DEKRA Certification, Inc.
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Sterling, VA 20164
United States of America

FCC LISTED, REGISTRATION NUMBER: 2764.01

ISED LISTED REGISTRATION NUMBER: 23595-1

Test Report No:
3809ERM.002A2

Test Report

USA FCC Part 15.247, 15.209; & CANADA RSS-247, RSS-Gen

Radio Frequency Devices. Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz

Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices.

(*) Identification of item tested	Telematics Control Unit
(*) Trademark	Zoox L5 TCU
(*) Model and /or type reference	L5 TCU
Other identification of the product	FCC ID: 2AHPN-BE2873 HW version: C3 SW version: S7.8
(*) Features	UMTS, LTE, 4G, Wi-Fi (802.11 b,g,n,ac,ax)
Manufacturer	Harman International 30001 Cabot Drive. Novi, MI 48377, USA
Test method requested, standard	USA FCC Part 15.247 (06-01-20 Edition): Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 15.209 (10-1-20 Edition): Radiated emission limits; general requirements. CANADA RSS-247 Issue 3 (August 2023). CANADA RSS-Gen Issue 5 amendment 1 (March 2019). Guidance for Performing Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid Systems Devices Operating Under Section 15.247 of the FCC Rules. 558074 D01 Meas Guidance v05r02 dated April 2, 2019. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager Digitally signed by Domingo Galvez DN: cn=Domingo Galvez, o=Dekra Certification Inc., ou=Regulatory Lab Manager, email=domingo.galvez@dekra.com, c=US
Date of issue	02-09-2024
Report template No	FDT08_23 (*) "Data provided by the client"

Index

Acronyms

Acronym ID	Acronym Description
E.I.R.P.	Effective Isotropic Radiated Power
Avg Power	Maximum Average Conducted Output Power
BW	Bandwidth
Ebw	Emission Bandwidth
Equipment	Equipment Type
Freq	Frequency
Inband Peak Lvl	Inband Peak Level
Lvl	Level
MP	Measurement Point
Mod	Modulation
Mode	MIMO Mode
Occ Ch BW	Occupied Channel Bandwidth
PSD	Power Spectrum Density
Port	Active Port

Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification internal document PODT000.

Test case	Frequency (MHz)	U (k=2)	Units
RF Power and PSD	5150-5850	0.88	dB
Occupied Bandwidth		1.87	%
Band Edge		0.64	dB
Radiated Spurious Emission	30-180	4.27	dB
	180-1000	3.14	dB
	1000-18000	3.30	dB
	18000-40000	3.49	dB

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested").

2. The sample consists of a Telematics control unit developed by Harman for Zoox. Enables connectivity to the Zoox robotaxi.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples used for test have been selected by: The client.

Sample S/01 is composed of the following elements, accessories and auxiliary equipment:

Id	Control Number	Description	Manufacturer/ Model	Serial Nº	Date of Reception	Application
S/01	3809/56	Telematics Control Unit	-	23219-00019	8/17/2023	Element Under Test
S/01	3809/1	Mohawk Module Antenna 1	-	S23013-00009	6/2/2023	Element Under Test
S/01	3809/3	BTWLAN Antenna 1	-	21104-00032	6/2/2023	Element Under Test
S/01	3809/4	BTWLAN Antenna 2	-	21104-00034	6/2/2023	Element Under Test
S/01	3809/12	ZOOX 20WAY Main Test Harness 4	-	-	6/2/2023	Accessory
S/01	3809/18	WLAN DUAL FAKRA TEST HARNESS 4	-	-	6/2/2023	Element Under Test
S/01	3809/33	1pcs MATEnet 9-2302454-9 to H-MTD Ethernet Cable H	-	-	8/7/2023	Accessory
S/01	3809/37	RJ45 Ethernet cable	5E	-	8/7/2023	Accessory
S/01	3809/49	BR to ETH converter	-	-	8/11/2023	Accessory
S/01	3809/55	USB Type A (male) to USB Mini (male) cable 1M	-	-	8/11/2023	Accessory
S/02	1484	Laptop	LENOVO / V14 G2 ITL	PF3Q2NKL	-	Auxiliary Element

Notes referenced to samples during the project:

Id	Type	Note
S/01	Radiated	All Radiated test(s) indicated in appendix A

Sample S/02 is composed of the following elements and accessories:

Id	Control Number	Description	Manufacturer/ Model	Serial Nº	Date of Reception	Application
S/02	3809/57	Telematics Control Unit	-	23221-00073	8/17/2023	Element Under Test
S/02	3809/10	ZOOX 20WAY Main Test Harness 2	-	S23013-00009	6/2/2023	Accessory
S/02	3809/19	WLAN DUAL FAKRA TEST HARNESS 5	-	21104-00032	6/2/2023	Accessory
S/02	3809/28	USB Type A (male) to USB Mini (male) cable 1M	-	21104-00034	8/7/2023	Accessory
S/02	3809/32	1pcs MATEnet 9-2302454-9 to H-MTD Ethernet Cable H	-	-	8/7/2023	Accessory
S/02	3809/36	RJ45 Ethernet cable	5E	-	8/7/2023	Accessory
S/02	3809/42	Laptop	T470	PF126CFQ	8/8/2023	Accessory
S/02	3809/44	BR to ETH converter	5E	-	8/11/2023	Accessory

Notes referenced to samples during the project:

Id	Type	Note
S/02	Conducted	All Conducted test(s) indicated in appendix A

Test sample description

Test Sample description (compulsory information for EMC and RF testing services

Ports…….. :	Port name and description	Cable			
		Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)
	Dual FAKRA Coax connector, White	<5m	[X]	[X]	[ ]
	Dual FAKRA Coax connector, Purple	<5m	[X]	[X]	[ ]
	Nano MQS 20pol Main connector	<5m	[X]	[X]	[ ]
	Ethernet connector, Turquoise	<5m	[X]	[X]	[ ]
	.....	.....	[ ]	[ ]	[ ]
	.....	.....	[ ]	[ ]	[ ]

Supplementary information to the ports…….. :	.....						
Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]
	[ ]	AC:	[ ]	[ ]	[ ]	[ ]	[ ]
	[X]	DC: 12V nominal Car Battery, 6V to 16V max					
	[ ]	DC:					
Rated Power .....:	12V DC, 1A max						
Clock frequencies.....:	32,768 Hz, 12.288 MHz, 25 MHz, 26 MHz						
Other parameters .....:	.....						
Software version .....:	S7.8						
Hardware version .....:	C3						
Dimensions in cm (W x H x D) ....:	Approximate dimensions -- 203x135x23. See mechanical drawing for details.						
Mounting position .....:	[ ]	Table top equipment					
	[ ]	Wall/Ceiling mounted equipment					
	[ ]	Floor standing equipment					
	[ ]	Hand-held equipment					
	[X]	Other: Automotive Telematics control Unit					

Modules/parts.....:	Module/parts of test item	Type	Manufacturer
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....

Accessories (not part of the test item) .....:	Description	Type	Manufacturer
	Cable Harness	.....	.....
	Antenna	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....
Documents as provided by the applicant .....:	Description	File name	Issue date
	Technical description	.....	.....
	.....	.....	.....
	.....	.....	.....
	.....	.....	.....

Copy of marking plate:

Identification of the client

Harman International
30001 Cabot Drive. Novi, MI 48377, USA

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	08-28-2023
Date (finish)	10-26-2023

Document history

Report number	Date	Description
3809ERM.002	11-22-2023	First release.
3809ERM.002A1	01-23-2024	Second release. Antenna gain values and power test results were updated in Appendix A. This modified test report cancels and replaces the test report 3809ERM.002.
3809ERM.002A2	02-09-2024	Third release. Antenna gain and EIRP values were added in Maximum Average Conducted Output Power sections, test information was updated in Emissions compliance (Transmitter) – Radiated section of Appendix A. This modified test report cancels and replaces the test report 3809ERM.002A1.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

Remarks and comments

The tests have been performed by the technical personnel: Juliana Cherry, Ivy Yousuf Moutushi, Qi Zhang, and Koji Nishimoto.

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P

Summary

Annex A.1: SISO A - 802.11 b/g/n 20 MHz

Requirement – Test case	FCC PART 15 PARAGRAPH / RSS-247	Verdict	Remark
RSS-247 5.2 (a) / FCC 15.247 (a) (2) 6 dB Bandwidth		Pass	N/A
FCC 2.1049 / Occupied Channel Bandwidth 99%		Pass	N/A
RSS-247 5.2 (b) / FCC 15.247 (e) Power spectral density		Pass	N/A
RSS-247 5.4 (d) / FCC 15.247 (b) (1) Maximum Average Conducted output Power		Pass	N/A
RSS-247 5.5 / FCC 15.247 (d) Band-edge emissions compliance (Transmitter) - Conducted		Pass	N/A
RSS-247 5.5 / FCC 15.247 (d) Emissions compliance (Transmitter) - Radiated		N/A	Refer 1
Supplementary information and remarks: 1. This test case was performed in worst case.			

Annex A.2: SISO B - 802.11 b/g/n 20 MHz

Requirement – Test case	FCC PART 15 PARAGRAPH / RSS-247	Verdict	Remark
RSS-247 5.2 (a) / FCC 15.247 (a) (2) 6 dB Bandwidth		Pass	N/A
FCC 2.1049 / Occupied Channel Bandwidth 99%		Pass	N/A
RSS-247 5.2 (b) / FCC 15.247 (e) Power spectral density		Pass	N/A
RSS-247 5.4 (d) / FCC 15.247 (b) (1) Maximum Average Conducted output Power		Pass	N/A
RSS-247 5.5 / FCC 15.247 (d) Band-edge emissions compliance (Transmitter) - Conducted		Pass	N/A
RSS-247 5.5 / FCC 15.247 (d) Emissions compliance (Transmitter) - Radiated		Pass	N/A
Supplementary information and remarks: None			

Annex A.3: MIMO - 802.11 n 20 MHz

Requirement – Test case	FCC PART 15 PARAGRAPH / RSS-247	Verdict	Remark
RSS-247 5.2 (a) / FCC 15.247 (a) (2) 6 dB Bandwidth		Pass	N/A
FCC 2.1049 / Occupied Channel Bandwidth 99%		Pass	N/A
RSS-247 5.2 (b) / FCC 15.247 (e) Power spectral density		Pass	N/A
RSS-247 5.4 (d) / FCC 15.247 (b) (1) Maximum Average Conducted output Power		Pass	N/A
RSS-247 5.5 / FCC 15.247 (d) Band-edge emissions compliance (Transmitter) - Conducted		Pass	N/A
RSS-247 5.5 / FCC 15.247 (d) Emissions compliance (Transmitter) - Radiated		Pass	N/A
Supplementary information and remarks: None			

List of equipment used during the test

Conducted Measurements

Control Num	Equipment	Manufacturer	Serial	Model	Next calibration
897	Power supply	AMETEK	1707A01906	PROG-DC-PS	N/A
1039	FSV40 Signal Analyzer 40GHz	Rohde & Schwarz	101627	FSV40	2024-10-31
1107	Ethernet SNMP Thermometer	HW Group	60038026952	HWg-STE Plain	2024-10-17
1313	Wireless Measurement Software R&S WMS32	Rohde & Schwarz	---	---	---
1397	Signal Analyzer 85GHz	Rohde & Schwarz	101311	FSW85	2024-05-25

Radiated Measurements

Control Num	Equipment	Manufacturer	Serial	Model	Next calibration
878	AMETEK PROG DC Power supply	AMETEK	1707A01783	PROG-DC-PS	N/A
1012	ESR26 EMI Test Receiver	Rohde & Schwarz	101478	ESR26	2024-04-12
1014	FSV40 Signal Analyzer 40GHz	Rohde & Schwarz	101626	FSV40	2024-08-01
1055	3116C Double-Ridged Waveguide Horn Antenna 18-40 GHz	ETS Lindgren	213179	3116C	2026-02-06
1057	3115 Double-Ridged Waveguide Horn Antenna 1-18 GHz	ETS Lindgren	211373	3115	2026-07-18
1064	3142E Biconilog Antenna	ETS Lindgren	208600	3142E	2024-12-13
1108	Ethernet SNMP Thermometer-CR Room	HW Group	60038026954	HWg-STE Plain	2024-10-18
1111	Ethernet SNMP Thermometer-SAC	HW Group	60038026577	HWg-STE Plain	2024-10-18
1179	Semi anechoic Absorber Lined Chamber	Frankonia	F169021	SAC 3plus 'L'	N/A
1314	Wireless Measurement Software R&S EMC32	Rohde & Schwarz	1040-OT102236	-	N/A
1461	Low Noise Preamplifier	Bonn Elektronik	2213857B	BLMA0118-4A	2024-06-01

Appendix A: Test results

Appendix A

PRODUCT INFORMATION

The following information is provided by the client:

Information	Description
Modulation	DSSS / OFDM
Maximum RF Output Power	14 dBm
Operation mode	
- Operating Frequency Range	2400 – 2483.5 MHz
- Nominal Channel Bandwidth	WLAN 2.4 GHz: 20 MHz BW note: 802.11n mode is supported only with 20 MHz BW
Extreme operating conditions	
- Temperature range	15 ºC to +35 ºC
Antenna type	External Antenna
Antenna gain	BTWLAN Antenna / Mohawk Module Antenna -1.5 dBi for SISO A / 0 dBi for SISO A -1.5 dBi for SISO B / 3.5 dBi for SISO B -1.5 dBi for MIMO / 2.1 dBi for MIMO MIMO Antenna gain values are calculated based on SISO A & SISO B values according to KDB 662911 D02(F)
Nominal Voltage	
- Supply Voltage	12 Vdc
- Type of power source	DC voltage
Equipment type	Wi-Fi 2.4 GHz b/g/n20

TEST CONDITIONS

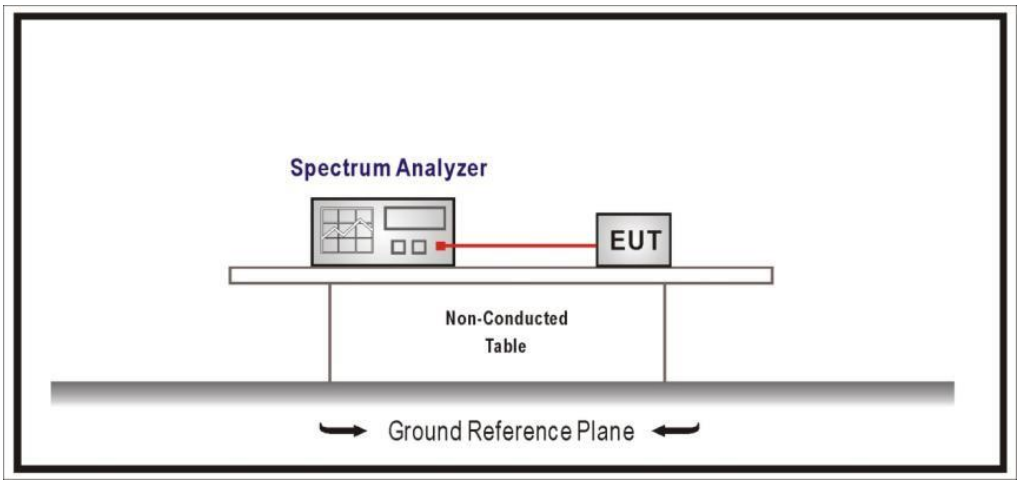
(*): Data provided by the client.

TEST CONDITIONS	DESCRIPTION
TC/01(1) **(b mode)**	Power supply (V): $V_{nominal}$: 12 Vdc Temperature: $T_{nominal}$: +15 to +35 ºC Channel Bandwidth: 20 MHz Test Frequencies for Conducted/Radiated tests: Lowest channel: 2412 MHz Middle channel: 2437 MHz Highest channel: 2462 MHz
TC/02(1) **(g mode)**	Power supply (V): $V_{nominal}$: 12 Vdc Temperature: $T_{nominal}$: +15 to +35 ºC Channel Bandwidth: 20 MHz Test Frequencies for Conducted/Radiated tests: Lowest channel: 2412 MHz Middle channel: 2437 MHz Highest channel: 2462 MHz
TC/03(1) **(n mode)**	Power supply (V): $V_{nominal}$: 12Vdc Temperature: $T_{nominal}$: +15 to +35 ºC Channel Bandwidth: 20 MHz Test Frequencies for Conducted/Radiated tests: Lowest channel: 2412 MHz Middle channel: 2437 MHz Highest channel: 2462 MHz

Note (1): For spurious emissions for OFDM modes 802.11g and 802.11n20 a preliminary scan was performed to determine the worst case. The following tables and plots show the results for the worst case in DSSS modulation (802.11b) and OFDM modulation (802.11n).

The data rates of 1Mb/s for 802.11b and MCS0 for 802.11n, were selected based on preliminary testing that identified those rates corresponding to the worst cases.

CONDUCTED MEASUREMENTS:



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 3 m for the frequency range 30-1000 MHz (Bilog antenna) and 1-18 GHz Double ridge horn antennas, and 1m for the frequency range 18 GHz- 26 GHz Double ridge horn antenna.

For radiated emissions in the range 18 - 26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain.

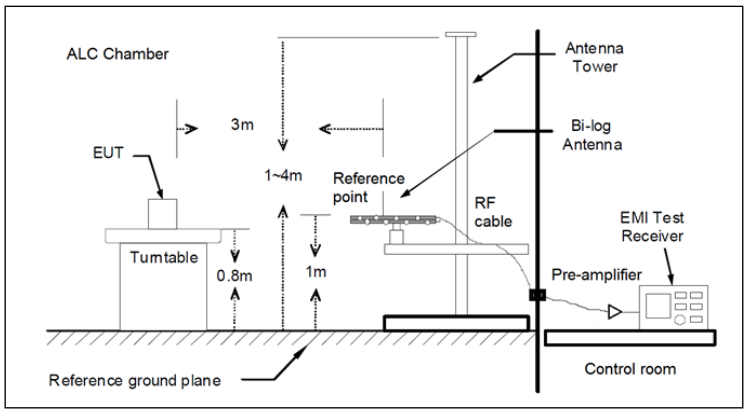


Fig A1: Radiated measurements Setup f < 1 GHz

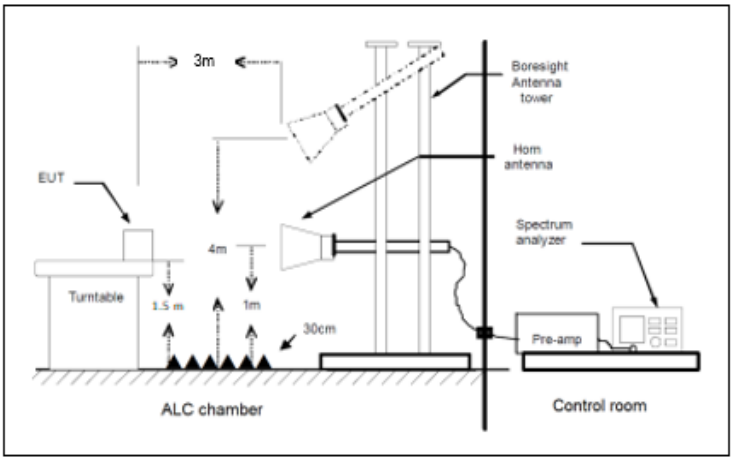


Fig A2: Radiated measurements setup f > 1-18 GHz

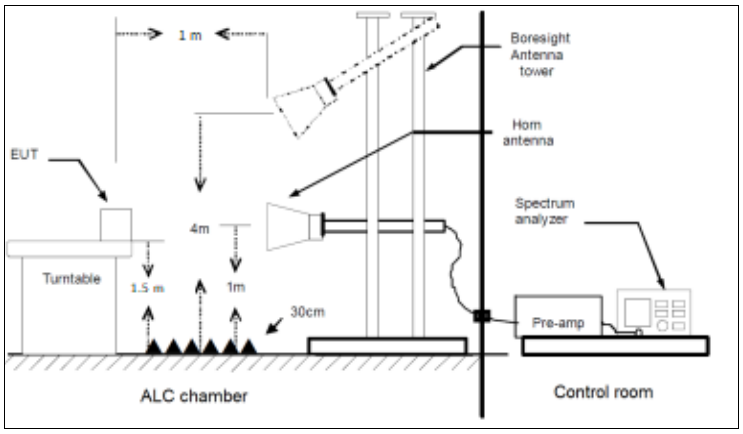


Fig A3: Radiated measurements setup f > 18 GHz

Appendix A.1: Test results – SISO A

Appendix A.1

TEST CASES DETAILS

RSS-247 5.2 (a) / FCC 15.247 (a) (2) - 6 dB Bandwidth

Limits

The minimum 6 dB bandwidth shall be at least 500 kHz.

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	1	10.150
	2437.00000		10.150
	2462.00000		10.150

Verdict

Pass

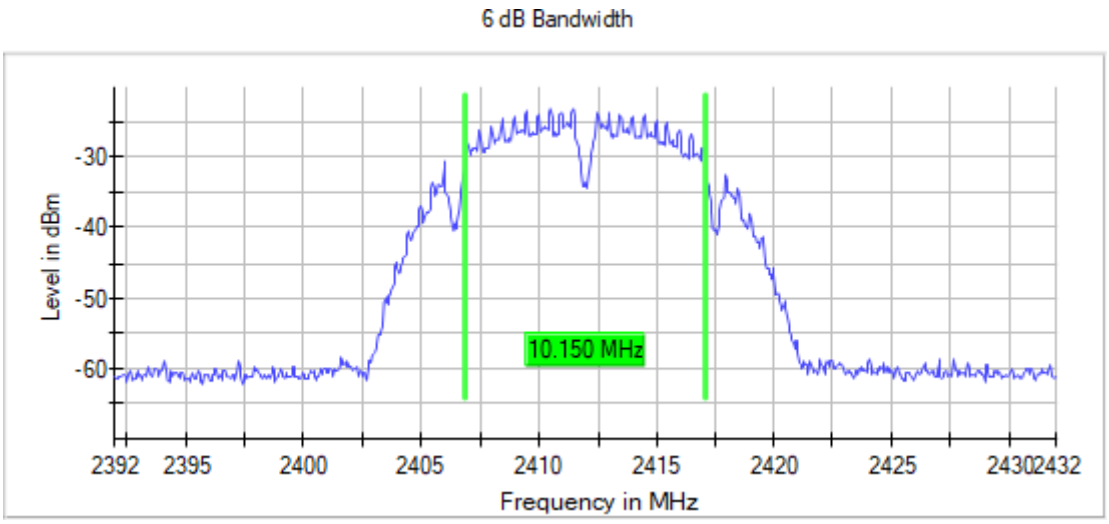
Attachments

Bandwidth MHz = 20 Modulation = 802.11b (DSSS 1 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = SISO

Active Port = 1

Images:

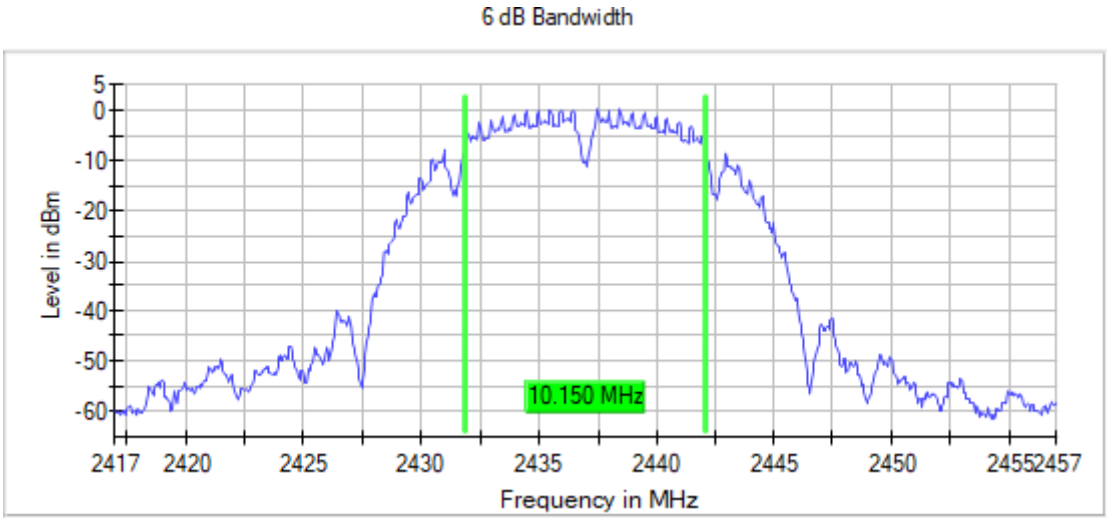


Bandwidth MHz = 20 Modulation = 802.11b (DSSS 1 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = SISO

Active Port = 1

Images:

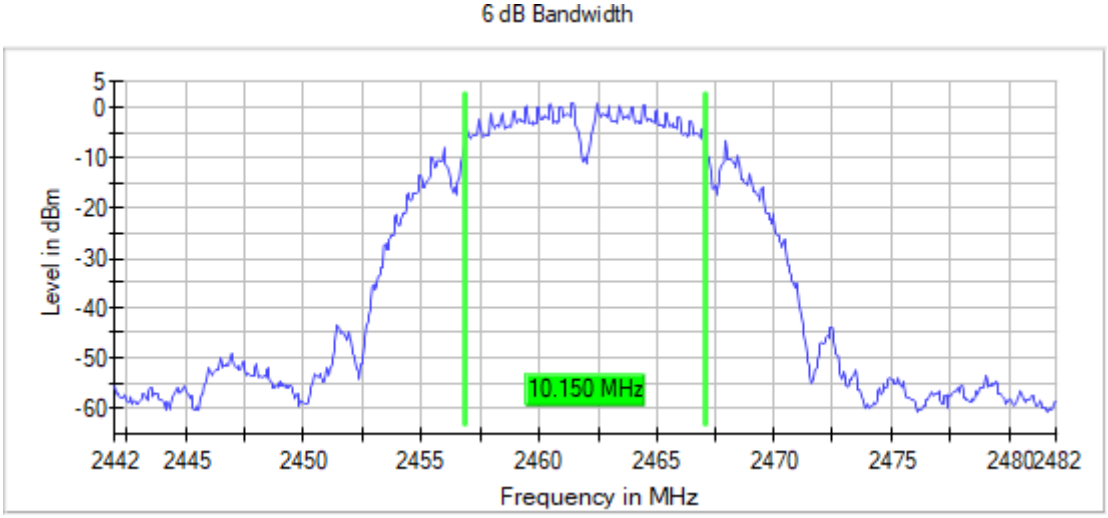


Bandwidth MHz = 20 Modulation = 802.11b (DSSS 1 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = SISO

Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	800	800	800
Sweeptime	1.040 ms	1.040 ms	1.040 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	14 / max.	12 / max. 150	11 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.13 dB	0.19 dB	0.15 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	1	16.450
	2437.00000		16.400
	2462.00000		16.400

Verdict

Pass

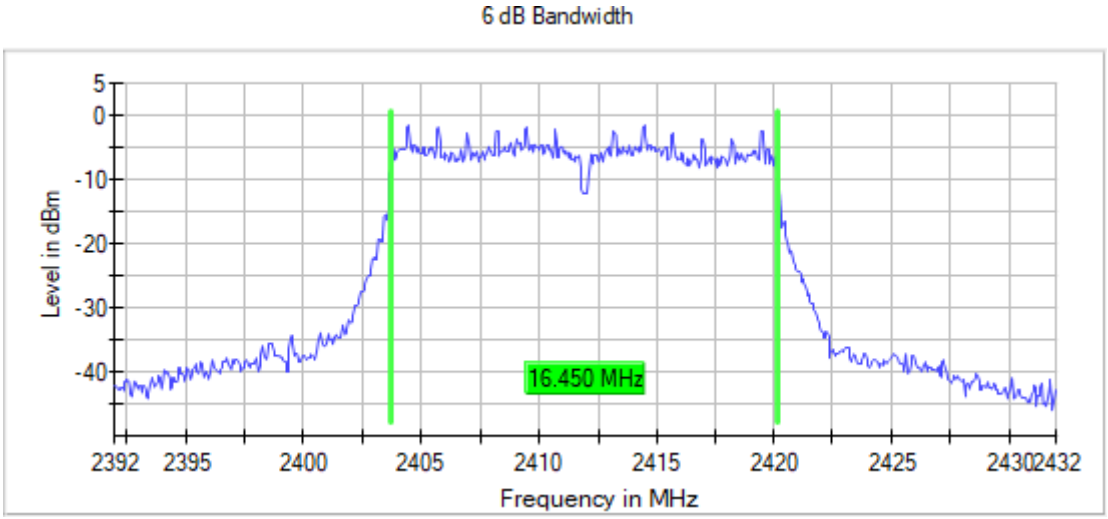
Attachments

Bandwidth MHz = 20 Modulation = 802.11g (OFDM 6 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = SISO

Active Port = 1

Images:

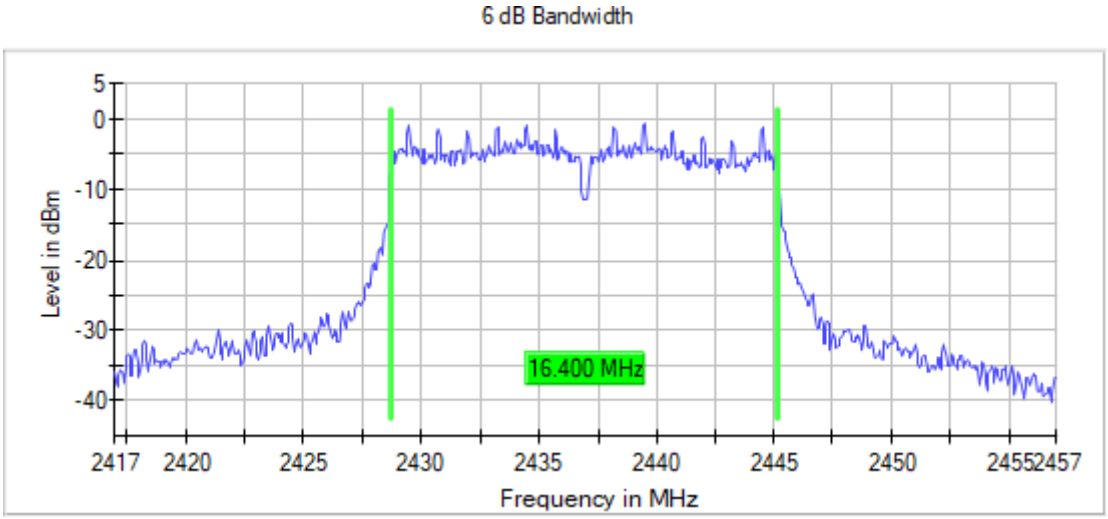


Bandwidth MHz = 20 Modulation = 802.11g (OFDM 6 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = SISO

Active Port = 1

Images:

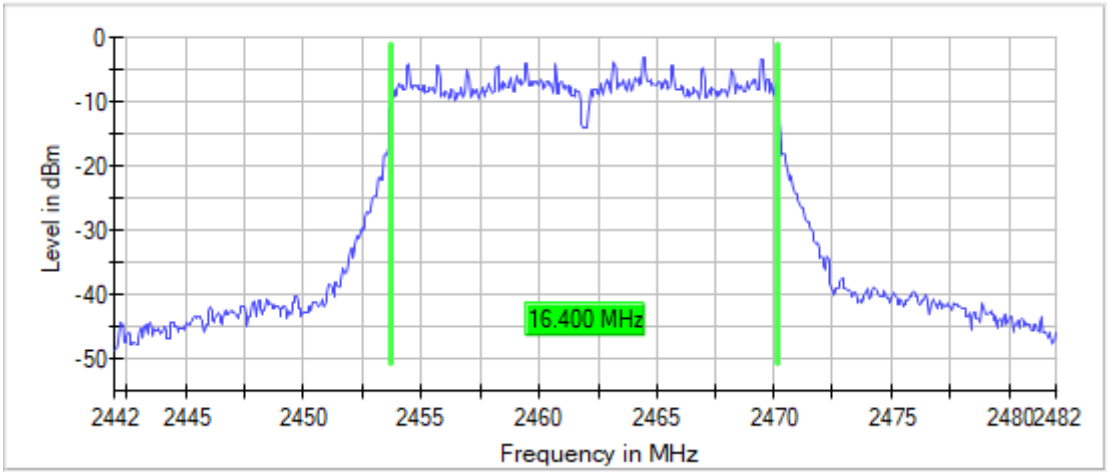


Bandwidth MHz = 20 Modulation = 802.11g (OFDM 6 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = SISO

Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	7 / max.	8 / max. 150	7 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.14 dB	0.15 dB	0.11 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	1	17.400
	2437.00000		17.650
	2462.00000		17.650

Verdict

Pass

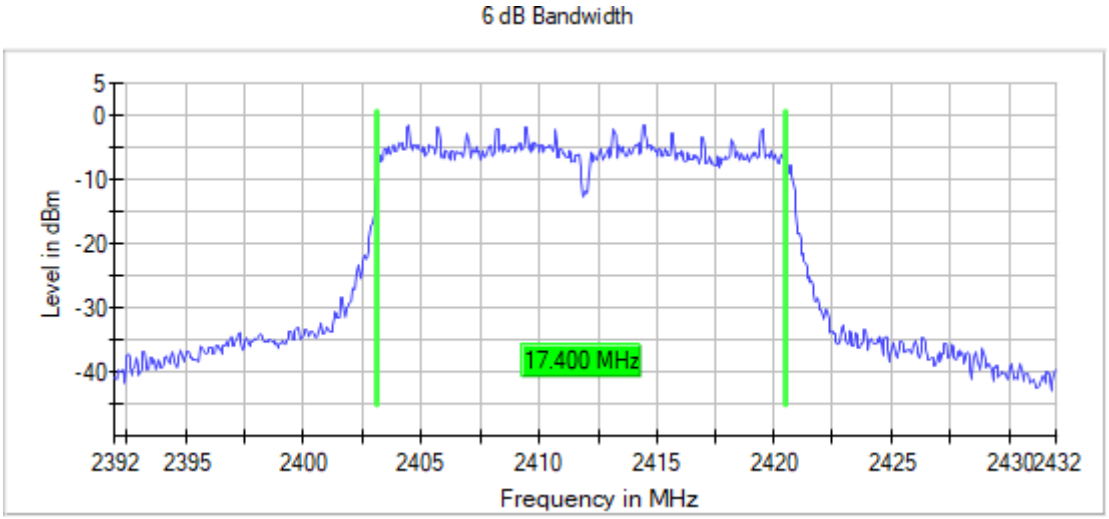
Attachments

Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = SISO

Active Port = 1

Images:

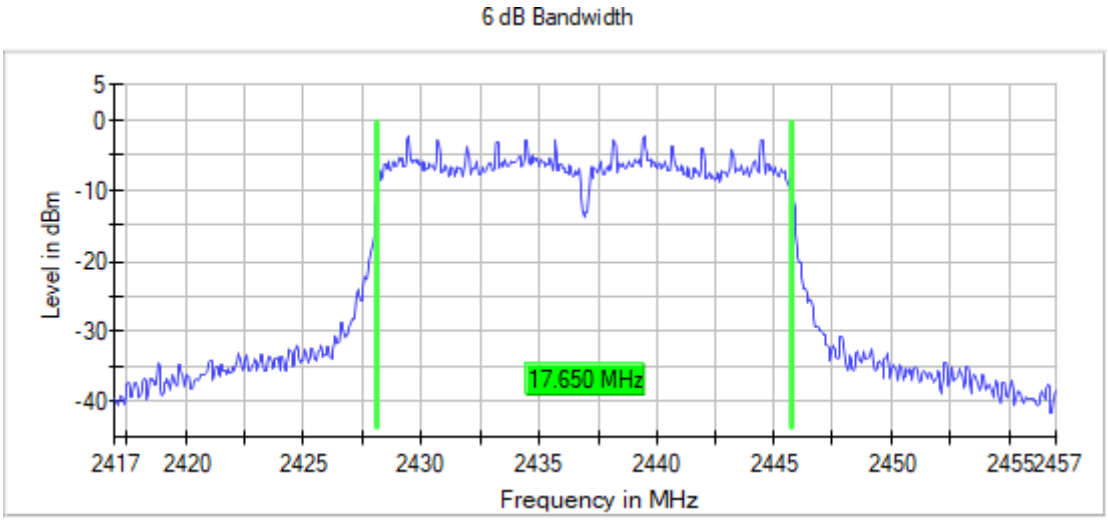


Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = SISO

Active Port = 1

Images:

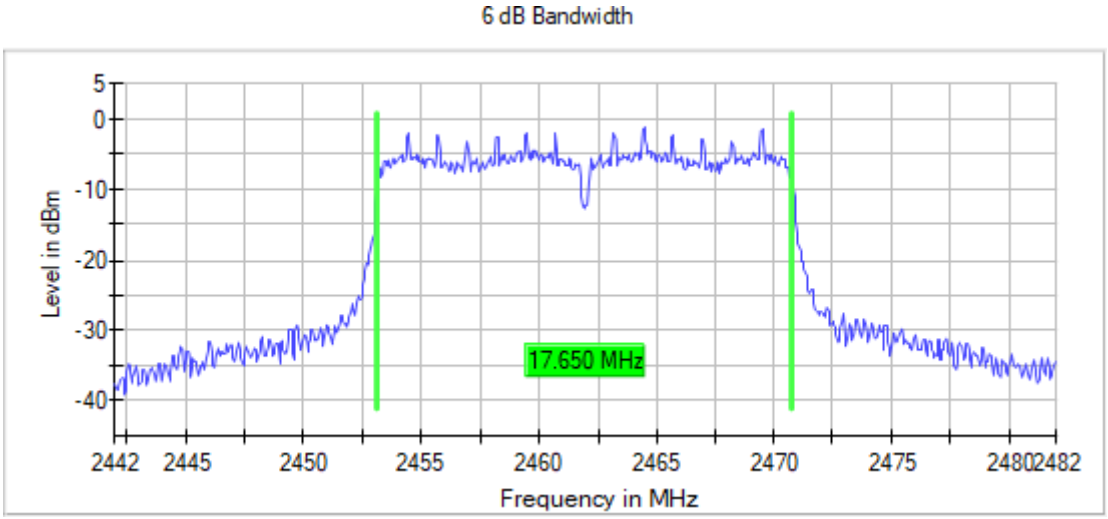


Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = SISO

Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	800	800	800
Sweeptime	1.040 ms	1.040 ms	1.040 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	36 / max.	48 / max. 150	43 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.41 dB	0.16 dB	0.21 dB

FCC 2.1049 / Occupied Channel Bandwidth 99%

Limits

No Limit has been set to this test case

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	1	13.500
		2437.00000		13.300
		2462.00000		13.300

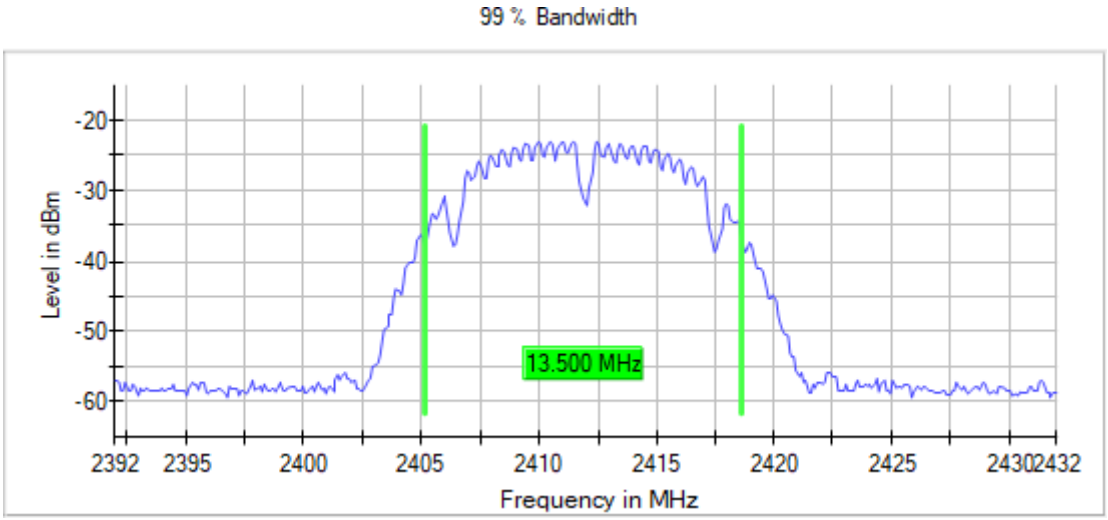
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11b (DSSS 1 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2412.00000
Active Port = 1

Images:

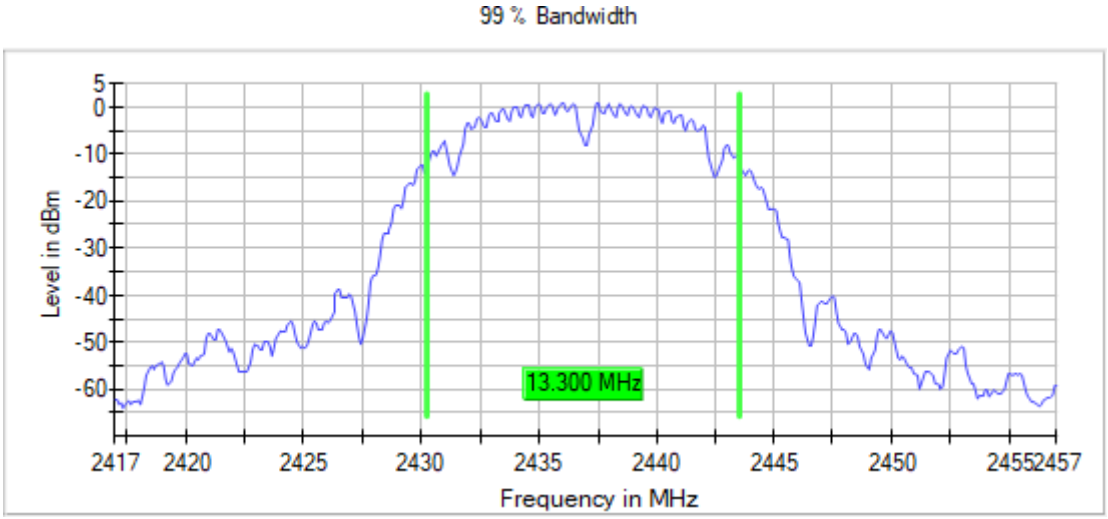


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 1

Images:

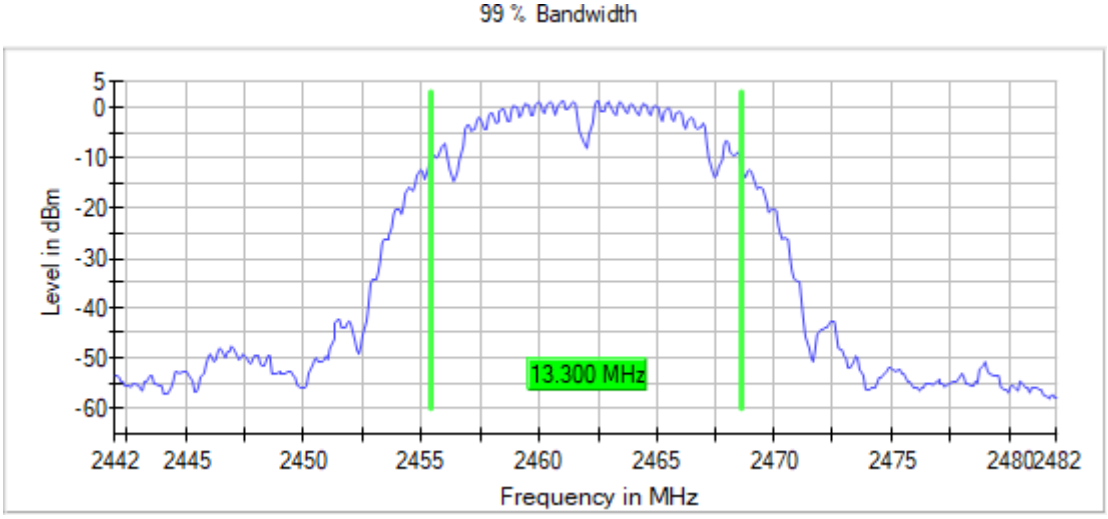


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	7 / max.	8 / max. 150	7 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.14 dB	0.15 dB	0.11 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	1	16.600
		2437.00000		16.700
		2462.00000		16.600

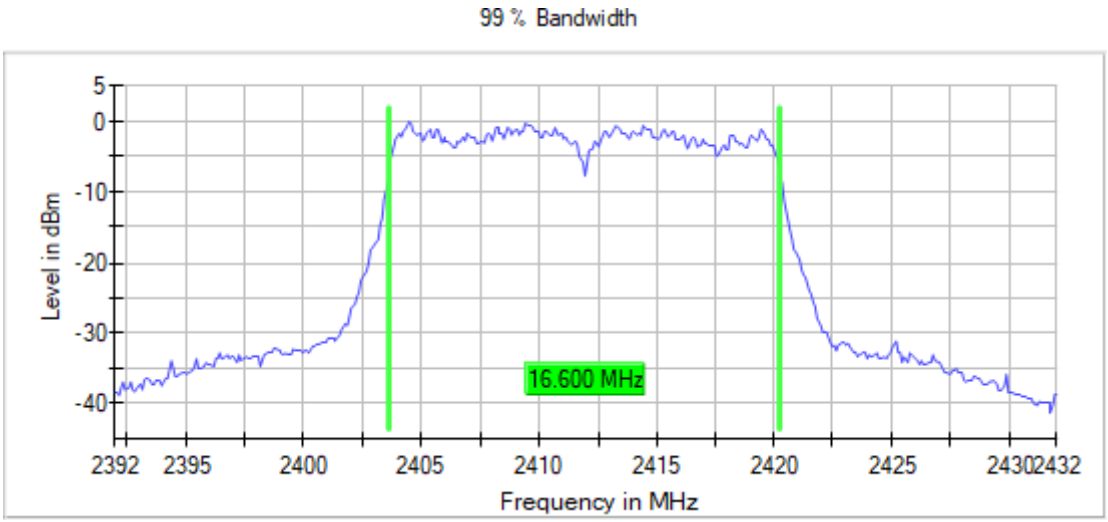
Verdict

Pass

Attachments

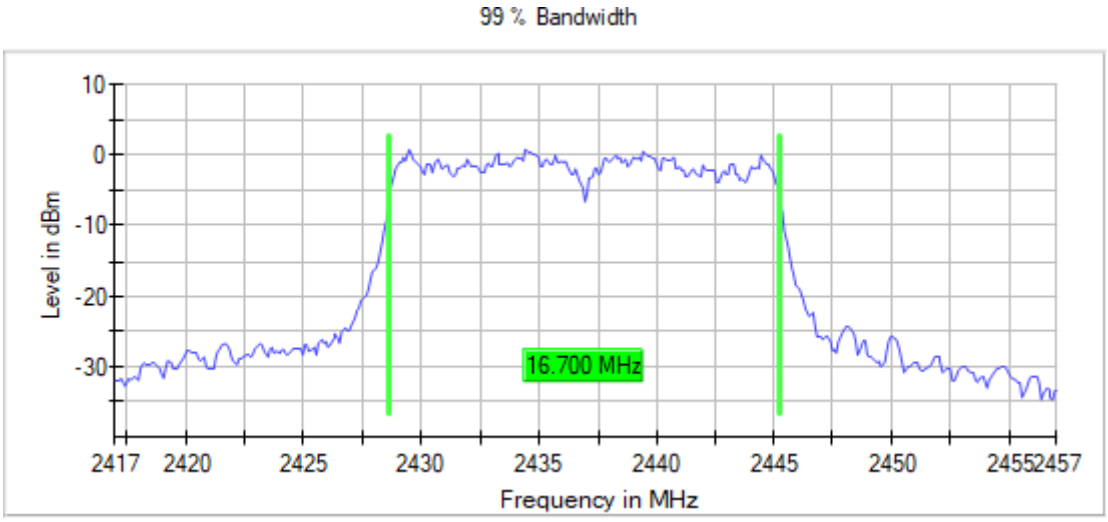
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 1

Images:



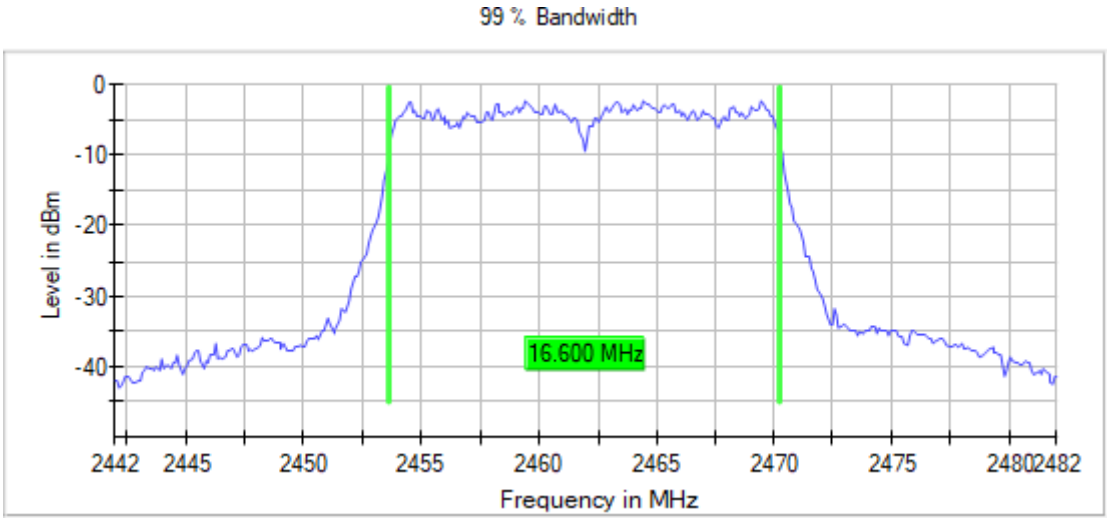
Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11g (OFDM 6 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2437.00000
Active Port = 1

Images:



Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11g (OFDM 6 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2462.00000
Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	7 / max.	8 / max. 150	7 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.14 dB	0.15 dB	0.11 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	1	17.600
		2437.00000		17.800
		2462.00000		17.800

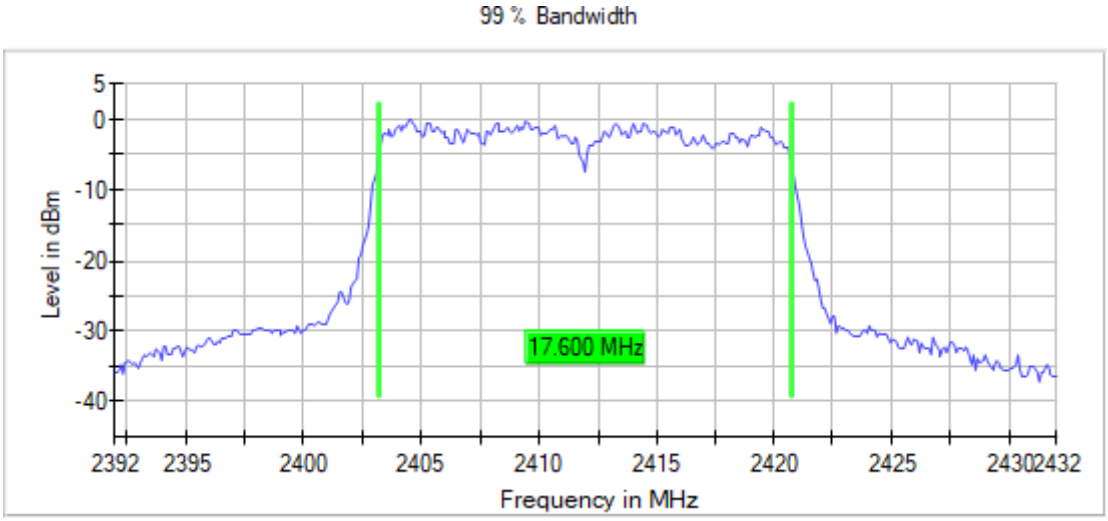
Verdict

Pass

Attachments

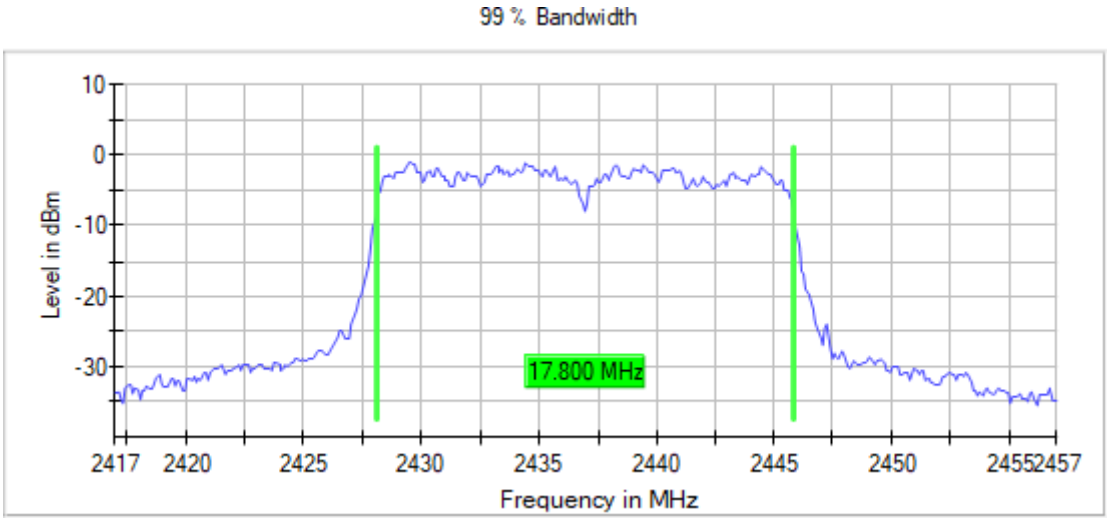
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 1

Images:



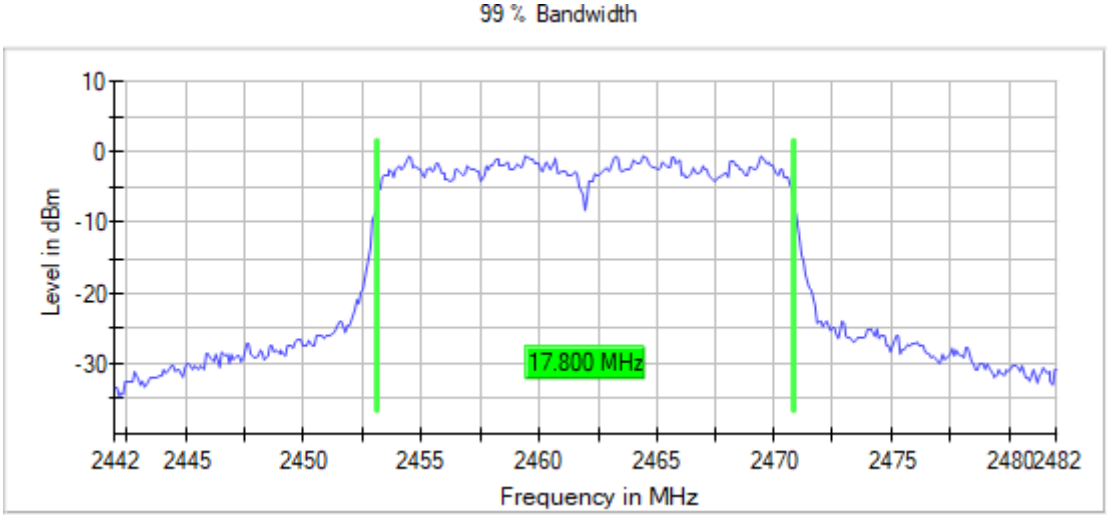
Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2437.00000
Active Port = 1

Images:



Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2462.00000
Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	54 / max.	29 / max. 150	45 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.02 dB	0.22 dB	0.11 dB

RSS-247 5.2 (b) / FCC 15.247 (e) - Power spectral density

Limits

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

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	4.05
		2437.00000		1.33
		2462.00000		1.14

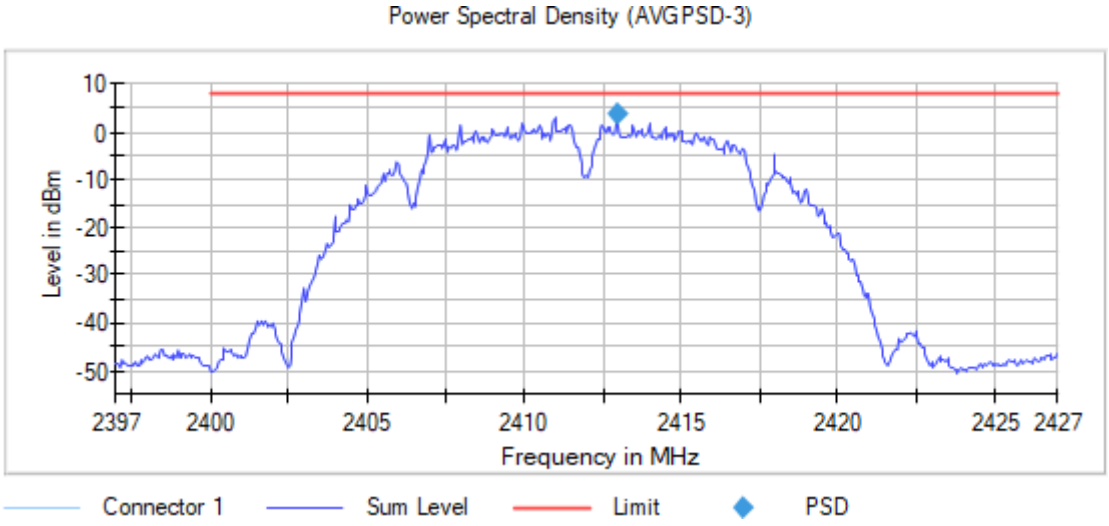
Verdict

Pass

Attachments

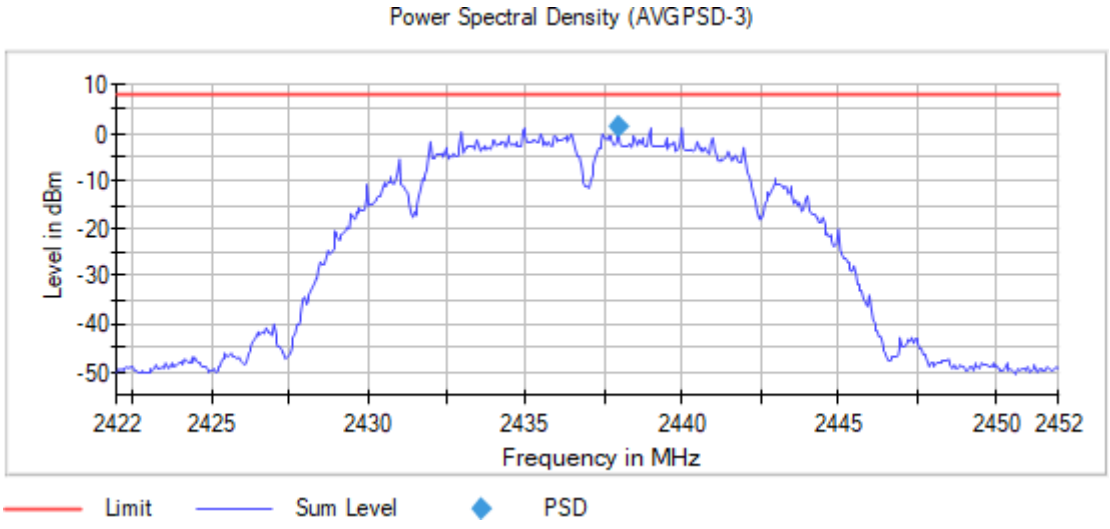
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 1

Images:



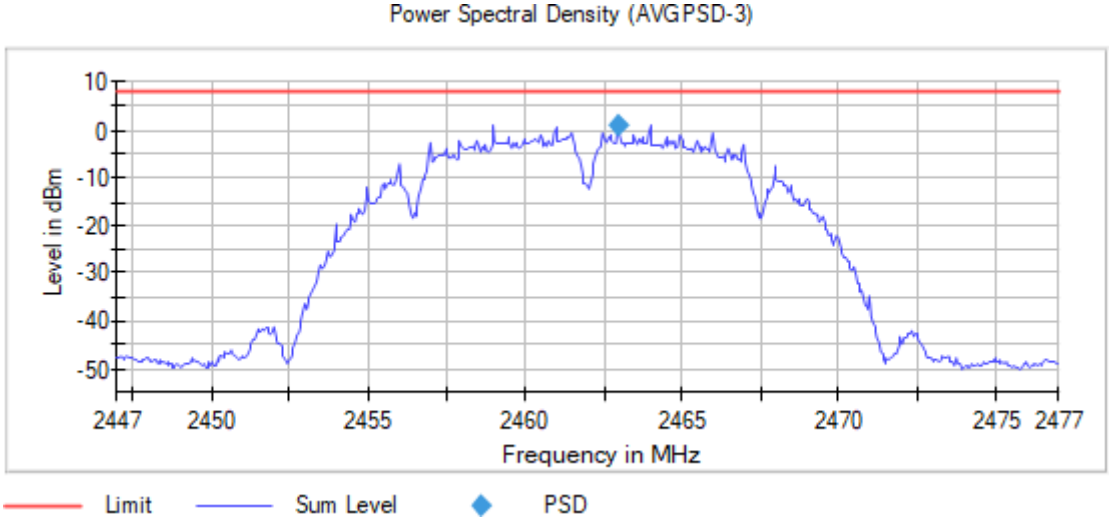
Equipment Type = Digital Transmission System (DTS)	Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)	Frequency MHz = 2437.00000
MIMO Mode = SISO	Active Port = 1

Images:



Equipment Type = Digital Transmission System (DTS)	Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)	Frequency MHz = 2462.00000
MIMO Mode = SISO	Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	13 / max.	9 / max. 15	13 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.00 dB	0.10 dB	0.00 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	-4.87
		2437.00000		-6.02
		2462.00000		-7.52

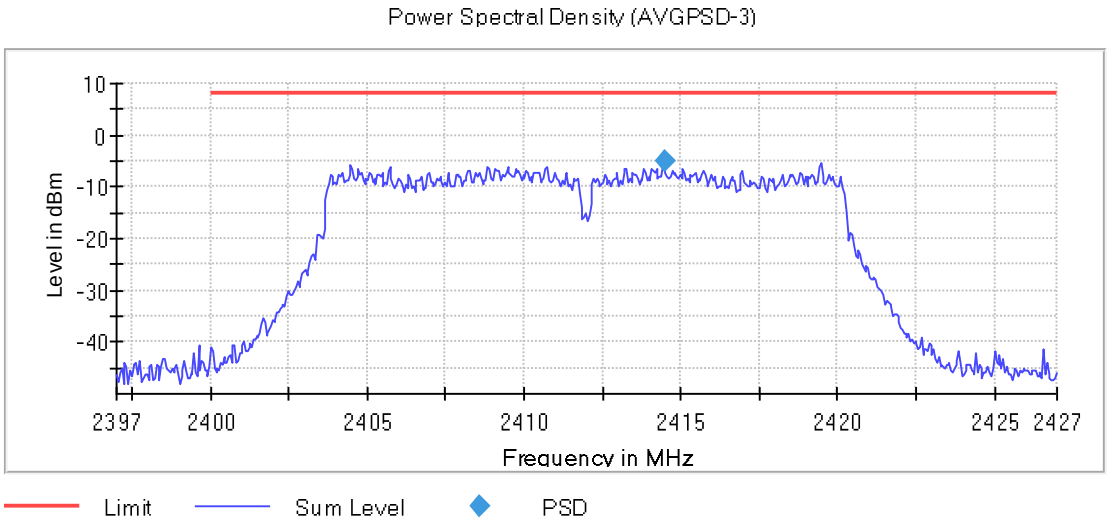
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 1

Images:

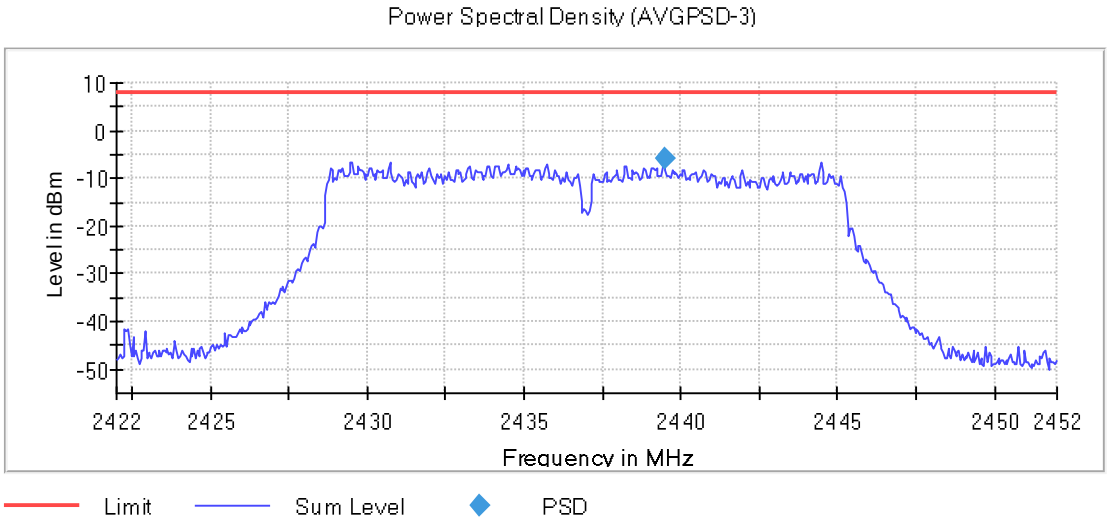


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 1

Images:

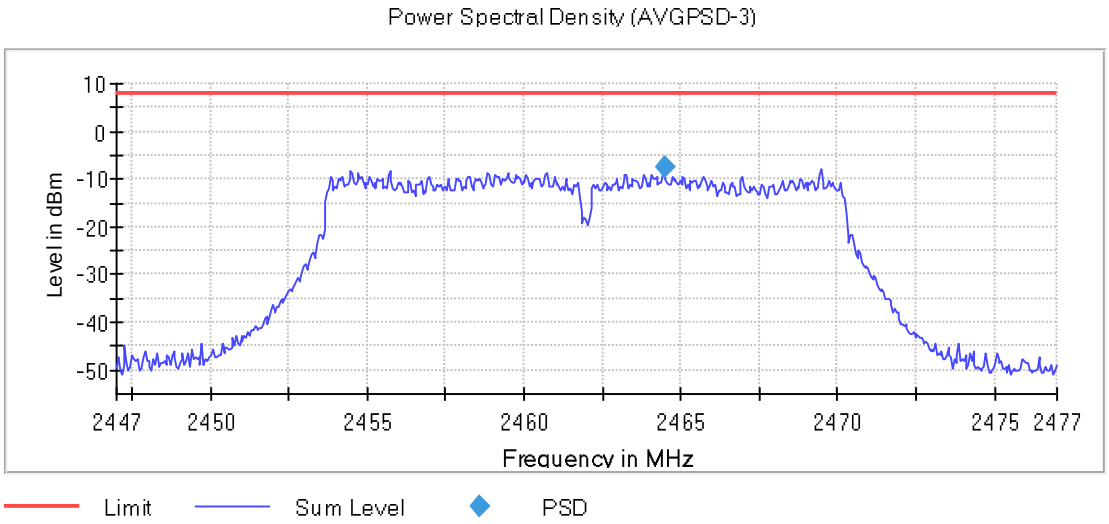


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	6 / max. 15	9 / max. 15	7 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.50 dB	0.22 dB	0.36 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	-5.61
		2437.00000		-6.49
		2462.00000		-7.99

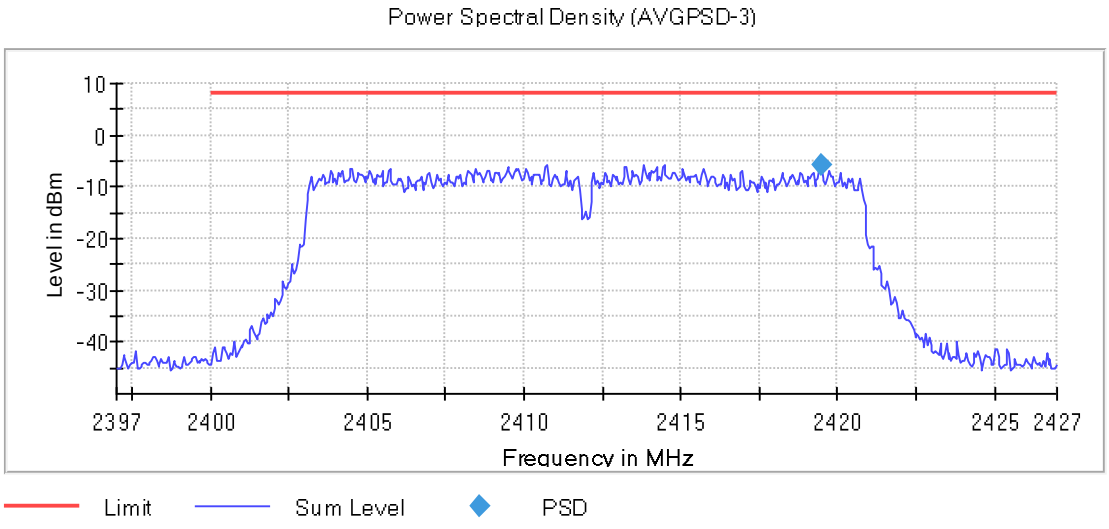
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 1

Images:

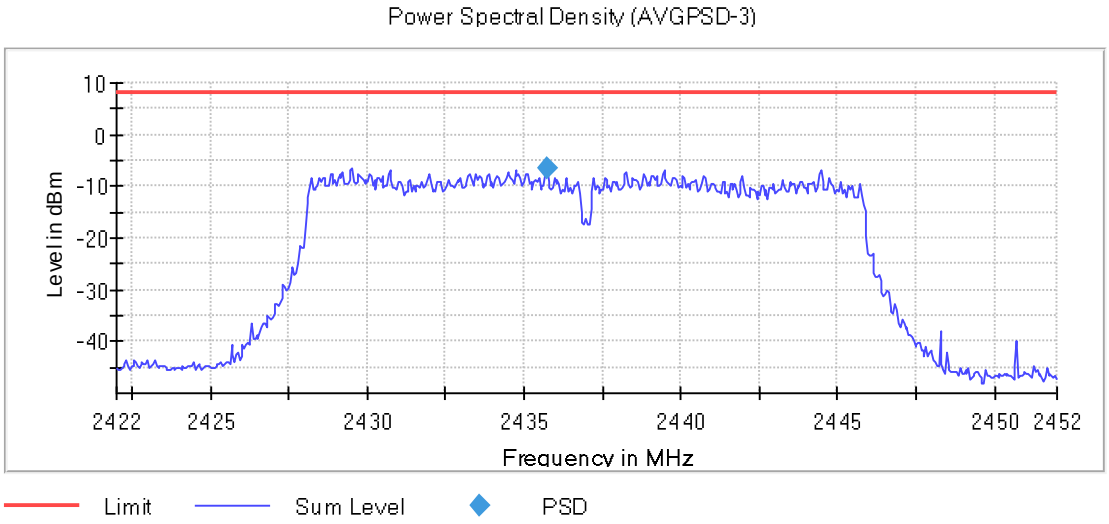


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 1

Images:

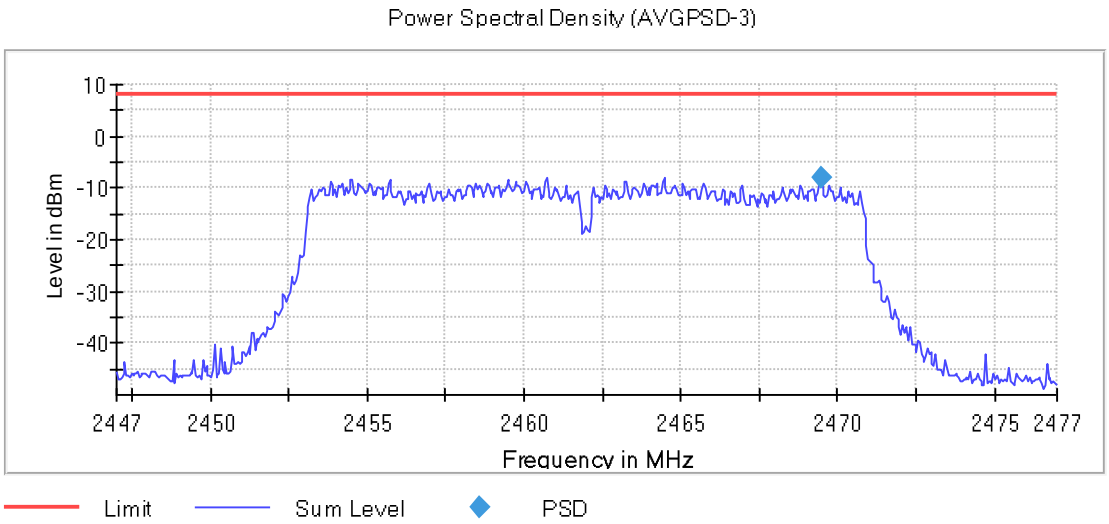


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	4 / max. 15	8 / max. 15	5 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.37 dB	0.41 dB	0.45 dB

RSS-247 5.4 (d) / FCC 15.247 (b) (1) - Maximum Average Conducted Output Power

Limits

systems using digital modulation in the 2400 -2483.5 MHz band: 1 watt (30 dBm).
The e.i.r.p. shall not exceed 4 W (36 dBm) (RSS-247).

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	12.96	11.46
Digital Transmission System (DTS)	20	2437.00000	1	10.51	9.01
Digital Transmission System (DTS)	20	2462.00000	1	10.81	9.31

Maximum declared Mohawk Module Antenna gain: 0 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	12.96	12.96
Digital Transmission System (DTS)	20	2437.00000	1	10.51	10.51
Digital Transmission System (DTS)	20	2462.00000	1	10.81	10.81

Verdict

Pass

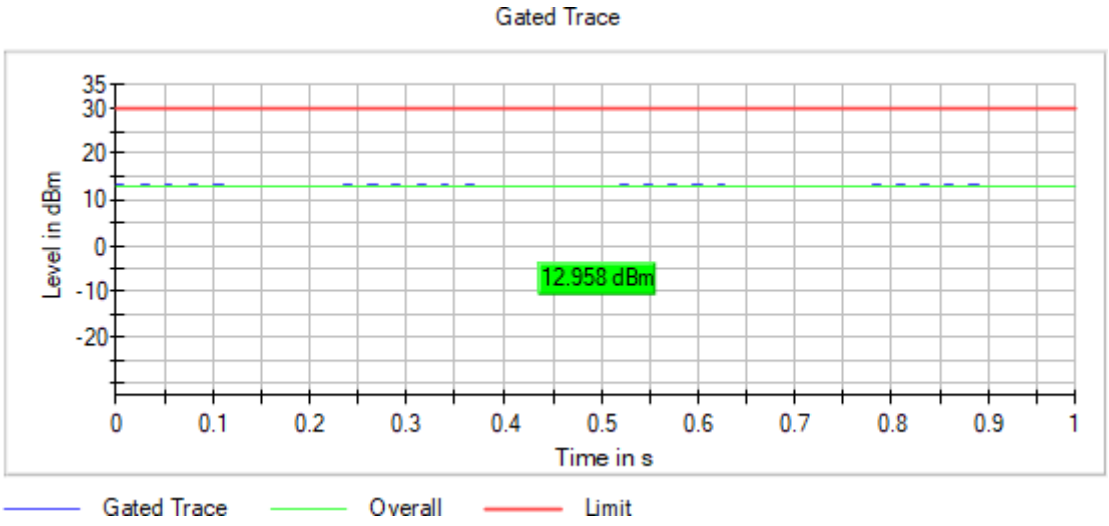
Attachments

Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2412.00000

MIMO Mode = SISO Active Port = 1

Images:

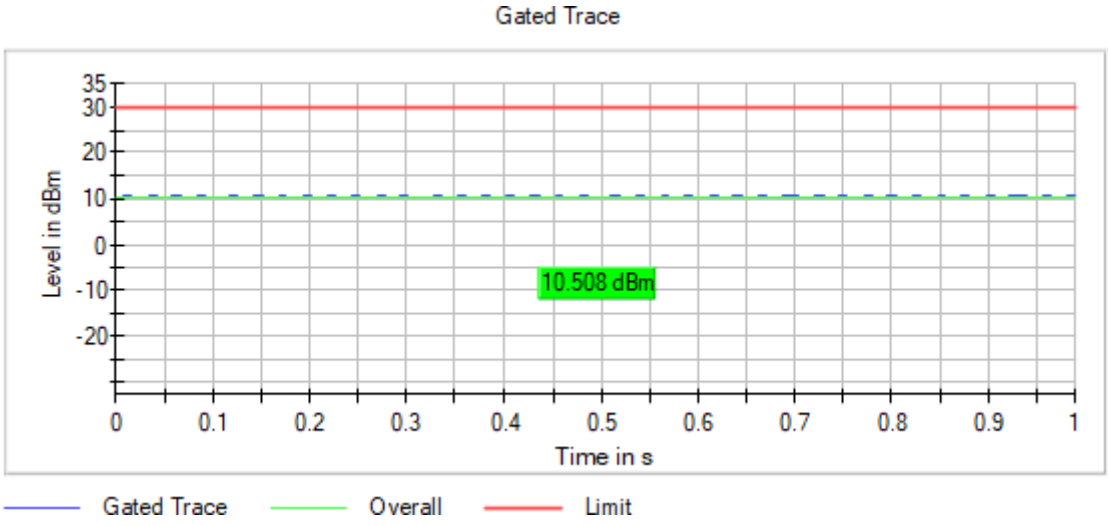


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 1

Images:

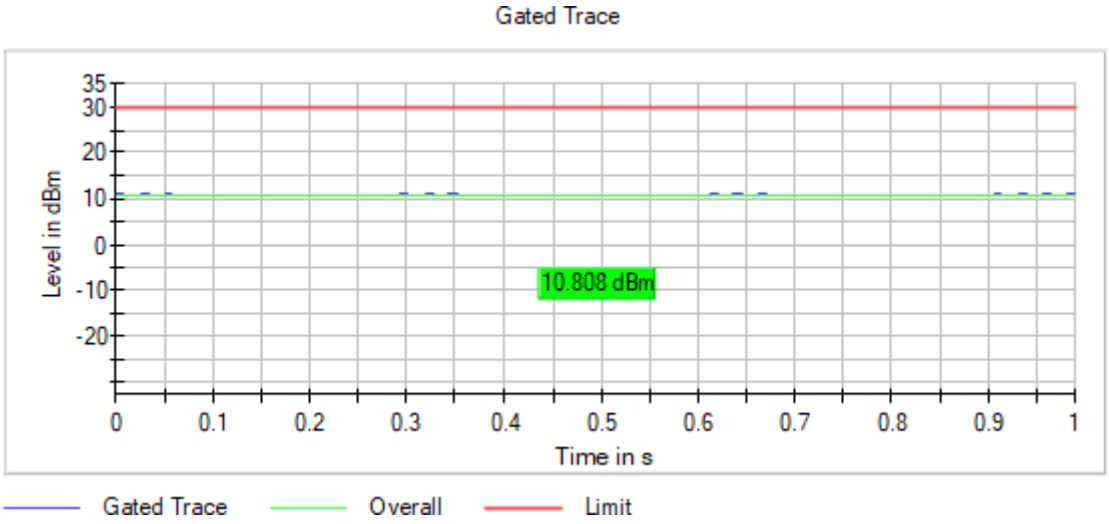


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 1

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	9.39	7.89
Digital Transmission System (DTS)	20	2437.00000	1	8.52	7.02
Digital Transmission System (DTS)	20	2462.00000	1	6.99	5.49

Maximum declared Mohawk Module Antenna gain: 0 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	9.39	9.39
Digital Transmission System (DTS)	20	2437.00000	1	8.52	8.52
Digital Transmission System (DTS)	20	2462.00000	1	6.99	6.99

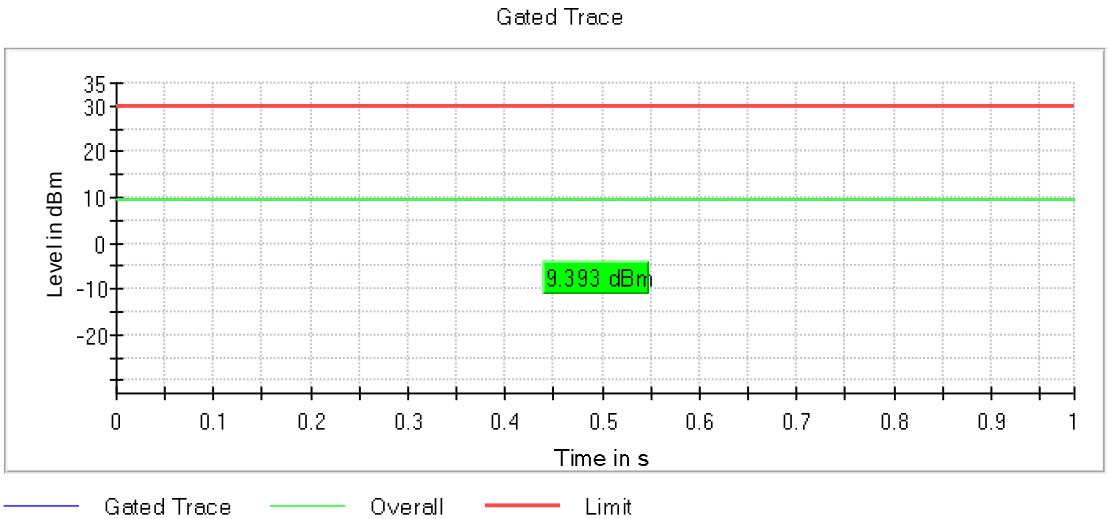
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 1

Images:

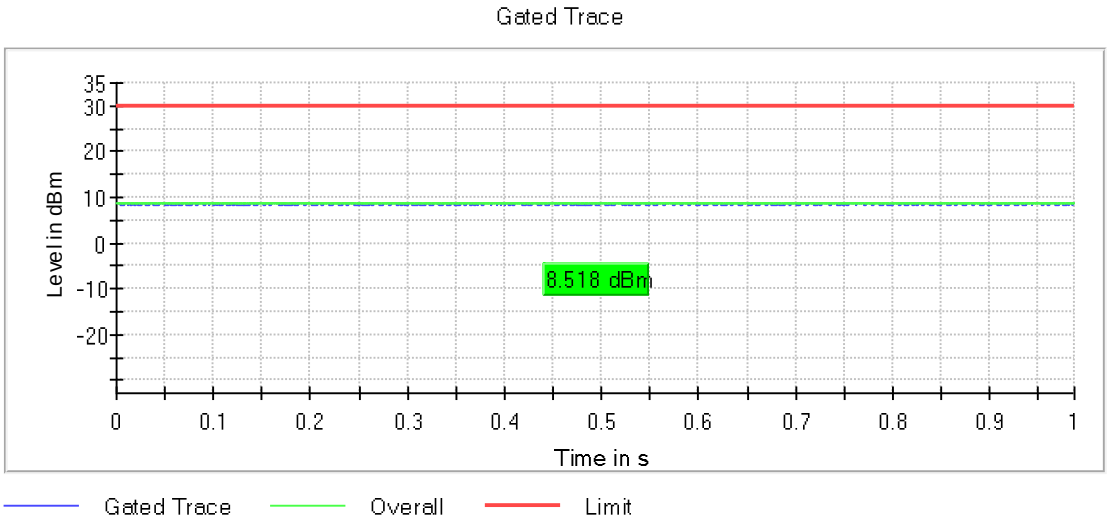


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 1

Images:

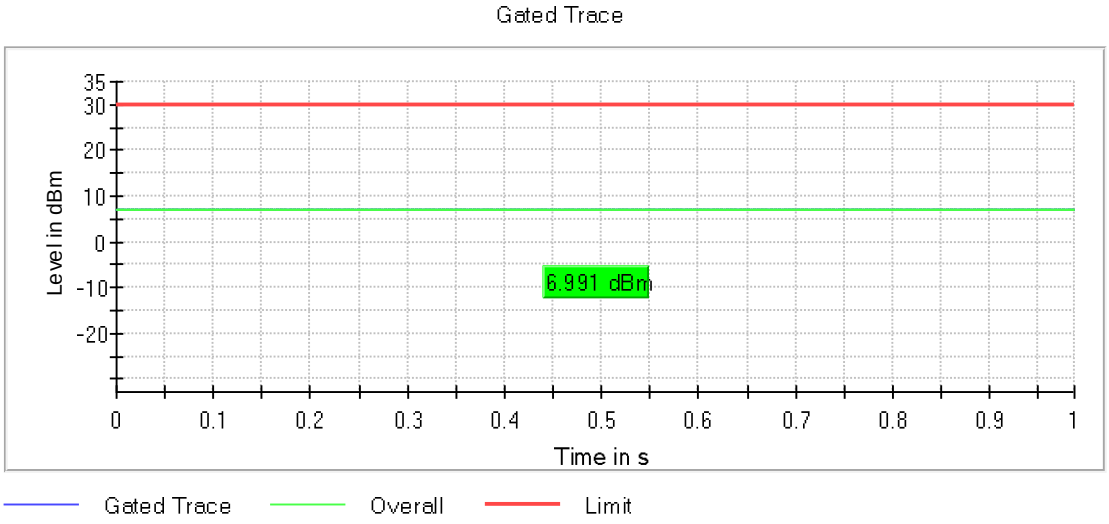


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 1

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	9.54	8.04
Digital Transmission System (DTS)	20	2437.00000	1	8.56	7.06
Digital Transmission System (DTS)	20	2462.00000	1	7.23	5.73

Maximum declared Mohawk Module Antenna gain: 0 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	9.54	9.54
Digital Transmission System (DTS)	20	2437.00000	1	8.56	8.56
Digital Transmission System (DTS)	20	2462.00000	1	7.23	7.23

Verdict

Pass

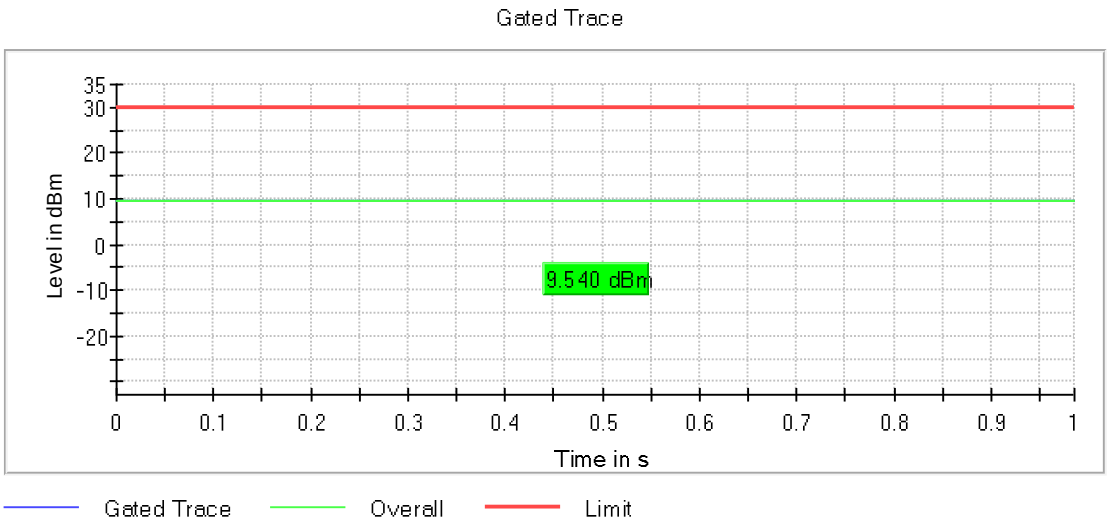
Attachments

Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2412.00000

MIMO Mode = SISO Active Port = 1

Images:

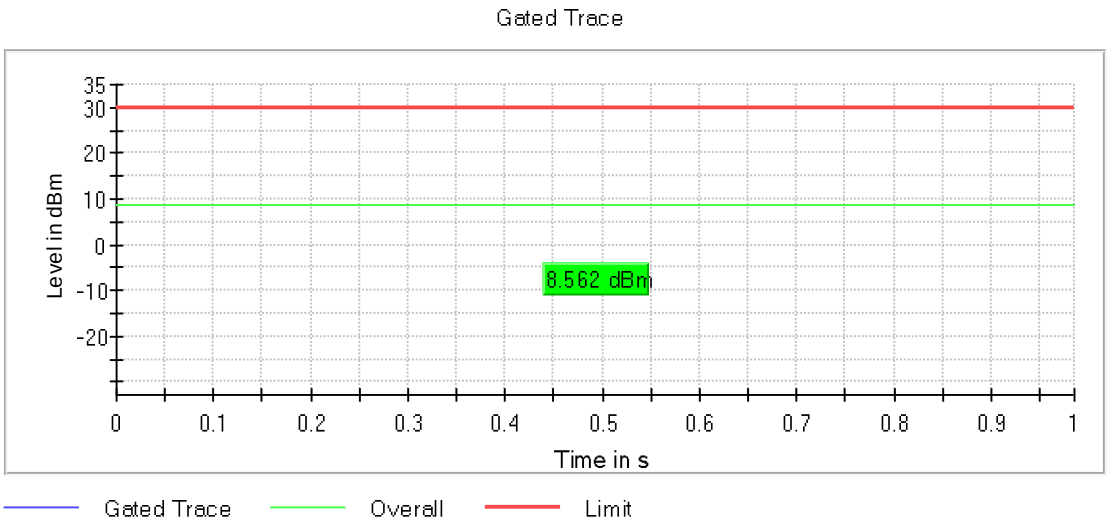


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 1

Images:

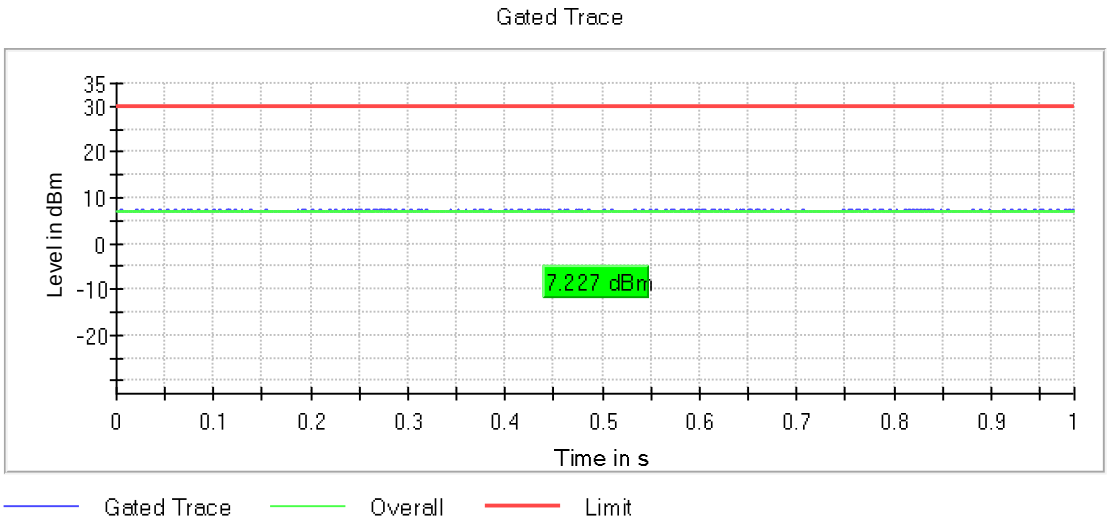


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 1

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

RSS-247 5.5 / FCC 15.247 (d) - Band-edge emissions compliance (Transmitter) - Conducted

Limits

In any 100 kHz bandwidths outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2376.475000	-57.0	3.5	-53.5	PASS
2376.425000	-57.2	3.6	-53.5	PASS
2376.675000	-57.9	4.4	-53.5	PASS
2324.475000	-57.9	4.4	-53.5	PASS
2355.025000	-57.9	4.4	-53.5	PASS
2371.475000	-57.9	4.4	-53.5	PASS
2364.925000	-58.0	4.5	-53.5	PASS
2371.425000	-58.0	4.5	-53.5	PASS
2355.075000	-58.0	4.5	-53.5	PASS
2336.875000	-58.1	4.5	-53.5	PASS
2369.125000	-58.1	4.6	-53.5	PASS
2389.975000	-58.1	4.6	-53.5	PASS
2371.675000	-58.1	4.6	-53.5	PASS
2364.875000	-58.2	4.6	-53.5	PASS
2394.225000	-58.2	4.6	-53.5	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2487.975000	-53.3	23.9	-29.4	PASS
2485.275000	-53.7	24.3	-29.4	PASS
2487.925000	-53.8	24.4	-29.4	PASS
2485.325000	-53.9	24.5	-29.4	PASS
2487.475000	-54.1	24.7	-29.4	PASS
2487.525000	-54.2	24.8	-29.4	PASS
2487.575000	-54.2	24.8	-29.4	PASS
2486.975000	-54.5	25.1	-29.4	PASS
2488.975000	-54.5	25.1	-29.4	PASS
2487.775000	-54.5	25.1	-29.4	PASS
2487.675000	-54.6	25.2	-29.4	PASS
2487.625000	-54.8	25.3	-29.4	PASS
2486.925000	-54.8	25.4	-29.4	PASS
2488.025000	-55.0	25.6	-29.4	PASS
2498.475000	-55.0	25.6	-29.4	PASS

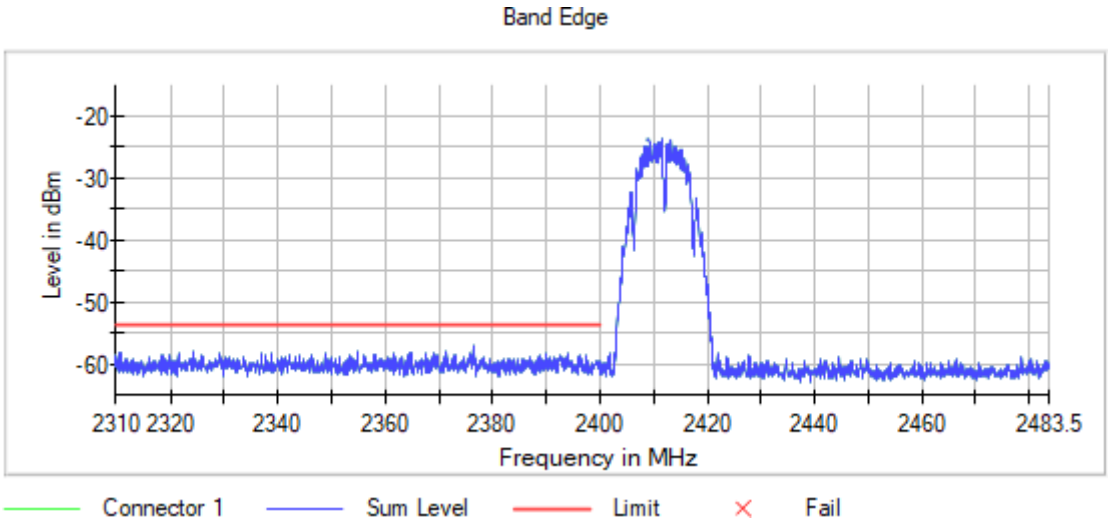
Verdict

Pass

Attachments

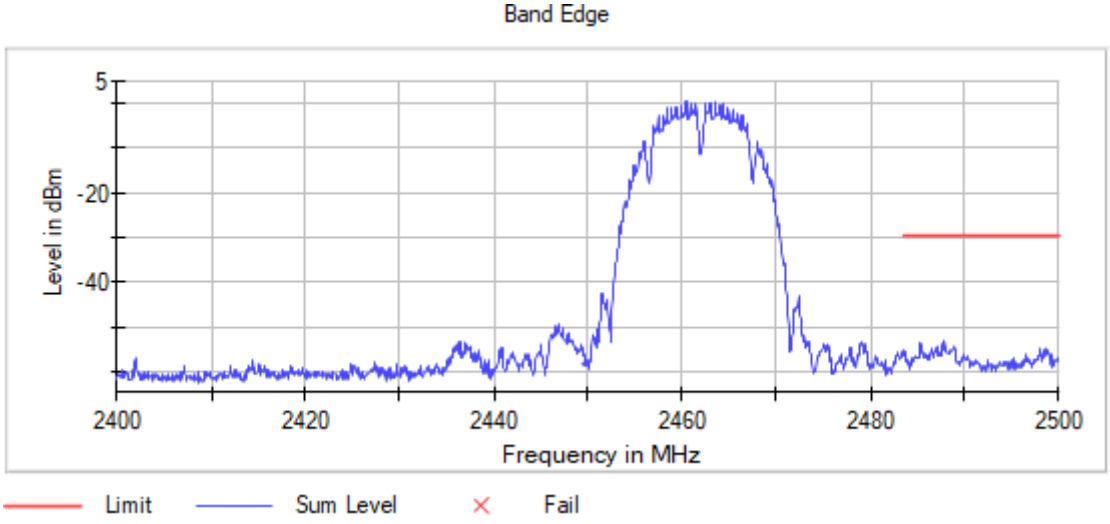
Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s) | Frequency MHz = 2412.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 1

Images:



Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s) | Frequency MHz = 2462.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1800
Sweeptime	1.800 ms	1.800 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	4 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.00 dB	0.00 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2394.725000	-36.8	5.1	-31.7	PASS
2394.775000	-36.9	5.2	-31.7	PASS
2394.675000	-38.0	6.3	-31.7	PASS
2398.425000	-38.5	6.9	-31.7	PASS
2398.475000	-38.6	6.9	-31.7	PASS
2394.375000	-38.9	7.2	-31.7	PASS
2399.675000	-39.1	7.4	-31.7	PASS
2399.725000	-39.1	7.4	-31.7	PASS
2394.325000	-39.2	7.5	-31.7	PASS
2398.525000	-39.2	7.5	-31.7	PASS
2399.225000	-39.3	7.6	-31.7	PASS
2399.975000	-39.4	7.7	-31.7	PASS
2394.425000	-39.4	7.7	-31.7	PASS
2399.625000	-39.5	7.8	-31.7	PASS
2394.825000	-39.5	7.8	-31.7	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.475000	-48.5	13.8	-34.6	PASS
2484.425000	-49.3	14.6	-34.6	PASS
2483.825000	-49.9	15.3	-34.6	PASS
2483.775000	-50.2	15.6	-34.6	PASS
2483.675000	-50.3	15.7	-34.6	PASS
2483.625000	-50.4	15.7	-34.6	PASS
2483.575000	-50.5	15.9	-34.6	PASS
2483.525000	-50.7	16.1	-34.6	PASS
2487.425000	-50.7	16.1	-34.6	PASS
2484.525000	-50.8	16.2	-34.6	PASS
2487.375000	-51.1	16.4	-34.6	PASS
2485.225000	-51.1	16.4	-34.6	PASS
2485.275000	-51.2	16.5	-34.6	PASS
2483.725000	-51.3	16.6	-34.6	PASS
2484.075000	-51.5	16.8	-34.6	PASS

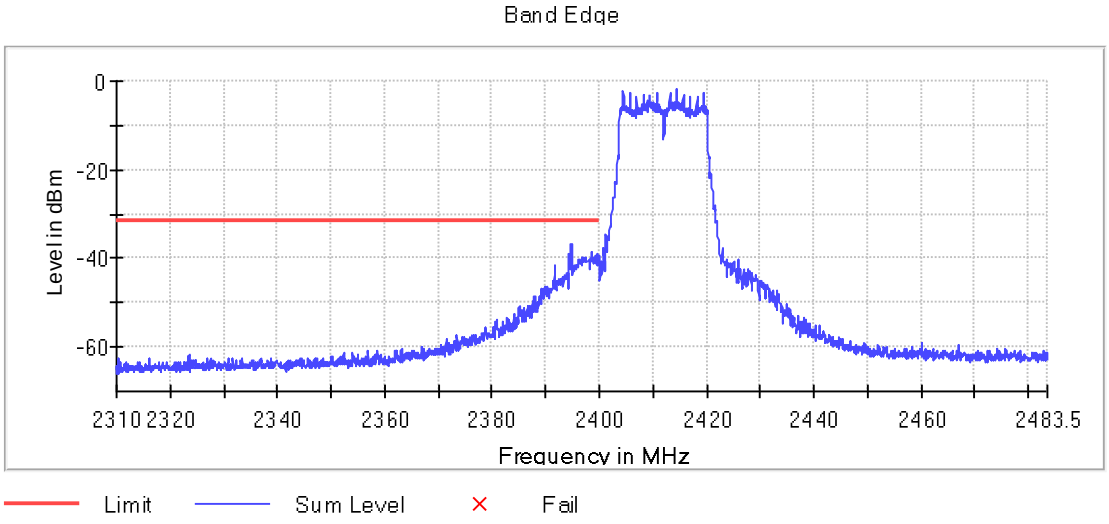
Verdict

Pass

Attachments

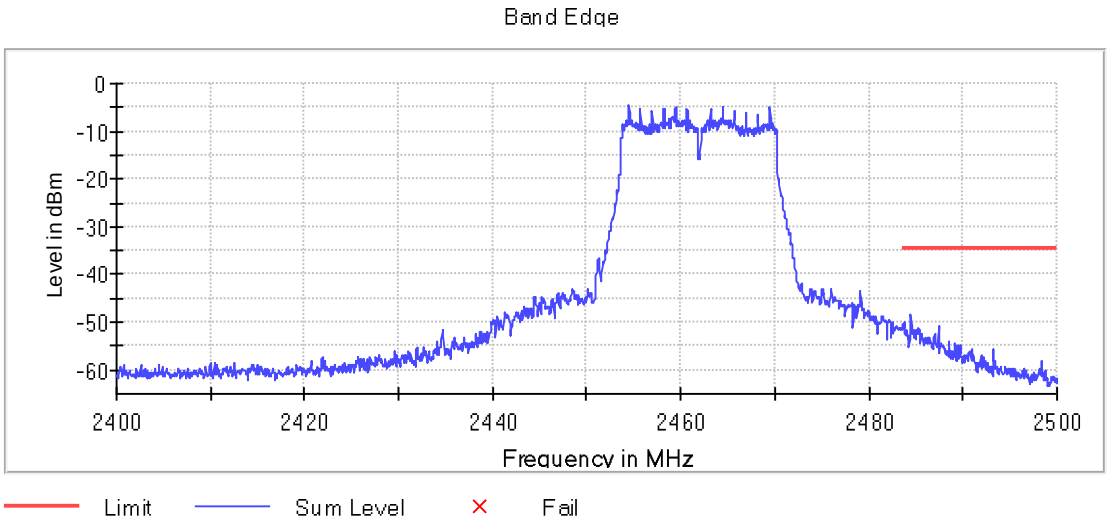
Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s) | Frequency MHz = 2412.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 1

Images:



Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s) | Frequency MHz = 2462.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1800
Sweeptime	1.800 ms	1.800 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	10.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	40 / max. 150	40 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.14 dB	0.14 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2398.225000	-35.5	3.8	-31.7	PASS
2398.175000	-35.6	3.9	-31.7	PASS
2398.125000	-35.8	4.1	-31.7	PASS
2397.225000	-36.0	4.3	-31.7	PASS
2397.275000	-36.1	4.4	-31.7	PASS
2398.275000	-36.1	4.4	-31.7	PASS
2398.475000	-36.1	4.4	-31.7	PASS
2398.525000	-36.1	4.4	-31.7	PASS
2398.425000	-36.2	4.5	-31.7	PASS
2398.575000	-36.2	4.5	-31.7	PASS
2397.475000	-36.3	4.6	-31.7	PASS
2397.525000	-36.3	4.6	-31.7	PASS
2397.575000	-36.3	4.6	-31.7	PASS
2398.075000	-36.3	4.6	-31.7	PASS
2397.875000	-36.4	4.7	-31.7	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2485.075000	-44.1	9.8	-34.4	PASS
2484.775000	-44.2	9.8	-34.4	PASS
2484.725000	-44.3	9.9	-34.4	PASS
2484.675000	-44.8	10.4	-34.4	PASS
2484.125000	-44.9	10.5	-34.4	PASS
2483.675000	-44.9	10.5	-34.4	PASS
2484.175000	-44.9	10.6	-34.4	PASS
2483.625000	-45.0	10.6	-34.4	PASS
2485.425000	-45.3	10.9	-34.4	PASS
2484.475000	-45.4	11.1	-34.4	PASS
2484.425000	-45.4	11.1	-34.4	PASS
2484.375000	-45.5	11.1	-34.4	PASS
2485.475000	-45.5	11.2	-34.4	PASS
2484.525000	-45.5	11.2	-34.4	PASS
2485.375000	-45.6	11.2	-34.4	PASS

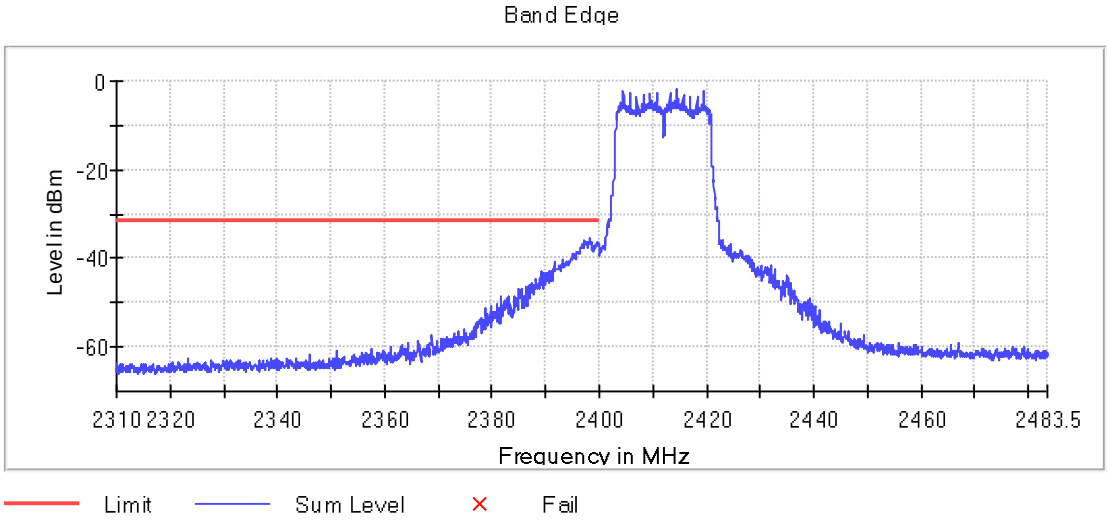
Verdict

Pass

Attachments

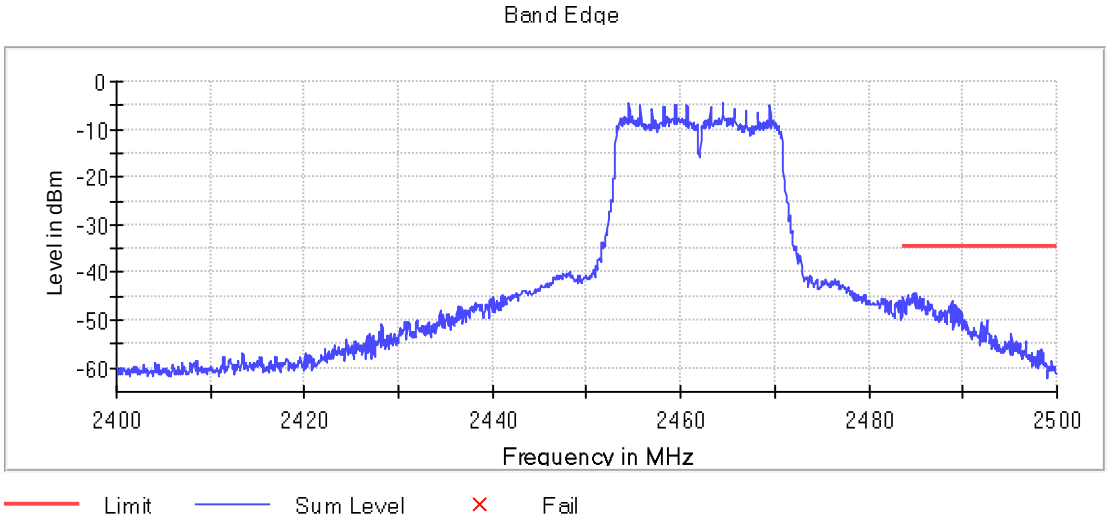
Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) | Frequency MHz = 2412.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 1

Images:



Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) | Frequency MHz = 2462.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 1

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	2.31000 GHz	2.31000 GHz
Stop Frequency	2.40000 GHz	2.40000 GHz
Span	90.000 MHz	90.000 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1800
Sweeptime	1.800 ms	1.800 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	10.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	24 / max. 150	24 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.13 dB	0.13 dB

Appendix A.2: Test results – SISO B

Appendix A.2

TEST CASES DETAILS

RSS-247 5.2 (a) / FCC 15.247 (a) (2) - 6 dB Bandwidth

Limits

The minimum 6 dB bandwidth shall be at least 500 kHz.

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	1	10.150
	2437.00000		10.150
	2462.00000		10.150

Verdict

Pass

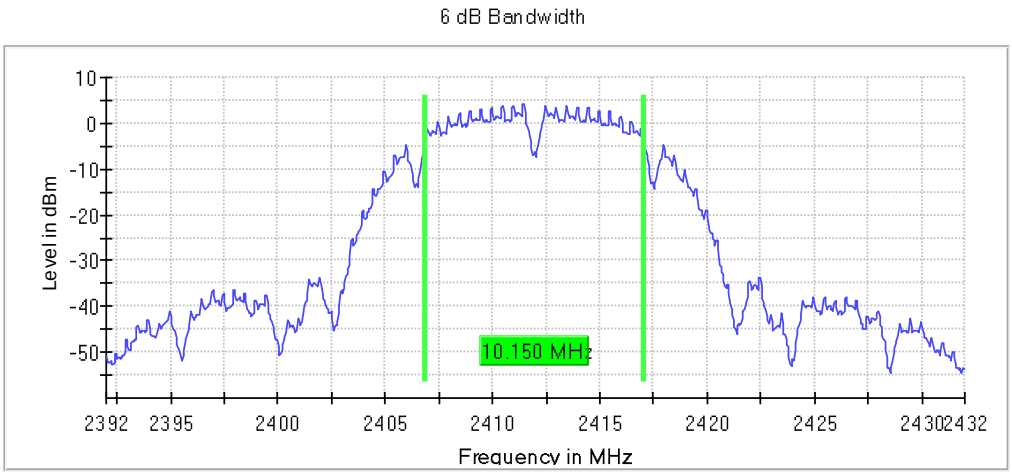
Attachments

Bandwidth MHz = 20 Modulation = 802.11b (DSSS 1 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = SISO

Active Port = 2

Images:

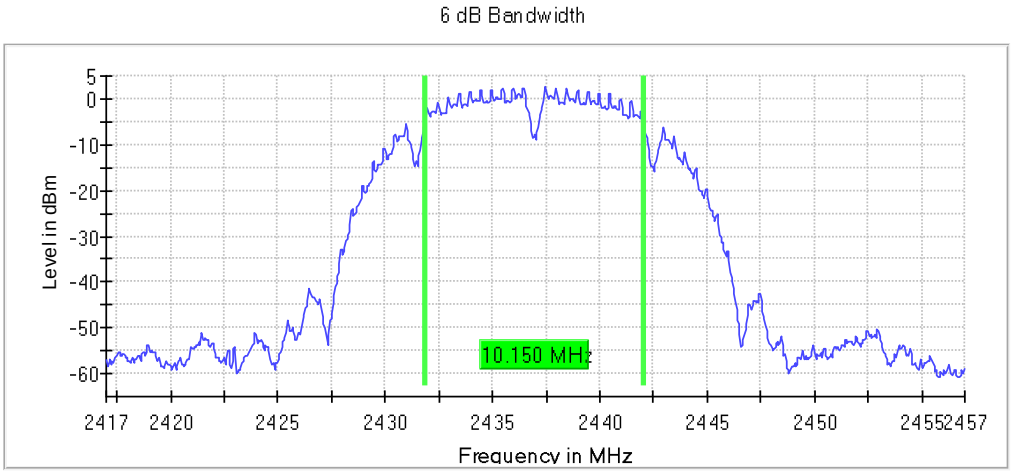


Bandwidth MHz = 20 Modulation = 802.11b (DSSS 1 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = SISO

Active Port = 2

Images:

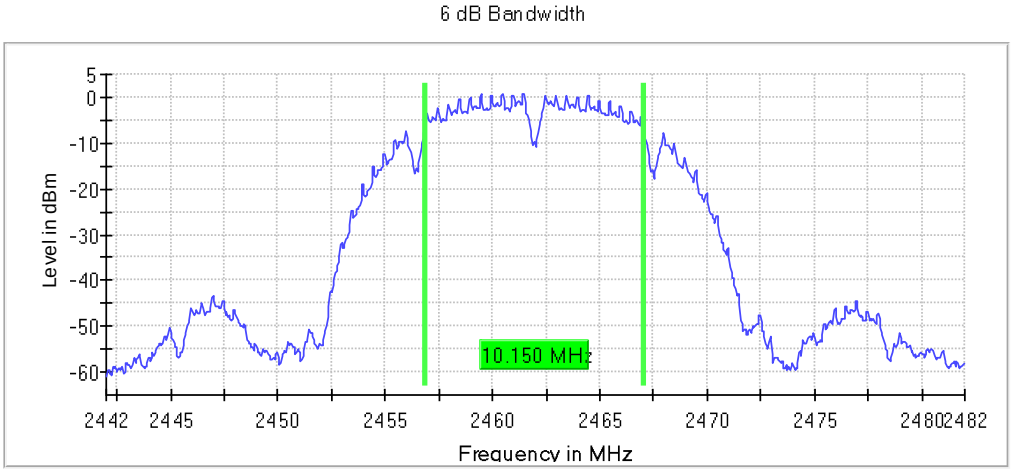


Bandwidth MHz = 20 Modulation = 802.11b (DSSS 1 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = SISO

Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	800	800	800
Sweeptime	1.040 ms	1.040 ms	1.040 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	14 / max.	12 / max. 150	11 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.13 dB	0.19 dB	0.15 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	1	16.400
	2437.00000		16.450
	2462.00000		16.450

Verdict

Pass

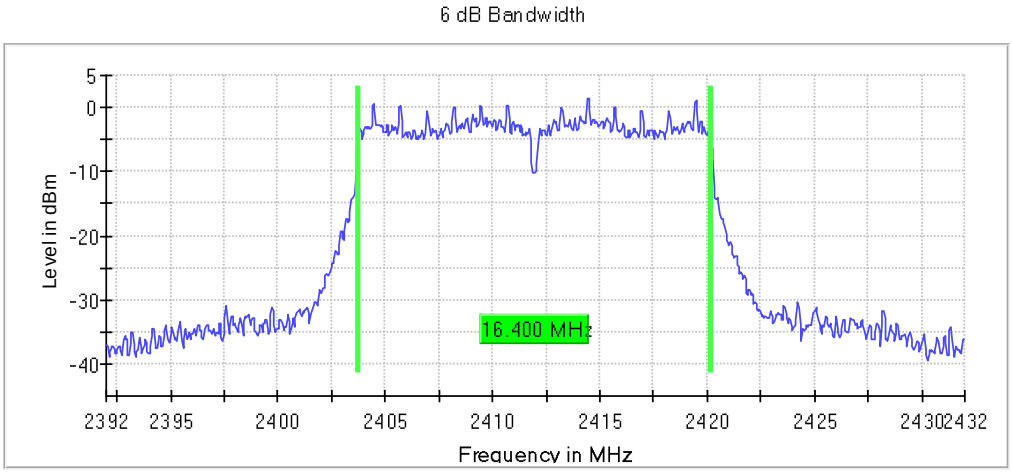
Attachments

Bandwidth MHz = 20 Modulation = 802.11g (OFDM 6 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = SISO

Active Port = 2

Images:

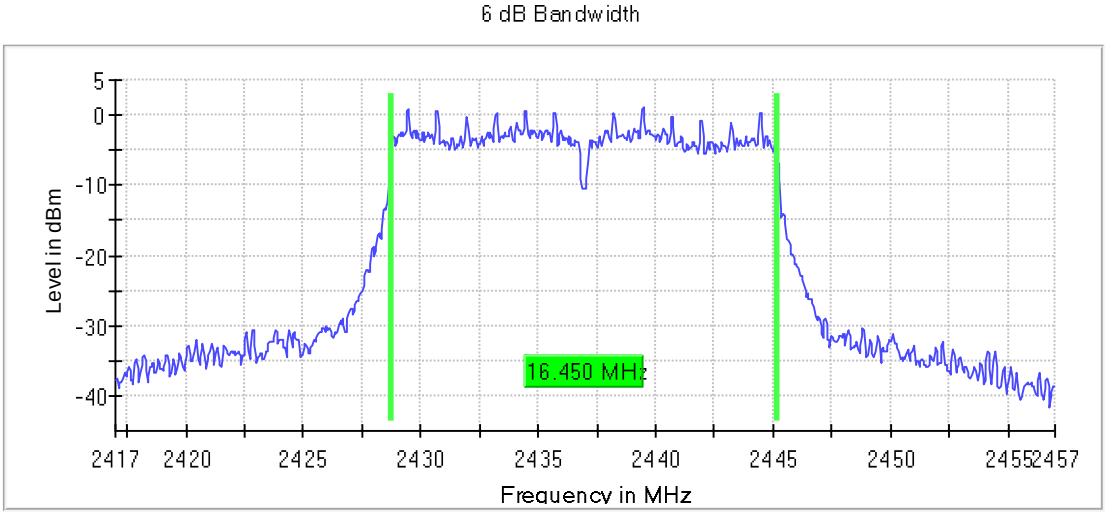


Bandwidth MHz = 20 Modulation = 802.11g (OFDM 6 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = SISO

Active Port = 2

Images:

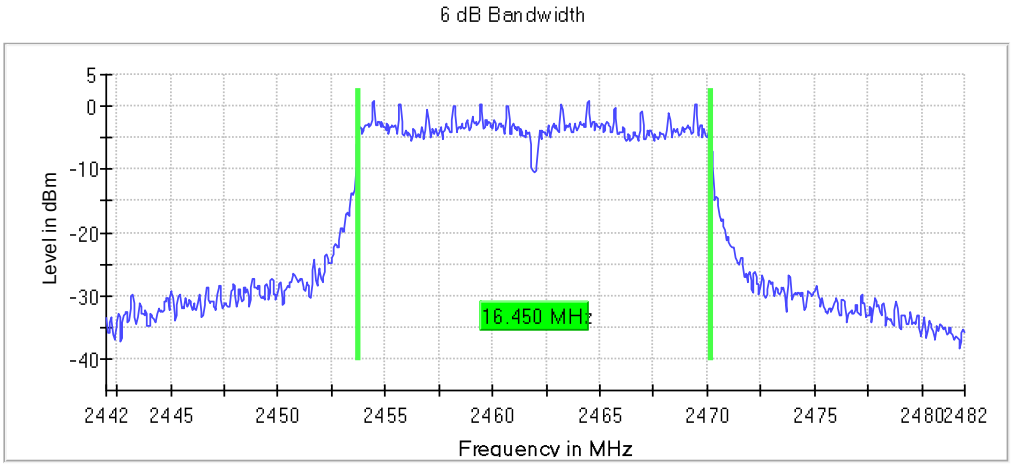


Bandwidth MHz = 20 Modulation = 802.11g (OFDM 6 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = SISO

Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	7 / max.	8 / max. 150	7 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.14 dB	0.15 dB	0.11 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	1	17.650
	2437.00000		17.400
	2462.00000		17.400

Verdict

Pass

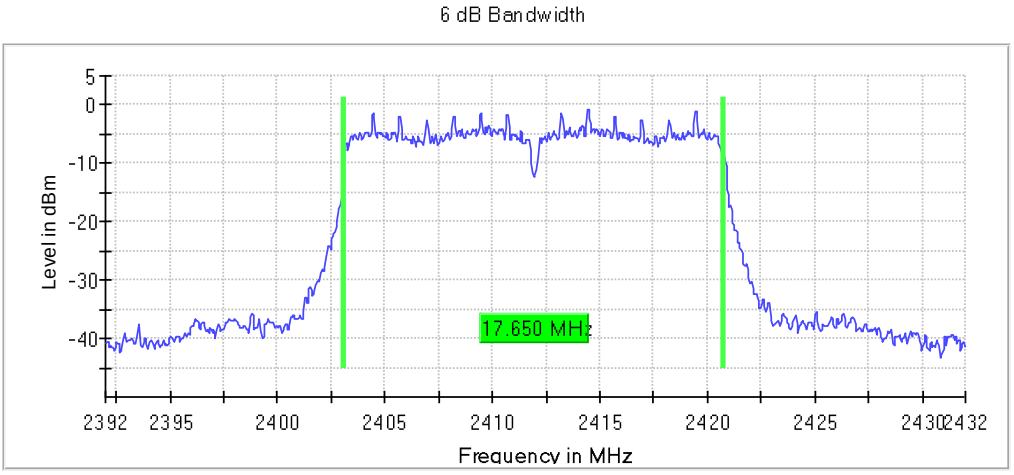
Attachments

Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = SISO

Active Port = 2

Images:

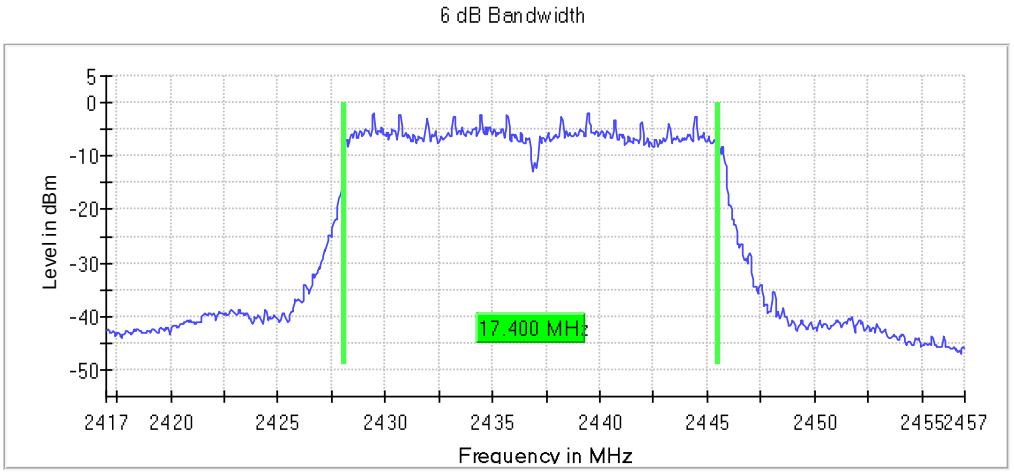


Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = SISO

Active Port = 2

Images:

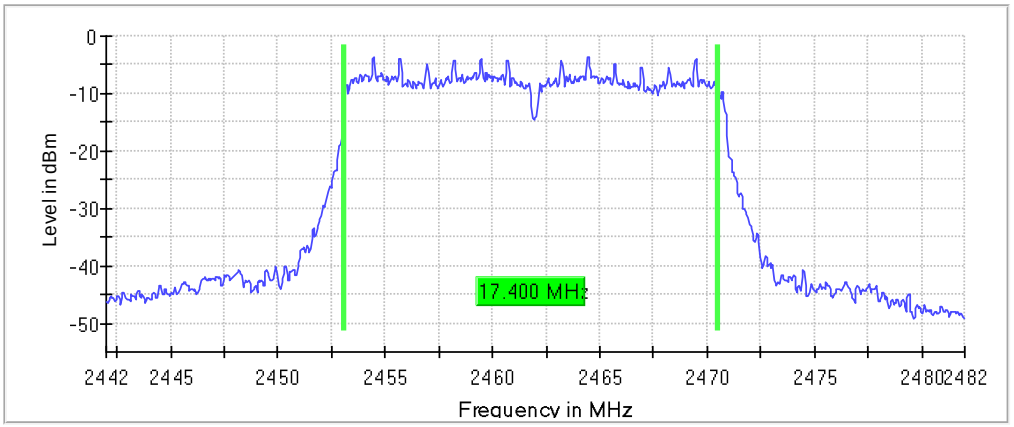


Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = SISO

Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	800	800	800
Sweeptime	1.040 ms	1.040 ms	1.040 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	36 / max.	48 / max. 150	43 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.41 dB	0.16 dB	0.21 dB

FCC 2.1049 / Occupied Channel Bandwidth 99%

Limits

No Limit has been set to this test case

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	1	13.200
		2437.00000		13.300
		2462.00000		13.500

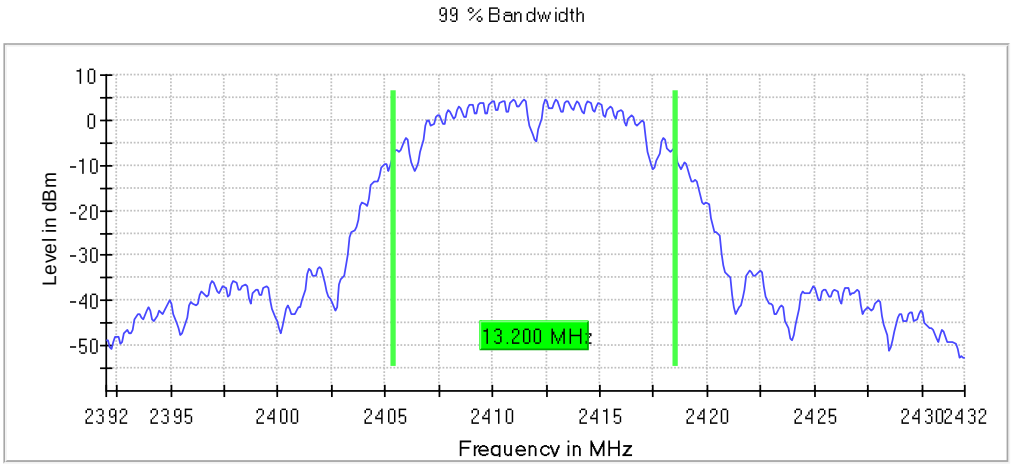
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 2

Images:

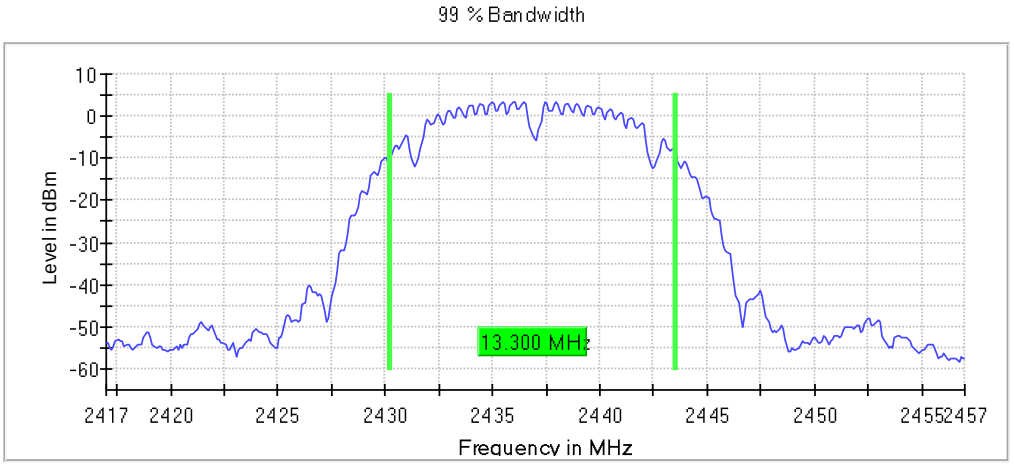


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 2

Images:

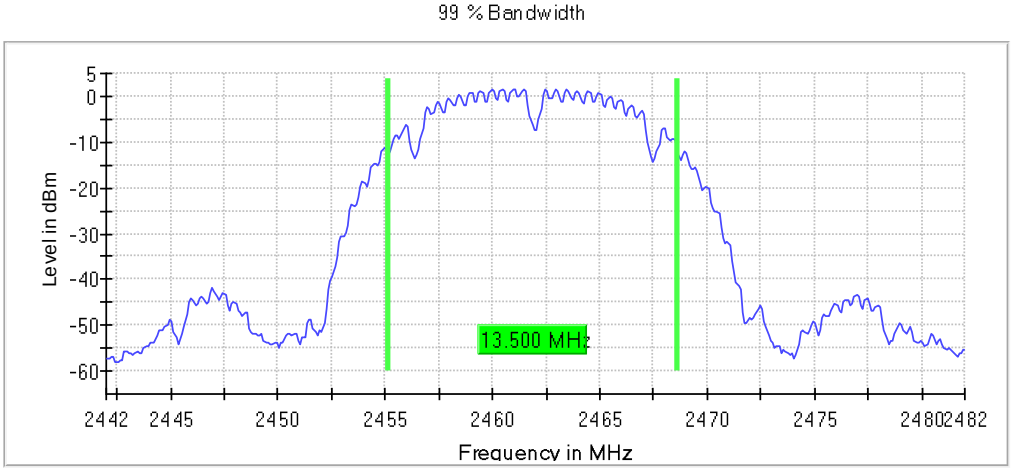


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	7 / max.	8 / max. 150	7 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.14 dB	0.15 dB	0.11 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	1	16.600
		2437.00000		16.600
		2462.00000		16.700

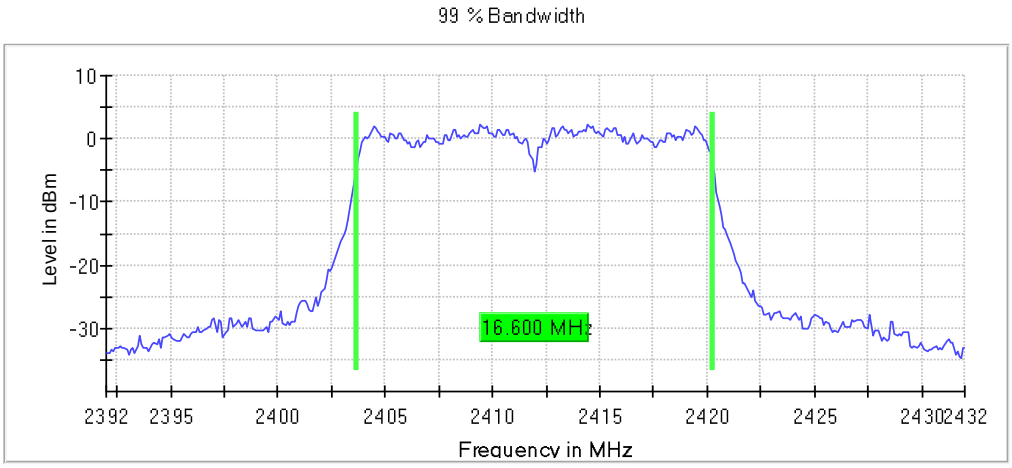
Verdict

Pass

Attachments

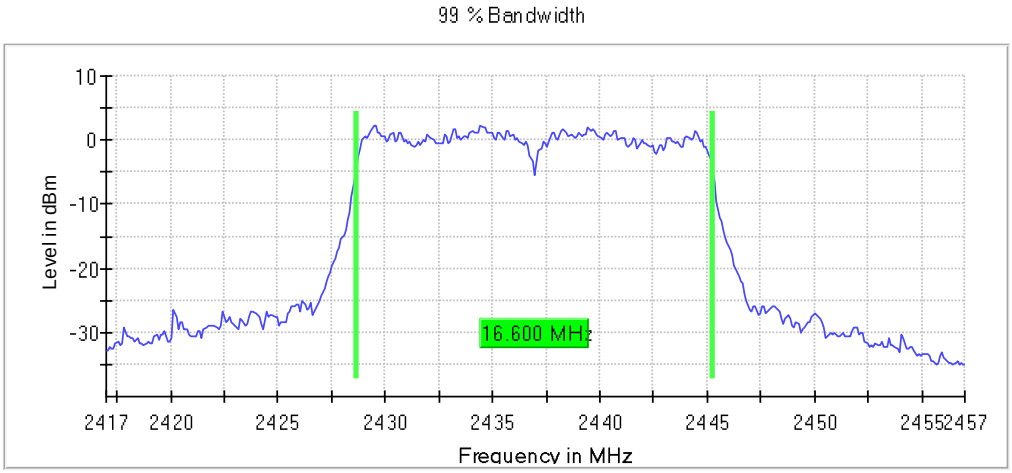
Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11g (OFDM 6 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2412.00000
Active Port = 2

Images:



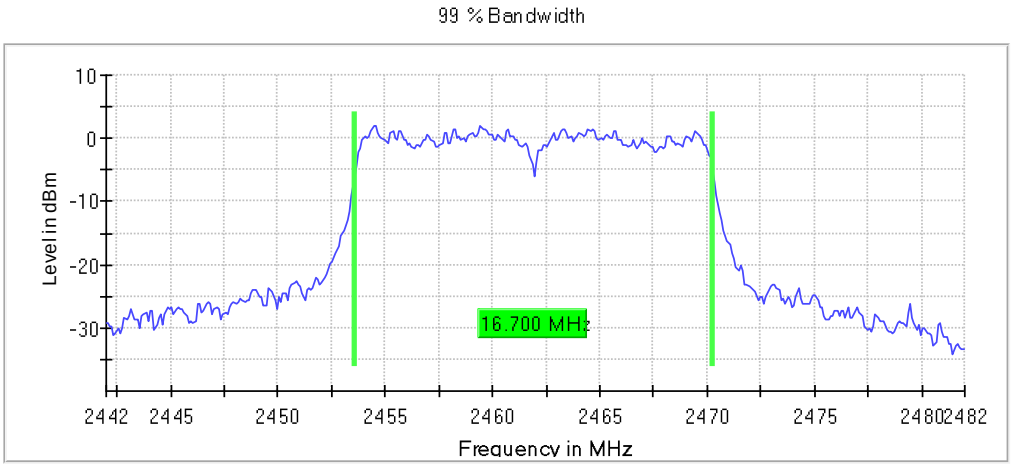
Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11g (OFDM 6 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2437.00000
Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11g (OFDM 6 Mbit/s)
MIMO Mode = SISO
Bandwidth MHz = 20
Frequency MHz = 2462.00000
Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	31 / max.	42 / max. 150	35 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.06 dB	0.11 dB	0.05 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	1	17.600
		2437.00000		17.600
		2462.00000		17.600

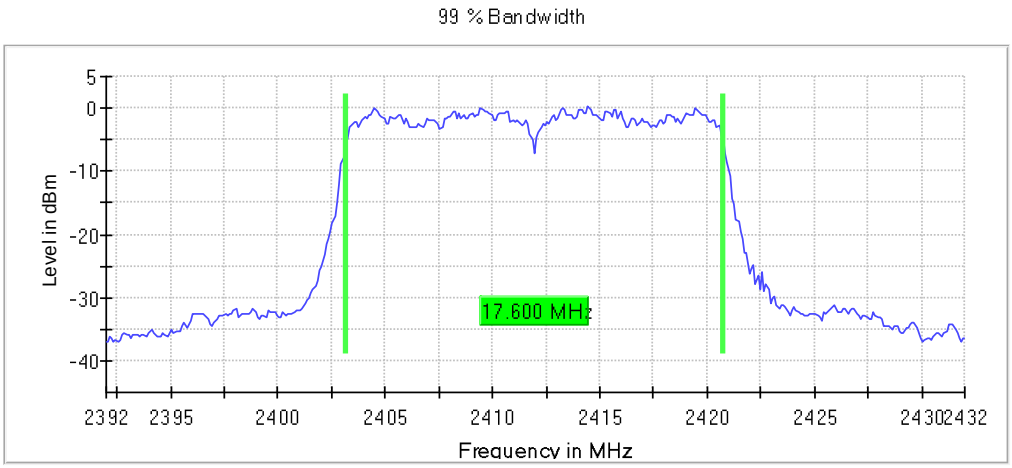
Verdict

Pass

Attachments

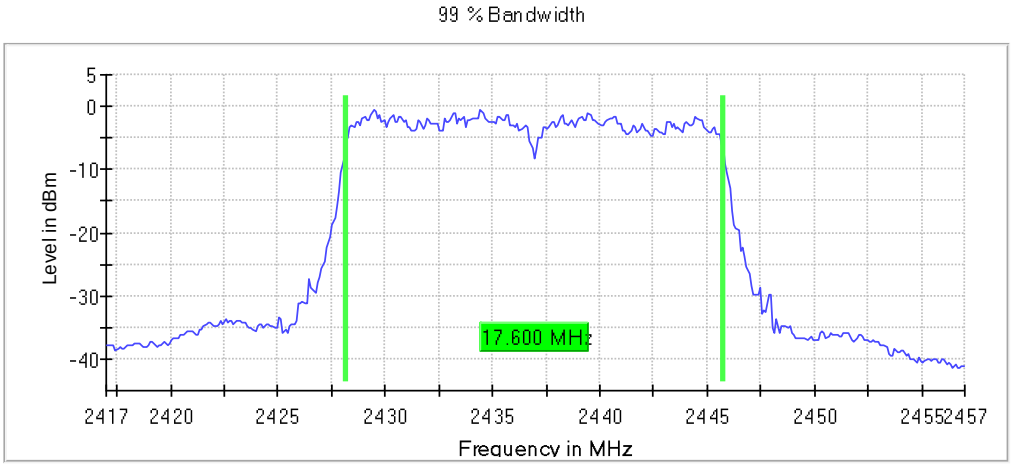
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 2

Images:



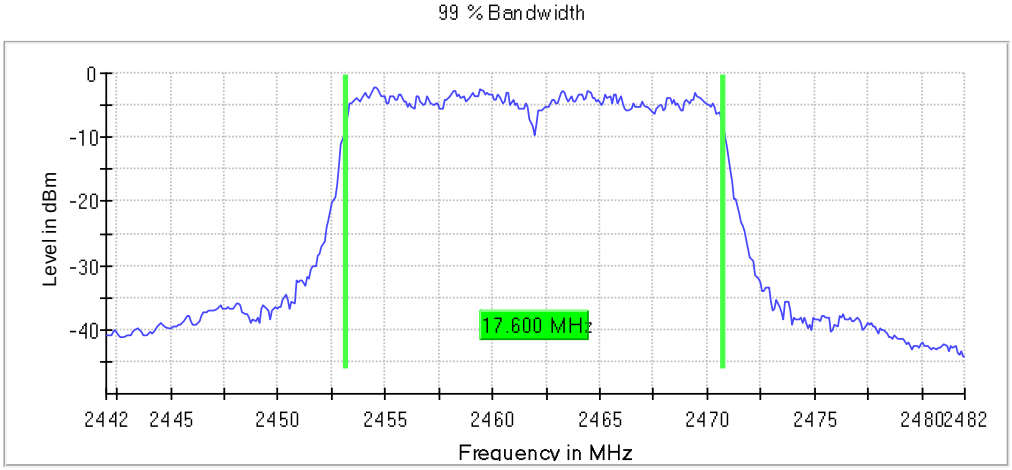
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2437.00000
MIMO Mode = SISO
Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2462.00000
MIMO Mode = SISO
Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	54 / max.	29 / max. 150	45 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.02 dB	0.22 dB	0.11 dB

RSS-247 5.2 (b) / FCC 15.247 (e) - Power spectral density

Limits

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

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	3.18
		2437.00000		1.89
		2462.00000		0.91

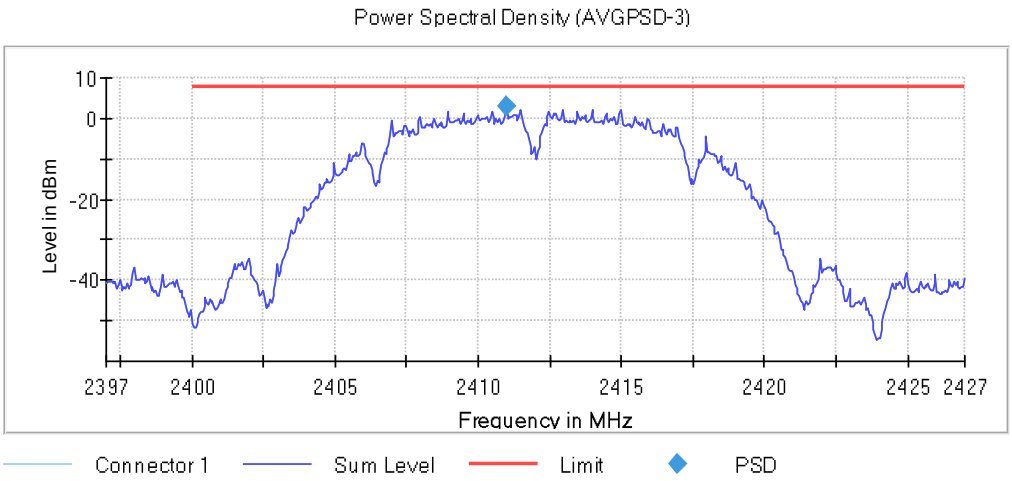
Verdict

Pass

Attachments

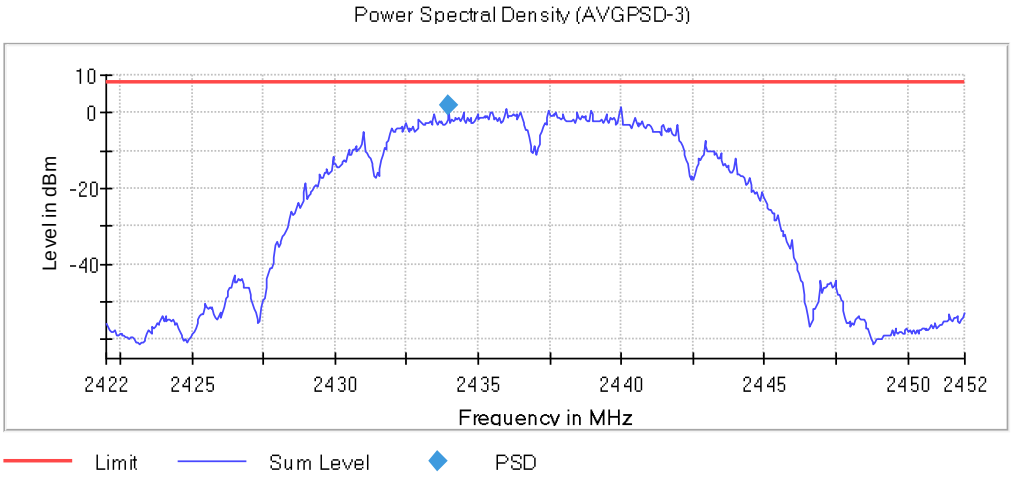
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 2

Images:



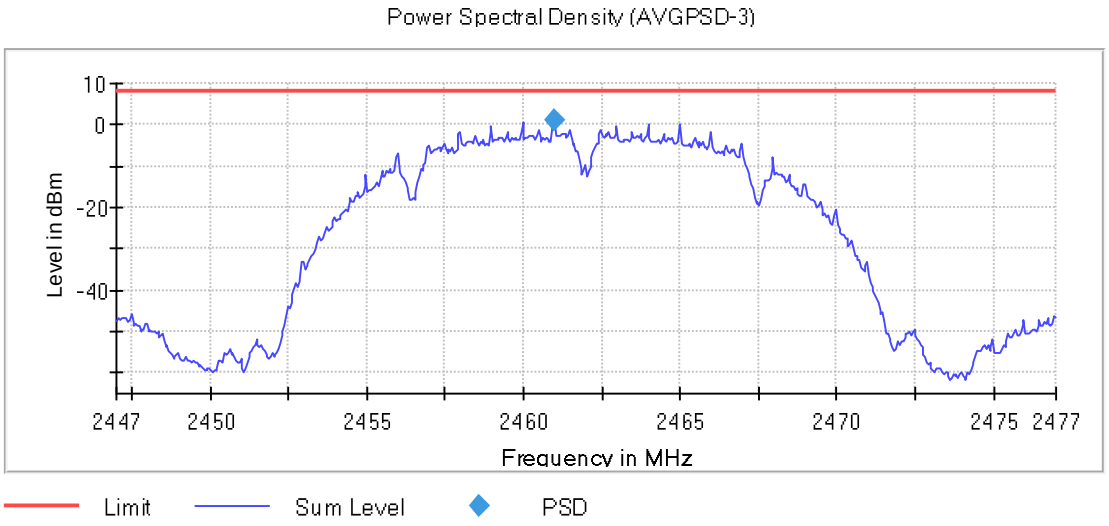
Equipment Type = Digital Transmission System (DTS)	Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)	Frequency MHz = 2437.00000
MIMO Mode = SISO	Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS)	Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s)	Frequency MHz = 2462.00000
MIMO Mode = SISO	Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	13 / max.	9 / max. 15	13 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.00 dB	0.10 dB	0.00 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	-3.77
		2437.00000		-5.05
		2462.00000		-6.54

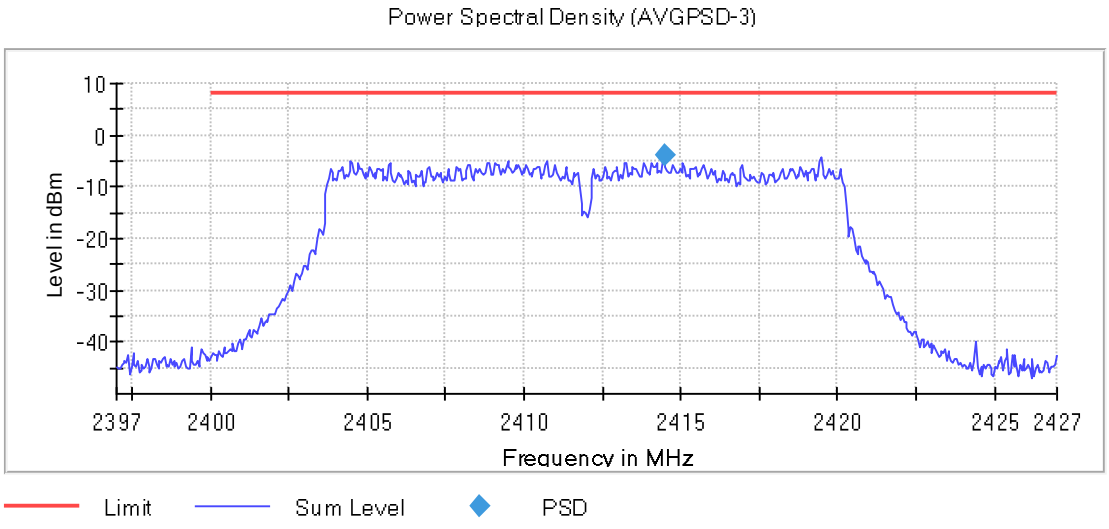
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 2

Images:

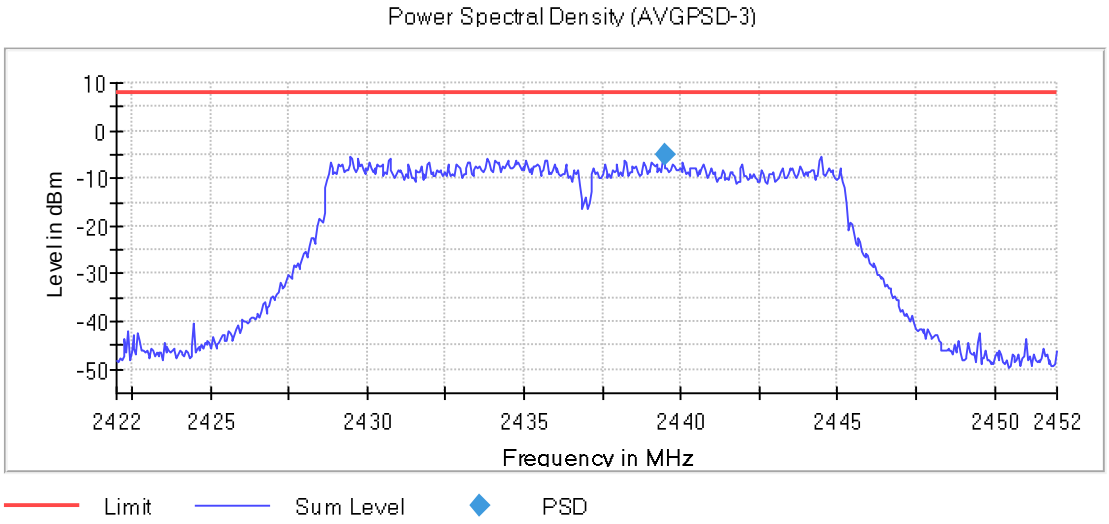


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 2

Images:

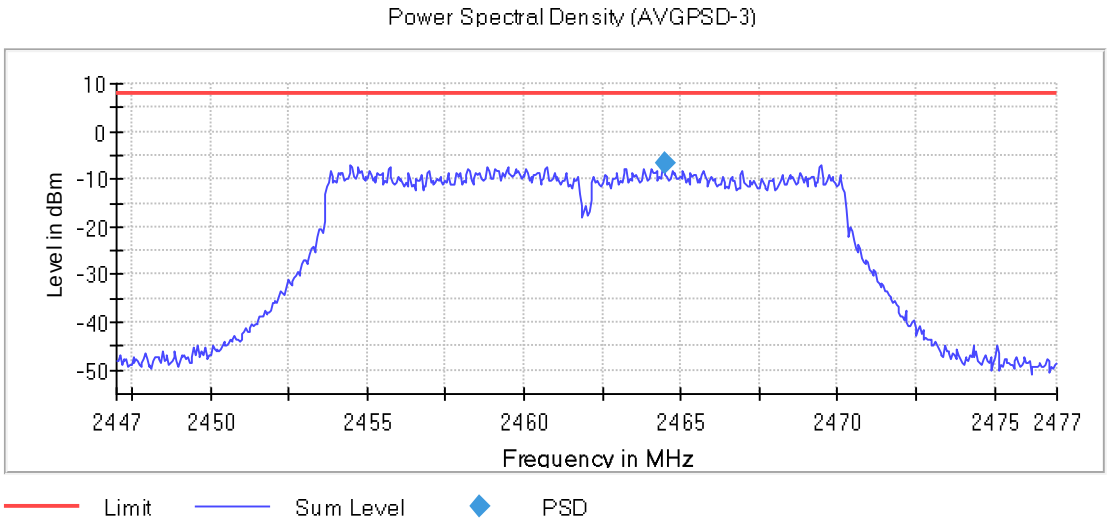


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	6 / max. 15	9 / max. 15	7 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.50 dB	0.22 dB	0.36 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	-4.45
		2437.00000		-5.78
		2462.00000		-7.44

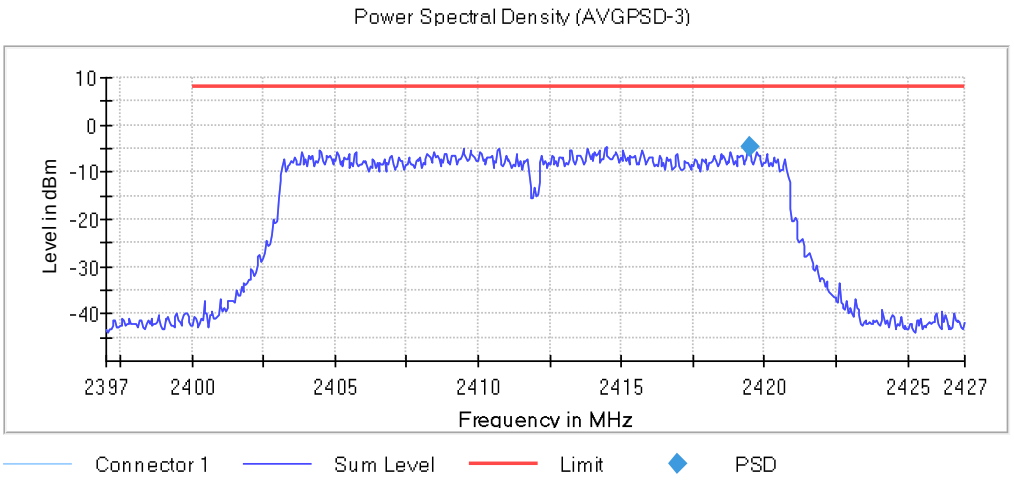
Verdict

Pass

Attachments

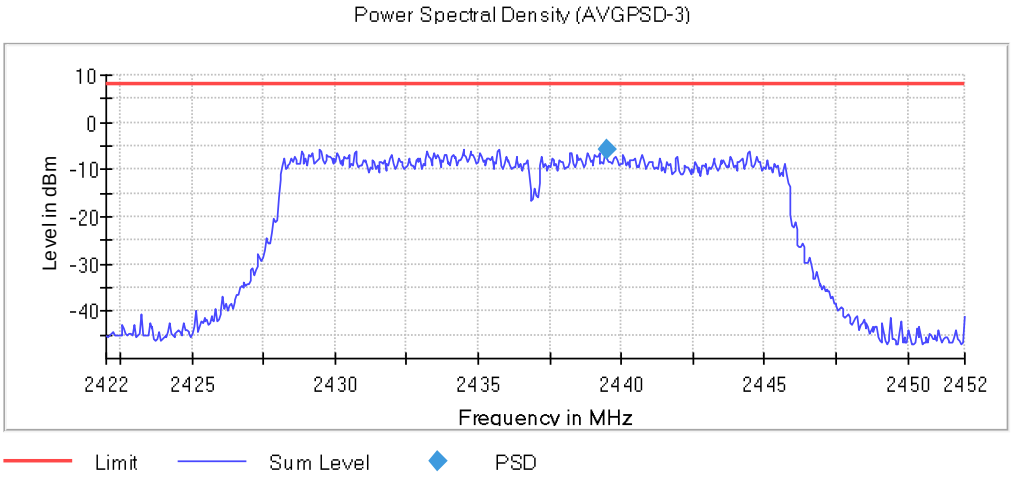
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 2

Images:



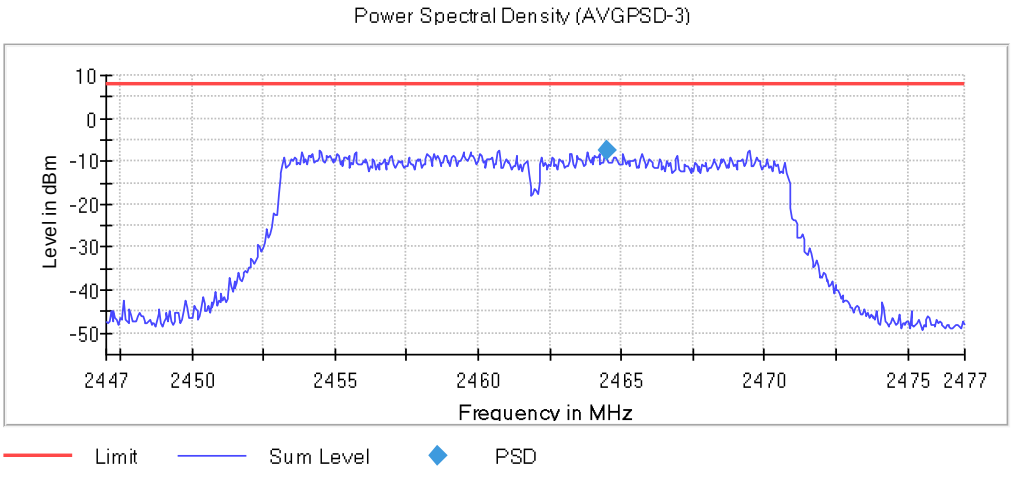
Equipment Type = Digital Transmission System (DTS)	Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)	Frequency MHz = 2437.00000
MIMO Mode = SISO	Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS)	Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)	Frequency MHz = 2462.00000
MIMO Mode = SISO	Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	4 / max. 15	8 / max. 15	5 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.37 dB	0.41 dB	0.45 dB

RSS-247 5.4 (d) / FCC 15.247 (b) (1) - Maximum Average Conducted Output Power

Limits

systems using digital modulation in the 2400 -2483.5 MHz band: 1 watt (30 dBm).
The e.i.r.p. shall not exceed 4 W (36 dBm) (RSS-247).

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	14.03	12.53
Digital Transmission System (DTS)	20	2437.00000	1	12.73	11.23
Digital Transmission System (DTS)	20	2462.00000	1	10.95	9.45

Maximum declared Mohawk Module Antenna gain: 3.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	14.03	17.53
Digital Transmission System (DTS)	20	2437.00000	1	12.73	16.23
Digital Transmission System (DTS)	20	2462.00000	1	10.95	14.45

Verdict

Pass

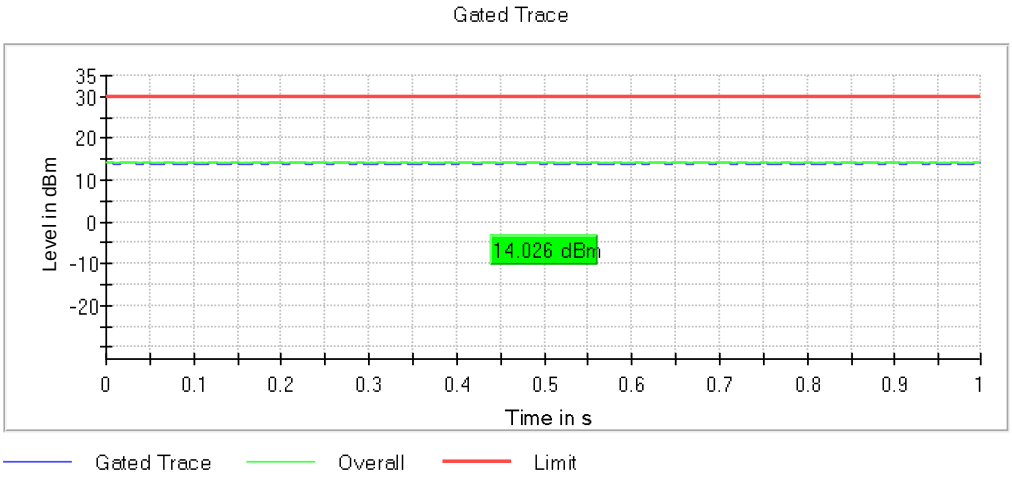
Attachments

Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2412.00000

MIMO Mode = SISO Active Port = 2

Images:

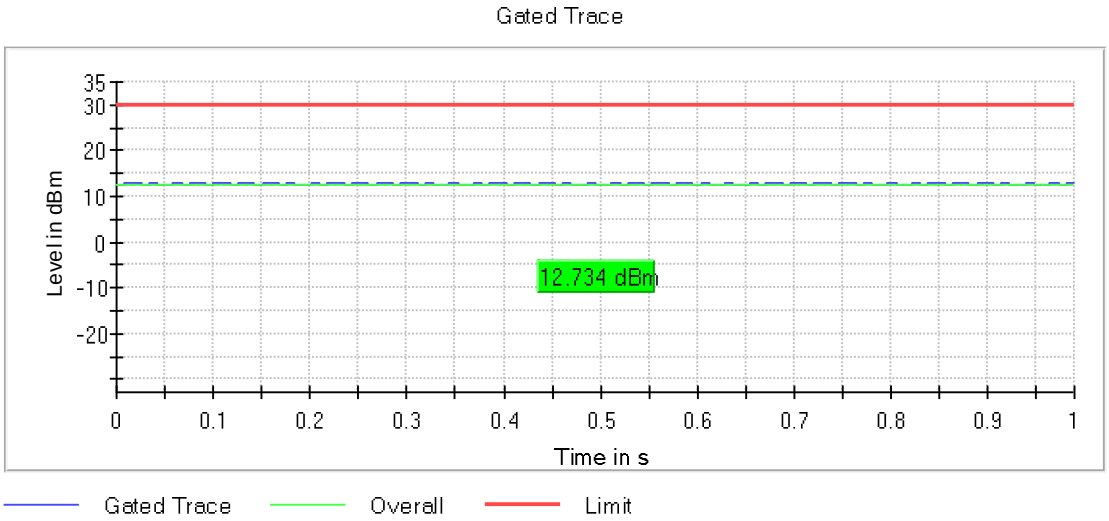


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 2

Images:

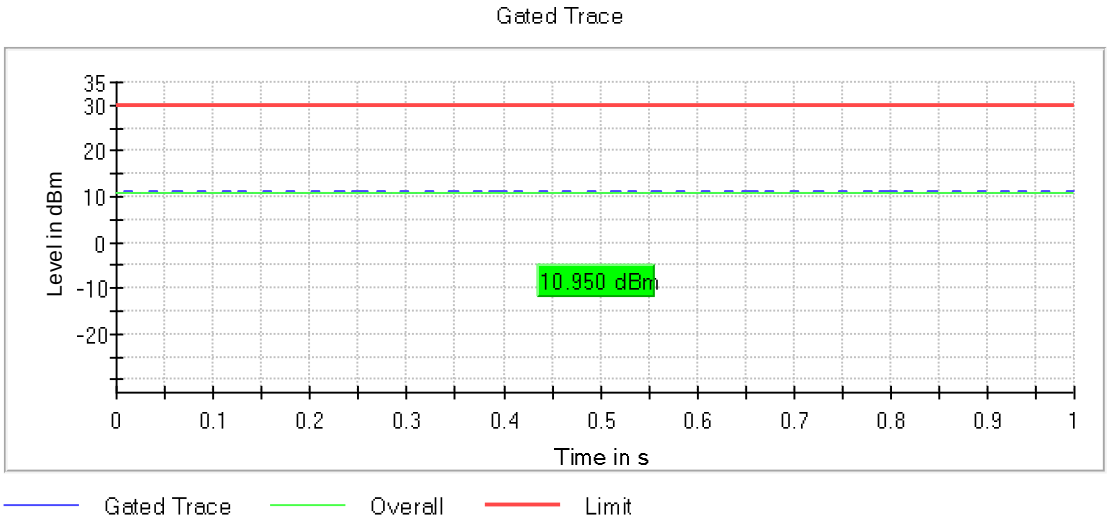


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11b (DSSS 1 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 2

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	10.49	8.99
Digital Transmission System (DTS)	20	2437.00000	1	9.45	7.95
Digital Transmission System (DTS)	20	2462.00000	1	8.08	6.58

Maximum declared Mohawk Module Antenna gain: 3.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	10.49	13.99
Digital Transmission System (DTS)	20	2437.00000	1	9.45	12.95
Digital Transmission System (DTS)	20	2462.00000	1	8.08	11.58

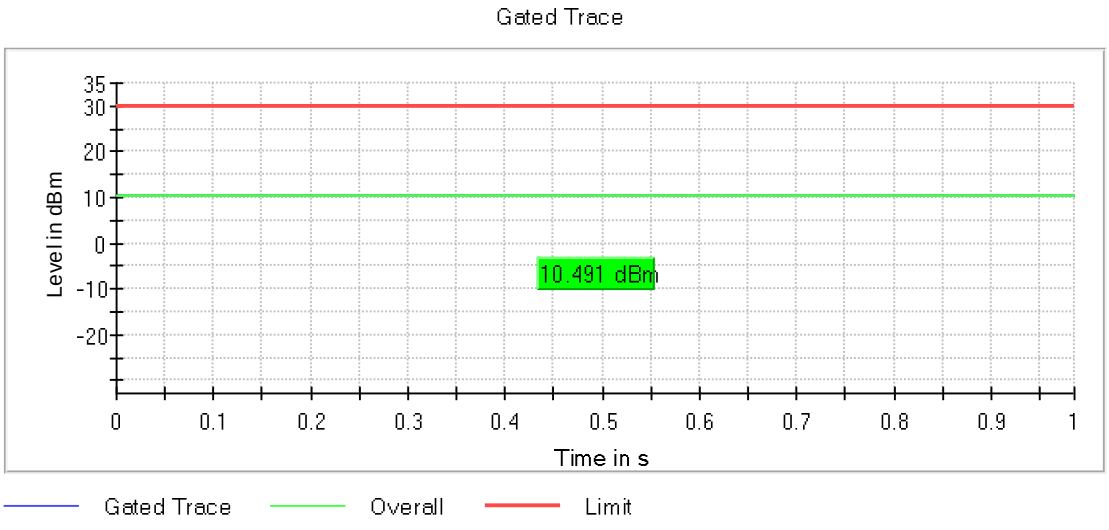
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = SISO
Active Port = 2

Images:

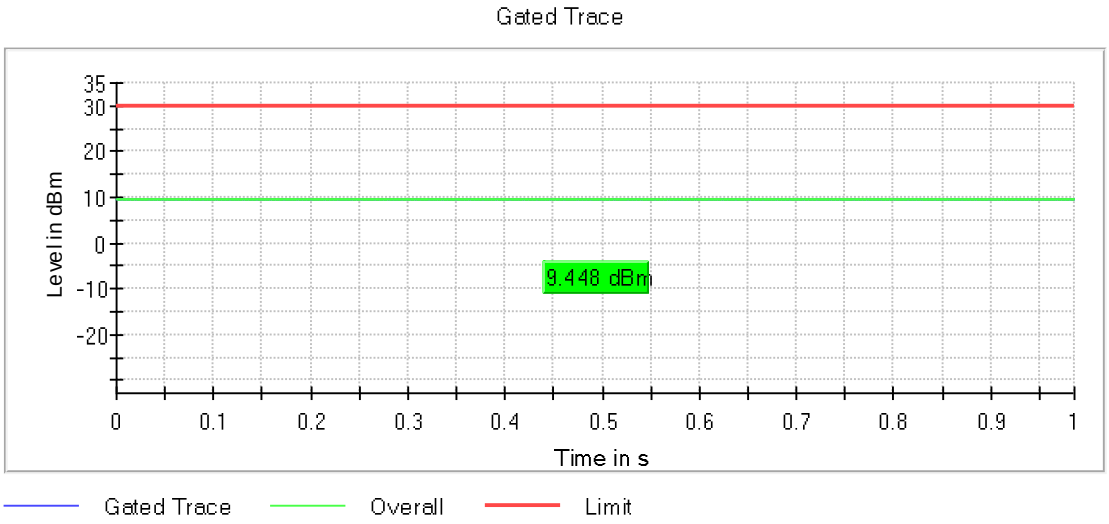


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 2

Images:

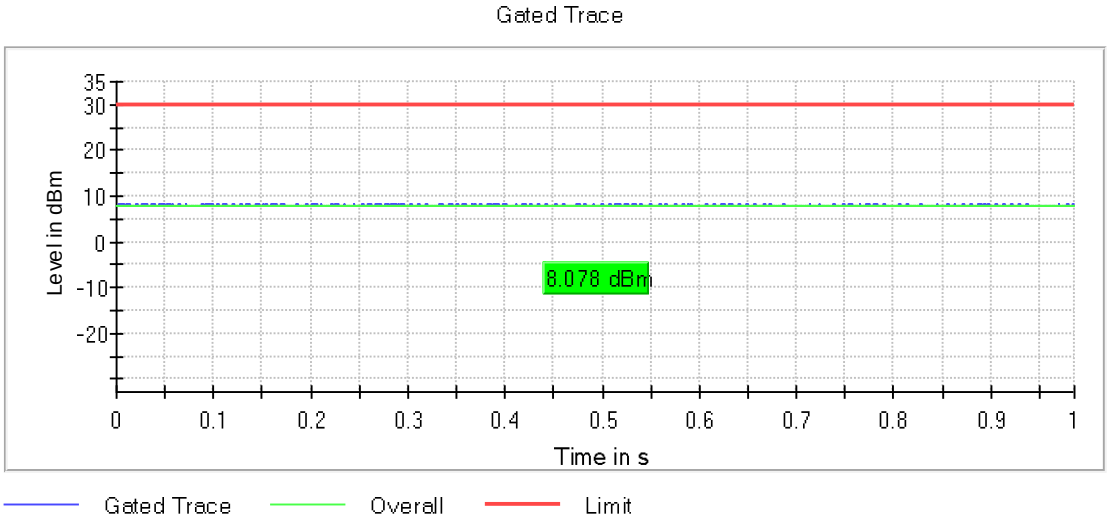


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11g (OFDM 6 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 2

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	10.64	9.14
Digital Transmission System (DTS)	20	2437.00000	1	9.63	8.13
Digital Transmission System (DTS)	20	2462.00000	1	7.93	6.43

Maximum declared Mohawk Module Antenna gain: 3.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	1	10.64	14.14
Digital Transmission System (DTS)	20	2437.00000	1	9.63	13.13
Digital Transmission System (DTS)	20	2462.00000	1	7.93	11.43

Verdict

Pass

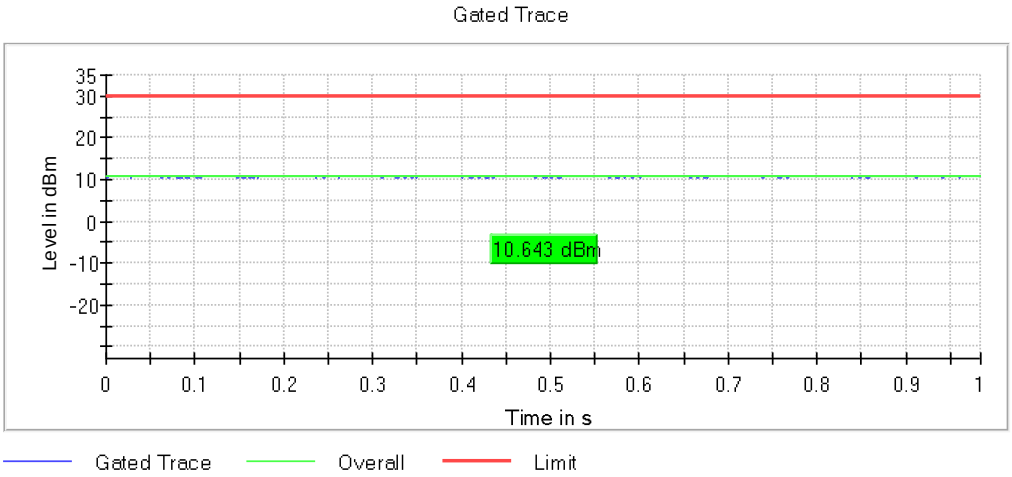
Attachments

Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2412.00000

MIMO Mode = SISO Active Port = 2

Images:

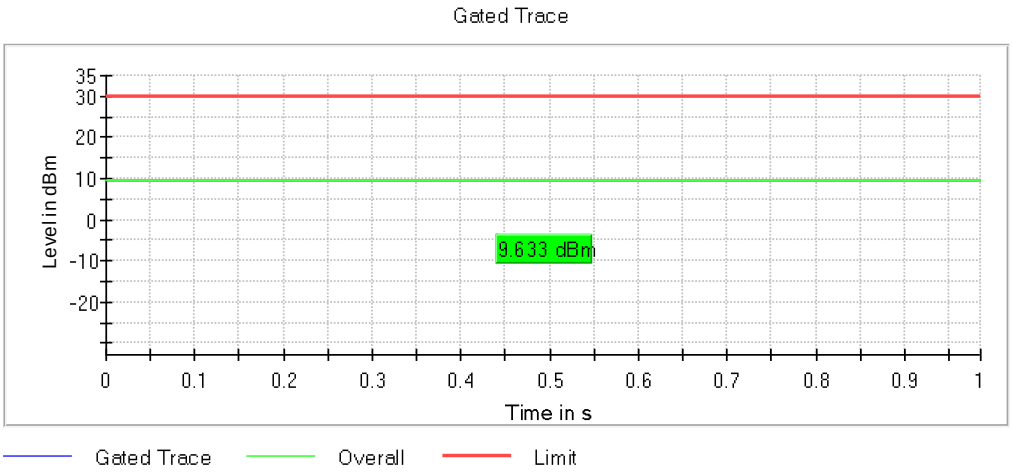


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = SISO Active Port = 2

Images:

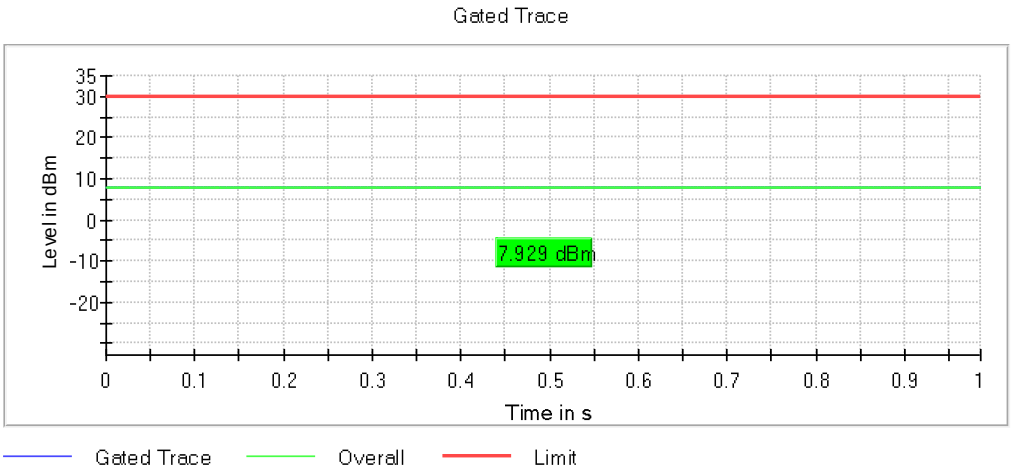


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = SISO Active Port = 2

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

RSS-247 5.5 / FCC 15.247 (d) - Band-edge emissions compliance (Transmitter) - Conducted

Limits

In any 100 kHz bandwidths outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Modulation: 802.11b (DSSS 1 Mbit/s)

MIMO Mode: SISO

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2397.925000	-34.4	8.5	-25.9	PASS
2397.975000	-34.6	8.7	-25.9	PASS
2396.925000	-34.7	8.8	-25.9	PASS
2396.975000	-34.9	9.0	-25.9	PASS
2398.475000	-35.0	9.2	-25.9	PASS
2398.425000	-35.2	9.3	-25.9	PASS
2399.425000	-35.5	9.7	-25.9	PASS
2399.475000	-35.6	9.8	-25.9	PASS
2397.475000	-35.8	10.0	-25.9	PASS
2397.425000	-35.9	10.1	-25.9	PASS
2398.025000	-36.1	10.3	-25.9	PASS
2397.025000	-36.2	10.3	-25.9	PASS
2398.175000	-36.4	10.6	-25.9	PASS
2398.225000	-36.5	10.6	-25.9	PASS
2397.875000	-36.6	10.7	-25.9	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2487.975000	-53.8	24.5	-29.3	PASS
2488.725000	-54.1	24.7	-29.3	PASS
2487.925000	-54.3	25.0	-29.3	PASS
2487.775000	-54.4	25.0	-29.3	PASS
2488.775000	-54.6	25.2	-29.3	PASS
2488.175000	-54.7	25.3	-29.3	PASS
2488.925000	-54.7	25.4	-29.3	PASS
2488.475000	-54.7	25.4	-29.3	PASS
2486.675000	-54.7	25.4	-29.3	PASS
2486.625000	-54.7	25.4	-29.3	PASS
2486.975000	-54.8	25.4	-29.3	PASS
2487.475000	-54.8	25.5	-29.3	PASS
2488.125000	-54.8	25.5	-29.3	PASS
2486.475000	-54.8	25.5	-29.3	PASS
2487.425000	-54.9	25.5	-29.3	PASS

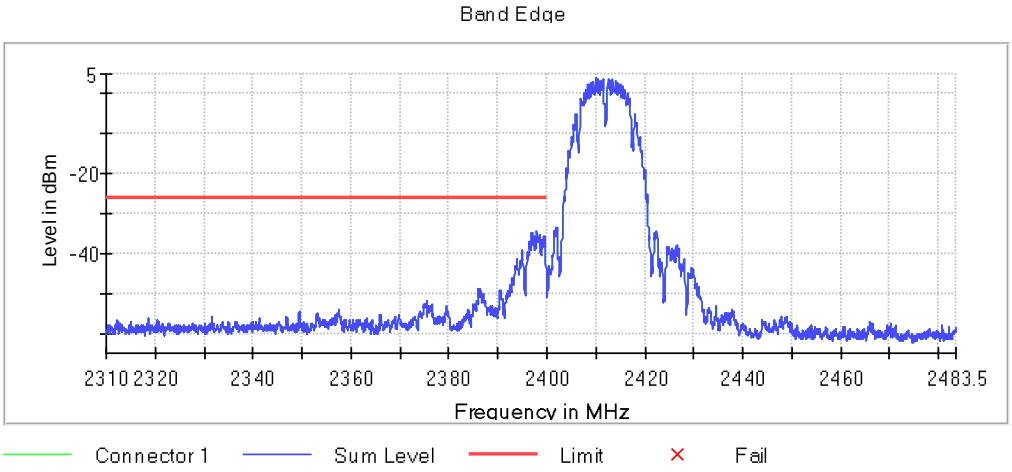
Verdict

Pass

Attachments

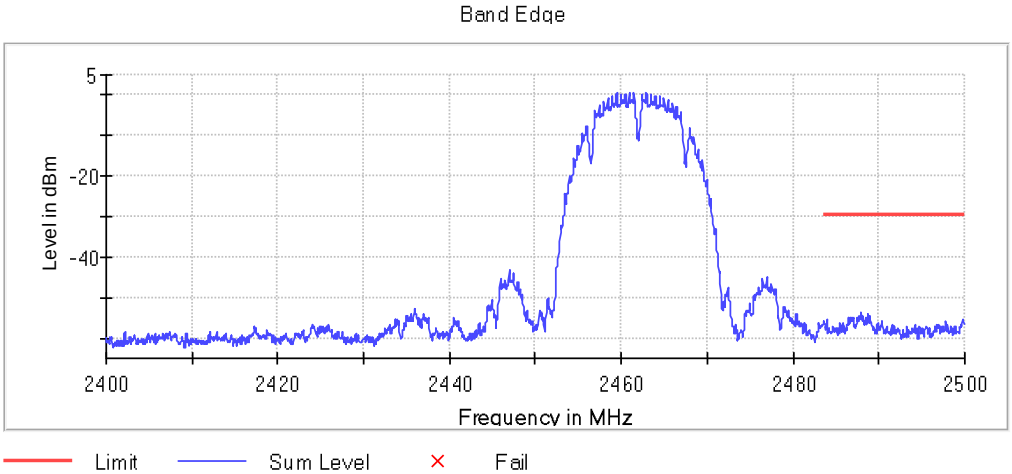
Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s) | Frequency MHz = 2412.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11b (DSSS 1 Mbit/s) | Frequency MHz = 2462.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	2.31000 GHz	2.40000 GHz
Stop Frequency	2.40000 GHz	2.48350 GHz
Span	90.000 MHz	83.500 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1670
Sweeptime	1.800 ms	1.670 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	10 / max. 150	8 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.24 dB	0.37 dB

Modulation: 802.11g (OFDM 6 Mbit/s)

MIMO Mode: SISO

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2398.225000	-36.7	6.0	-30.6	PASS
2398.175000	-37.1	6.5	-30.6	PASS
2398.275000	-37.4	6.8	-30.6	PASS
2399.575000	-37.5	6.9	-30.6	PASS
2399.625000	-37.5	6.9	-30.6	PASS
2398.825000	-37.6	7.0	-30.6	PASS
2398.775000	-37.7	7.0	-30.6	PASS
2399.425000	-37.9	7.3	-30.6	PASS
2399.475000	-38.0	7.3	-30.6	PASS
2396.125000	-38.1	7.5	-30.6	PASS
2399.975000	-38.2	7.6	-30.6	PASS
2398.875000	-38.3	7.7	-30.6	PASS
2396.175000	-38.4	7.8	-30.6	PASS
2397.975000	-38.4	7.8	-30.6	PASS
2397.925000	-38.5	7.9	-30.6	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.625000	-50.7	17.6	-33.2	PASS
2483.675000	-50.8	17.6	-33.2	PASS
2485.225000	-52.3	19.2	-33.2	PASS
2486.575000	-52.8	19.6	-33.2	PASS
2485.175000	-52.8	19.7	-33.2	PASS
2485.275000	-53.0	19.8	-33.2	PASS
2493.225000	-53.1	19.9	-33.2	PASS
2493.175000	-53.2	20.0	-33.2	PASS
2484.425000	-53.5	20.3	-33.2	PASS
2486.625000	-53.6	20.4	-33.2	PASS
2484.225000	-53.6	20.4	-33.2	PASS
2484.475000	-53.7	20.5	-33.2	PASS
2484.175000	-53.9	20.7	-33.2	PASS
2485.425000	-53.9	20.7	-33.2	PASS
2484.325000	-53.9	20.7	-33.2	PASS

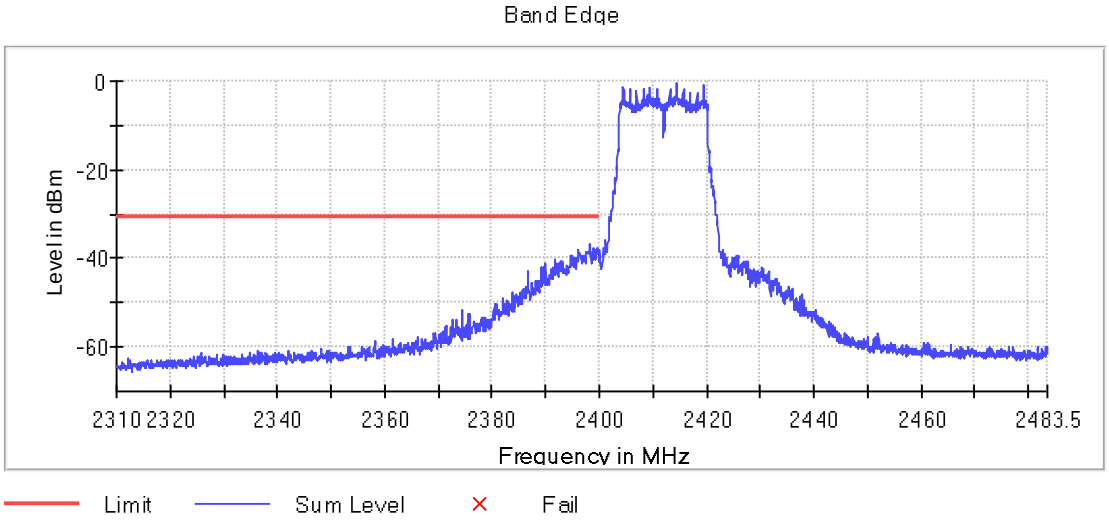
Verdict

Pass

Attachments

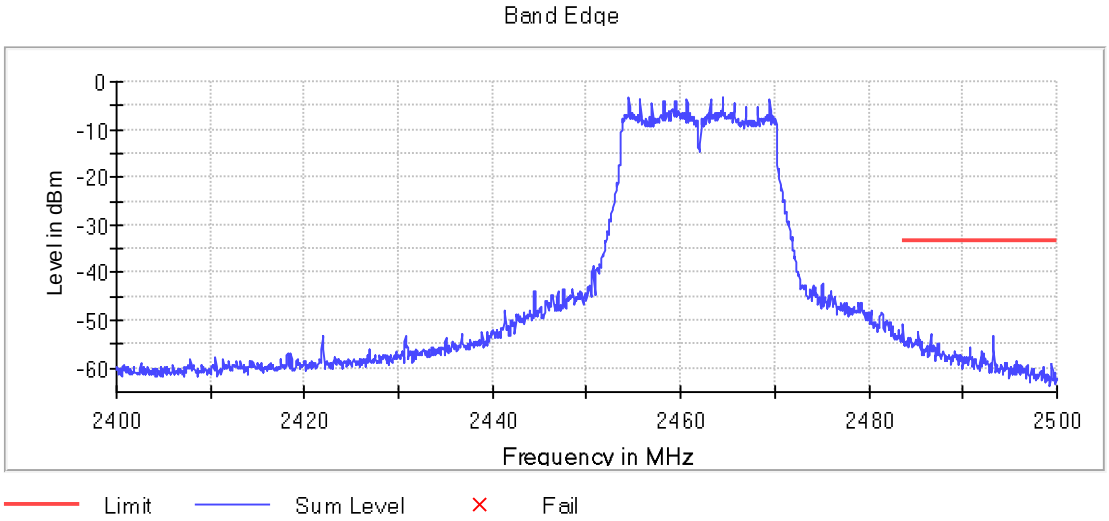
Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s) | Frequency MHz = 2412.00000
MIMO Mode = SISO | Measurement Point = 2
Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11g (OFDM 6 Mbit/s) | Frequency MHz = 2462.00000
MIMO Mode = SISO | Measurement Point = 2
Active Port = 2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	2.31000 GHz	2.40000 GHz
Stop Frequency	2.40000 GHz	2.48350 GHz
Span	90.000 MHz	83.500 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1670
Sweeptime	1.800 ms	1.670 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	65 / max. 150	25 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.28 dB	0.35 dB

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: SISO

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2398.875000	-34.7	4.0	-30.7	PASS
2398.825000	-34.7	4.0	-30.7	PASS
2399.575000	-34.8	4.1	-30.7	PASS
2397.225000	-34.8	4.2	-30.7	PASS
2397.275000	-34.8	4.2	-30.7	PASS
2398.775000	-34.8	4.2	-30.7	PASS
2399.525000	-34.9	4.2	-30.7	PASS
2397.775000	-35.0	4.3	-30.7	PASS
2397.725000	-35.1	4.5	-30.7	PASS
2398.525000	-35.1	4.5	-30.7	PASS
2397.825000	-35.2	4.5	-30.7	PASS
2396.275000	-35.2	4.5	-30.7	PASS
2398.675000	-35.2	4.5	-30.7	PASS
2396.525000	-35.2	4.5	-30.7	PASS
2399.625000	-35.2	4.6	-30.7	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2487.175000	-48.6	15.0	-33.5	PASS
2485.375000	-49.9	16.4	-33.5	PASS
2485.425000	-50.0	16.4	-33.5	PASS
2485.025000	-50.3	16.7	-33.5	PASS
2487.125000	-50.4	16.8	-33.5	PASS
2485.075000	-50.6	17.1	-33.5	PASS
2484.075000	-50.6	17.1	-33.5	PASS
2487.225000	-50.6	17.1	-33.5	PASS
2489.175000	-50.9	17.3	-33.5	PASS
2488.825000	-50.9	17.4	-33.5	PASS
2484.125000	-51.0	17.5	-33.5	PASS
2484.975000	-51.1	17.6	-33.5	PASS
2485.125000	-51.1	17.6	-33.5	PASS
2484.525000	-51.4	17.8	-33.5	PASS
2489.225000	-51.4	17.9	-33.5	PASS

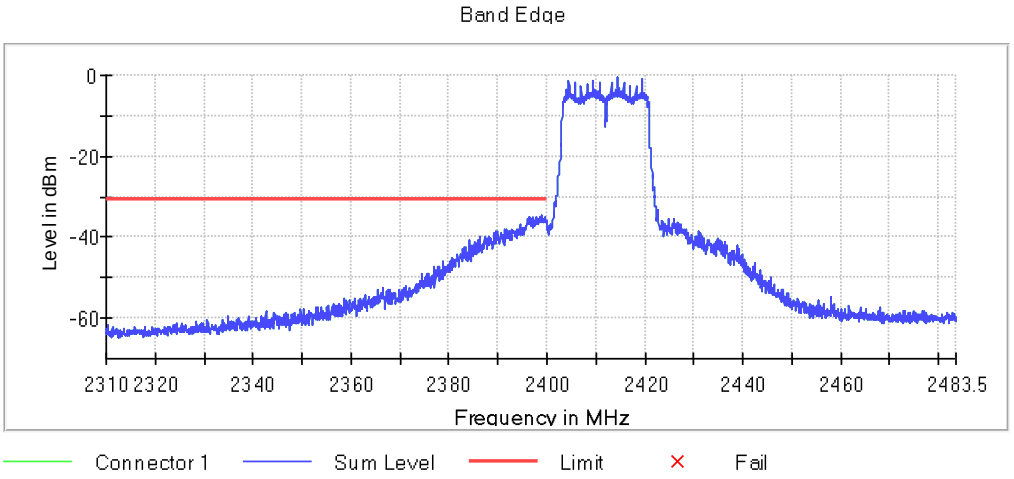
Verdict

Pass

Attachments

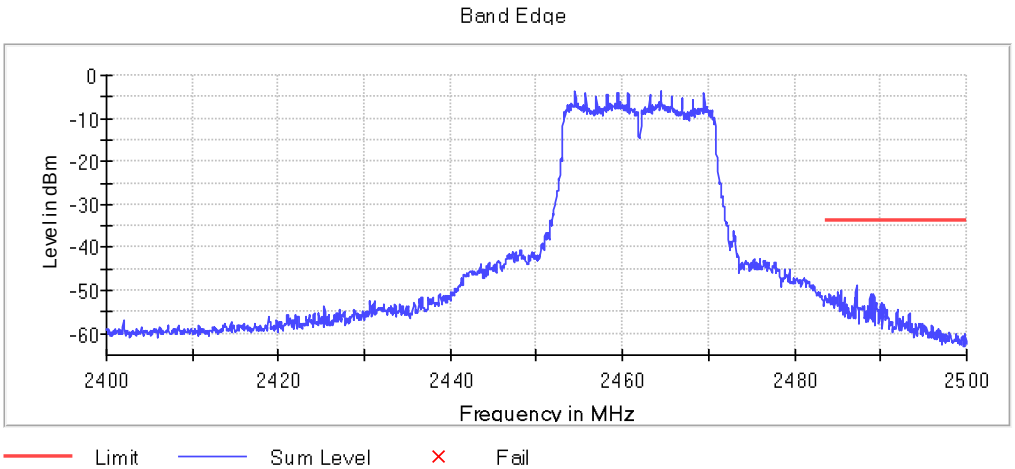
Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) | Frequency MHz = 2412.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 2

Images:



Equipment Type = Digital Transmission System (DTS) | Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) | Frequency MHz = 2462.00000
MIMO Mode = SISO | Measurement Point = 1
Active Port = 2

Images:



Spectrum Analyzer Parameters

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Start Frequency	2.31000 GHz	2.40000 GHz
Stop Frequency	2.40000 GHz	2.48350 GHz
Span	90.000 MHz	83.500 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1670
Sweeptime	1.800 ms	1.670 ms
Reference Level	0.000 dBm	10.000 dBm
Attenuation	10.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	47 / max. 150	34 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.11 dB	0.47 dB

RSS-247 5.5 / FCC 15.247 (d) - Emissions compliance (Transmitter) - Radiated

Limits

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required

Verdict

Pass

The following tables and plots show the results for the worst case with the use of the Mohawk Module Antenna.

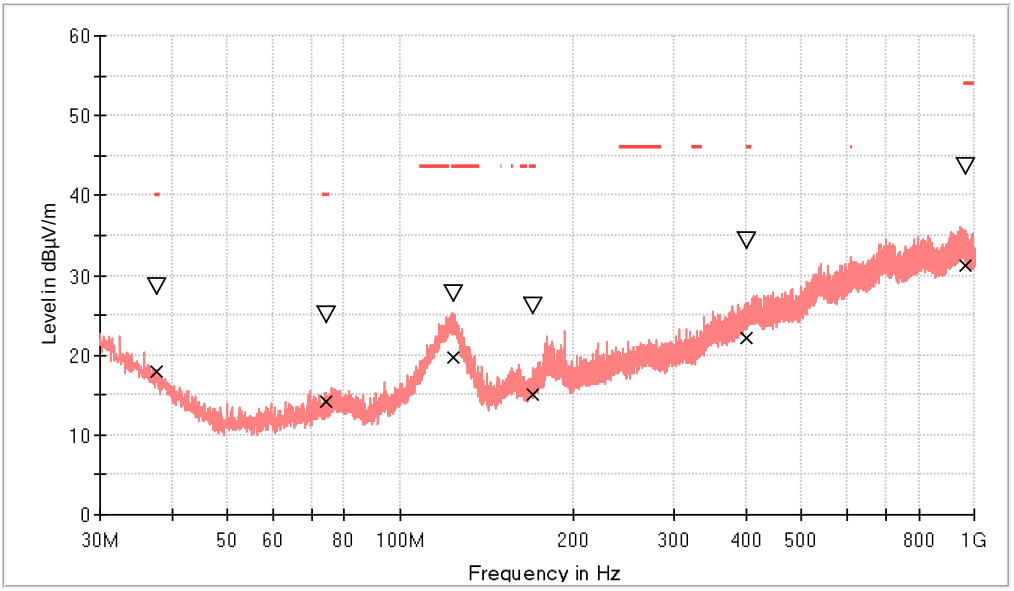
Modulation: 802.11b (DSSS 1 Mbit/s)
Results

Frequency range 0.03 - 1 GHz
The spurious emissions below 1 GHz do not depend on the operating channel selected in the EUT.

Middle Channel

Frequency MHz = 2437.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [0.03, 1]

Images:



PK+_MAXH
TX limits to Spurious Emission FCC15.247 (30MHz to 1GHz) Restricted Bands QPK Limit
MaxPeak-PK+ (Single)
QuasiPeak-QPK (Single)

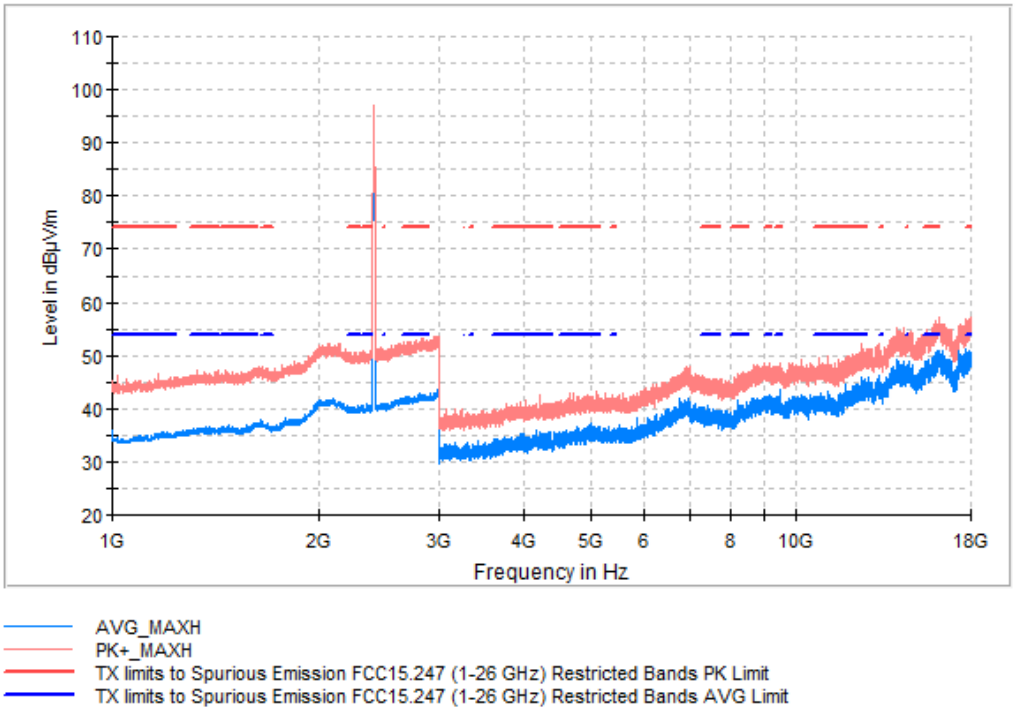
Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol	Margin - QPK (dB)	Limit - QPK (dBµV/m)
37.663000	28.5	18.0	V	22.0	40.0
74.183500	24.9	14.2	V	25.9	40.0
124.090000	27.8	19.8	V	23.8	43.5
170.553000	26.1	15.2	V	28.4	43.5
400.928000	34.3	22.2	H	23.8	46.0
963.576500	43.5	31.1	V	22.9	54.0

Frequency range 1 - 18 GHz

Lowest Channel

Frequency MHz = 2412.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [1, 18]

Images:



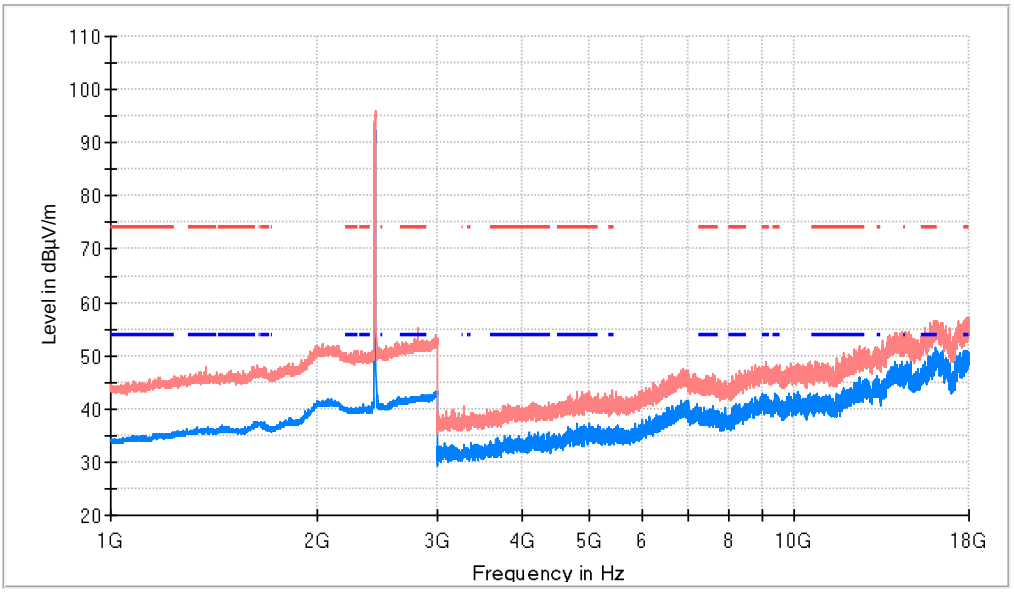
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
2410.500000	96.9	93.1	V	---	---	Fundamental
2843.000000	53.2	41.7	V	12.3	54.0	
17987.00000	57.3	48.9	H	5.1	54.0	

Frequency range 1 - 18 GHz

Middle Channel

Frequency MHz = 2437.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [1, 18]

Images:



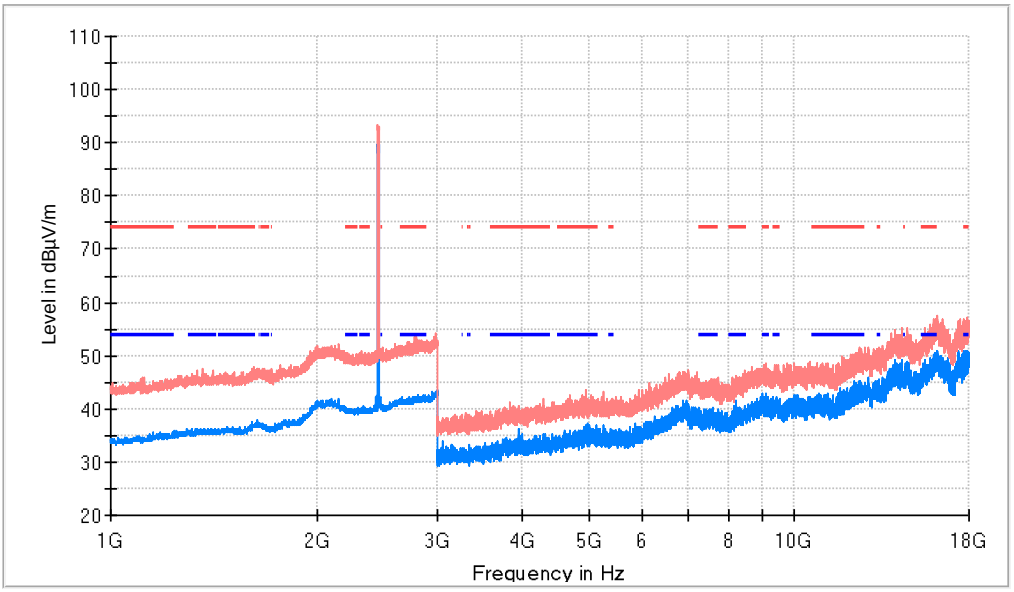
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
2435.50000	96.0	92.1	H	---	---	Fundamental
2810.50000	55.1	41.8	V	12.2	54.0	
16060.0000	54.4	51.5	H	2.5	54.0	

Frequency range 1 - 18 GHz

Highest Channel

Frequency MHz = 2462.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [1, 18]

Images:



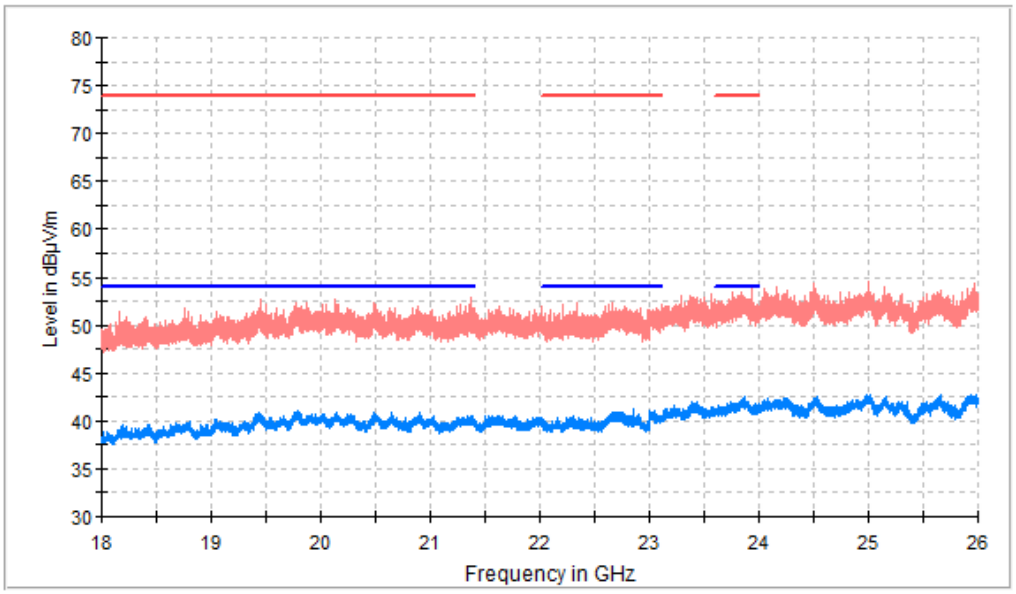
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
2460.500000	93.3	89.4	H	---	---	Fundamental
3956.000000	40.6	36.3	V	17.7	54.0	
17919.000000	56.1	51.0	H	3.0	54.0	

Frequency range 18 - 26 GHz

Lowest Channel

Frequency MHz = 2412.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [18, 26]

Images:



AVG_MAXH
PK+_MAXH
TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands PK Limit
TX limits to Spurious Emission FCC15.247 (1-26 GHz) Restricted Bands AVG Limit

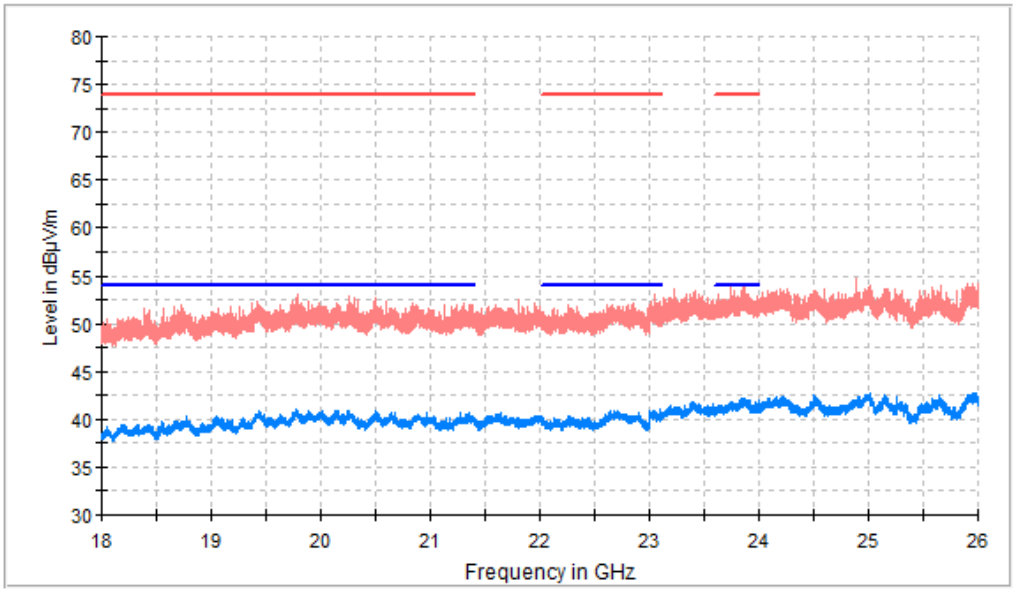
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19452.500000	52.7	40.1	V	13.9	54.0
22658.500000	52.3	40.1	V	13.9	54.0
23929.500000	53.8	40.8	V	13.2	54.0

Frequency range 18 - 26 GHz

Middle Channel

Frequency MHz = 2437.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [18, 26]

Images:



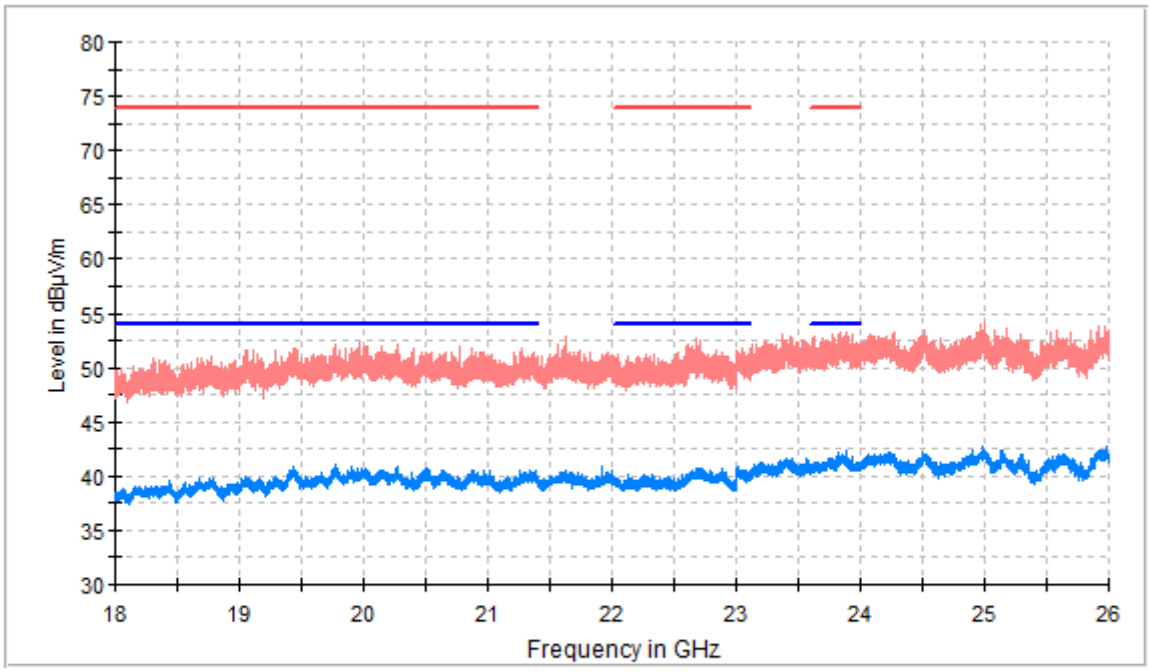
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19786.000000	53.0	40.5	V	13.5	54.0
23053.000000	53.2	40.5	V	13.5	54.0
23735.500000	54.0	41.4	V	12.6	54.0

Frequency range 18 - 26 GHz

Highest Channel

Frequency MHz = 2462.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11b (DSSS 1 Mbit/s), Frequency Range GHz = [18, 26]

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19973.000000	52.3	40.0	V	14.0	54.0
22669.500000	52.6	39.9	V	14.1	54.0
23885.500000	53.3	41.4	V	12.6	54.0

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time
30 MHz - 1 GHz	48.5 kHz	RMS ; PK+	100 kHz	1 s

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time
1 GHz - 3 GHz	500 kHz	PK+ ; AVG	1 MHz	0.1 s
3 GHz - 18 GHz	500 kHz	PK+ ; AVG	1 MHz	0.1 s

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time
18 GHz - 26 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s

Appendix A.3: Test results – MIMO

Appendix A.3

TEST CASES DETAILS

RSS-247 5.2 (a) / FCC 15.247 (a) (2) - 6 dB Bandwidth

Limits

The minimum 6 dB bandwidth shall be at least 500 kHz.

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: MIMO CCD Mode 2x2

Results

BW (MHz)	Freq (MHz)	Port	Ebw (MHz)
20	2412.00000	2	17.650
	2437.00000		17.650
	2462.00000		17.650

Verdict

Pass

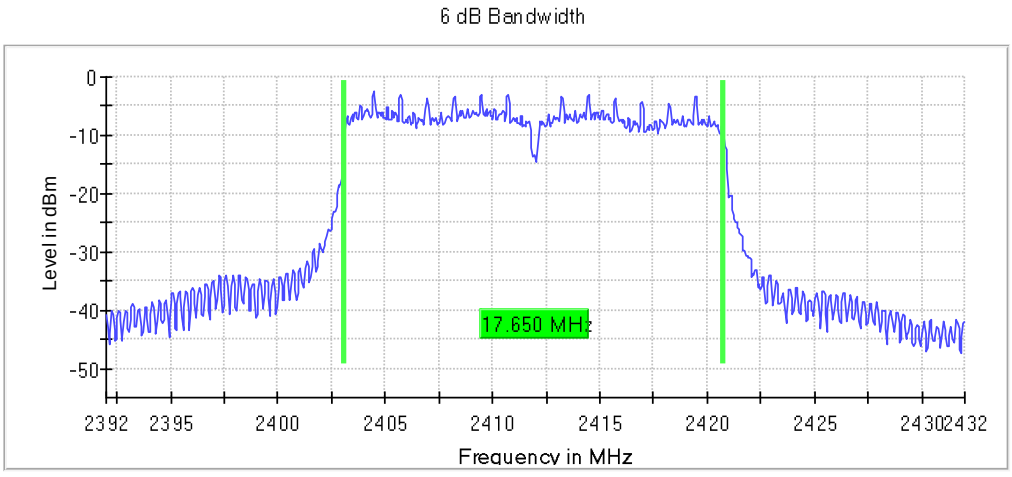
Attachments

Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2412.00000 MIMO Mode = MIMO CCD Mode 2x2

Active Port = 1+2

Images:

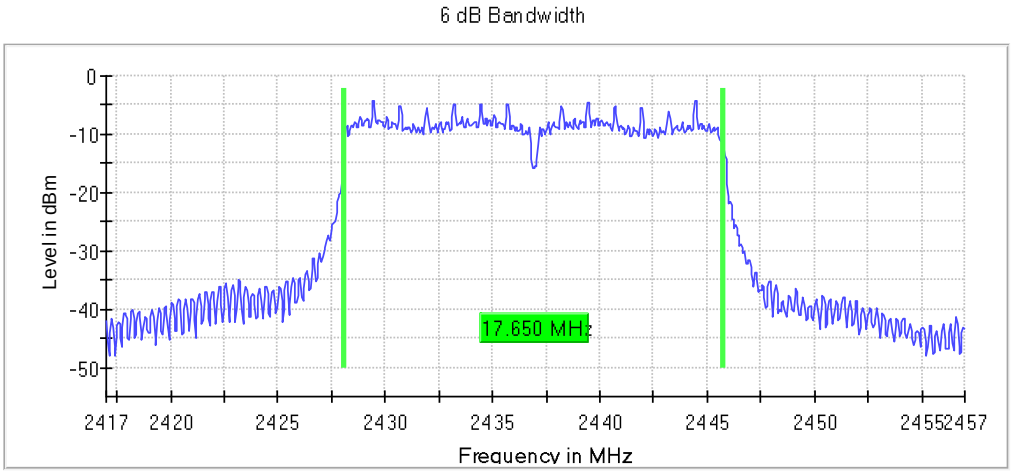


Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2437.00000 MIMO Mode = MIMO CCD Mode 2x2

Active Port = 1+2

Images:

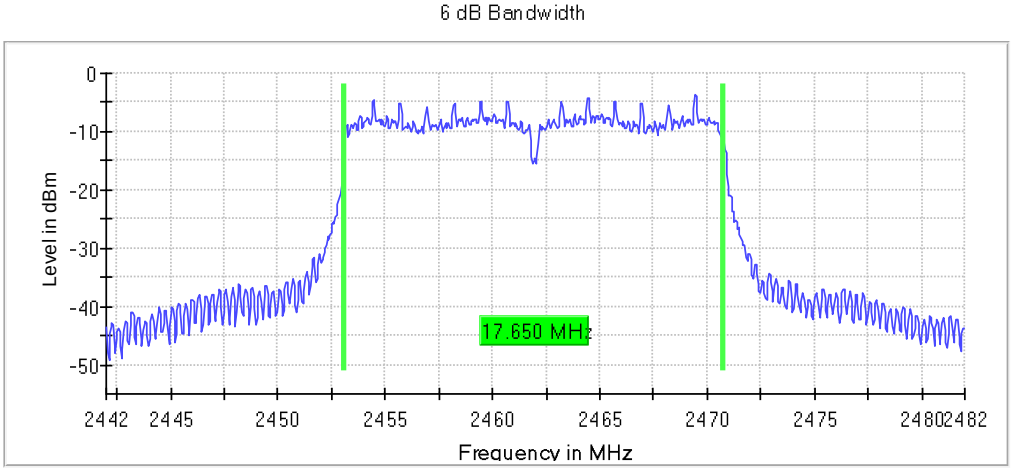


Bandwidth MHz = 20 Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

Frequency MHz = 2462.00000 MIMO Mode = MIMO CCD Mode 2x2

Active Port = 1+2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	800	800	800
Sweeptime	1.040 ms	1.040 ms	1.040 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	36 / max.	44 / max. 150	48 / max. 150
Stable	5 / 5	5 / 5	5 / 5
Max Stable Difference	0.35 dB	0.29 dB	0.48 dB

FCC 2.1049 / Occupied Channel Bandwidth 99%

Limits

No Limit has been set to this test case

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: MIMO CCD Mode 2x2

Results

Equipment	BW (MHz)	Freq (MHz)	Port	Occ Ch BW (MHz)
Digital Transmission System (DTS)	20	2412.00000	2	17.700
		2437.00000		17.700
		2462.00000		17.700

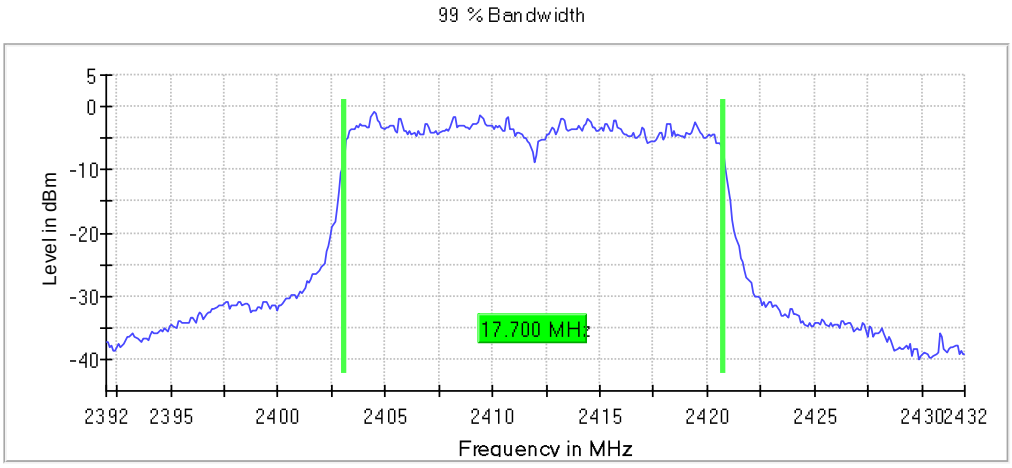
Verdict

Pass

Attachments

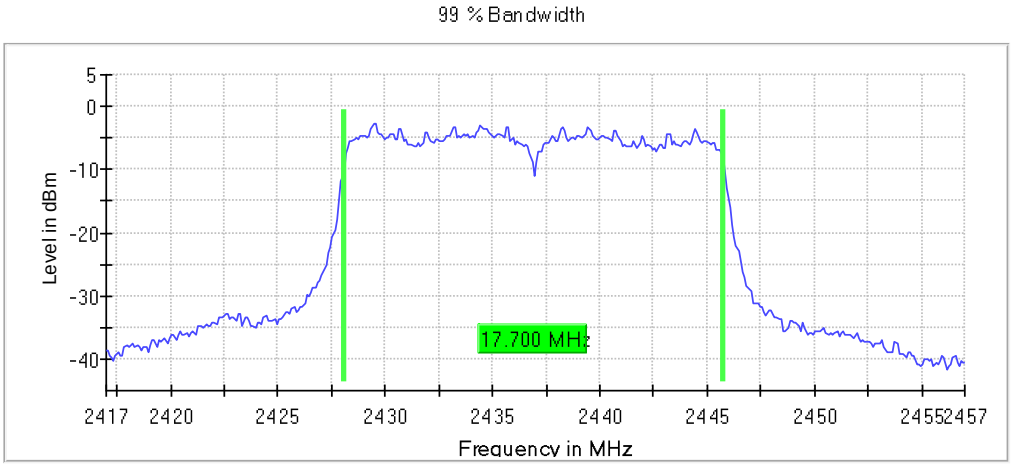
Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = MIMO CCD Mode 2x2
Active Port = 1+2

Images:



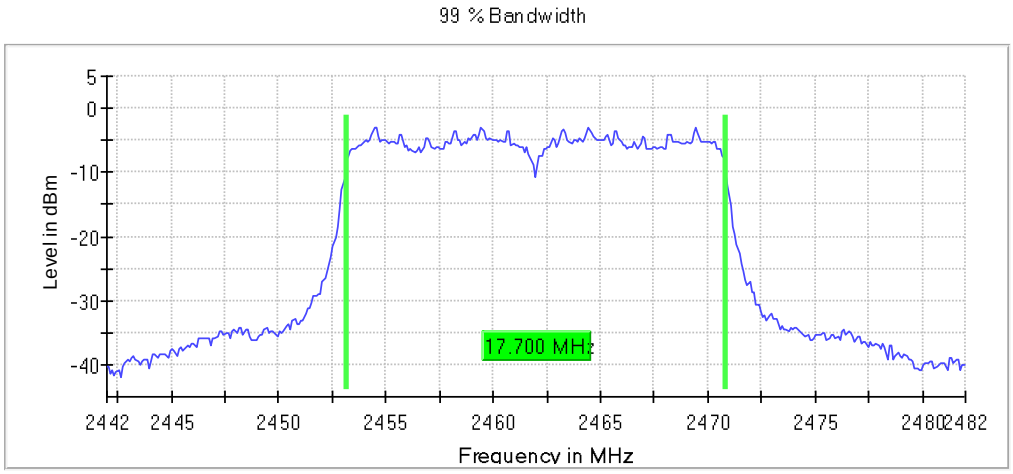
Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = MIMO CCD Mode 2x2
Bandwidth MHz = 20
Frequency MHz = 2437.00000
Active Port = 1+2

Images:



Equipment Type = Digital Transmission System (DTS)
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
MIMO Mode = MIMO CCD Mode 2x2
Bandwidth MHz = 20
Frequency MHz = 2462.00000
Active Port = 1+2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39200	2.41700 GHz	2.44200 GHz
Stop Frequency	2.43200	2.45700 GHz	2.48200 GHz
Span	40.000	40.000 MHz	40.000 MHz
RBW	200.000	200.000 kHz	200.000 kHz
VBW	1.000 MHz	1.000 MHz	1.000 MHz
SweepPoints	400	400	400
Sweeptime	1.000 ms	1.000 ms	1.000 ms
Reference Level	10.000	10.000 dBm	0.000 dBm
Attenuation	20.000 dB	20.000 dB	10.000 dB
Detector	MaxPeak	MaxPeak	MaxPeak
SweepCount	100	100	100
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.30 dB	0.30 dB	0.30 dB
Run	39 / max.	58 / max. 150	45 / max. 150
Stable	3 / 3	3 / 3	3 / 3
Max Stable Difference	0.11 dB	0.12 dB	0.06 dB

RSS-247 5.2 (b) / FCC 15.247 (e) - Power spectral density

Limits

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

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: MIMO CCD Mode 2x2

Results

Equipment	BW (MHz)	Freq (MHz)	Port	PSD (dBm)
Digital Transmission System (DTS)	20	2412.00000	2	-3.15
		2437.00000		-4.37
		2462.00000		-5.81

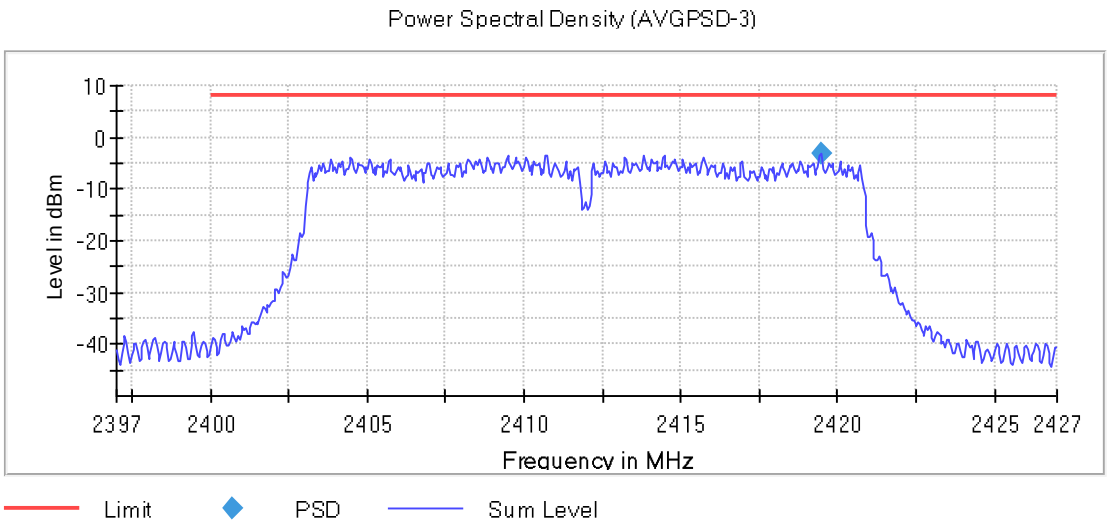
Verdict

Pass

Attachments

Equipment Type = Digital Transmission System (DTS)
Bandwidth MHz = 20
Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)
Frequency MHz = 2412.00000
MIMO Mode = MIMO CCD Mode 2x2
Active Port = 1+2

Images:

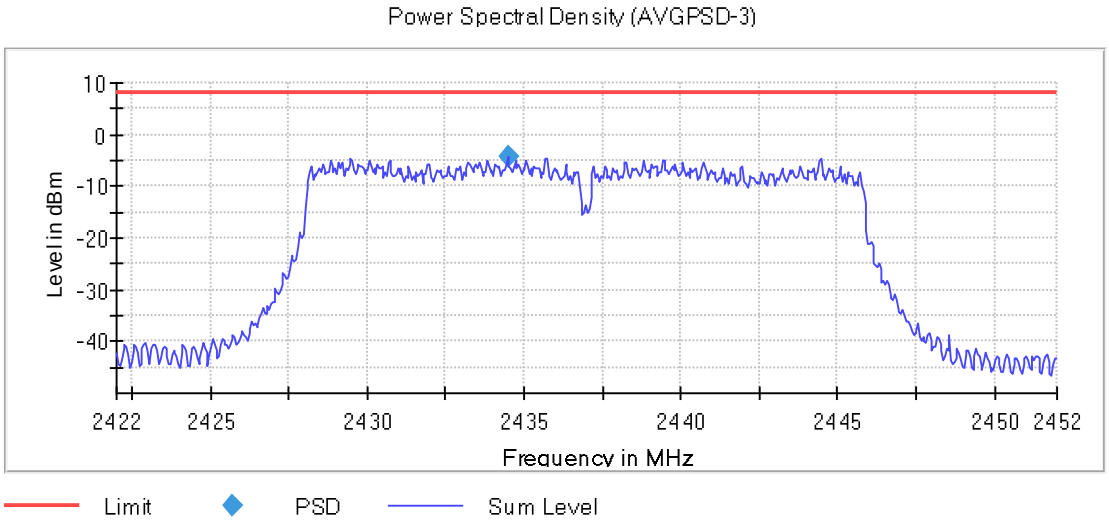


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = MIMO CCD Mode 2x2 Active Port = 1+2

Images:

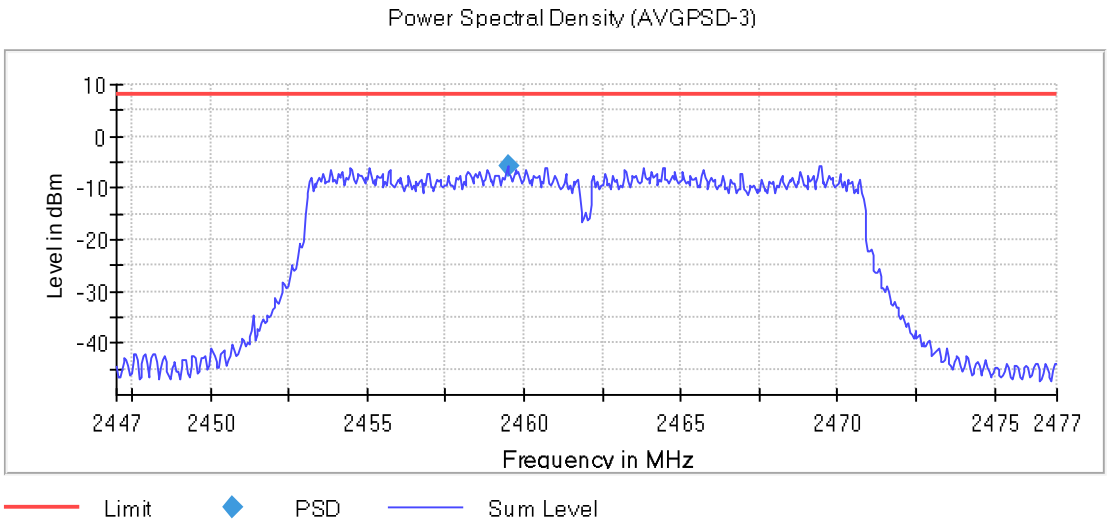


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = MIMO CCD Mode 2x2 Active Port = 1+2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value	Instrument Value
Start Frequency	2.39700	2.42200 GHz	2.44700 GHz
Stop Frequency	2.42700	2.45200 GHz	2.47700 GHz
Span	30.000	30.000 MHz	30.000 MHz
RBW	100.000	100.000 kHz	100.000 kHz
VBW	300.000	300.000 kHz	300.000 kHz
SweepPoints	600	600	600
Sweeptime	12.000 ms	12.000 ms	12.000 ms
Reference Level	10.000	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB	20.000 dB
Detector	RMS	RMS	RMS
SweepCount	5000	5000	5000
Filter	3 dB	3 dB	3 dB
Trace Mode	Max Hold	Max Hold	Max Hold
Sweeptype	Sweep	Sweep	Sweep
Preamp	off	off	off
Stablemode	Trace	Trace	Trace
Stablevalue	0.50 dB	0.50 dB	0.50 dB
Run	7 / max. 15	6 / max. 15	6 / max. 15
Stable	1 / 1	1 / 1	1 / 1
Max Stable Difference	0.47 dB	0.28 dB	0.50 dB

RSS-247 5.4 (d) / FCC 15.247 (b) (1) - Maximum Average Conducted Output Power

Limits

systems using digital modulation in the 2400 -2483.5 MHz band: 1 watt (30 dBm).
The e.i.r.p. shall not exceed 4 W (36 dBm) (RSS-247).

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: MIMO CCD Mode 2x2

Results

Maximum declared BTWLAN Antenna gain: -1.5 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	2	11.74	10.24
Digital Transmission System (DTS)	20	2437.00000	2	10.48	8.98
Digital Transmission System (DTS)	20	2462.00000	2	9.13	7.63

Maximum declared Mohawk Module Antenna gain: 2.1 dBi

Equipment	BW (MHz)	Freq (MHz)	Port	Avg power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	2	11.74	13.84
Digital Transmission System (DTS)	20	2437.00000	2	10.48	12.58
Digital Transmission System (DTS)	20	2462.00000	2	9.13	11.23

Verdict

Pass

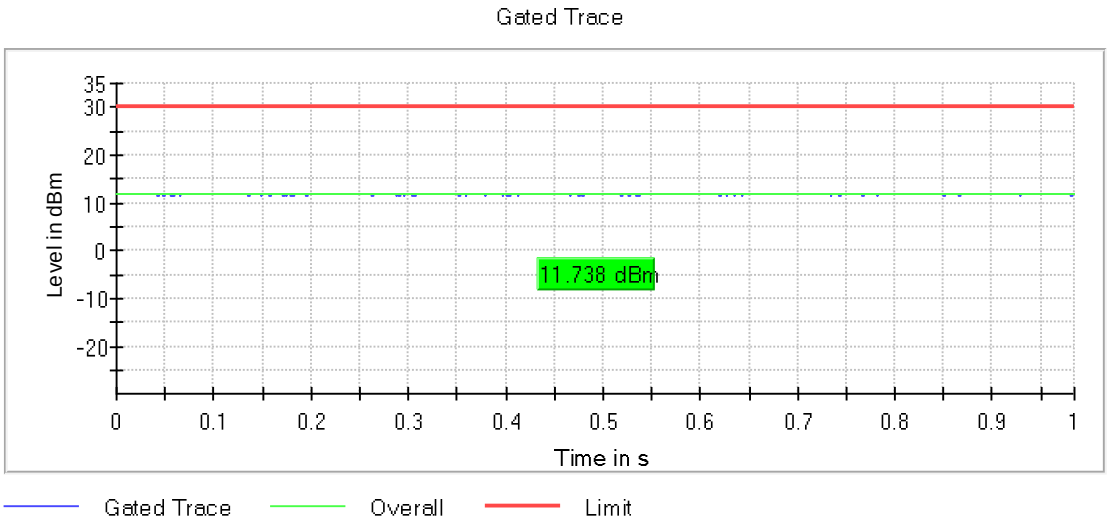
Attachments

Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2412.00000

MIMO Mode = MIMO CCD Mode 2x2 Active Port = 1+2

Images:

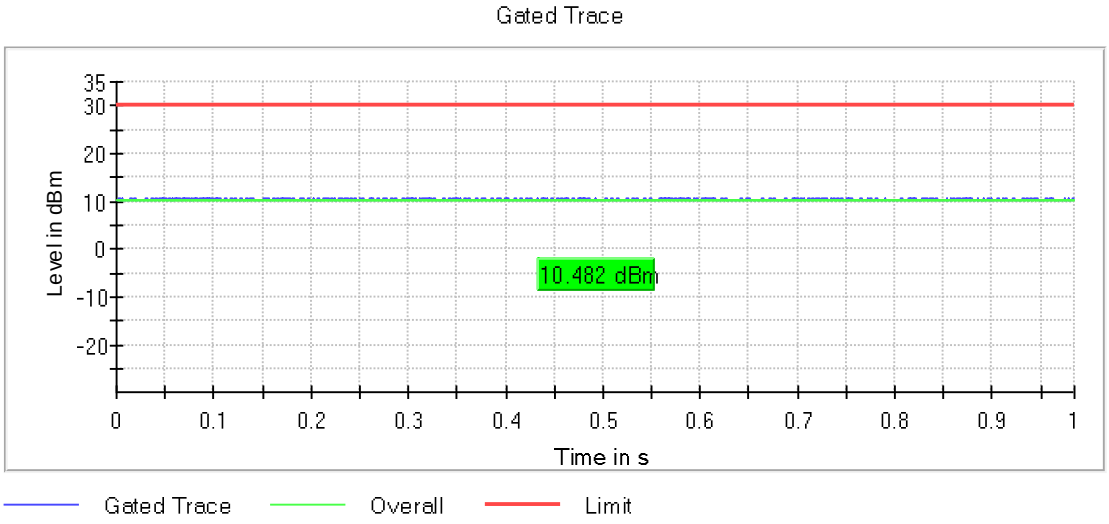


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2437.00000

MIMO Mode = MIMO CCD Mode 2x2 Active Port = 1+2

Images:

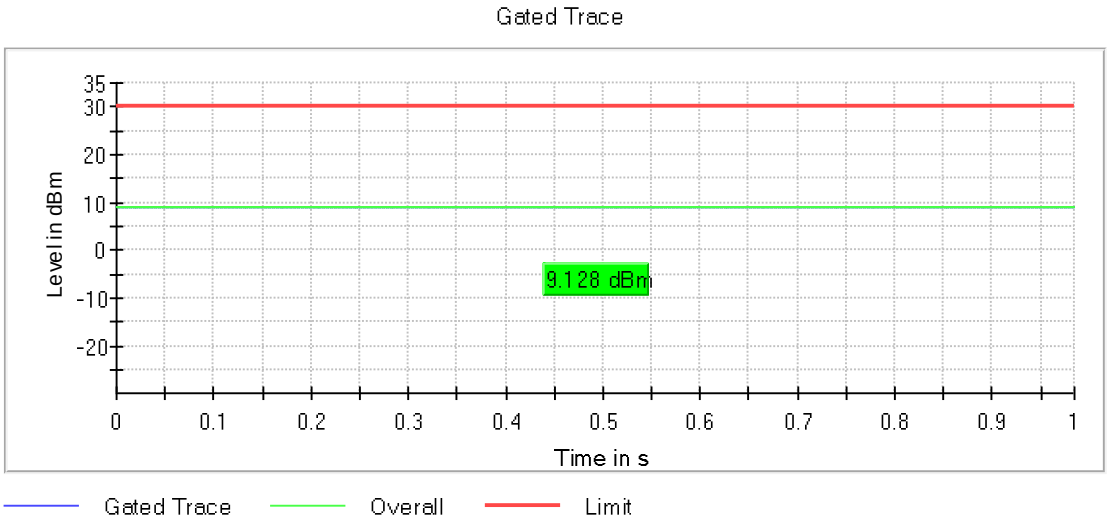


Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = MIMO CCD Mode 2x2 Active Port = 1+2

Images:



Power Meter Settings

Setting	Instrument Value	Instrument Value	Instrument Value
Measurement Time	1.000 s	1.000 s	1.000 s
Points	1000000	1000000	1000000
Time resolution	1.000 µs	1.000 µs	1.000 µs

RSS-247 5.5 / FCC 15.247 (d) - Band-edge emissions compliance (Transmitter) - Conducted

Limits

In any 100 kHz bandwidths outside the frequency band in which the intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Modulation: 802.11n HT20 (OFDM MCS0 6.5 Mbit/s)

MIMO Mode: MIMO CCD Mode 2x2

Results

DUT Frequency	Result
2412.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2398.175000	-32.8	3.2	-29.6	PASS
2399.475000	-32.9	3.3	-29.6	PASS
2398.225000	-32.9	3.3	-29.6	PASS
2399.425000	-32.9	3.3	-29.6	PASS
2397.275000	-33.0	3.4	-29.6	PASS
2397.225000	-33.1	3.5	-29.6	PASS
2397.875000	-33.1	3.5	-29.6	PASS
2397.575000	-33.2	3.6	-29.6	PASS
2399.725000	-33.2	3.6	-29.6	PASS
2399.125000	-33.2	3.6	-29.6	PASS
2399.775000	-33.2	3.6	-29.6	PASS
2397.925000	-33.2	3.6	-29.6	PASS
2398.525000	-33.3	3.7	-29.6	PASS
2399.175000	-33.3	3.7	-29.6	PASS
2398.825000	-33.4	3.8	-29.6	PASS

DUT Frequency	Result
2462.000000	PASS

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.775000	-46.1	13.9	-32.2	PASS
2484.825000	-46.4	14.2	-32.2	PASS
2484.725000	-46.6	14.4	-32.2	PASS
2485.125000	-47.3	15.1	-32.2	PASS
2484.475000	-47.4	15.2	-32.2	PASS
2485.075000	-47.5	15.3	-32.2	PASS
2484.675000	-48.4	16.2	-32.2	PASS
2485.675000	-48.6	16.4	-32.2	PASS
2485.325000	-48.6	16.4	-32.2	PASS
2485.375000	-48.7	16.5	-32.2	PASS
2484.525000	-48.7	16.5	-32.2	PASS
2484.125000	-48.7	16.5	-32.2	PASS
2483.825000	-48.9	16.7	-32.2	PASS
2485.625000	-49.0	16.8	-32.2	PASS
2484.425000	-49.2	17.0	-32.2	PASS

Verdict

Pass

Attachments

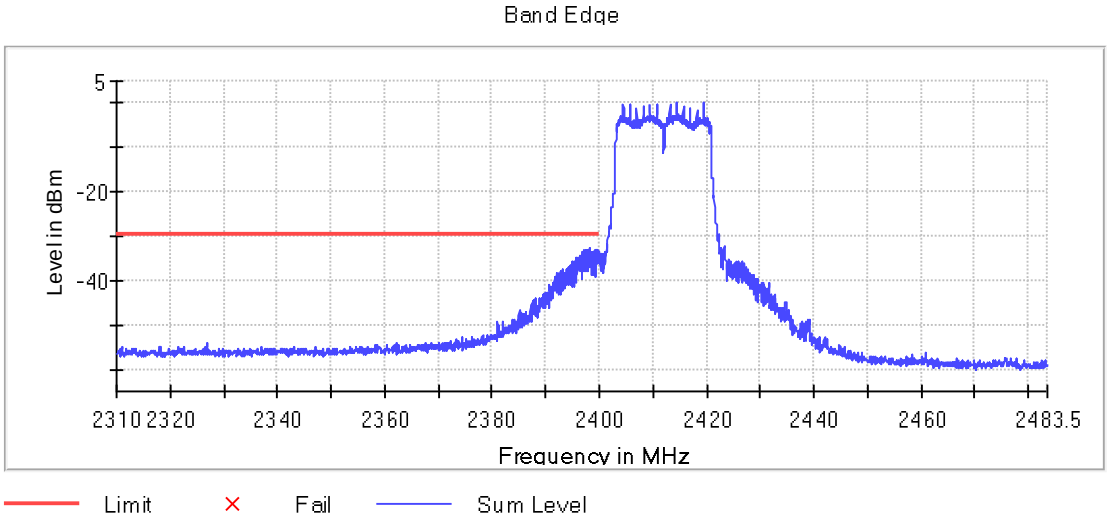
Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2412.00000

MIMO Mode = MIMO CCD Mode 2x2 Measurement Point = 1

Active Port = 1+2

Images:



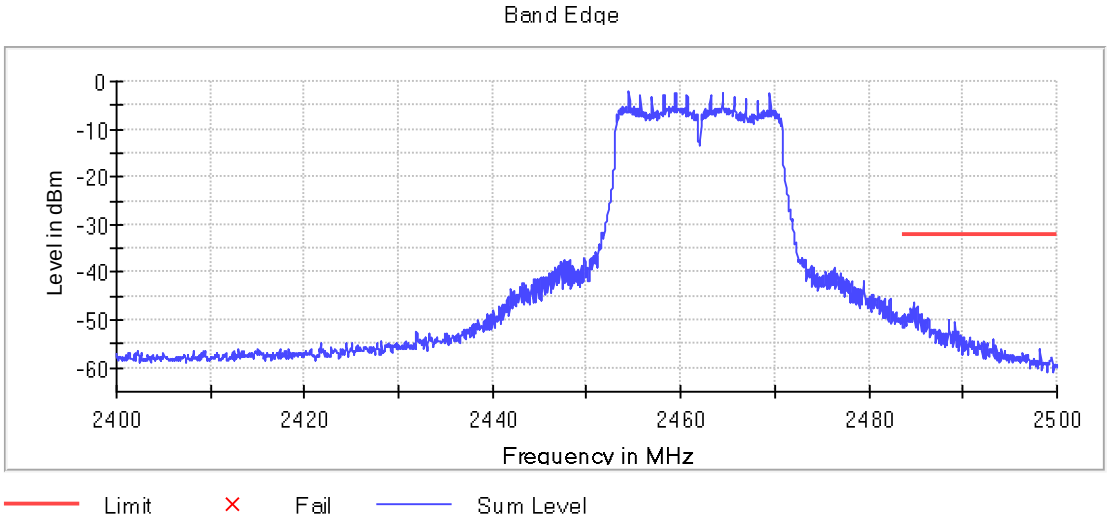
Equipment Type = Digital Transmission System (DTS) Bandwidth MHz = 20

Modulation = 802.11n HT20 (OFDM MCS0 6.5 Mbit/s) Frequency MHz = 2462.00000

MIMO Mode = MIMO CCD Mode 2x2 Measurement Point = 1

Active Port = 1+2

Images:



Spectrum Analyzer Parameters

Setting	Instrument Value	Instrument Value
Start Frequency	2.31000 GHz	2.40000 GHz
Stop Frequency	2.40000 GHz	2.48350 GHz
Span	90.000 MHz	83.500 MHz
RBW	100.000 kHz	100.000 kHz
VBW	300.000 kHz	300.000 kHz
SweepPoints	1800	1670
Sweeptime	1.800 ms	1.670 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 dB	20.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	15 / max. 150	41 / max. 150
Stable	3 / 3	3 / 3
Max Stable Difference	0.49 dB	0.47 dB

Limits

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c) / RSS-Gen):

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 25000	500	54	3

The emission limits shown in the above table are based on measurements employing CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

For average radiated emission measurements above 1000 MHz, there is also a limit corresponding to 20 dB above the indicated values in the table is specified when measuring with peak detector function.

RSS-247. Attenuation below the general field strength limits specified in RSS-Gen is not required

Verdict

Pass

The following tables and plots show the results for the worst case with the use of the Mohawk Module Antenna.

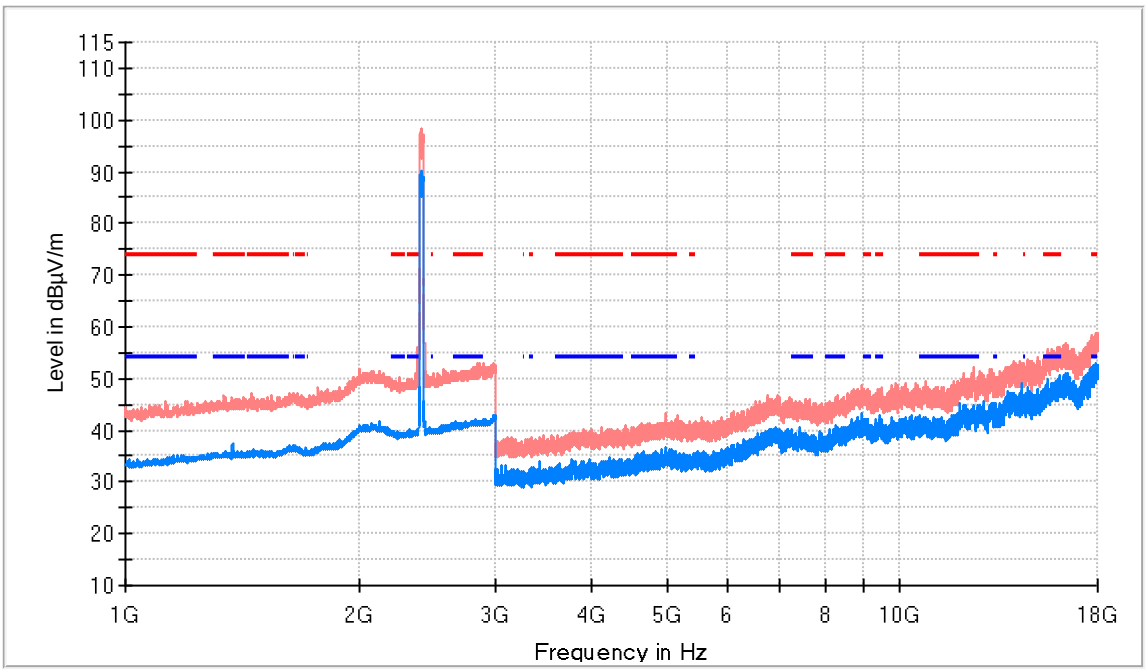
Modulation: 802.11n (OFDM 6 Mbit/s)
Results

Frequency range 1 - 18 GHz

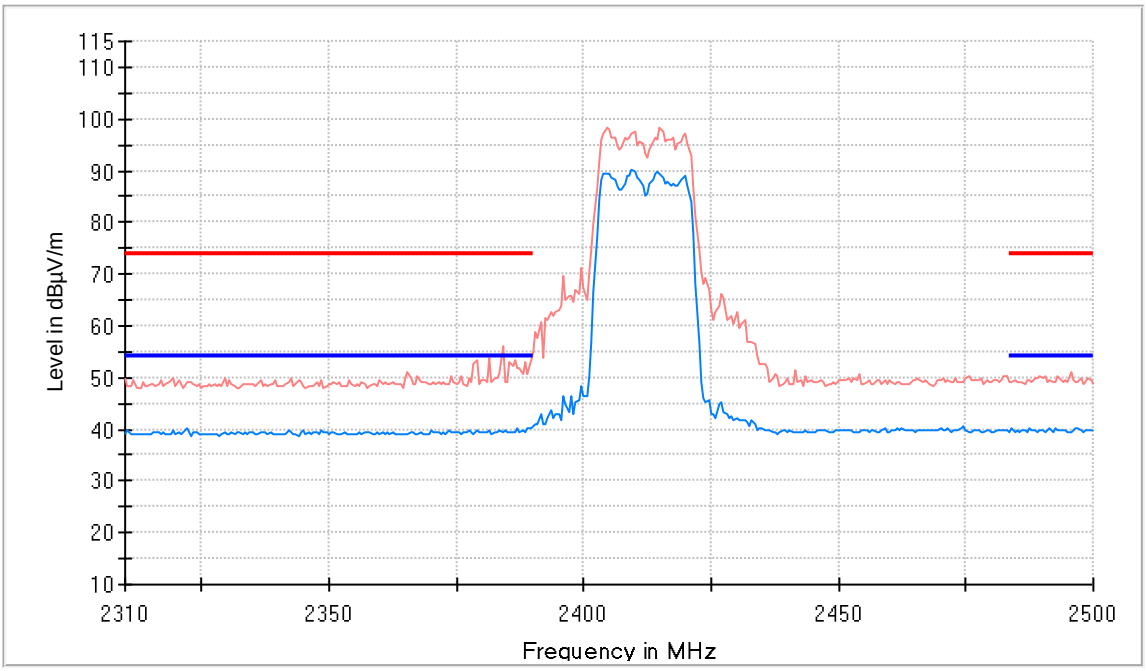
Lowest Channel

Frequency MHz = 2412.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11n (OFDM 6 Mbit/s), Frequency Range GHz = [1, 18]

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
1375.000000	45.6	37.5	V	16.5	54.0	
2409.500000	97.4	90.2	H	---	---	Fundamental
11968.50000	47.7	45.3	V	8.7	54.0	



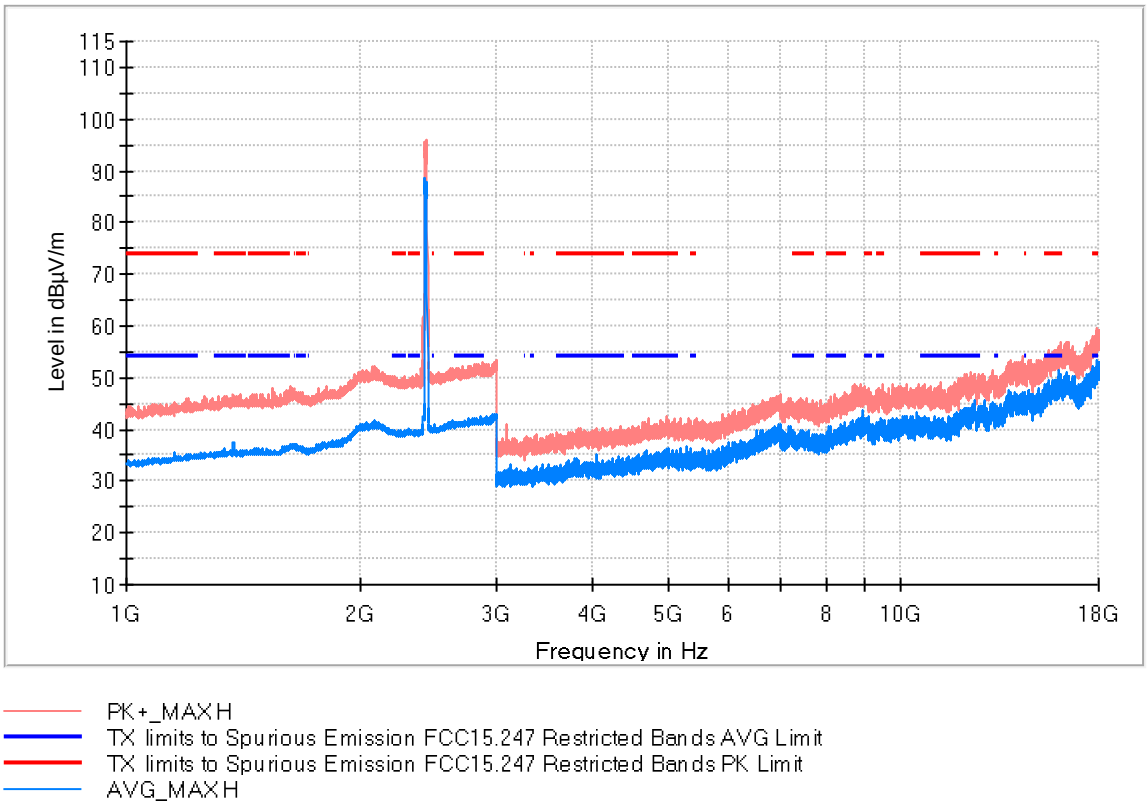
PK+_MAXH
TX limits to Spurious Emission FCC15.247 Restricted Bands AVG Limit
TX limits to Spurious Emission FCC15.247 Restricted Bands PK Limit
AVG_MAXH

Frequency range 1 - 18 GHz

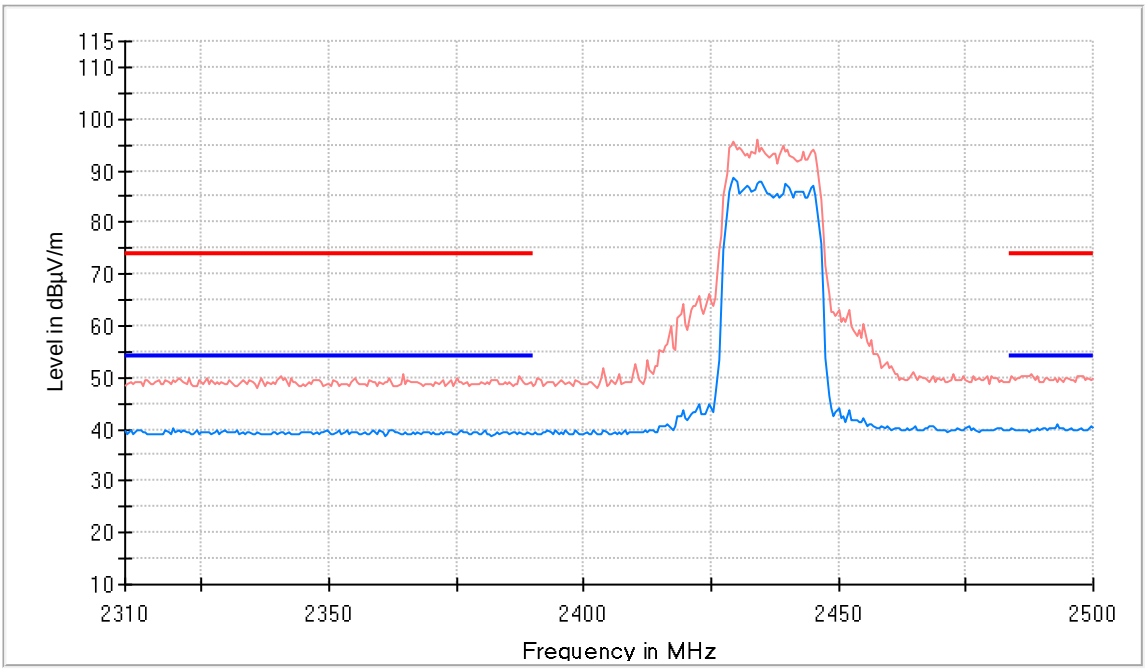
Middle Channel

Frequency MHz = 2437.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11n (OFDM 6 Mbit/s), Frequency Range GHz = [1, 18]

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
1375.000000	46.4	37.6	V	16.4	54.0	
2429.500000	95.5	88.5	H	---	---	Fundamental
12436.00000	50.6	45.8	V	8.2	54.0	



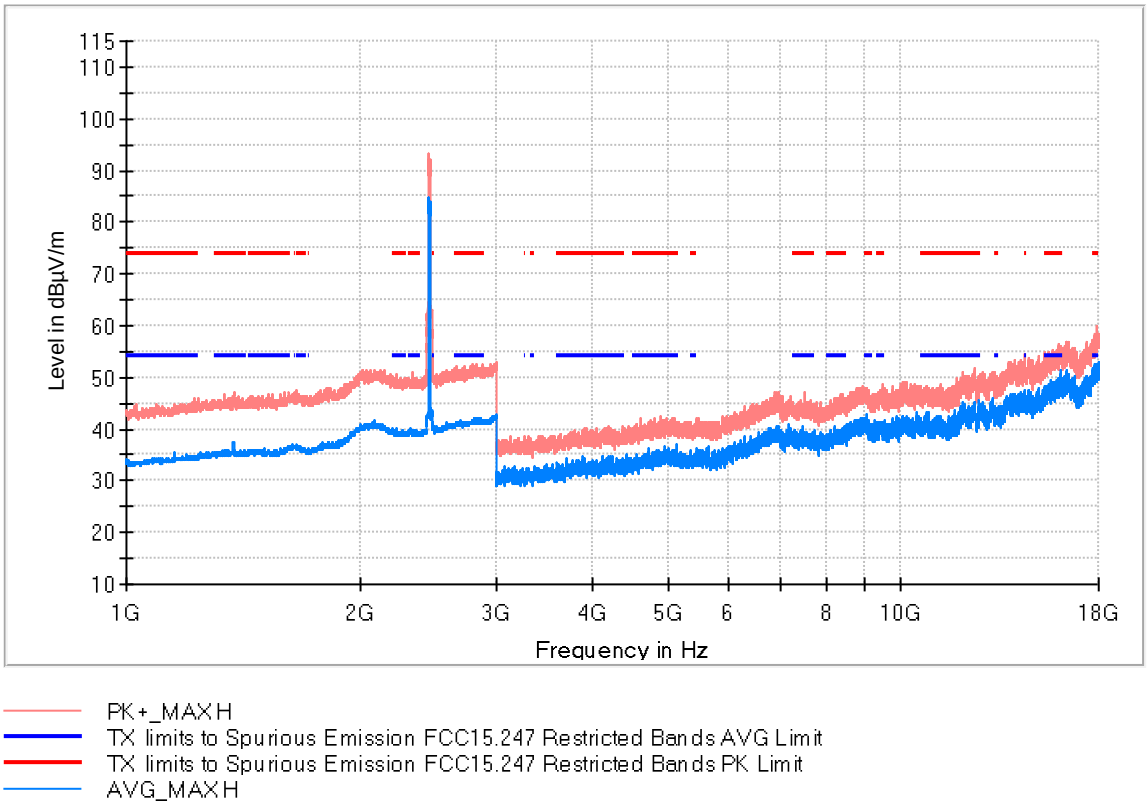
PK+_MAX H
TX limits to Spurious Emission FCC15.247 Restricted Bands AVG Limit
TX limits to Spurious Emission FCC15.247 Restricted Bands PK Limit
AVG_MAX H

Frequency range 1 - 18 GHz

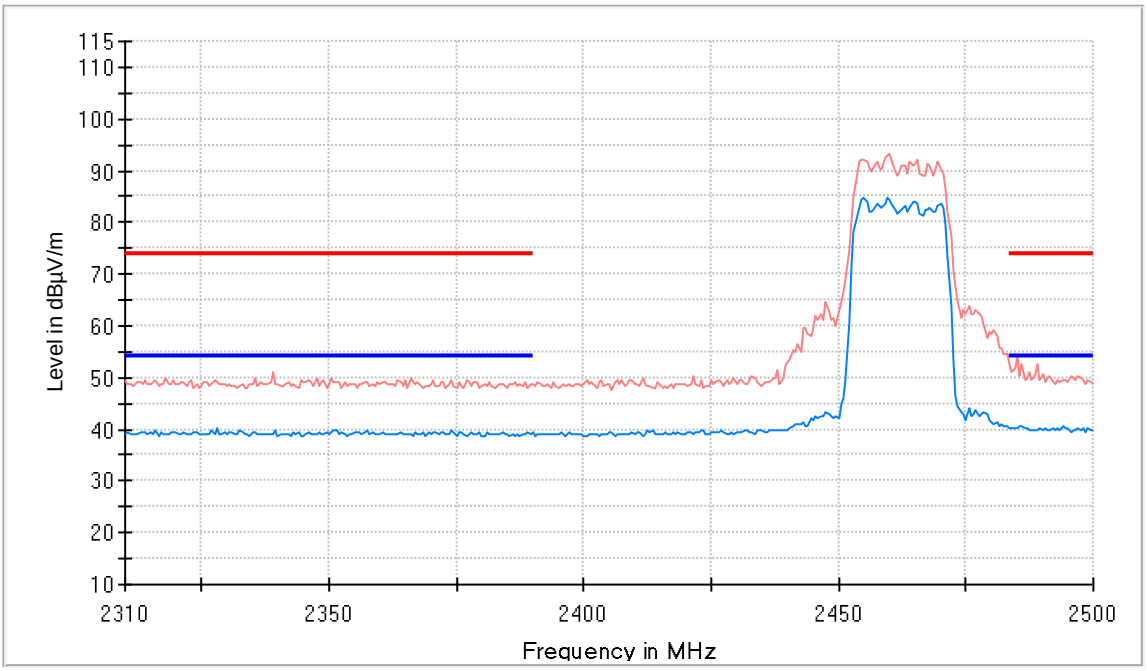
Highest Channel

Frequency MHz = 2462.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11n (OFDM 6 Mbit/s), Frequency Range GHz = [1, 18]

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)	Comment
1375.000000	46.5	37.6	H	16.4	54.0	
2460.000000	93.4	84.6	H	---	---	Fundamental
12632.000000	49.9	45.5	V	8.5	54.0	



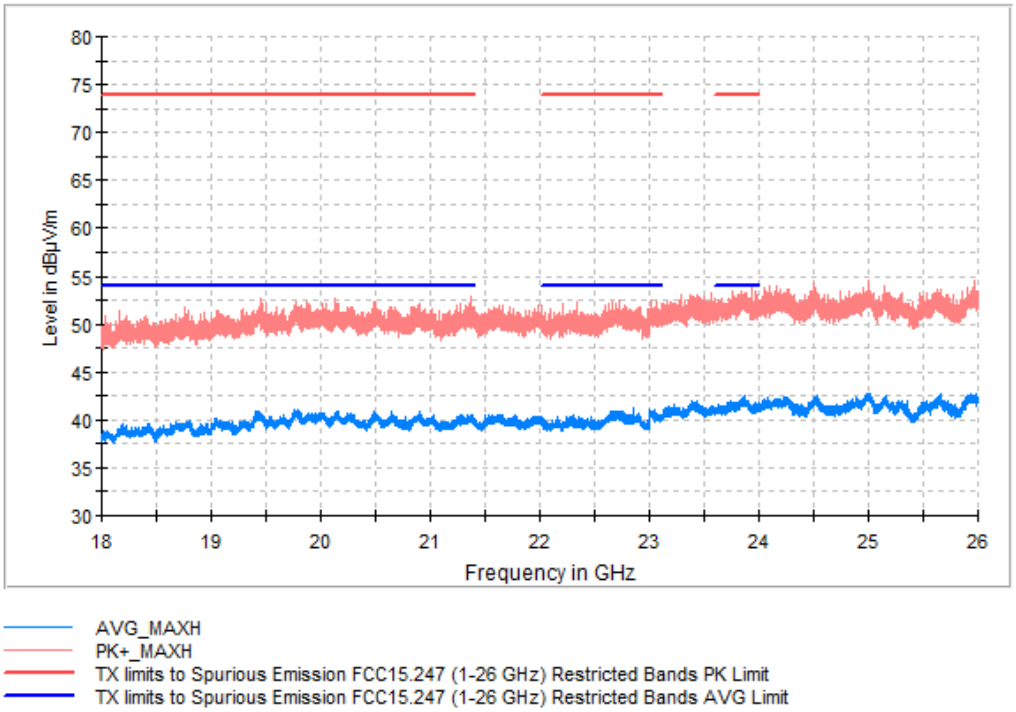
PK+_MAX H
TX limits to Spurious Emission FCC15.247 Restricted Bands AVG Limit
TX limits to Spurious Emission FCC15.247 Restricted Bands PK Limit
AVG_MAX H

Frequency range 18 - 26 GHz

Lowest Channel

Frequency MHz = 2412.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11n (OFDM 6 Mbit/s), Frequency Range GHz = [18, 26]

Images:



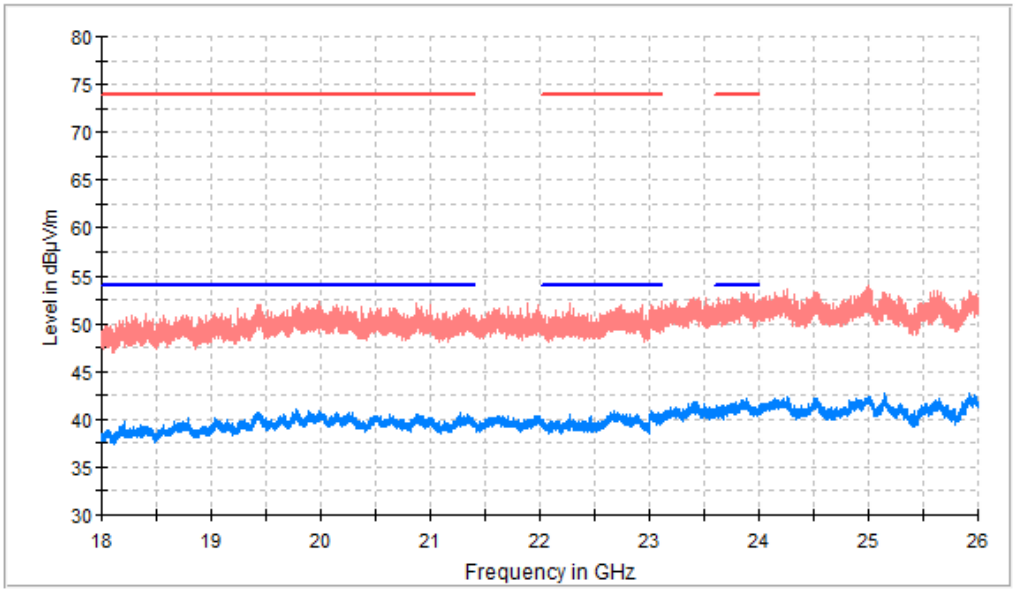
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19452.500000	52.7	40.1	V	13.9	54.0
23010.000000	52.6	40.5	V	13.5	54.0
23929.500000	53.8	40.8	V	13.2	54.0

Frequency range 18 - 26 GHz

Middle Channel

Frequency MHz = 2437.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11n (OFDM 6 Mbit/s), Frequency Range GHz = [18, 26]

Images:



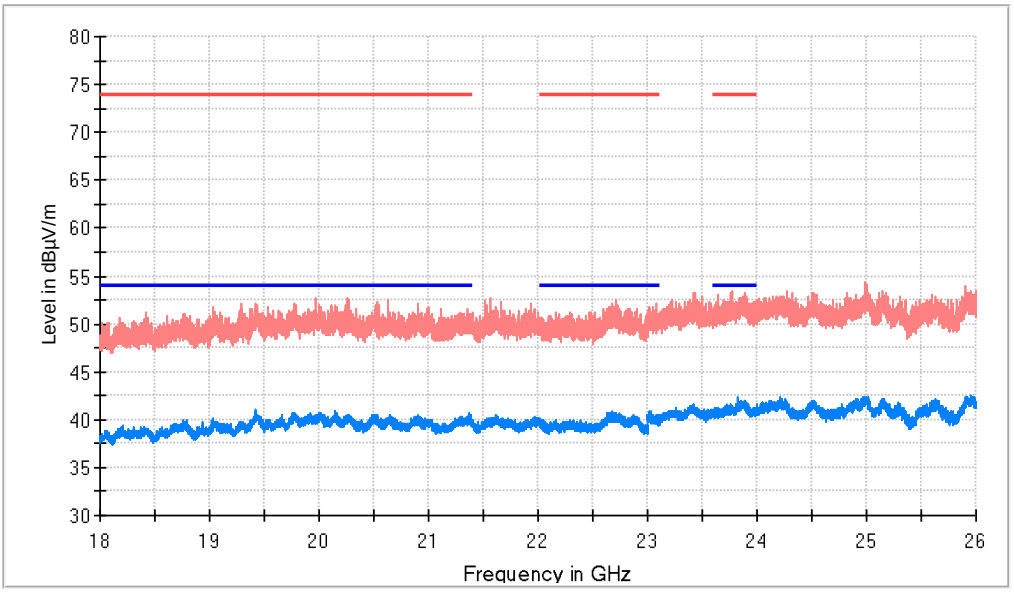
Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19772.000000	51.5	41.0	V	13.0	54.0
22672.000000	49.8	40.9	V	13.1	54.0
23890.500000	51.9	42.2	V	11.8	54.0

Frequency range 18 - 26 GHz

Highest Channel

Frequency MHz = 2462.00000, Equipment Type = Digital Transmission System (DTS), Bandwidth MHz = 20, Modulation = 802.11n (OFDM 6 Mbit/s), Frequency Range GHz = [18, 26]

Images:



Frequency (MHz)	PK+_MAXH (dBµV/m)	AVG_MAXH (dBµV/m)	Pol	Margin - AVG (dB)	Limit - AVG (dBµV/m)
19424.000000	50.0	41.0	V	13.0	54.0
23030.500000	50.2	41.0	V	13.0	54.0
23820.000000	51.1	42.3	V	11.7	54.0

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time
30 MHz - 1 GHz	48.5 kHz	RMS ; PK+	100 kHz	1 s

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time
1 GHz - 3 GHz	500 kHz	PK+ ; AVG	1 MHz	0.1 s
3 GHz - 18 GHz	500 kHz	PK+ ; AVG	1 MHz	0.1 s

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time
18 GHz - 26 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s