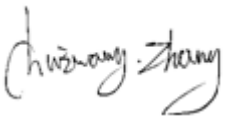
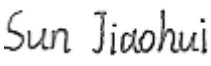
RF TEST REPORT

Report No.:	20241217G26340X-W3
Product Name:	Cloud Digital Signage，Smart Digital Signage，Intelligent Professional Commercial Display, Commercial Digital Signage， Professional Display Signage， Professional Digital Signage, Interactive Digital Signage, Freestanding Digital Signage, Commercial LCD Display, LCD Multimedia Display, LCD Display, Interactive LCD Display, Digital Signage Display
Main Model No. :	M65T5A
Series Model No. :	See page 5
FCC ID:	2AVB8-0010010048315
Applicant:	Shanghai Goodview Electronics Technology Co., Ltd
Address:	Room 118, 1st Floor, No. 2, Lane 3999, Xiupu Road, Pudong District, Shanghai
Dates of Testing:	12/13/2024 - 12/20/2024
Issued by:	CCIC Southern Testing Co., Ltd.
Lab Location:	Electronic Testing Building, No.43, Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China. **Tel**：86-755-26627338 **E-Mail**：manager@ccic-set.com

Test Report

Product .....:	Cloud Digital Signage，Smart Digital Signage，Intelligent Professional Commercial Display, Commercial Digital Signage， Professional Display Signage， Professional Digital Signage, Interactive Digital Signage, Freestanding Digital Signage, Commercial LCD Display, LCD Multimedia Display, LCD Display, Interactive LCD Display, Digital Signage Display
Trade Name .....:	Goodview
Applicant.....:	Shanghai Goodview Electronics Technology Co., Ltd
Applicant Address .....:	Room 118, 1st Floor, No. 2, Lane 3999, Xiupu Road, Pudong District, Shanghai
Manufacturer .....:	Shanghai Goodview Electronics Technology Co., Ltd
Manufacturer Address .....:	Room 118, 1st Floor, No. 2, Lane 3999, Xiupu Road, Pudong District, Shanghai
Test Standards .....:	47 CFR Part 15 Subpart E 15.407 ANSI C63.10-2020
Test Result.....:	Pass
Tested by .....:	 2024.12.20 Chuiwang Zhang, Test Engineer
Reviewed by .....:	 2024.12.20 Sun Jiaohui, Senior Engineer
Approved by .....:	 2024.12.20 Chris You, Manager

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Change History		
Issue	Date	Reason for change
1.0	2024.12.20	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Cloud Digital Signage，Smart Digital Signage，Intelligent Professional Commercial Display, Commercial Digital Signage, Professional Display Signage，Professional Digital Signage, Interactive Digital Signage, Freestanding Digital Signage, Commercial LCD Display, LCD Multimedia Display, LCD Display, Interactive LCD Display, Digital Signage Display
Models	M65T5A, M65T7A, M65******, OM65******, OH65******, L65******, A65******, T65******，TC65******，PF65****** (where "*" can be represented by 0-9, A-Z, or a blank space to differentiate between different sales regions and channels, which does not affect the product's safety and electromagnetic compatibility)
EUT supports Radios application	WLAN5.0GHz 802.11a/n/ac/ax
Product Type	Client devices
Modulation Type	802.11a/n: OFDM (BPSK/QPSK/16QAM/64QAM) 802.11ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM) 802.11ax: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM)
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6 Mbps 802.11n: up to 150 Mbps 802.11ac: up to 200 Mbps 802.11ax: up to 286.765 Mbps
Frequency Range	UNII-3: 5725 ~ 5850MHz
Channel Bandwidth	802.11a: 20MHz 802.11n/ac/ax: 20MHz/40MHz
Channel Number	UNII-3: 5 for 802.11a, 802.11n(HT20), 802.11ac(VHT20), 802.11ax(HE20) 2 for 802.11n(HT40), 802.11ac(VHT40), 802.11ax(HE40)
Antenna Type	External antenna
Antenna Gain	5.5dBi
Output Power (Max.)	12.94dBm
Power supply	100V-240V～50/60Hz 2.5A

Note 1: The information of antenna gain and cable loss is provided by the manufacturer and our lab is not responsible for the accuracy of the antenna gain and cable loss information.

1.2. Test Standards and Results

The purpose of the report is to conduct testing according to the following FCC certification standards:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart E §15.407	Radio Frequency Devices
2	KDB789033 D02 General UNII Test Procedures New Rules v02r01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
3	ANSI C63.10-2020	American National Standard for Testing Unlicensed Wireless Devices

Test detailed items/section required by FCC rules and results are as below:

No.	FCC Rule	Description	Result
1	15.203 15.407(a)	Antenna Requirement	PASS
2	15.407(a)(3)(i)	Maximum Conducted Output Power	PASS
3	15.407(a)(12)	26dB Emission Bandwidth 99% Occupied Bandwidth	PASS
4	15.407(e)	6dB Emission Bandwidth	PASS
5	15.407(a)(3)(i)	Power spectral density (PSD)	PASS
6	15.207	AC Power Line Conducted Emission	PASS
7	15.205 15.209 15.407(b)	Radiated Band Edges and Spurious Emission	PASS
8	15.407(g)	Frequency Stability	PASS

1.3. Channel List

Operated band in 5725 MHz ~ 5850MHz

5 channels are provided for 802.11a, 802.11n-HT20, 802.11ac-VHT20 and 802.11ax-HE20.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

2 channels are provided for 802.11n-HT40, 802.11ac-VHT40 and 802.11ax-HE40.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
151	5755	159	5795

1.4. Test environment and mode

During the measurement, the environmental conditions were within the listed ranges:

Operating Environment	
Temperature	15 ℃ - 35 ℃
Humidity	30% -60%
Atmospheric Pressure	86kPa-106kPa
Test mode:	
Continuously transmitting mode	Keep the EUT in continuous transmitting with modulation

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

For Frequency band 5725 ~ 5850 MHz				
Test Mode	Frequency(MHz)			Data rate
	LCH	MCH	HCH	
802.11a	5745	5785	5825	6 Mbps
802.11n-HT20/ac-VHT20/ax-HE20				MCS 0
802.11n-HT40/ac-VHT40/ax-HE40	5755	/	5795	MCS 0
Note: After scanning all modulation types and data rates for all test patterns, the above list was found to be the worst case.				

1.5. Table for Supporting Units

No.	Equipment	Brand Name	Model Name	Manufacturer	Serial No.	Note
1	Laptop	HP	TPN-Q221	HP	5CD14347QB	FCC DOC

1.6. Laboratory Facilities

FCC-Registration No.: CN1283

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until Jun. 30th, 2025.

ISED Registration: 11185A

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A on Aug. 04, 2016, valid time is until Jun. 30th, 2025.

CAB number: CN0064

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

2. 47 CFR Part 15E Requirements

2.1. Antenna requirement

2.1.1. Applicable Standard

According to FCC 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

According to FCC 15.407(a)(3): For the band 5.725-5.850 GHz, If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

2.1.2. Antenna Information

Antenna General Information:

No.	Operating frequency range	Ant. Type	Ant. Gain
1	5725 ~ 5850MHz	Externa	5.5dBi

2.1.3. Result: comply

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Maximum Conducted Output Power

2.2.1. Limit of Maximum Conducted Output Power

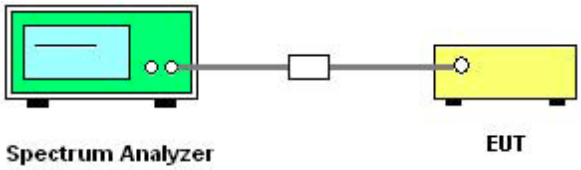
47 CFR Part 15.407(a)(3)(i):

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

2.2.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.2.3. Test Setup



2.2.4. Test Procedures

1. The testing follows the of KDB 789033 D02 v02r01 Section II.E.2.b and ANSI C63.10-2020 Section 12.4.2.2.
2. The RF output of EUT was connected to spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Power is calculated by integrating over the spectrum of the entire 99% OBW signal using the instrument's band power measurement feature.
4. Set span to encompass the entire 99% OBW of the signal.
5. Set RBW = 1MHz, VBW ≥ 3MHz, Sweep time = Auto, Detector = power averaging (RMS).
6. Number of points in sweep ≥ 2 × span / RBW.
7. Trace average at least 100 traces in power averaging (rms) mode.
8. Replace the EUT center frequency and repeat steps 3~7.

2.2.5. Test Results of Maximum Conducted Output Power

Please refer to APPENDIX A for detail

2.3. Power spectral density (PSD)

2.3.1. Limit of Power Spectral Density

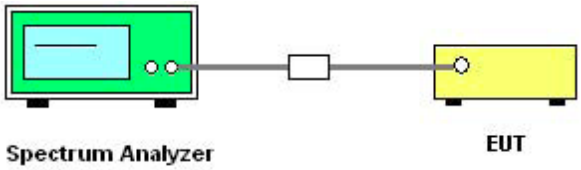
47 CFR Part 15.407(a)(3)(i):

For the band 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500kHz band.

2.3.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.3.3. Test Setup



2.3.4. Test Procedures

1. The testing follows the of KDB 789033 D02 v02r01 Section II.F and ANSI C63.10-2020 Section 12.6.
2. The RF output of EUT was connected to spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set span to encompass the entire 99% OBW of the signal.
4. For U-NII-1, U-NII-2a, U-NII-2c Band: Set RBW = 1MHz, VBW ≥ 3MHz, Sweep time = Auto, Detector = power averaging (RMS).
5. For U-NII-3 Band: Set RBW = 500kHz, VBW ≥ 3MHz, Sweep time = Auto, Detector = power averaging (RMS).
6. Number of points in sweep ≥ 2 × span / RBW.
7. Trace average at least 100 traces in power averaging (rms) mode.
8. Use the peak search function on the instrument to find the peak of the spectrum.
9. Replace the EUT center frequency and repeat steps 3~8.

2.3.5. Test Result of Power Spectral Density

Please refer to APPENDIX A for detail

2.4. 26dB Emission Bandwidth and 99% Occupied Bandwidth

2.4.1. Limit of 26dB Emission Bandwidth and 99% Occupied Bandwidth

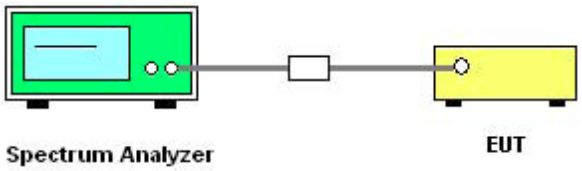
26dB Emission Bandwidth and 99% Occupied Bandwidth no Bandwidth limit.

The minimum 6dB bandwidth of U-NII-3 shall be at least 500 kHz.

2.4.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.4.3. Test Description



2.4.4. Test Procedures

1. The testing follows the of KDB 789033 D02 v02r01 Section II.C.D and ANSI C63.10-2020 Section 12.5.
2. The RF output of EUT was connected to spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Use the spectrum analyzer “Channel Bandwidth” function to easurement the 26dB EBW, 6dB EBW and 99% OBW.
4. Set center frequency to the nominal EUT channel center frequency.
5. For 99% OBW Measurement:
   Set Span = 1.5 times to 5.0 times the OBW/ RBW = Within 1% to 5% of OBW/VBW $\geq 3 \times$ RBW.
6. For 26dB EBW Measurement:
   Set Span = 2.0 times to 5.0 times the EBW/ RBW = Within 1% to 5% of EBW/VBW $\geq 3 \times$ RBW.
7. For 6dB EBW Measurement:
   Set RBW =100kHz, VBW $\geq 3 \times$ RBW.
8. Set Detector = Peak, Trace mode = max hold and Sweep time = auto couple.
9. Allow the trace to stabilize.
10. Replace the EUT center frequency and repeat steps 3~9.

2.4.5. Test Results of 26dB Emission Bandwidth and 99% Occupied Bandwidth

Please refer to APPENDIX A for detail

2.5. Frequency Stability

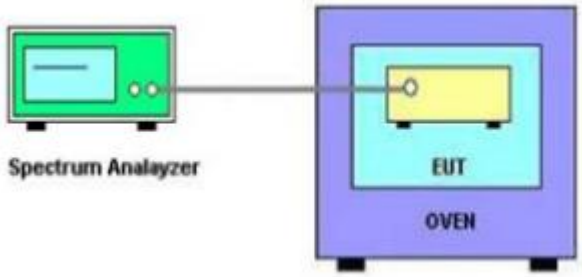
2.5.1. Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

2.5.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.5.3. Test Setup



2.5.4. Test Procedures

1. The testing follows the of KDB 789033 D02 v02r01 Section II.A.3 and ANSI C63.10-2020 Section 6.8.
2. The EUT is installed in an environment test chamber with external power source, was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set the chamber to operate at 50 ℃ and external power source to output at nominal voltage of EUT.
5. A sufficient stabilization period at each temperatures in used prior to each frequency measurement.
6. The test shall be performed under -30 ℃ to 50 ℃ and 85% to 115% of the nominal voltage. Change setting of chamber and external power source to complete all conditions.
7. Replace the EUT center frequency and repeat steps 3~6.

2.5.5. Test Result of Frequency Stability

Please refer to APPENDIX A for detail

2.6. Radiated Band Edge and Spurious Emission

2.6.1. Limit of Radiated Band Edges and Spurious Emission

Radiated emission which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, 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 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

FCC Part 15.407(b)			
Frequency Band (MHz)	Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength @3m (dBμV/m)
5150 - 5250	Outside of the 5.15~5.35 GHz	-27	68.2
5725 - 5850	< 5650	-27	68.2
	5650~5700	-27~10	68.2~105.2
	5700~5720	10~15.6	105.2~110.8
	5720~5725	15.6~27	110.8~122.2
	5850~5855	27~15.6	122.2~110.8
	5855~5875	15.6~10	110.8~105.2
	5875~5925	10~-27	105.2~68.2
	> 5925	-27	68.2

Note:

1) EIRP[dBm] = E[dBμV/m] + 20 log (d[m]) - 104.77, d is the measurement distance in m.
2) E[dBμV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm] = -27dBm.
   E[dBμV/m] = EIRP[dBm] + 95.2=105.2 dBuV/m, for EIPR[dBm] = 10dBm.
   E[dBμV/m] = EIRP[dBm] + 95.2=110.8 dBuV/m, for EIPR[dBm] = 15.6dBm.
   E[dBμV/m] = EIRP[dBm] + 95.2=122.2 dBuV/m, for EIPR[dBm] = 27dBm.

Applicable To	Limit	
KDB 789033 D02 General UNII Test Procedures New Rules v02r01	Field Strength at 3m	
	PK: 68.2(dBμV/m)	AV: 54 (dBμV/m)

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

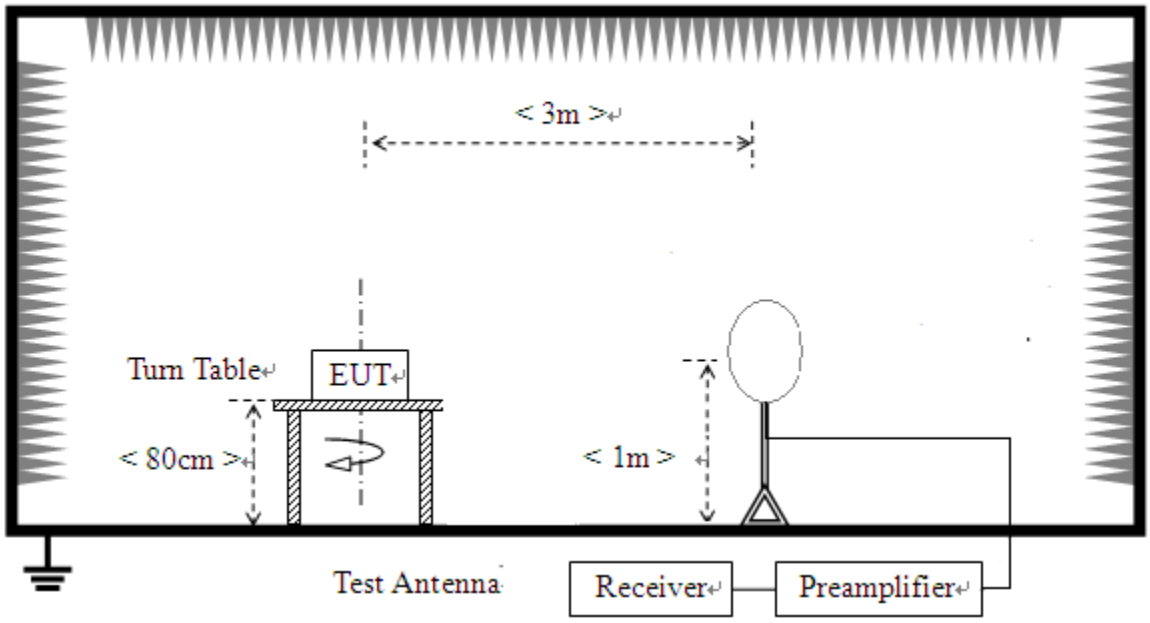
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41	/	/	/
Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. [2]Above 38.6.			

2.6.2. Measuring Instruments

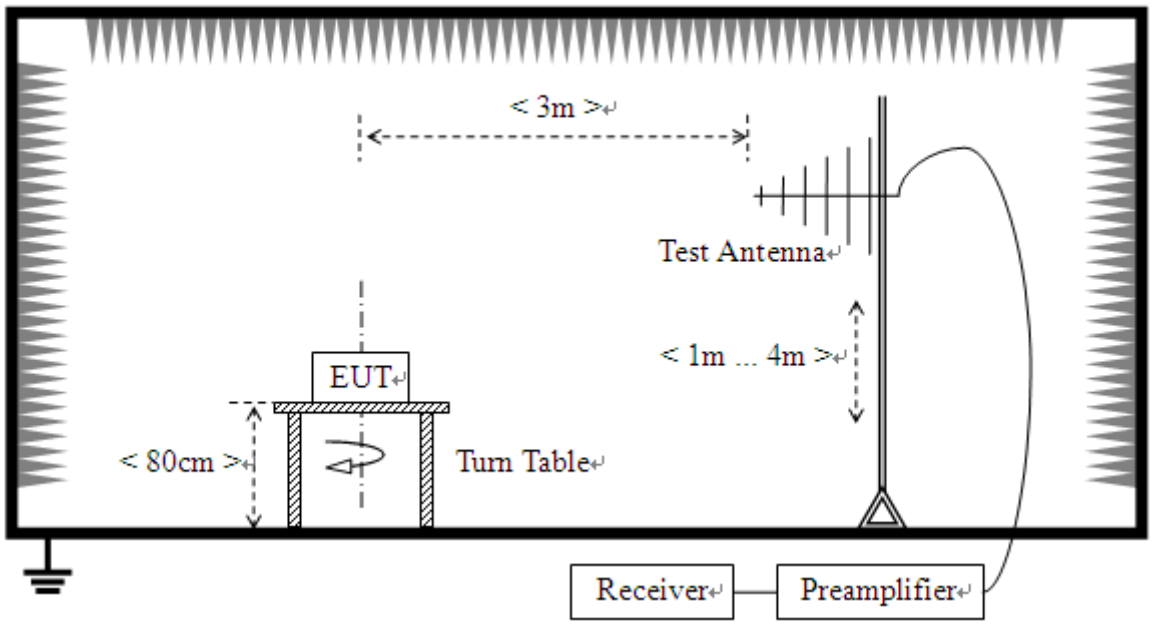
The measuring equipment is listed in the section 3 of this test report.

2.6.3. Test Setup

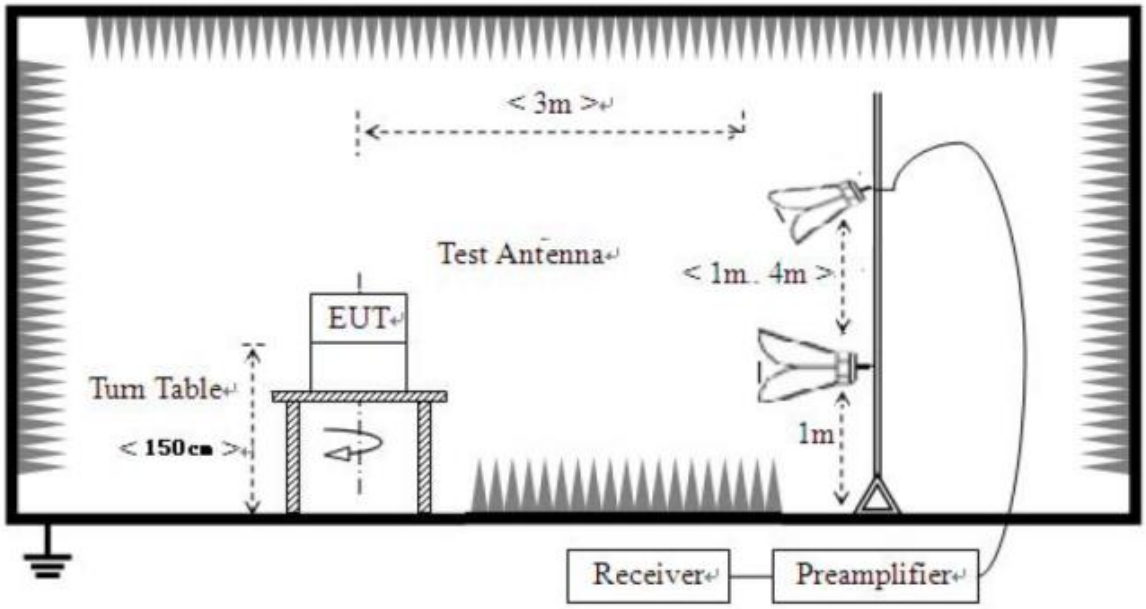
For radiated emissions from 9 kHz to 30 MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



2.6.4. Test Procedures

1. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. 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 height of antenna 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
6. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for

Quasi-peak detection (QP) at frequency below 1 GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (10 log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
5. Only worst-Case mode data provide here, 802.11a (20MHz) 5180MHz for Below 1GHz.

2.6.5. Test Result of Radiated Band Edge and Spurious Emission

For 9 kHz to 30MHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

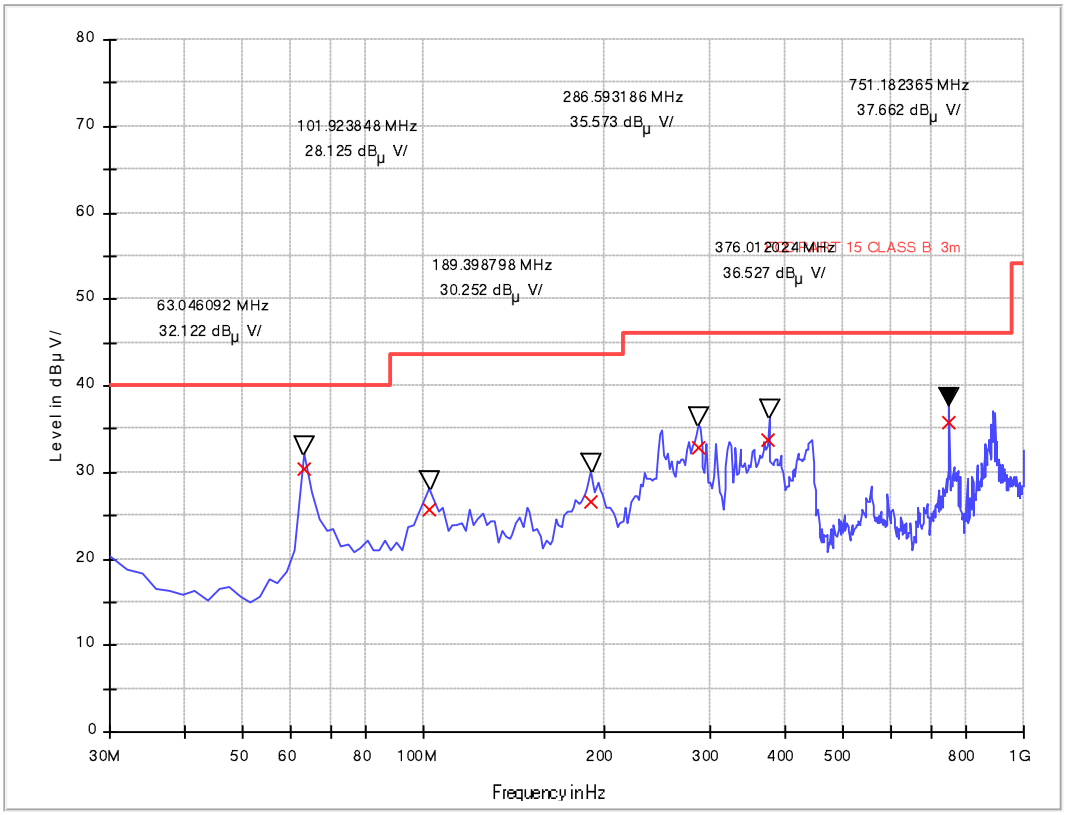
For 30MHz to 1GHz, All of the EUT Configure mode were tested and found 802.11a_5785MHz channel is the worst mode, the worst case is recorded in this report.

For 1GHz to 18GHz, Only worst-case data is reported.

For above 18GHz, The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

For 30MHz to 1000 MHz

Test site:	3M anechoic chamber	Environment:	Temp: 23℃; Humi:48%;101kPa
Operator:	Huang Chaoming	Test Date:	2024.10.24
Test Mode:	5G WIFI - TX	Test Result:	Pass

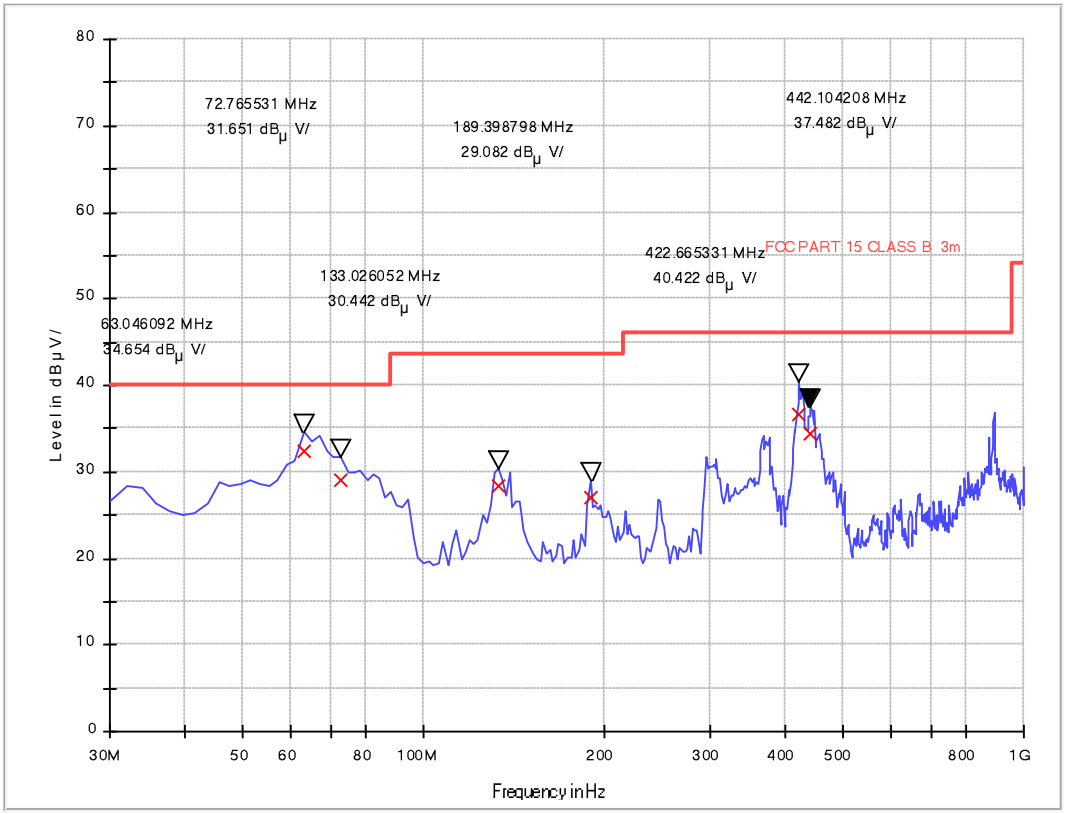


Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Height (cm)	Polarity	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
63.040000	30.47	120.000	100.0	H	5.8	9.53	40.0
101.920000	25.60	120.000	100.0	H	10.3	17.90	43.5
189.400000	26.48	120.000	100.0	H	11.8	17.02	43.5
286.600000	32.91	120.000	100.0	H	14.6	13.09	46.0
376.000000	33.83	120.000	100.0	H	16.5	12.17	46.0
751.200000	35.77	120.000	100.0	H	21.4	10.23	46.0

Remark:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB).
3. Margin value = Limit value – Emission Level.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. Only the antenna height (from 1m to 4m) at maximum reading are recorded.

Test site:	3M anechoic chamber	Environment:	Temp: 23℃; Humi:48%;101kPa
Operator:	Huang Chaoming	Test Date:	2024.10.24
Test Mode:	5G WIFI - TX	Test Result:	Pass



Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Height (cm)	Polarity	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
63.040000	32.45	120.000	100.0	V	5.8	7.55	40.0
72.760000	29.13	120.000	100.0	V	6.8	10.87	40.0
133.040000	28.32	120.000	100.0	V	11.5	15.18	43.5
189.400000	26.98	120.000	100.0	V	11.8	16.52	43.5
422.680000	36.61	120.000	100.0	V	17.2	9.39	46.0
442.120000	34.32	120.000	100.0	V	17.5	11.68	46.0

Remark:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB).
3. Margin value = Limit value - Emission Level.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. Only the antenna height (from 1m to 4m) at maximum reading are recorded.

For 1GHz to 40 GHz

U-NII-3_802.11a_5745MHz									
Frequency (MHz)	Emssion Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)	Polarity	Detector
5650.00	49.60	68.20	-18.60	1.50	280	48.80	0.80	Horizontal	Peak
5700.00	51.07	105.20	-54.13	1.50	280	49.83	1.24	Horizontal	Peak
5720.00	50.99	110.80	-59.81	1.50	280	49.71	1.28	Horizontal	Peak
5725.00	51.95	122.20	-70.25	1.50	280	50.65	1.30	Horizontal	Peak
11490.00	56.29	68.20	-11.91	1.50	280	44.74	11.55	Horizontal	Peak
11490.00	45.26	54.00	-8.74	1.50	280	33.71	11.55	Horizontal	Average
5650.00	51.22	68.20	-16.98	1.50	150	50.42	0.80	Vertical	Peak
5700.00	51.41	105.20	-53.79	1.50	150	50.17	1.24	Vertical	Peak
5720.00	50.81	110.80	-59.99	1.50	150	49.53	1.28	Vertical	Peak
5725.00	52.23	122.20	-69.97	1.50	150	50.93	1.30	Vertical	Peak
11490.00	55.70	68.20	-12.50	1.50	150	44.15	11.55	Vertical	Peak
11490.00	45.77	54.00	-8.23	1.50	150	34.22	11.55	Vertical	Average
U-NII-3_802.11a_5825MHz									
Frequency (MHz)	Emssion Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)	Polarity	Detector
5850.00	50.81	122.20	-71.39	1.50	280	48.99	1.82	Horizontal	Peak
5855.00	51.00	110.80	-59.80	1.50	280	49.15	1.85	Horizontal	Peak
5875.00	50.98	105.20	-54.22	1.50	280	49.00	1.98	Horizontal	Peak
5925.00	51.16	68.20	-17.04	1.50	280	49.04	2.12	Horizontal	Peak
11650.00	56.57	68.20	-11.63	1.50	280	44.93	11.64	Horizontal	Peak
11650.00	45.12	54.00	-8.88	1.50	280	33.48	11.64	Horizontal	Average
5850.00	50.04	122.20	-72.16	1.50	150	48.22	1.82	Vertical	Peak
5855.00	52.11	110.80	-58.69	1.50	150	50.26	1.85	Vertical	Peak
5875.00	53.65	105.20	-51.55	1.50	150	51.67	1.98	Vertical	Peak
5925.00	51.76	68.20	-16.44	1.50	150	49.64	2.12	Vertical	Peak
11650.00	55.34	68.20	-12.86	1.50	150	43.70	11.64	Vertical	Peak
11650.00	45.21	54.00	-8.79	1.50	150	33.57	11.64	Vertical	Average

Remark:

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(dB)

3. Margin value = Emission Level – Limit value

4.The emission levels of other frequencies are very lower than the limit and not show in test report.

5.Tnly the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.

U-NII-3_802.11ax-HE40_5755MHz									
Frequency (MHz)	Emssion Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)	Polarity	Detector
5650.00	50.73	68.20	-17.47	1.50	280	49.93	0.80	Horizontal	Peak
5700.00	50.67	105.20	-54.53	1.50	280	49.43	1.24	Horizontal	Peak
5720.00	51.77	110.80	-59.03	1.50	280	50.49	1.28	Horizontal	Peak
5725.00	52.41	122.20	-69.79	1.50	280	51.11	1.30	Horizontal	Peak
11510.00	55.28	68.20	-12.92	1.50	280	43.72	11.56	Horizontal	Peak
11510.00	45.82	54.00	-8.18	1.50	280	34.26	11.56	Horizontal	Average
5650.00	51.50	68.20	-16.70	1.50	150	50.70	0.80	Vertical	Peak
5700.00	50.20	105.20	-55.00	1.50	150	48.96	1.24	Vertical	Peak
5720.00	50.19	110.80	-60.61	1.50	150	48.91	1.28	Vertical	Peak
5725.00	51.21	122.20	-70.99	1.50	150	49.91	1.30	Vertical	Peak
11510.00	55.36	68.20	-12.84	1.50	150	43.80	11.56	Vertical	Peak
11510.00	44.65	54.00	-9.35	1.50	150	33.09	11.56	Vertical	Average
U-NII-3_802.11ax-HE40_5795MHz									
Frequency (MHz)	Emssion Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV/m)	Correction Factor (dB/m)	Polarity	Detector
5850.00	51.10	122.20	-71.10	1.50	280	49.28	1.82	Horizontal	Peak
5855.00	51.04	110.80	-59.76	1.50	280	49.19	1.85	Horizontal	Peak
5875.00	50.67	105.20	-54.53	1.50	280	48.69	1.98	Horizontal	Peak
5925.00	51.40	68.20	-16.80	1.50	280	49.28	2.12	Horizontal	Peak
11590.00	56.82	68.20	-11.38	1.50	280	45.31	11.51	Horizontal	Peak
11590.00	44.54	54.00	-9.46	1.50	280	33.03	11.51	Horizontal	Average
5850.00	49.46	122.20	-72.74	1.50	150	47.64	1.82	Vertical	Peak
5855.00	53.05	110.80	-57.75	1.50	150	51.20	1.85	Vertical	Peak
5875.00	55.08	105.20	-50.12	1.50	150	53.10	1.98	Vertical	Peak
5925.00	51.97	68.20	-16.23	1.50	150	49.85	2.12	Vertical	Peak
11590.00	55.56	68.20	-12.64	1.50	150	44.05	11.51	Vertical	Peak
11590.00	44.73	54.00	-9.27	1.50	150	33.22	11.51	Vertical	Average

Remark:

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(dB)

3. Margin value = Emission Level – Limit value

4.The emission levels of other frequencies are very lower than the limit and not show in test report.

5.Tnly the antenna height (from 1m to 4m) and turntable angle (from 0 degrees to 360 degrees) at maximum reading are recorded.

2.7. AC Power Line Conducted Emission

2.7.1. Limit of AC Power Line Conducted Emission

47 CFR Part 15.207:

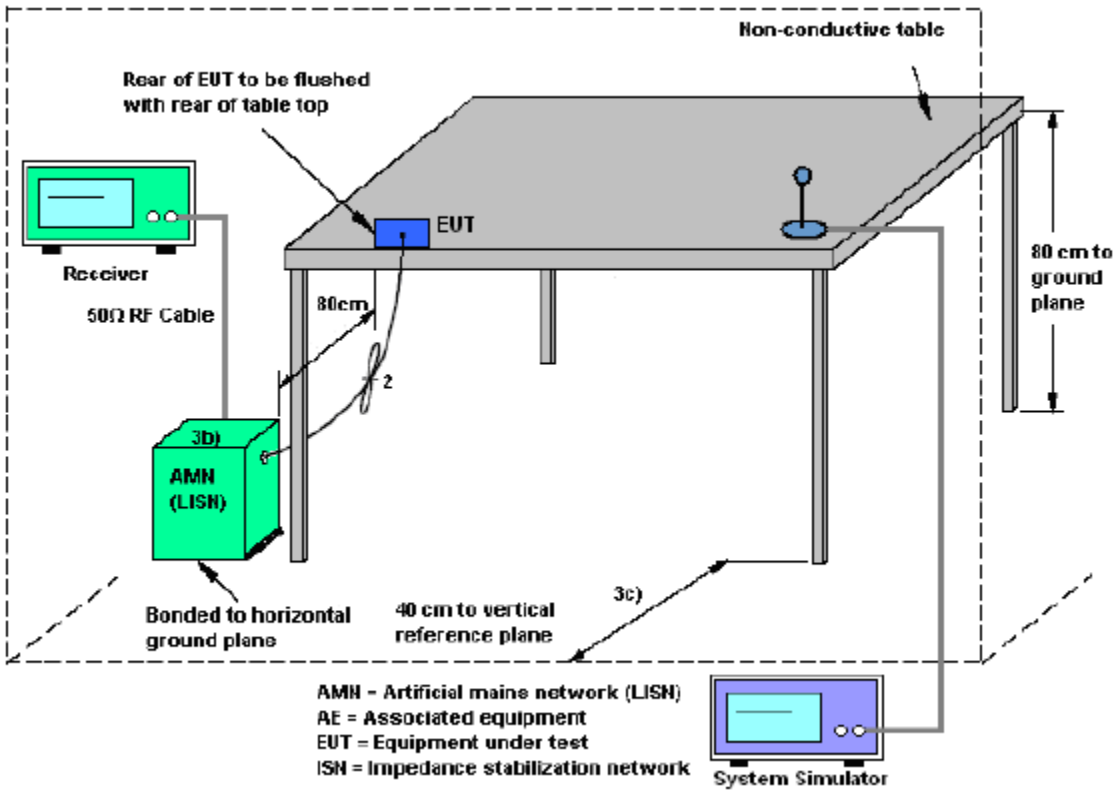
For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

2.7.2. Measuring Instruments

The measuring equipment is listed in the section 3 of this test report.

2.7.3. Test Setup



2.7.4. Test Procedures

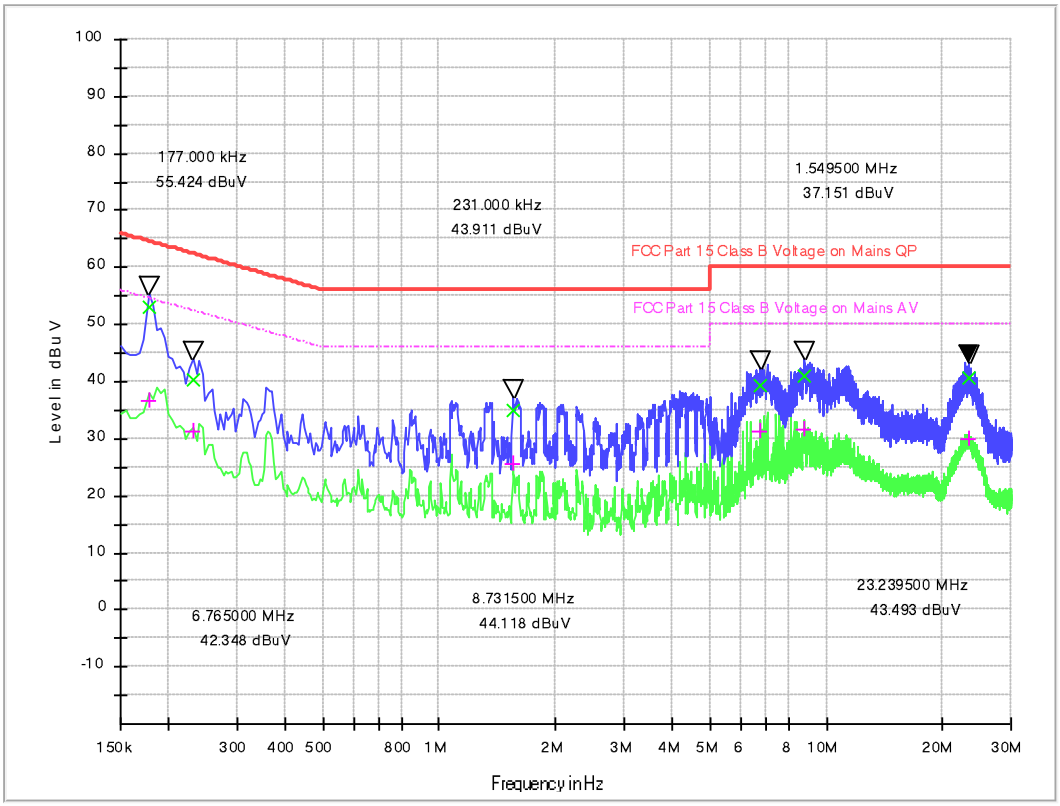
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

2.7.5. Test Result of AC Power Line Conducted Emission

The EUT configuration of the emission tests is 5G WLAN Link + AC 120V.

All of the EUT Configure mode were tested and found 802.11a_5785MHz channel is the worst mode, the worst case is recorded in this report.

Test site:	Shield ROOM 1	Environment:	Temp: 23℃; Humi:53%;101kPa
Operator:	LIQINGLONG	Test Date:	2024.10.18
Test Mode:	5G WIFI- TX	Test Part:	L Line

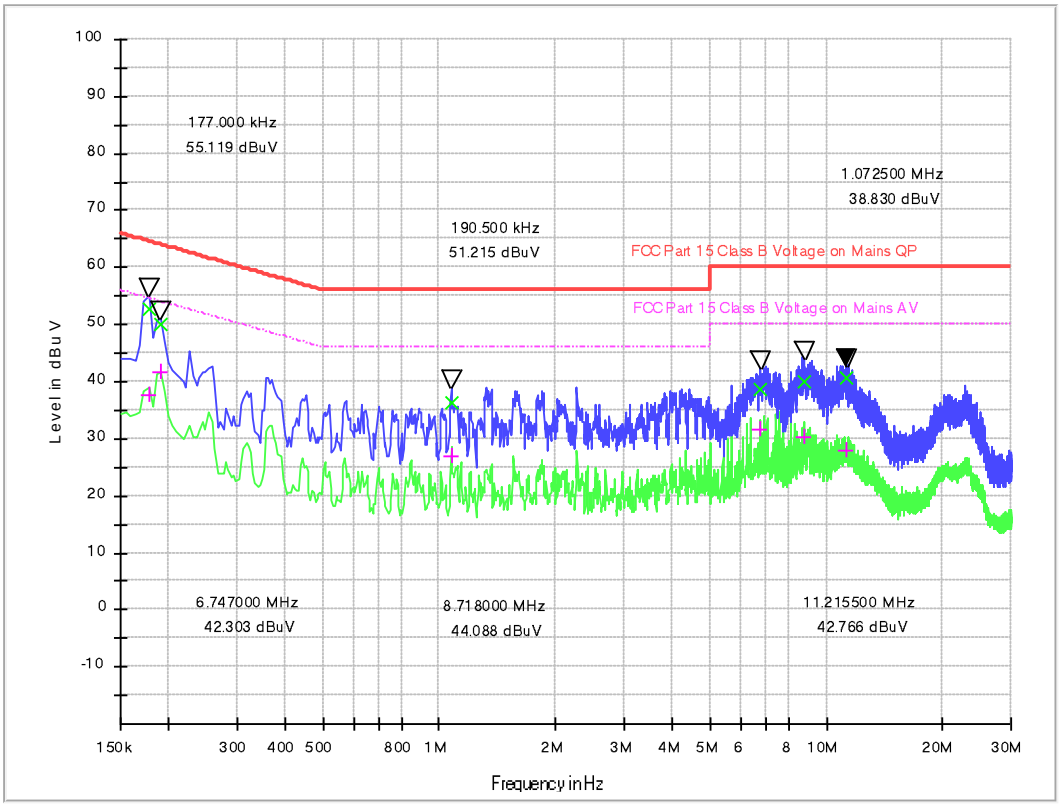


Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Corr.Factor (dB)	Margin - QPK(dB)	Limit - QPK (dBµV)	Margin - AV (dB)	Limit - AV (dBµV)
0.177000	53.04	36.81	20.4	11.58	64.6	17.82	54.6
0.231000	40.17	31.36	20.4	22.24	62.4	21.06	52.4
1.549500	34.92	25.63	20.3	21.08	56.0	20.37	46.0
6.765000	39.34	31.20	20.0	20.66	60.0	18.80	50.0
8.731500	40.98	31.75	19.9	19.02	60.0	18.25	50.0
23.239500	40.62	30.03	19.7	19.38	60.0	19.97	50.0

Test Result : Pass

Note: Final Level = Receiver Read level + Correction factor.

Test site:	Shield ROOM 1	Environment:	Temp: 23℃; Humi:53%;101kPa
Operator:	LIQINGLONG	Test Date:	2024.10.18
Test Mode:	5G WIFI- TX	Test Part:	N Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Corr.Factor (dB)	Margin - QPK(dB)	Limit - QPK (dBµV)	Margin - AV (dB)	Limit - AV (dBµV)
0.177000	52.77	37.59	20.1	11.85	64.6	17.04	54.6
0.190500	49.93	41.69	20.1	14.08	64.0	12.33	54.0
1.072500	36.33	26.95	20.2	19.67	56.0	19.05	46.0
6.747000	38.75	31.65	19.8	21.25	60.0	18.35	50.0
8.718000	40.13	30.32	19.6	19.87	60.0	19.68	50.0
11.215500	40.59	28.08	19.5	19.41	60.0	21.92	50.0

Test Result : Pass

Note: Final Level = Receiver Read level + Correction factor.

3. List of measuring equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	5M Anechoic Chamber	Albatross	SAC-5MAC 12.8x6.8x6.4m	A0304210	2023.08.01	2026.07.31
2	EMI Test Receiver	ROHDE&SCHWARZ	ESW26	A180502935	2024.05.23	2025.05.22
3	Loop Antenna	Schwarz beck	HFH2-Z2	A0304220	2022.05.02	2025.05.01
4	Broadband antenna (30MHz~1GHz)	R&S	HL562	A0304224	2023.06.08	2026.06.07
5	EMI Horn Ant. (1-18G)	ETC	MCTD-1209	A150402241	2023.05.16	2026.05.15
6	Horn antenna (18GHz~26.5GHz)	AR	AT4510	A0804450	2023.06.01	2026.05.31
7	Amplifier 30M~1GHz	MILMEGA	80RF1000-10004	A140101634	2024.09.05	2025.09.04
8	Amplifier 1G~18GHz	MILMEGA	AS0104R-800/400	A160302517	2024.05.25	2025.05.24
9	Spectrum Analyzer	KEYSIGHT	N9030A	A160702554	2024.01.18	2025.01.17
10	Test Receiver	R&S	ESIB7	A0501375	2024.02.28	2025.02.27
11	Broadband Ant.	ETC	MCTD 2786	A150402240	2023.05.22	2026.05.21
12	3M Anechoic Chamber	Albatross	SAC-3MAC 9*6*6m	A0412375	2024.02.27	2027.02.26
13	Temperature chamber	ESPEC	SU-642	A150802409	2024.02.22	2025.02.21
14	Test Receiver	KEYSIGHT	N9038A	A141202036	2024.06.05	2025.06.04
15	LISN	ROHDE&SCHWARZ	ENV216	A140701847	2024.05.23	2025.05.22
16	Cable(9kHz~30MHz)	/	/	C230800587	2023.08.21	2026.08.20
17	Cable(30MHz~18GHz)	/	XSMJA750-SMNM(RA)-12M	C230800588	2023.08.21	2026.08.20
18	Cable(18GHz~40GHz)	/	SUCOFLEX102	C230800590	2023.08.21	2026.08.20

4. Uncertainty of Evaluation

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence . The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of AC Power Line Conducted Emission Measurement (150kHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	2.8dB

Uncertainty of Radiated Emission Measurement (9kHz~30MHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	3.5dB

Uncertainty of Radiated Emission Measurement (30MHz~1GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	3.91dB

Uncertainty of Radiated Emission Measurement (1GHz~18GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	4.5dB

Uncertainty of Radiated Emission Measurement (18GHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	4.9dB

Uncertainty of RF Conducted Measurement (9kHz~40GHz)

Measuring Uncertainty for a level of confidence of 95%(U=2Uc(y))	1.2dB

Appendix A

Duty Cycle

Test Result and Data

Test Mode	Antenna	Frequency[MHz]	ON Time[ms]	Period[ms]	Duty Cycle[%]	DC Factor
11A	Ant1	5745	2.03	2.18	93.12	0.31
11N20SISO	Ant1	5745	1.89	2.12	89.15	0.50
11N40SISO	Ant1	5755	0.94	1.06	88.68	0.52
11AC20SISO	Ant1	5745	1.90	2.04	93.14	0.31
11AC40SISO	Ant1	5755	0.94	1.06	88.68	0.52
11AX20SISO	Ant1	5745	1.90	2.06	92.23	0.35
11AX40SISO	Ant1	5755	0.94	1.06	88.68	0.52

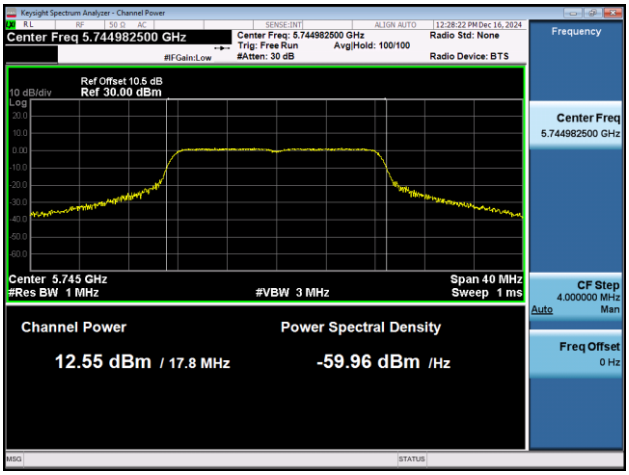
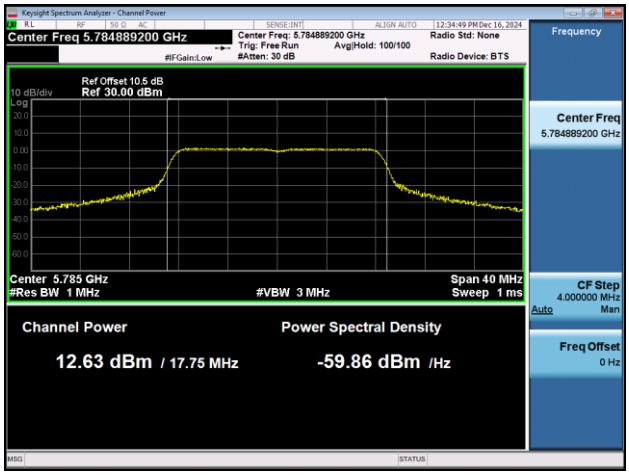
Maximum Conducted Output Power

Test Result and Data

Test Mode	Antenna	Frequency [MHz]	Power [dBm]	DC Factor [dBm]	Result [dBm]	Power Limit [dBm]	Verdict
11A	Ant1	5745	12.55	0.31	12.86	≤30.00	PASS
11A	Ant1	5785	12.63	0.31	12.94	≤30.00	PASS
11A	Ant1	5825	11.66	0.31	11.97	≤30.00	PASS
11N20SISO	Ant1	5745	12.08	0.50	12.58	≤30.00	PASS
11N20SISO	Ant1	5785	11.81	0.50	12.31	≤30.00	PASS
11N20SISO	Ant1	5825	10.69	0.50	11.19	≤30.00	PASS
11N40SISO	Ant1	5755	11.12	0.52	11.64	≤30.00	PASS
11N40SISO	Ant1	5795	10.64	0.52	11.16	≤30.00	PASS
11AC20SISO	Ant1	5745	12.10	0.31	12.41	≤30.00	PASS
11AC20SISO	Ant1	5785	11.38	0.31	11.69	≤30.00	PASS
11AC20SISO	Ant1	5825	10.80	0.31	11.11	≤30.00	PASS
11AC40SISO	Ant1	5755	11.31	0.52	11.83	≤30.00	PASS
11AC40SISO	Ant1	5795	11.08	0.52	11.60	≤30.00	PASS
11AX20SISO	Ant1	5745	11.72	0.35	12.07	≤30.00	PASS
11AX20SISO	Ant1	5785	11.38	0.35	11.73	≤30.00	PASS
11AX20SISO	Ant1	5825	10.76	0.35	11.11	≤30.00	PASS
11AX40SISO	Ant1	5755	11.12	0.52	11.64	≤30.00	PASS
11AX40SISO	Ant1	5795	10.93	0.52	11.45	≤30.00	PASS

Note：The Duty Cycle Factor is compensated in the graph.

Test Graphs

11A-Ant1-5745-PASS	11A-Ant1-5785-PASS
	
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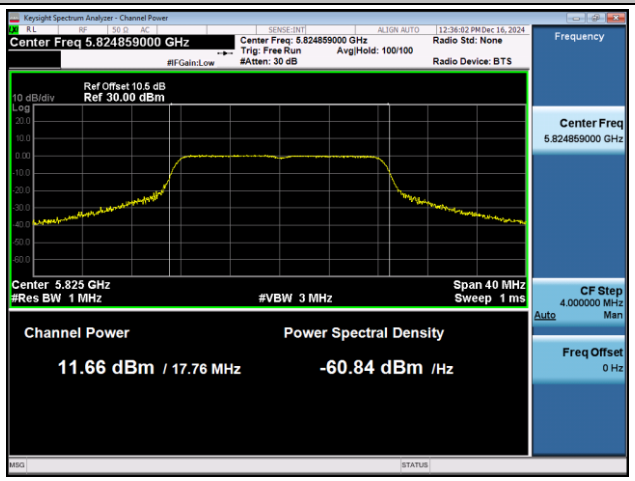	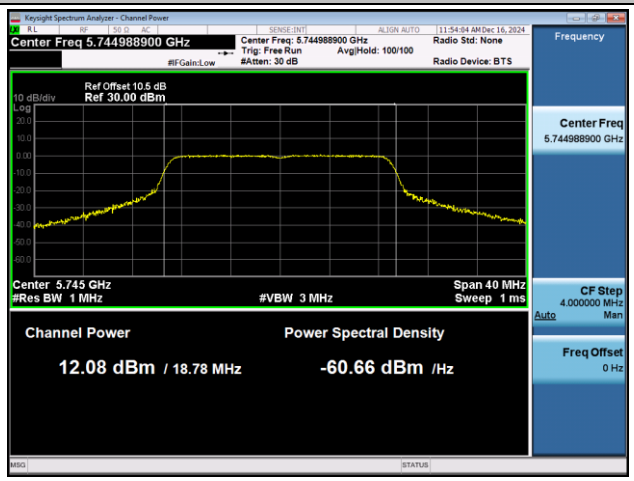
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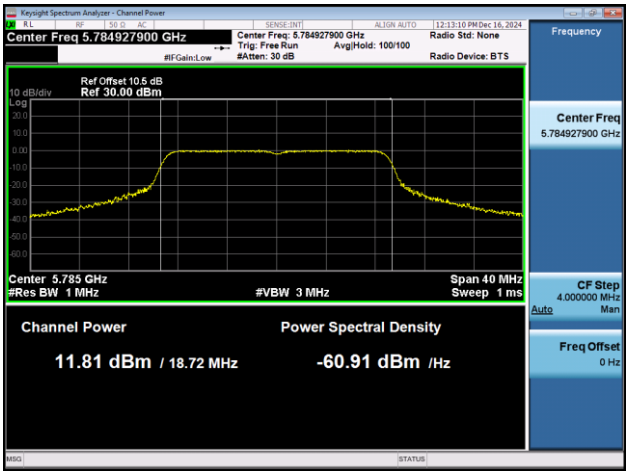	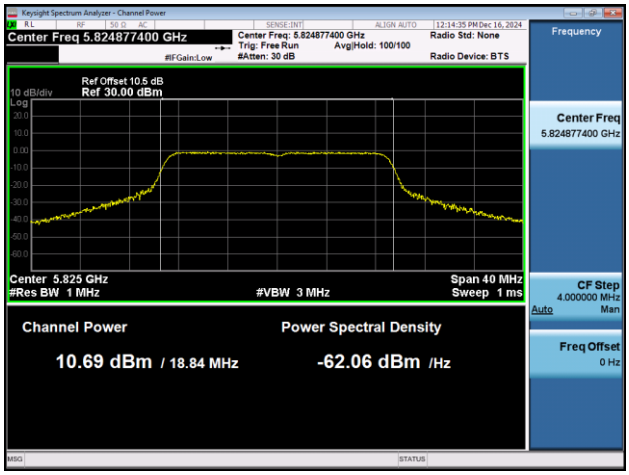

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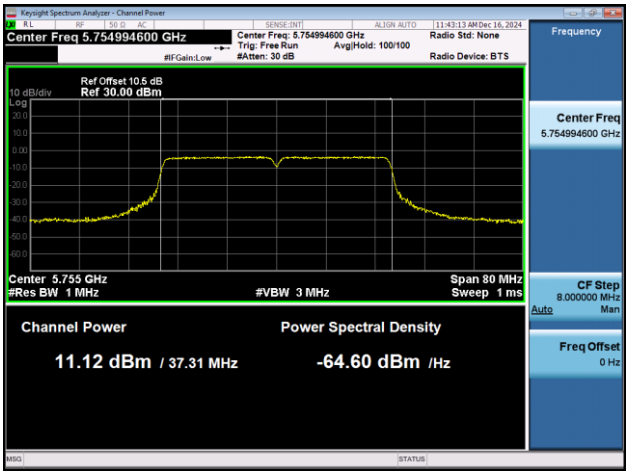	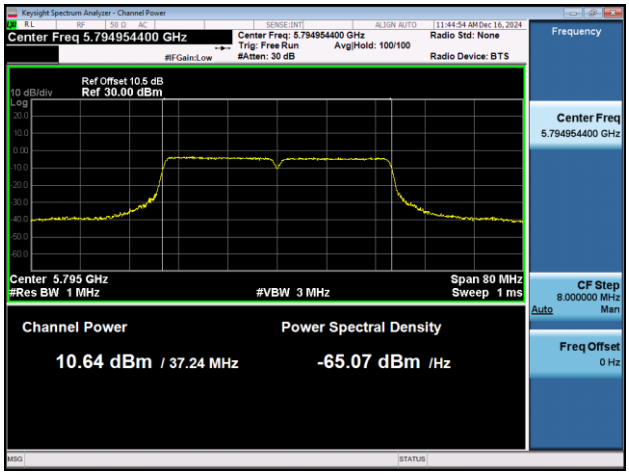
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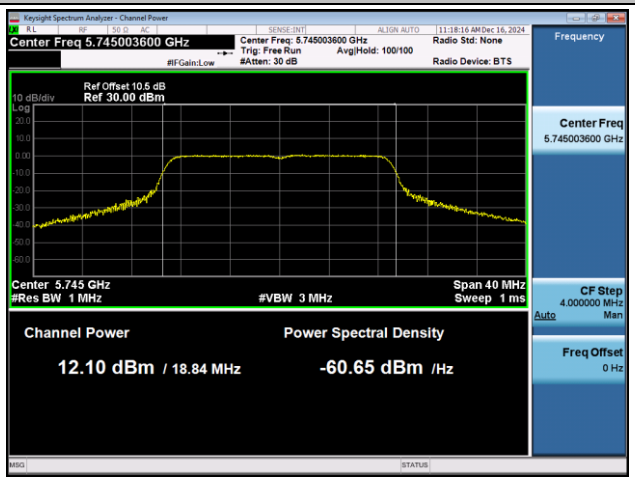
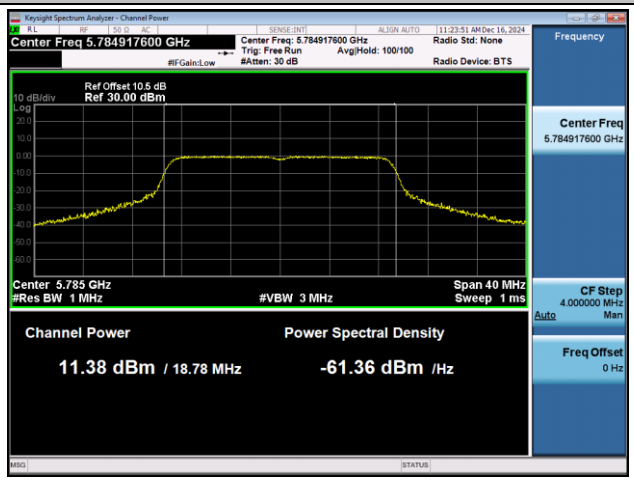
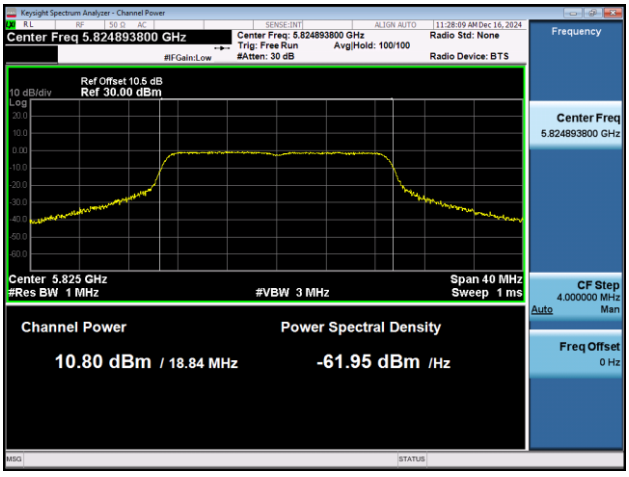
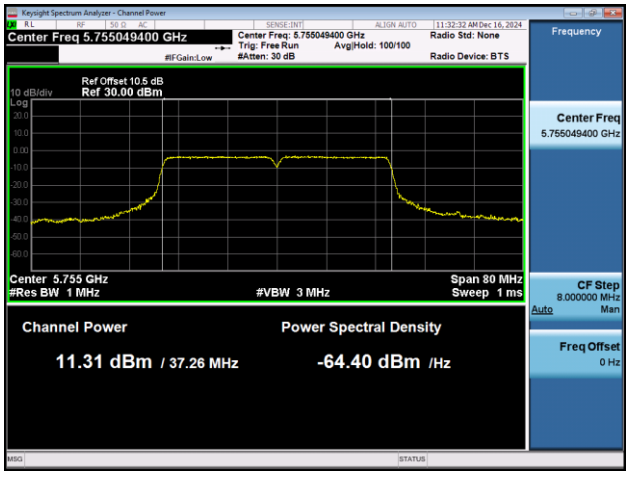
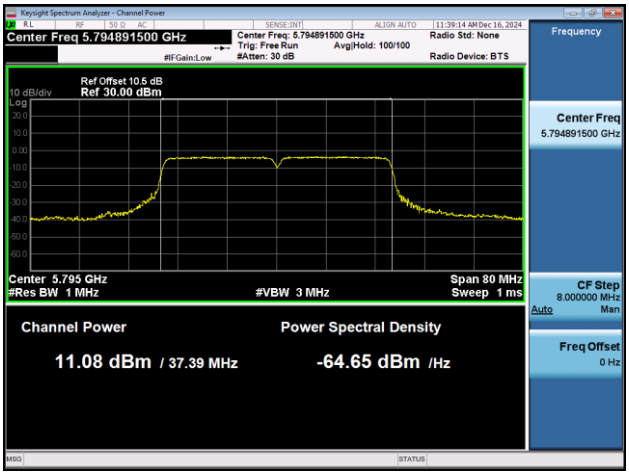
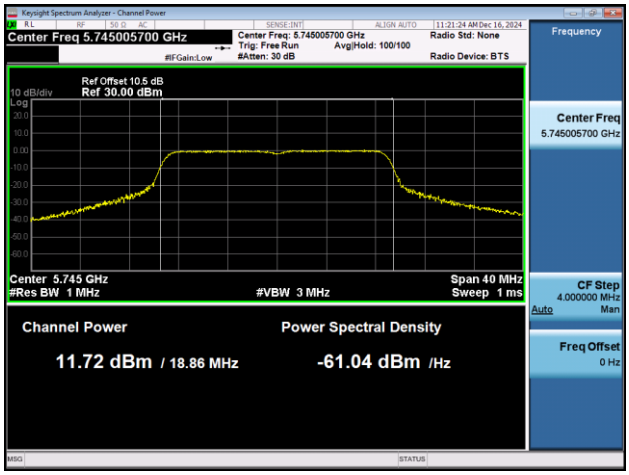
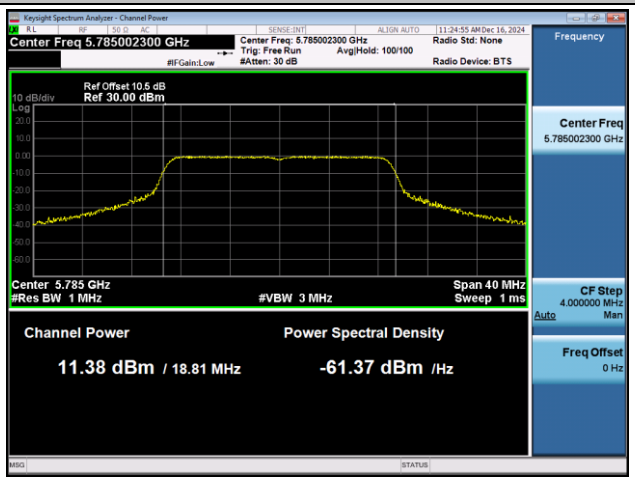
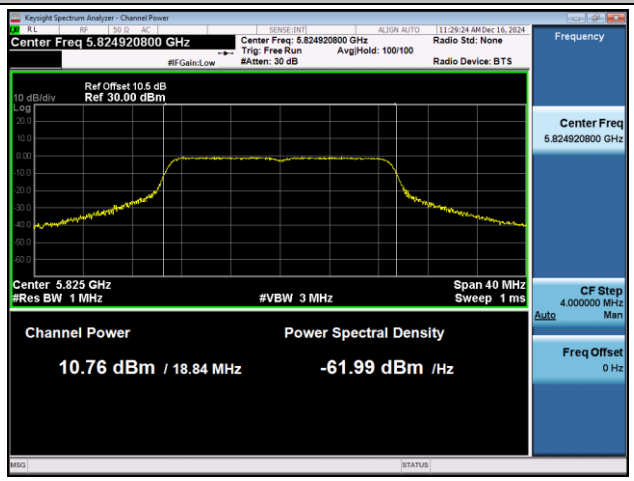
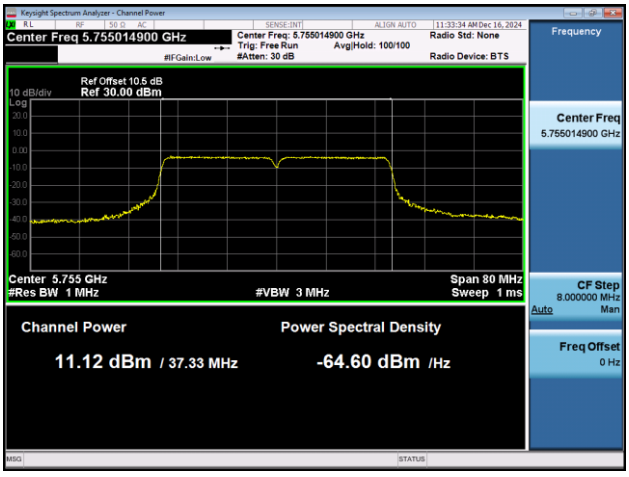
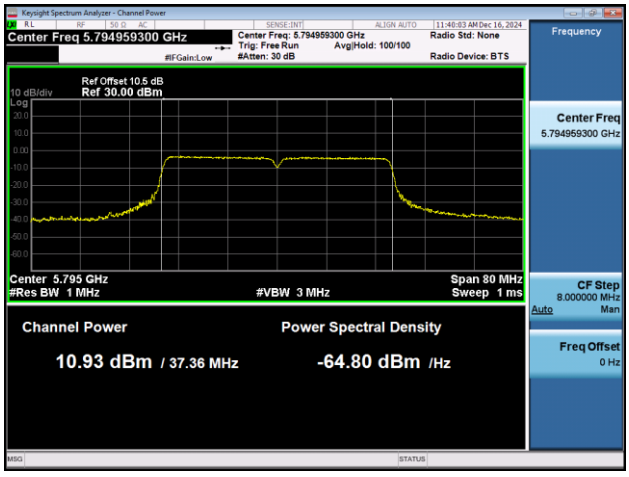
	
11AC20SISO-Ant1-5825-PASS	11AC40SISO-Ant1-5755-PASS
	

11AC40SISO-Ant1-5795-PASS	11AX20SISO-Ant1-5745-PASS
	
11AX20SISO-Ant1-5785-PASS	11AX20SISO-Ant1-5825-PASS
	
11AX40SISO-Ant1-5755-PASS	11AX40SISO-Ant1-5795-PASS
	

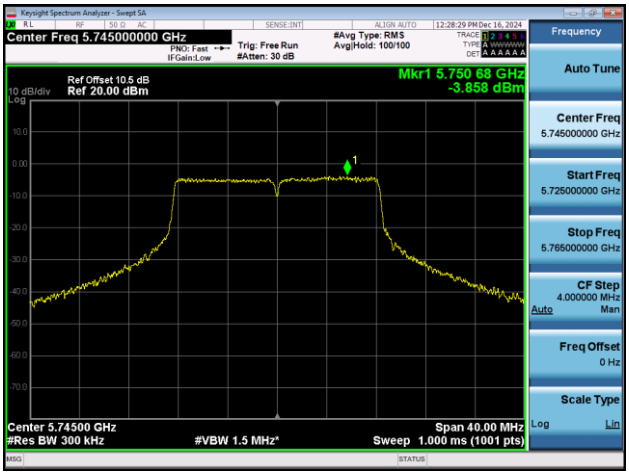
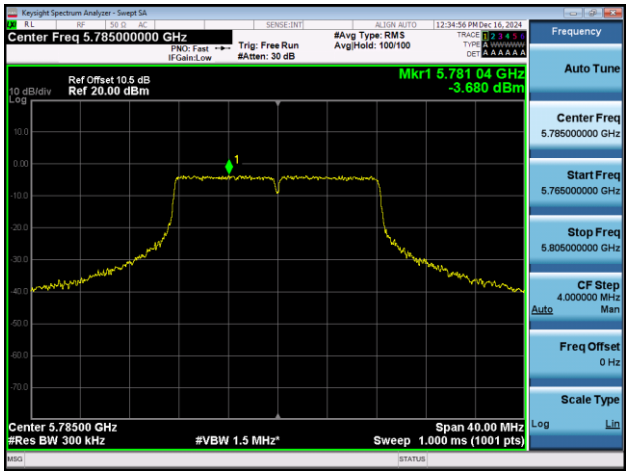
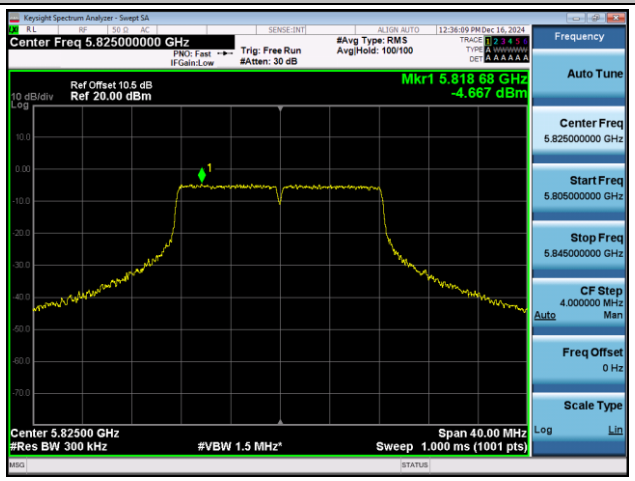
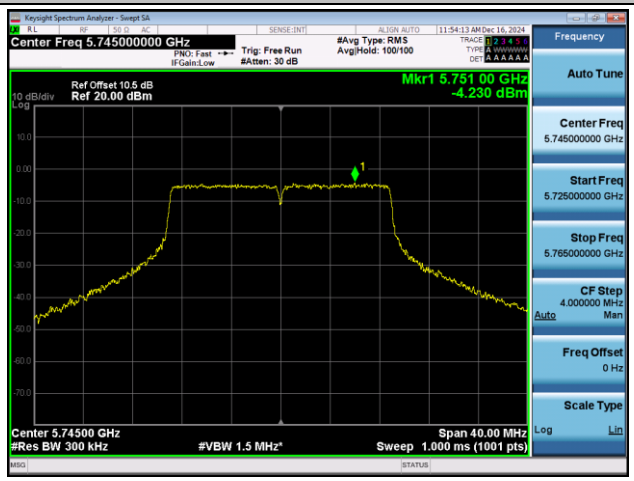
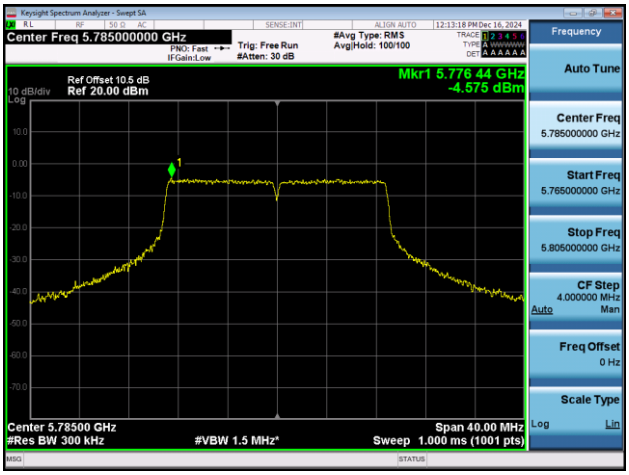
Power Spectral Density

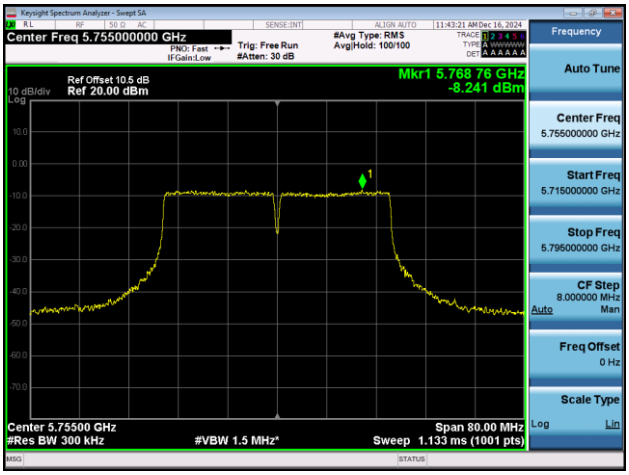
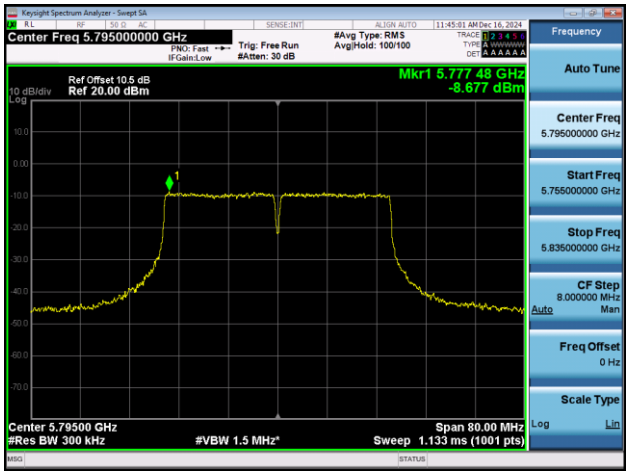
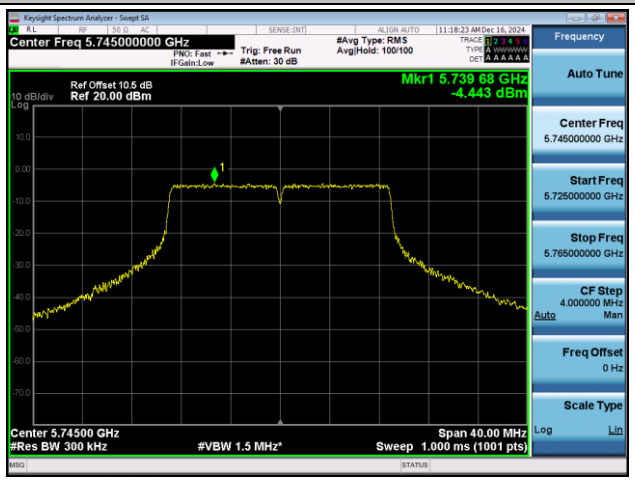
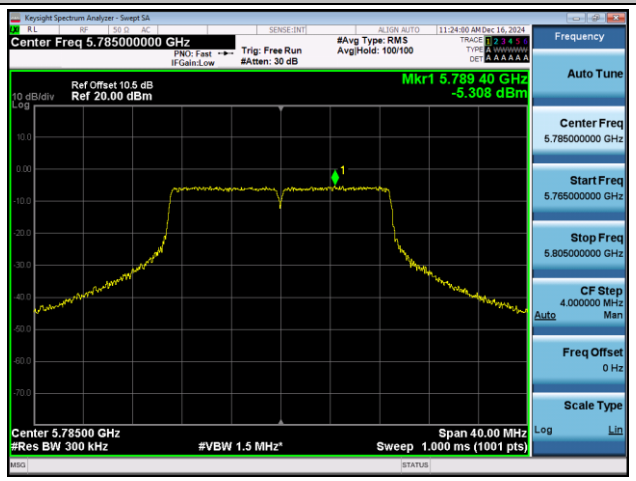
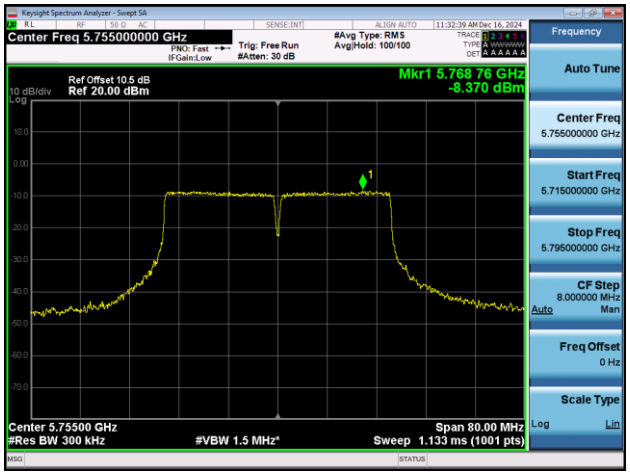
Test Result and Data

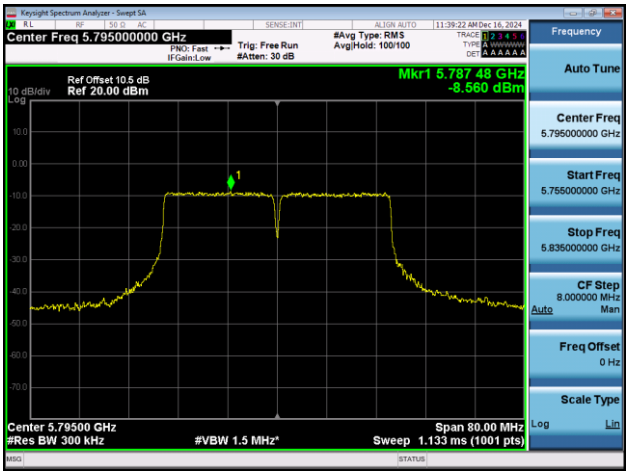
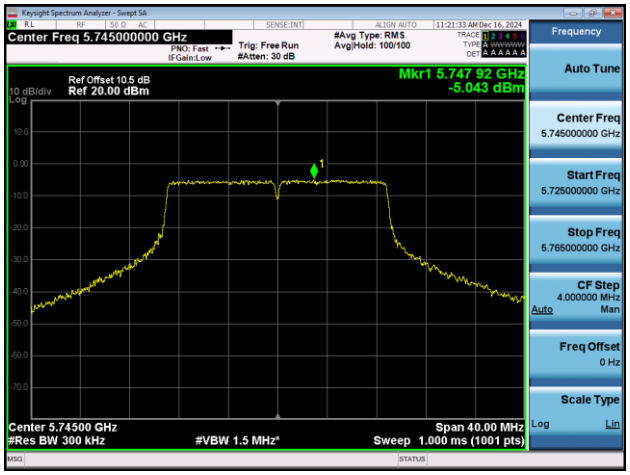
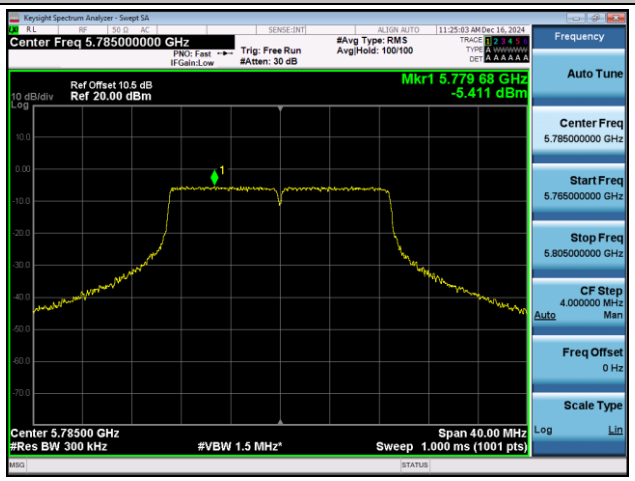
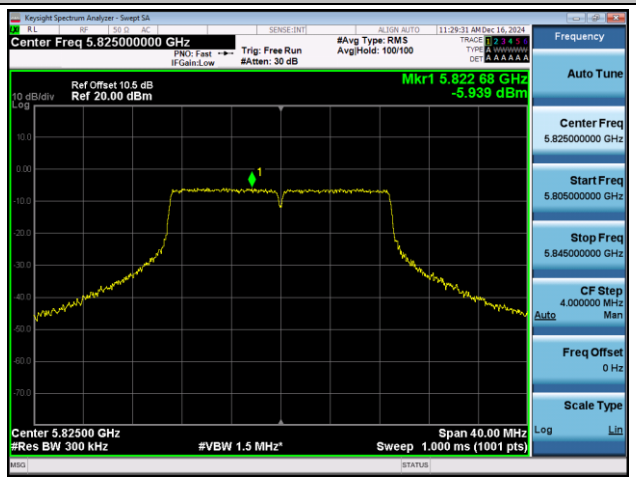
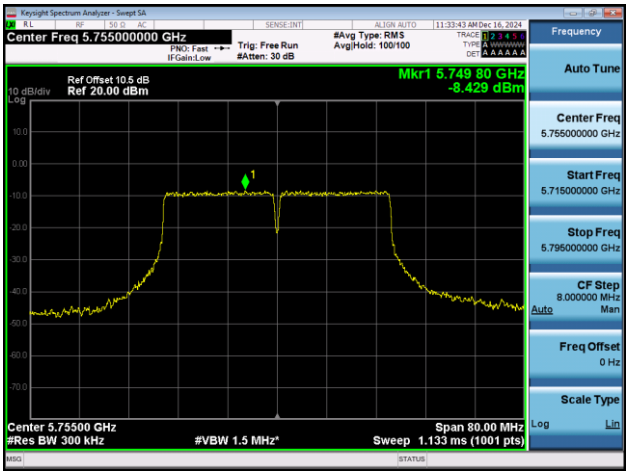
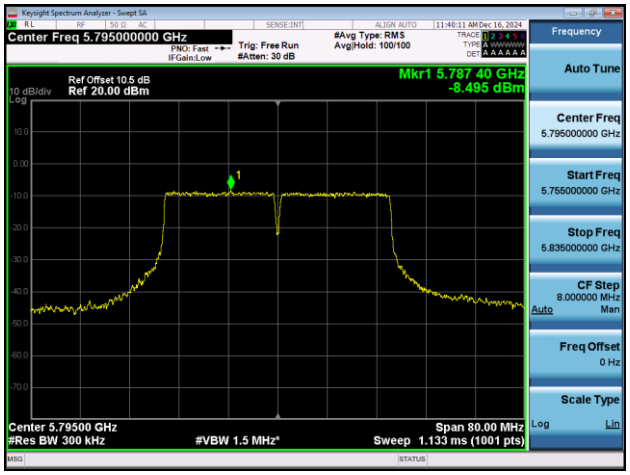
Test Mode	Antenna	Frequency[MHz]	Result[dBm/500kHz]	Limit[dBm/500kHz]	Verdict
11A	Ant1	5745	-1.33	≤30.00	PASS
11A	Ant1	5785	-1.15	≤30.00	PASS
11A	Ant1	5825	-2.14	≤30.00	PASS
11N20SISO	Ant1	5745	-1.51	≤30.00	PASS
11N20SISO	Ant1	5785	-1.86	≤30.00	PASS
11N20SISO	Ant1	5825	-2.99	≤30.00	PASS
11N40SISO	Ant1	5755	-5.50	≤30.00	PASS
11N40SISO	Ant1	5795	-5.94	≤30.00	PASS
11AC20SISO	Ant1	5745	-1.91	≤30.00	PASS
11AC20SISO	Ant1	5785	-2.78	≤30.00	PASS
11AC20SISO	Ant1	5825	-3.23	≤30.00	PASS
11AC40SISO	Ant1	5755	-5.63	≤30.00	PASS
11AC40SISO	Ant1	5795	-5.82	≤30.00	PASS
11AX20SISO	Ant1	5745	-2.47	≤30.00	PASS
11AX20SISO	Ant1	5785	-2.84	≤30.00	PASS
11AX20SISO	Ant1	5825	-3.37	≤30.00	PASS
11AX40SISO	Ant1	5755	-5.69	≤30.00	PASS
11AX40SISO	Ant1	5795	-5.76	≤30.00	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

Test Graphs

11A-Ant1-5745-PASS	11A-Ant1-5785-PASS
	
11A-Ant1-5825-PASS	**11N20SISO-Ant1-5745-PASS**
	
11N20SISO-Ant1-5785-PASS	**11N20SISO-Ant1-5825-PASS**
	

11N40SISO-Ant1-5755-PASS	11N40SISO-Ant1-5795-PASS
	
11AC20SISO-Ant1-5745-PASS	**11AC20SISO-Ant1-5785-PASS**
	
11AC20SISO-Ant1-5825-PASS	**11AC40SISO-Ant1-5755-PASS**
	

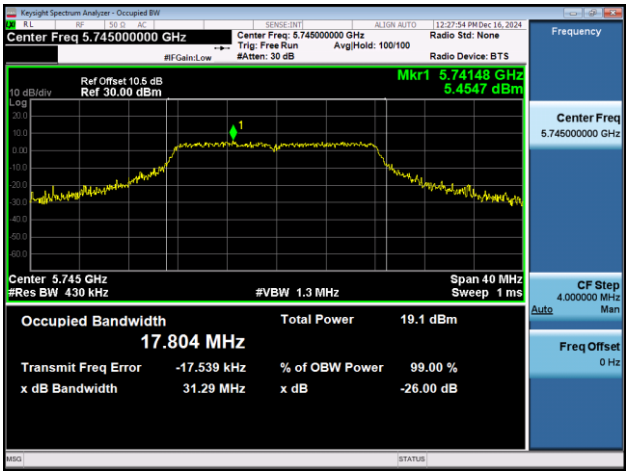
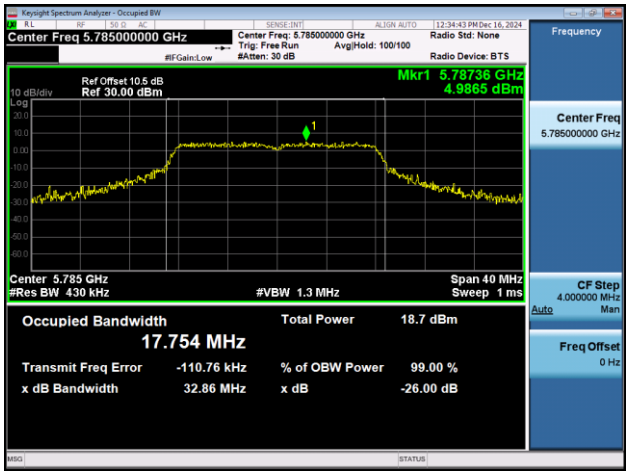
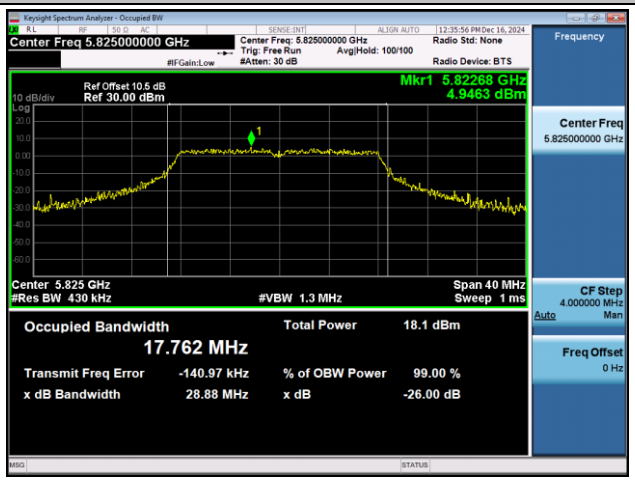
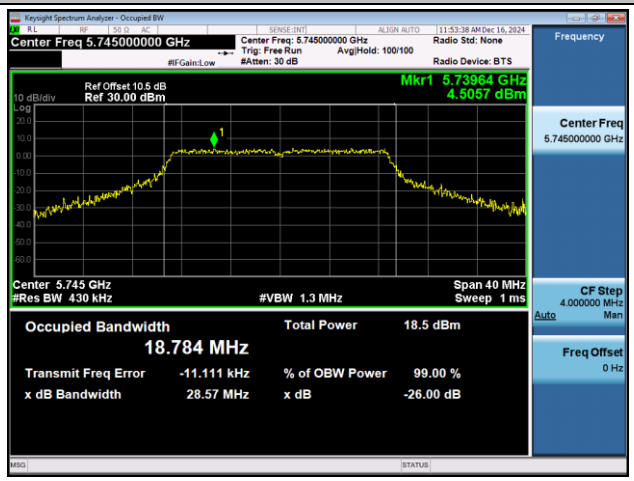
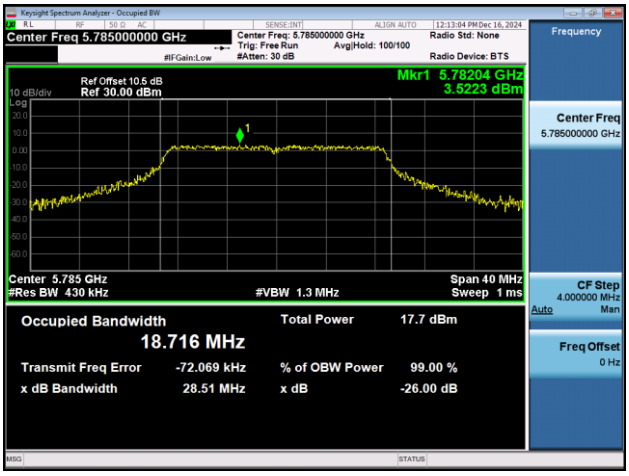
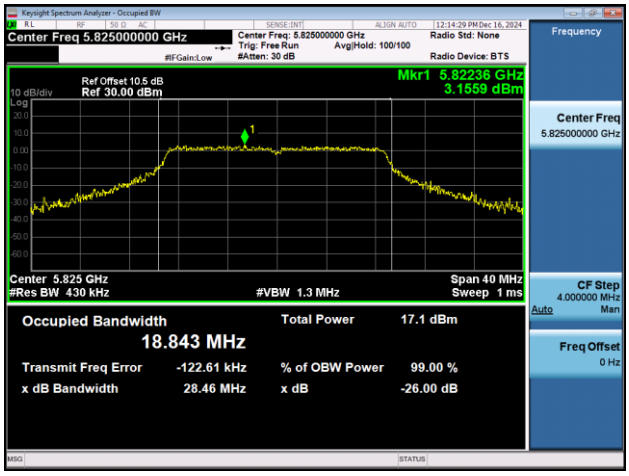
11AC40SISO-Ant1-5795-PASS	11AX20SISO-Ant1-5745-PASS
	
11AX20SISO-Ant1-5785-PASS	11AX20SISO-Ant1-5825-PASS
	
11AX40SISO-Ant1-5755-PASS	11AX40SISO-Ant1-5795-PASS
	

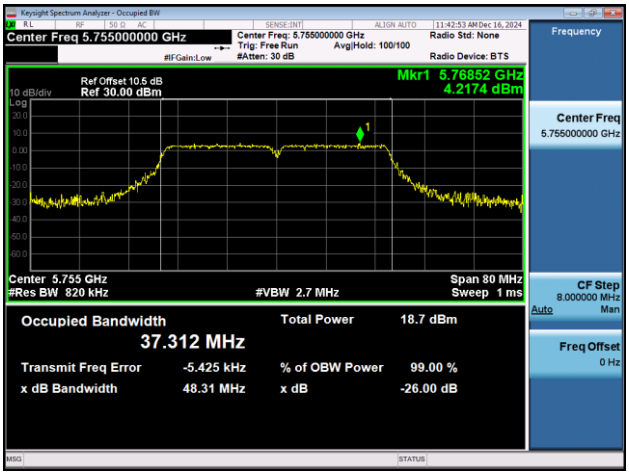
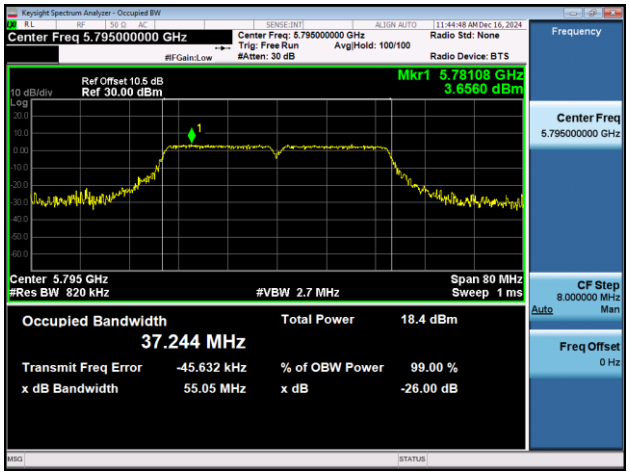
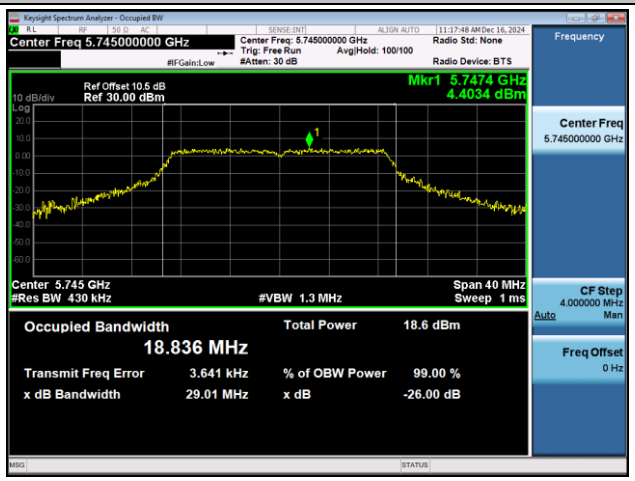
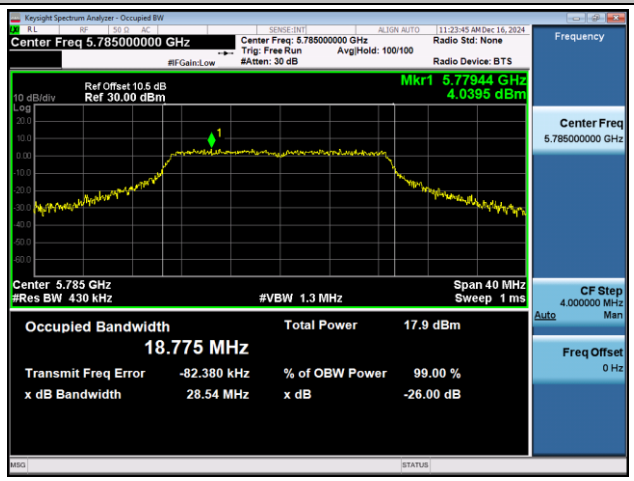
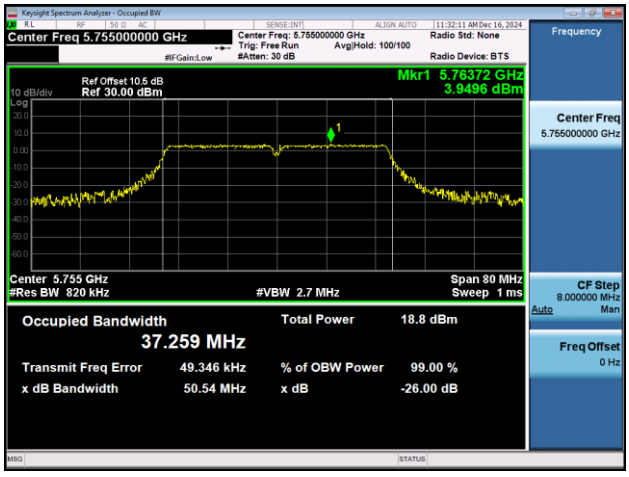
99% Occupied Bandwidth

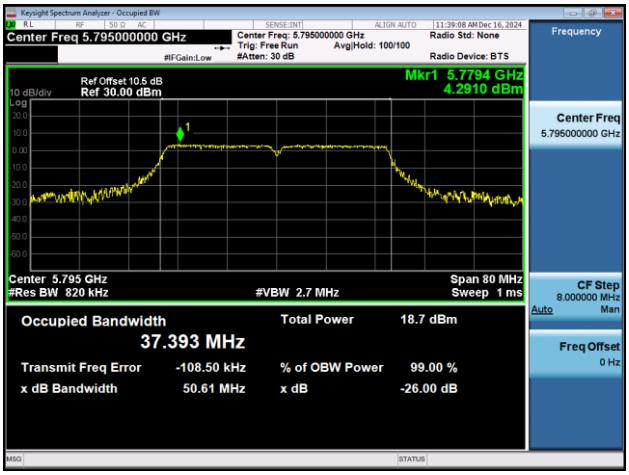
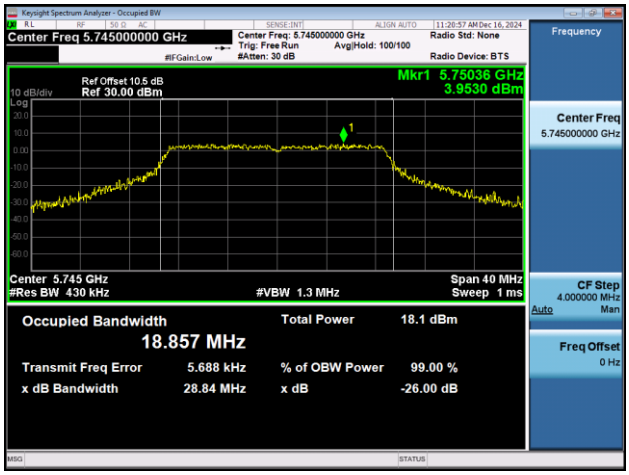
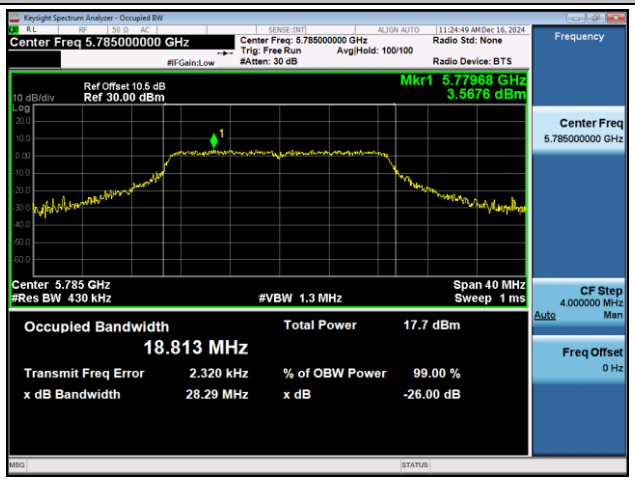
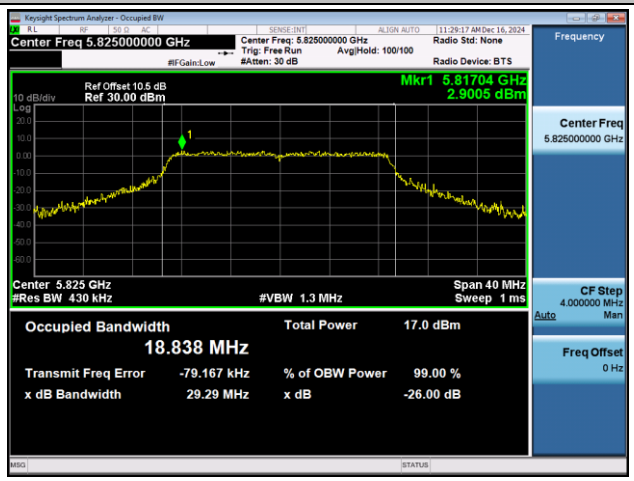
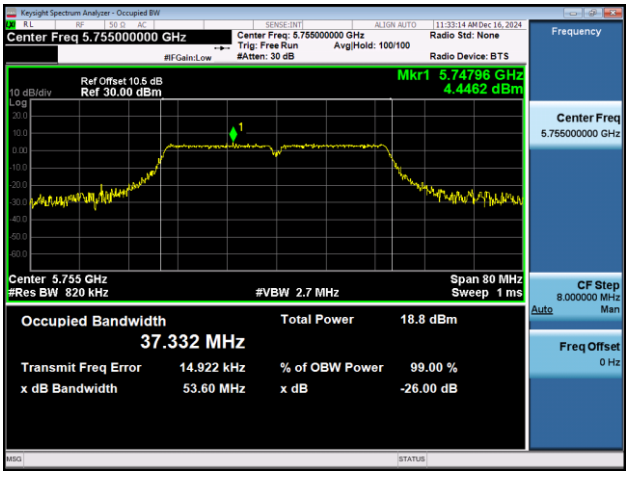
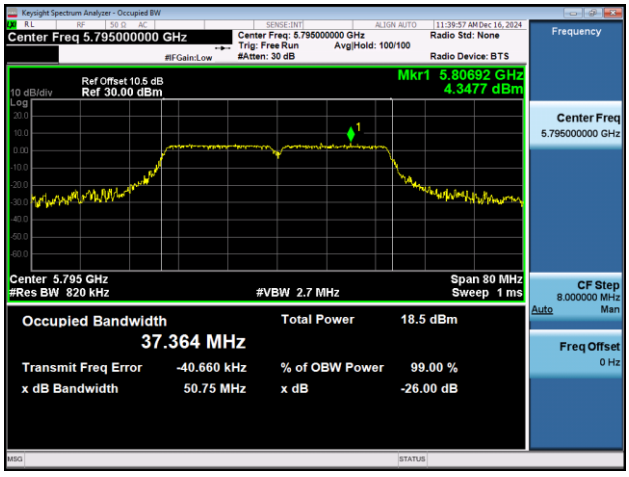
Test Result and Data

Test Mode	Antenna	Frequency[MHz]	99% OBW[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	17.804	---	---
11A	Ant1	5785	17.754	---	---
11A	Ant1	5825	17.762	---	---
11N20SISO	Ant1	5745	18.784	---	---
11N20SISO	Ant1	5785	18.716	---	---
11N20SISO	Ant1	5825	18.843	---	---
11N40SISO	Ant1	5755	37.312	---	---
11N40SISO	Ant1	5795	37.244	---	---
11AC20SISO	Ant1	5745	18.836	---	---
11AC20SISO	Ant1	5785	18.775	---	---
11AC20SISO	Ant1	5825	18.841	---	---
11AC40SISO	Ant1	5755	37.259	---	---
11AC40SISO	Ant1	5795	37.393	---	---
11AX20SISO	Ant1	5745	18.857	---	---
11AX20SISO	Ant1	5785	18.813	---	---
11AX20SISO	Ant1	5825	18.838	---	---
11AX40SISO	Ant1	5755	37.332	---	---
11AX40SISO	Ant1	5795	37.364	---	---

Test Graphs

11A-Ant1-5745	11A-Ant1-5785
	
11A-Ant1-5825	**11N20SISO-Ant1-5745**
	
11N20SISO-Ant1-5785	**11N20SISO-Ant1-5825**
	

11N40SISO-Ant1-5755	11N40SISO-Ant1-5795
	
11AC20SISO-Ant1-5745	11AC20SISO-Ant1-5785
	
11AC20SISO-Ant1-5825	11AC40SISO-Ant1-5755
	

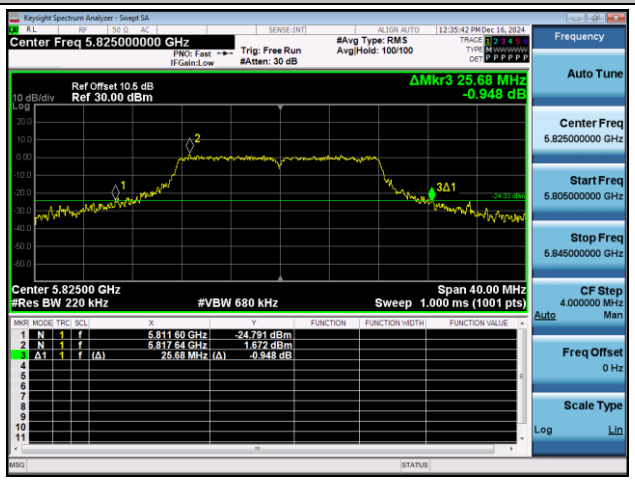
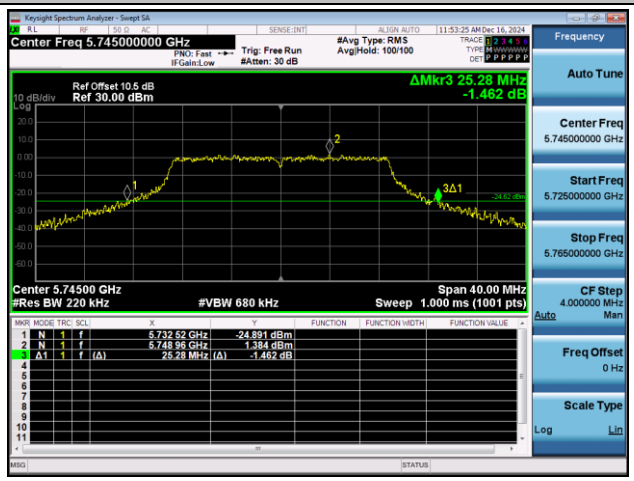
11AC40SISO-Ant1-5795	11AX20SISO-Ant1-5745
	
11AX20SISO-Ant1-5785	**11AX20SISO-Ant1-5825**
	
11AX40SISO-Ant1-5755	**11AX40SISO-Ant1-5795**
	

26dB Emission Bandwidth

Test Result and Data

Test Mode	Antenna	Frequency[MHz]	26dB EBW[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	25.360	---	---
11A	Ant1	5785	24.280	---	---
11A	Ant1	5825	25.680	---	---
11N20SISO	Ant1	5745	25.280	---	---
11N20SISO	Ant1	5785	27.000	---	---
11N20SISO	Ant1	5825	25.800	---	---
11N40SISO	Ant1	5755	45.680	---	---
11N40SISO	Ant1	5795	46.480	---	---
11AC20SISO	Ant1	5745	25.800	---	---
11AC20SISO	Ant1	5785	26.240	---	---
11AC20SISO	Ant1	5825	25.240	---	---
11AC40SISO	Ant1	5755	48.240	---	---
11AC40SISO	Ant1	5795	46.560	---	---
11AX20SISO	Ant1	5745	26.960	---	---
11AX20SISO	Ant1	5785	26.320	---	---
11AX20SISO	Ant1	5825	25.920	---	---
11AX40SISO	Ant1	5755	52.400	---	---
11AX40SISO	Ant1	5795	45.760	---	---

Test Graphs

11A-Ant1-5745	11A-Ant1-5785
	
11A-Ant1-5825	**11N20SISO-Ant1-5745**
	
11N20SISO-Ant1-5785	**11N20SISO-Ant1-5825**