FCC Test Report

Equipment	:	UHD Set -Top Box
Brand Name	:	AirTies
Model No.	:	Air 7410X
FCC ID	:	Z3WAIR7410
Standard	:	47 CFR FCC Part 15.247
Operating Band	:	2400 MHz – 2483.5 MHz
Function	:	☒ Point-to-multipoint; ☐ Point-to-point
Applicant	:	AirTies Wireless Networks Gülbahar Mah. Avni Dilligil Sok. Celik Is Merkezi No 5 mecidiyekoy ISTANBUL, 34394 Turkey

The product sample received on Jan. 29, 2016 and completely tested on Aug. 25, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Sam Chen
SPORTON INTERNATIONAL INC.

Testing Laboratory
1190

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Summary of Test Result

Conformance Test Specifications				
Report Clause	**Ref. Std. Clause**	**Description**	**Limit**	**Result**
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	FCC 15.207	Complied
3.2	15.247(a)	DTS Bandwidth	≥500kHz	Complied
3.3	15.247(b)	Fundamental Emission Output Power	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]:8	Complied
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: > 30 dBc	Complied
3.6	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied

Revision History

Report No.	Version	Description	Issued Date
FR612906AA	Rev. 01	Initial issue of report	Sep. 07, 2016

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	g, n (HT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4G	11g	20	1
2.4G	11n HT20	20	2
2.4G	11n HT40	40	2

Note:
- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)			Remark
					Antenna Gain (dBi)	Cable Loss (dB)	True Gain (dBi)	
1	-	-	Printed Antenna	N/A	3.444	-	3.444	2.4G WLAN
2	-	-	Printed Antenna	N/A	3.444	-	3.444	2.4G WLAN
3	-	-	PIFA Antenna	I-PEX	5.83	0.5	5.33	5G WLAN
4	-	-	PIFA Antenna	I-PEX	5.83	0.5	5.33	5G WLAN
5	-	-	PIFA Antenna	I-PEX	5.83	0.5	5.33	5G WLAN

Note: The EUT has five wifi antennas.

For 2.4G WLAN Function

For IEEE 802.11g mode (1TX/1RX):

Only chain 1 can be used as transmitting/receiving antenna.

For IEEE 802.11n mode (2TX/2RX):

Chain 1 and chain 2 can be used as transmitting/receiving antenna.

Chain 1 and chain 2 could transmit/receive simultaneously.

For 5G WLAN Function

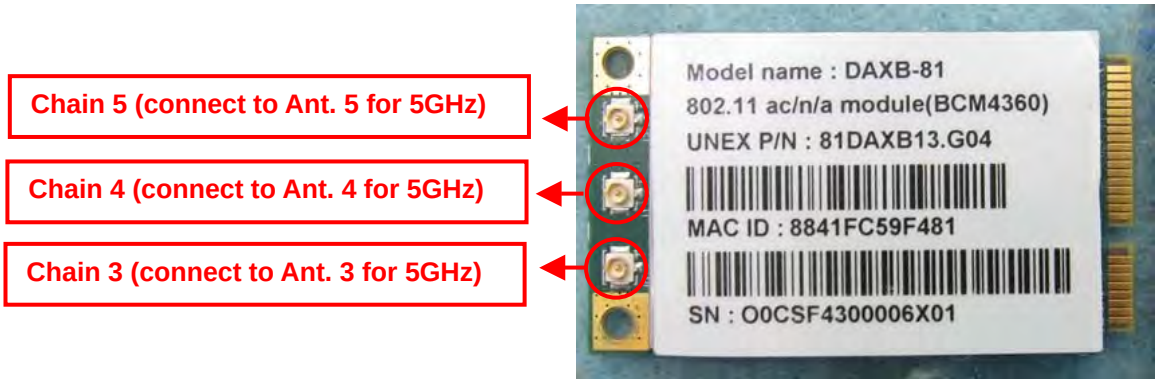
For IEEE 802.11a mode (1TX/1RX):

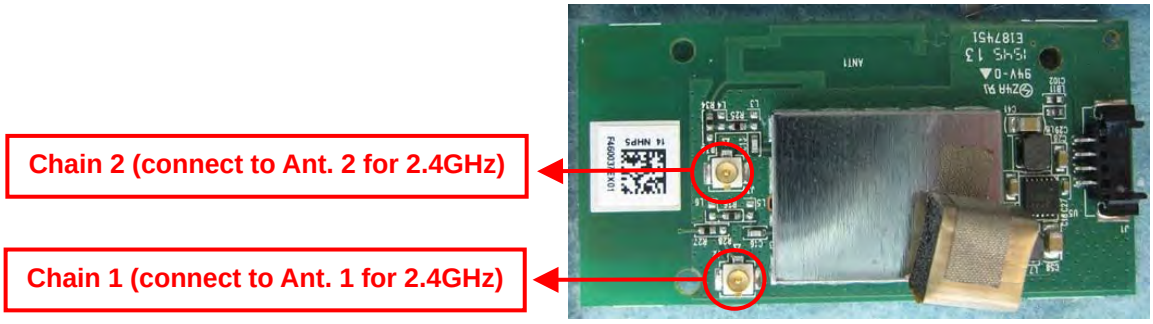
Only chain 3 can be used as transmitting/receiving antenna.

For IEEE 802.11n/ac mode (3TX/3RX):

Chain 3, chain 4 and chain 5 can be used as transmitting/receiving antenna.

Chain 3, chain 4 and chain 5 could transmit/receive simultaneously.





1.1.3 Mode Test Duty Cycle

Mode	DC	T(s)	VBW(Hz) ≥ 1/T
11g	0.986	n/a (DC>=0.98)	n/a (DC>=0.98)
HT20	0.985	n/a (DC>=0.98)	n/a (DC>=0.98)
HT40	0.971	933.125u	3k

1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter			
Beamforming Function	☒	With beamforming for 802.11n/ac in 5GHz	☐	Without beamforming

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 558074 D01 v03r05
- FCC KDB 662911 D01 v02r01

1.3 Testing Location Information

Testing Location			
☐	HWA YA	ADD :	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
		TEL :	886-3-327-3456 FAX : 886-3-318-0055
☒	JHUBEI	ADD :	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.
		TEL :	886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Akina Chiu	20°C / 60%	Jun. 16, 2016 ~ Aug. 25, 2016
Radiated	03CH01-CB	Akina Chiu	19.9°C / 50%	Feb. 24, 2016 ~ Aug. 12, 2016
AC Conduction	CO01-CB	Da Deng	24°C / 55%	Feb. 26, 2016

Test site Designation No. TW0006 with FCC.
Test site registered number IC 4086D with Industry Canada.

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	11g	20	1	1	2412	L	51
2.4G	11g	20	1	1	2437	M	76
2.4G	11g	20	1	1	2462	H	58
2.4G	HT20	20	1,(M0)	2	2412	L	33
2.4G	HT20	20	1,(M0)	2	2437	M	76
2.4G	HT20	20	1,(M0)	2	2462	H	45
2.4G	HT40	40	1,(M0)	2	2422	L	24
2.4G	HT40	40	1,(M0)	2	2437	M	36
2.4G	HT40	40	1,(M0)	2	2452	H	33

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	Normal Link
1	EUT + 2.4GHz WLAN + RF4CE idle
2	EUT + 5GHz WLAN + RF4CE idle
For operating mode 2 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Fundamental Emission Output Power Power Spectral Density
Test Condition	Conducted measurement at transmit chains

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Non-restricted Frequency Bands Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Normal Link
1	EUT + 2.4GHz WLAN + RF4CE idle
2	EUT + 5GHz WLAN + RF4CE idle
For operating mode 1 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
1	EUT in Z axis

Note1: The EUT can only be used at Z axis position.
Note2: All the specification of test configurations and test modes were based on customer's request.

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

Accessories			
Equipment Name	**Brand Name**	**Model Name**	**Rating**
Adapter	MOSO	MSP-C1500IC12.0-18A-US	INPUT: 100-240V, 50/60Hz, 0.6A max OUTPUT: 12.0V, 1.5A
Others			
RJ-45 cable*1: Non-shielded, 1.5m			
HDMI cable*1: Shielded, 1.5m			
Scart cable*1: Non-shielded, 1.2m			
Remote controller*1			

2.5 Support Equipment

For Test Site No: CO01-CB

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	NB*2	DELL	E6430	DoC
2	AP	Planex	GW-AP54SGX	KA220030603014-1
3	HDMI box	Gefen	EXT-HDBOOST-141	DoC
4	HDD3.0	WD	WDBACY5000AWT	DoC

For Test Site No: 03CH01-CB (below 1GHz)

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	NB*2	DELL	E4300	DoC
2	AP	Planex	GW-AP54SGX	KA220030603014-1
3	HDMI box	Gefen	EXT-HDBOOST-141	DoC
4	HDD3.0	WD	WDBACY5000AWT	DoC

For Test Site No: 03CH01-CB (above 1GHz)

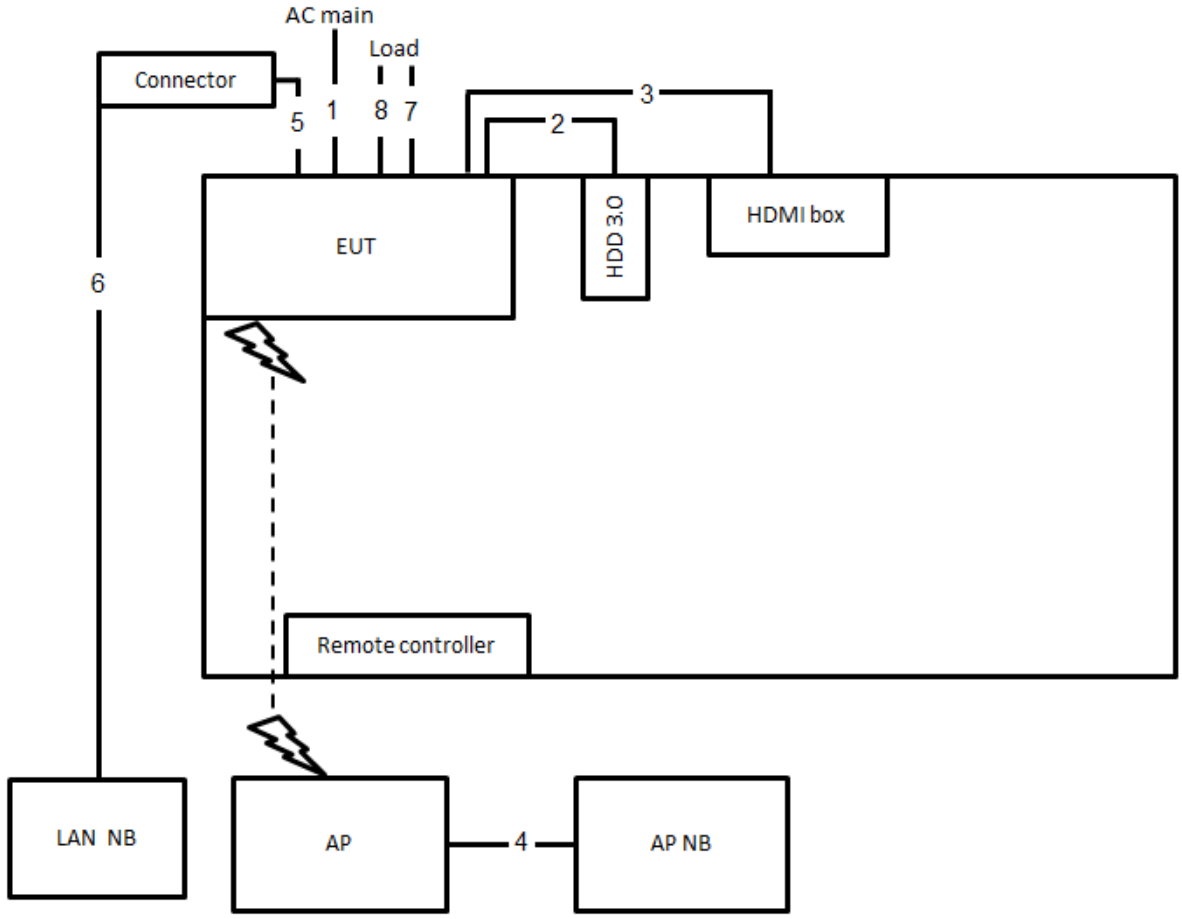
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	NB	DELL	E4300	DoC

For Test Site No: TH01-CB

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	NB	DELL	E4300	DoC

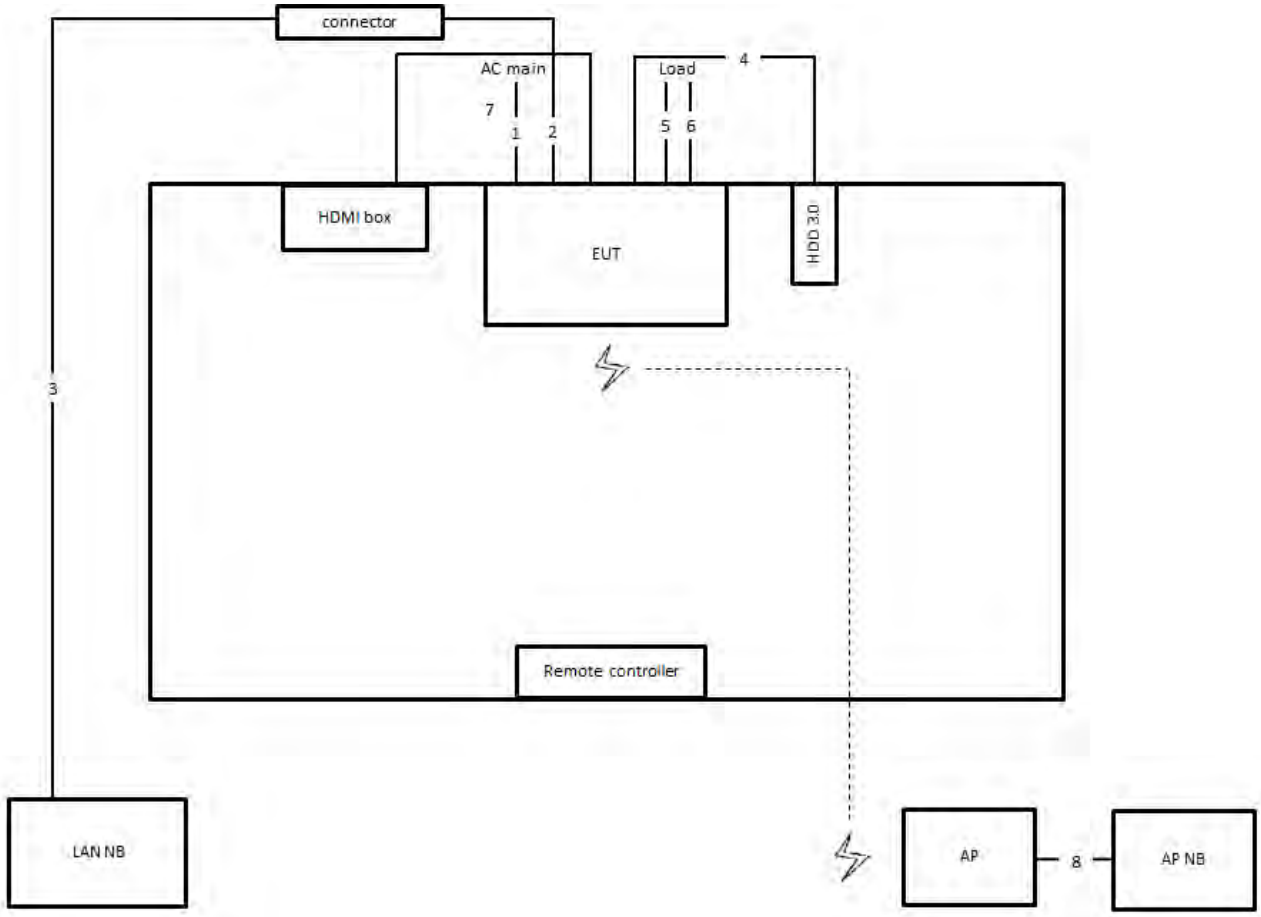
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



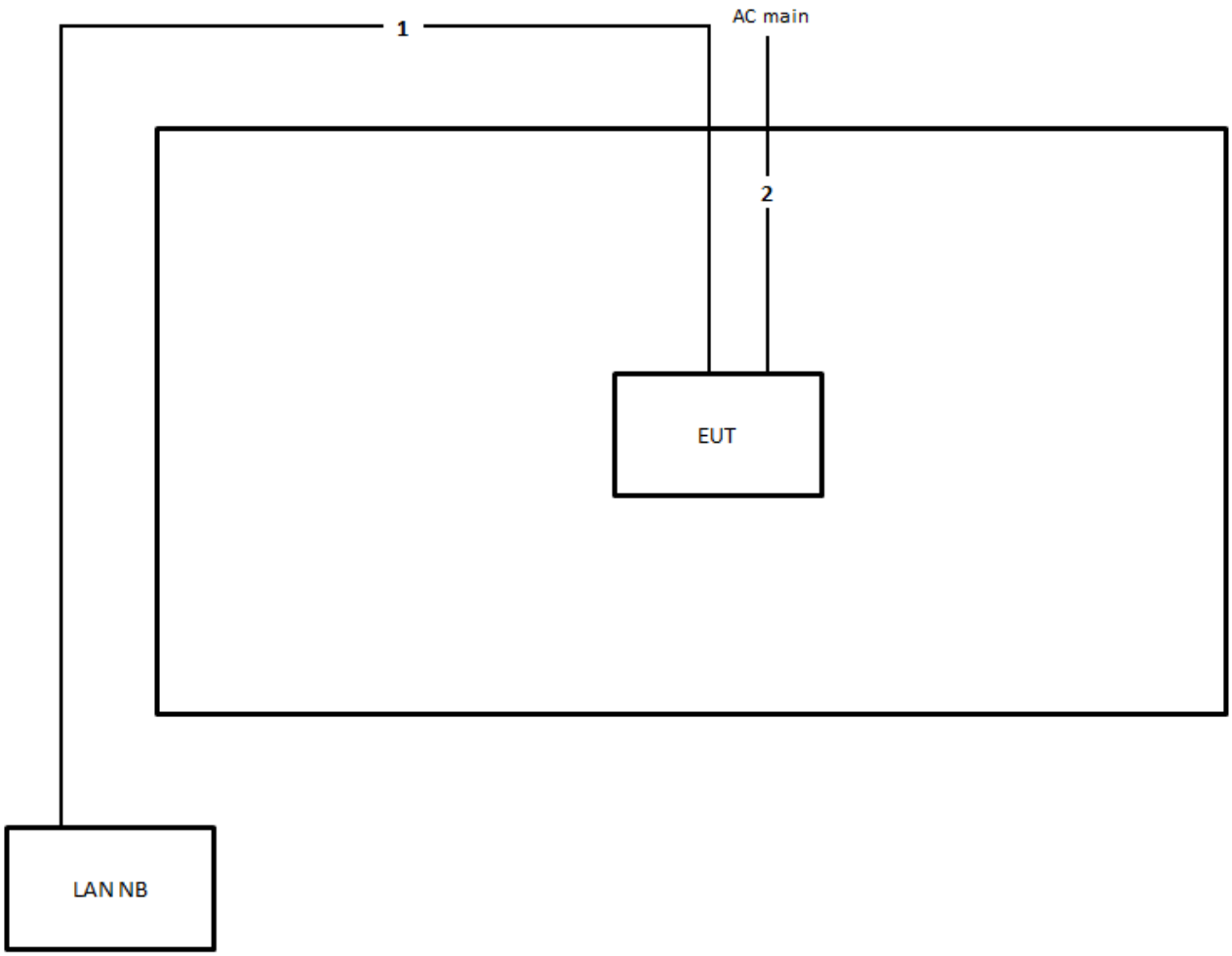
Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	USB cable	Yes	0.2m
3	HDMI cable	Yes	1.5m
4	RJ-45 cable	No	1.5m
5	RJ-45 cable	No	1.5m
6	RJ-45 cable	No	10m
7	Scart cable	No	1.2m
8	Fiber cable	No	1m

Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	1.5m
3	RJ-45 cable	No	10m
4	USB cable	Yes	0.4m
5	Scart cable	No	1.2m
6	Fiber cable	No	1m
7	HDMI cable	Yes	1.5m
8	RJ-45 cable	No	1.5m

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	Power cable	No	1.5m

3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

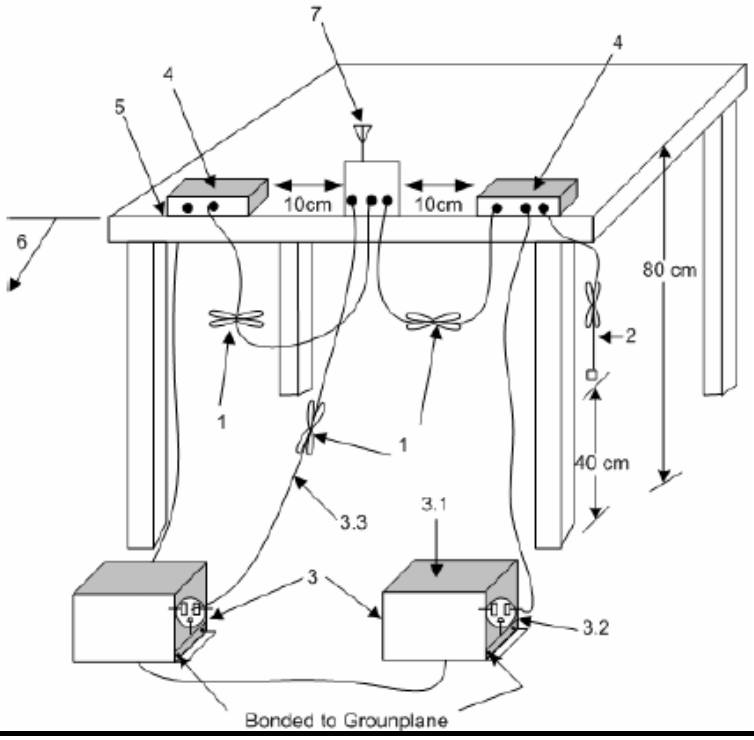
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

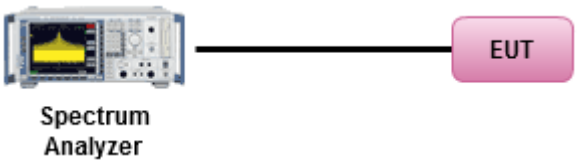
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
	☒ Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
	☐ Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
	☐ Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Fundamental Emission Output Power

3.3.1 Fundamental Emission Output Power Limit

Maximum Conducted Output Power Limit		
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)	
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm	
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
	▪ Smart antenna system (SAS):	
		- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3 + 8$dB dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.		

3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	☐ Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
▪ Maximum Conducted Output Power	
	[duty cycle ≥ 98% or external video / power trigger]
	☐ Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
	☐ Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed)
	duty cycle < 98% and average over on/off periods with duty factor
	☐ Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
	☐ Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
	RF power meter and average over on/off periods with duty factor or gated trigger
	☒ Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM-G (using an RF average power meter).
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

RF Output Power (Power Meter)


3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

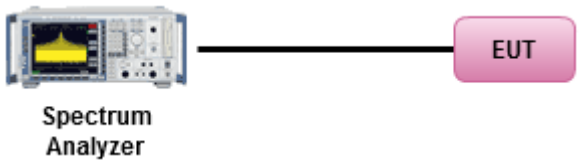
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method		
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).		
	☒ Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).	
	[duty cycle ≥ 98% or external video / power trigger]	
	☐ Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).	
	☐ Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)	
	duty cycle < 98% and average over on/off periods with duty factor	
	☐ Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).	
	☐ Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)	
▪ For conducted measurement.		
	▪ If The EUT supports multiple transmit chains using options given below:	
		☒ Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
		☐ Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
		☐ Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

3.4.4 Test Setup

Power Spectral Density


3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	**Limit (dB)**
Peak output power procedure	20
Average output power procedure	30
Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to 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. Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to 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 in-band average PSD level.	

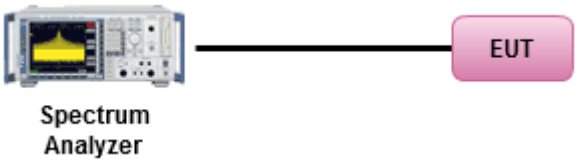
3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method
▪ Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands


3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

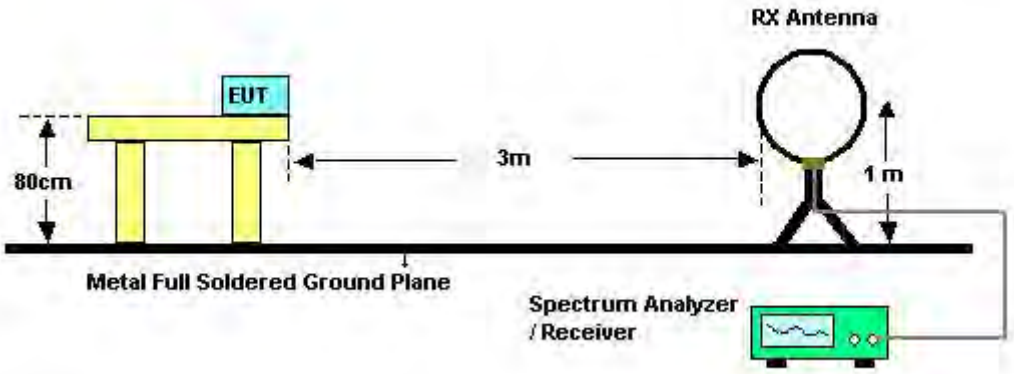
3.6.3 Test Procedures

Test Method		
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].		
▪ Refer as ANSI C63.10, clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.		
▪ For the transmitter unwanted emissions shall be measured using following options below:		
	▪ Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.	
		☐ Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle ≥98%)
		☐ Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
		☒ Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW≥1/T).
		☐ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☐ Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		☒ Refer as FCC KDB 558074, clause 12.2.4 measurement procedure peak limit.
▪ For the transmitter band-edge emissions shall be measured using following options below:		
	▪ Refer as FCC KDB 558074 clause 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.	
	▪ Refer as FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.	
	▪ Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).	
▪ For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.		
	▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB	
	▪ For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.	

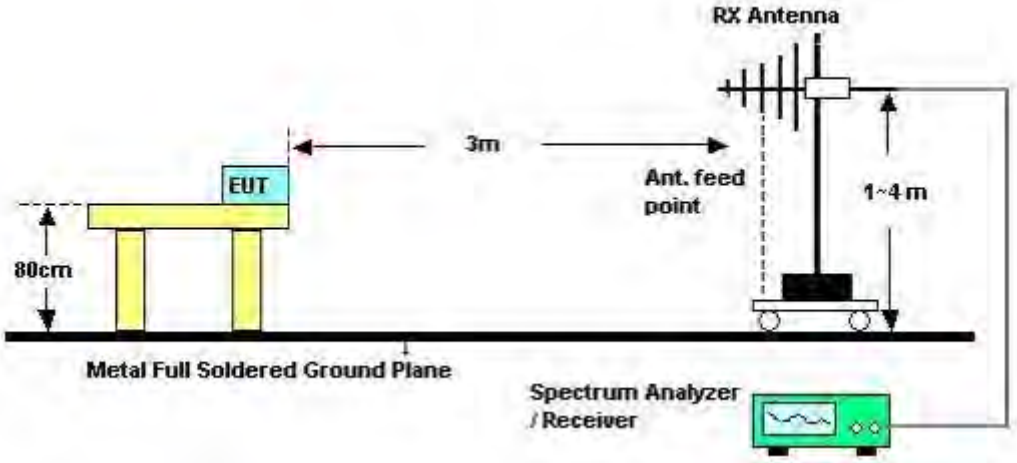
3.6.4 Test Setup

Transmitter Radiated Emissions

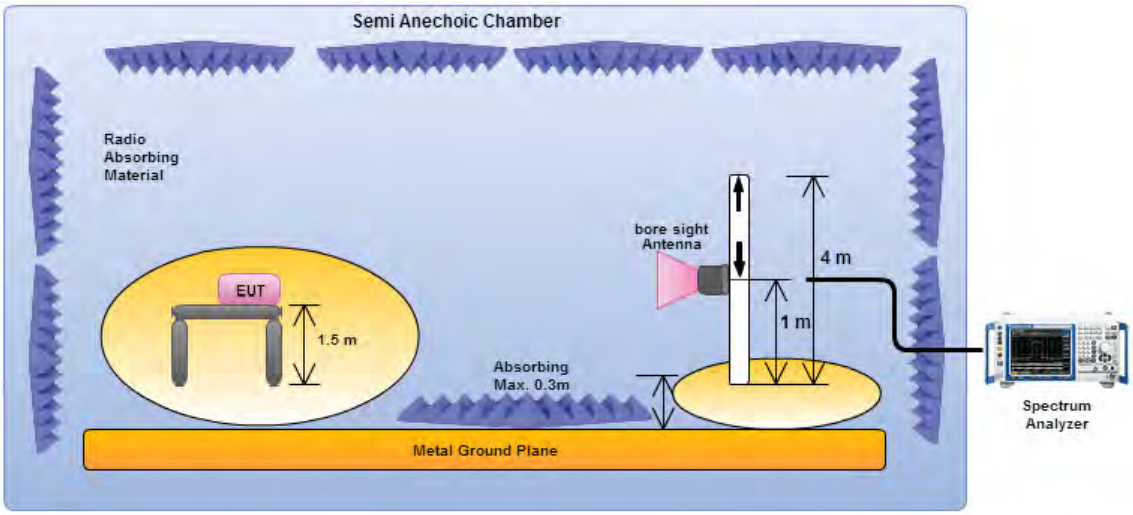
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.6.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 27, 2016	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 08, 2015	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 23, 2015	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 25, 2015	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA	TESEQ	CBL6112D	37880	20MHz ~ 2GHz	Sep. 03, 2015	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 12, 2015*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Oct. 22, 2015	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10783	9kHz ~ 1.3GHz	Mar. 23, 2015	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26GHz ~ 40GHz	Nov. 13, 2015	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Oct. 27, 2015	Radiation (03CH01-CB)
EMI Receiver	Agilent	N9038A	MY52260123	9kHz ~ 8.4GHz	Jan. 27, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz ~ 1 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-17	N/A	1 GHz ~ 18 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-1	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G-2	N/A	18GHz ~ 40 GHz	Nov. 02, 2015	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-l0-7	N/A	N/A	Radiation (03CH01-CB)

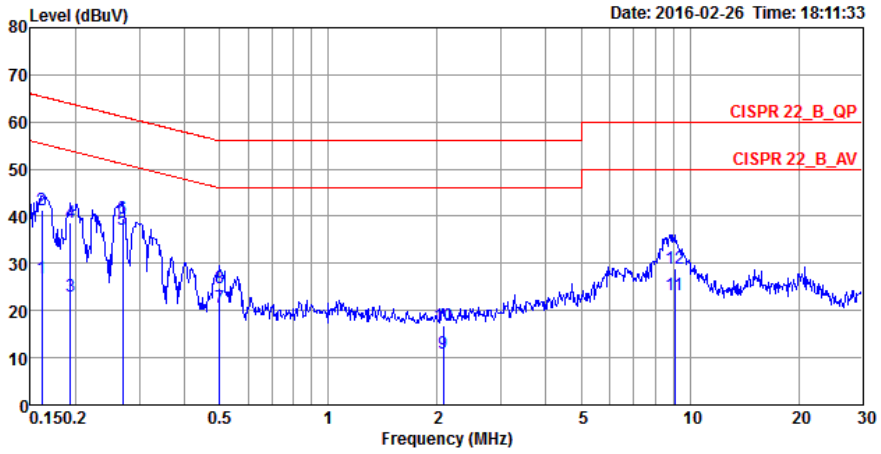
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 09, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 26.5 GHz	Nov. 02, 2015	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 02, 2015	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

"*" Calibration Interval of instruments listed above is two years.

N.C.R means Non-Calibration required.

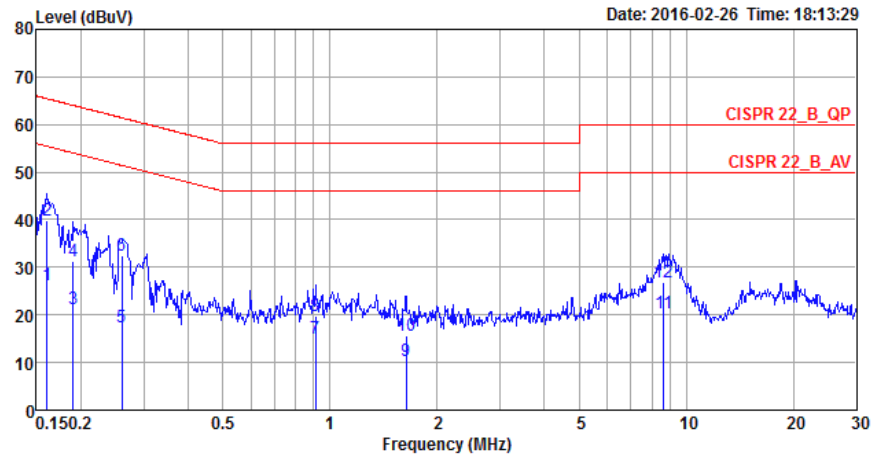
AC Power-line Conducted Emissions Result			
Operating Mode	2	**Power Phase**	Neutral
Operating Function	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1616	26.85	-28.53	55.38	16.76	10.07	0.02	NEUTRAL	Average
2	0.1616	41.45	-23.93	65.38	31.36	10.07	0.02	NEUTRAL	QP
3	0.1934	23.00	-30.89	53.89	13.01	9.97	0.02	NEUTRAL	Average
4	0.1934	38.57	-25.32	63.89	28.58	9.97	0.02	NEUTRAL	QP
5	0.2701	37.25	-13.87	51.12	27.25	9.97	0.03	NEUTRAL	Average
6	0.2701	39.50	-21.62	61.12	29.50	9.97	0.03	NEUTRAL	QP
7	0.4994	20.56	-25.45	46.01	10.56	9.96	0.04	NEUTRAL	Average
8	0.4994	24.79	-31.22	56.01	14.79	9.96	0.04	NEUTRAL	QP
9	2.0768	10.90	-35.10	46.00	0.84	10.00	0.06	NEUTRAL	Average
10	2.0768	16.77	-39.23	56.00	6.71	10.00	0.06	NEUTRAL	QP
11	9.0592	23.21	-26.79	50.00	12.86	10.14	0.21	NEUTRAL	Average
12	9.0592	28.96	-31.04	60.00	18.61	10.14	0.21	NEUTRAL	QP

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result			
Operating Mode	2	**Power Phase**	Line
Operating Function	Normal Link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1607	26.37	-29.06	55.43	16.39	9.96	0.02	LINE	Average
2	0.1607	39.95	-25.48	65.43	29.97	9.96	0.02	LINE	QP
3	0.1904	21.26	-32.76	54.02	11.28	9.96	0.02	LINE	Average
4	0.1904	31.20	-32.82	64.02	21.22	9.96	0.02	LINE	QP
5	0.2603	17.36	-34.06	51.42	7.37	9.96	0.03	LINE	Average
6	0.2603	32.40	-29.02	61.42	22.41	9.96	0.03	LINE	QP
7	0.9087	15.02	-30.98	46.00	5.00	9.97	0.05	LINE	Average
8	0.9087	19.77	-36.23	56.00	9.75	9.97	0.05	LINE	QP
9	1.6363	10.34	-35.66	46.00	0.29	9.99	0.06	LINE	Average
10	1.6363	15.62	-40.38	56.00	5.57	9.99	0.06	LINE	QP
11	8.6373	20.48	-29.52	50.00	10.13	10.15	0.20	LINE	Average
12	8.6373	26.85	-33.15	60.00	16.50	10.15	0.20	LINE	QP

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

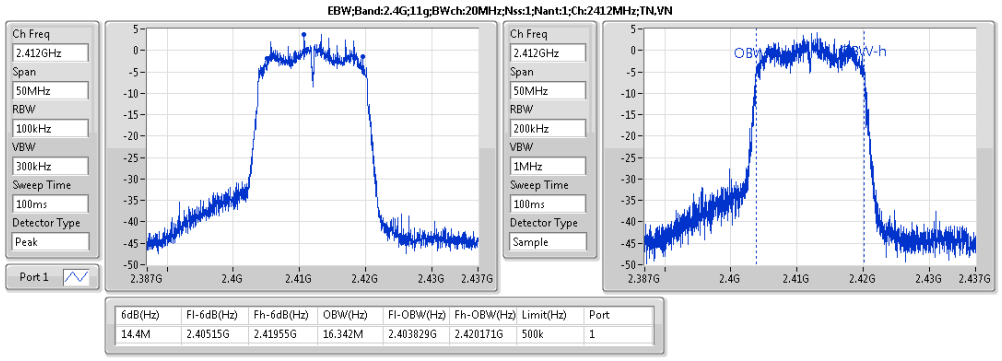
Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4G;11g;Nss1;Ntx1	15.3M	16.442M	16M4D1D	14.4M	16.292M
2.4G;HT20;Nss1,(M0);Ntx2	15.05M	17.641M	17M6D1D	14.375M	17.441M
2.4G;HT40;Nss1,(M0);Ntx2	36.35M	36.332M	36M3D1D	35.6M	36.182M

Result

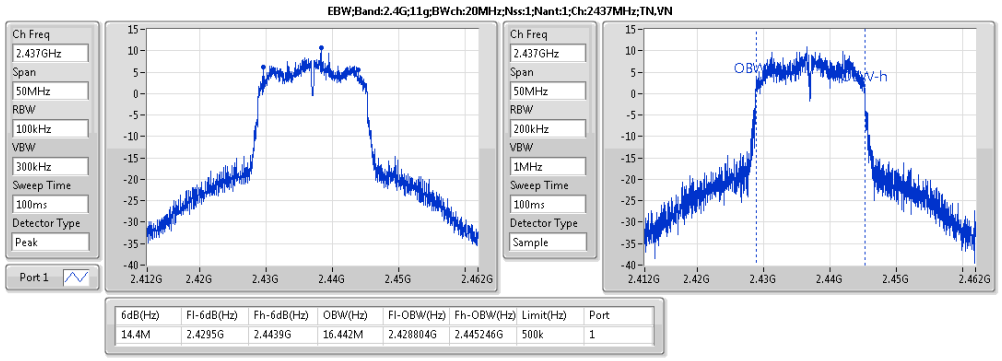
Mode	Result	Limit	P1-N dB (Hz)	P1-OBW (Hz)	P2-N dB (Hz)	P2-OBW (Hz)
2.4G;11g;Nss1;Ntx1;2412;TN,VN	Pass	500k	14.4M	16.342M		
2.4G;11g;Nss1;Ntx1;2437;TN,VN	Pass	500k	14.4M	16.442M		
2.4G;11g;Nss1;Ntx1;2462;TN,VN	Pass	500k	15.3M	16.292M		
2.4G;HT20;Nss1,(M0);Ntx2;2412;TN,VN	Pass	500k	14.975M	17.441M	14.375M	17.466M
2.4G;HT20;Nss1,(M0);Ntx2;2437;TN,VN	Pass	500k	15.025M	17.641M	15.05M	17.541M
2.4G;HT20;Nss1,(M0);Ntx2;2462;TN,VN	Pass	500k	15.05M	17.466M	15.05M	17.491M
2.4G;HT40;Nss1,(M0);Ntx2;2422;TN,VN	Pass	500k	36.35M	36.282M	35.6M	36.282M
2.4G;HT40;Nss1,(M0);Ntx2;2437;TN,VN	Pass	500k	36.25M	36.182M	36.3M	36.232M
2.4G;HT40;Nss1,(M0);Ntx2;2452;TN,VN	Pass	500k	36.3M	36.332M	36.3M	36.232M

EBW;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:1;Ch:2412MHz;TN,VN



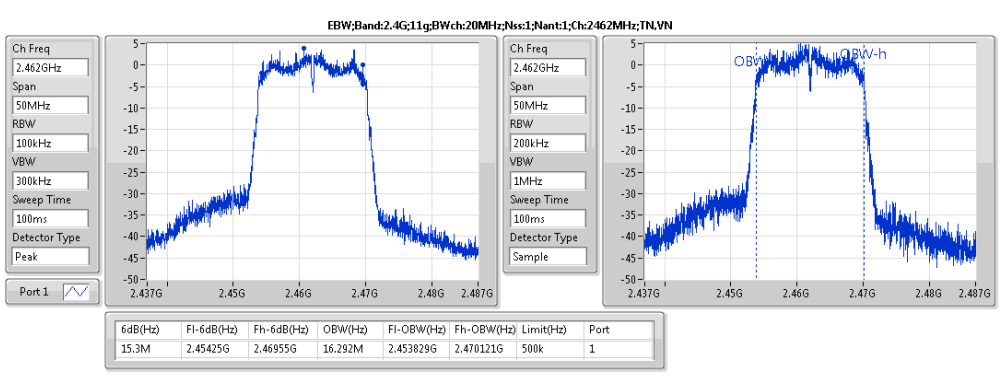
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
14.4M	2.40515G	2.41955G	16.342M	2.403829G	2.420171G	500k	1

EBW;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:1;Ch:2437MHz;TN,VN



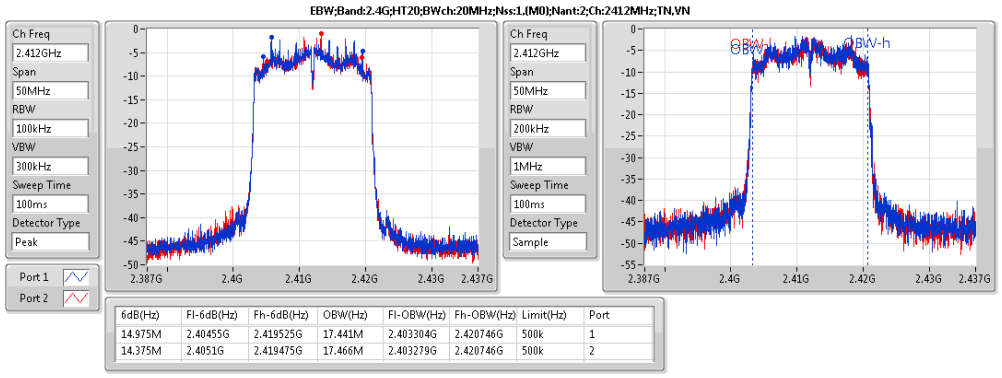
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
14.4M	2.4295G	2.4439G	16.442M	2.428804G	2.445246G	500k	1

EBW;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:1;Ch:2462MHz;TN,VN



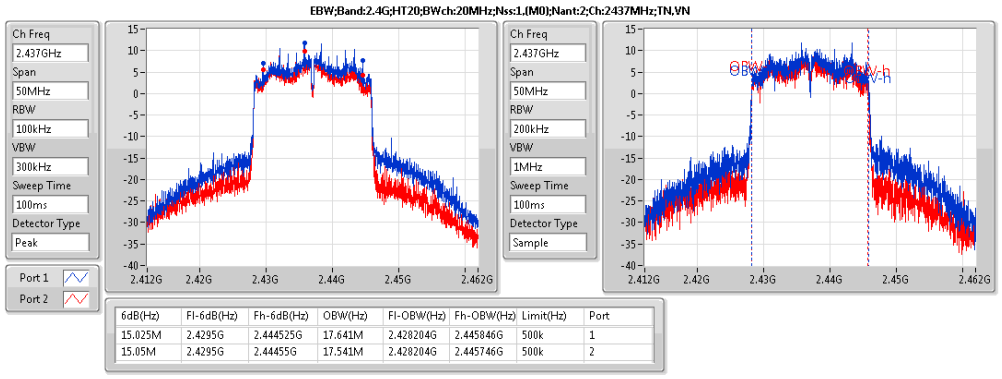
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.3M	2.45425G	2.46955G	16.292M	2.453829G	2.470121G	500k	1

EBW;Band:2.4G;HT20;BWch:20MHz;Nss:1,(M0);Nant:2;Ch:2412MHz;TN,VN



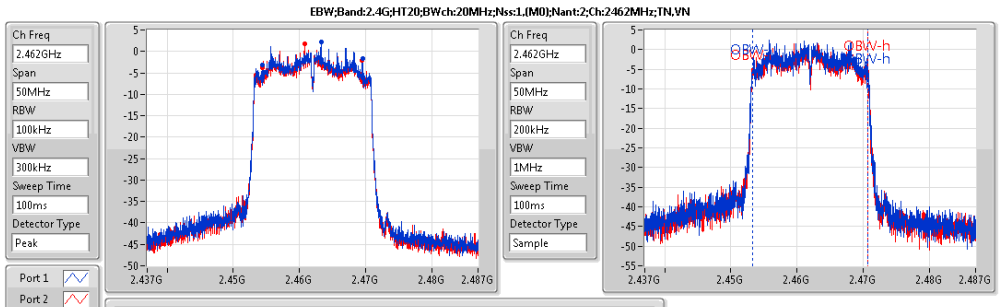
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
14.975M	2.40455G	2.419525G	17.441M	2.403304G	2.420746G	500k	1
14.375M	2.4051G	2.419475G	17.466M	2.403279G	2.420746G	500k	2

EBW;Band:2.4G;HT20;BWch:20MHz;Nss:1,(M0);Nant:2;Ch:2437MHz;TN,VN



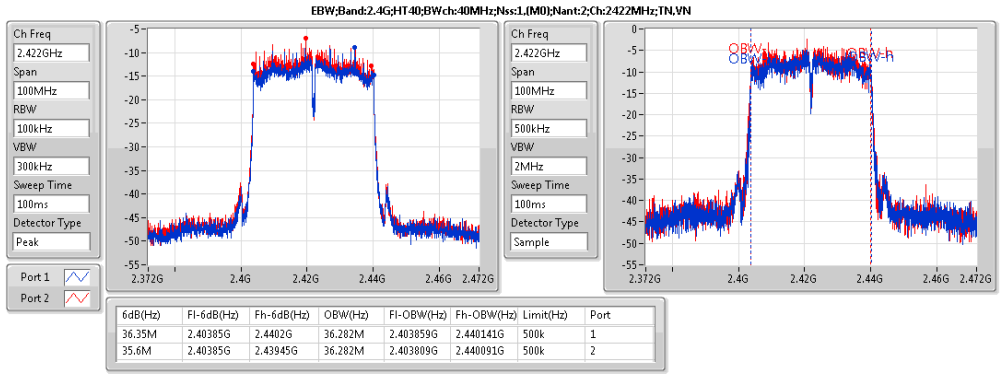
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.025M	2.4295G	2.444525G	17.641M	2.428204G	2.445846G	500k	1
15.05M	2.4295G	2.44455G	17.541M	2.428204G	2.445746G	500k	2

EBW;Band:2.4G;HT20;BWch:20MHz;Nss:1,(M0);Nant:2;Ch:2462MHz;TN,VN



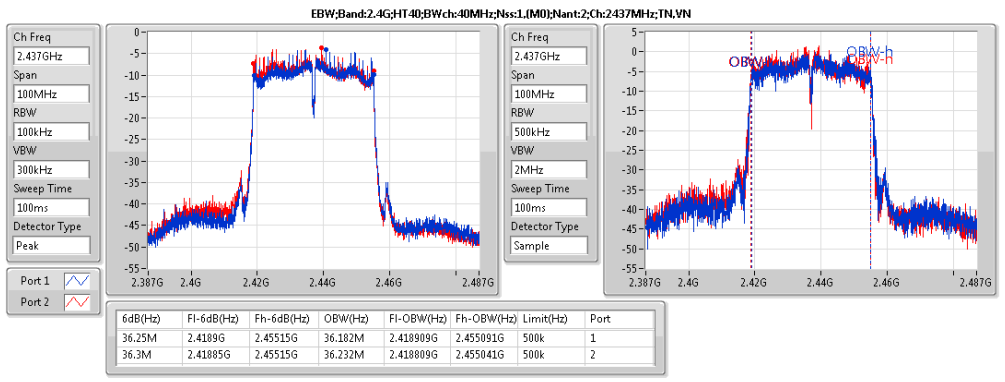
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.05M	2.454475G	2.469525G	17.466M	2.453254G	2.470721G	500k	1
15.05M	2.45445G	2.4695G	17.491M	2.453254G	2.470746G	500k	2

EBW;Band:2.4G;HT40;BWch:40MHz;Nss:1,(M0);Nant:2;Ch:2422MHz;TN,VN



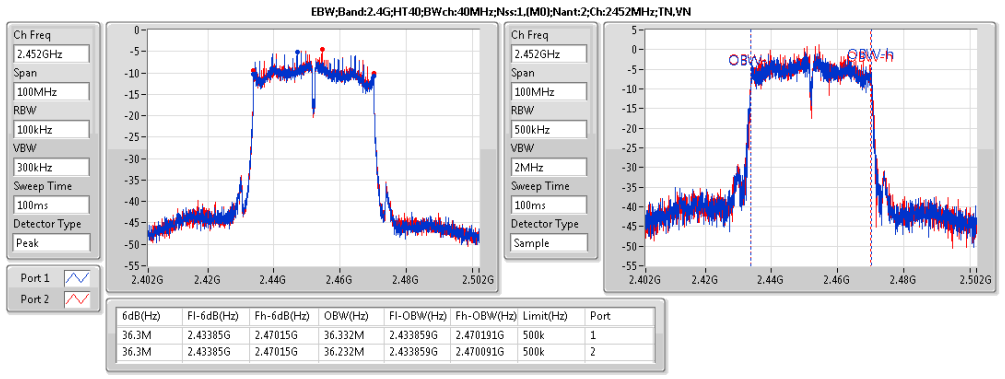
6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.35M	2.40385G	2.4402G	36.282M	2.403859G	2.440141G	500k	1
35.6M	2.40385G	2.43945G	36.282M	2.403809G	2.440091G	500k	2

EBW;Band:2.4G;HT40;BWch:40MHz;Nss:1,(M0);Nant:2;Ch:2437MHz;TN,VN



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.25M	2.4189G	2.45515G	36.182M	2.418909G	2.455091G	500k	1
36.3M	2.41885G	2.45515G	36.232M	2.418809G	2.455041G	500k	2

EBW;Band:2.4G;HT40;BWch:40MHz;Nss:1,(M0);Nant:2;Ch:2452MHz;TN,VN



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
36.3M	2.43385G	2.47015G	36.332M	2.433859G	2.470191G	500k	1
36.3M	2.43385G	2.47015G	36.232M	2.433859G	2.470091G	500k	2

Summary

Mode	Sum (dBm)	Sum (W)	EIRP (dBm)	EIRP (W)
2.4G;11g;Nss1;Ntx1	22.67	0.18493	26.11	0.40832
2.4G;HT20;Nss1,(M0);Ntx2	25.03	0.31842	28.47	0.70307
2.4G;HT40;Nss1,(M0);Ntx2	13.73	0.0236	17.18	0.05224

Result

Mode	Result	DG (dBi)	EIRP (dBm)	EIRP Lim. (dBm)	Sum (dBm)	Sum Lim. (dBm)	P1 (dBm)	P2 (dBm)
2.4G;11g;Nss1;Ntx1;2412;TN,VN	Pass	3.444	18.08	36.00	14.64	30.00	14.64	
2.4G;11g;Nss1;Ntx1;2437;TN,VN	Pass	3.444	26.11	36.00	22.67	30.00	22.67	
2.4G;11g;Nss1;Ntx1;2462;TN,VN	Pass	3.444	19.84	36.00	16.40	30.00	16.4	
2.4G;HT20;Nss1,(M0);Ntx2;2412;TN,VN	Pass	3.444	16.48	36.00	13.04	30.00	9.98	10.08
2.4G;HT20;Nss1,(M0);Ntx2;2437;TN,VN	Pass	3.444	28.47	36.00	25.03	30.00	22.68	21.23
2.4G;HT20;Nss1,(M0);Ntx2;2462;TN,VN	Pass	3.444	19.76	36.00	16.32	30.00	13.32	13.29
2.4G;HT40;Nss1,(M0);Ntx2;2422;TN,VN	Pass	3.444	13.05	36.00	9.61	30.00	6.16	6.99
2.4G;HT40;Nss1,(M0);Ntx2;2437;TN,VN	Pass	3.444	17.18	36.00	13.73	30.00	10.64	10.8
2.4G;HT40;Nss1,(M0);Ntx2;2452;TN,VN	Pass	3.444	16.55	36.00	13.11	30.00	9.97	10.22

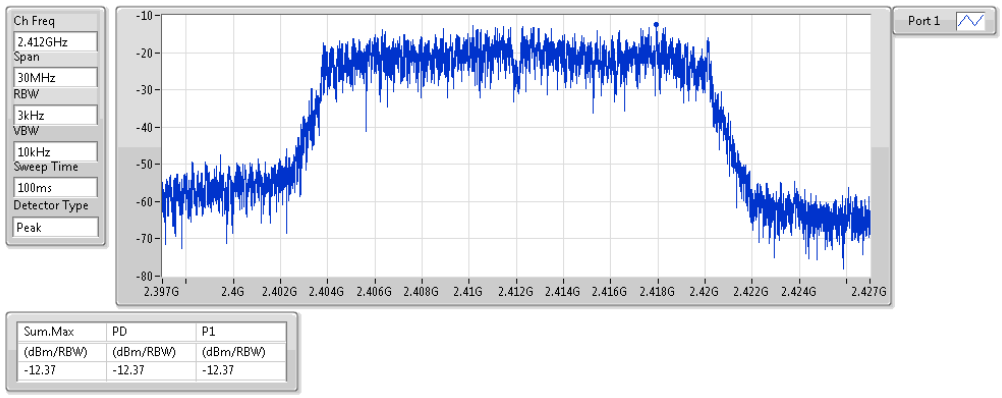
Summary

Mode	PD (dBm/RBW)	EIRP.PD (dBm/RBW)
2.4G;11g;Nss1;Ntx1	-4.58	-1.14
2.4G;HT20;Nss1,(M0);Ntx2	-1.90	4.55
2.4G;HT40;Nss1,(M0);Ntx2	-17.40	-10.95

Result

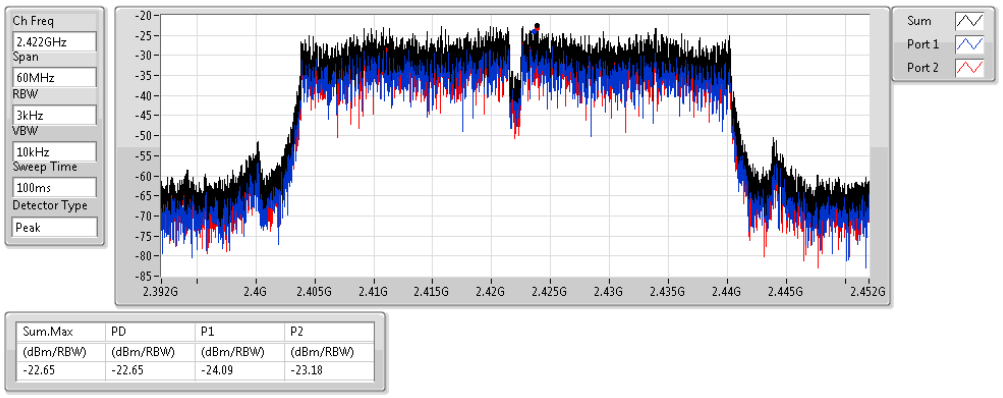
Mode	Result	Meas.RBW (Hz)	Lim.RBW (Hz)	BWCF (dB)	DG (dBi)	Sum.Max (dBm/RBW)	PD (dBm/RBW)	PD.Limit (dBm/RBW)	EIRP.PD (dBm/RBW)	EIRP.PD.Lim (dBm/RBW)	P1 (dBm/RBW)	P2 (dBm/RBW)
2.4G;11g;Nss1;Ntx1;2412;TN,VN	Pass	3k	3k	0.00	3.444	-12.37	-12.37	7.55	-8.93	Inf	-12.37	
2.4G;11g;Nss1;Ntx1;2437;TN,VN	Pass	3k	3k	0.00	3.444	-4.58	-4.58	7.55	-1.14	Inf	-4.58	
2.4G;11g;Nss1;Ntx1;2462;TN,VN	Pass	3k	3k	0.00	3.444	-10.12	-10.12	7.55	-6.68	Inf	-10.12	
2.4G;HT20;Nss1,(M0);Ntx2;2412;TN,VN	Pass	3k	3k	0.00	6.454	-15.03	-15.03	7.55	-8.58	Inf	-15.39	-15.38
2.4G;HT20;Nss1,(M0);Ntx2;2437;TN,VN	Pass	3k	3k	0.00	6.454	-1.90	-1.90	7.55	4.55	Inf	-3.15	-6.11
2.4G;HT20;Nss1,(M0);Ntx2;2462;TN,VN	Pass	3k	3k	0.00	6.454	-12.16	-12.16	7.55	-5.71	Inf	-13.61	-13.90
2.4G;HT40;Nss1,(M0);Ntx2;2422;TN,VN	Pass	3k	3k	0.00	6.454	-22.65	-22.65	7.55	-16.20	Inf	-24.09	-23.18
2.4G;HT40;Nss1,(M0);Ntx2;2437;TN,VN	Pass	3k	3k	0.00	6.454	-17.40	-17.40	7.55	-10.95	Inf	-19.09	-19.55
2.4G;HT40;Nss1,(M0);Ntx2;2452;TN,VN	Pass	3k	3k	0.00	6.454	-19.10	-19.10	7.55	-12.65	Inf	-20.07	-19.84

PSD;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:1;Ch:2412MHz;TN,VN



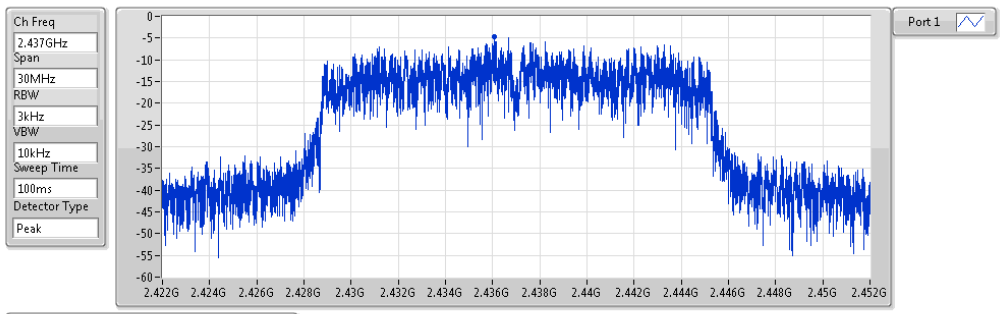
Sum.Max	PD	P1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.37	-12.37	-12.37

PSD;Band:2.4G;HT40;BWch:40MHz;Nss:1,(M0);Nant:2;Ch:2422MHz;TN,VN



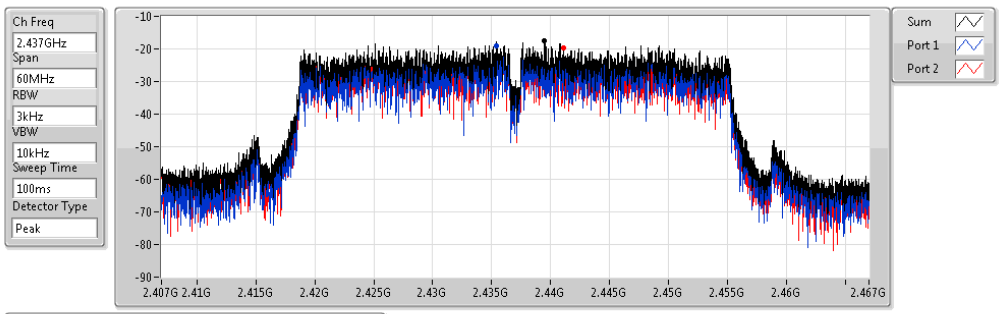
Sum.Max	PD	P1	P2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-22.65	-22.65	-24.09	-23.18

PSD;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:1;Ch:2437MHz;TN,VN



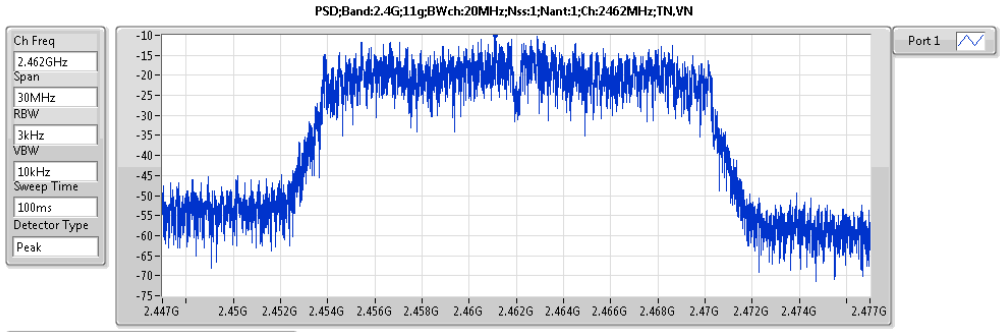
Sum.Max	PD	P1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-4.58	-4.58	-4.58

PSD;Band:2.4G;HT40;BWch:40MHz;Nss:1,(M0);Nant:2;Ch:2437MHz;TN,VN



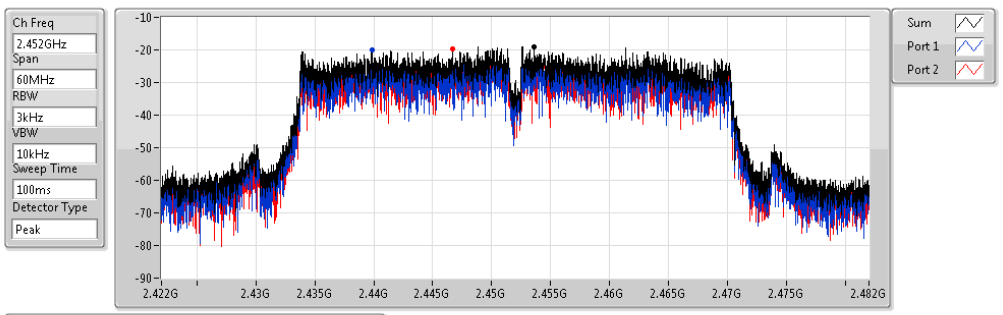
Sum.Max	PD	P1	P2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-17.40	-17.40	-19.09	-19.55

PSD;Band:2.4G;11g;BWch:20MHz;Nss:1;Nant:1;Ch:2462MHz;TN,VN



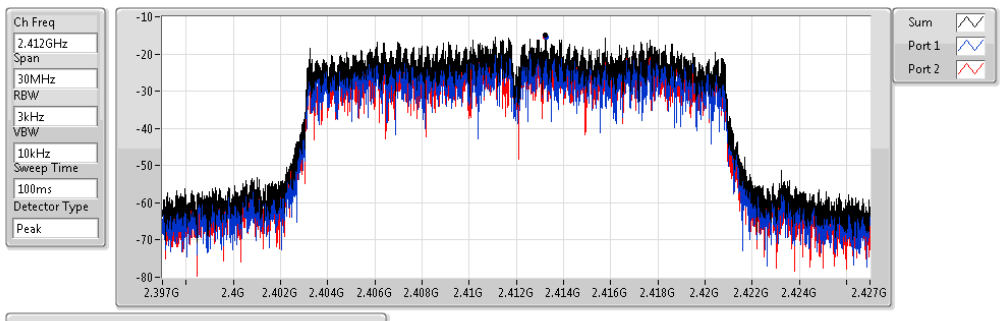
Sum.Max	PD	P1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.12	-10.12	-10.12

PSD;Band:2.4G;HT40;BWch:40MHz;Nss:1,(M0);Nant:2;Ch:2452MHz;TN,VN



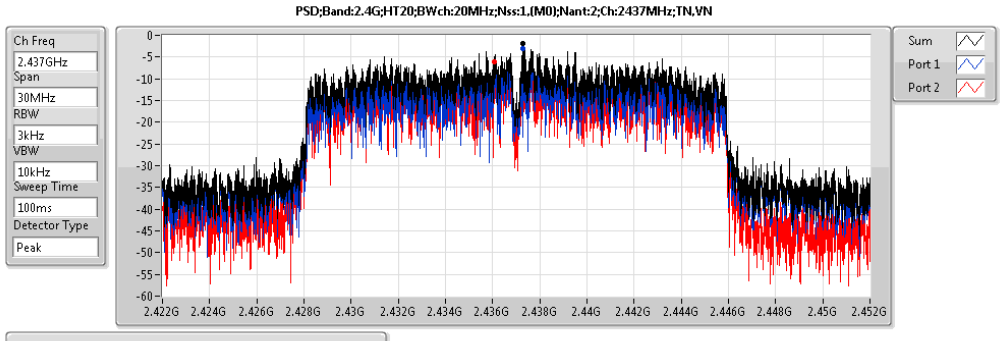
Sum.Max	PD	P1	P2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-19.10	-19.10	-20.07	-19.84

PSD;Band:2.4G;HT20;BWch:20MHz;Nss:1,(M0);Nant:2;Ch:2412MHz;TN,VN



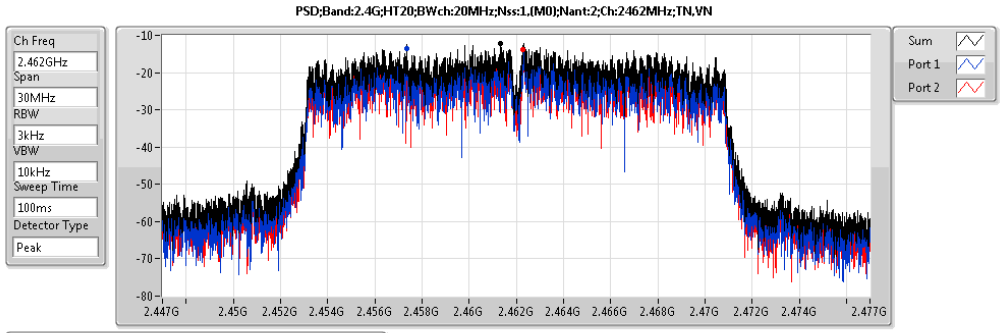
Sum.Max	PD	P1	P2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-15.03	-15.03	-15.39	-15.38

PSD;Band:2.4G;HT20;BWch:20MHz;Nss:1,(M0);Nant:2;Ch:2437MHz;TN,VN



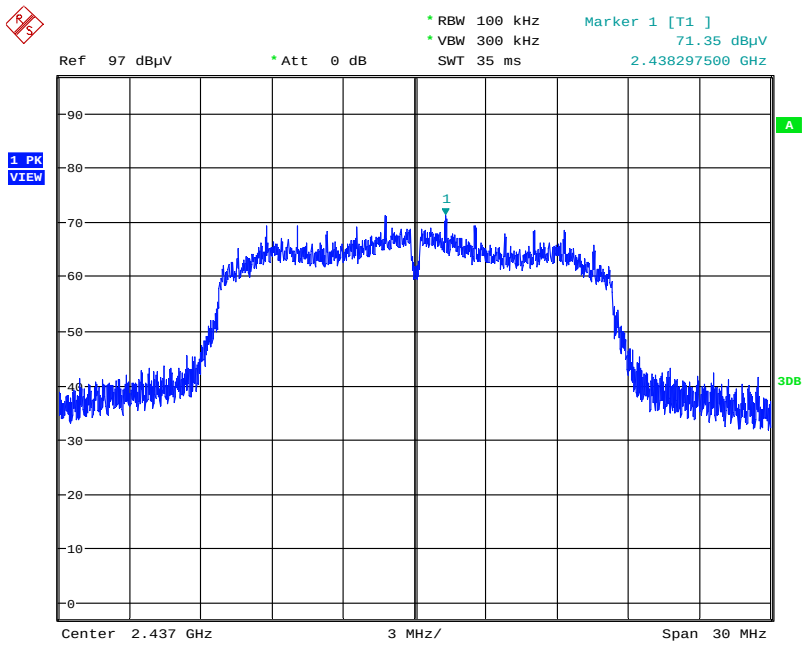
Sum.Max	PD	P1	P2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.90	-1.90	-3.15	-6.11

PSD;Band:2.4G;HT20;BWch:20MHz;Nss:1,(M0);Nant:2;Ch:2462MHz;TN,VN



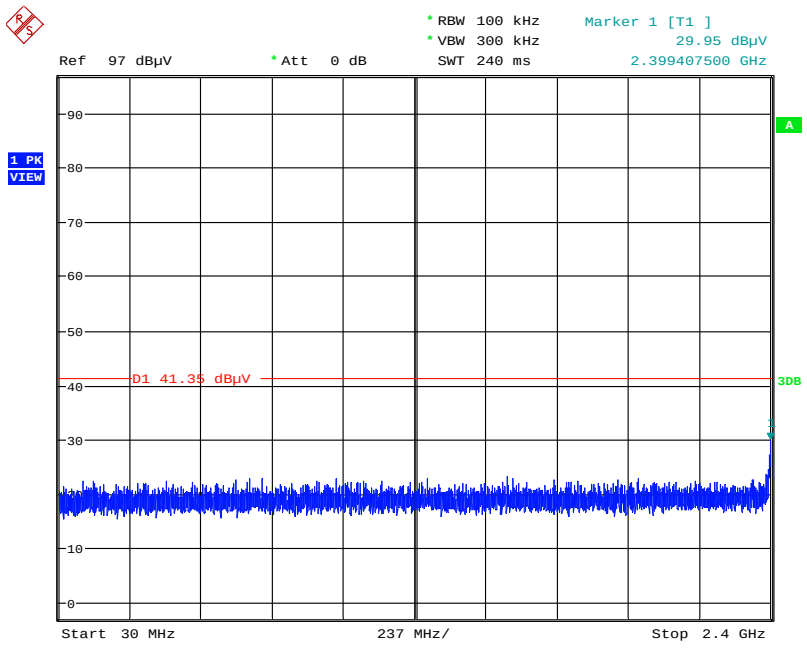
Sum.Max	PD	P1	P2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.16	-12.16	-13.61	-13.90

Plot on Configuration IEEE 802.11g / Reference Level



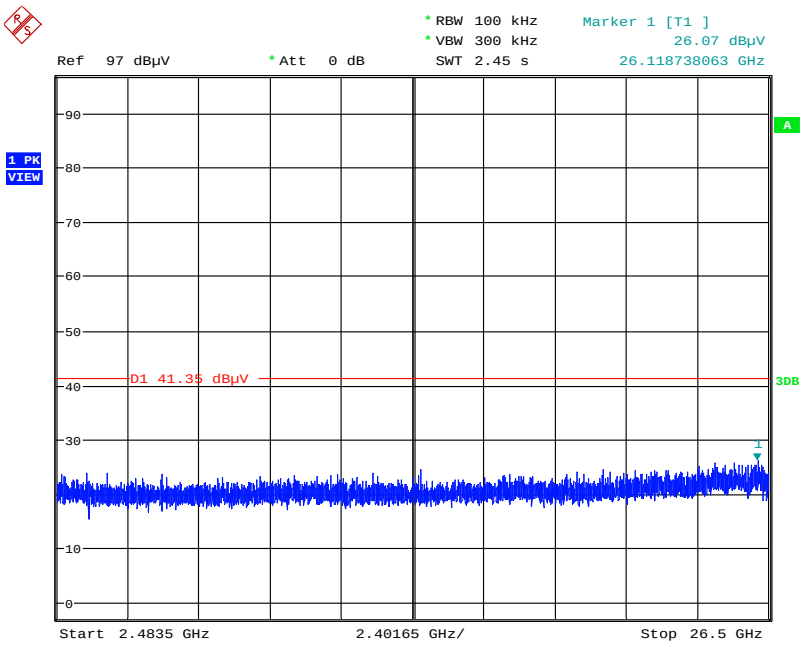
Date: 12.AUG.2016 17:29:31

Plot on Configuration IEEE 802.11g / CH 1 / 30MHz~2400MHz (down 30dBc)



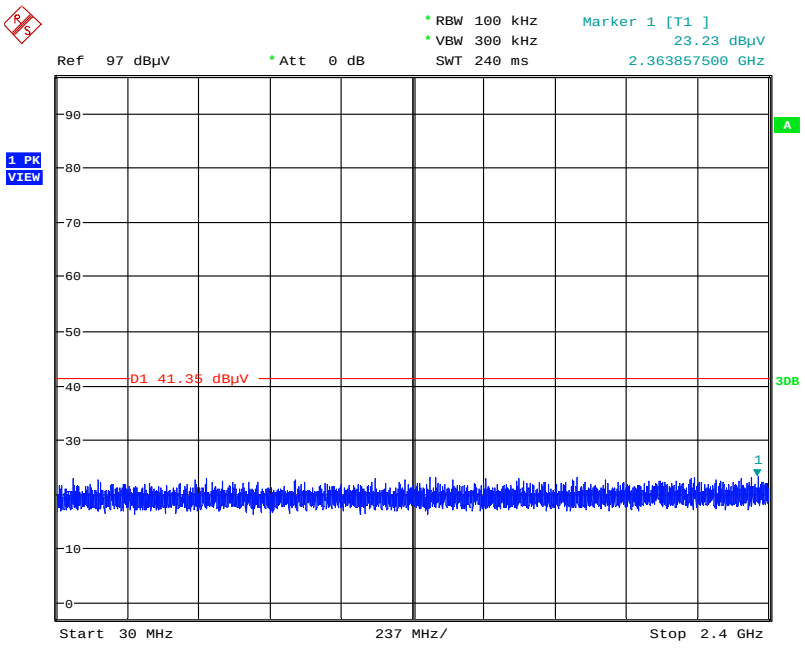
Date: 12.AUG.2016 17:31:25

Plot on Configuration IEEE 802.11g / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



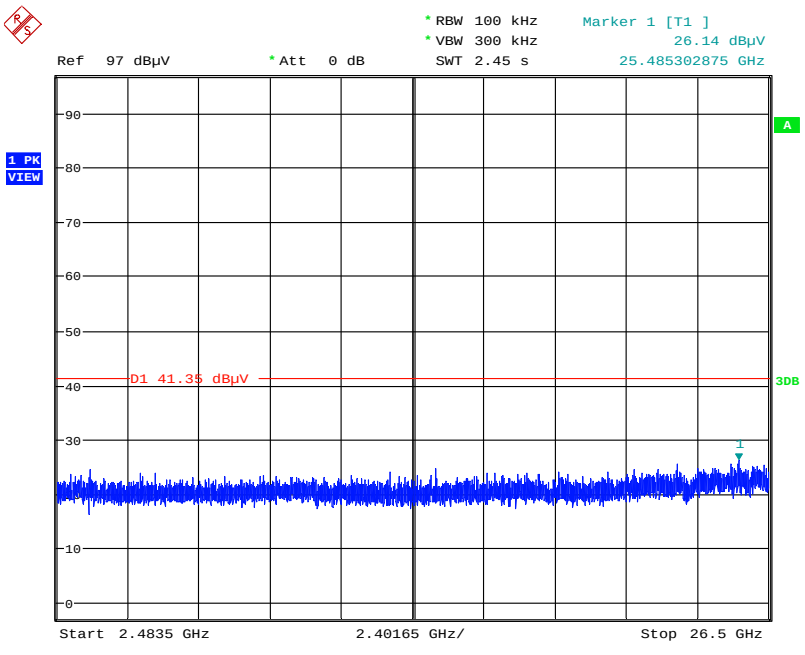
Date: 12.AUG.2016 17:32:32

Plot on Configuration IEEE 802.11g / CH 11 / 30MHz~2400MHz (down 30dBc)

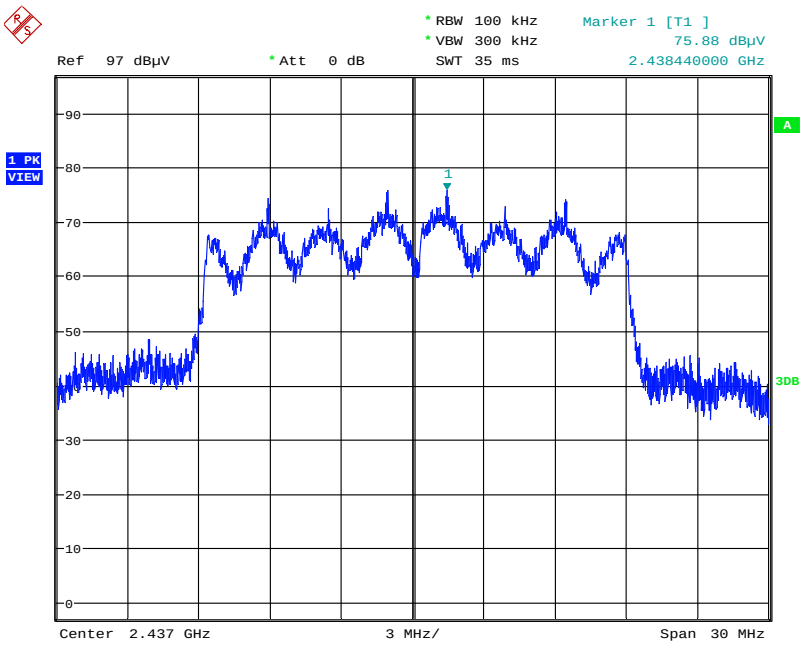


Date: 12.AUG.2016 17:34:12

Plot on Configuration IEEE 802.11g / CH 11 / 2483.5MHz~26500MHz (down 30dBc)

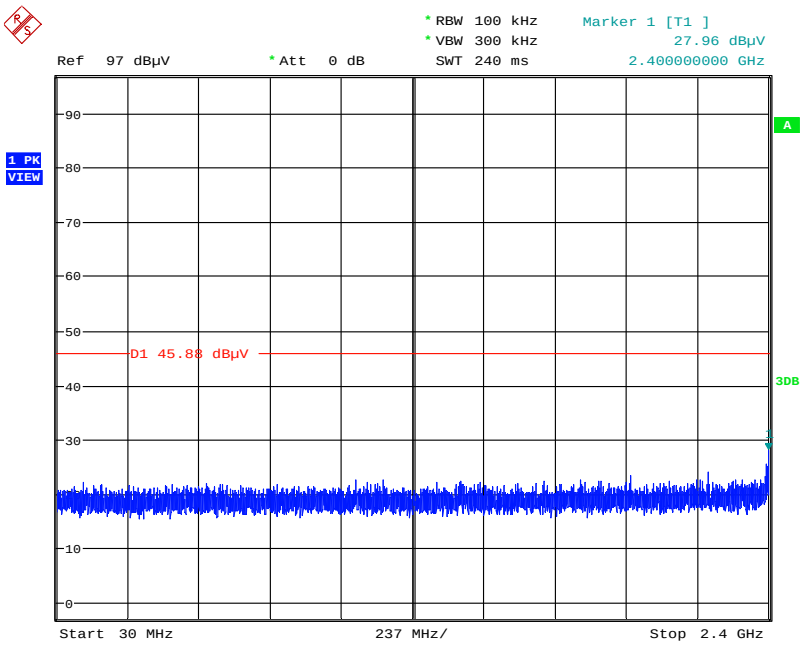


Plot on Configuration IEEE 802.11n MCS0 HT20 / Reference Level



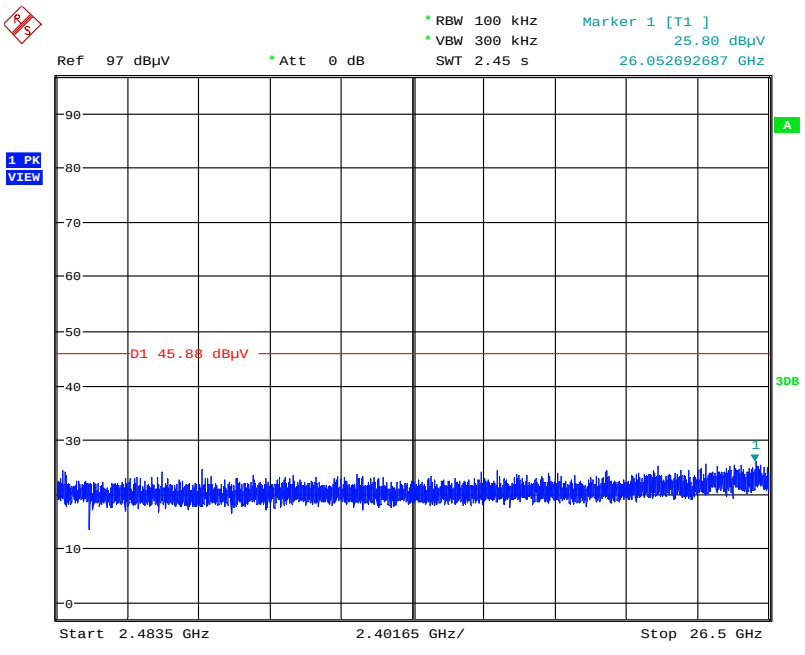
Date: 12.AUG.2016 17:44:25

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 30MHz~2400MHz (down 30dBc)



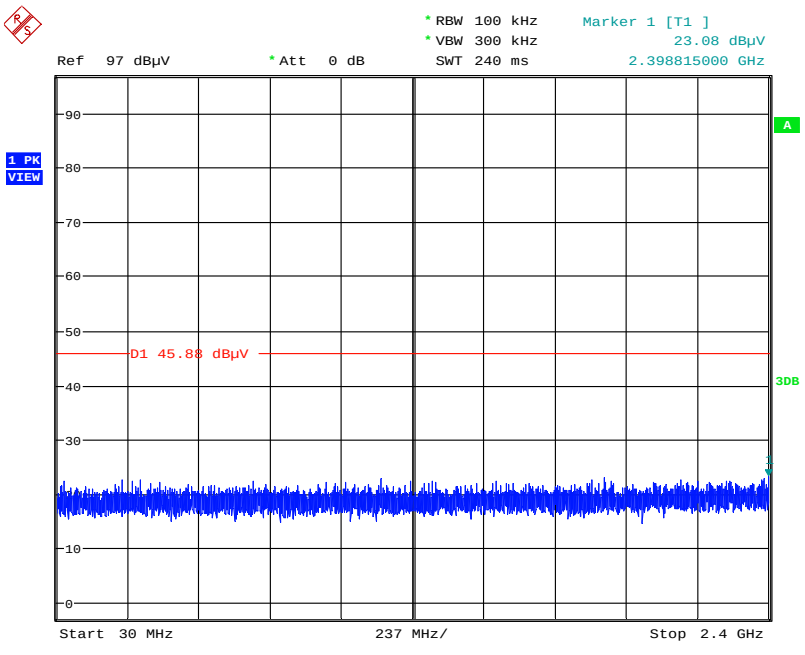
Date: 12.AUG.2016 17:45:33

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 1 / 2483.5MHz~26500MHz (down 30dBc)



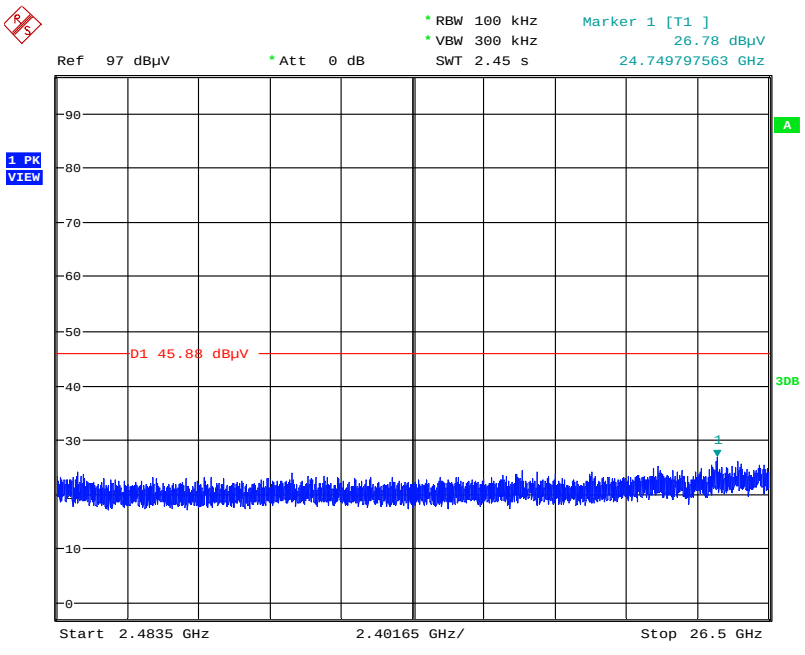
Date: 12.AUG.2016 17:45:56

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 30MHz~2400MHz (down 30dBc)

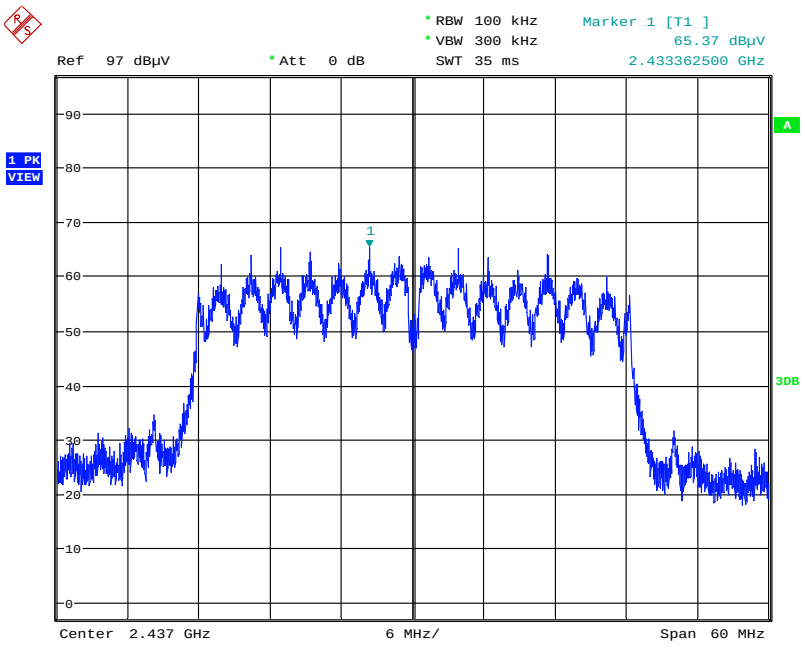


Date: 12.AUG.2016 17:46:58

Plot on Configuration IEEE 802.11n MCS0 HT20 / CH 11 / 2483.5MHz~26500MHz (down 30dBc)

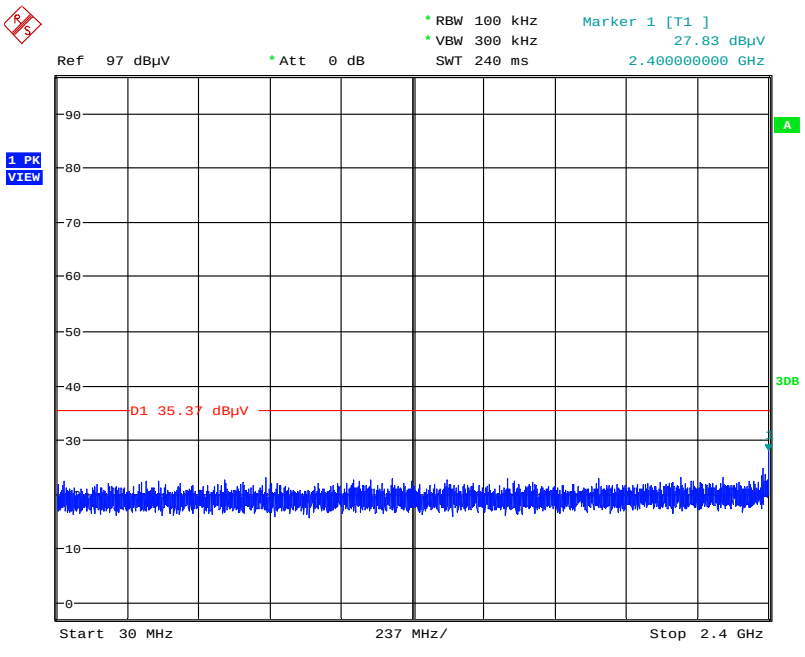


Plot on Configuration IEEE 802.11n MCS0 HT40 / Reference Level



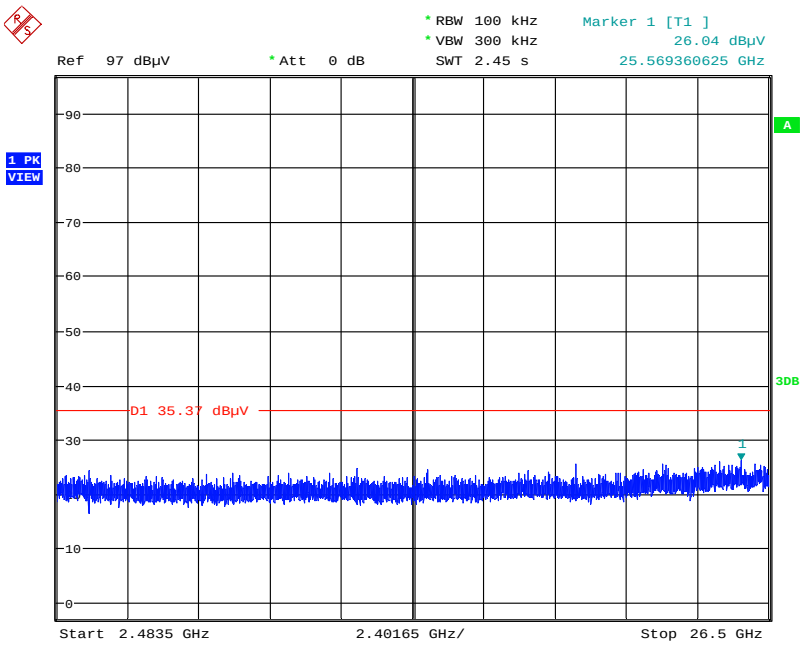
Date: 12.AUG.2016 17:53:06

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 30MHz~2400MHz (down 30dBc)



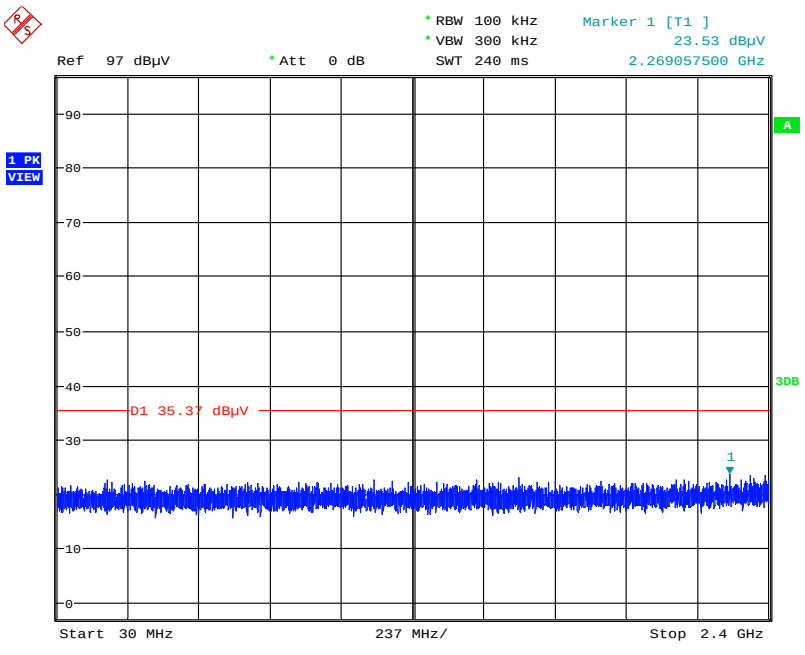
Date: 12.AUG.2016 17:54:07

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 3 / 2483.5MHz~26500MHz (down 30dBc)



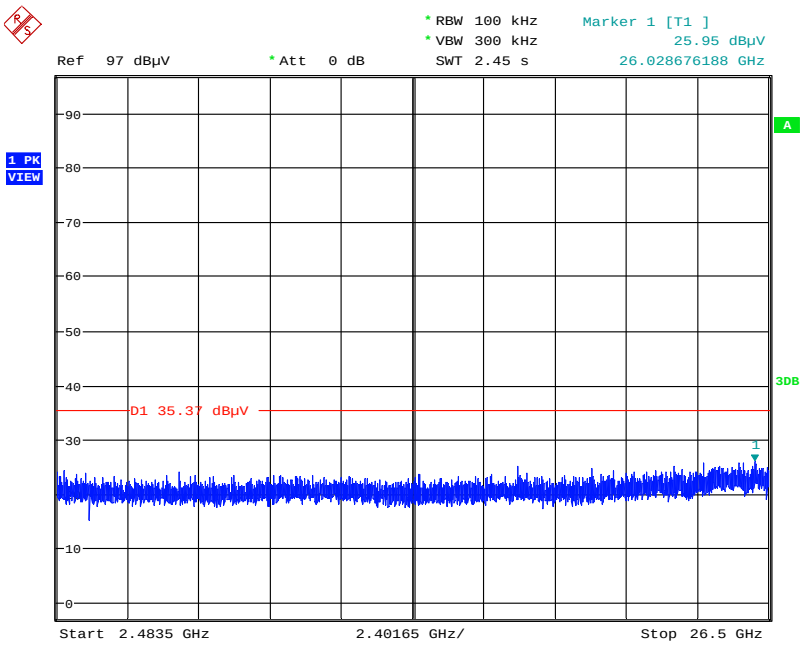
Date: 12.AUG.2016 17:54:35

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 30MHz~2400MHz (down 30dBc)

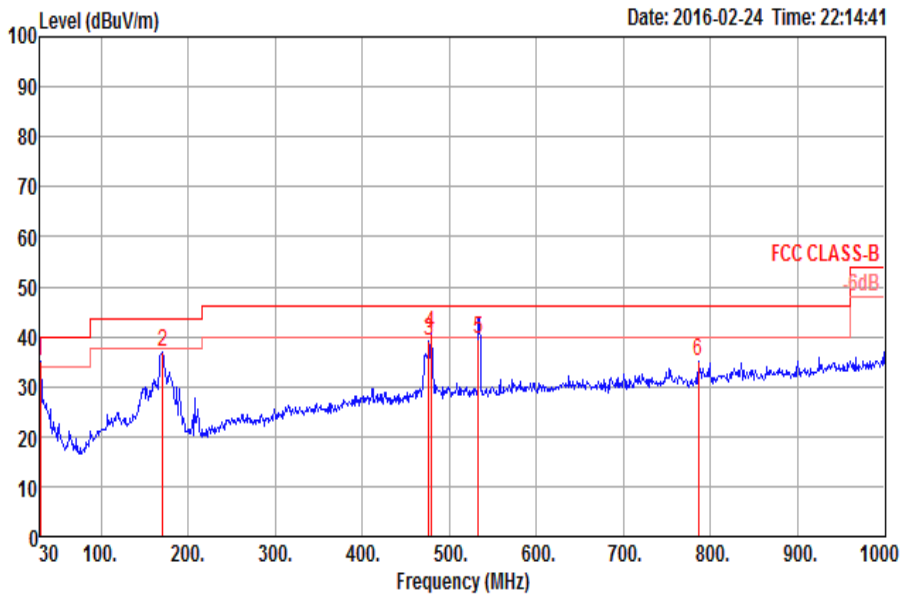


Date: 12.AUG.2016 17:55:29

Plot on Configuration IEEE 802.11n MCS0 HT40 / CH 9 / 2483.5MHz~26500MHz (down 30dBc)



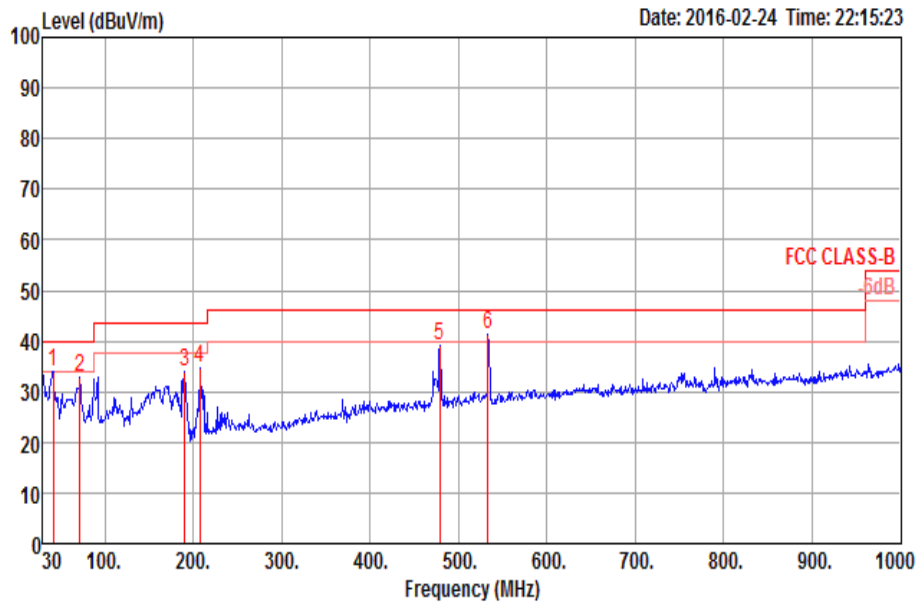
RSE below 1GHz Result			
Operating Mode	1	**Polarization**	Horizontal
Operating Function	Normal Link		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	30.00	34.98	40.00	-5.02	41.29	0.49	25.60	32.40	125	250	Peak	HORIZONTAL
2	170.65	36.76	43.50	-6.74	51.41	1.12	16.57	32.34	100	285	Peak	HORIZONTAL
3	476.20	38.99	46.00	-7.01	45.82	1.89	23.63	32.35	100	275	Peak	HORIZONTAL
4	479.11	40.42	46.00	-5.58	47.19	1.90	23.68	32.35	115	280	Peak	HORIZONTAL
5	533.43	39.64	46.00	-6.36	45.47	2.00	24.54	32.37	100	265	QP	HORIZONTAL
6	785.63	35.11	46.00	-10.89	38.25	2.43	26.69	32.26	125	305	Peak	HORIZONTAL

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

RSE below 1GHz Result			
Operating Mode	1	**Power Phase**	Vertical
Operating Function	Normal Link		



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	41.64	33.96	40.00	-6.04	46.70	0.56	19.11	32.41	100	295	Peak	VERTICAL
2	71.71	32.85	40.00	-7.15	51.49	0.73	13.03	32.40	100	345	Peak	VERTICAL
3	190.05	34.11	43.50	-9.39	49.25	1.19	16.00	32.33	110	325	Peak	VERTICAL
4	207.51	34.71	43.50	-8.79	49.10	1.24	16.70	32.33	115	305	Peak	VERTICAL
5	479.11	39.00	46.00	-7.00	45.77	1.90	23.68	32.35	100	325	Peak	VERTICAL
6	533.43	41.15	46.00	-4.85	46.98	2.00	24.54	32.37	100	350	Peak	VERTICAL

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

Radiated Emissions (1GHz~10th Harmonic)

Configurations	IEEE 802.11g CH 1 / Chain 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.96	64.06	74.00	-9.94	57.62	6.26	33.11	32.93	255	315	Peak	HORIZONTAL
2	4824.26	50.66	54.00	-3.34	44.22	6.26	33.11	32.93	255	315	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.95	64.49	74.00	-9.51	58.05	6.26	33.11	32.93	286	218	Peak	VERTICAL
2	4824.05	50.81	54.00	-3.19	44.37	6.26	33.11	32.93	286	218	Average	VERTICAL

Configurations	IEEE 802.11g CH 6 / Chain 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.71	51.06	54.00	-2.94	44.48	6.28	33.23	32.93	300	318	Average	HORIZONTAL
2	4875.18	65.35	74.00	-8.65	58.77	6.28	33.23	32.93	300	318	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.86	50.67	54.00	-3.33	44.09	6.28	33.23	32.93	291	218	Average	VERTICAL
2	4876.39	64.76	74.00	-9.24	58.18	6.28	33.23	32.93	291	218	Peak	VERTICAL

Configurations	IEEE 802.11g CH 11 / Chain 1

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4924.41	49.36	54.00	-4.64	42.64	6.29	33.35	32.92	240	312	Average	HORIZONTAL
2	4924.43	63.04	74.00	-10.96	56.32	6.29	33.35	32.92	240	312	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4923.34	63.86	74.00	-10.14	57.17	6.29	33.32	32.92	249	217	Peak	VERTICAL
2	4924.43	49.55	54.00	-4.45	42.83	6.29	33.35	32.92	249	217	Average	VERTICAL

Configurations	IEEE 802.11n MCS0 HT20 CH 1 / Chain 1 + Chain 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4822.74	33.77	54.00	-20.23	27.33	6.26	33.11	32.93	183	327	Average	HORIZONTAL
2	4823.58	46.58	74.00	-27.42	40.14	6.26	33.11	32.93	183	327	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4823.51	33.66	54.00	-20.34	27.22	6.26	33.11	32.93	115	247	Average	VERTICAL
2	4824.16	47.19	74.00	-26.81	40.75	6.26	33.11	32.93	115	247	Peak	VERTICAL

Configurations	IEEE 802.11n MCS0 HT20 CH 6 / Chain 1 + Chain 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4873.74	36.66	54.00	-17.34	30.08	6.28	33.23	32.93	224	280	Average	HORIZONTAL
2	4874.05	49.47	74.00	-24.53	42.89	6.28	33.23	32.93	224	280	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4876.28	33.74	54.00	-20.26	27.16	6.28	33.23	32.93	249	156	Average	VERTICAL
2	4876.50	47.12	74.00	-26.88	40.54	6.28	33.23	32.93	249	156	Peak	VERTICAL

Configurations	IEEE 802.11n MCS0 HT20 CH 11 / Chain 1 + Chain 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4924.51	46.64	74.00	-27.36	39.92	6.29	33.35	32.92	270	196	Peak	HORIZONTAL
2	4925.60	33.38	54.00	-20.62	26.66	6.29	33.35	32.92	270	196	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4922.31	46.06	74.00	-27.94	39.37	6.29	33.32	32.92	175	113	Peak	VERTICAL
2	4922.70	33.32	54.00	-20.68	26.63	6.29	33.32	32.92	175	113	Average	VERTICAL

Configurations	IEEE 802.11n MCS0 HT40 CH 3 / Chain 1 + Chain 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4841.61	46.98	74.00	-27.02	40.47	6.27	33.17	32.93	190	259	Peak	HORIZONTAL
2	4843.37	33.86	54.00	-20.14	27.35	6.27	33.17	32.93	190	259	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4842.08	47.41	74.00	-26.59	40.90	6.27	33.17	32.93	225	118	Peak	VERTICAL
2	4842.79	33.75	54.00	-20.25	27.24	6.27	33.17	32.93	225	118	Average	VERTICAL

Configurations	IEEE 802.11n MCS0 HT40 CH 6 / Chain 1 + Chain 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4874.55	33.08	54.00	-20.92	26.50	6.28	33.23	32.93	167	149	Average	HORIZONTAL
2	4876.24	46.67	74.00	-27.33	40.09	6.28	33.23	32.93	167	149	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4872.57	33.32	54.00	-20.68	26.74	6.28	33.23	32.93	125	48	Average	VERTICAL
2	4876.18	46.53	74.00	-27.47	39.95	6.28	33.23	32.93	125	48	Peak	VERTICAL

Configurations	IEEE 802.11n MCS0 HT40 CH 9 / Chain 1 + Chain 2

Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4903.57	32.98	54.00	-21.02	26.33	6.28	33.29	32.92	138	236	Average	HORIZONTAL
2	4905.07	45.76	74.00	-28.24	39.11	6.28	33.29	32.92	138	236	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4902.08	32.91	54.00	-21.09	26.26	6.28	33.29	32.92	154	140	Average	VERTICAL
2	4905.42	46.04	74.00	-27.96	39.39	6.28	33.29	32.92	154	140	Peak	VERTICAL

Note:

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

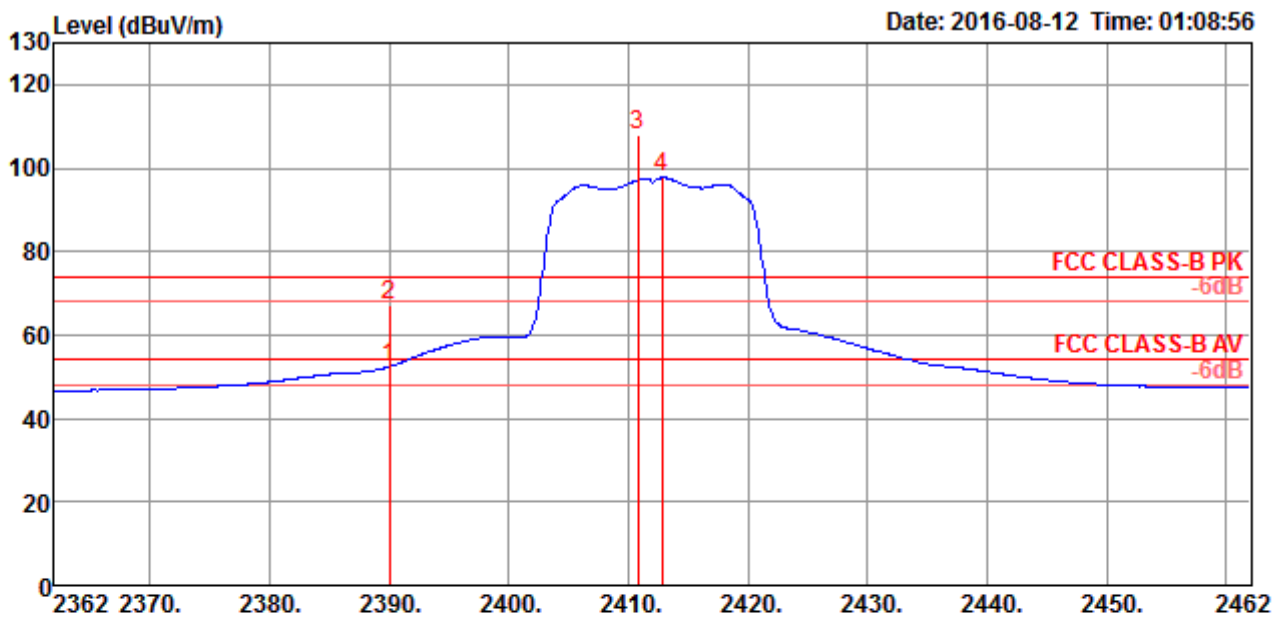
Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Band Edge Emissions

Configurations	IEEE 802.11g CH 1, 6, 11 / Chain 1

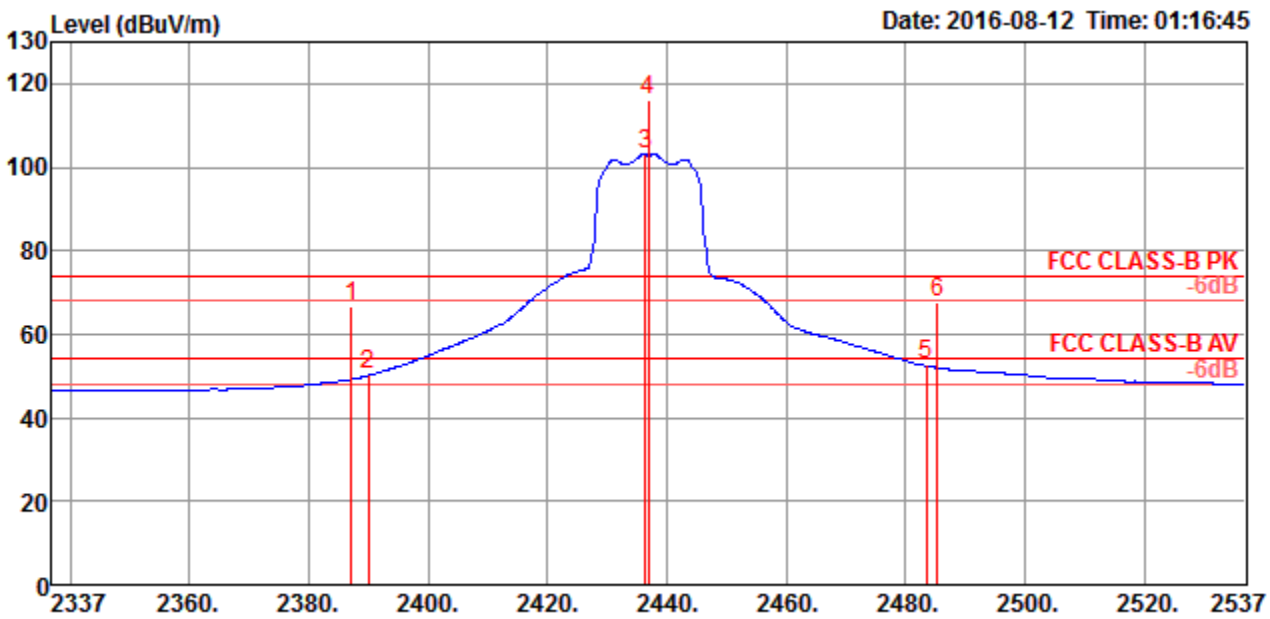
Channel 1



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2390.00	52.31	54.00	-1.69	17.84	6.57	27.90	0.00	320	286	Average	HORIZONTAL
2	2390.00	66.92	74.00	-7.08	32.45	6.57	27.90	0.00	320	286	Peak	HORIZONTAL
3	2410.80	107.89			73.39	6.62	27.88	0.00	320	286	Peak	HORIZONTAL
4	2412.80	97.71			63.20	6.63	27.88	0.00	320	286	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

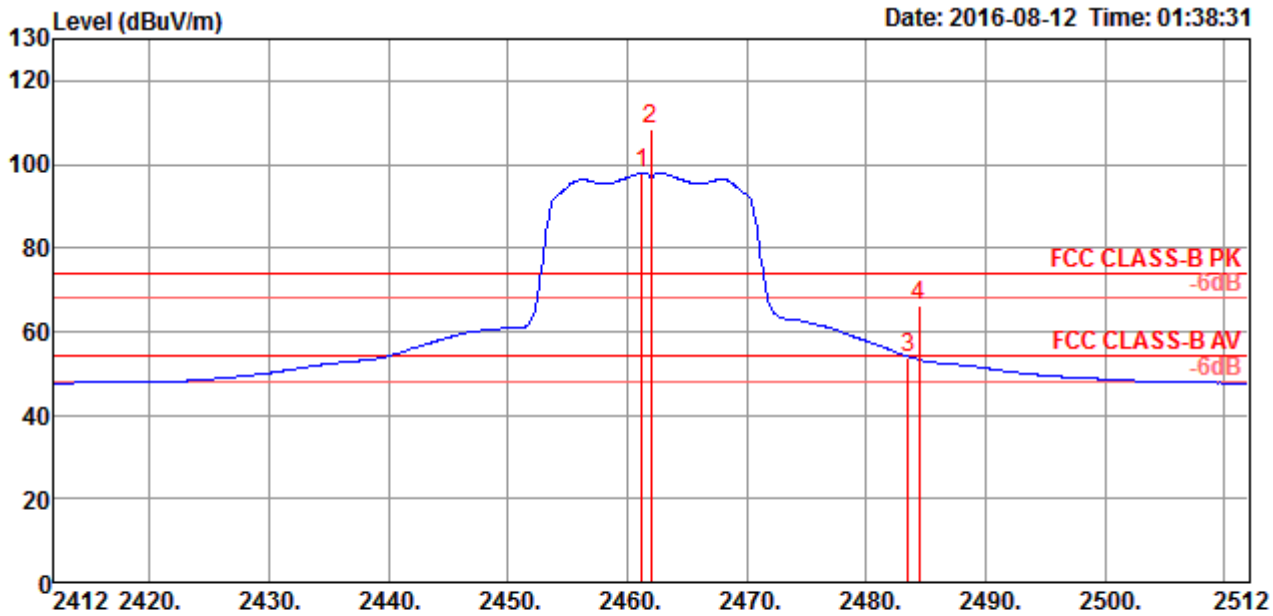
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2387.20	66.90	74.00	-7.10	32.43	6.57	27.90	0.00	124	216	Peak	VERTICAL
2	2390.00	50.57	54.00	-3.43	16.10	6.57	27.90	0.00	124	216	Average	VERTICAL
3	2436.40	103.29			68.74	6.69	27.86	0.00	124	216	Average	VERTICAL
4	2437.00	115.87			81.32	6.69	27.86	0.00	124	216	Peak	VERTICAL
5	2483.50	52.91	54.00	-1.09	18.29	6.81	27.81	0.00	124	216	Average	VERTICAL
6	2485.40	67.75	74.00	-6.25	33.13	6.81	27.81	0.00	124	216	Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

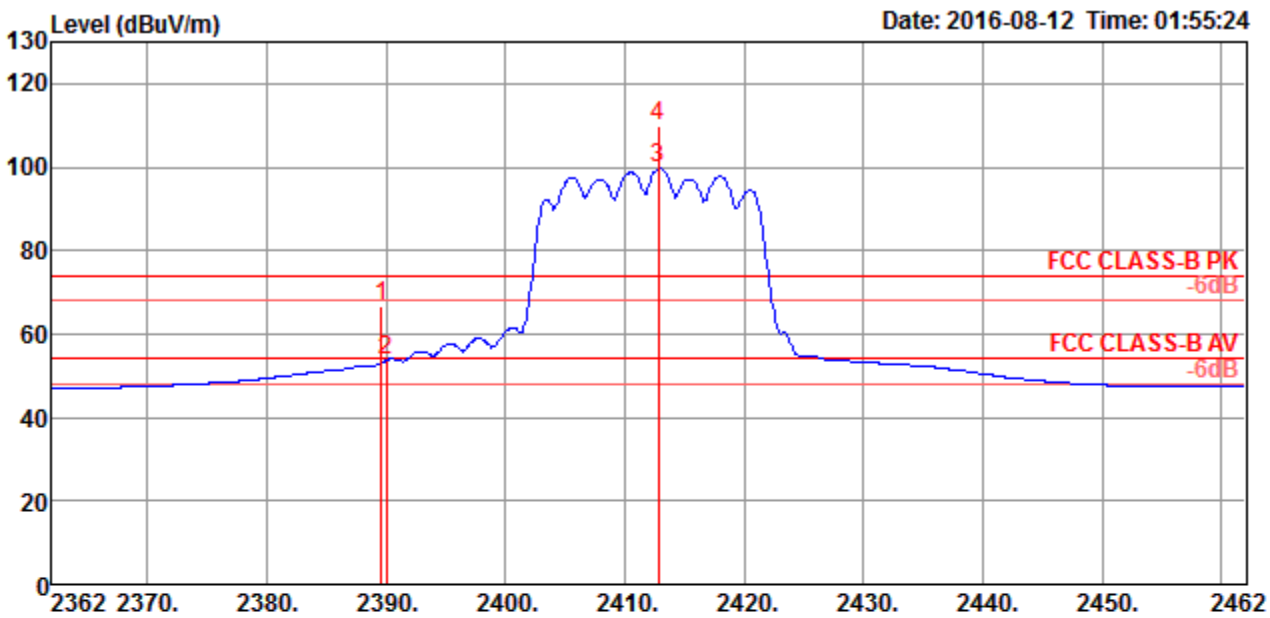


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2461.20	97.93			63.34	6.76	27.83	0.00	286	289	Average	HORIZONTAL
2	2462.00	108.40			73.81	6.76	27.83	0.00	286	289	Peak	HORIZONTAL
3	2483.50	53.94	54.00	-0.06	19.32	6.81	27.81	0.00	286	289	Average	HORIZONTAL
4	2484.40	66.11	74.00	-7.89	31.49	6.81	27.81	0.00	286	289	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Configurations	IEEE 802.11n MCS0 HT20 CH 1, 6, 11 / Chain 1 + Chain 2

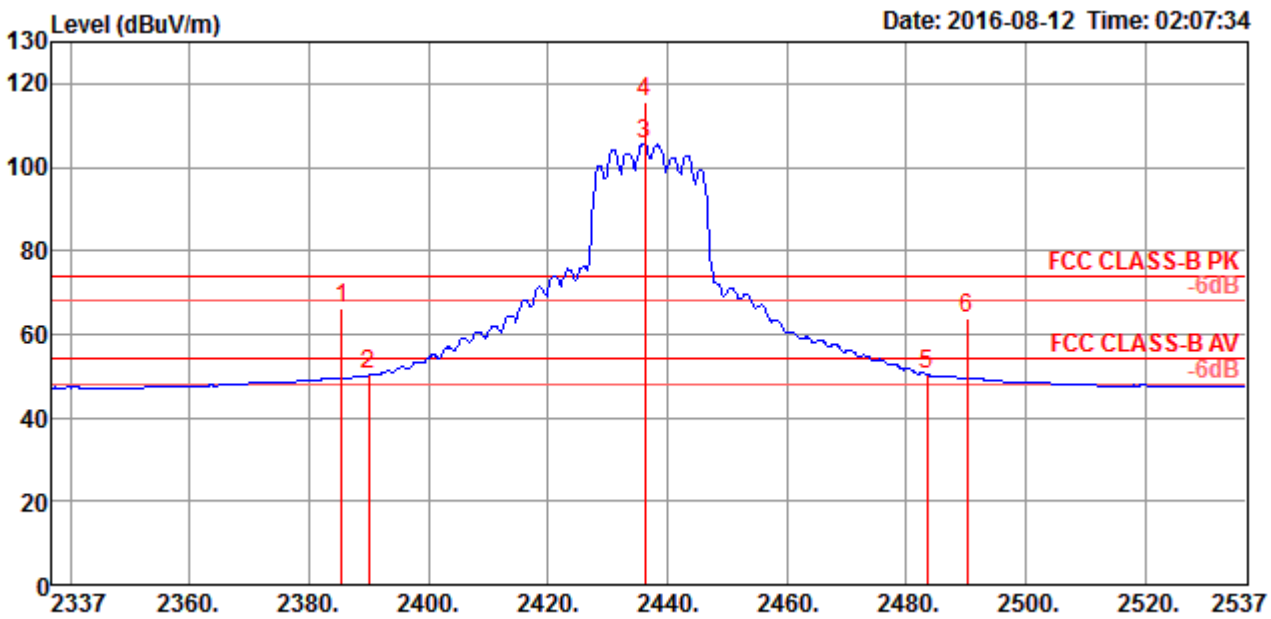
Channel 1



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.60	66.59	74.00	-7.41	32.12	6.57	27.90	0.00	319	272	Peak	HORIZONTAL
2	2390.00	53.73	54.00	-0.27	19.26	6.57	27.90	0.00	319	272	Average	HORIZONTAL
3	2412.80	99.64			65.13	6.63	27.88	0.00	319	272	Average	HORIZONTAL
4	2412.80	109.88			75.37	6.63	27.88	0.00	319	272	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2412 MHz.

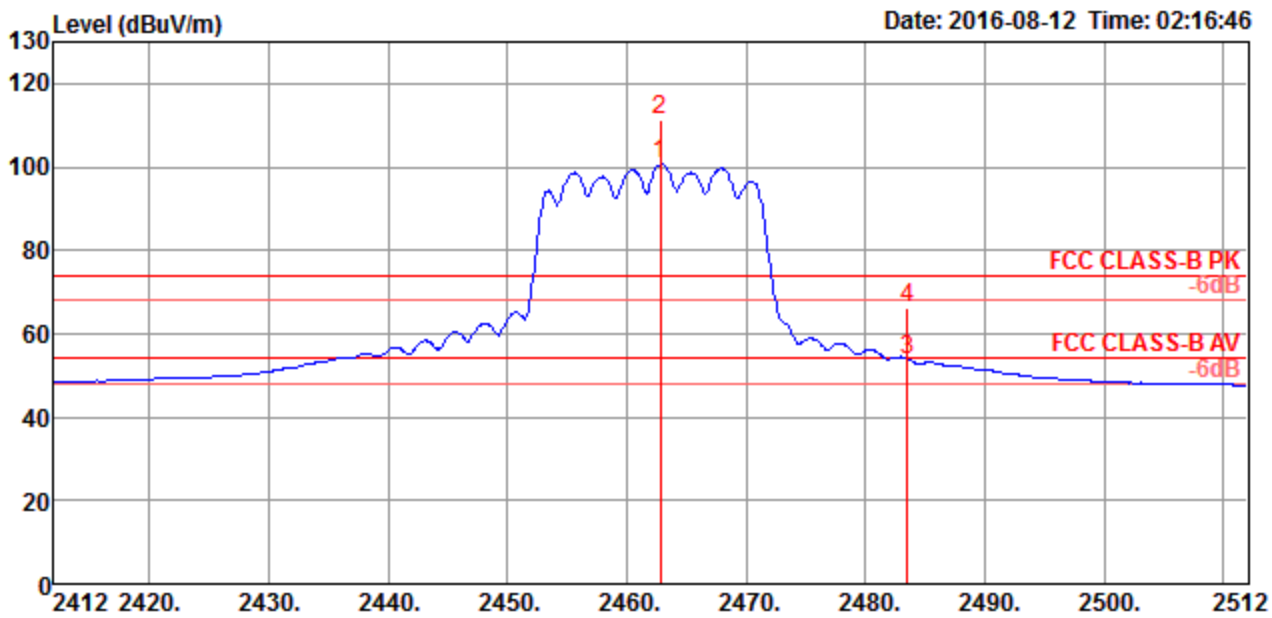
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2385.40	66.07	74.00	-7.93	31.60	6.57	27.90	0.00	263	263	Peak	HORIZONTAL
2	2390.00	50.25	54.00	-3.75	15.78	6.57	27.90	0.00	263	263	Average	HORIZONTAL
3	2436.20	105.77			71.22	6.69	27.86	0.00	263	263	Average	HORIZONTAL
4	2436.20	115.48			80.93	6.69	27.86	0.00	263	263	Peak	HORIZONTAL
5	2483.50	50.44	54.00	-3.56	15.82	6.81	27.81	0.00	263	263	Average	HORIZONTAL
6	2490.20	63.82	74.00	-10.18	29.18	6.83	27.81	0.00	263	263	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 11

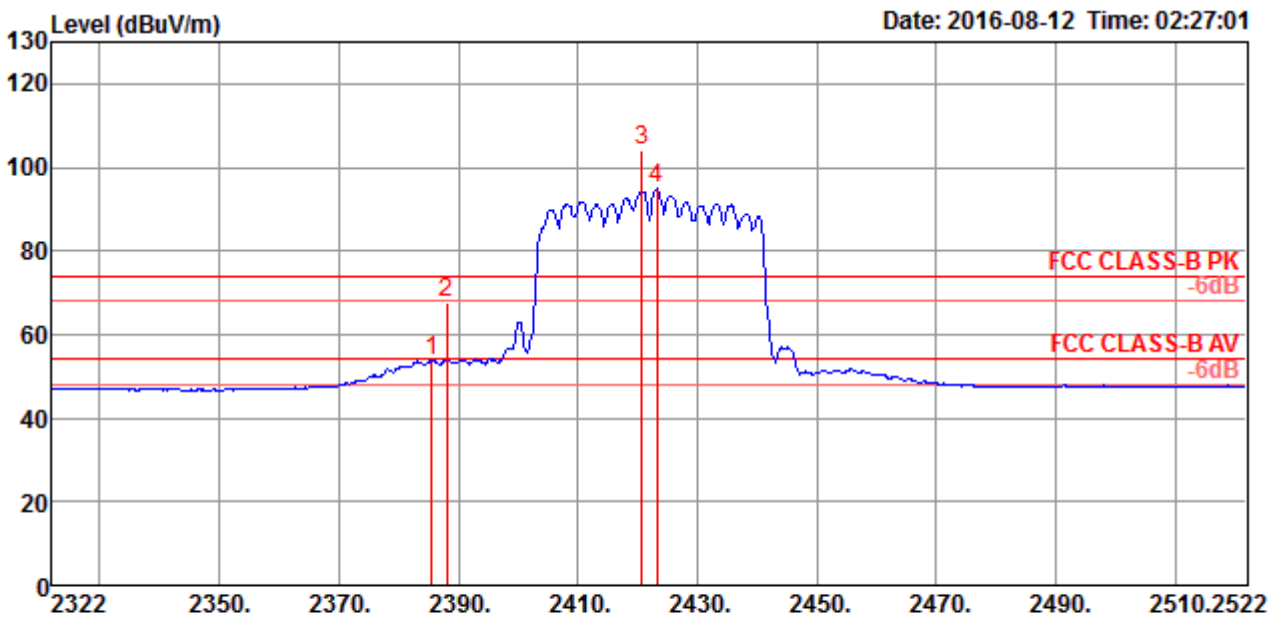


	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2462.80	100.57			65.98	6.76	27.83	0.00	259	268	Average	HORIZONTAL
2	2462.80	111.28			76.69	6.76	27.83	0.00	259	268	Peak	HORIZONTAL
3	2483.50	53.94	54.00	-0.06	19.32	6.81	27.81	0.00	259	268	Average	HORIZONTAL
4	2483.50	66.38	74.00	-7.62	31.76	6.81	27.81	0.00	259	268	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2462 MHz.

Configurations	IEEE 802.11n MCS0 HT40 CH 3, 6, 9 / Chain 1 + Chain 2

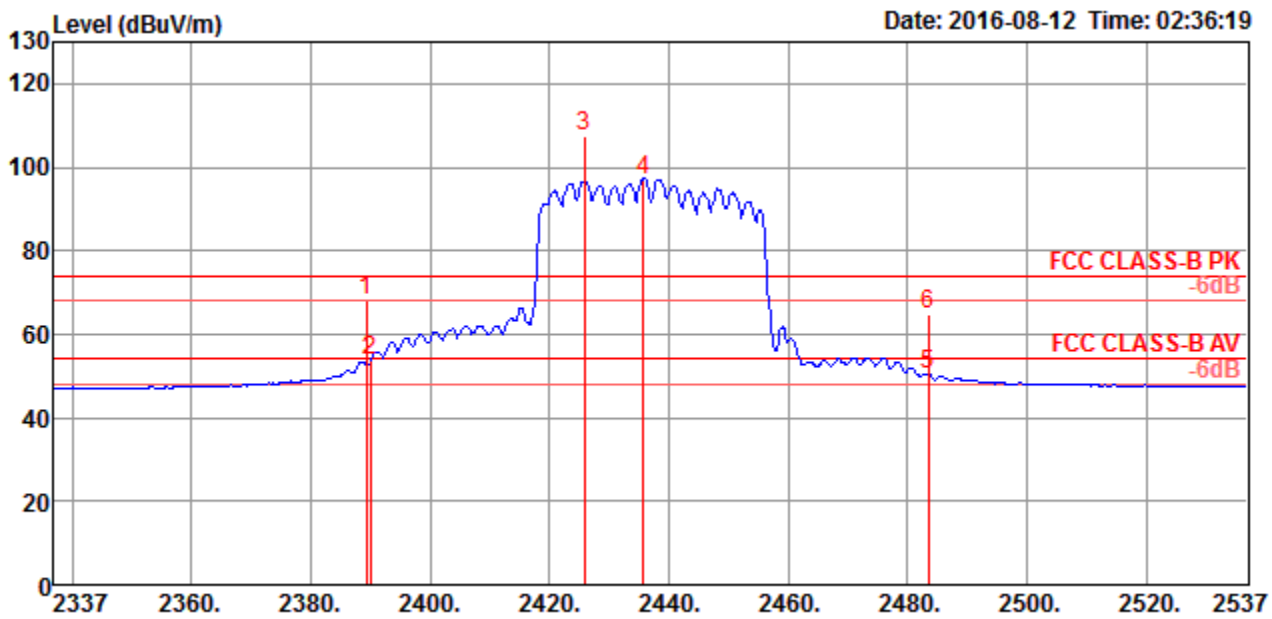
Channel 3



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2385.60	53.79	54.00	-0.21	19.32	6.57	27.90	0.00	271	263	Average	HORIZONTAL
2	2388.00	67.63	74.00	-6.37	33.16	6.57	27.90	0.00	271	263	Peak	HORIZONTAL
3	2420.80	103.89			69.37	6.65	27.87	0.00	271	263	Peak	HORIZONTAL
4	2423.20	94.82			60.30	6.65	27.87	0.00	271	263	Average	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2422 MHz.

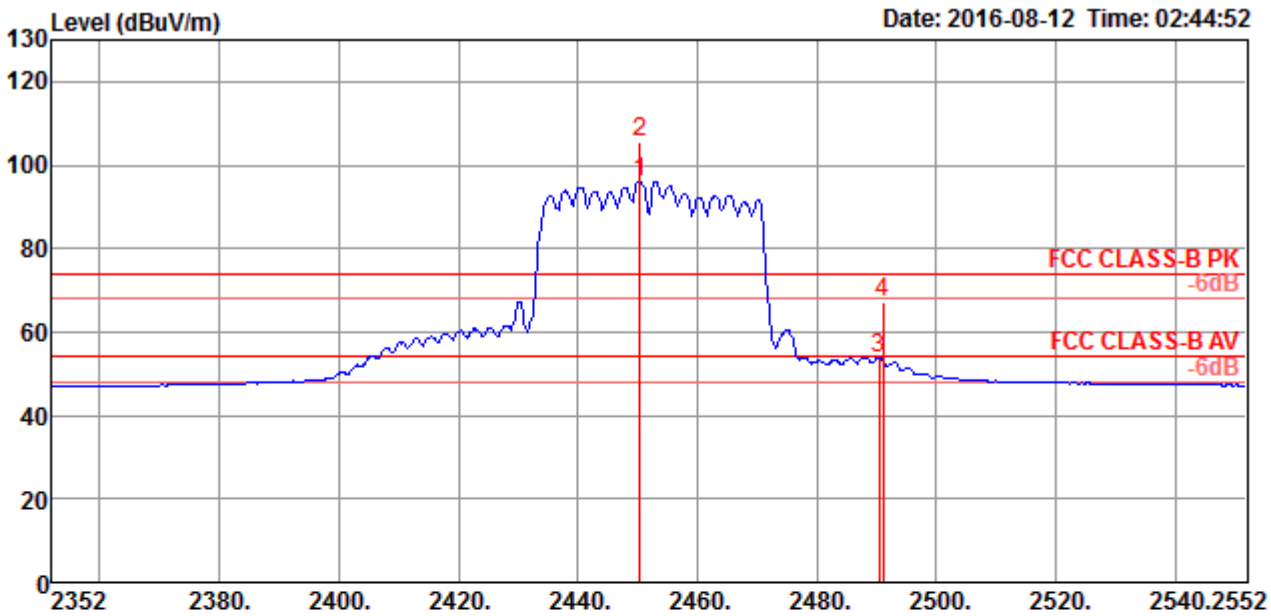
Channel 6



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2389.40	68.07	74.00	-5.93	33.60	6.57	27.90	0.00	273	263	Peak	HORIZONTAL
2	2390.00	53.90	54.00	-0.10	19.43	6.57	27.90	0.00	273	263	Average	HORIZONTAL
3	2425.80	107.59			73.06	6.67	27.86	0.00	273	263	Peak	HORIZONTAL
4	2435.80	97.11			62.56	6.69	27.86	0.00	273	263	Average	HORIZONTAL
5	2483.50	50.49	54.00	-3.51	15.87	6.81	27.81	0.00	273	263	Average	HORIZONTAL
6	2483.50	64.67	74.00	-9.33	30.05	6.81	27.81	0.00	273	263	Peak	HORIZONTAL

Item 3, 4 are the fundamental frequency at 2437 MHz.

Channel 9



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2450.40	96.06			61.49	6.72	27.85	0.00	267	268	Average	HORIZONTAL
2	2450.40	105.69			71.12	6.72	27.85	0.00	267	268	Peak	HORIZONTAL
3	2490.40	53.96	54.00	-0.04	19.32	6.83	27.81	0.00	267	268	Average	HORIZONTAL
4	2491.20	67.06	74.00	-6.94	32.42	6.83	27.81	0.00	267	268	Peak	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2452 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.