

ISED CABid: ES1909

Lab. Company Number: 4621A

Test Report No:

83206RRF.004A2

Partial Test Report

USA FCC Part 15.247, 15.209

CANADA RSS-247, RSS-Gen

(*) Identification of item tested	Central In-Vehicle Infotainment Computer
(*) Trademark	BOSCH
(*) Model and /or type reference	MBCI2LS2PR1
Other identification of the product	FCC ID: 2AUXS-MBCI2LS3PR2 IC: 25847-MBCI2LS3PR1
(*) Features	AM/FM/DAB/SIRIUS, GNSS, 2.4/5GHz WLAN, Bluetooth 5.1, Video/Audio HW version: D22 SW version: E30.6
Applicant	Robert Bosch GmbH Robert-Bosch-Strasse 200 31139, Hildesheim, GERMANY
Test method requested, standard	USA FCC Part 15.247 (10-1-23 Edition): Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz. USA FCC Part 15.209 (10-1-23 Edition): Radiated emission limits; general requirements. CANADA RSS-247 Issue 3 (August 2023). CANADA RSS-Gen Issue 5 amendment 2 (February 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.
Approved by (name / position & signature)	José Manuel Gómez Galván EMC Consumer & RF Lab. Manager
Date of issue	2025-09-03
Report template No	FDT08_25 (*) "Data provided by the client"

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Acronyms

Acronym ID	Acronym Description
Avg COT	Average Channel Occupancy Time
BW	Bandwidth
Detector	Detector used
Ebw	Emission Bandwidth
Equipment	Equipment Type
EUT	Equipment Under Test
Freq	Frequency
Freq Rng	Frequency Range
Freq Sep	Frequency Separation
Inband Peak Lvl	Inband Peak Level
Lvl	Level
MP	Measurement Point
Mod	Modulation
Mode	MIMO Mode
NHC	Number of Hopping Channels
NHp	Number of hops over the period
Occ Ch BW	Occupied Channel Bandwidth
PSD	Power Spectral Density
Peak Power	Maximum Peak Conducted Output Power
Pol	Polarization
Port	Active Port
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 S.A.U. is an FCC-recognized accredited testing laboratory with appropriate scope of accreditation that covers the performed tests in this report.

DEKRA Testing and Certification S.A.U. 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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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 ($k = 2$).

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 Central In-Vehicle Infotainment Computer, including WLAN/ Bluetooth, GPS, AM/FM/DAB receiver

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. The laboratory is not responsible for such information and it is not covered by accreditation.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial N°	Date of Reception	Application
S/01	82544C_2.1	Headunit A- PREMIUM ROW	MBCI2LS3PR1	0769006	2025-05-13	Element Under Test
S/01	76719D_81.1	Antenna	A1779052902/002		2024-04-17	Auxiliary Element
S/01	76719D_83.1	Antenna	A1779052902/002		2024-04-17	Auxiliary Element
S/01	76719D_87.1	Antenna	A1779052902/002		2024-04-17	Auxiliary Element
S/01	76719D_89.1	Antenna	A1779052902/002		2024-04-17	Auxiliary Element
S/01	76719D_9.1	Fakra - 4 Fakra Cable			2024-04-04	Auxiliary Element
S/01	80633C_4.1	Ethernet- CAN interface	VN5610A		2024-12-18	Auxiliary Element
S/01	80633C_9.1	Harness			2024-12-18	Auxiliary Element
S/01	82341B_13.1	Fakra Cable			2025-04-09	Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Sample used for Radiated testing

Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test		Shielded		
	Main Connector	2m	[X]		[]		
	Main Connector	2m	[X]		[]		
	Fakra Quad Connector AM/FM/DAB Fakra Single Connector GPS		[X]		[X]		
	Fakra Quad Connector WLAN/BT		[X]		[X]		
Supplementary information to the ports..... :	--						
Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	[]	AC:					
	[X]	DC: 9-16V nominal 12 VDC by vehicle battery					
Rated Power	--						
Clock frequencies..... :	--						
Other parameters							
Software version	E030.6						
Hardware version	D22						
Dimensions in cm (W x H x D) :							
Mounting position	[]	Table top equipment					
	[]	Wall/Ceiling mounted equipment					
	[]	Floor standing equipment					
	[]	Hand-held equipment					
	[X]	Other: Cluster in the car					
Modules/parts..... :	Module/parts of test item		Type		Manufacturer		
	--						
Accessories (not part of the test item)	Description		Type		Manufacturer		
	Antennas						
	HUD						
	SA2 Panel						
	Cameras						
Documents as provided by the applicant	Description		File name		Issue date		
	--						

Identification of the client

Robert Bosch GmbH
Robert-Bosch-Strasse 200, 31139 Hildesheim
Germany

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2025-06-16
Date (finish)	2025-07-04

Document history

Report number	Date	Description
83206RRF.004	2025-08-14	First release.
83206RRF.004A1	2025-09-02	Second release. This report was modified to include a spot check of RF Maximum Output Power test. This report replaces 83206RRF004.
83206RRF.004A2	2025-09-03	Third release. This report was modified to updated the FCC ID. This report replaces 83206RRF004A1

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 semianechoic chamber, 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 Maireles, Carmen Vázquez Perez, Pablo Redondo Reyes and Valentin Andarias Diaz.

Used instrumentation:

Control No.	Equipment	Model	Manufacturer	Next Calibration
06791	SEMIANECHOIC ABSORBER LINED CHAMBER IV	FACT 3 200 STP	ETS LINDGREN	N/A
06792	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06609	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2026-04-21
06615	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2026-04-24
06143	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	ETS LINDGREN	2027-01-22
06142	PRE-AMPLIFIER G>38dB 30MHz-6GHz	BLNA 0360-01N	BONN ELEKTRONIK	2025-07-25
06496	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK	2026-12-01
03783	PRE-AMPLIFIER G>30dB 1GHz-18GHz	BLMA 0118-3A	BONN ELEKTRONIK	2026-03-17
04657	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2026-06-12
10537	PRE-AMPLIFIER G>46dB 18-40 GHz	BLMA 1840-5G	BONN ELEKTRONIK	2026-03-07
07817	EMI TEST RECEIVER 2Hz-44GHz	ESW44	ROHDE AND SCHWARZ	2026-07-01
07445	DC POWER SUPPLY 30V/5A	U8002A	KEYSIGHT TECHNOLOGIES	N/A
07760	DIGITAL MULTIMETER	175	FLUKE	2025-11-07
04848	SOFTWARE FOR EMC/RF TESTING	EMC32	ROHDE AND SCHWARZ	N/A

Testing verdicts

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

Summary

Bluetooth Low Energy (2M, 1M)

FCC PART 15 PARAGRAPH/ RSS-247			
Requirement – Test case		Verdict	Remark
FCC 15.247 (a)(2) / RSS-247 5.2. (a)	6 dB Bandwidth	N/A	
FCC 15.247 (e) / RSS-247 5.2. (b)	Power spectral density	N/A	
FCC 15.247 (b) / RSS-247 5.4. (d)	Maximum output power and antenna gain	P*	(2)
FCC 15.247 (d) / RSS-247 5.5.	Band-edge emissions compliance (Transmitter)	N/A	
FCC 15.247 (d) / RSS-247 5.5.	Emission limitations radiated (Transmitter)	P	(1)
<u>Supplementary information and remarks:</u> (1) Only radiated test has been requested. (2) Spot-check was requested for worst channel and mode.			

Bluetooth EDR

Requirement – Test case	FCC PART 15 PARAGRAPH / RSS-247	Verdict	Remark
FCC 15.247 (a) (1) / RSS-247 5.1 (b)	20 dB Bandwidth and Carrier frequency separation	N/A	
FCC 15.247 (a) (1) (iii) / RSS-247 5.1 (d)	Time of Occupancy (Dwell Time)	N/A	
FCC 15.247 (a) (1) (iii) / RSS-247 5.1 (d)	Number of hopping channels	N/A	
FCC 15.247 (b) / RSS-247 5.4. (b)	Maximum peak output power and	P*	(2)
FCC 15.247 (d) / RSS-247 5.5	Band-edge emissions compliance	N/A	
FCC 15.247 (d) / RSS-247 5.5	Emission limitations radiated (Transmitter)	P	(1)
<u>Supplementary information and remarks:</u> (1) Only radiated test has been requested. (2) Spot-check was requested for worst channel and mode.			

WLAN 2.4 GHz (B/G/N/AX 1x1)

FCC PART 15 PARAGRAPH/ RSS-247			
Requirement – Test case		Verdict	Remark
FCC 15.247 (a)(2) / RSS-247 5.2. (a)	6 dB Bandwidth	N/A	
FCC 15.247 (e) / RSS-247 5.2. (b)	Power spectral density	N/A	
FCC 15.247 (b) / RSS-247 5.4. (d)	Maximum output power and antenna gain	P*	(2)
FCC 15.247 (d) / RSS-247 5.5.	Band-edge emissions compliance (Transmitter)	N/A	
FCC 15.247 (d) / RSS-247 5.5.	Emission limitations radiated (Transmitter)	P	(1)
<u>Supplementary information and remarks:</u> (1) Only radiated test has been requested. (2) Spot-check was requested for worst channel and mode.			

Appendix A: Test results. Bluetooth Low Energy (2M, 1M)

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 12 Vdc
Type of Power Supply: Battery

ANTENNA (*):

Technology	Antenna Gain	Type
BTLE:	+0.1 dBi	External

TEST FREQUENCIES (*):

Modulation	Data rates	Low Channel	Middle Channel	High Channel
BTLE GFSK	1M 1 Mbit/s	2402 MHz	2440 MHz	2480 MHz
BTLE GFSK	2M 2 Mbit/s	2402 MHz	2440 MHz	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 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).

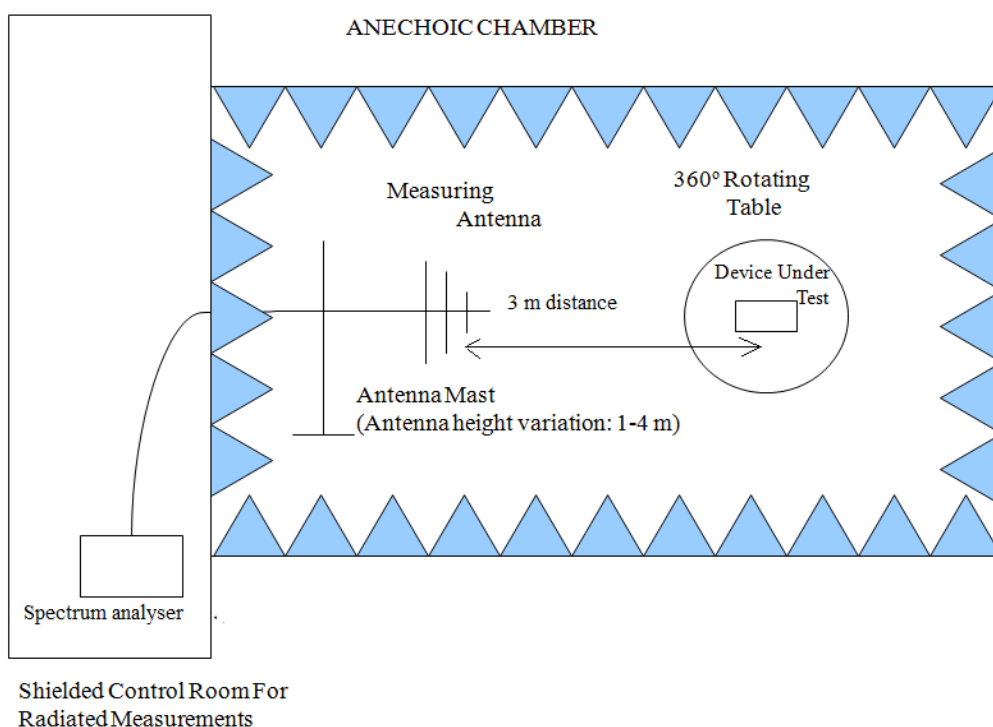
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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.

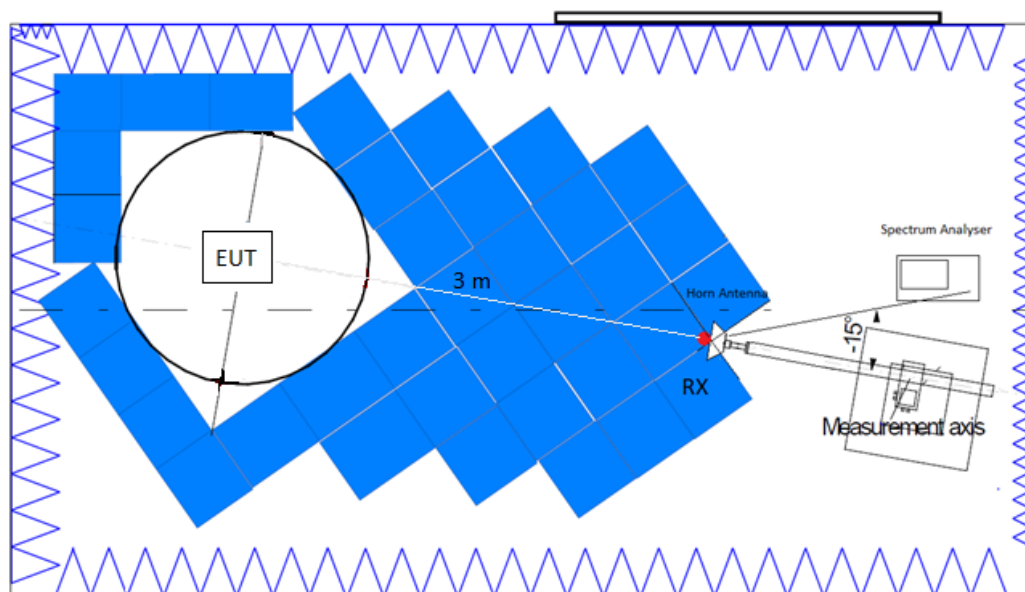
Measurements were made in both horizontal and vertical planes of polarization.

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.

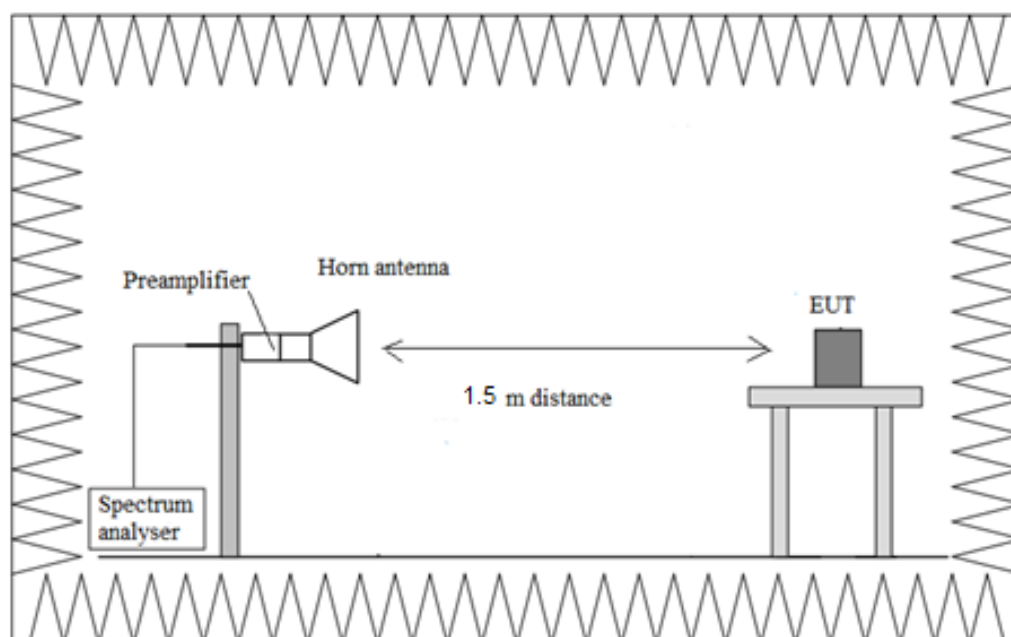
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



TEST CASES DETAILS

FCC 47 CFR Part 15.247 / RSS-247

RSS-247 5.4 (d) / FCC 15.247 (b) (3) Maximum Peak Conducted output power

Limits

FCC 15.247 (b) (3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

RSS 5.4 (d)

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e).

Results

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

Modulation: BTLE 5.2 (GFSK 1 Mbit/s)

Operation Band (MHz)	Equipment	Freq (MHz)	Peak Power (dBm)	E.I.R.P. (dBm)
[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	2.99	3.09

Verdict

Pass

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 is specified when measuring with peak detector function.

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

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Results

Modulation: BTLE (GFSK 1 Mbit/s)

Results

Freq Rng (GHz)	Operation Band (MHz)	Equipment	Freq (MHz)	Port	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	31.212	25.12	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	31.212	31.40	H	PK

Freq Rng (GHz)	Operation Band (MHz)	Equipment	Freq (MHz)	Port	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	594.006	29.86	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	594.006	35.78	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	875.015	23.22	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	875.015	28.55	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	30.825	31.27	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	30.825	25.51	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	48.964	21.03	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	48.964	16.42	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	374.981	29.22	V	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	374.981	25.54	V	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	929.529	30.76	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2440.00000	1	929.529	25.37	H	QP

Verdict

Pass

Attachments

Frequency Range GHz = [0.03, 1]

Equipment Type = Digital Transmission System (DTS)

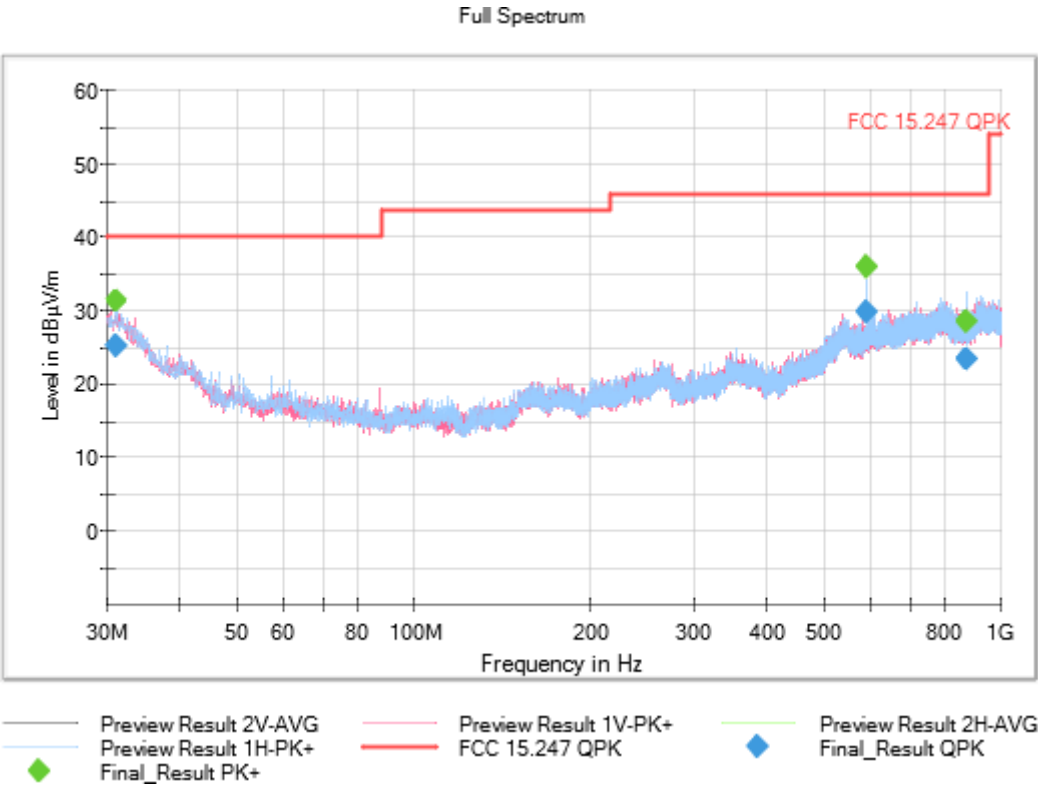
Modulation = The spurious frequencies detected do not depend on the modulation.

Frequency MHz = The spurious frequencies detected do not depend on the operating channel.

MIMO Mode = SISO

Active Port = 4

Images:



Tables:

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	0 dB

Frequency Range GHz = [1, 17]

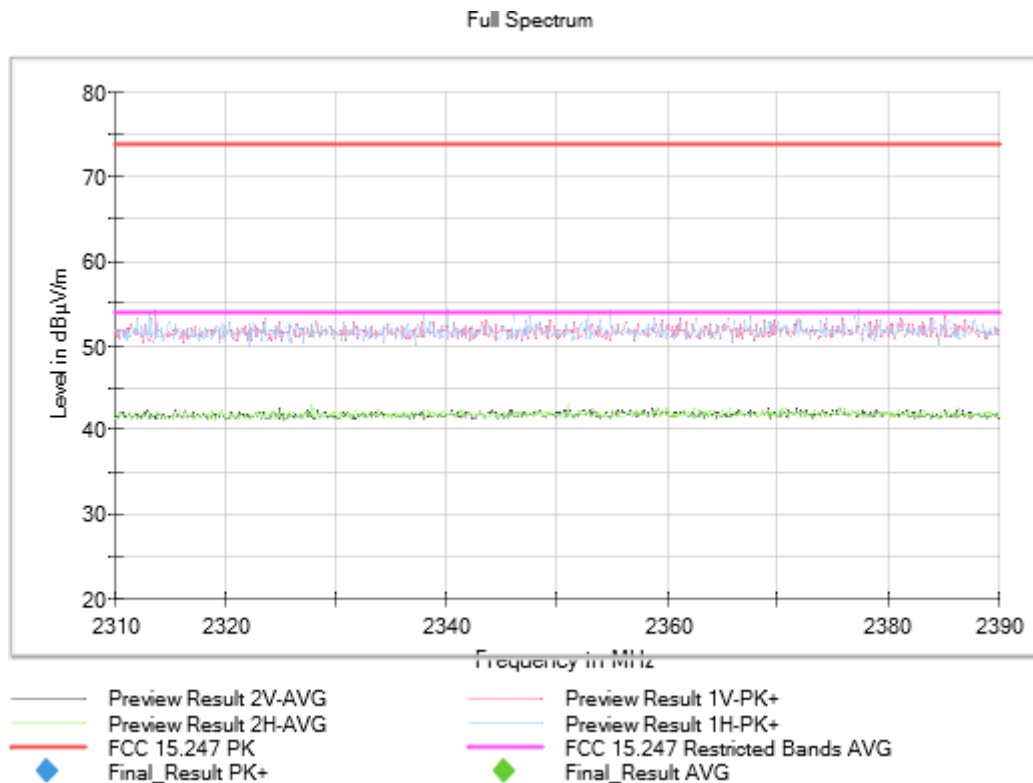
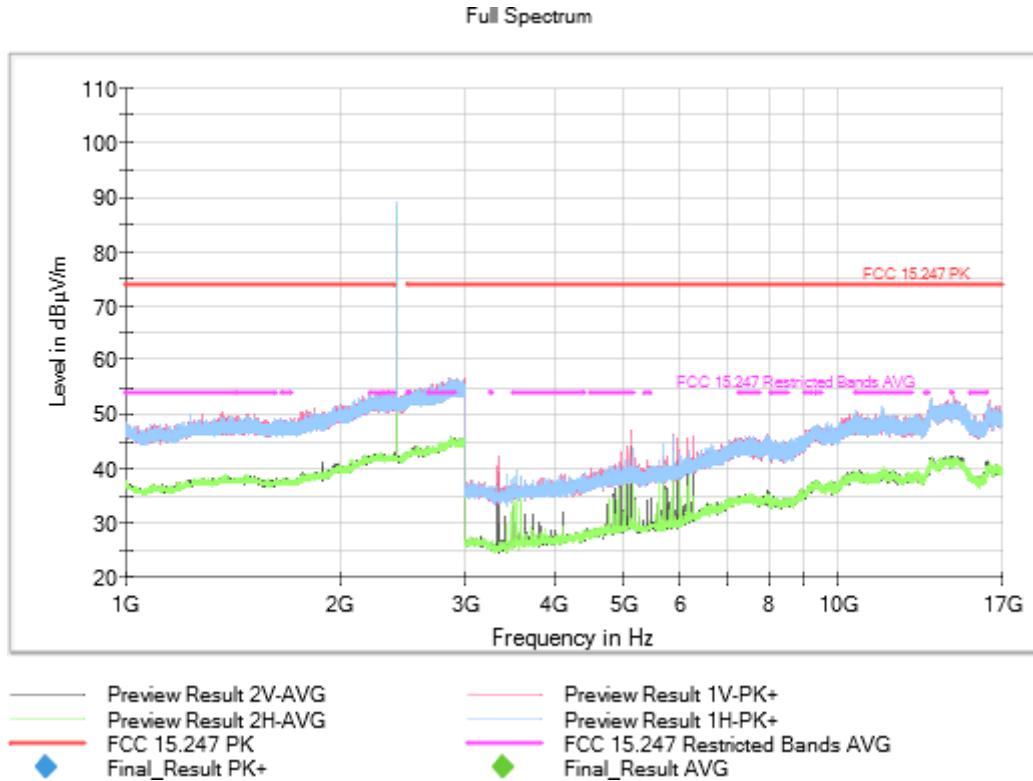
Operation Band MHz = [2400, 2483.5]

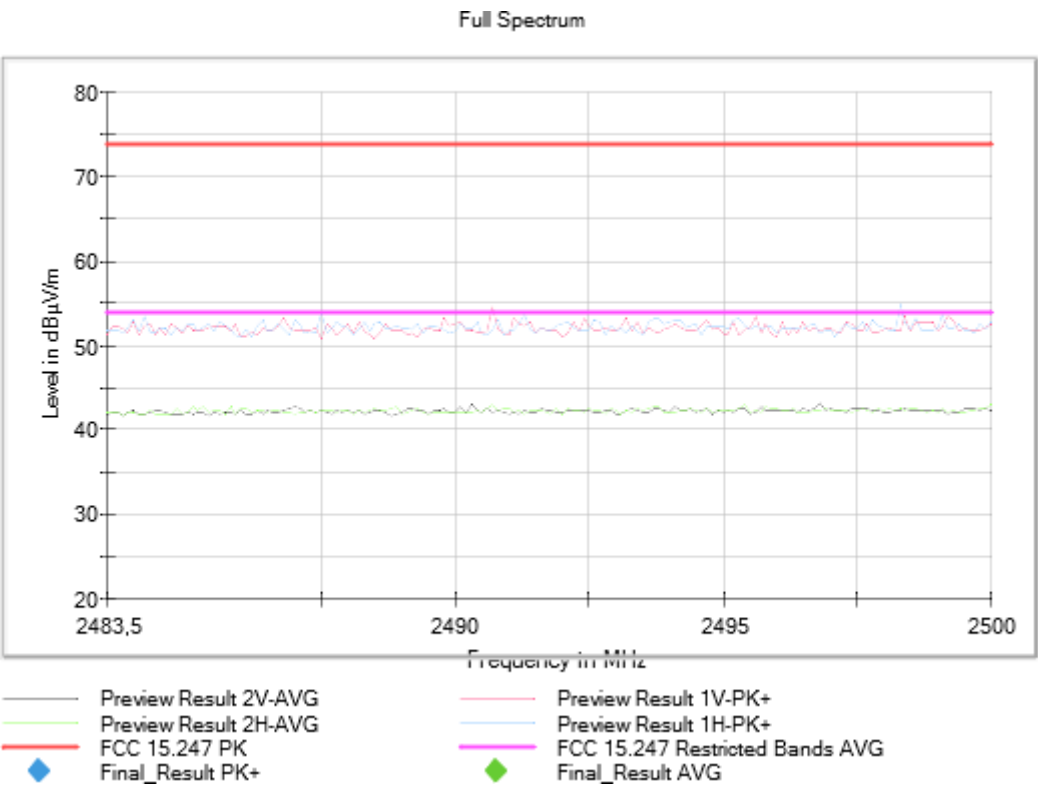
Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2402.00000

Active Port = 4

Modulation = BTLE (GFSK 1 Mbit/s)

Images:





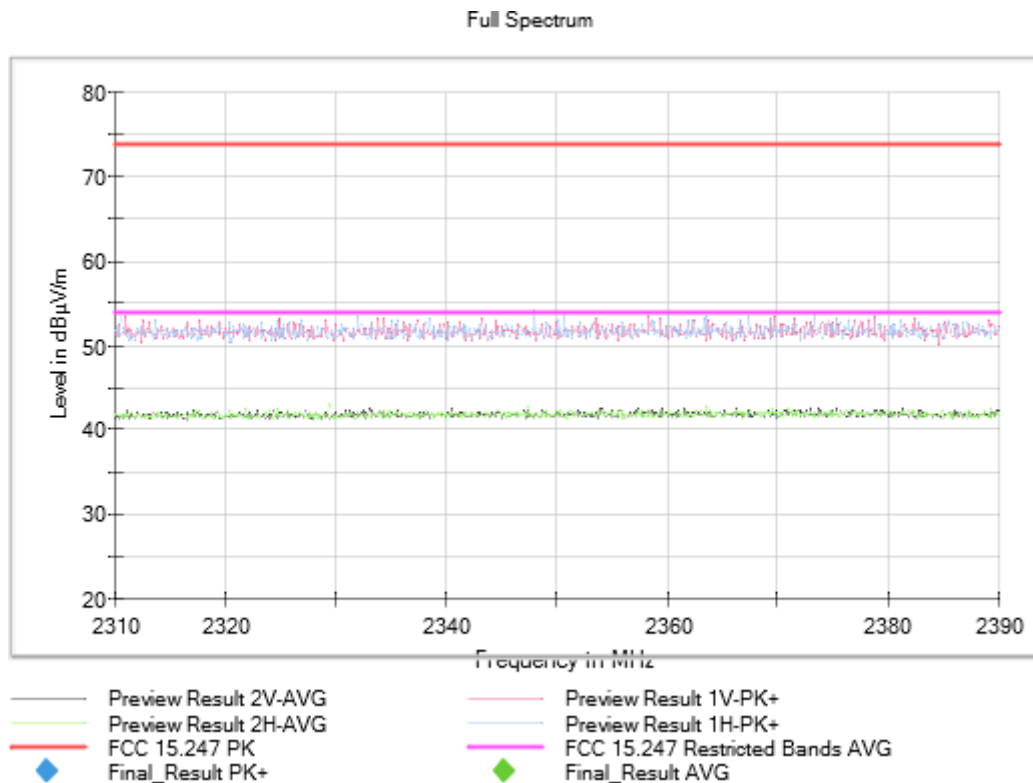
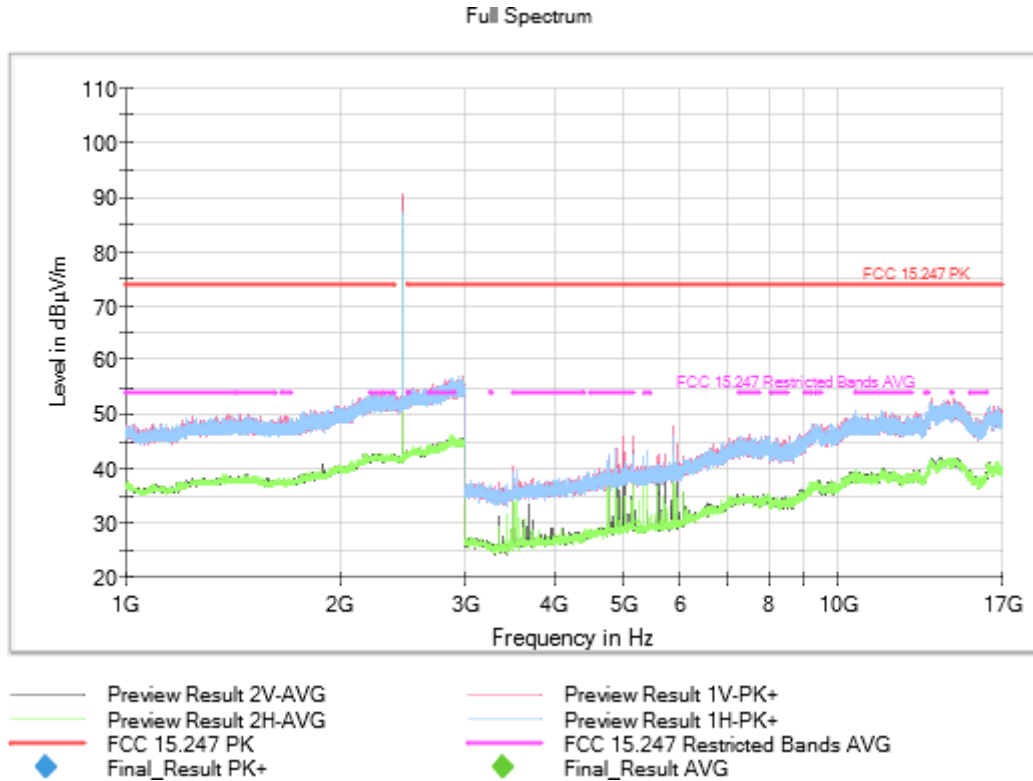
Frequency Range GHz = [1, 17]

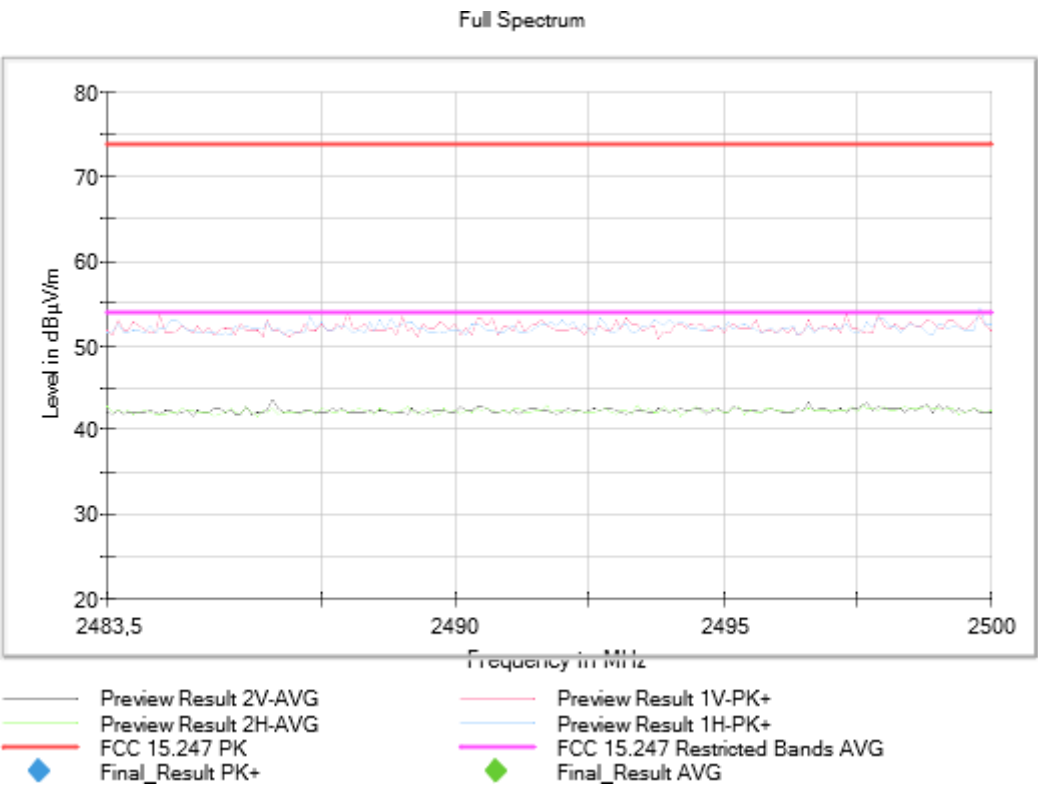
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2440.00000

Modulation = BTLE (GFSK 1 Mbit/s)

Images:





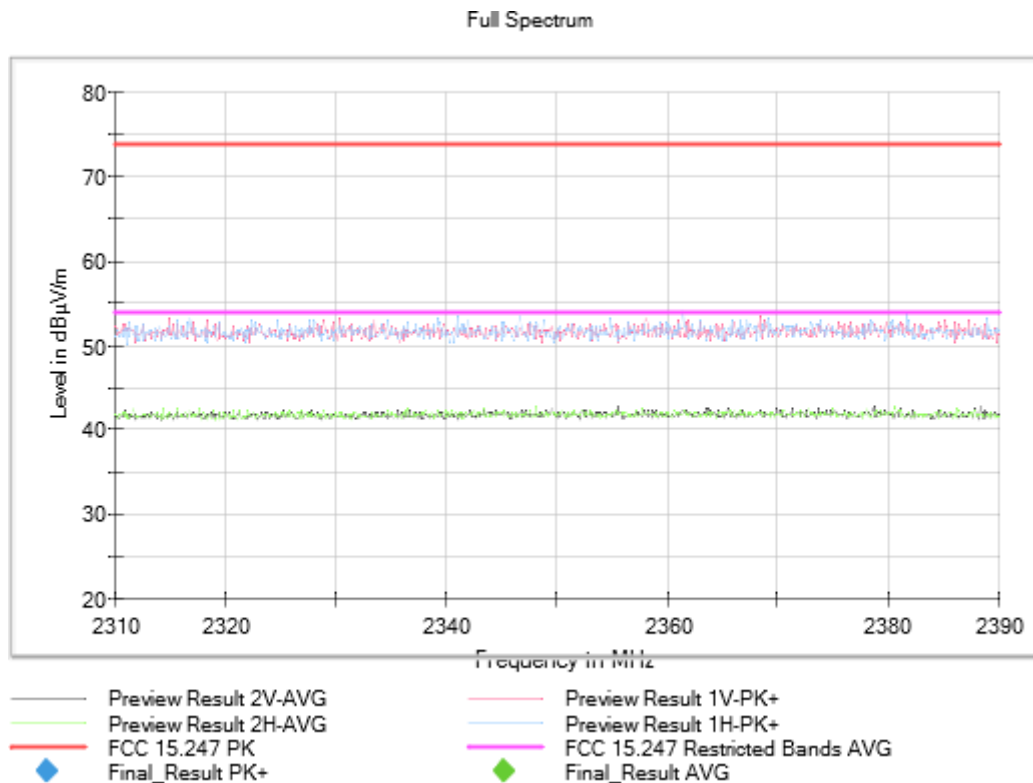
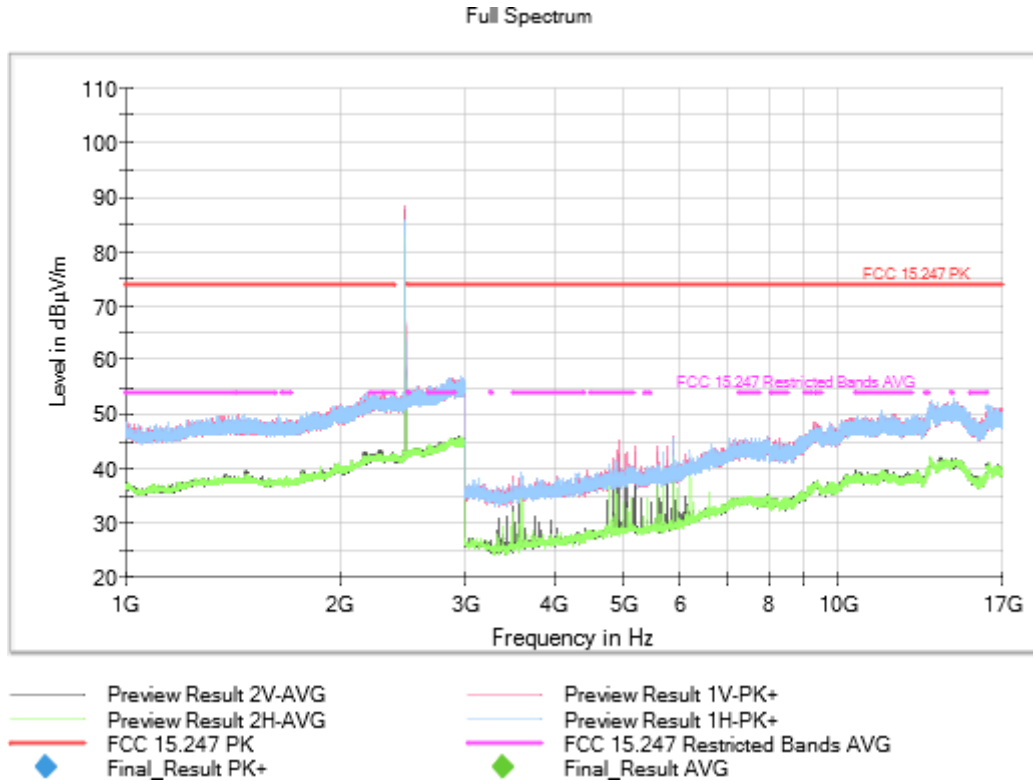
Frequency Range GHz = [1, 17]

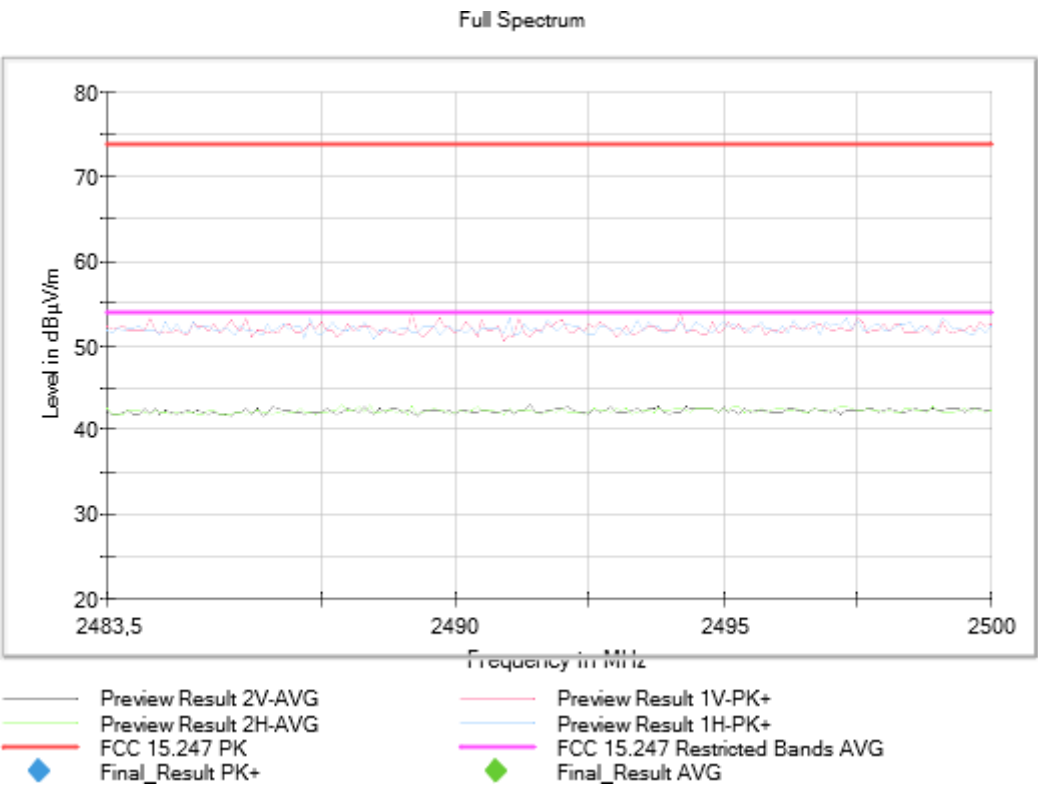
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2480.00000

Modulation = BTLE (GFSK 1 Mbit/s)

Images:





Modulation: BTLE 5.0 (GFSK 2 Mbit/s)

Modulation: BTLE (GFSK 2 Mbit/s)

Results

Freq Rng (GHz)	Operation Band (MHz)	Equipment	Freq (MHz)	Port	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	PoI	Detector
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2402.00000	1	30.145	26.07	V	QP
					30.145	31.79	V	PK
					600.020	32.99	H	PK
					600.020	29.36	H	QP
					932.100	31.79	H	PK
					932.100	25.84	H	QP

Verdict

Pass

Attachments

Frequency Range GHz = [0.03, 1]

Equipment Type = Digital Transmission System (DTS)

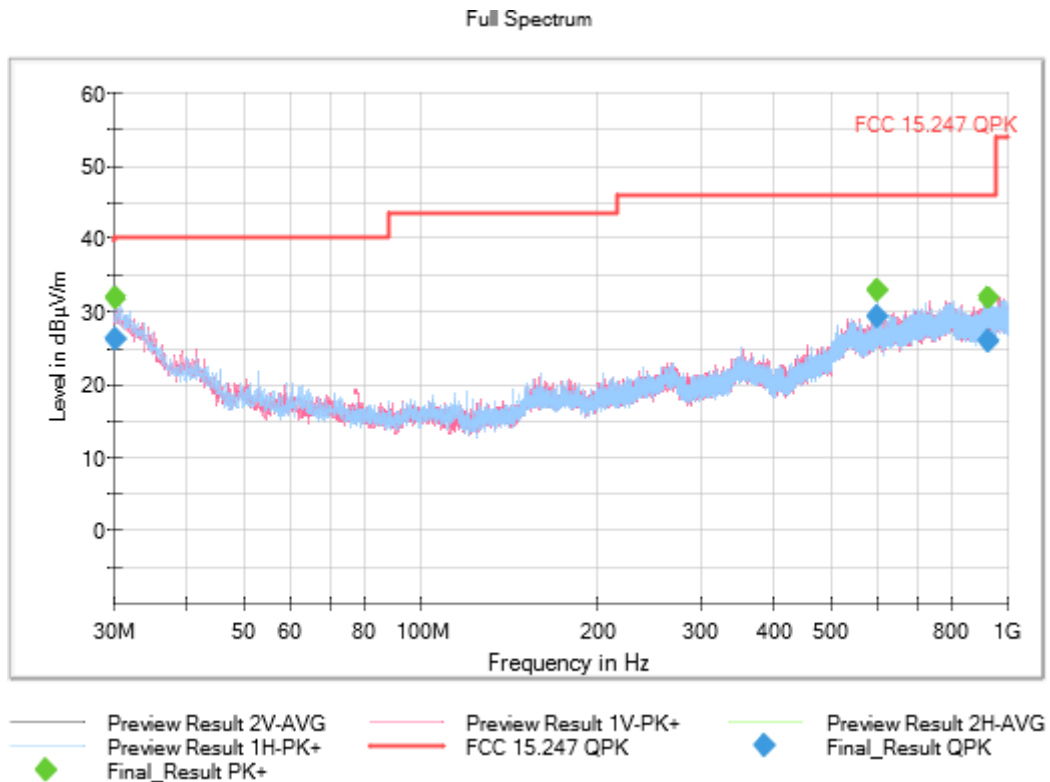
Modulation = The spurious frequencies detected do not depend on the modulation.

Frequency MHz = The spurious frequencies detected do not depend on the operating channel.

MIMO Mode = SISO

Active Port = 4

Images:



Frequency Range GHz = [1, 17]

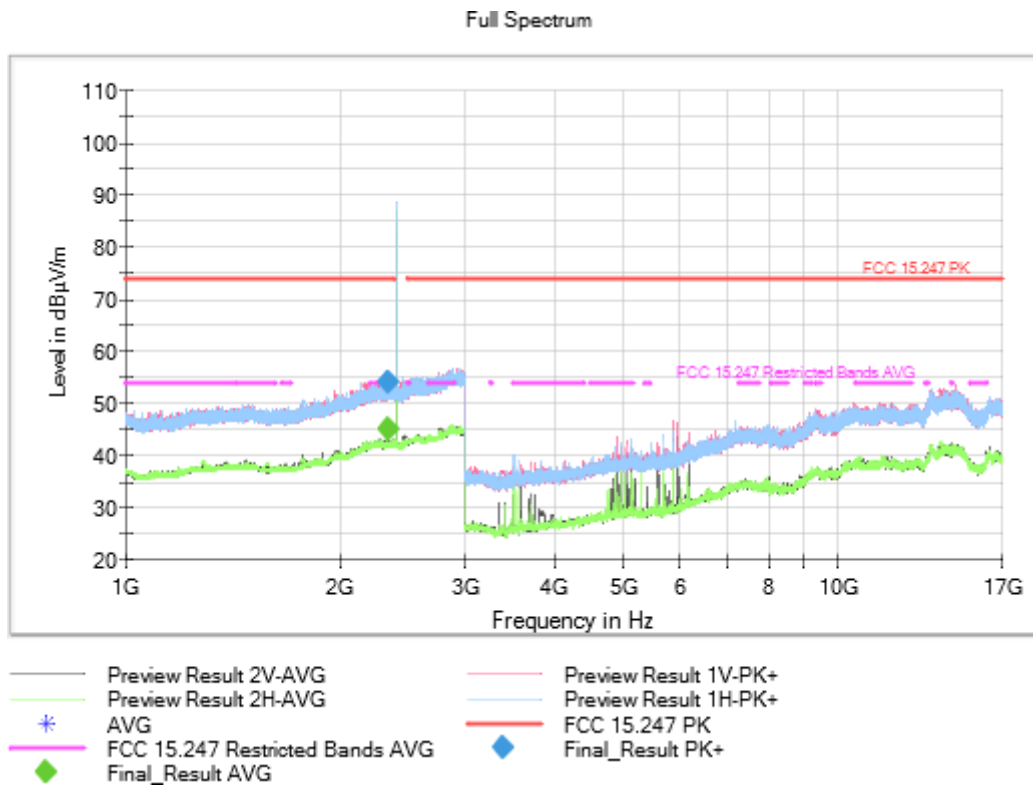
Operation Band MHz = [2400, 2483.5]

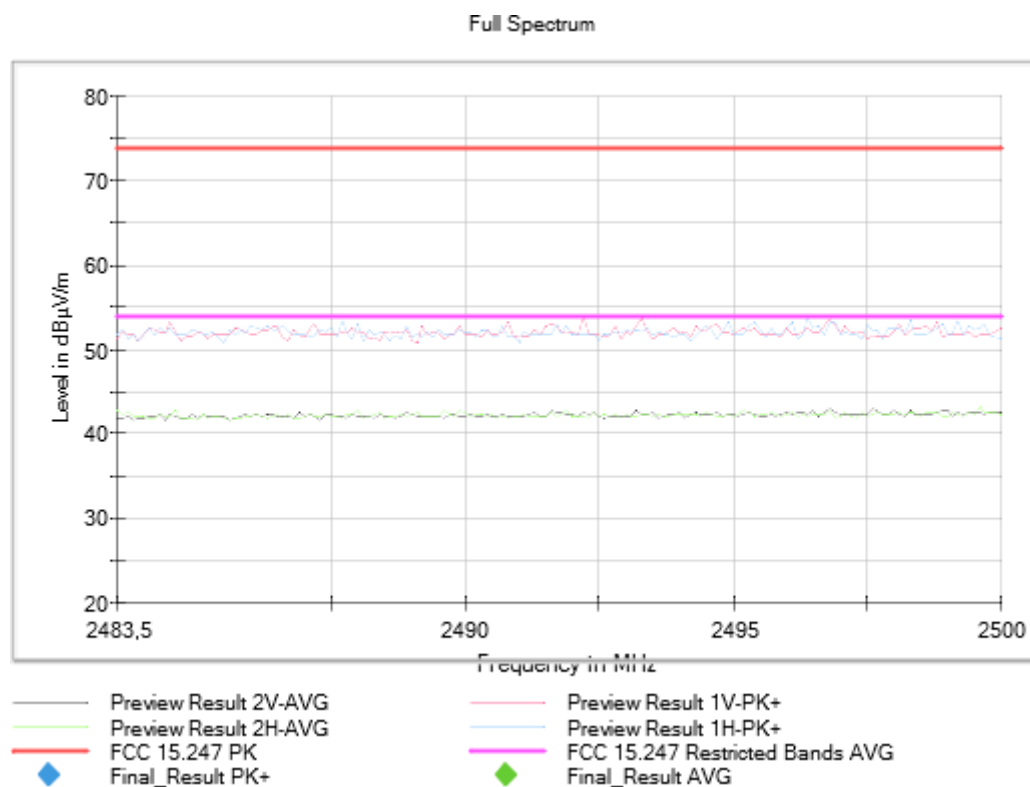
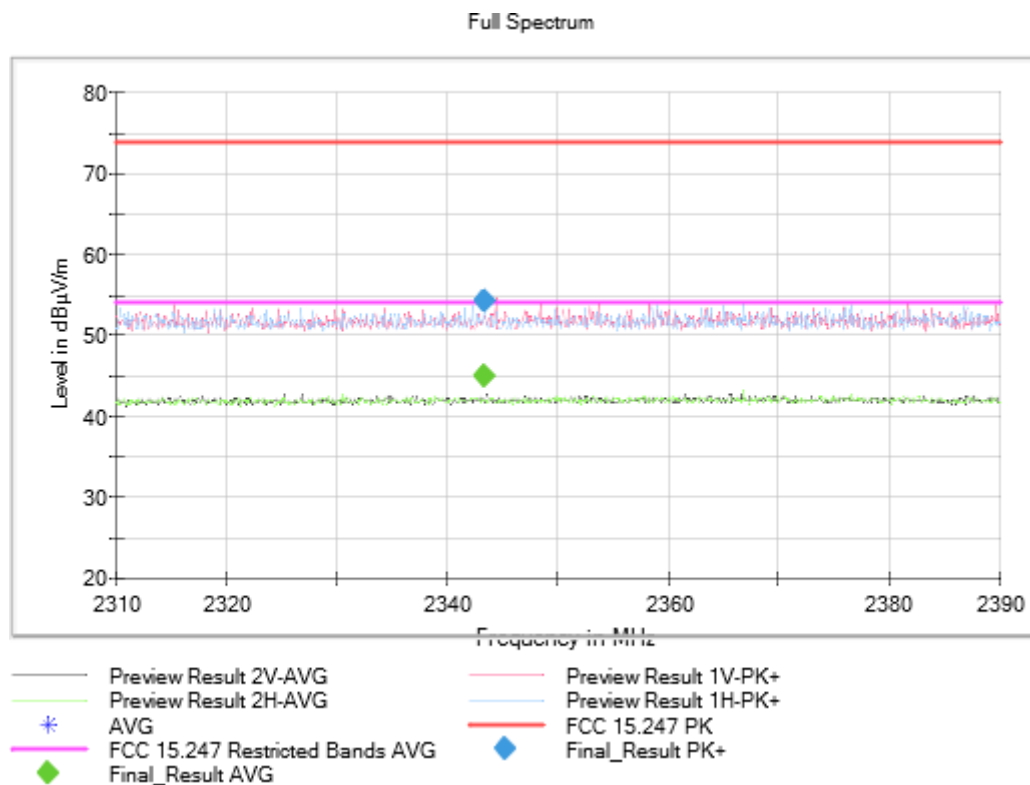
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

Frequency MHz = 2402.00000

Modulation = BTLE (GFSK 2 Mbit/s)

Images:





Frequency Range GHz = [1, 17]

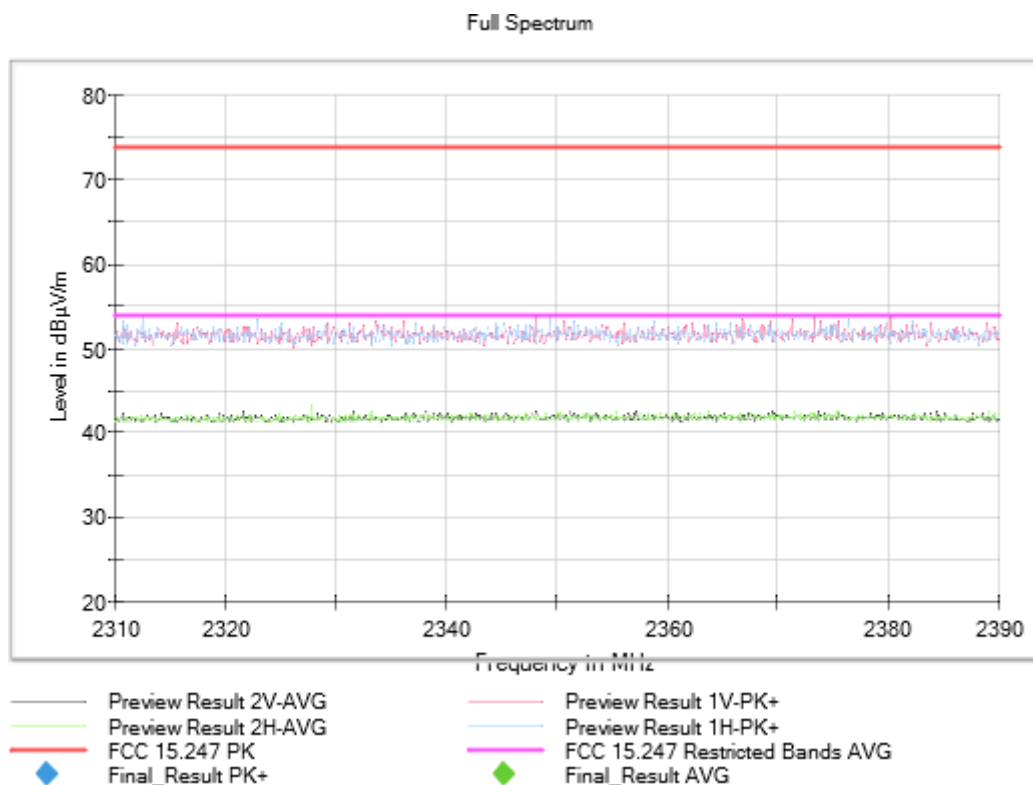
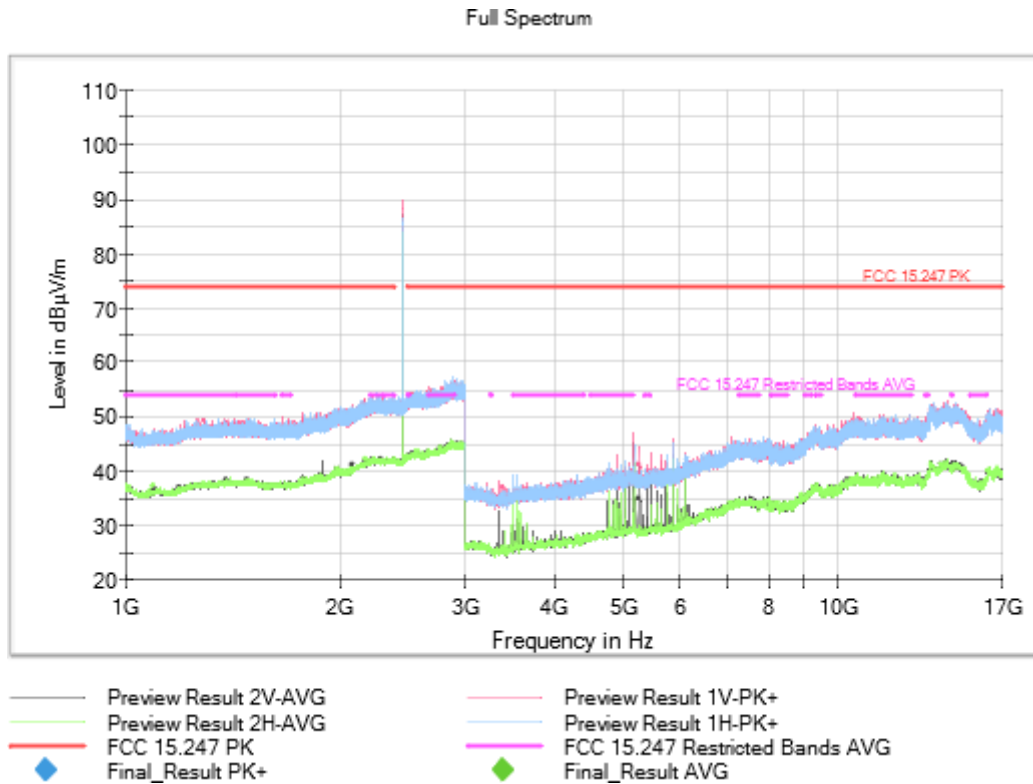
Operation Band MHz = [2400, 2483.5]

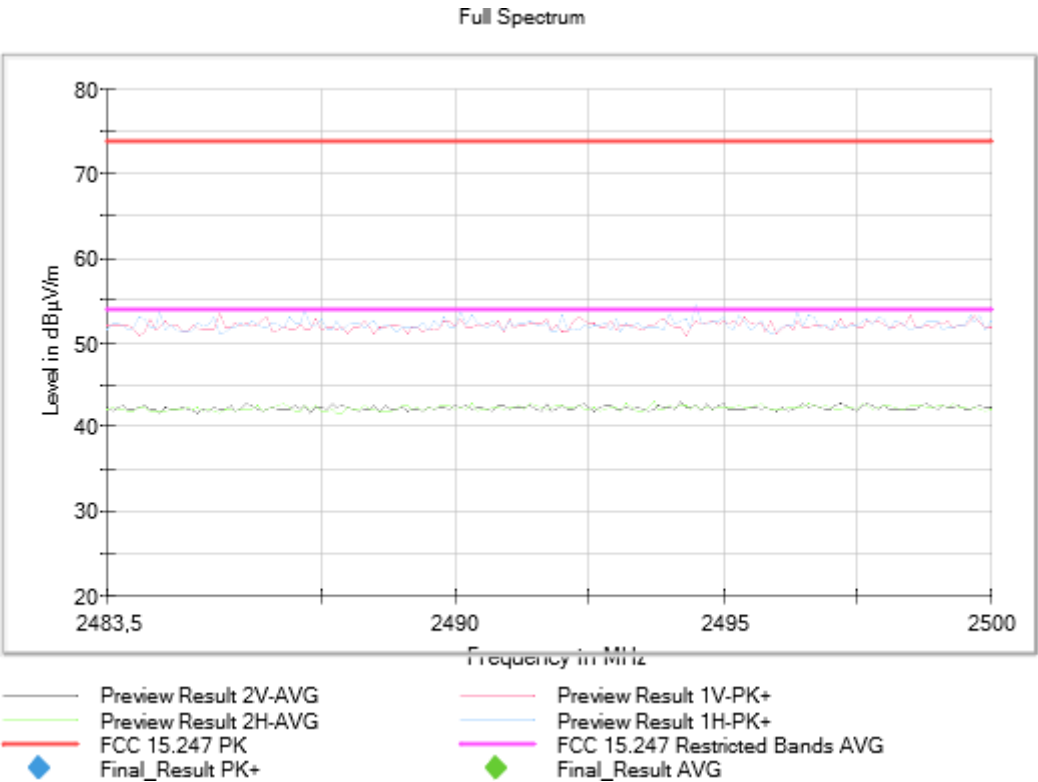
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

Frequency MHz = 2440.00000

Modulation = BTLE (GFSK 2 Mbit/s)

Images:





Frequency Range GHz = [1, 17]

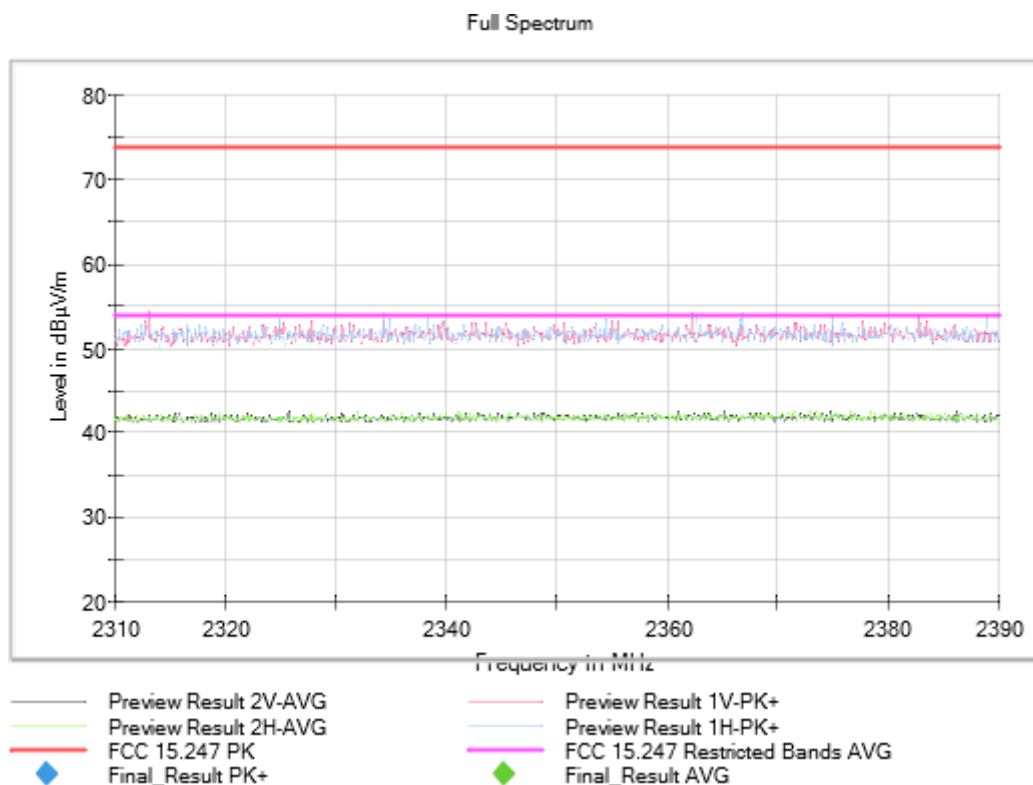
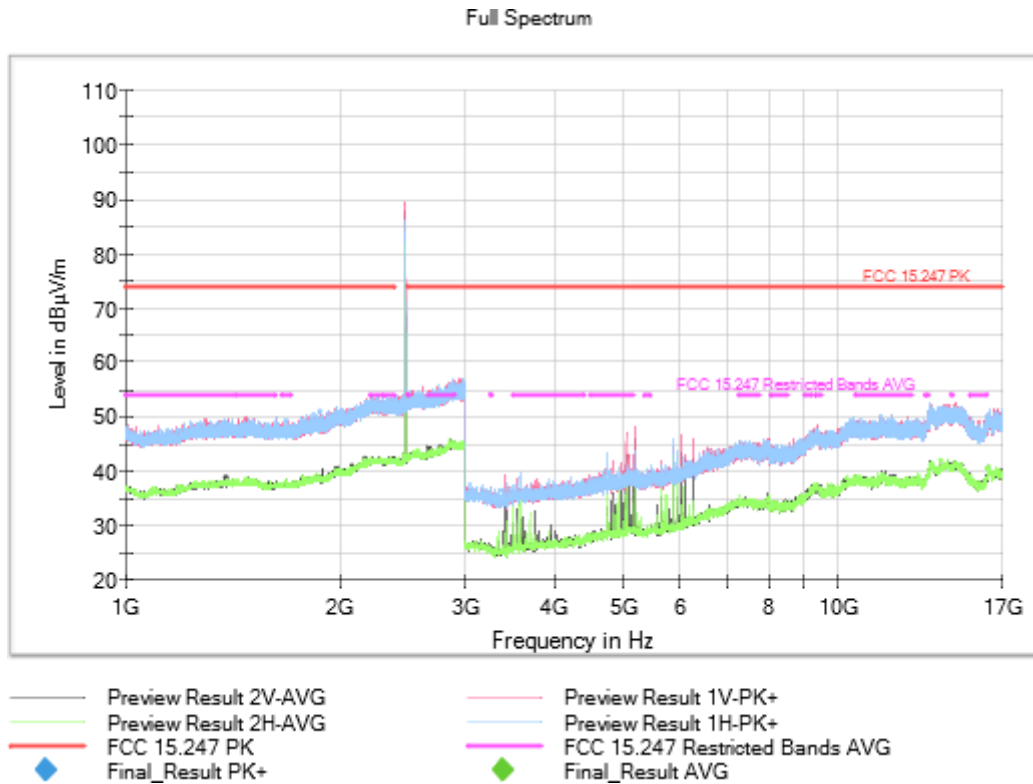
Operation Band MHz = [2400, 2483.5]

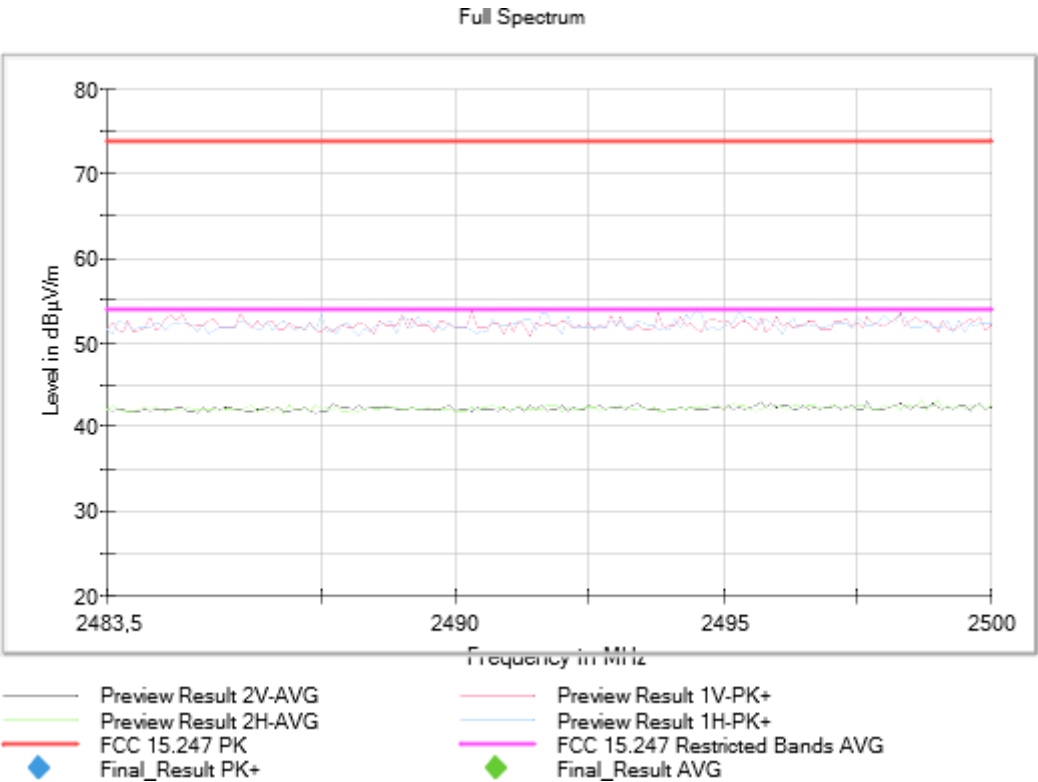
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

Frequency MHz = 2480.00000

Modulation = BTLE (GFSK 2 Mbit/s)

Images:





Tables:

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
1 GHz - 2,39 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
2,39 GHz - 2,484 GHz	40 kHz	PK+	100 kHz	0,01 s	0 dB
2,484 GHz - 3 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
3 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Frequency range 17GHz - 26GHz

Modulation: The spurious frequencies detected do not depend on either the modulation or the operating channel.

No spurious frequencies detected at less than 20 dB below the limit.

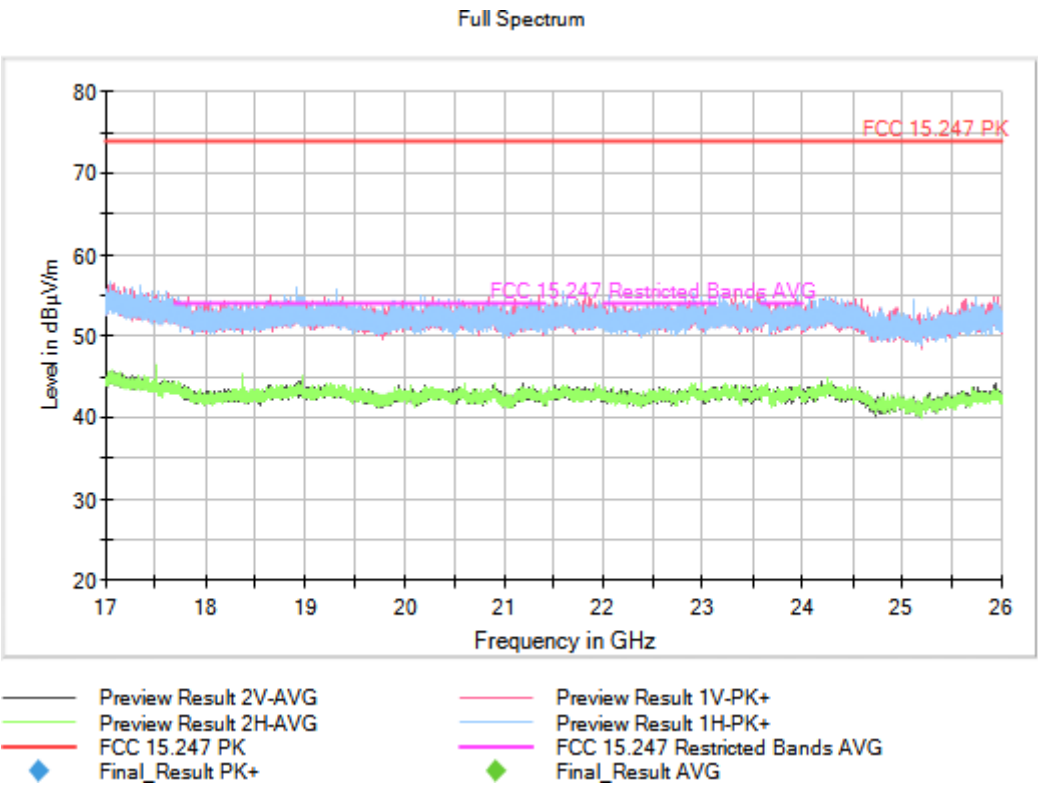
Verdict

Pass

Attachments

Frequency Range GHz = [17, 26] Equipment Type = Digital Transmission System (DTS)
The spurious frequencies detected do not depend on either the modulation or the operating channel.
MIMO Mode = SISO Active Port = 4

Images:



Tables:

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
17 GHz - 26 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Appendix B: Test results. Bluetooth EDR

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TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 12 Vdc
Type of Power Supply: Battery

ANTENNA (*):

Technology	Antenna Gain	Type
BTEDR:	+0.1 dBi	External

TEST FREQUENCIES (*):

Modulation	Data rates	Low Channel	Middle Channel	High Channel
BTEDR GFSK	1-DH5	2402 MHz	2441 MHz	2480 MHz
BTEDR PI/4 DQPSK	2-DH5	2402 MHz	2441 MHz	2480 MHz
BTEDR 8DPSK	3-DH5	2402 MHz	2441 MHz	2480 MHz

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 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).

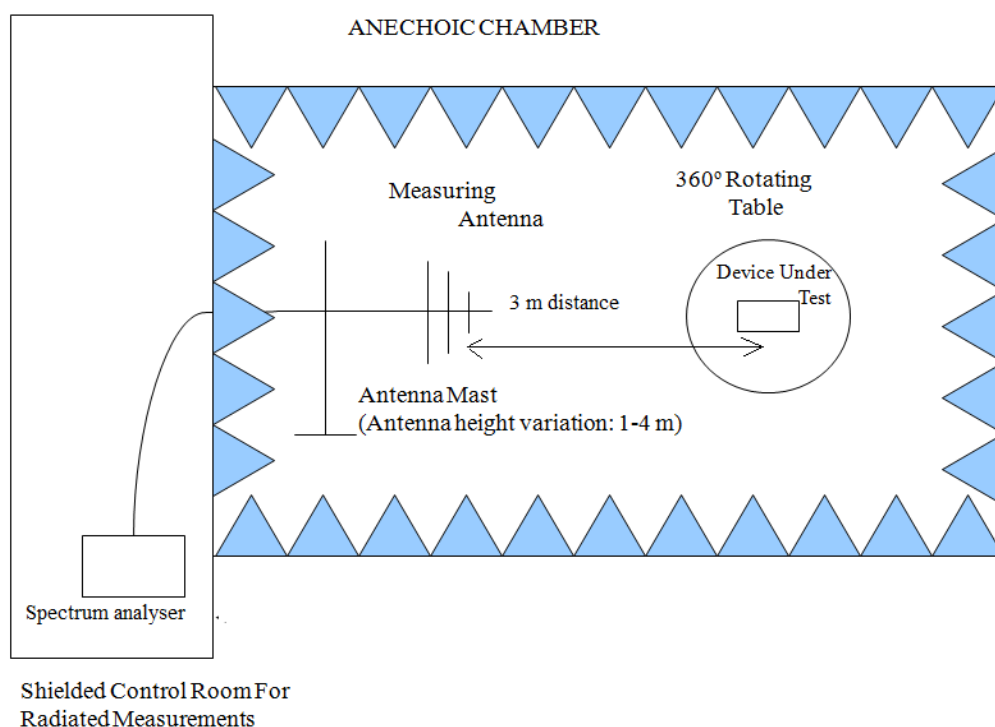
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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.

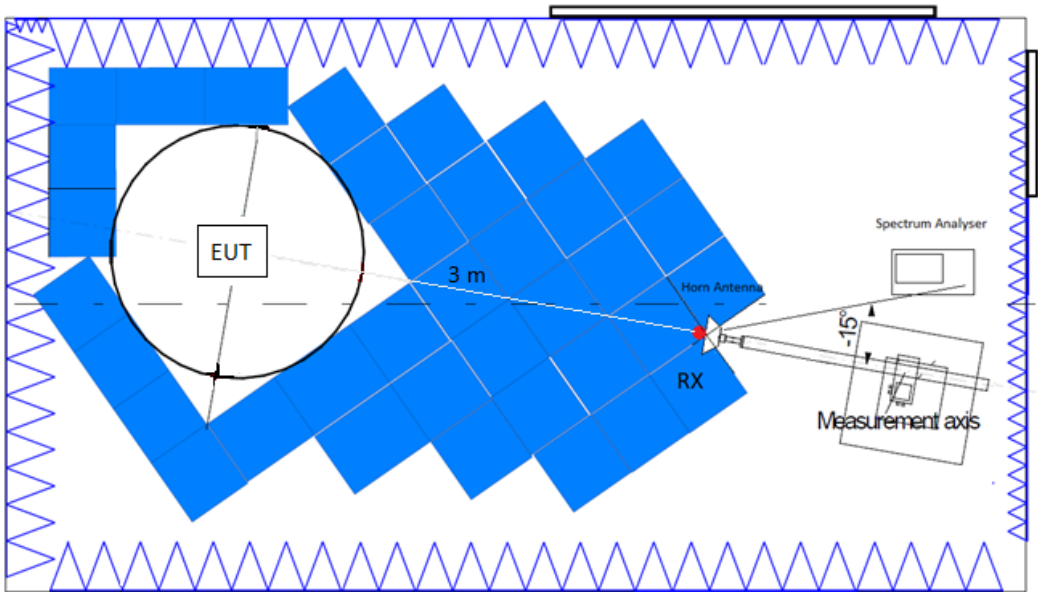
Measurements were made in both horizontal and vertical planes of polarization.

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.

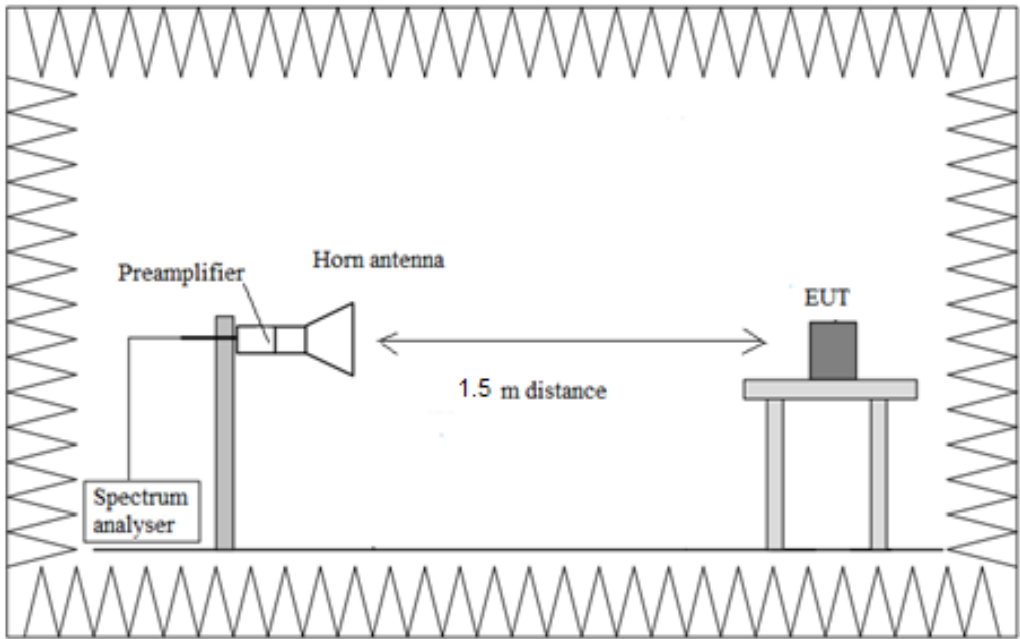
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



TEST CASES DETAILS

FCC 47 CFR Part 15.247 / RSS-247

RSS-247 5.4 (b) / FCC 15.247 (b) (1) Maximum Peak Conducted output power

Limits

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels: 1 watt (30 dBm). The e.i.r.p. shall not exceed 4 W (RSS-247).

Results

Modulation: BT (8DPSK 3-DH5)

Equipment	BW (MHz)	Freq (MHz)	Port	Peak Power (dBm)	Max EIRP Power (dBm)
Frequency Hopping Spread Spectrum systems (DSS)	1	2402.00000	3	10.857	10.957

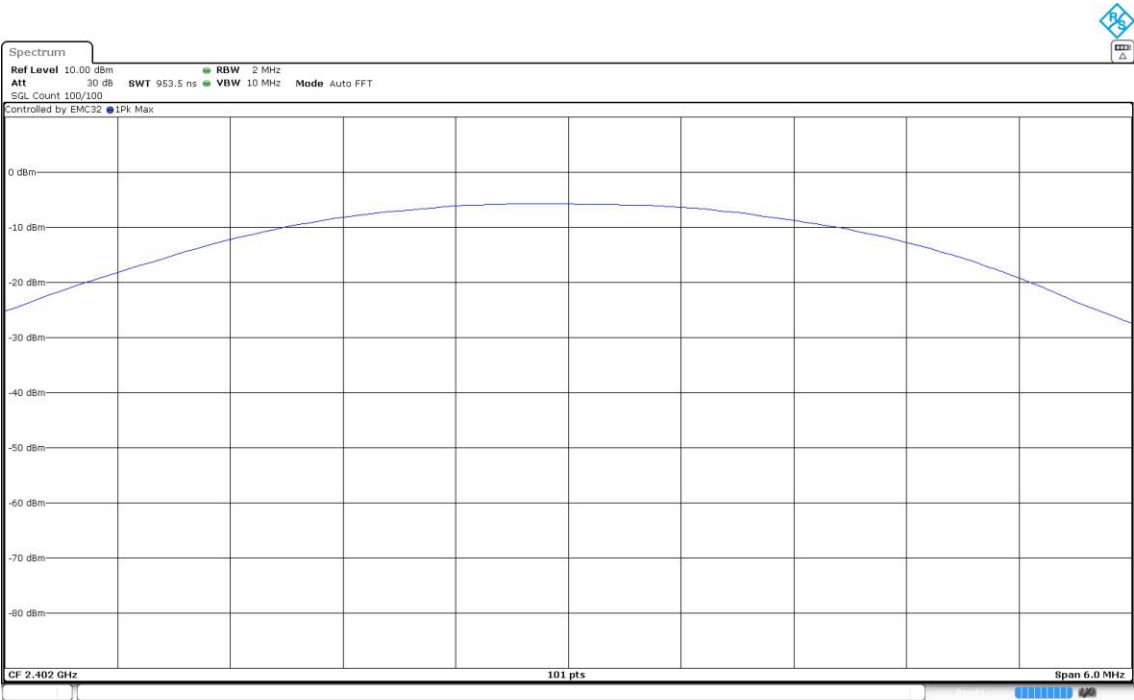
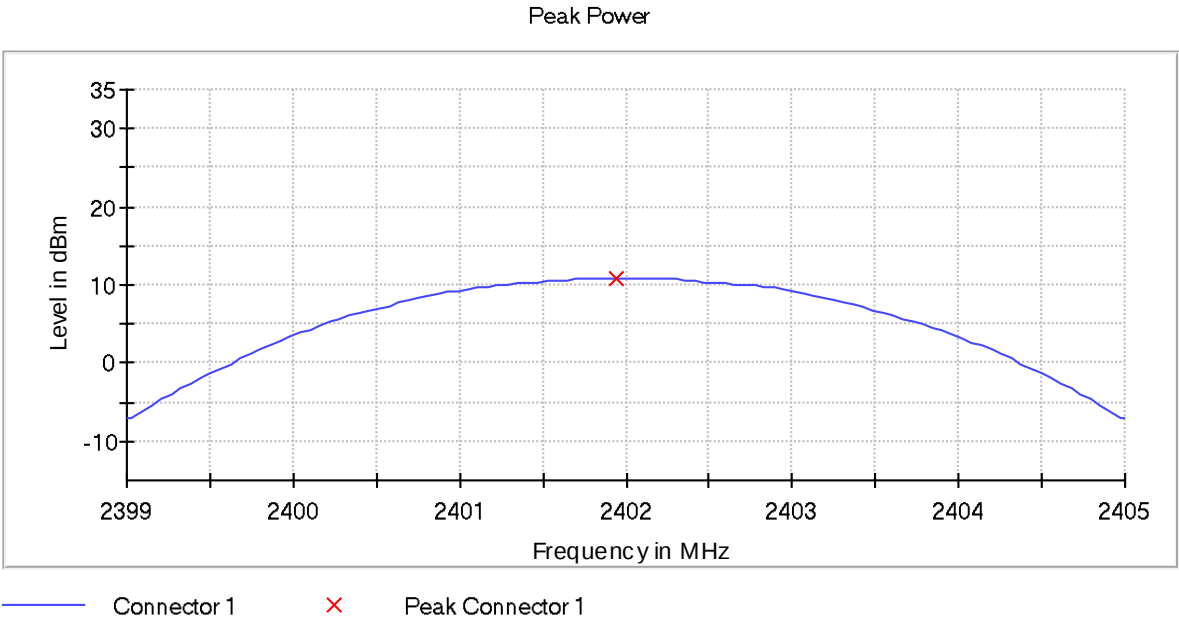
Verdict

Pass

Attachments

Operation Band MHz = [2400, 2483.5] Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)
Frequency MHz = 2402.00000 Active Port = 3
Modulation = BT (8DPSK 3-DH5)

Images:



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 ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	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 is specified when measuring with peak detector function.

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

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Modulation: BT (GFSK 1-DH5)

Results

Freq Rng (GHz)	Operation Band (MHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	PoI	Detector
[0.03, 1]	[2400, 2483.5]	All Freq	30.921500	31.17	H	PK
[0.03, 1]	[2400, 2483.5]	All Freq	30.921500	25.75	H	QP
[0.03, 1]	[2400, 2483.5]	All Freq	594.055000	---	H	QP
[0.03, 1]	[2400, 2483.5]	All Freq	594.055000	32.68	H	PK
[0.03, 1]	[2400, 2483.5]	All Freq	600.069000	44.15	H	PK
[0.03, 1]	[2400, 2483.5]	All Freq	600.069000	27.68	H	QP
[0.03, 1]	[2400, 2483.5]	All Freq	875.064000	31.87	H	QP
[0.03, 1]	[2400, 2483.5]	All Freq	875.064000	28.88	H	PK

Verdict

Pass

Attachments

Frequency Range GHz = [0.03, 1]

Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

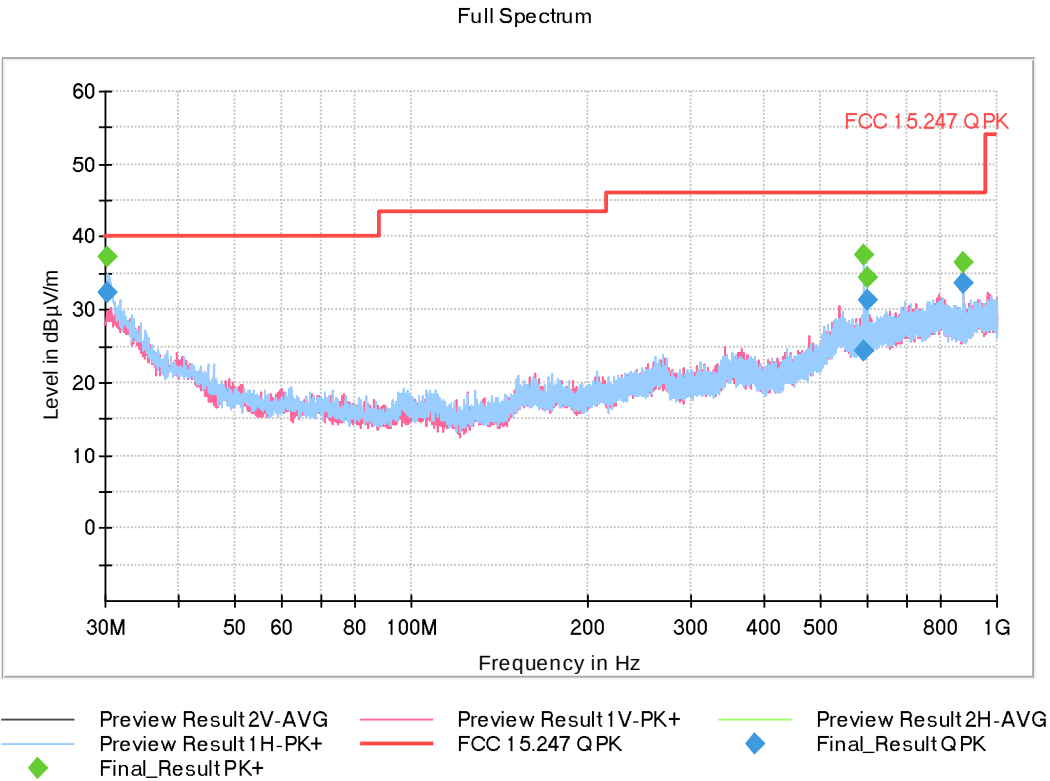
Modulation = The spurious frequencies detected do not depend on the modulation

Frequency MHz = The spurious frequencies detected do not depend on the operating channel.

MIMO Mode = SISO

Active Port = 3

Images:



Tables:

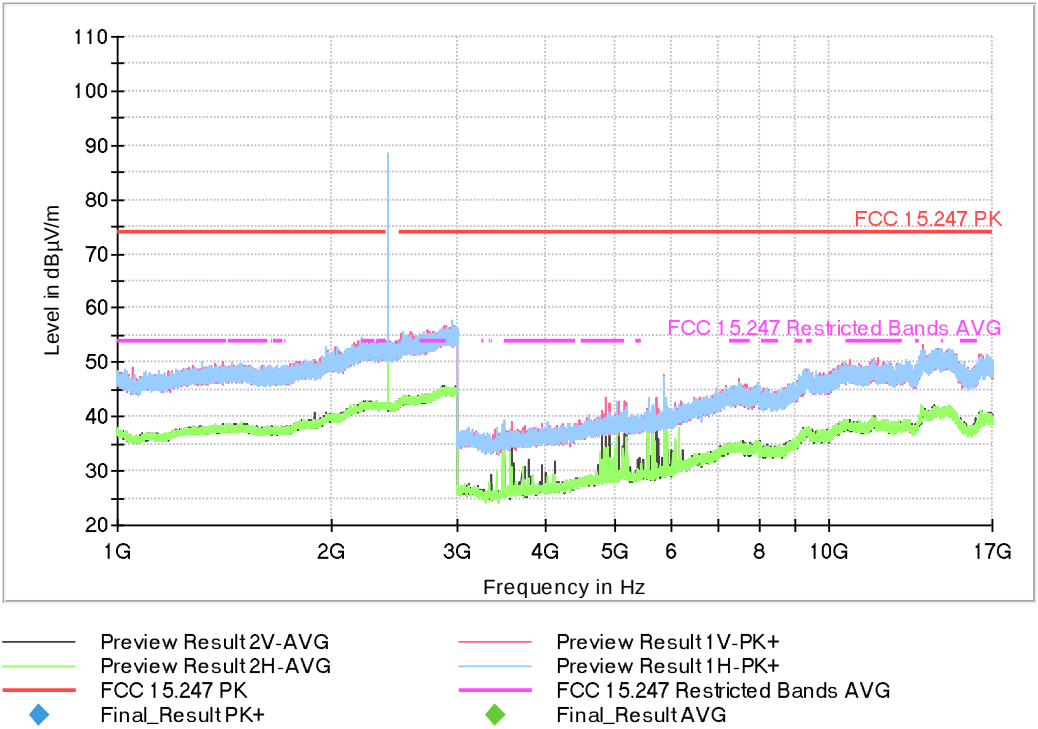
Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	0 dB

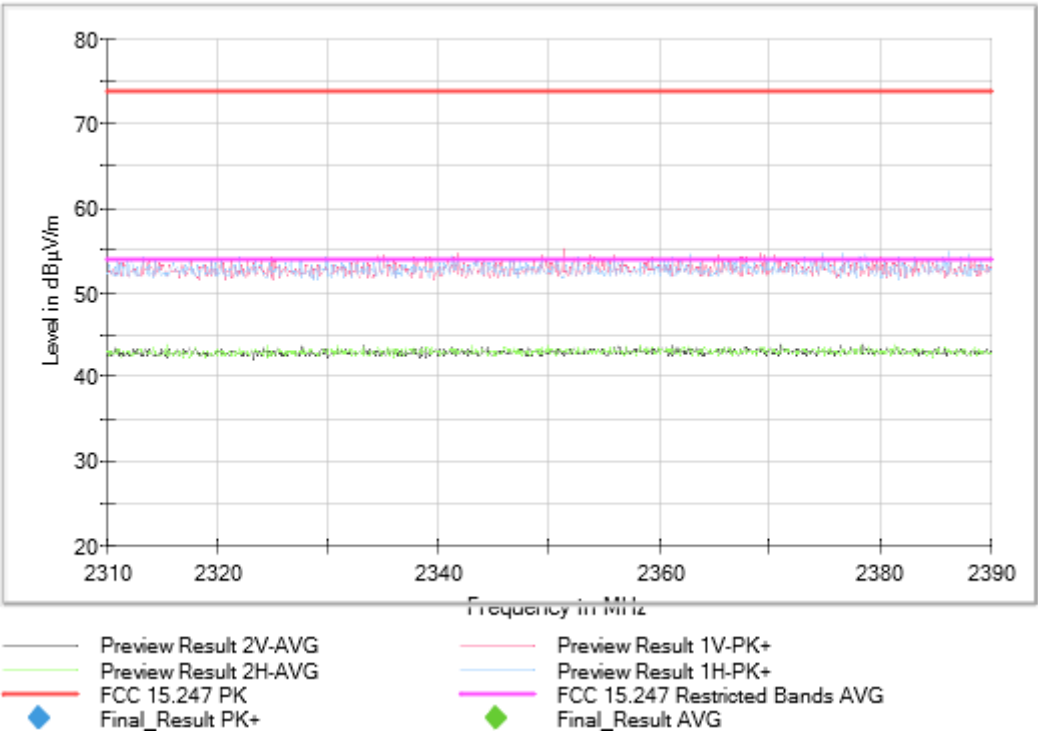
Frequency Range GHz = [1, 17] Operation Band MHz = [2400, 2483.5]
Equipment Type = FHSS Frequency MHz = 2402.00000
Active Port = 3 Modulation = BT (GFSK 1-DH5)

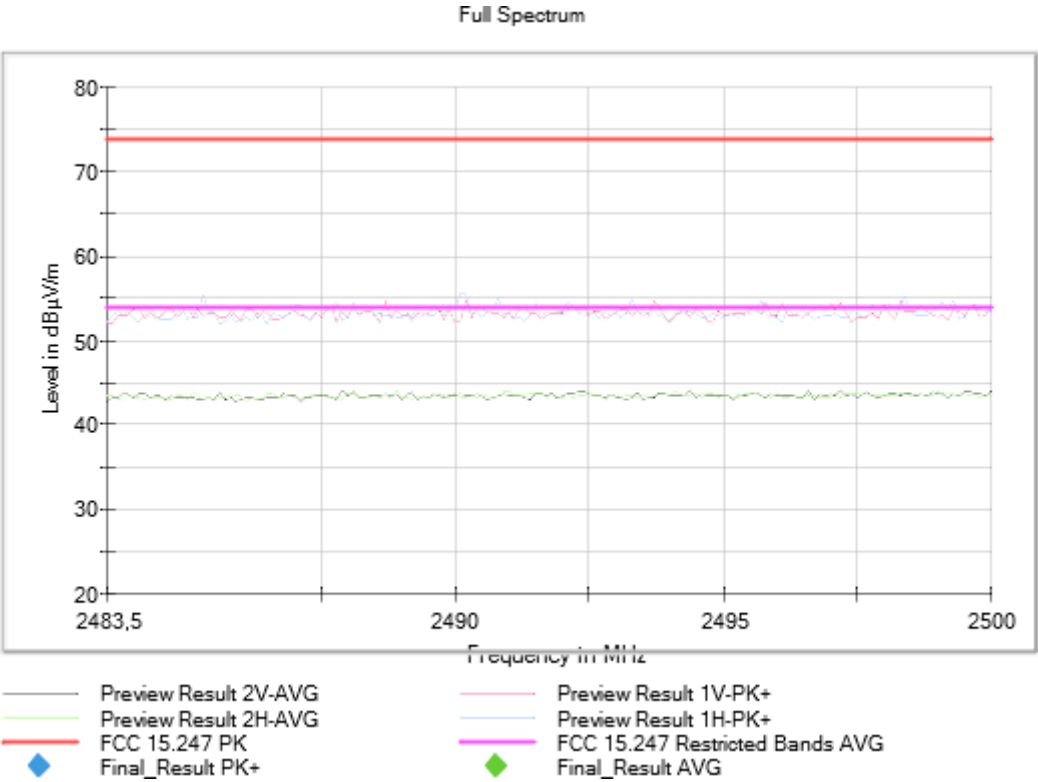
Images:

Full Spectrum



Full Spectrum

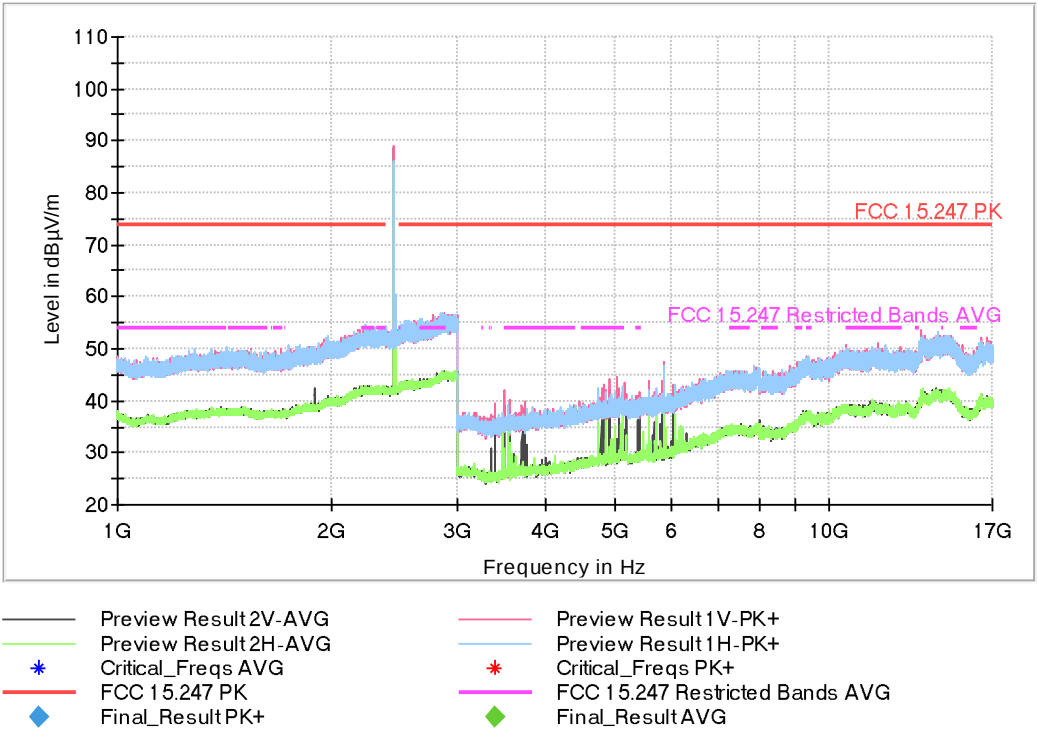




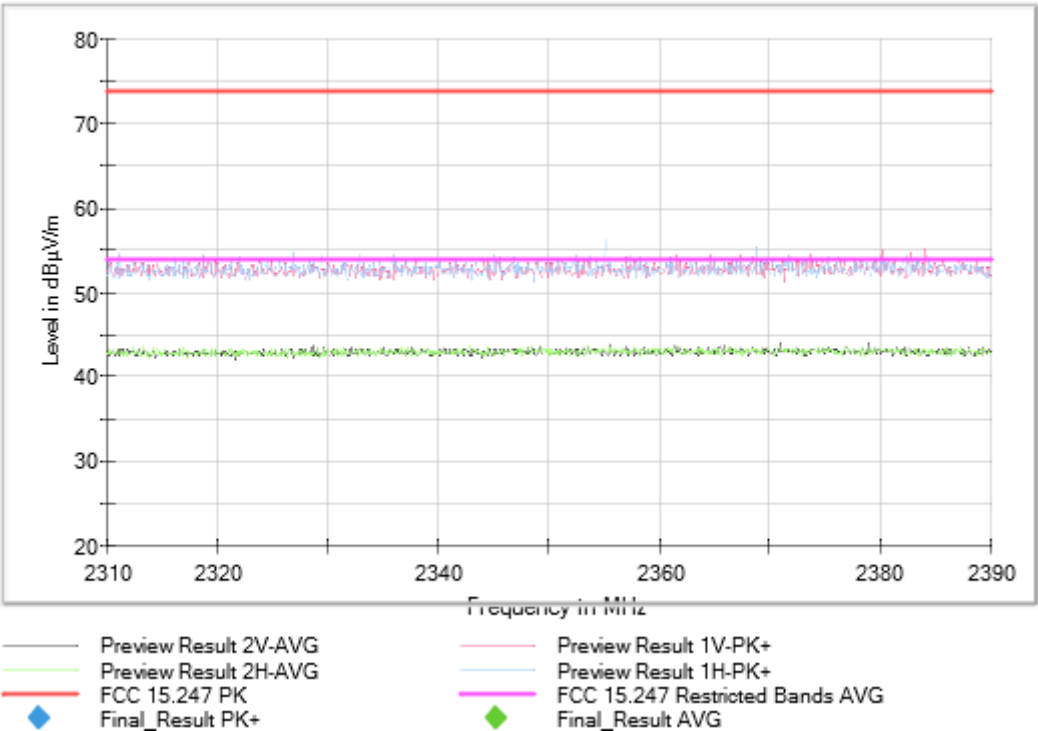
Frequency Range GHz = [1, 17] Operation Band MHz = [2400, 2483.5]
Equipment Type = FHSS Frequency MHz = 2441.00000
Active Port = 3 Modulation = BT (GFSK 1-DH5)

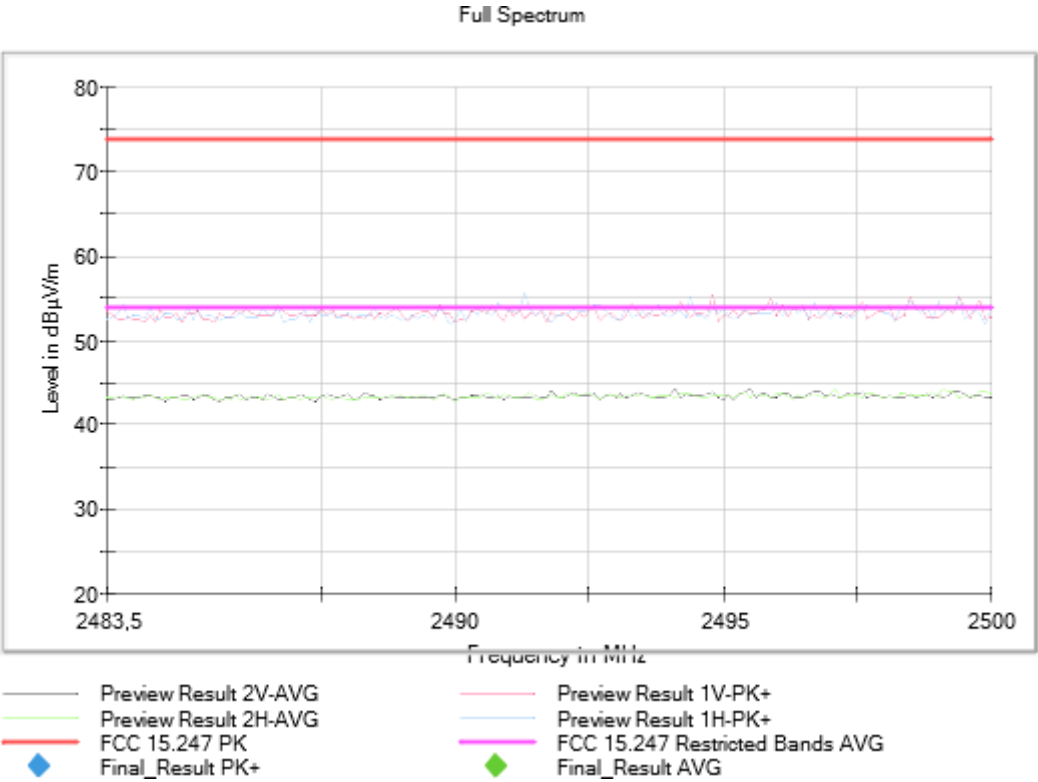
Images:

Full Spectrum



Full Spectrum

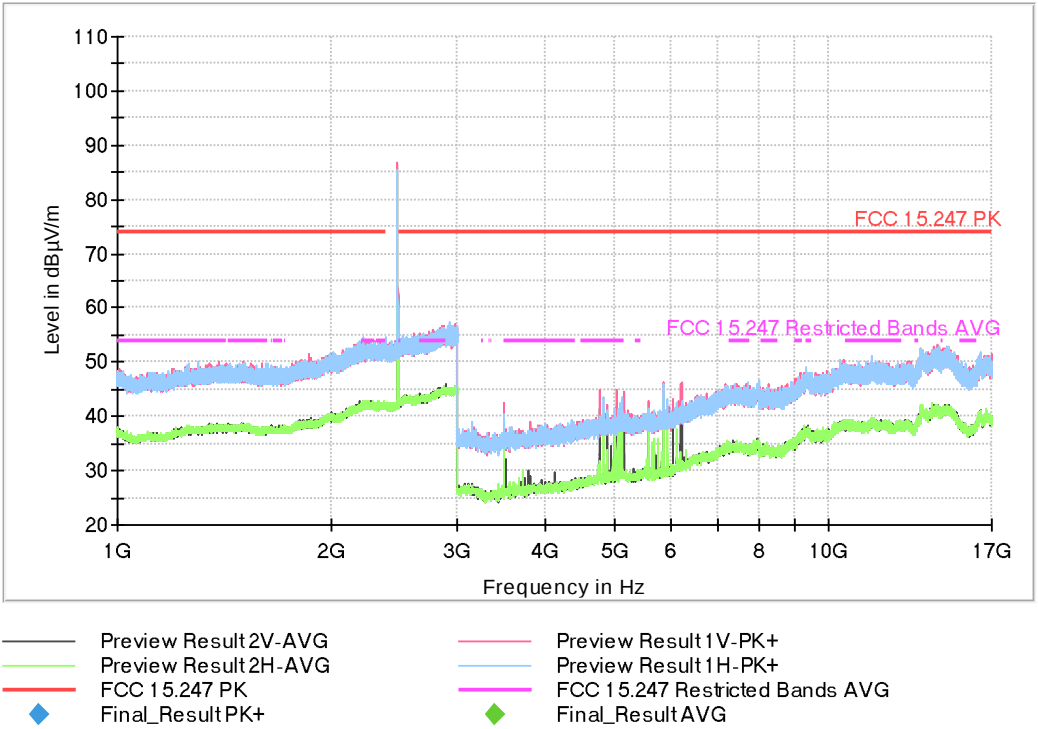




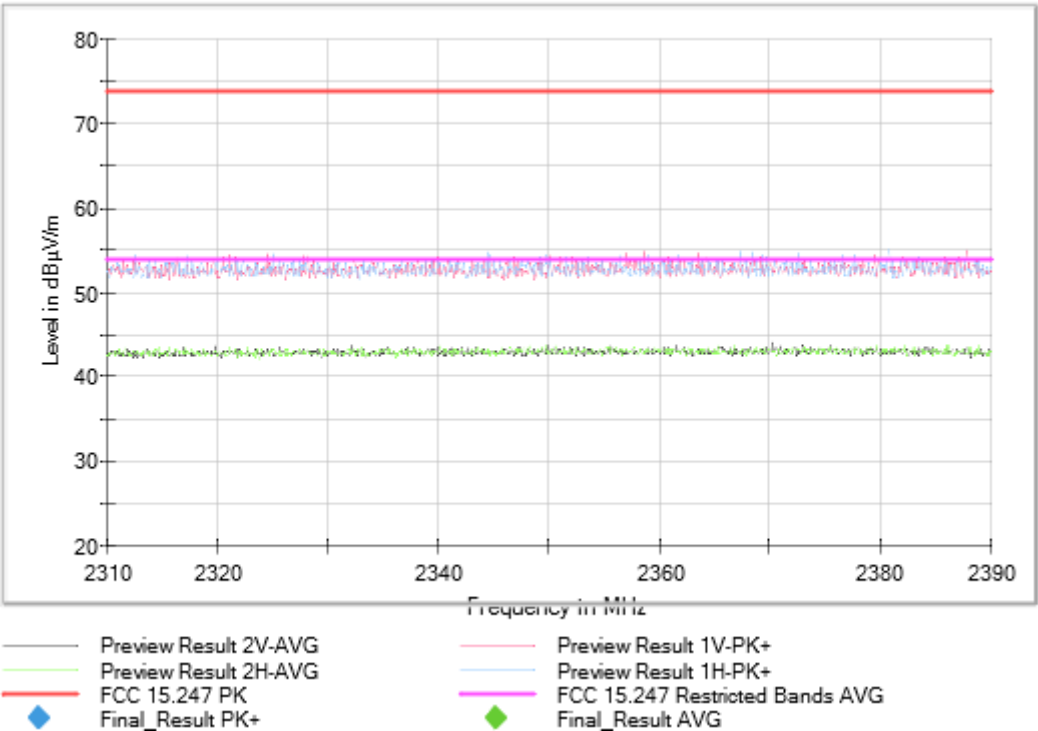
Frequency Range GHz = [1, 17] Operation Band MHz = [2400, 2483.5]
Equipment Type = FHSS Frequency MHz = 2480.00000
Active Port = 3 Modulation = BT (GFSK 1-DH5)

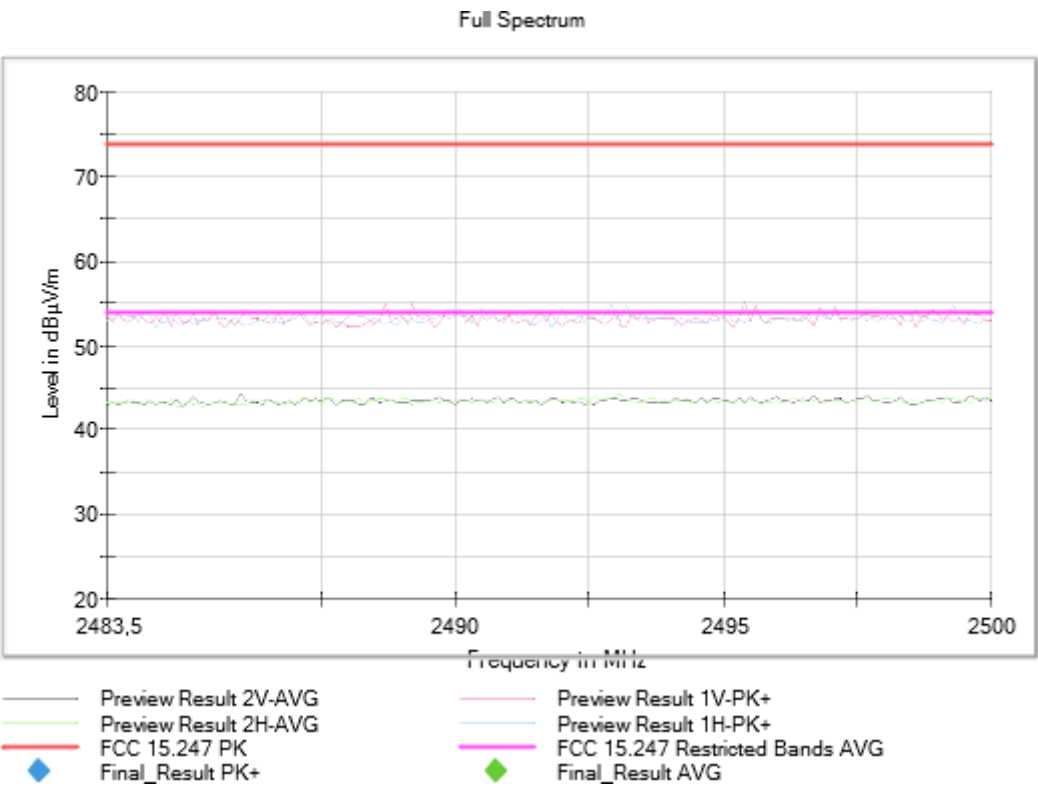
Images:

Full Spectrum



Full Spectrum





Modulation: BT (Pi/4 DQPSK 2-DH5)

No spurious frequencies detected at less than 20 dB below the limit.

Verdict

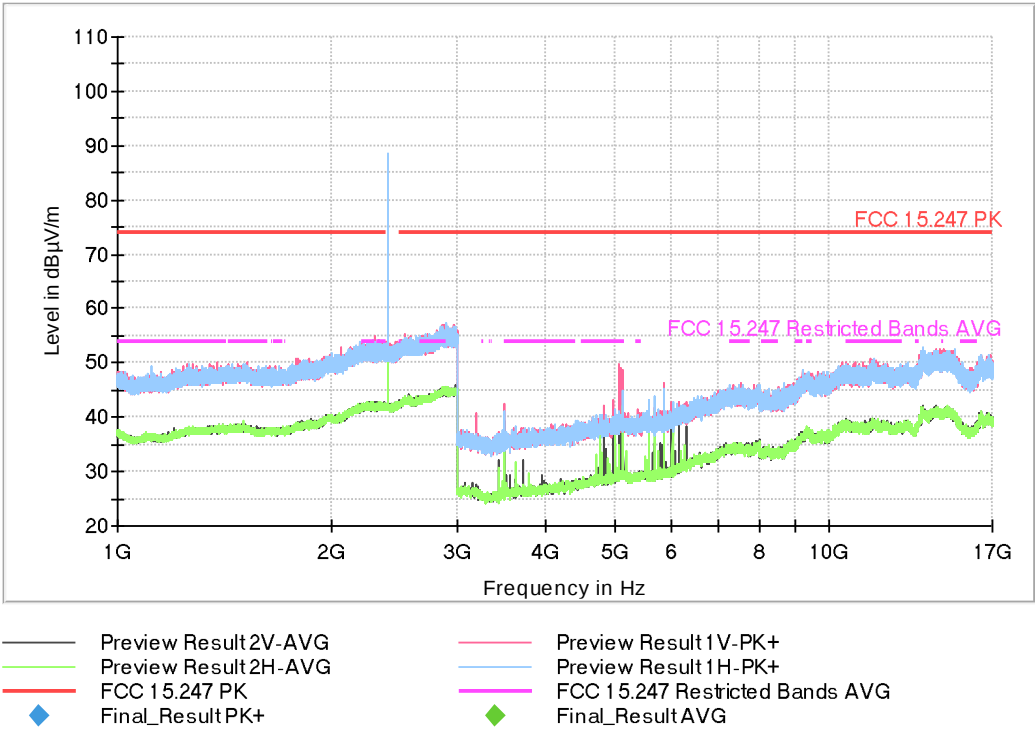
Pass

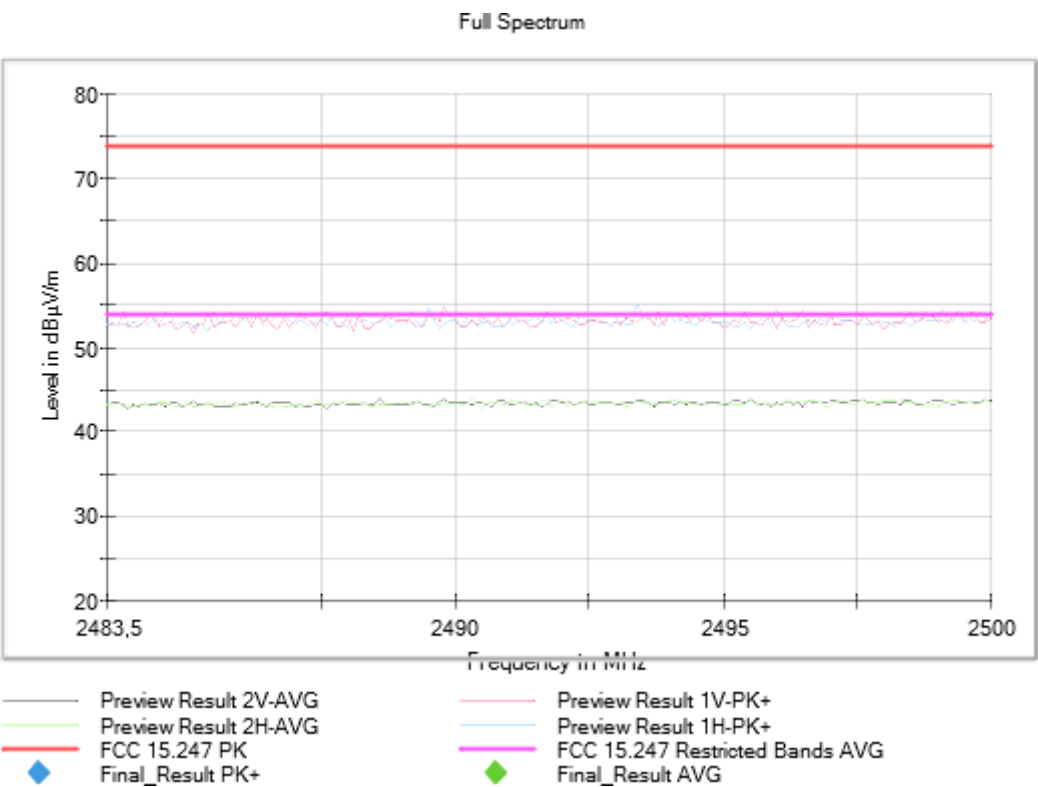
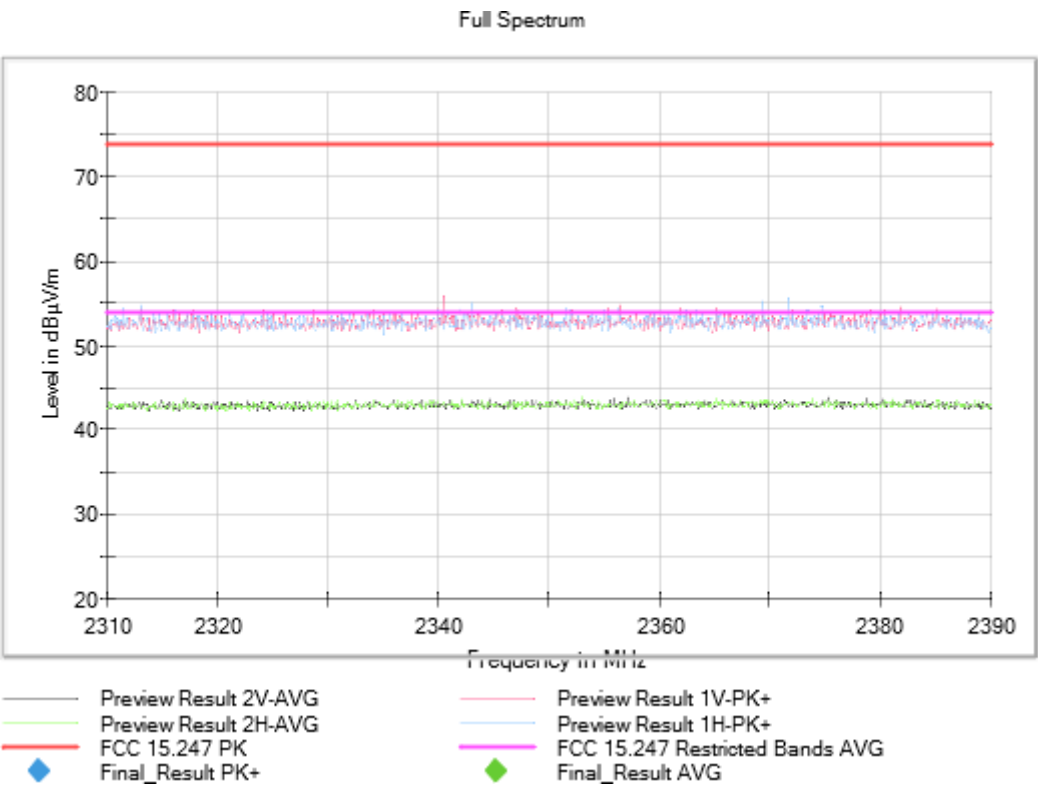
Attachments

Frequency Range GHz = [1, 17] Operation Band MHz = [2400, 2483.5]
Equipment Type = FHSS Frequency MHz = 2402.00000
Active Port = 3 Modulation = BT (Pi/4 DQPSK 2-DH5)

Images:

Full Spectrum

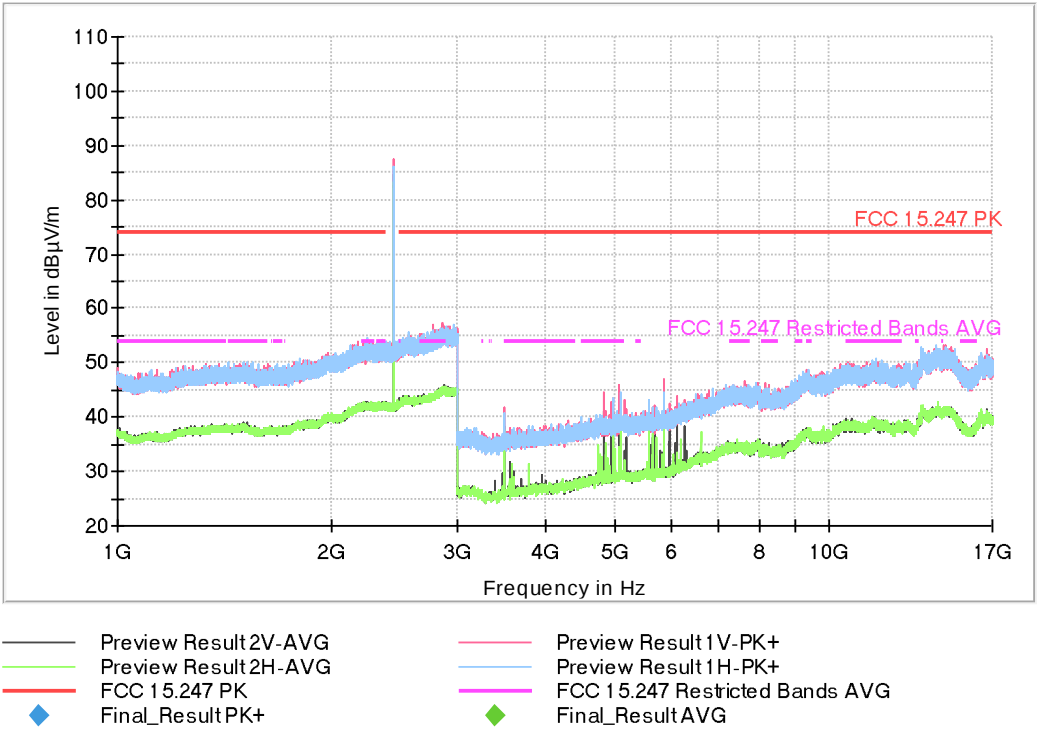




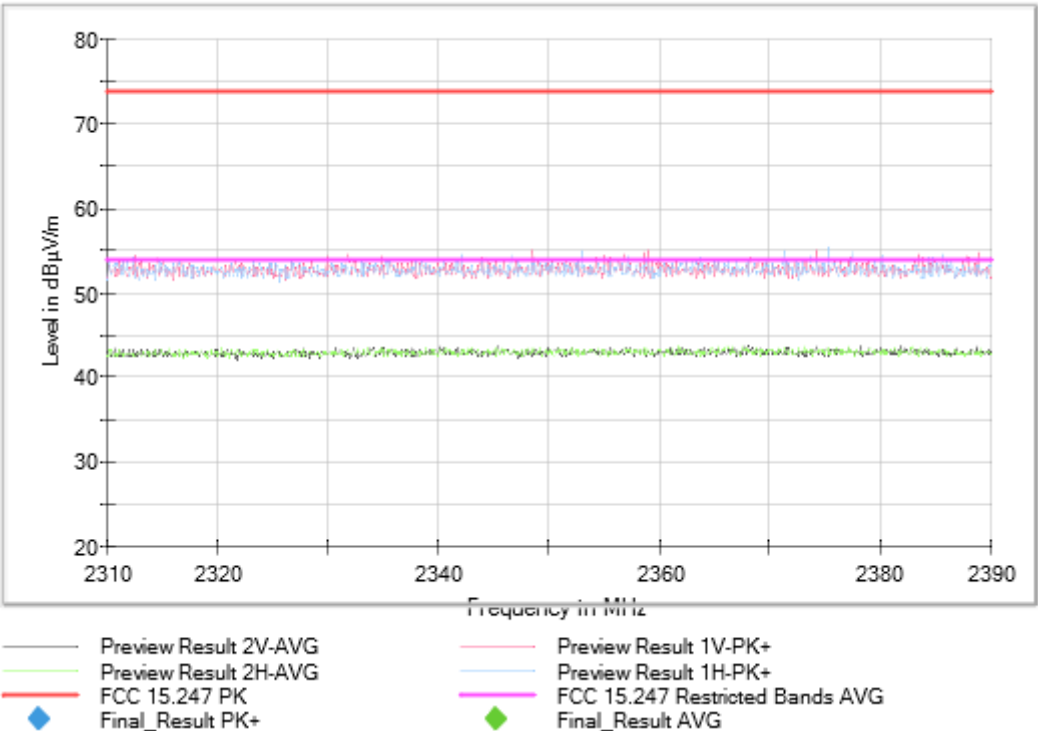
Frequency Range GHz = [1, 17] Operation Band MHz = [2400, 2483.5]
Equipment Type = FHSS Frequency MHz = 2441.00000
Active Port = 3 Modulation = BT (Pi/4 DQPSK 2-DH5)

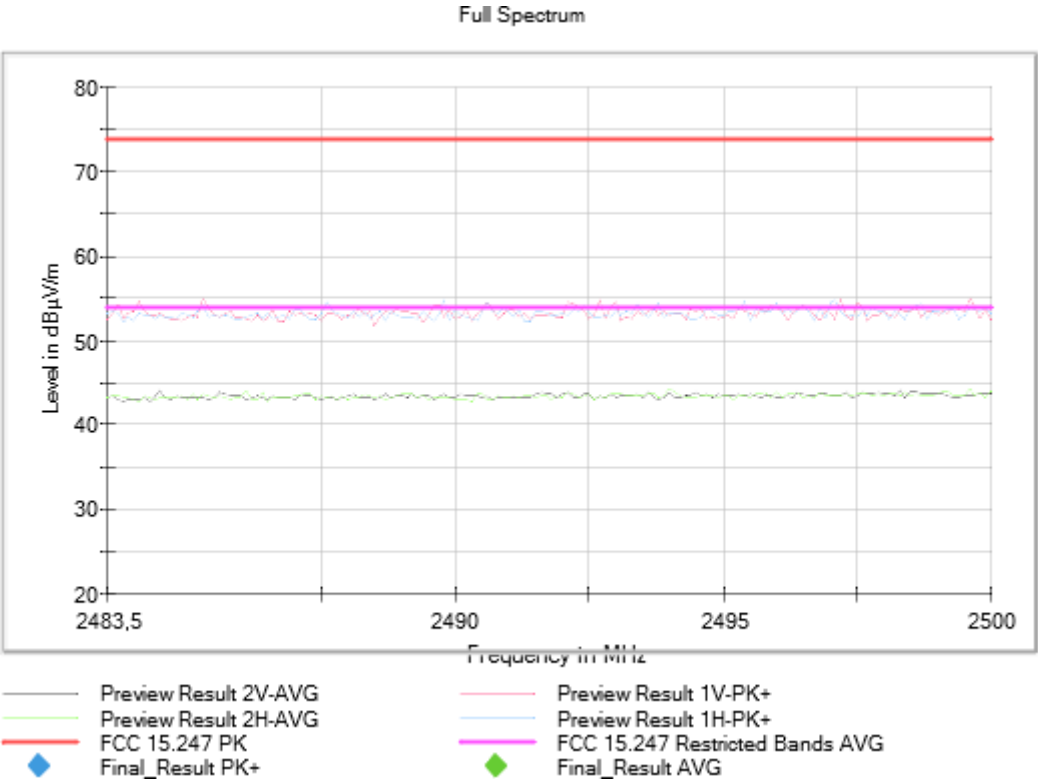
Images:

Full Spectrum



Full Spectrum

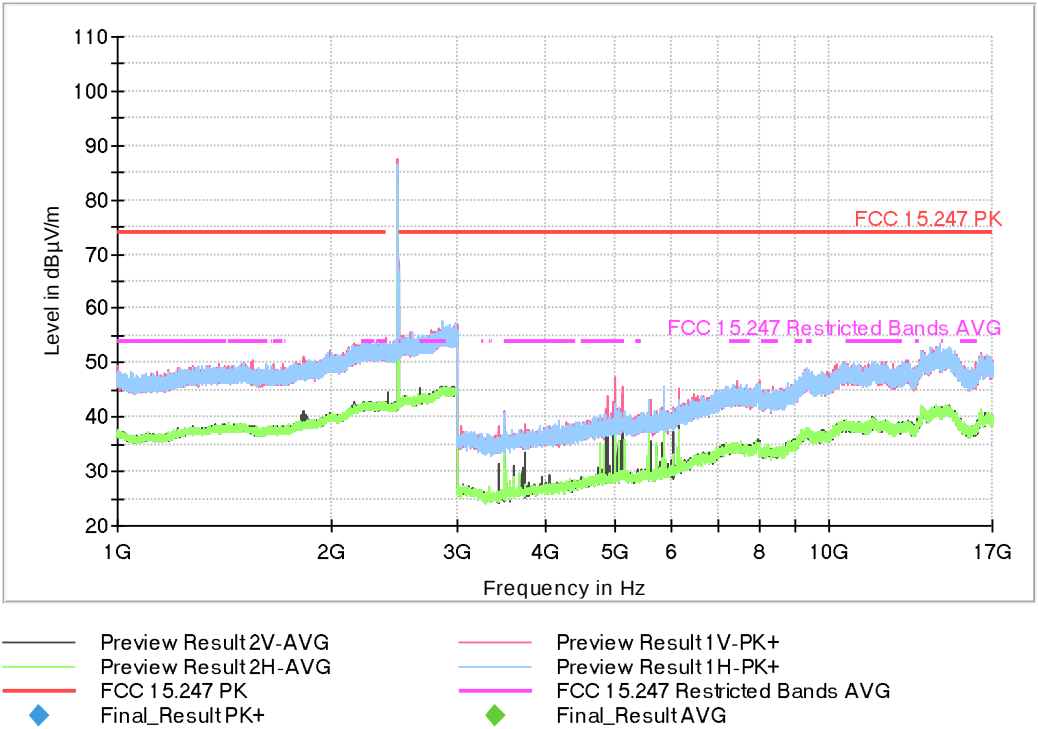




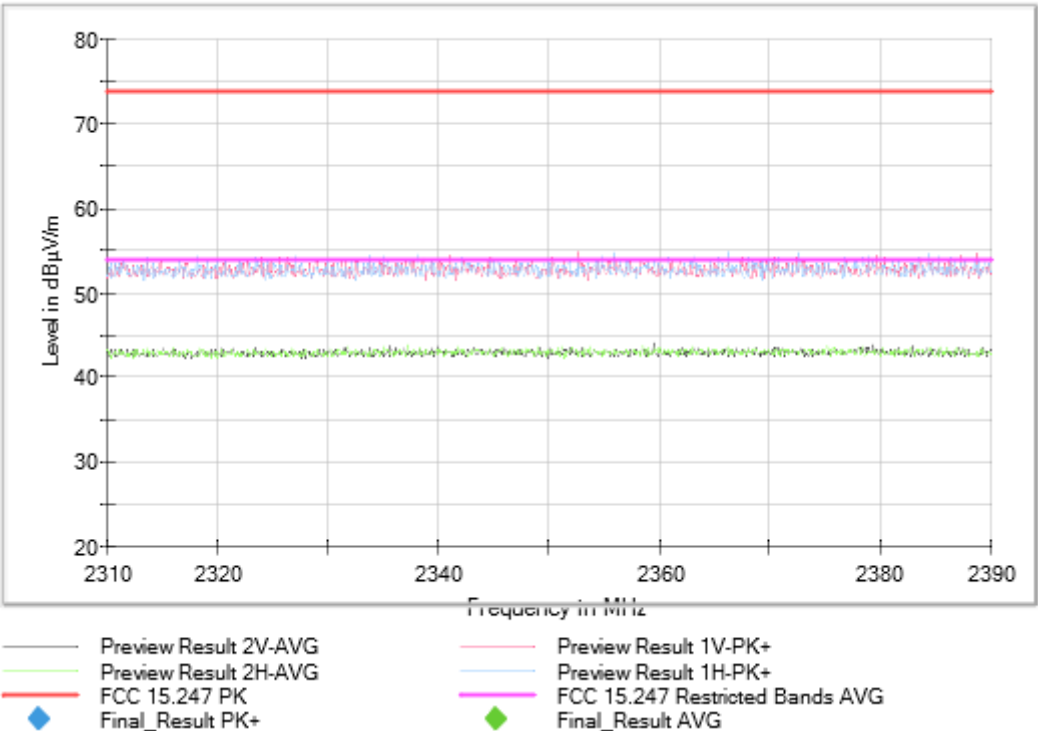
Frequency Range GHz = [1, 17] Operation Band MHz = [2400, 2483.5]
Equipment Type = FHSS Frequency MHz = 2480.00000
Active Port = 3 Modulation = BT (Pi/4 DQPSK 2-DH5)

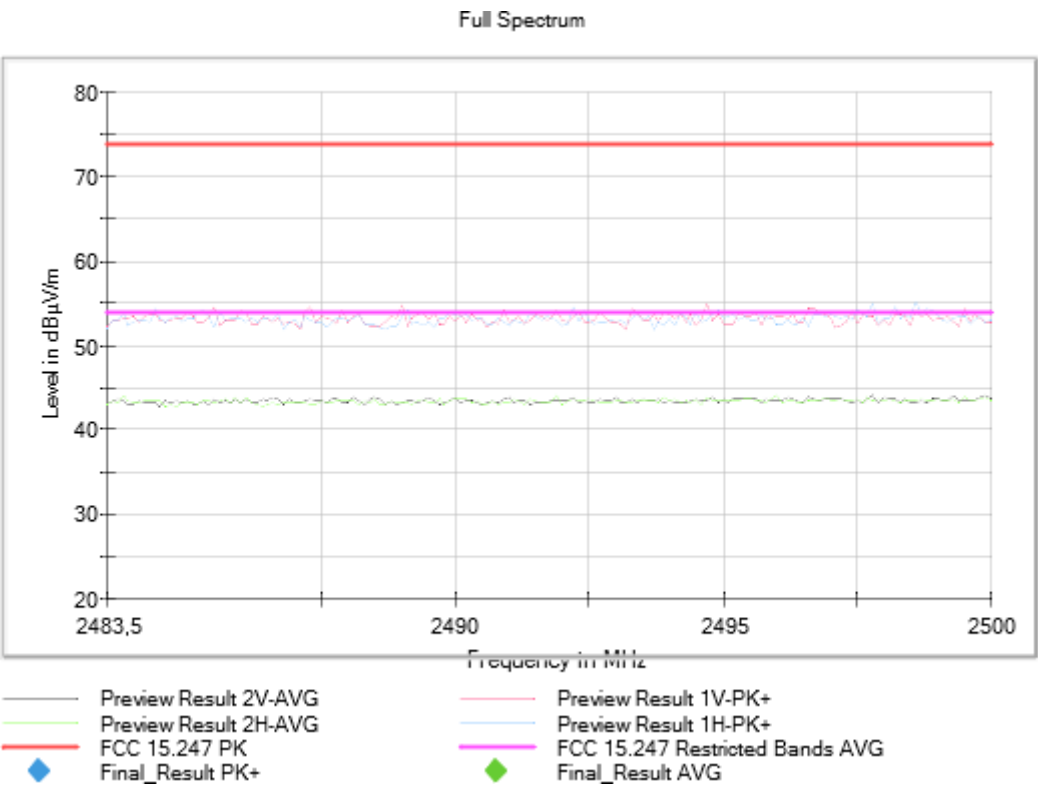
Images:

Full Spectrum



Full Spectrum





Results

Modulation: BT (8DPSK 3-DH5)

No spurious frequencies detected at less than 20 dB below the limit.

Verdict

Pass

Attachments

Frequency Range GHz = [1, 17]

Operation Band MHz = [2400, 2483.5]

Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

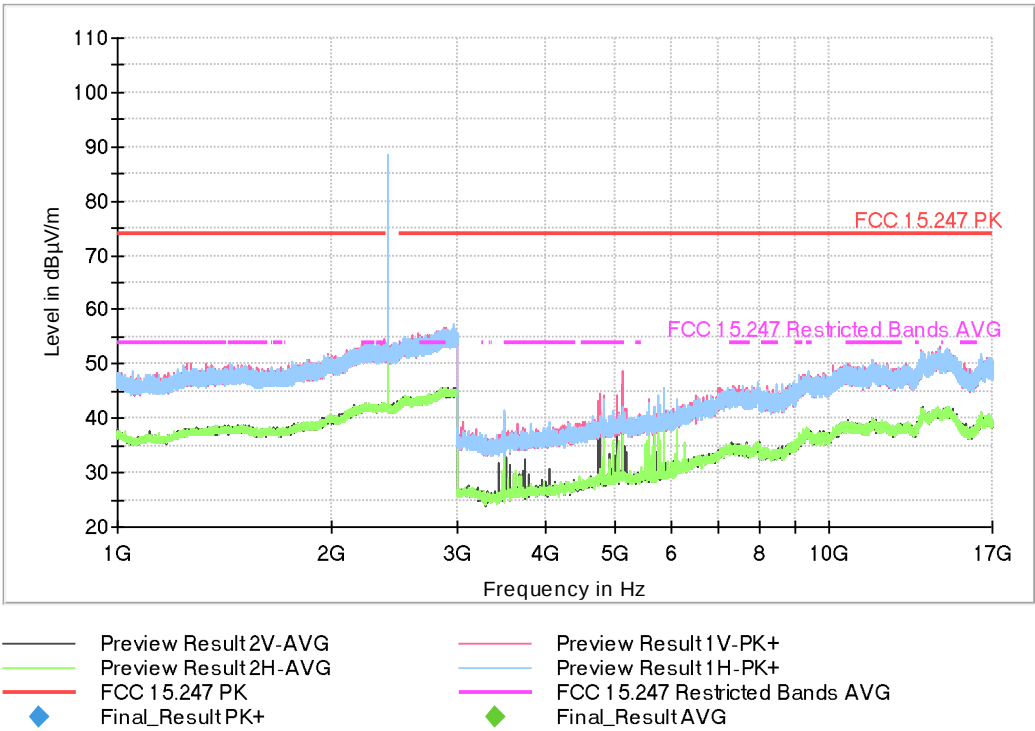
Frequency MHz = 2402.00000

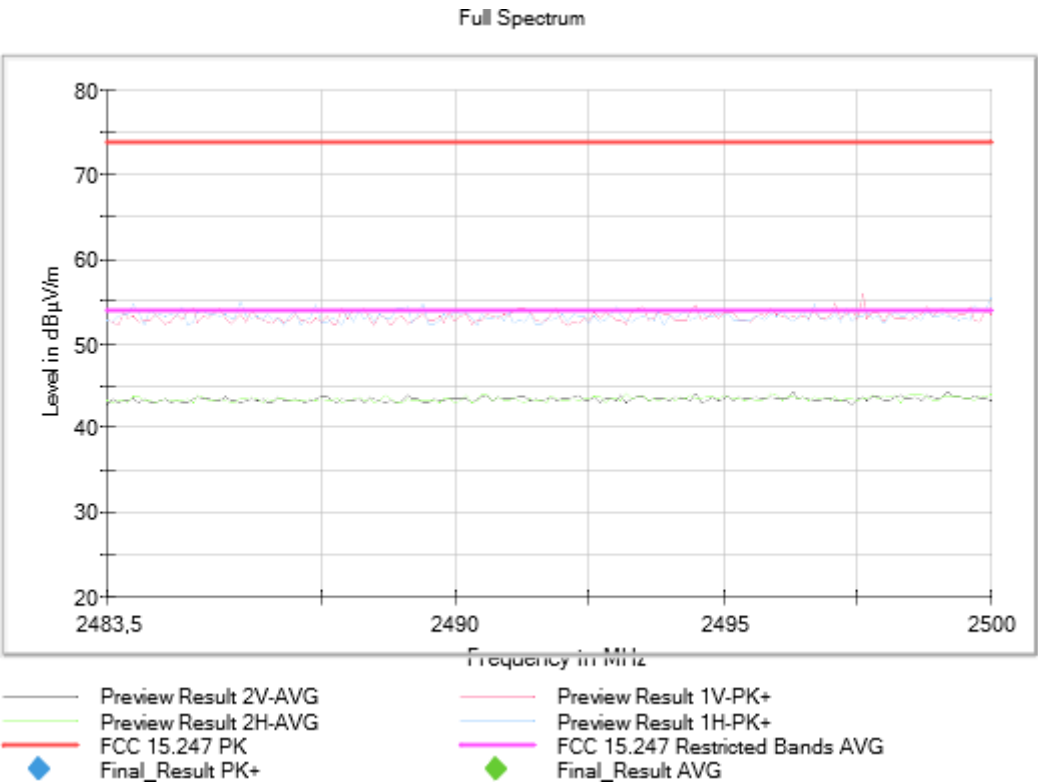
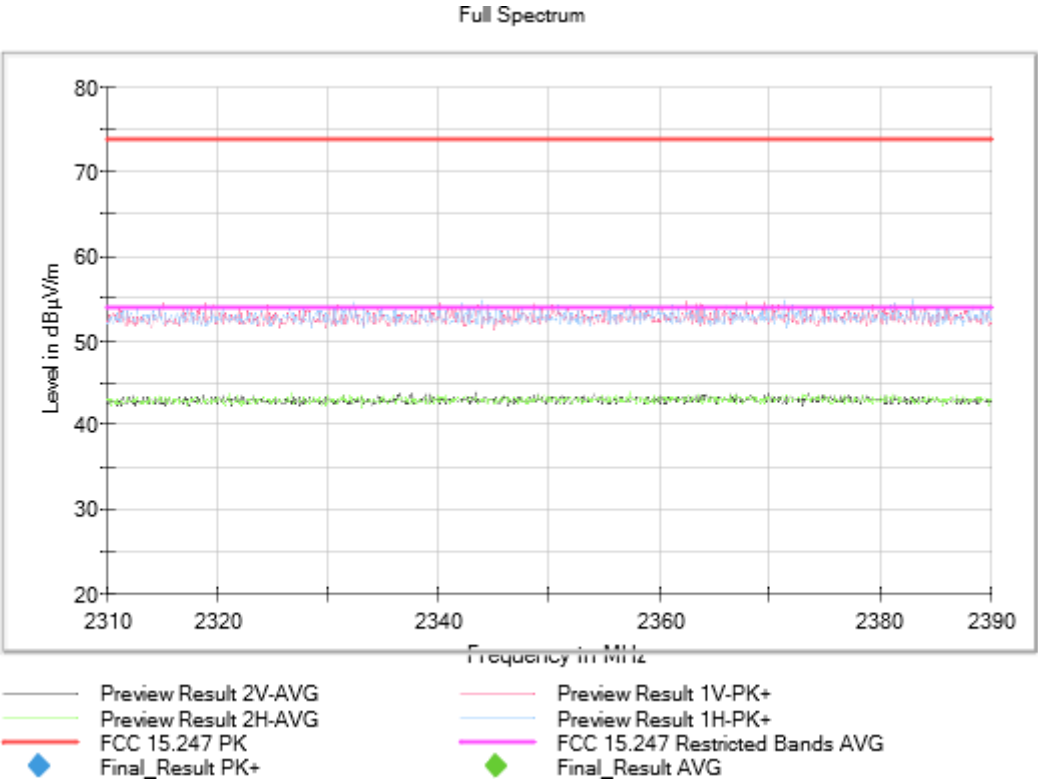
Active Port = 3

Modulation = BT (8DPSK 3-DH5)

Images:

Full Spectrum





Frequency Range GHz = [1, 17]

Operation Band MHz = [2400, 2483.5]

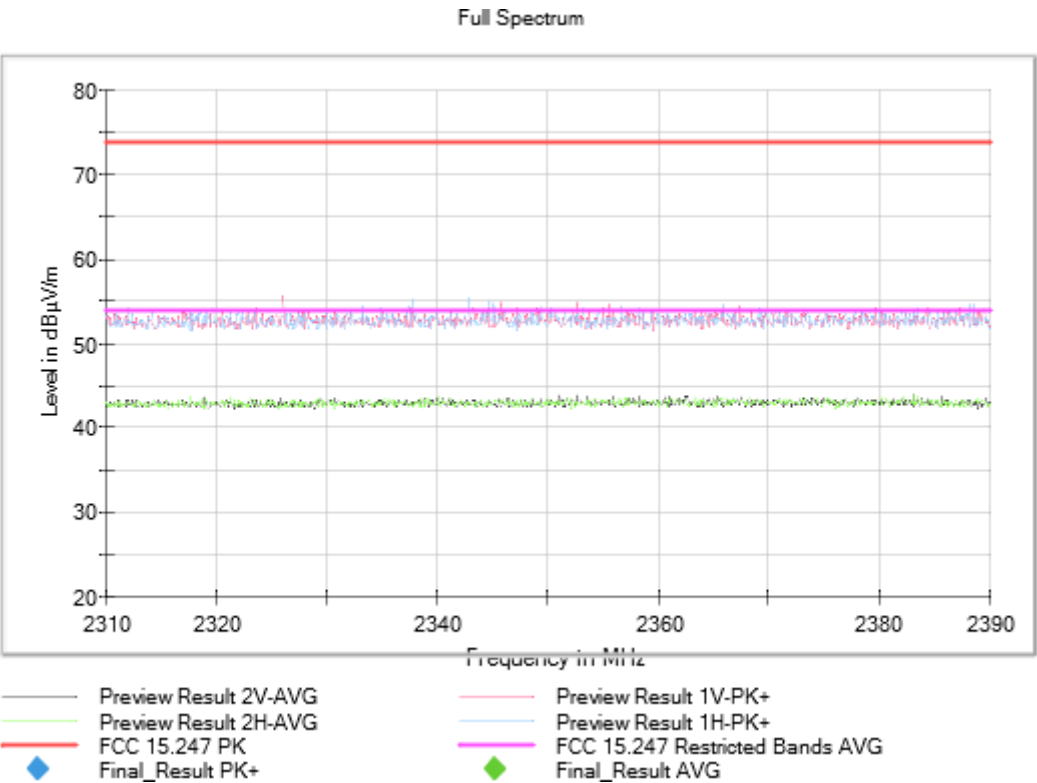
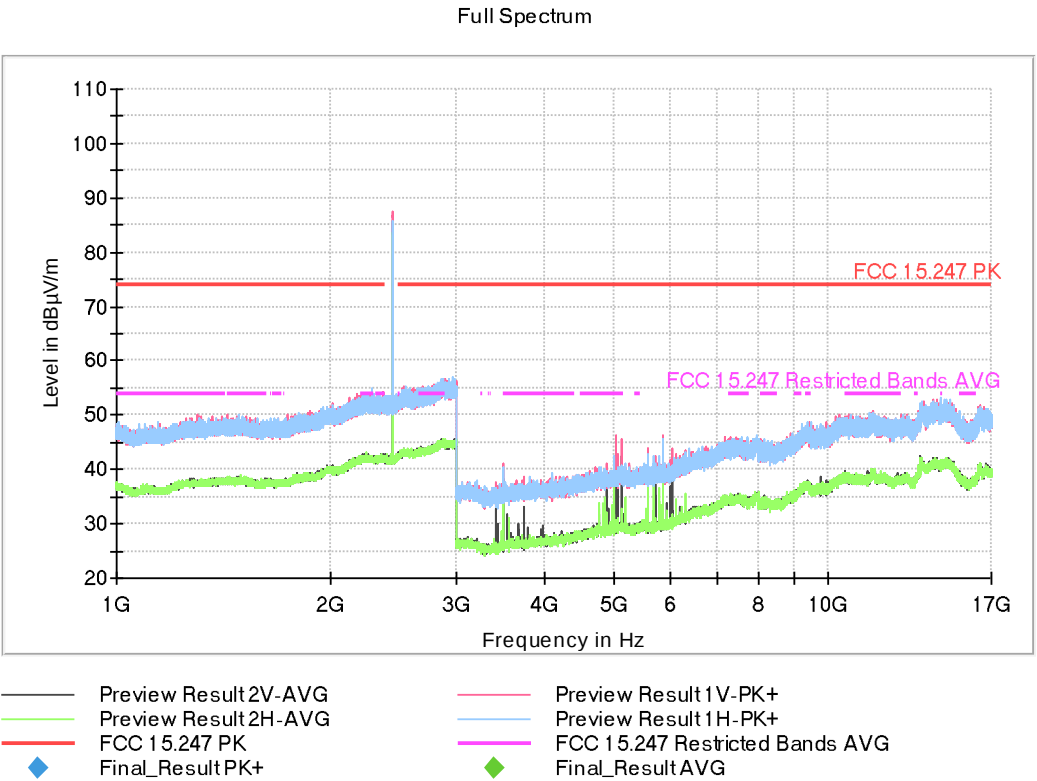
Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

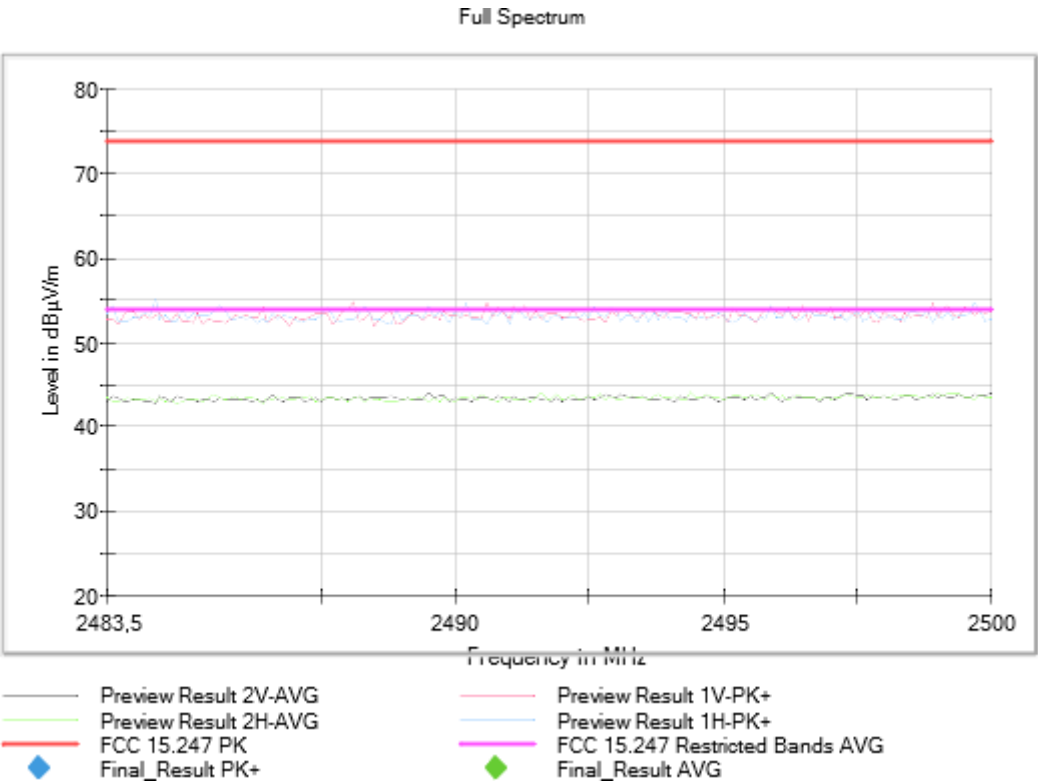
Frequency MHz = 2441.00000

Active Port = 3

Modulation = BT (8DPSK 3-DH5)

Images:





Frequency Range GHz = [1, 17]

Operation Band MHz = [2400, 2483.5]

Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)

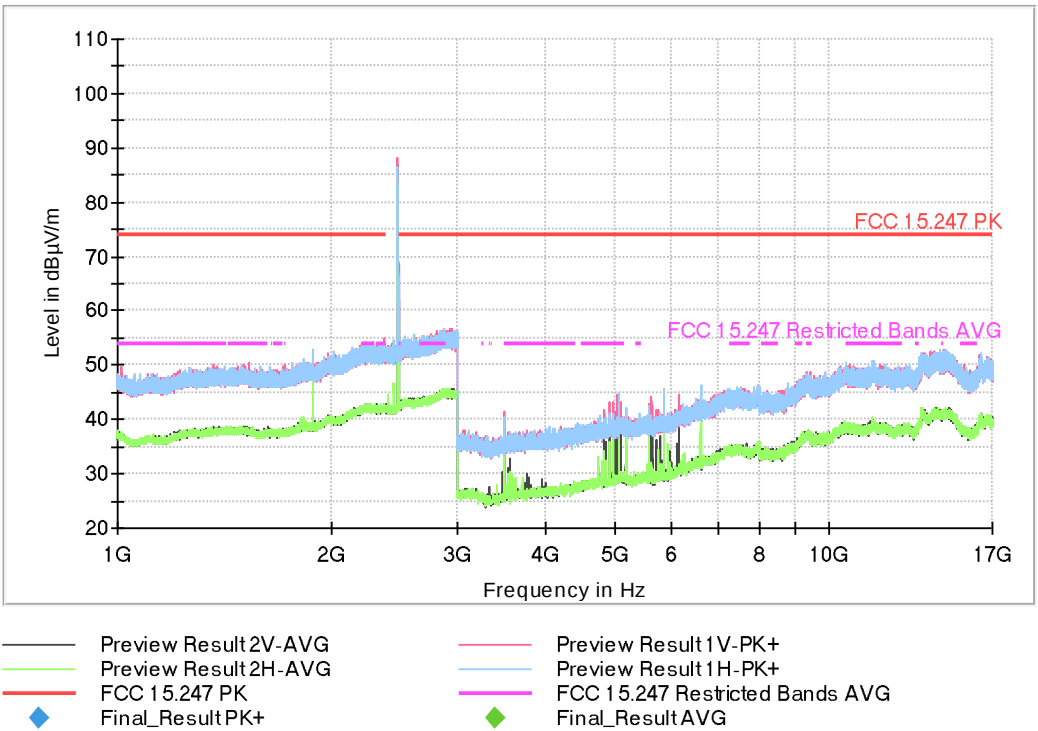
Frequency MHz = 2480.00000

Active Port = 3

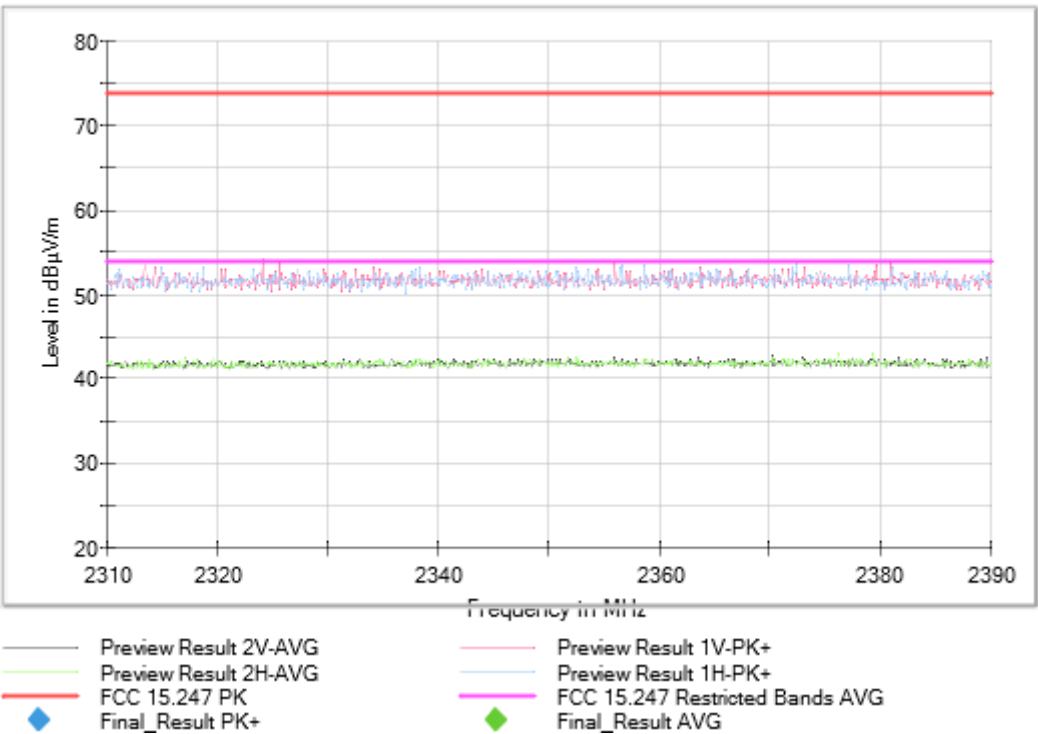
Modulation = BT (8DPSK 3-DH5)

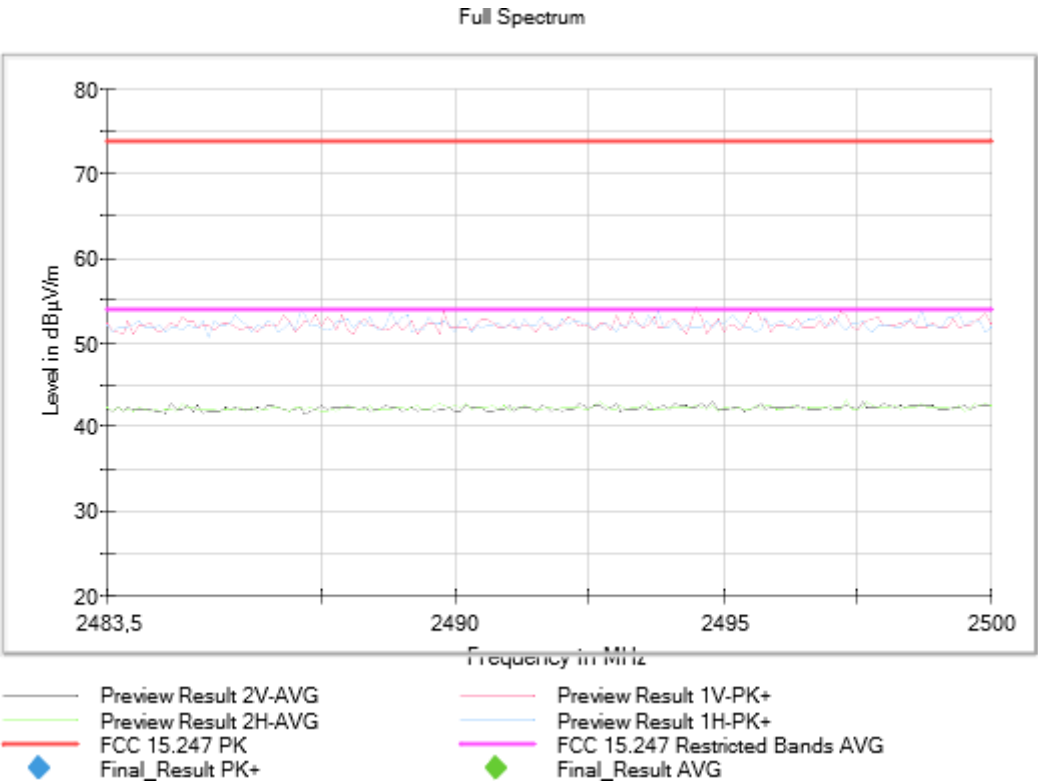
Images:

Full Spectrum



Full Spectrum





Tables:
Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
1 GHz - 2,39 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
2,39 GHz - 2,484 GHz	40 kHz	PK+	100 kHz	0,01 s	0 dB
2,484 GHz - 3 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
3 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

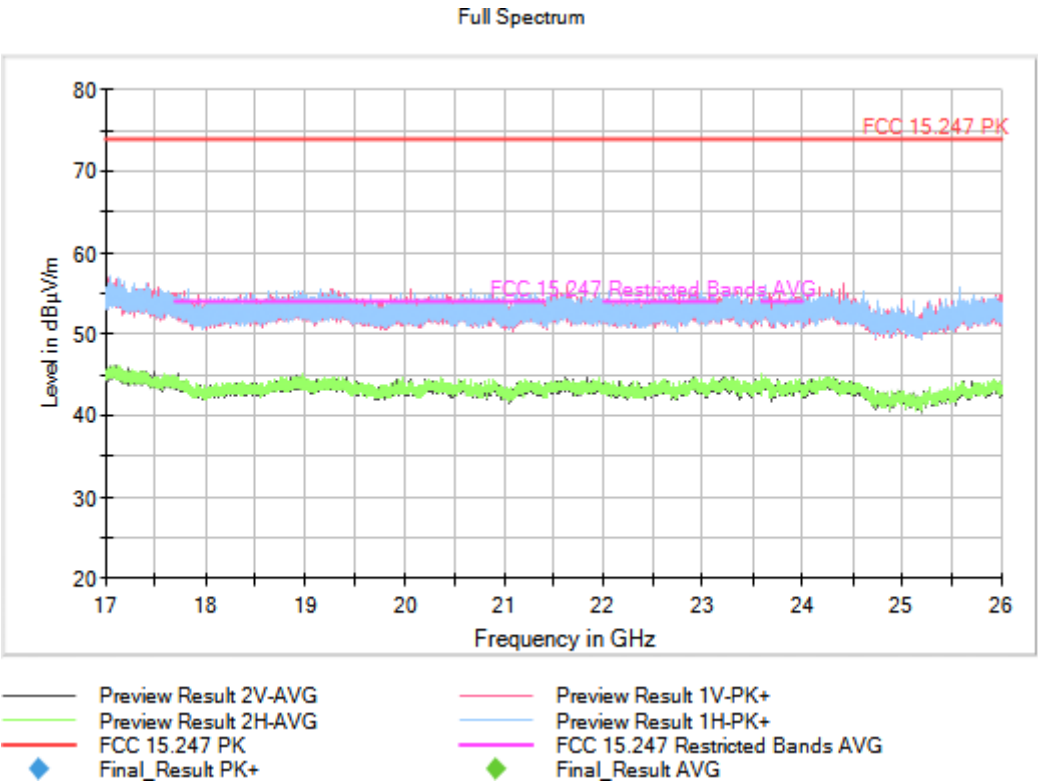
Frequency range 17GHz - 26GHz

Modulation: The spurious frequencies detected do not depend on either the modulation or the operating channel.

No spurious frequencies detected at less than 20 dB below the limit.

Frequency Range GHz = [17, 26]	Equipment Type = Frequency Hopping Spread Spectrum systems (DSS)
Modulation = The spurious frequencies detected do not depend on the modulation.	Frequency MHz = The spurious frequencies detected do not depend on operating channel.
MIMO Mode = SISO	Active Port = 3

Images:



Tables:

Spectrum Analyzer Parameters

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
17 GHz - 26 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Appendix C: Test results. WLAN 2.4 GHz

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TEST CONDITIONS66

TEST CASES DETAILS69

 FCC 47 CFR PART 15.247 / RSS-24769

 RSS-247 5.4 (d) / FCC 15.247 (b) (1) Maximum Average Conducted output Power69

 RSS-247 5.5 / FCC 15.247 (d) Emission limitations radiated (Transmitter)70

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal: 12 Vdc
Type of Power Supply: Battery

ANTENNA (*):

Technology	Antenna Gain	Type
WLAN 2G4:	+0.1 dBi	External

TEST FREQUENCIES (*):

Modulation	Data rates	Low Channel	Middle Channel	High Channel
802.11b:	1 Mbit/s	2412 MHz	2437 MHz	2462 MHz
802.11g:	6 Mbit/s	2412 MHz	2437 MHz	2462 MHz
802.11n:	HT20 MCS0 6.5 Mbit/s	2412 MHz	2437 MHz	2462 MHz
802.11ax20:	OFDM – SU Full-channel allocation	2412 MHz	2437 MHz *	2462 MHz
802.11ax20:	OFDMA – RU Subcarrier allocation	2412 MHz	2437 MHz	2462 MHz

The measured RU offset is indicated in the following table:

Offset ChLow:	0
Offset ChMid:	4
Offset ChHigh:	8

During transmitter test the EUT was controlled by a SW tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

CONDUCTED MEASUREMENTS:

The equipment under test was set up in a shielded room and it is connected to the TS8997 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).

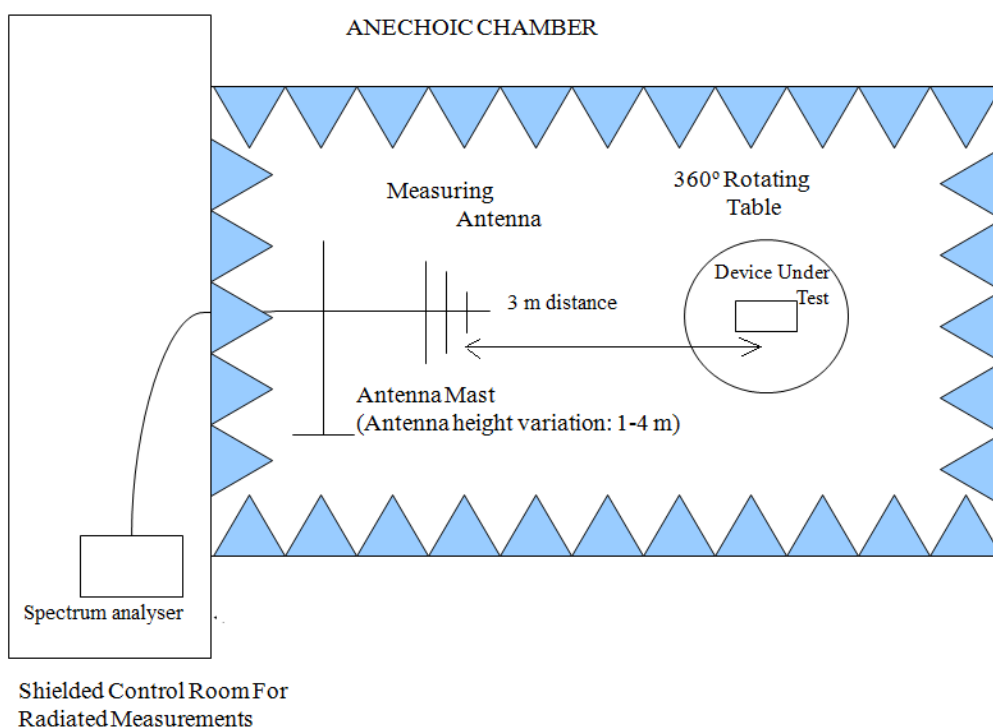
For radiated emissions in the range 17 GHz-26 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

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.

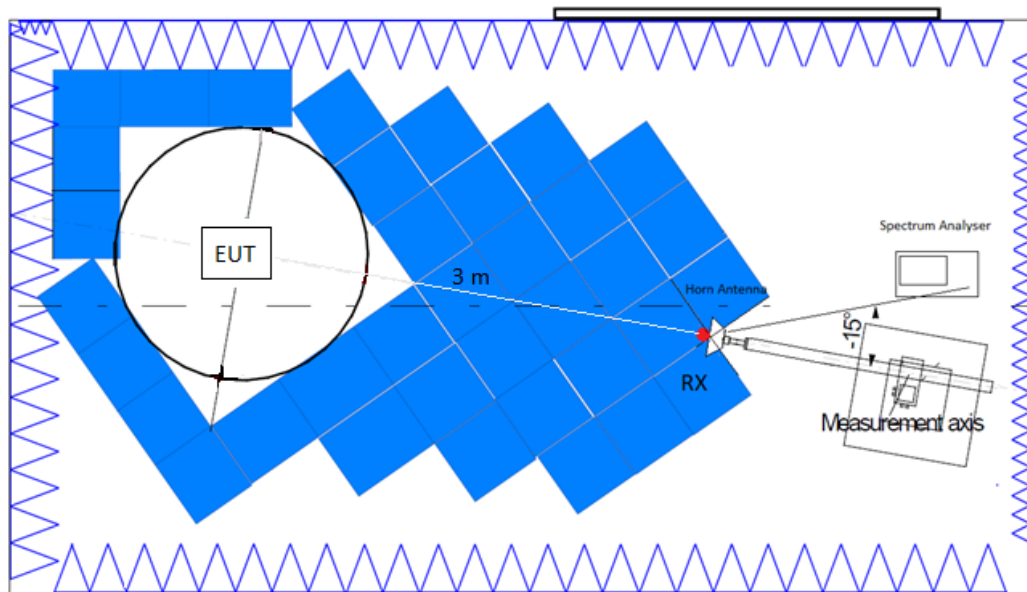
Measurements were made in both horizontal and vertical planes of polarization.

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.

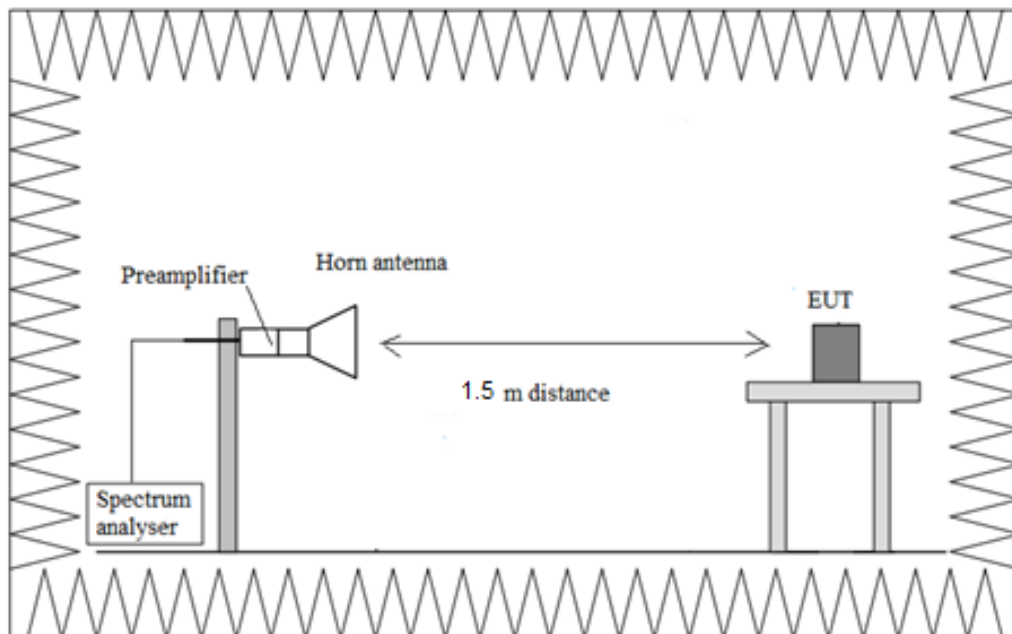
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup $f > 17$ GHz:



TEST CASES DETAILS

FCC 47 CFR Part 15.247 / RSS-247

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

Limits

For 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) (Canada).

Results

The maximum peak conducted output power level of the fundamental emission was measured according to clause 11.9.2.3.2 “Method AVGPM-G” of ANSI C63.10-2013.

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

The maximum directional gain of the antenna is less than 6 dBi and therefore the maximum output power is not required to be reduced from the stated values.

Modulation: 802.11b (DSSS 1 Mbit/s)

Equipment	BW (MHz)	Freq (MHz)	Avg Power (dBm)	E.I.R.P. (dBm)
Digital Transmission System (DTS)	20	2412.00000	8.89	8.99

Verdict

Pass

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 is specified when measuring with peak detector function.

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

Frequency range tested for Radiated emissions:

Start frequency: no radiofrequency signal generated in the device found below 10th sub-harmonic, no further investigation required.

Stop frequency: it has been performed the radiated spurious emissions until 10th harmonic.

Modulation: 802.11b (DSSS 1 Mbit/s)

Results

Freq Rng (GHz)	Operation Band (MHz)	Equipment	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	30.097	33.18	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	30.097	27.76	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	375.029	26.89	V	QP

Freq Rng (GHz)	Operation Band (MHz)	Equipment	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	375.029	29.96	V	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	594.006	43.68	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	594.006	33.33	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	600.020	34.38	H	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	600.020	31.46	H	QP
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	875.015	37.11	V	PK
[0.03, 1]	[2400, 2483.5]	Digital Transmission System (DTS)	2412.00000	875.015	34.47	V	QP

Verdict

Pass

Attachments

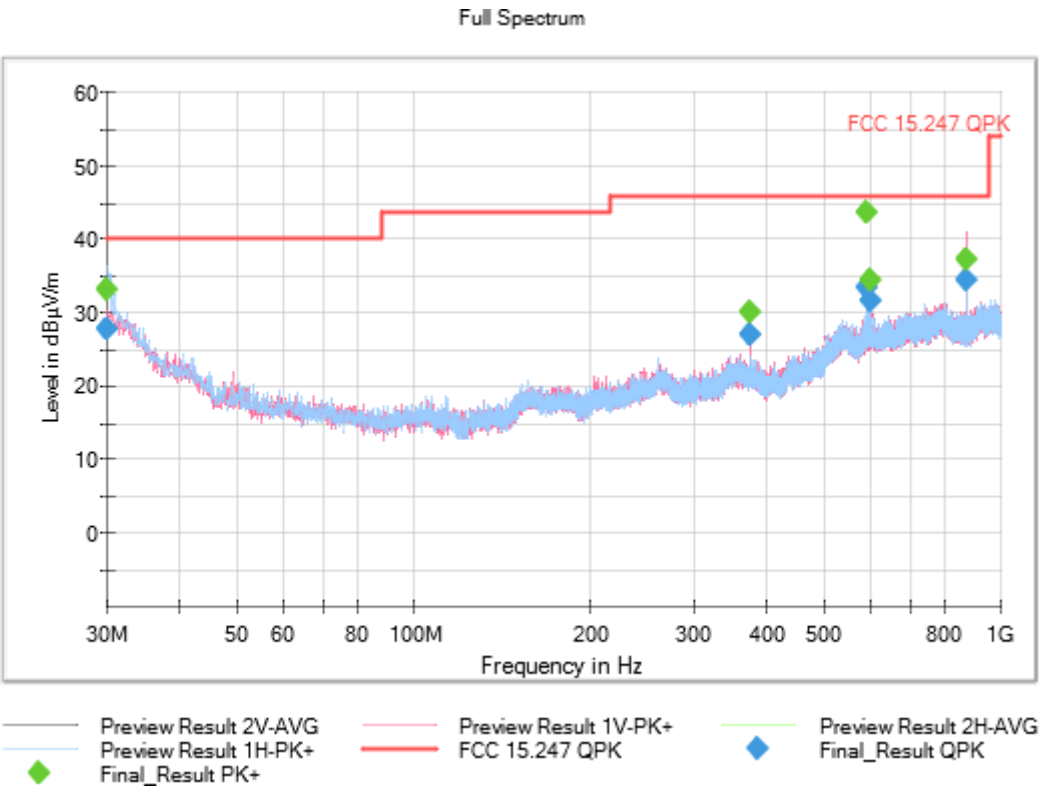
Frequency Range GHz = [0.03, 1]

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS)

The spurious frequencies detected do not depend on the transmission channel or the Modulation

Images:



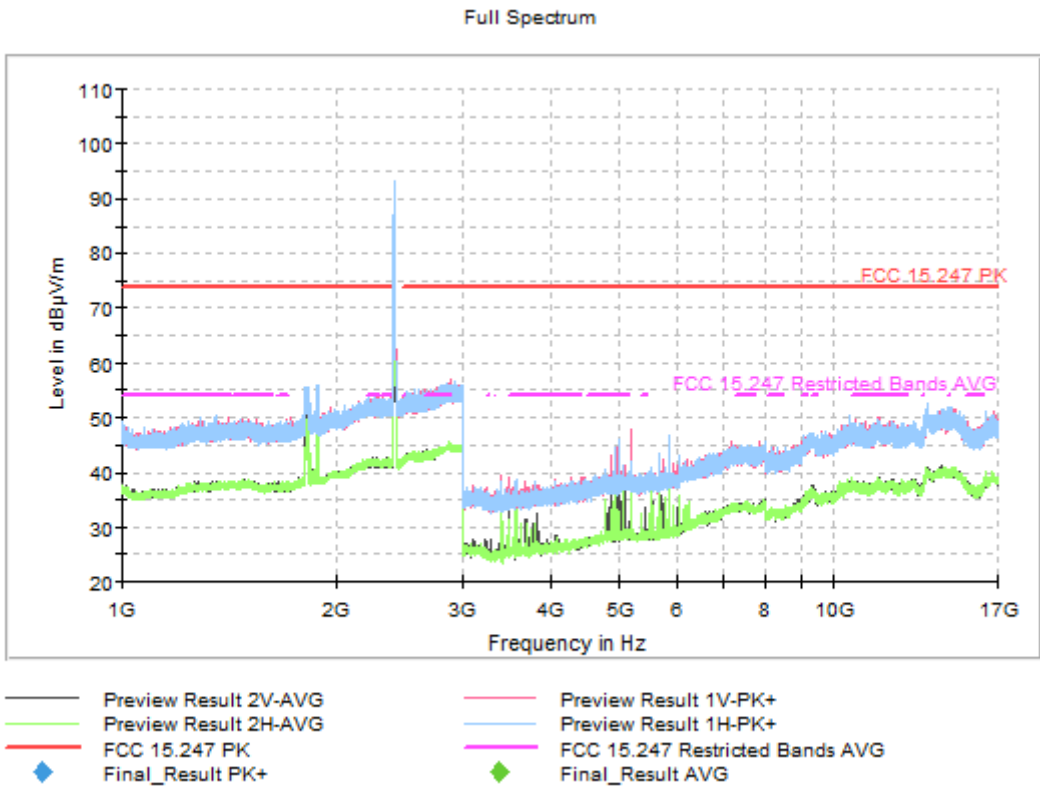
Frequency Range GHz = [1, 17]

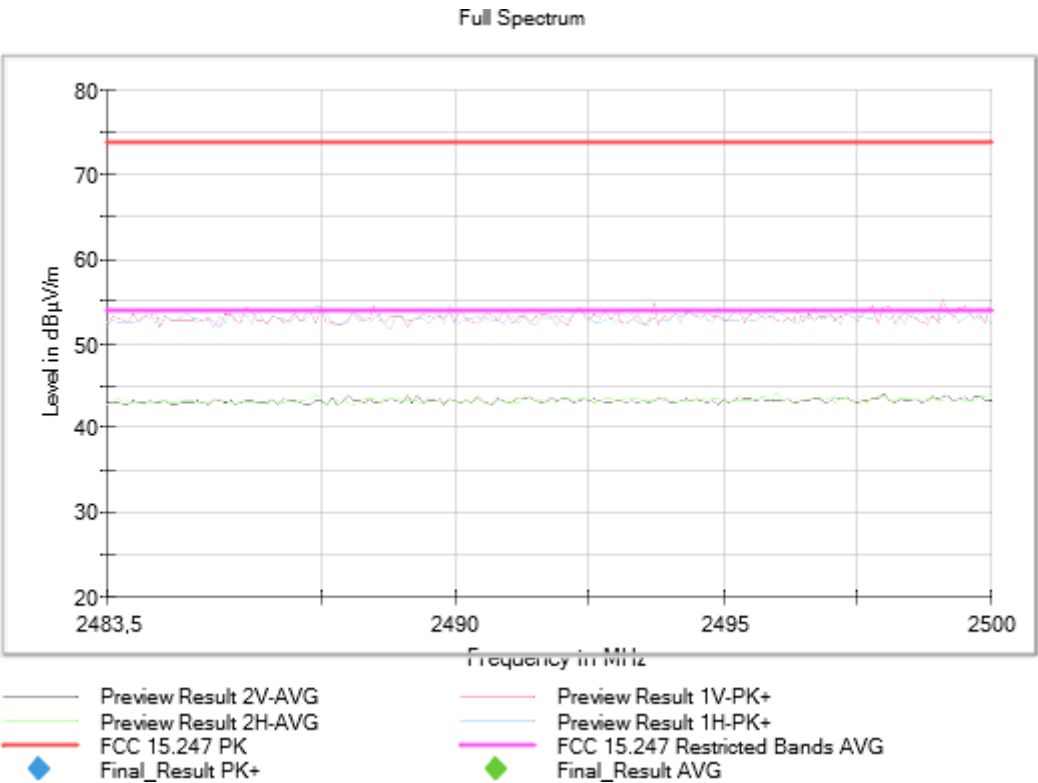
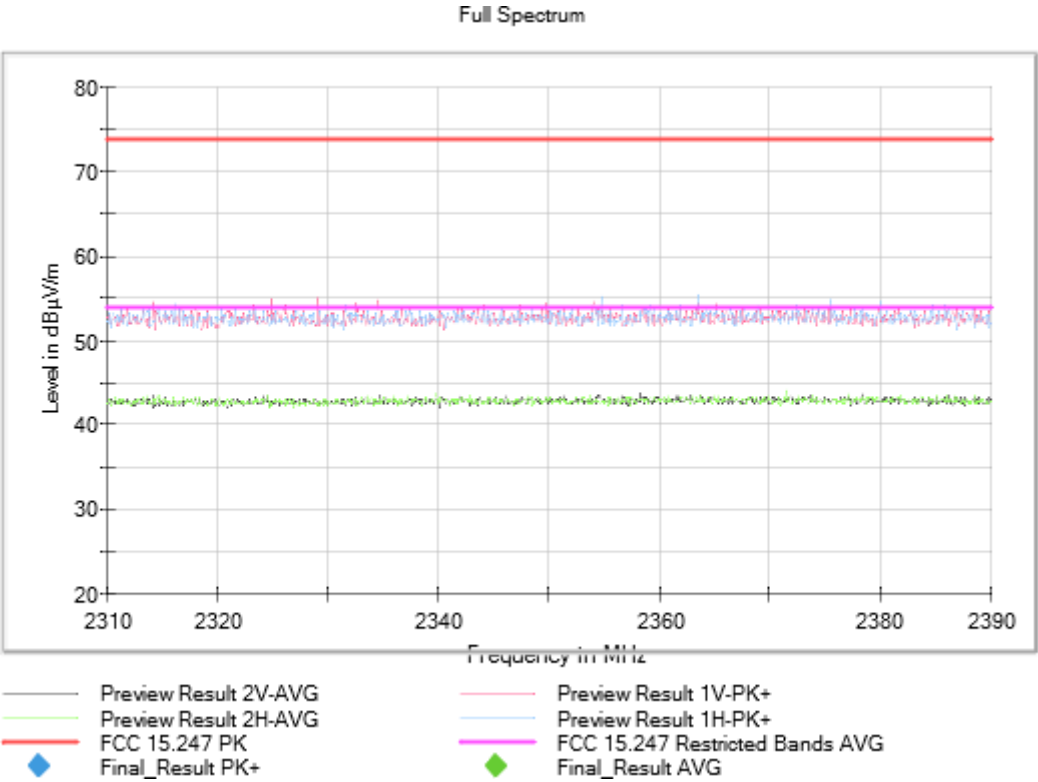
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2412.00000

Modulation = 802.11b (DSSS 1 Mbit/s)

Images:





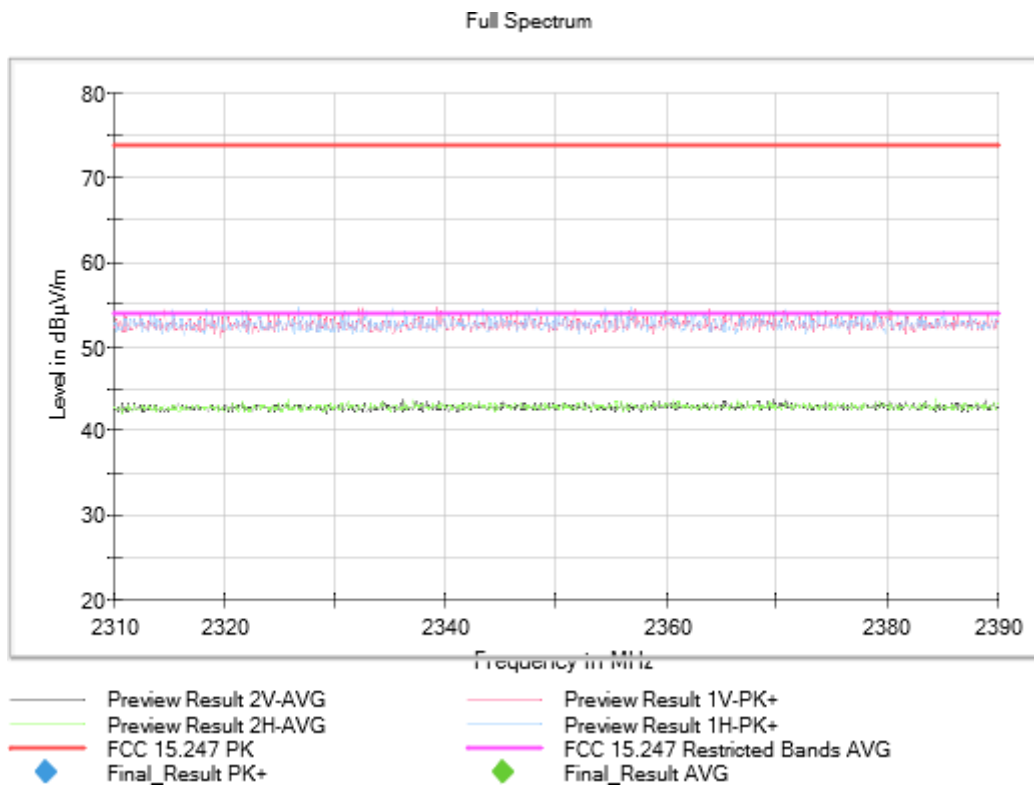
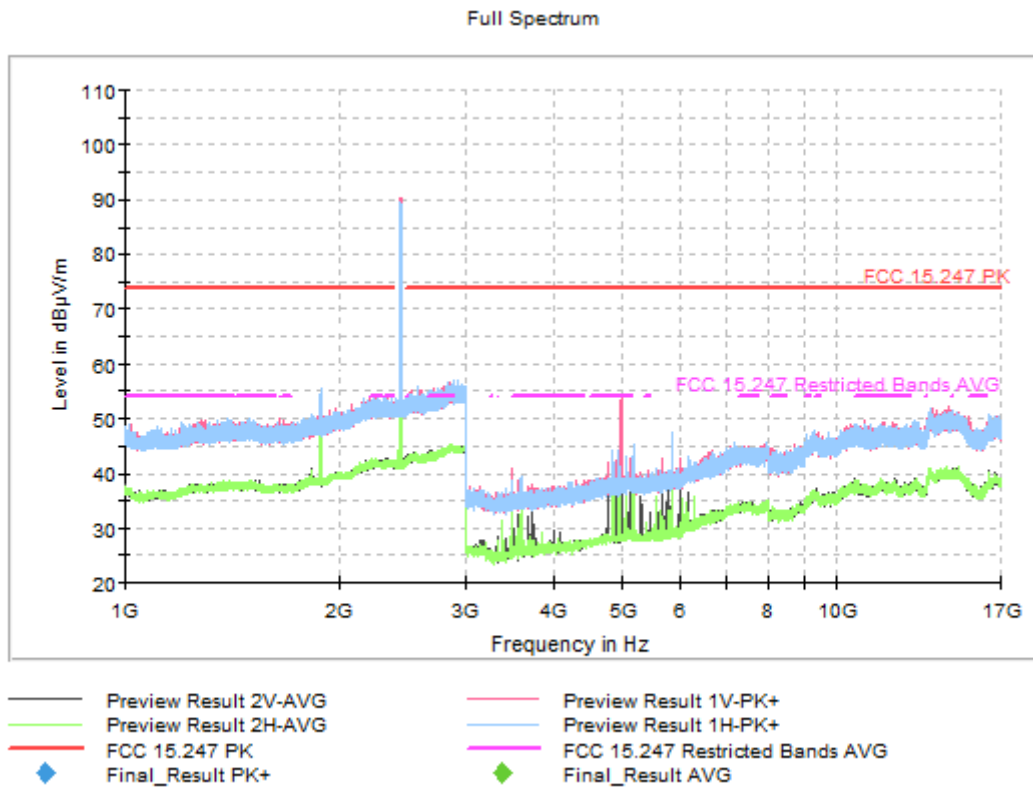
Frequency Range GHz = [1, 17]

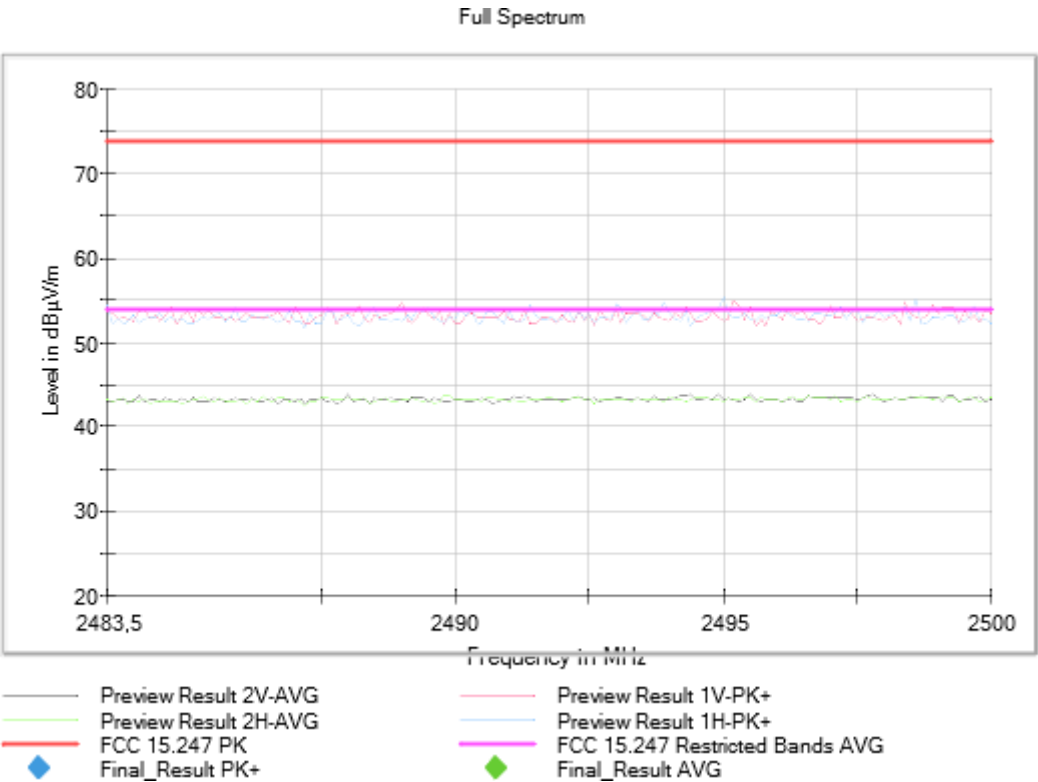
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2437.00000

Modulation = 802.11b (DSSS 1 Mbit/s)

Images:





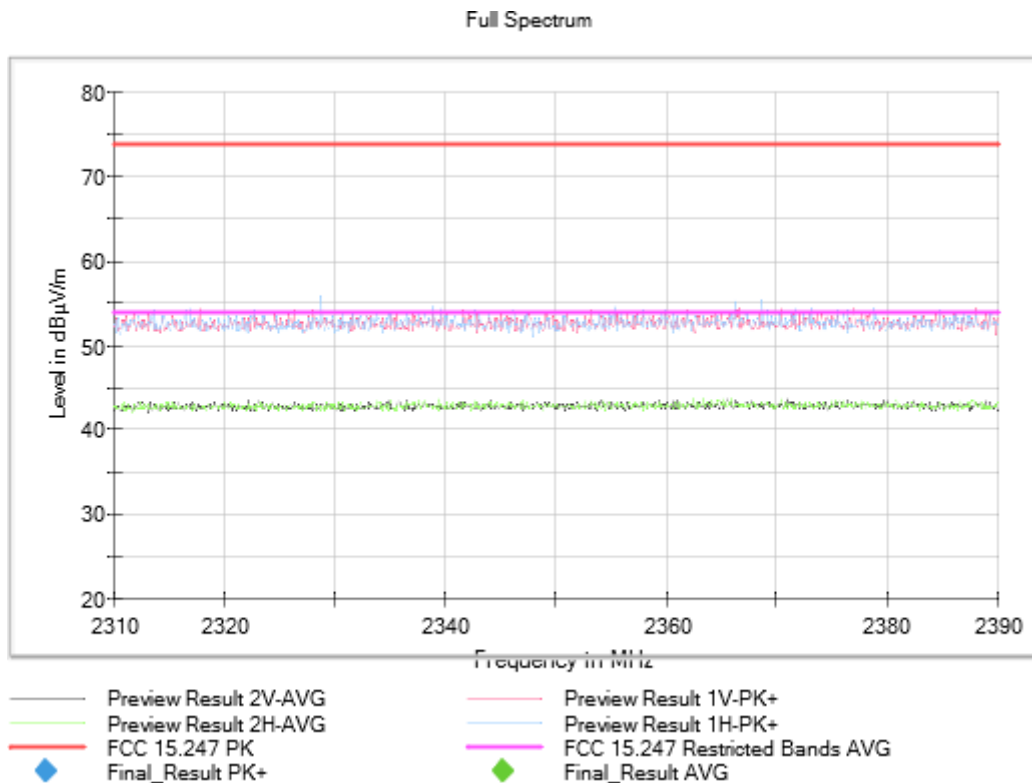
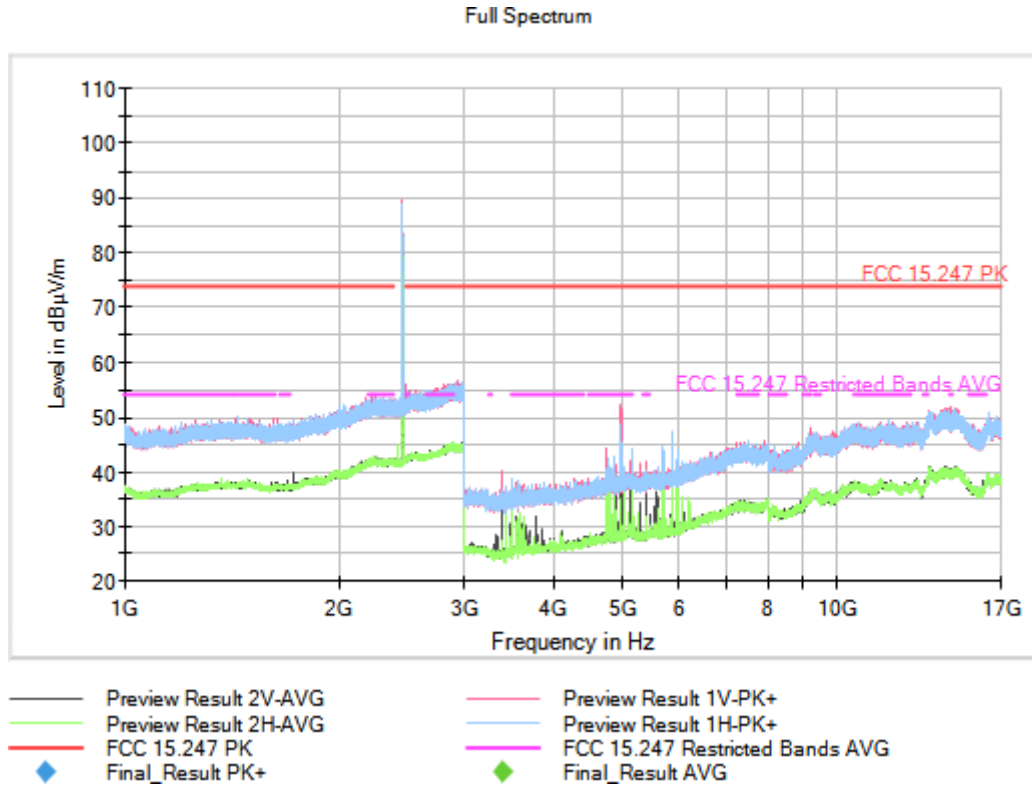
Frequency Range GHz = [1, 17]

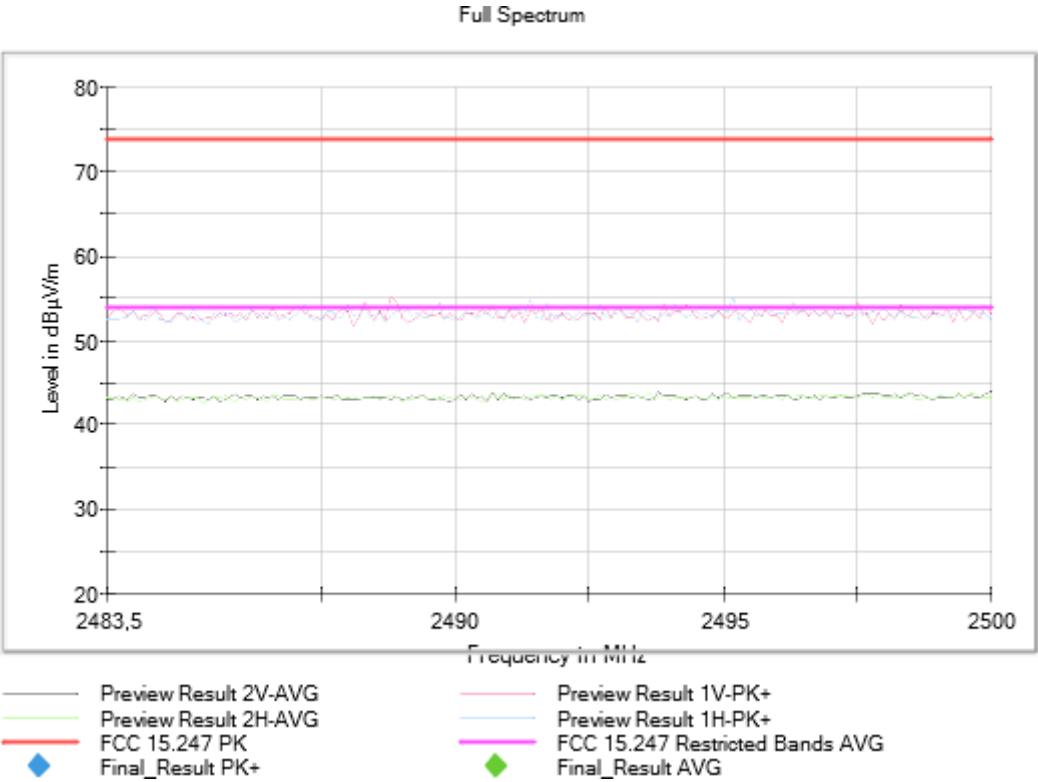
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2462.00000

Modulation = 802.11b (DSSS 1 Mbit/s)

Images:





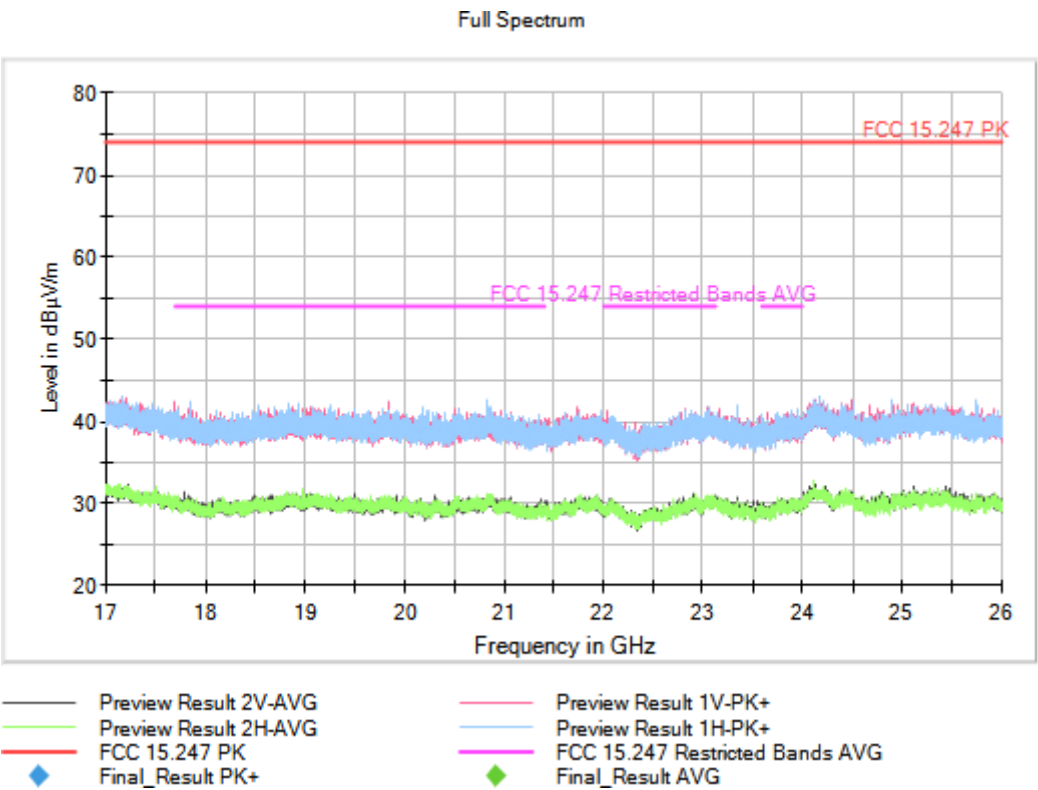
Frequency Range GHz = [17, 26]

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission
System (DTS)

The spurious frequencies detected do not depend on the
transmission channel or the Modulation

Images:



Results

Modulation: 802.11g (OFDM 6 Mbit/s)

Results

Freq Rng (GHz)	Operation Band (MHz)	Equipmen t	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[0.03, 1]	[2400, 2483.5]	Digital Transmissi on System (DTS)	2437.00000	32.474	34.22	H	PK
				32.474	29.11	H	QP
				58.421	13.54	H	QP
				58.421	18.19	H	PK
				594.006	45.74	H	PK
				594.006	33.82	H	QP
				600.020	30.64	H	QP
				600.020	33.58	H	PK
				875.015	45.25	V	QP
				875.015	46.36	V	PK
				899.993	30.17	V	QP
				899.993	34.04	V	PK

Verdict

Pass

Attachments

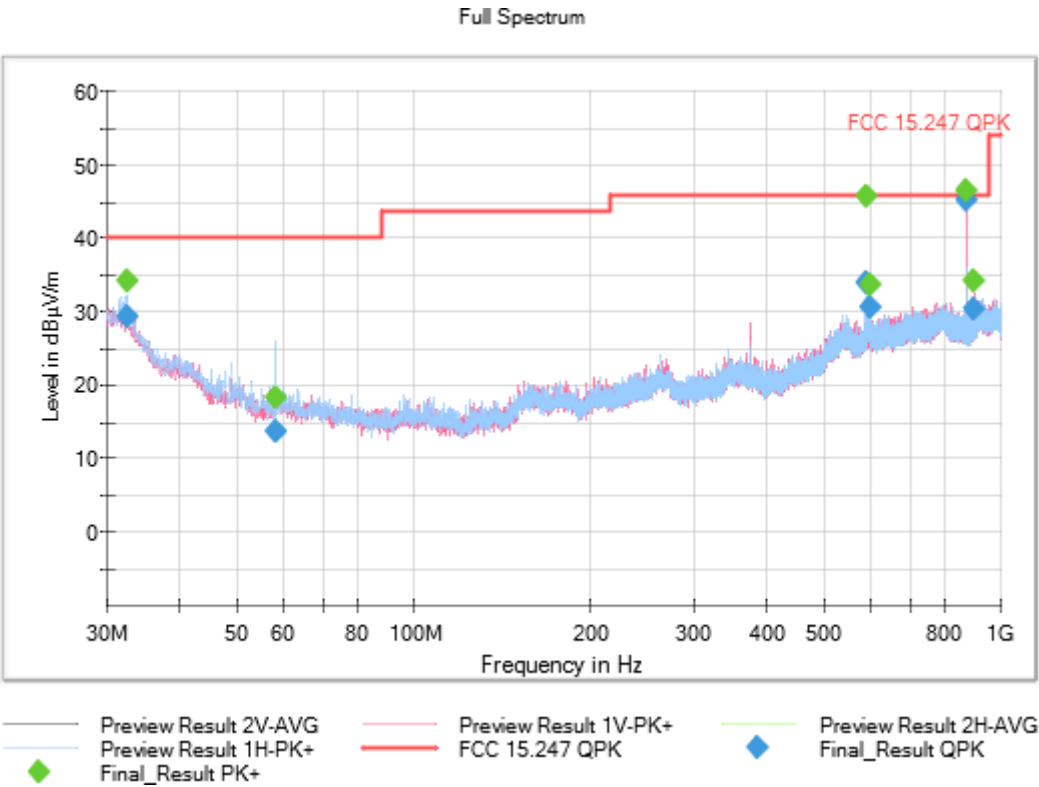
Frequency Range GHz = [0.03, 1]

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS)

The spurious frequencies detected do not depend on the transmission channel or the Modulation

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	Receiver: [ESW 44]					
	30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	0 dB

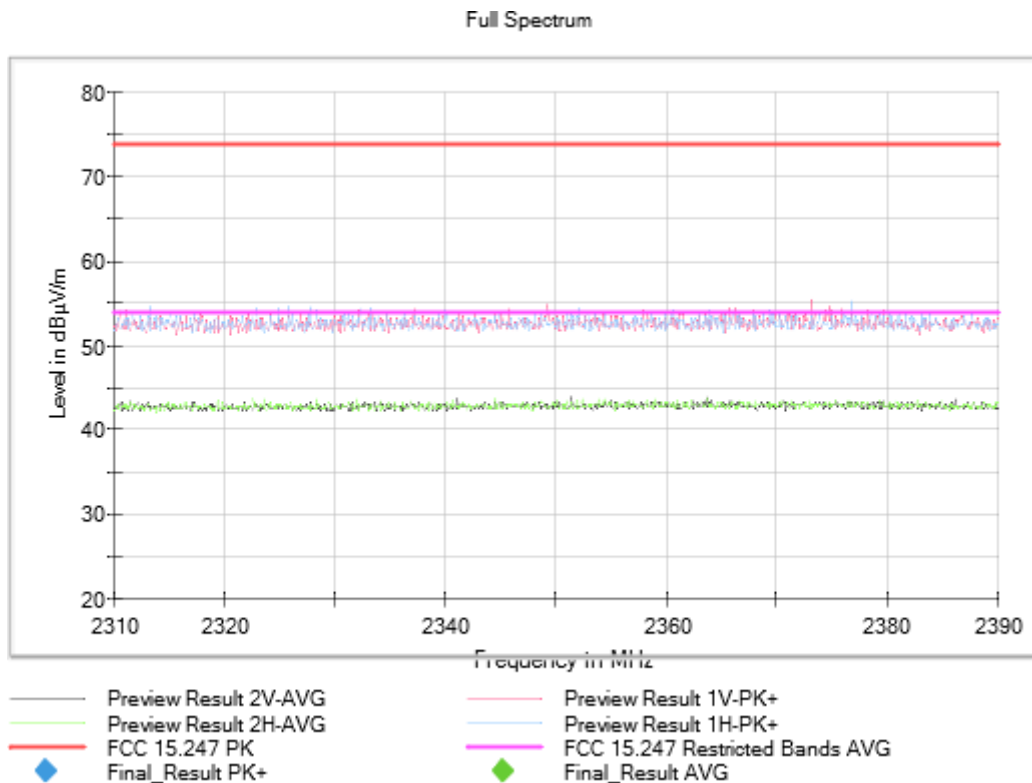
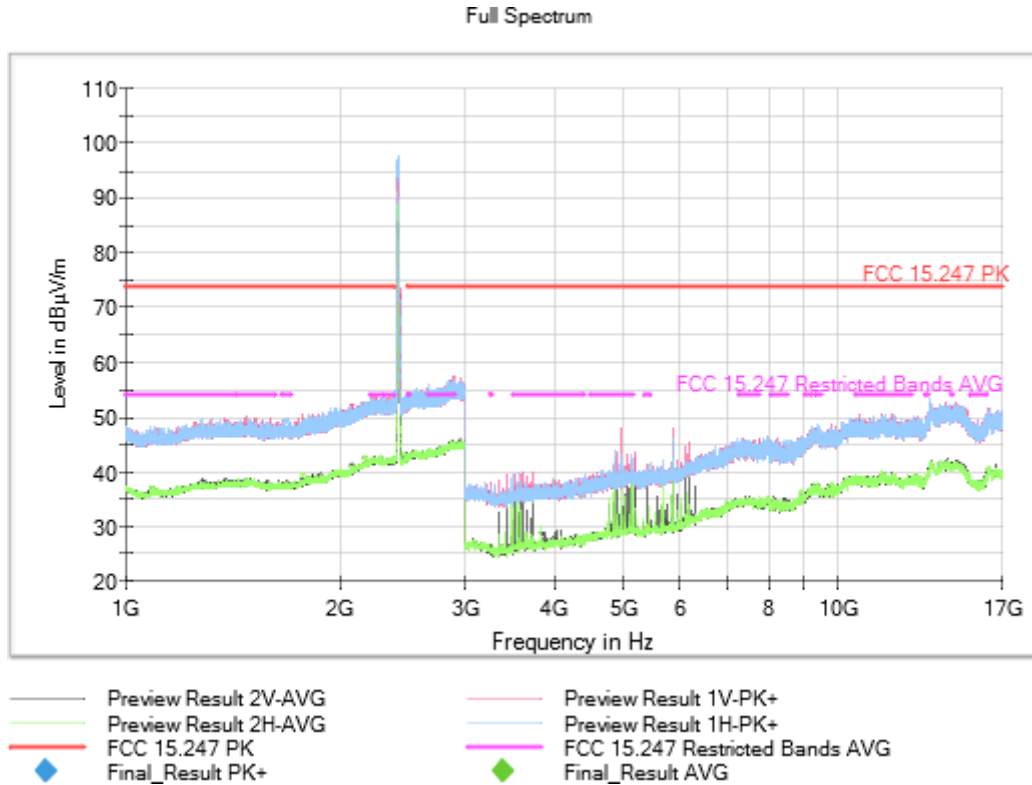
Frequency Range GHz = [1, 17]

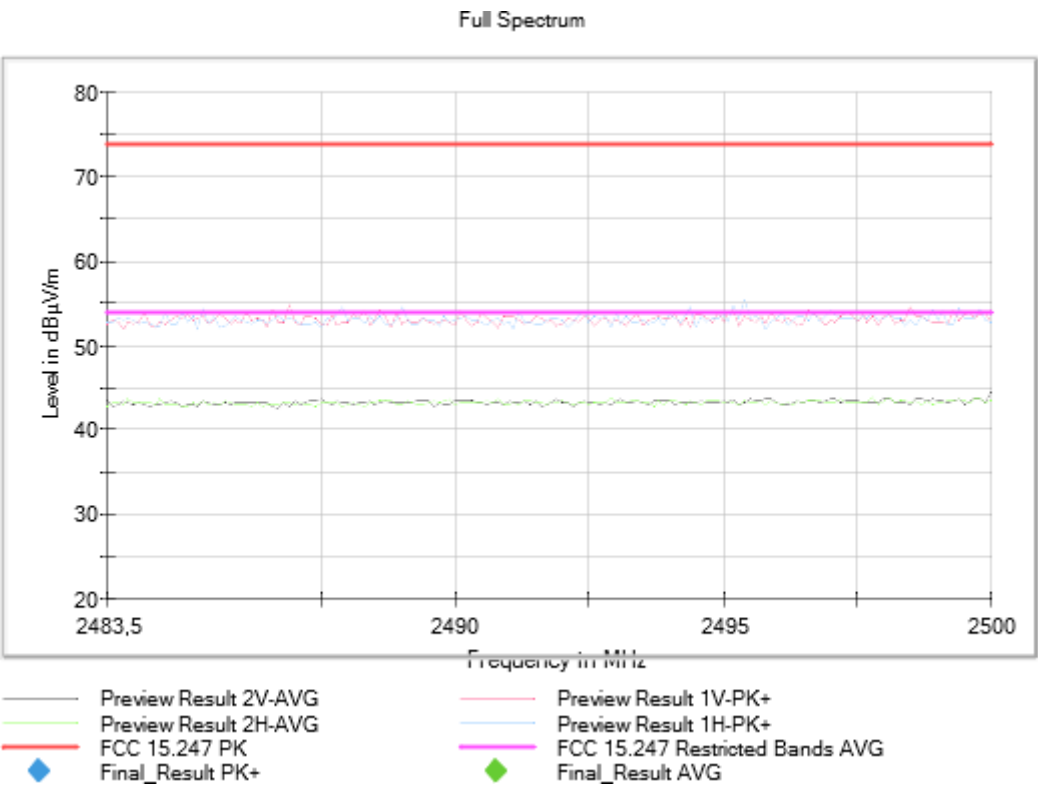
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2412.00000

Modulation = 802.11g (OFDM 6 Mbit/s)

Images:





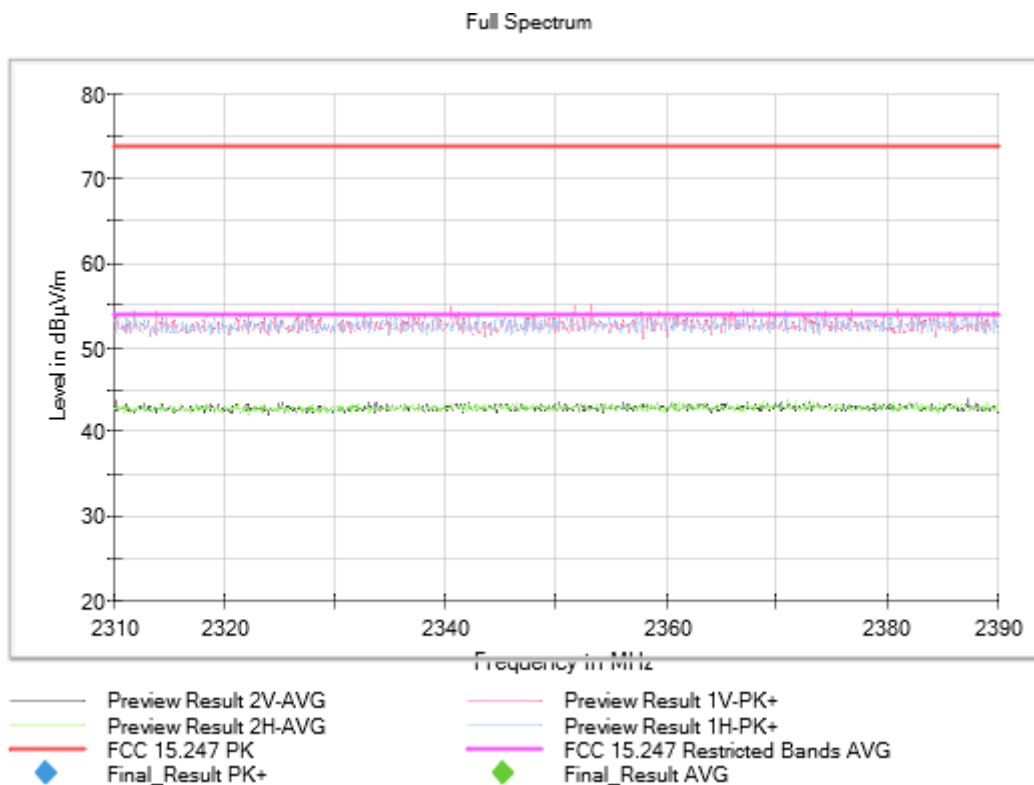
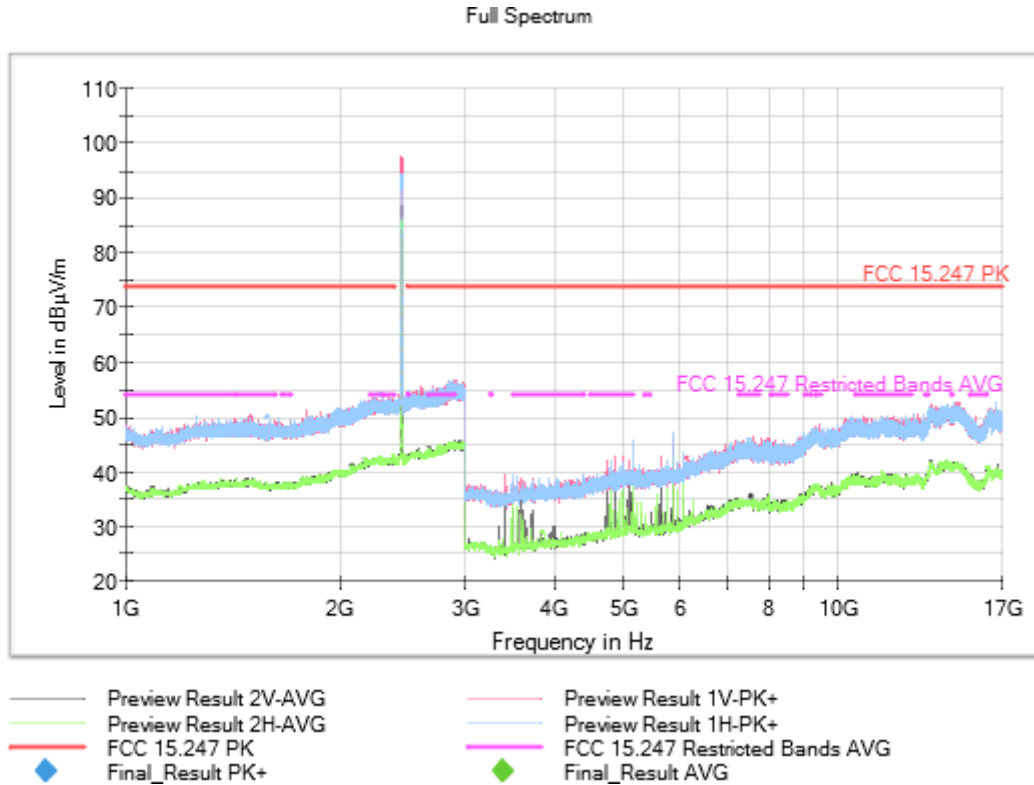
Frequency Range GHz = [1, 17]

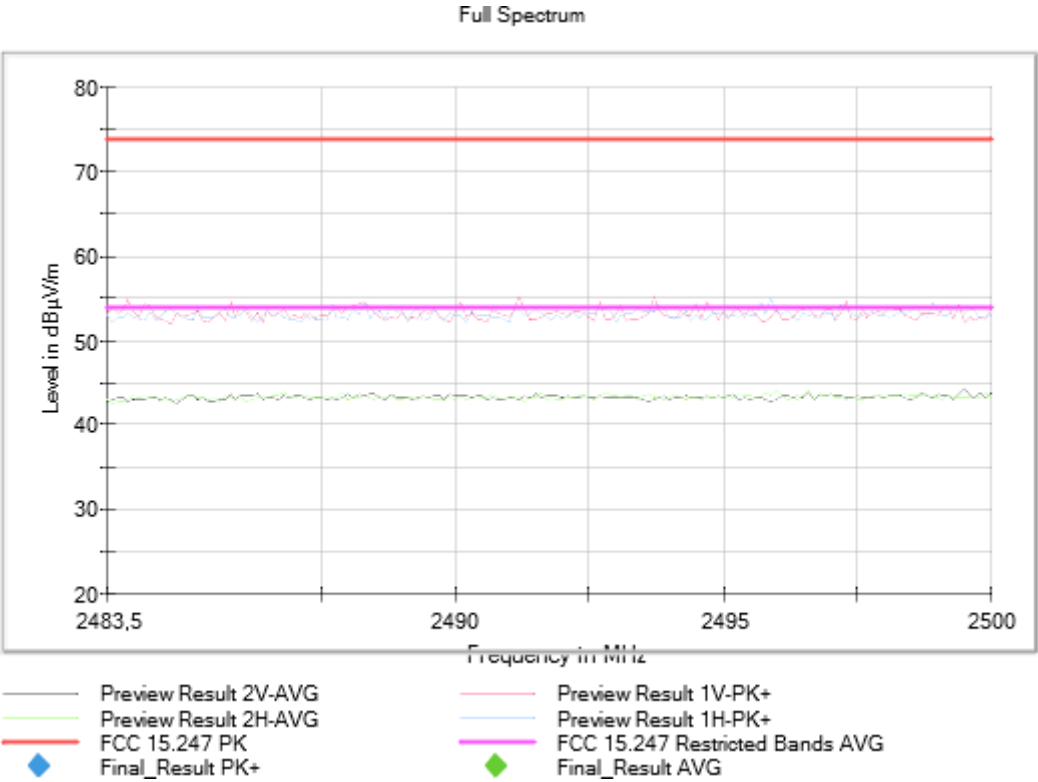
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2437.00000

Modulation = 802.11g (OFDM 6 Mbit/s)

Images:





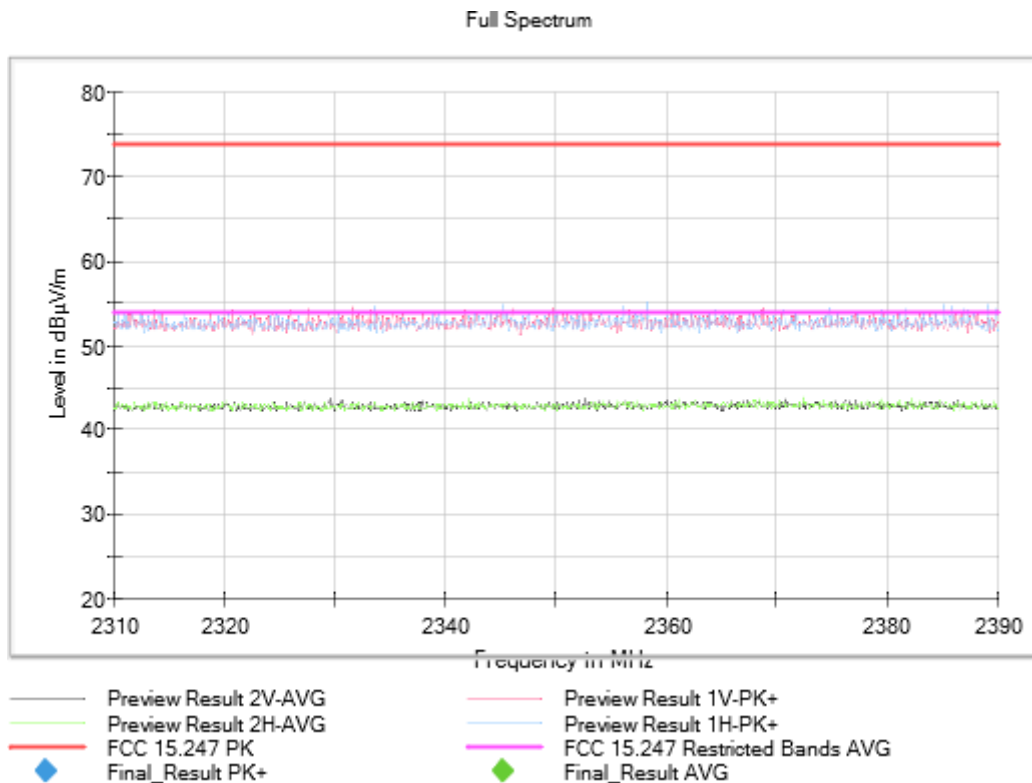
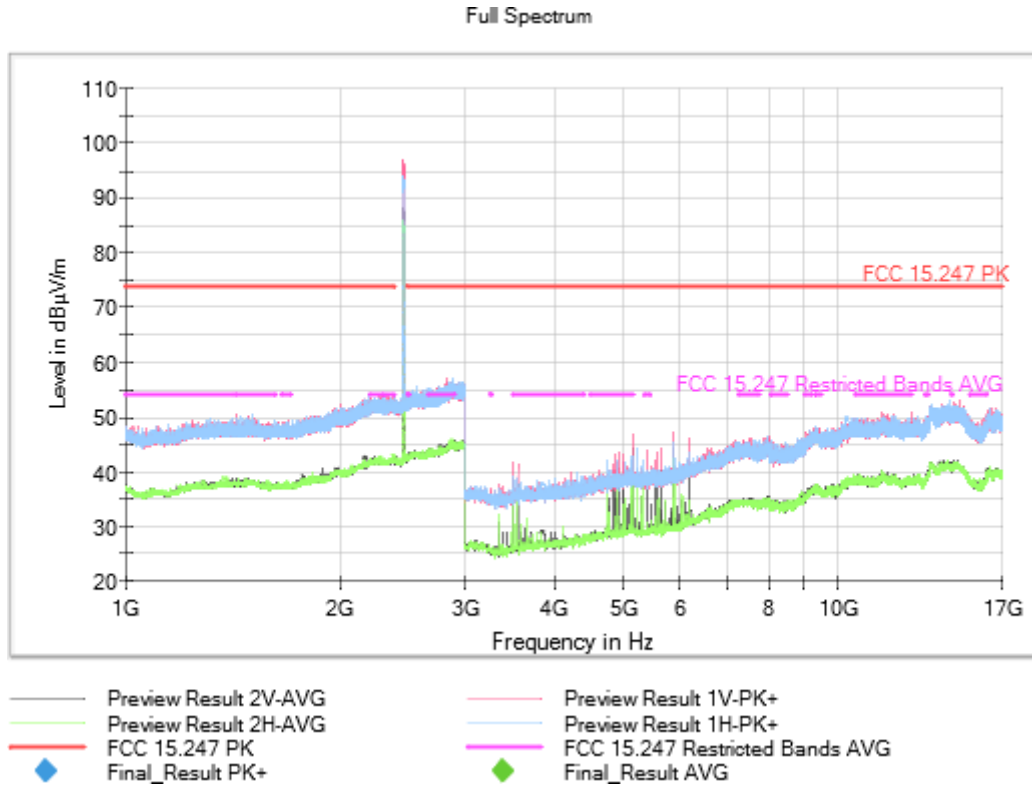
Frequency Range GHz = [1, 17]

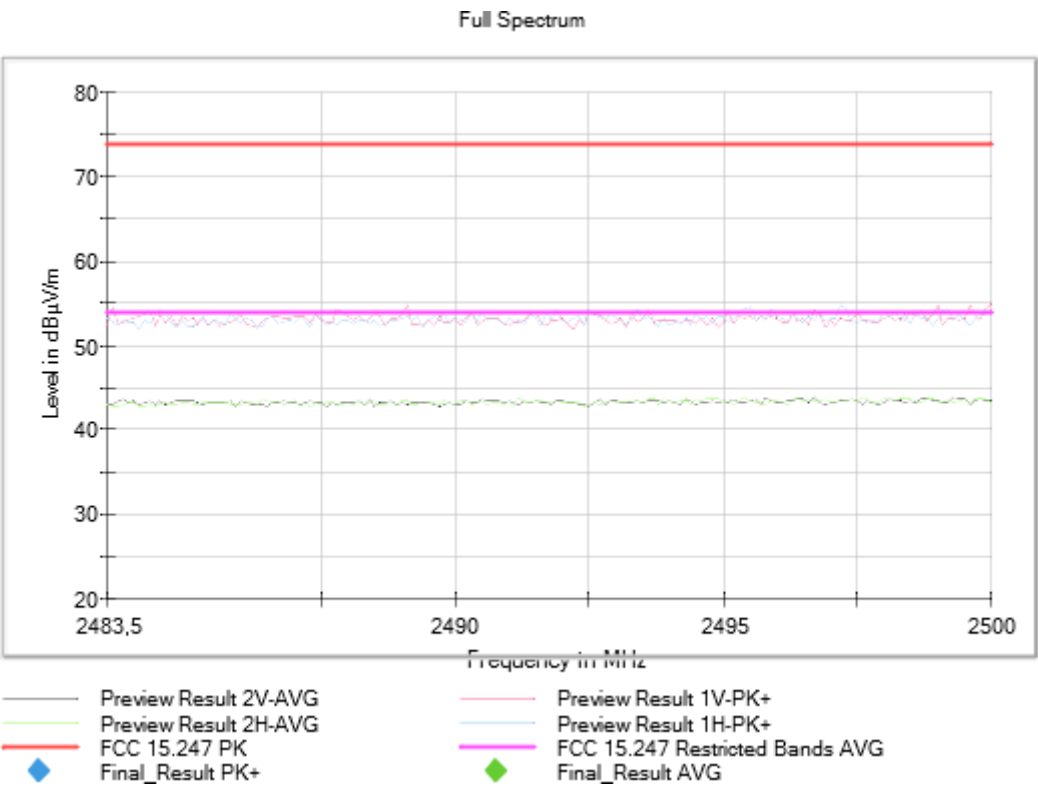
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2462.00000

Modulation = 802.11g (OFDM 6 Mbit/s)

Images:





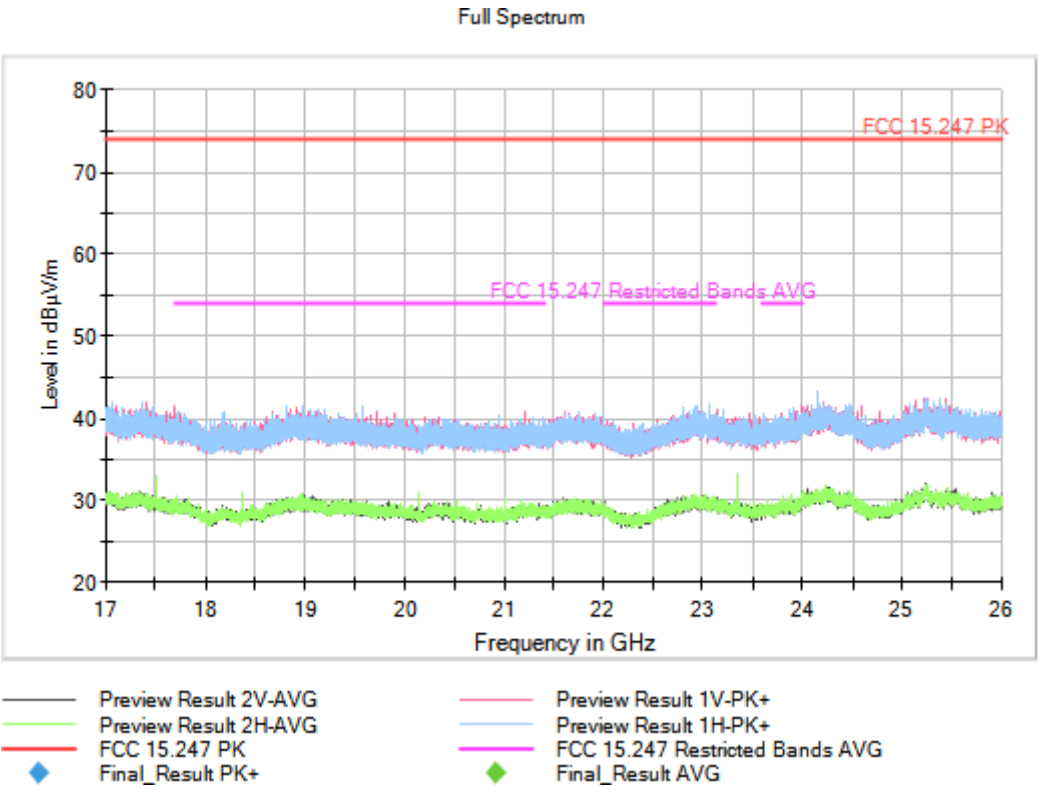
Frequency Range GHz = [17, 26]

Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS)

The spurious frequencies detected do not depend on the transmission channel or the Modulation

Images:



Results

Modulation: 802.11n HT20 (OFDM MCS0)

MIMO Mode: SISO

No spurious emissions were detected

Verdict

Pass

Attachments

Frequency Range GHz = [1, 17]

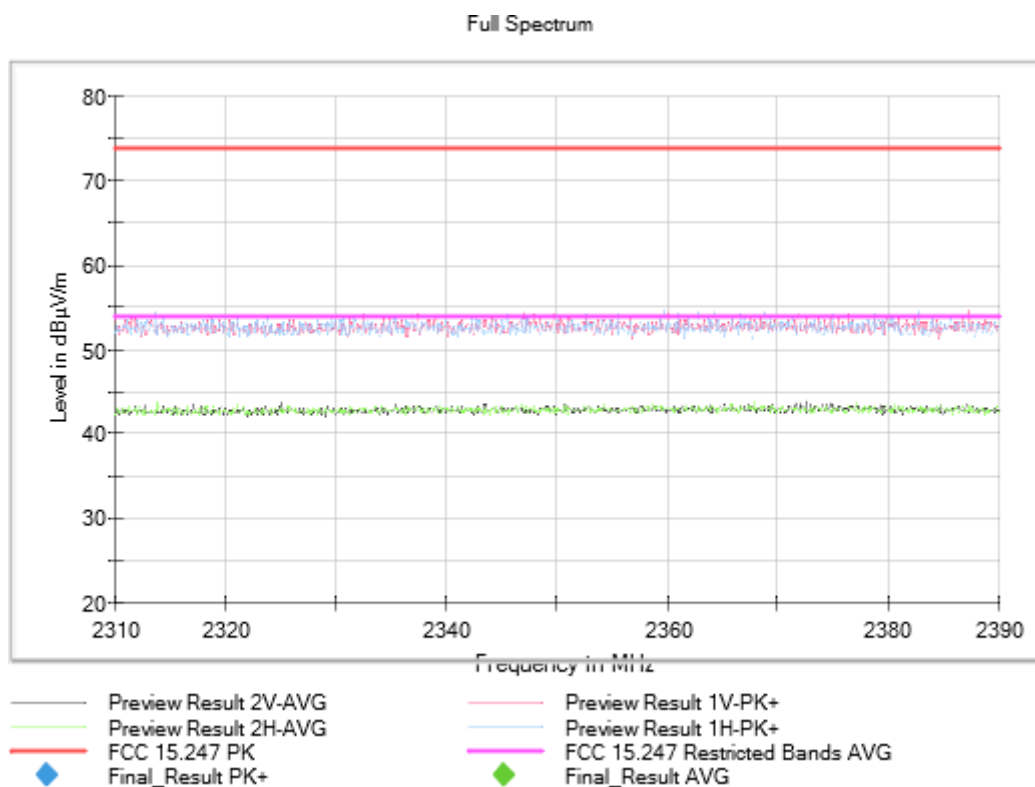
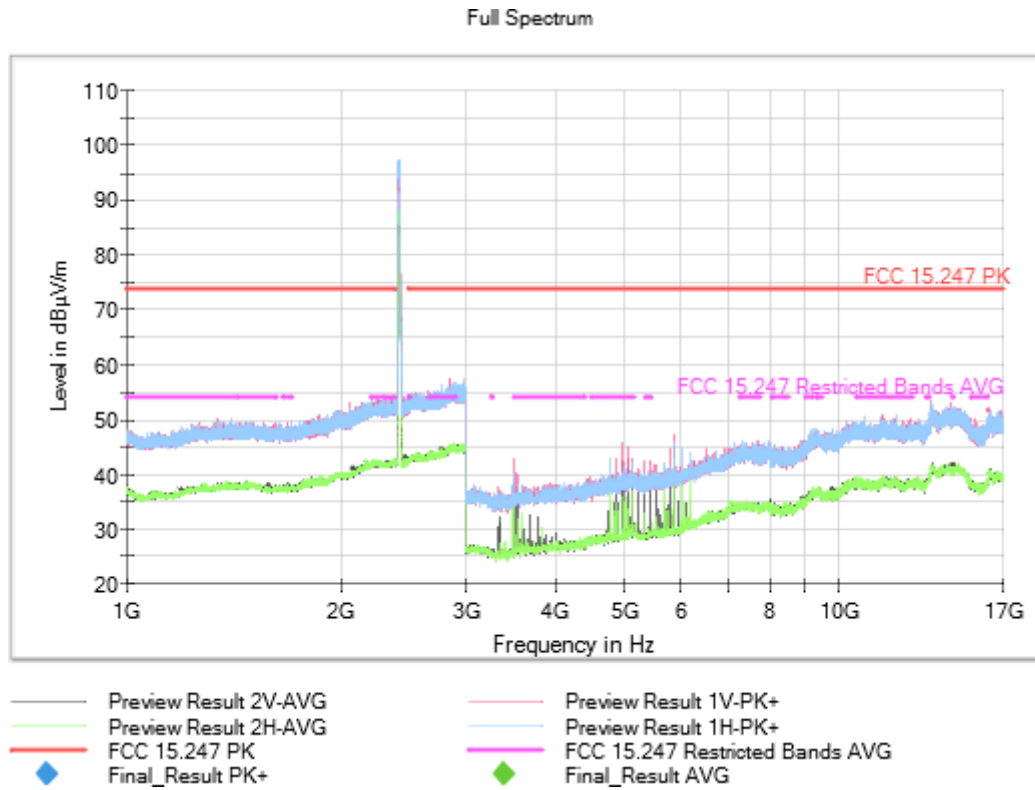
Operation Band MHz = [2400, 2483.5]

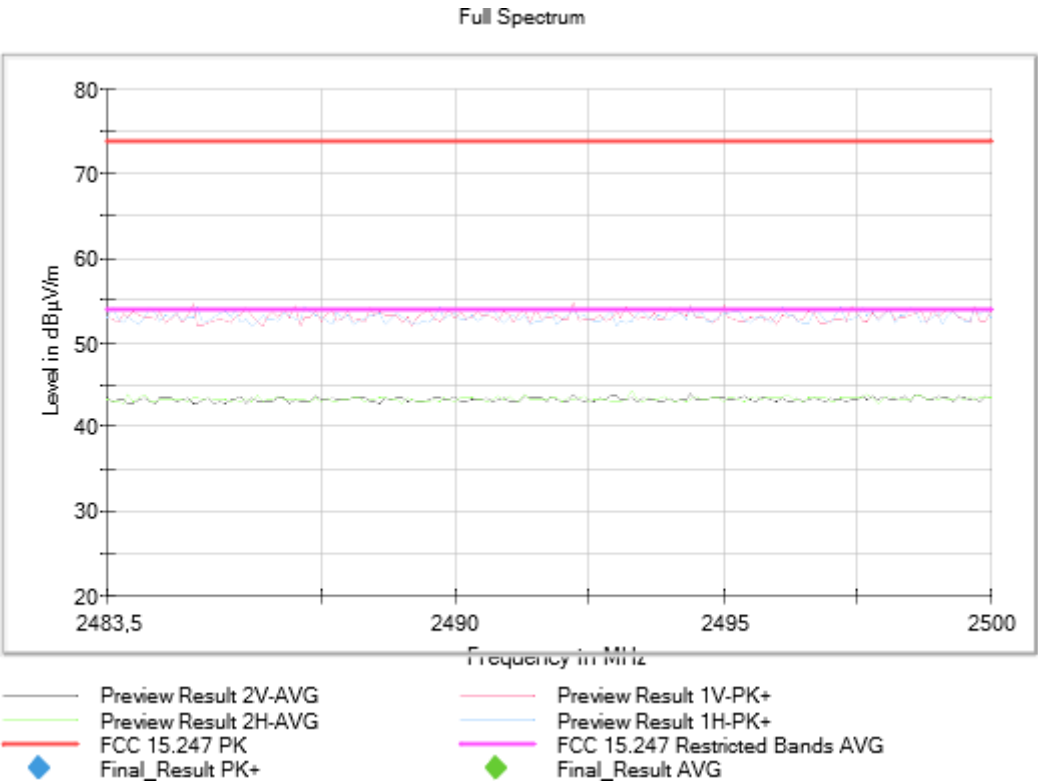
Equipment Type = Digital Transmission System (DTS)

Frequency MHz = 2412.00000

Modulation = 802.11n HT20 (OFDM MCS0)

Images:





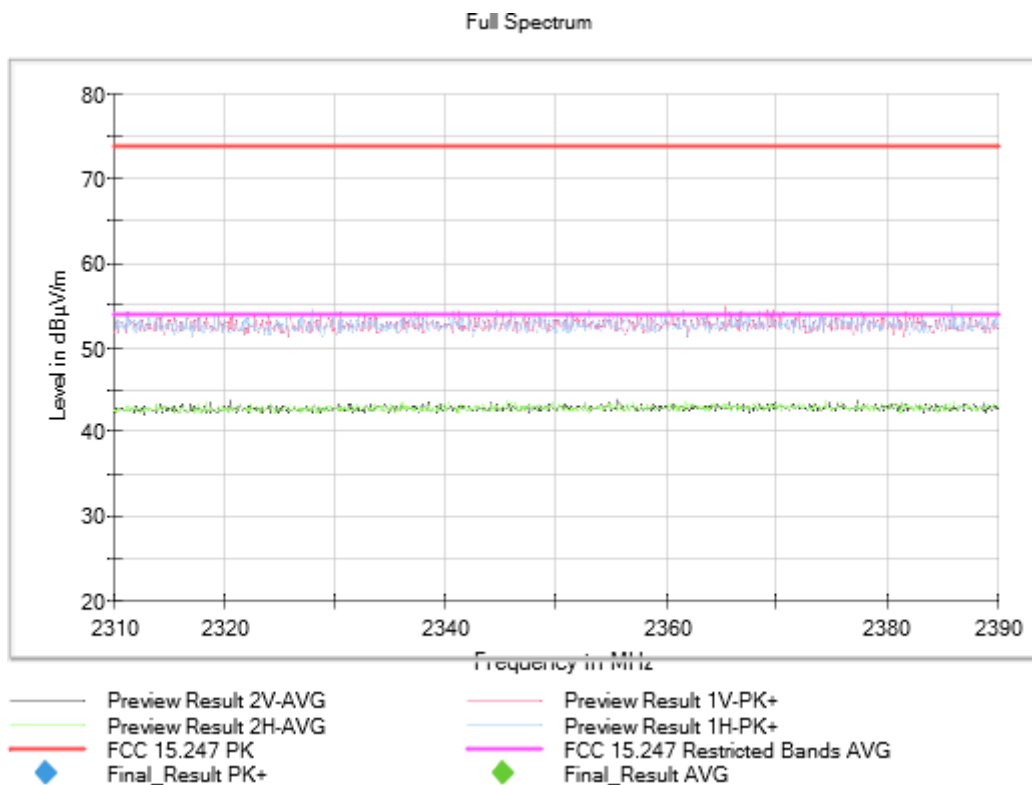
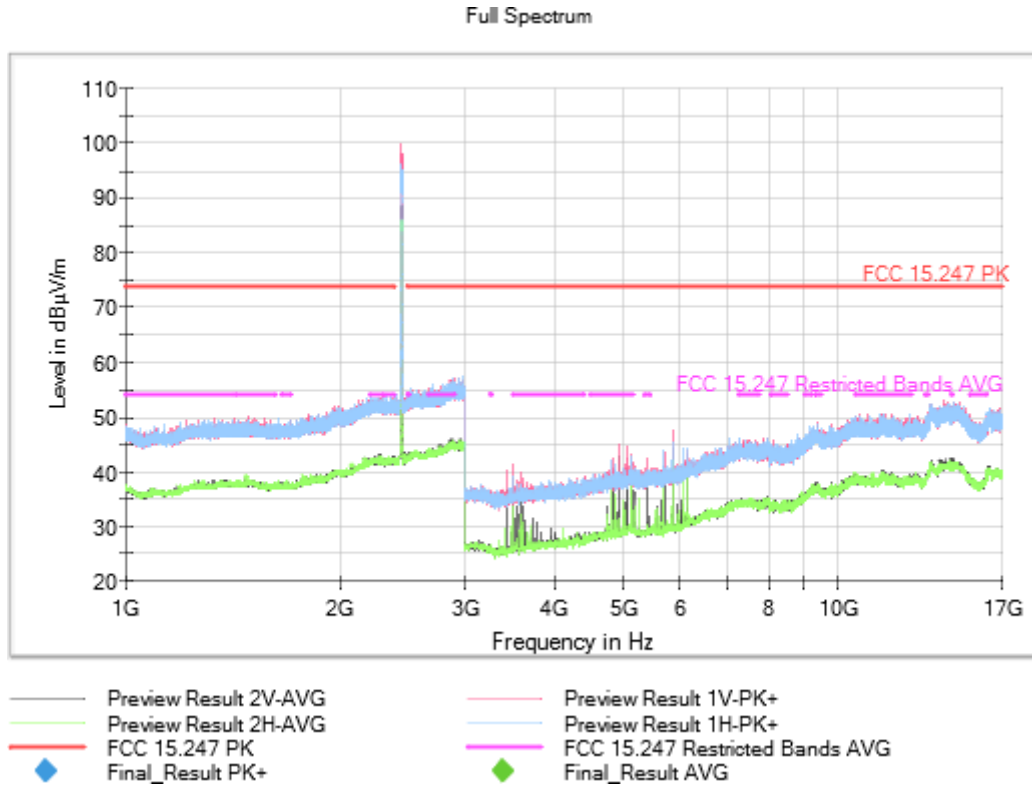
Frequency Range GHz = [1, 17]

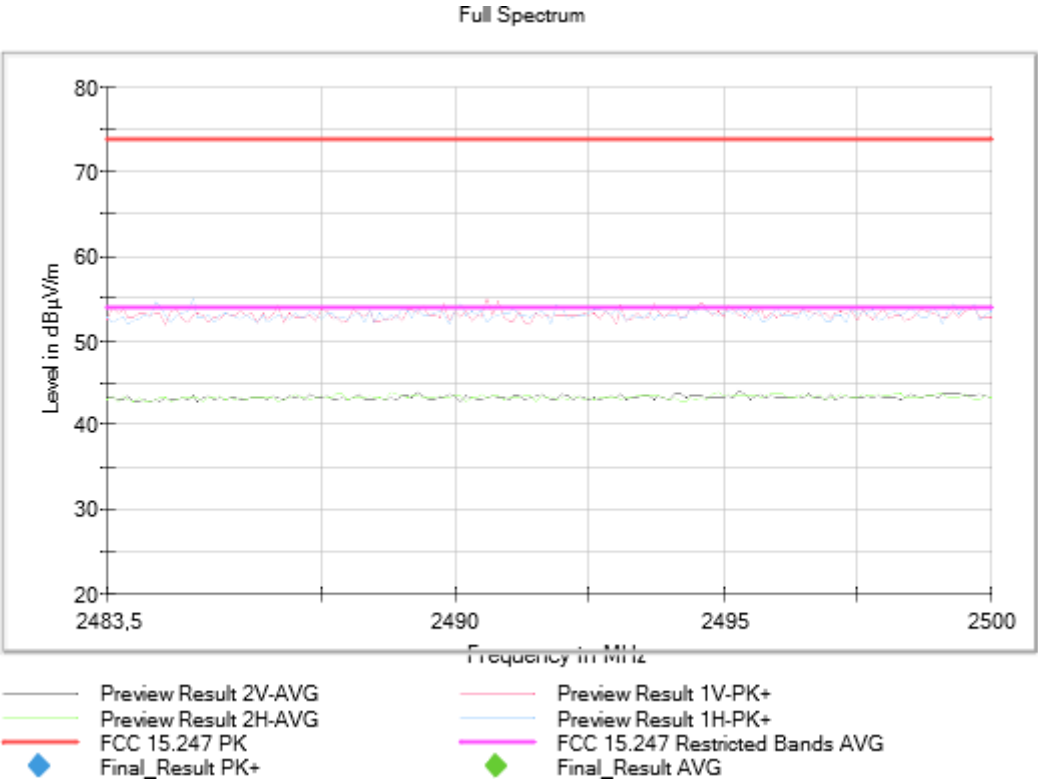
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2437.00000

Modulation = 802.11n HT20 (OFDM MCS0)

Images:





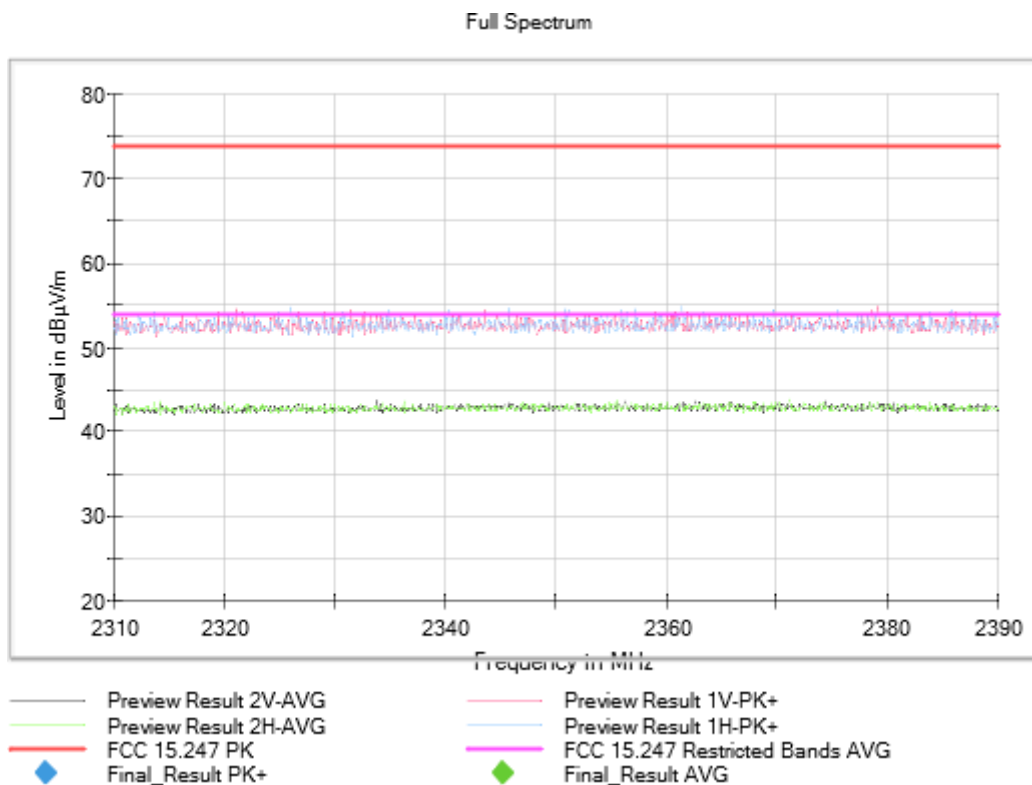
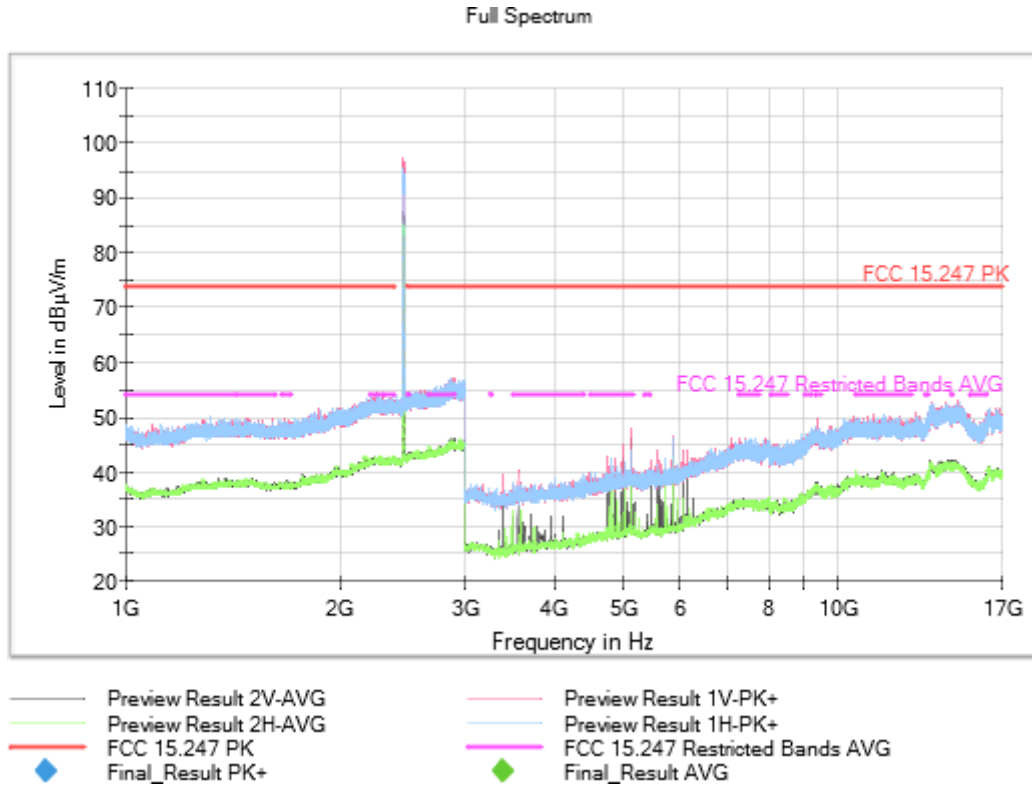
Frequency Range GHz = [1, 17]

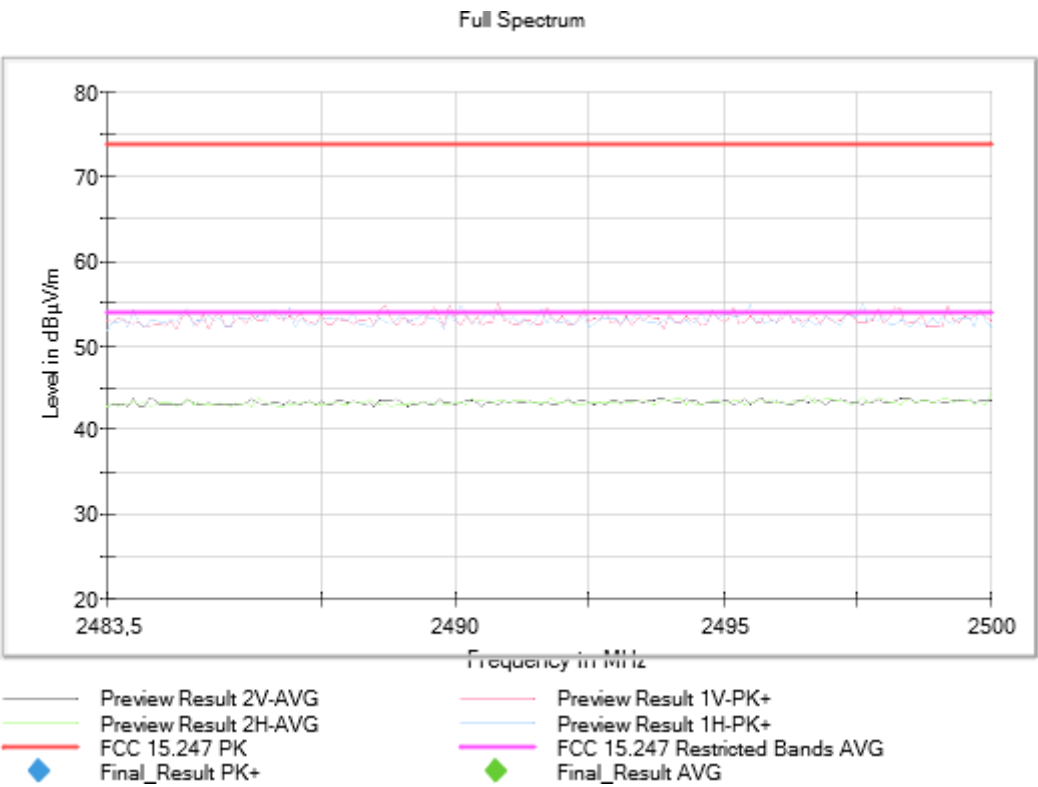
Operation Band MHz = [2400, 2483.5]

Equipment Type = Digital Transmission System (DTS) Frequency MHz = 2462.00000

Modulation = 802.11n HT20 (OFDM MCS0)

Images:





Results

Modulation: 802.11ax20 OFDM – SU Full-channel allocation

No spurious frequencies detected at less than 20 dB below the limit.

Verdict

Pass

Attachments

Frequency Range GHz = [1, 17]

Operation Band MHz = [2400, 2483.5]

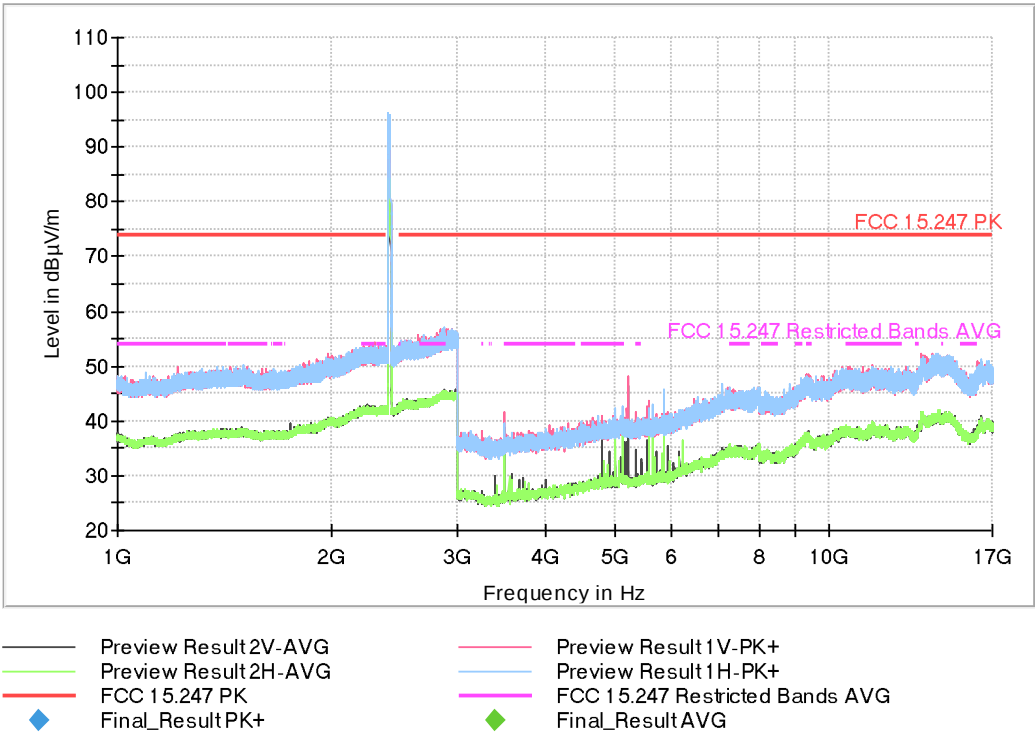
Equipment Type = Digital Transmission System (DTS)

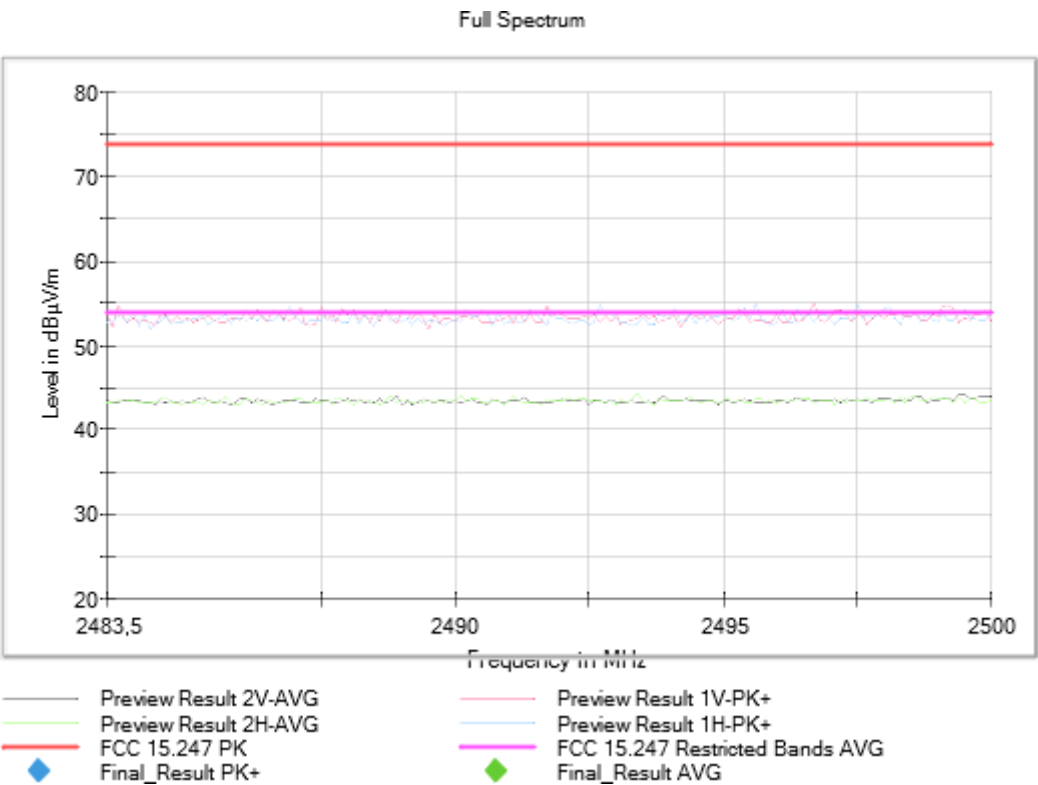
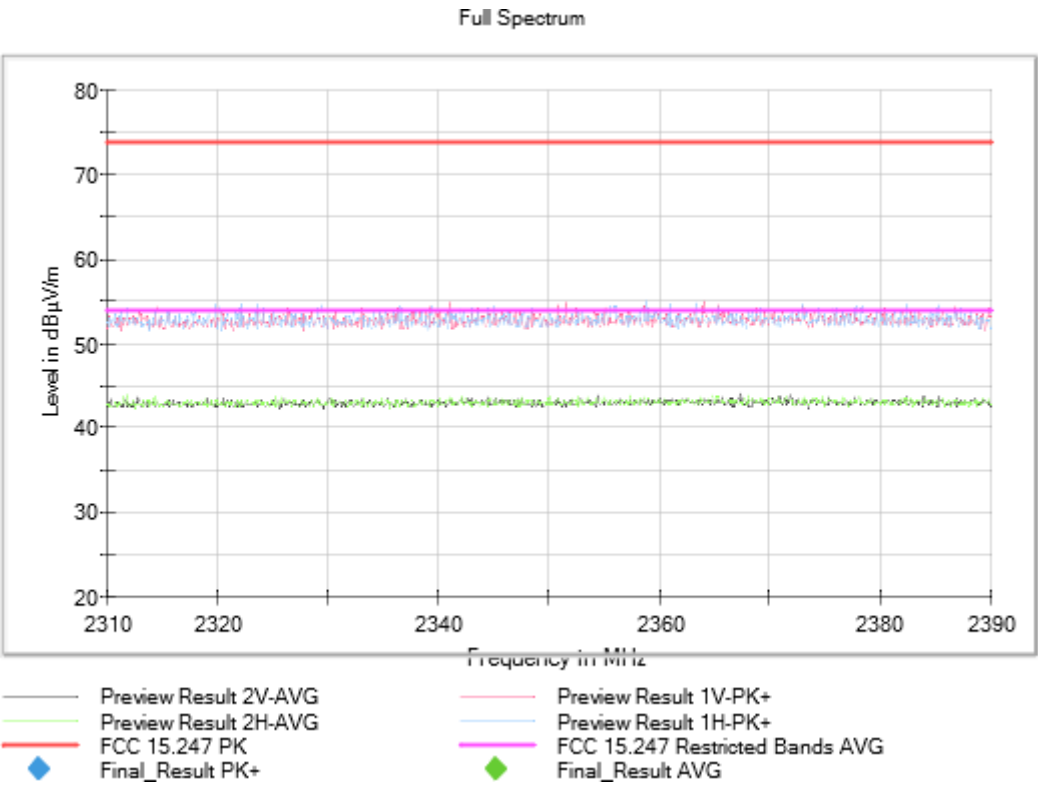
Frequency MHz = 2412.00000

Modulation = 802.11ax20 OFDM – SU Full-channel allocation

Images:

Full Spectrum

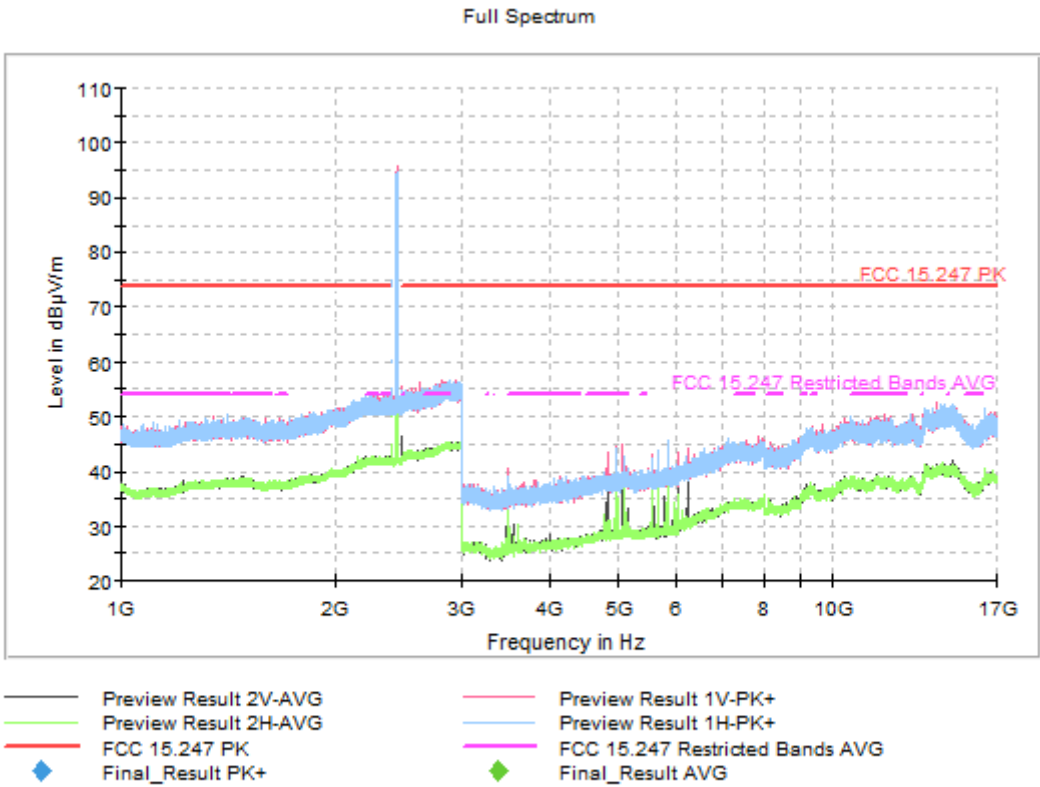


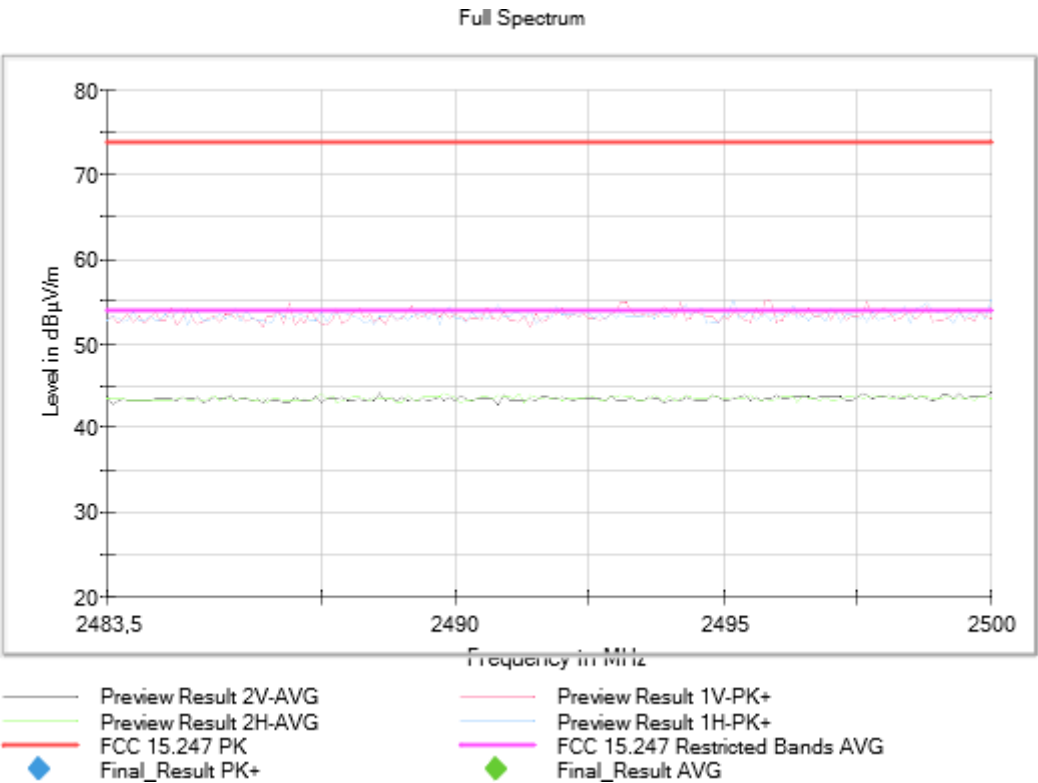
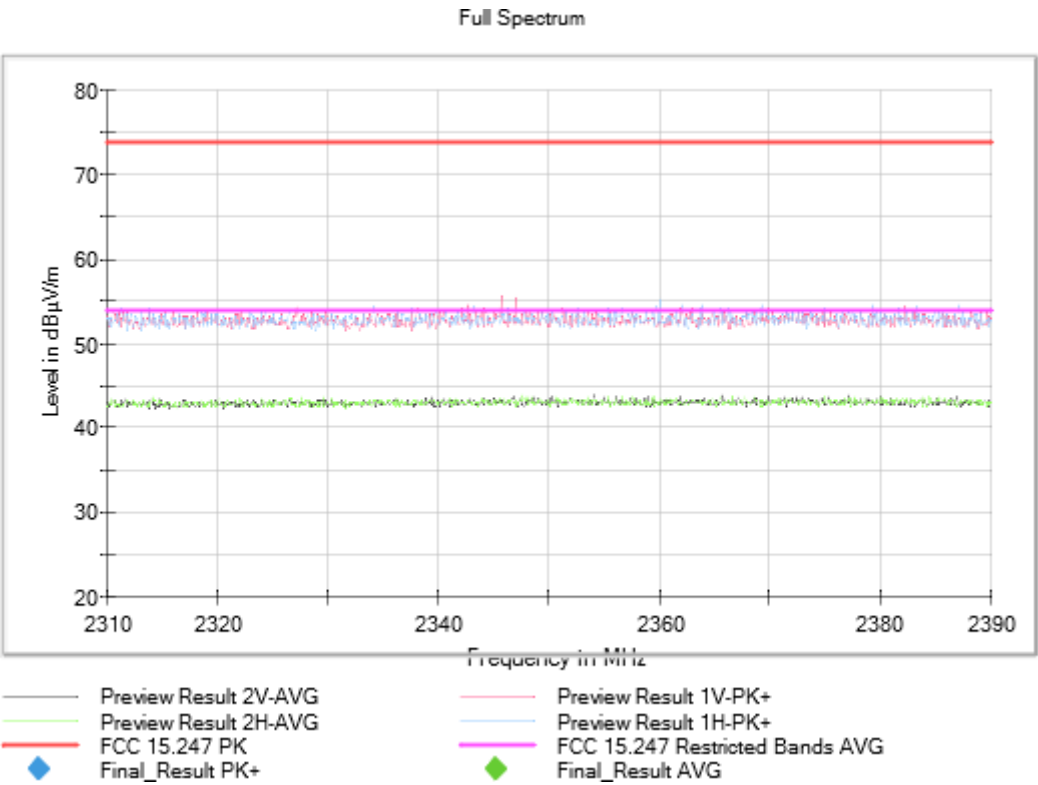


Frequency Range GHz = [1, 17]
Equipment Type = Digital Transmission System
(DTS)

Operation Band MHz = [2400, 2483.5]
Frequency MHz = 2437.00000
Modulation = 802.11ax20 OFDM – SU Full-channel
allocation

Images:

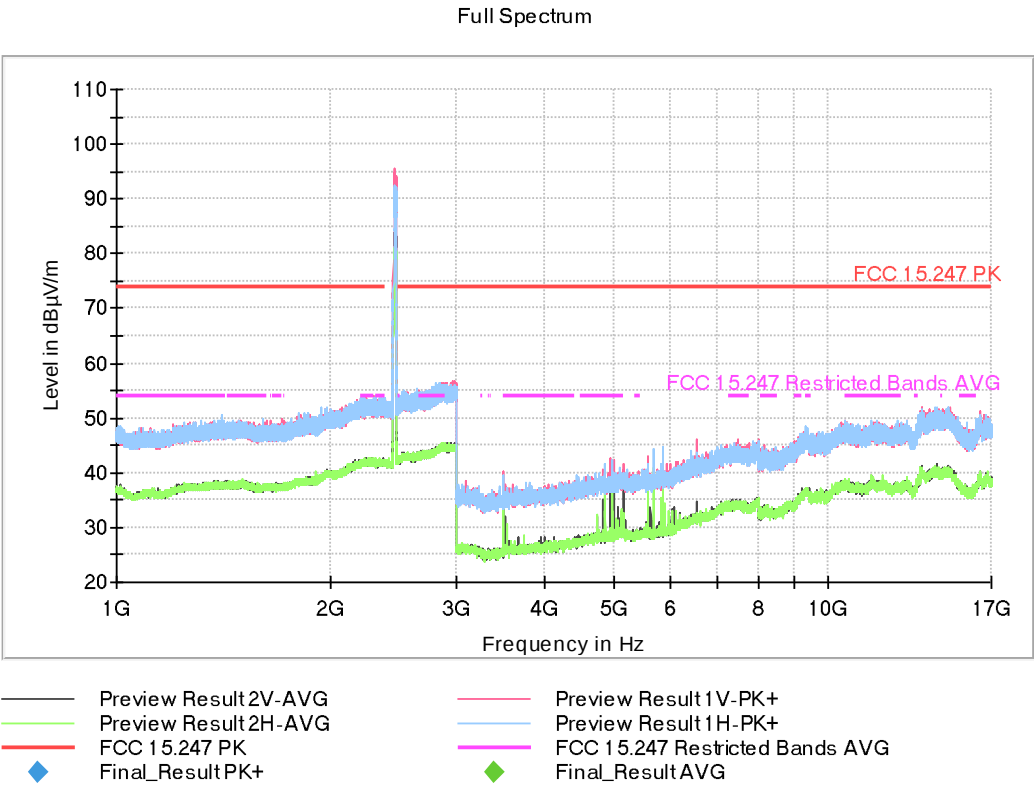


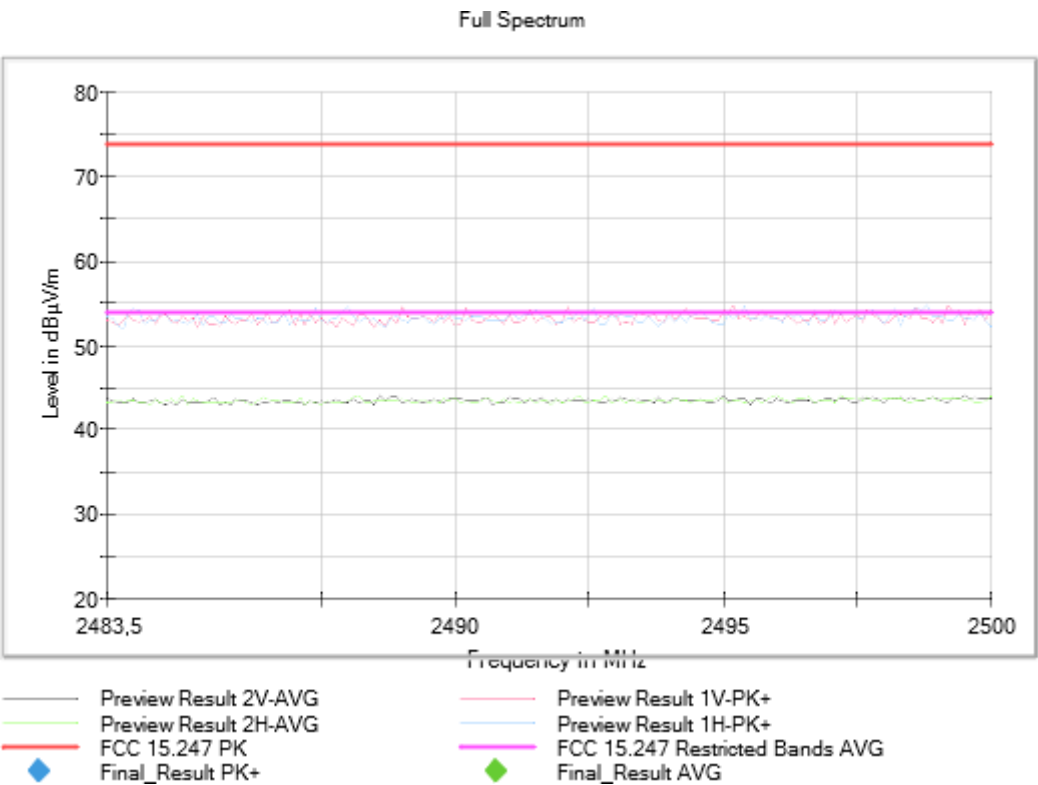
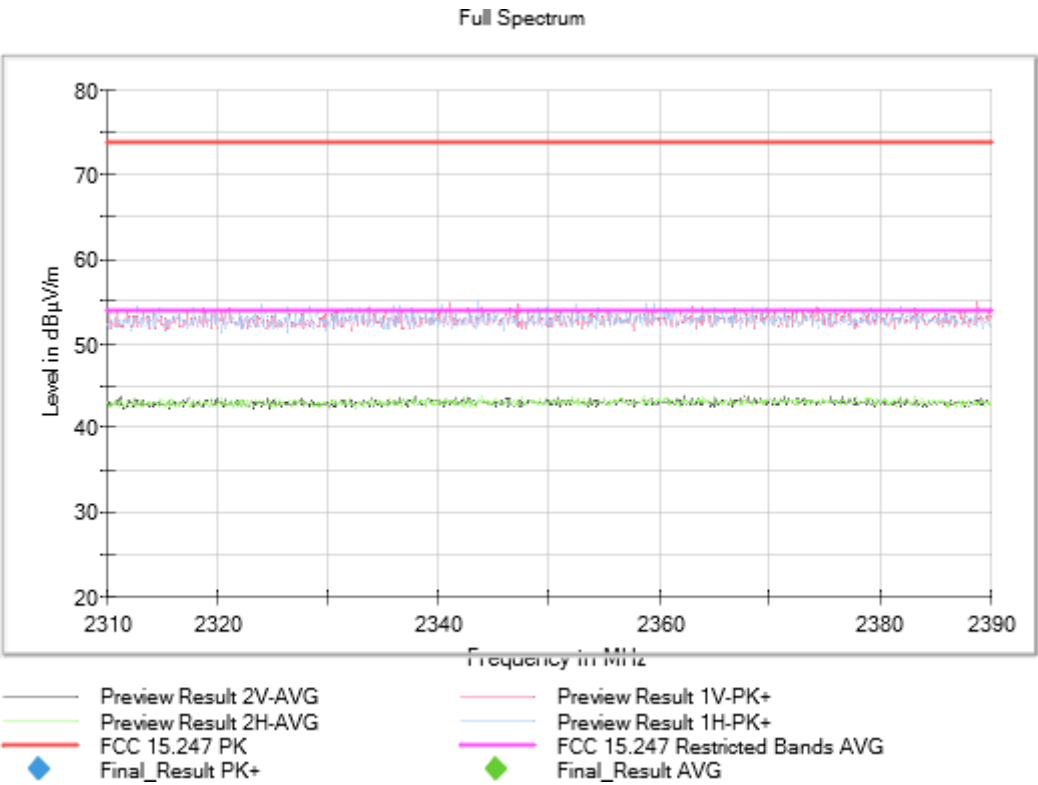


Frequency Range GHz = [1, 17]
Equipment Type = Digital Transmission System
(DTS)

Operation Band MHz = [2400, 2483.5]
Frequency MHz = 2462.00000
Modulation = 802.11ax20 OFDM – SU Full-channel
allocation

Images:





Results

Modulation: 802.11ax20 OFDM – RU Subcarrier allocation

No spurious frequencies detected at less than 20 dB below the limit.

Verdict

Pass

Attachments

Frequency Range GHz = [1, 17]

Equipment Type = Digital Transmission System (DTS)

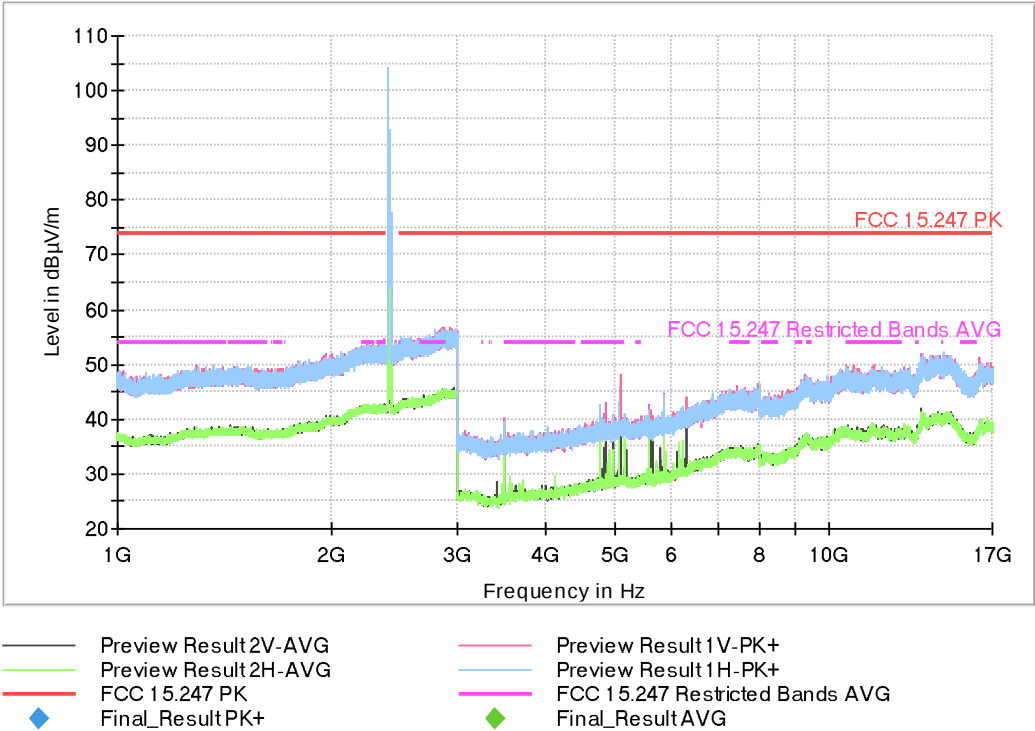
Modulation = 802.11ax20 OFDM – RU Subcarrier allocation

Frequency MHz = 2412.00000

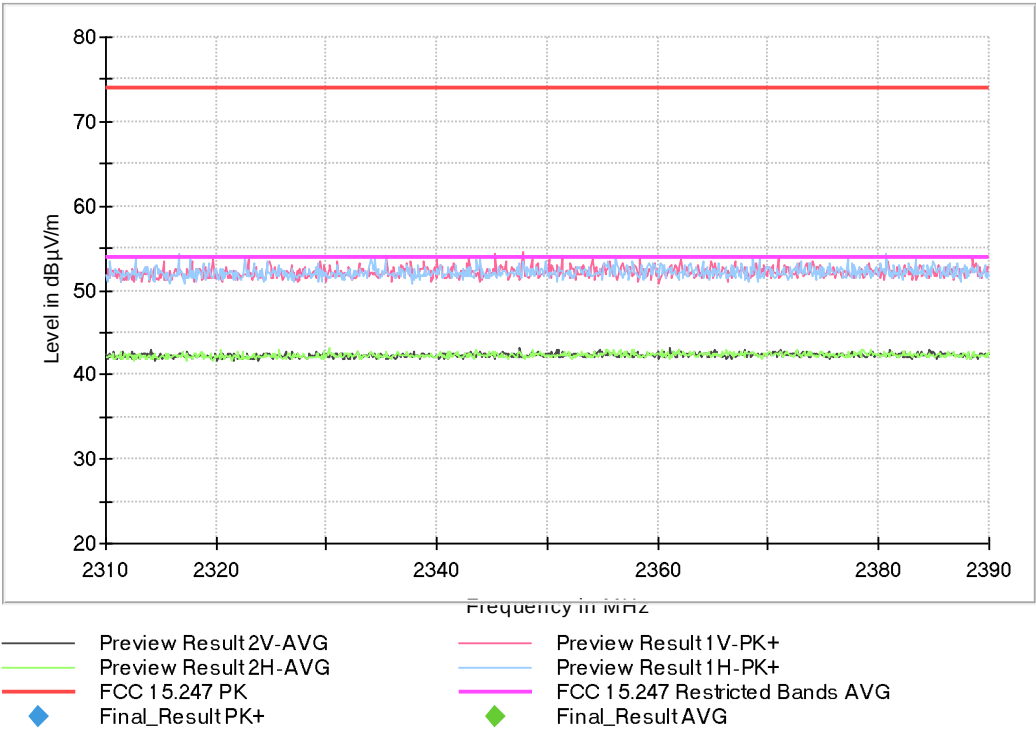
MIMO Mode = SISO

Images:

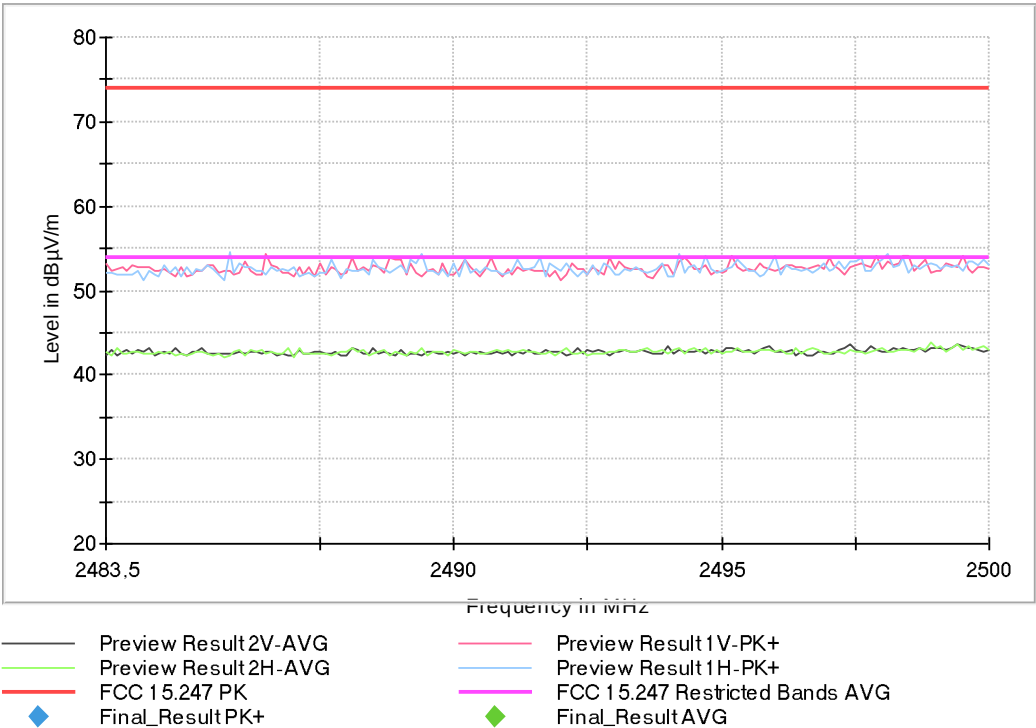
Full Spectrum



Full Spectrum



Full Spectrum



Frequency Range GHz = [1, 17]

Equipment Type = Digital Transmission
System (DTS)

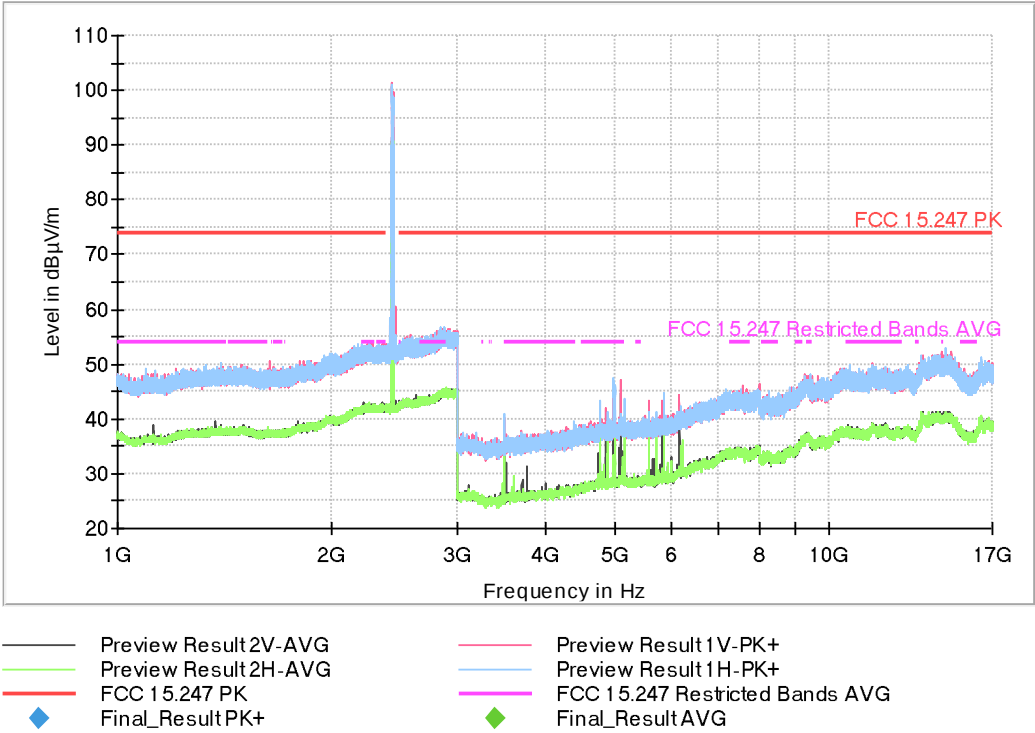
Modulation = 802.11ax20 OFDM – RU Subcarrier allocation

Frequency MHz = 2437.00000

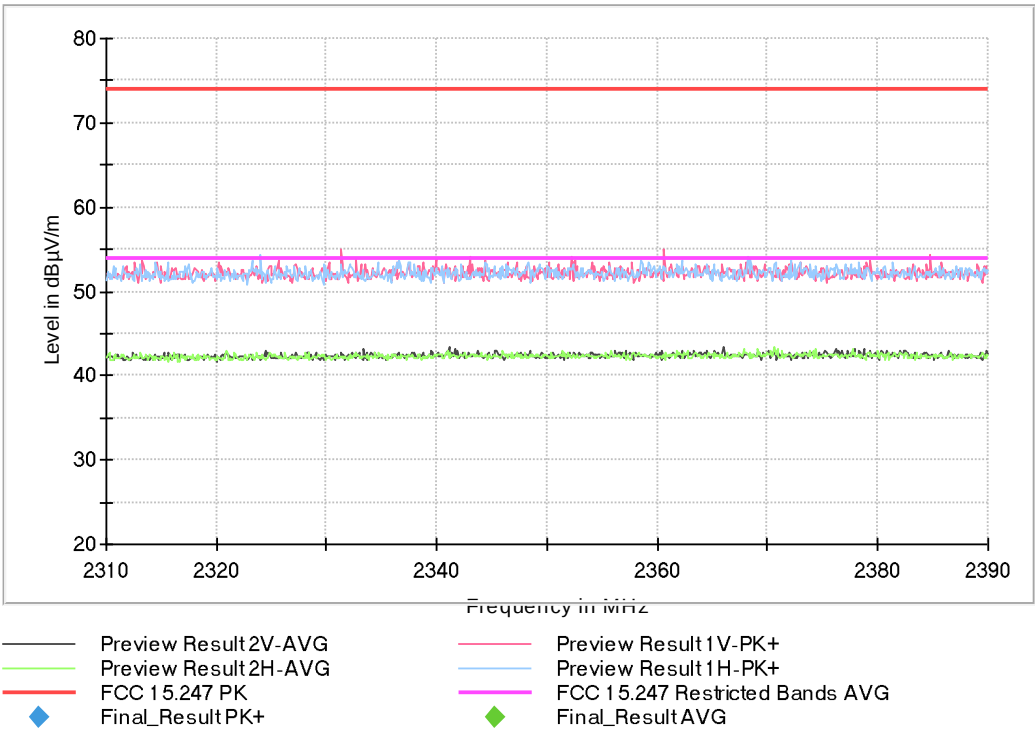
MIMO Mode = SISO

Images:

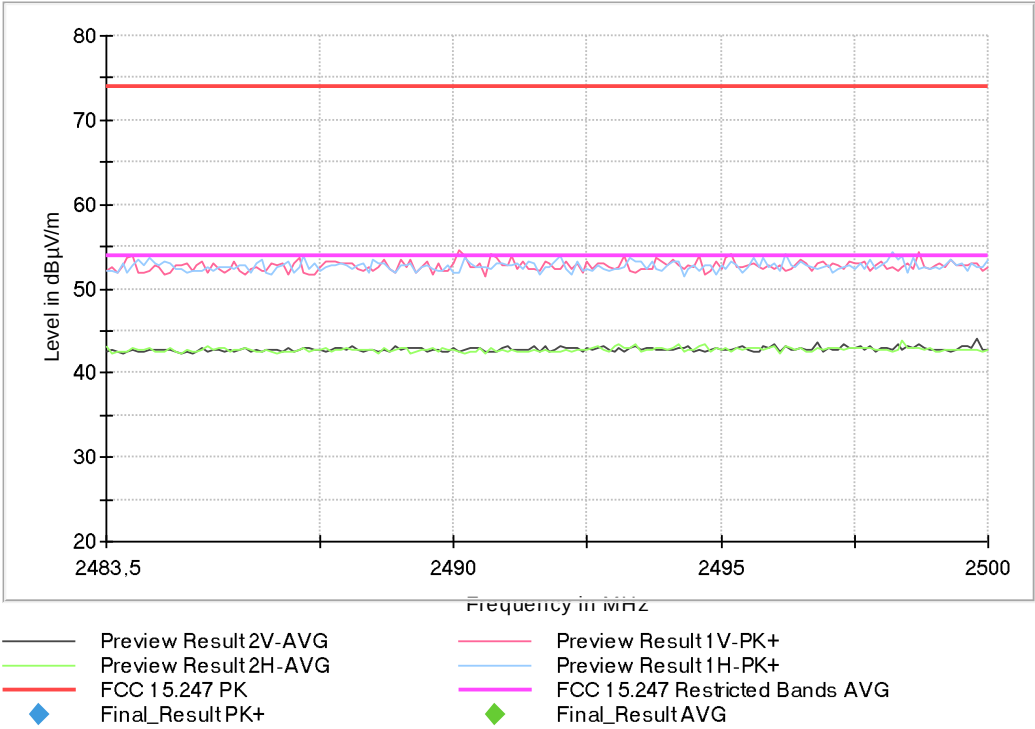
Full Spectrum



Full Spectrum



Full Spectrum



Frequency Range GHz = [1, 17]

Equipment Type = Digital Transmission
System (DTS)

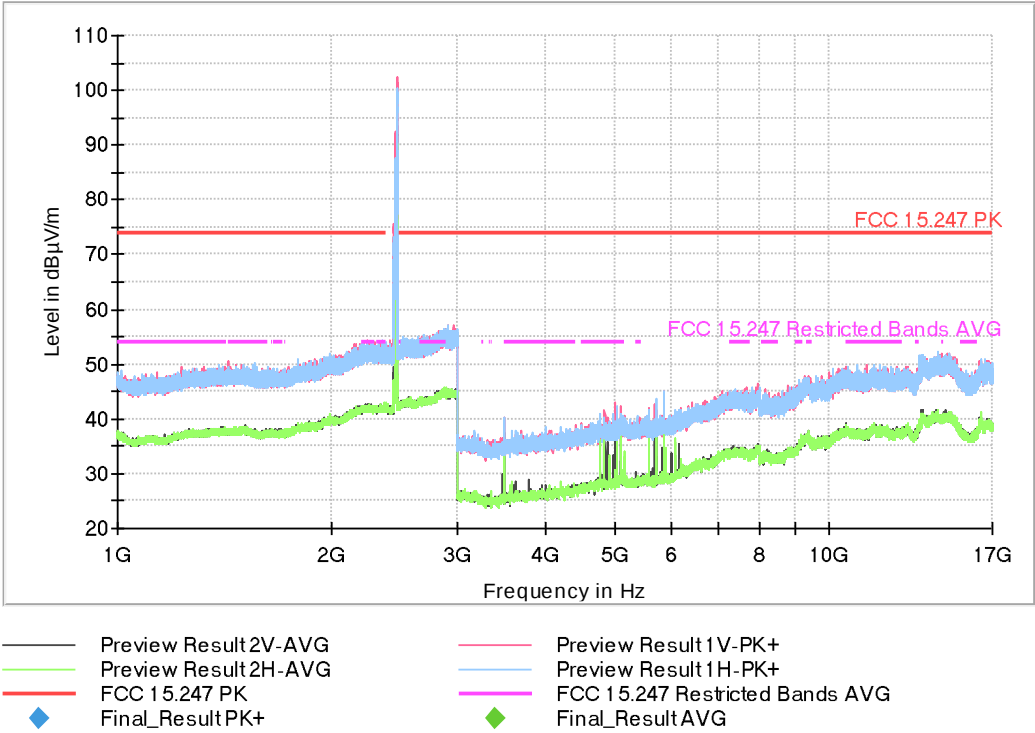
Modulation = 802.11ax20 OFDM – RU Subcarrier allocation

Frequency MHz = 2462.00000

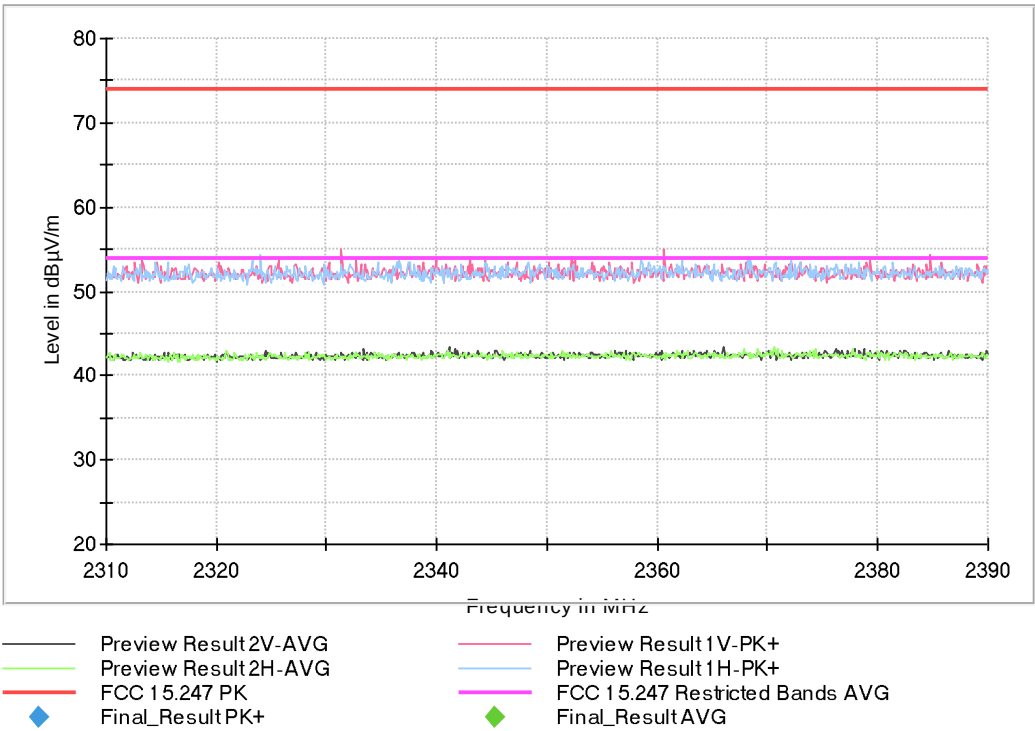
MIMO Mode = SISO

Images:

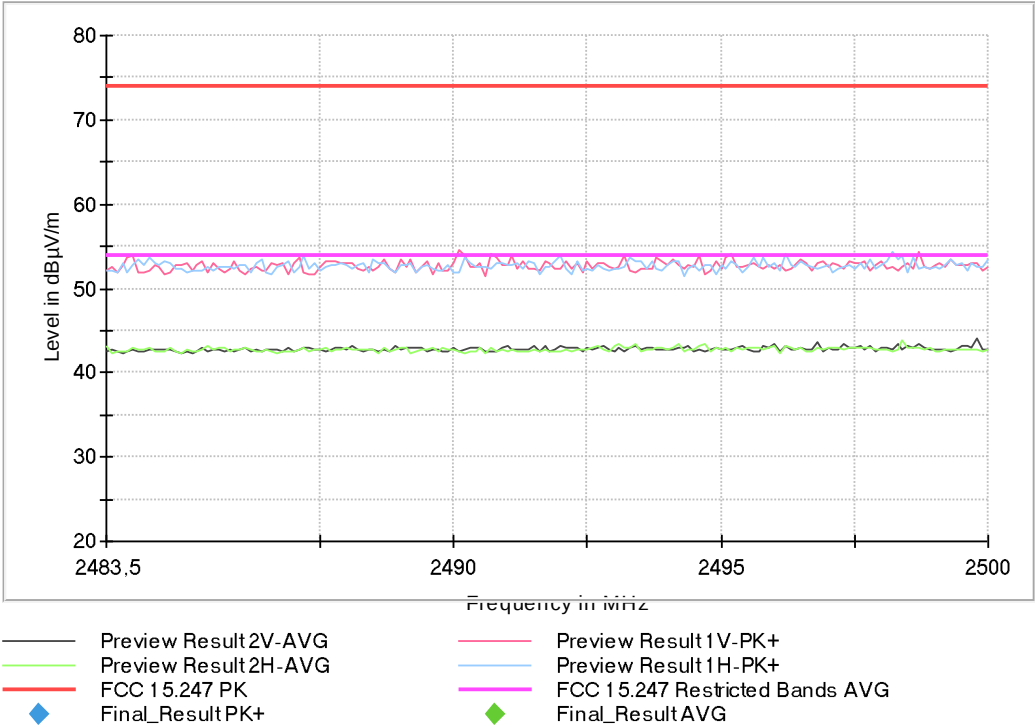
Full Spectrum



Full Spectrum



Full Spectrum



Modulation: The spurious frequencies detected do not depend on either the modulation or the operating channel.

Frequency Range GHz = [17, 26]

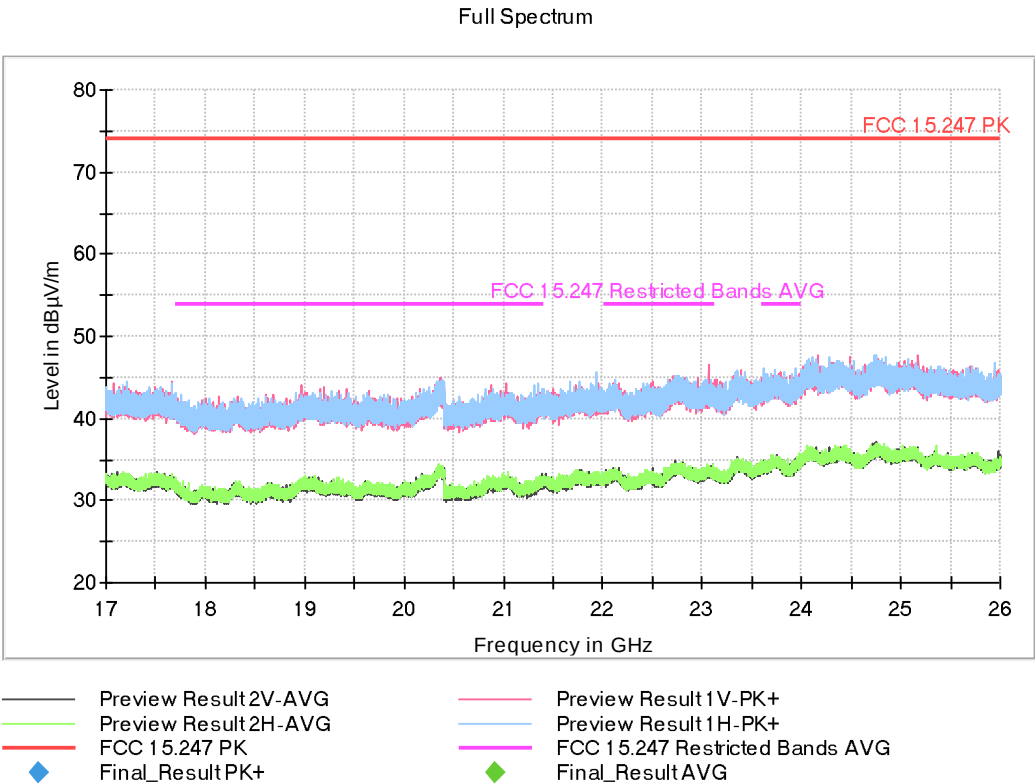
Equipment Type = Digital Transmission System (DTS)

Modulation = Modulation: The spurious frequencies detected do not depend on the modulation.

Frequency MHz = Modulation: The spurious frequencies detected do not depend on the operating channel.

MIMO Mode = SISO

Images:



Tables:

Spectrum Analyzer Parameters

	Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
	30 MHz - 1 GHz	48,5 kHz	PK+	100 kHz	1 s	0 dB

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
1 GHz - 2,39 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
2,39 GHz - 2,484 GHz	40 kHz	PK+	100 kHz	0,01 s	0 dB
2,484 GHz - 3 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
3 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
17 GHz - 26 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB