FCC PART 15 SUBPART C TEST REPORT

FCC PART 15 SUBPART E 15.407

Report Reference No.....:	**MAX26011412P01-R01**
FCC ID..... :	**2BUTN-V319**
Compiled by (position+printed name+signature)..:	Engineer/ Cindy Zheng Cindy zheng
Supervised by (position+printed name+signature)..:	Manager/Haley Wen Haley wen
Approved by (position+printed name+signature)..:	RF Manager/ Vivian Jiang Vivian Jiang
Date of issue.....:	January 26, 2026
Testing Laboratory Name .....:	**MAXLAB Testing Co.,Ltd.**
Address.....:	1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China
Applicant's name.....:	**Shenzhen Horizon Technology Co., Ltd.**
Address.....:	No. 401, Building B2, Shangrong Industrial Park, No. 2 Baolong 5th Road, Baolong Community, Baolong Sub-district, Longgang District, Shenzhen City
Test specification ..... :	
Standard .....:	**FCC CFR Title 47 Part 15 Subpart C Section 15.407** **ANSI C63.10:2020** **KDB 789033 D02 v02r01**

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Test item description ..... :	**Projector**
Trade Mark .....:	N/A
Manufacturer.....:	**Shenzhen Horizon Technology Co., Ltd.**
Model/Type reference.....:	V319
Listed Models .....:	V418,V417,V520,V521,V522,V525,V526,V528,X5,X6,X7,X8,X9,Q8, Q9,A3,A5,A7,A9,V319,V318,V510,V515,V516,V518,F15,F16,F18
Modulation Type .....:	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM for 802.11a/n/ac
Operation Frequency.....:	From 5180MHz-5240MHz, 5745MHz-5825MHz
Rating .....:	AC100V-240V 50/60Hz 1.5A
Result.....:	**PASS**

TEST REPORT

Equipment under Test	:	**Projector**
Model /Type	:	V319
Series Model No.		V418,V417,V520,V521,V522,V525,V526,V528,X5,X6,X7,X8,X9,Q8, Q9,A3,A5,A7,A9,V319,V318,V510,V515,V516,V518,F15,F16,F18
Model Declaration	:	All models covered in this report are the same with each other, except for different model No. for trading purpose.
Applicant	:	**Shenzhen Horizon Technology Co., Ltd.**
Address	:	No. 401, Building B2, Shangrong Industrial Park, No. 2 Baolong 5th Road, Baolong Community, Baolong Sub-district, Longgang District, Shenzhen City
Manufacturer	:	**Shenzhen Horizon Technology Co., Ltd.**
Address	:	No. 401, Building B2, Shangrong Industrial Park, No. 2 Baolong 5th Road, Baolong Community, Baolong Sub-district, Longgang District, Shenzhen City

Test Result:	**PASS**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15 Subpart E—Unlicensed National Information Infrastructure Devices
ANSI C63.10-2020: American National Standard for Testing Unlicensed Wireless Devices
KDB789033 D02: General UNII Test Procedures New Rules v02r01

2 SUMMARY

2.1 General Remarks

Date of receipt of test sample	:	January 13, 2026
Testing commenced on	:	January 13, 2026
Testing concluded on	:	January 26, 2026

2.2 Product Description

Product Name:	Projector			
Model/Type reference:	V319,V418,V417,V520,V521,V522,V525,V526,V528,X5,X6,X7,X8,X9,Q8,Q9,A3 ,A5,A7,A9,V319,V318,V510,V515,V516,V518,F15,F16,F18			
Power supply:	AC100V-240V 50/60Hz 1.5A			
Adapter information	N/A			
testing sample ID:	MAX2601412-P01R01-1# (Engineer sample), MAX2601412-P01R01-2# (Normal sample)			
Hardware version:	V1.0			
Software version:	V1.0			
WIFI :				
Supported type:	20MHz system	40MHz system	80MHz system	160MHz system
	802.11a 802.11n 802.11ac	802.11n 802.11ac	802.11ac	N/A
Modulation:	5180MHz-5240MHz 5745MHz-5825MHz	5190MHz-5230MHz 5755MHz-5795MHz	5210MHz 5775MHz	N/A
Operation frequency:	OFDM	OFDM	OFDM	N/A
Channel number:	9	4	2	N/A
Channel separation:	20MHz	40MHz	80MHz	N/A
Data Rate:	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac(VHT20): NSS1, MCS0-MCS8 802.11ac(VHT40/VHT80):NSS1, MCS0-MCS			
Antenna type:	FPCB antenna			
Antenna gain:	1.5 dBi			

2.3 Equipment Under Test

Power supply system utilised

Power supply voltage	:	○	230V / 50 Hz	●	120V / 60Hz
		○	12 V DC	○	24 V DC
		○	Other (specified in blank below)		

2.4 Short description of the Equipment under Test (EUT)

This is Projector.
For more details, refer to the user's manual of the EUT.

2.5 EUT operation mode

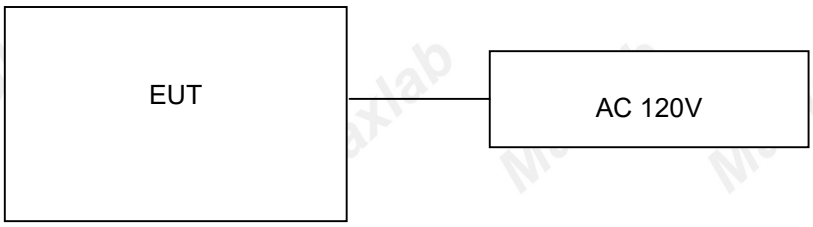
The Applicant provides communication tools software (AT command) to control the EUT for staying in continuous transmitting (Duty Cycle more than 98%) and receiving mode for testing.
All test performed at the low, middle and high of operational frequency range of each mode.

Operation Frequency List WIFI on 5G Band：

Operating band	20MHz		40MHz		80MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
U-NII 1 (5150MHz-5250MHz)	36	5180	38	5190	42	5210
	40	5200				
	44	5220	46	5230		
	48	5240				
U-NII 3 (5725MHz-5850MHz)	149	5745	151	5755	155	5775
	153	5765				
	157	5785	159	5795		
	161	5805				
	165	5825	--	--	--	--

Note: The line display in grey is those Channels/Frequencies select to test in this report for each operation mode.

2.6 Block Diagram of Test Setup



2.7 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

2.8 Modifications

No modifications were implemented to meet testing criteria.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

MAXLAB Testing Co.,Ltd.
1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District, Shenzhen,Guangdong, 518052, People's Republic of China

3.2 Test Facility

FCC-Registration No.: 562200 Designation Number: CN1338
MAXLAB Testing Co.,Ltd.has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

Industry Canada Registration Number. Is: 11093A CAB identifier: CN0019
The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

A2LA-Lab Cert. No.: 4707.01
MAXLAB Testing Co.,Ltd.has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:
Radiated Emission:

Temperature:	25 ° C
Humidity:	45 %
Atmospheric pressure:	950-1050mbar

Conducted testing：

Temperature:	25 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

AC Power Conducted Emission

Temperature:	24 ° C
Humidity:	44 %
Atmospheric pressure:	950-1050mbar

3.4 Test Description

FCC Requirement		
FCC Part 15.207	AC Power Conducted Emission	N/A
FCC Part 15.407(a)	Emission Bandwidth(26dBm Bandwidth)	PASS Note1
FCC Part 15.407(e)	Minimum Emission Bandwidth(6dBm Bandwidth)	PASS Note2
FCC Part 15.407(a)	Maximum Conducted Output Power	PASS
FCC Part 15.407(a)	Peak Power Spectral Density	PASS
FCC Part 15.407(g)	Frequency Stability	PASS
FCC Part 15.407(b)	Undesirable emission	PASS
FCC Part 15.407(b)/15.205/15.209	Radiated Emissions	PASS
15.407(b)(1)/ 15.407(b)(2) 15.407(b)(3)/ 15.407(b)(4)	Band Edge	PASS
15.407(b)	Spurious Emissions at Antenna Terminals	PASS
FCC Part 15.407(h)	Dynamic Frequency Selection	N/A Note 3
FCC Part 15.203/15.247(b)	Antenna Requirement	PASS
FCC Part 15.407(c)	Automatically discontinue transmission	PASS Note4

Note 1: Apply to U-NII 1, U-NII 2A, and U-NII 2C band.
Note 2: Apply to U-NII 3 band only.
Note 3: This device not work in DFS band.
Note 4: While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (Manufacturer declare)

Data Rate Used:

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate
MMaximum Conducted Output Power Power Spectral Density Emission Bandwidth(26dBm Bandwidth) Minimum Emission Bandwidth(6dBm Bandwidth) Undesirable emission Frequency Stability	11a/OFDM	6 Mbps
	11n(20MHz),11ac(20MHz)/OFDM	7.2 Mbps
	11n(40MHz),11ac(40MHz)/OFDM	15.0Mbps
	11ac(80MHz)/OFDM	65.0Mbps

3.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the MAXLAB Testing Co.,Ltd.quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for MAXLAB Testing Co.,Ltd.

Test item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB(10 MHz ≤f<3.6 GHz);
	1.38 dB(3.6 GHz ≤f<8 GHz)
Peak Output Power (Conducted)(Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB(10 MHz ≤f< 3.6 GHz);
	1.38 dB(3.6 GHz ≤f<8 GHz)
Frequencies Stability	6.7 x 10-8 (Antenna couple method)
	5.5x 10-8(Conducted method)
Conducted spurious emissions	0.86 dB(10 MHz ≤f<3.6 GHz);
	1.40 dB(3.6 GHz ≤f<8 GHz)
	1.66 dB (8 GHz ≤f < 26.5 GHz)
Uncertainty for radio frequency (RBW <20 kHz)	$3x10^{-8}$
Temperature	0.4℃
Humidity	2%
Uncertainty for Radiation Emission test (9 kHz-30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz-1GHz)	4.70 dB (Antenna Polarize:V)
	4.84 dB(Antenna Polarize:H)
Uncertainty for Radiation Emission test (1GHz-40GHz)	4.10 dB(1-6 GHz)
	4.40 dB(6 GHz- 18 GHz)
	3.54 dB(18 GHz- 26 GHz)
	4.30 dB(26 GHz-40 GHz)
Uncertainty for Power line conduction emission test	3.34dB(150KHz-30MHz)
	3.72dB(9KHz-150KHz)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6 Equipments Used during the Test

Conducted Emission					
Test Equipment	**Manufacturer**	**Model**	**Serial No.**	**Date of Cal.**	**Due Date**
Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	MAX252	2025-10-28	2026-10-27
EMI Test Receiver	R&S	ESCI 7	MAX552	2025-10-28	2026-10-27
Coaxial Switch	ANRITSU CORP	MP59B	MAX225	2025-10-28	2026-10-27
ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	MAX226	2025-10-28	2026-10-27
Coaxial Cable	MAX	N/A	MAX227	N/A	N/A
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Thermo meter	KTJ	TA328	MAX233	2025-10-28	2026-10-27
Absorbing clamp	Elektronik-Feinmechanik	MDS21	MAX229	2025-10-28	2026-10-27
LISN	R&S	ENV216	308	2025-10-28	2026-10-27
LISN	R&S	ENV216	314	2025-10-28	2026-10-27

Radiation Test equipment					
Test Equipment	**Manufacturer**	**Model**	**Serial No.**	**Date of Cal.**	**Due Date**
3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	MAX250	2025-10-28	2026-10-27
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	MAX251	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	MAX203	2025-10-28	2026-10-27
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	MAX214	2025-10-28	2026-10-27
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	MAX208	2025-10-28	2026-10-27
Horn Antenna	ETS-LINDGREN	3160	MAX217	2025-10-28	2026-10-27
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Coaxial Cable	MAX	N/A	MAX213	2025-10-28	2026-10-27
Coaxial Cable	MAX	N/A	MAX211	2025-10-28	2026-10-27
Coaxial cable	MAX	N/A	MAX210	2025-10-28	2026-10-27
Coaxial Cable	MAX	N/A	MAX212	2025-10-28	2026-10-27
Amplifier(100kHz-3GHz)	HP	8347A	MAX204	2025-10-28	2026-10-27
Amplifier(2GHz-20GHz)	HP	84722A	MAX206	2025-10-28	2026-10-27
Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	MAX218	2025-10-28	2026-10-27
Band filter	Amindeon	82346	MAX219	2025-10-28	2026-10-27
Power Meter	Anritsu	ML2495A	MAX540	2025-10-28	2026-10-27
Power Sensor	Anritsu	MA2411B	MAX541	2025-10-28	2026-10-27

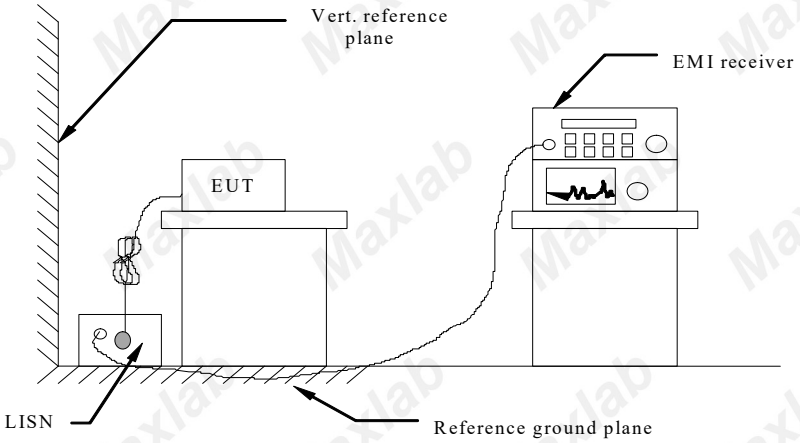
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	MAX575	2025-10-28	2026-10-27
Splitter	Agilent	11636B	MAX237	2025-10-28	2026-10-27
Loop Antenna	ZHINAN	ZN30900A	MAX534	2025-10-28	2026-10-27
Breitband hornantenne	SCHWARZBECK	BBHA 9170	MAX579	2025-10-28	2026-10-27
Amplifier	TDK	PA-02-02	MAX574	2025-10-28	2026-10-27
Amplifier	TDK	PA-02-03	MAX576	2025-10-28	2026-10-27
PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	MAX578	2025-10-28	2026-10-27

RF Conducted Test:					
Test Equipment	**Manufacturer**	**Model**	**Serial No.**	**Date of Cal.**	**Due Date**
MXA Signal Analyzer	Agilent	N9020A	MAX566	2025-10-28	2026-10-27
EMI Test Receiver	R&S	ESCI 7	MAX552	2025-10-28	2026-10-27
Spectrum Analyzer	Agilent	E4440A	MAX533	2025-10-28	2026-10-27
MXG vector Signal Generator	Agilent	N5182A	MAX567	2025-10-28	2026-10-27
ESG Analog Signal Generator	Agilent	E4428C	MAX568	2025-10-28	2026-10-27
USB RF Power Sensor	DARE	RPR3006W	MAX569	2025-10-28	2026-10-27
RF Switch Box	Shongyi	RFSW3003328	MAX571	2025-10-28	2026-10-27
Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	MAX572	2025-10-28	2026-10-27

4 TEST CONDITIONS AND RESULTS

4.1 AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2020.
2 Support equipment, if needed, was placed as per ANSI C63.10-2020
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2020
4 The EUT received power from adapter, the adapter received AC120V/60Hz and AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT.The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8 During the above scans, the emissions were maximized by cable manipulation.

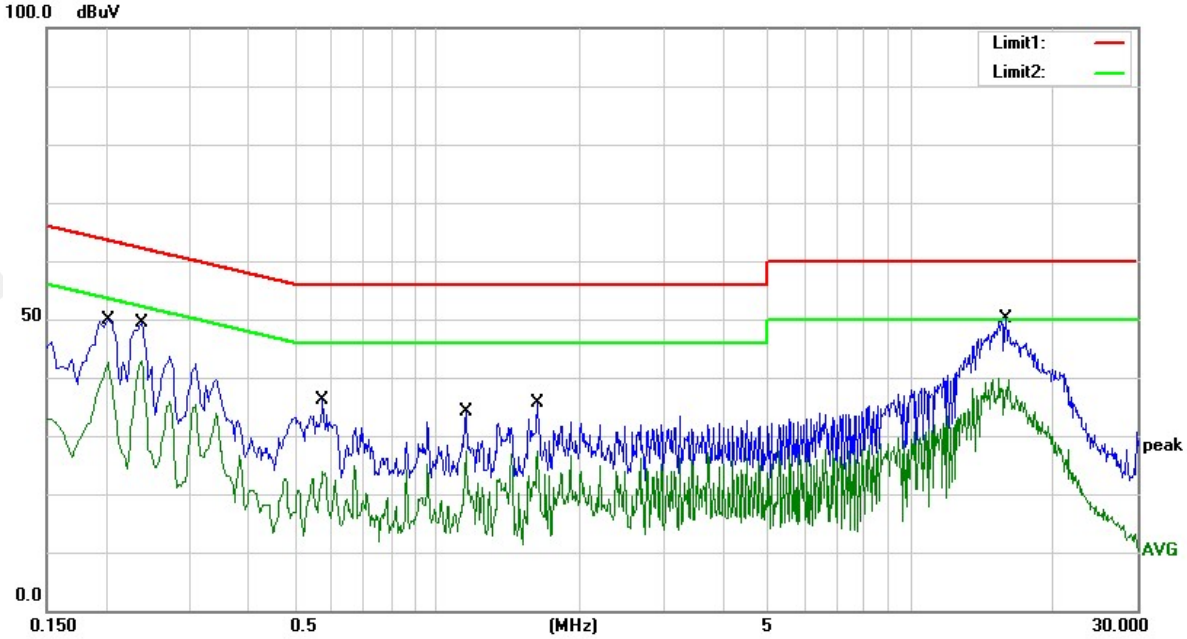
AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
* Decreases with the logarithm of the frequency.		

TEST RESULTS

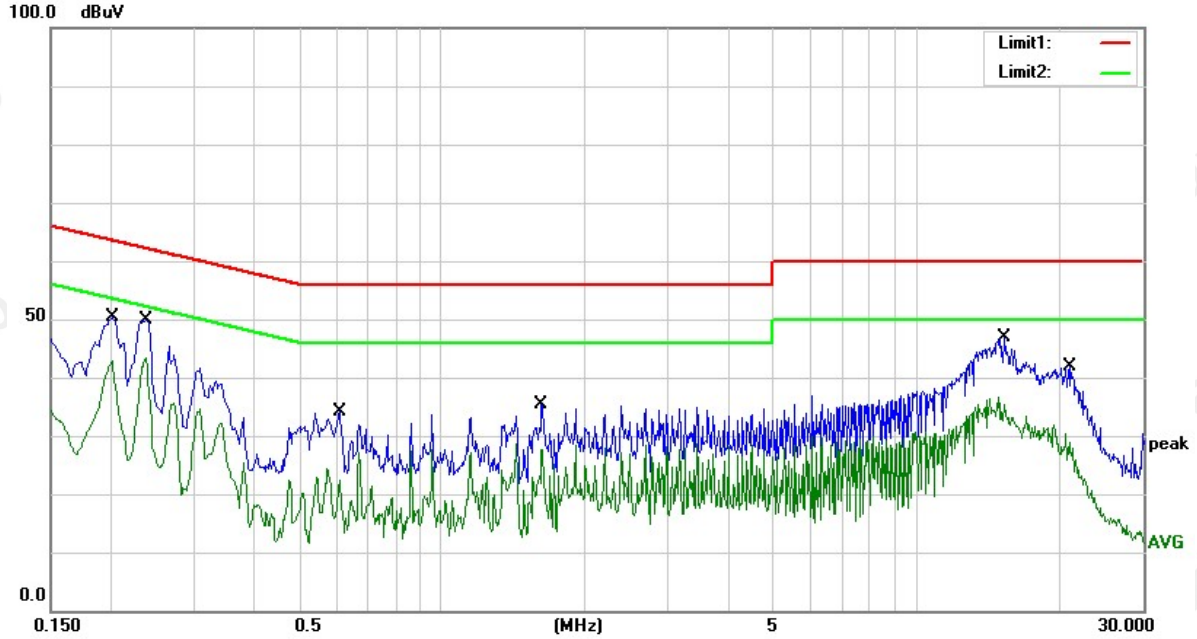
Power supply:	AC 120V/60Hz	Polarization	L
Test Mode:	TX 802.11a 5745-Worst Case		



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	
1	0.2020	39.62	10.32	49.94	63.53	-13.59	
2	0.2020	32.42	10.32	42.74	53.53	-10.79	
3	0.2380	38.84	10.48	49.32	62.17	-12.85	
4	0.2380	32.47	10.48	42.95	52.17	-9.22	
5	0.5740	25.68	10.47	36.15	56.00	-19.85	
6	0.5740	13.34	10.47	23.81	46.00	-22.19	
7	1.1500	23.71	10.30	34.01	56.00	-21.99	
8	1.1500	17.00	10.30	27.30	46.00	-18.70	
9	1.6300	25.43	10.30	35.73	56.00	-20.27	
10	1.6300	17.14	10.30	27.44	46.00	-18.56	
11	15.8260	38.10	11.92	50.02	60.00	-9.98	
12	15.8260	28.05	11.92	39.97	50.00	-10.03	

Note:1).Level (dBμV)= Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). Margin(dB) = Limit (dBμV) - Level (dBμV)

Power supply:	AC 120V/60Hz	Polarization	N
Test Mode:	TX 802.11a 5745-Worst Case		



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	
1	0.2020	40.08	10.32	50.40	63.53	-13.13	
2	0.2020	32.63	10.32	42.95	53.53	-10.58	
3	0.2380	39.33	10.48	49.81	62.17	-12.36	
4	0.2380	32.98	10.48	43.46	52.17	-8.71	
5	0.6100	23.78	10.44	34.22	56.00	-21.78	
6	0.6100	16.65	10.44	27.09	46.00	-18.91	
7	1.6260	24.97	10.30	35.27	56.00	-20.73	
8	1.6260	17.45	10.30	27.75	46.00	-18.25	
9	15.3260	35.04	11.80	46.84	60.00	-13.16	
10	15.3260	24.79	11.80	36.59	50.00	-13.41	
11	20.9740	28.92	12.85	41.77	60.00	-18.23	
12	20.9740	18.08	12.85	30.93	50.00	-19.07	

Note:1).Level (dBμV)= Reading (dBμV)+ Factor (dB)
2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)
3). Margin(dB) = Limit (dBμV) - Level (dBμV)

4.2 Radiated Emission

Limit

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) 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 e.i.r.p. of −27 dBm/MHz.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz 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.

Undesirable emission limits

Requirement	Limit(EIRP)	Limit (Field strength at 3m) Note1
15.407(b)(1)	PK:-27(dBm/MHz)	PK:68.2(dBμV/m)
15.407(b)(2)		
15.407(b)(3)		
15.407(b)(4)		

Note1: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

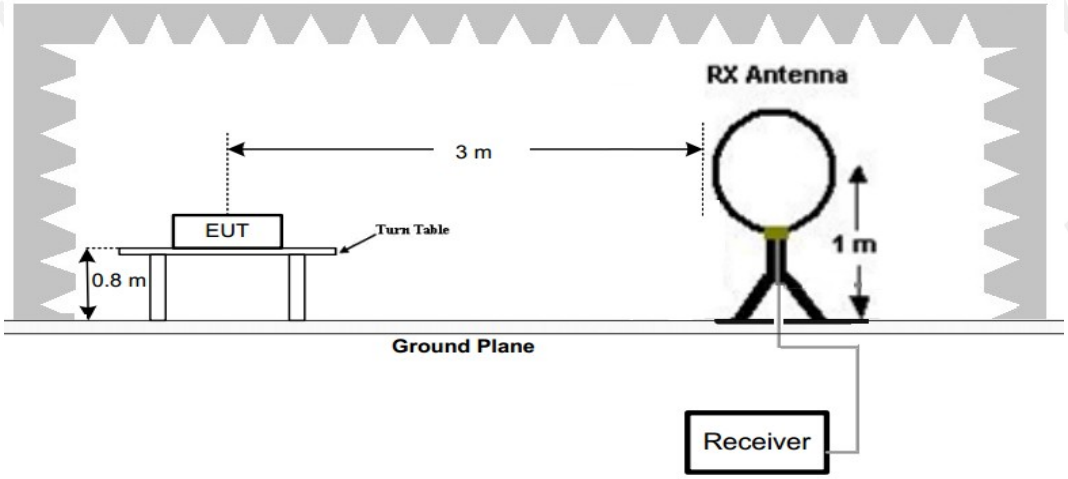
(5) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209
(6)In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Radiated emission limits

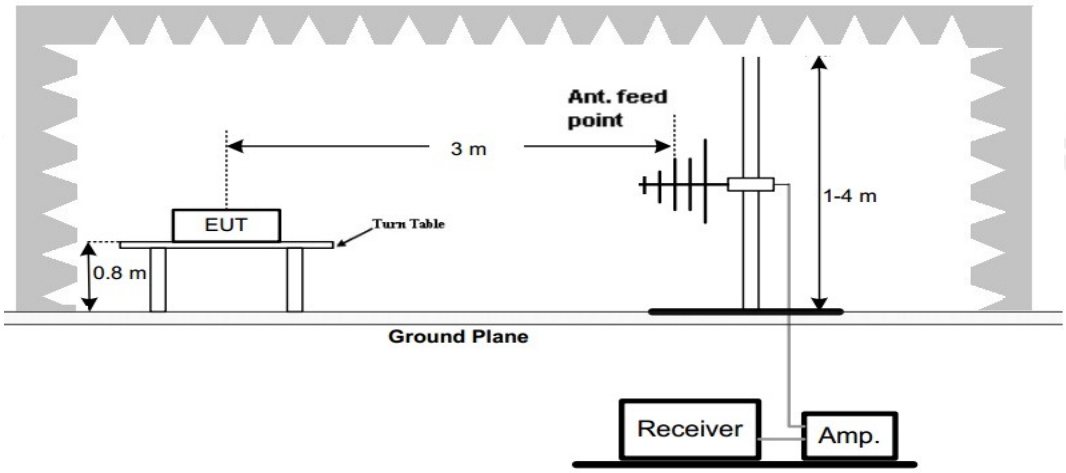
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

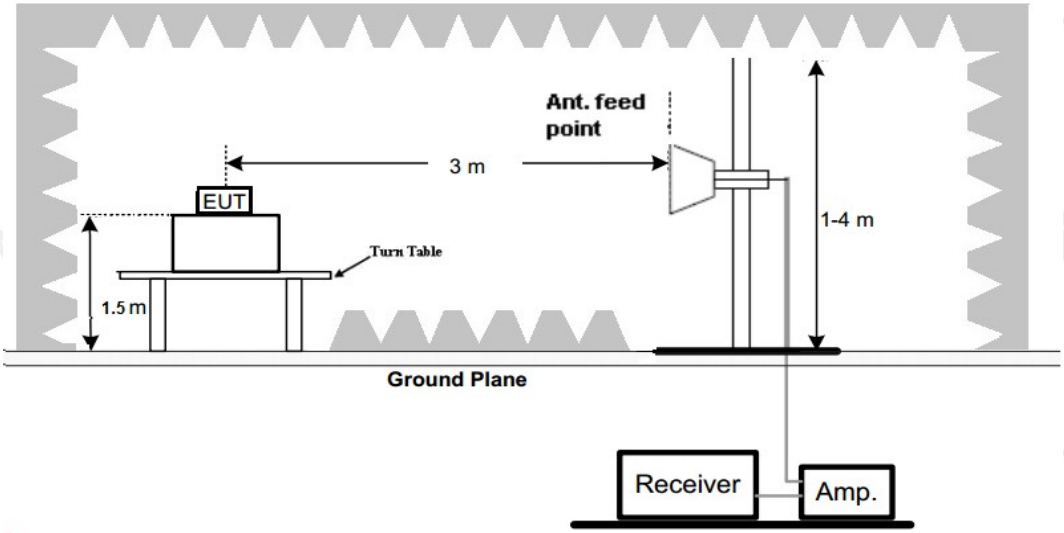
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 40GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

TEST RESULTS

Between 9KHz – 30MHz
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.
Note : All 802.11a/n/ac (HT20), 802.11n/ac (HT40) and 802.11ac (HT80) modes have been tested for above 1GHz test, only the worst case 802.11ac(HT20) 5180Mhz was recorded.

For 30MHz-1GHz

Temperature:	25℃	Relative Humidity:	54%
Pressure:	101 kPa	Test Voltage:	AC 120V/60Hz

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	148.441	45.74	-12.78	32.96	43.50	-10.54	QP
2	216.399	47.48	-15.68	31.80	46.00	-14.20	QP
3	244.232	51.80	-14.20	37.60	46.00	-8.40	QP
4	297.224	49.93	-12.61	37.32	46.00	-8.68	QP
5	480.528	42.56	-7.74	34.82	46.00	-11.18	QP
6 *	796.183	41.67	-1.25	40.42	46.00	-5.58	QP

Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	52.760	47.76	-14.39	33.37	40.00	-6.63	QP
2 !	72.084	52.45	-16.94	35.51	40.00	-4.49	QP
3 !	98.832	55.42	-17.19	38.23	43.50	-5.27	QP
4	298.268	50.42	-12.01	38.41	46.00	-7.59	QP
5 *	522.718	48.86	-6.81	42.05	46.00	-3.95	QP
6 !	821.710	41.01	-0.13	40.88	46.00	-5.12	QP

Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)
2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)
3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

For 1GHz to 40GHz

Note: All 802.11a/n/ac (HT20), 802.11n/ac (HT40) and 802.11ac (HT80) modes have been tested for above 1GHz test, only the worst case 802.11ac(HT20) was recorded.

U-NII 1 & 802.11ac20 Mode (above 1GHz)

Tested Channel	Frequency (MHz)	Emission Limit (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
36 5180MHz	5150.00	53.67	PK	H	68.20	14.53	50.68	32.40	5.11	34.52	2.99
	5150.00	43.20	AV	H	54.00	10.80	40.21	32.40	5.11	34.52	2.99
	10360.00	42.40	PK	H	68.20	25.80	35.24	36.51	5.86	35.21	7.16
	--	--	--	--	--	--	--	--	--	--	--
40 5200MHz	10400.00	39.81	PK	H	68.20	28.39	32.52	36.58	5.96	35.25	7.29
	--	--	--	--	--	--	--	--	--	--	--
48 5240MHz	5350.50	43.66	PK	H	68.20	24.54	40.62	32.45	5.22	34.63	3.04
	10480.00	43.09	PK	H	68.20	25.11	35.74	36.68	6.21	35.54	7.35
	--	--	--	--	--	--	--	--	--	--	--

Tested Channel	Frequency (MHz)	Emission Limit (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
36 5180MHz	5150.00	53.64	PK	V	68.20	14.56	50.65	32.40	5.11	34.52	2.99
	5150.00	43.73	AV	V	54.00	10.27	40.74	32.40	5.11	34.52	2.99
	10360.00	42.62	PK	V	68.20	25.58	35.46	36.51	5.86	35.21	7.16
	--	--	--	--	--	--	--	--	--	--	--
40 5200MHz	10400.00	39.90	PK	V	68.20	28.30	32.61	36.58	5.96	35.25	7.29
	--	--	--	--	--	--	--	--	--	--	--
48 5240MHz	5350.50	47.45	PK	V	68.20	20.75	44.41	32.45	5.22	34.63	3.04
	10480.00	47.56	PK	V	68.20	20.64	40.21	36.68	6.21	35.54	7.35
	--	--	--	--	--	--	--	--	--	--	--

U-NII 3 & 802.11ac20 Mode (above 1GHz)

Tested Channel	Frequency (MHz)	Emission Limit (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
149 5745MHz	5720.00	54.96	PK	H	68.20	13.24	50.16	34.21	5.11	34.52	4.80
	5720.00	45.12	AV	H	54.00	8.88	40.32	34.21	5.11	34.52	4.80
	11490.00	44.25	PK	H	68.20	23.95	35.25	38.35	5.86	35.21	9.00
	--	--	--	--	--	--	--	--	--	--	--
157 5785MHz	11570.00	41.58	PK	H	68.20	26.62	32.26	38.61	5.96	35.25	9.32
	--	--	--	--	--	--	--	--	--	--	--
165 5825MHz	5855.00	45.40	PK	H	68.20	22.80	40.25	34.56	5.22	34.63	5.15
	11650.00	44.71	PK	H	68.20	23.49	35.26	38.78	6.21	35.54	9.45
	--	--	--	--	--	--	--	--	--	--	--

Tested Channel	Frequency (MHz)	Emission Limit (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
149 5745MHz	5720.00	55.04	PK	V	68.20	13.16	50.24	34.21	5.11	34.52	4.80
	5720.00	45.06	AV	V	54.00	8.94	40.26	34.21	5.11	34.52	4.80
	11490.00	44.26	PK	V	68.20	23.94	35.26	38.35	5.86	35.21	9.00
	--	--	--	--	--	--	--	--	--	--	--
157 5785MHz	11570.00	42.56	PK	V	68.20	25.64	33.24	38.61	5.96	35.25	9.32
	--	--	--	--	--	--	--	--	--	--	--
165 5825MHz	5855.00	45.31	PK	V	68.20	22.89	40.16	34.56	5.22	34.63	5.15
	11650.00	44.71	PK	V	68.20	23.49	35.26	38.78	6.21	35.54	9.45
	--	--	--	--	--	--	--	--	--	--	--

REMARKS:
1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the other emission levels were very low against the limit.
5. RBW1MHz VBW 3MHz Peak detector is for PK value; RBW 1MHz VBW10Hz Peak detector is for AV value.
6. Worst case data at 54Mbps at IEEE 802.11a; MCS7 at IEEE 802.11n(HT20); MCS7 at IEEE 802.11n(HT40); Ncc1 MCS8 at IEEE 802.11ac(HT20); MCS7 at IEEE 802.11ac(HT40); MCS9 at IEEE 802.11ac(HT80);
7.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

4.3 Conducted Output Power

Limit

For the band 5.15-5.25 GHz.
(i) For an outdoor 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.

(ii) 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.

(iii) For fixed point-to-point access points 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.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.

Test Configuration

Test Results

U-NII 1

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11a	36	8.000	23.98	Pass
	40	8.078		
	48	8.101		
802.11n(HT20)	36	8.021	23.98	Pass
	40	8.319		
	48	7.897		
802.11n(HT40)	38	7.973	23.98	Pass
	46	8.024		
802.11ac(HT20)	36	7.861	23.98	Pass
	40	7.953		
	48	7.910		
802.11ac(HT40)	38	7.915	23.98	Pass
	46	7.983		
802.11ac(HT80)	42	8.094	23.98	Pass

U-NII 3

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11a	149	8.288	30.00	Pass
	157	8.232		
	165	7.819		
802.11n(HT20)	149	8.134	30.00	Pass
	157	8.050		
	165	8.276		
802.11n(HT40)	151	8.154	30.00	Pass
	159	8.178		
802.11ac(HT20)	149	8.311	30.00	Pass
	157	8.002		
	165	8.300		
802.11ac(HT40)	151	8.068	30.00	Pass
	159	8.235		
802.11ac(HT80)	155	8.123	30.00	Pass

Note:
1) Measured output power at difference data rate for each mode and recorded worst case for each mode.
2) Test results including cable loss.
3) Worst case data at 54Mbps at IEEE 802.11a; MCS7 at IEEE 802.11n(HT20); MCS7 at IEEE 802.11n(HT40); Ncc1 MCS8 at IEEE 802.11ac(HT20); MCS7 at IEEE 802.11ac(HT40); MCS9 at IEEE 802.11ac(HT80);

4.4 Power Spectral Density

Limit

(1) For the band 5.15 - 5.25 GHz.

(i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band.[note1]

(ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band.[note1]

(iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.

(iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. [note1]

(2) For the 5.25 - 5.35 GHz and 5.47 - 5.725 GHz bands, the peak power spectral density shall not exceed 11 dBm in any 1 MHz band. [note1]

(3) For the band 5.725 - 5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band. [note1, note2]

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2: 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.

transmission.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 1MHz for U-NII 1, U-NII 2A, U-NII C band and 510KHz for U-NII 3 band.
3. Set the VBW ≥ 3× RBW.
4. Set the span to encompass the entire EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.

Test Configuration

Test Results

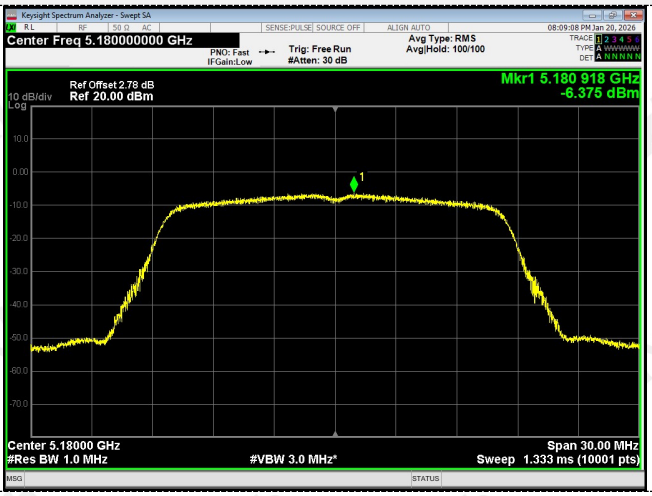
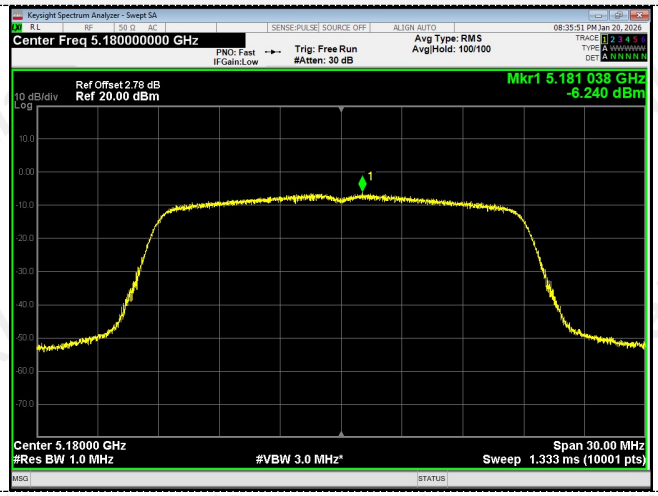
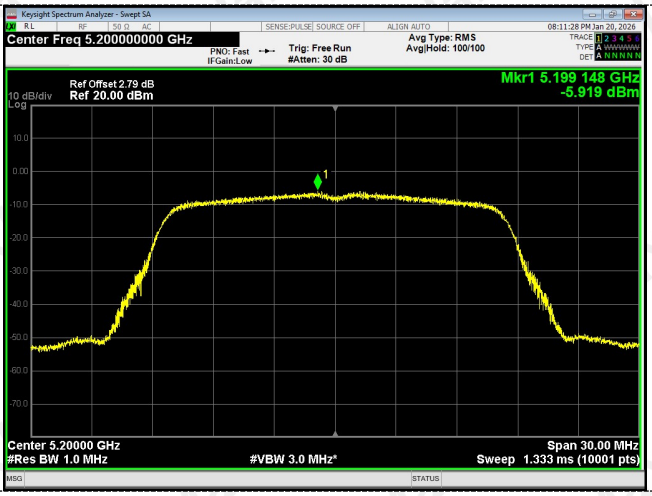
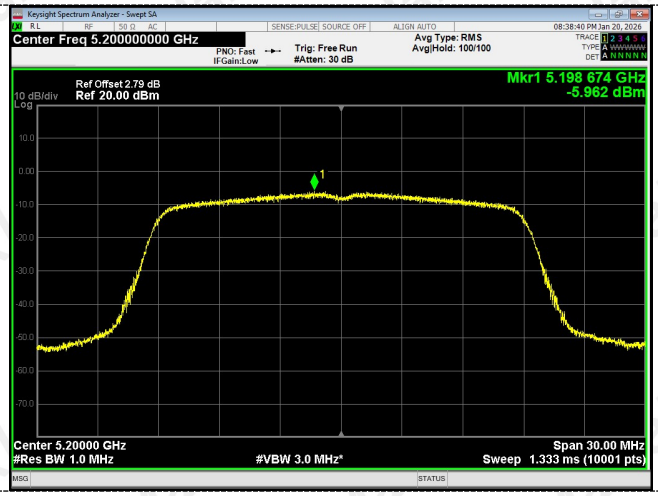
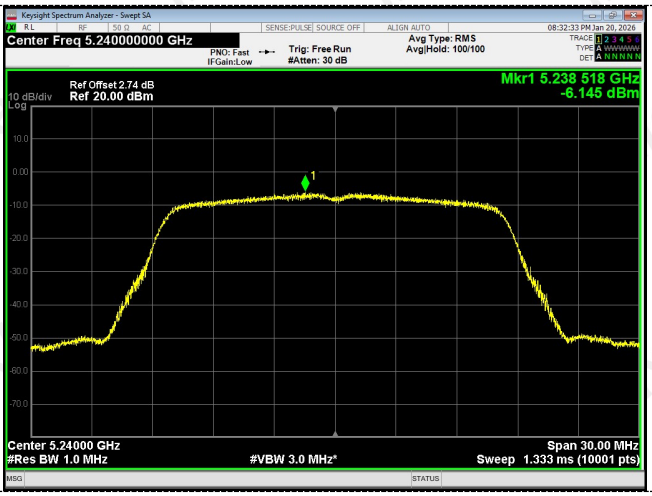
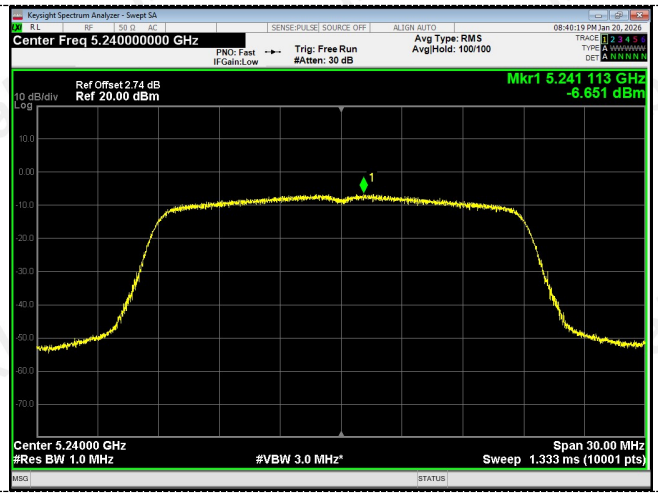
Type	Bands	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	U-NII 1	36	-6.375	11	Pass
		40	-5.919		
		48	-6.145		
802.11n (HT20)	U-NII 1	36	-6.240		
		40	-5.962		
		48	-6.651		
802.11n (HT40)	U-NII 1	38	-9.318		
		46	-9.274		
802.11ac (HT20)	U-NII 1	36	-6.654		
		40	-6.289		
		48	-6.164		
802.11ac (HT40)	U-NII 1	38	-9.251		
		46	-9.307		
802.11ac (HT80)	U-NII 1	42	-12.511		

Note:
1. Measured output power at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss.

Type	Bands	Channel	Power Spectral Density (dBm/510KHz)	Power Spectral Density (dBm/500KHz)	Limit (dBm/500 KHz)	Result
802.11a	U-NII 3	149	-8.703	-8.789	30	Pass
		157	-8.722	-8.808		
		165	-9.181	-9.267		
802.11n (HT20)	U-NII 3	149	-9.375	-9.461		
		157	-9.281	-9.367		
		165	-9.217	-9.303		
802.11n (HT40)	U-NII 3	151	-12.225	-12.311		
		159	-12.085	-12.171		
802.11ac (HT20)	U-NII 3	149	-9.223	-9.309		
		157	-9.550	-9.636		
		165	-9.260	-9.346		
802.11ac (HT40)	U-NII 3	151	-12.253	-12.339		
		159	-11.993	-12.079		
802.11ac (HT80)	U-NII 3	155	-15.511	-15.597		

Note: Remark: P.S.D(dBm/500KHz)= P.S.D(dBm/510KHz)+10 log (500 kHz/510KHz).
Correction Factor = 10log(500KHz/RBW in measurement) =-0.086

Test plot as follows:
5.2G

802.11a	802.11n(HT20)
U-NII 1	U-NII 1
	
CH36	CH36
	
CH40	CH40
	
CH48	CH48

802.11n(HT40)	802.11ac(HT20)
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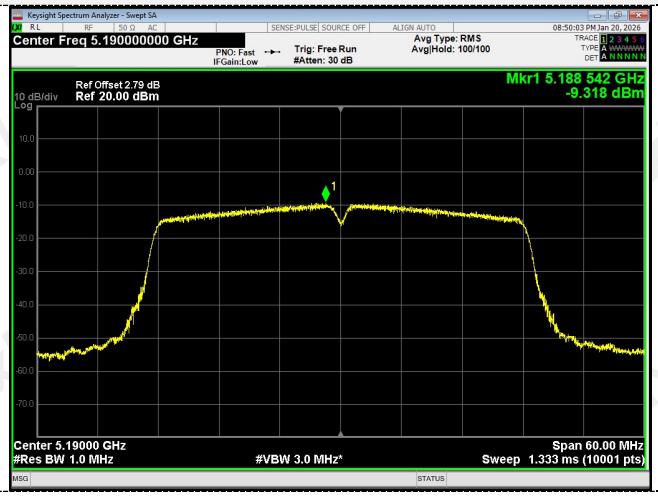
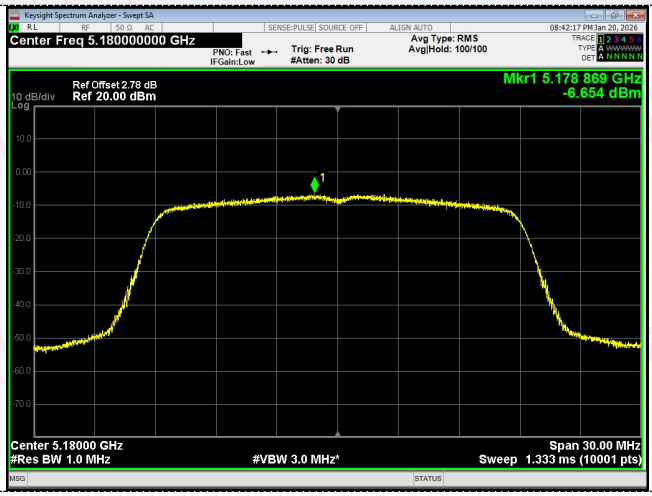
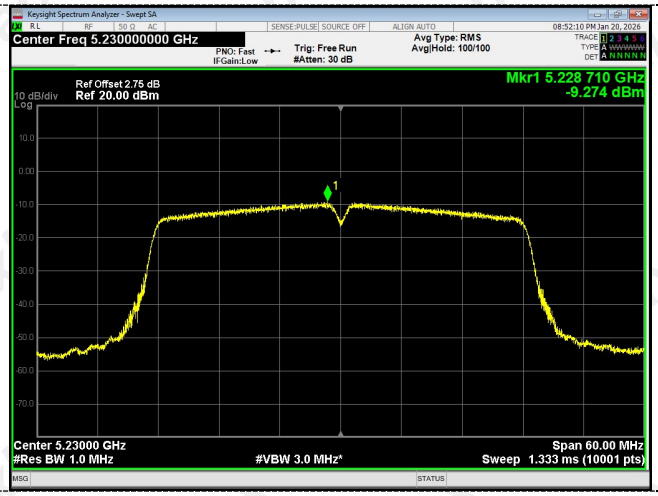
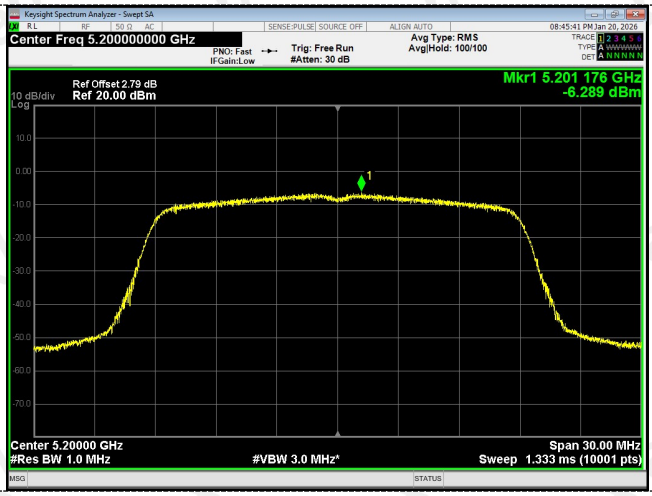
	
CH38	CH36
	
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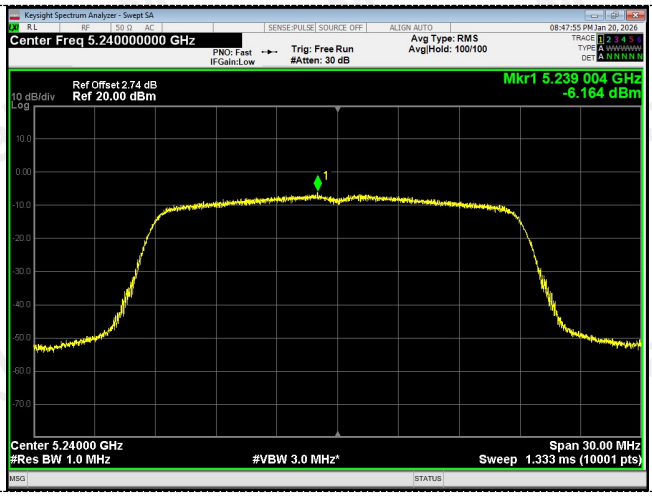
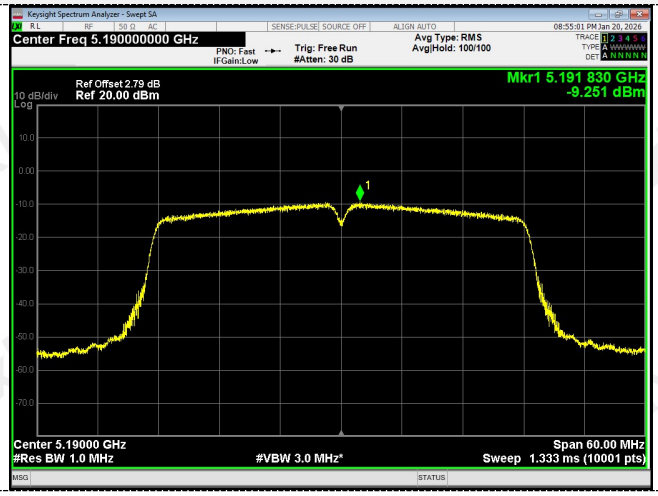
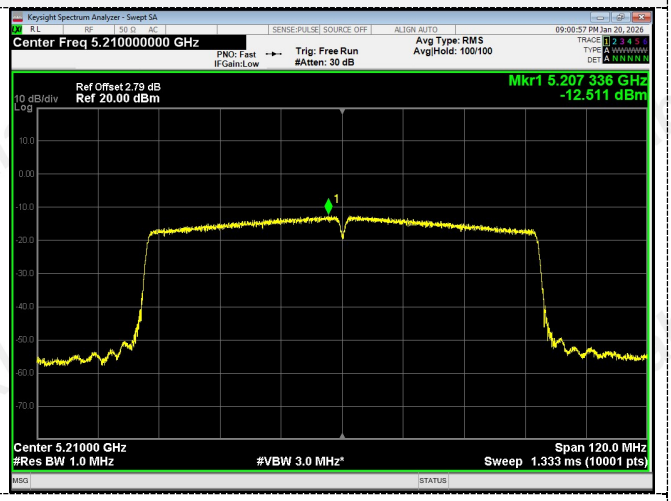
	
	CH48

802.11ac(HT40)	802.11ac(HT80)
U-NII 1	U-NII 1
	
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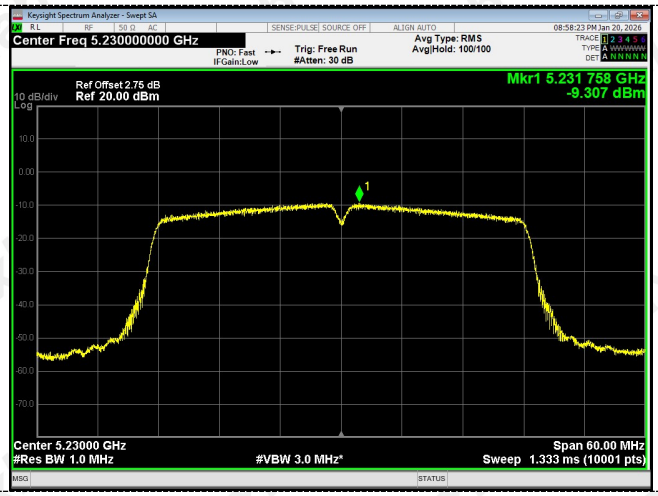	
CH46	

5.8G

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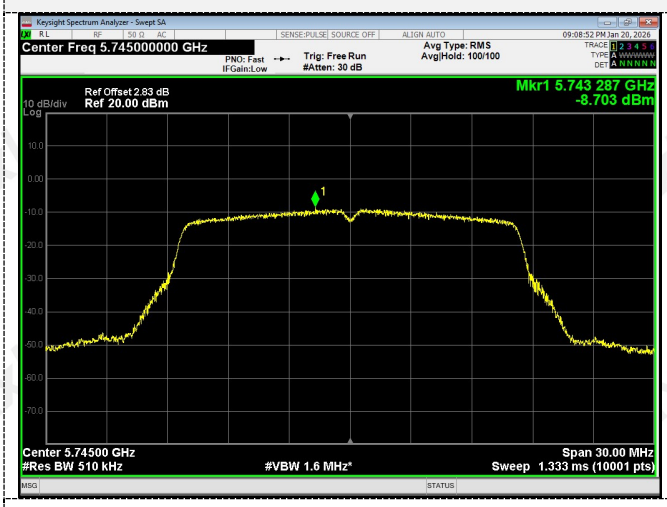	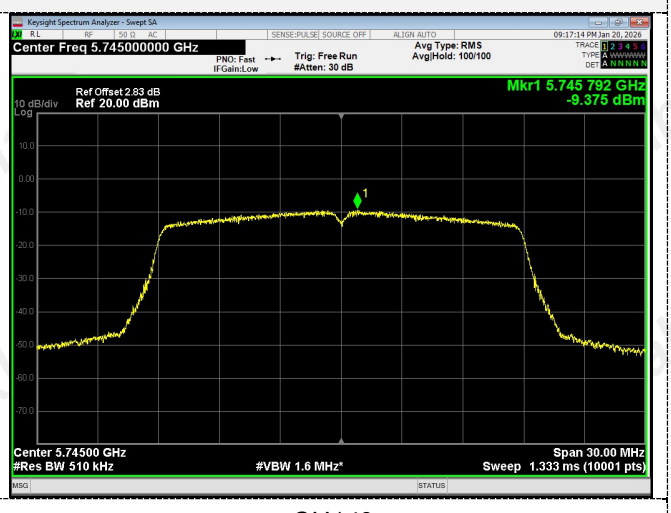
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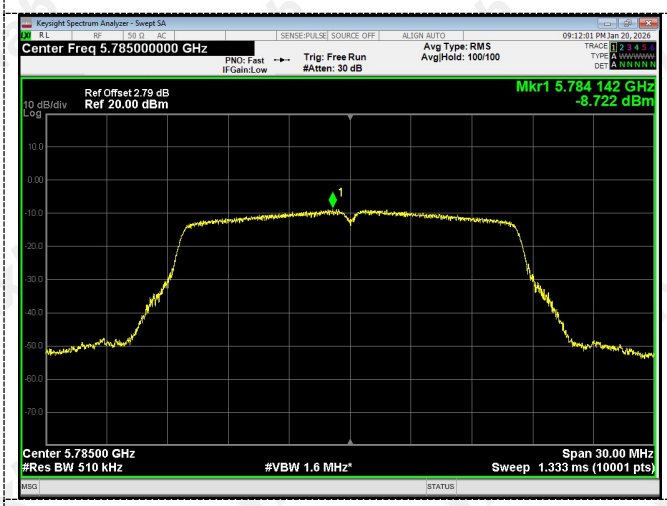	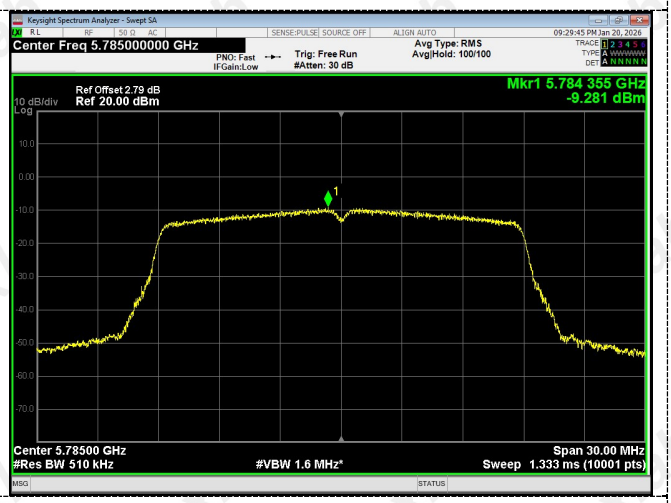
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	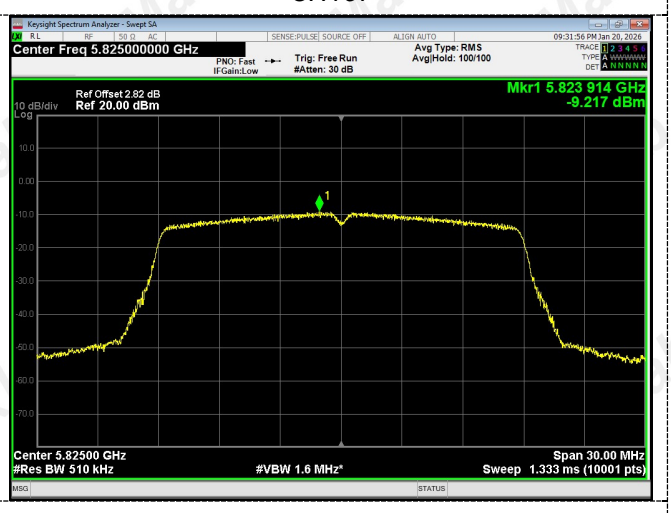
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