

ISED CABid: ES1909
Lab. Company Number: 4621A

Test Report No:
NIE: 70923RRF.004

Test Report

USA FCC Part 15.247, 15.209

CANADA RSS-247, RSS-Gen

(*) Identification of item tested	Radio Anchor that localises transmitters
(*) Trademark	Inpixon nanoANQ Chirp V3
(*) Model and /or type reference	PN03ANQCS
Other identification of the product	FCC ID: SIFANQ03QCS IC: 7654A-ANQ03C
(*) Features	Features: 2x Chirp 2.4g Rx/Tx RF Front End, USB and PoE HW version: 0387-20 Inpixon nanoANQ Chirp SW version: TDOAnchor-ver-2.0.14
Applicant	Nanotron Technologies GmbH Alt Moabit 60a 10555, Berlin, GERMANY
Test method requested, standard	USA FCC Part 15.247 (10-1-21) Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 15.209 (10-1-21) Edition: Radiated emission limits; general requirements. CANADA RSS-247 Issue 2 (Feb. 2017). CANADA RSS-Gen Issue 5 Amendment 1 (Mar. 2019) + Amendment 2 (Feb. 2021). 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)	Rafael López Martín EMC Consumer & RF Lab. Manager  2023.01.18 14:51:34 +01'00'
Date of issue	2023-01-18
Report template No.	FDT08_24 (*) "Data provided by the client"

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Acronyms

Acronym ID	Acronym Description
6Ebw	Emission Bandwidth
Detector	Detector used
Equipment	Equipment Type
Freq	Frequency
Freq Rng	Frequency Range
Inband Peak Lvl	Inband Peak Level
Lvl	Level
MP	Measurement Point
Mod	Modulation
Occ Ch BW	Occupied Channel Bandwidth
PSD	Power Spectrum Density
Peak Power	Maximum Peak Conducted Output Power
Pol	Polarization
Unwanted Freq	Unwanted Emissions Frequency
Unwanted Lvl	Unwanted Emissions Level

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC - Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

DEKRA Testing and Certification is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

DEKRA Testing and Certification is an ISED-recognized accredited testing laboratory, CABid: ES1909, Company Number: 4621A, with the appropriate scope of accreditation that covers the performed tests in this report.

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

DEKRA Testing and Certification S.A.U. 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 Testing and Certification S.A.U. at the time of performance of the test.

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

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General conditions

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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 Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the radiated emissions of EUT from 30 MHz to 1 GHz is:
Measurement uncertainty $\leq \pm 5.35$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 1 GHz to 17 GHz is:
Measurement uncertainty $\leq \pm 4.32$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the radiated emissions of EUT from 17 GHz to 26 GHz is:
Measurement uncertainty $\leq \pm 5.51$ dB with factor ($k = 2$).

The total uncertainty of the measurement system for the conducted testing of EUT is:

RF Peak Output Power: Measurement uncertainty $\leq \pm 0.80$ dB

Power Spectral Density: Measurement uncertainty $\leq \pm 0.99$ dB

6dB Bandwidth: Measurement uncertainty $\leq \pm 2.84$ %

Occupied Channel Bandwidth: Measurement uncertainty $\leq \pm 1.17$ %

Conducted Band-edge spurious emissions: Measurement uncertainty $\leq \pm 1.76$ 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 of the model PN03ANQCS is an Anchor for receiving blinks in a radio network that localises tags using a real time localisation system in an area.

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

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial No.	Date Reception	of	Application
S/01	70923_25.1	Inpixon nanoANQ Chirp V3	PN03ANQCS	--	2022-05-03		Element Under Test
S/01	70923_30.1	Ethernet Cable	--	--	2022-05-03		Auxiliary Element
S/01	70923_33.1	USB-micro Cable	--	--	2022-05-03		Auxiliary Element
S/01	70923_37.1	POE Router	FS108P	2HK1253P51390	2022-05-03		Auxiliary Element
S/01	70923_38.1	Power Supply	NU60-F480125-I1NN	261211181102900742	2022-05-03		Auxiliary Element
S/01	70923_39.1	Power Cable (EU)	--	--	2022-05-03		Auxiliary Element
S/02	70923_23.1	Inpixon nanoANQ Chirp V3	PN03ANQCS	--	2022-05-03		Element Under Test
S/02	70923_31.1	SMA to UFL cable	--	--	2022-05-03		Auxiliary Element
S/02	70923_32.1	SMA to UFL cable	--	--	2022-05-03		Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Sample for radiated measurements
S/02	Sample for conducted measurements

Test sample description

Ports..... :	Port name and description		Cable				
			Specified max length [m]	Attached during test	Shielded	Coupled to patient ⁽³⁾	
	PoE Ethernet			[X]	[]	[]	
	USB Connection			[X]	[]	[]	
		--		[]	[]	[]	
Supplementary information to the ports..... :	--						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[]	AC:	[]	[]	[]	[]	[]
	[X]	DC: 48V / PoE					
		[X]	DC: 5V USB				
Rated Power	5W on PoE						
Clock frequencies.....	32 MHz, 32.768 kHz						
Other parameters	--						
Software version	TDOAAncor-ver-2.0.14						
Hardware version	0387-20 Inpixon nanoANQ Chirp						
Dimensions in cm (W x H x D)	196.3x145.5x34.3						
Mounting position	[]	Table top equipment					
	[X]	Wall/Ceiling mounted equipment					
	[]	Floor standing equipment					
	[]	Hand-held equipment					
	[X]	Other:					
Modules/parts.....	Module/parts of test item			Type	Manufacturer		
	--						
Accessories (not part of the test item)	Description			Type	Manufacturer		
	--						
Documents as provided by the applicant.....	Description			File name	Issue date		
	User Guide						
	Schematic and PCB Layout						
	Battery/PCB certificates						
	Housing Documentation						
	--						

⁽³⁾ Only for Medical Equipment

Identification of the client

Nanotron Technologies GmbH
Alt Moabit 60a, 10555, Berlin
Germany

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2022-05-05
Date (finish)	2022-06-03

Document history

Report number	Date	Description
70923RRF.004	2023-01-18	First release.

Environmental conditions

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

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

In the semi-anechoic chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

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

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 20 % Max. = 75 %

Remarks and comments

The tests have been performed by the technical personnel: Antonio Manuel Sánchez Carrizo and Victoria Olmedo Villalba.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
8130	SEMIANECHOIC ABSORBER LINED CHAMBER VI	P29419	ALBATROSS PROJECTS GMBH	2023-01-16
8134	SHIELDED ROOM	P29419	ALBATROSS PROJECTS GMBH	N/A
7826	ULTRALOG ANTENNA 30MHz-6GHz	HL562E_UPG	ROHDE AND SCHWARZ	2022-10-15
6165	EMI TEST RECEIVER 9kHz-7GHz	ESR7	ROHDE AND SCHWARZ	2023-11-08
6157	SIGNAL AND SPECTRUM ANALYZER 10Hz-40GHz	FSV40	ROHDE AND SCHWARZ	2023-10-11
7763	HORN ANTENNA 1-18GHz	BBHA 9120D	SCHWARZBECK MESS-ELEKTRONIK	2022-11-15
7769	PREAMPLIFIER 30dB 500MHz-18GHz	BBV 9718 C	SCHWARZBECK	2023-03-25
6495	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2024-03-19
7862	PRE-AMPLIFIER G>30dB 18-40GHz	BLMA 1840-3G	BONN ELEKTRONIK	2023-02-15
4848	EMC/RF SOFTWARE MEASUREMENTS	EMC32	ROHDE AND SCHWARZ	N/A
8835	SIGNAL AND SPECTRUM ANALYZER 2Hz-50GHz	FSW50	ROHDE AND SCHWARZ	2023-07-29
8848	OPEN SWITCH UNIT UP TO 7.5 GHz	OSP-B157W8 PLUS	ROHDE & SCHWARZ	2023-08-20
7798	EMC/RF MEASUREMENT SOFTWARE	WMS32	ROHDE AND SCHWARZ	N/A

Testing verdicts

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

Summary

2.4GHz proprietary

Requirement – Test case	FCC PART 15 / RSS-247	Verdict	Remark
FCC 15.247 (a)(2) / RSS-247 5.2 (a)	6 dB Bandwidth	P	--
FCC 15.247 (e) / RSS-247 5.2 (b)	Power spectral density	P	--
FCC 15.247 (b) / RSS-247 5.4 (d)	Maximum Peak Conducted output power	P	--
FCC 15.247 (d) / RSS-247 5.5	Band-edge emissions compliance (Transmitter)	P	--
FCC 15.247 (d) / RSS-247 5.5	Emission limitations radiated (Transmitter)	P	--
<u>Supplementary information and remarks:</u> None.			

Appendix A: Test results. 2.4GHz proprietary

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 5 Vdc
Type of Power Supply: External power supply

ANTENNA (*):

Type of Antenna: 2 Chip antennas (Internal).
Maximum Declared Antenna Gain: 2 dBi

TEST FREQUENCIES (*):

Single Channel: 2440 MHz

POWER SETTING:

The next power setting was used to configure the sample for the tests:

		Output Power
Proprietary Protocol 2.4GHz	Single Channel: 2440 MHz	txpwr36

The tests have been performed on both antennas (CHAIN A and CHAIN B) with the following data rates:

- Data rate 1 Mbit/s
- Data rate 250 kbit/s

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and connected to the TS8997 test bench system using a low-loss RF cable. The reading of the spectrum analyser is corrected taking into account the cable loss.



RADIATED MEASUREMENTS:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna (Bilog antenna for the range between 30 MHz to 1000 MHz and 1 GHz-17 GHz Double ridge horn antenna) is situated at a distance of 3 m and at a distance of 1.5 m for the frequency range 17 GHz-26 GHz (17 GHz-40 GHz horn antenna).

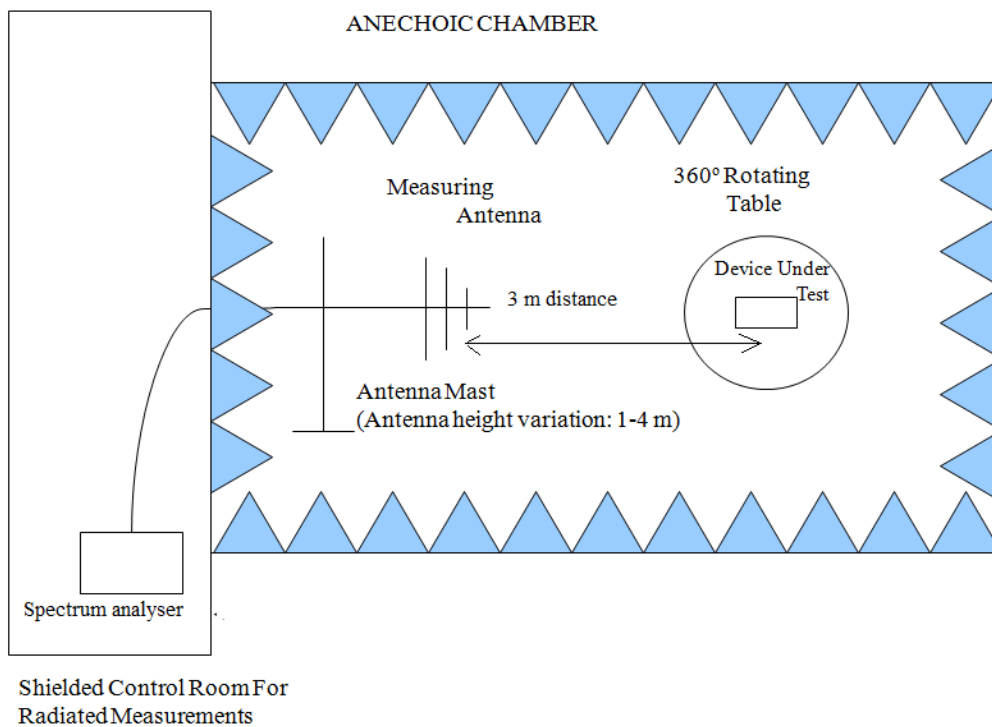
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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 360° and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find the maximum radiated emission.

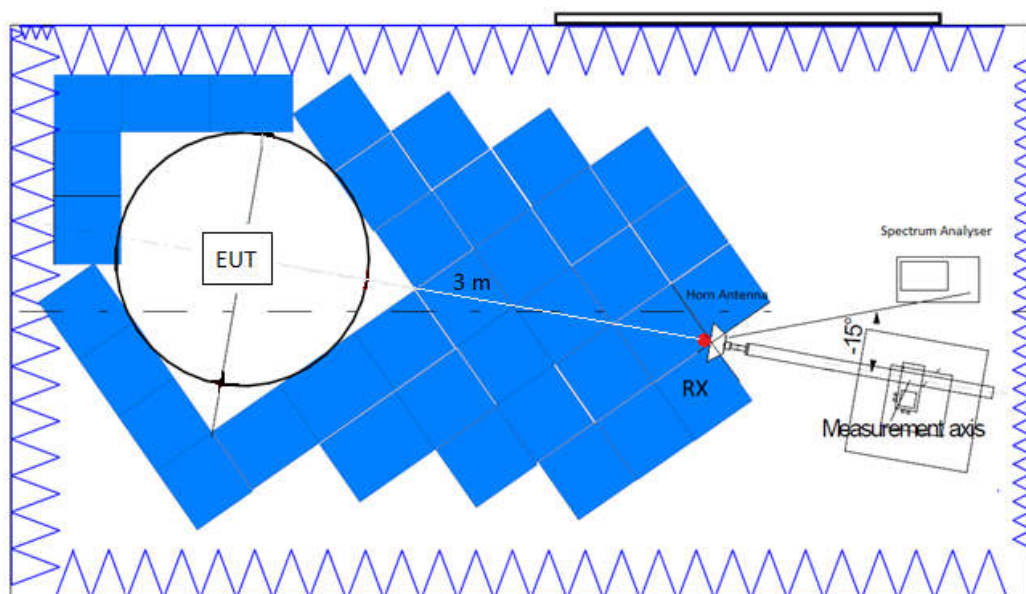
Measurements were made in both horizontal and vertical planes of polarization.

A resolution bandwidth/video bandwidth of 100 kHz / 300 kHz was used for frequencies below 1 GHz and 1 MHz / 3 MHz for frequencies above 1 GHz.

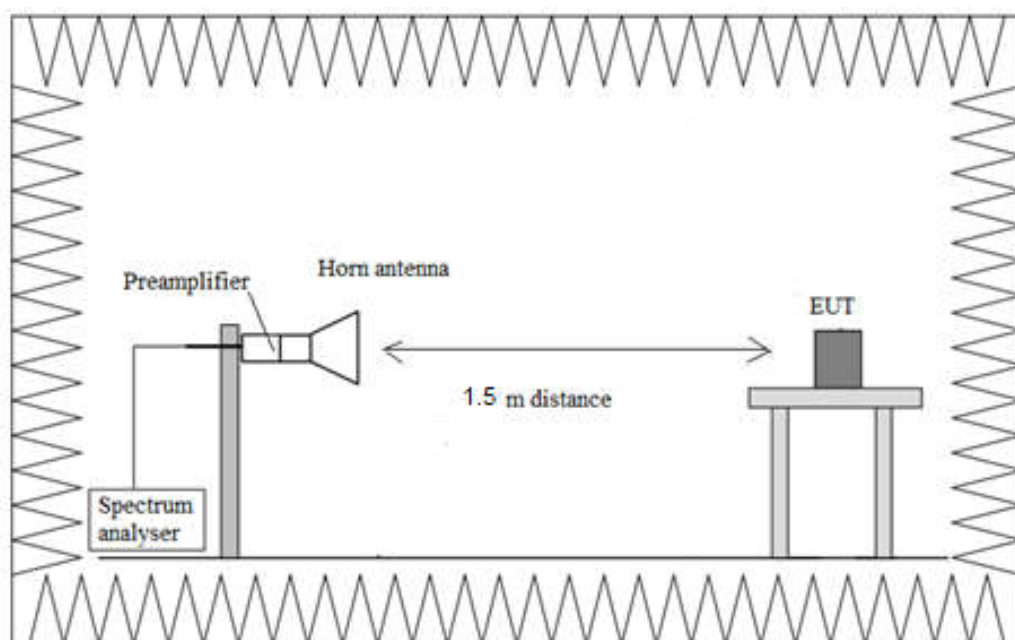
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



TEST CASES DETAILS

Occupied Channel Bandwidth 99%

Results

Modulation: 2.4GHz Proprietary (1 Mbit/s)

CHAIN A:

Freq (MHz)	Occ Ch BW (MHz)
2440.00000	59.000

CHAIN B:

Freq (MHz)	Occ Ch BW (MHz)
2440.00000	59.500

Modulation: 2.4GHz Proprietary (250 kbit/s)

CHAIN A:

Freq (MHz)	Occ Ch BW (MHz)
2440.00000	59.000

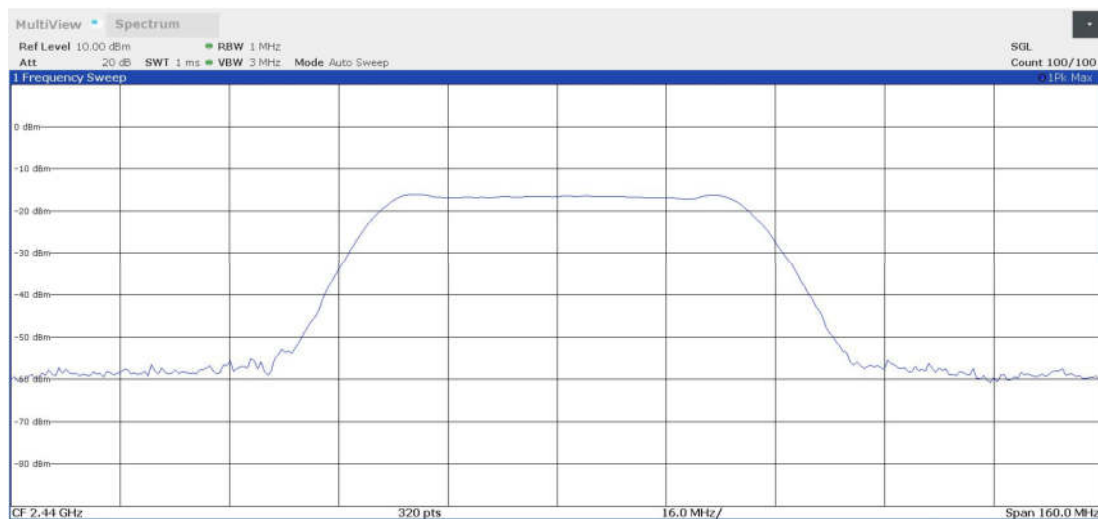
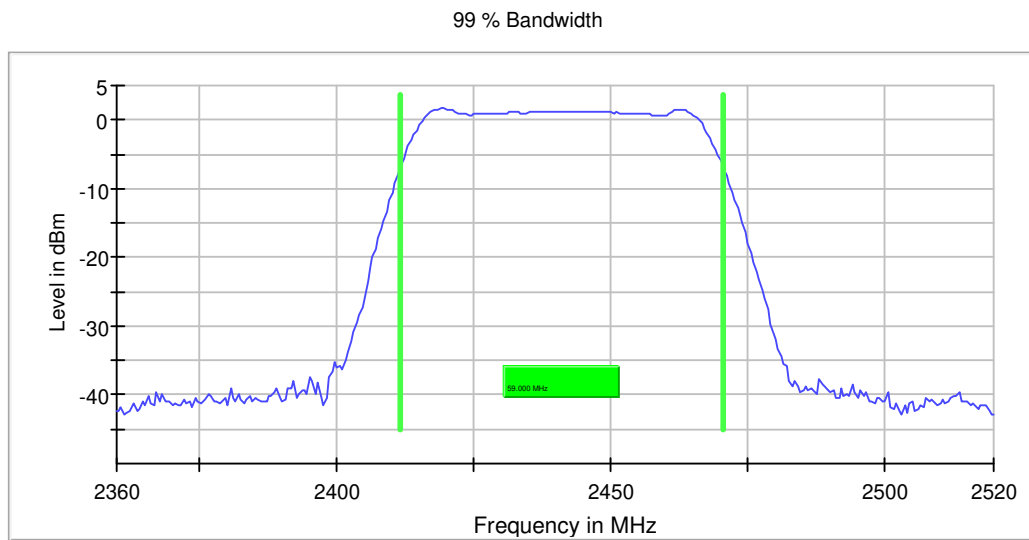
CHAIN B:

Freq (MHz)	Occ Ch BW (MHz)
2440.00000	60.000

Attachments

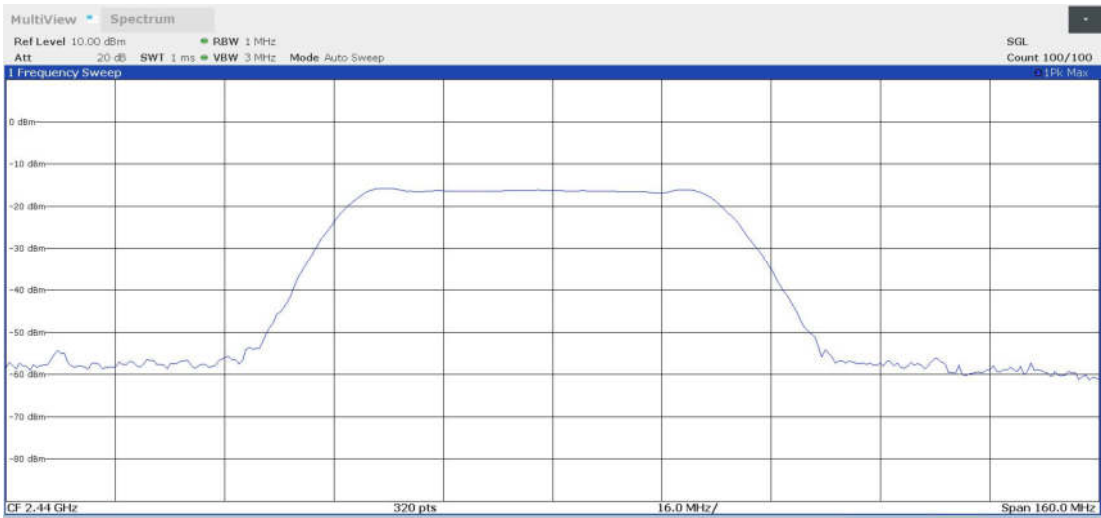
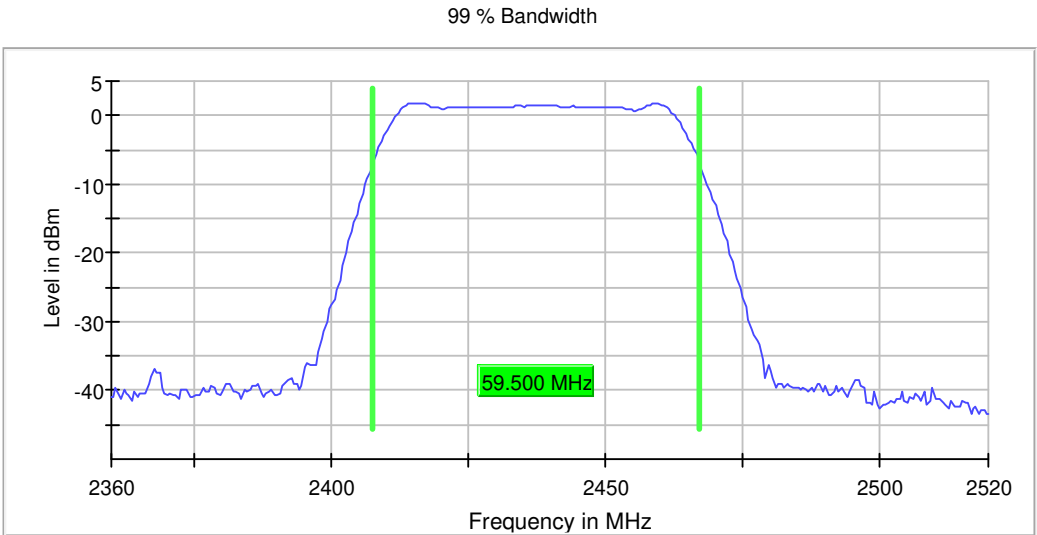
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN A

Figures:



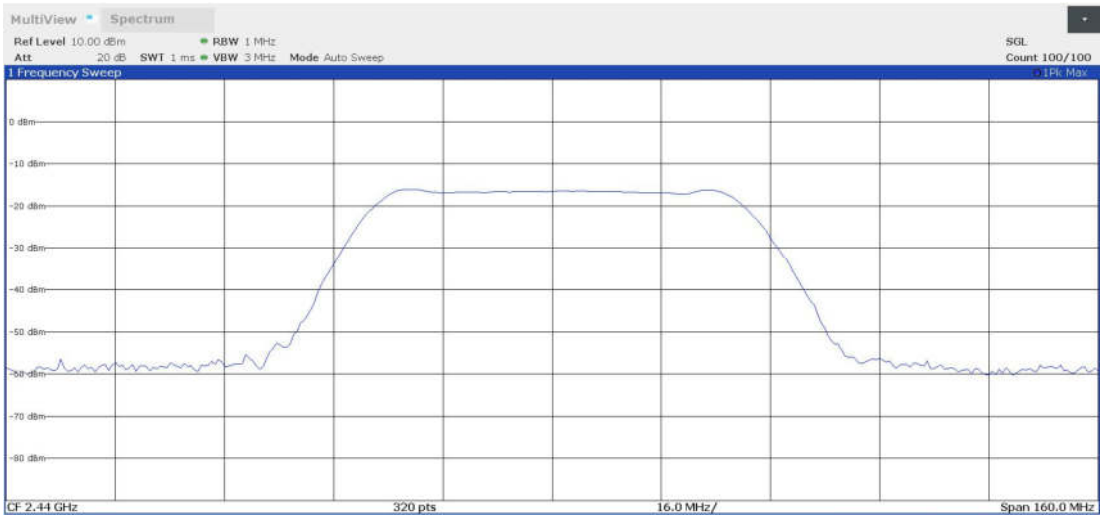
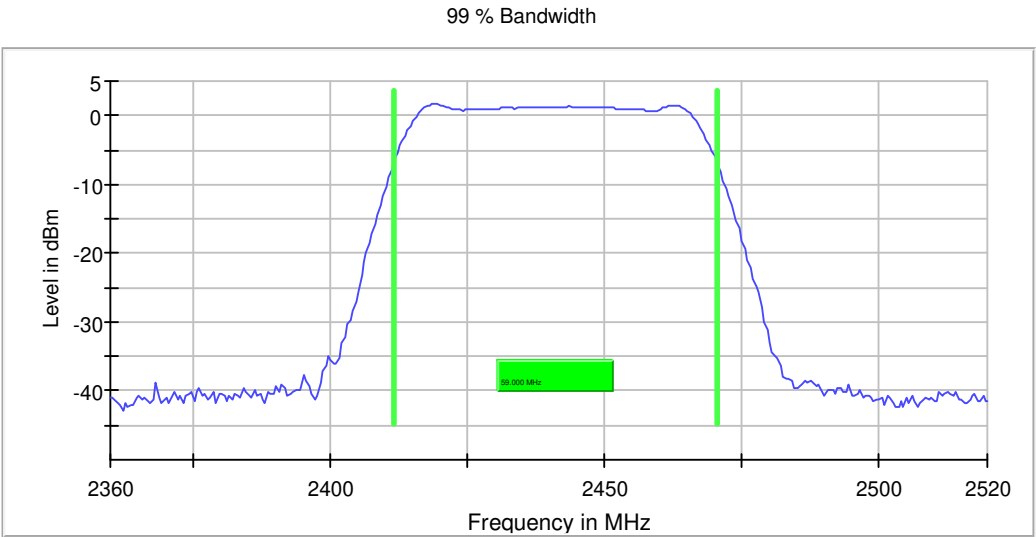
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN B

Figures:



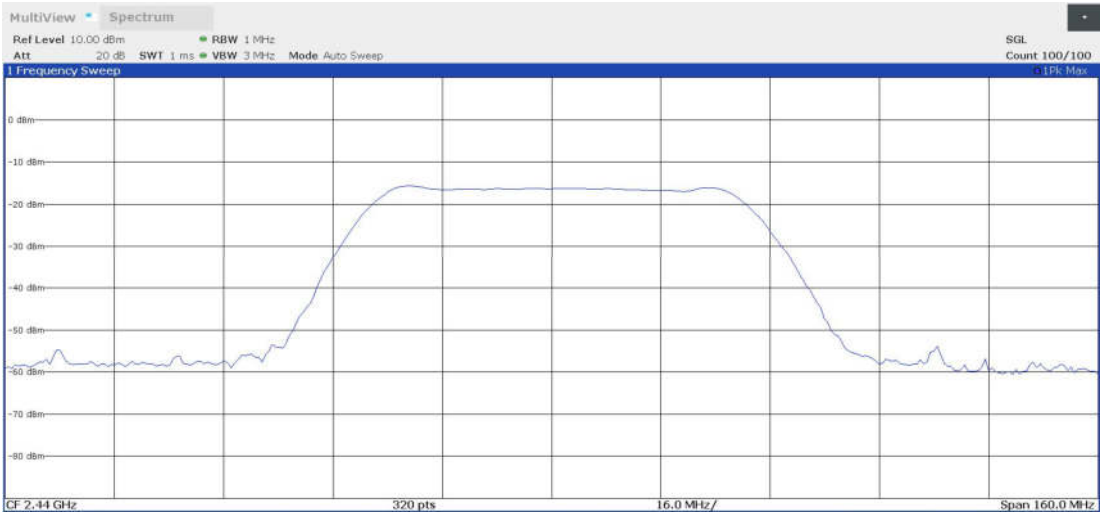
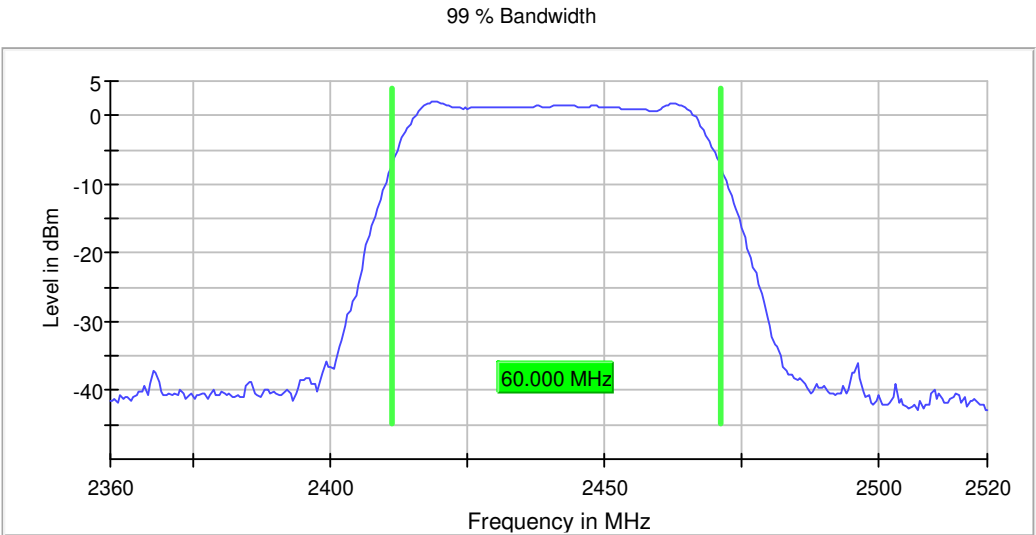
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN A

Figures:



Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN B

Figures:



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.

Results

Modulation: Proprietary 2.4GHz (1 Mbit/s)

CHAIN A:

Freq (MHz)	6 dB Bandwidth (MHz)
2440.00000	55.900

CHAIN B:

Freq (MHz)	6 dB Bandwidth (MHz)
2440.00000	55.500

Verdict

Pass

Modulation: Proprietary 2.4GHz (250 kbit/s)

CHAIN A:

Freq (MHz)	6 dB Bandwidth (MHz)
2440.00000	56.000

CHAIN B:

Freq (MHz)	6 dB Bandwidth (MHz)
2440.00000	56.000

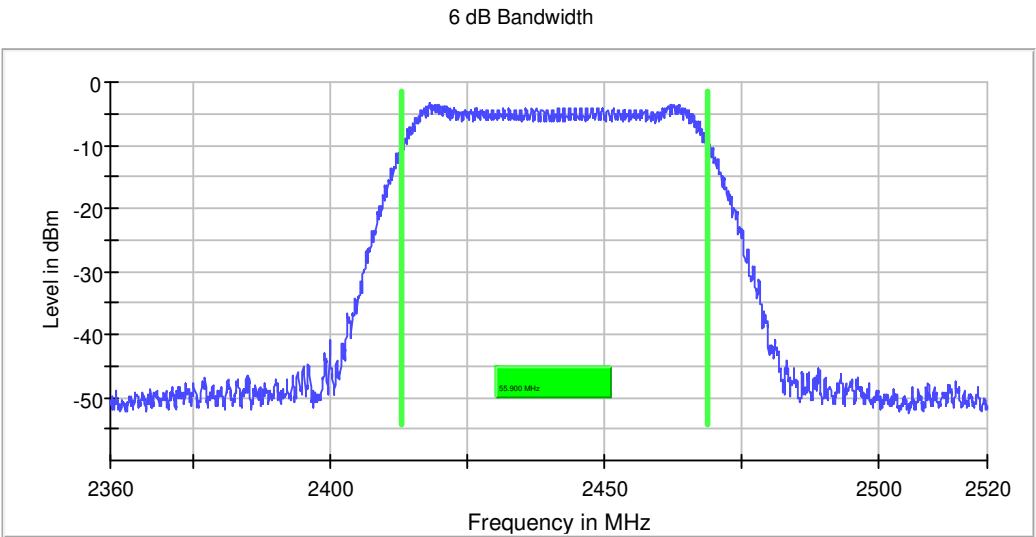
Verdict

Pass

Attachments

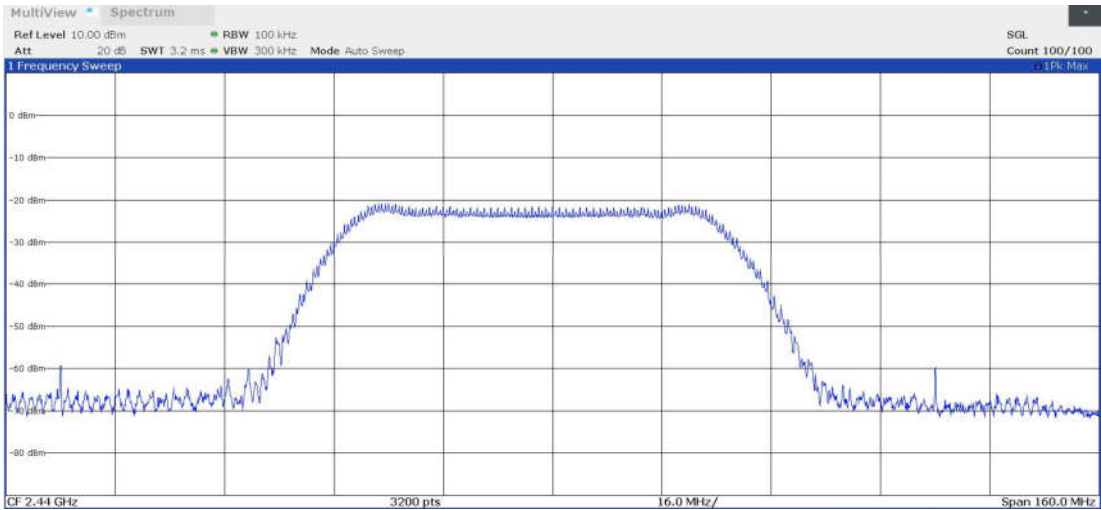
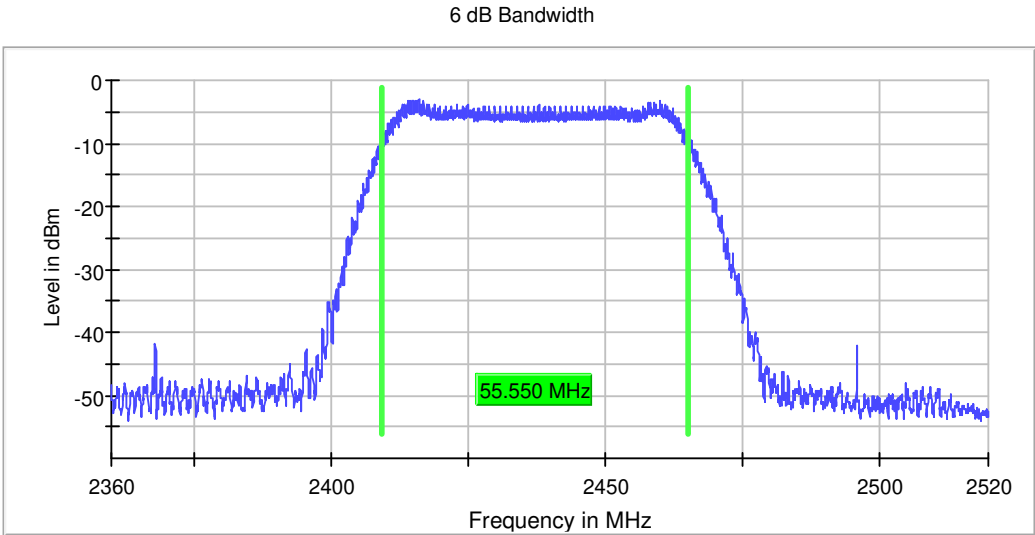
Frequency (MHz) = 2440.00000, Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN A

Figures:



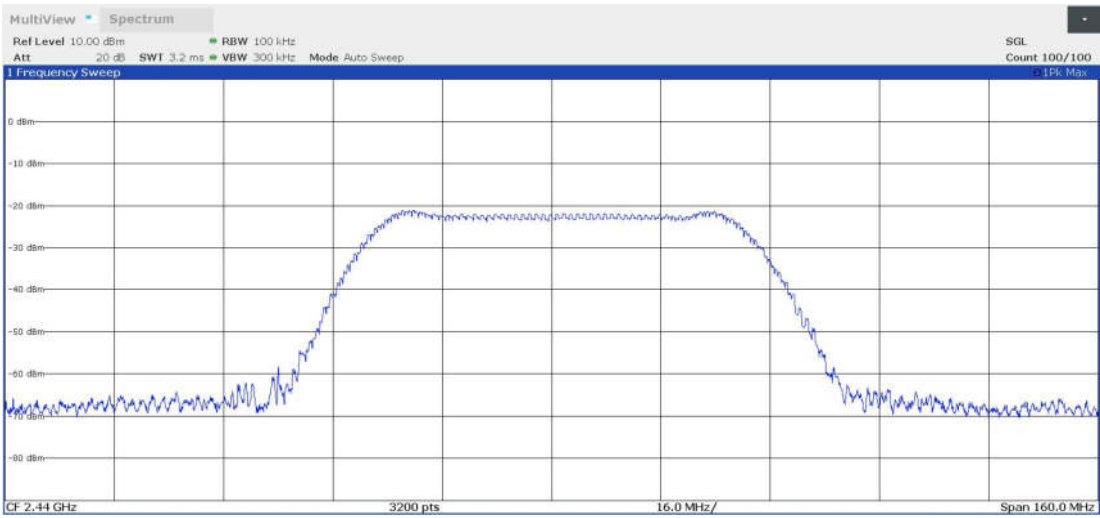
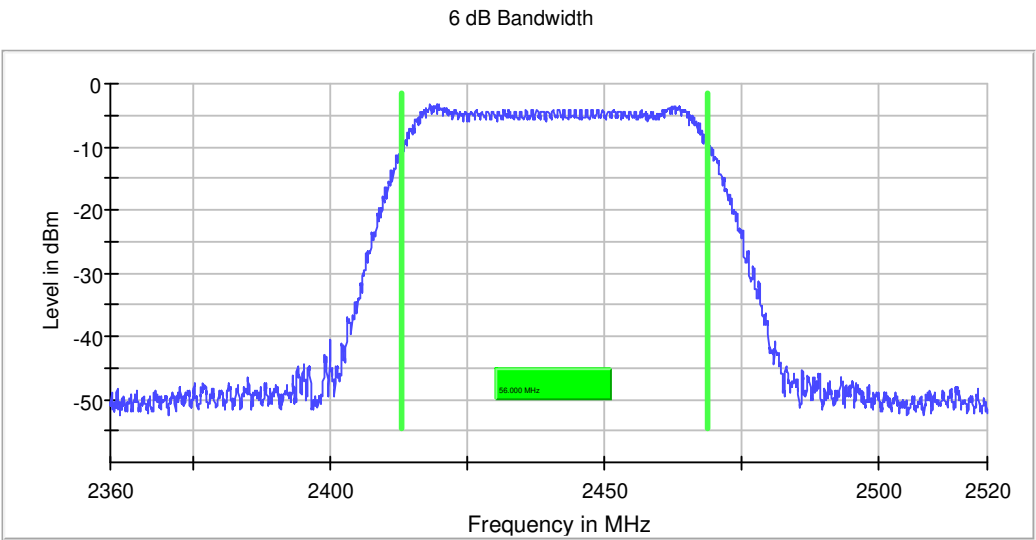
Frequency (MHz) = 2440.00000, Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN B

Figures:



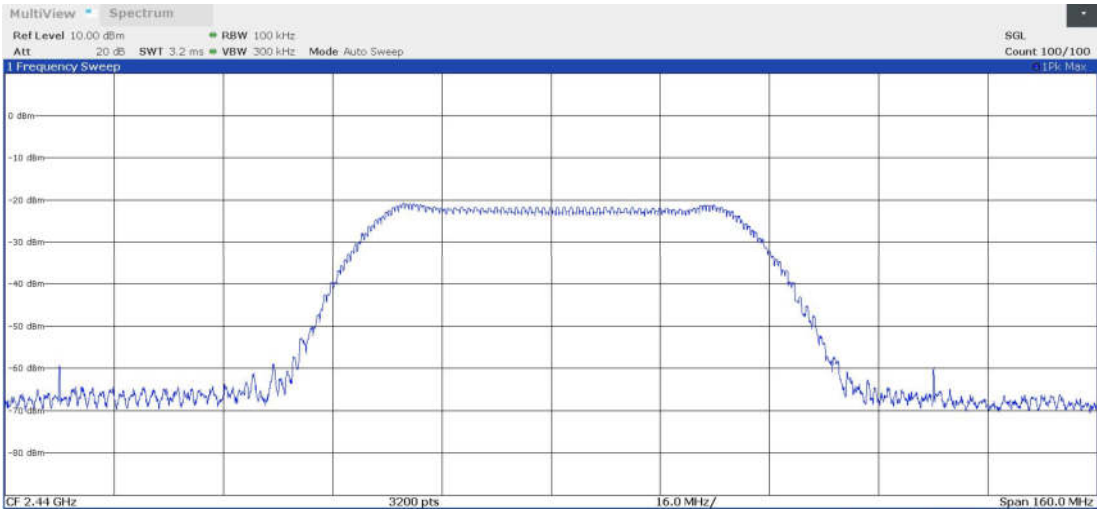
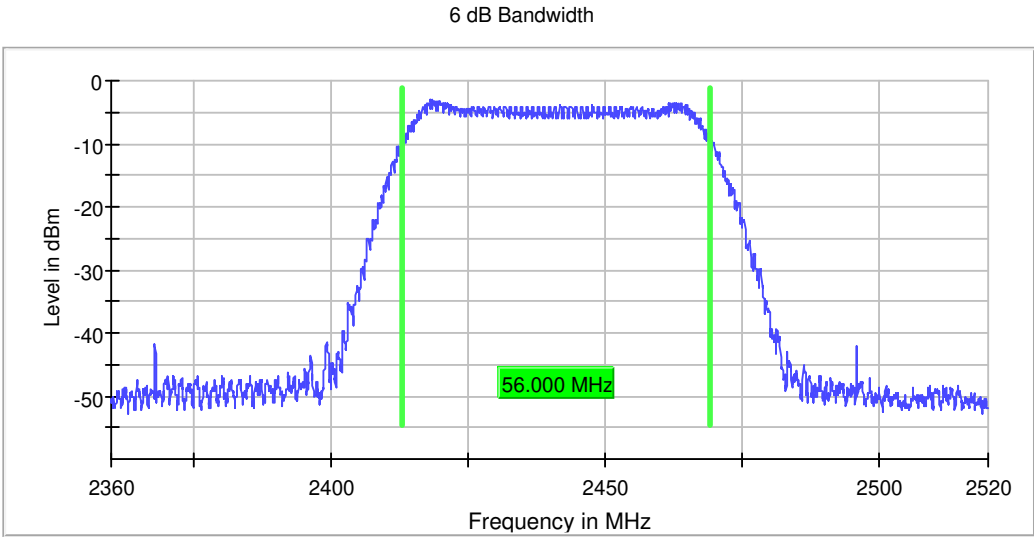
Frequency (MHz) = 2440.00000, Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN A

Figures:



Frequency (MHz) = 2440.00000, Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN B

Figures:



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.

Results

The power spectral density was measured according to clause 11.10.2 "Method PKPSD (peak PSD)" of ANSI C63.10-2013.

Modulation: Proprietary 2.4GHz (1 Mbit/s)

CHAIN A:

Freq (MHz)	PSD (dBm)
2440.00000	-3.384

CHAIN B:

Freq (MHz)	PSD (dBm)
2440.00000	-3.179

Verdict

Pass

Modulation: Proprietary 2.4GHz (250 kbit/s)

CHAIN A:

Freq (MHz)	PSD (dBm)
2440.00000	-3.460

CHAIN B:

Freq (MHz)	PSD (dBm)
2440.00000	-3.179

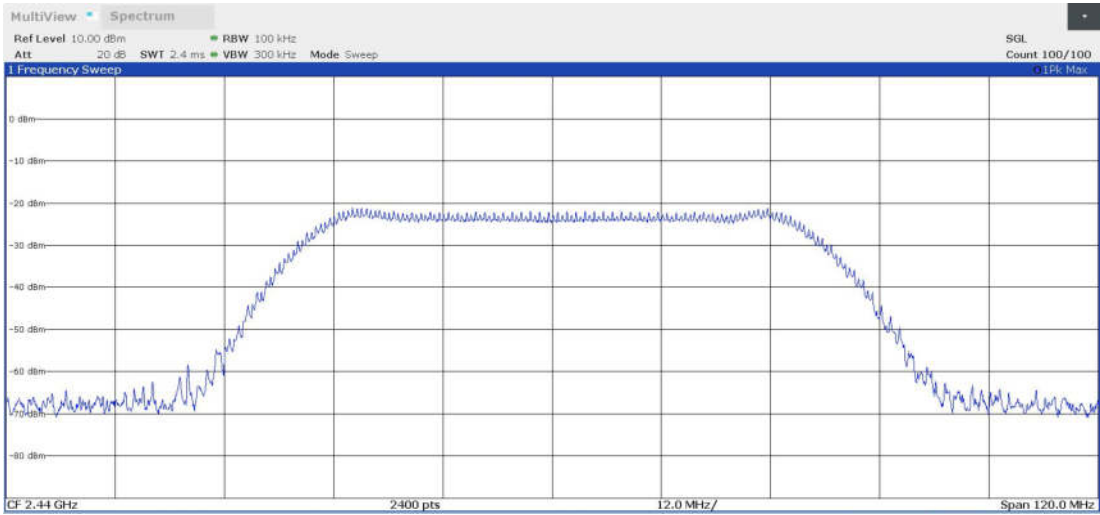
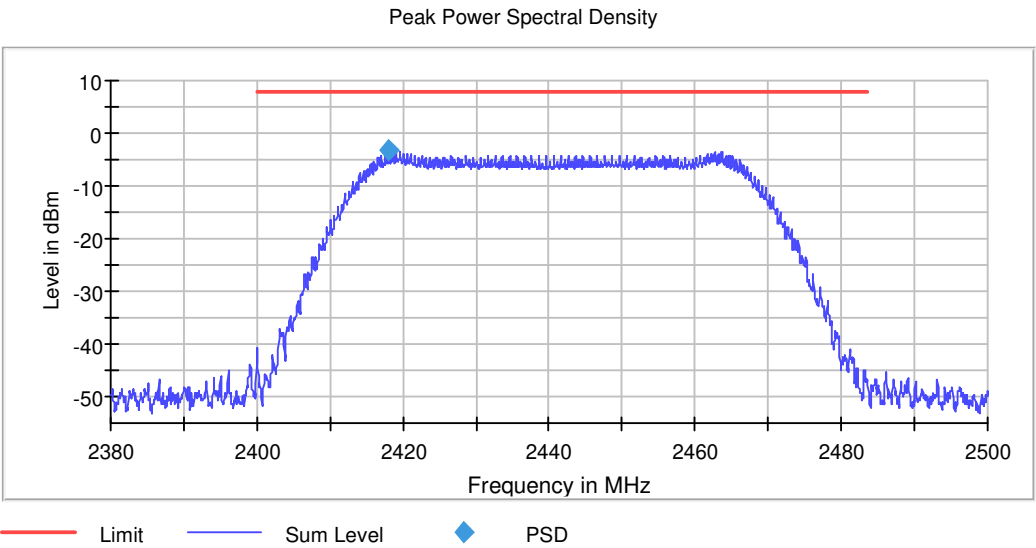
Verdict

Pass

Attachments

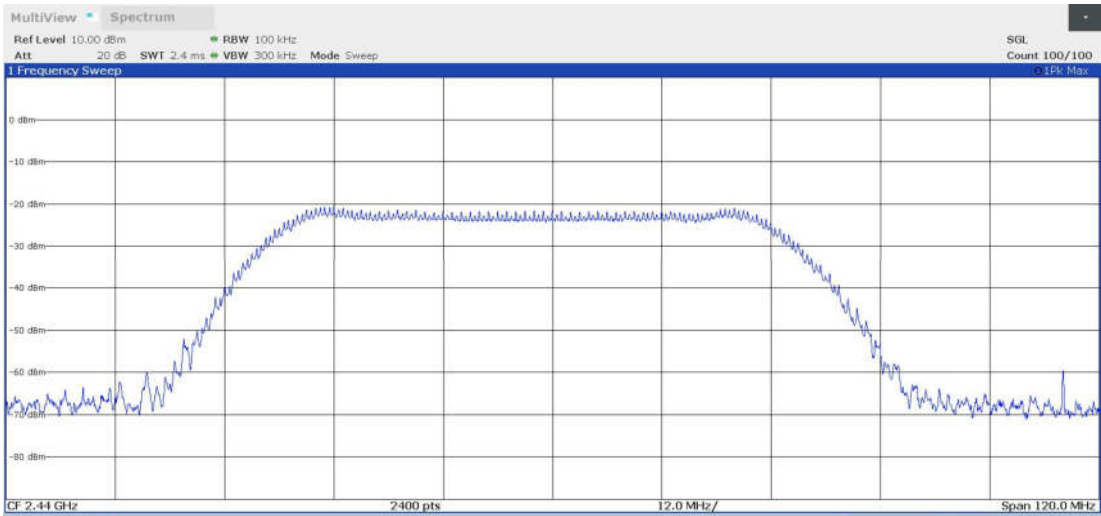
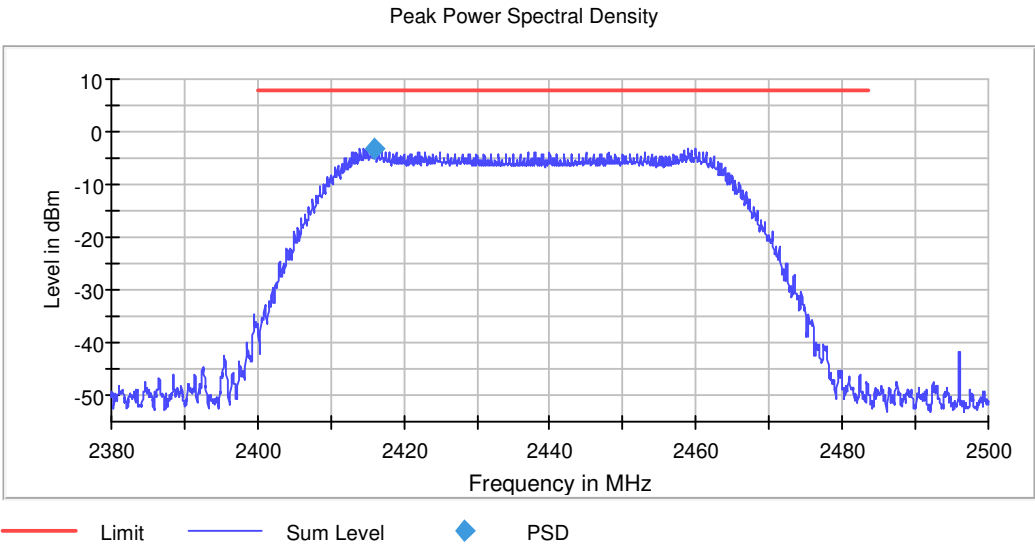
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN A

Figures:



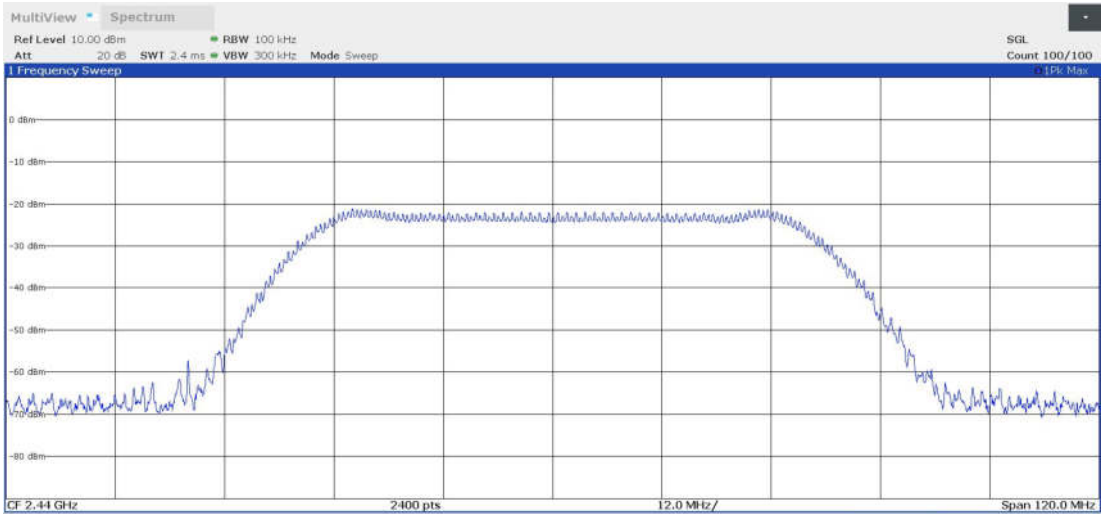
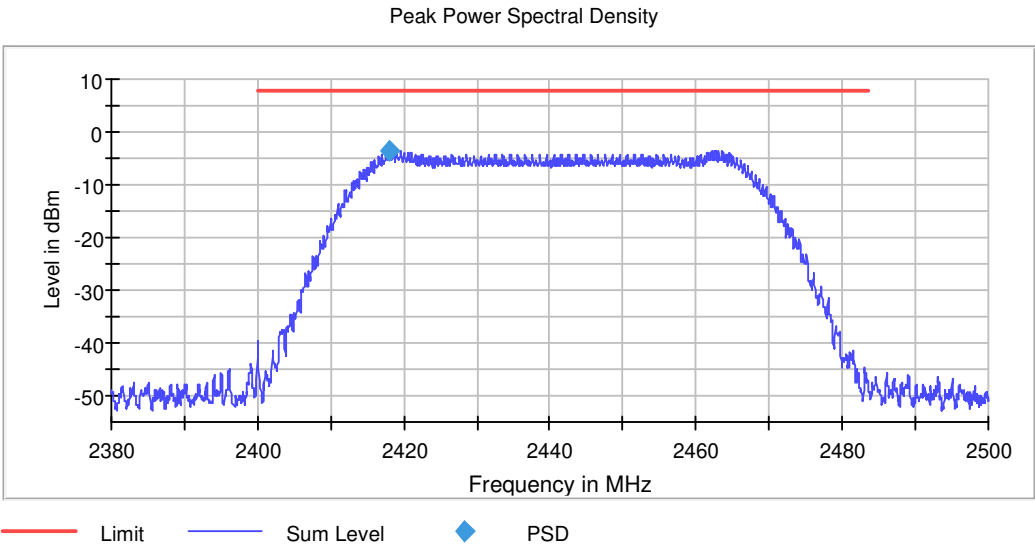
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN B

Figures:



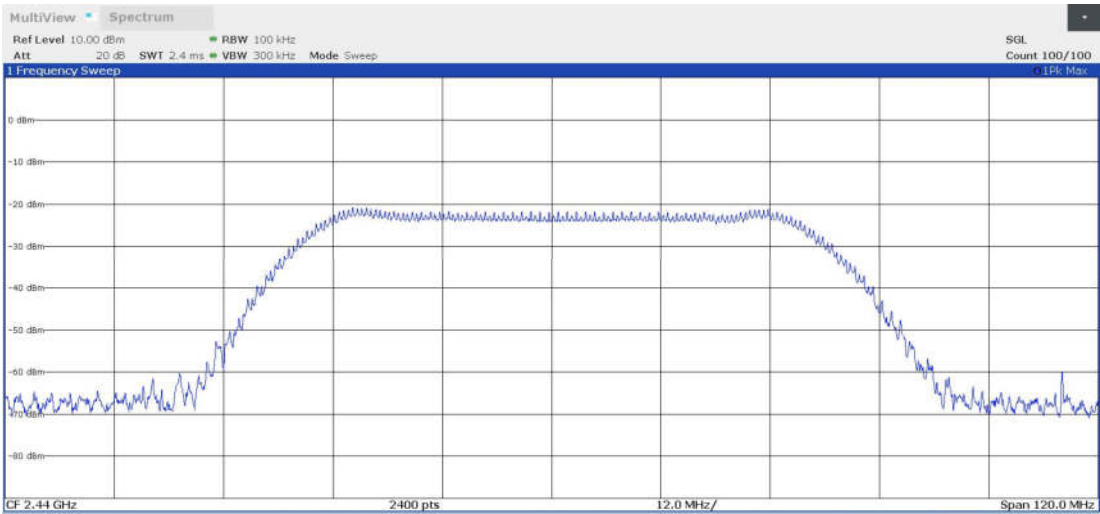
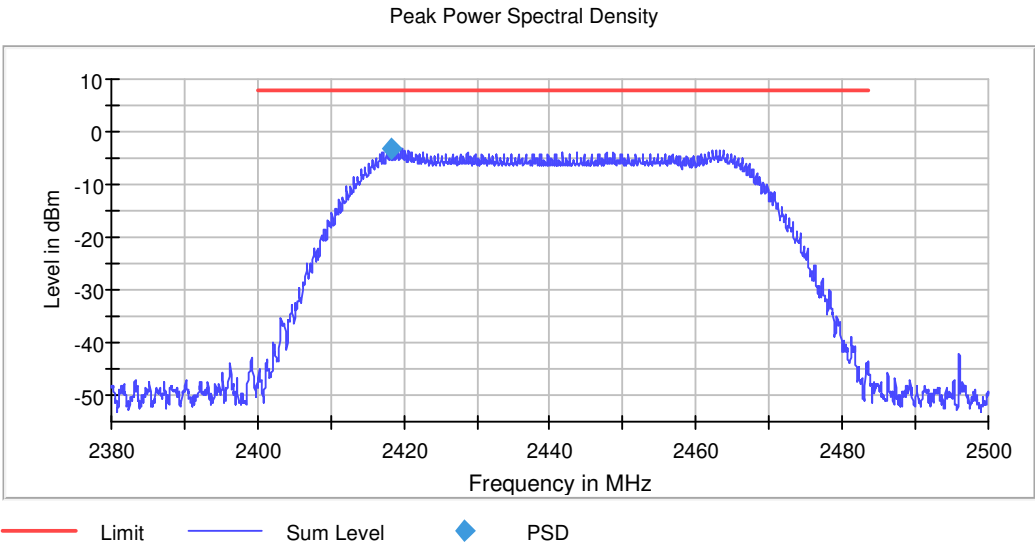
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN A

Figures:



Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN B

Figures:



RSS-247 5.4 (d) / FCC 15.247 (b) Maximum Peak Conducted output power

Limits

For systems using digital modulation in the 2400-2483.5 MHz band: 1 watt (30 dBm).

RSS-247:

The e.i.r.p. shall not exceed 4 W (RSS-247).

Results

The maximum peak conducted output power level in the fundamental emission was measured using the method according to clause 11.9.1.1 "RBW $\geq$ DTS bandwidth" of ANSI C.63.10-2013.

The EIRP power (dBm) is calculated by adding the declared maximum antenna gain to the measured conducted power.

Maximum Declared Antenna Gain: 2 dBi

Modulation: Proprietary 2.4GHz (1 Mbit/s)

CHAIN A:

Freq (MHz)	Maximum Conducted Power (dBm)	Maximum EIRP Power (dBm)
2440.00000	16.083	18.083

CHAIN B:

Freq (MHz)	Maximum Conducted Power (dBm)	Maximum EIRP Power (dBm)
2440.00000	16.105	18.105

Verdict

Pass

Modulation: Proprietary 2.4GHz (250 kbit/s)

CHAIN A:

Freq (MHz)	Maximum Conducted Power (dBm)	Maximum EIRP Power (dBm)
2440.00000	16.009	18.009

CHAIN B:

Freq (MHz)	Maximum Conducted Power (dBm)	Maximum EIRP Power (dBm)
2440.00000	16.066	18.066

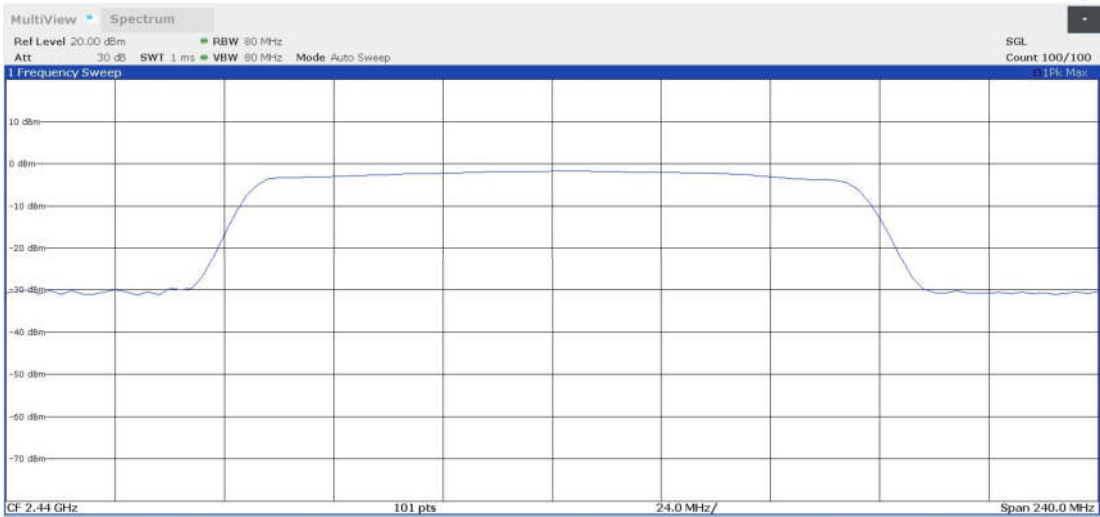
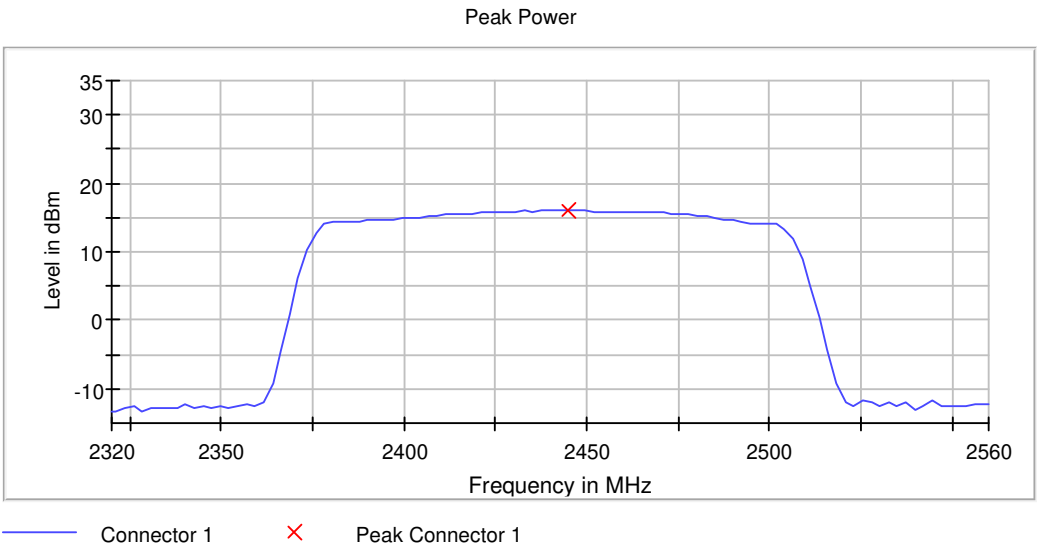
Verdict

Pass

Attachments

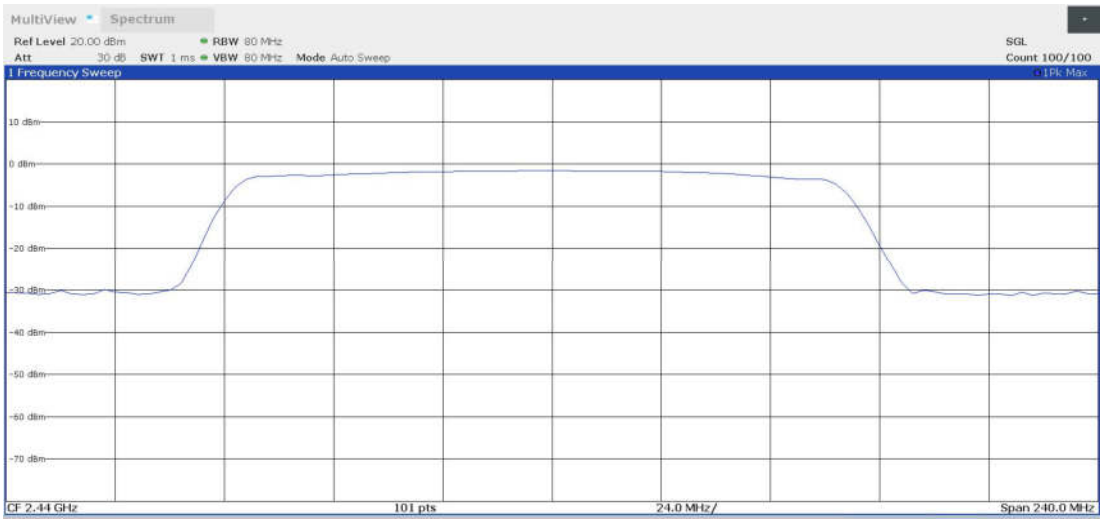
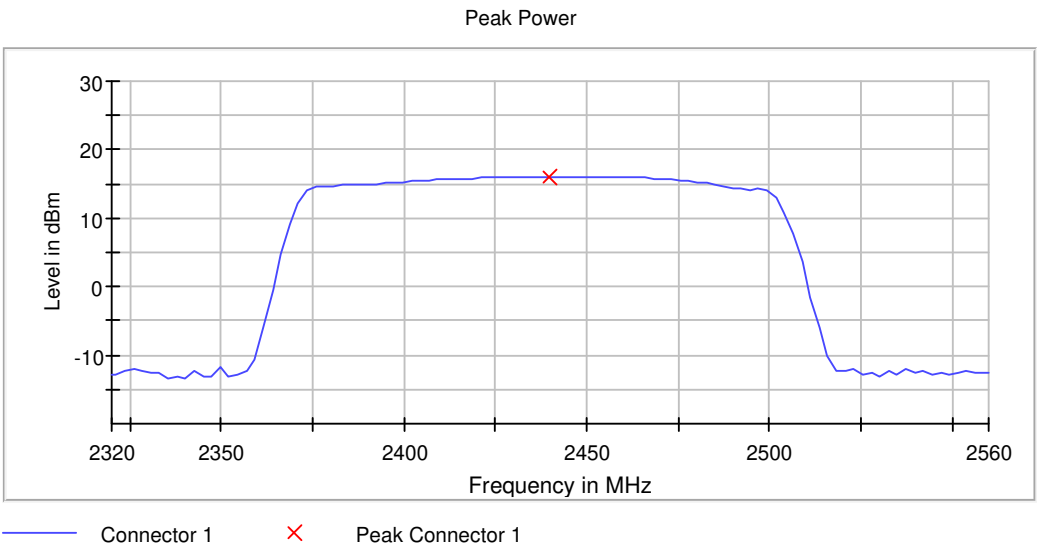
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN A

Figures:



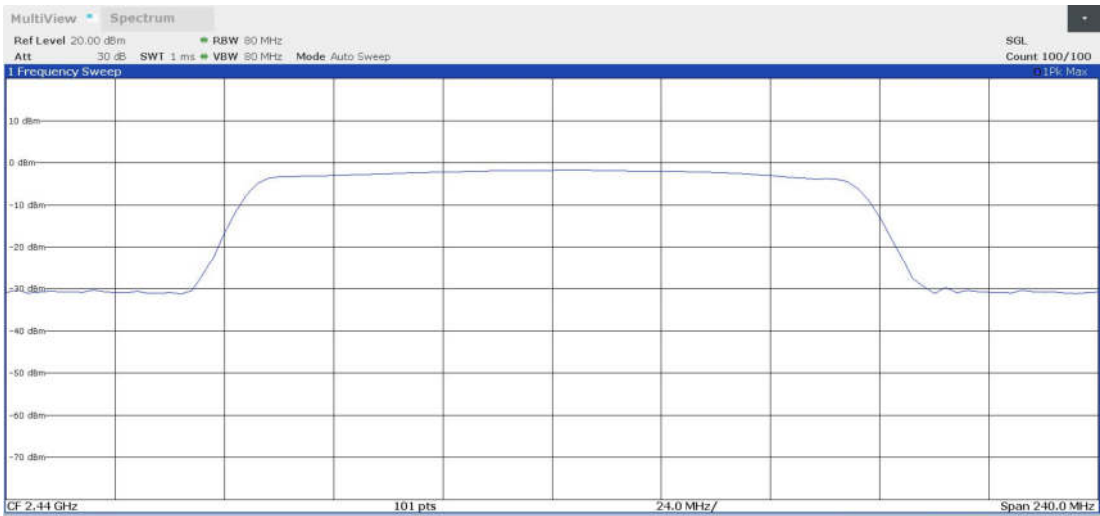
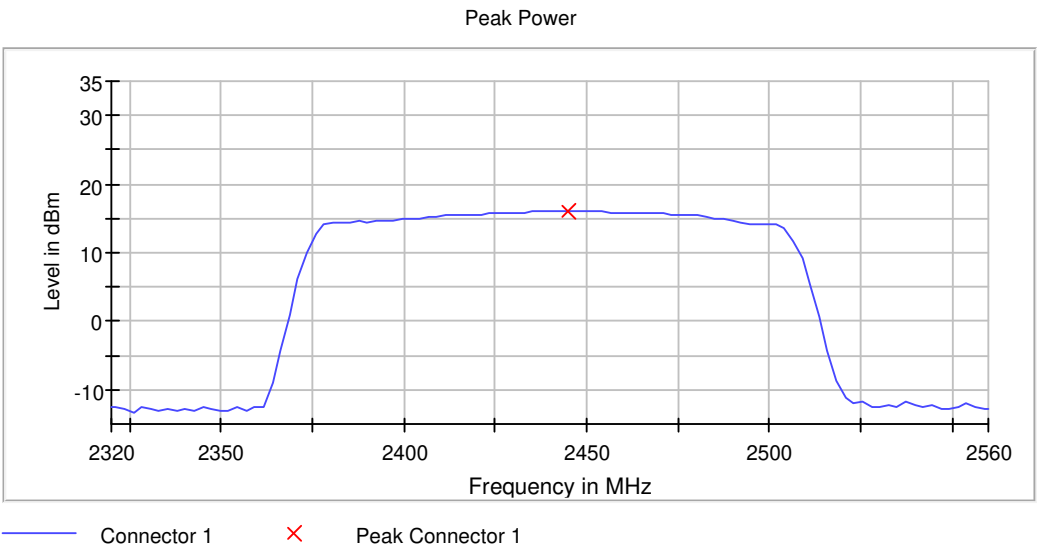
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN B

Figures:



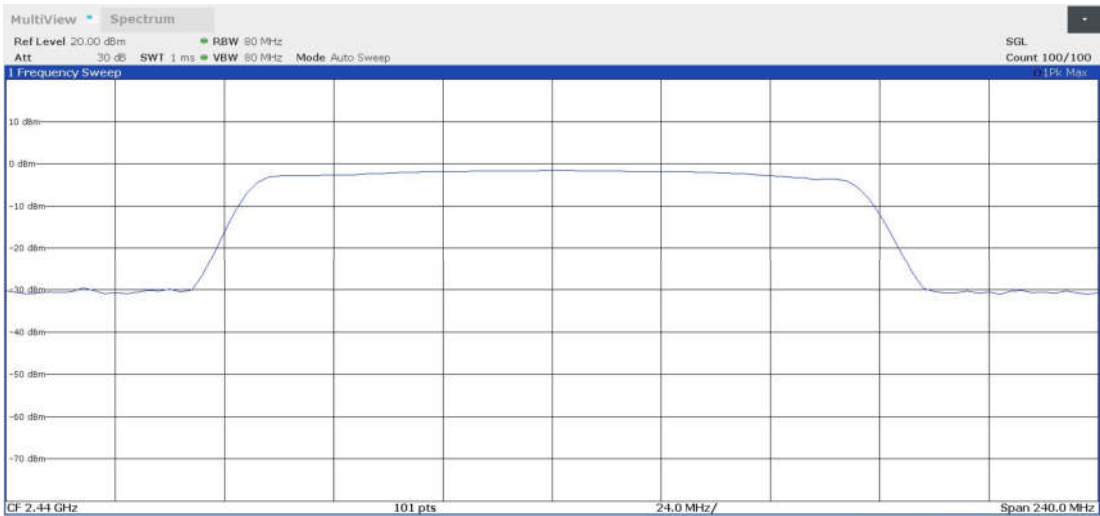
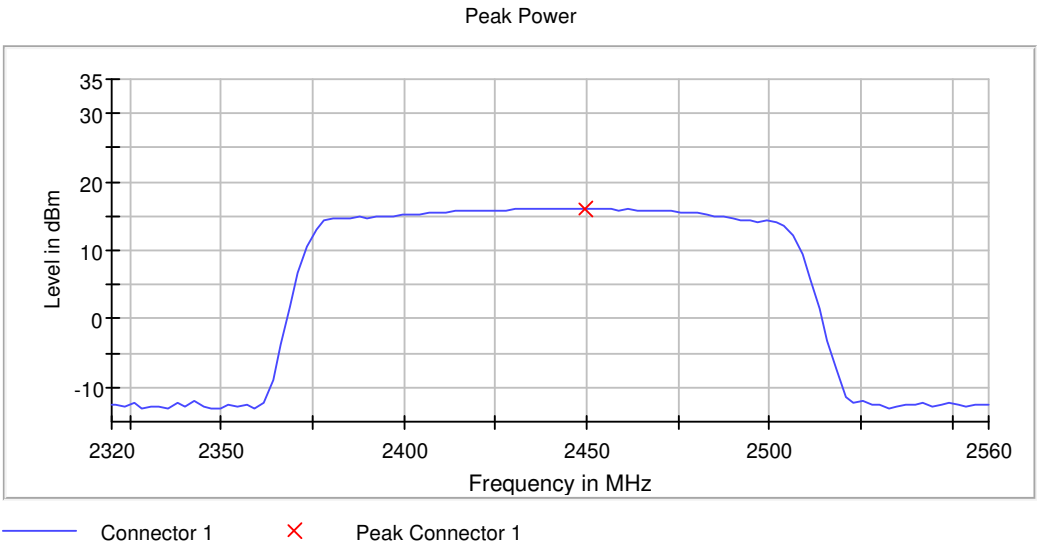
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN A

Figures:



Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN B

Figures:



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

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 shall be 30 dB instead of 20 dB.

Results

Modulation: Proprietary 2.4GHz (1 Mbit/s)

CHAIN A

Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

CHAIN B

Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

Verdict

Pass

Modulation: Proprietary 2.4GHz (250 kbit/s)

CHAIN A

Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

CHAIN B

Radiated measurements were used to show compliance with the limits in the restricted bands 2.31-2.39 GHz and 2.4835-2.5 GHz.

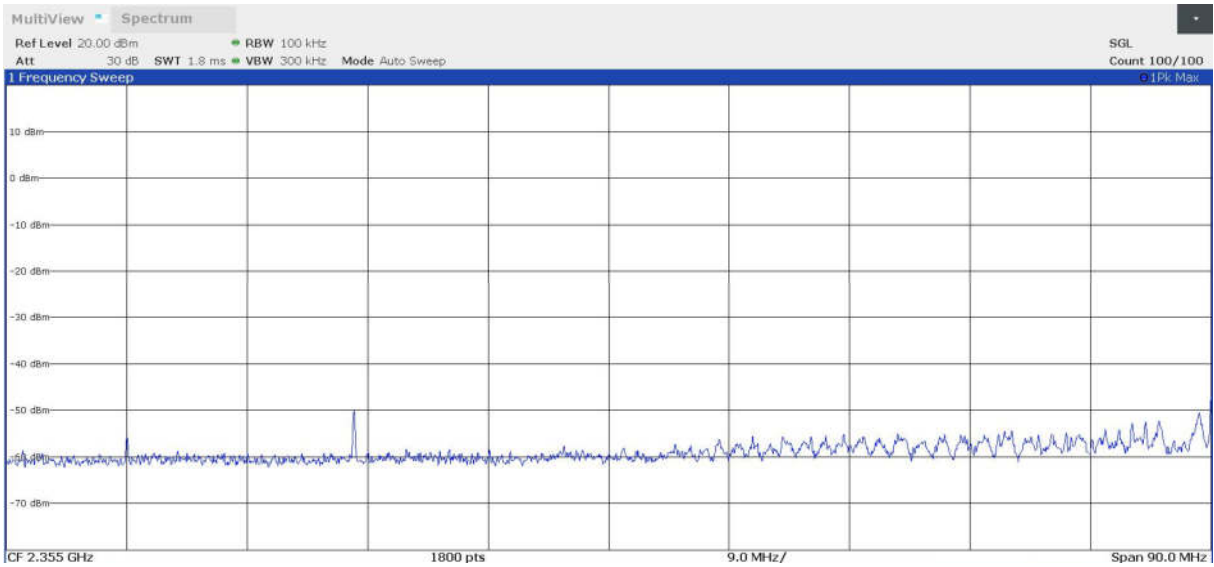
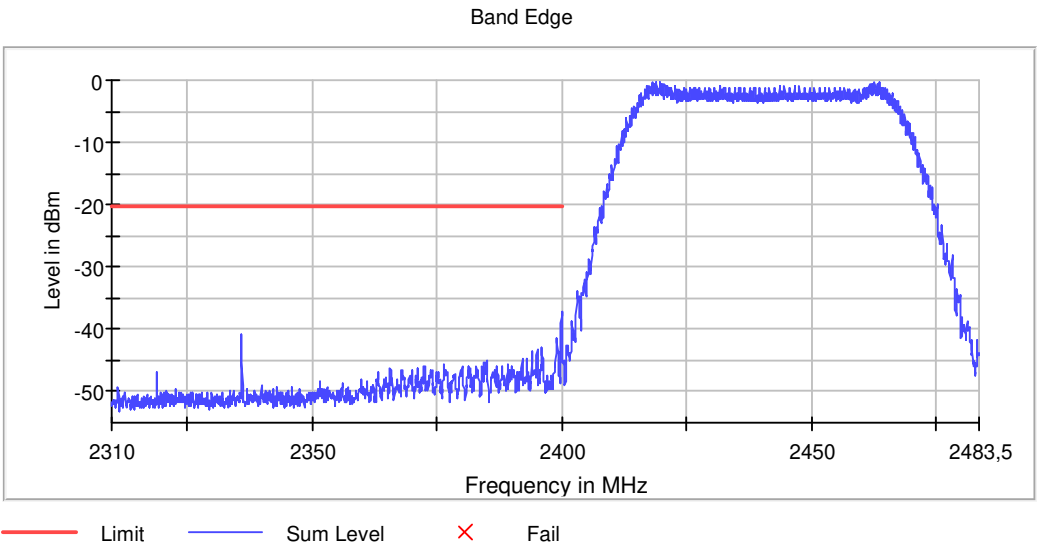
Verdict

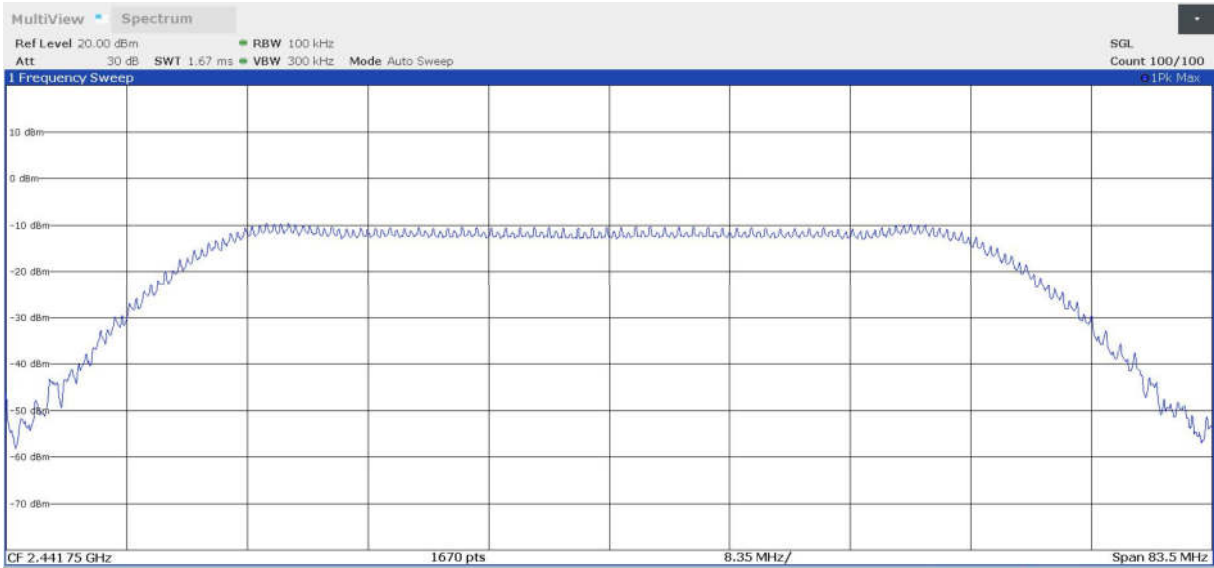
Pass

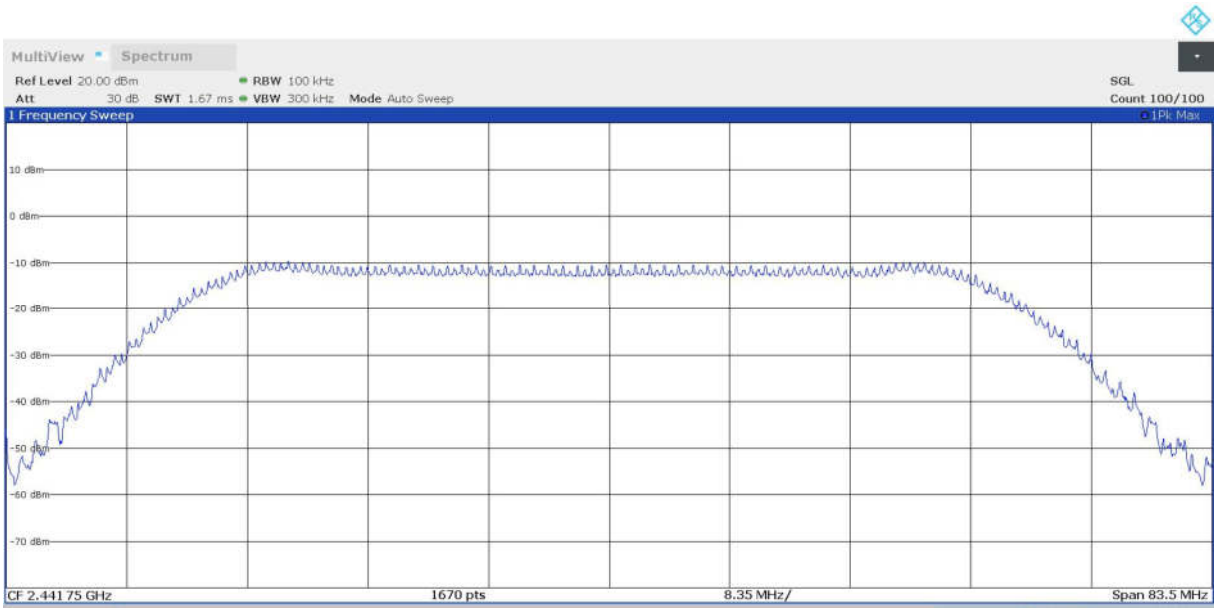
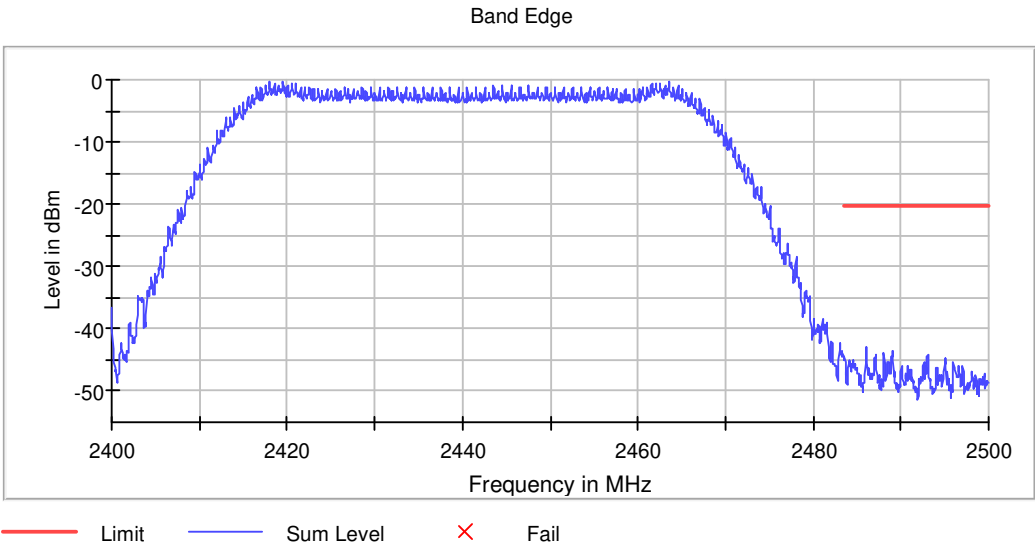
Attachments

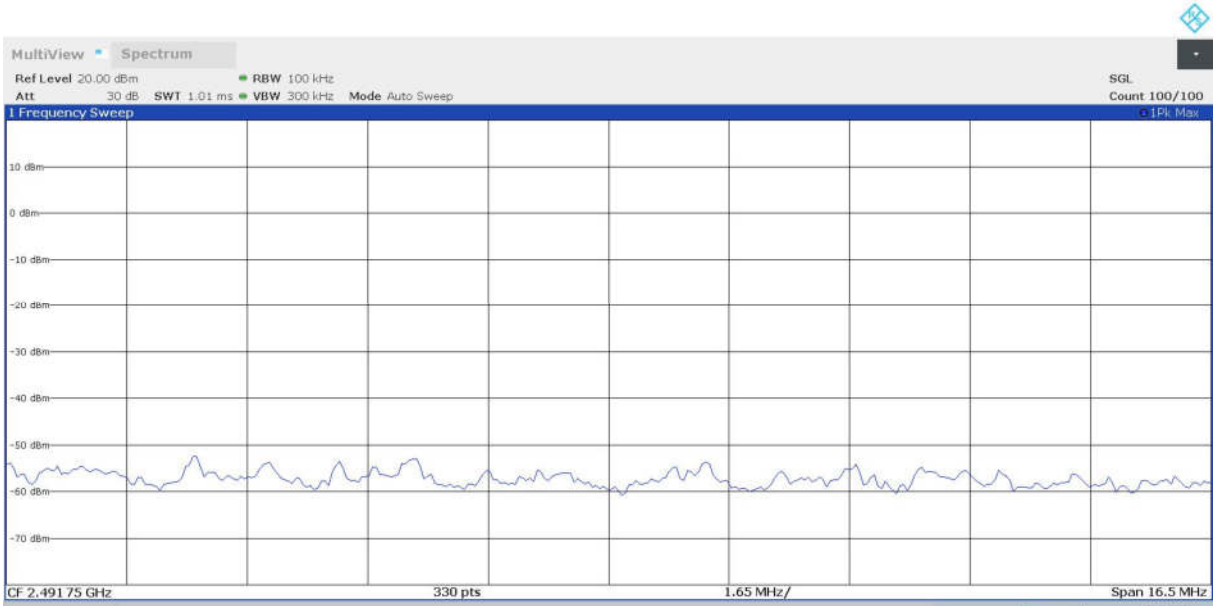
Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN A

Figures:



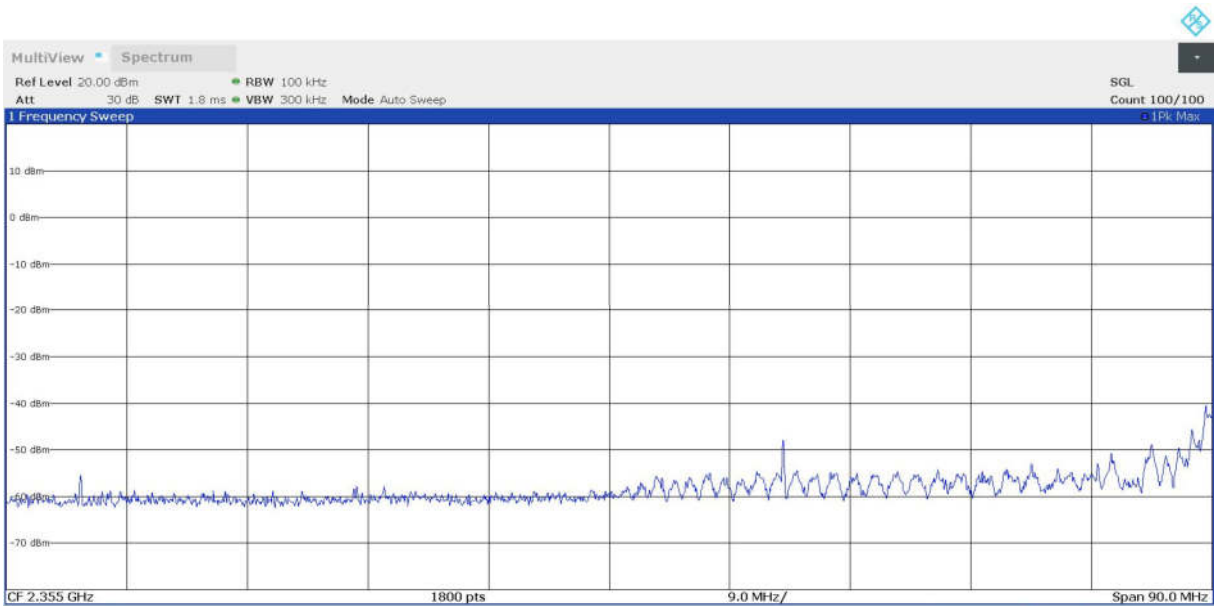
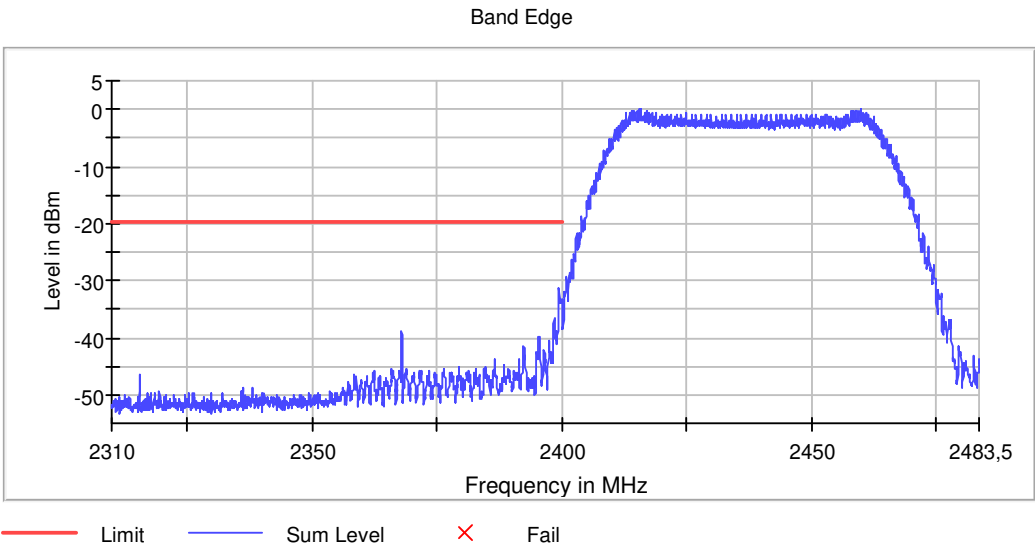


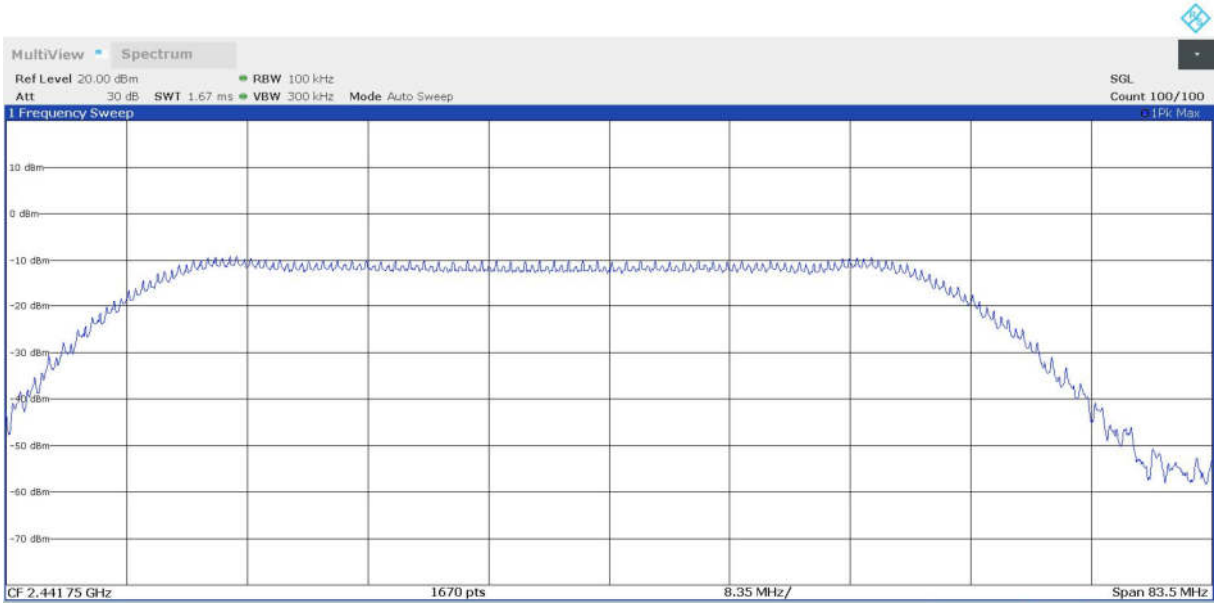


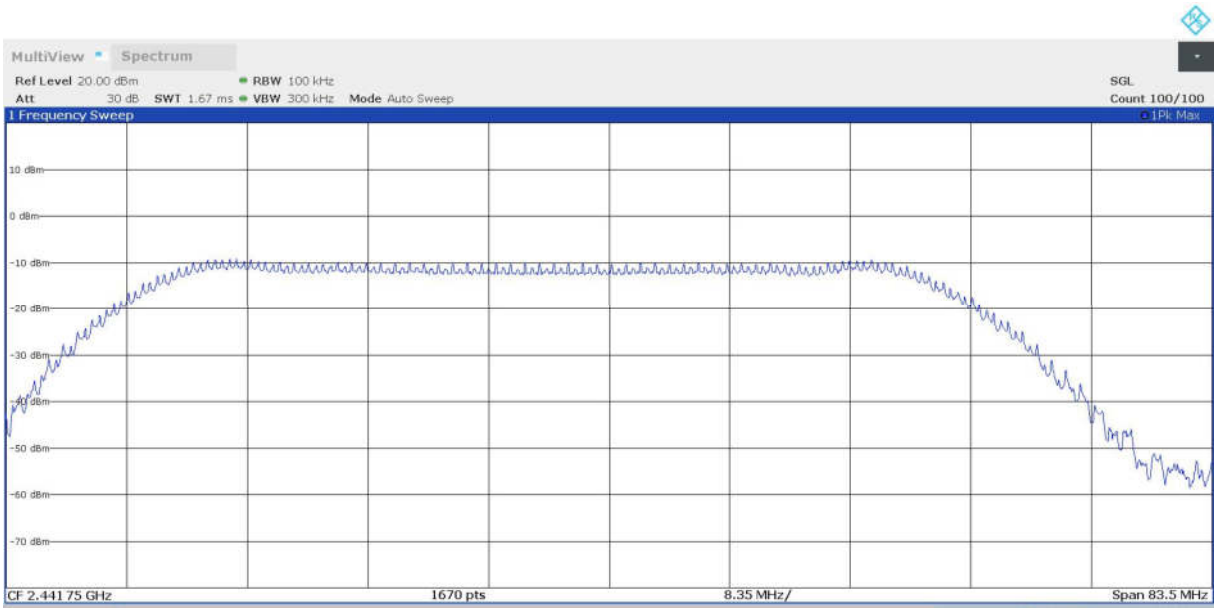
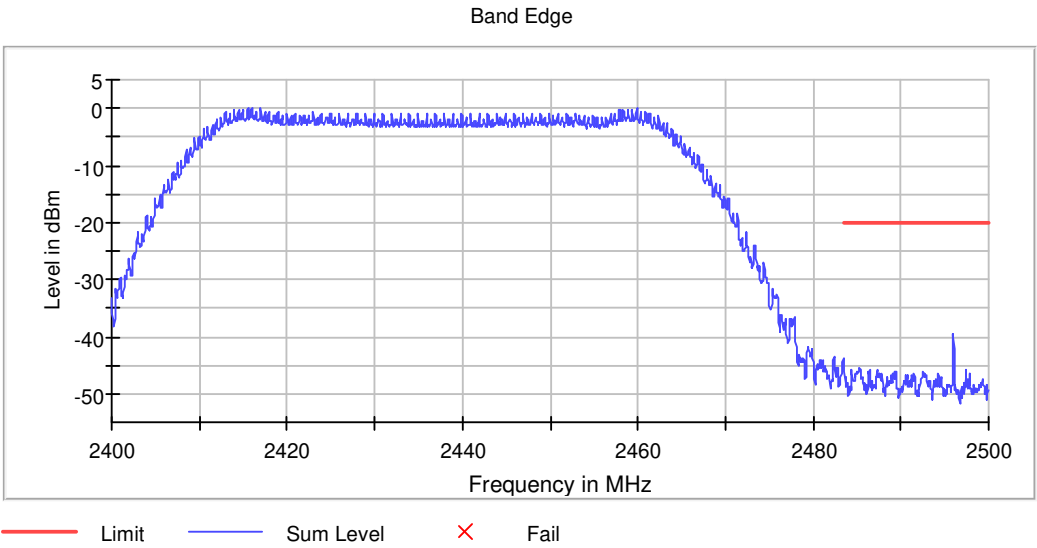


Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), CHAIN B

Figures:



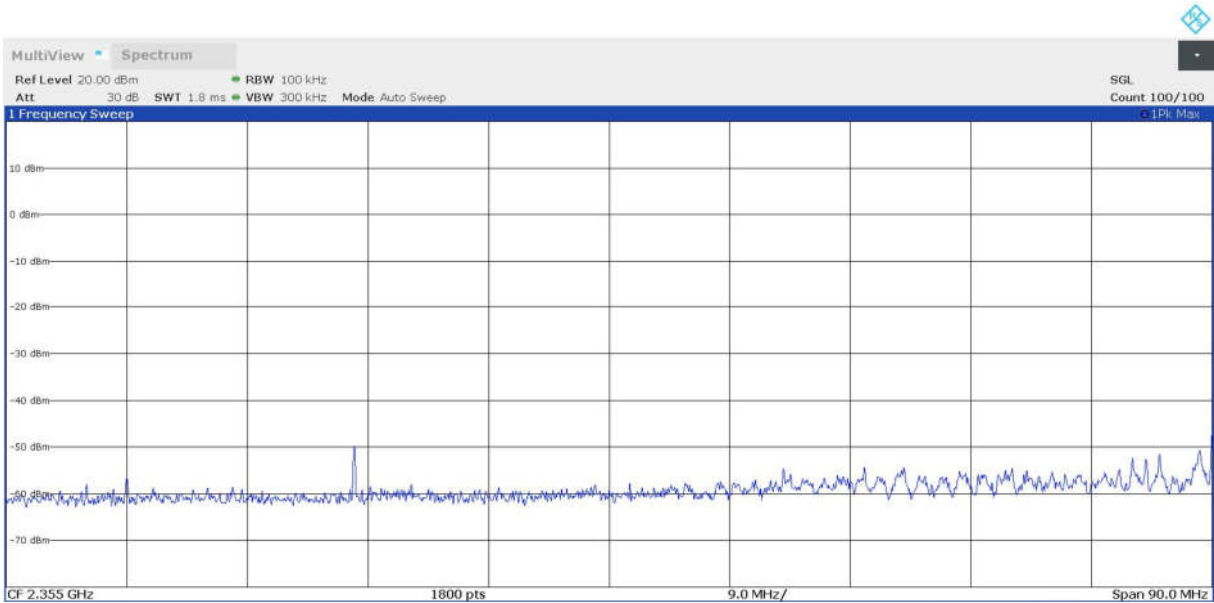
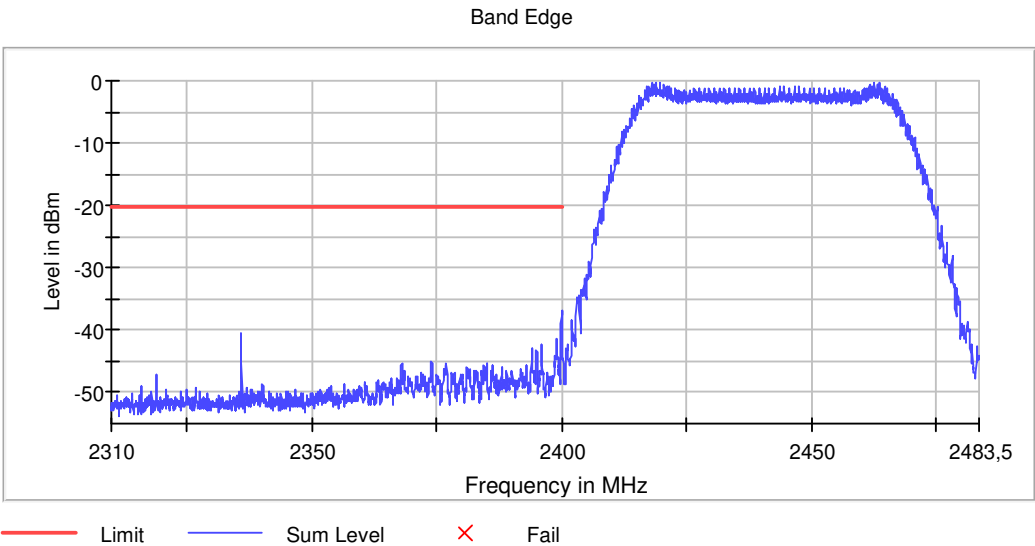


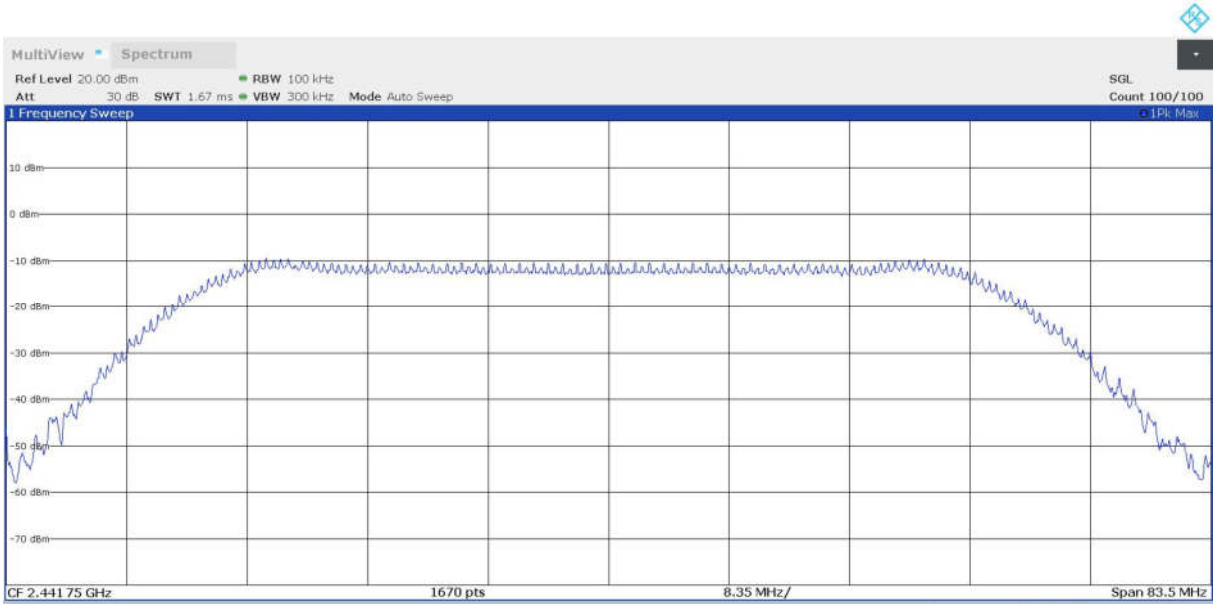


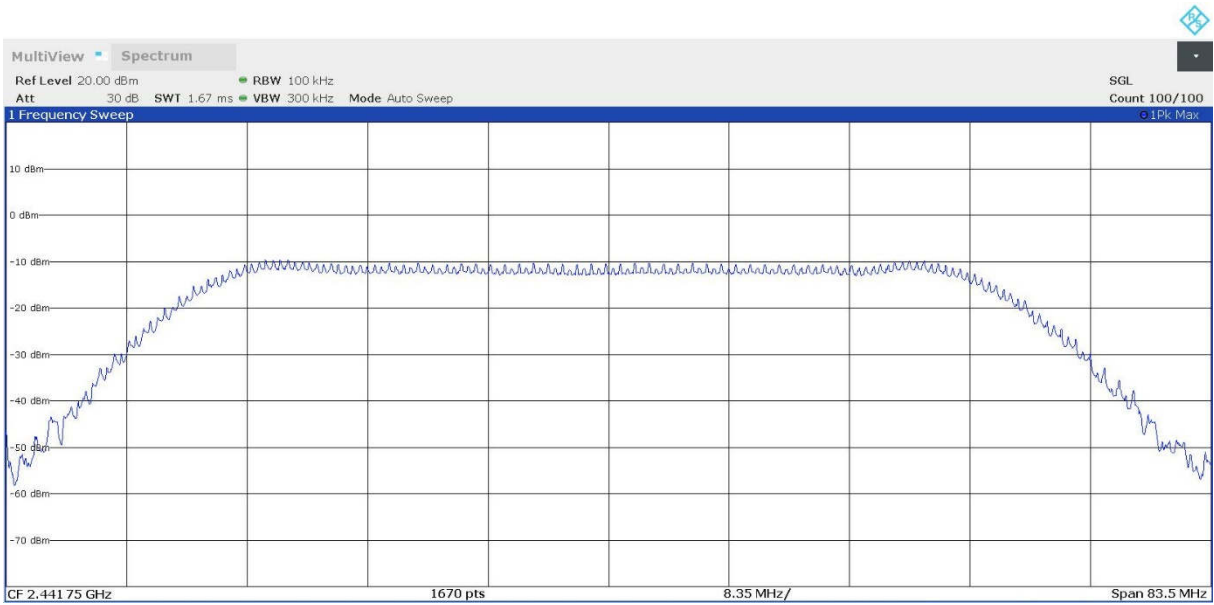
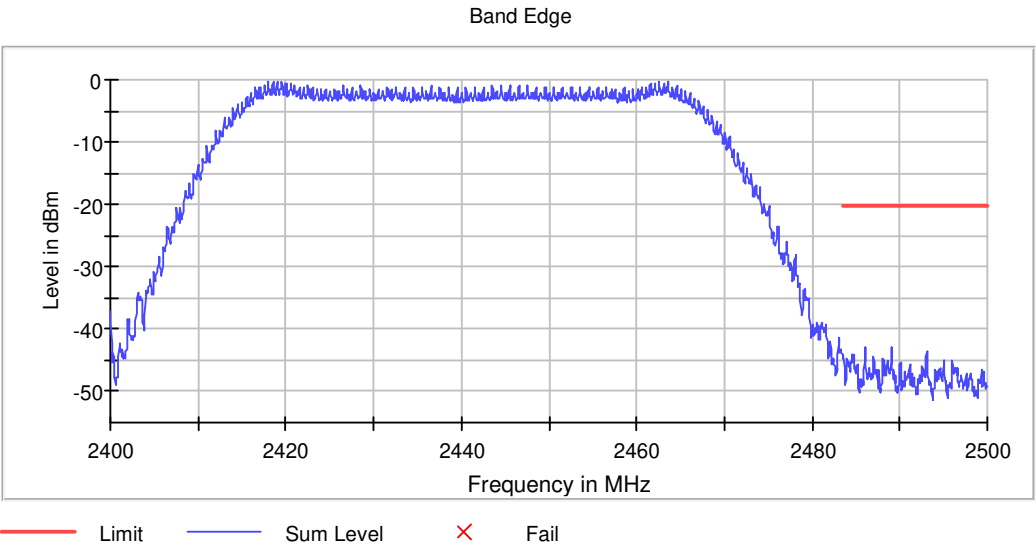


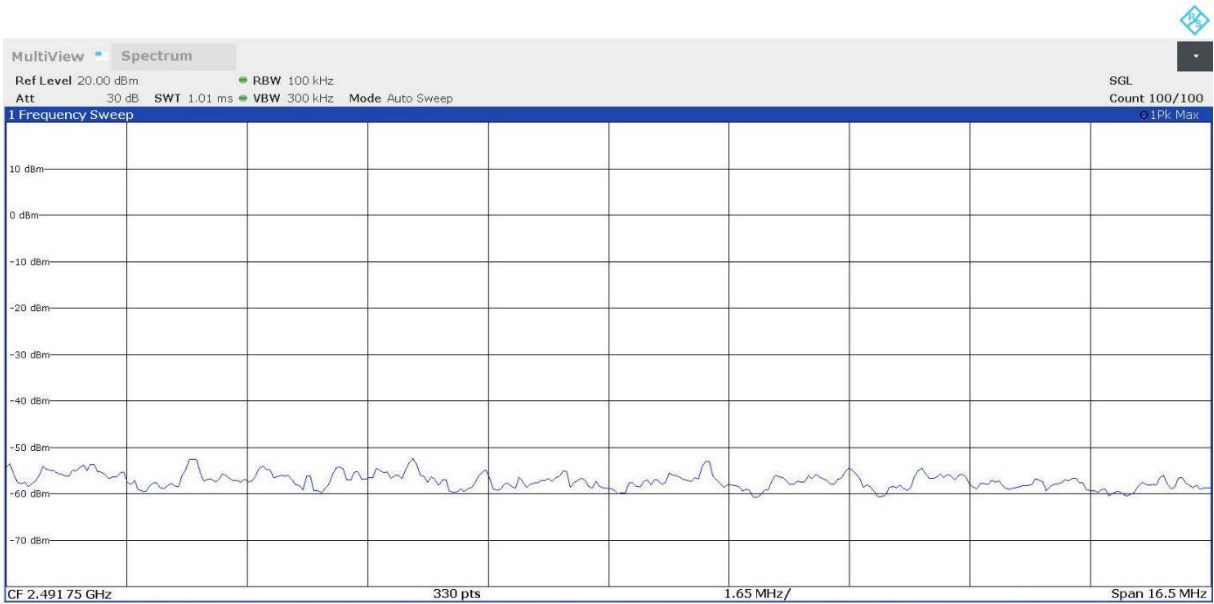
Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN A

Figures:



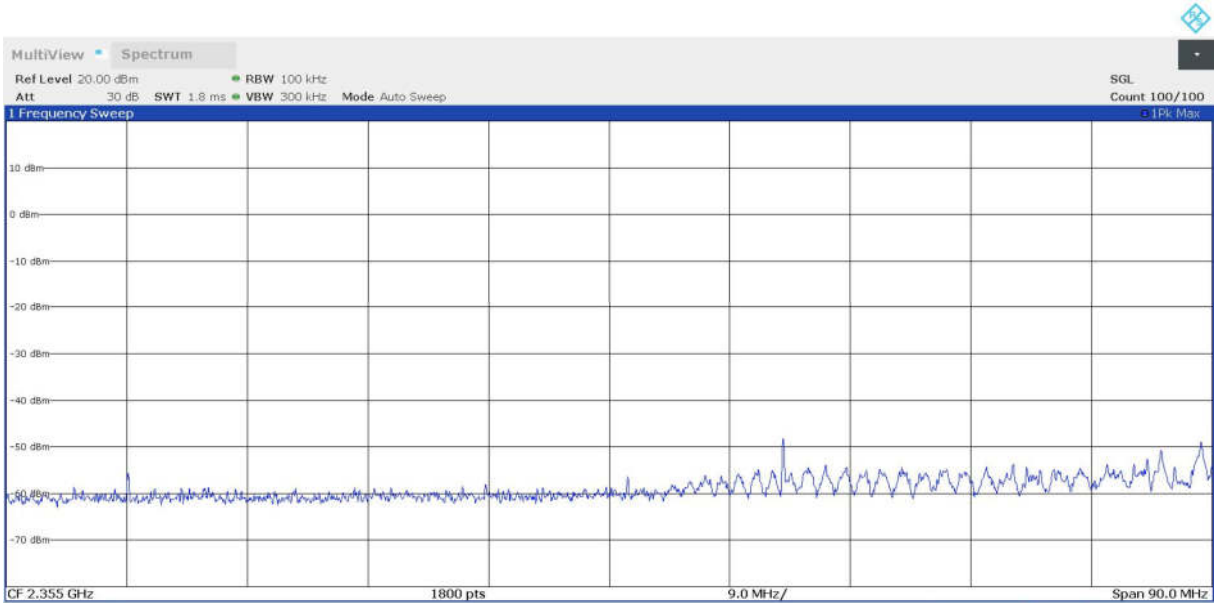
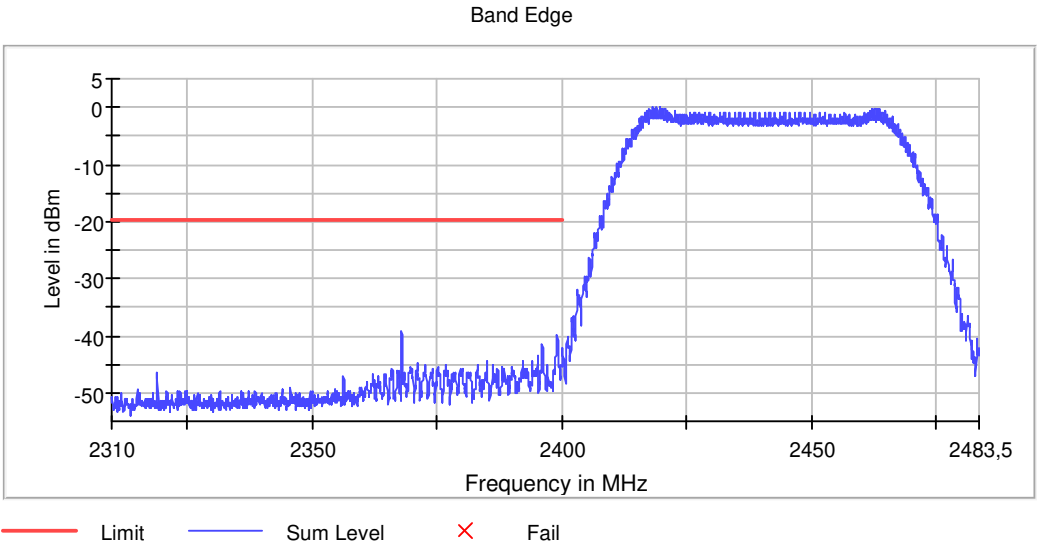


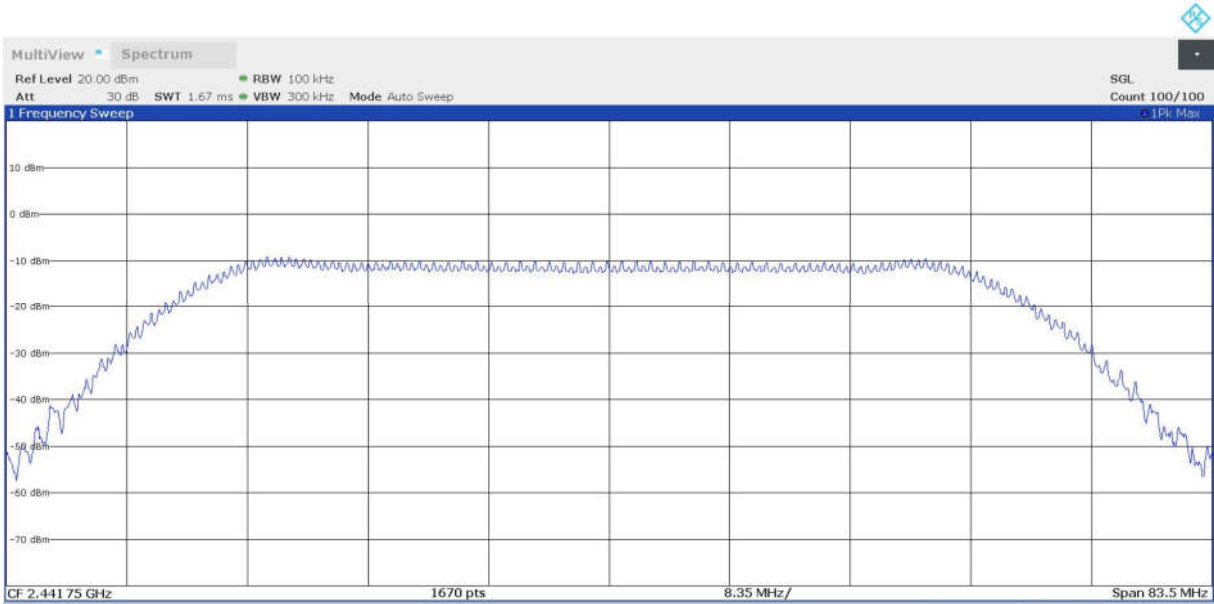


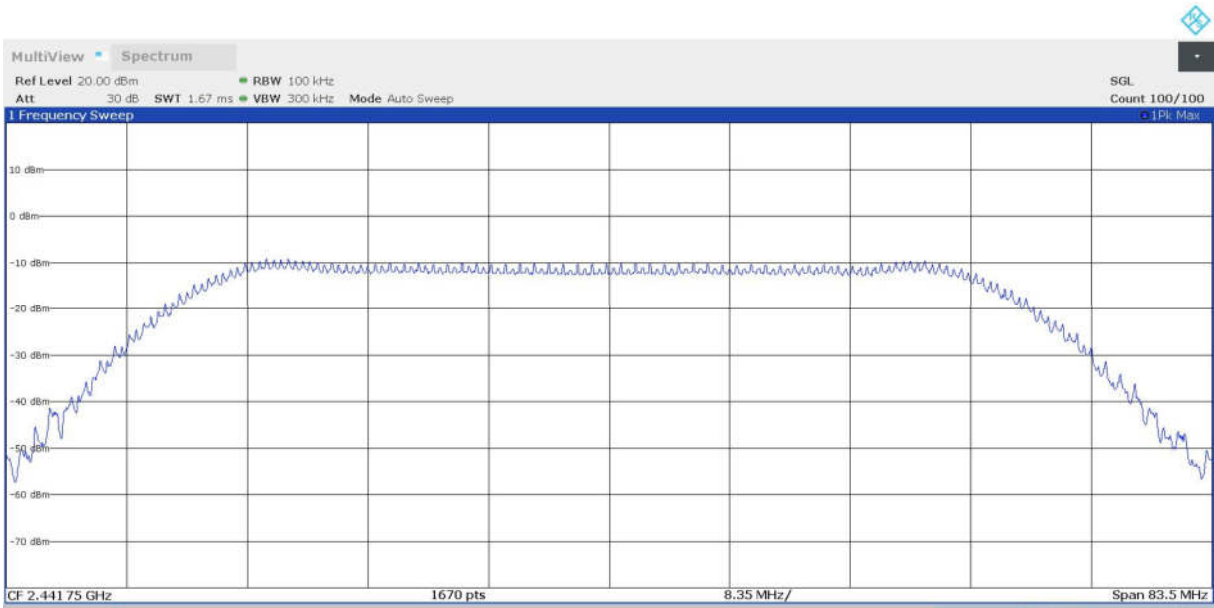
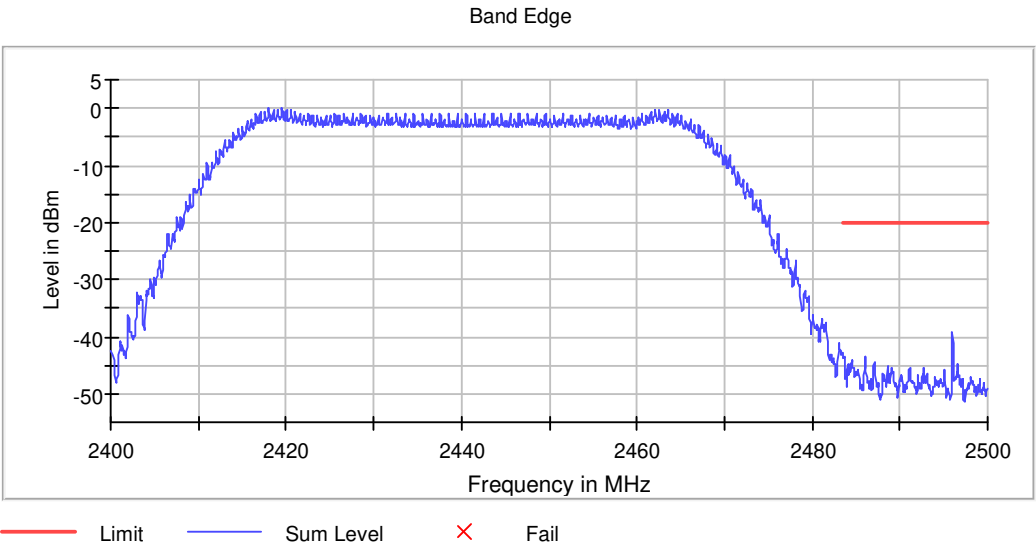


Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), CHAIN B

Figures:









RSS-247 5.5 / FCC 15.247 (d) Emission limitations radiated (Transmitter)

Limits

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 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
Above 960	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, specified when measuring with peak detector function.

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

Results

Modulation: Proprietary 2.4GHz (1 Mbit/s)

The EUT was configured to transmit with commercial duty cycle for this test.

Duty Cycle (commercial): 0.279 %

CHAIN A

Frequency range 30 MHz – 1 GHz:

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBμV/m)	Pol	Detector
2440.00000	[0.03, 1]	31.552	22.52	V	QP
		49.934	32.70	V	QP
		58.712	31.53	V	QP
		72.001	30.03	V	QP
		98.434	28.71	H	QP
		166.625	24.90	V	QP
		215.998	31.24	V	QP
		249.996	35.30	V	QP
		500.014	32.03	V	QP
		874.967	35.99	H	QP

Frequency range 1 GHz – 26 GHz:

The results below show the maximum measured levels in the 1 – 26 GHz range including the restricted bands 2.31 – 2.39 GHz and 2.4835 – 2.5 GHz.

Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with average detector for compliance checking with the average limit.

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[1, 3]	2377.867	58.06	V	PK
			48.42	V	AVG
		2484.067	59.79	H	PK
			49.28	H	AVG

CHAIN B

Frequency range 30 MHz – 1 GHz:

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[0.03, 1]	30.727	26.52	V	QP
		49.982	38.15	V	QP
		71.953	28.48	V	QP
		101.877	29.82	H	QP
		215.949	27.51	V	QP
		249.948	29.74	V	QP
		399.958	26.62	H	QP
		875.015	35.12	H	QP

Frequency range 1 GHz – 26 GHz:

The results below show the maximum measured levels in the 1 – 26 GHz range including the restricted bands 2.31 – 2.39 GHz and 2.4835 – 2.5 GHz.

Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with average detector for compliance checking with the average limit.

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[1, 3]	2367.733	59.12	V	PK
			48.42	V	AVG
	[3, 17]	11332.000	52.09	V	PK
		15938.000	54.37	V	PK
			43.97	V	AVG

Verdict

Pass

Modulation: Proprietary 2.4GHz (250 kbit/s)

The EUT was configured to transmit with commercial duty cycle for this test.

Duty Cycle (commercial): 0.298 %

CHAIN A

Frequency range 30 MHz – 1 GHz:

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[0.03, 1]	41.300	38.76	V	QP
		42.998	34.46	V	QP
		51.049	31.59	V	QP
		55.269	35.14	V	QP
		58.712	33.46	V	QP
		83.350	34.71	V	QP
		249.996	39.89	H	QP
		400.007	31.77	H	QP
		875.015	35.54	H	QP

Frequency range 1 GHz – 26 GHz:

The results below show the maximum measured levels in the 1 – 26 GHz range including the restricted bands 2.31 – 2.39 GHz and 2.4835 – 2.5 GHz.

Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with average detector for compliance checking with the average limit.

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[1, 3]	2380.867	58.73	V	PK
			48.44	V	AVG
		2495.933	59.76	V	PK
			49.14	V	AVG

CHAIN B

Frequency range 30 MHz – 1 GHz:

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[0.03, 1]	41.252	37.96	V	QP
		42.950	35.61	V	QP
		51.194	35.15	V	QP
		55.269	37.34	V	QP
		58.712	34.12	V	QP
		83.932	34.55	V	QP
		249.996	42.23	H	QP
		875.015	36.19	H	QP

Frequency range 1 GHz – 26 GHz:

The results below show the maximum measured levels in the 1 – 26 GHz range including the restricted bands 2.31 – 2.39 GHz and 2.4835 – 2.5 GHz.

Spurious frequencies with peak levels above the average limit (54 dBµV/m at 3 m) are measured with average detector for compliance checking with the average limit.

Freq (MHz)	Freq Rng (GHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
2440.00000	[1, 3]	2319.800	58.26	V	PK
			48.48	V	AVG
		2873.133	60.93	V	PK
			50.97	V	AVG

Verdict

Pass

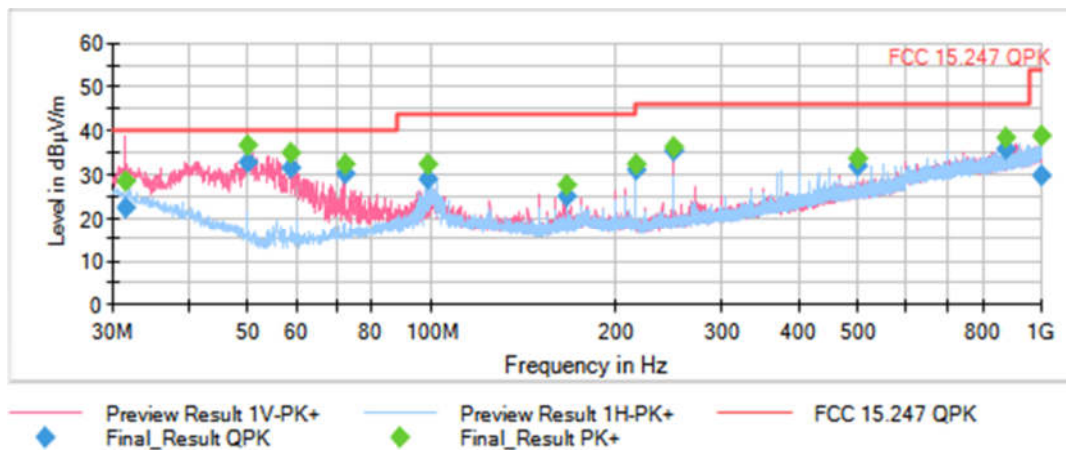
Attachments

The measurement settings for each range of frequency are as follows:

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [ESR 7] 30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	20 dB
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [FSV 40] 1 GHz - 3 GHz	66,667 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [FSV 40] 3 GHz - 17 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB
Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
Receiver: [FSV 40] 17 GHz - 26 GHz	500 kHz	PK+ ; AVG	1 MHz	1 s	0 dB

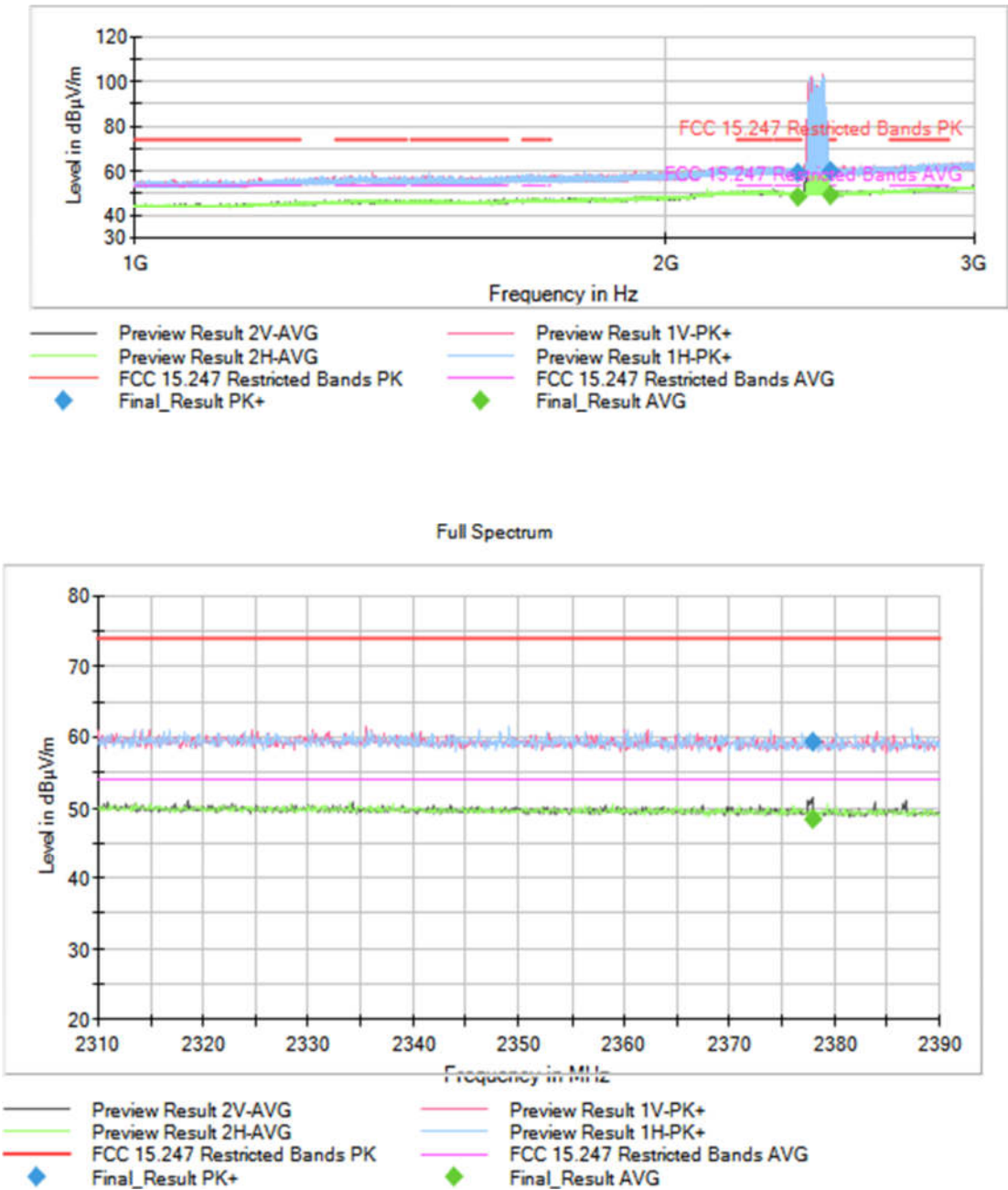
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [0.03, 1], CHAIN A

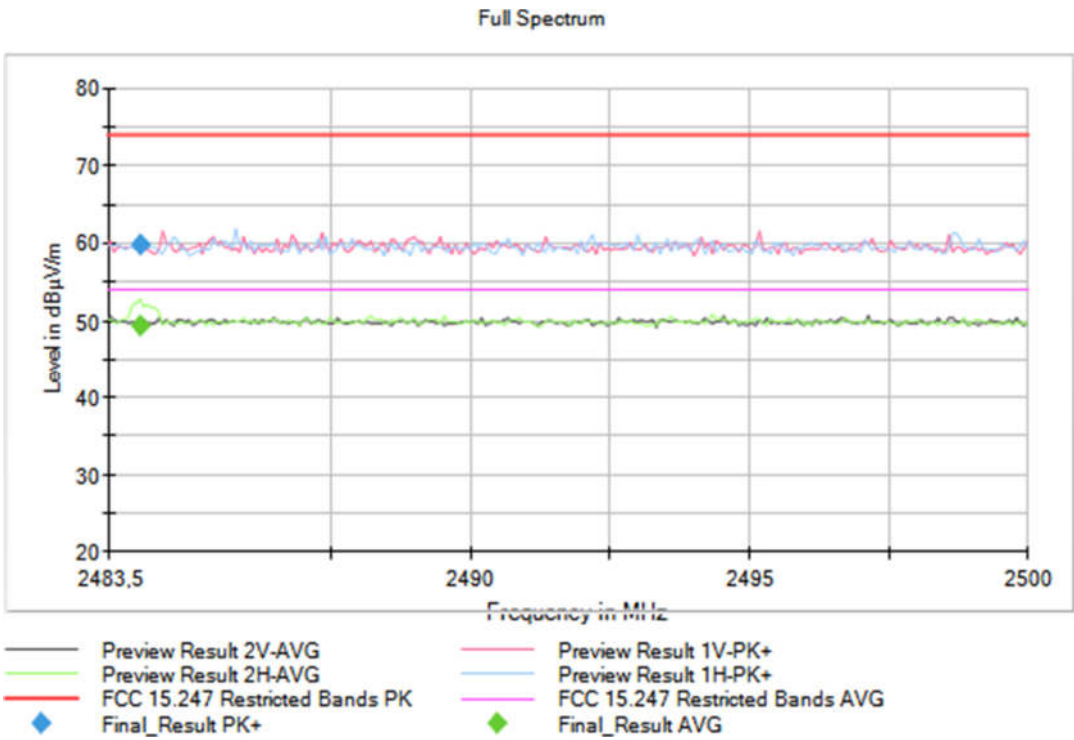
Figures:



Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [1, 3], CHAIN A

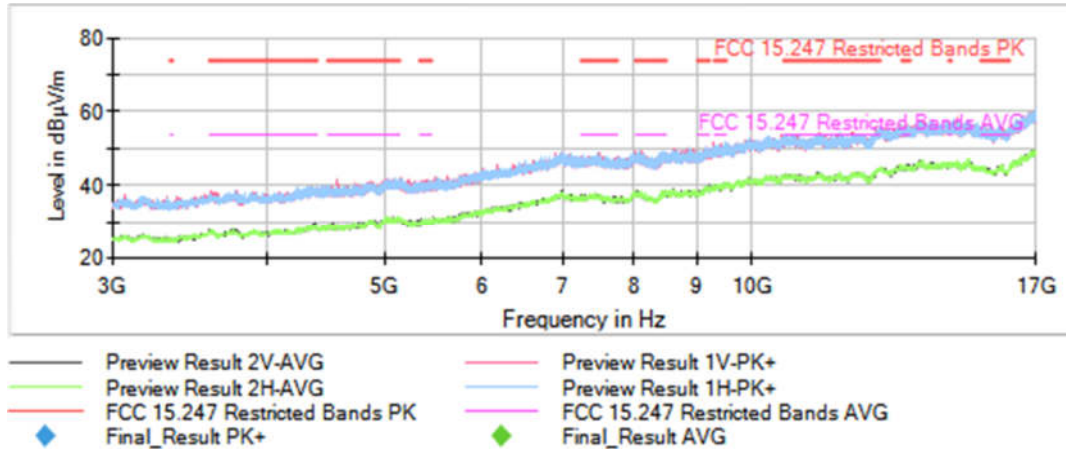
Figures:





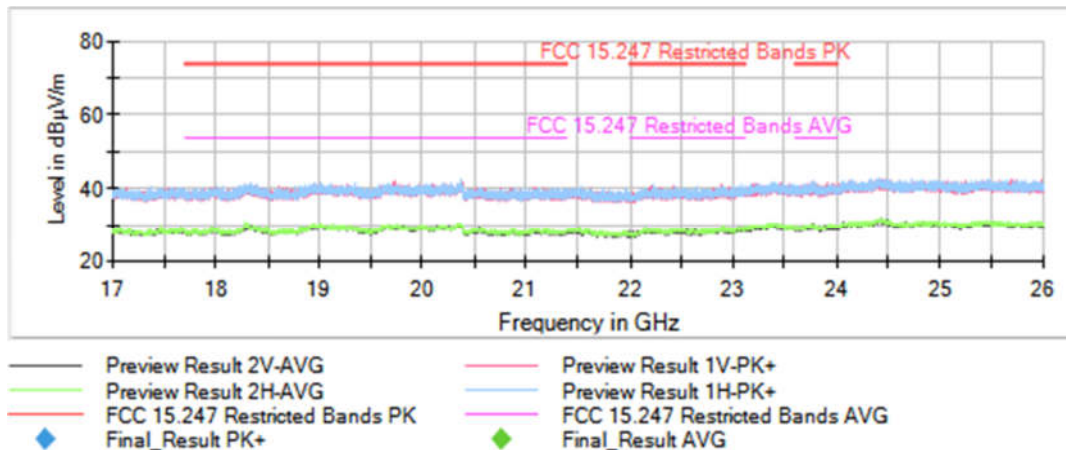
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [3, 17], CHAIN A

Figures:



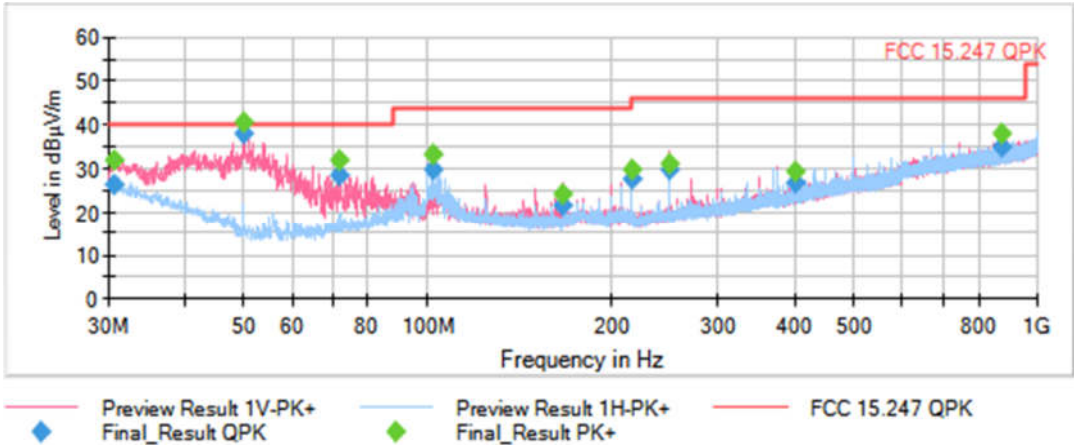
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [17, 26], CHAIN A

Figures:



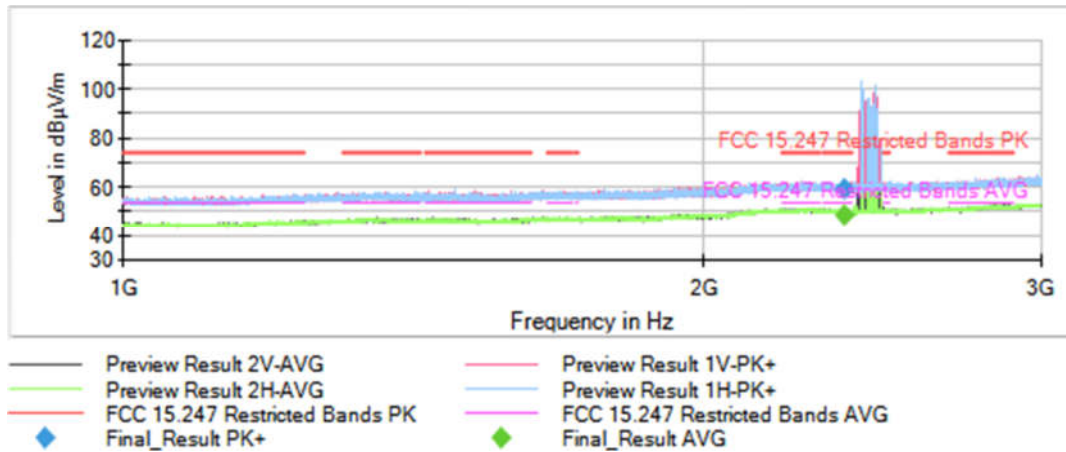
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Figures:

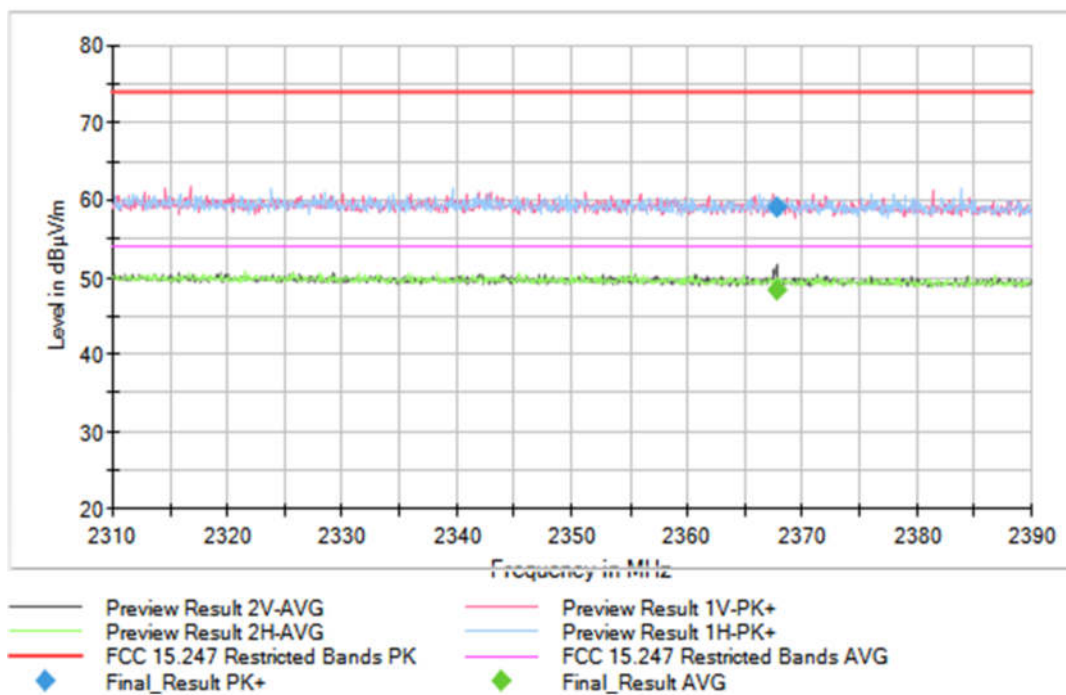


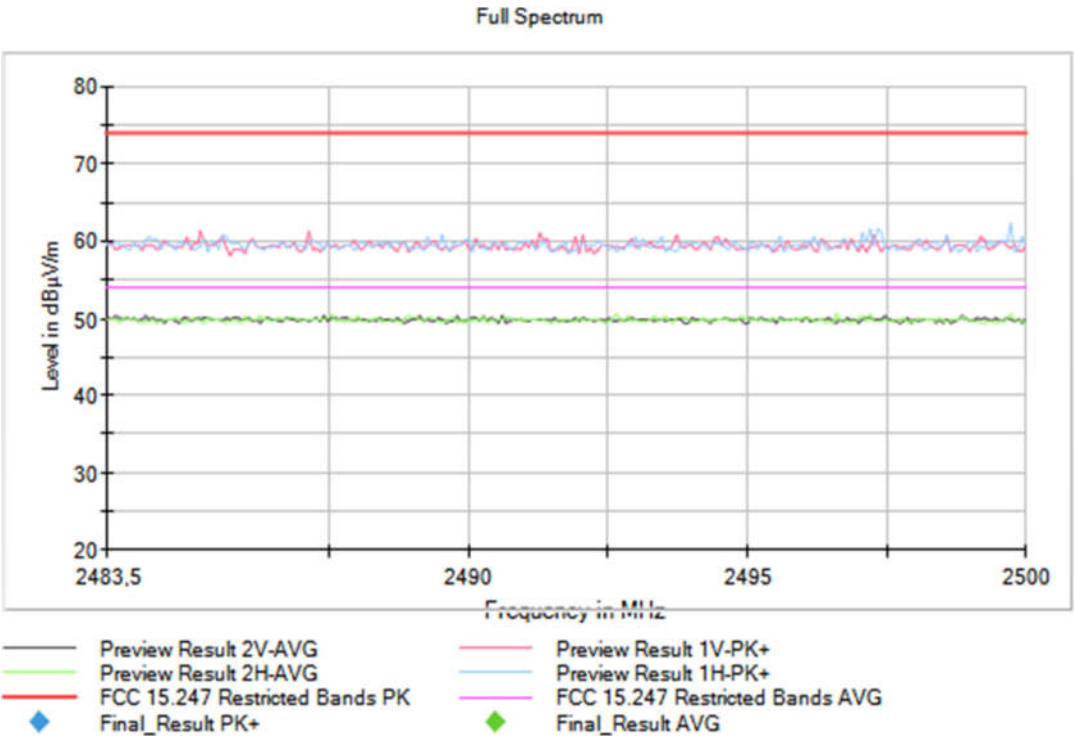
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [1, 3], CHAIN B

Figures:



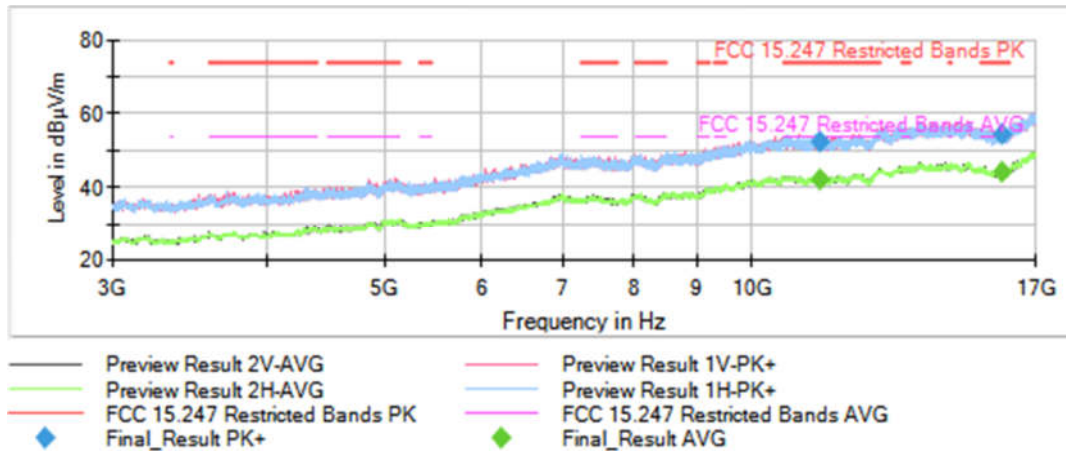
Full Spectrum





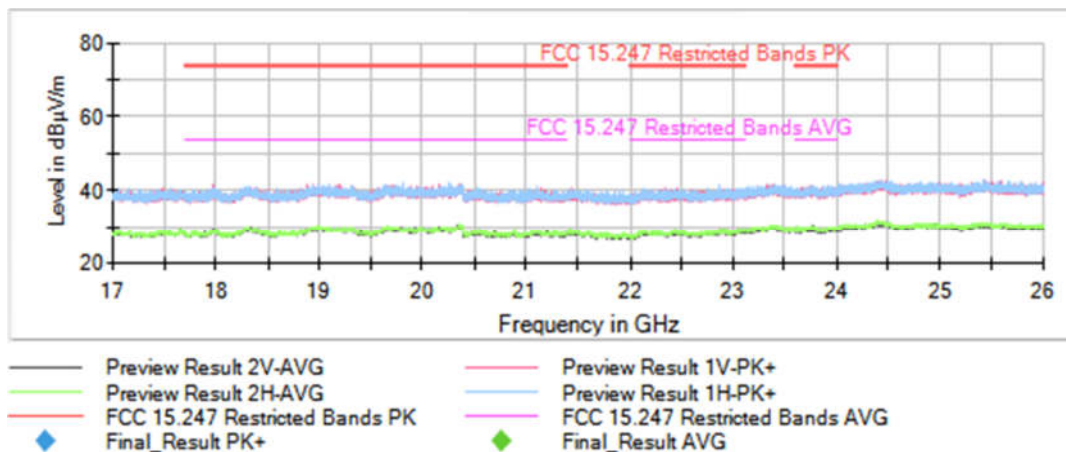
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [3, 17], CHAIN B

Figures:



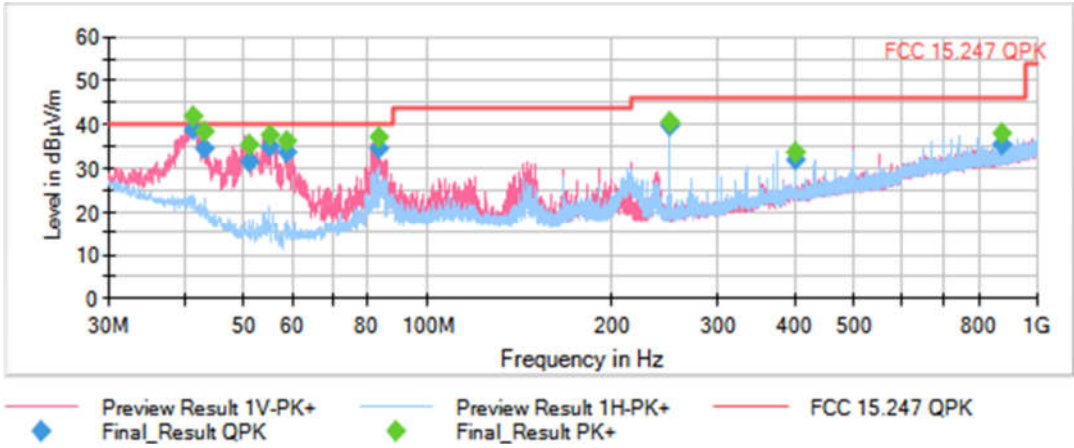
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (1 Mbit/s), Frequency Range (GHz) = [17, 26], CHAIN B

Figures:



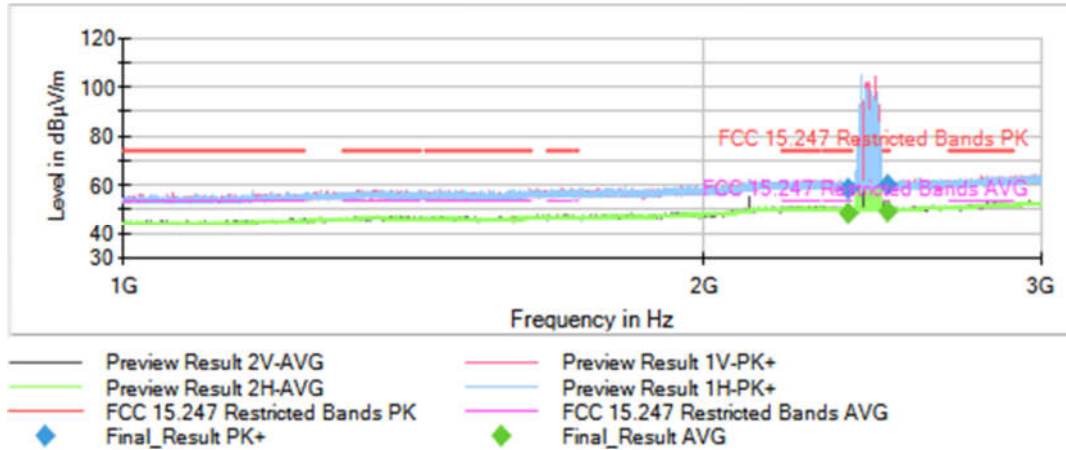
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [0.03, 1], CHAIN A

Figures:

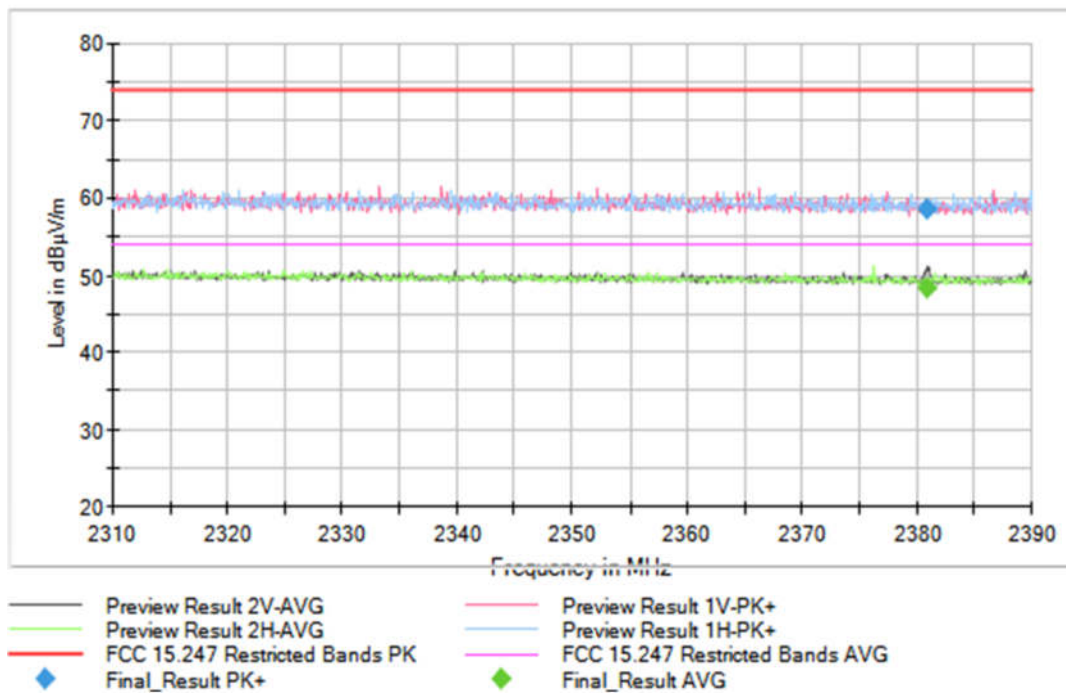


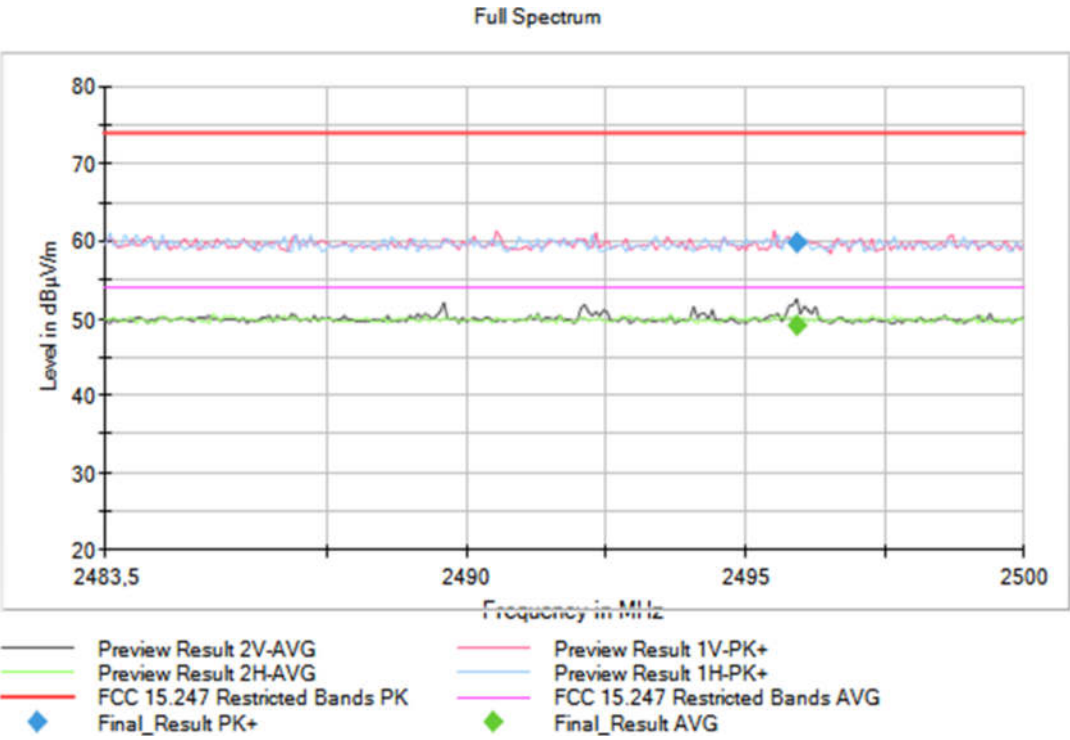
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [1, 3], CHAIN A

Figures:



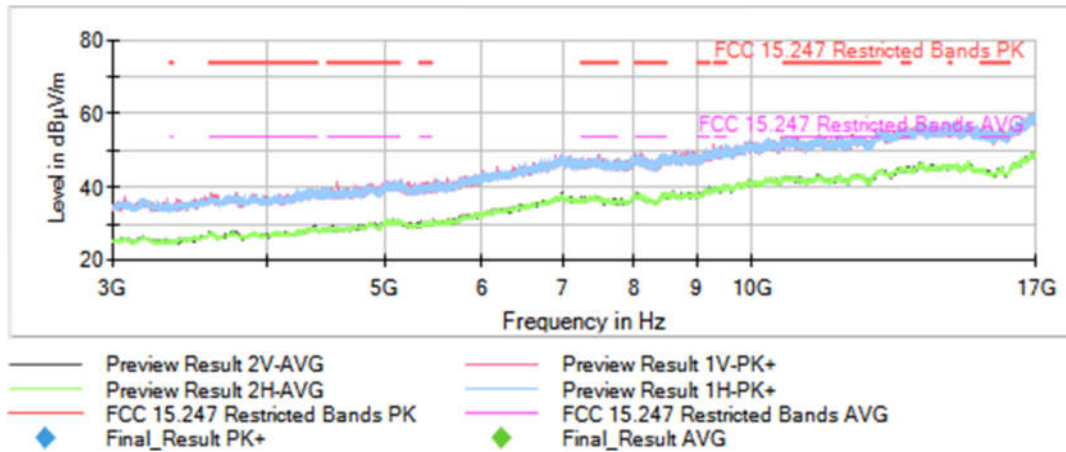
Full Spectrum





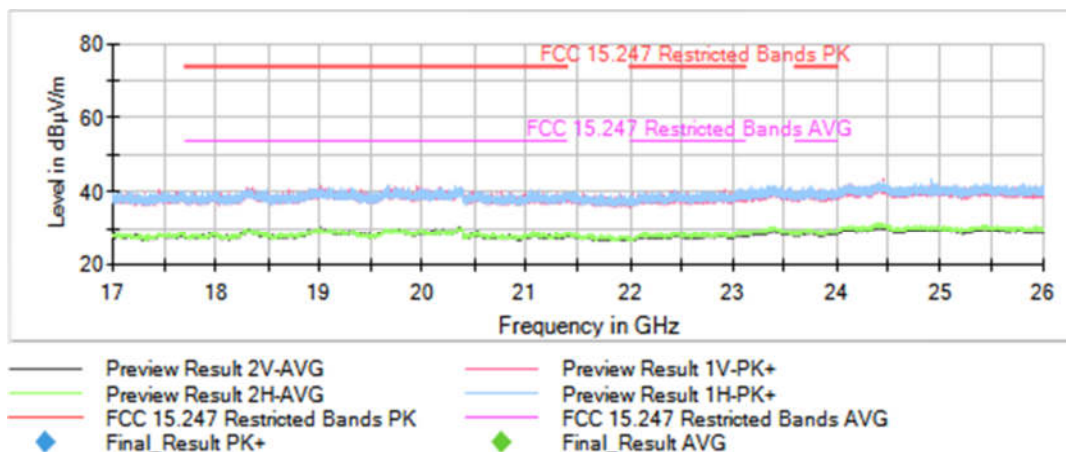
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [3, 17], CHAIN A

Figures:



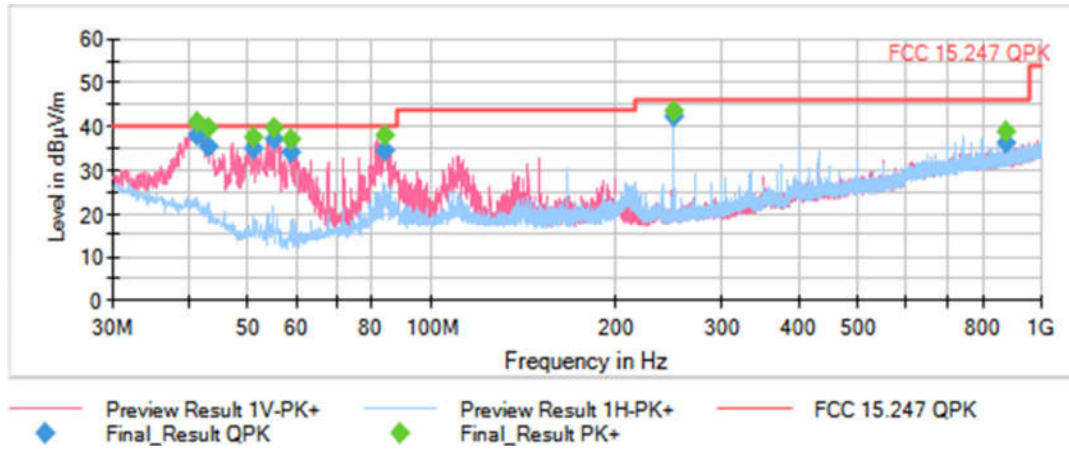
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [17, 26], CHAIN A

Figures:



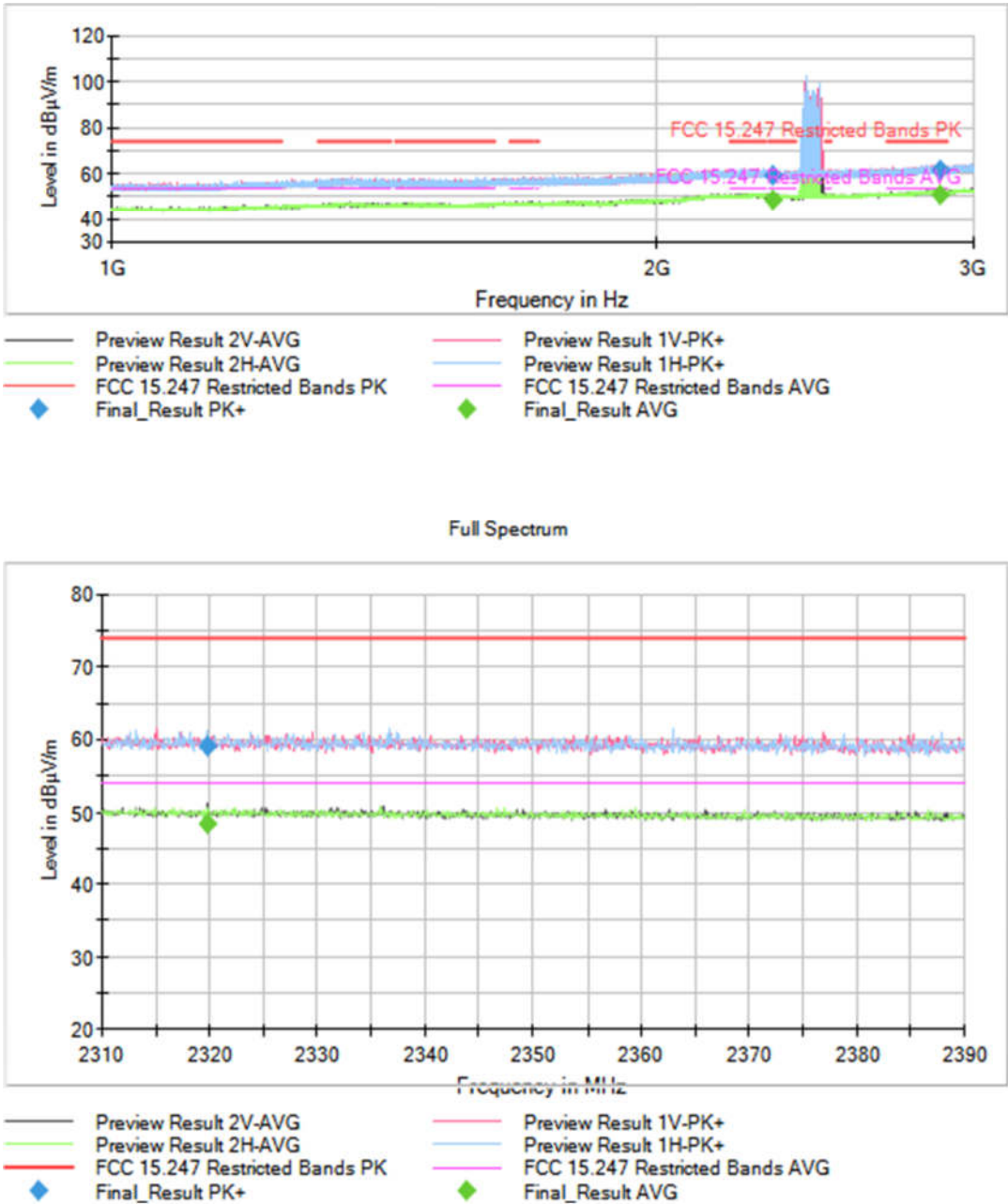
Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [0.03, 1], CHAIN B

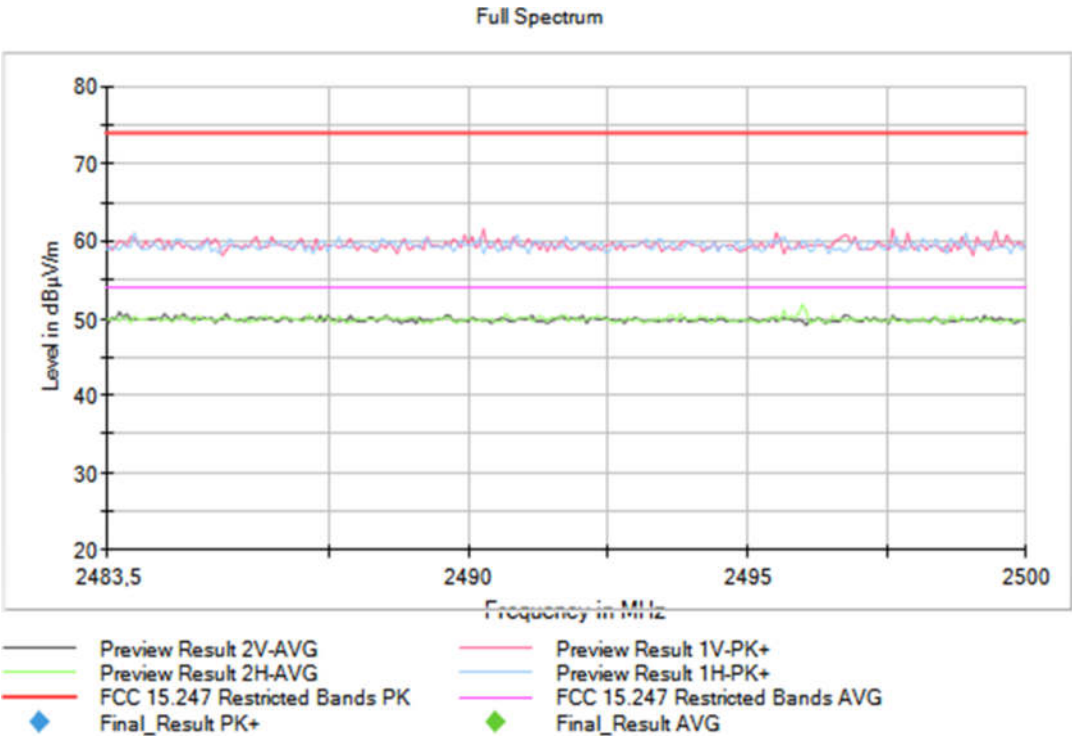
Figures:



Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [1, 3], CHAIN B

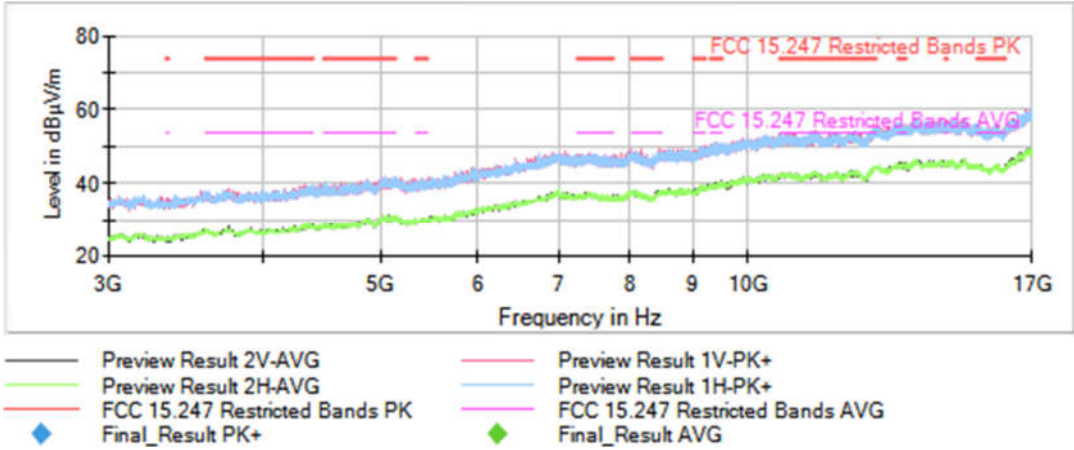
Figures:





Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [3, 17], CHAIN B

Figures:



Frequency (MHz) = 2440.00000, Equipment Type: Digital Transmission System (DTS), Modulation: Proprietary 2.4GHz (250 kbit/s), Frequency Range (GHz) = [17, 26], CHAIN B

Figures:

