Product Service

FCC / IC – TEST REPORT

Report Number	:	**60.790.15.023.01R**	Date of Issue:	2015-09-30

Model	:	**FOCUS86, FOCUS86-W, FOCUS86-B, FOCUS86T**
Product Type	:	WiFi Home Video Camera
Applicant	:	Binatone Electronics International Limited
Address	:	Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong.
Production Facility	:	TATUNG COMPANY
Address	:	22 Chungshan N. Rd. 3rd Sec. Taipei 104 Taiwan.

Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	57

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TÜV SÜD Hong Kong Co., Ltd reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Hong Kong Co., Ltd shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Hong Kong Co., Ltd issued reports.

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2, Nanshan District,
Shenzhen City, 518052,
P. R. China

Telephone: 86 755 8828 6998
Fax: 86 755 8828 5299

3 Description of the Equipment Under Test

Product:	WiFi Home Video Camera
Model no.:	FOCUS86
Listed Models:	FOCUS86-B, FOCUS86-W, FOCUS86T
FCC ID:	VLJ-FOCUS86
IC:	4522A-FOCUS86
Options and accessories:	AC/DC Adapter, Mobile Phone
Rating:	DC5V, 1000mA powered by AC/DC power adaptor
RF Transmission Frequency:	2412 – 2462 MHz 2422 – 2452 MHz
No. of Operated Channel:	11 CH / (802.11b/g/n – HT20) ; 7 CH / (802.11n – HT40)
Modulation:	DSSS (BPSK, QPSK, CCK) and OFDM (BPSK/QPSK/16-QAM/ 64-QAM)
Antenna Type:	Integral
Antenna Gain:	0 dBi
Description of the EUT:	The Equipment Under Test (EUT) is a Camera of Wireless Monitoring System which includes 802.11b/g/n module.

Channel list (MHz) (802.11b/g/n – HT20)				
CH 1 = 2412	CH 2 = 2417	CH 3 = 2422	CH 4 = 2427	CH 5 = 2432
CH 6 = 2437	CH 7 = 2442	CH 8 = 2447	CH 9 = 2452	CH 10 = 2457
CH 11 = 2462	---	---	---	---

Channel list (MHz) (802.11n – HT40)				
CH 3 = 2422	CH 4 = 2427	CH 5 = 2432	CH 6 = 2437	CH 7 = 2442
CH 8 = 2447	CH 9 = 2452	---	---	---

Product Service

4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2014 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 4 November 2014	General Requirements for the Certification of Radio Apparatus
RSS-247 Issue 1 May 2015	RSS-247 – Digital Transmission Systems (DTSs), Frequency Hopping systems (FHSs) and License-exempt Local Area Network (LE-LAN) Devices
RSS-102 Issue 5 March 2015	Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

The test methods were according to the procedures KDB 558074 D01 DTS Meas Guidance v03r02.

Product Service

5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C, RSS-Gen, RSS-247, RSS-102				
Test Condition			Test Site	Test Result
§15.207	RSS-Gen Section 8.8	Conducted emission AC power port	Site 1	Pass
§15.247(b)(1)	RSS-247 Section 5.4(2)	Conducted peak output power	Site 1	Pass
§15.247(a)(2)	RSS-247 Section 5.2(1)	6dB bandwidth	Site 1	Pass
§15.247(a)(1)	RSS-247 Section 5.1(1)	20dB bandwidth	---	N/A
§15.247(a)(1)	RSS-247 Section 5.1(2)	Carrier frequency separation	---	N/A
§15.247(a)(1)(iii)	RSS-247 Section 5.1(4)	Number of hopping frequencies	---	N/A
§15.247(a)(1)(iii)	RSS-247 Section 5.1(4)	Dwell Time	---	N/A
§15.247(e)	RSS-247 Section 5.2(2)	Power spectral density*	Site 1	Pass
§15.247(d)	RSS-247 Section 5.5	Spurious RF conducted emissions	Site 1	Pass
§15.247(d)	RSS-247 Section 5	Band edge	Site 1	Pass
§15.247(d) & §15.209 &	RSS-247 Section 5.5 & RSS-Gen 6.13	Spurious radiated emissions for transmitter	Site 1	Pass
---	RSS-102 Section 2.5.2	RF Exposure Evaluation	---	Pass
§15.203	RSS-Gen 8.3	Antenna requirement	See note 1	Pass

Note 1: N/A=Not Applicable.
Note 2: The EUT uses a patch antenna, which gain is 0 dBi. In accordance to §15.203 and RSS-Gen 8.3 , It is considered sufficiently to comply with the provisions of this section.
Note 3: The data shown on the report are the worst case result.

Product Service

6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: VLJ-FOCUS86, IC: 4522A-FOCUS86 complies with Section 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C Rules and RSS-247.

As per Client Declaration, the circuit design, PCB Layout, shielding and interfaces of FOCUS86 are identical for Listed Models of above table, only the Cosmetic are different. So we use the FOCUS86 as a representative model.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: 2015-08-25

Testing Start Date: 2015-08-25

Testing End Date: 2015-09-30

TÜV SÜD HONG KONG LTD.

Prepared by:

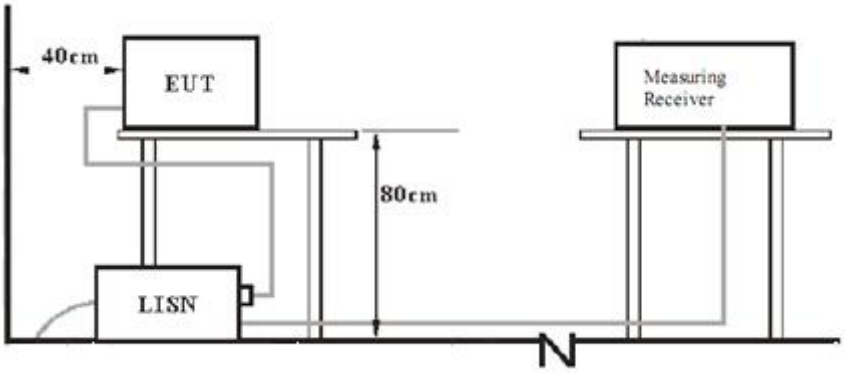
Alan Xiong
Project Engineer

Reviewed by:

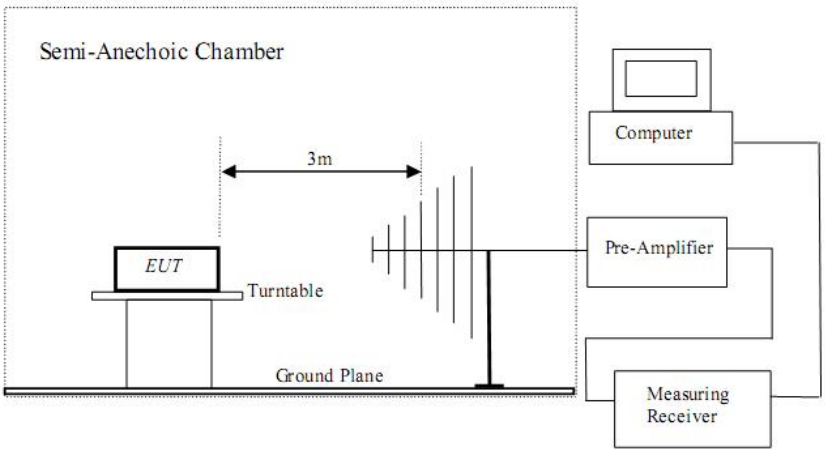
John Zhi
Project Manager

7 Test Setups

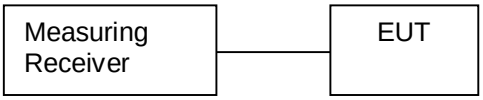
7.1 AC Power Line Conducted Emission test setups



7.2 Radiated test setups



7.3 Conducted RF test setups



8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
WiFi Home Video Camera	TATUNG COMPANY	FOCUS86	---

The system was configured to Normal mode and Test mode.

Normal mode: typical working mode (normal status)

Test mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power

9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

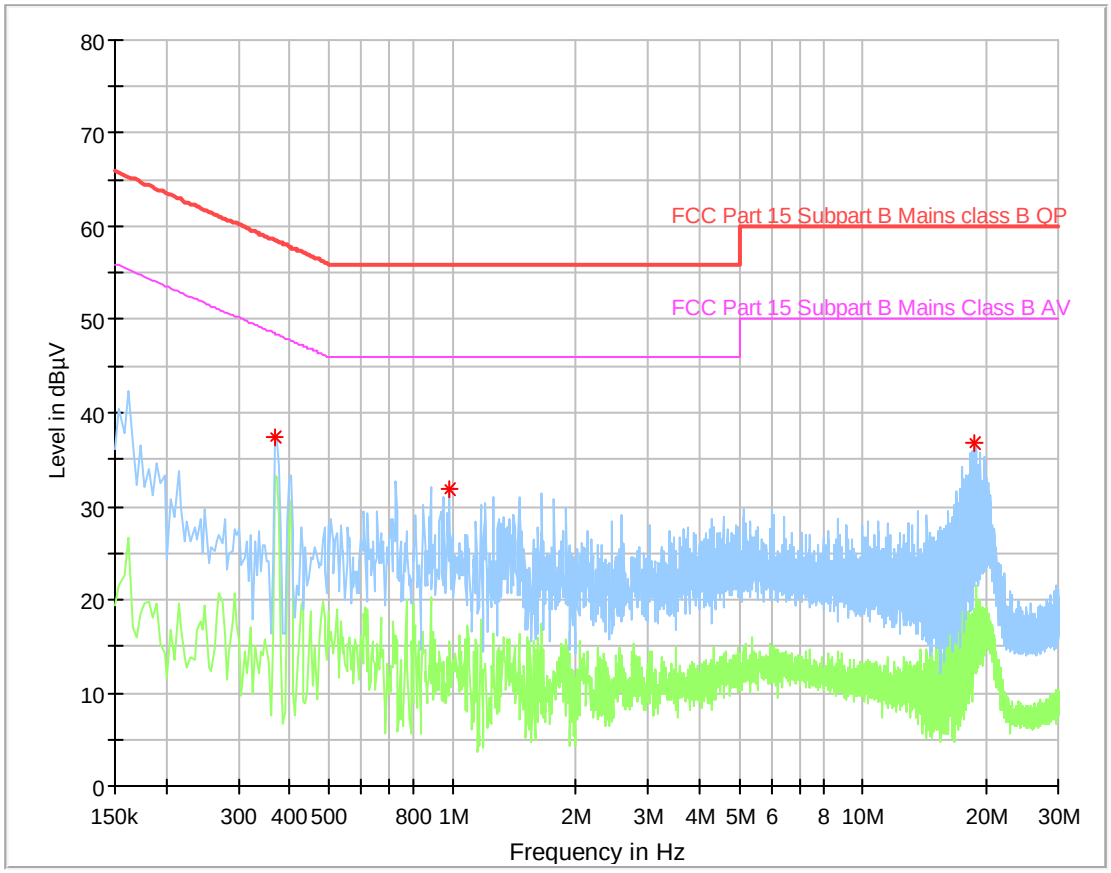
Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

Conducted Emission

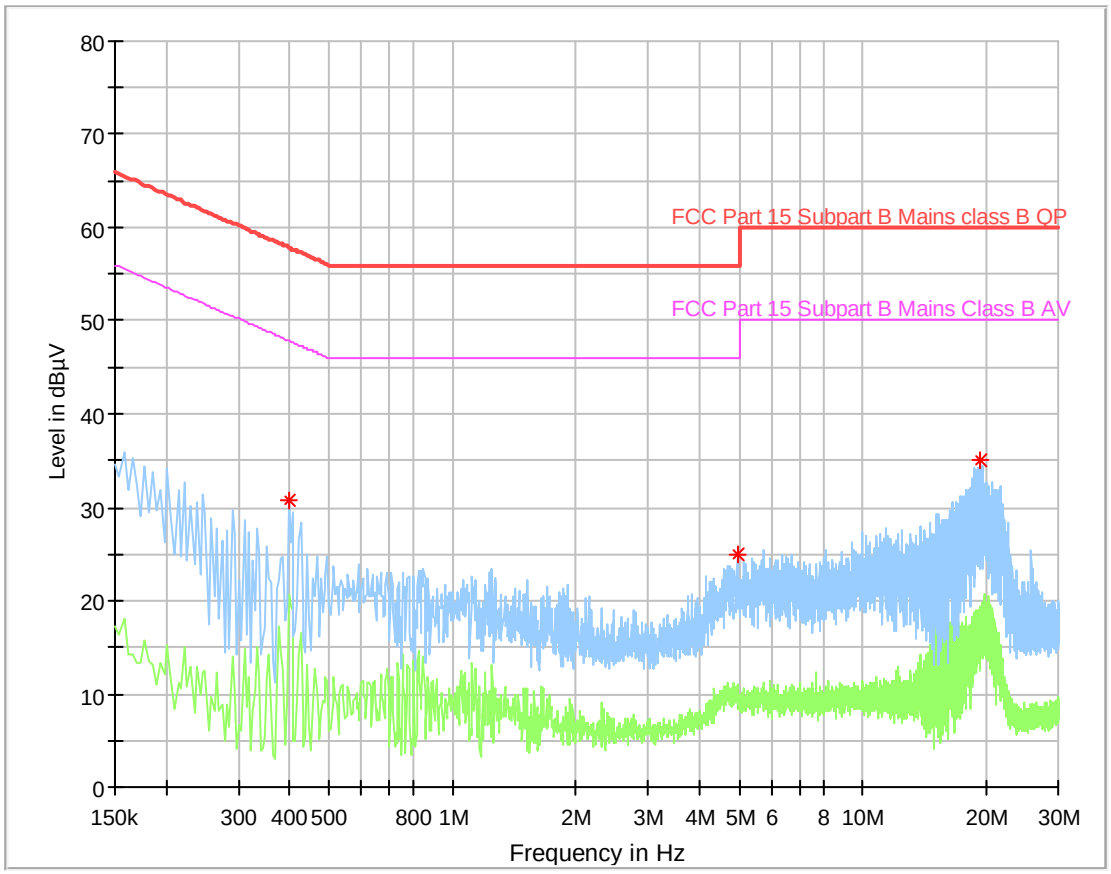
Product Type	:	WiFi Home Video Camera
M/N	:	FOCUS86-W
Operating Condition	:	Transmitting mode
Test Specification	:	FCC part 15 Section 15.207 Class B RSS-GEN Issue 4 section 8.8
Comment	:	---

Phase L
(Adaptor Model: S005ANU0500100)



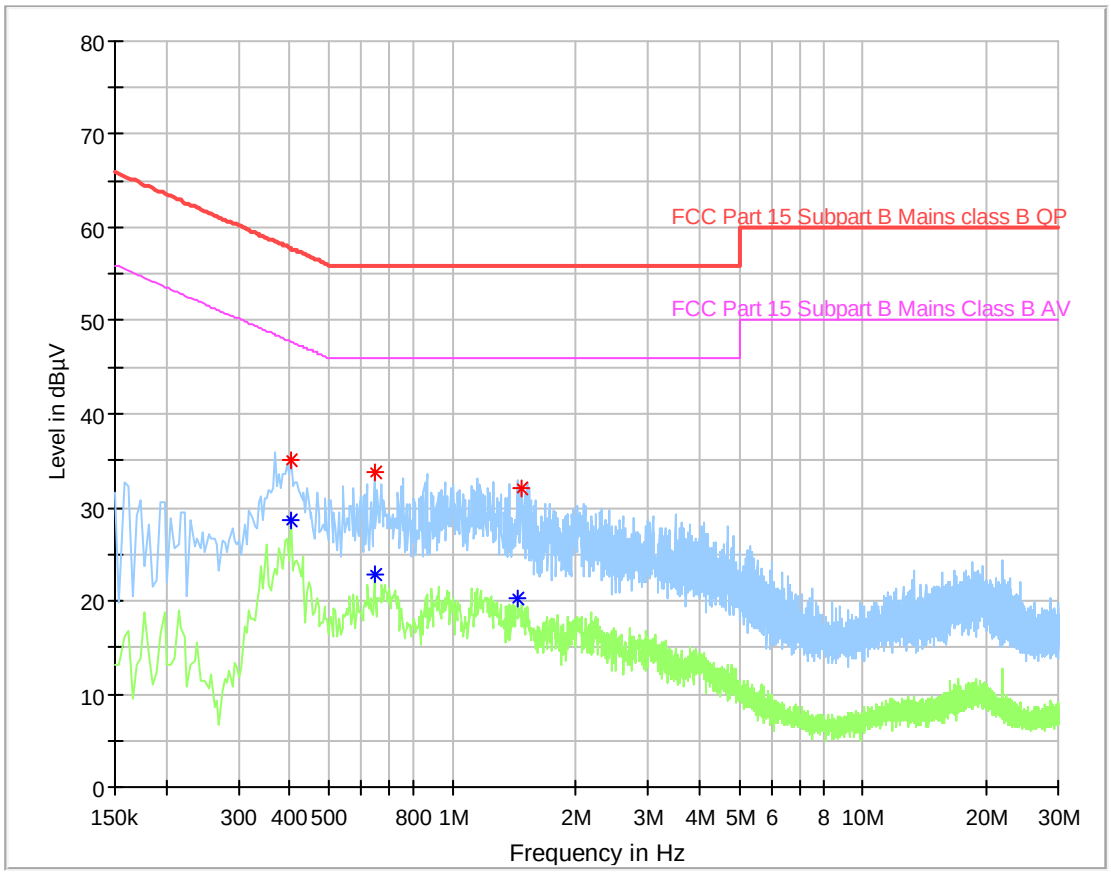
Frequency (MHz)	MaxPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.370000	37.42	58.50	21.08	L1	10.2
0.982000	31.74	56.00	24.26	L1	9.8
18.750000	36.82	60.00	23.18	L1	10.1

Phase N
(Adaptor Model: S005ANU0500100)



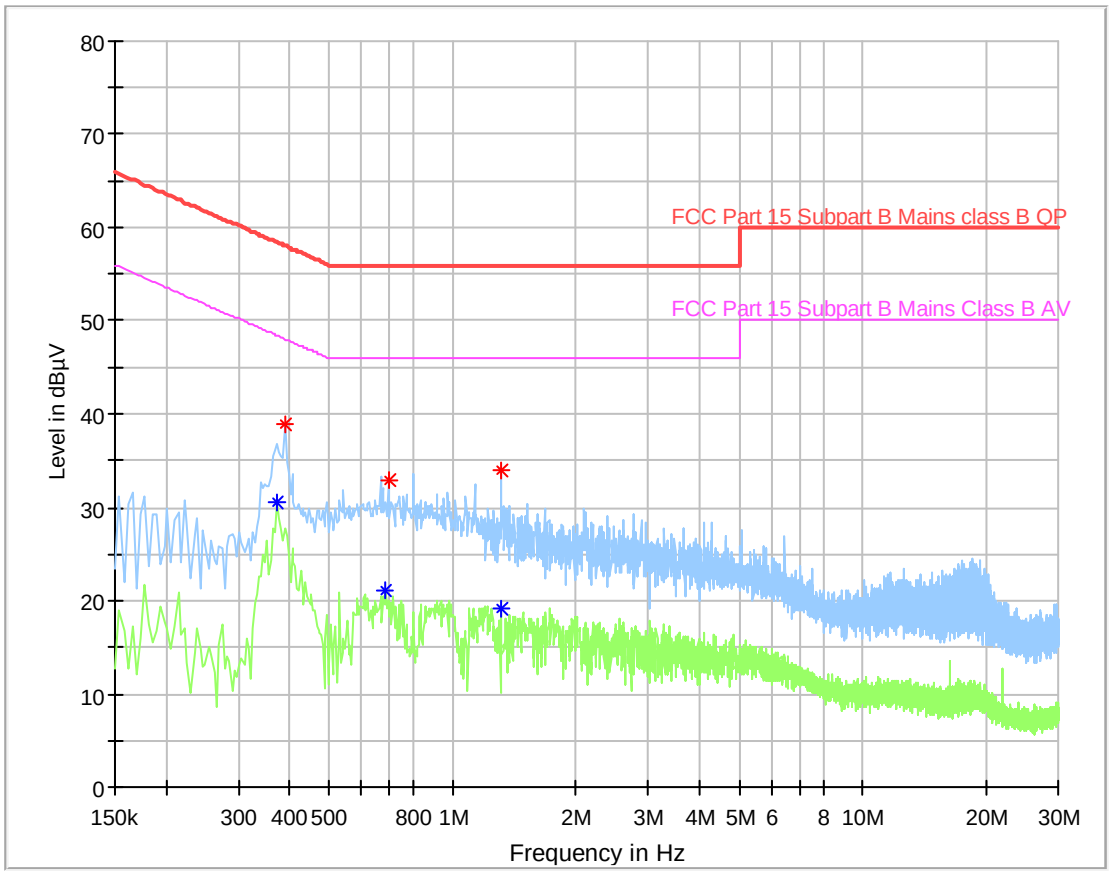
Frequency (MHz)	MaxPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.398000	30.81	57.90	27.08	N	10.1
4.934000	24.99	56.00	31.01	N	9.8
19.318000	35.11	60.00	24.89	N	10.1

Phase L
(Adaptor Model: S006AKU0500100)



Frequency (MHz)	MaxPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.402000	---	47.81	19.22	L1	10.1
0.402000	35.01	57.81	22.80	L1	10.1
0.646000	---	46.00	23.17	L1	10.0
0.646000	33.75	56.00	22.25	L1	10.0
1.438000	---	46.00	25.79	L1	9.8
1.478000	31.98	56.00	24.02	L1	9.8

Phase N
(Adaptor Model: S006AKU0500100)



Frequency (MHz)	MaxPeak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.374000	---	48.41	17.92	N	10.1
0.390000	38.86	58.06	19.20	N	10.1
0.686000	---	46.00	24.86	N	9.9
0.698000	33.00	56.00	23.00	N	9.9
1.318000	---	46.00	26.81	N	9.8
1.318000	34.03	56.00	21.97	N	9.8

9.2 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
   Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
   RBW > the 20 dB bandwidth of the emission being measured, VBW≥RBW,
   Sweep = auto, Detector function = peak, Trace = max hold
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

Limits

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

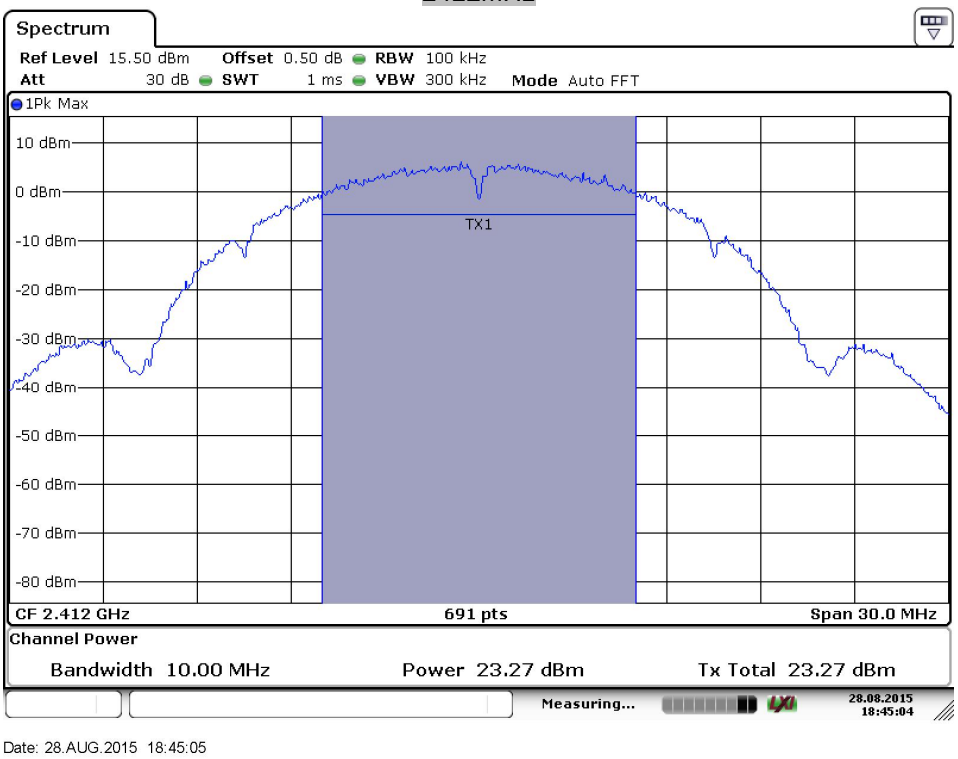
Conducted peak output power

IEEE802.11b

Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2412 MHz	23.27	Pass
Middle channel 2437 MHz	21.59	Pass
High channel 2462 MHz	22.26	Pass

2412MHz



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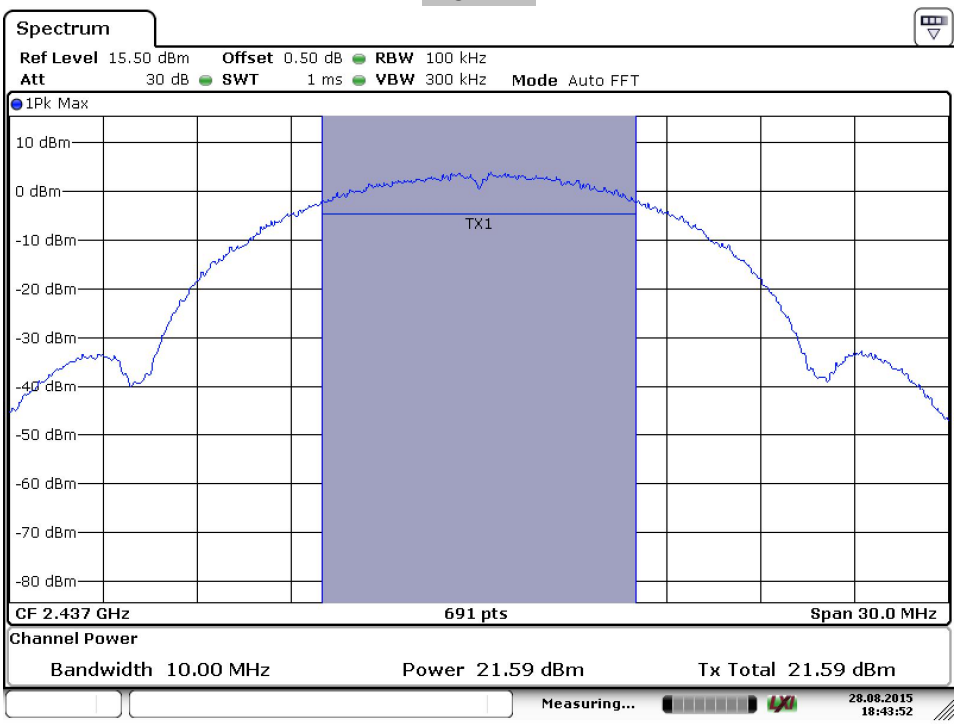
2437MHz



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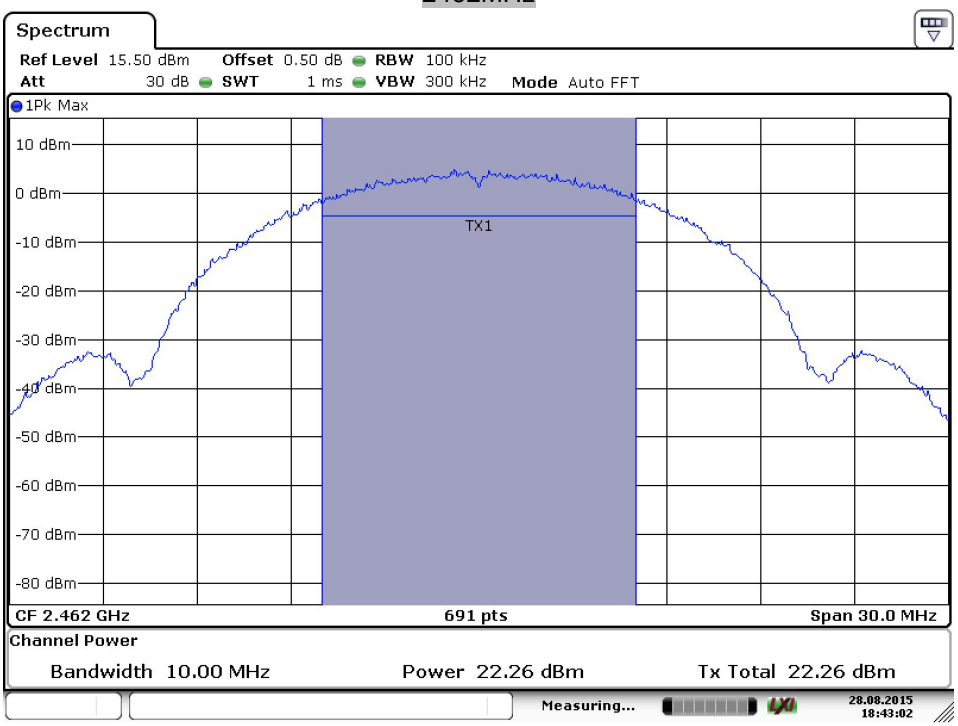
2462MHz



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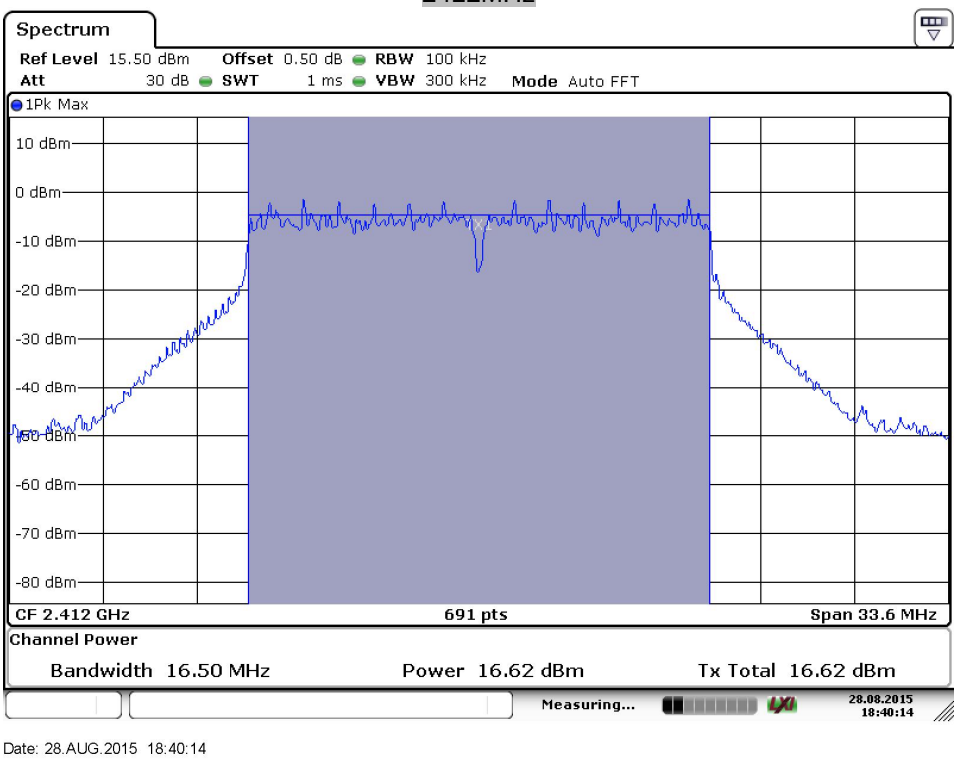
IEEE802.11g

Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2412 MHz	16.62	Pass
Middle channel 2437 MHz	15.71	Pass
High channel 2462 MHz	16.68	Pass

2412MHz



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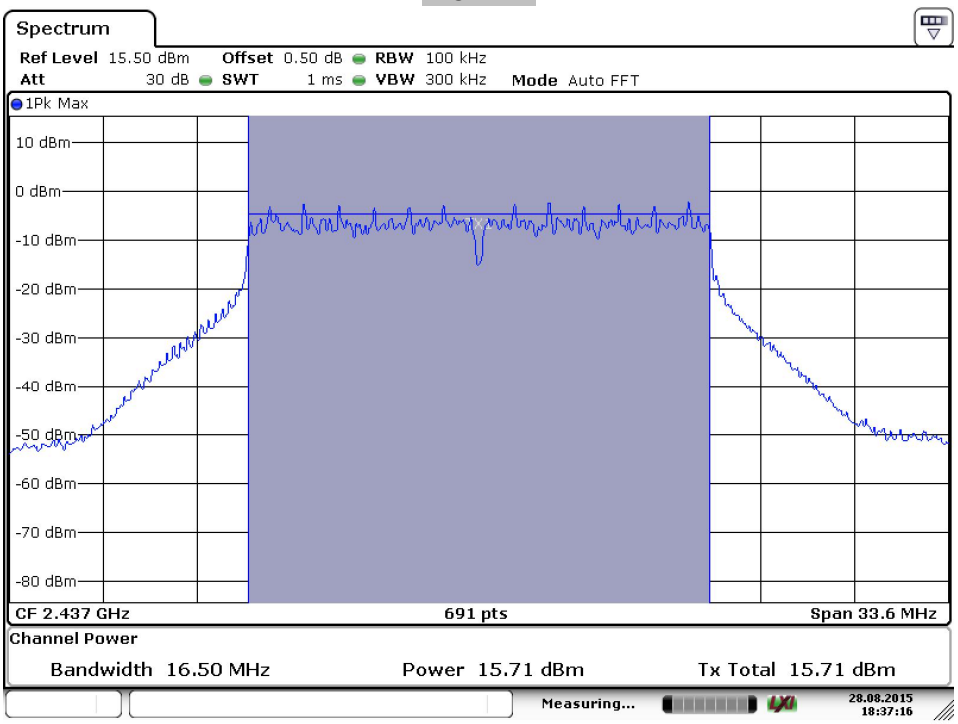
2437MHz



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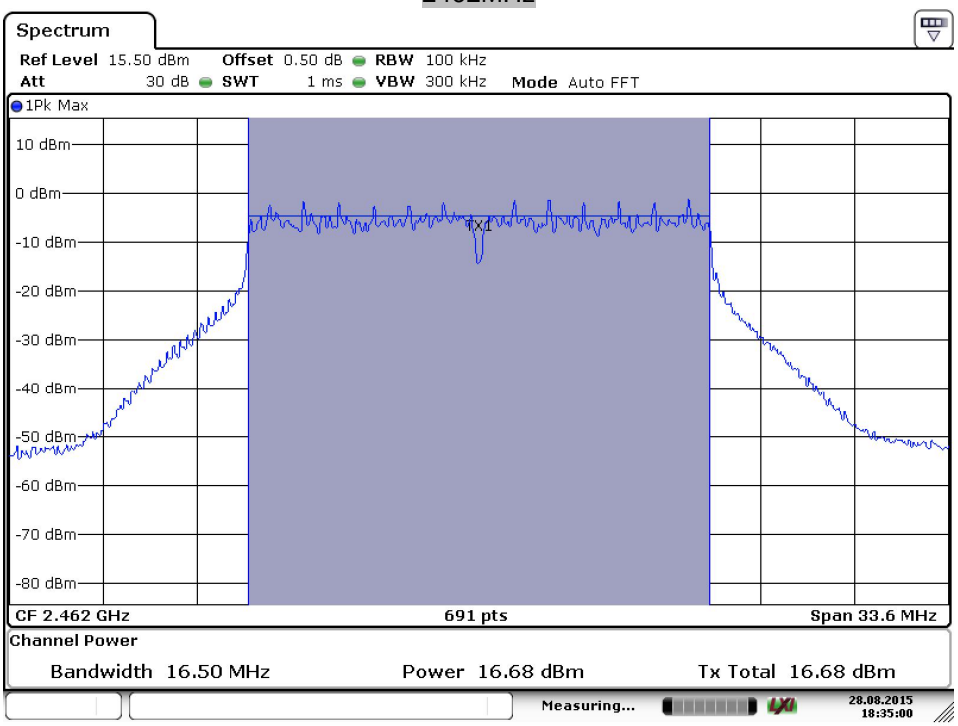
2462MHz



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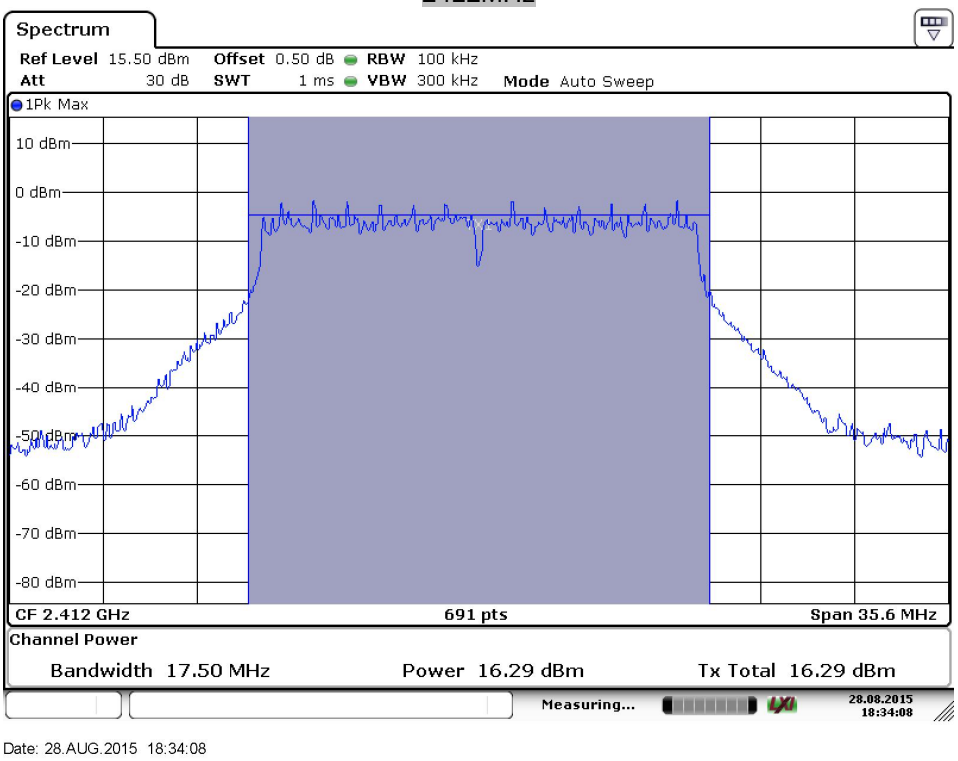
IEEE802.11n-HT20

Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2412 MHz	16.29	Pass
Middle channel 2437 MHz	15.48	Pass
High channel 2462 MHz	16.10	Pass

2412MHz



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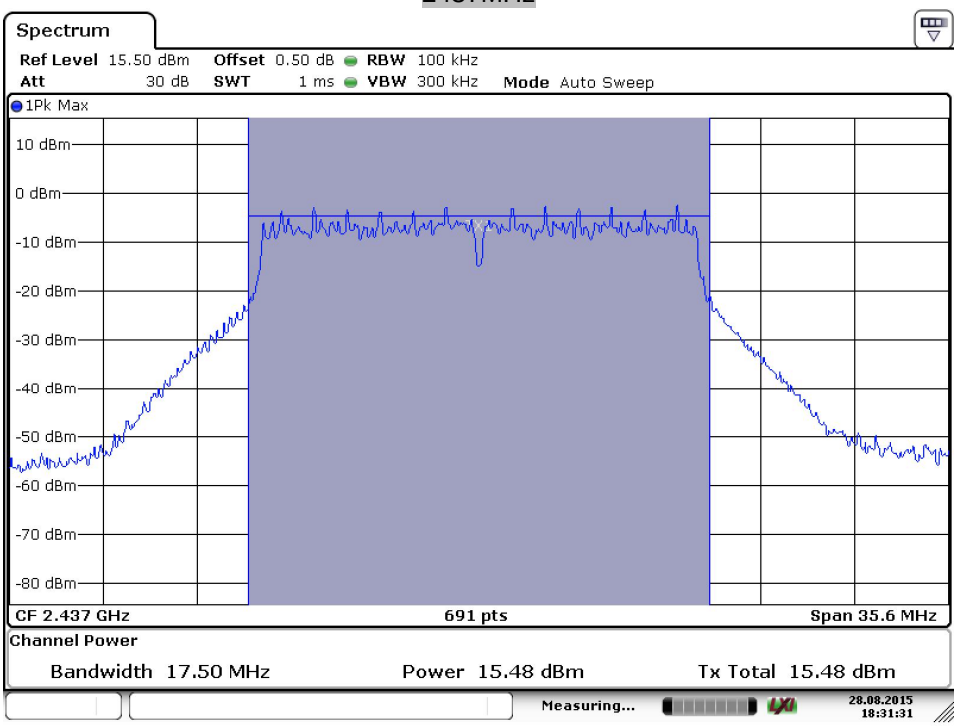
2437MHz



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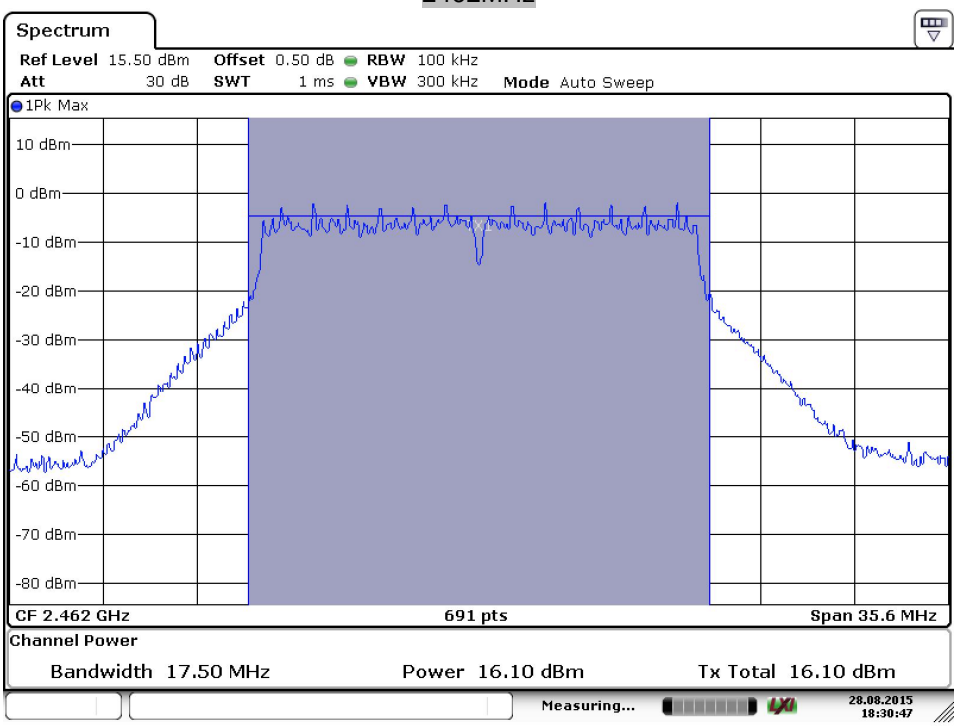
2462MHz



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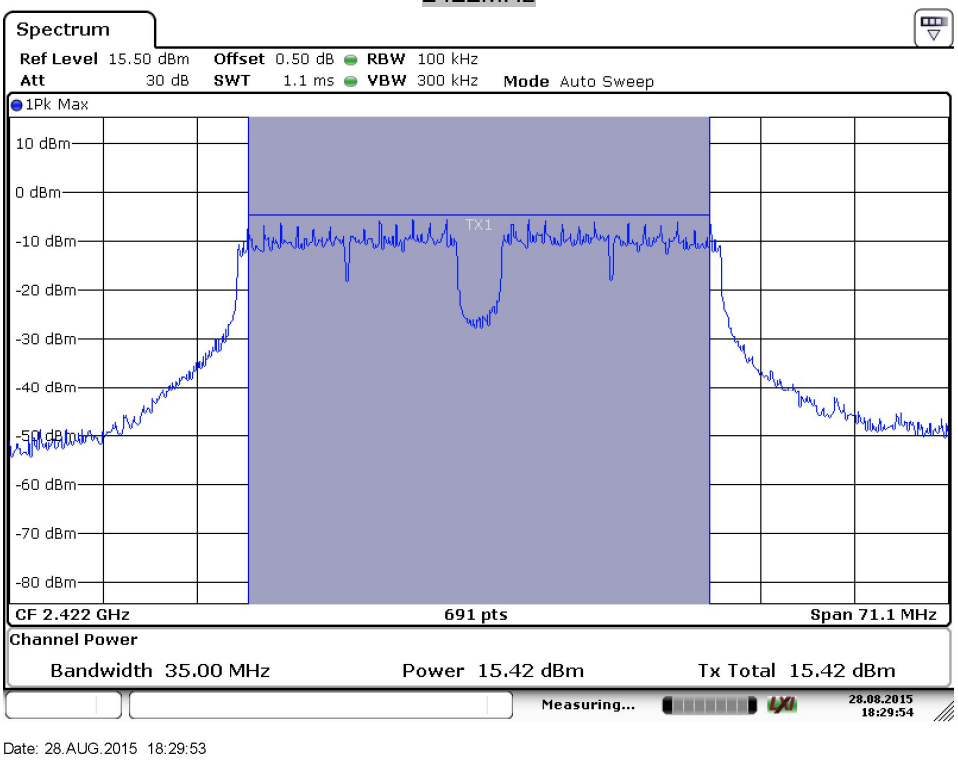
IEEE802.11n-HT40

Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2422 MHz	15.42	Pass
Middle channel 2437 MHz	14.64	Pass
High channel 2452 MHz	15.03	Pass

2422MHz



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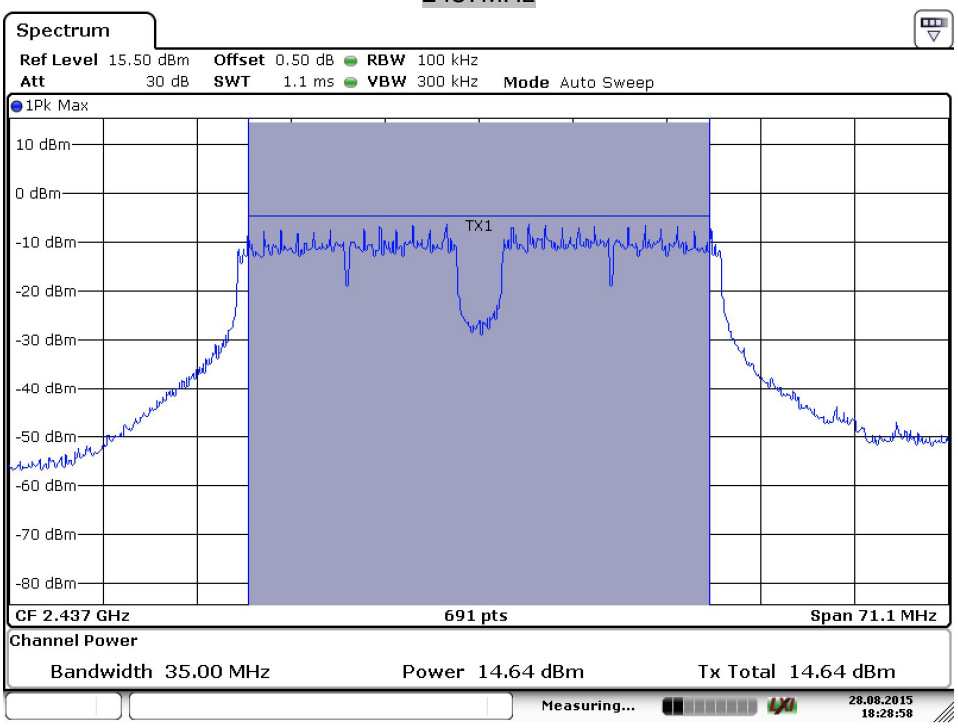
2437MHz



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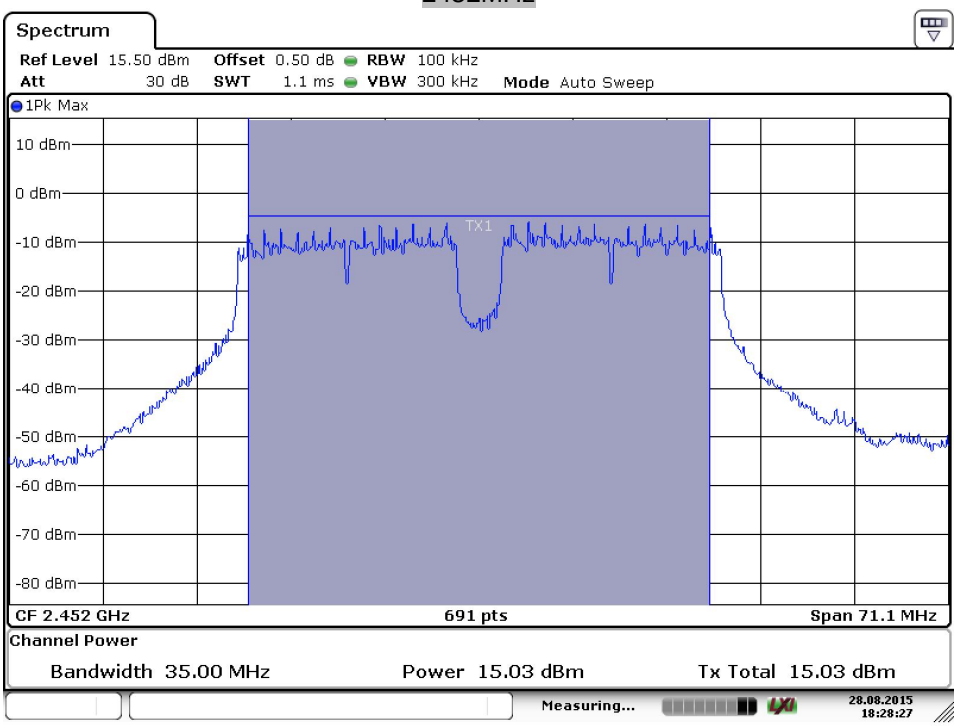
2452MHz



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9.3 6 dB bandwidth

Test Method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Limit

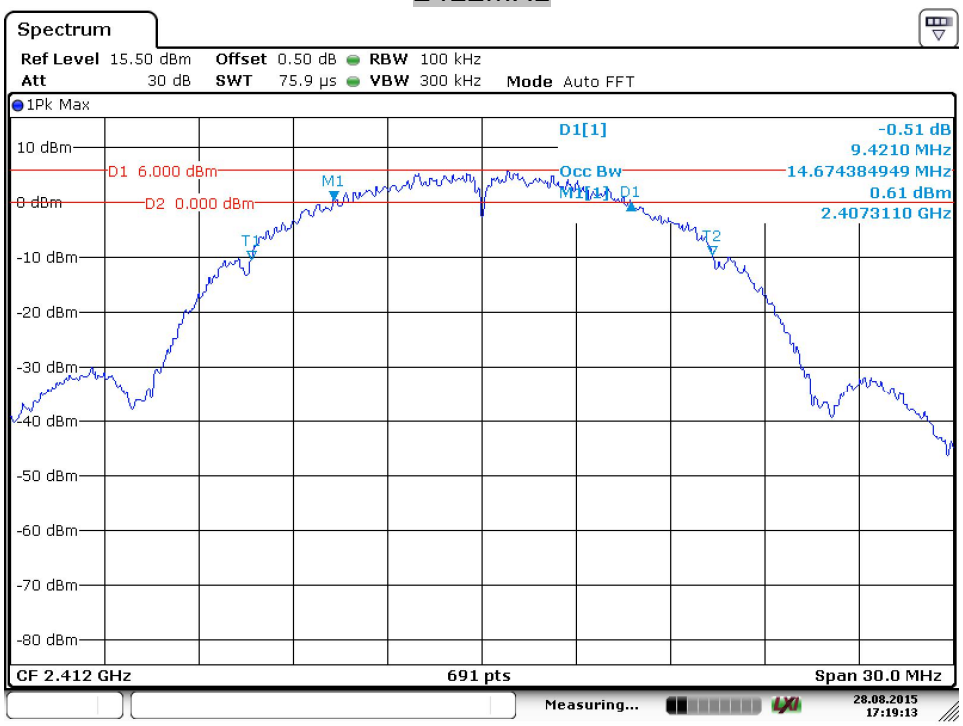
Limit [kHz]
N/A

6 dB bandwidth

IEEE802.11b

Frequency MHz	6 dB Bandwidth MHz	Result
2412	9.421	Pass
2437	9.465	Pass
2462	10.246	Pass

2412MHz



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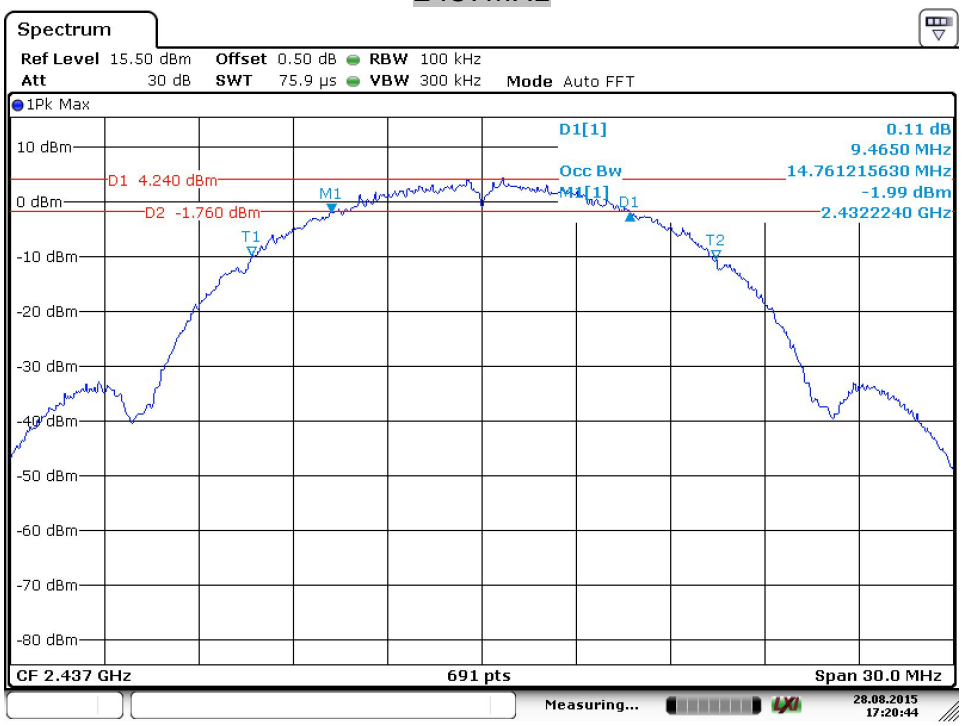
2437MHz



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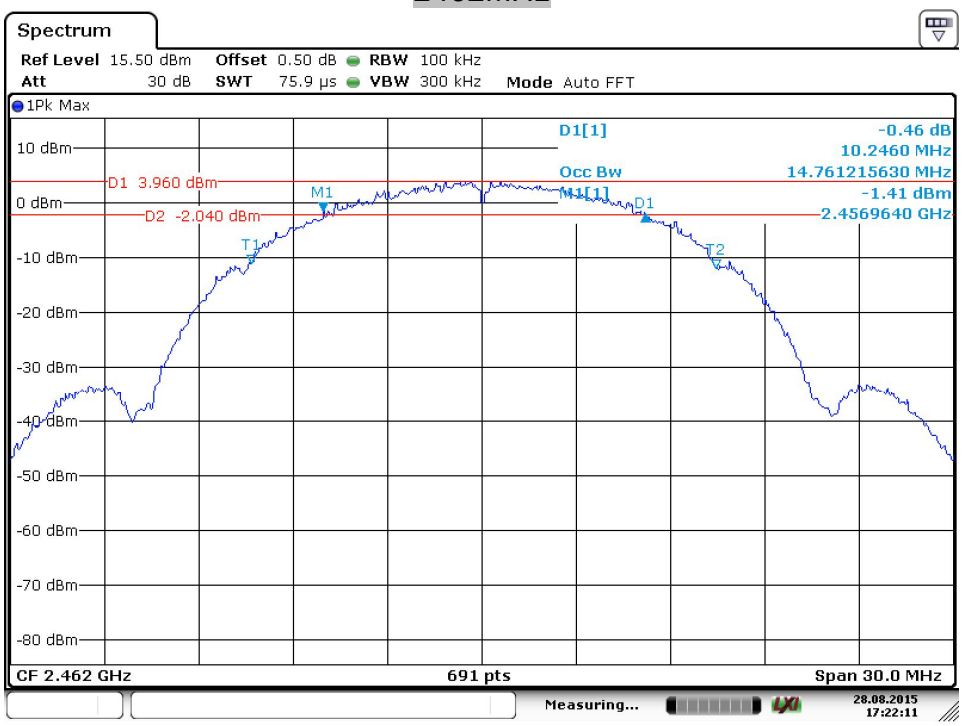
2462MHz



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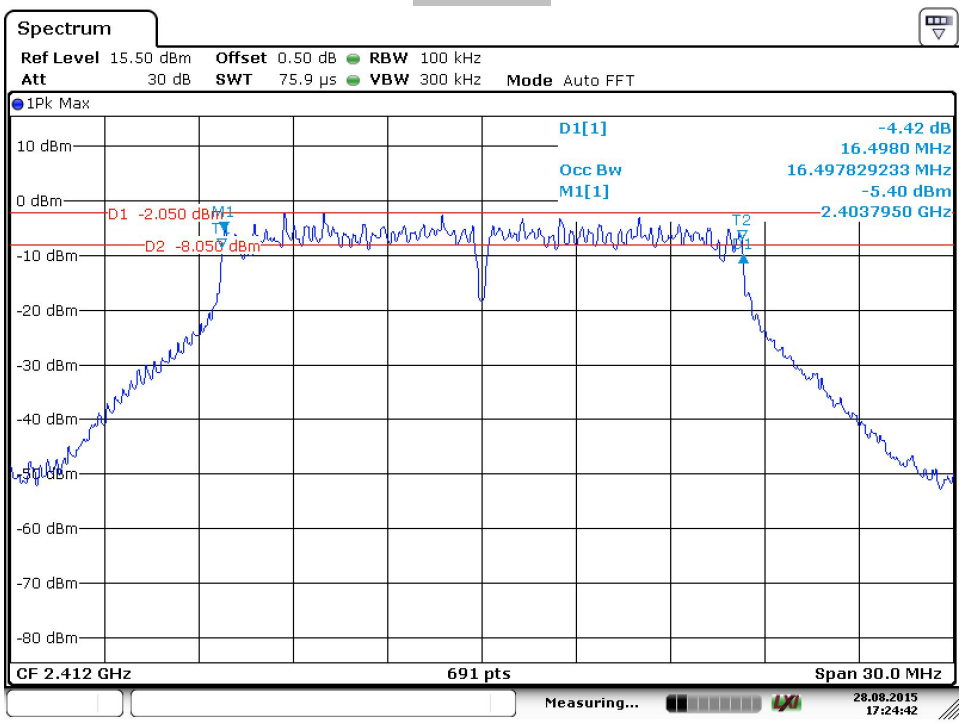
IEEE802.11g

Frequency MHz	6 dB Bandwidth MHz	Result
2412	16.498	Pass
2437	16.498	Pass
2462	16.454	Pass

2412MHz



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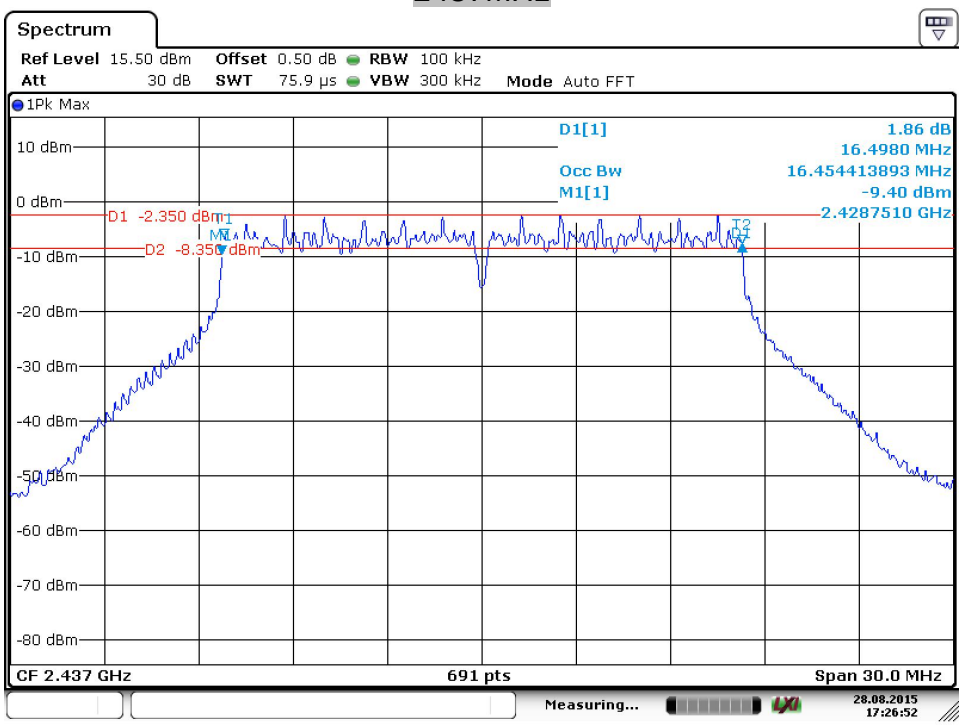
2437MHz



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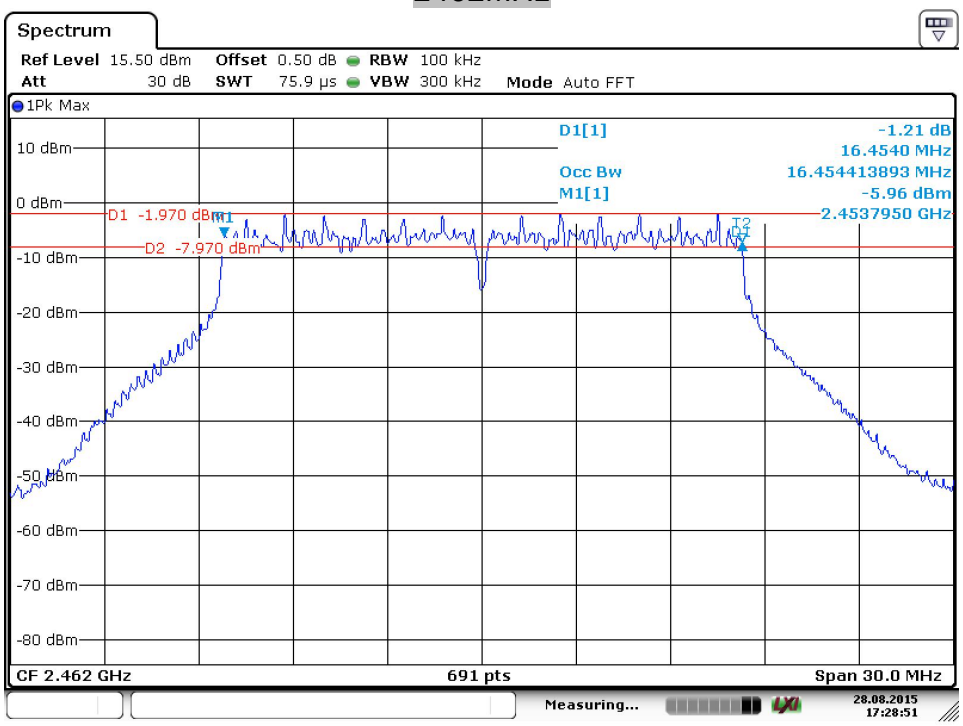
2462MHz



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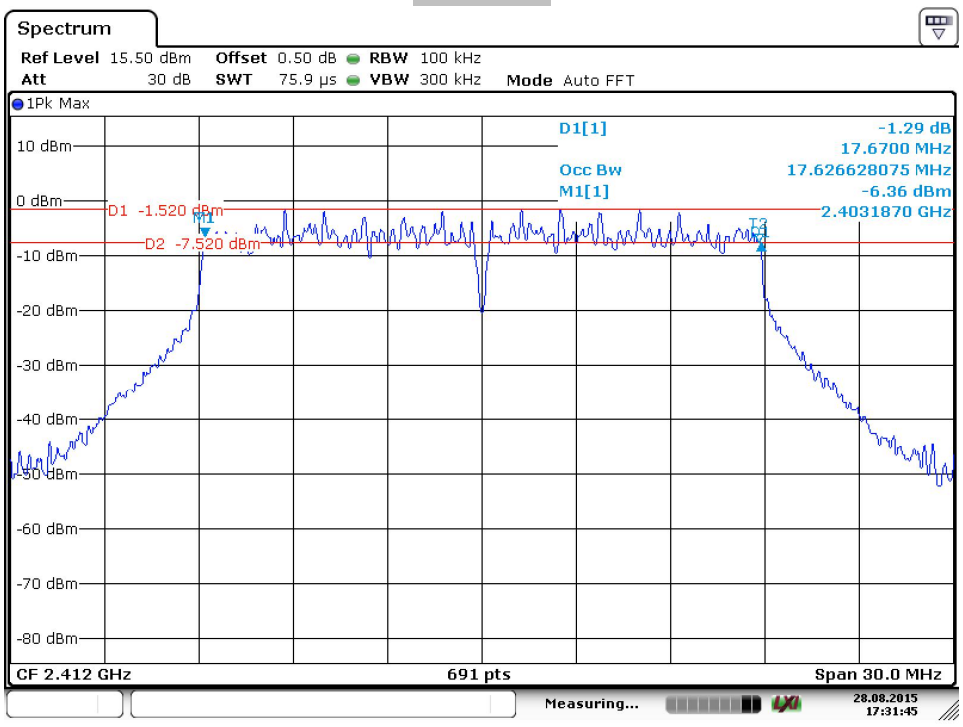
IEEE802.11n- HT20

Frequency MHz	6 dB Bandwidth MHz	Result
2412	17.670	Pass
2437	17.670	Pass
2462	17.670	Pass

2412MHz



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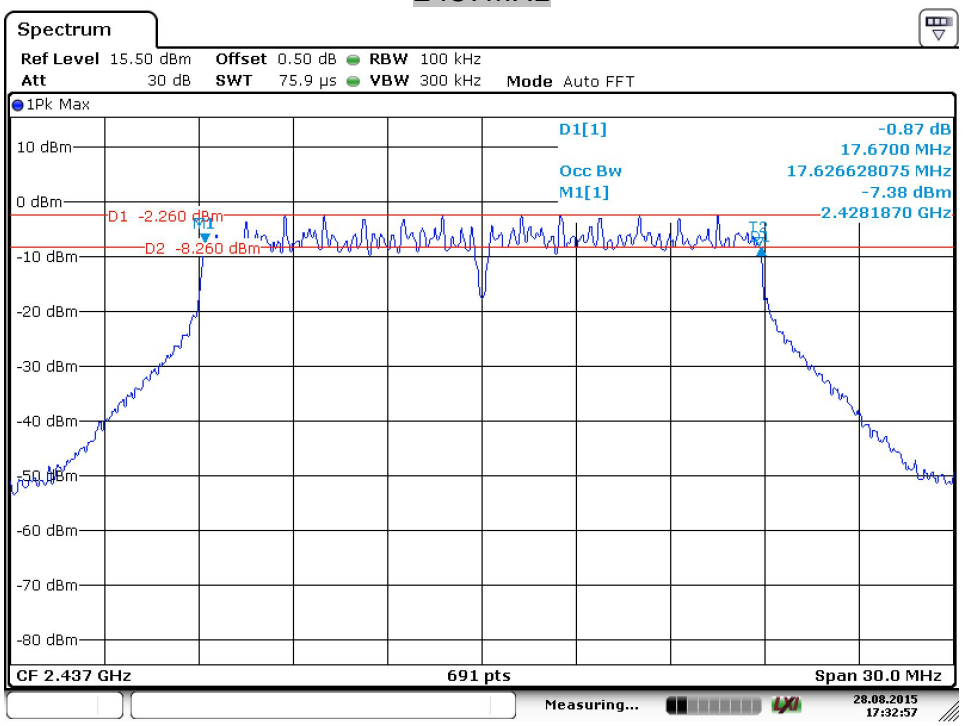
2437MHz



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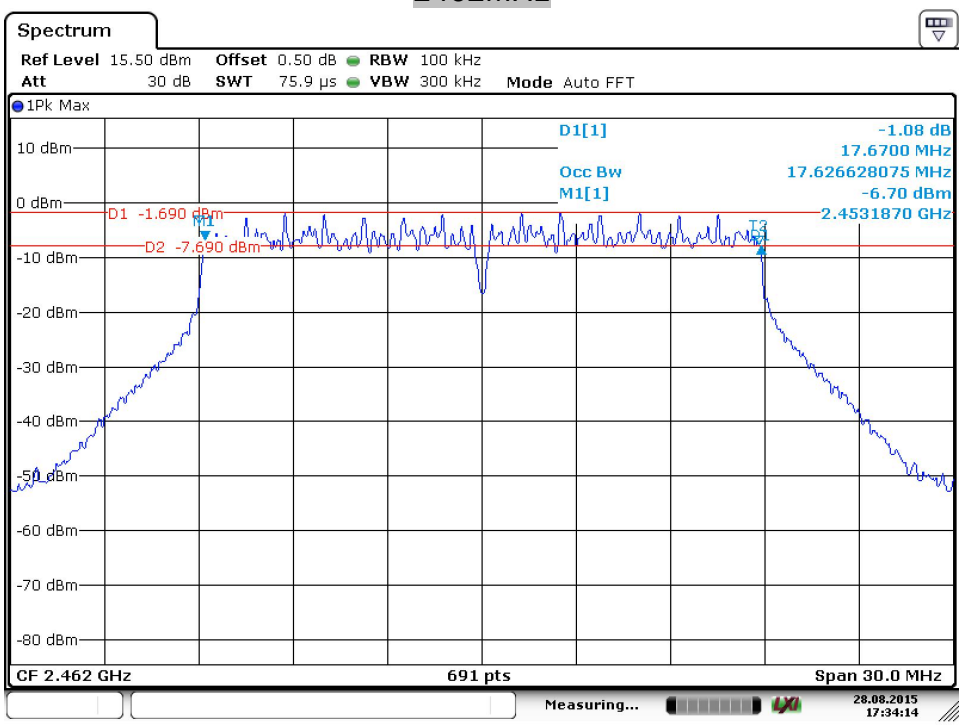
2462MHz



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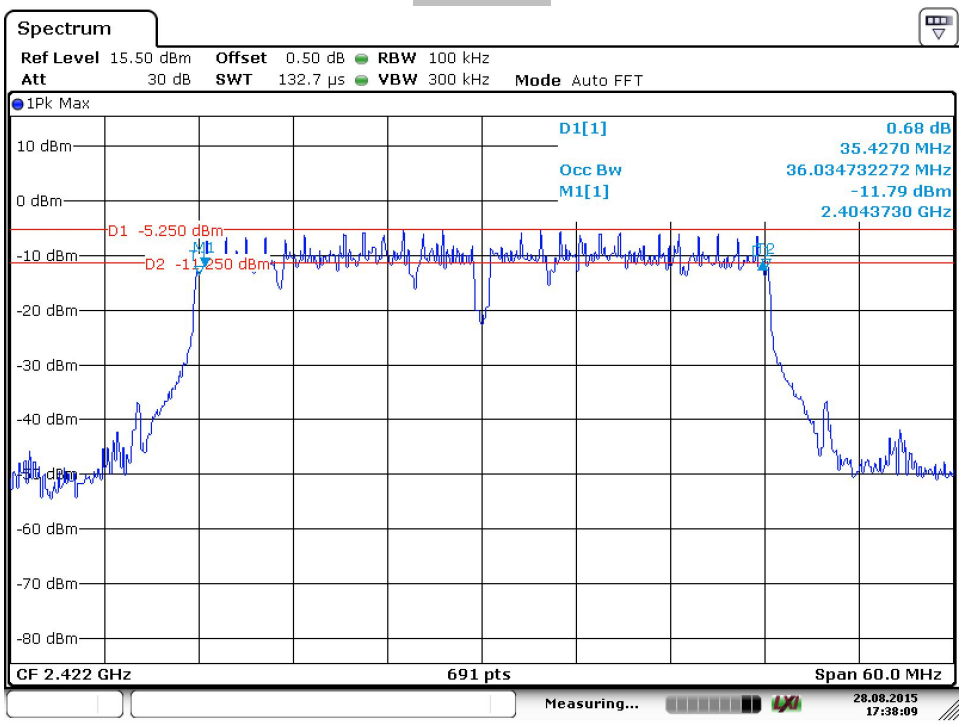
IEEE802.11n- HT40

Frequency MHz	6 dB Bandwidth MHz	Result
2422	35.427	Pass
2437	35.687	Pass
2452	35.774	Pass

2422MHz



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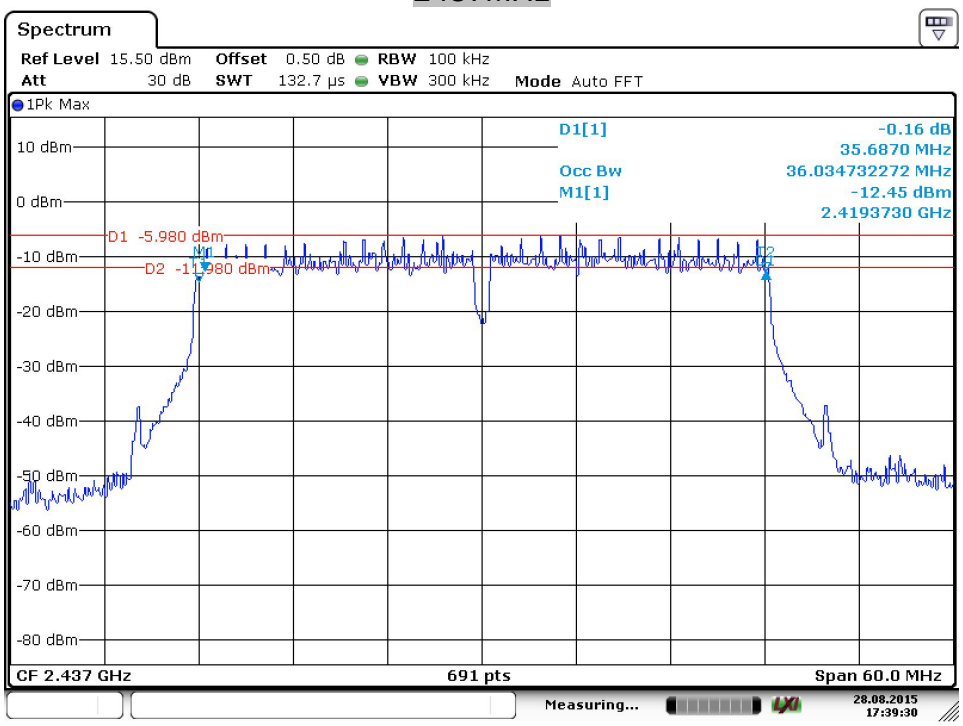
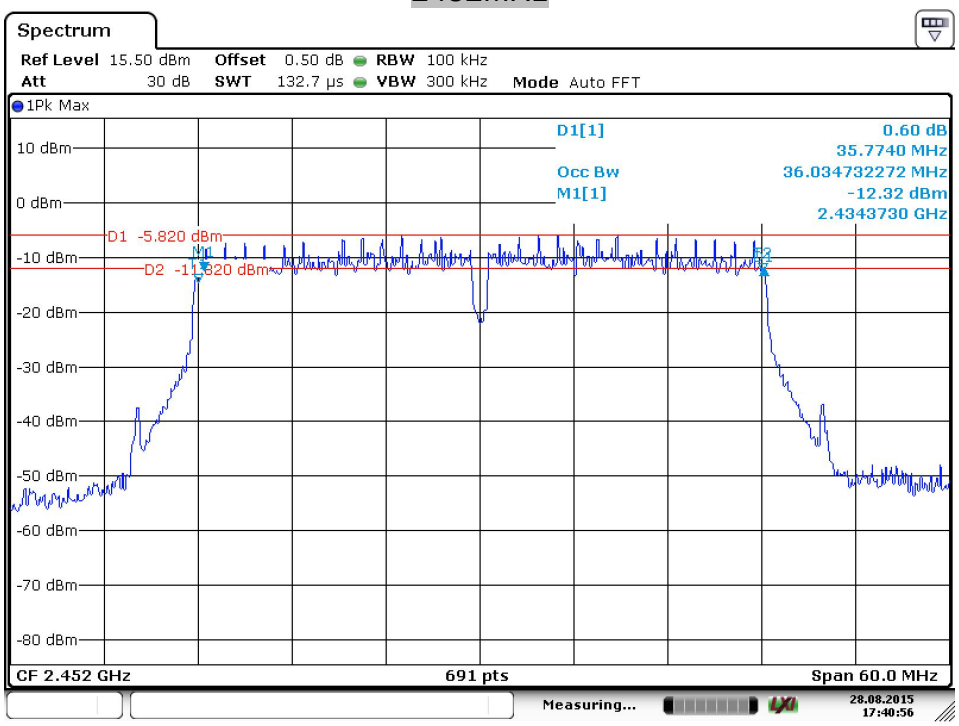
2437MHz



Date: 28.AUG.2015 17:39:31

2452MHz



Date: 28.AUG.2015 17:40:56

9.4 Power Spectral Density

Test Method

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance:

1. Set analyzer center frequency to DTS channel center frequency. RBW=3kHz,VBW≥3RBW,Span=1.5 times DTS bandwidth, Detector=Peak, Sweep=auto, Trace= max hold.
2. Allow trace to fully stabilize, use the peak marker function to determine the maximum amplitude level within the RBW.

Limit

Limit [dBm]
8

Power Spectral Density

IEEE 802.11b

Frequency	Power spectral density	Result
MHz	**dBm**	
Low channel 2412MHz	-9.36	Pass
Middle channel 2437MHz	-10.74	Pass
High channel 2462MHz	-10.20	Pass

IEEE 802.11g

Frequency	Power spectral density	Result
MHz	**dBm**	
Low channel 2412MHz	-16.90	Pass
Middle channel 2437MHz	-17.04	Pass
High channel 2462MHz	-16.67	Pass

IEEE802.11 N-HT20

Frequency	Power spectral density	Result
MHz	**dBm**	
Low channel 2412MHz	-17.27	Pass
Middle channel 2437MHz	-17.05	Pass
High channel 2462MHz	-16.55	Pass

IEEE802.11N-HT40

Frequency	Power spectral density	Result
MHz	**dBm**	
Low channel 2422MHz	-20.72	Pass
Middle channel 2437MHz	-21.23	Pass
High channel 2452MHz	-20.73	Pass

9.5 Spurious RF conducted emissions

Test Method

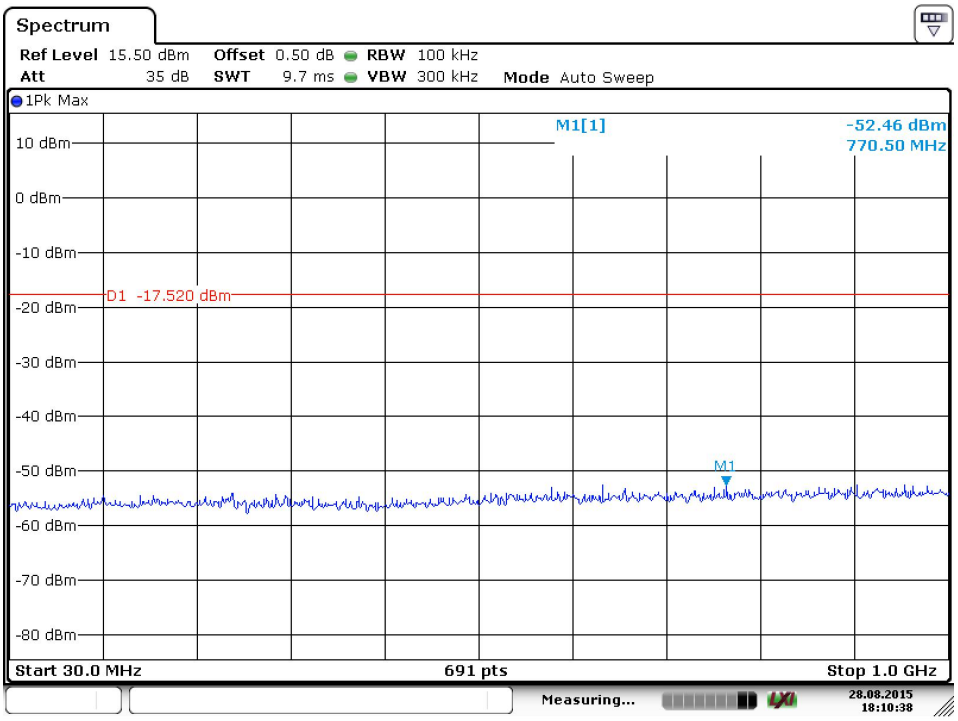
1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
   RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
3. The level displayed must comply with the limit specified in this Section. Submit these plots.
4. Repeat above procedures until all frequencies measured were complete.

Limit

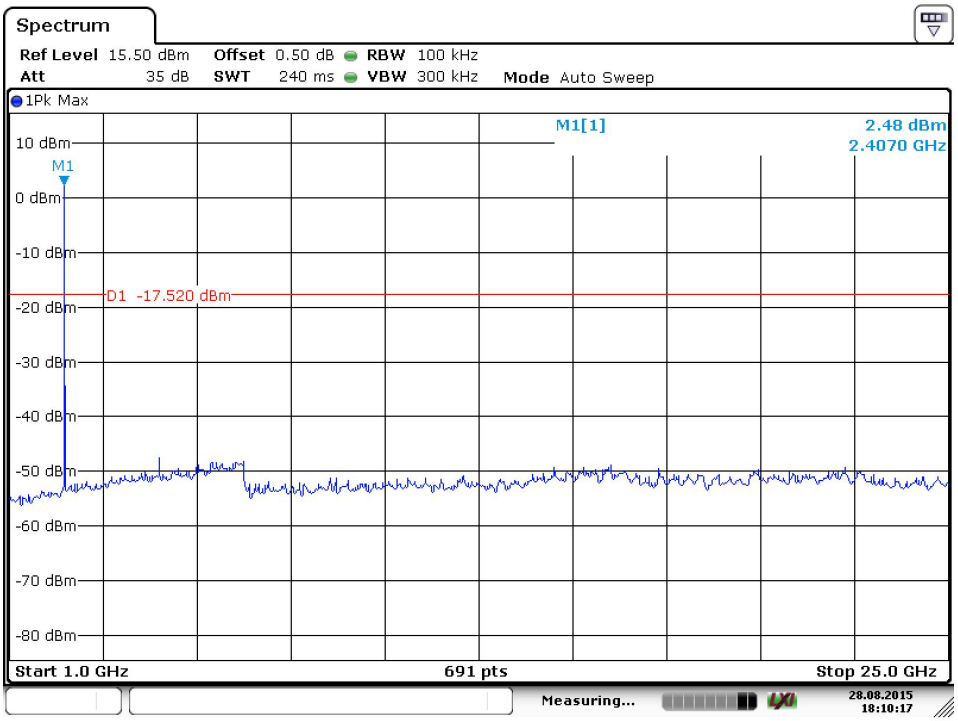
Frequency Range MHz	Limit (dBc)
30-25000	-20

Spurious RF conducted emissions

IEEE802.11b
2412MHz

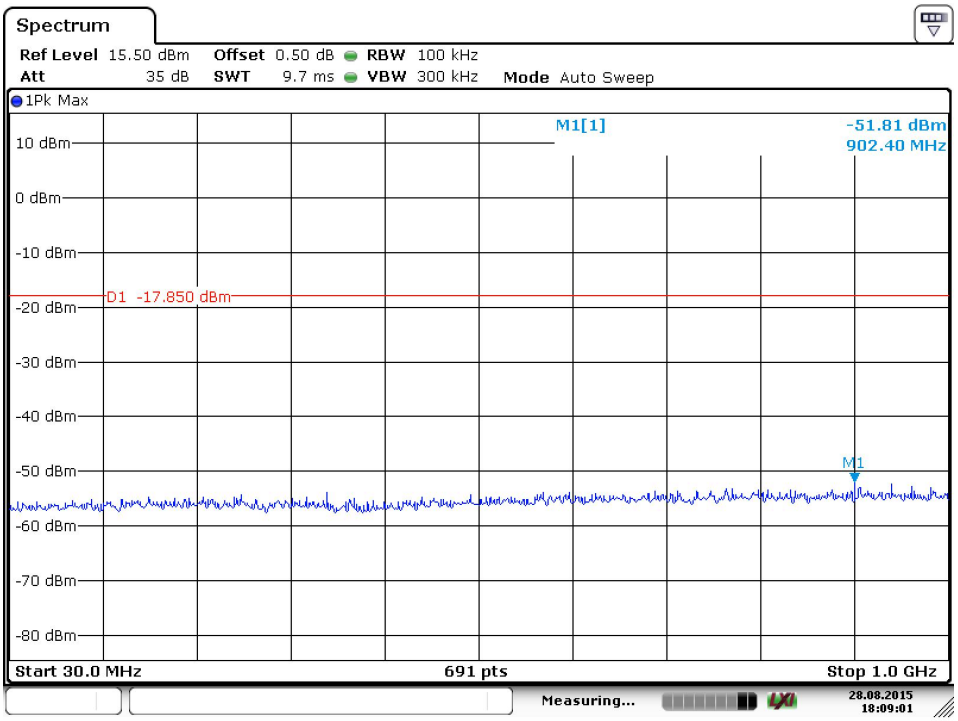


Date: 28.AUG.2015 18:10:38

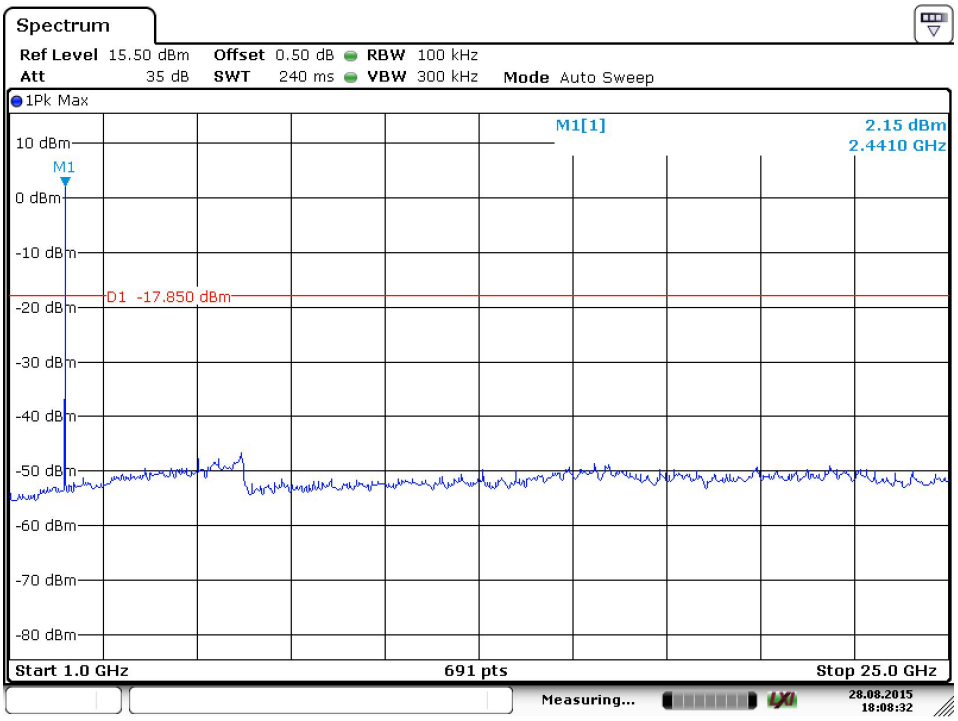


Date: 28.AUG.2015 18:10:17

2437MHz

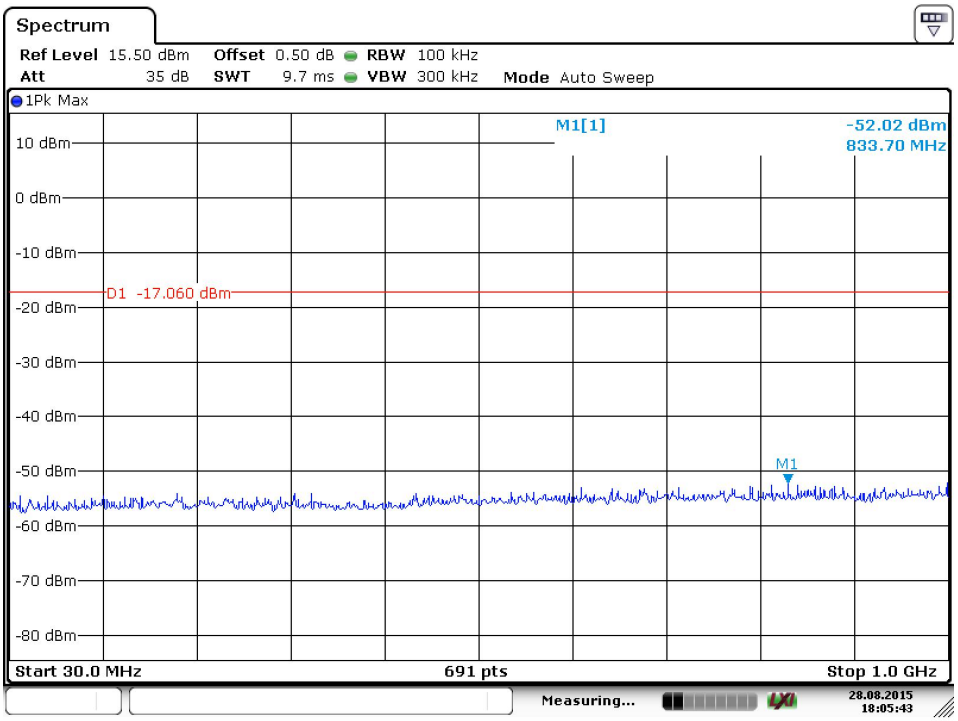


Date: 28.AUG.2015 18:09:02

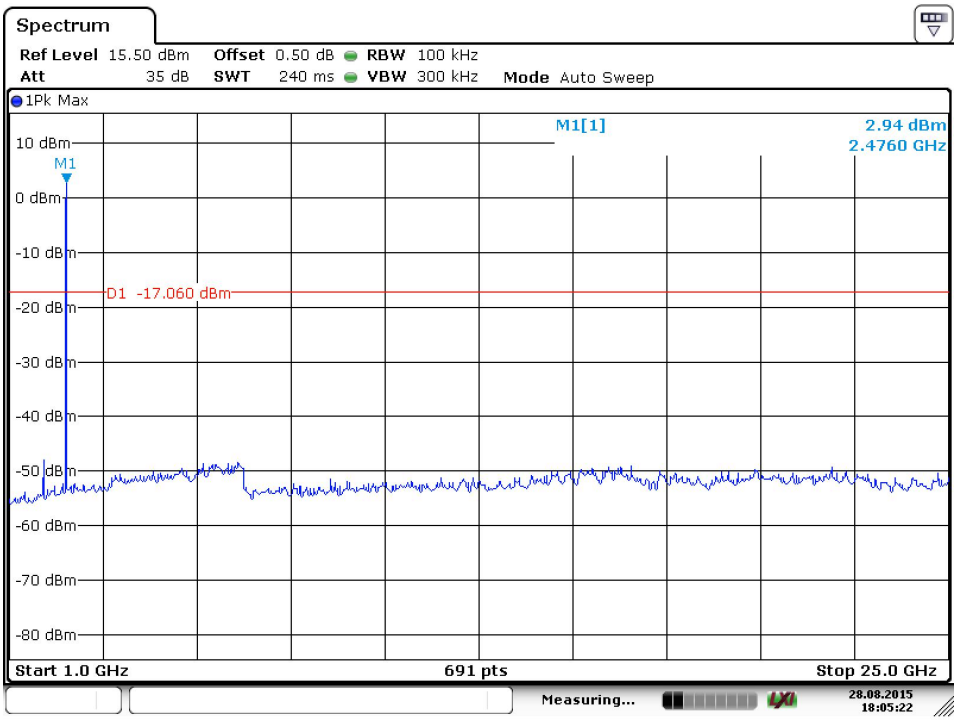


Date: 28.AUG.2015 18:08:32

2462MHz

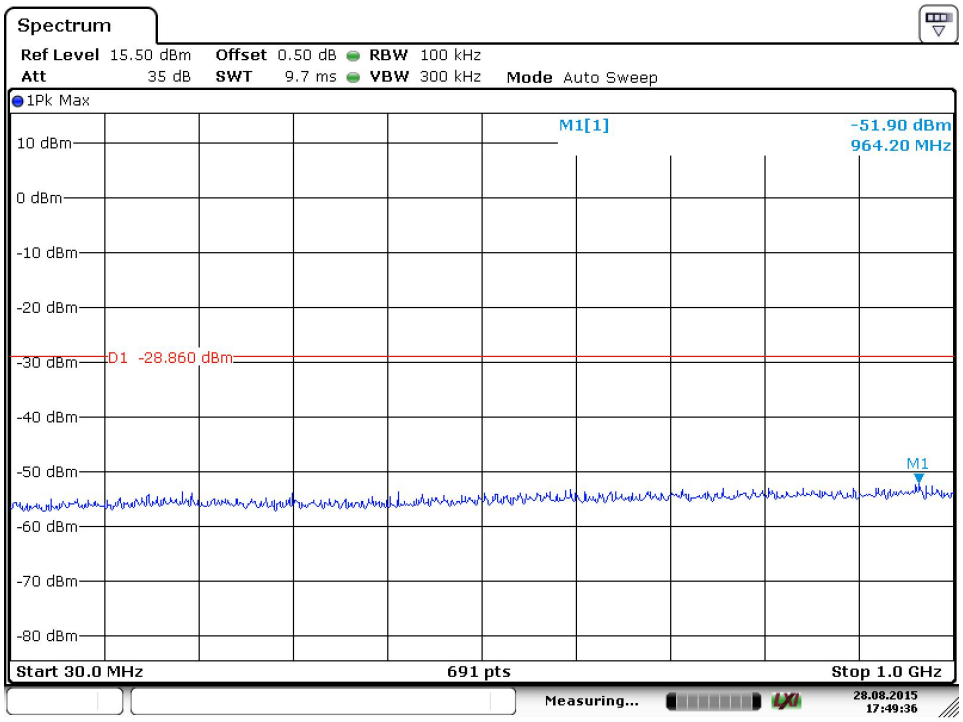


Date: 28.AUG.2015 18:05:43

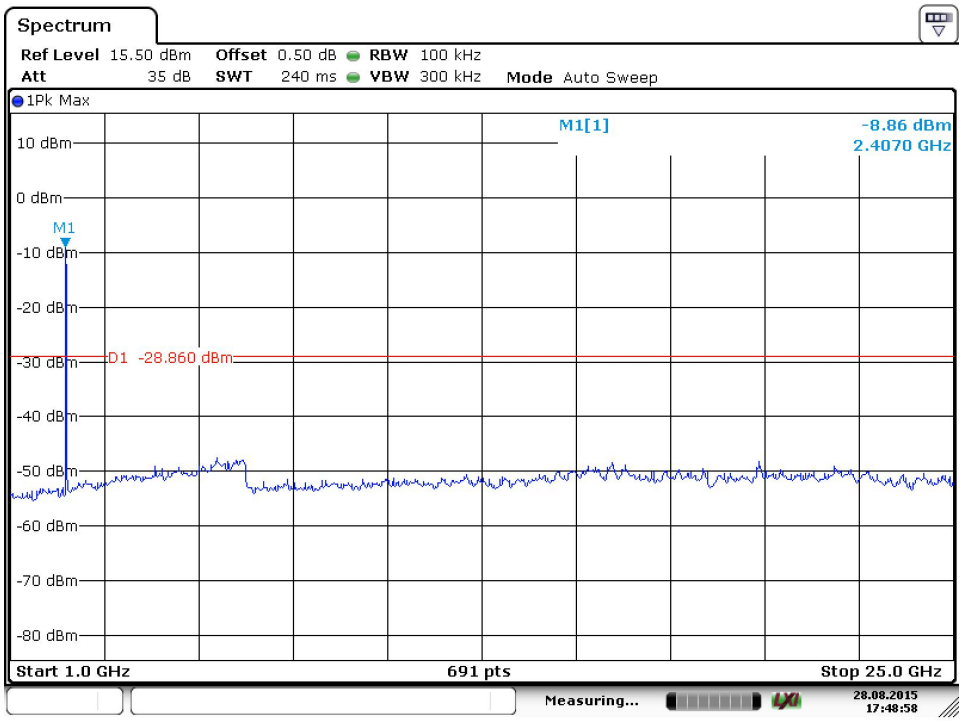


Date: 28.AUG.2015 18:05:22

IEEE 802.11n-HT40
2422MHz

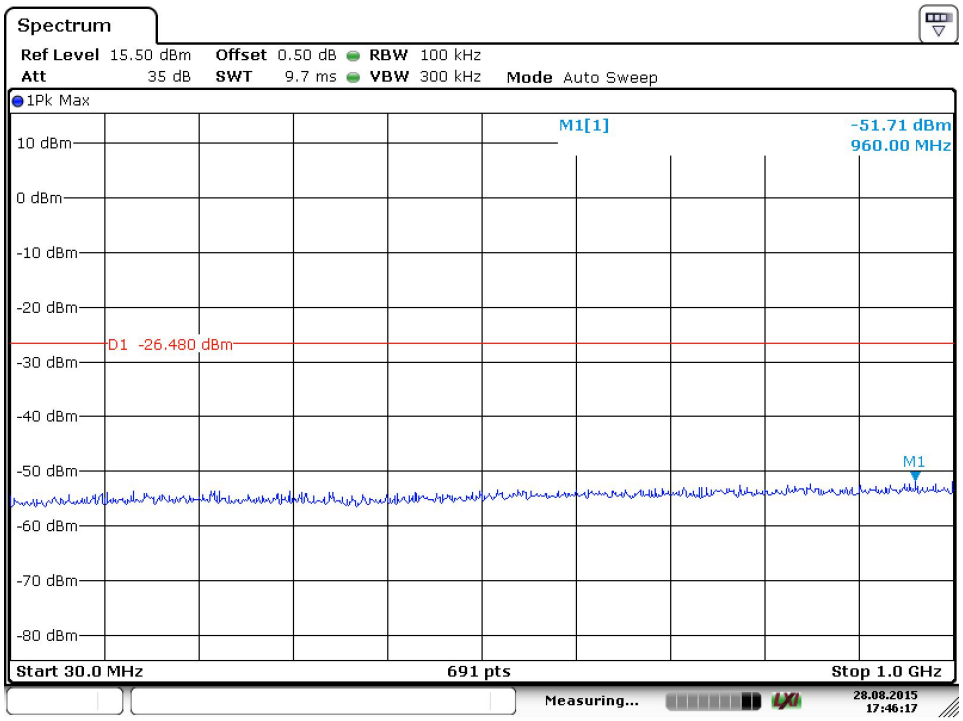


Date: 28.AUG.2015 17:49:36

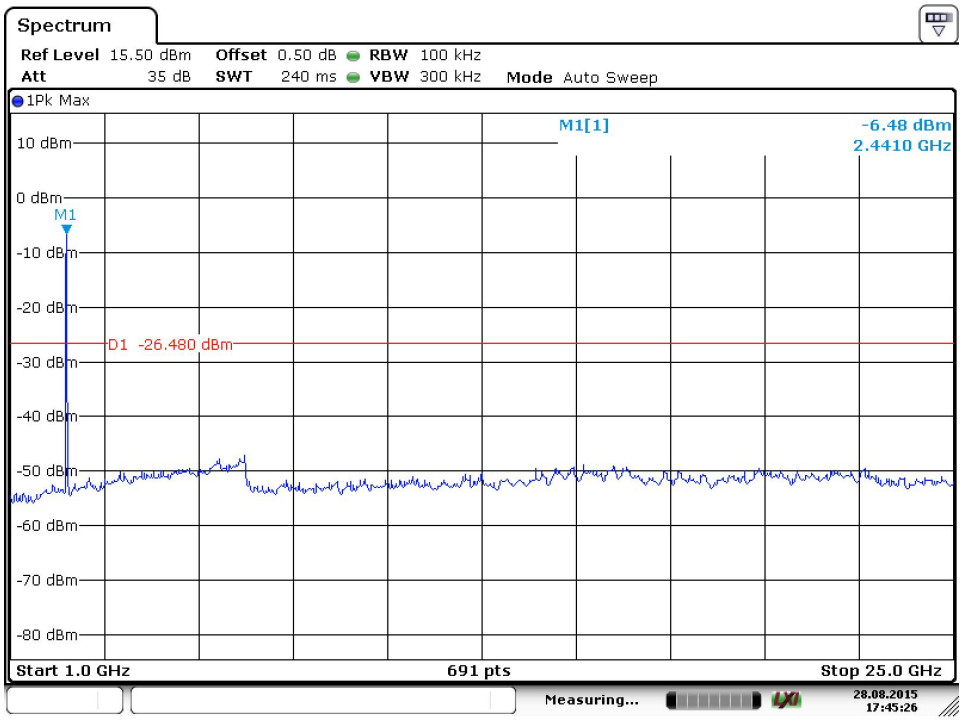


Date: 28.AUG.2015 17:48:58

2437MHz

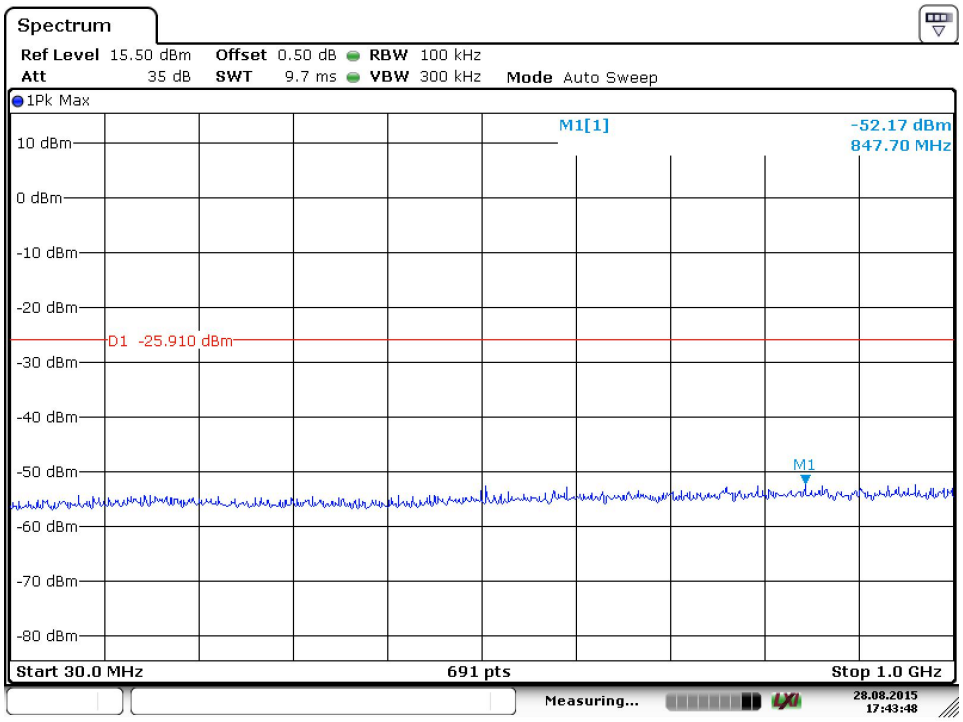


Date: 28.AUG.2015 17:46:17

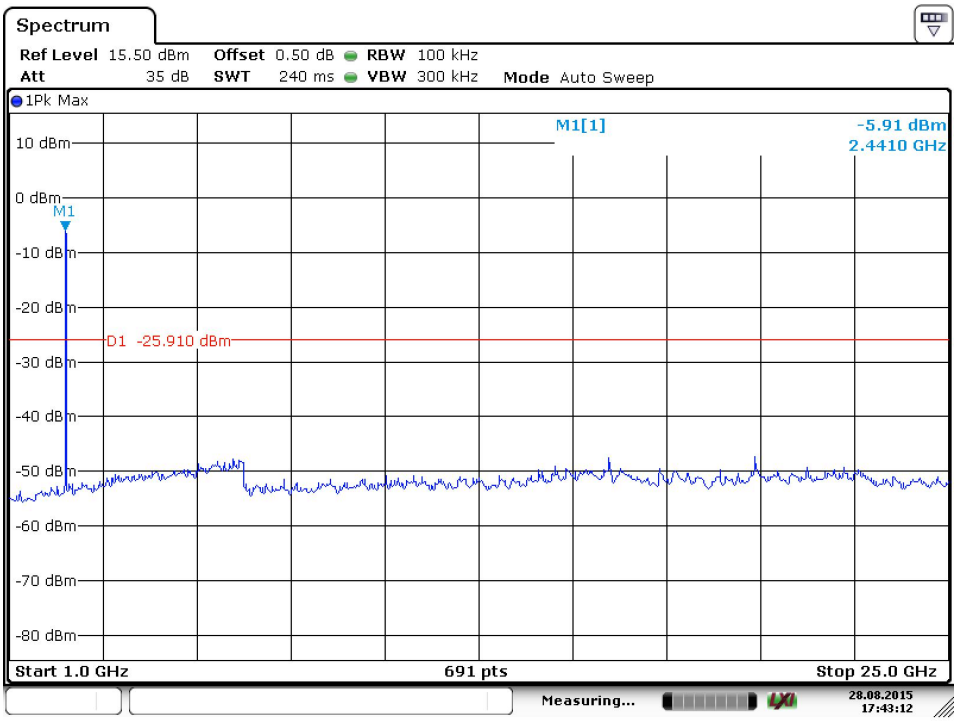


Date: 28.AUG.2015 17:45:26

2452MHz



Date: 28.AUG.2015 17:43:48



Date: 28.AUG.2015 17:43:12

9.6 Band edge testing

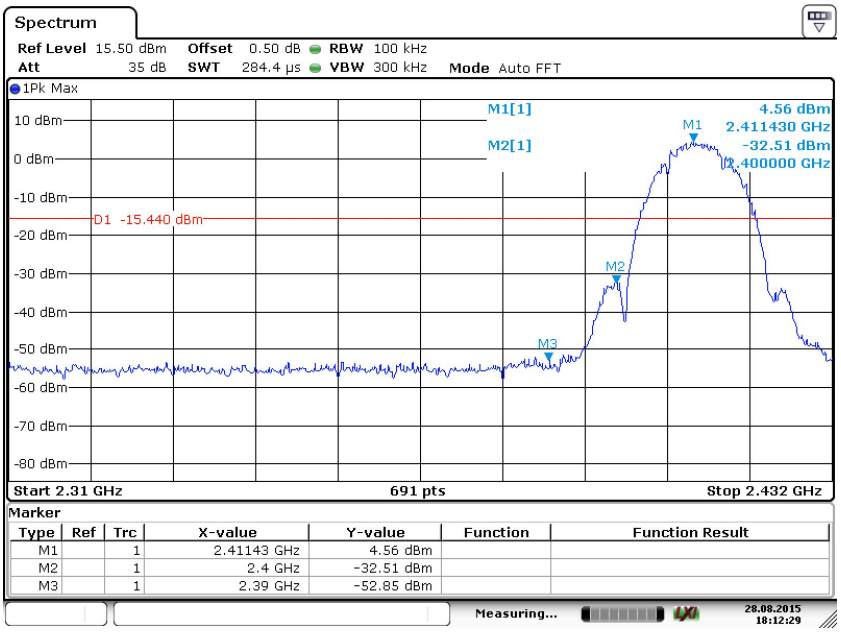
Test Method

1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
3 The level displayed must comply with the limit specified in this Section. .
4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

Band edge testing

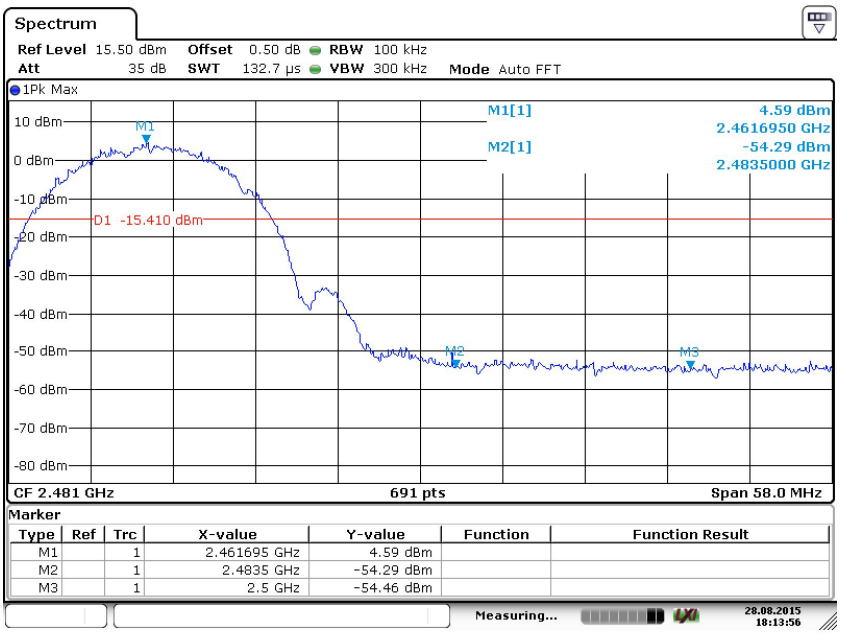
Test Result:

IEE 802.11b
Lowest Frequency:



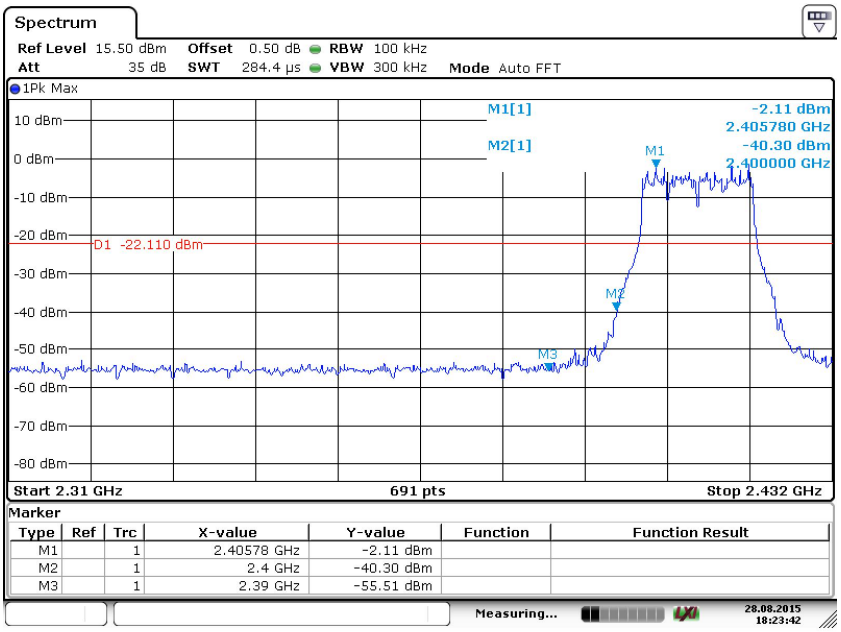
Date: 28.AUG.2015 18:12:29

Highest Frequency:



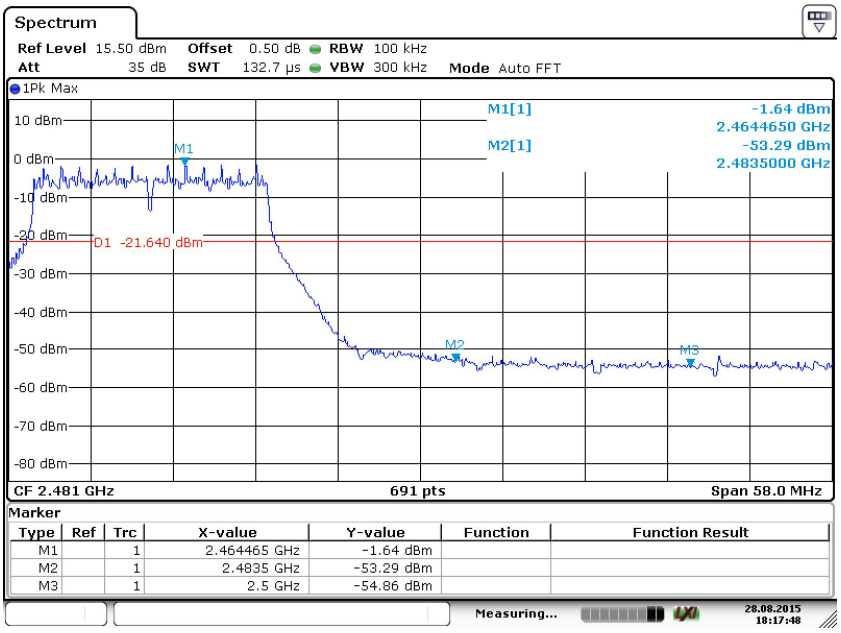
Date: 28.AUG.2015 18:13:56

IEE 802.11g
Lowest Frequency:



Date: 28.AUG.2015 18:23:42

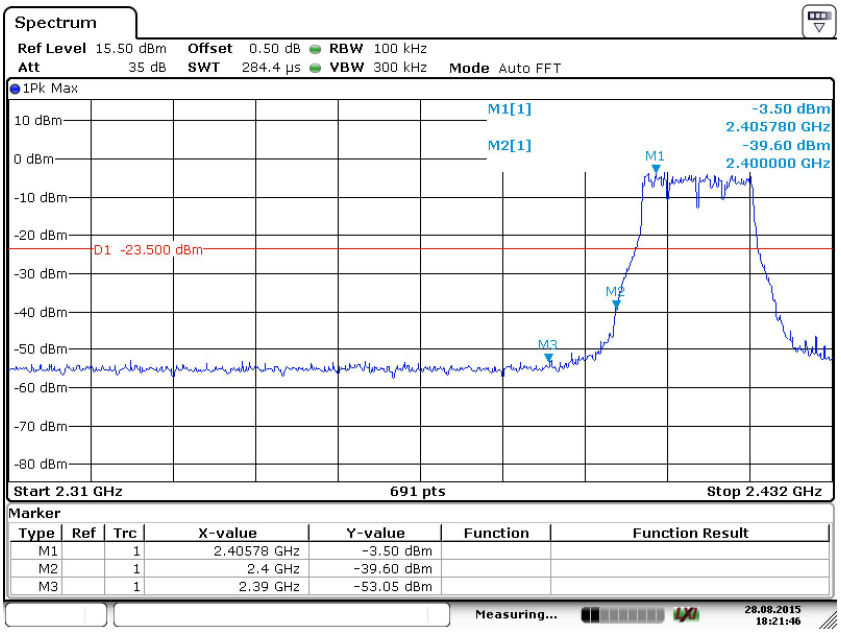
Highest Frequency:



Date: 28.AUG.2015 18:17:48

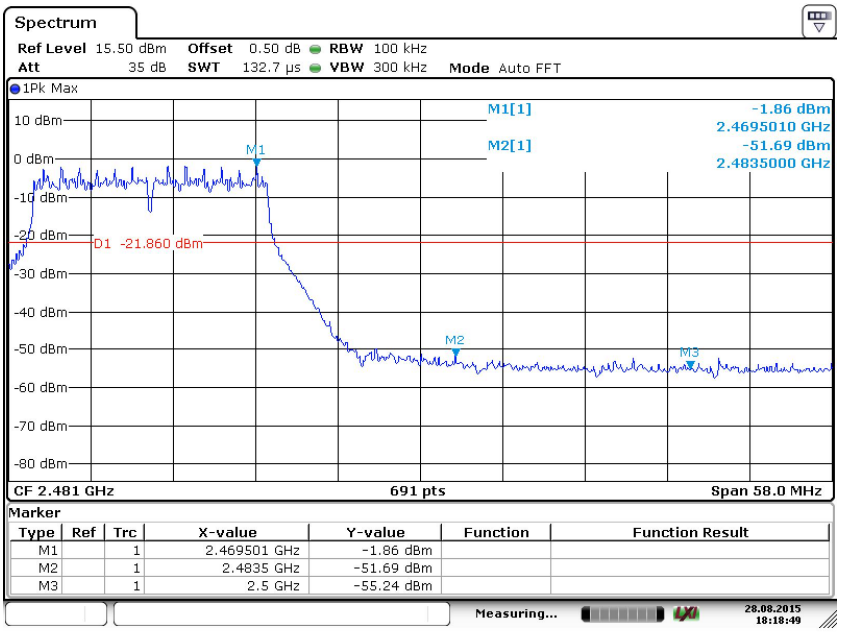
IEE 802.11n-HT20

Lowest Frequency:



Date: 28.AUG.2015 18:21:47

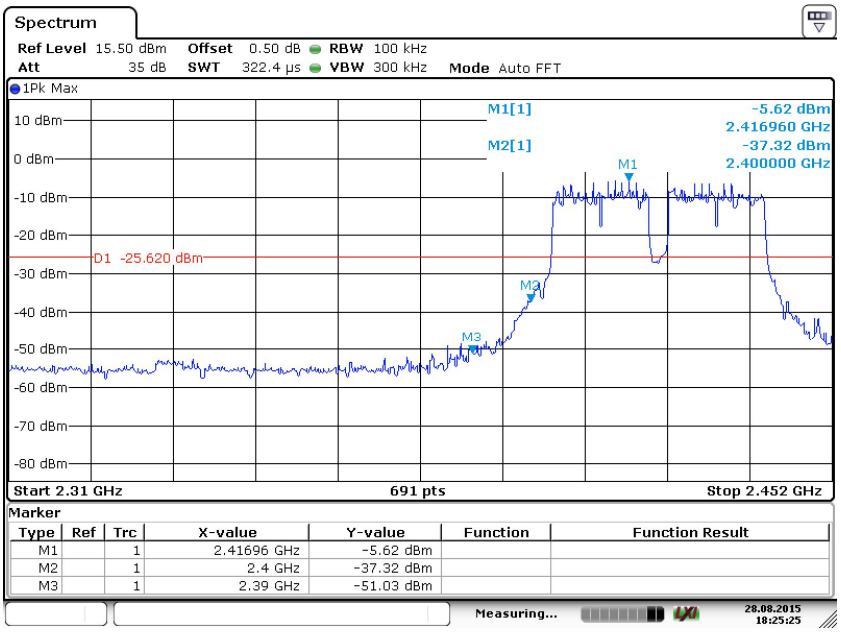
Highest Frequency:



Date: 28.AUG.2015 18:18:49

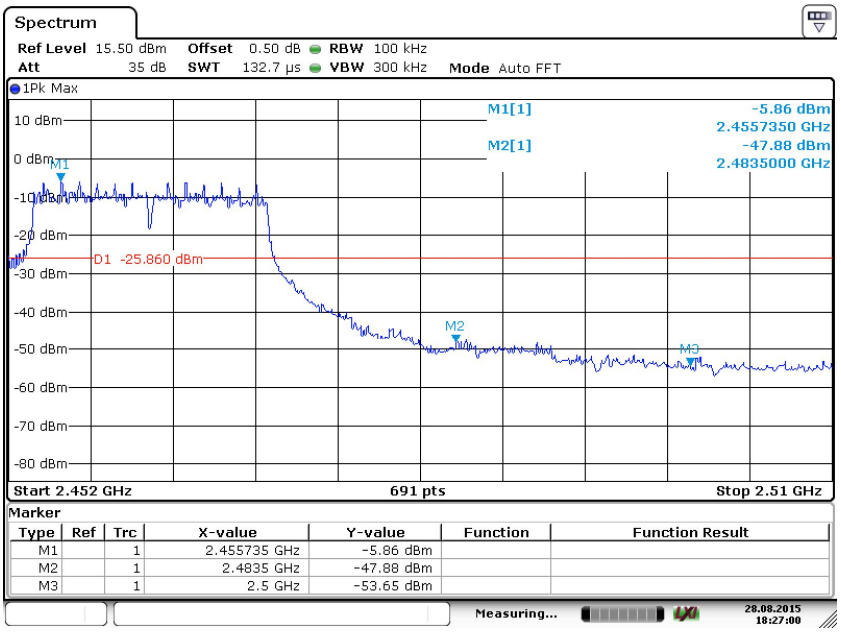
IEE 802.11n-HT40

Lowest Frequency:



Date: 28.AUG.2015 18:25:25

Highest Frequency:



Date: 28.AUG.2015 18:27:00

9.7 Spurious radiated emissions for transmitter

Test Method

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
3. Use the following spectrum analyzer settings:
   Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold
4. Follow the guidelines in ANSI C63.4-2009 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc.
   The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the duty cycle per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(duty cycle/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBµV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the 802.11b mode) test result is listed in the report.

Transmitting spurious emission test result as below:

Remark:

(1) AV Emission Level= PK Emission Level+20log(dutycycle)
(2) Data of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.
(3) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

Frequency (Vertical – 30MHz to 3GHz)

Adaptor Model: S005ANU0500100

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
59.100000	34.18	40.00	5.82	V
395.993125	42.89	46.00	3.11	V
420.000625	41.95	46.00	4.05	V

Adaptor Model: S006AKU0500100

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
42.488750	35.72	40.00	4.18	V
92.383125	35.14	43.50	8.36	V
124.938750	32.20	43.50	11.30	V
250.008125	32.05	46.00	13.95	V
455.951250	39.08	46.00	6.92	V
492.023125	41.77	46.00	4.23	V

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Pol
1196.062500	-54.77	-30.00	24.77	V
2416.500000	3.74	-30.00	-33.74	V
2576.625000	-49.41	-30.00	19.41	V

Frequency (Horizontal – 30MHz to 3GHz)

Adaptor Model: S005ANU0500100

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
56.008125	34.70	40.00	5.30	H
155.978750	35.34	43.50	8.16	H
372.004000	44.20	46.00	1.80	H
803.999375	39.82	46.00	6.18	H

Adaptor Model: S006AKU0500100

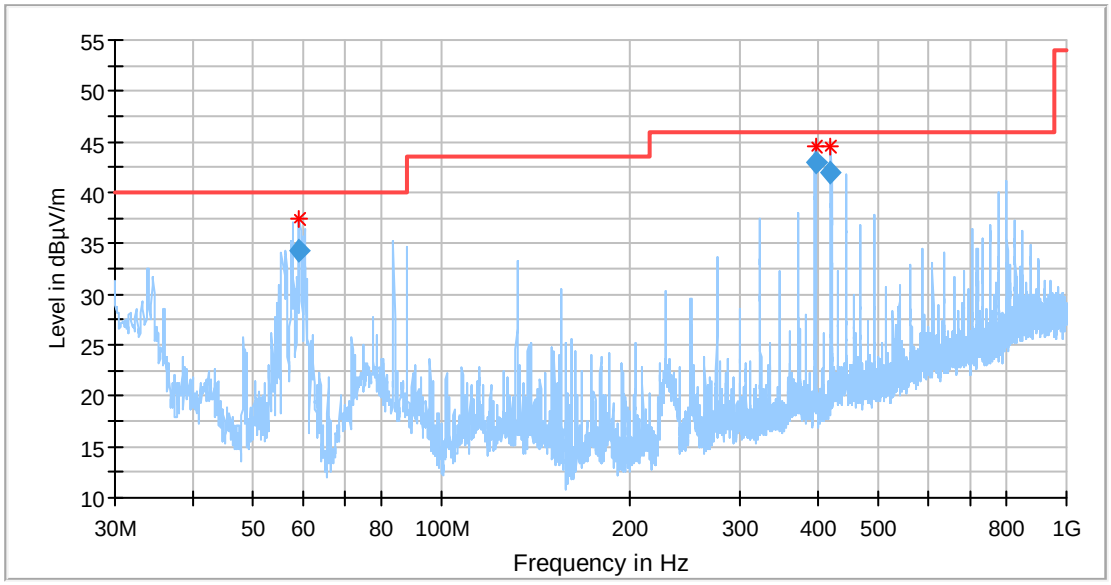
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol
250.008125	27.08	46.00	18.92	H
418.000000	31.45	46.00	14.55	H
505.966875	34.39	46.00	11.61	H
804.060000	37.34	46.00	8.66	H

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Pol
1799.937500	-57.21	-30.00	27.21	H
2410.375000	2.25	-30.00	-32.25	H
2478.625000	-44.44	-30.00	14.44	H

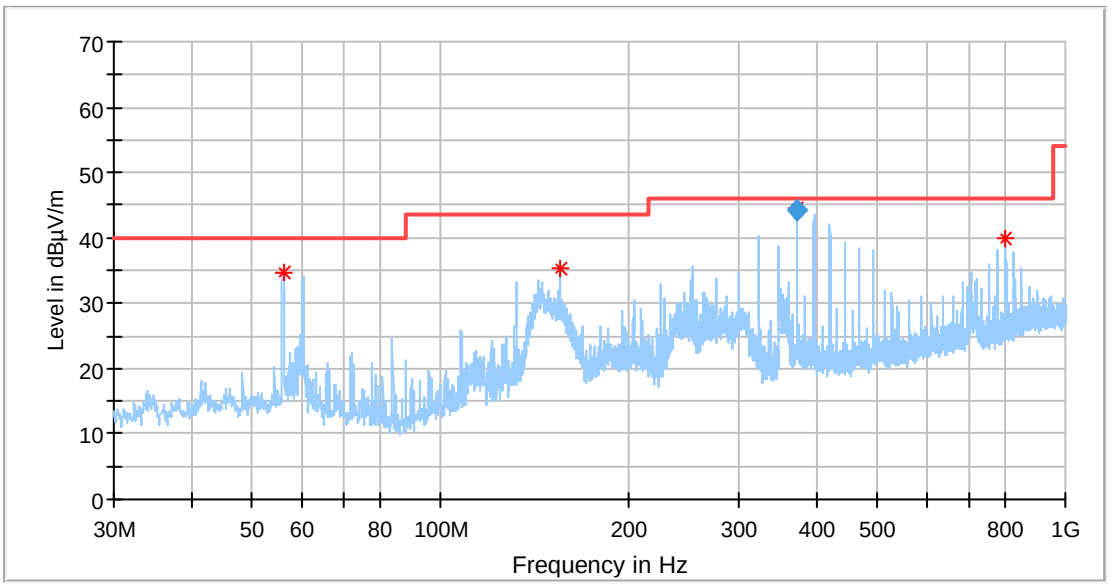
Spurious radiated emissions for transmitter

Radiated emission data graph (Vertical polarization, 30MHz-1GHz)

Adaptor Model: S005ANU0500100

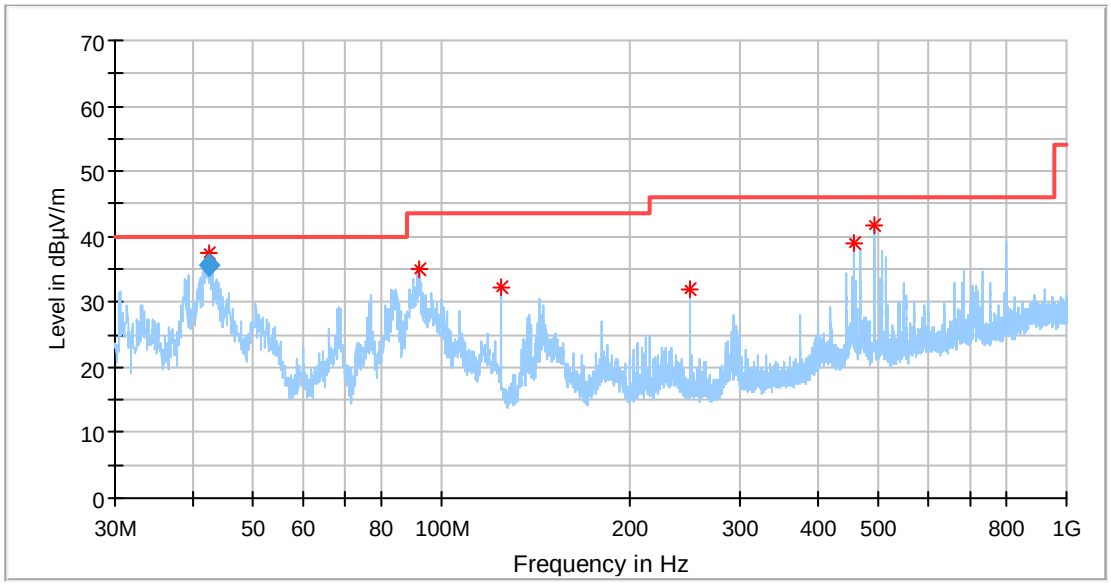


Radiated emission data graph (Horizontal polarization, 30MHz-1GHz)

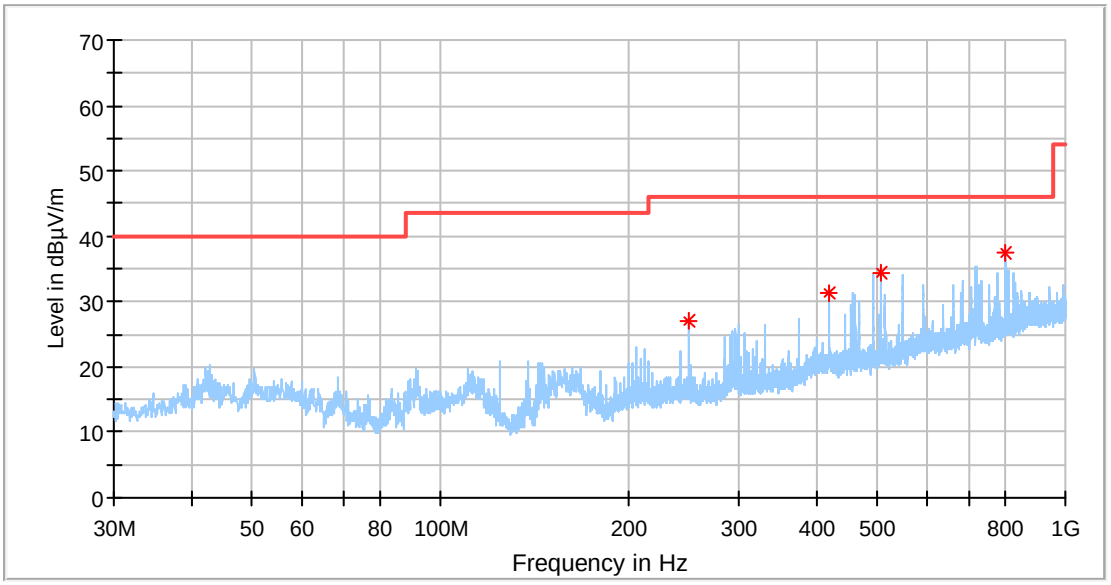


Radiated emission data graph (Vertical polarization, 30MHz-1GHz)

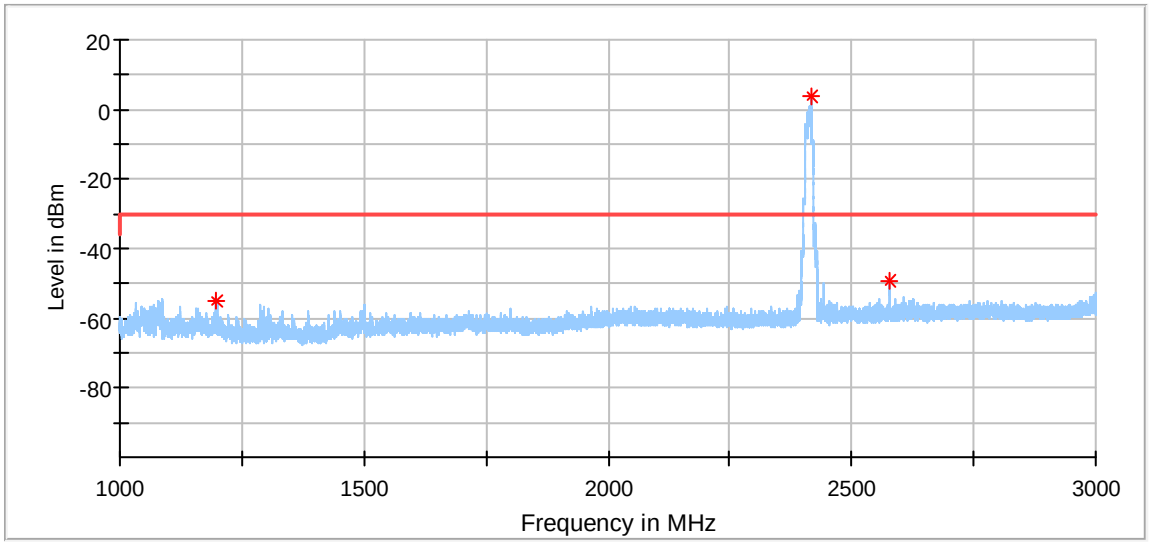
Adaptor Model: S006AKU0500100



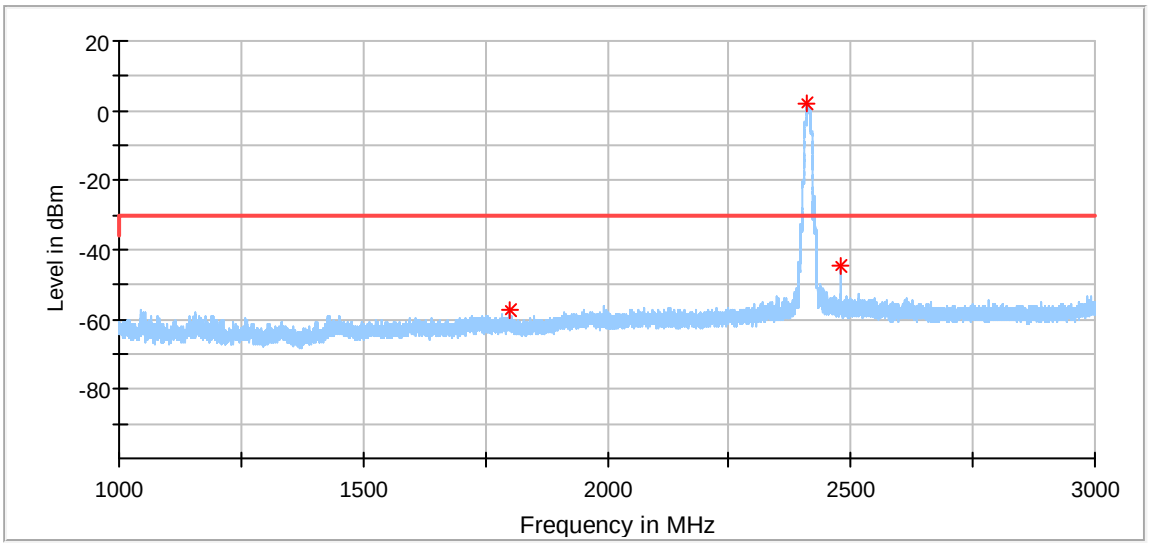
Radiated emission data graph (Horizontal polarization, 30MHz-1GHz)



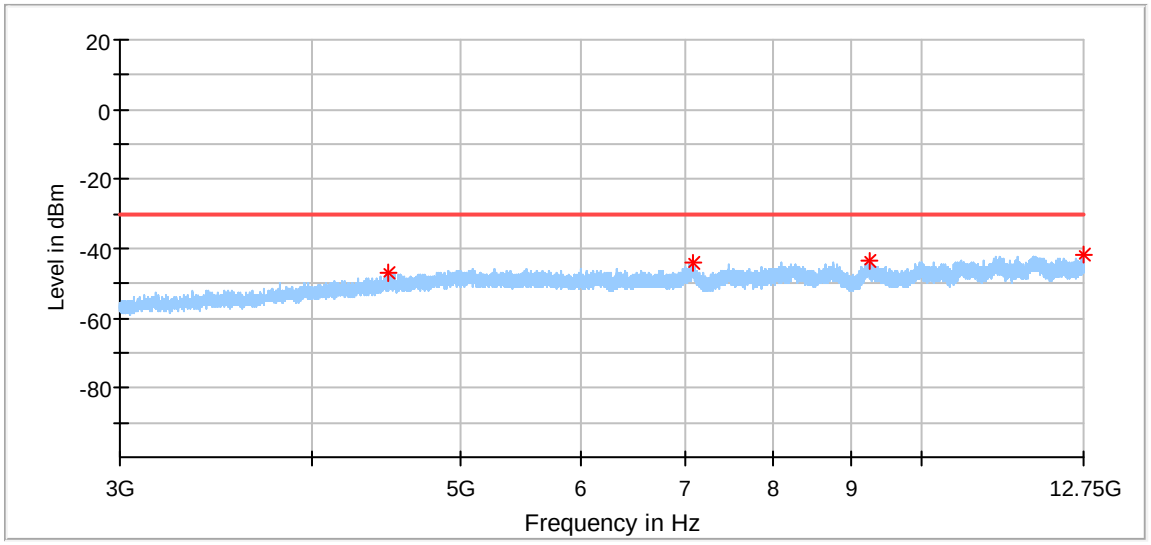
Radiated emission data graph (Vertical polarization, 1GHz-3GHz)



Radiated emission data graph (Horizontal polarization, 1GHz-3GHz)



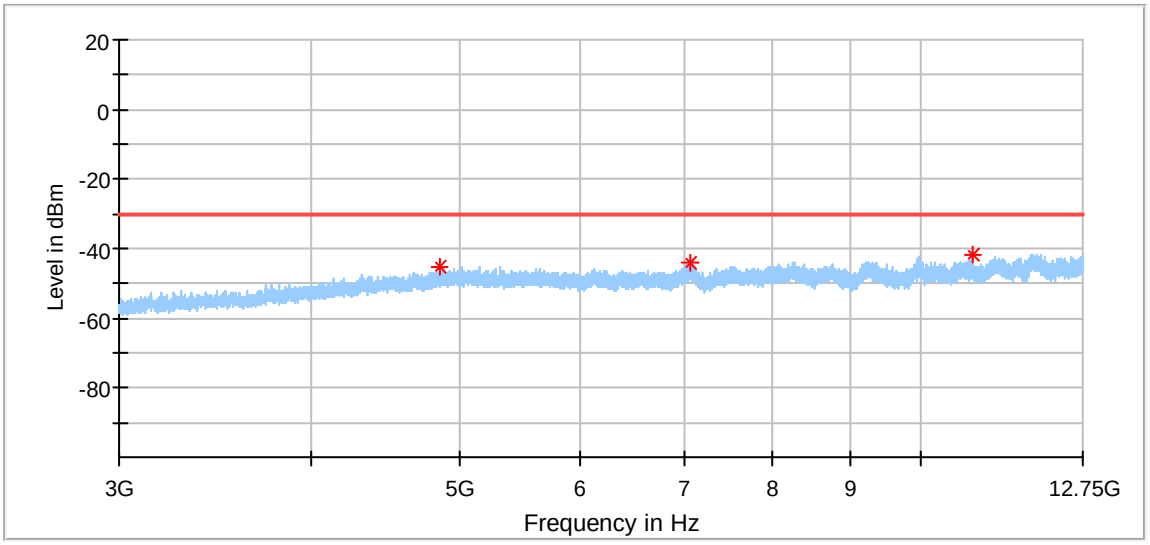
Radiated emission data graph (Vertical polarization, 3GHz-18GHz)



Remark: Only background noise was measured from 12.75GHz-26GHz.

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Pol
4493.578125	-46.76	-30.00	16.76	V
7098.351563	-44.23	-30.00	14.23	V
9245.179688	-43.45	-30.00	13.45	V
12749.695313	-41.90	-30.00	11.90	V

Radiated emission data graph (Horizontal polarization, 3GHz-18GHz)



Remark: Only background noise was measured from 12.75GHz-26GHz.

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Pol
4853.109375	-44.95	-30.00	14.95	H
7065.750000	-44.03	-30.00	14.03	H
10818.585938	-41.48	-30.00	11.48	H

10 RF Exposure Evaluation

For the purpose of the exemption clause of RSS-102 section 2.5.2, the TP is calculated according to the following equation given in RSS-Gen section 6.12:

$$TP = \frac{(FS \times D)^2}{30 \times G}$$

where FS : Field Strength in volts/metre
D : Distance between two antennas in metres
G : Antenna gain, 0 dBi

According to clause 9.2, the Max. Output Power is 0.212 W @ 2412MHz.

EIRP = the maximum output power+ antenna gain

= 23.27 dBm + 0 dBi

= 23.27 dBm

= 212 mW

Therefore, for the device operating at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W *(adjusted for tune-up tolerance), where f is in MHz.*

maximum e.i.r.p. $\leq 1.31 \times 10^{-2} f^{0.6834}$ W

$\leq 1.31 \times 10^{-2} \ 2412^{0.6834}$ W

≤ 2.684 W

The power density at 20cm from the antenna : = EIRP / 4π R²

= 0.0422 mW / cm²

Product Service

11 Test Equipment List

List of Test Instruments

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
CE	EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2016-8-17
	LISN	Rohde & Schwarz	ENV4200	100249	2016-8-17
	LISN	Rohde & Schwarz	ENV216	100326	2016-8-17
	ISN	Rohde & Schwarz	ENY81	100177	2016-8-17
	ISN	Rohde & Schwarz	ENY81-CAT6	101664	2016-8-17
	High Voltage Proble	Rohde & Schwarz	TK9420(VT9420)	9420-58	2016-8-17
	RF Current probe	Rohde & Schwarz	EZ-17	100816	2016-8-17
C	Signal Generator	Rohde & Schwarz	SMB100A	108272	2016-8-17
	Signal Analyzer	Rohde & Schwarz	FSV40	101030	2016-8-17
	Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2016-8-17
	RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2016-8-17
RE	EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2016-8-17
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2017-8-17
	Horn Antenna	Rohde & Schwarz	HF907	102294	2017-8-17
	Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2016-8-17
	3m Semi-anechoic chamber	TDK	9X6X6	----	2019-5-29

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- 20dB bandwidth and 99% Occupied Bandwidth
- Carrier frequency separation
- Number of hopping frequencies
- Dwell Time
- Power spectral density*
- Spurious RF conducted emissions
- Band edge

12 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.83dB; Vertical: 4.91dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-18000MHz	Horizontal: 4.89dB; Vertical: 4.88dB;
Uncertainty for Conducted Emission 9kHz-150KHz	3.88dB