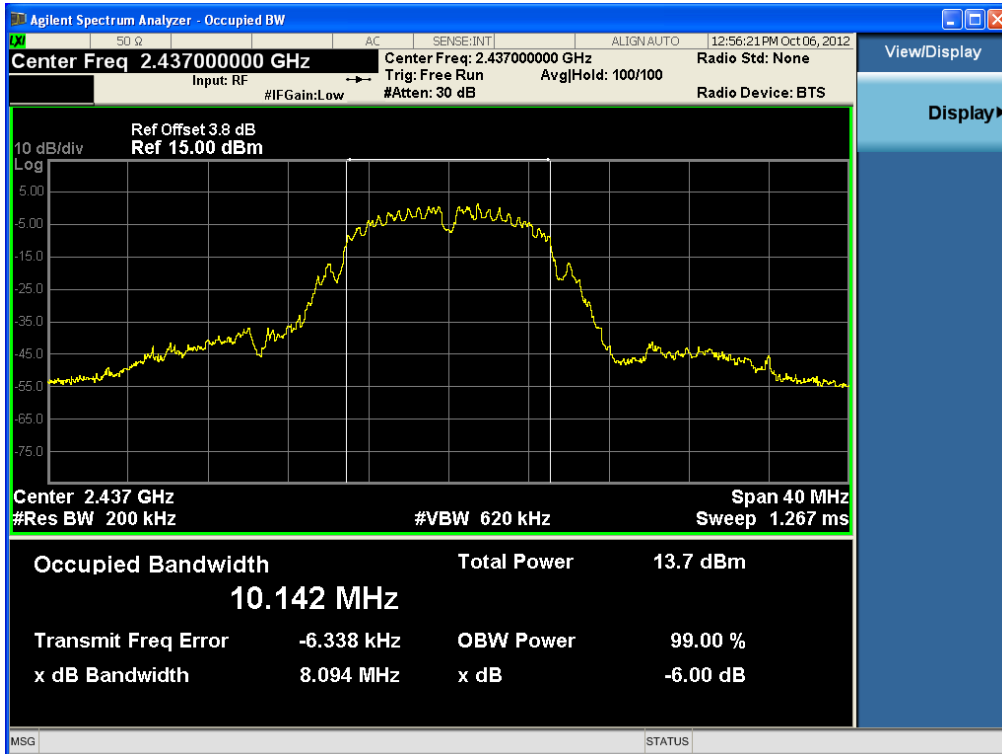
6 dB Bandwidth

Test Mode: 802.11b & 11Mbps & 2412MHz



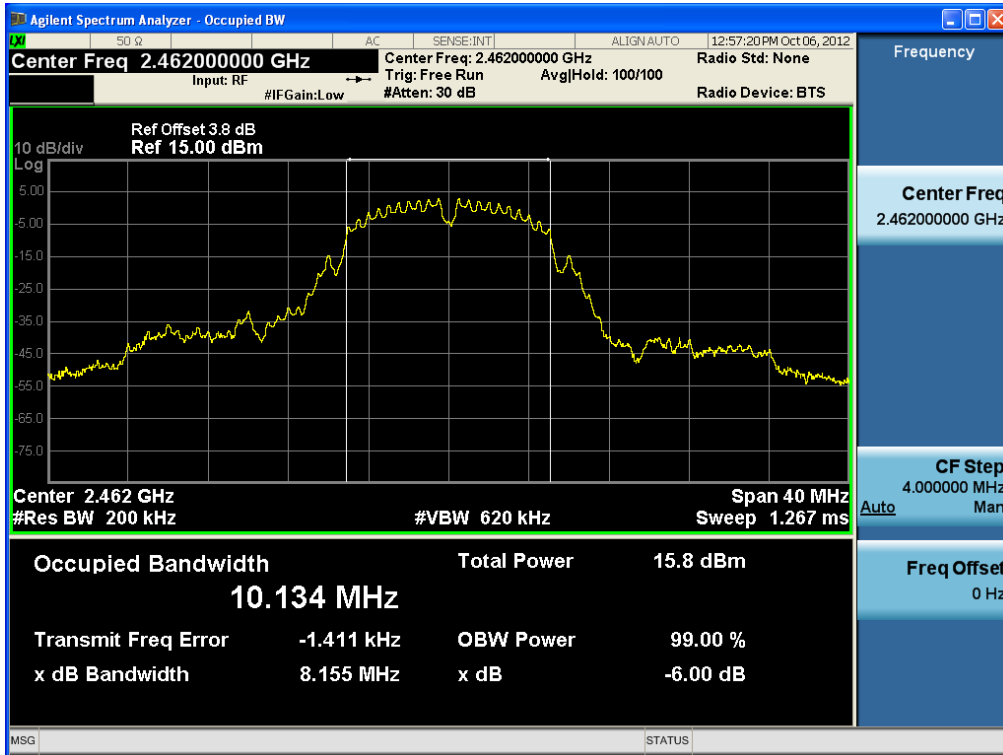
6 dB Bandwidth

Test Mode: 802.11b & 11Mbps & 2437MHz



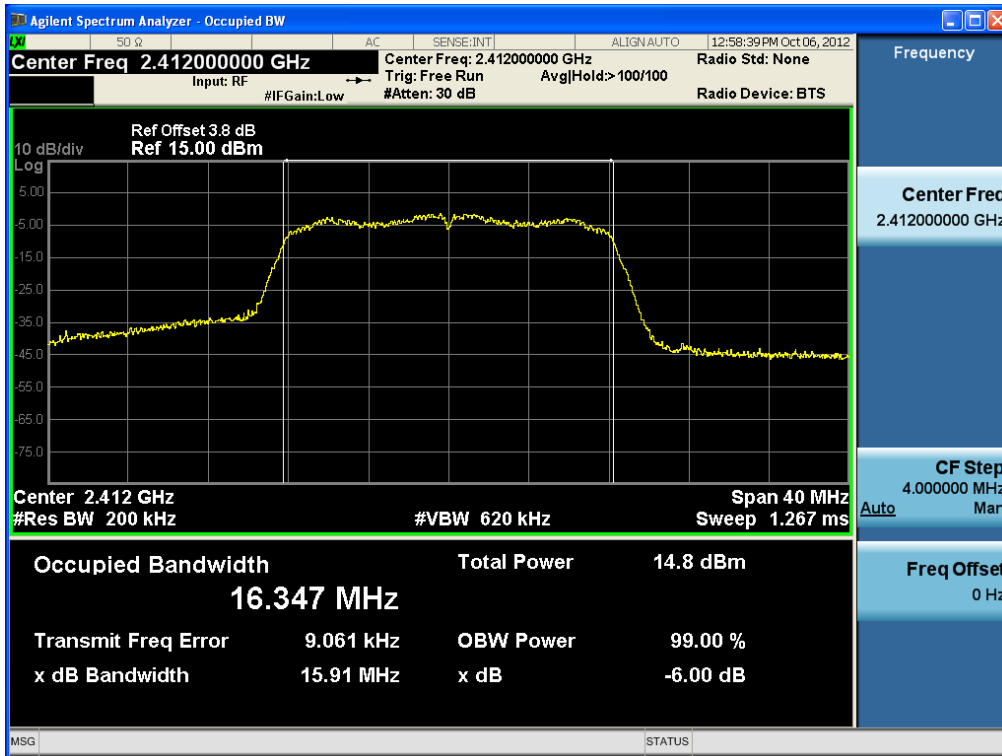
6 dB Bandwidth

Test Mode: 802.11b & 11Mbps & 2462MHz



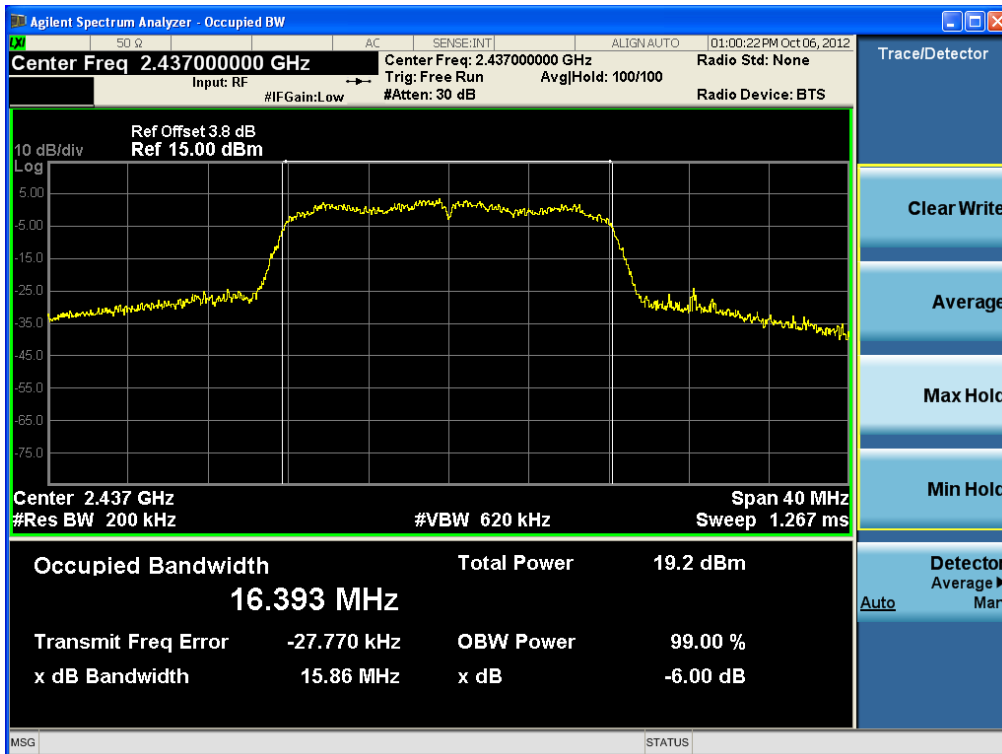
6 dB Bandwidth

Test Mode: 802.11g & 54Mbps & 2412MHz



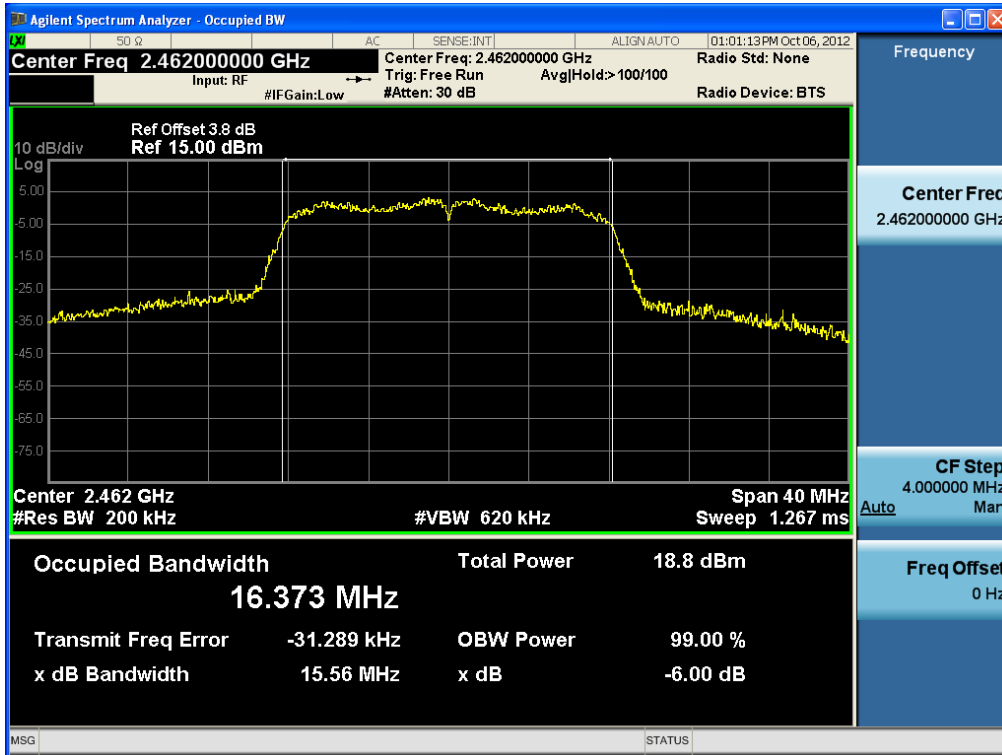
6 dB Bandwidth

Test Mode: 802.11g & 54Mbps & 2437MHz



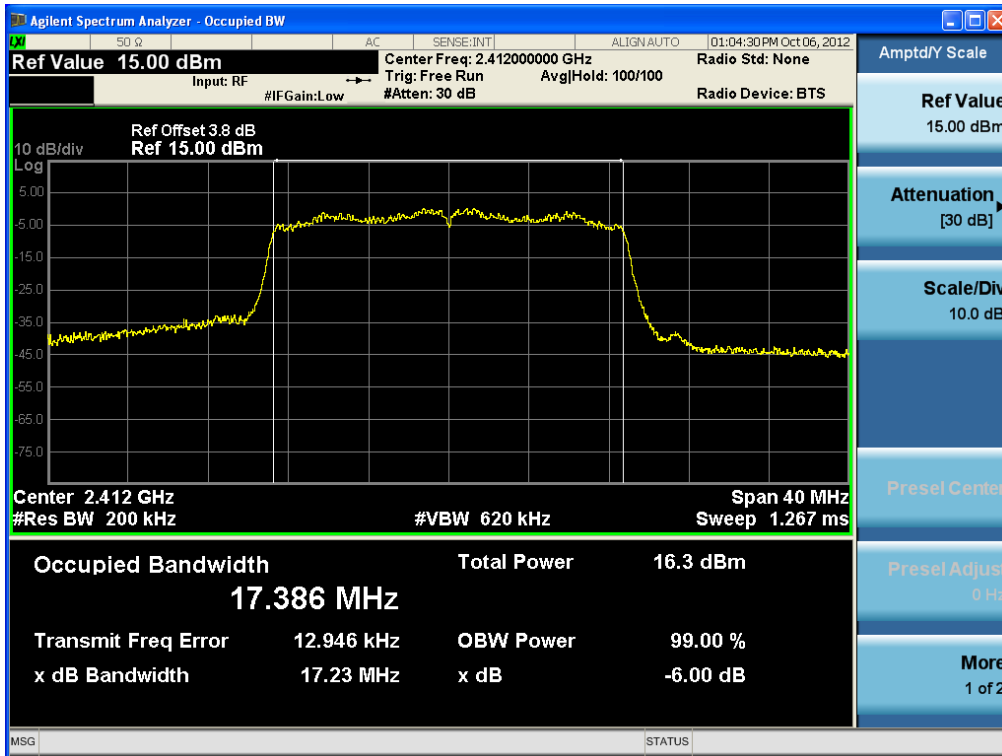
6 dB Bandwidth

Test Mode: 802.11g & 54Mbps & 2462MHz



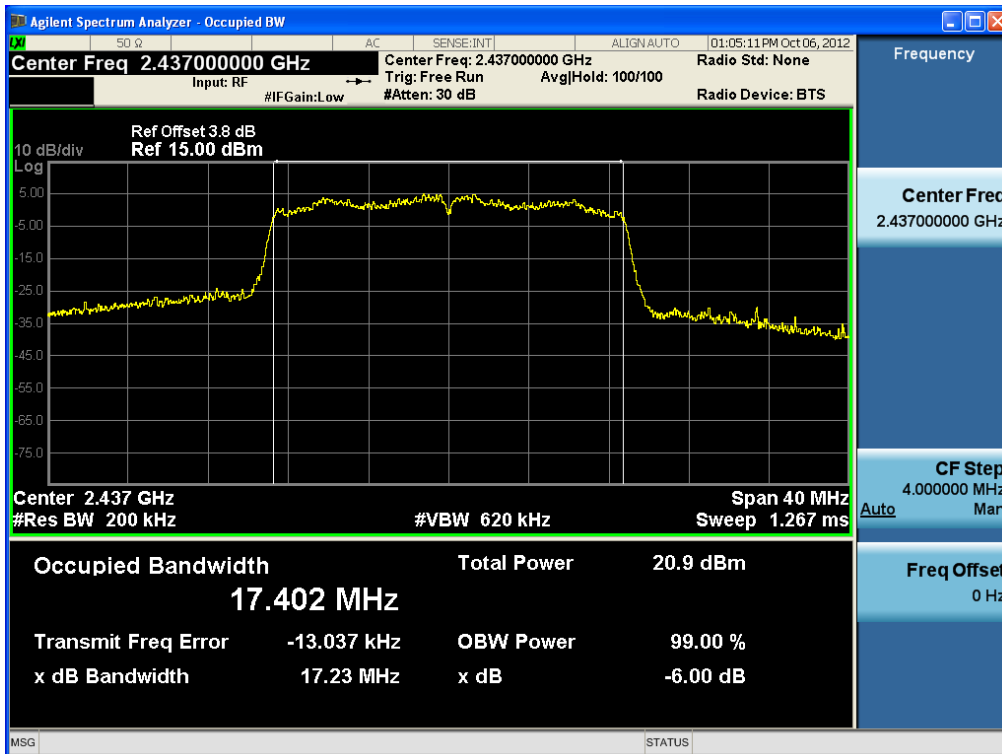
6 dB Bandwidth

Test Mode: 802.11n(HT20) & MCS 7 & 2412MHz



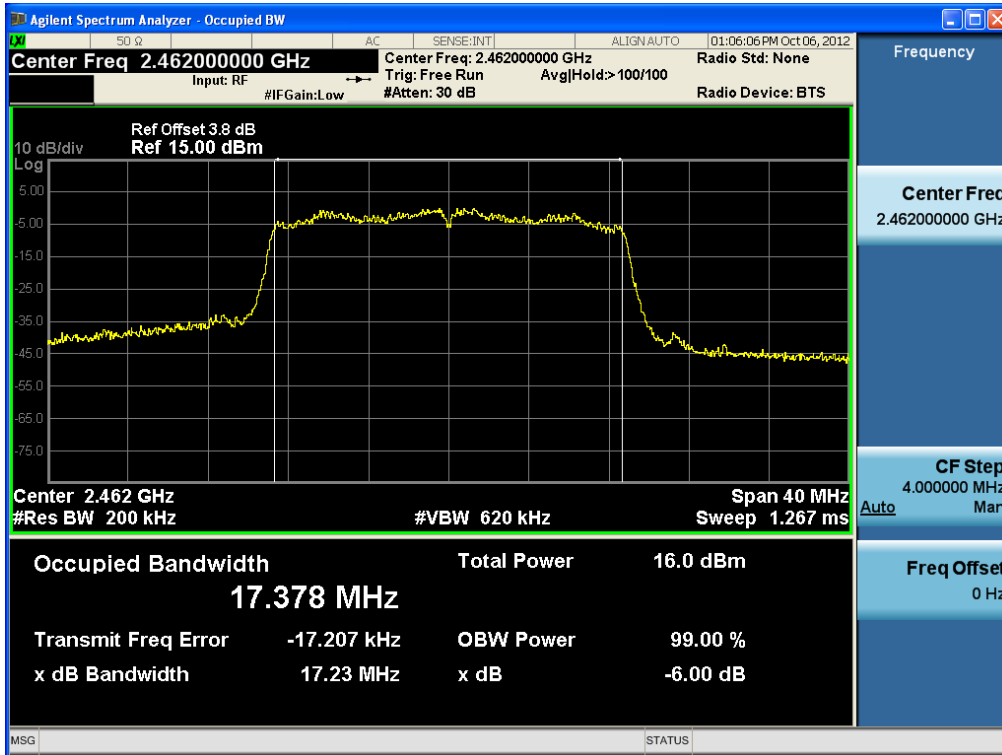
6 dB Bandwidth

Test Mode: 802.11n(HT20) & MCS 7 & 2437MHz



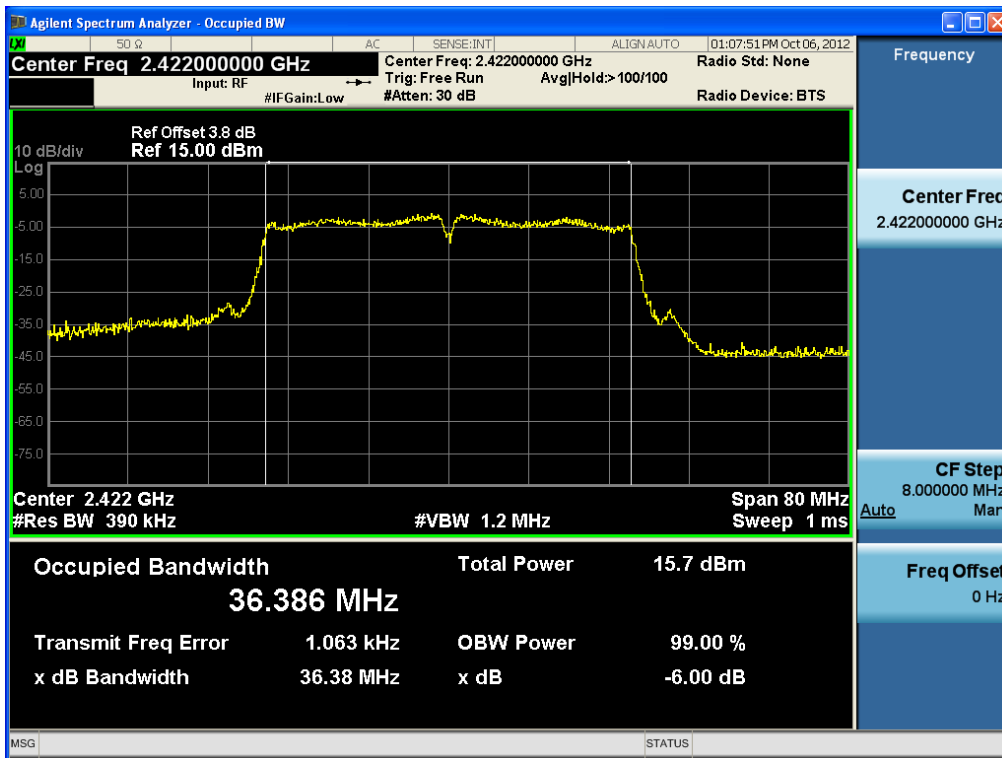
6 dB Bandwidth

Test Mode: 802.11n(HT20) & MCS 7 & 2462MHz



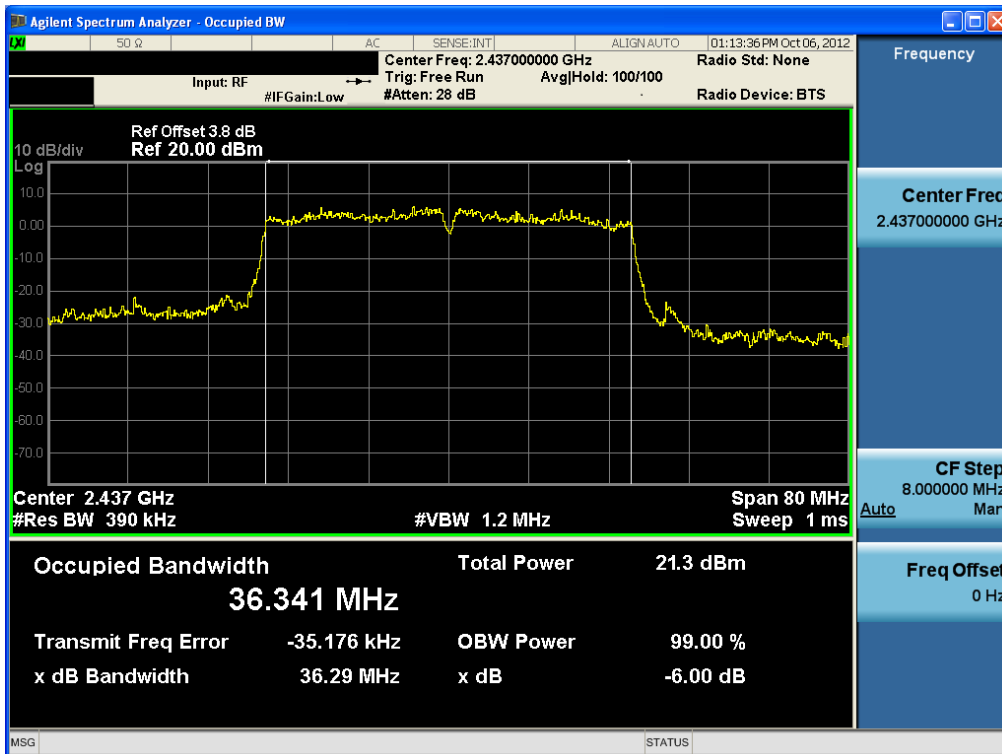
6 dB Bandwidth

Test Mode: 802.11n(HT40) & MCS 7 & 2422MHz



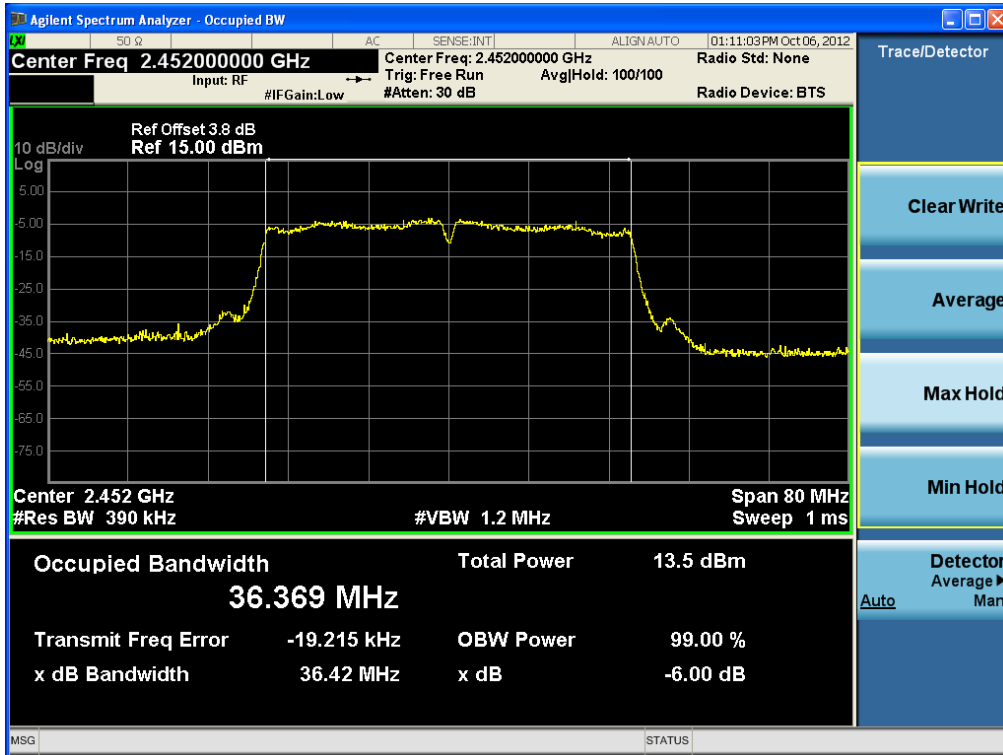
6 dB Bandwidth

Test Mode: 802.11n(HT40) & MCS 7 & 2437MHz



6 dB Bandwidth

Test Mode: 802.11n(HT40) & MCS 7 & 2452MHz



8.2 Maximum Peak Conducted Output Power

Test Requirements and limit, §15.247(b) & RSS-210 [A8.4]

A transmitter antenna terminal of EUT is connected to the input of a spectrum analyzer.

Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

The maximum permissible conducted output power is 1 Watt.

■ TEST CONFIGURATION

Refer to the APPENDIX I.

■ TEST PROCEDURE :

Maximum Peak Conducted Output Power is measured using **the Measurement Procedure PK2 of KDB558074.**

1. Set the **RBW = 1 MHz.**
2. Set the **VBW = 3 MHz.**
3. Set the span to a value that is **5-30 %** greater than the EBW.
4. Detector = **peak.**
5. Sweep time = **auto couple.**
6. Trace mode = **max hold.**
7. Allow trace to fully stabilize.
8. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges (for some analyzers, this may require a manual override to ensure use of peak detector). If the spectrum analyzer does not have a band power function, sum the spectrum levels (in linear power units) at 1 MHz intervals extending across the EBW of the spectrum.

Note: Tests were performed all possible data rates and the worst case data were reported.

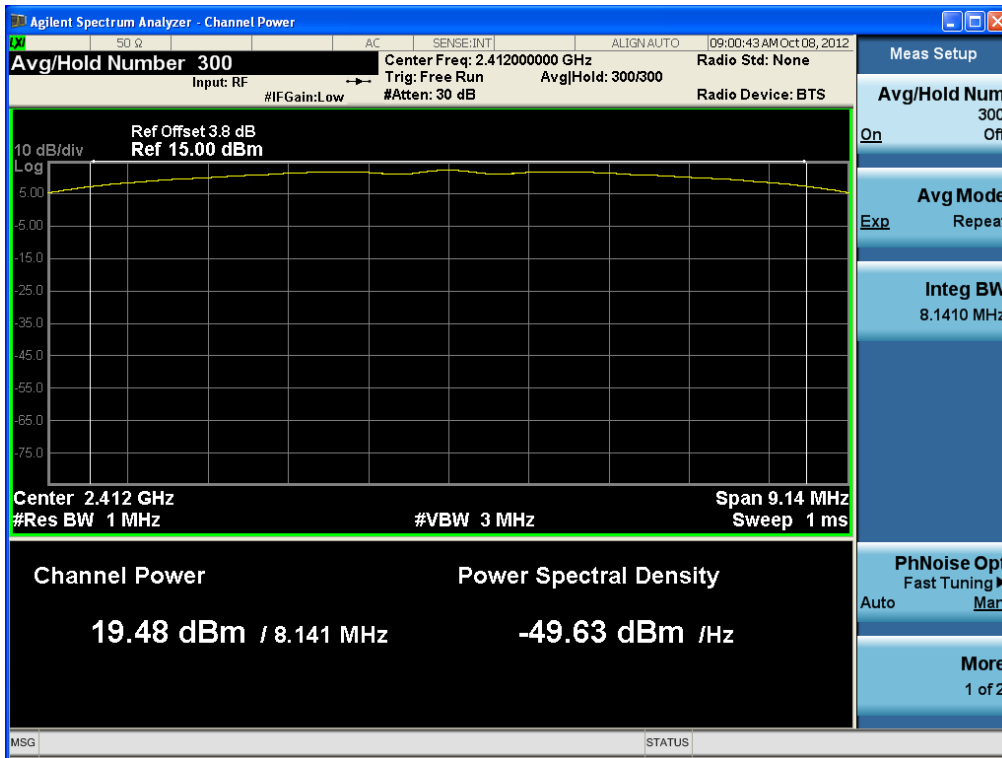
■ TEST RESULTS : **Comply**

Test Mode	Data Rate	Test Results[dBm]		
		Lowest	Middle	Highest
802.11b	11 Mbps	19.48	19.65	19.46
802.11g	54 Mbps	19.20	24.38	19.08
802.11n(HT20)	MCS 7	18.05	22.57	17.78
802.11n(HT40)	MCS 7	15.41	22.41	15.39

RESULT PLOTS

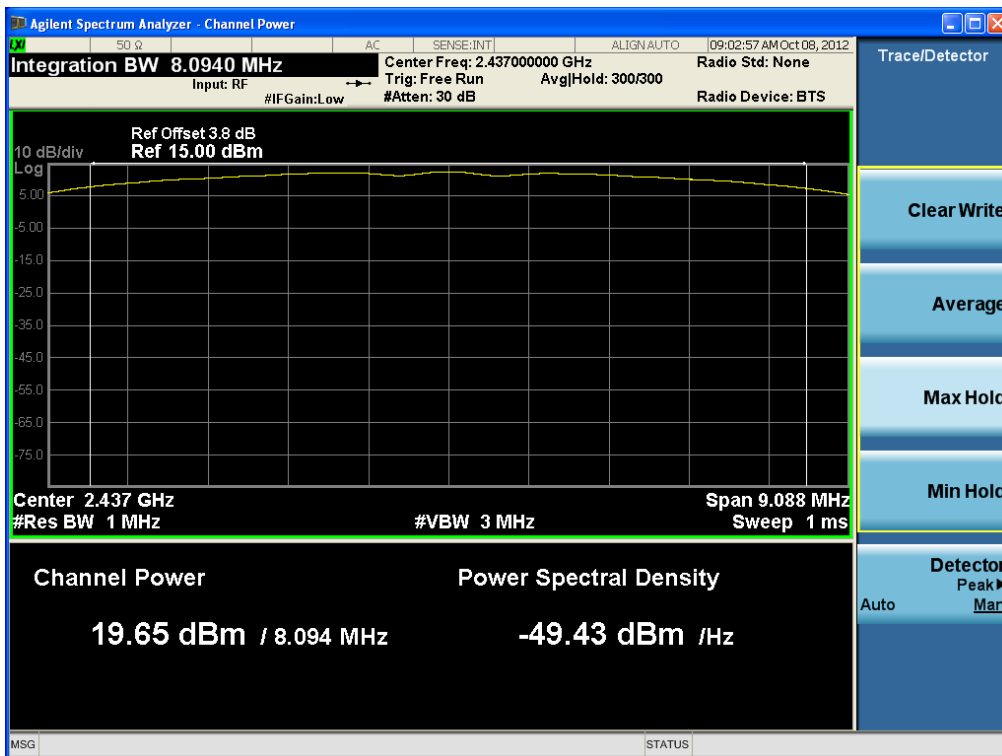
Peak Output Power

Test Mode: 802.11b & 11Mbps & 2412MHz



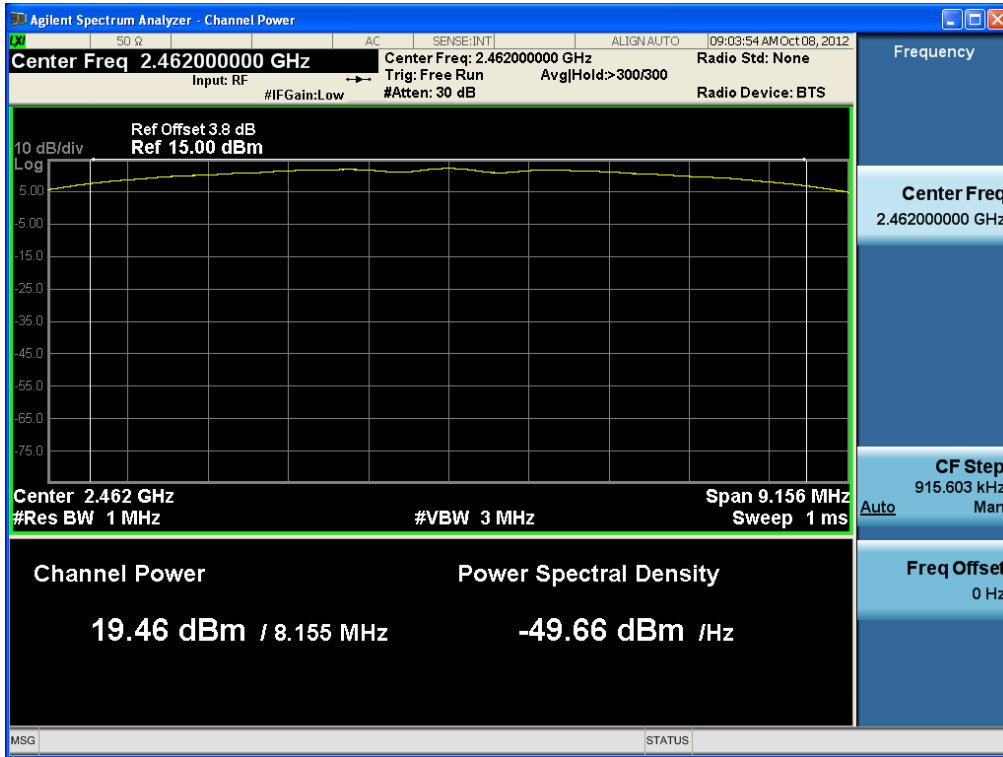
Peak Output Power

Test Mode: 802.11b & 11Mbps & 2437MHz



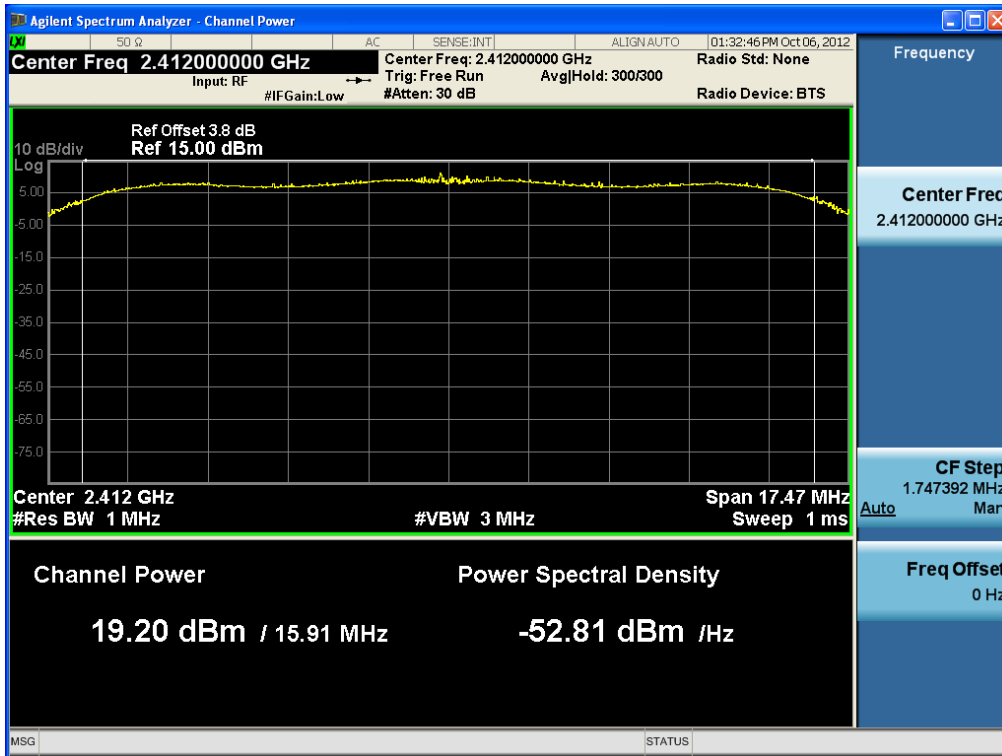
Peak Output Power

Test Mode: 802.11b & 11Mbps & 2462MHz



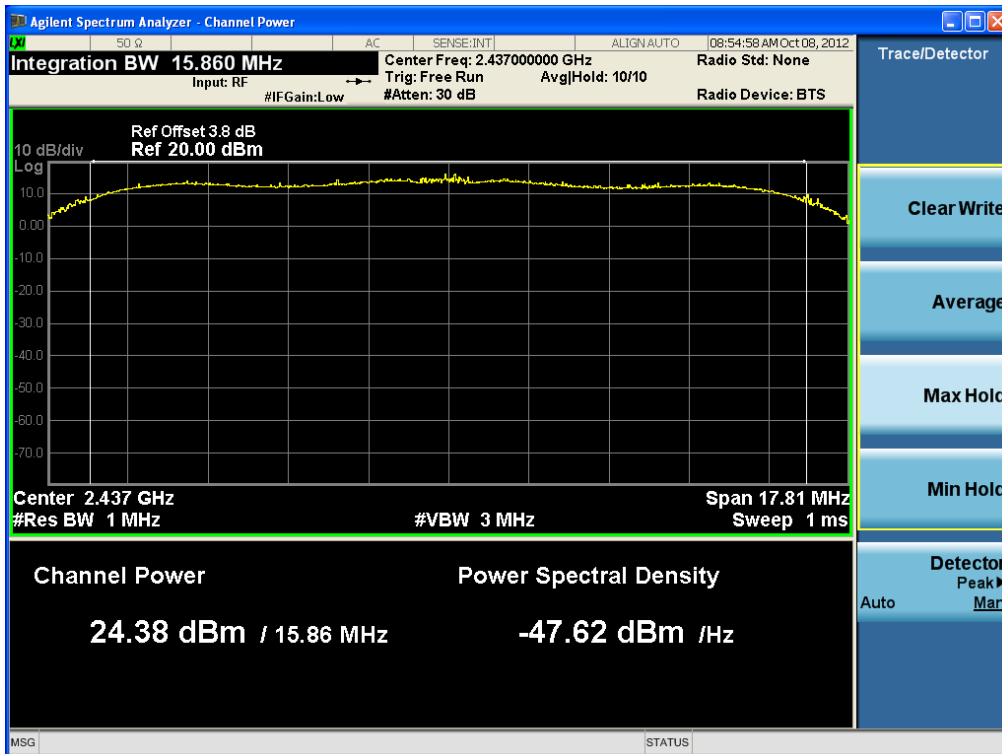
Peak Output Power

Test Mode: 802.11g & 54Mbps & 2412MHz



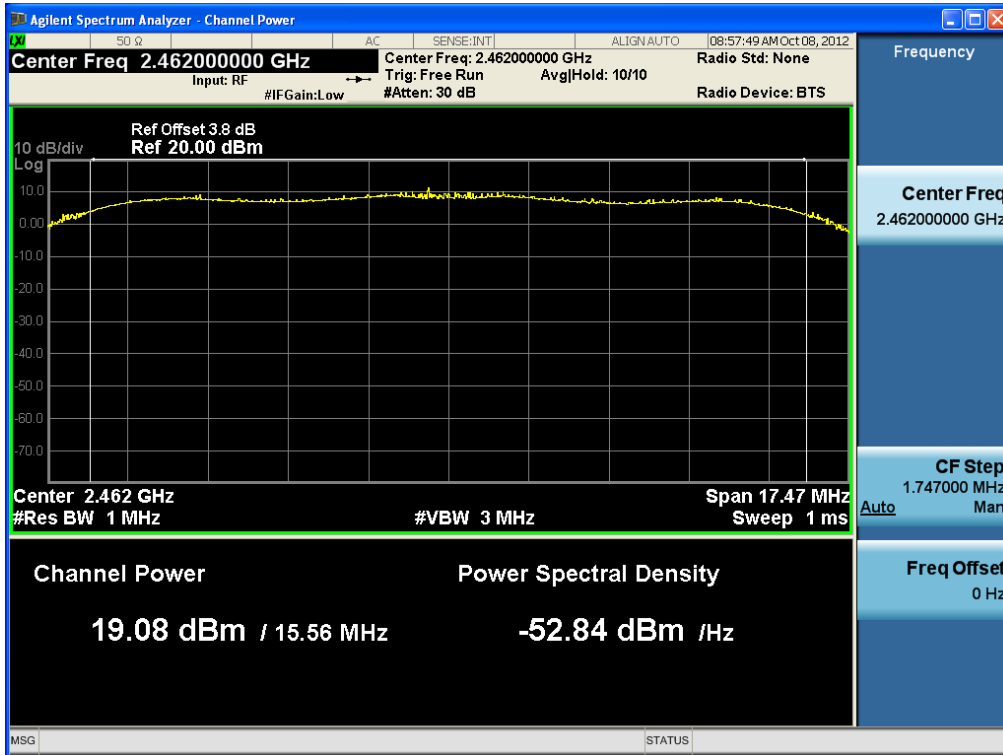
Peak Output Power

Test Mode: 802.11g & 54Mbps & 2437MHz



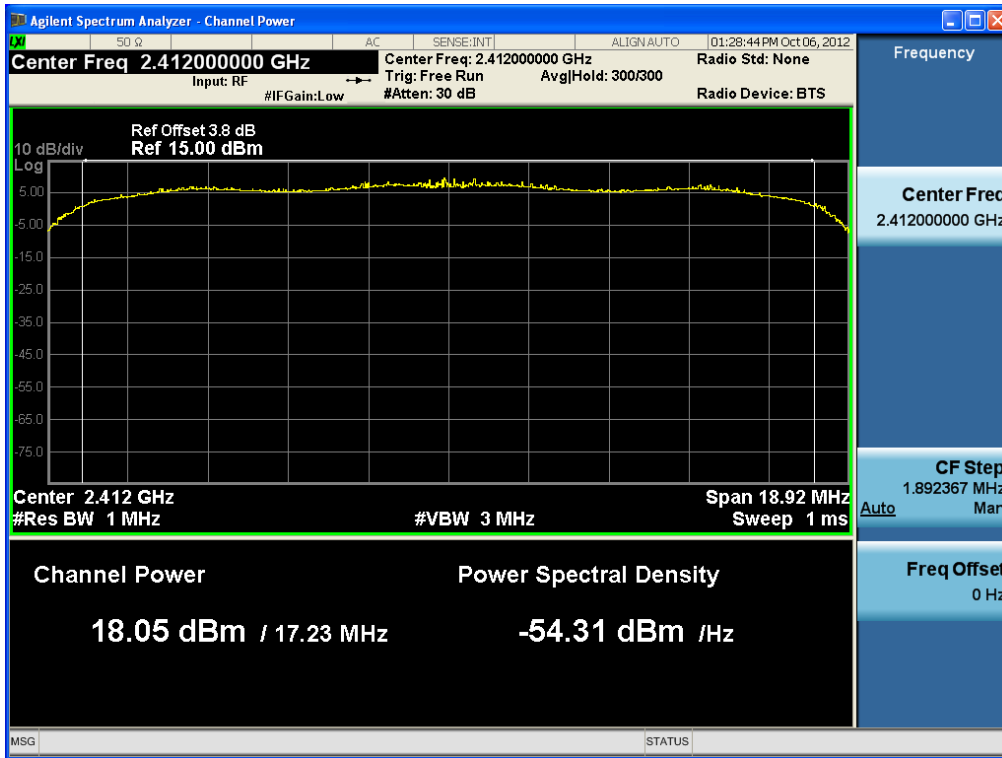
Peak Output Power

Test Mode: 802.11g & 54Mbps & 2462MHz



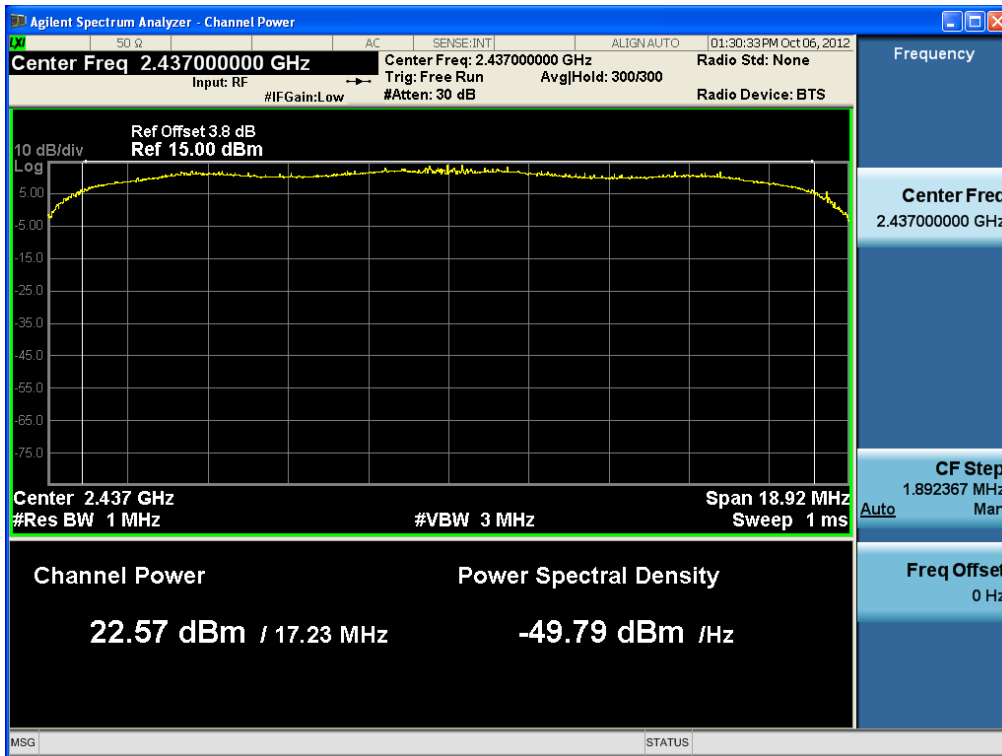
Peak Output Power

Test Mode: 802.11n(HT20) & MCS 7 & 2412MHz



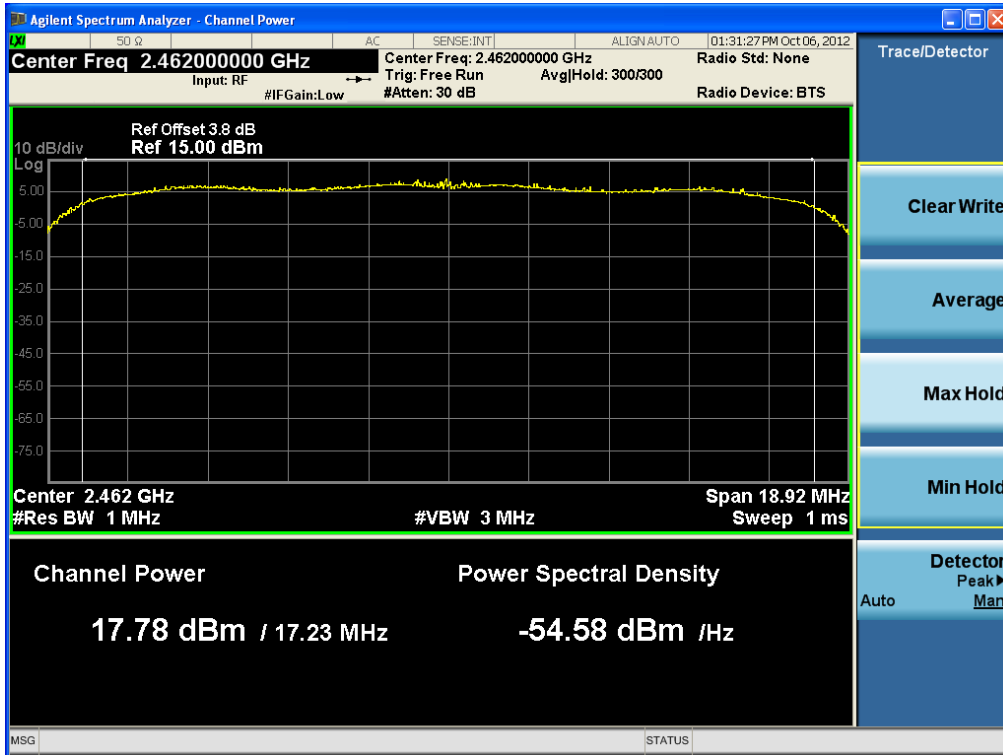
Peak Output Power

Test Mode: 802.11n(HT20) & MCS 7 & 2437MHz



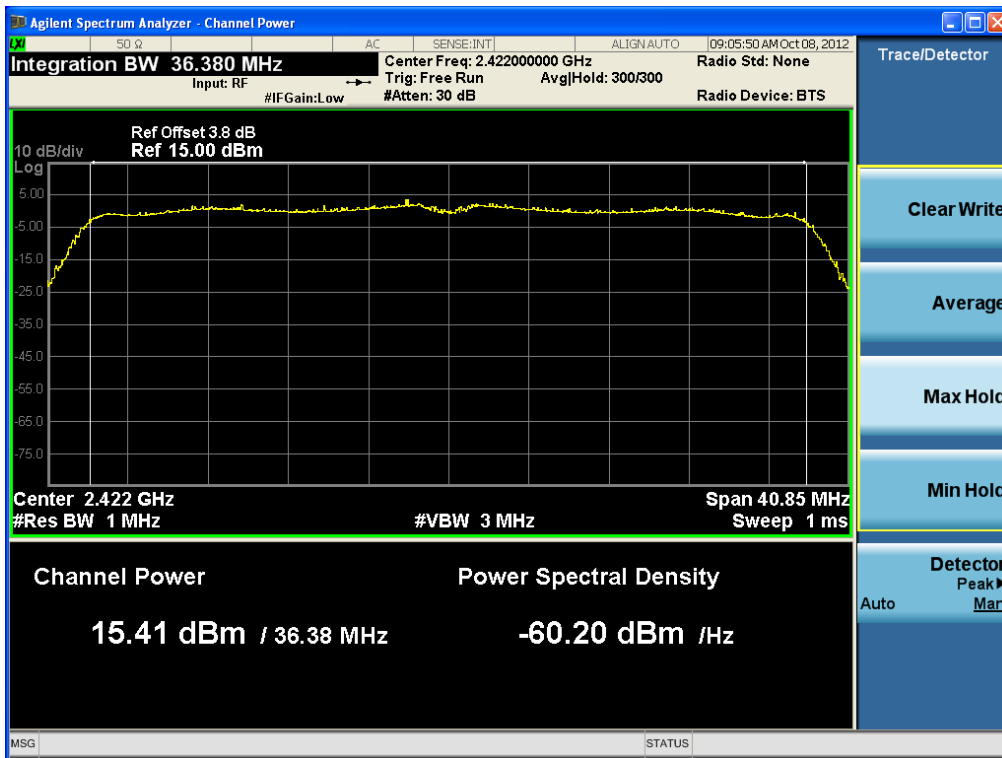
Peak Output Power

Test Mode: 802.11n(HT20) & MCS 7 & 2462MHz



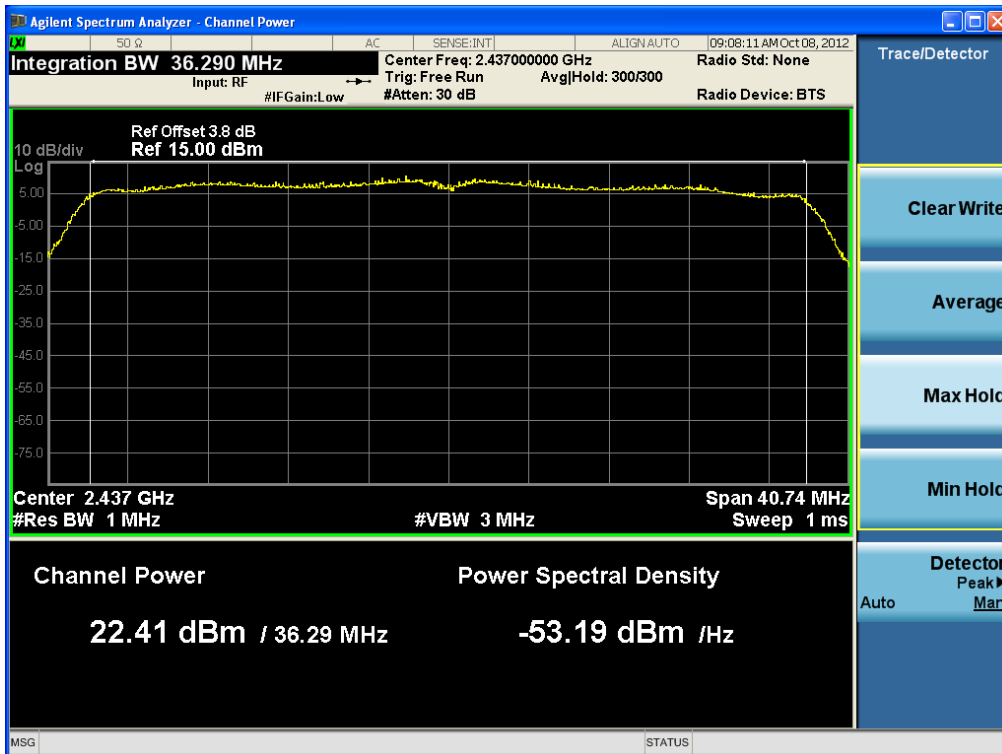
Peak Output Power

Test Mode: 802.11n(HT40) & MCS 7 & 2422MHz



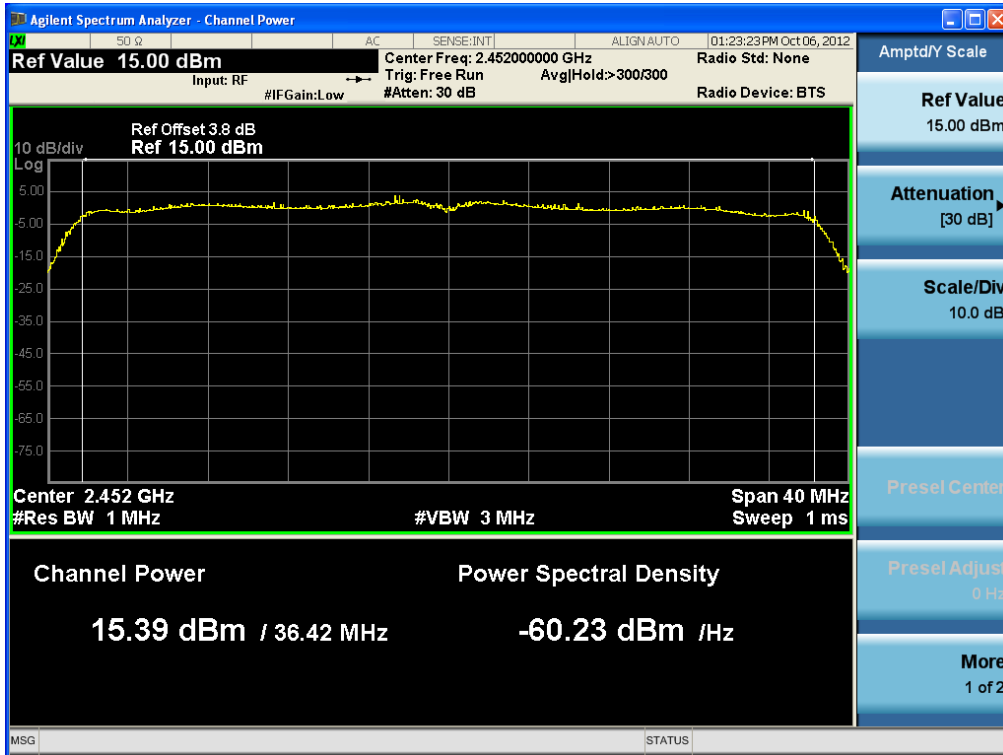
Peak Output Power

Test Mode: 802.11n(HT40) & MCS 7 & 2437MHz



Peak Output Power

Test Mode: 802.11n(HT40) & MCS 7 & 2452MHz



8.3 Maximum Power Spectral Density

Test requirements and limit, §15.247(e) & RSS-210 [A8.2]

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Minimum Standard –specifies a conducted power spectral density (PSD) limit of 8 dBm in any 3 kHz band segment within the fundamental EBW during any time interval of continuous transmission.

■ TEST CONFIGURATION

Refer to the APPENDIX I.

■ TEST PROCEDURE:

The Measurement Procedure **PKPSD of KDB558074** is used.

1. Set the **RBW = 100 kHz**.
2. Set the **VBW ≥ 300 kHz**.
3. Set the span to **5-30 %** greater than the EBW.
4. Detector = **peak**.
5. Sweep time = **auto couple**.
6. Trace mode = **max hold**.
7. Allow trace to fully stabilize.
8. Use the **peak marker function** to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
9. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where **BWCF = $10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$** .
10. The resulting peak PSD level must be $\leq 8\text{ dBm}$.

■ TEST RESULTS: **N/A**

8.4 Out of Band Emissions at the Band Edge/ Conducted Spurious Emissions

Test requirements and limit, §15.247(d)

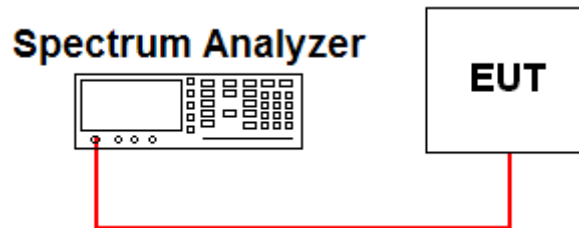
§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions:

If **the peak output power procedure** is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated **by at least 20 dB** relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured inband average PSD level.

In either case, attenuation to levels below the general emission limits specified in **§15.209(a)** is not required.

■ TEST CONFIGURATION



■ TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer.

- Measurement Procedure 1 – Reference Level

1. Set the **RBW = 100 kHz**.
2. Set the **VBW ≥ 300 kHz**.
3. Set the span to **5-30 %** greater than the EBW.
4. Detector = **peak**.
5. Sweep time = **auto couple**.
6. Trace mode = **max hold**.
7. Allow trace to fully stabilize.
8. Use the **peak marker function** to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

Next, **determine the power** in 100 kHz band segments outside of the authorized frequency band using the following measurement:

- Measurement Procedure 2 - Unwanted Emissions

1. Set **RBW = 100 kHz**.
2. Set **VBW ≥ 300 kHz**.
3. Set **span to encompass the spectrum** to be examined.
4. Detector = **peak**.
5. Trace Mode = **max hold**.
6. Sweep = **auto couple**.
7. Allow the trace to stabilize (this may take some time, depending on the extent of the span).

■ TEST RESULTS: **N/A**

8.5 Radiated Spurious Emissions

Test Requirements and limit, §15.247(d), §15.205, §15.209 & RSS-210 [A8.5], RSS-Gen [7.2.2]

In any 100kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed

▪ **FCC Part 15.209(a) and (b)**

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

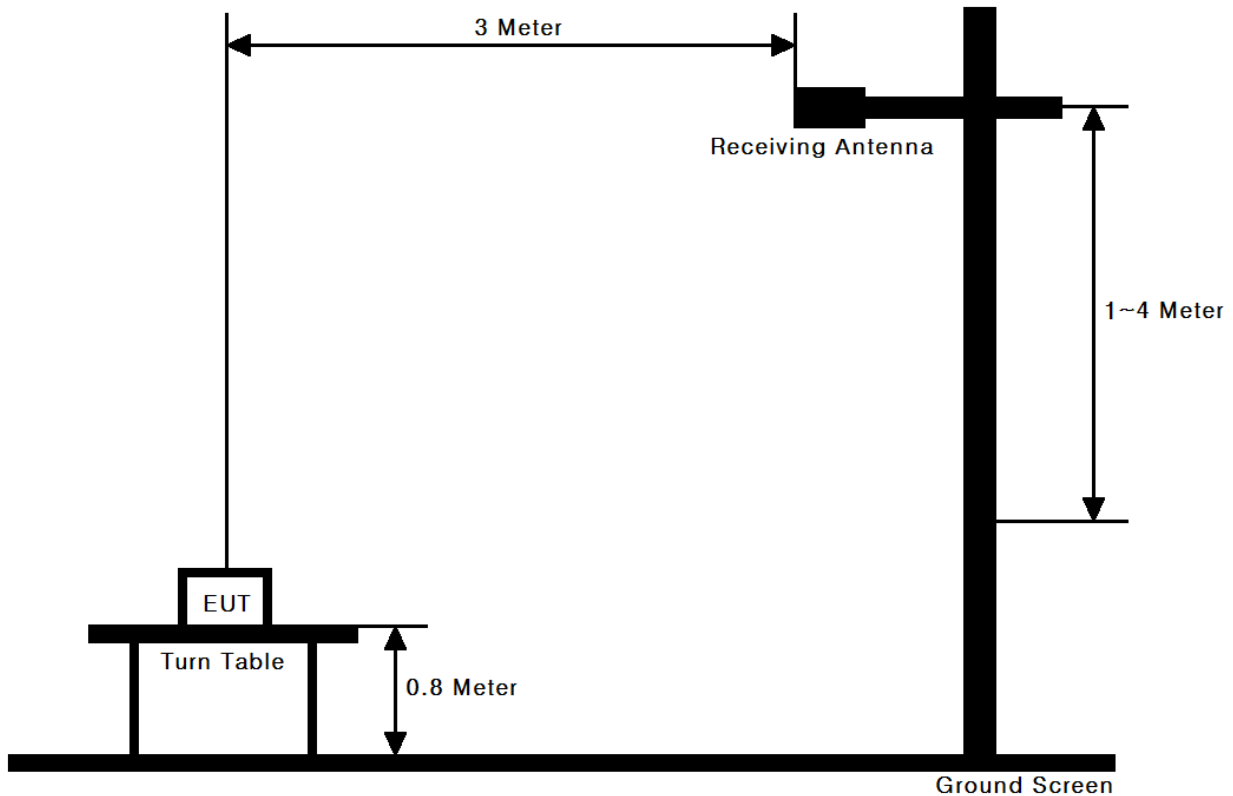
** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

▪ **FCC Part 15.205 (a):** Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	3600 ~ 4400	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	4.5 ~ 5.15	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	5.35 ~ 5.46	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	7.25 ~ 7.75	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	8.025 ~ 8.5	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.0 ~ 9.2	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	9.3 ~ 9.5	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	10.6 ~ 12.7	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900	13.25 ~ 13.4	
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240			
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

▪ **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

802.11b Mode Result(9KHz ~ 25GHz)

▪ **Lowest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2388.930	H	X	PK	56.66	-4.71	51.95	74.00	22.05
2390.000	H	X	AV	45.14	-4.71	40.43	54.00	13.57
3215.867	H	X	PK	56.01	-2.53	53.48	74.00	20.52
3216.050	H	X	AV	52.62	-2.53	50.09	54.00	3.91
4823.975	V	X	PK	50.24	2.21	52.45	74.00	21.55
4824.042	V	X	AV	47.76	2.21	49.97	54.00	4.03
-	-	-	-	-	-	-	-	-

▪ **Middle Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
3249.458	H	X	PK	54.94	-2.38	52.56	74.00	21.44
3249.400	H	X	AV	51.19	-2.38	48.81	54.00	5.19
4873.875	V	X	PK	50.35	2.85	53.20	74.00	20.80
4874.050	V	X	AV	48.62	2.85	51.47	54.00	2.53
-	-	-	-	-	-	-	-	-

▪ **Highest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.610	V	X	PK	59.48	-4.51	54.97	74.00	19.03
2483.500	V	X	AV	47.91	-4.51	43.40	54.00	10.60
3282.620	H	X	PK	51.59	-2.26	49.33	74.00	24.67
3282.722	H	X	AV	48.89	-2.26	46.63	54.00	7.37
4923.813	V	X	PK	50.35	2.72	53.07	74.00	20.93
4924.093	V	X	AV	48.65	2.72	51.37	54.00	2.63
-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
2. Above listed point data is the worst case data.
3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

802.11g Mode Result(9KHz ~ 25GHz)

▪ **Lowest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.870	H	X	PK	72.92	-4.71	68.21	74.00	5.79
2390.000	H	X	AV	57.05	-4.71	52.34	54.00	1.66
3216.076	H	X	PK	54.19	-2.53	51.66	74.00	22.34
3216.042	H	X	AV	51.02	-2.53	48.49	54.00	5.51
4824.110	V	X	PK	50.21	2.21	52.42	74.00	21.58
4824.050	V	X	AV	39.21	2.21	41.42	54.00	12.58
-	-	-	-	-	-	-	-	-

▪ **Middle Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
3249.408	H	X	PK	53.57	-2.38	51.19	74.00	22.81
3249.383	H	X	AV	50.18	-2.38	47.80	54.00	6.20
4870.670	V	X	PK	63.46	2.85	66.31	74.00	7.69
4873.770	V	X	AV	49.12	2.85	51.97	54.00	2.03
-	-	-	-	-	-	-	-	-

▪ **Highest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.692	H	Z	PK	63.34	-4.51	58.83	74.00	15.17
2483.500	H	Z	AV	48.87	-4.51	44.36	54.00	9.64
3282.742	H	X	PK	55.00	-2.26	52.74	74.00	21.26
3282.675	H	X	AV	51.21	-2.26	48.95	54.00	5.05
4921.670	V	X	PK	55.46	2.72	58.18	74.00	15.82
4924.000	V	X	AV	40.97	2.72	43.69	54.00	10.31
-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table..
2. Above listed point data is the worst case data.
3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

802.11n(HT20) Mode Result(9KHz ~ 25GHz)

▪ **Lowest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.470	H	X	PK	70.66	-4.71	65.95	74.00	8.05
2390.000	H	X	AV	55.72	-4.71	51.01	54.00	2.99
3216.158	H	X	PK	53.48	-2.53	50.95	74.00	23.05
3216.033	H	X	AV	49.87	-2.53	47.34	54.00	6.66
4824.670	H	Y	PK	52.46	2.21	54.67	74.00	19.33
4824.030	H	Y	AV	38.92	2.21	41.13	54.00	12.87
-	-	-	-	-	-	-	-	-

▪ **Middle Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
3249.345	H	X	PK	56.01	-2.38	53.63	74.00	20.37
3249.362	H	X	AV	52.32	-2.38	49.94	54.00	4.06
4874.250	V	X	PK	63.67	2.85	66.52	74.00	7.48
4873.920	V	X	AV	48.59	2.85	51.44	54.00	2.56
-	-	-	-	-	-	-	-	-

▪ **Highest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.912	H	Z	PK	65.61	-4.51	61.10	74.00	12.90
2483.500	H	Z	AV	49.17	-4.51	44.66	54.00	9.34
3282.833	H	X	PK	53.53	-2.26	51.27	74.00	22.73
3282.667	H	X	AV	50.02	-2.26	47.76	54.00	6.24
4925.500	V	X	PK	56.06	2.72	58.78	74.00	15.22
4923.920	V	X	AV	40.45	2.72	43.17	54.00	10.83
-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table..
2. Above listed point data is the worst case data.
3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

802.11n(HT40) Mode Result(9KHz ~ 25GHz)

▪ **Lowest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2388.530	H	X	PK	70.85	-4.71	66.14	74.00	7.86
2390.000	H	X	AV	54.89	-4.71	50.18	54.00	3.82
3229.762	H	X	PK	54.09	-2.53	51.56	74.00	22.44
3229.368	H	X	AV	50.65	-2.53	48.12	54.00	5.88
4843.897	H	Y	PK	52.31	2.36	54.67	74.00	19.33
4844.036	H	Y	AV	38.20	2.36	40.56	54.00	13.44
-	-	-	-	-	-	-	-	-

▪ **Middle Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
3249.561	H	X	PK	54.55	-2.38	52.17	74.00	21.83
3249.287	H	X	AV	50.94	-2.38	48.56	54.00	5.44
4874.920	V	X	PK	65.47	2.85	68.32	74.00	5.68
4874.052	V	X	AV	49.14	2.85	51.99	54.00	2.01
-	-	-	-	-	-	-	-	-

▪ **Highest Channel**

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.692	H	Z	PK	66.88	-4.51	62.37	74.00	11.63
2483.500	H	Z	AV	50.45	-4.51	45.94	54.00	8.06
3255.146	H	X	PK	54.57	-2.26	52.31	74.00	21.69
3255.429	H	X	AV	50.33	-2.26	48.07	54.00	5.93
4904.176	V	X	PK	55.67	2.56	58.23	74.00	15.77
4903.918	V	X	AV	41.28	2.56	43.84	54.00	10.16
-	-	-	-	-	-	-	-	-

Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table..
2. Above listed point data is the worst case data.
3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F / T.F = AF + CL – AG
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain

8.6 Power-line Conducted Emissions

Test Requirements and limit, §15.207 & RSS-Gen [7.2.2]

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Frequency Range (MHz)	Conducted 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

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to the test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

RESULT PLOTS

AC Line Conducted Emissions (Graph)

Test Mode: 802.11b (2.4GHz Band)



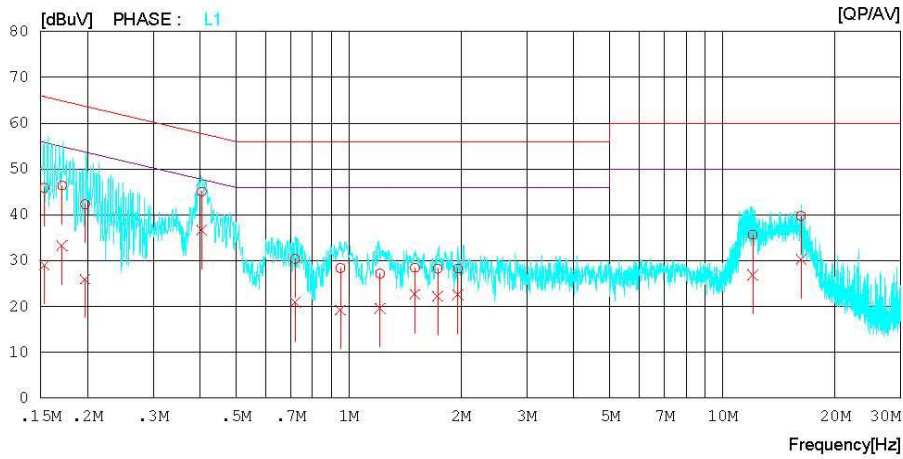
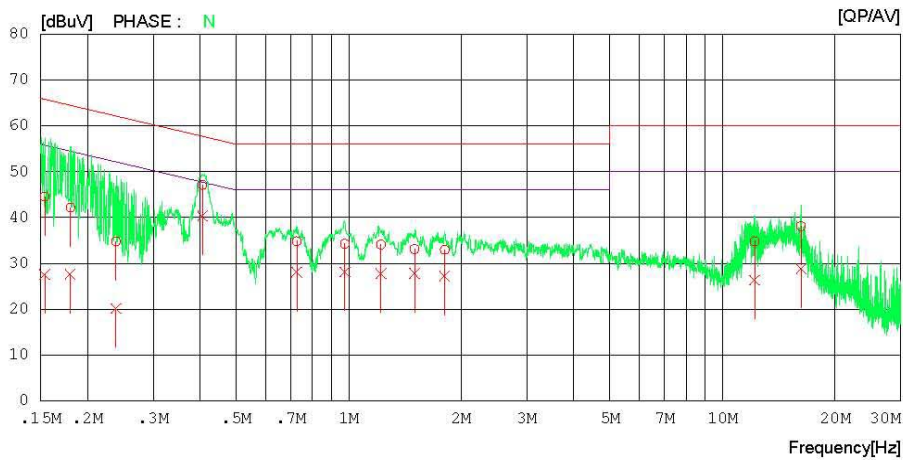
Results of Conducted Emission

Digital EMC
Date : 2012-09-14

Model No. : IPN100HD-5110PIR
Type : IP Network Camera
Serial No. : N/A
Test Condition : 802.11b

Reference No. : FCC Part15.C
Power Supply : 120 V 60 Hz
Temp/Humi. : 23°C 52% R.H.
Operator : S.K. Ryu

Memo :
LIMIT : CISPR22_B QP
CISPR22_B AV



AC Line Conducted Emissions (List)
 Test Mode: 802.11b (2.4GHz Band)

Results of Conducted Emission

Digital EMC
 Date : 2012-09-17

Model No. : IPN100HD-5110PIR Reference No. : FCC Part15.C
 Type : IP Network Camera Power Supply : 120 V 60 Hz
 Serial No. : N/A Temp/Humi. : 23 'C 52 % R.H.
 Test Condition : 802.11b Operator : S.K. Ryu

Memo :

LIMIT : CISPR22_B QP
 CISPR22_B AV

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15389	44.2	27.3	0.3	44.5	27.6	65.8	55.8	21.3	28.2	N
2	0.18013	42.0	27.4	0.2	42.2	27.6	64.5	54.5	22.3	26.9	N
3	0.23848	34.6	20.0	0.2	34.8	20.2	62.1	52.1	27.3	31.9	N
4	0.40645	46.8	40.0	0.3	47.1	40.3	57.7	47.7	10.6	7.4	N
5	0.72705	34.6	27.8	0.2	34.8	28.0	56.0	46.0	21.2	18.0	N
6	0.97650	34.0	27.8	0.3	34.3	28.1	56.0	46.0	21.7	17.9	N
7	1.21950	33.8	27.5	0.3	34.1	27.8	56.0	46.0	21.9	18.2	N
8	1.50000	32.8	27.5	0.3	33.1	27.8	56.0	46.0	22.9	18.2	N
9	1.80800	32.7	26.9	0.3	33.0	27.2	56.0	46.0	23.0	18.8	N
10	12.19600	34.0	25.5	0.8	34.8	26.3	60.0	50.0	25.2	23.7	N
11	16.22750	37.1	27.8	1.0	38.1	28.8	60.0	50.0	21.9	21.2	N
12	0.15356	45.6	28.7	0.3	45.9	29.0	65.8	55.8	19.9	26.8	L1
13	0.17119	46.2	33.1	0.2	46.4	33.3	64.9	54.9	18.5	21.6	L1
14	0.19709	42.1	25.8	0.2	42.3	26.0	63.7	53.7	21.4	27.7	L1
15	0.40463	44.8	36.4	0.3	45.1	36.7	57.8	47.8	12.7	11.1	L1
16	0.71931	30.2	20.7	0.2	30.4	20.9	56.0	46.0	25.6	25.1	L1
17	0.95080	28.1	19.0	0.3	28.4	19.3	56.0	46.0	27.6	26.7	L1
18	1.21400	26.9	19.3	0.3	27.2	19.6	56.0	46.0	28.8	26.4	L1
19	1.50500	28.2	22.4	0.3	28.5	22.7	56.0	46.0	27.5	23.3	L1
20	1.73100	28.0	21.9	0.3	28.3	22.2	56.0	46.0	27.7	23.8	L1
21	1.96000	28.0	22.3	0.3	28.3	22.6	56.0	46.0	27.7	23.4	L1
22	12.05350	34.9	26.1	0.8	35.7	26.9	60.0	50.0	24.3	23.1	L1
23	16.22800	38.8	29.3	1.0	39.8	30.3	60.0	50.0	20.2	19.7	L1

AC Line Conducted Emissions (Graph)

Test Mode: 802.11g (2.4GHz Band)

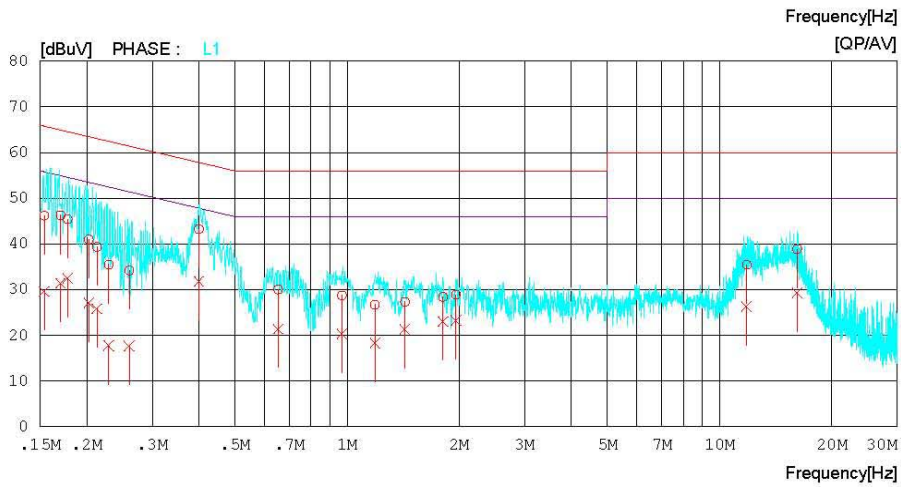
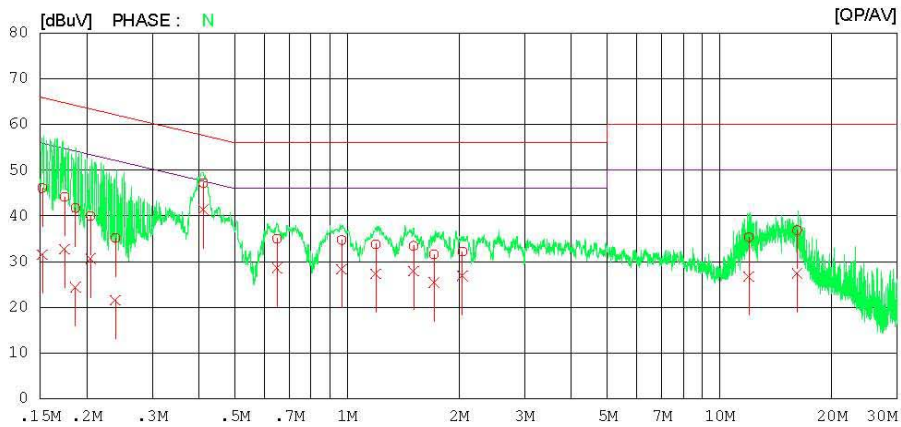


Results of Conducted Emission

Digital EMC
Date : 2012-09-14

Model No.	: IPN100HD-5110PIR	Reference No.	: FCC Part15.C
Type	: IP Network Camera	Power Supply	: 120 V 60 Hz
Serial No.	: N/A	Temp/Humi.	: 23 °C 52 % R.H.
Test Condition	: 802.11g	Operator	: S.K. Ryu

Memo :
LIMIT : CISPR22_B QP
CISPR22_B AV



AC Line Conducted Emissions (List)
 Test Mode: 802.11g (2.4GHz Band)

Results of Conducted Emission

Digital EMC
 Date : 2012-09-17

Model No. : IPN100HD-5110PIR
 Type : IP Network Camera
 Serial No. : N/A
 Test Condition : 802.11g
 Reference No. : FCC Part15.C
 Power Supply : 120 V 60 Hz
 Temp/Humi. : 23 'C 52 % R.H.
 Operator : S.K. Ryu

Memo :
 LIMIT : CISPR22_B QP
 CISPR22_B AV

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15206	45.8	31.2	0.3	46.1	31.5	65.9	55.9	19.8	24.4	N
2	0.17434	43.9	32.5	0.2	44.1	32.7	64.8	54.8	20.7	22.1	N
3	0.18659	41.5	24.2	0.2	41.7	24.4	64.2	54.2	22.5	29.8	N
4	0.20490	39.8	30.4	0.2	40.0	30.6	63.4	53.4	23.4	22.8	N
5	0.23868	35.0	21.3	0.2	35.2	21.5	62.1	52.1	26.9	30.6	N
6	0.41138	46.9	41.0	0.3	47.2	41.3	57.6	47.6	10.4	6.3	N
7	0.64903	34.8	28.4	0.2	35.0	28.6	56.0	46.0	21.0	17.4	N
8	0.96726	34.4	28.0	0.3	34.7	28.3	56.0	46.0	21.3	17.7	N
9	1.19450	33.5	27.0	0.3	33.8	27.3	56.0	46.0	22.2	18.7	N
10	1.50800	33.2	27.6	0.3	33.5	27.9	56.0	46.0	22.5	18.1	N
11	1.71200	31.3	25.1	0.3	31.6	25.4	56.0	46.0	24.4	20.6	N
12	2.04050	31.9	26.5	0.3	32.2	26.8	56.0	46.0	23.8	19.2	N
13	11.98150	34.5	25.9	0.8	35.3	26.7	60.0	50.0	24.7	23.3	N
14	16.16600	35.8	26.4	1.0	36.8	27.4	60.0	50.0	23.2	22.6	N
15	0.15390	45.9	29.3	0.3	46.2	29.6	65.8	55.8	19.6	26.2	L1
16	0.17016	46.1	31.2	0.2	46.3	31.4	65.0	55.0	18.7	23.6	L1
17	0.17773	45.2	32.3	0.2	45.4	32.5	64.6	54.6	19.2	22.1	L1
18	0.20269	40.8	26.9	0.2	41.0	27.1	63.5	53.5	22.5	26.4	L1
19	0.21305	39.2	25.6	0.2	39.4	25.8	63.1	53.1	23.7	27.3	L1
20	0.22910	35.3	17.6	0.2	35.5	17.8	62.5	52.5	27.0	34.7	L1
21	0.26033	34.0	17.5	0.2	34.2	17.7	61.4	51.4	27.2	33.7	L1
22	0.40019	43.0	31.5	0.3	43.3	31.8	57.8	47.8	14.5	16.0	L1
23	0.65321	29.8	21.2	0.2	30.0	21.4	56.0	46.0	26.0	24.6	L1
24	0.96889	28.4	20.0	0.3	28.7	20.3	56.0	46.0	27.3	25.7	L1
25	1.18850	26.4	18.0	0.3	26.7	18.3	56.0	46.0	29.3	27.7	L1
26	1.42950	27.0	21.1	0.3	27.3	21.4	56.0	46.0	28.7	24.6	L1
27	1.81000	28.1	22.7	0.3	28.4	23.0	56.0	46.0	27.6	23.0	L1
28	1.95950	28.6	23.0	0.3	28.9	23.3	56.0	46.0	27.1	22.7	L1
29	11.82800	34.7	25.5	0.8	35.5	26.3	60.0	50.0	24.5	23.7	L1
30	16.16700	37.9	28.3	1.0	38.9	29.3	60.0	50.0	21.1	20.7	L1

AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT20 (2.4GHz Band)

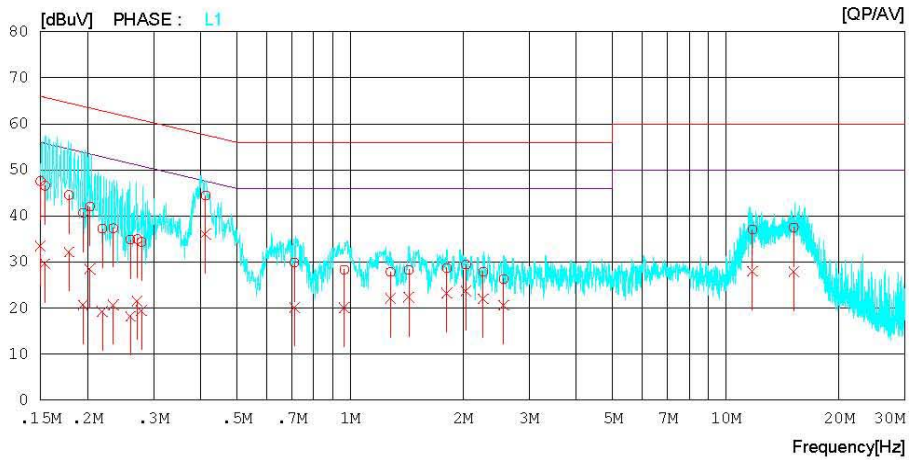
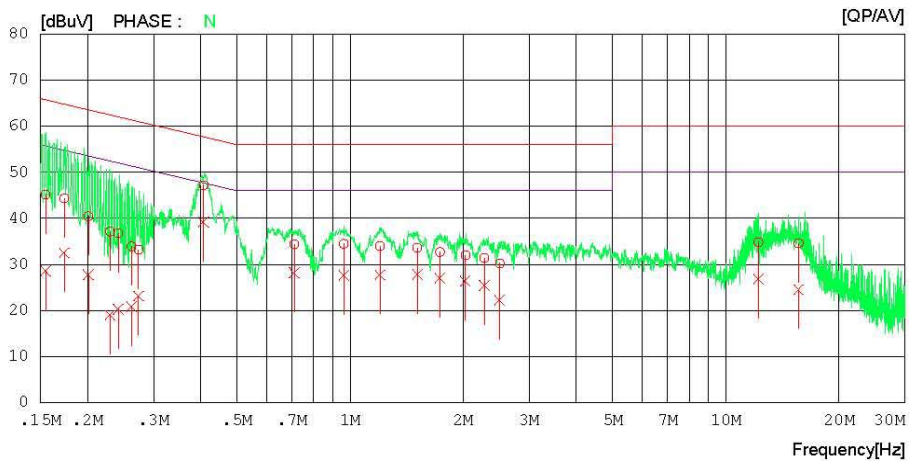


Results of Conducted Emission

Digital EMC
Date : 2012-09-14

Model No.	: IPN100HD-5110PIR	Reference No.	: FCC Part15.C
Type	: IP Network Camera	Power Supply	: 120 V 60 Hz
Serial No.	: N/A	Temp/Humi.	: 23 °C 52 % R.H.
Test Condition	: 802.11n(HT20)	Operator	: S.K. Ryu

Memo :
LIMIT : CISPR22_B QP
CISPR22_B AV



AC Line Conducted Emissions (List)

Test Mode: 802.11n HT20 (2.4GHz Band)

Results of Conducted Emission

Digital EMC
 Date : 2012-09-17

Model No. : IPN100HD-5110PIR Reference No. : FCC Part15.C
 Type : IP Network Camera Power Supply : 120 V 60 Hz
 Serial No. : N/A Temp/Humi. : 23 'C 52 % R.H.
 Test Condition : 802.11n(HT20) Operator : S.K. Ryu

Memo :

LIMIT : CISPR22_B QP
 CISPR22_B AV

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	
1	0.15494	44.9	28.3	0.3	45.2	28.6	65.7	55.7	20.5	27.1	N
2	0.17366	44.1	32.3	0.2	44.3	32.5	64.8	54.8	20.5	22.3	N
3	0.20118	40.2	27.6	0.2	40.4	27.8	63.6	53.6	23.2	25.8	N
4	0.22998	36.9	18.7	0.2	37.1	18.9	62.5	52.5	25.4	33.6	N
5	0.24156	36.6	20.1	0.2	36.8	20.3	62.0	52.0	25.2	31.7	N
6	0.26190	33.7	20.6	0.2	33.9	20.8	61.4	51.4	27.5	30.6	N
7	0.27338	33.0	22.9	0.2	33.2	23.1	61.0	51.0	27.8	27.9	N
8	0.40768	46.9	38.9	0.3	47.2	39.2	57.7	47.7	10.5	8.5	N
9	0.71069	34.2	28.0	0.2	34.4	28.2	56.0	46.0	21.6	17.8	N
10	0.96236	34.2	27.3	0.3	34.5	27.6	56.0	46.0	21.5	18.4	N
11	1.20150	33.7	27.4	0.3	34.0	27.7	56.0	46.0	22.0	18.3	N
12	1.51000	33.2	27.5	0.3	33.5	27.8	56.0	46.0	22.5	18.2	N
13	1.73600	32.4	26.7	0.3	32.7	27.0	56.0	46.0	23.3	19.0	N
14	2.02700	31.7	26.1	0.3	32.0	26.4	56.0	46.0	24.0	19.6	N
15	2.27850	31.1	25.1	0.3	31.4	25.4	56.0	46.0	24.6	20.6	N
16	2.50350	29.9	21.9	0.3	30.2	22.2	56.0	46.0	25.8	23.8	N
17	12.21500	34.0	26.1	0.8	34.8	26.9	60.0	50.0	25.2	23.1	N
18	15.61500	33.6	23.5	1.0	34.6	24.5	60.0	50.0	25.4	25.5	N
19	0.15000	47.3	33.2	0.3	47.6	33.5	66.0	56.0	18.4	22.5	L1
20	0.15436	46.3	29.3	0.3	46.6	29.6	65.8	55.8	19.2	26.2	L1
21	0.17875	44.3	32.0	0.2	44.5	32.2	64.5	54.5	20.0	22.3	L1
22	0.19493	40.5	20.4	0.2	40.7	20.6	63.8	53.8	23.1	33.2	L1
23	0.20320	41.9	28.3	0.2	42.1	28.5	63.5	53.5	21.4	25.0	L1
24	0.21909	37.1	19.1	0.2	37.3	19.3	62.9	52.9	25.6	33.6	L1
25	0.23431	37.1	20.5	0.2	37.3	20.7	62.3	52.3	25.0	31.6	L1
26	0.26064	34.7	18.0	0.2	34.9	18.2	61.4	51.4	26.5	33.2	L1
27	0.27158	34.8	21.4	0.2	35.0	21.6	61.1	51.1	26.1	29.5	L1
28	0.27861	34.2	19.3	0.2	34.4	19.5	60.9	50.9	26.5	31.4	L1
29	0.41250	44.1	35.8	0.3	44.4	36.1	57.6	47.6	13.2	11.5	L1
30	0.71138	29.7	20.0	0.2	29.9	20.2	56.0	46.0	26.1	25.8	L1
31	0.96515	28.0	19.8	0.3	28.3	20.1	56.0	46.0	27.7	25.9	L1
32	1.28250	27.6	21.8	0.3	27.9	22.1	56.0	46.0	28.1	23.9	L1
33	1.43300	28.0	22.1	0.3	28.3	22.4	56.0	46.0	27.7	23.6	L1
34	1.81100	28.4	23.0	0.3	28.7	23.3	56.0	46.0	27.3	22.7	L1
35	2.03700	29.1	23.4	0.3	29.4	23.7	56.0	46.0	26.6	22.3	L1
36	2.26200	27.6	21.7	0.3	27.9	22.0	56.0	46.0	28.1	24.0	L1
37	2.56350	26.0	20.3	0.3	26.3	20.6	56.0	46.0	29.7	25.4	L1
38	11.76950	36.2	27.2	0.8	37.0	28.0	60.0	50.0	23.0	22.0	L1
39	15.16950	36.6	27.0	0.9	37.5	27.9	60.0	50.0	22.5	22.1	L1

AC Line Conducted Emissions (Graph)

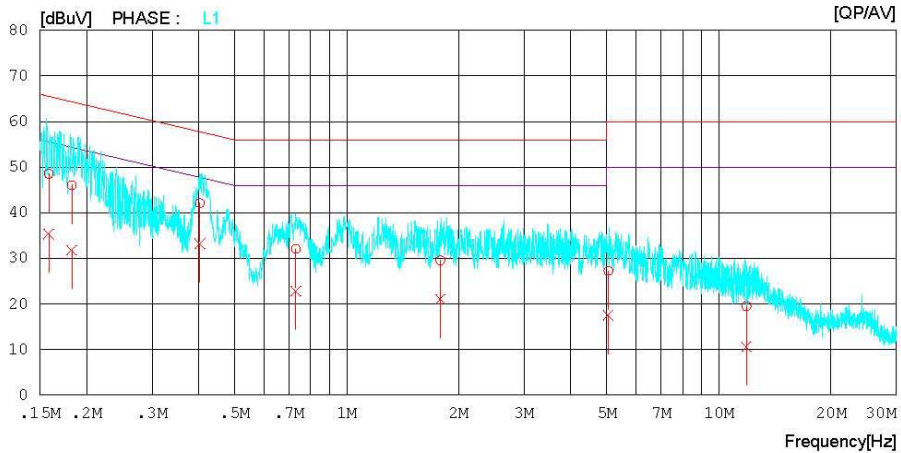
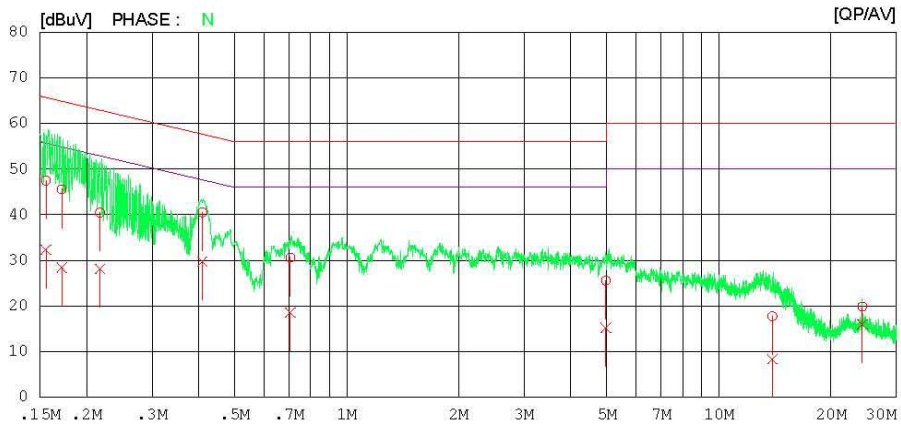
Test Mode: 802.11n HT40 (2.4GHz Band)



Results of Conducted Emission

Digital EMC
Date : 2012-09-25

Model No.	: IPN100HD-5110	Reference No.	:
Type	: IP Network Camera	Power Supply	: 120 V 60 Hz
Serial No.	: N/A	Temp/Humi.	: 25 °C 41 % R.H.
Test Condition	: WLAN	Operator	: S.K.RYU
Memo	: 802.11n(40)		
LIMIT	: CISPR22_B QP		
	: CISPR22_B AV		



AC Line Conducted Emissions (List)

Test Mode: 802.11n HT40 (2.4GHz Band)

Results of Conducted Emission

Digital EMC
 Date : 2012-09-25

Model No.	: IPN100HD-5110	Reference No.	:
Type	: IP Network Camera	Power Supply	: 120 V 60 Hz
Serial No.	: N/A	Temp/Humi.	: 25 'C 41 % R.H.
Test Condition	: WLAN	Operator	: S.K.RYU

Memo : 802.11n(40)

LIMIT : CISPR22_B QP
 CISPR22_B AV

NO	FREQ [MHz]	READING		C. FACTOR [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]			
1	0.15550	47.2	32.0	0.3	47.5	32.3	65.7	55.7	18.2	23.4	N
2	0.17163	45.4	28.2	0.2	45.6	28.4	64.9	54.9	19.3	26.5	N
3	0.21750	40.2	27.9	0.2	40.4	28.1	62.9	52.9	22.5	24.8	N
4	0.40989	40.2	29.5	0.3	40.5	29.8	57.7	47.7	17.2	17.9	N
5	0.70591	30.4	18.3	0.2	30.6	18.5	56.0	46.0	25.4	27.5	N
6	4.97100	25.1	14.8	0.4	25.5	15.2	56.0	46.0	30.5	30.8	N
7	13.93100	16.8	7.4	0.9	17.7	8.3	60.0	50.0	42.3	41.7	N
8	24.28700	18.5	14.7	1.3	19.8	16.0	60.0	50.0	40.2	34.0	N
9	0.15833	48.3	35.1	0.3	48.6	35.4	65.6	55.6	17.0	20.2	L1
10	0.18256	45.9	31.6	0.2	46.1	31.8	64.4	54.4	18.3	22.6	L1
11	0.40324	41.9	33.0	0.3	42.2	33.3	57.8	47.8	15.6	14.5	L1
12	0.72980	31.9	22.7	0.2	32.1	22.9	56.0	46.0	23.9	23.1	L1
13	1.78650	29.3	20.8	0.3	29.6	21.1	56.0	46.0	26.4	24.9	L1
14	5.05200	26.9	17.2	0.4	27.3	17.6	60.0	50.0	32.7	32.4	L1
15	11.86850	18.7	9.9	0.8	19.5	10.7	60.0	50.0	40.5	39.3	L1

9. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent	E4440A	12/09/18	13/09/18	MY45304199
Spectrum Analyzer	Rohde Schwarz	FSQ26	12/01/09	13/01/09	200445
Spectrum Analyzer	Agilent	N9020A	12/01/09	13/01/09	MY49100833
Digital Multimeter	H.P	34401A	12/03/05	13/03/05	3146A13475, US36122178
Signal Generator	Rohde Schwarz	SMR20	12/03/05	13/03/05	101251
Vector Signal Generator	Rohde Schwarz	SMJ100A	12/01/09	13/01/09	100148
Thermo hygrometer	BODYCOM	BJ5478	12/01/13	13/01/13	090205-2
DC Power Supply	HP	6622A	12/03/05	13/03/05	3448A03760
High-pass filter	Wainwright	WHNX3.0	12/09/17	13/09/17	9
LOOP Antenna	ETS	6502	10/10/29	12/10/29	3471
BILOG ANTENNA	SCHAFFNER	CBL6112D	10/12/21	12/12/21	22609
HORN ANT	ETS	3115	12/02/20	13/02/20	6419
HORN ANT	A.H.Systems	SAS-574	11/03/25	13/03/25	154
Attenuator (3dB)	WEINSCHL	56-3	12/09/17	13/09/17	Y2342
Amplifier (22dB)	H.P	8447E	12/01/09	13/01/09	2945A02865
Amplifier (30dB)	Agilent	8449B	12/03/05	13/03/05	3008A01590
EMI TEST RECEIVER	R&S	ESU	12/03/05	13/03/05	100014
EMI Test Receiver	R&S	ECSI	12/03/05	13/03/05	100364
LISN	R&S	ESH2-Z5	12/09/18	13/09/18	8287391006
CVCF	NF Electronic	4420	12/03/05	13/03/05	304935/337980