



Certificate #4312.01

TEST REPORT

Product Name: 5-Port SMB UC/Networking Convergence
Wireless Gateway
Trade Mark: GRANDSTREAM
Model No.: GCC6010W
Report Number: 24031410094RFC-1
Test Standards: FCC 47 CFR Part 15 Subpart C
FCC ID: YZZGCC6010W
Test Result: PASS
Date of Issue: June 19, 2024

Prepared for:

Grandstream Networks, Inc.
126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
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Version

Version No.	Date	Description
V1.0	June 19, 2024	Original



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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Grandstream Networks, Inc.
Address of Applicant:	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA
Manufacturer:	Grandstream Networks, Inc.
Address of Manufacturer:	126 Brookline Ave., 3rd Floor Boston, MA 02215, USA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	5-Port SMB UC/Networking Convergence Wireless Gateway		
Model No.:	GCC6010W		
Trade Mark:	GRANDSTREAM		
DUT Stage:	Identical Prototype		
EUT Supports Function: (Provided by the customer)	2.4 GHz ISM Band:	IEEE 802.11b/g/n/ax	
	U-NII 5 GHz Bands:	5 150 MHz to 5 250 MHz	IEEE 802.11a/n/ac/ax
		5 250 MHz to 5 350 MHz	IEEE 802.11a/n/ac/ax
		5 470 MHz to 5 725 MHz	IEEE 802.11a/n/ac/ax
		5 725 MHz to 5 850 MHz	IEEE 802.11a/n/ac/ax
Software Version:	0.3.13.1(Provided by the customer)		
Hardware Version:	V1.2(Provided by the customer)		
Sample Received Date:	March 14, 2024		
Sample Tested Date:	March 14, 2024 to May 31, 2024		
Remark:	The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.		

1.2.2 Description of Accessories

Adapter(1)	
Model No.:	DCT24W120150US-A3
Input:	100-240 V~50/60 Hz 0.7 A Max
Output:	12.0 V $\equiv$ 1.5 A
DC Cable:	1.5 Meter, Unshielded without ferrite

Adapter(2)	
Model No.:	GQ24-120150-DU
Input:	100-240 V~50/60 Hz 1.0 A Max
Output:	12.0 V $\equiv$ 1.5 A
DC Cable:	2.5 Meter, Unshielded without ferrite

Cable	
Connector:	Ethernet cable
Cable Type:	Unshielded without ferrite
Length:	1.5 Meter, Unshielded without ferrite

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1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Band:	2400 MHz to 2483.5 MHz	
Frequency Range:	2412 MHz to 2462 MHz	
Support Standards:	IEEE 802.11b/g/n-HT20/n-HT40/ax-HE20/ax-HE40	
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDM/OFDMA ^{Note 1} (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)	
Data Rate:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20/HT40: Up to MCS15 IEEE 802.11ax-HE20/ HE40: Up to MCS11	
Number of Channels:	IEEE 802.11b/g/n-HT20/ax-HE20: 11 IEEE 802.11n-HT40/ax-HE40: 7	
Channel Separation:	5 MHz	
Antenna Type: (Provided by the customer)	Antenna 0	PCB Antenna
	Antenna 1	PCB Antenna
Antenna Gain: (Provided by the customer)	Antenna 0	4.16 dBi
	Antenna 1	4.71 dBi
Normal Test Voltage:	12 Vdc	
Note 1: For IEEE 802.11ax, the customer declaration the product supports only the SU mode.		

1.4 OTHER INFORMATION

Operation Frequency Each of Channel	
IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20 IEEE 802.11ax-HE20	$f = 2407 + 5k \text{ MHz}, k = 1, \dots, 11$
IEEE 802.11n-HT40 IEEE 802.11ax-HE40	$f = 2407 + 5k \text{ MHz}, k = 3, \dots, 9$
Note: f is the operating frequency (MHz); k is the operating channel.	

1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

1) Support Equipment

Description	Manufacturer	Model No.	Serial Number	Supplied by
Notebook	DELL	Latitude 3400	16238087894	UnionTrust
Mouse	DELL	MS111	CN-0KW2YH-71616-617-0660	UnionTrust

2) Support Cable

Cable No.	Description	Connector	Length (Meter)	Supplied by
1	Ethernet Cable*2	RJ45	1.5 Unshielded without ferrite	UnionTrust
2	Antenna Cable*2	SMA	0.1	UnionTrust

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1.6 TEST LOCATION

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Tests were sub-contracted. (Radiated Emissions and Band Edge Measurement)
Dongguan DN Testing Co., Ltd.

Address: No. 1, West 4th Street, Xingfa South Road, Wusha Community, Chang'an Town, Dongguan, People's Republic of China
Telephone: +86-769-88087383
Email: joise.yang@dn-testing.com

1.7 TEST FACILITY

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194
Test Firm Registration Number: 259480

Dongguan DN Testing Co., Ltd.

A2LA-Lab Certificate No.: 7050.01

CAB identifier: CN0149

1.8 DEVIATION FROM STANDARDS

None.

1.9 ABNORMALITIES FROM STANDARD CONDITIONS

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None.

1.10 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.11 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB
8	Radio frequency	± 6.5 × 10 ⁻⁸
9	Occupied Channel Bandwidth	± 1.86 %
10	RF output power, conducted	± 0.68 dB
11	Power Spectral Density	± 0.6 dB
12	Spurious emissions, conducted	± 2.7 dB
13	Time	± 0.19 %

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2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart C Test Cases			
Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203/15.247 (b)(4)	N/A	PASS
AC Power Line Conducted Emission	FCC 47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013 Clause 6.2	PASS
Conducted Peak Output Power	FCC 47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013 Clause 11.9.1.3	PASS
6dB Bandwidth	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013 Clause 11.8.1	PASS
Power Spectral Density	FCC 47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013 Clause 11.10.2	PASS
Conducted Out of Band Emission	FCC 47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013 Clause 11.11	PASS
Radiated Spurious Emissions	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013 Clause 11.11 & Clause 11.12	PASS
Band Edge Measurements (Radiated)	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013 Clause 11.13	PASS
Note: 1) N/A: In this whole report not applicable.			
Disclaimer and Explanations: The declared of product specification and data (e.g., antenna gain, RF specification, etc) for EUT presented in the report are provided by the customer, and the customer takes all the responsibilities for the accuracy of product specification.			

3. EQUIPMENT LIST

Dongguan DN Testing Co., Ltd.

Test Equipment for Radiated Emission(30MHz-1000MHz)						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	Receiver	R&S	ESR7	102497	2023-10-24	2024-10-23
☒	Test Software	Tonscend	JS32-RE V5.0.0	NA	NA	NA
☒	RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	DNT-001	2023-10-24	2024-10-23
☒	Log periodic antenna	ETS-LINDGREN	VULB 9168	01475	2023-10-24	2024-10-23
☒	Pre-amplifier	Schwarzbeck	BBV9743B	00423	2023-10-24	2024-10-23

Test Equipment for Radiated Emission(Above 1000MHz)						
☒	Frequency analyser	Keysight	N9010A	MY52221458	2023-10-24	2024-10-23
☒	RF Cable	ETS-LINDGREN	RFC-NMS-100-NMS-350-IN	DNT-002	2023-10-24	2024-10-23
☒	Horn Antenna	ETS-LINDGREN	3117	00252567	2023-10-24	2024-10-23
☒	Double ridged waveguide antenna	ETS-LINDGREN	3116C	00251780	2023-10-24	2024-10-23
☒	Test Software	Tonscend	JS32-RE V5.0.0	NA	NA	NA
☒	Pre-amplifier	ETS-LINDGREN	3117-PA	252567	2023-10-24	2024-10-23
☒	Pre-amplifier	ETS-LINDGREN	3116C-PA	251780	2023-10-24	2024-10-23

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AC Power Line Conducted Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	Receiver	R&S	ESR7	101181	27-Oct-2023	26-Oct-2024
☒	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	27-Oct-2023	26-Oct-2024
☒	LISN	R&S	ESH2-Z5	860014/024	27-Oct-2023	26-Oct-2024
☒	LISN	ETS-Lindgren	3816/2SH	00201088	27-Oct-2023	26-Oct-2024
☒	Shielding room	ETS-Lindgren	843	Euroshiedpn-CT001270-1246	5-Nov-2021	4-Nov-2024
☒	Test Software	EZ-EMC	EZ-CON	Software Version: EMC-CON 3A1.1		

RF Conducted Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
☒	EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY51440197	14-Apr-2023 29-Mar-2024	13-Apr-2024 28-Mar-2025
☒	EXA Spectrum Analyzer	KEYSIGHT	N9020A	MY51286807	27-Oct-2023	26-Oct-2024
☒	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY55430035	27-Oct-2023	26-Oct-2024

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4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	12	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment and Test Sample

Test Item	Temp. (°C)	Relative Humidity (%)	Pressure (kPa)	Sample No.	Tested by
AC Power Line Conducted Emission	23.0	51.9	100.6	S202403142876-ZJA03/4	Linson Xie
Conducted Peak Output Power	23.5	46.9	100.4	S202403142876-ZJA01/4	Allen Zhou
6dB Bandwidth					
Power Spectral Density					
Conducted Out of Band Emission	25	60	100.6	S202403142876-ZJA02/4	Wayne Lin
Radiated Spurious Emissions					
Band Edge Measurements (Radiated)					

4.2 TEST CHANNELS

Mode	Tx/Rx Frequency (MHz)	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11b	2412-2462	Channel 1	Channel 6	Channel 11
IEEE 802.11g		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11n-HT20				
IEEE 802.11ax-HE20				
Mode	Tx/Rx Frequency (MHz)	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11n-HT40	2422-2452	Channel 3	Channel 6	Channel 9
IEEE 802.11ax-HE40		2422 MHz	2437 MHz	2452 MHz

4.3 EUT TEST STATUS

Mode	Tx/Rx Function	Description
IEEE 802.11b IEEE 802.11g	1Tx/1Rx	1. Keep the EUT in continuously transmitting or receiving with modulation and data rates test single. 2. Keep the equipment in normal operation and achieve a certain throughput.
IEEE 802.11n-HT20 IEEE 802.11n-HT40 IEEE 802.11ax-HE20 IEEE 802.11ax-HE40	2Tx/2Rx	

Power Setting (Provided by the customer)						
Mode	Lowest(L)	Middle(M)	Highest(H)	Lowest(L)	Middle(M)	Highest(H)
	Ant 0			Ant 1		
IEEE 802.11b	16			17	16	16
IEEE 802.11g	19			18		
IEEE 802.11n-HT20	19.5			19.5		
IEEE 802.11n-HT40	19.5			19.5		
IEEE 802.11ax-HE20 (SU)	20.5	19.5	19.5	20.5	19.5	19.5
IEEE 802.11ax-HE40 (SU)	20.5			20.5		

Test Software (Provided by the customer)
Test software name: 7986_0007 QA 0.0.2.97;

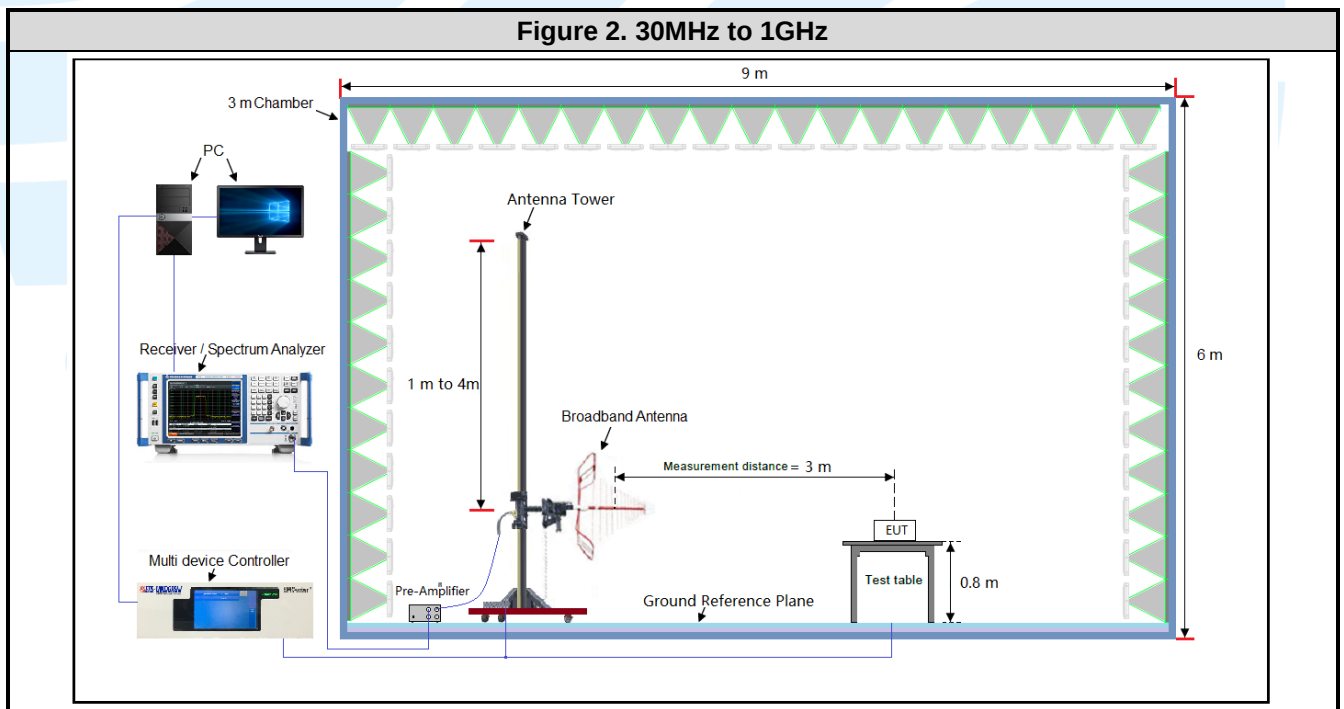
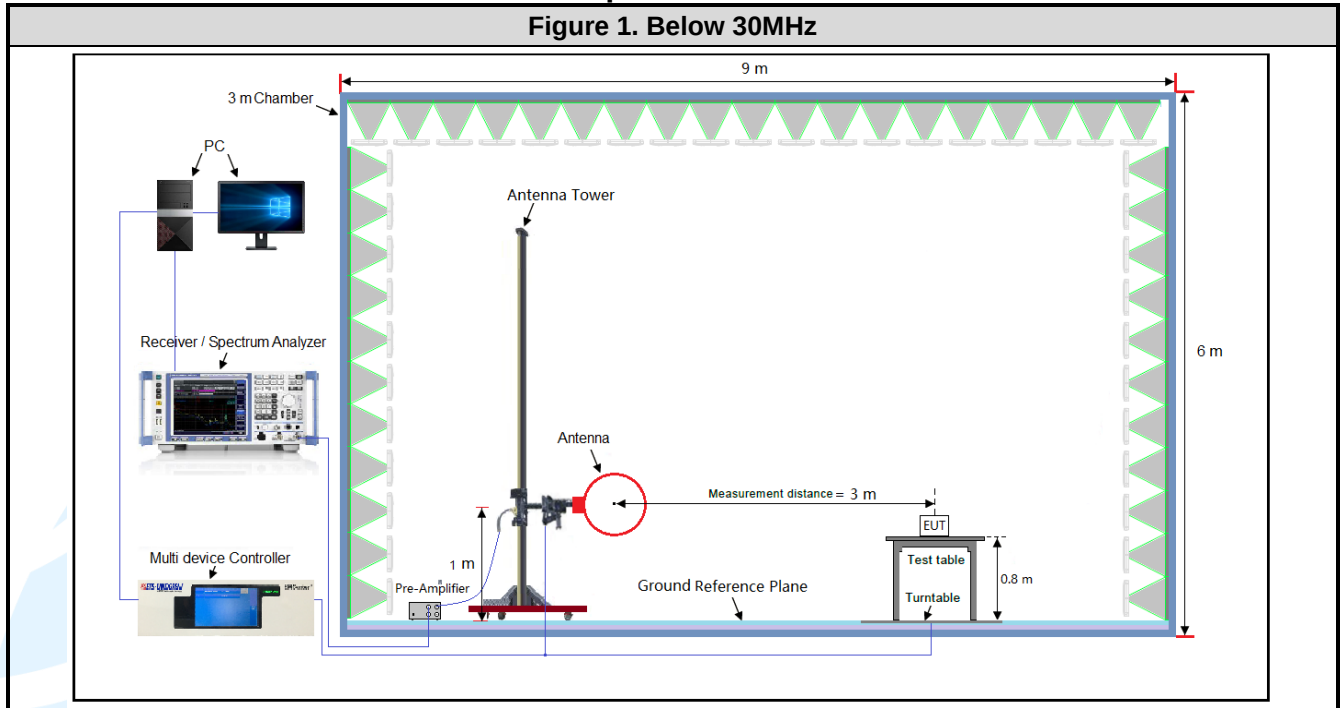
4.4 PRE-SCAN

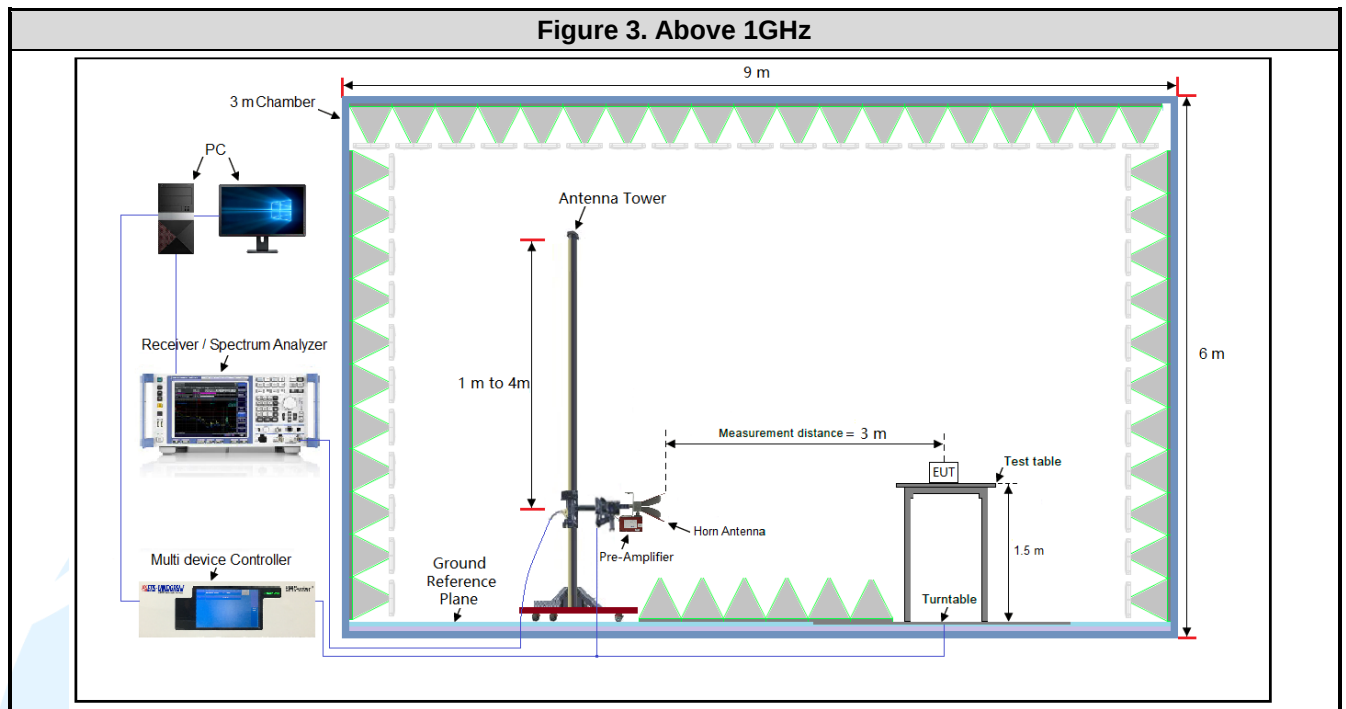
Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations and data rate. Following data rate was (were) selected for the final test as listed below

Mode	Worst-case data rates
IEEE 802.11b	1 Mbps
IEEE 802.11g	6 Mbps
IEEE 802.11n-HT20	MCS8
IEEE 802.11n-HT40	MCS8
IEEE 802.11ax-HE20	MCS0
IEEE 802.11ax-HE40	MCS0

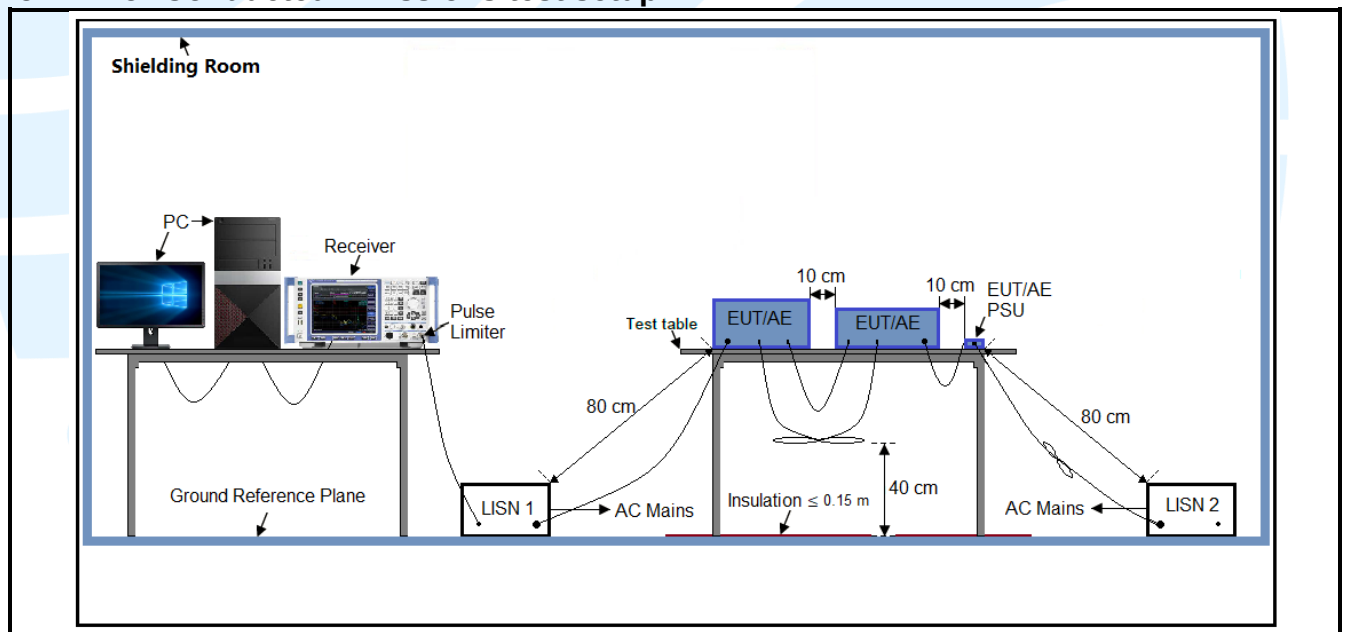
4.5 TEST SETUP

4.5.1 For Radiated Emissions test setup

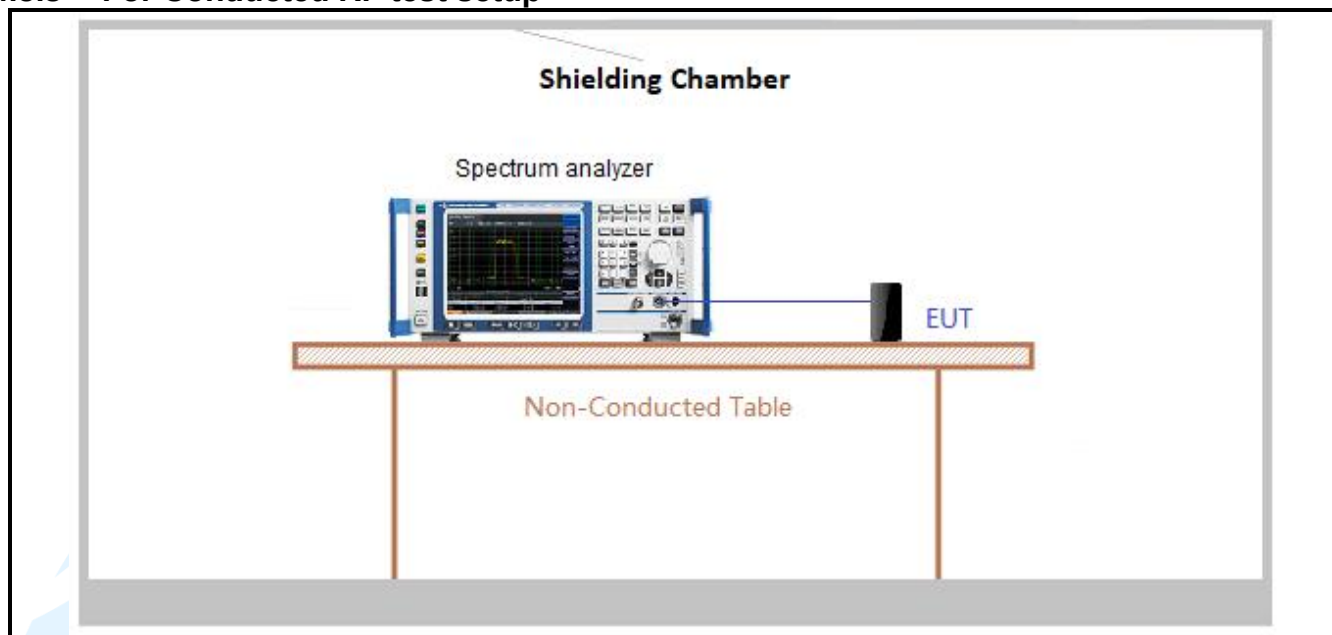




4.5.2 For Conducted Emissions test setup



4.5.3 For Conducted RF test setup



4.6 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Only the worst case data were recorded in this test report.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. Therefore, all final radiated testing was performed with the EUT in orientation.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4.7 DUTY CYCLE

Test Procedure: ANSI C63.10-2013 Clause 11.6.

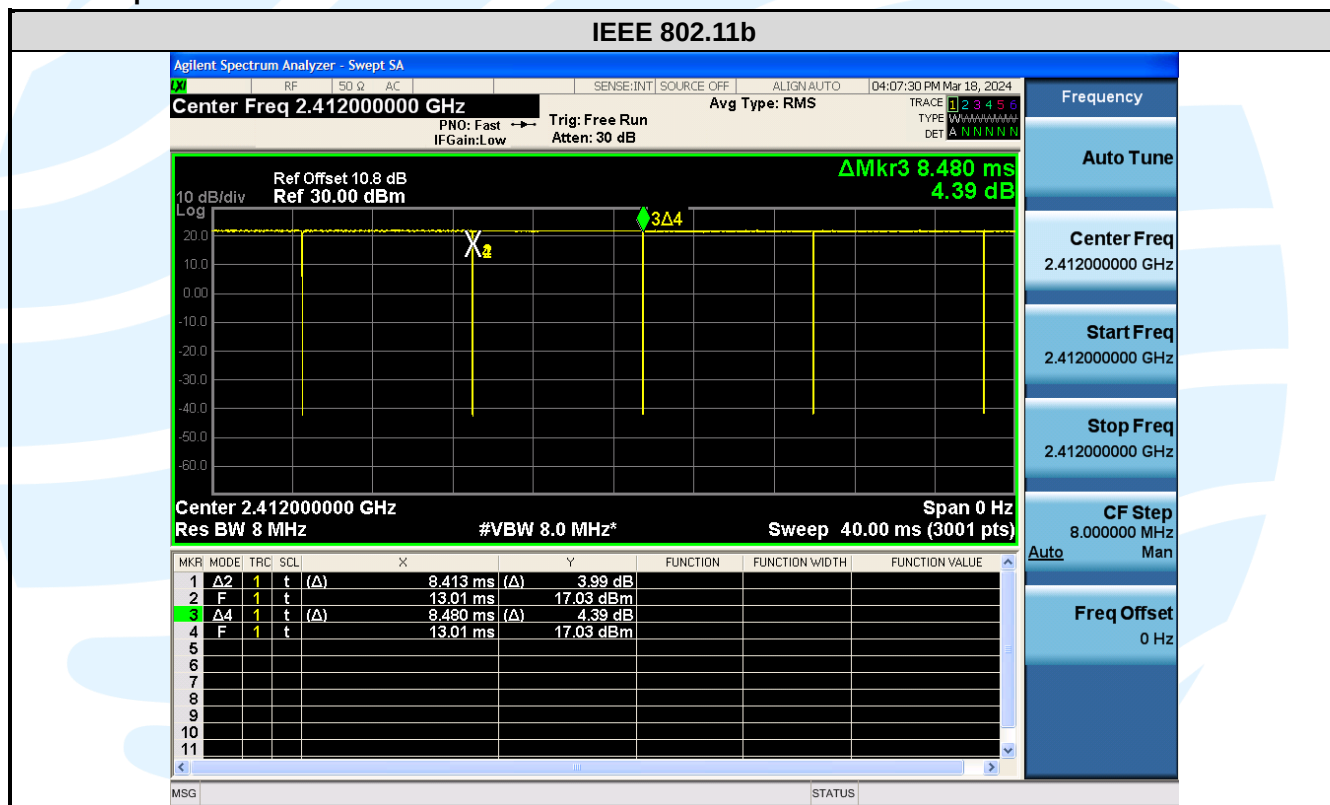
Test Results

Mode	RU	Data Rates	On Time (msec)	Period (msec)	Duty Cycle (linear)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/T Minimum VBW (kHz)
IEEE 802.11b	N/A	1 Mbps	8.413	8.480	0.99	99.21	0.00	0.01
IEEE 802.11g	N/A	6 Mbps	1.397	1.453	0.96	96.15	0.17	0.72
IEEE 802.11n-HT20	N/A	MCS 8	1.307	1.363	0.96	95.89	0.18	0.77
IEEE 802.11n-HT40	N/A	MCS 8	0.645	0.705	0.91	91.49	0.39	1.55
IEEE 802.11ax-HE20	SU	MCS 0	0.310	0.370	0.84	83.78	0.77	3.23
IEEE 802.11ax-HE40	SU	MCS 0	0.310	0.370	0.84	83.78	0.77	3.23

Remark:

- 1) Duty cycle= On Time/ Period;
- 2) Duty Cycle factor = $10 * \log(1/ \text{Duty cycle})$;

The test plots as follows



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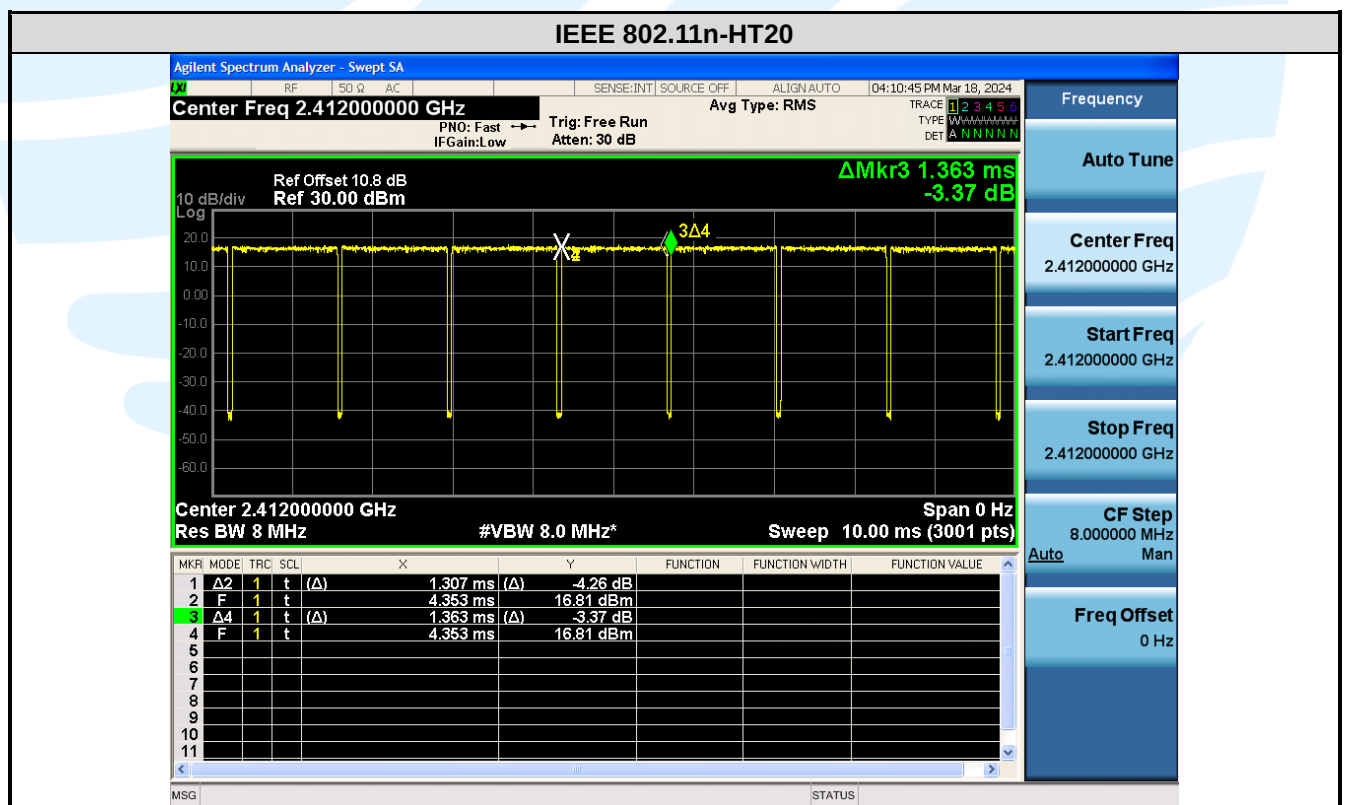
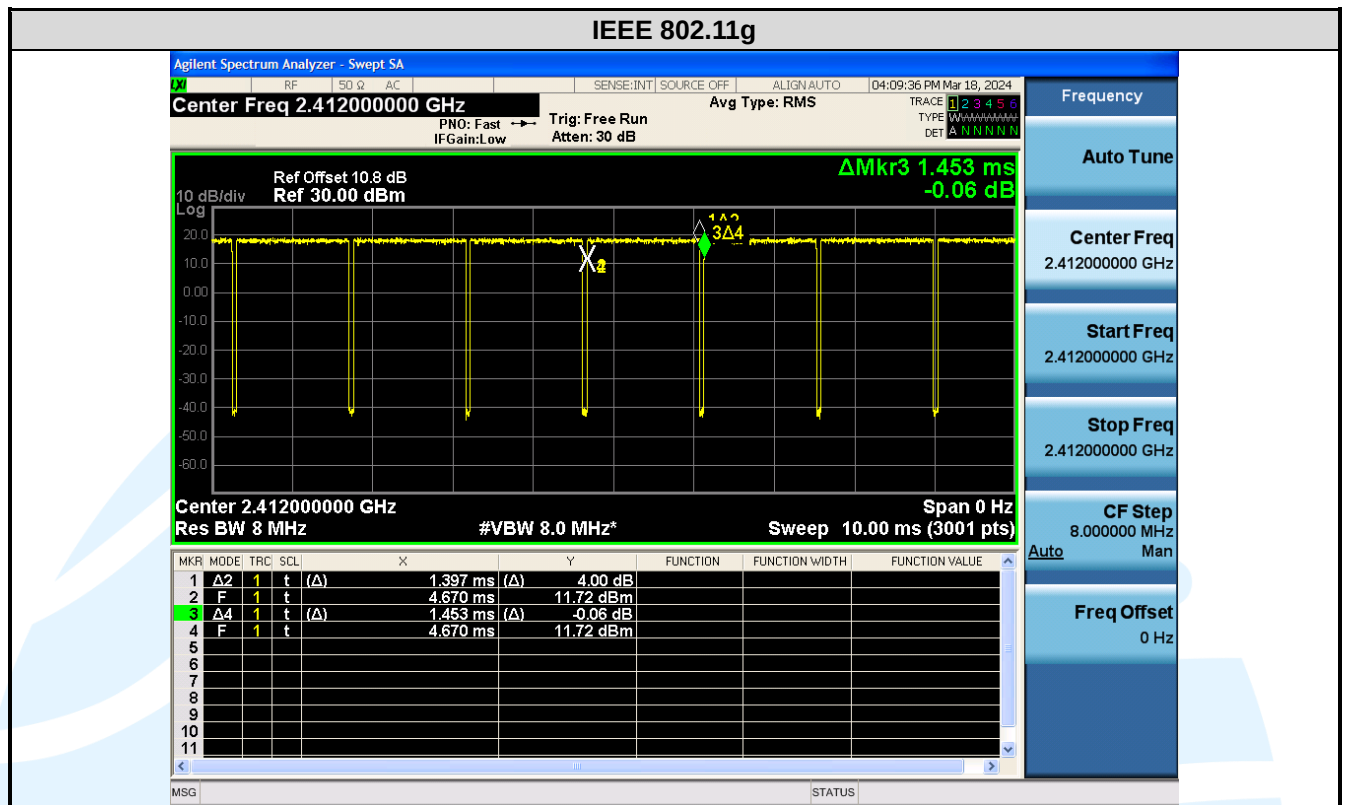
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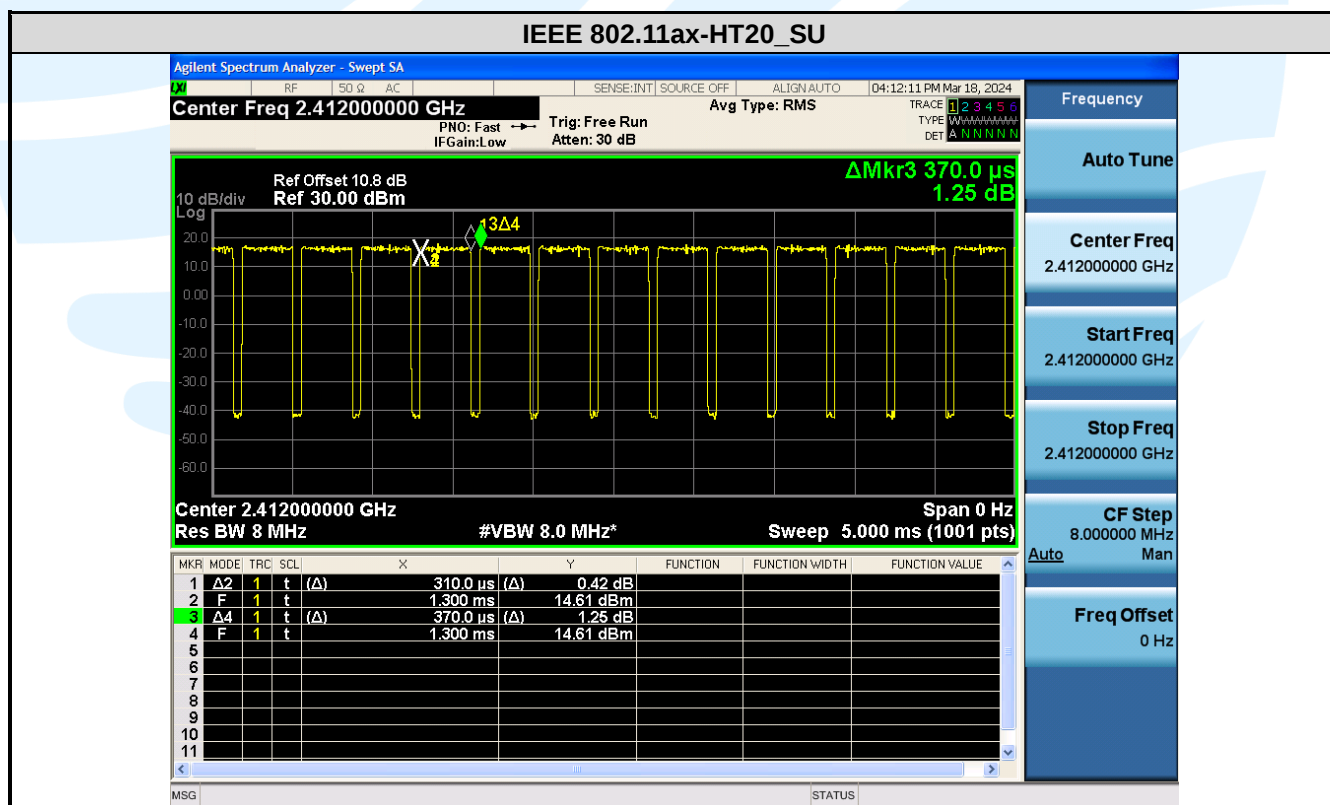
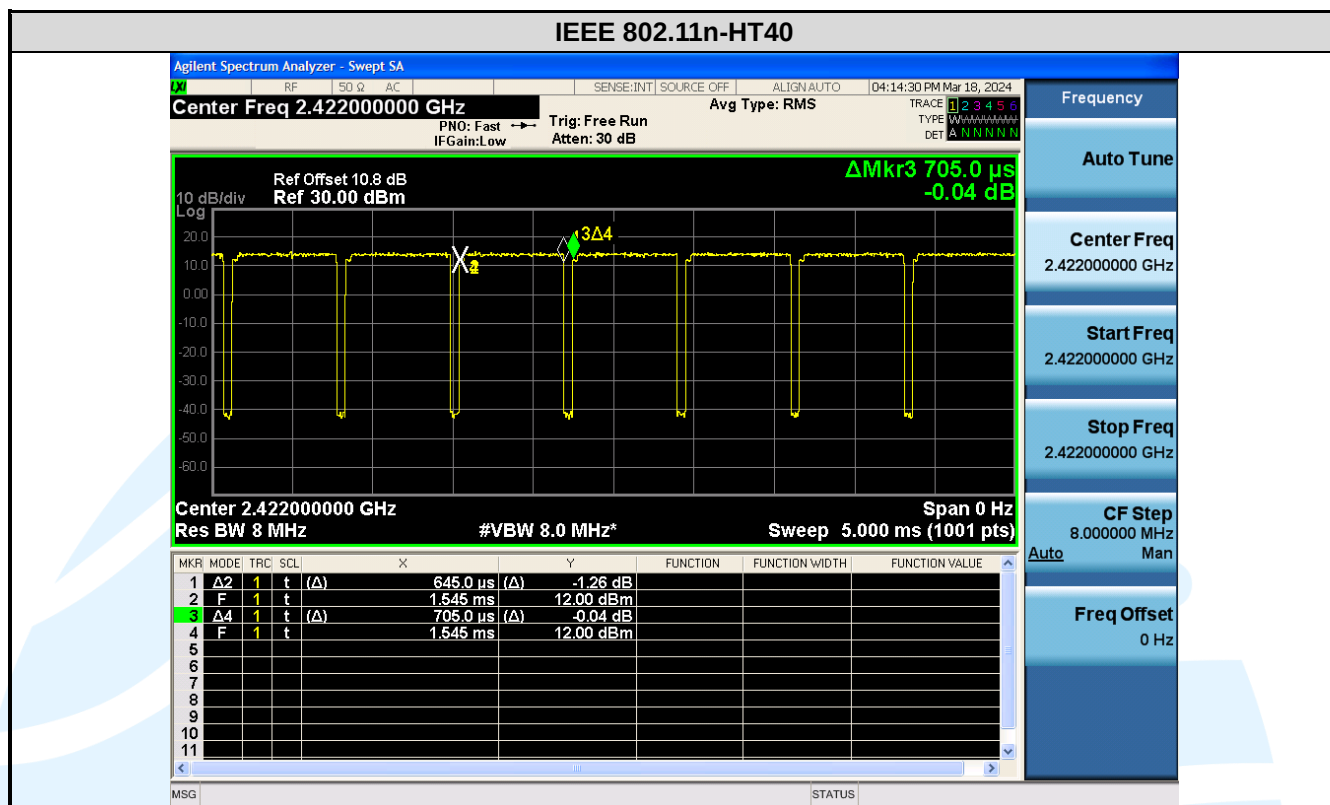
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UTTR-RF-FCCPART15.247-V1.2

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

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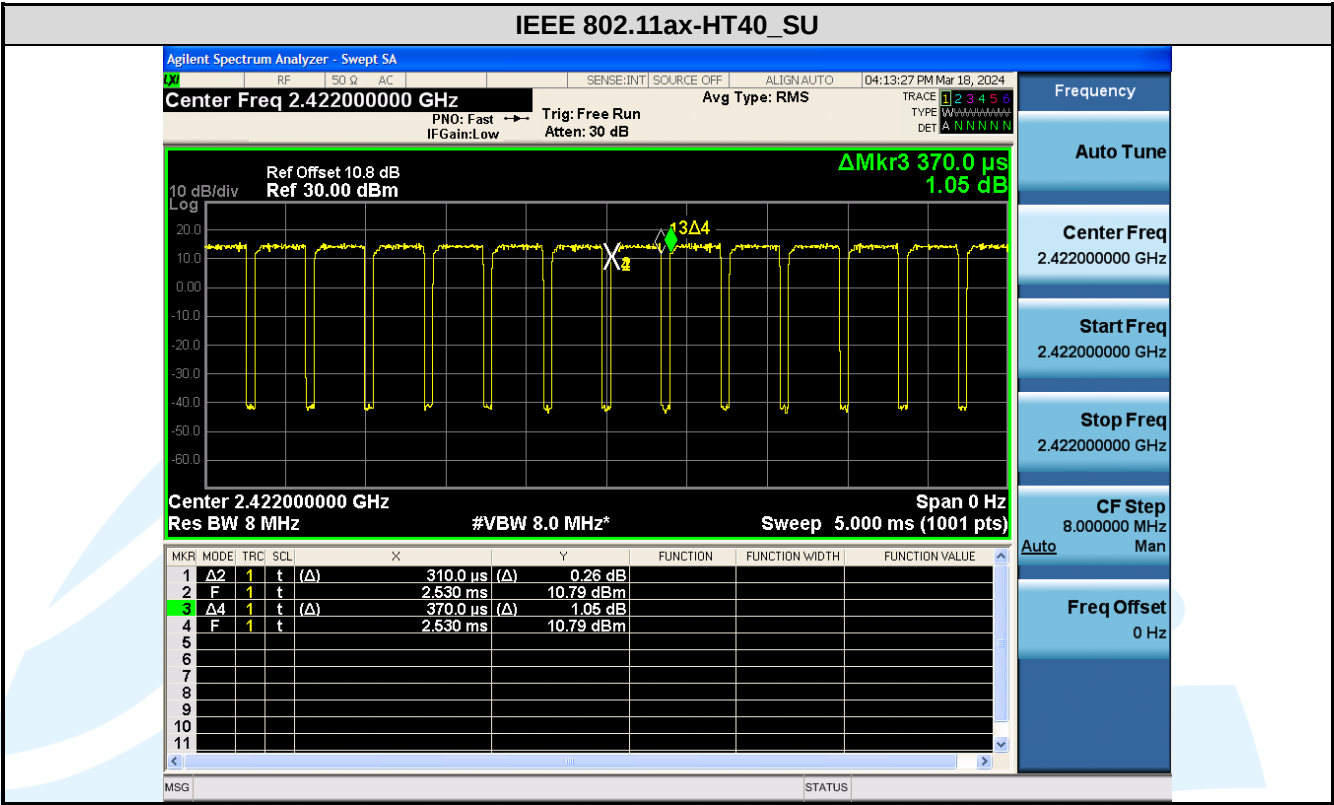
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5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices
4	KDB 558074 D01 15.247 Meas Guidance v05r02	Guidance for compliance measurements on Digital Transmission Systems, Frequency Hopping Spread Spectrum system, and Hybrid system devices operating under Section 15.247 of the FCC rules
5	KDB 662911 D01 Multiple Transmitter Output v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band

5.2 ANTENNA REQUIREMENT

Standard Requirement
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi. EUT Antenna: Both antenna in the interior of the equipment and no consideration of replacement. The transmit signals are correlated with each other, the best case directional gain of the antenna is 7.45 dBi (See section 5.3).

5.3 CONDUCTED OUTPUT POWER

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.247 (b)(3)

Test Method: ANSI C63.10-2013 Clause 11.9.1.3

Limit: For systems using digital modulation in the 2400-2483.5 MHz bands: 1 Watt.

Test Procedure:

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.
2. Measure out each test modes' peak or average output power, record the power level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Results:

Directional gain and the maximum output power limit.

Frequency (MHz)	Antenna Gain (dBi)		Directional gain (dBi)	Directional gain (dBi)	Limit	
	Ant .0	Ant .1	Power	PSD	Power (dBm)	PSD (dBm/3kHz)
2412 - 2462	4.16	4.71	7.45	7.45	28.55	6.55

Unequal antenna gains, with equal transmit powers. Directional gain is to be computed as follows:
If transmit signals are correlated, then
Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / NANT]$ dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Mode	Freq. (MHz)	RU&Index	Max. Avg Power (dBm)				Result
			Ant. 0	Ant. 1	Total	Limit	
IEEE 802.11 b	2412	N/A	18.32	19.28	N/A	30.00	PASS
	2437	N/A	18.35	18.25	N/A	30.00	PASS
	2462	N/A	18.71	18.55	N/A	30.00	PASS
IEEE 802.11 g	2412	N/A	19.75	18.79	N/A	30.00	PASS
	2437	N/A	19.56	18.53	N/A	30.00	PASS
	2462	N/A	19.96	18.85	N/A	30.00	PASS
IEEE 802.11 n-HT20	2412	N/A	18.56	18.43	21.51	28.55	PASS
	2437	N/A	18.48	18.35	21.43		PASS
	2462	N/A	18.82	18.58	21.71		PASS
IEEE 802.11 n-HT40	2422	N/A	18.39	18.24	21.33		PASS
	2437	N/A	18.39	18.11	21.26		PASS
	2452	N/A	18.31	18.10	21.22		PASS
IEEE 802.11 ax-HE20	2412	SU	18.69	18.92	21.82		PASS
	2437	SU	17.85	17.82	20.85		PASS
	2462	SU	18.31	18.01	21.17		PASS
IEEE 802.11 ax-HE40	2422	SU	19.02	19.05	22.05		PASS
	2437	SU	18.94	19.01	21.99		PASS
	2452	SU	18.88	18.92	21.91		PASS

Note:

1. Total (Chain 0+1) = $10 \log[(10^{Chain\ 0/10} + 10^{Chain\ 1/10})]$
2. The Duty Cycle Factor is compensated in the Total Power.

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Mode	Freq.	RU&Index	Max. Peak Power (dBm)				Result
	(MHz)		Ant. 0	Ant. 1	Total	Limit	
IEEE 802.11 b	2412	N/A	20.76	21.83	N/A	30.00	PASS
	2437	N/A	20.81	20.68	N/A	30.00	PASS
	2462	N/A	21.23	20.92	N/A	30.00	PASS
IEEE 802.11 g	2412	N/A	26.21	25.67	N/A	30.00	PASS
	2437	N/A	25.52	24.51	N/A	30.00	PASS
	2462	N/A	26.01	25.01	N/A	30.00	PASS
IEEE 802.11 n-HT20	2412	N/A	25.94	24.17	28.15	28.55	PASS
	2437	N/A	24.03	24.73	27.40		PASS
	2462	N/A	25.32	23.86	27.66		PASS
IEEE 802.11 n-HT40	2422	N/A	25.52	25.13	28.34		PASS
	2437	N/A	24.85	24.42	27.65		PASS
	2452	N/A	24.27	24.75	27.53		PASS
IEEE 802.11 ax-HE20	2412	SU	25.22	25.73	28.49		PASS
	2437	SU	24.22	24.74	27.50		PASS
	2462	SU	25.38	24.11	27.80		PASS
IEEE 802.11 ax-HE40	2422	SU	26.04	24.83	28.49		PASS
	2437	SU	24.82	25.78	28.34		PASS
	2452	SU	25.87	24.58	28.28		PASS

Note:

1. Total (Chain 0+1) = $10 \cdot \log[(10^{\text{Chain 0/10}}) + (10^{\text{Chain 1/10}})]$

5.46 DB BANDWIDTH

Test Requirement:	FCC 47 CFR Part 15 Subpart C Section 15.247 (a)(2)
Test Method:	ANSI C63.10-2013 Clause 11.8.1
Limit:	For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz
Test Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW. c) Detector = Peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize. g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.
Test Setup:	Refer to section 4.5.3 for details.
Instruments Used:	Refer to section 3 for details
Test Mode:	Link mode
Test Results:	Please refer to Appendix A

5.5 POWER SPECTRAL DENSITY

Test Requirement:	FCC 47 CFR Part 15 Subpart C Section 15.247 (e)
Test Method:	ANSI C63.10-2013 Clause 11.10.2
Limit:	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
Test Procedure:	Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. Use the following spectrum analyzer settings: - Set analyzer center frequency to DTS channel center frequency. - Set the span to 1.5 times the DTS bandwidth. - Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$. - Set the VBW $\geq 3 \times \text{RBW}$. - Detector = peak. - Sweep time = auto couple. - Trace mode = max hold. - Allow trace to fully stabilize. - Use the peak marker function to determine the maximum amplitude level within the RBW. - If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat. Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.
Test Setup:	Refer to section 4.5.3 for details.
Instruments Used:	Refer to section 3 for details
Test Mode:	Link mode
Test Results:	Please refer to Appendix A

5.6 CONDUCTED OUT OF BAND EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.247(d)

Test Method: ANSI C63.10-2013 Clause 11.11

Limit: In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

Test Procedure: Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

Use the following spectrum analyzer settings:

Step 1: Measurement Procedure REF

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥ 1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW $\geq 3 \times$ RBW.
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.
- j) Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

Step 2: Measurement Procedure OOB

- a) Set RBW = 100 kHz.
- b) Set VBW ≥ 300 kHz.
- c) Detector = peak.
- d) Sweep = auto couple.
- e) Trace Mode = max hold.
- f) Allow trace to fully stabilize.
- g) Use the peak marker function to determine the maximum amplitude level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.5.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Link mode

Test Results: Please refer to Appendix A

5.7 RADIATED SPURIOUS EMISSIONS

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

Test Method: ANSI C63.10-2013 Clause 11.11 & Clause 11.12

Receiver Setup:

Frequency	RBW
0.009 MHz-0.150 MHz	200/300 kHz
0.150 MHz -30 MHz	9/10 kHz
30 MHz-1 GHz	100/120 kHz
Above 1 GHz	1 MHz

Limits:

Spurious Emissions

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

Remark:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Test Setup: Refer to section 4.5.1 for details.

Test Procedures:

1. From 30 MHz to 1GHz test procedure as below:
 - 1) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
 - 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
 - 3) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
 - 4) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotating table was turned from 0 degrees to 360 degrees to find the maximum reading.
 - 5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
 - 6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
2. Above 1GHz test procedure as below:
 - 1) Different from above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change from table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter).
 - 2) Test the EUT in the lowest channel, middle channel, the Highest channel

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- 3) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the Z axis positioning which it is worse case.
- 4) Repeat above procedures until all frequencies measured was complete.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

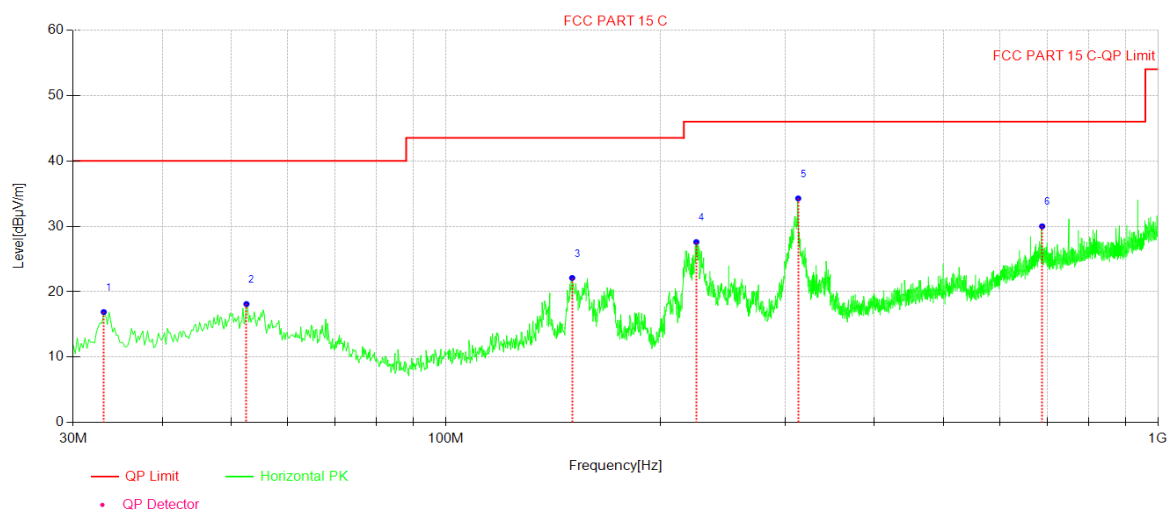
The measurement data as follows:

Radiated Emission Test Data (9 kHz ~ 30 MHz):

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

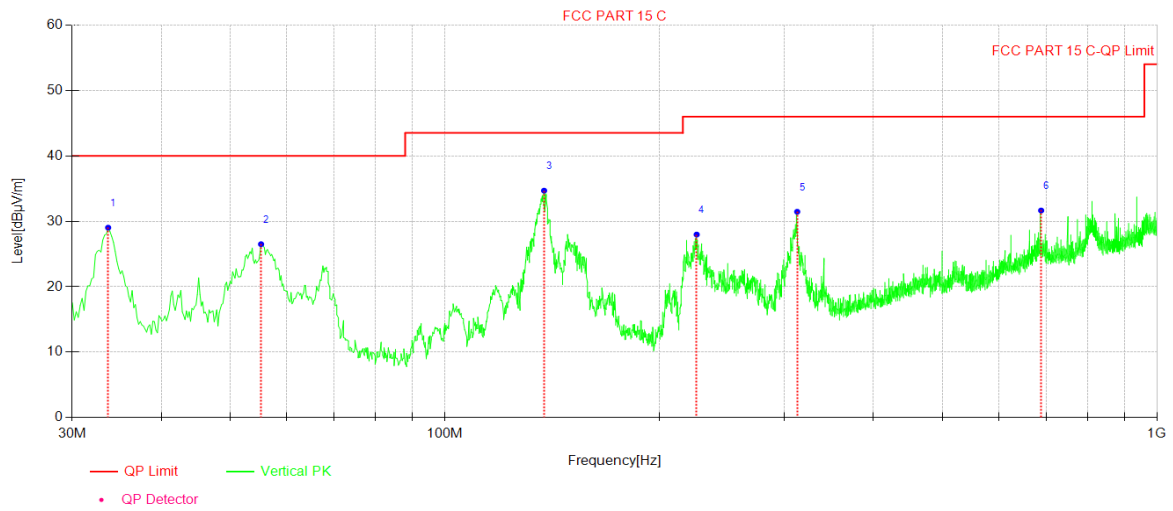
Radiated Emission Test Data (30 MHz ~ 1 GHz): Worst-Case Configuration(IEEE 802.11ax-HE40 Channel 3)

Horizontal



No.	Frequency (MHz)	Reading (dBUV)	Correction factor (dB)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	33.1046	26.48	-9.57	16.91	40.00	23.09	Peak
2	52.5085	24.76	-6.63	18.13	40.00	21.87	Peak
3	150.4981	30.00	-7.88	22.12	43.50	21.38	Peak
4	224.815	38.66	-11.06	27.60	46.00	18.40	Peak
5	312.5205	40.85	-6.58	34.27	46.00	11.73	Peak
6	687.5975	27.84	2.17	30.01	46.00	15.99	Peak

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.6867	38.49	-9.45	29.04	40.00	10.96	Peak
2	55.225	33.29	-6.78	26.51	40.00	13.49	Peak
3	137.8856	43.53	-8.84	34.69	43.50	8.81	Peak
4	225.7852	39.00	-11.02	27.98	46.00	18.02	Peak
5	312.5205	38.05	-6.58	31.47	46.00	14.53	Peak
6	687.5975	29.49	2.17	31.66	46.00	14.34	Peak

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Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO Antenna 0 IEEE 802.11b Channel 1:								
1	4824.0608	50.76	-1.18	49.58	74.00	24.42	Peak	Horizontal
2	7236.1412	43.20	2.58	45.78	74.00	28.22	Peak	Horizontal
3	4824.5608	48.27	-1.18	47.09	54.00	6.91	Average	Horizontal
4	7236.1412	37.43	2.58	40.01	54.00	13.99	Average	Horizontal
5	4824.0608	51.38	-1.18	50.20	74.00	23.80	Peak	Vertical
6	7235.1412	45.28	2.57	47.85	74.00	26.15	Peak	Vertical
7	4824.5608	49.30	-1.18	48.12	54.00	5.88	Average	Vertical
8	7237.1412	40.83	2.59	43.42	54.00	10.58	Average	Vertical
SISO Antenna 0 IEEE 802.11b Channel 6:								
1	4874.0625	52.98	-1.72	51.26	74.00	22.74	Peak	Horizontal
2	7309.6437	44.87	2.34	47.21	74.00	26.79	Peak	Horizontal
3	4874.5625	50.92	-1.72	49.20	54.00	4.80	Average	Horizontal
4	7310.1437	38.84	2.35	41.19	54.00	12.81	Average	Horizontal
5	4874.0625	54.17	-1.72	52.45	74.00	21.55	Peak	Vertical
6	7312.6438	44.66	2.37	47.03	74.00	26.97	Peak	Vertical
7	4874.5625	51.61	-1.72	49.89	54.00	4.11	Average	Vertical
8	7310.6437	40.13	2.35	42.48	54.00	11.52	Average	Vertical
SISO Antenna 0 IEEE 802.11b Channel 11:								
1	4924.0641	53.97	-1.56	52.41	74.00	21.59	Peak	Horizontal
2	7384.6462	42.50	2.93	45.43	74.00	28.57	Peak	Horizontal
3	4924.5642	52.40	-1.57	50.83	54.00	3.17	Average	Horizontal
4	7385.6462	37.01	2.94	39.95	54.00	14.05	Average	Horizontal
5	4924.0641	54.71	-1.56	53.15	74.00	20.85	Peak	Vertical
6	7386.6462	43.46	2.95	46.41	74.00	27.59	Peak	Vertical
7	4924.5642	52.89	-1.57	51.32	54.00	2.68	Average	Vertical
8	7385.1462	37.81	2.93	40.74	54.00	13.26	Average	Vertical

Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO Antenna 0 IEEE 802.11g Channel 1:								
1	4824.0608	44.45	-1.18	43.27	74.00	30.73	Peak	Horizontal
2	7236.1412	49.51	2.58	52.09	74.00	21.91	Peak	Horizontal
3	4824.0608	36.07	-1.18	34.89	54.00	19.11	Average	Horizontal
4	7236.1412	38.34	2.58	40.92	54.00	13.08	Average	Horizontal
5	4824.0608	44.60	-1.18	43.42	74.00	30.58	Peak	Vertical
6	7235.1412	49.82	2.57	52.39	74.00	21.61	Peak	Vertical
7	4824.0608	36.22	-1.18	35.04	54.00	18.96	Average	Vertical
8	7236.1412	41.78	2.58	44.36	54.00	9.64	Average	Vertical
SISO Antenna 0 IEEE 802.11g Channel 6:								
1	4874.0625	45.41	-1.72	43.69	74.00	30.31	Peak	Horizontal
2	7311.1437	46.91	2.35	49.26	74.00	24.74	Peak	Horizontal
3	4874.0625	38.21	-1.72	36.49	54.00	17.51	Average	Horizontal
4	7311.1437	39.28	2.35	41.63	54.00	12.37	Average	Horizontal
5	4874.0625	46.17	-1.72	44.45	74.00	29.55	Peak	Vertical
6	7311.1437	48.54	2.35	50.89	74.00	23.11	Peak	Vertical
7	4874.0625	39.61	-1.72	37.89	54.00	16.11	Average	Vertical
8	7311.1437	39.02	2.35	41.37	54.00	12.63	Average	Vertical
SISO Antenna 0 IEEE 802.11g Channel 11:								
1	4924.0641	46.54	-1.56	44.98	74.00	29.02	Peak	Horizontal
2	7386.1462	45.92	2.95	48.87	74.00	25.13	Peak	Horizontal
3	4924.0641	38.78	-1.56	37.22	54.00	16.78	Average	Horizontal
4	7386.1462	39.51	2.95	42.46	54.00	11.54	Average	Horizontal
5	4924.0641	46.72	-1.56	45.16	74.00	28.84	Peak	Vertical
6	7386.1462	46.78	2.95	49.73	74.00	24.27	Peak	Vertical
7	4924.0641	39.00	-1.56	37.44	54.00	16.56	Average	Vertical
8	7386.1462	37.38	2.95	40.33	54.00	13.67	Average	Vertical

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Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO Antenna 1 IEEE 802.11b Channel 1:								
1	4824.0608	53.75	-1.18	52.57	74.00	21.43	Peak	Horizontal
2	7236.1412	48.50	2.58	51.08	74.00	22.92	Peak	Horizontal
3	4824.5608	51.90	-1.18	50.72	54.00	3.28	Average	Horizontal
4	7235.6412	46.05	2.58	48.63	54.00	5.37	Average	Horizontal
5	4824.0608	53.86	-1.18	52.68	74.00	21.32	Peak	Vertical
6	7236.1412	48.81	2.58	51.39	74.00	22.61	Peak	Vertical
7	4824.5608	52.13	-1.18	50.95	54.00	3.05	Average	Vertical
8	7235.6412	46.17	2.58	48.75	54.00	5.25	Average	Vertical
SISO Antenna 1 IEEE 802.11b Channel 6:								
1	4874.0625	54.92	-1.72	53.20	74.00	20.80	Peak	Horizontal
2	7312.6438	47.18	2.37	49.55	74.00	24.45	Peak	Horizontal
3	4874.5625	52.94	-1.72	51.22	54.00	2.78	Average	Horizontal
4	7312.6438	42.71	2.37	45.08	54.00	8.92	Average	Horizontal
5	4874.0625	55.40	-1.72	53.68	74.00	20.32	Peak	Vertical
6	7311.1437	45.62	2.35	47.97	74.00	26.03	Peak	Vertical
7	4874.5625	53.19	-1.72	51.47	54.00	2.53	Average	Vertical
8	7311.1437	41.42	2.35	43.77	54.00	10.23	Average	Vertical
SISO Antenna 1 IEEE 802.11b Channel 11:								
1	4924.0641	55.43	-1.56	53.87	74.00	20.13	Peak	Horizontal
2	7385.6462	47.92	2.94	50.86	74.00	23.14	Peak	Horizontal
3	4924.5642	53.61	-1.57	52.04	54.00	1.96	Average	Horizontal
4	7387.1462	44.02	2.95	46.97	54.00	7.03	Average	Horizontal
5	4924.0641	56.00	-1.56	54.44	74.00	19.56	Peak	Vertical
6	7387.1462	47.97	2.95	50.92	74.00	23.08	Peak	Vertical
7	4924.5642	53.97	-1.57	52.40	54.00	1.60	Average	Vertical
8	7385.1462	44.31	2.93	47.24	54.00	6.76	Average	Vertical

Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
SISO Antenna 1 IEEE 802.11g Channel 1:								
1	4824.0608	46.76	-1.18	45.58	74.00	28.42	Peak	Horizontal
2	7236.1412	52.81	2.58	55.39	74.00	18.61	Peak	Horizontal
3	4824.0608	39.89	-1.18	38.71	54.00	15.29	Average	Horizontal
4	7236.1412	45.68	2.58	48.26	54.00	5.74	Average	Horizontal
5	4824.0608	47.67	-1.18	46.49	74.00	27.51	Peak	Vertical
6	7236.1412	53.03	2.58	55.61	74.00	18.39	Peak	Vertical
7	4824.0608	39.88	-1.18	38.70	54.00	15.30	Average	Vertical
8	7236.1412	46.58	2.58	49.16	54.00	4.84	Average	Vertical
SISO Antenna 1 IEEE 802.11g Channel 6:								
1	4874.0625	47.65	-1.72	45.93	74.00	28.07	Peak	Horizontal
2	7311.1437	49.29	2.35	51.64	74.00	22.36	Peak	Horizontal
3	4874.0625	42.13	-1.72	40.41	54.00	13.59	Average	Horizontal
4	7311.1437	43.14	2.35	45.49	54.00	8.51	Average	Horizontal
5	4874.0625	48.27	-1.72	46.55	74.00	27.45	Peak	Vertical
6	7311.1437	49.17	2.35	51.52	74.00	22.48	Peak	Vertical
7	4874.0625	40.54	-1.72	38.82	54.00	15.18	Average	Vertical
8	7311.1437	41.43	2.35	43.78	54.00	10.22	Average	Vertical
SISO Antenna 1 IEEE 802.11g Channel 11:								
1	4924.0641	49.13	-1.56	47.57	74.00	26.43	Peak	Horizontal
2	7386.1462	50.60	2.95	53.55	74.00	20.45	Peak	Horizontal
3	4924.0641	41.90	-1.56	40.34	54.00	13.66	Average	Horizontal
4	7386.1462	43.56	2.95	46.51	54.00	7.49	Average	Horizontal
5	4924.0641	51.49	-1.56	49.93	74.00	24.07	Peak	Vertical
6	7386.1462	50.32	2.95	53.27	74.00	20.73	Peak	Vertical
7	4924.0641	40.74	-1.56	39.18	54.00	14.82	Average	Vertical
8	7386.1462	43.14	2.95	46.09	54.00	7.91	Average	Vertical

Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_Antenna 0+1_ IEEE 802.11n-HT20_Channel 1:								
1	4824.0608	43.80	-1.18	42.62	74.00	31.38	Peak	Horizontal
2	7236.1412	44.67	2.58	47.25	74.00	26.75	Peak	Horizontal
3	4824.0608	36.30	-1.18	35.12	54.00	18.88	Average	Horizontal
4	7236.1412	36.89	2.58	39.47	54.00	14.53	Average	Horizontal
5	4824.0608	42.97	-1.18	41.79	74.00	32.21	Peak	Vertical
6	7234.1411	48.55	2.57	51.12	74.00	22.88	Peak	Vertical
7	4824.0608	36.03	-1.18	34.85	54.00	19.15	Average	Vertical
8	7236.1412	38.07	2.58	40.65	54.00	13.35	Average	Vertical
MIMO_Antenna 0+1_ IEEE 802.11n-HT20_Channel 6:								
1	4874.0625	46.33	-1.72	44.61	74.00	29.39	Peak	Horizontal
2	7311.1437	46.16	2.35	48.51	74.00	25.49	Peak	Horizontal
3	4874.0625	37.94	-1.72	36.22	54.00	17.78	Average	Horizontal
4	7311.1437	37.37	2.35	39.72	54.00	14.28	Average	Horizontal
5	4874.0625	45.62	-1.72	43.90	74.00	30.10	Peak	Vertical
6	7311.1437	45.41	2.35	47.76	74.00	26.24	Peak	Vertical
7	4874.0625	36.27	-1.72	34.55	54.00	19.45	Average	Vertical
8	7311.1437	37.40	2.35	39.75	54.00	14.25	Average	Vertical
MIMO_Antenna 0+1_ IEEE 802.11n-HT20_Channel 11:								
1	4924.0641	45.48	-1.56	43.92	74.00	30.08	Peak	Horizontal
2	7386.1462	43.32	2.95	46.27	74.00	27.73	Peak	Horizontal
3	4924.0641	37.61	-1.56	36.05	54.00	17.95	Average	Horizontal
4	7386.1462	36.05	2.95	39.00	54.00	15.00	Average	Horizontal
5	4924.0641	46.05	-1.56	44.49	74.00	29.51	Peak	Vertical
6	7386.1462	44.71	2.95	47.66	74.00	26.34	Peak	Vertical
7	4924.0641	38.98	-1.56	37.42	54.00	16.58	Average	Vertical
8	7386.1462	36.17	2.95	39.12	54.00	14.88	Average	Vertical

Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_Antenna 0+1_IEEE 802.11n-HT40_Channel 3:								
1	4844.0615	44.65	-1.24	43.41	74.00	30.59	Peak	Horizontal
2	7266.1422	42.55	2.71	45.26	74.00	28.74	Peak	Horizontal
3	4844.0615	39.34	-1.24	38.10	54.00	15.90	Average	Horizontal
4	7266.1422	35.45	2.71	38.16	54.00	15.84	Average	Horizontal
5	4844.0615	44.58	-1.24	43.34	74.00	30.66	Peak	Vertical
6	7266.1422	44.03	2.71	46.74	74.00	27.26	Peak	Vertical
7	4844.0615	38.38	-1.24	37.14	54.00	16.86	Average	Vertical
8	7266.1422	35.44	2.71	38.15	54.00	15.85	Average	Vertical
MIMO_Antenna 0+1_IEEE 802.11n-HT40_Channel 6:								
1	4874.0625	43.50	-1.72	41.78	74.00	32.22	Peak	Horizontal
2	7311.1437	44.47	2.35	46.82	74.00	27.18	Peak	Horizontal
3	4874.0625	35.17	-1.72	33.45	54.00	20.55	Average	Horizontal
4	7311.1437	36.53	2.35	38.88	54.00	15.12	Average	Horizontal
5	4874.0625	43.56	-1.72	41.84	74.00	32.16	Peak	Vertical
6	7311.1437	44.74	2.35	47.09	74.00	26.91	Peak	Vertical
7	4874.0625	34.99	-1.72	33.27	54.00	20.73	Average	Vertical
8	7311.1437	37.33	2.35	39.68	54.00	14.32	Average	Vertical
MIMO_Antenna 0+1_IEEE 802.11n-HT40_Channel 9:								
1	4904.0635	41.81	-1.53	40.28	74.00	33.72	Peak	Horizontal
2	7356.1452	45.15	2.68	47.83	74.00	26.17	Peak	Horizontal
3	4904.0635	35.22	-1.53	33.69	54.00	20.31	Average	Horizontal
4	7356.1452	35.71	2.68	38.39	54.00	15.61	Average	Horizontal
5	4904.0635	43.76	-1.53	42.23	74.00	31.77	Peak	Vertical
6	7356.1452	42.36	2.68	45.04	74.00	28.96	Peak	Vertical
7	4904.0635	35.56	-1.53	34.03	54.00	19.97	Average	Vertical
8	7356.1452	35.08	2.68	37.76	54.00	16.24	Average	Vertical

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Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_Antenna 0+1_IEEE 802.11ax-HE20_Channel 1:								
1	4824.0608	45.91	-1.18	44.73	74.00	29.27	Peak	Horizontal
2	7236.1412	47.62	2.58	50.20	74.00	23.80	Peak	Horizontal
3	4824.0608	37.76	-1.18	36.58	54.00	17.42	Average	Horizontal
4	7236.1412	35.60	2.58	38.18	54.00	15.82	Average	Horizontal
5	4824.0608	44.09	-1.18	42.91	74.00	31.09	Peak	Vertical
6	7237.6413	47.31	2.58	49.89	74.00	24.11	Peak	Vertical
7	4824.0608	37.01	-1.18	35.83	54.00	18.17	Average	Vertical
8	7238.1413	40.48	2.59	43.07	54.00	10.93	Average	Vertical
MIMO_Antenna 0+1_IEEE 802.11ax-HE20_Channel 6:								
1	4874.0625	51.50	-1.72	49.78	74.00	24.22	Peak	Horizontal
2	7311.1437	56.28	2.35	58.63	74.00	15.37	Peak	Horizontal
3	4874.0625	44.14	-1.72	42.42	54.00	11.58	Average	Horizontal
4	7311.1437	46.34	2.35	48.69	54.00	5.31	Average	Horizontal
5	4874.0625	52.33	-1.72	50.61	74.00	23.39	Peak	Vertical
6	7311.1437	55.01	2.35	57.36	74.00	16.64	Peak	Vertical
7	4874.0625	43.74	-1.72	42.02	54.00	11.98	Average	Vertical
8	7311.1437	47.36	2.35	49.71	54.00	4.29	Average	Vertical
MIMO_Antenna 0+1_IEEE 802.11ax-HE20_Channel 11:								
1	4924.0641	46.88	-1.56	45.32	74.00	28.68	Peak	Horizontal
2	7386.1462	44.73	2.95	47.68	74.00	26.32	Peak	Horizontal
3	4924.0641	37.21	-1.56	35.65	54.00	18.35	Average	Horizontal
4	7386.1462	37.70	2.95	40.65	54.00	13.35	Average	Horizontal
5	4924.0641	46.24	-1.56	44.68	74.00	29.32	Peak	Vertical
6	7386.1462	45.63	2.95	48.58	74.00	25.42	Peak	Vertical
7	4924.0641	37.98	-1.56	36.42	54.00	17.58	Average	Vertical
8	7386.1462	36.66	2.95	39.61	54.00	14.39	Average	Vertical

Radiated Emission Test Data (Above 1GHz):								
No.	Freq. (MHz)	Reading (dBμV)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Polaxis
MIMO_Antenna 0+1_ IEEE 802.11ax-HE40_Channel 3:								
1	4844.0615	45.92	-1.24	44.68	74.00	29.32	Peak	Horizontal
2	7269.6423	47.12	2.72	49.84	74.00	24.16	Peak	Horizontal
3	4844.0615	37.98	-1.24	36.74	54.00	17.26	Average	Horizontal
4	7266.1422	35.99	2.71	38.70	54.00	15.30	Average	Horizontal
5	4844.0615	44.14	-1.24	42.90	74.00	31.10	Peak	Vertical
6	7266.1422	42.38	2.71	45.09	74.00	28.91	Peak	Vertical
7	4844.0615	38.64	-1.24	37.40	54.00	16.60	Average	Vertical
8	7266.1422	35.50	2.71	38.21	54.00	15.79	Average	Vertical
MIMO_Antenna 0+1_ IEEE 802.11ax-HE40_Channel 6:								
1	4874.0625	44.18	-1.72	42.46	74.00	31.54	Peak	Horizontal
2	7311.1437	44.24	2.35	46.59	74.00	27.41	Peak	Horizontal
3	4874.0625	36.75	-1.72	35.03	54.00	18.97	Average	Horizontal
4	7311.1437	36.80	2.35	39.15	54.00	14.85	Average	Horizontal
5	4874.0625	45.20	-1.72	43.48	74.00	30.52	Peak	Vertical
6	7311.1437	43.14	2.35	45.49	74.00	28.51	Peak	Vertical
7	4874.0625	38.36	-1.72	36.64	54.00	17.36	Average	Vertical
8	7311.1437	35.52	2.35	37.87	54.00	16.13	Average	Vertical
MIMO_Antenna 0+1_ IEEE 802.11ax-HE40_Channel 9:								
1	4904.0635	44.40	-1.53	42.87	74.00	31.13	Peak	Horizontal
2	7356.1452	43.63	2.68	46.31	74.00	27.69	Peak	Horizontal
3	4904.0635	37.60	-1.53	36.07	54.00	17.93	Average	Horizontal
4	7356.1452	36.69	2.68	39.37	54.00	14.63	Average	Horizontal
5	4904.0635	43.93	-1.53	42.40	74.00	31.60	Peak	Vertical
6	7356.1452	45.69	2.68	48.37	74.00	25.63	Peak	Vertical
7	4904.0635	36.34	-1.53	34.81	54.00	19.19	Average	Vertical
8	7356.1452	36.26	2.68	38.94	54.00	15.06	Average	Vertical

Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Limit – Result

5.8 BAND EDGE MEASUREMENTS (RADIATED)

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

Test Method: ANSI C63.10-2013 Clause 11.13

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).

Frequency	Limit (dB μ V/m @3m)	Remark
30 MHz-88 MHz	40.0	Quasi-peak Value
88 MHz-216 MHz	43.5	Quasi-peak Value
216 MHz-960 MHz	46.0	Quasi-peak Value
960 MHz-1 GHz	54.0	Quasi-peak Value
Above 1 GHz	54.0	Average Value
	74.0	Peak Value

Test Setup: Refer to section 4.5.1 for details.

Test Procedures:

Radiated band edge measurements at 2390 MHz and 2483.5 MHz were made with the unit transmitting in the low end of the channel range and the high end closest to the restricted bands respectively. The emissions were made on the 966 Semi-Chamber. Use (resolution bandwidth (RBW) = 1 MHz, video bandwidth (VBW) = 3 MHz for peak levels and RBW = 1 MHz and VBW = 10 Hz or 1/T for average levels).

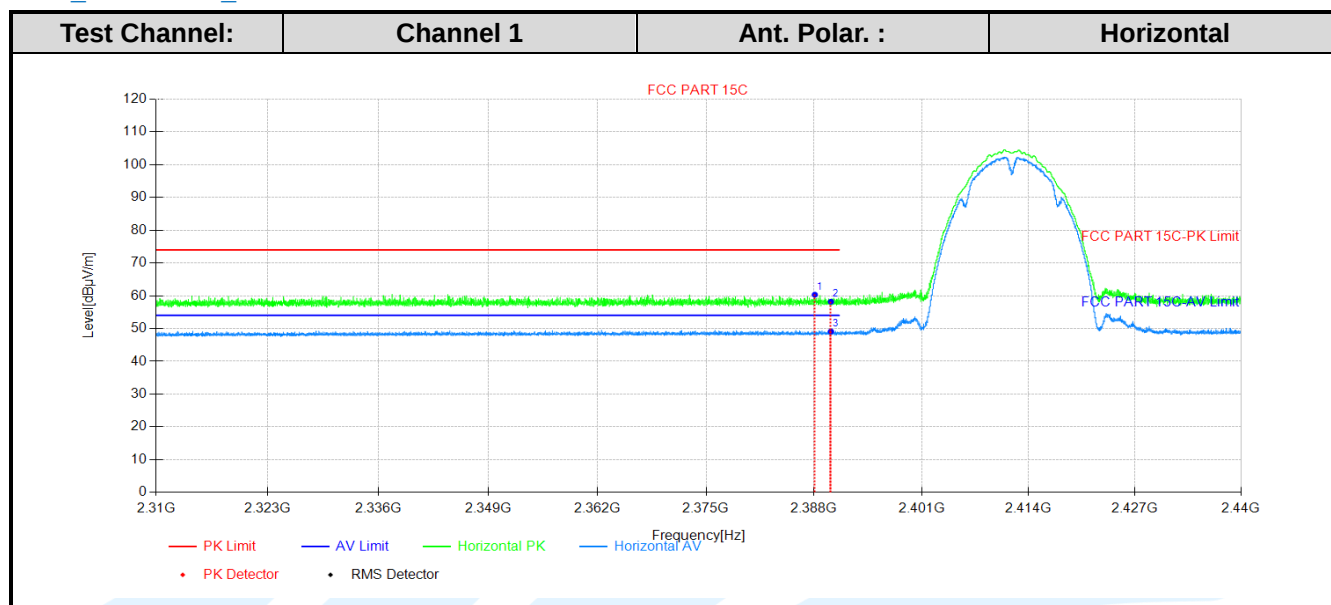
1. Use radiated spurious emission test procedure described in clause 5.7. The transmitter output (antenna port) was connected to the test receiver.
2. Set the PK and AV limit line.
3. Record the fundamental emission and emissions out of the band-edge.
4. Determine band-edge compliance as required.

Equipment Used: Refer to section 3 for details.

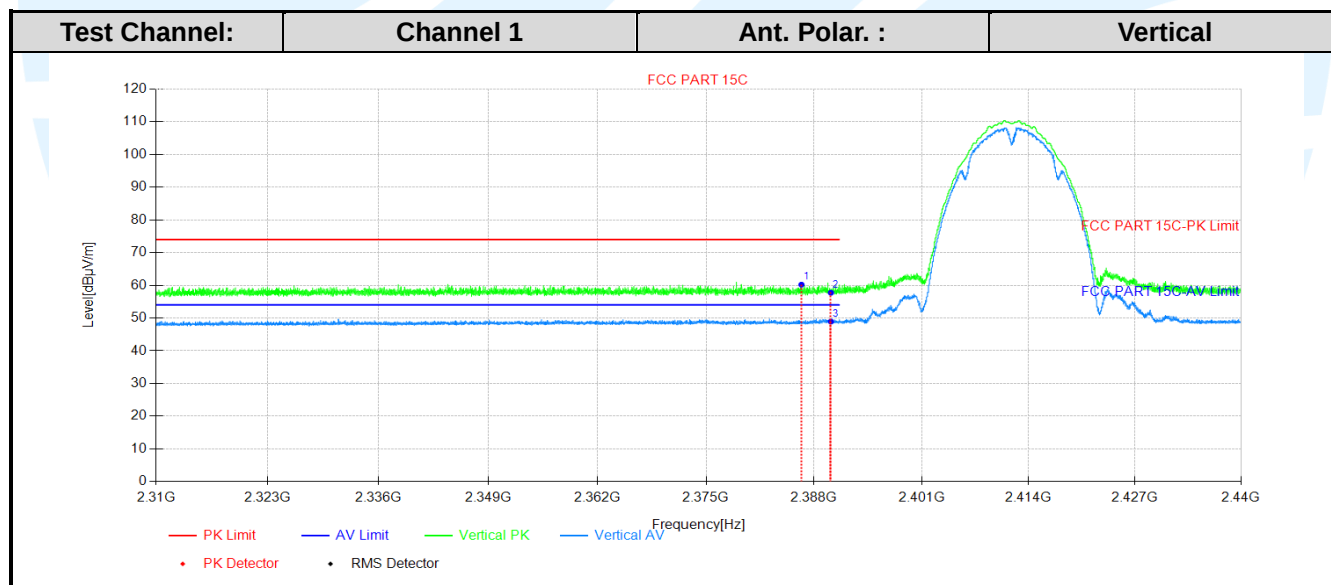
Test Result: Pass

The measurement data as follows:

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Data List											
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2388.0728	49.13	11.20	60.33	74.00	13.67	150	0	PK	Horizontal	PASS
2	2390.01	46.99	11.20	58.19	74.00	15.81	150	326	PK	Horizontal	PASS
3	2390.01	37.92	11.20	49.12	54.00	4.88	150	156	AV	Horizontal	PASS



Data List											
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2386.4606	49.01	11.20	60.21	74.00	13.79	150	262	PK	Vertical	PASS
2	2390.01	46.54	11.20	57.74	74.00	16.26	150	21	PK	Vertical	PASS
3	2390.01	37.76	11.20	48.96	54.00	5.04	150	79	AV	Vertical	PASS

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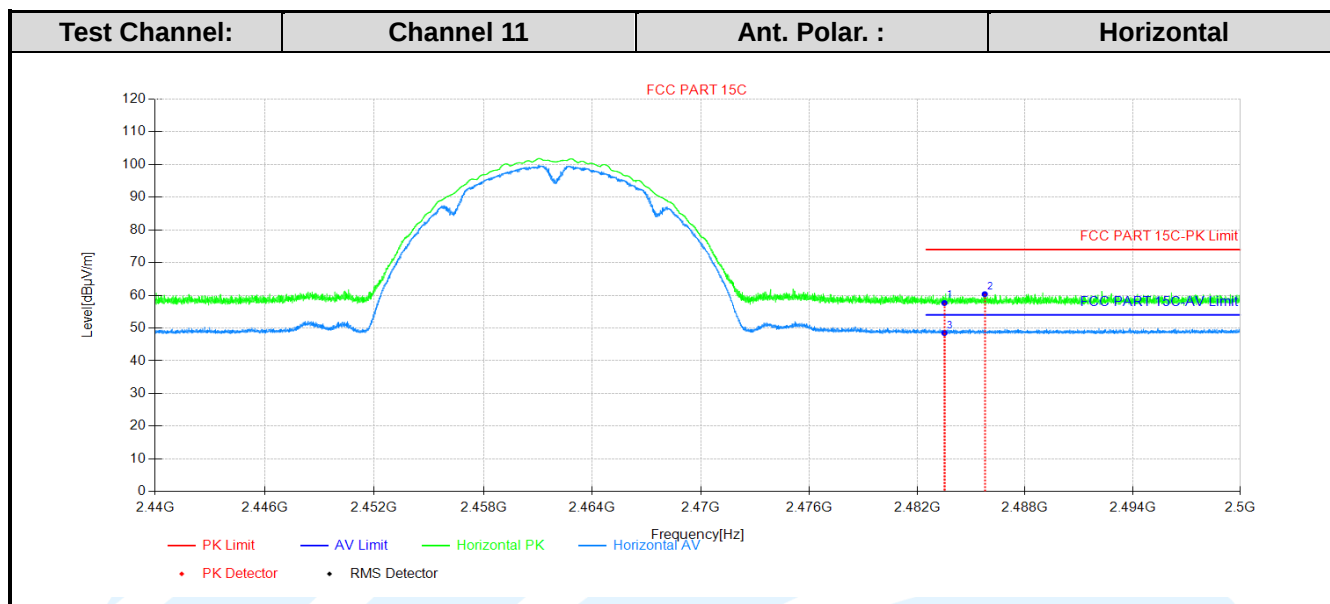
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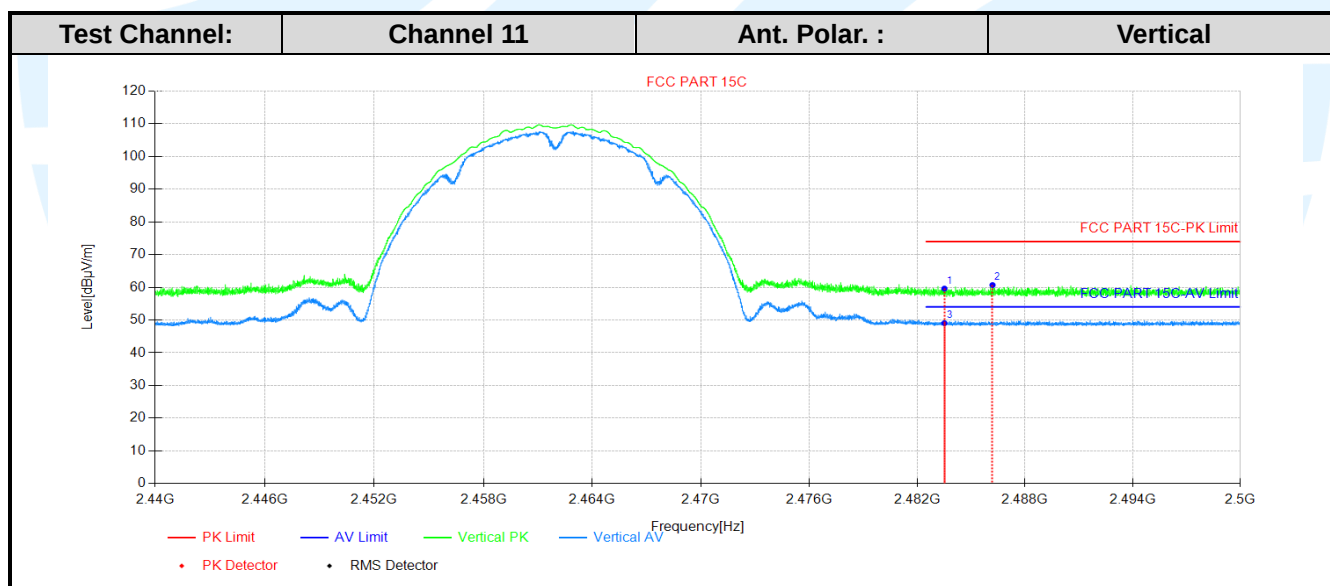
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Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	45.98	11.68	57.66	74.00	16.34	150	28	PK	Horizontal	PASS
2	2485.7486	48.67	11.68	60.35	74.00	13.65	150	70	PK	Horizontal	PASS
3	2483.5044	36.80	11.68	48.48	54.00	5.52	150	0	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	47.94	11.68	59.62	74.00	14.38	150	94	PK	Vertical	PASS
2	2486.1806	49.03	11.67	60.70	74.00	13.30	150	110	PK	Vertical	PASS
3	2483.5044	37.39	11.68	49.07	54.00	4.93	150	150	AV	Vertical	PASS

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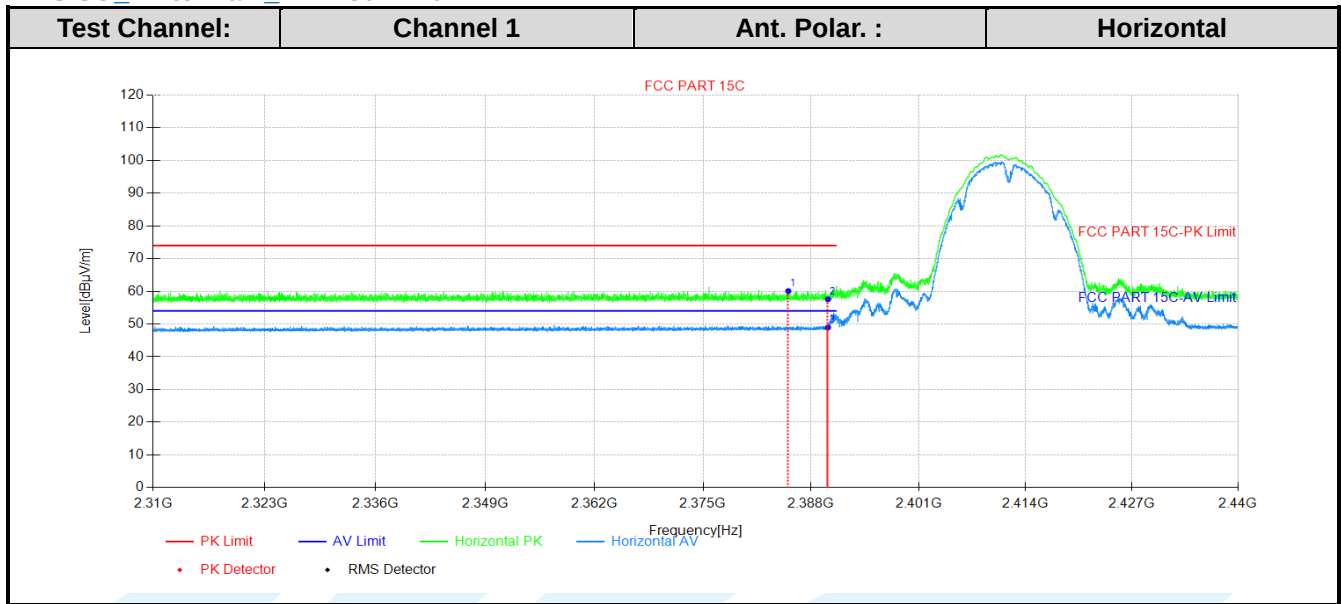
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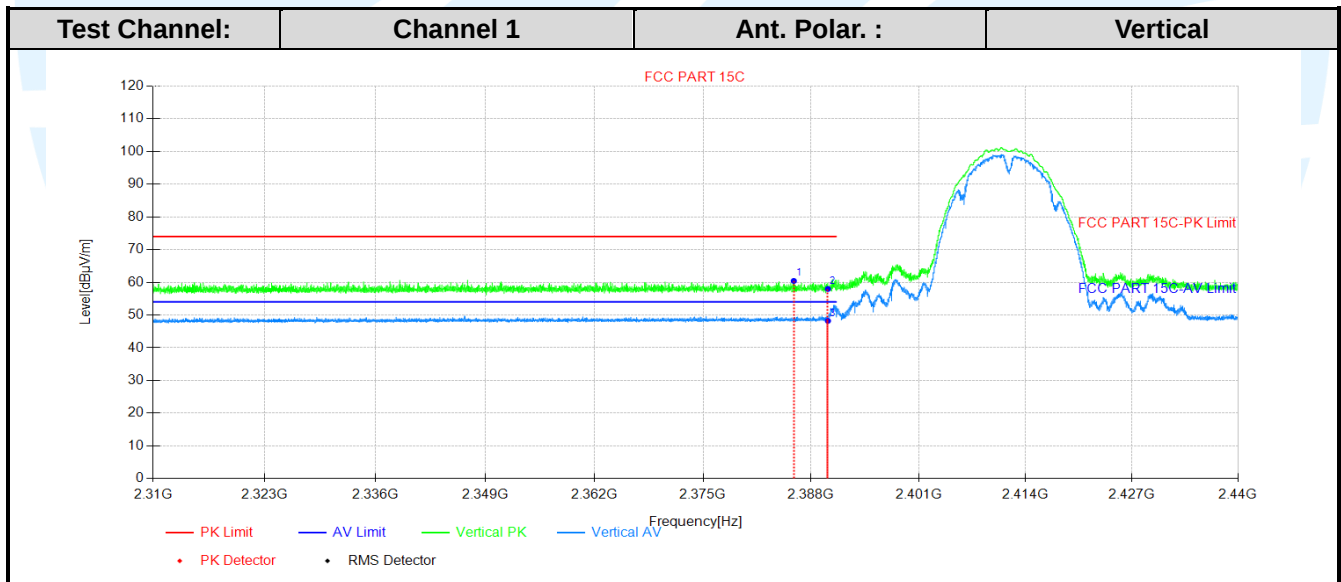
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Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2385.2385	48.89	11.20	60.09	74.00	13.91	150	1	PK	Horizontal	PASS
2	2390.01	46.36	11.20	57.56	74.00	16.44	150	215	PK	Horizontal	PASS
3	2390.01	37.74	11.20	48.94	54.00	5.06	150	125	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2385.9016	49.24	11.20	60.44	74.00	13.56	150	83	PK	Vertical	PASS
2	2390.01	46.78	11.20	57.98	74.00	16.02	150	264	PK	Vertical	PASS
3	2390.01	37.02	11.20	48.22	54.00	5.78	150	301	AV	Vertical	PASS

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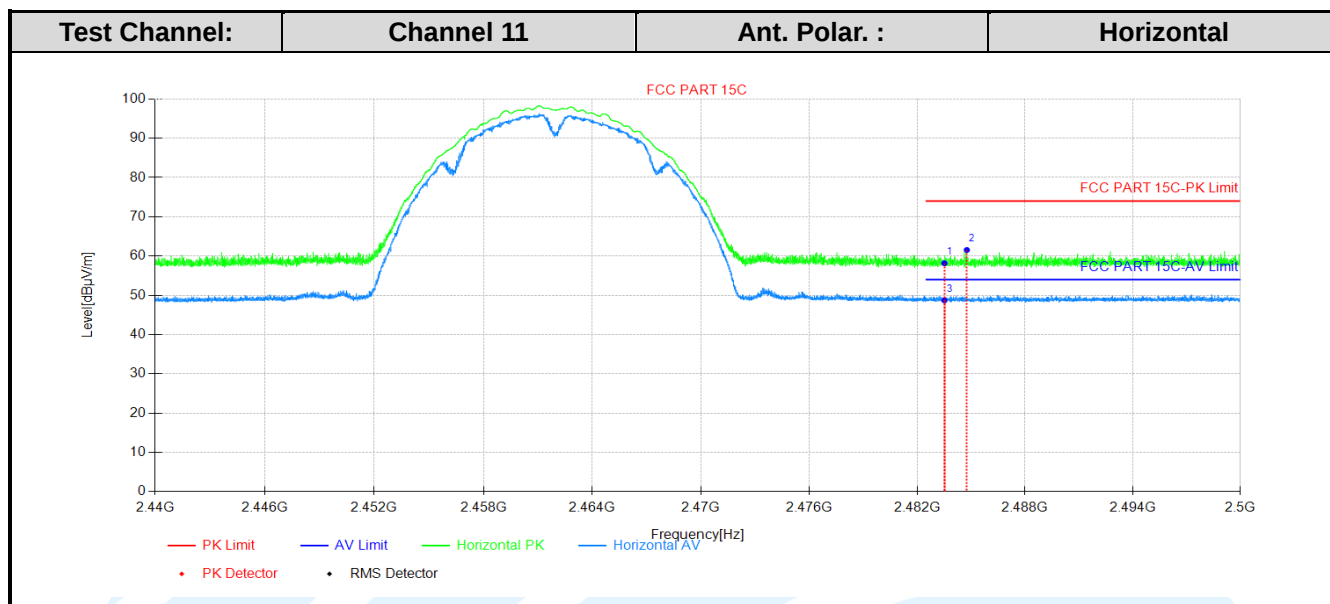
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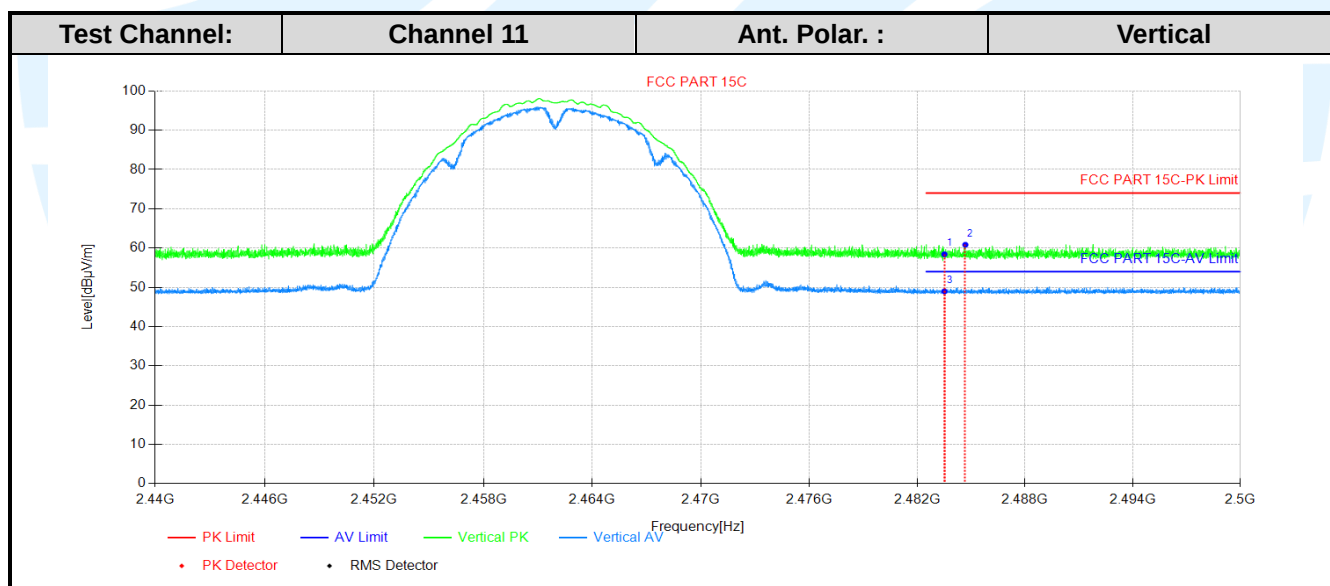
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Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	46.49	11.68	58.17	74.00	15.83	150	359	PK	Horizontal	PASS
2	2484.7525	49.88	11.67	61.55	74.00	12.45	150	71	PK	Horizontal	PASS
3	2483.5044	37.05	11.68	48.73	54.00	5.27	150	139	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	46.74	11.68	58.42	74.00	15.58	150	92	PK	Vertical	PASS
2	2484.6685	49.17	11.67	60.84	74.00	13.16	150	354	PK	Vertical	PASS
3	2483.5044	37.30	11.68	48.98	54.00	5.02	150	211	AV	Vertical	PASS

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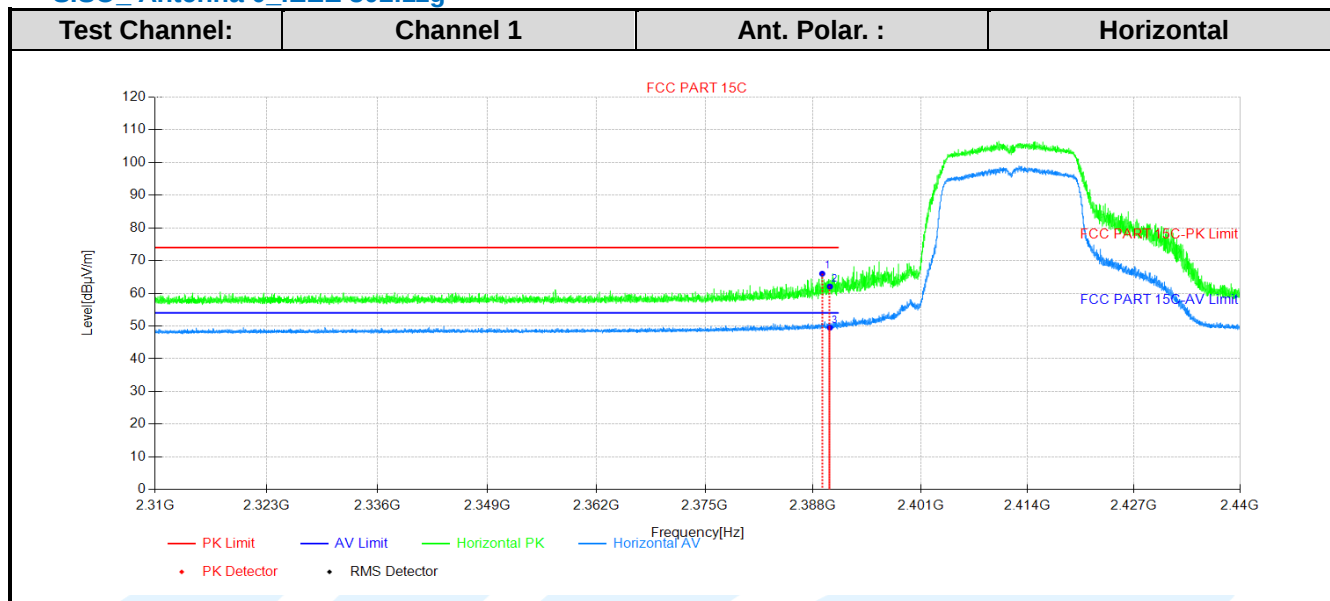
Fax: +86-755-28230886

E-mail: info@uttlab.com

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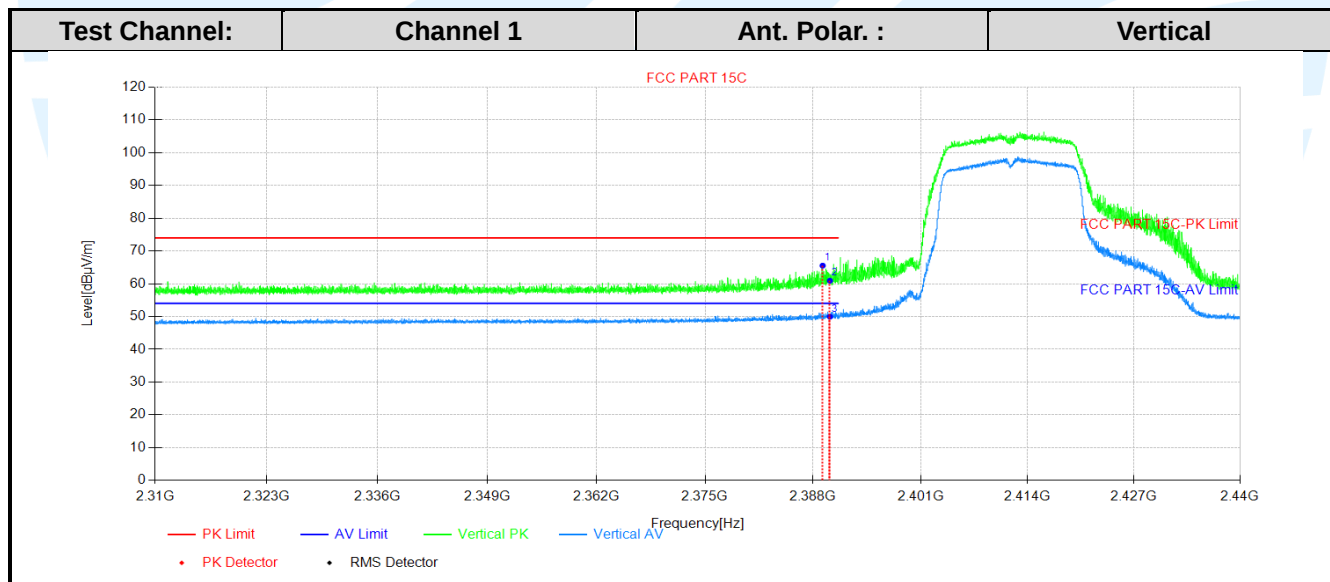
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SISO_Antenna 0_ IEEE 802.11g



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2389.0869	54.81	11.20	66.01	74.00	7.99	150	26	PK	Horizontal	PASS
2	2390.01	50.88	11.20	62.08	74.00	11.92	150	33	PK	Horizontal	PASS
3	2390.01	38.30	11.20	49.50	54.00	4.50	150	170	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2389.1389	54.33	11.20	65.53	74.00	8.47	150	174	PK	Vertical	PASS
2	2390.01	49.74	11.20	60.94	74.00	13.06	150	37	PK	Vertical	PASS
3	2390.01	38.76	11.20	49.96	54.00	4.04	150	166	AV	Vertical	PASS

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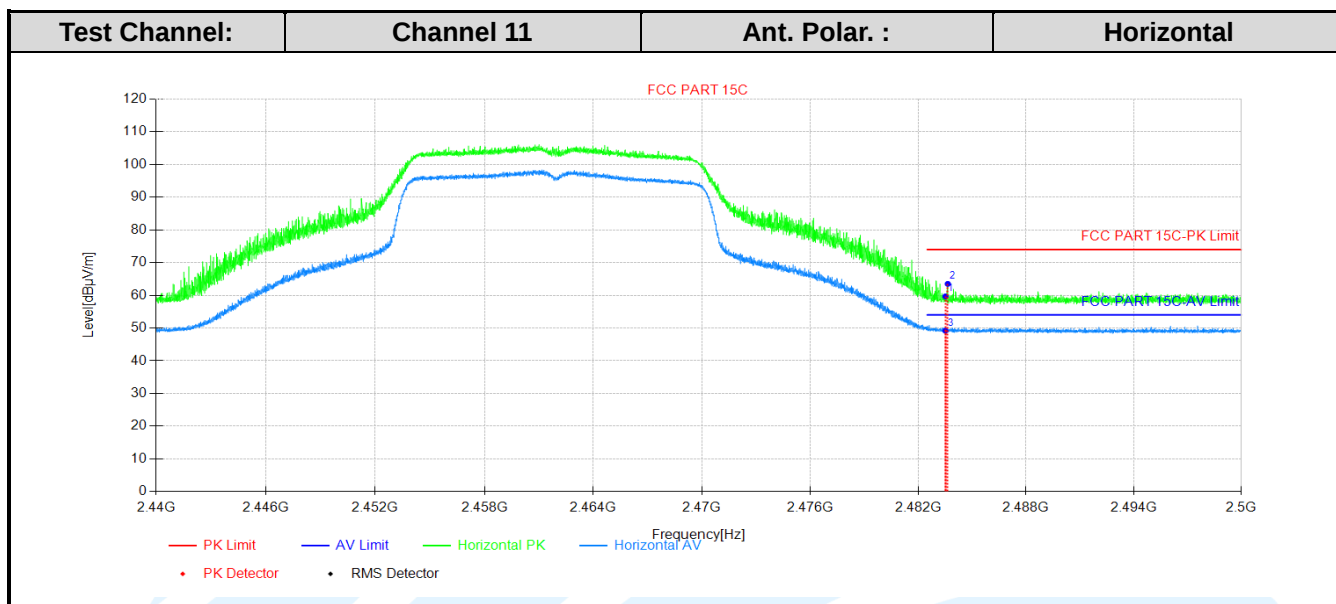
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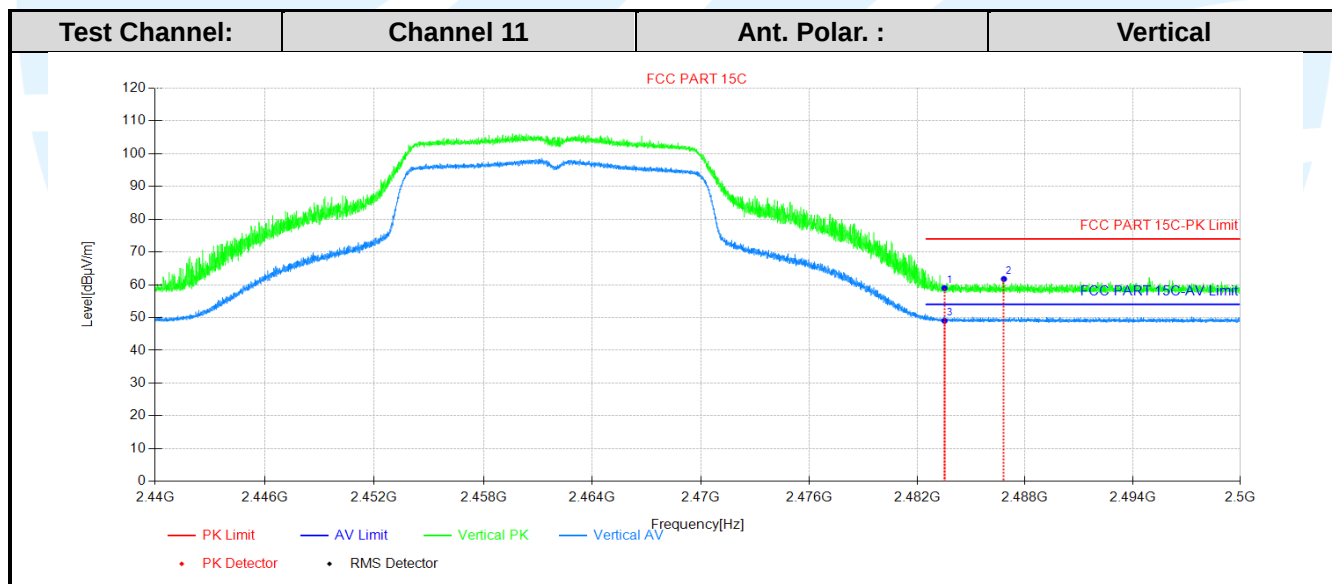
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Data List												
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict	
1	2483.5044	48.01	11.68	59.69	74.00	14.31	150	140	PK	Horizontal	PASS	
2	2483.6364	51.84	11.67	63.51	74.00	10.49	150	4	PK	Horizontal	PASS	
3	2483.5044	37.51	11.68	49.19	54.00	4.81	150	75	AV	Horizontal	PASS	



Data List												
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1	2483.5104	47.31	11.68	58.99	74.00	15.01	150	98	PK	Vertical	PASS	
2	2486.8167	50.11	11.67	61.78	74.00	12.22	150	359	PK	Vertical	PASS	
3	2483.5104	37.32	11.68	49.00	54.00	5.00	150	82	AV	Vertical	PASS	

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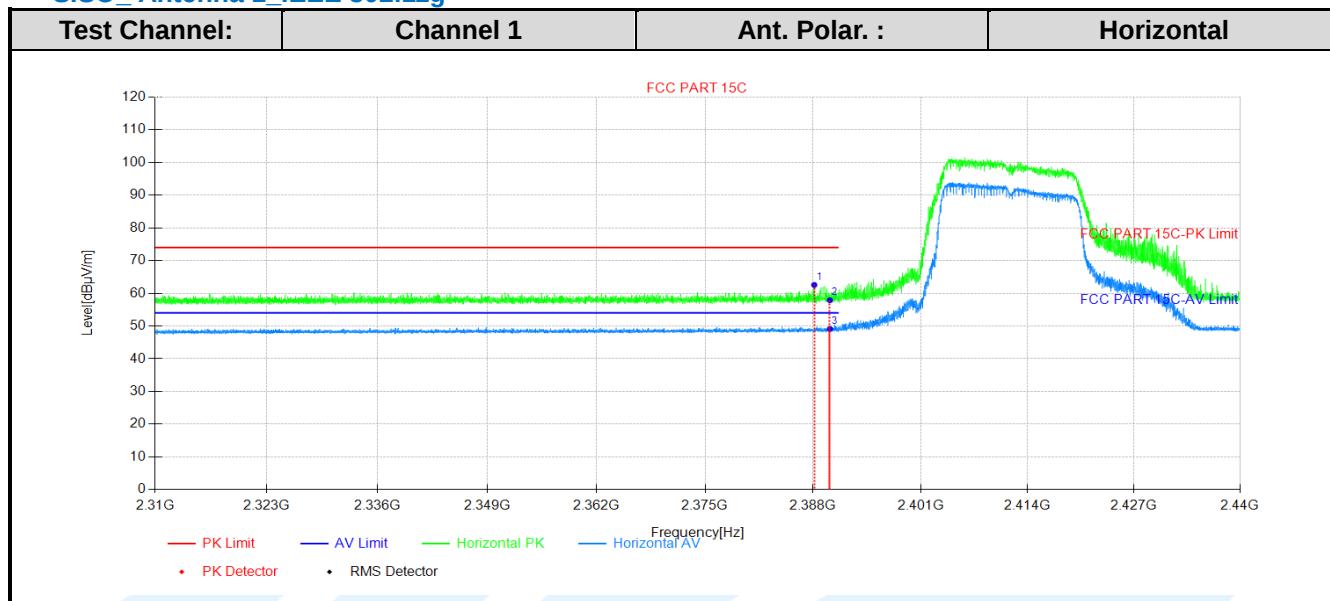
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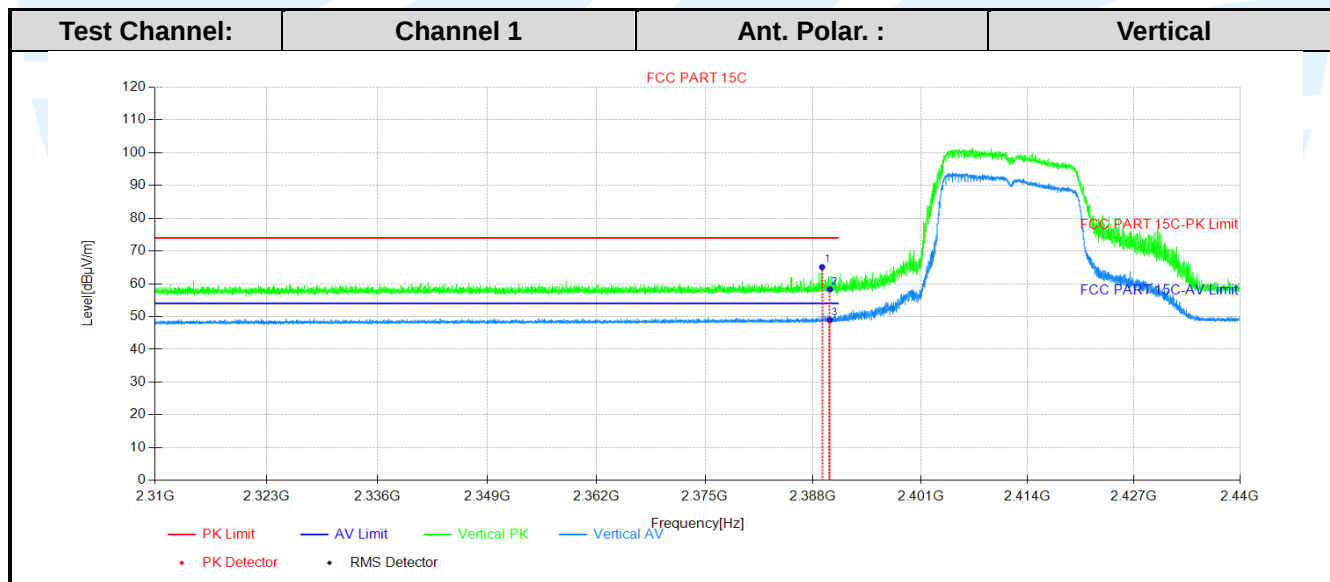
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SISO_Antenna 1_ IEEE 802.11g



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2388.1248	51.37	11.20	62.57	74.00	11.43	150	305	PK	Horizontal	PASS
2	2390.01	46.70	11.20	57.90	74.00	16.10	150	7	PK	Horizontal	PASS
3	2390.01	37.92	11.20	49.12	54.00	4.88	150	305	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2389.0739	53.90	11.20	65.10	74.00	8.90	150	308	PK	Vertical	PASS
2	2390.01	47.16	11.20	58.36	74.00	15.64	150	317	PK	Vertical	PASS
3	2390.01	37.74	11.20	48.94	54.00	5.06	150	117	AV	Vertical	PASS

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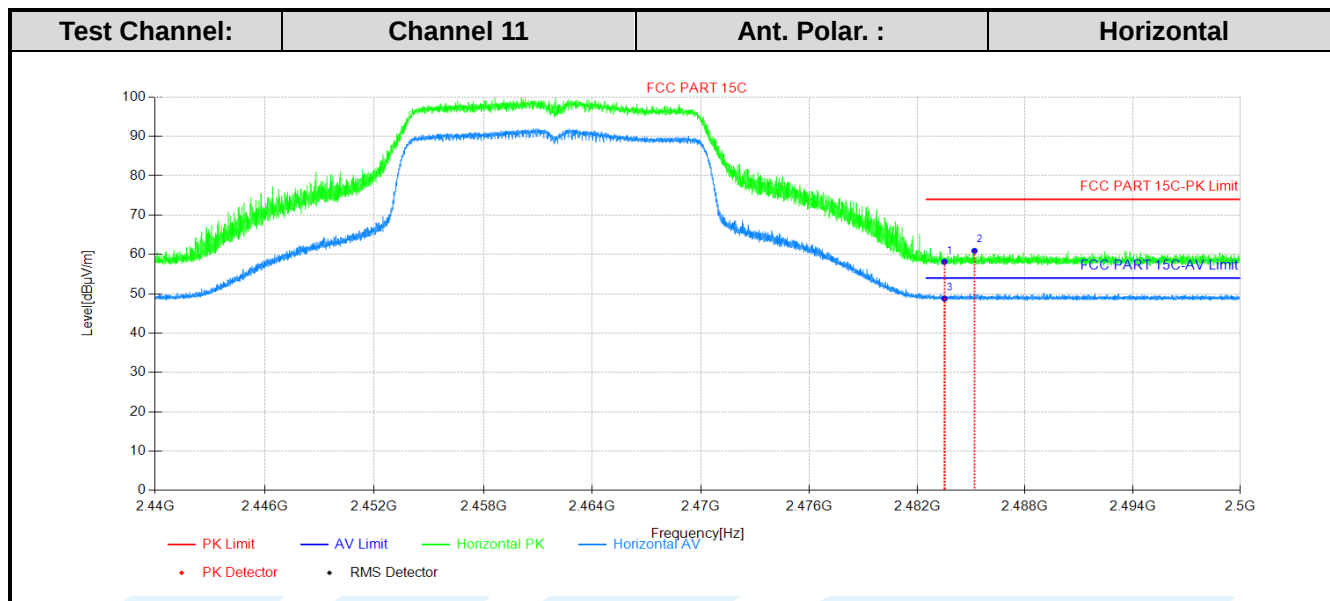
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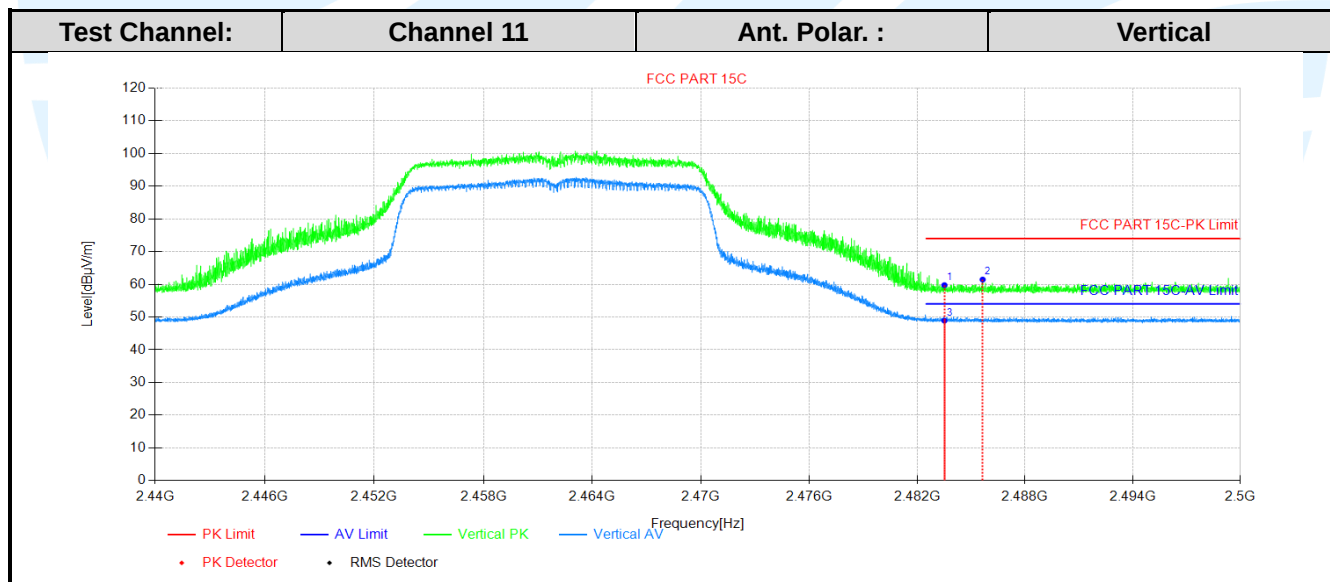
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Data List												
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict	
1	2483.5104	46.46	11.68	58.14	74.00	15.86	150	7	PK	Horizontal	PASS	
2	2485.1785	49.24	11.68	60.92	74.00	13.08	150	3	PK	Horizontal	PASS	
3	2483.5104	37.07	11.68	48.75	54.00	5.25	150	1	AV	Horizontal	PASS	



Data List												
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict	
1	2483.5044	48.08	11.68	59.76	74.00	14.24	150	277	PK	Vertical	PASS	
2	2485.6346	49.78	11.68	61.46	74.00	12.54	150	91	PK	Vertical	PASS	
3	2483.5044	37.22	11.68	48.90	54.00	5.10	150	359	AV	Vertical	PASS	

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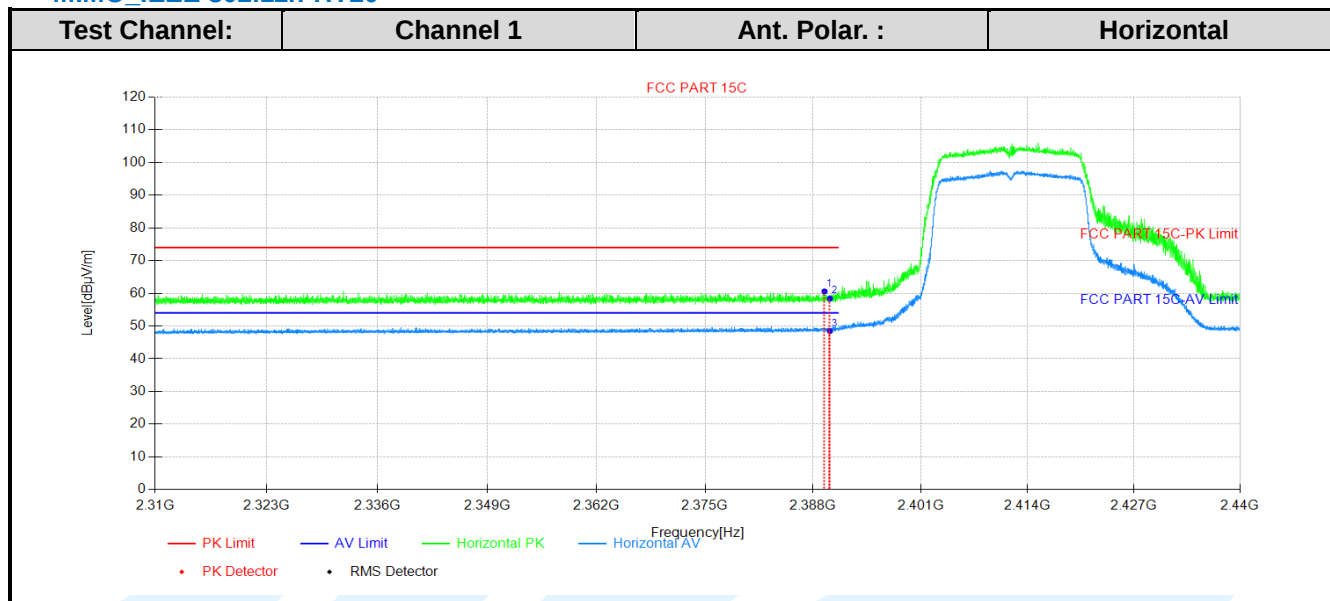
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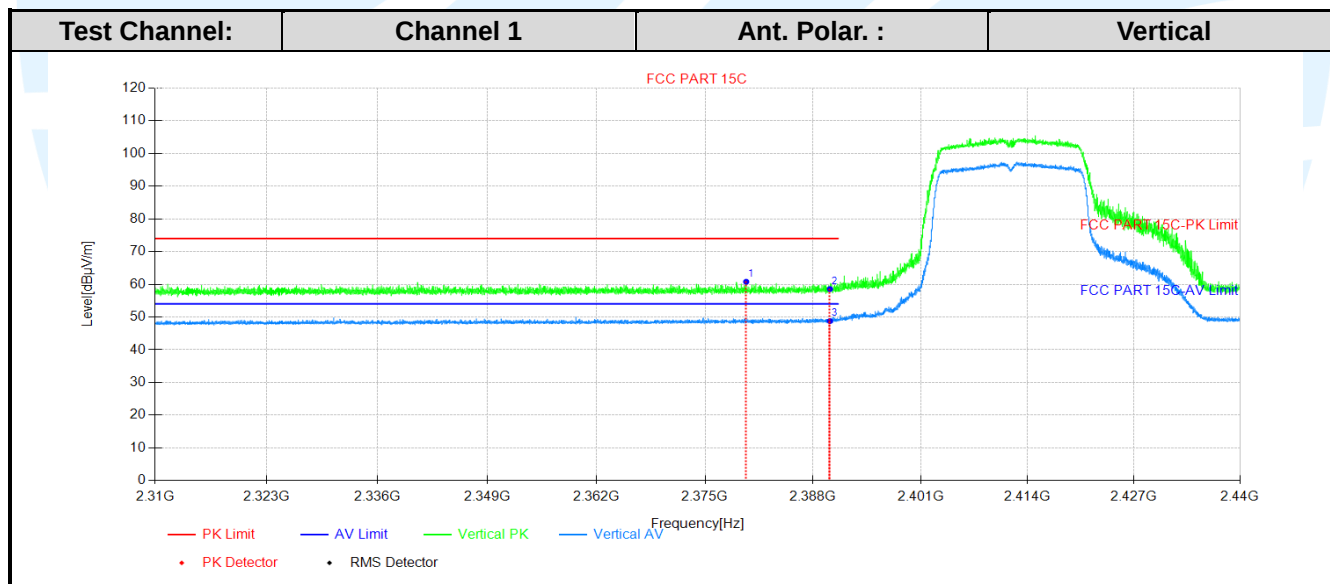
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MIMO_ IEEE 802.11n-HT20



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2389.3599	49.40	11.20	60.60	74.00	13.40	150	1	PK	Horizontal	PASS
2	2390.01	47.20	11.20	58.40	74.00	15.60	150	16	PK	Horizontal	PASS
3	2390.01	37.26	11.20	48.46	54.00	5.54	150	4	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2379.934	49.59	11.20	60.79	74.00	13.21	150	189	PK	Vertical	PASS
2	2390.01	47.36	11.20	58.56	74.00	15.44	150	151	PK	Vertical	PASS
3	2390.01	37.58	11.20	48.78	54.00	5.22	150	359	AV	Vertical	PASS

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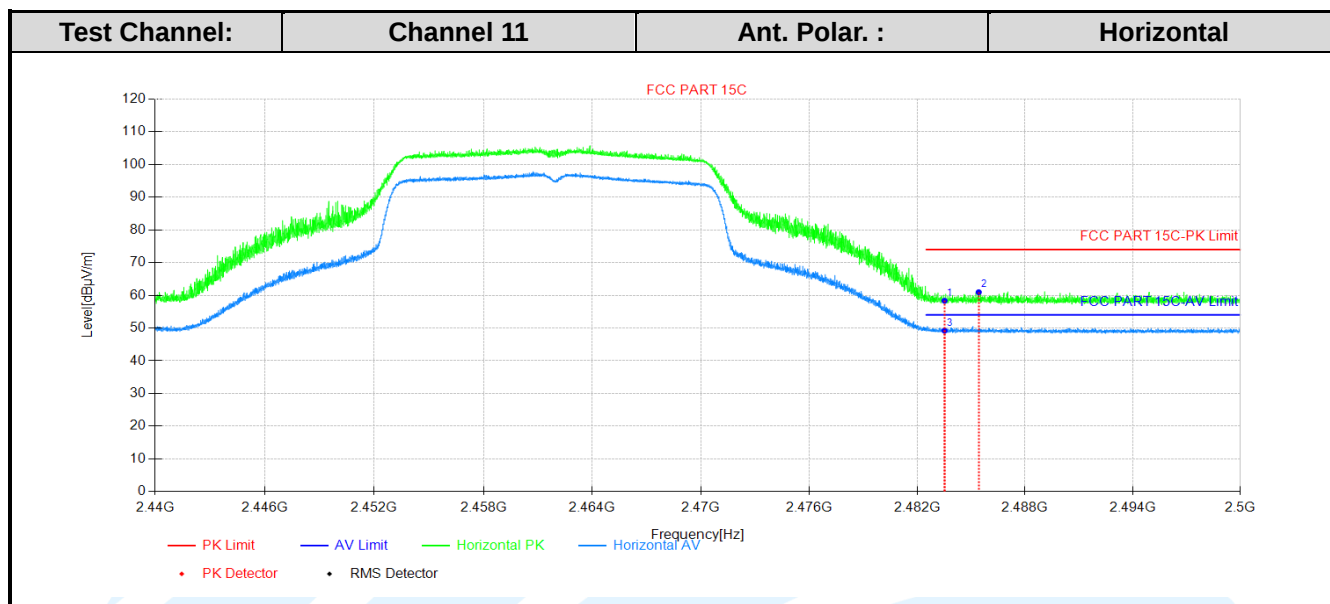
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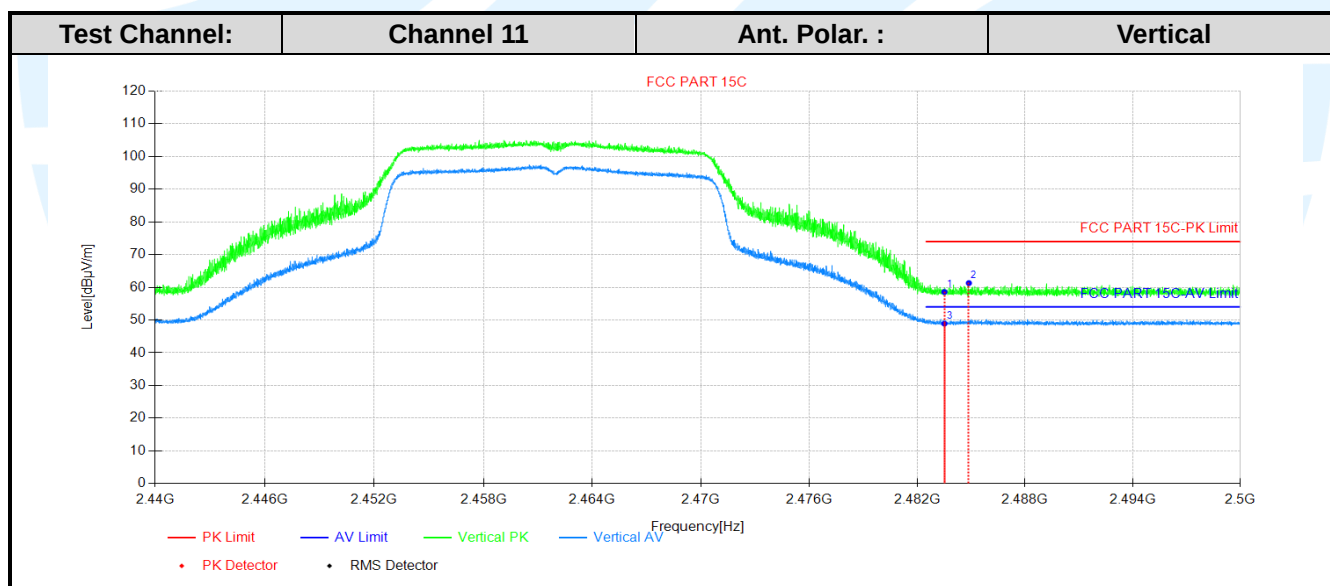
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Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5104	46.67	11.68	58.35	74.00	15.65	150	231	PK	Horizontal	PASS
2	2485.4125	49.27	11.68	60.95	74.00	13.05	150	63	PK	Horizontal	PASS
3	2483.5104	37.52	11.68	49.20	54.00	4.80	150	17	AV	Horizontal	PASS


Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	46.90	11.68	58.58	74.00	15.42	150	13	PK	Vertical	PASS
2	2484.8665	49.64	11.67	61.31	74.00	12.69	150	199	PK	Vertical	PASS
3	2483.5044	37.22	11.68	48.90	54.00	5.10	150	94	AV	Vertical	PASS

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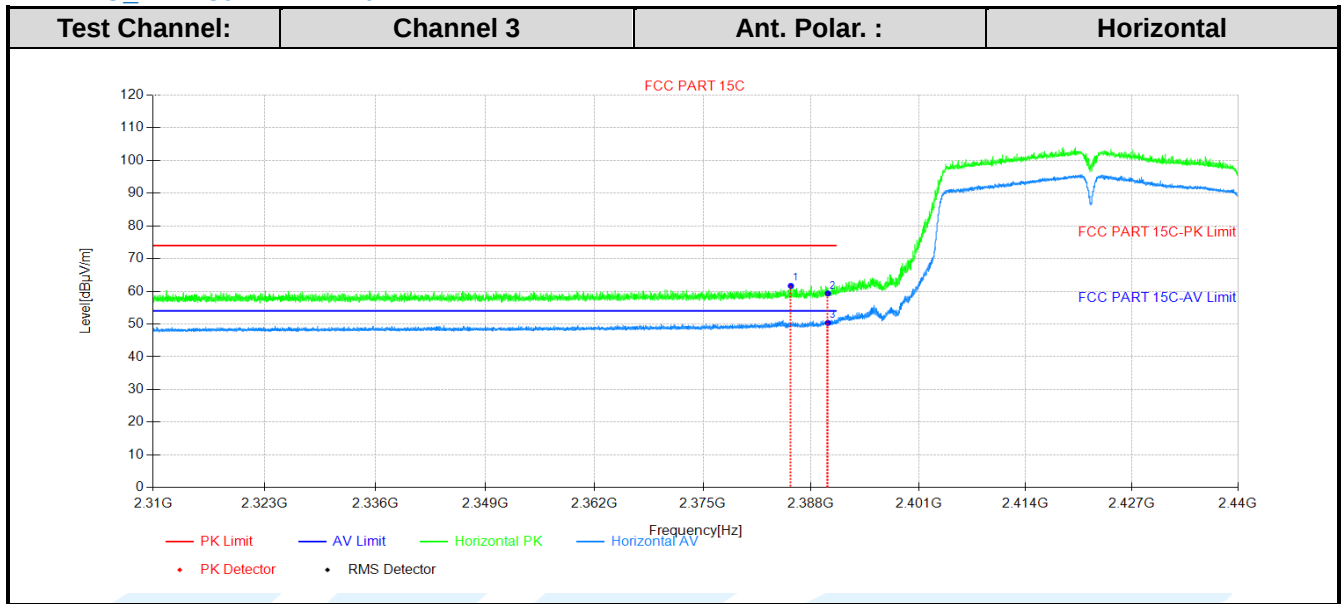
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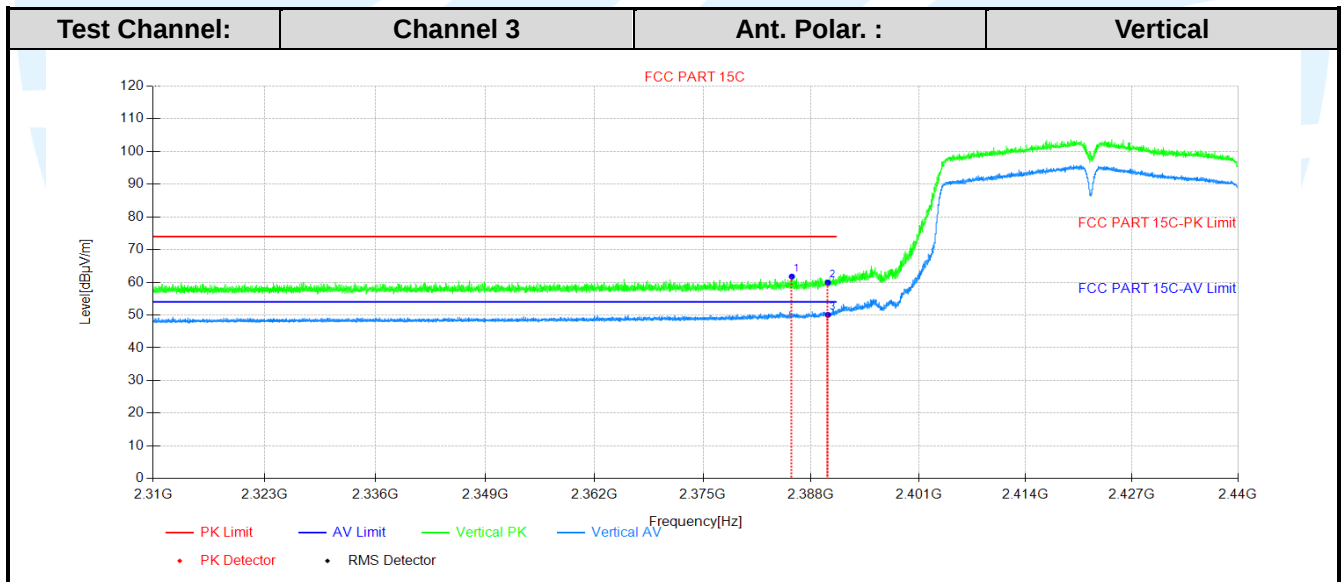
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MIMO_ IEEE 802.11n-HT40



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2385.5506	50.47	11.20	61.67	74.00	12.33	150	30	PK	Horizontal	PASS
2	2390.01	48.18	11.20	59.38	74.00	14.62	150	23	PK	Horizontal	PASS
3	2390.01	39.16	11.20	50.36	54.00	3.64	150	39	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2385.6676	50.57	11.20	61.77	74.00	12.23	150	28	PK	Vertical	PASS
2	2390.01	48.72	11.20	59.92	74.00	14.08	150	357	PK	Vertical	PASS
3	2390.01	38.86	11.20	50.06	54.00	3.94	150	28	AV	Vertical	PASS

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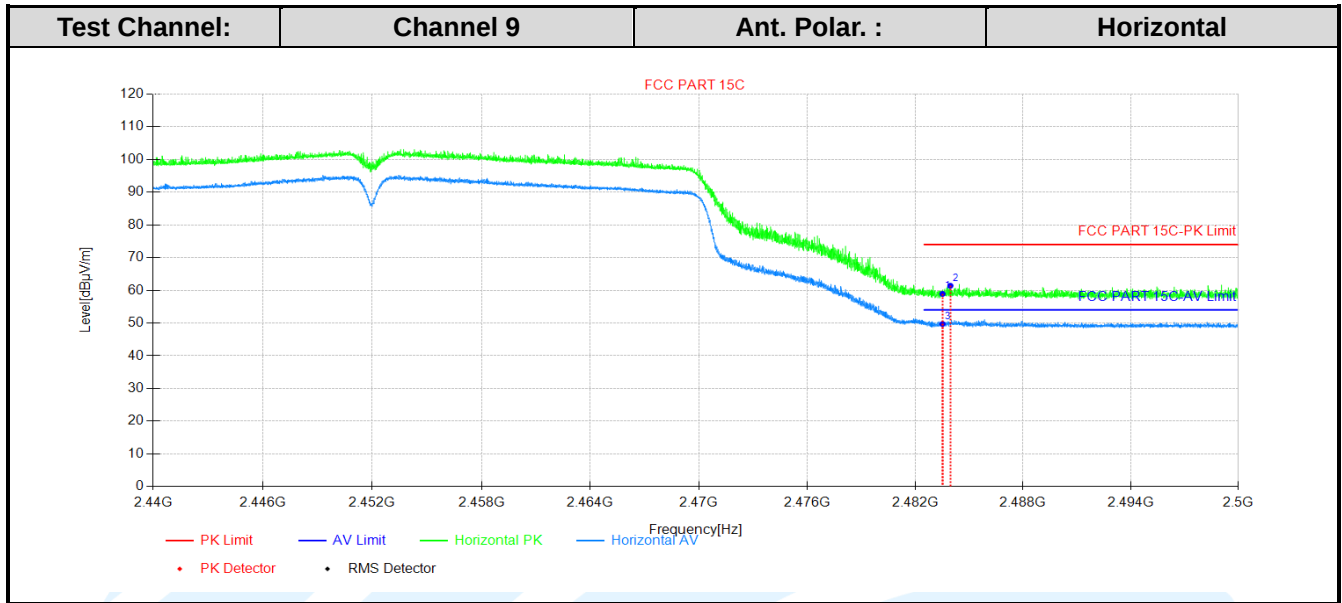
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E-mail: info@uttlab.com

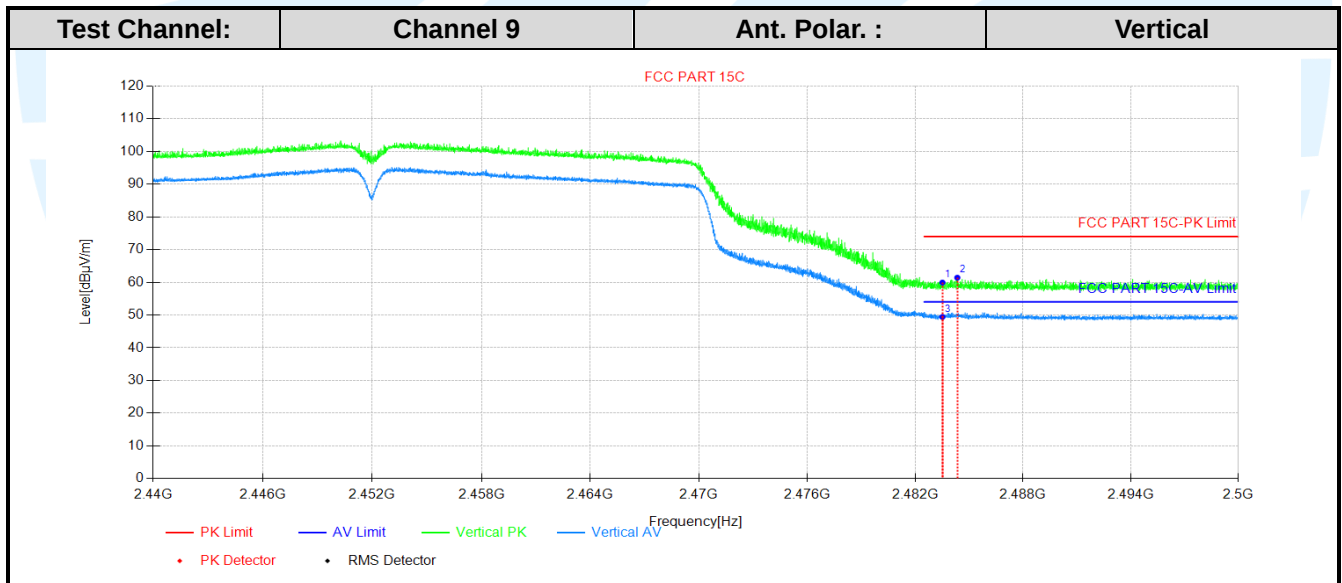
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Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5104	47.23	11.68	58.91	74.00	15.09	150	0	PK	Horizontal	PASS
2	2483.9484	49.73	11.67	61.40	74.00	12.60	150	0	PK	Horizontal	PASS
3	2483.5104	38.05	11.68	49.73	54.00	4.27	150	0	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	48.26	11.68	59.94	74.00	14.06	150	358	PK	Vertical	PASS
2	2484.3324	49.76	11.67	61.43	74.00	12.57	150	359	PK	Vertical	PASS
3	2483.5044	37.75	11.68	49.43	54.00	4.57	150	20	AV	Vertical	PASS

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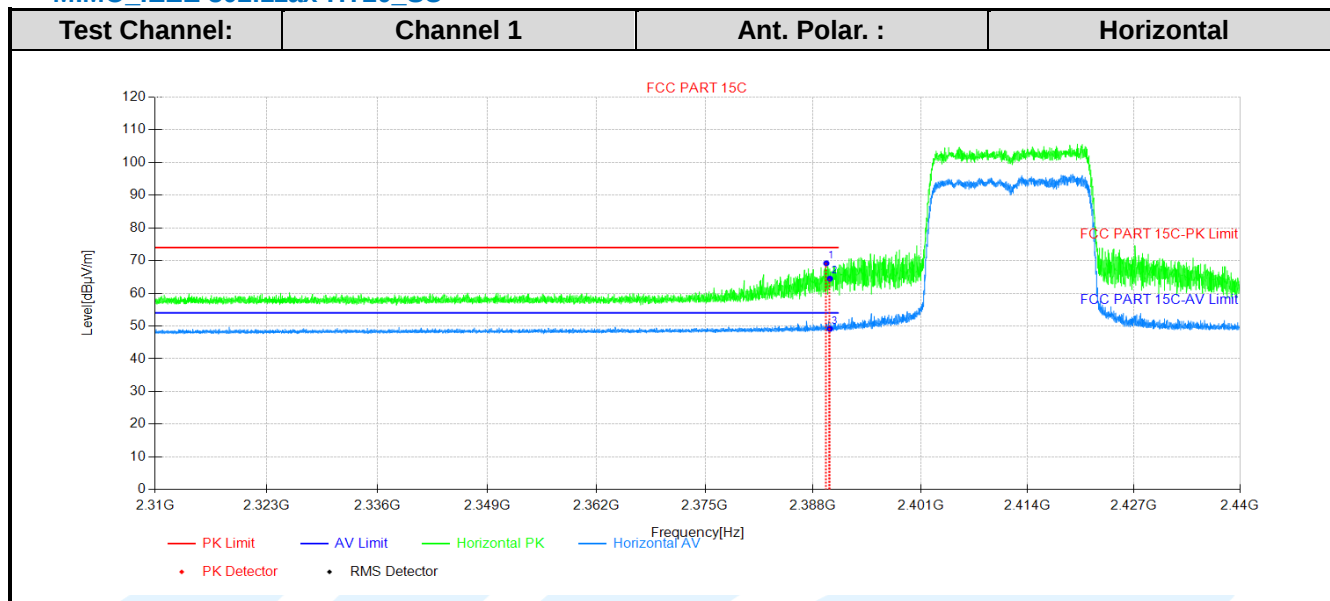
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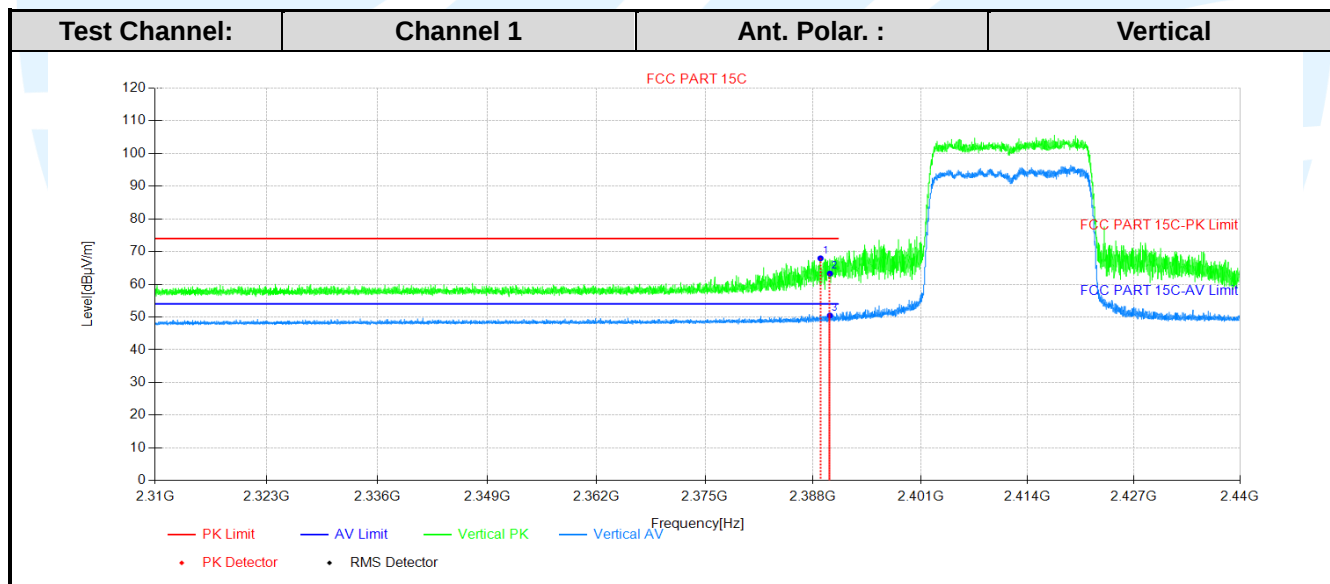
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MIMO_ IEEE 802.11ax-HT20_SU



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2389.581	57.97	11.20	69.17	74.00	4.83	150	30	PK	Horizontal	PASS
2	2390.01	53.29	11.20	64.49	74.00	9.51	150	0	PK	Horizontal	PASS
3	2390.01	37.95	11.20	49.15	54.00	4.85	150	359	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2388.8789	56.76	11.20	67.96	74.00	6.04	150	33	PK	Vertical	PASS
2	2390.01	52.08	11.20	63.28	74.00	10.72	150	359	PK	Vertical	PASS
3	2390.01	39.29	11.20	50.49	54.00	3.51	150	358	AV	Vertical	PASS

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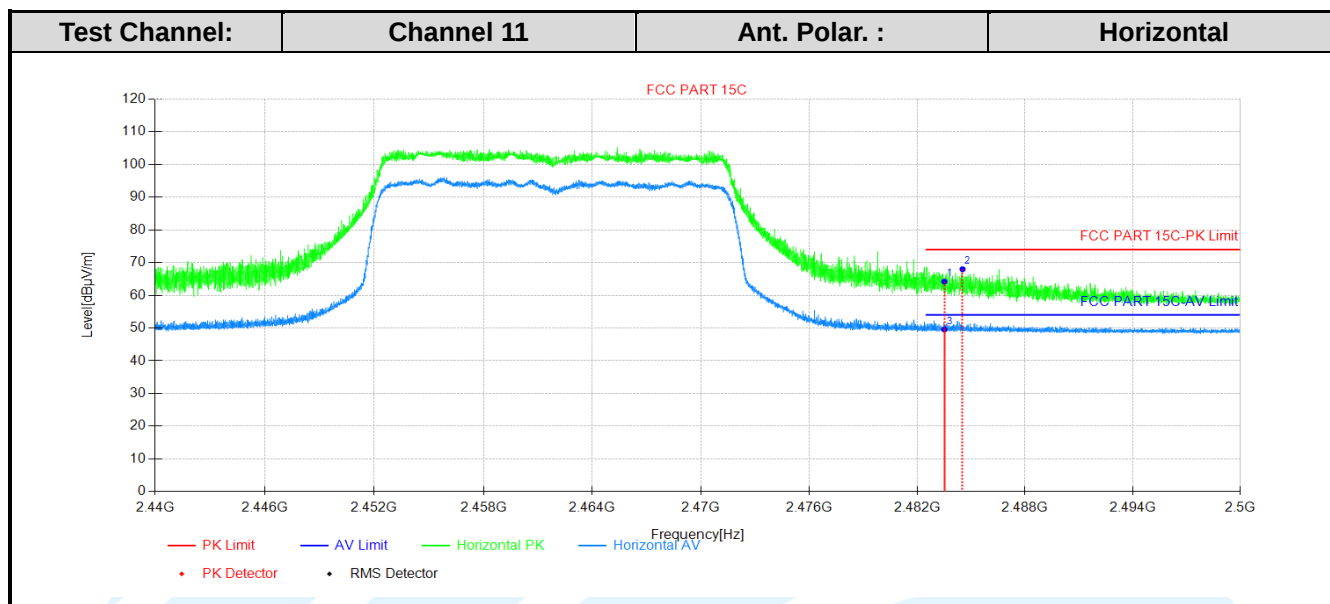
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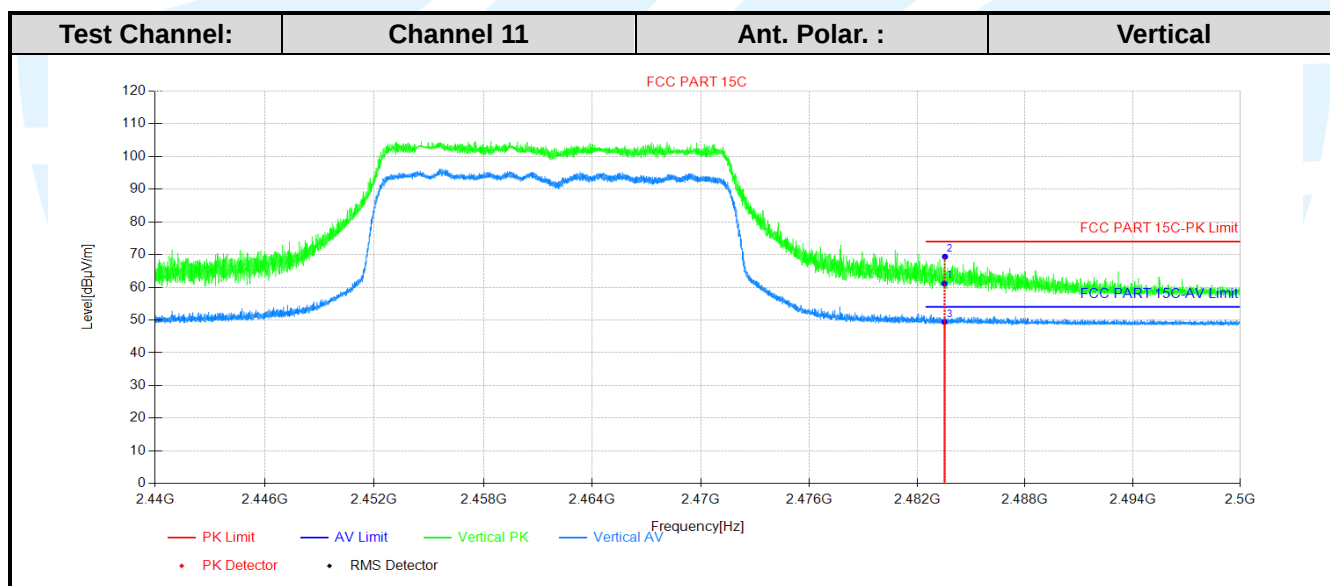
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Data List											
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	52.54	11.68	64.22	74.00	9.78	150	346	PK	Horizontal	PASS
2	2484.5125	56.33	11.67	68.00	74.00	6.00	150	0	PK	Horizontal	PASS
3	2483.5044	37.89	11.68	49.57	54.00	4.43	150	355	AV	Horizontal	PASS



Data List											
NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	49.48	11.68	61.16	74.00	12.84	150	183	PK	Vertical	PASS
2	2483.5344	57.68	11.68	69.36	74.00	4.64	150	12	PK	Vertical	PASS
3	2483.5044	37.72	11.68	49.40	54.00	4.60	150	359	AV	Vertical	PASS

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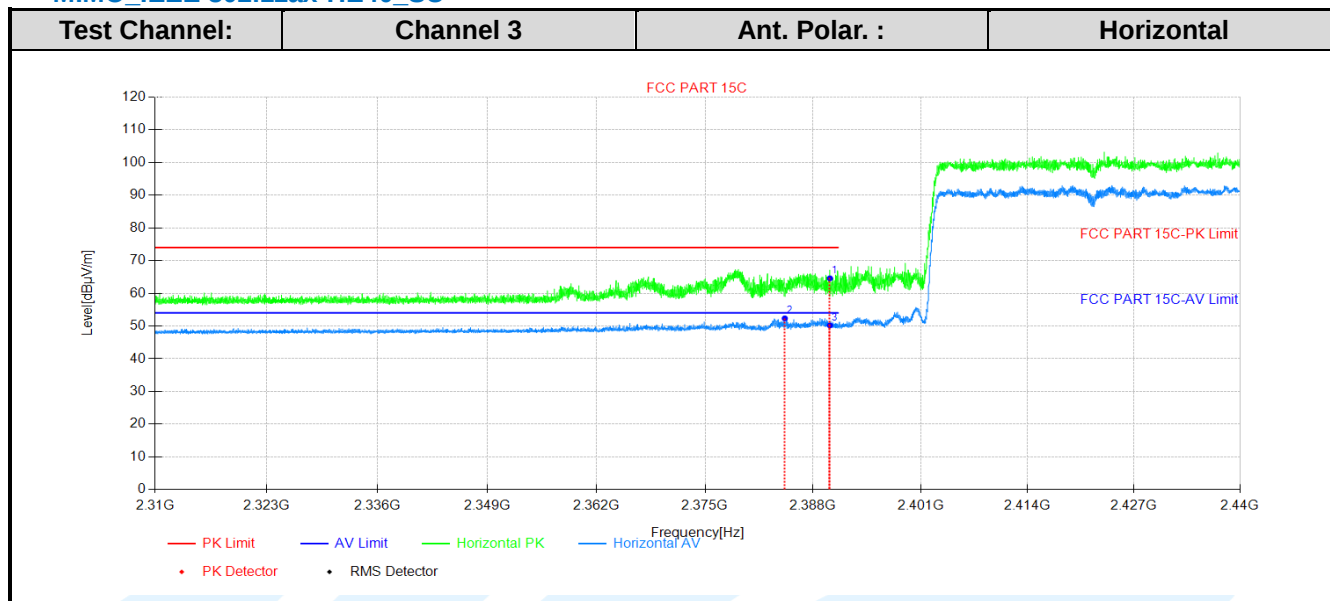
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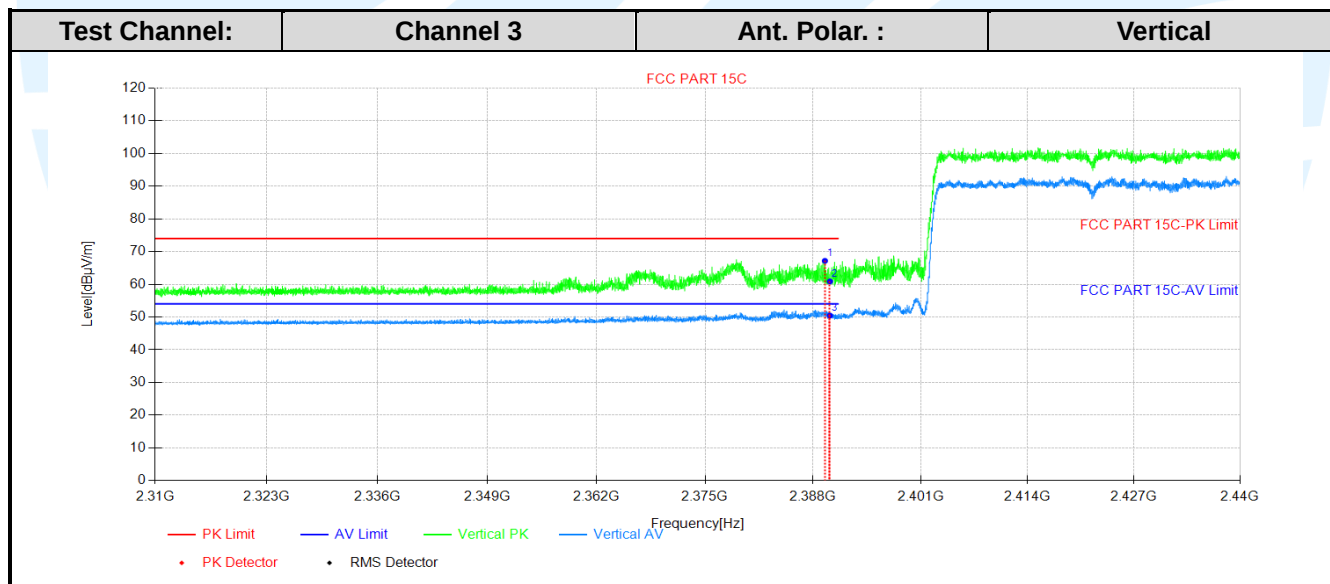
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MIMO_ IEEE 802.11ax-HE40_SU



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2390.01	53.38	11.20	64.58	74.00	9.42	150	28	PK	Horizontal	PASS
2	2384.5755	41.16	11.20	52.36	54.00	1.64	150	35	AV	Horizontal	PASS
3	2390.01	39.01	11.20	50.21	54.00	3.79	150	35	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2389.4119	55.98	11.20	67.18	74.00	6.82	150	30	PK	Vertical	PASS
2	2390.01	49.69	11.20	60.89	74.00	13.11	150	141	PK	Vertical	PASS
3	2390.01	39.26	11.20	50.46	54.00	3.54	150	30	AV	Vertical	PASS

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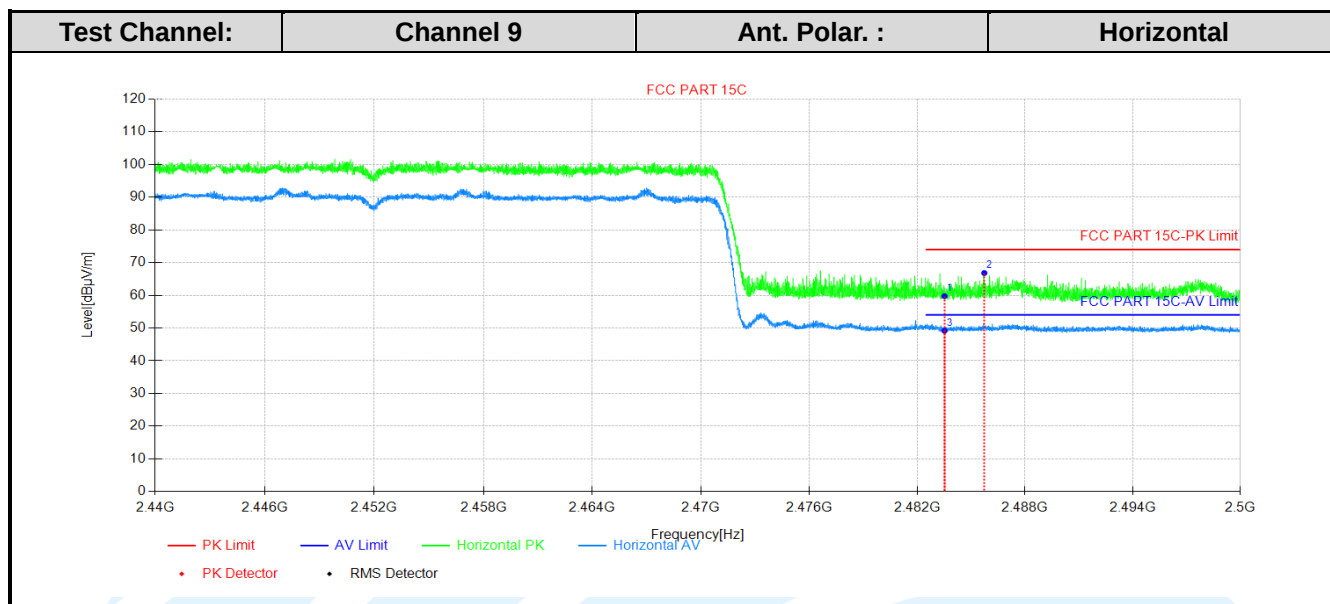
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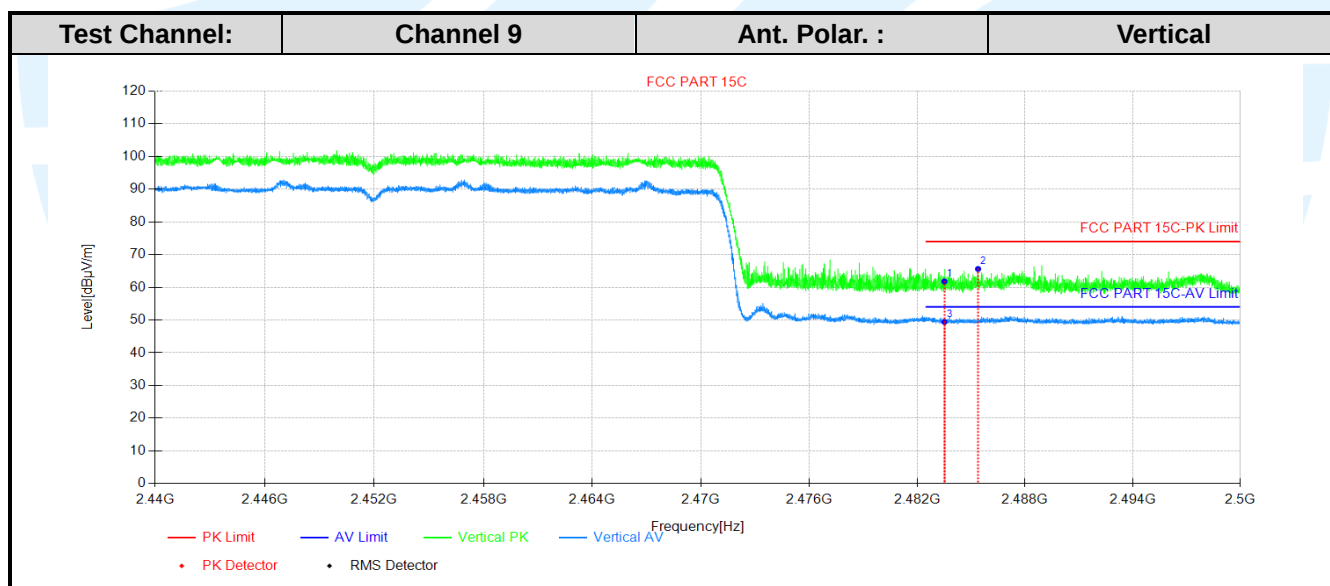
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Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5104	48.07	11.68	59.75	74.00	14.25	150	154	PK	Horizontal	PASS
2	2485.7246	55.13	11.68	66.81	74.00	7.19	150	0	PK	Horizontal	PASS
3	2483.5104	37.50	11.68	49.18	54.00	4.82	150	359	AV	Horizontal	PASS



Data List

NO.	Freq. [MHz]	Reading [dBμV]	Correct Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Polarity	Verdict
1	2483.5044	50.13	11.68	61.81	74.00	12.19	150	12	PK	Vertical	PASS
2	2485.3765	53.95	11.68	65.63	74.00	8.37	150	12	PK	Vertical	PASS
3	2483.5044	37.75	11.68	49.43	54.00	4.57	150	358	AV	Vertical	PASS

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Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Limit – Result



5.9 CONDUCTED EMISSION

Test Requirement: 47 CFR Part 15C Section 15.207

Test Method: ANSI C63.10-2013 Section 6.2

Limits:

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.5.2 for details.

Test Procedures:

Test frequency range :150KHz-30MHz

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Equipment Used: Refer to section 3 for details.

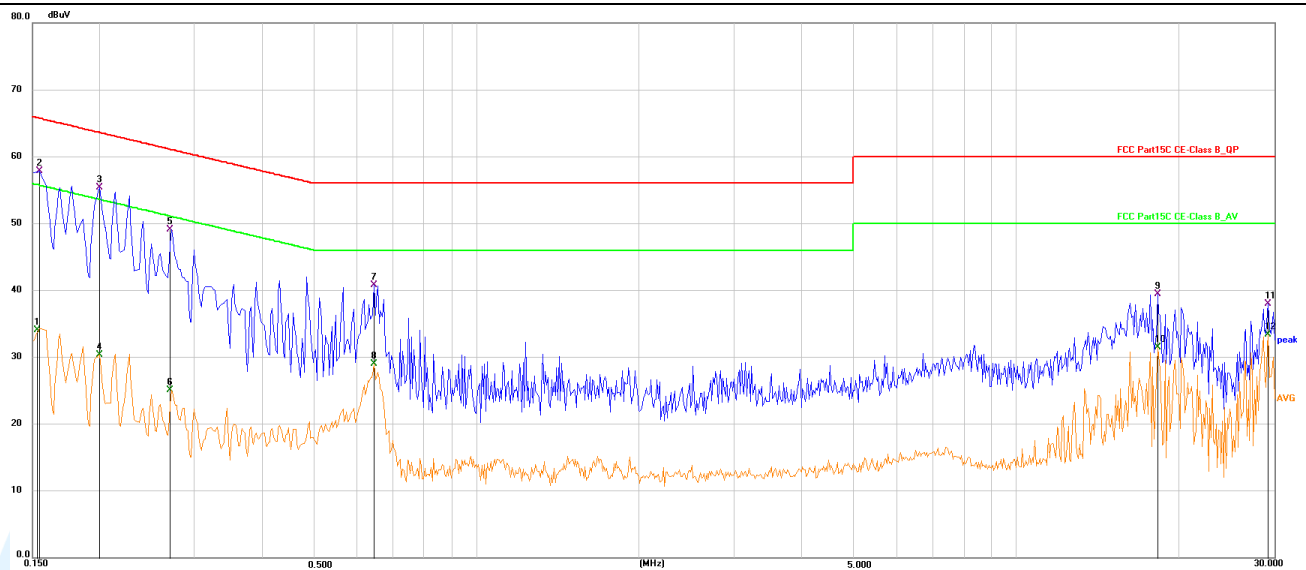
Test Result: Pass

The worst measurement data as follows:

Quasi Peak and Average:

Mode: WIFI Link

Live Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1539	23.88	10.20	34.08	55.79	-21.71	AVG
2	0.1545	47.59	10.20	57.79	65.75	-7.96	QP
3	0.1995	45.20	10.16	55.36	63.63	-8.27	QP
4	0.1995	20.15	10.16	30.31	53.63	-23.32	AVG
5	0.2714	38.87	10.20	49.07	61.07	-12.00	QP
6	0.2714	14.93	10.20	25.13	51.07	-25.94	AVG
7	0.6450	30.64	10.19	40.83	56.00	-15.17	QP
8	0.6450	18.80	10.19	28.99	46.00	-17.01	AVG
9	18.2445	28.71	10.70	39.41	60.00	-20.59	QP
10	18.2445	20.82	10.70	31.52	50.00	-18.48	AVG
11	29.2335	27.07	10.90	37.97	60.00	-22.03	QP
12	29.2335	22.46	10.90	33.36	50.00	-16.64	AVG

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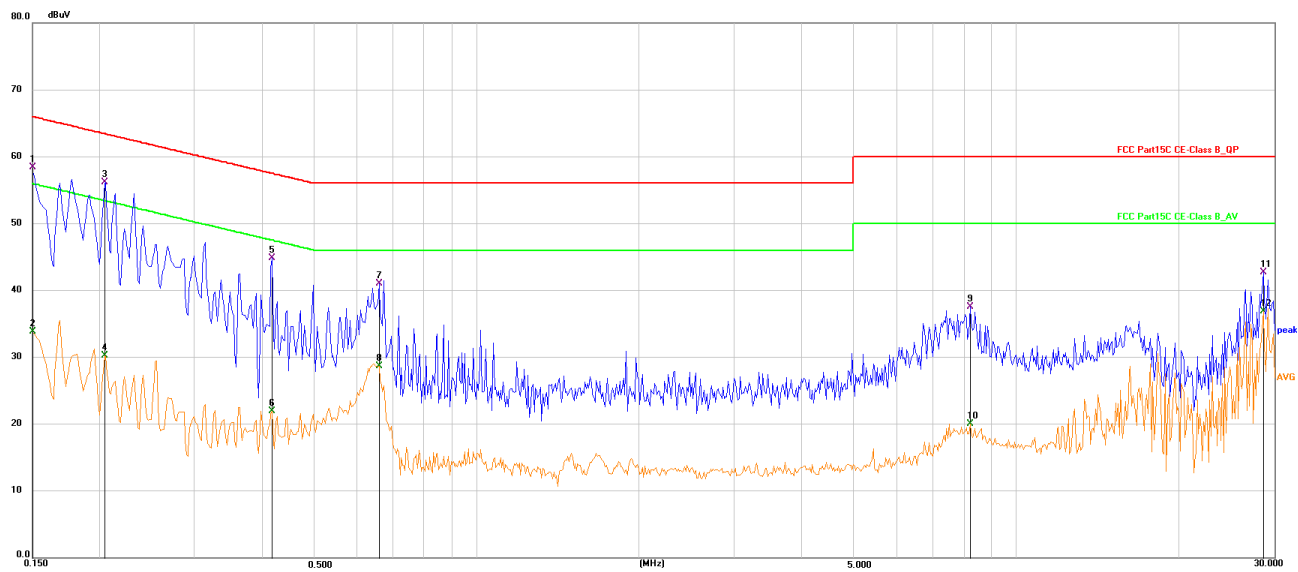
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Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1500	48.17	10.19	58.36	66.00	-7.64	QP
2	0.1500	23.64	10.19	33.83	56.00	-22.17	AVG
3	0.2040	46.15	10.05	56.20	63.45	-7.25	QP
4	0.2040	20.15	10.05	30.20	53.45	-23.25	AVG
5	0.4154	34.64	10.20	44.84	57.54	-12.70	QP
6	0.4154	11.69	10.20	21.89	47.54	-25.65	AVG
7	0.6584	30.81	10.25	41.06	56.00	-14.94	QP
8	0.6584	18.38	10.25	28.63	46.00	-17.37	AVG
9	8.2140	27.20	10.34	37.54	60.00	-22.46	QP
10	8.2140	9.73	10.34	20.07	50.00	-29.93	AVG
11	28.6844	31.78	10.88	42.66	60.00	-17.34	QP
12	28.6844	25.95	10.88	36.83	50.00	-13.17	AVG

Remark:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit
4. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

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APPENDIX A RF TEST DATA

A.1 99% BANDWIDTH

Mode	Channel	RU & Index	Ant.	99% BW (MHz)
IEEE 802.11b	1	N/A	0	12.793
			1	12.828
	6		0	12.760
			1	12.790
	11		0	12.785
			1	12.767
IEEE 802.11g	1		0	16.765
			1	16.820
	6		0	16.784
			1	16.749
	11		0	16.733
			1	16.733
IEEE 802.11n_20	1		0	17.831
			1	17.796
	6		0	17.914
			1	17.863
	11		0	17.926
			1	17.843
IEEE 802.11n_40	3		0	36.199
			1	36.169
	6		0	36.238
			1	36.193
	9		0	36.229
			1	36.301
IEEE 802.11ax_20	1	0	18.903	
		1	18.897	
	6	0	18.976	
		1	19.010	
	11	0	19.011	
		1	18.982	
IEEE 802.11ax_40	3	0	37.702	
		1	37.630	
	6	0	37.779	
		1	37.687	
	9	0	37.708	
		1	37.736	

Test Graphs



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