DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29507456

Test Report No:
76719RRF.005A2

Partial Test Report
USA FCC Part 15.407, 15.209

(*) Identification of item tested	Central In-Vehicle Infotainment Computer CIVIC Gen20xi.3
(*) Trademark	BOSCH
(*) Model and /or type reference	BCI3L3R1 / vehicular architecture: Star3.0
(*) Derived model not tested	BCI3L3R1 / vehicular architecture: Star3.5
Other identification of the product	FCC ID: 2AUXS-BCI3L3R1
(*) Features	AM/FM/DAB(SXM US version)(/TV JP Version) W-LAN 2.4GHz /5GHz MIMO / SiSO - no DFS Bands, AP / Client Bluetooth 5.2 LE& EDR GNSS multiple HW version: D5 SW version: E064.4
Applicant	Robert Bosch GmbH Robert-Bosch-Strasse 200 31139 Hildesheim Germany
Test method requested, standard	USA FCC Part 15.407 (10-1-23) Edition: Unlicensed National Information Infrastructure (U-NII) Devices. General technical requirements. USA FCC Part 15.209 (10-1-23) Edition: Radiated emission limits; general requirements. Guidance for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017. 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 Firmado digitalmente por 53680346W JOSE MANUEL GOMEZ (C:A29507456)
Date of issue	2025-07-02
Report template No	FDT08_25 (*) "Data provided by the client"

Index

Acronyms

Acronym ID	Acronym Description
Avg Power	Maximum Average Conducted Output Power
DC	Duty Cycle
Detector	Detector used
Ebw	Emission Bandwidth
EUT	Equipment Under Test
Freq	Frequency
Freq Rng	Frequency Range
Inband Peak Lvl	Inband Peak Level
Lvl	Level
MP	Measurement Point
Max EIRP	Maximum Burst EIRP
Mod	Modulation
Mode	MIMO Mode
Operation Band	Operation Band
PSD	Power Spectral Density
Pol	Polarization
Port	Active Port
TPC	TPC
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.

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.

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

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

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA 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 ≤ ± 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 ≤ ± 4,32 dB with factor (k = 2).

The total uncertainty of the measurement system for the radiated emissions of EUT from 17 GHz to 40 GHz is:
Measurement uncertainty ≤ ± 5,55 dB with factor (k = 2).

The total uncertainty of the measurement system for the conducted testing of EUT is:
RF Average Output Power: Measurement uncertainty ≤ ± 2,01 dB
Duty Cycle: Measurement uncertainty ≤ ± 0,84 ms
Power Spectral Density: Measurement uncertainty ≤ ± 2,01 dB
Occupied/26 dBc Bandwidth: Measurement uncertainty
≤ ± 57,76 kHz for BW 20MHz;
≤ ± 115,53 kHz for BW 40MHz; and
≤ ± 231,06 kHz for BW 80MHz.

6 dB Banwidth: Measurement uncertainty
≤ ± 34,67 kHz for BW 20MHz;
≤ ± 46,22 kHz for BW 40MHz; and
≤ ± 80,90 kHz for BW 80MHz.

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 CIVIC Gen20xi.3

Including:

GNSS (GPS, Galileo Beidou Glonass)

AM/FM/DAB (ROW/ECE)

AM/FM/SXM (NA)

AM/FM/TV (JP)

WLAN 2.4 &5GHz

Bluetooth

3. Declaration of similarity

Cross-Domain Computing Solutions

BOSCH

To whom it may concern

Robert Bosch GmbH
Postfach 10 02 61
31102 Hildesheim
Visitor:
Robert-Bosch-Straße 200
31139 Hildesheim
Phone +49 5121 49-0
www.bosch.com

Karin Silberhorn, XC/QMM-VR2.1
Phone +49 5121 49-7662
Karin.Silberhorn@de.bosch.com

FCC BCI3L3R1 - Product Variant Declaration Star 3.0 vs Star 3.5 May 13, 2025

Ladies and gentlemen,

We, Robert Bosch GmbH, herewith declare that our product **BCI3L3R1** exists in two variants, which are electrical identical in all aspects.

HVIN (Model Name)	BCI3L3R1
FCC ID:	2AUXS- BCI3L3R1

The product is mounted in two different vehicle types:
- one with a CAN Bus Vehicle communication system,
- the other one has vehicular Ethernet as communication system

In order to be operational in these vehicles, our product is preconfigured in two variants as described below. Both are **HW identical,** only that different path for in-vehicle communication is used.
The CAN and Ethernet interface are always built on both Star architectures, but only Star 3.0 uses the CAN interface, and Star 3.5 uses Ethernet interface.

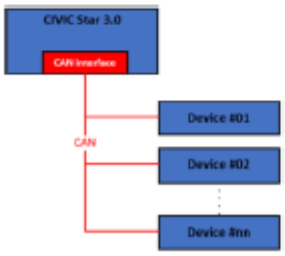
The following block diagrams show the architectures:

Cross-Domain Computing Solutions

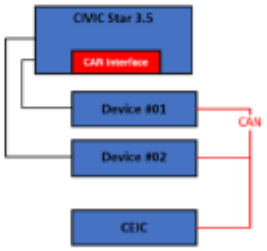
Variant

Blockdiagram Star Architectures

Star 3.0



Star 3.5



From regulatory point of view, we, BOSCH, consider the impact of the variant coding as follows:

	CAN Bus / Ethernet Bus
Radio Requirements	No impact
Health Requirements	No impact
Electrical Safety Requirements	No impact
EMC Requirements	Radiated emissions

Yours sincerely

Dirk_Zamow

Digitally signed by Dirk_Zamow
Date: 2025.05.14 08:34:48 +02'00'

By: Dirk Zamow
Title: Grantee Main Contact
Telephone: +49 5121 49 2608
e-mail: dirk.zamow@de.bosch.com

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 Nº	Date of Reception	Application
S/01	76719D_148.1	Headunit A-PREMIUN USA	BCI3L3N1	CM0206R0016007	2024-10-25	Element Under Test
	76719D_111.1	Harness	---	---	2024-04-19	Auxiliary Element
	76719D_48.1	Farkra-USB adapter cable	---	---	2024-04-17	Auxiliary Element
	76719D_60.1	Termination box	---	---	2024-04-17	Auxiliary Element
	76719D_62.1	DC Block	---	---	2024-04-17	Auxiliary Element
	76719D_64.1	DC Block	---	---	2024-04-17	Auxiliary Element
	76719D_65.1	DC Block	---	---	2024-04-17	Auxiliary Element
	76719D_68.1	DC Block	---	---	2024-04-17	Auxiliary Element
	76719D_84.1	Antenna	A1779052902/002	---	2024-04-17	Auxiliary Element
	76719D_85.1	Antenna	A1779052902/002	---	2024-04-17	Auxiliary Element
	76719D_86.1	Antenna	A1779052902/002	---	2024-04-17	Auxiliary Element
	76719D_93.1	Antenna	A1779052902/002	---	2024-04-17	Auxiliary Element
S/02	76719D_148.1	Headunit A-PREMIUN USA	BCI3L3N1	CM0206R0016007	2024-10-25	Element Under Test
	76719D_111.1	Harness	---	---	2024-04-19	Auxiliary Element
	76719D_48.1	Farkra-USB adapter cable	---	---	2024-04-17	Auxiliary Element
	76719D_96.1	Farkra- 4 SMA cable	---	---	2024-04-17	Auxiliary Element

Notes referenced to samples during the project:

Id	Type
S/01	Samples used for radiated test
S/02	Samples used for conducted test

Test sample description

Ports…… :	**Port name and description**		**Cable**					
			Specified max length [m]		**Attached during test**		**Shielded**	
	Main Connector		*2m*		[X]		[ ]	
	Fakra Quad Connector AM/FM/DAB *Fakra Single Connector GPS*				[X]		[ ]	
	Fakra Quad Connector WLAN/BT				[X]		[ ]	
	USB Cable				[X]		[ ]	
Supplementary information to the ports…… :	--							
Rated power supply .....:	**Voltage and Frequency**		**Reference poles**					
			L1	**L2**	**L3**	**N**	**PE**	
	[ ]	AC:						
	[X]	DC: 9-16V nomimal 12 VDC by vehicle battery						
Rated Power .....:	--							
Clock frequencies.....:	--							
Other parameters .....:	IP20 ; -40C toi +65C							
Software version .....:	E064.4							
Hardware version .....:	D5							
Dimensions in cm (W x H x D) ....:	220mmx161mmx78mm							
Mounting position .....:	[ ]	Table top equipment						
	[ ]	Wall/Ceiling mounted equipment						
	[ ]	Floor standing equipment						
	[ ]	Hand-held equipment						
	[X]	Other: Cluster in the car with separate antennas built into the cockpit of vehicle						
Modules/parts.....:	**Module/parts of test item**		**Type**		**Manufacturer**			
	--							
Accessories (not part of the test item) .....:	**Description**		**Type**		**Manufacturer**			
	Antennas							
	Display							
	any other equipment to make device functional							
	Laptop							
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)	2025-01-14
Date (finish)	2025-02-02

Document history

Report number	Date	Description
76719RRF.005	2025-06-04	First release.
76719RRF.005A1	2025-06-12	Second release. Modification due to typos. This modification test report cancels and replaces the test report 76719RRF.005.
76719RRF.005A2	2025-07-02	Second release. Modification due to typos. This modification test report cancels and replaces the test report 76719RRF.005A1.

Environmental conditions

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

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

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

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

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

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

Remarks and comments

The tests have been performed by the technical personnel: Antonio Maireles, Carmen Vázquez Perez, Pablo Redondo Reyes and Rosa Maria Gallardo Perez.

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
06793	SHIELDED ROOM	S101	ETS LINDGREN	N/A
06611	ETHERNET TEMPERATURE AND HUMIDITY LOGGER	HWg-STE	HW GROUP	2026-04-21
06668	SIGNAL AND SPECTRUM ANALYZER 10Hz-40GHz	FSV40	ROHDE AND SCHWARZ	2027-04-01
07796	EXTENSION FOR OPEN SWITCH UNIT UP TO 40GHz	OSP-B157Wx	ROHDE AND SCHWARZ	2027-01-09
08848	OPEN SWITCH UNIT UP TO 7.5 GHz	OSP-B157W8 PLUS	ROHDE AND SCHWARZ	2027-01-02
00922	POWER SUPPLY DC 40 V / 40 A	NGPE 40/40	ROHDE AND SCHWARZ	N/A
05850	DIGITAL MULTIMETER	179	FLUKE	2025-11-04
07798	SOFTWARE FOR EMC/RF TESTING	WMS32	ROHDE AND SCHWARZ	N/A

Testing verdicts

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

Summary

U-NII-1 Band: 5.15 - 5.25 GHz

FCC PART 15 PARAGRAPH			
Requirement – Test case		**Verdict**	**Remark**
FCC 15.407 (a)(1)(iv)	Transmitter Maximum conducted Output Power	P*	(2)
FCC 15.407 (a)(1)(iv)	Transmitter Maximum Power Spectral Density	N/M	(1)
FCC 15.407 (b)(1)	Transmitter Out of Band Radiated Emissions	P	
FCC 15.407 (b)(1)	Transmitter Band Edge Radiated Emissions	P	
Supplementary information and remarks: (1) Test not requested. (2) Worst case channel and modulation only.			

U-NII-3: 5.725 GHz – 5.85 GHz Band:

FCC PART 15 PARAGRAPH			
Requirement – Test case		**Verdict**	**Remark**
FCC 15.407 (e)	6 dB Bandwidth	N/M	(1)
FCC 15.407 (a)(3)(i)	Transmitter Maximum Conducted Output Power	P	(2)
FCC 15.407 (a)(3)(i)	Transmitter Maximum Power Spectral Density	N/M	(1)
FCC 15.407 (b)(4)	Transmitter Out of Band Radiated Emissions	P	
FCC 15.407 (b)(4)	Transmitter Band Edge Radiated Emissions	P	
Supplementary information and remarks: (1) Test not requested. (2) Worst case channel and modulation only.			

Appendix A: Tests results for the U-NII-1 Band 5.15–5.25 GHz

INDEX

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal:	12 Vdc
Type of Power Supply:	Vehicle battery

ANTENNA (*):

Type of Antenna:	External

Directional Antenna Gain Calculations for CDD MIMO In-Band Measurements:

For 2Tx CDD MIMO modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(i), directional gain was calculated as follows:

- For power spectral density (PSD) measurements on all devices:

$$N_{SS} = 1, N_{ANT} = 2, G_{ANT0} = 5.1, G_{ANT1} = 5.1$$

$$Array\ Gain = 10 \log\left[\frac{N_{ANT}}{N_{SS}}\right] = 10 \log\left[\frac{2}{1}\right] = 3.01\ dB$$

$$\boldsymbol{Directional\ gain} = G_{ANT} + Array\ Gain = 5.1 + 3.01 = \mathbf{8.11\ dB}$$

- For power measurements on IEEE 802.11 devices:

$$Array\ Gain = 0\ dB\ for\ N_{ANT} \leq 4$$

$$\boldsymbol{Directional\ gain} = G_{ANT} + Array\ Gain = 5.1 + 0 = \mathbf{5.10\ dB}$$

POWER ADJUSTMENT (*): 8 dBm

TEST FREQUENCIES (*):

Technology Tested:	WLAN (IEEE 802.11 a,n,ac,ax) 2x2 / U-NII-1	
	802.11 n HT20: MCS0 to MCS23 (MIMO 2x2)	
	802.11 n HT40: MCS0 to MCS23 (MIMO 2x2)	
	802.11 ac VHT20: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ac VHT40: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ac VHT80: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ax HE20: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
	802.11 ax HE40: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
	802.11 ax HE80: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
Setting of cores / ports:	3+4	
Beamforming:	No.	
Frequency Range:	5150 MHz to 5250 MHz	
Channel Spacing:	20 MHz	
Transmit Channels	Channel	Channel Frequency (MHz)
	Low: 36	5180
	Middle: 40	5200
	High: 48	5240
Channel Spacing:	40 MHz	
Transmit Channels	Channel	Channel Frequency (MHz)
	Low: 38	5190
	High: 46	5230
Channel Spacing:	80 MHz	
Transmit Channels	Middle: 42	5210

* The EUT does not support the Middle Channel of 802.11ax HE20 (OFDMA MCS0) SU modulation.

The test set-up was made in accordance to the general provisions of FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode on the lowest and highest channels at the rated power for the channel under test.

For all modes, the EUT was configured in test mode using a software application. The application was used to enable a continuous transmission and to select the test channels as required. The client supplied instructions to configure the EUT. The customer supplied a document containing the setup instructions.

The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing that correspond to next data rates:

- 802.11 n HT20: MCS0
- 802.11 n HT40: MCS0
- 802.11 ac VHT20: MCS0
- 802.11 ac VHT40: MCS0
- 802.11 ac VHT80: MCS0
- 802.11 ax HE20: MCS0
- 802.11 ax HE40: MCS0
- 802.11 ax HE80: MCS0

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.

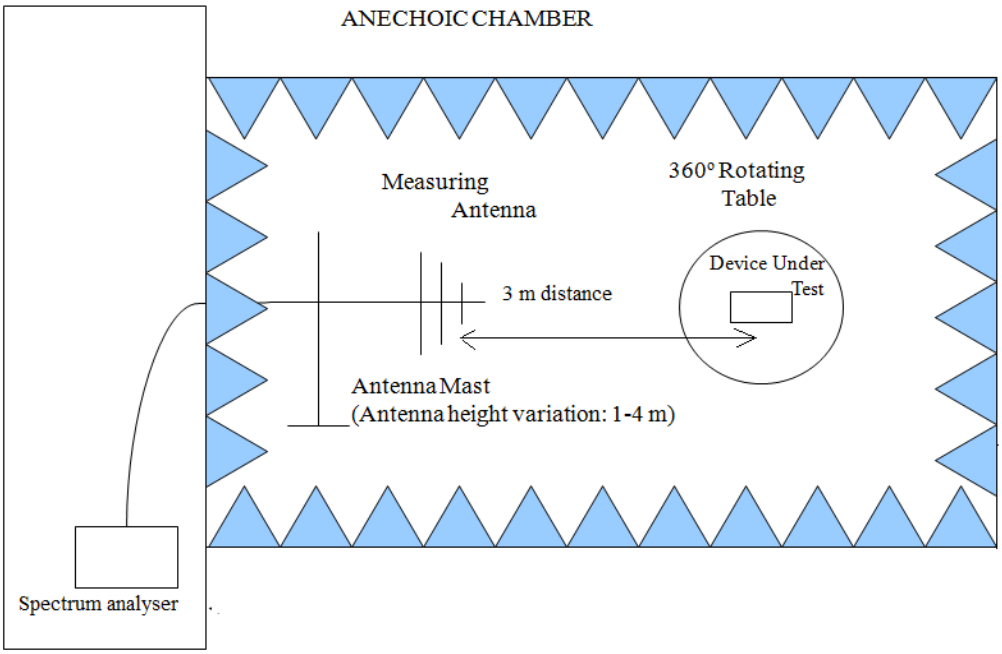
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find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

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

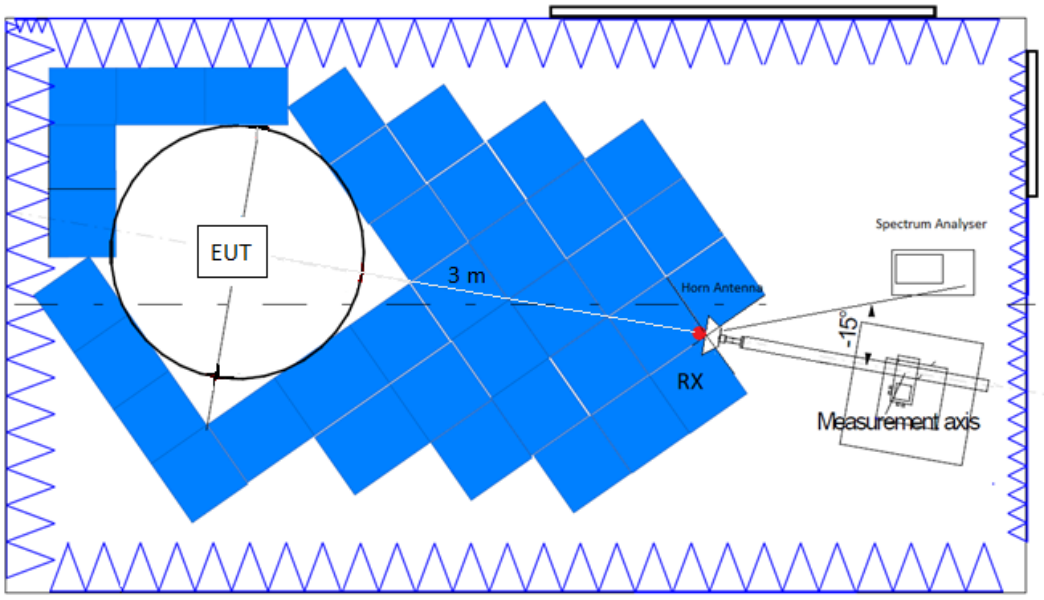
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

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.

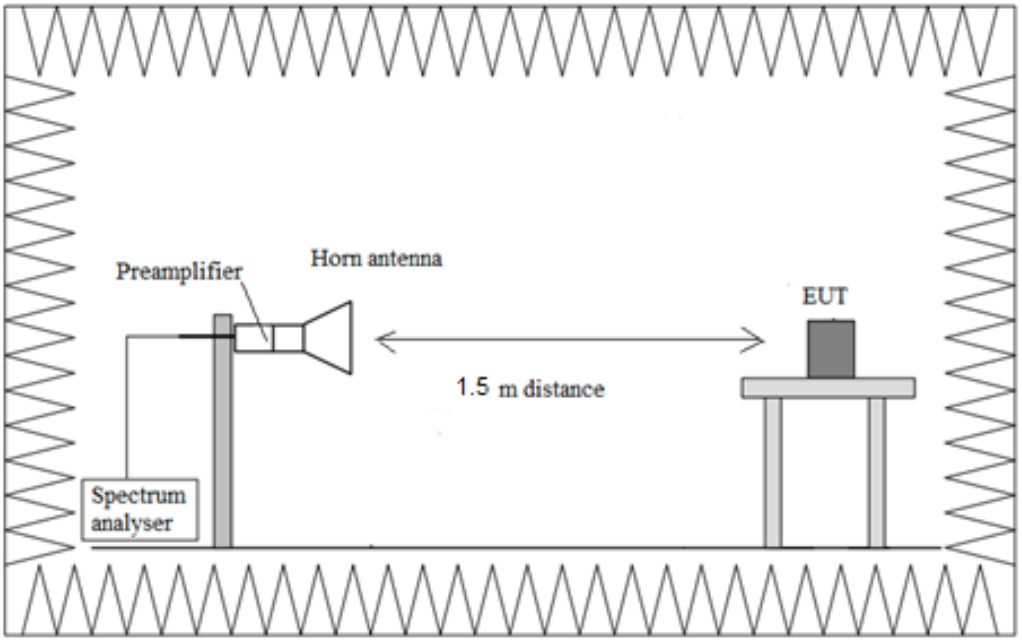
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup f > 17 GHz:



TEST CASES DETAILS

FCC 47 CFR Part 15.407

FCC 15.407 (a)(1) Maximum Conducted output power UNII-1

Limits

* FCC 15.407: For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Results

Worst case channel and modulation only.

Modulation: 802.11ac VHT40 (OFDM MCS0)

MIMO Mode: MIMO CDD Mode 2x2

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5150, 5250]	3+4	5230.00000	No	8.00	13.10

Verdict

Pass

FCC 15.407 (b) (1) (6) Transmitter Out of Band Radiated Emissions For transmitters operating in the 5.15–5.25 GHz

Limits

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz (68.23 dBµV/m at 3 m distance).

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

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)	-	300
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	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.

Results

Spurious emissions were evaluated for the worst-case modes within each modulation family, including OFDM-based modulations (802.11g/n/ac) and OFDMA modulations (802.11ax). The modes with the highest power spectral density were selected for testing, as specified in ANSI C63.10-2013 Section 5.6.2.2 (b).

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.

Frequency range 30 MHz – 1 GHz:

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

Spurious frequencies detected less than 20 dB below the limit:

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	3+4	[0.03, 1]	5180.00000	79.567	24.14	V	PK
				79.567	21.56	V	QP
				600.020	31.94	V	PK
				600.020	29.22	V	QP
				727.188	24.19	H	PK
				727.188	18.46	H	QP

Verdict

Pass

Attachments

Operation Band MHz = [5150, 5250]

Frequency Range GHz = [0.03, 1]

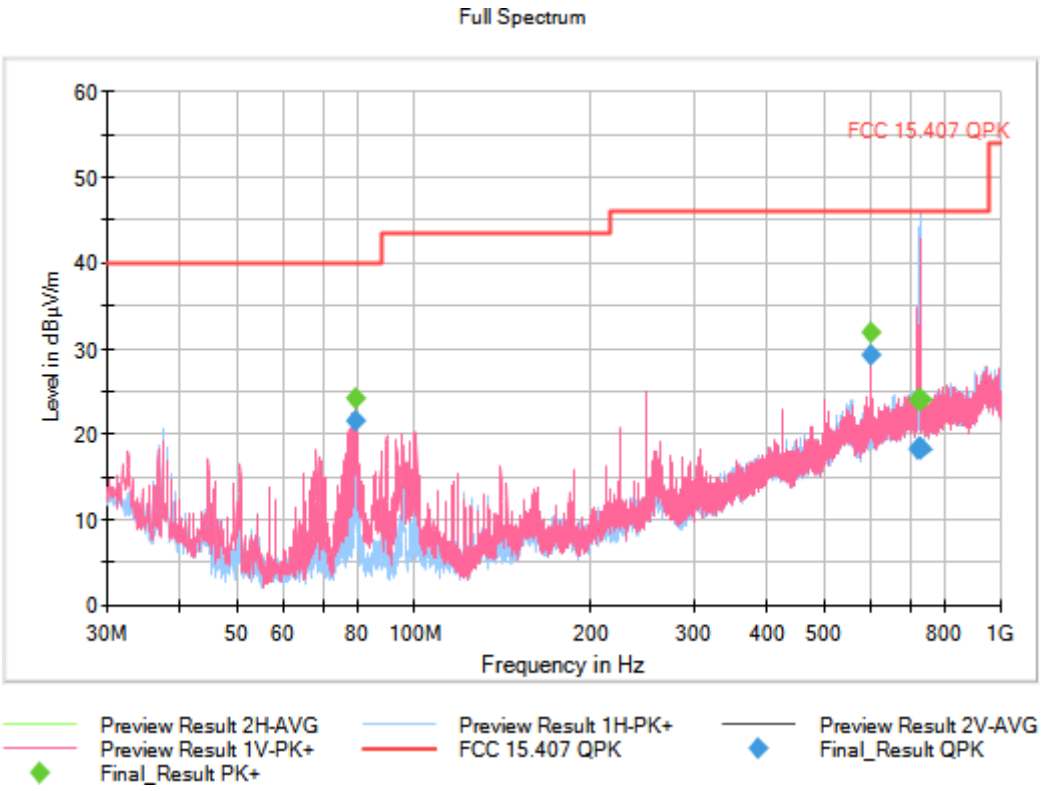
Modulation = The spurious frequencies detected do not depend on the modulation.

Active Port = 3+4

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

MIMO Mode = MIMO CDD Mode 2x2

Images:



Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	50 kHz	PK+	100 kHz	0,01 s	0 dB

Frequency range 1 GHz – 17 GHz:

Modulation: 802.11n HT20 (OFDM MCS0) (worst-case OFDM modulation)

MIMO Mode: MIMO CDD Mode 2x2

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

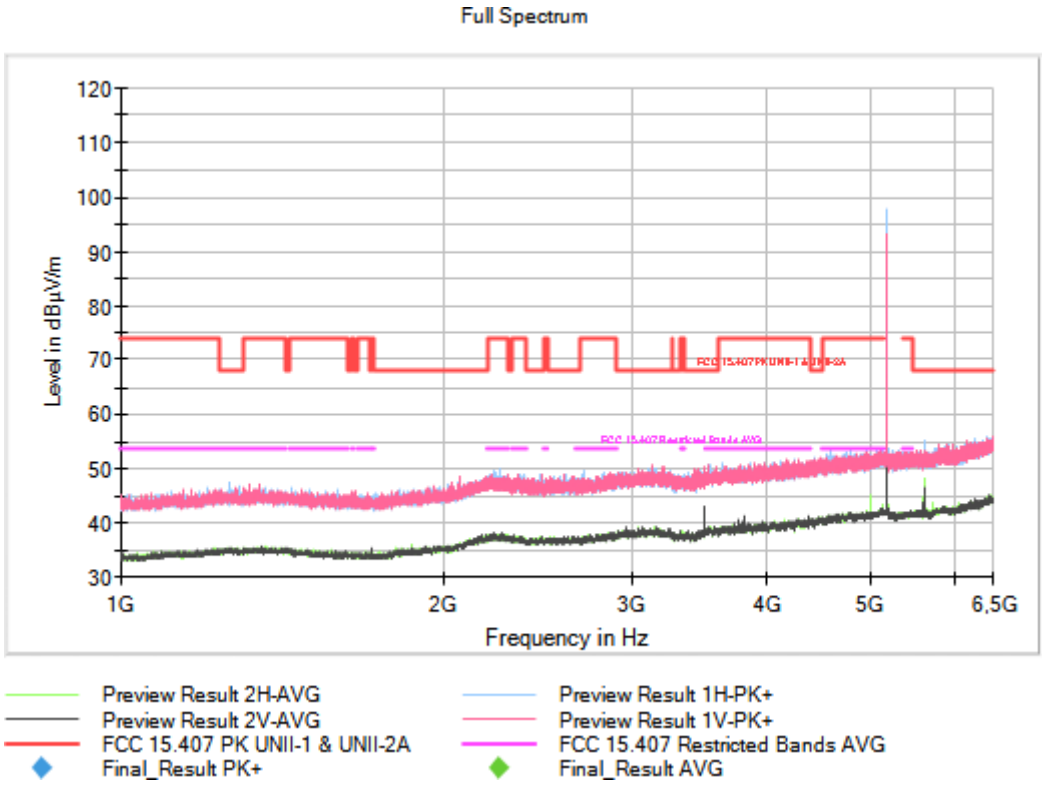
Verdict

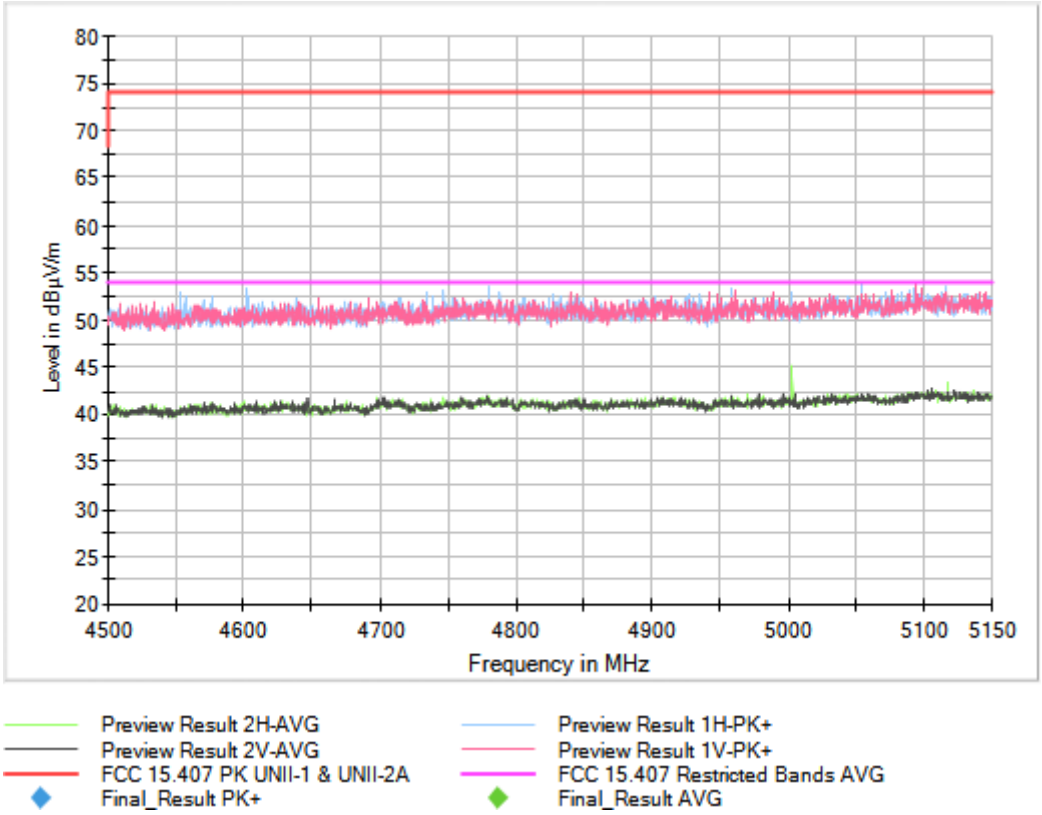
Pass

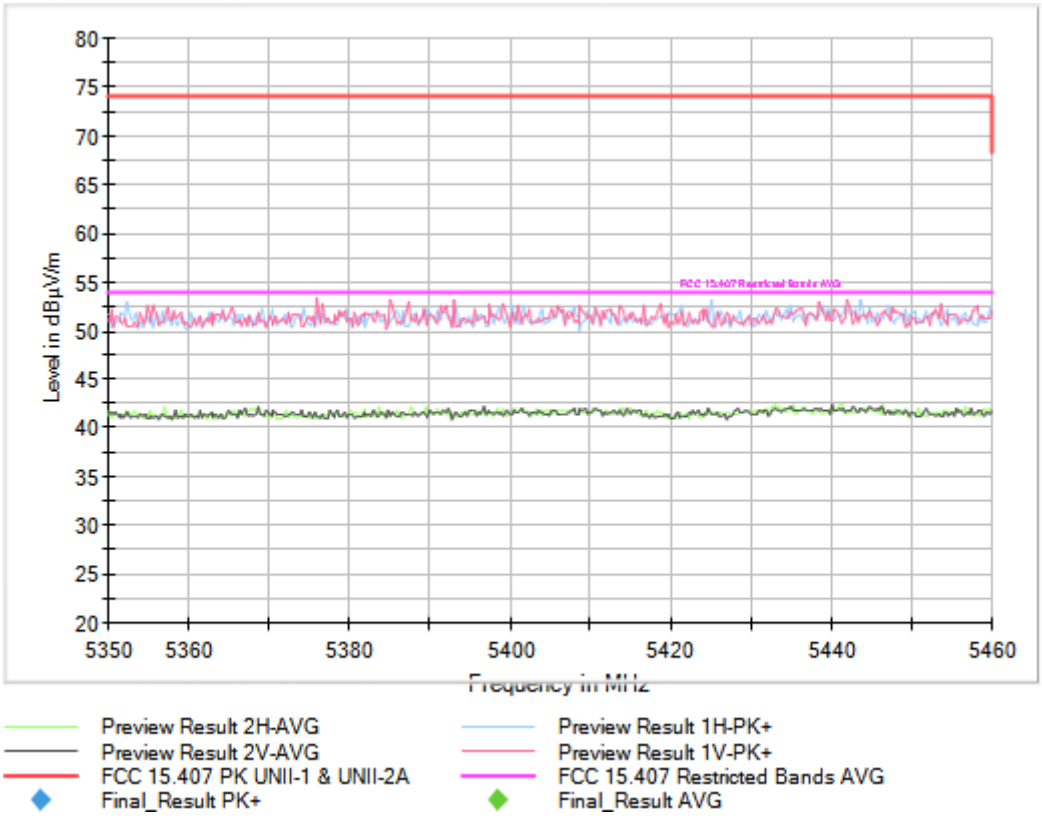
Attachments

Operation Band MHz = [5150, 5250]	Active Port = 3+4
Frequency Range GHz = [1, 6.5]	Frequency MHz = 5180.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = MIMO CDD Mode 2x2

Images:

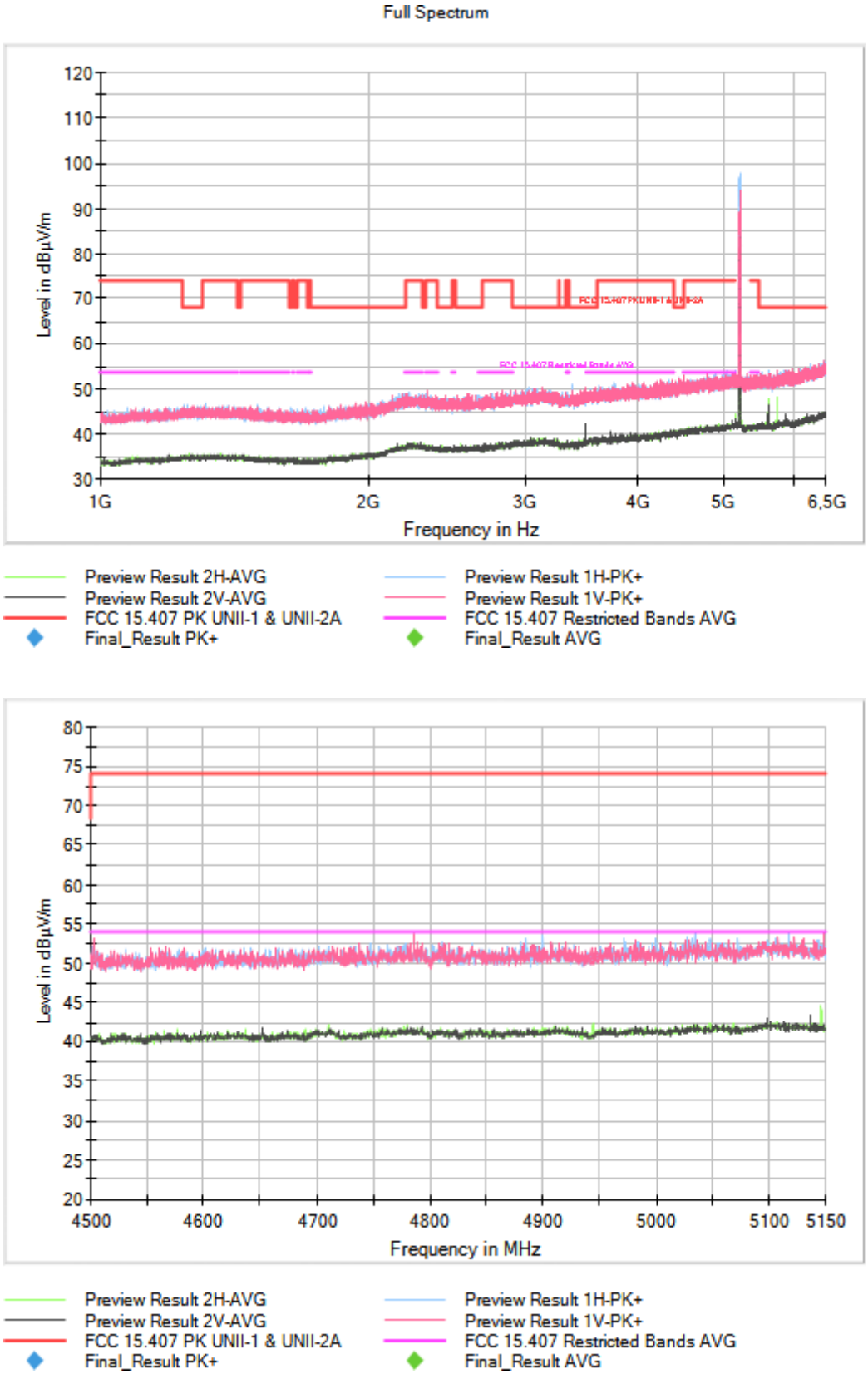


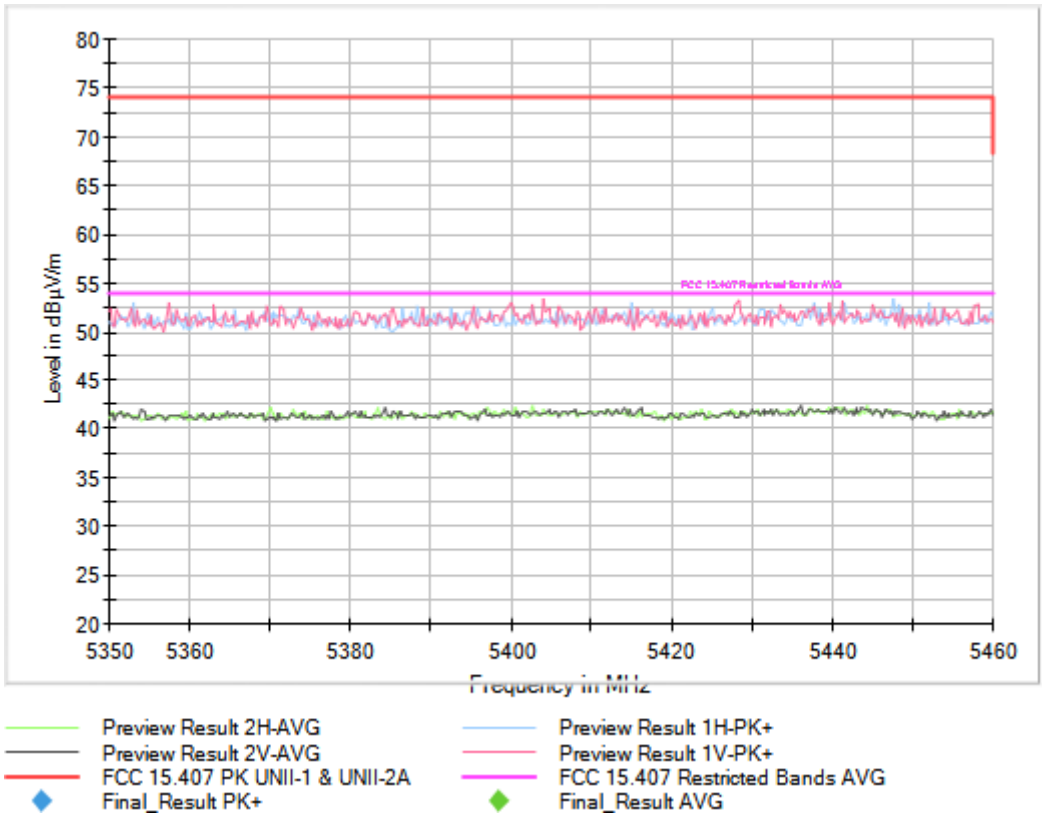

Level in dBµV/m
Frequency in MHz
Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG


Level in dBµV/m
Frequency in MHz
Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Operation Band MHz = [5150, 5250]	Active Port = 3+4
Frequency Range GHz = [1, 6.5]	Frequency MHz = 5220.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = MIMO CDD Mode 2x2

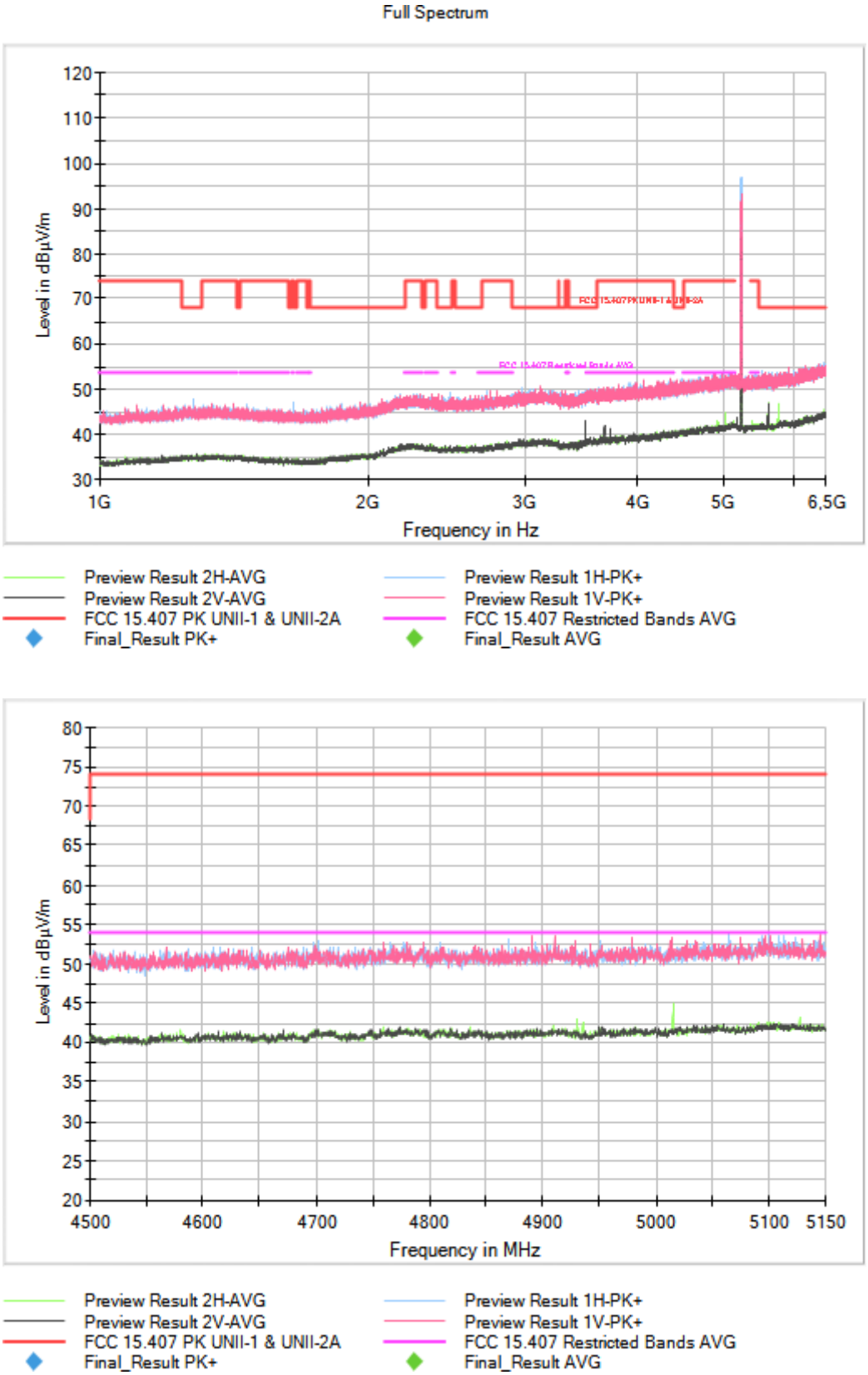
Images:

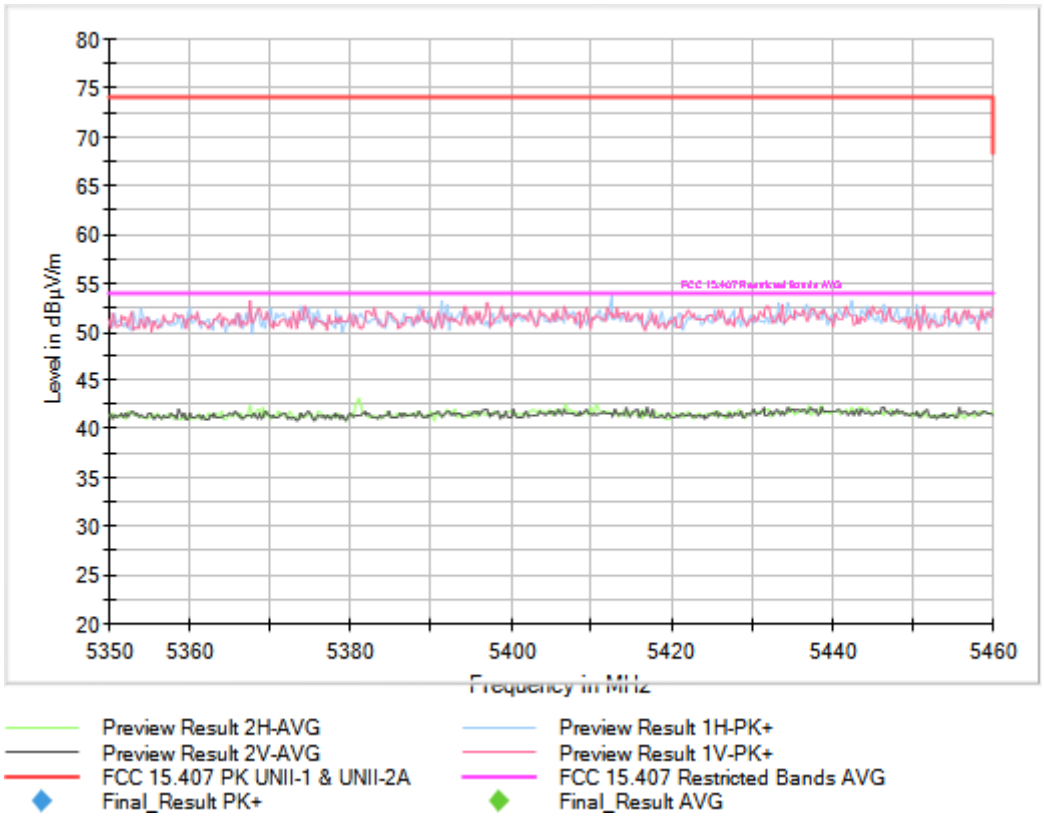



80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBµV/m
5350
5360
5380
5400
5420
5440
5460
Frequency in MHz
Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Operation Band MHz = [5150, 5250]	Active Port = 3+4
Frequency Range GHz = [1, 6.5]	Frequency MHz = 5240.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = MIMO CDD Mode 2x2

Images:




80
75
70
65
60
55
50
45
40
35
30
25
20
Level in dBµV/m
5350
5360
5380
5400
5420
5440
5460
Frequency in MHz
Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Modulation: 802.11ax HE40 (OFDMA MCS0) – RU (worst-case OFDMA modulation)

MIMO Mode: MIMO CDD Mode 2x2

Spurious frequencies detected less than 20 dB below the limit:

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	3+4	[1, 6.5]	5180.00000	4988.325	59.09	H	PK
				4988.325	48.02	H	QP

Verdict

Pass

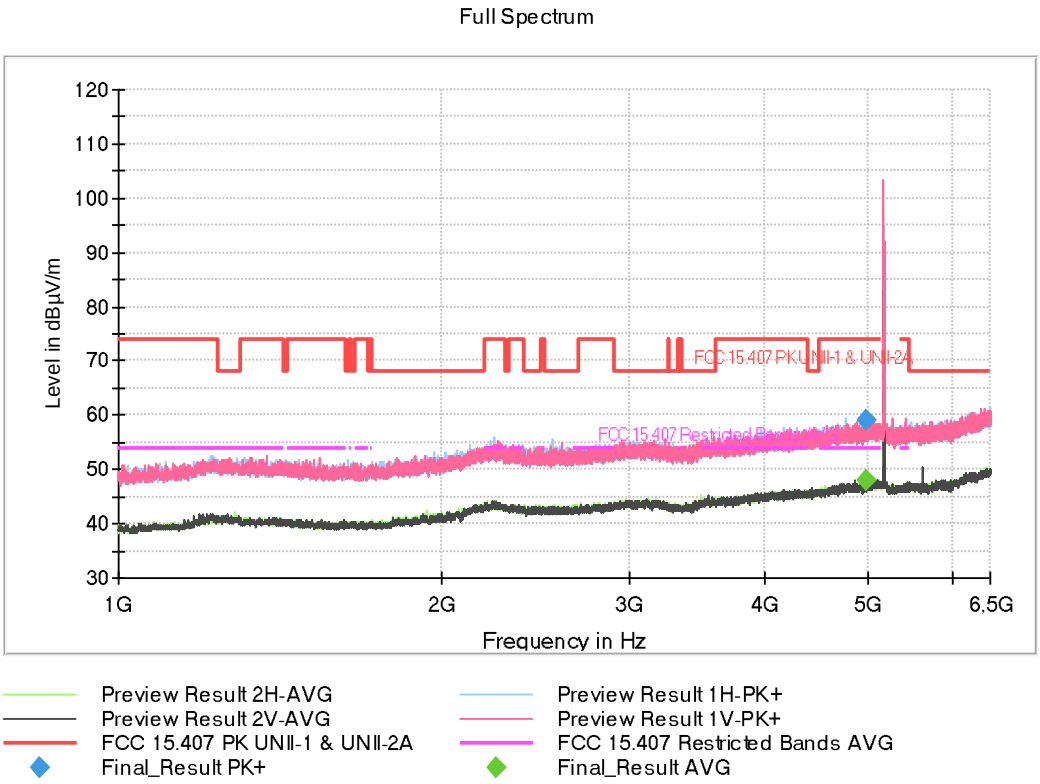
Attachments

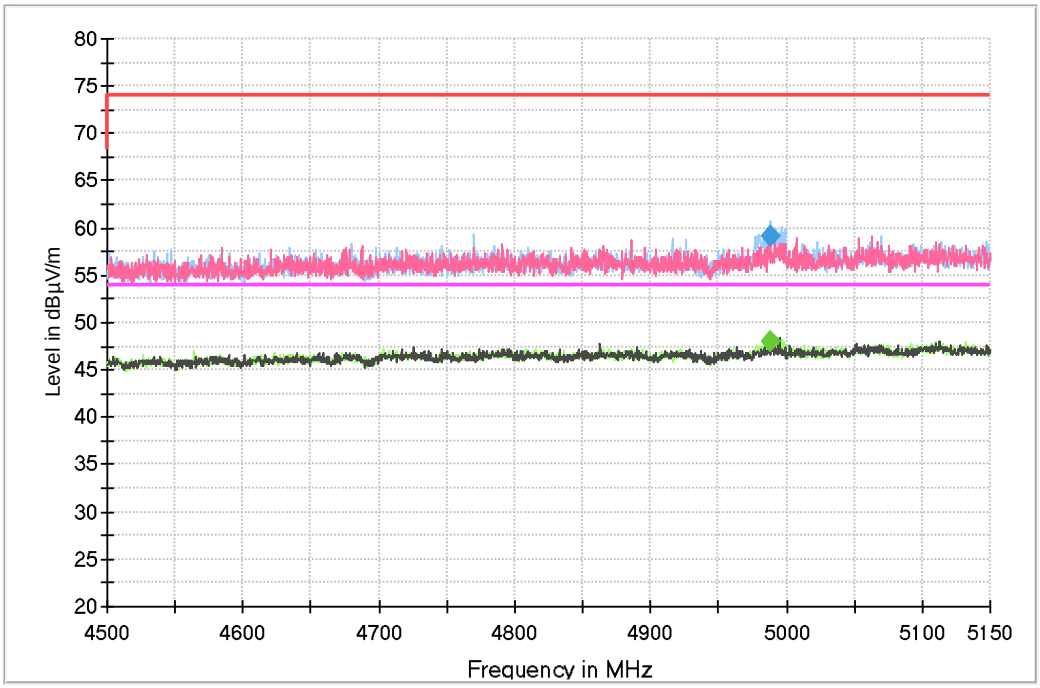
Operation Band MHz = [5150, 5250] Active Port = 3+4

Frequency Range GHz = [1, 6.5] Frequency MHz = 5190.00000

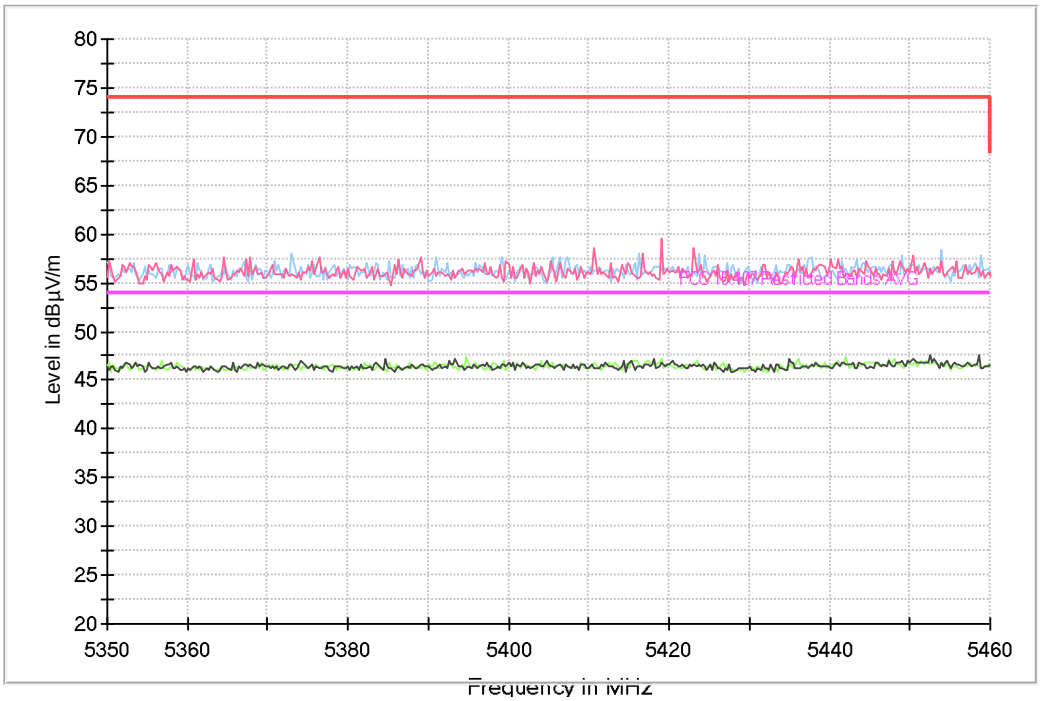
Modulation = 802.11ax HE40 (OFDMA MCS0) – RU MIMO Mode = MIMO CDD Mode 2x2

Images:





Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

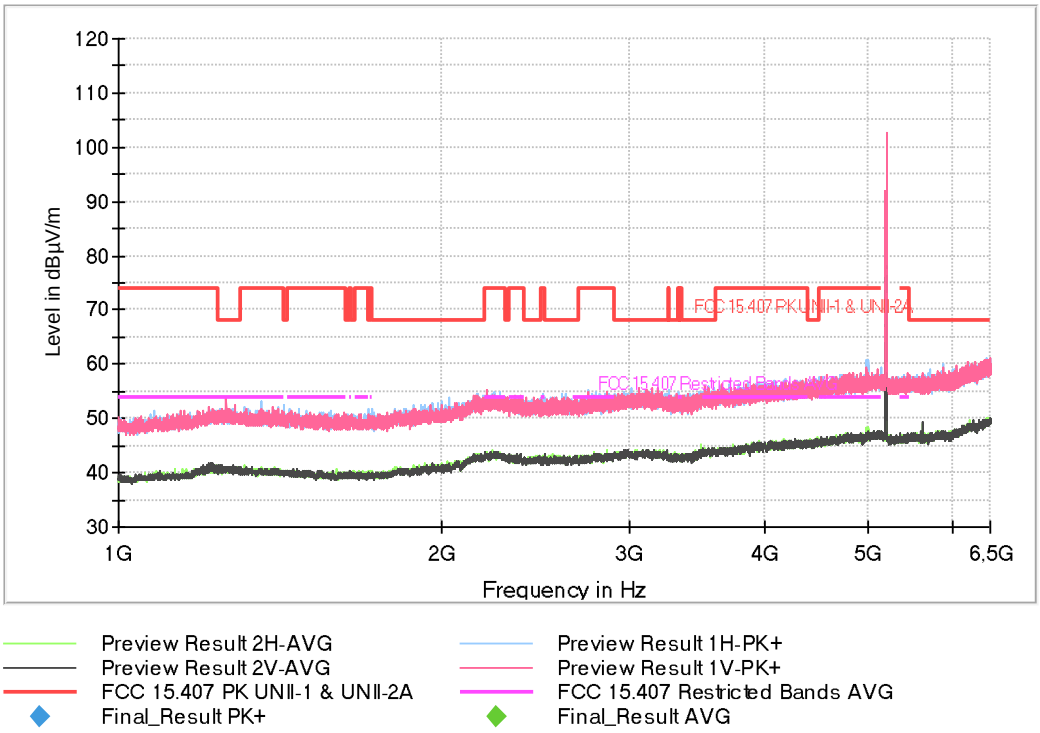


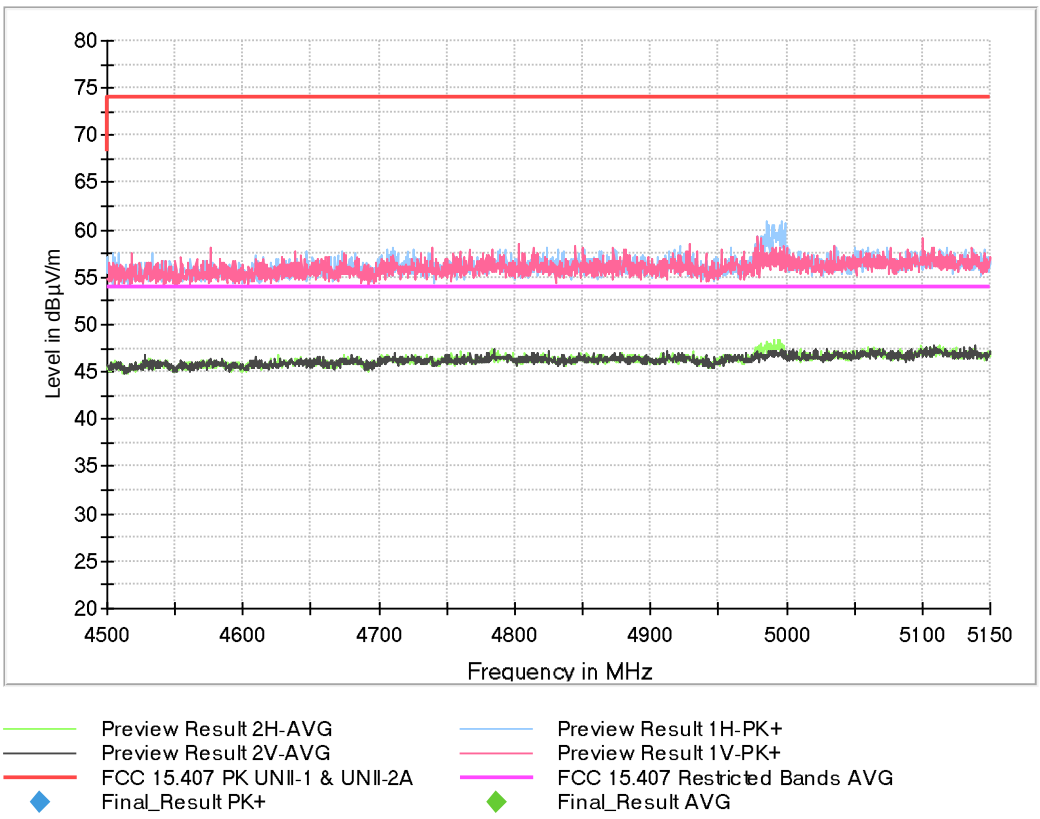
Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-1 & UNII-2A
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

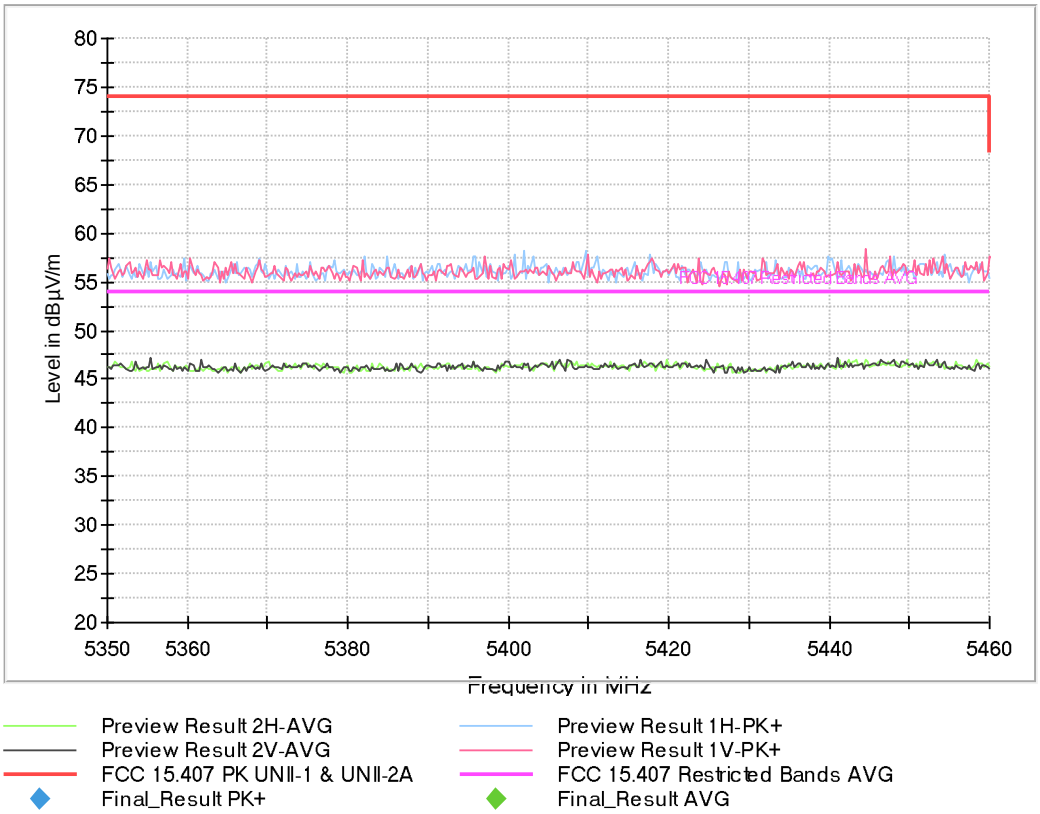
Operation Band MHz = [5150, 5250]
Active Port = 3+4
Frequency Range GHz = [1, 6.5]
Frequency MHz = 5230.00000
Modulation = 802.11ax HE40 (OFDMA MCS0) – RU
MIMO Mode = MIMO CDD Mode 2x2

Images:

Full Spectrum







Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 6,5 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
6,5 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Frequency range 17 GHz – 40 GHz:

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

Operation Band MHz = [5150, 5250]

Frequency Range GHz = [17, 40]

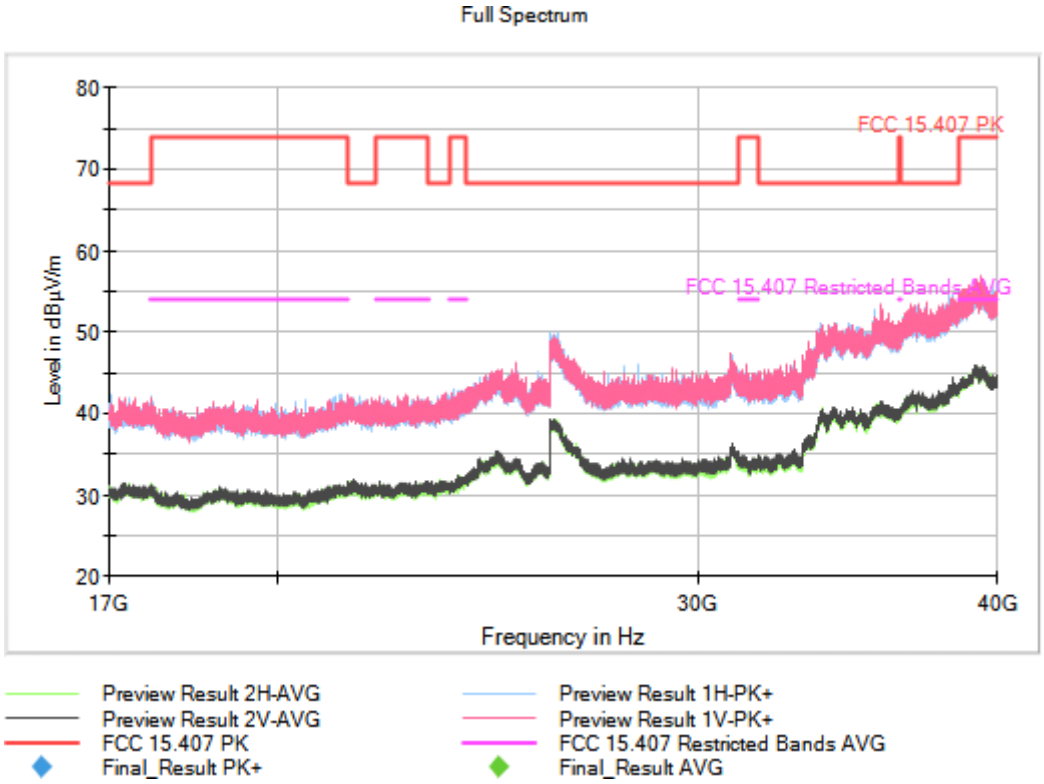
Modulation = The spurious frequencies detected do not depend on the modulation.

Active Port = 3+4

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

MIMO Mode = MIMO CDD Mode 2x2

Images:



Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
17 GHz - 40 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Appendix B: Tests results for the U-NII-3 Band 5.725 - 5.85 GHz

INDEX

TEST CONDITIONS

(*): Data provided by the client.

POWER SUPPLY (*):

Vnominal:	12 Vdc
Type of Power Supply:	Vehicle battery

ANTENNA (*):

Type of Antenna:	External

Directional Antenna Gain Calculations for CDD MIMO In-Band Measurements:

For 2Tx CDD MIMO modes, in accordance with KDB 662911 D01 v02r01 Section F)2)f)(i), directional gain was calculated as follows:

- For power spectral density (PSD) measurements on all devices:

$$N_{SS} = 1, N_{ANT} = 2, G_{ANT0} = 5.1, G_{ANT1} = 5.1$$

$$Array\ Gain = 10 \log\left[\frac{N_{ANT}}{N_{SS}}\right] = 10 \log\left[\frac{2}{1}\right] = 3.01\ dB$$

$$\boldsymbol{Directional\ gain} = G_{ANT} + Array\ Gain = 5.1 + 3.01 = \mathbf{8.11\ dB}$$

- For power measurements on IEEE 802.11 devices:

$$Array\ Gain = 0\ dB\ for\ N_{ANT} \leq 4$$

$$\boldsymbol{Directional\ gain} = G_{ANT} + Array\ Gain = 5.1 + 0 = \mathbf{5.10\ dB}$$

POWER ADJUSTMENT (*): 8 dBm

TEST FREQUENCIES (*):

Technology Tested:	WLAN (IEEE 802.11 a,n,ac,ax) 2x2 / U-NII-3	
	802.11 n HT20: MCS0 to MCS23 (MIMO 2x2)	
	802.11 n HT40: MCS0 to MCS23 (MIMO 2x2)	
	802.11 ac VHT20: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ac VHT40: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ac VHT80: MCS0 to MCS9 (MIMO 2x2)	
	802.11 ax HE20: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
	802.11 ax HE40: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
	802.11 ax HE80: MCS0 to MCS11 (MIMO 2x2) – SU/RU	
Setting of cores / ports:	3+4	
Beamforming:	No.	
	5725 MHz to 5850 MHz	
Power Settings:	13 dBm	
Operating Channel Bandwidth:	20 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Low (149)	5745
	Middle (157)	5785
	High (165)	5825
Operating Channel Bandwidth:	40 MHz	
Transmission Channels:	Channel	Channel Frequency (MHz)
	Low (151)	5755
	High (159)	5795
Operating Channel Bandwidth:	80 MHz	
Transmission Channels:	Single (155)	5775

* The EUT does not support the Middle Channel of 802.11ax HE20 (OFDMA MCS0) SU modulation.

The test set-up was made in accordance to the general provisions of FCC Unlicensed National Information Infrastructure (U-NII) Devices 789033 D02 General U-NII Test Procedures New Rules v02r01 dated Dec 14, 2017.

The EUT was tested in the following operating mode:

- Continuously transmitting with a modulated carrier at maximum power in all required channels using the supported data rates/modulations types.

The field strength at the band edges was evaluated for each mode on the lowest and highest channels at the rated power for the channel under test.

For all modes, the EUT was configured in test mode using a software application. The application was used to enable a continuous transmission and to select the test channels as required. The client supplied instructions to configure the EUT. The customer supplied a document containing the setup instructions.

The worst cases for testing were identified for output power and spurious levels at the band edges which were selected based on preliminary testing that correspond to next data rates:

- 802.11 n HT20: MCS0
- 802.11 n HT40: MCS0
- 802.11 ac VHT20: MCS0
- 802.11 ac VHT40: MCS0
- 802.11 ac VHT80: MCS0
- 802.11 ax HE20: MCS0
- 802.11 ax HE40: MCS0
- 802.11 ax HE80: MCS0

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.

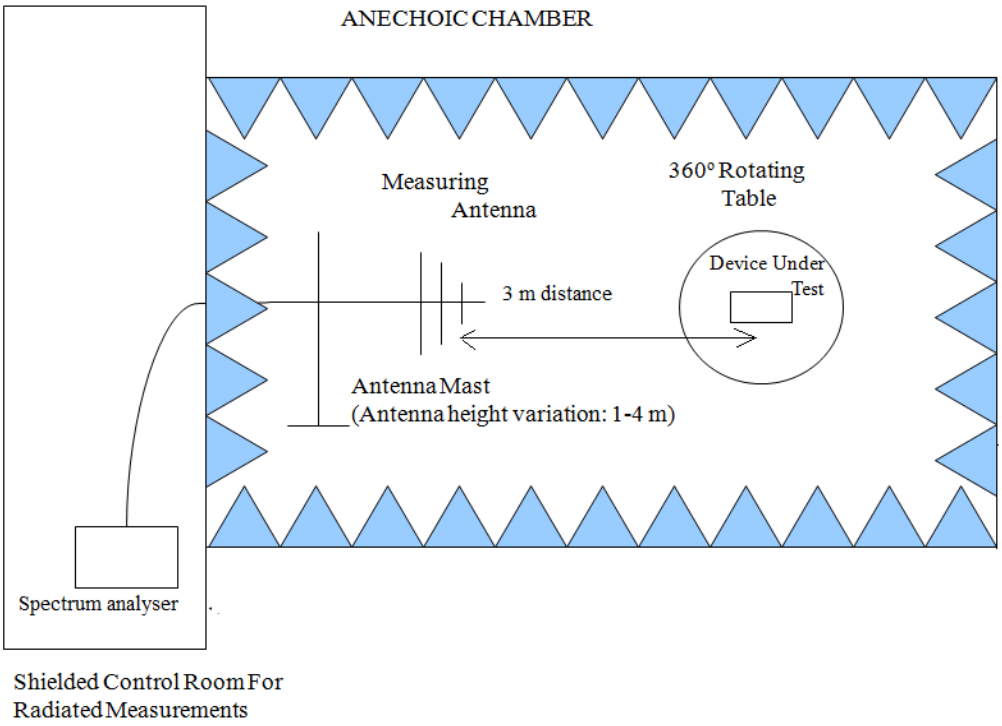
The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height (Bilog antenna and Double ridge horn antenna) was varied from 1 to 4 meters to find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

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

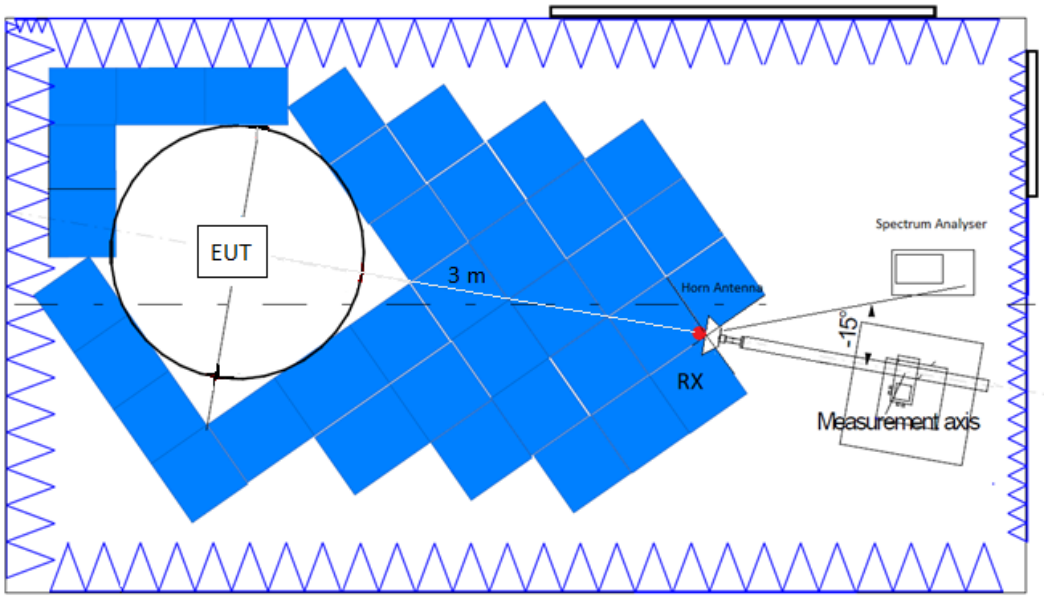
The final measured value, for the given emission, in the tables below incorporates the calibrated antenna factor and cable loss.

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.

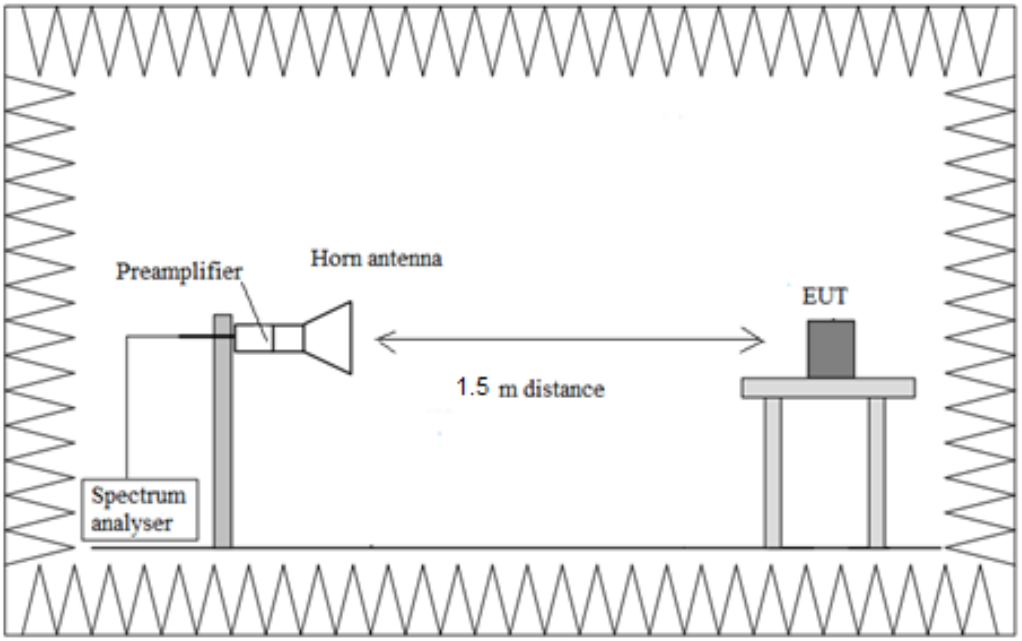
Radiated measurements setup from 30 MHz to 1 GHz:



Radiated measurements setup from 1 GHz to 17 GHz:



Radiated measurements setup f > 17 GHz:



FCC 15.407 (a) (3) Maximum Conducted output power UNII-3

Limits

* FCC 15.407: For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Results

Worst case channel and modulation only.

Modulation: 802.11ac VHT40 (OFDM MCS0)

MIMO Mode: MIMO CDD Mode 2x2

Operation Band (MHz)	Port	Freq (MHz)	TPC	Avg Power (dBm)	Max EIRP (dBm)
[5725, 5850]	3+4	5795.00000	No	6.75	11.85

Verdict

Pass

FCC 15.407 (b) (4) (6) Transmitter Out of Band Radiated Emissions For transmitters operating solely in the 5.725-5.850 GHz band

Limits

* FCC 15.407: For transmitters operating in the 5.725–5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz (68.23 dBµV/m at 3 m distance) at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

Frequency Range (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Measurement distance (m)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705 - 30.0	30	-	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
960 - 40000	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.

Results

Spurious emissions were evaluated for the worst-case modes within each modulation family, including OFDM-based modulations (802.11g/n/ac) and OFDMA modulations (802.11ax). The modes with the highest power spectral density were selected for testing, as specified in ANSI C63.10-2013 Section 5.6.2.2 (b).

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.

Frequency range 30 MHz – 1 GHz:

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

Spurious frequencies detected less than 20 dB below the limit:

Operation Band (MHz)	Port	Freq Rng (GHz)	Freq (MHz)	Unwanted Freq (MHz)	Unwanted Lvl (dBµV/m)	Pol	Detector
[5150, 5250]	3+4	[0.03, 1]	5745.00000	79.567	24.14	V	PK
				79.567	21.56	V	QP
				600.020	31.94	V	PK
				600.020	29.22	V	QP
				727.188	24.19	H	PK
				727.188	18.46	H	QP

Verdict

Pass

Attachments

Operation Band MHz = [5150, 5250]

Active Port = 3+4

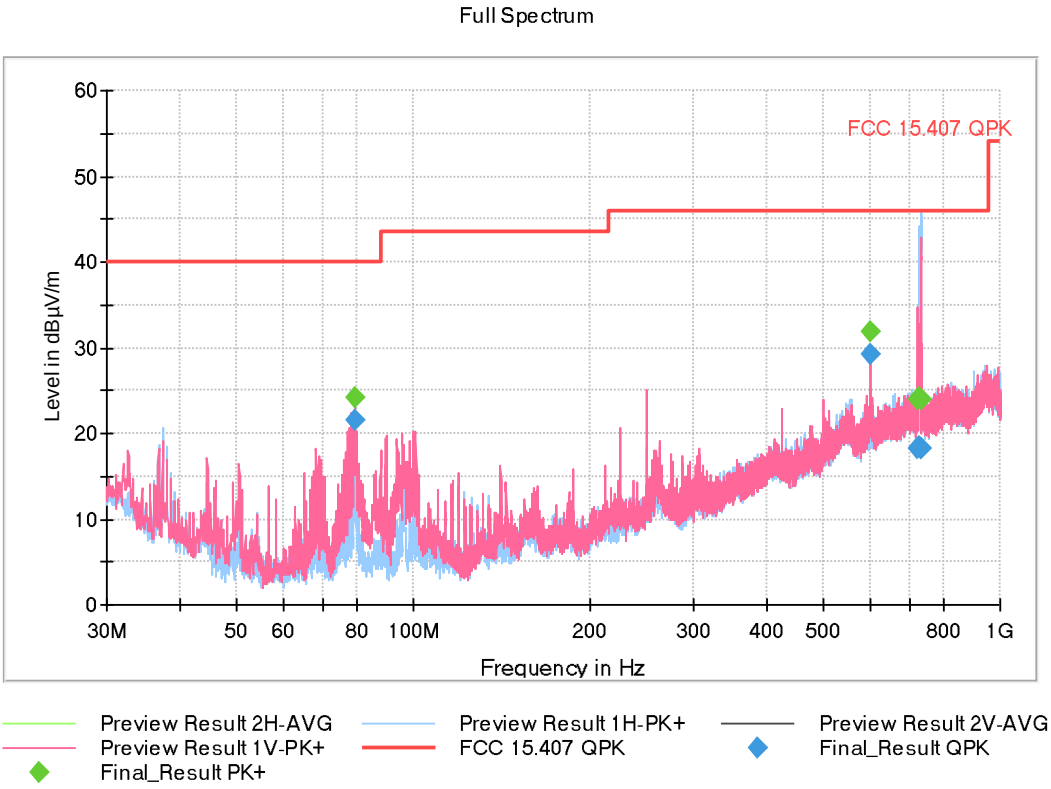
Frequency Range GHz = [0.03, 1]

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

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

MIMO Mode = MIMO CDD Mode 2x2

Images:



Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 1 GHz	50 kHz	PK+	100 kHz	0,01 s	0 dB

Frequency range 1 GHz – 17 GHz:

Modulation: 802.11n HT20 (OFDM MCS0) (worst-case OFDM modulation)

MIMO Mode: MIMO CDD Mode 2x2

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

Verdict

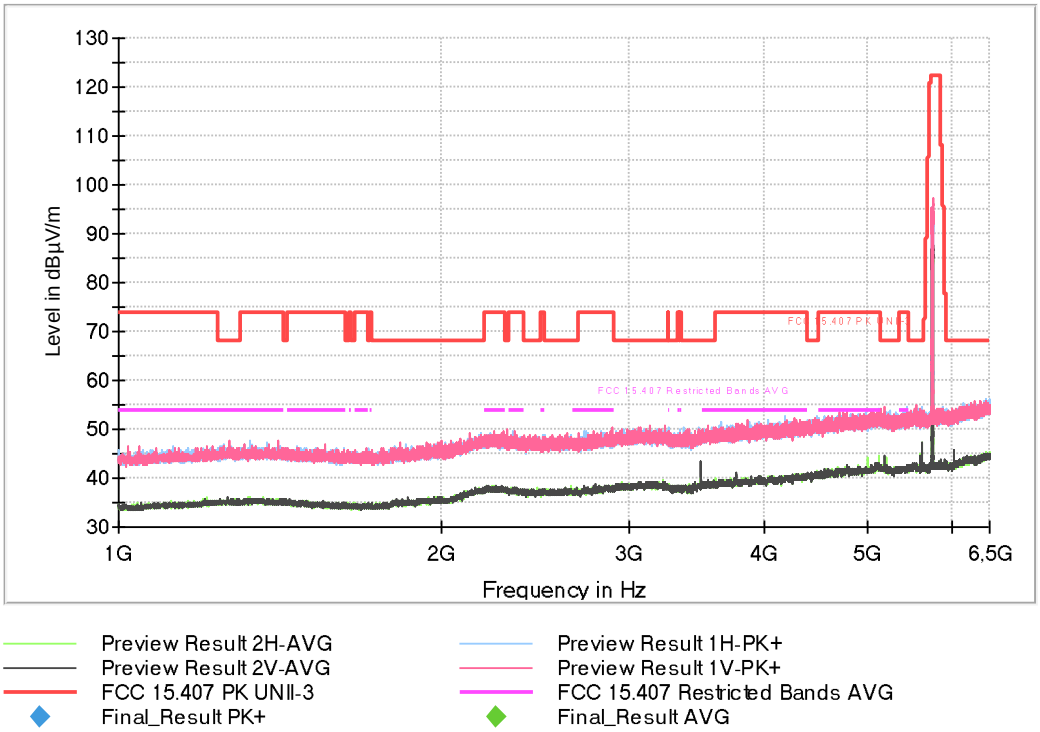
Pass

Attachments

Operation Band MHz = [5725, 5850]	Active Port = 3+4
Frequency Range GHz = [1, 17]	Frequency MHz = 5745.00000
Modulation = 802.11n HT20 (OFDM MCS0)	MIMO Mode = MIMO CDD Mode 2x2

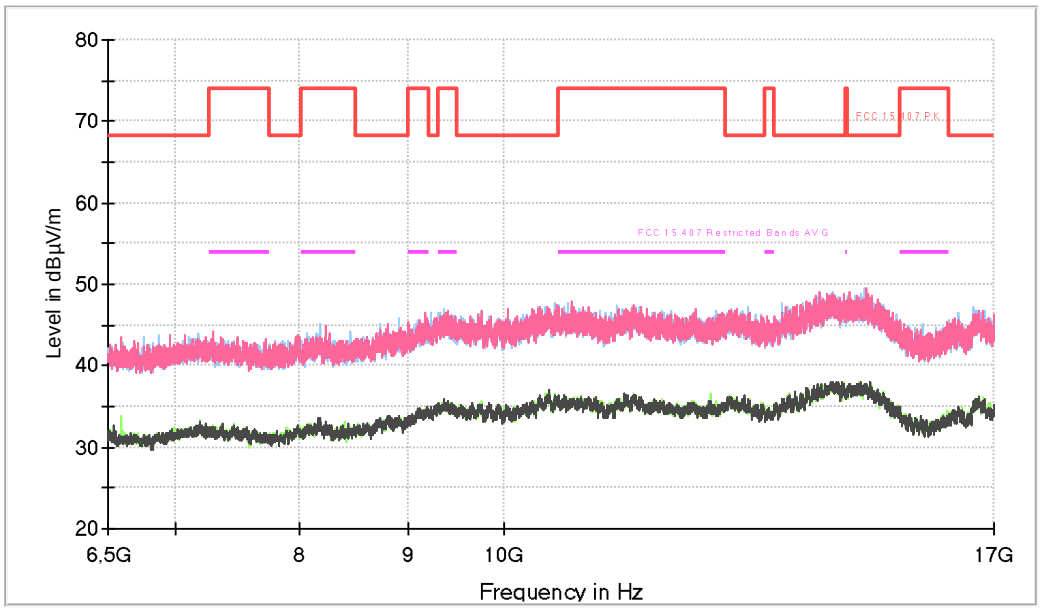
Images:

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-3
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

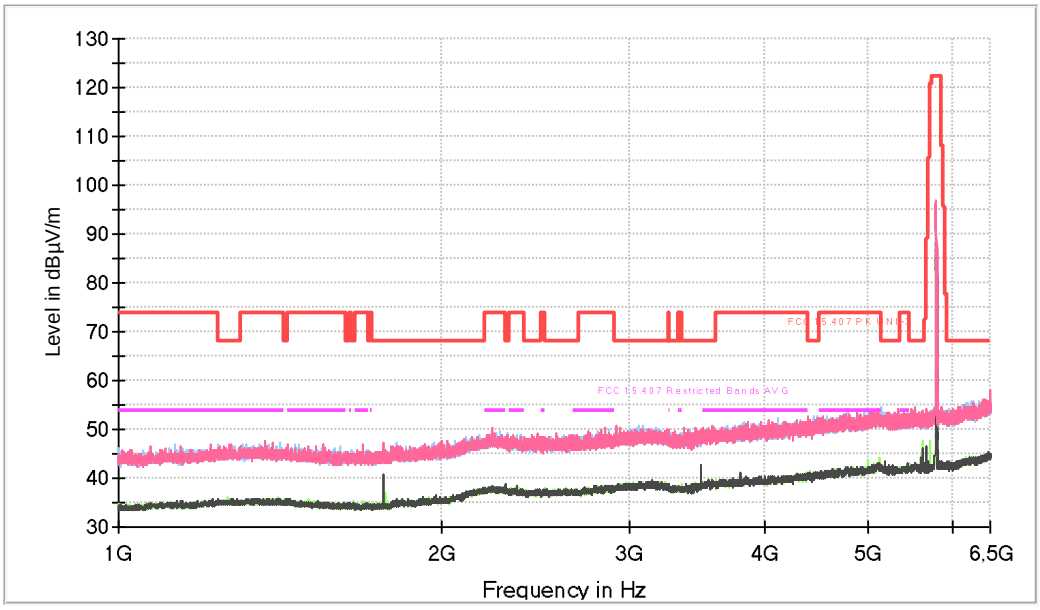
Operation Band MHz = [5725, 5850] Active Port = 3+4

Frequency Range GHz = [1, 17] Frequency MHz = 5785.00000

Modulation = 802.11n HT20 (OFDM MCS0) MIMO Mode = MIMO CDD Mode 2x2

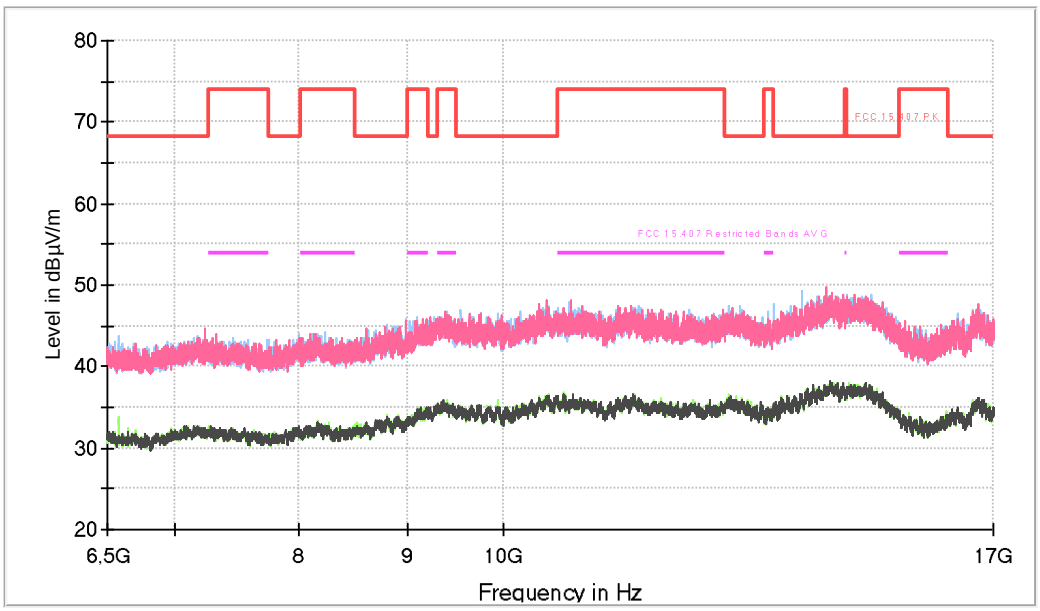
Images:

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-3
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

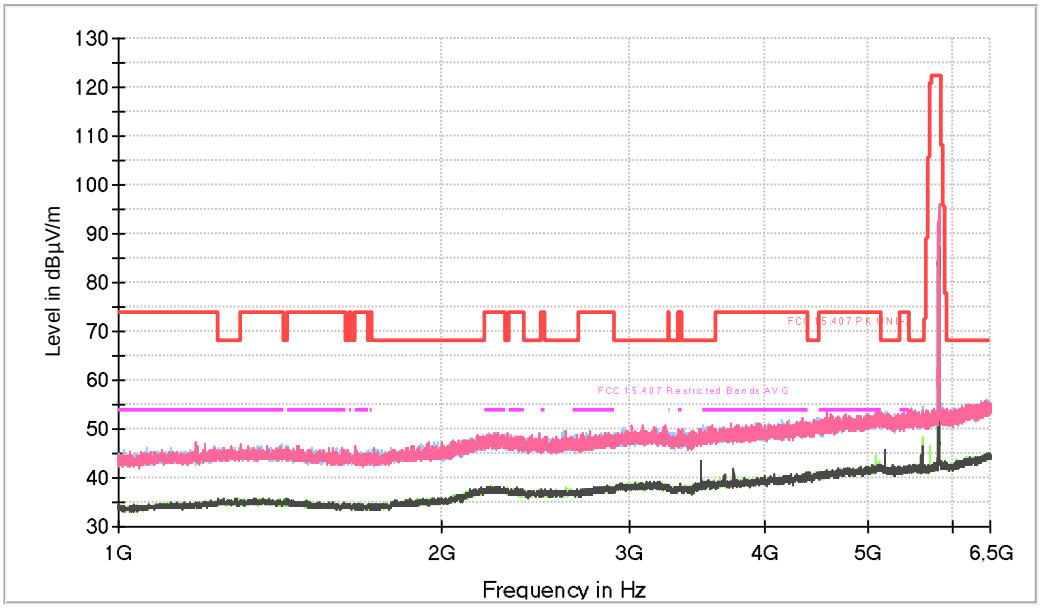
Operation Band MHz = [5725, 5850] Active Port = 3+4

Frequency Range GHz = [1, 17] Frequency MHz = 5825.00000

Modulation = 802.11n HT20 (OFDM MCS0) MIMO Mode = MIMO CDD Mode 2x2

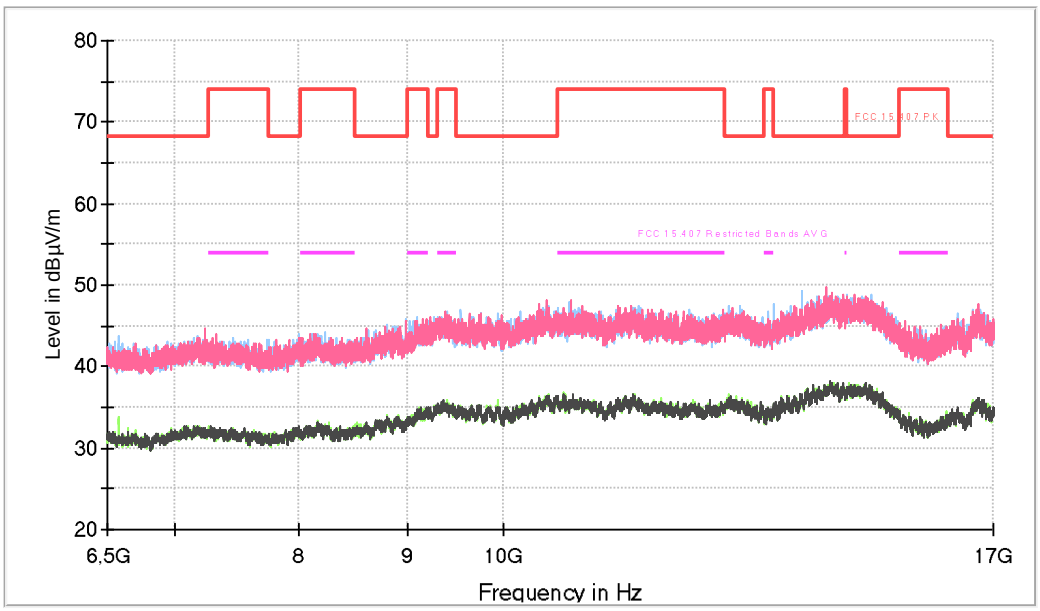
Images:

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-3
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 6,5 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
6,5 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Modulation: 802.11ax HE80 (OFDMA MCS0) – RU (worst-case OFDMA modulation)

MIMO Mode: MIMO CDD Mode 2x2

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

Verdict

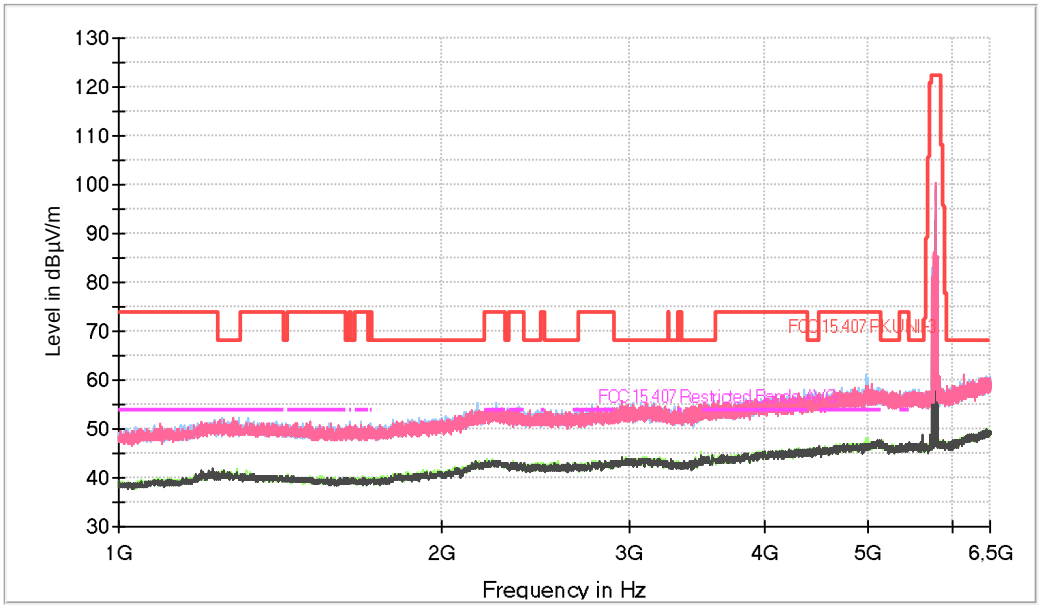
Pass

Attachments

Operation Band MHz = [5725, 5850]	Active Port = 3+4
Frequency Range GHz = [1, 6.5]	Frequency MHz = 5785.00000
Modulation = 802.11ax HE80 (OFDMA MCS0) – RU	MIMO Mode = MIMO CDD Mode 2x2

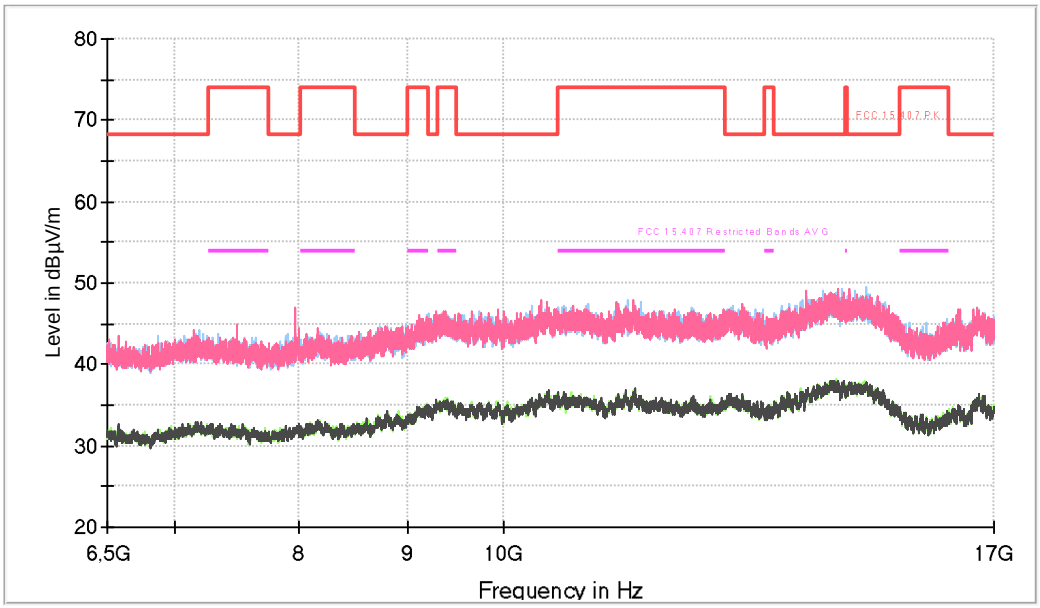
Images:

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK UNII-3
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Full Spectrum



Preview Result 2H-AVG
Preview Result 2V-AVG
FCC 15.407 PK
Final_Result PK+
Preview Result 1H-PK+
Preview Result 1V-PK+
FCC 15.407 Restricted Bands AVG
Final_Result AVG

Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 6,5 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
6,5 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

BAND EDGE EMISSIONS

Spurious emissions inside of the mask 5.65-5.925 GHz

Modulation: 802.11n HT20 (OFDM MCS0)

- Low Channel:

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

- Middle Channel:

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

- High Channel:

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

Modulation: 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

- Low Channel:

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

- High Channel:

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

Modulation: 802.11ac VHT20 (OFDM MCS0)

- Low Channel:

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

- Middle Channel:

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

- High Channel:

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

Modulation: 802.11ac VHT40 (OFDM MCS0)

- Low Channel:

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

- High Channel:

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

Modulation: 802.11ac VHT80 (OFDM MCS0)

- Single Channel:

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

Modulation: 802.11ax HE20 (OFDMA MCS0) – SU

- Low Channel:

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

- Middle Channel:

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

- High Channel:

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

Modulation: 802.11ax HE20 (OFDMA MCS0) – RU

- Low Channel:

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

- Middle Channel:

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

- High Channel:

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

Modulation: 802.11ax HE40 (OFDMA MCS0) – SU

- Low Channel:

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

- High Channel:

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

Modulation: 802.11ax HE40 (OFDMA MCS0) – RU

- Low Channel:

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

- High Channel:

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

Modulation: 802.11ax HE80 (OFDMA MCS0) – SU

- Single Channel:

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

Modulation: 802.11ax HE80 (OFDMA MCS0) – RU

- Single Channel:

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

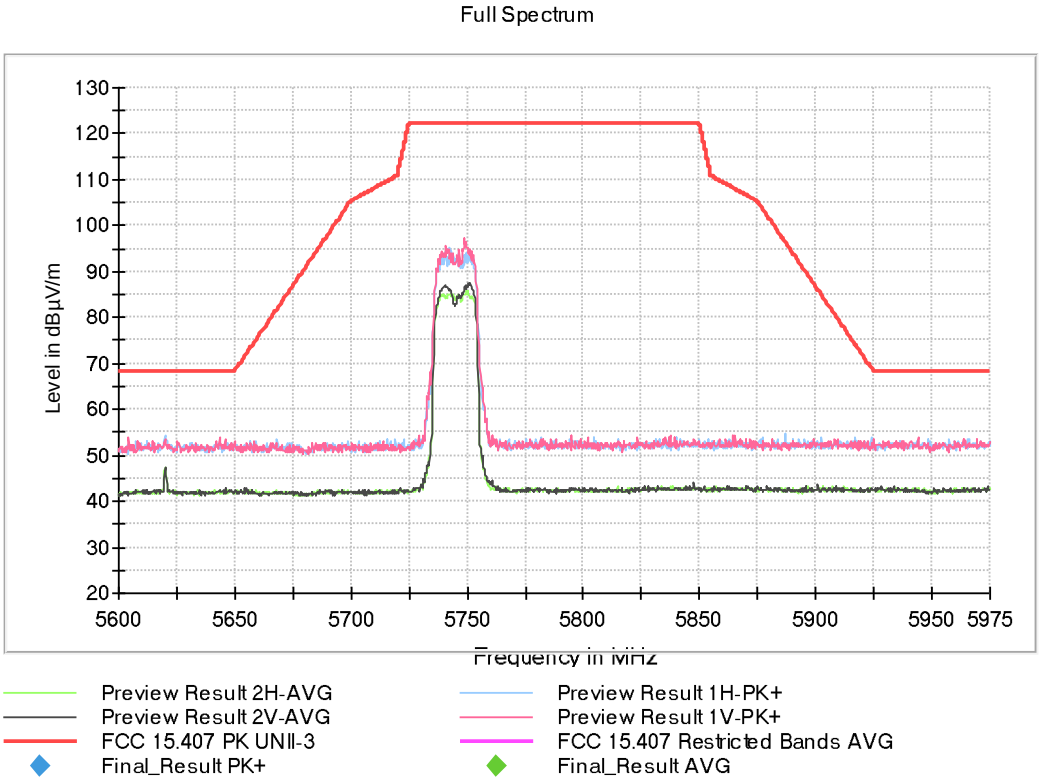
Verdict

Pass

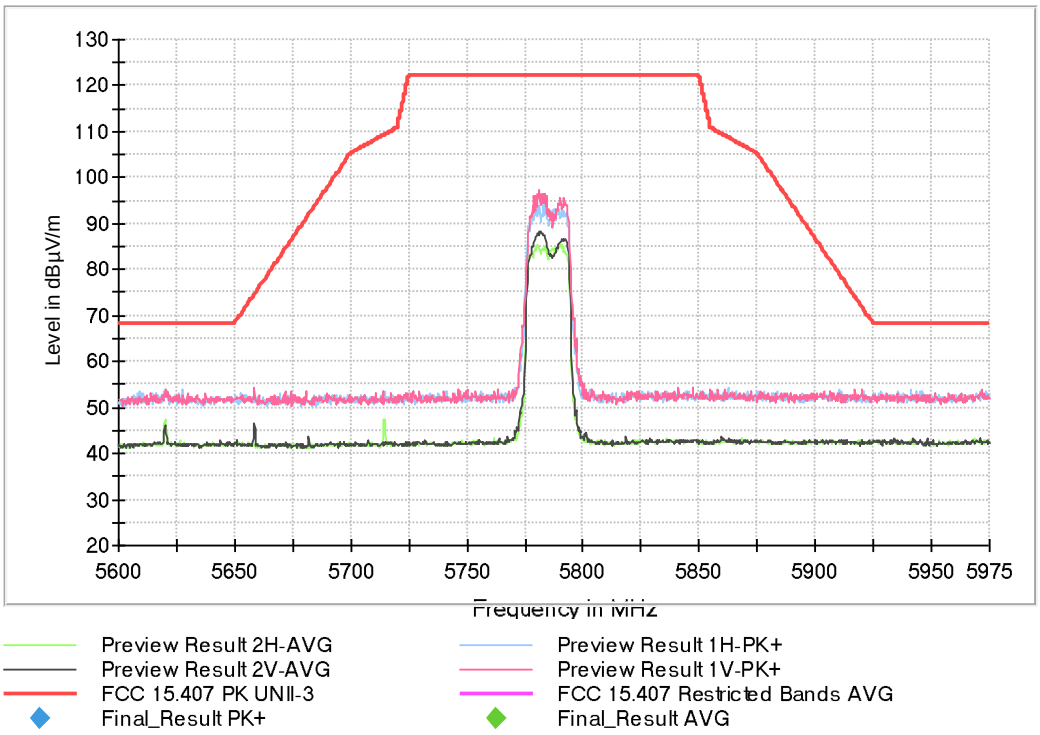
Attachments

Modulation: 802.11n HT20 (OFDM MCS0)

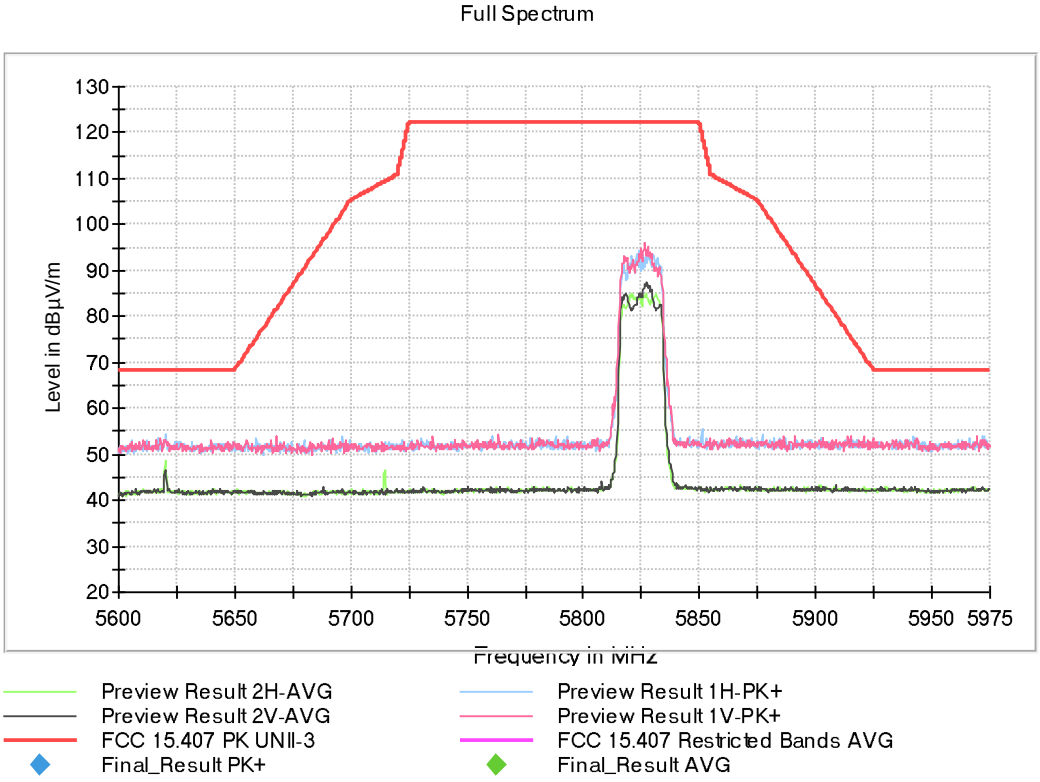
- Low Channel:



- Middle Channel:

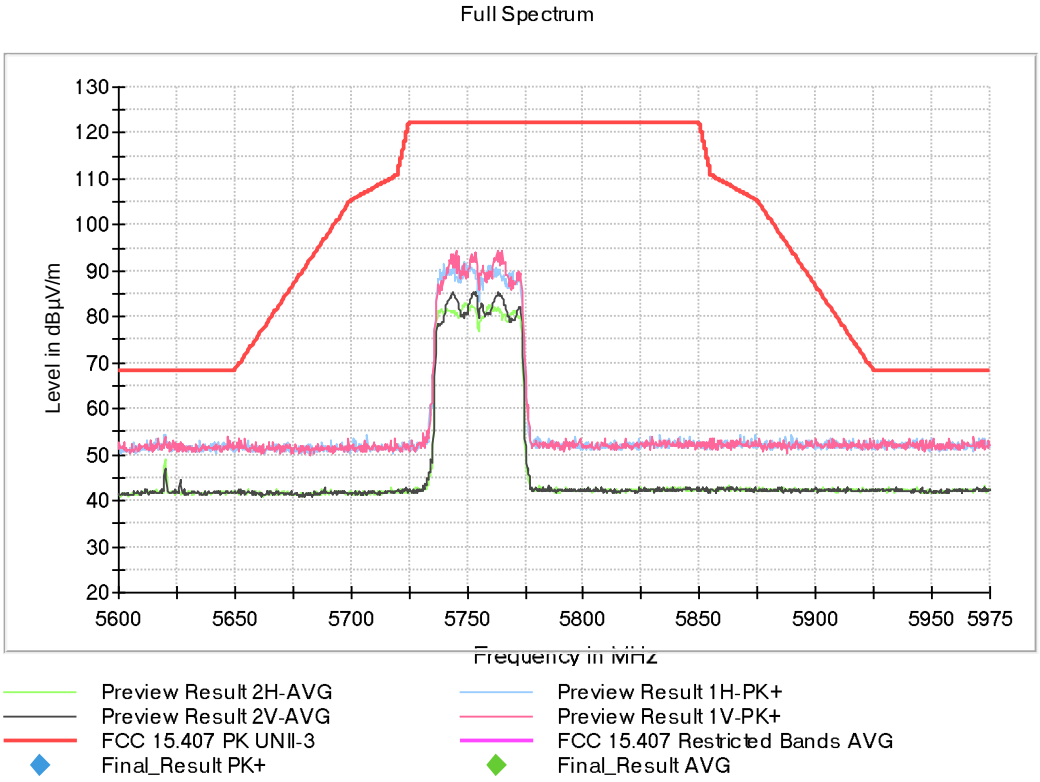


- High Channel:

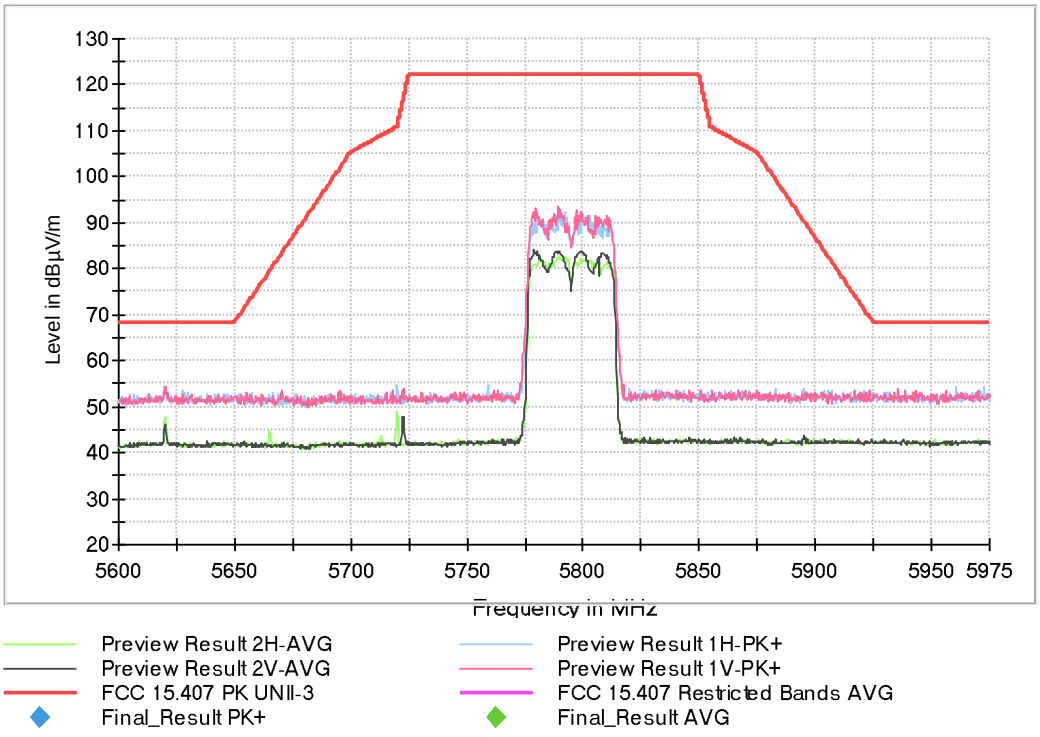


Modulation: 802.11n HT40 (OFDM MCS0 13.5 Mbit/s)

- Low Channel:

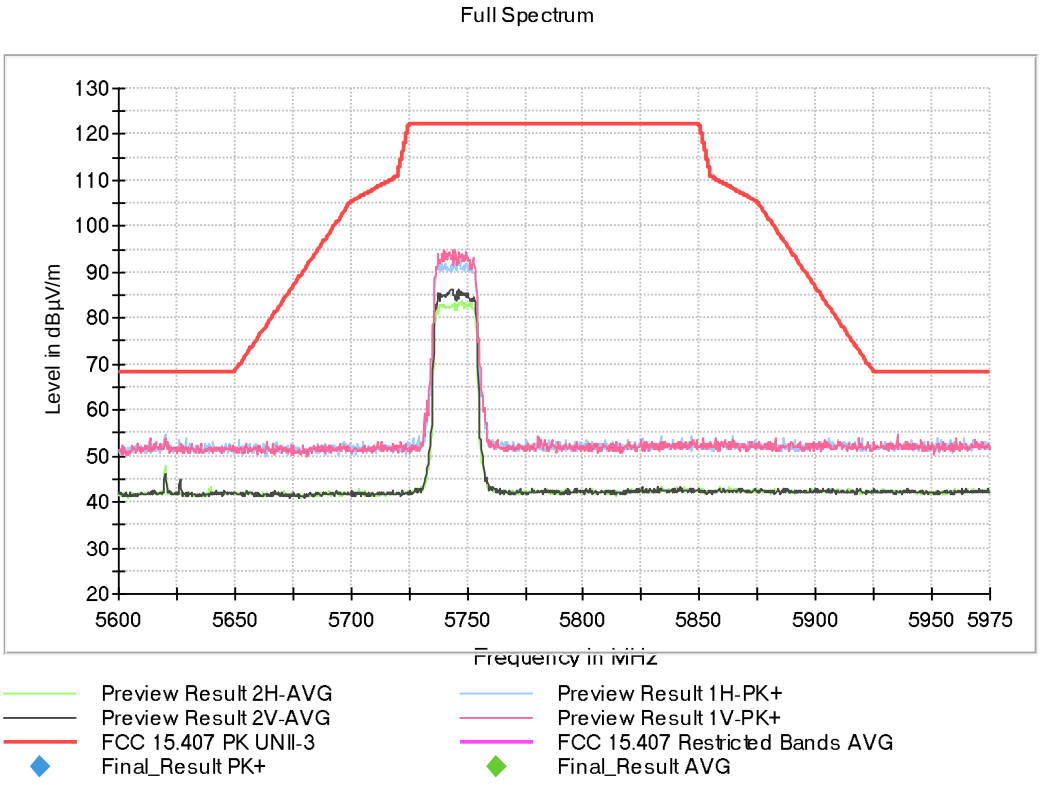


- High Channel:

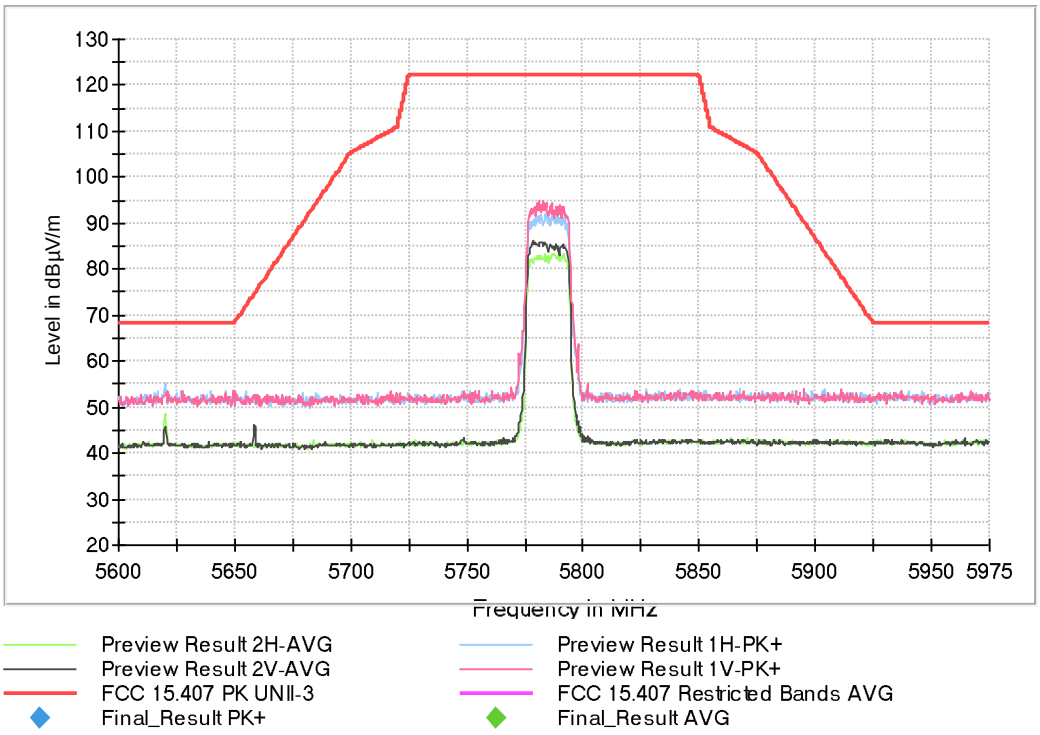


Modulation: 802.11ac VHT20 (OFDM MCS0)

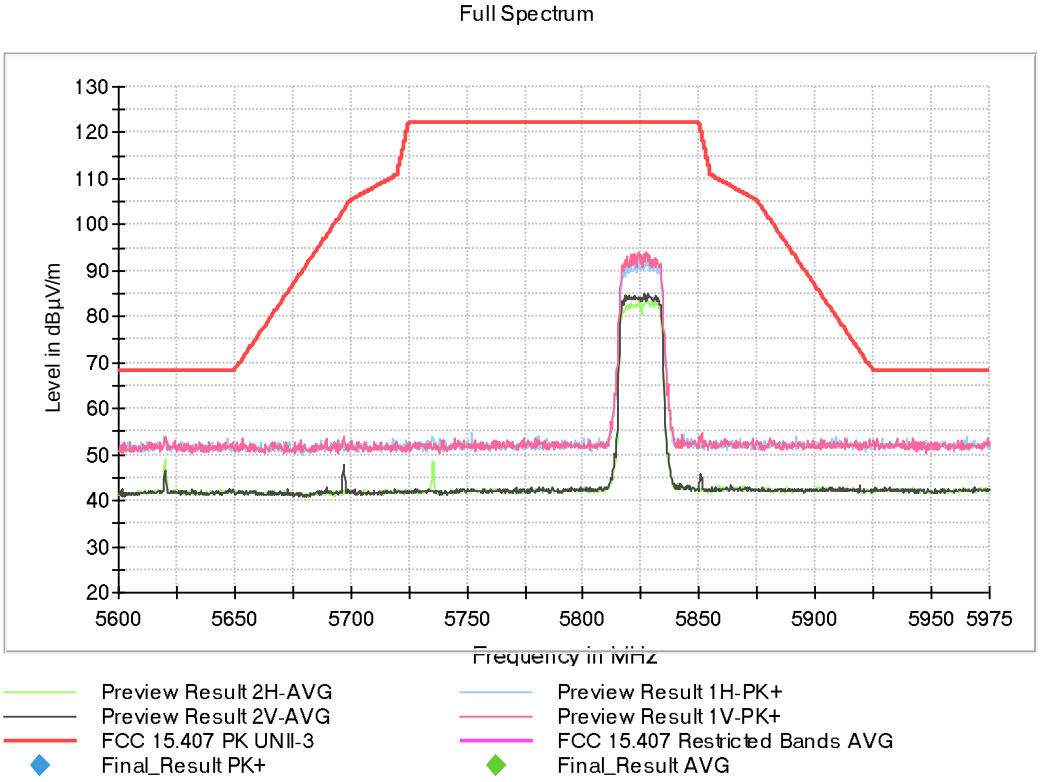
- Low Channel:



- Middle Channel:

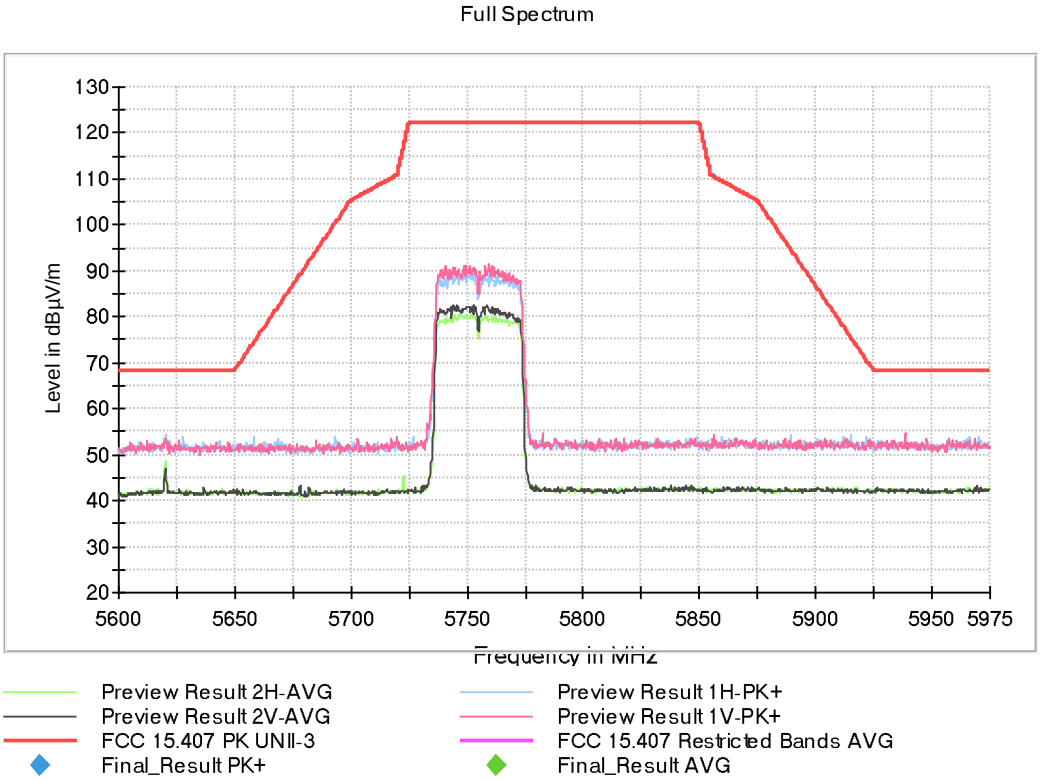


- High Channel:

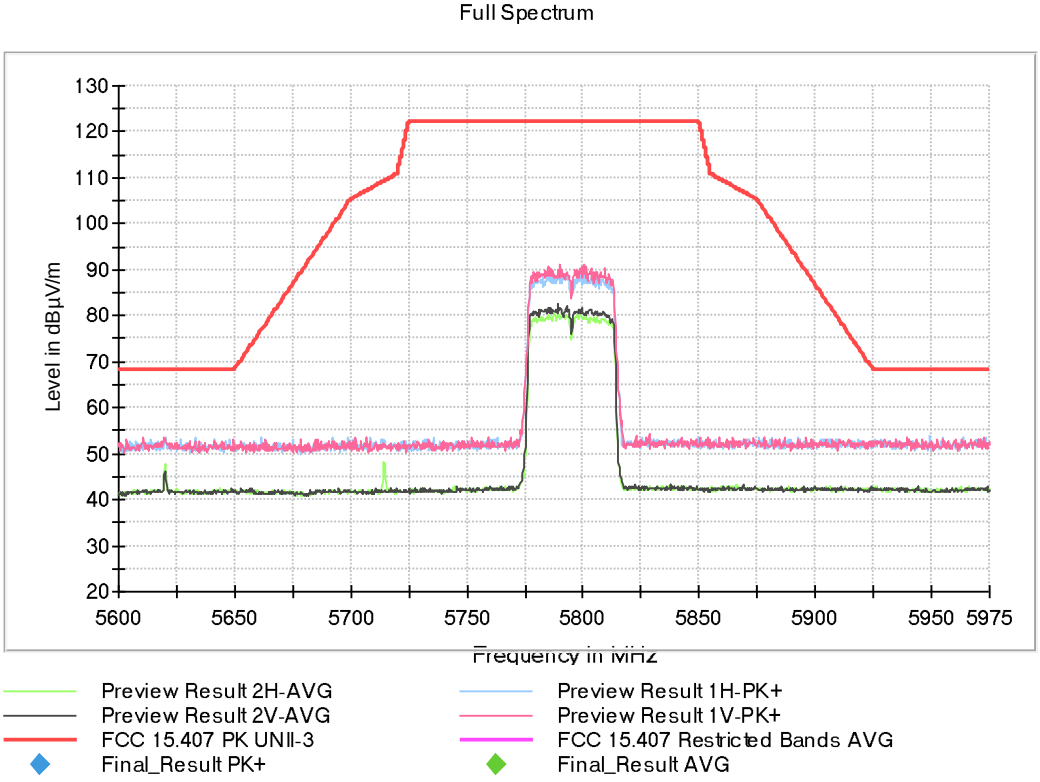


Modulation: 802.11ac VHT40 (OFDM MCS0)

- Low Channel:

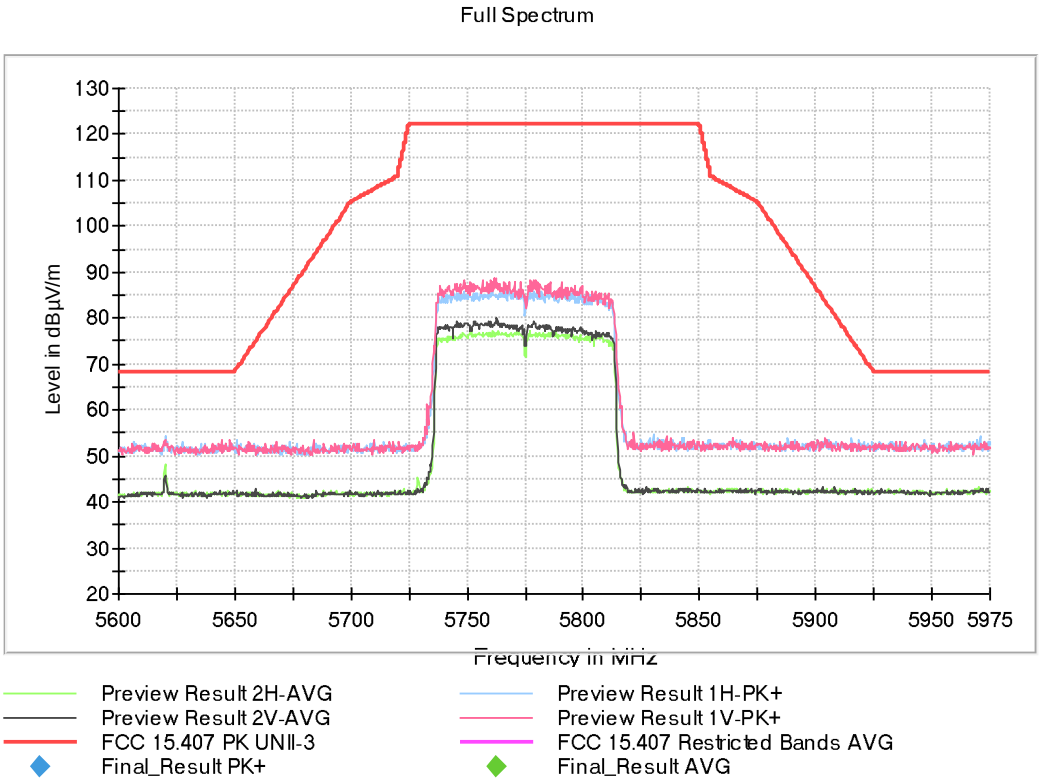


- High Channel:



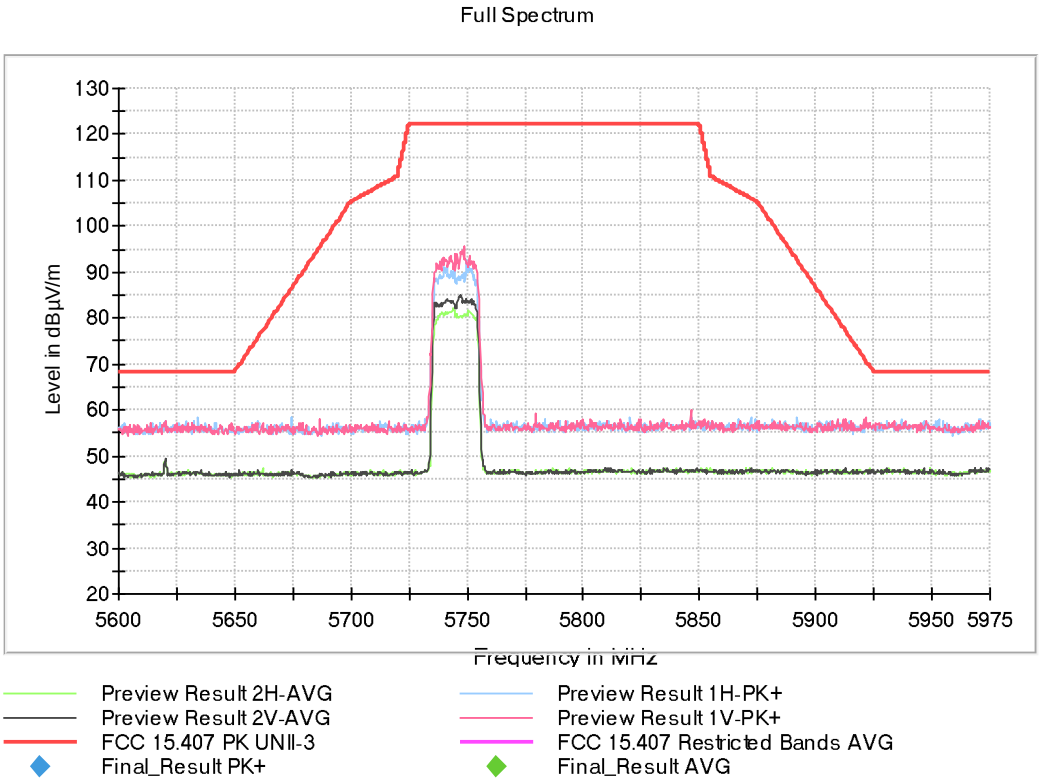
Modulation: 802.11ac VHT80 (OFDM MCS0)

- Single Channel:

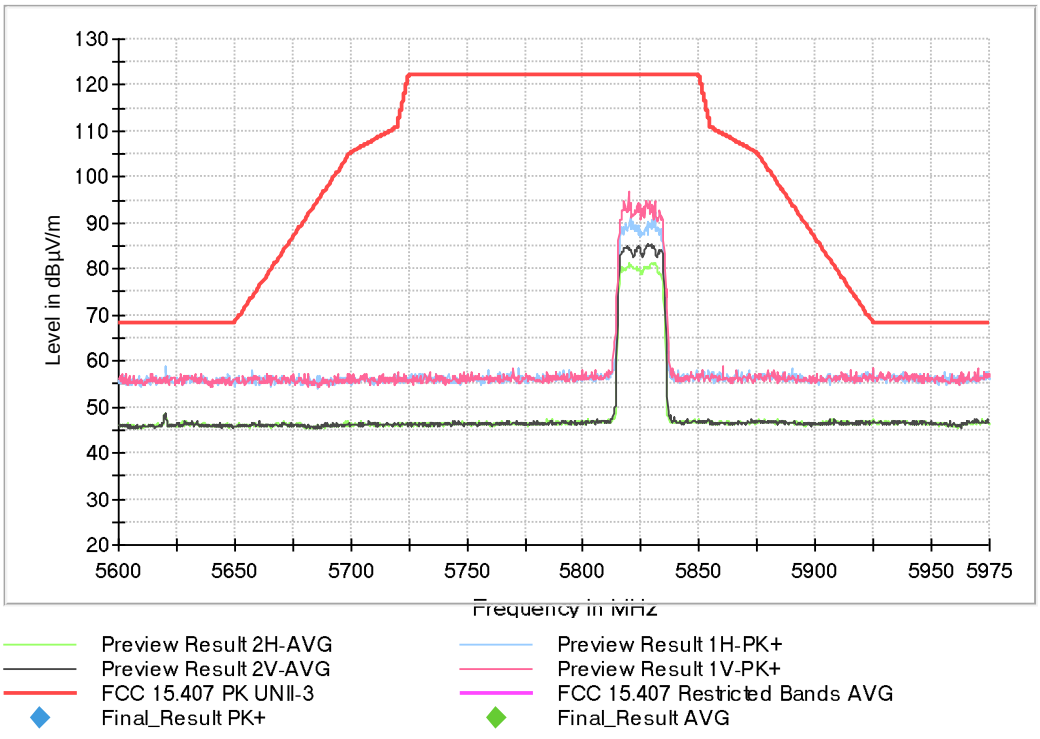


Modulation: 802.11ax HE20 (OFDMA MCS0) – SU

- Low Channel:

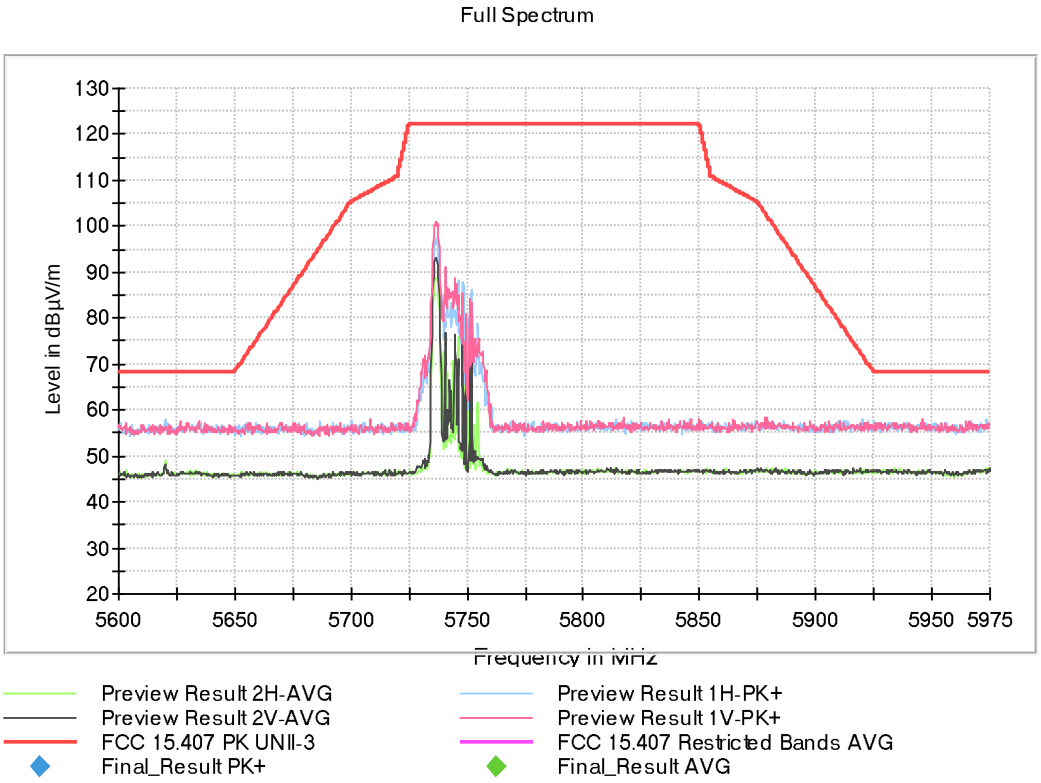


- High Channel:

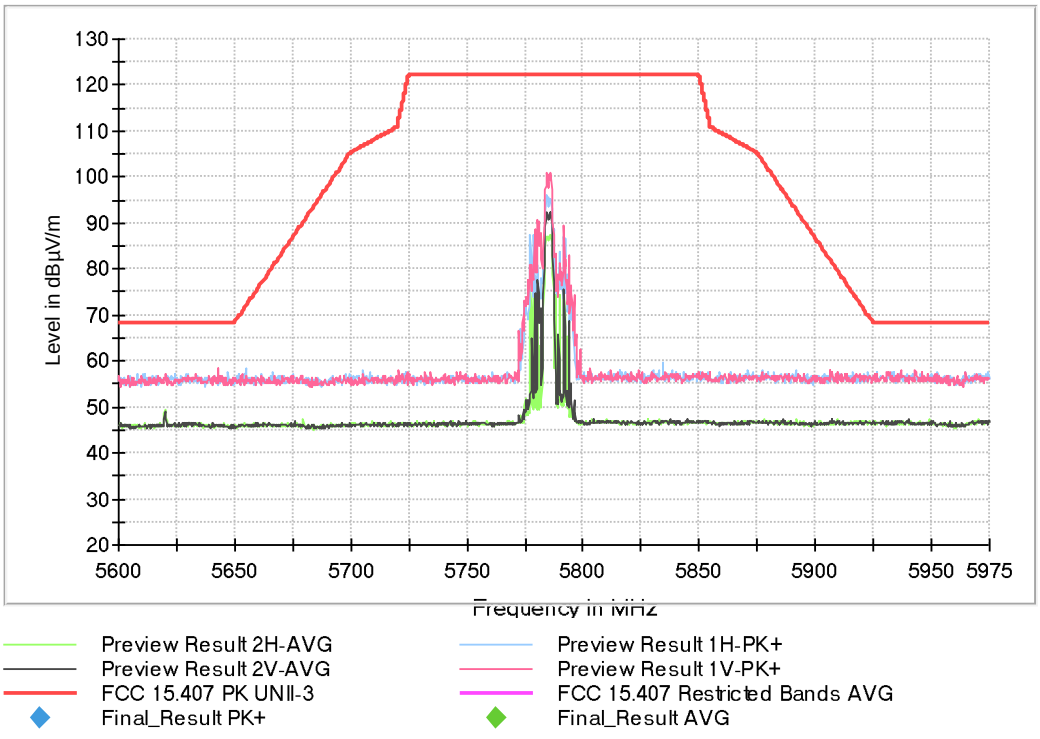


Modulation: 802.11ax HE20 (OFDMA MCS0) – RU

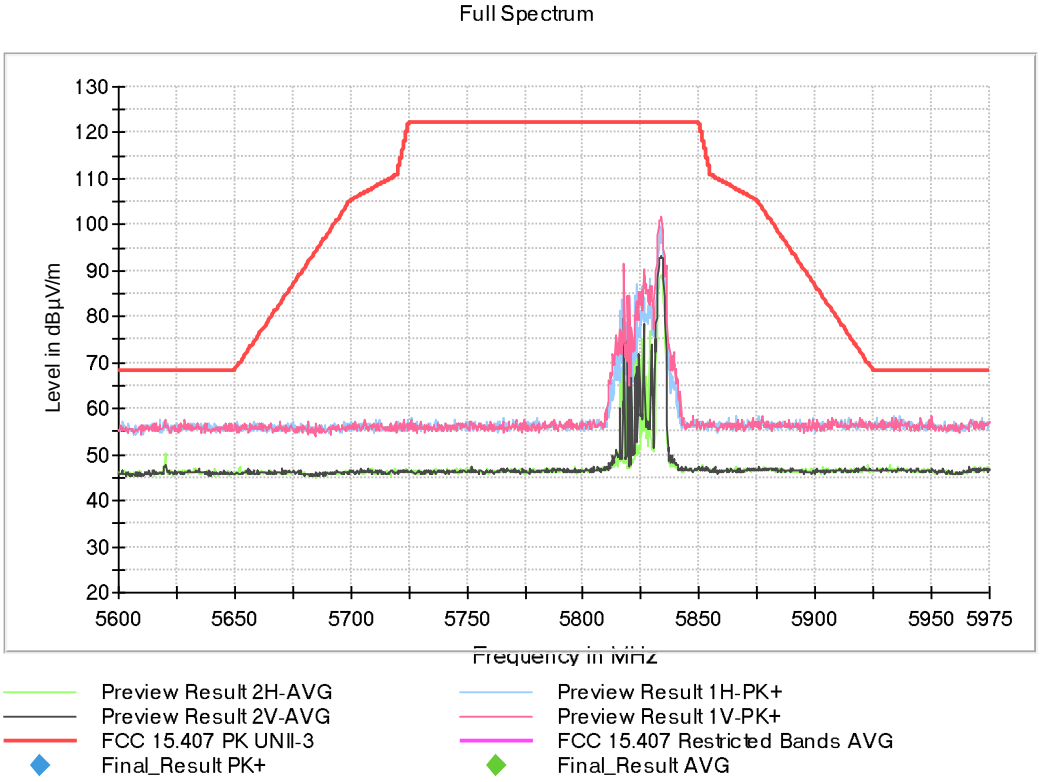
- Low Channel:



- Middle Channel:

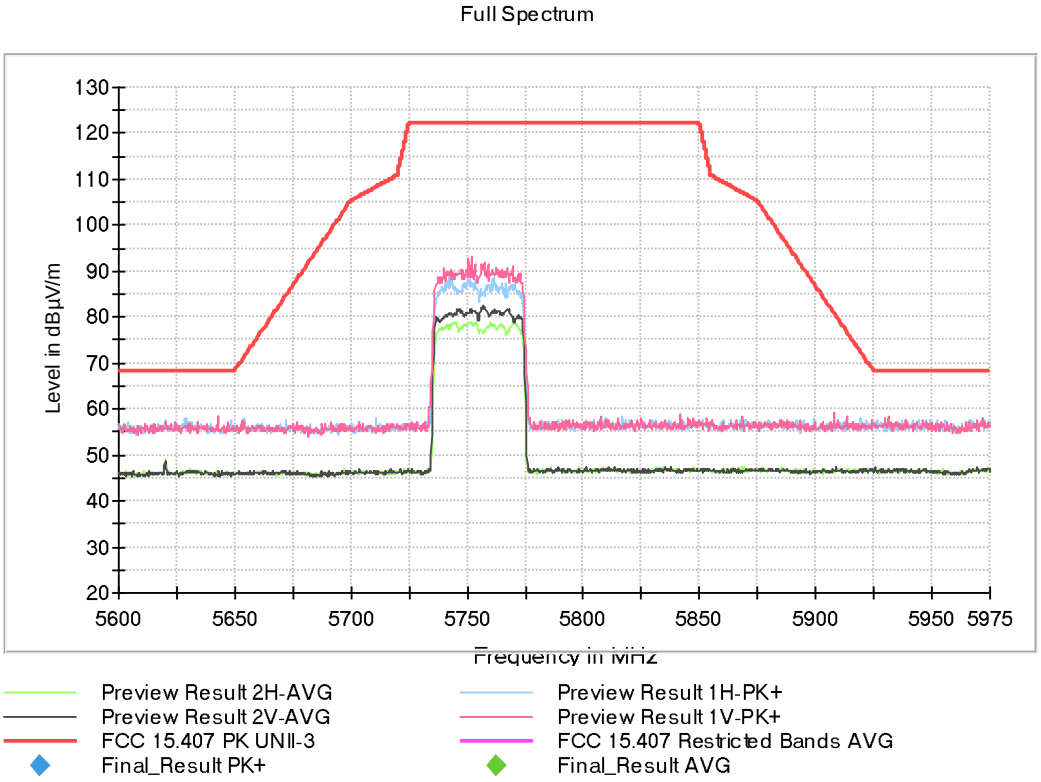


- High Channel:

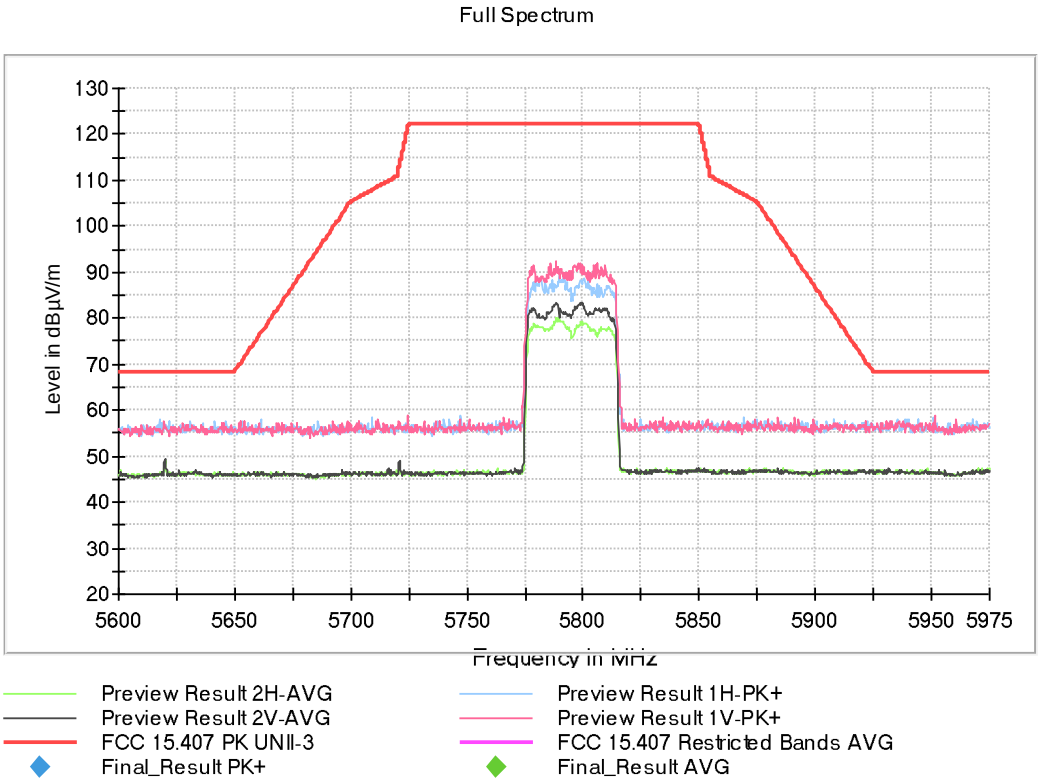


Modulation: 802.11ax HE40 (OFDMA MCS0) – SU

- Low Channel:

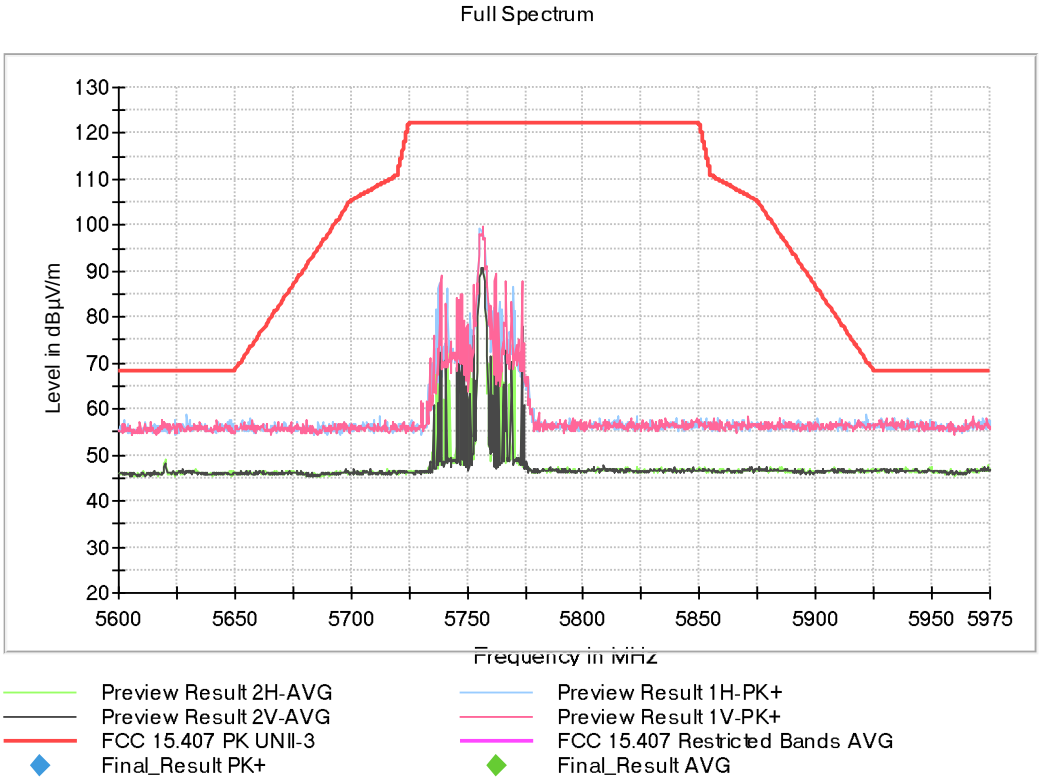


- High Channel:

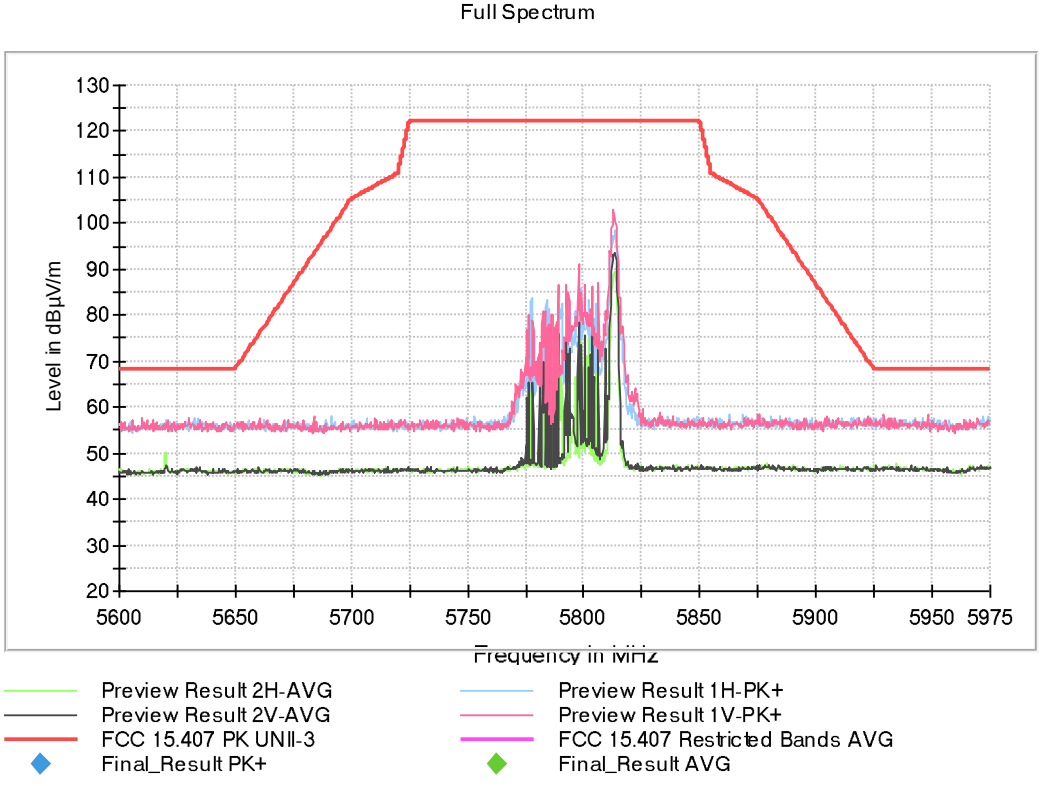


Modulation: 802.11ax HE40 (OFDMA MCS0) – RU

- Low Channel:

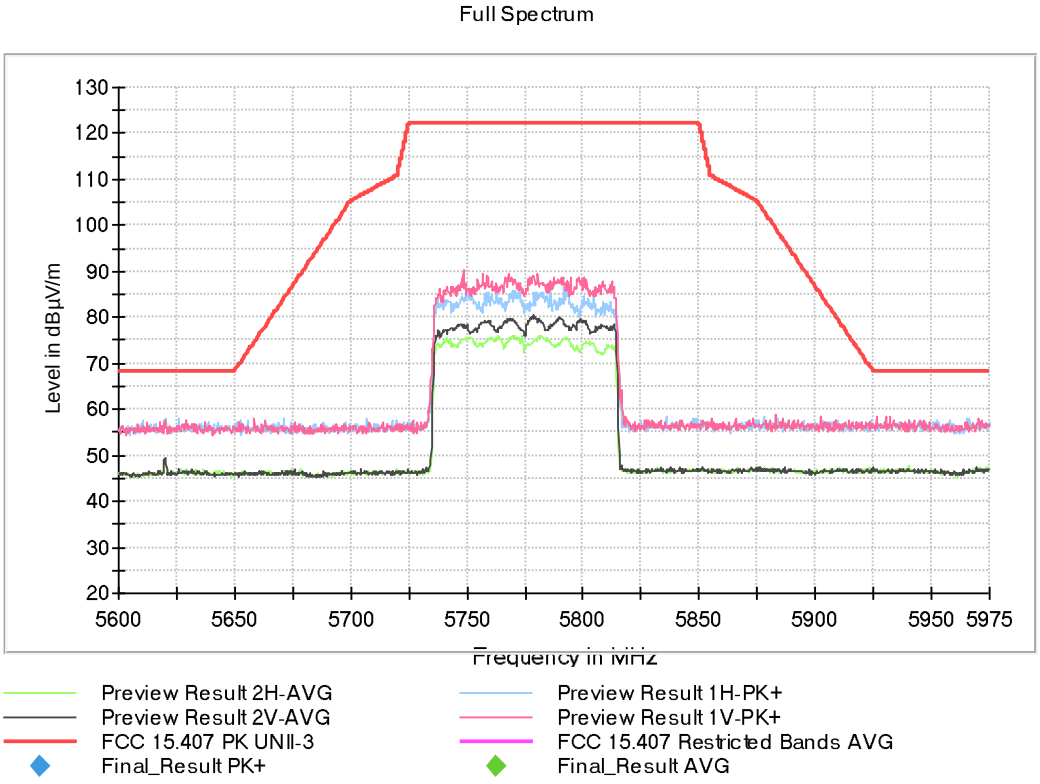


- High Channel:



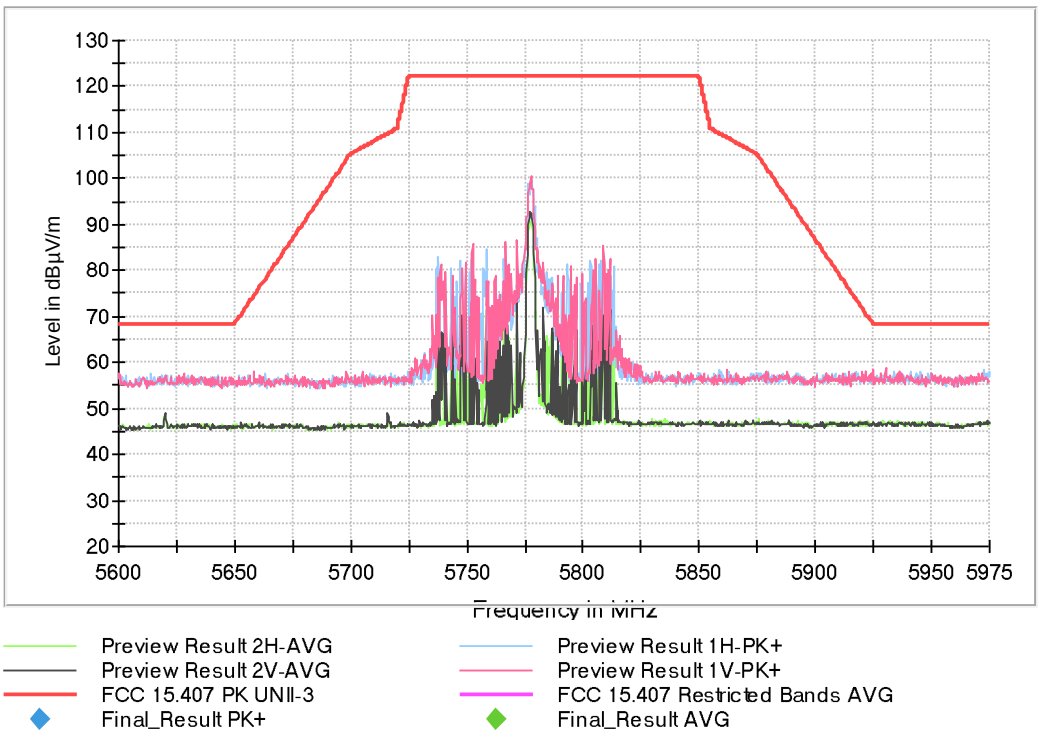
Modulation: 802.11ax HE80 (OFDMA MCS0) – SU

- Single Channel:



Modulation: 802.11ax HE80 (OFDMA MCS0) – RU

- Single Channel:



Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
1 GHz - 6,5 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB
6,5 GHz - 17 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB

Frequency range 17 GHz – 40 GHz:

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

Operation Band MHz = [5150, 5250]

Frequency Range GHz = [17, 40]

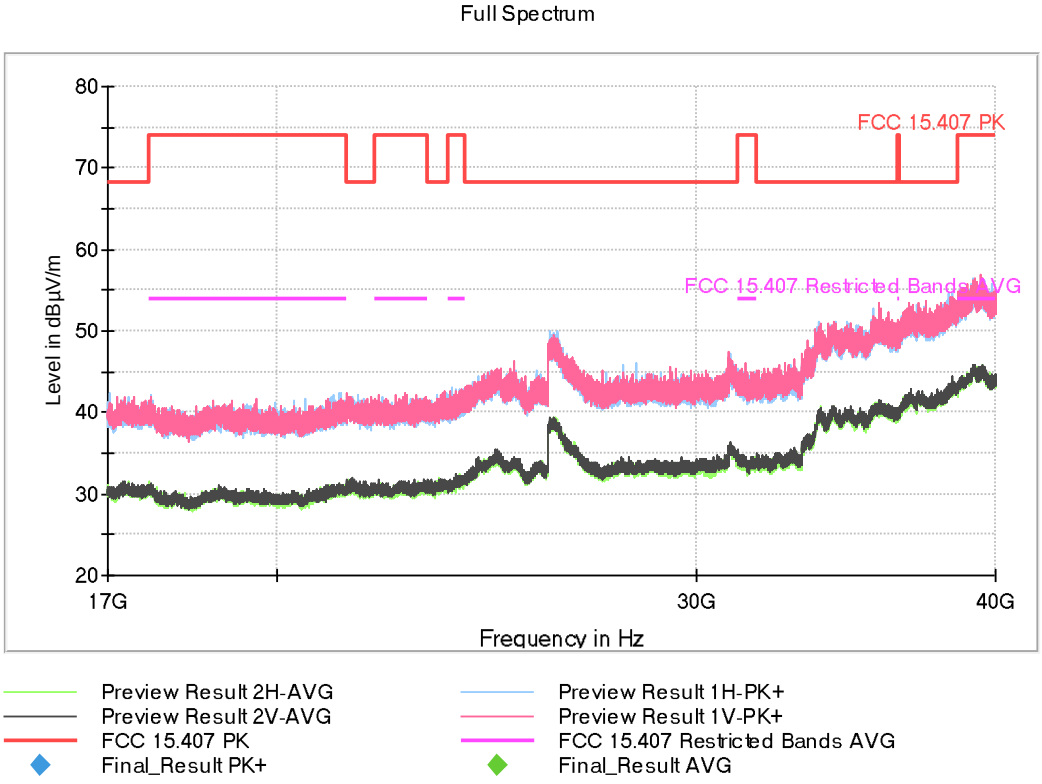
Modulation = The spurious frequencies detected do not depend on the modulation.

Active Port = 3+4

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

MIMO Mode = MIMO CDD Mode 2x2

Images:



Spectrum analyzer parameters:

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
17 GHz - 40 GHz	400 kHz	PK+	1 MHz	0,01 s	0 dB