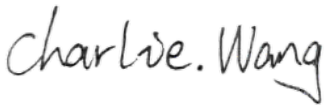
RF Test Report

Applicant:	Quectel Wireless Solutions Co., Ltd.
Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233, China
Product:	Wi-Fi & Bluetooth Module
Model No.:	FCS852R
Brand Name:	QUECTEL
FCC ID:	XMR2023FCS852R
Standards:	FCC CFR47 Part 15C
Report No.:	PD20230218RF10
Issue Date:	2024/03/14
Test Result:	PASS *

* **The above equipment has been tested and compliance with the requirement of the relative standards by Hefei Panwin Technology Co., Ltd.**



Reviewed By: Charlie Wang **Approved By:** Alec Yang

Hefei Panwin Technology Co., Ltd.

Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China

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Revision History

Report No.	Version	Description	Issue Date	Note
PD20230218RF10	1	Initial Report	2024/03/14	Valid

CONTENTS

Test Summary

No.	Test Case	FCC Rules	Verdict
1	Output Power Measurement	15.247(b)	PASS
2	6dB and 99% Bandwidth Measurement	15.247(a)(2)	PASS
3	Power Spectral Density Measurement	15.247(e)	PASS
4	Conducted Band Edges and Spurious Emission Measurement	15.247(d)	PASS
5	Radiated Band Edges and Spurious Emission Measurement	15.247(d)	PASS
6	AC Conducted Emission Measurement	15.207	PASS
7	Antenna Requirements	15.203 & 15.247(b)	PASS

Date of Testing: 2023/12/16 to 2024/03/14
Date of Sample Received: 2023/12/07

• We, Hefei Panwin Technology Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with the procedures given in applied standard(s) in **Section 2.3** of this report and shown compliance with the applicable technical standards.

• All indications of PASS/FAIL in this report are based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

1 General Information

1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with "Δ" are subcontracted projects.

1.2 Test Facility

FCC (Designation number: CN1361, Test Firm Registration Number: 473156)

Hefei Panwin Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 6849.01)

Hefei Panwin Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Laboratory

Company Name	Hefei Panwin Technology Co., Ltd.
Address	Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province,China
Telephone	+86-0551-63811775
Post Code	230031

2 General Description of Equipment under Test

2.1 Details of Application

Applicant	Quectel Wireless Solutions Co., Ltd.
Applicant Address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233, China
Manufacturer	Quectel Wireless Solutions Co., Ltd.
Manufacturer Address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233, China

2.2 General Information

Product	Wi-Fi & Bluetooth Module
Model	FCS852R
SN	1. E1823K90Q000124 2. E1823K90Q000148
Hardware Version	R1.0
Software Version	NA
Directional Gain	MIMO For Power: -0.10dBi MIMO For PSD: 2.91dBi
Antenna Type	External Antenna
Antenna Gain	-0.10dBi
Additional Beamforming Gain	NA
Max. Conducted Power	Wi-Fi 2.4G: 18.85dBm
Operating voltage range	3.1 V to 3.6 V; Rated Power Supply Voltage 3.3V
Type of Modulation	WLAN802.11b/g/n HT20/n HT40: DBPSK,DQPSK,CCK,BPSK,QPSK, 16QAM,64QAM
Operating Frequency Range(s)	802.11b/g/n HT20: 2412 to 2462MHz 802.11n HT40: 2422 to 2452MHz
Note: The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.	

2.3 Applicable Standard(s)

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01

Remark:

1.All test items were verified and recorded according to the standards and without any deviation during the test.

2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

3 Test Condition

3.1 Test Configuration

Test mode

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). The worst cases were recorded in this report.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes (Z, X, Y axis), receiver antenna polarization (horizontal and vertical), the worst emission was found in Z position and the worst case was recorded.

Test Mode	Data Rate(Mbps)
802.11b	1
802.11g	6
802.11n HT20	MCS0
802.11n HT40	MCS0

The worst case Antenna mode for each of the following tests for Wi-Fi:

Test Cases	Antenna 1	Antenna 2	MIMO/CDD
Output Power Measurement	O	O	O
Power Spectral Density Measurement	O	O	O
99% Bandwidth Measurement	O	O	O
6dB Bandwidth Measurement	/	/	O
Conducted Band Edges and Spurious Emission Measurement	O	O	O
Radiated Band Edges and Spurious Emission Measurement	/	/	O
AC Conducted Emission Measurement	/	/	O
Note: “O”: test all bands			

According to RF Output power results in Appendix A.1, we picked the worst antenna mode to test.

3.2 Carrier Frequency and Channel

Frequency Band	Channel	Freq.(MHz)	Channel	Freq.(MHz
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	/	/

3.3 Equipment List

Conducted

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
Spectrum Analyzer	KEYSIGHT	N9020B	PWC0055	1 Year	2024/10/11
DC Power	KEYSIGHT	E3640A	PWC0046	1 Year	2024/10/11
RF Control Unit	Tonseced	JS0806-2	PWC0055	/	/
Shielded Chamber	Maorui	MR543	PWC0041	3 Years	2026/08/26
Test Software	Tonseced	JS1120-3 V3.2.22	/	/	/

Radiated

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
EMI Test Receiver	R&S	ESR7	PWB0023	1 Year	2024/10/11
Spectrum Analyzer	R&S	FSV3044	PWB0024	1 Year	2024/10/11
Loop Antenna	R&S	HFH2-Z2E	PWB0026	1 Year	2024/10/21
TRILOG Broadband Antenna	Schwarzbeck	VULB9162	PWB0029	1 Year	2024/10/14
Double-Ridged Guide Antenna	ETS-Lindgren	3117	PWB0031	1 Year	2024/10/12
k Type Horn Antenna	Steatite Antennas	QMS-00880	PWB0035	1 Year	2024/10/17
Anechoic Chamber	ETS.LINDGREN	Fact 3-2m	PWB0003	3 Years	2026/06/05
Pre-Amplifier	R&S	SCU18F	PWB0034	1 Year	2024/10/11
Pre-Amplifier	R&S	SCU40F1	PWB0036	1 Year	2024/10/11

Pre-Amplifier	COM-MW	DLNA8	PWB0094	1 Year	2024/11/08
Test Software	R&S	ELEKTRA 4.20.2	/	/	/

3.4 Support Equipment List

Equipment	Manufacturer	Description	Model	Serial Number
External Antenna	QUECTEL	/	/	/
EVB	QUECTEL	/	/	/
USB Cable	/	/	/	/
Adapter	Xiamen Xinsenhai Electronics Co., Ltd	Output:12V 60W	P60EB120500	/

3.5 Test Uncertainty

No.	Parameter	Uncertainty
1	DTS Bandwidth	1.9 %
2	Occupied channel bandwidth	1.9 %
3	Duty Cycle	0.11 %
4	Maximum Conducted Output Power	1.18 dB
5	Maximum Power Spectral Density Level	0.98 dB
6	Band-edge Compliance	1.21dB
7	Unwanted Emissions In Non-restricted Frequency Bands	9kHz-7GHz: 1.21 dB 7GHz-40GHz: 3.31 dB
8	Radiated Band Edges and Spurious Emission	Below 1GHz: 4.88 dB Above 1GHz: 5.06 dB
9	Temperature	3 °C
10	Humidity	1.3 %
11	Supply Voltages	0.006 V

4 Test Items Description

Ambient condition

Shielded Chamber

Temperature [°C]	21.1 to 25.1
Humidity [%RH]	25 to 47
Pressure [kPa]	101.4 to 103.2

Anechoic Chamber

Temperature [°C]	20.1 to 24.3
Humidity [%RH]	36 to 48
Pressure [kPa]	101.1 to 103.6

4.1 Output Power Measurement

4.1.1 Limit of Output Power

Rule Part 15.247 (b) (3) specifies that “For systems using digital modulation in the 902-928 MHz 2400-2483.5 MHz: 1 Watt.”

Average Output Power	≤1W(30dBm)

4.1.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test.

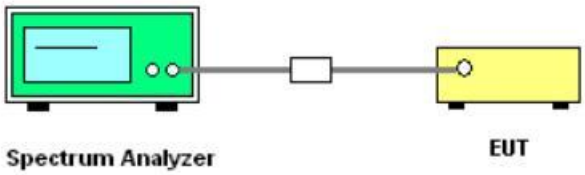
4.1.3 Test Procedures

The testing follows the Measurement Procedure of ANSI C63.10-2013 clause 11.9.2.2.4 Method AVGSA-2. Method AVGSA-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction. The procedure for this method is as follows:

1. Measure the duty cycle D of the transmitter output signal as described in 11.6.
2. Set span to at least 1.5 times the OBW.
3. Set RBW = 1% to 5% of the OBW, not to exceed 1 MHz.
4. Set VBW ≥ [3×RBW].
5. Number of points in sweep ≥[2 ×span/RBW]. (This gives bin-to-bin spacing ≤RBW / 2, so that narrowband signals are not lost between frequency bins.)
6. Sweep time = auto.
7. Detector = RMS (i.e., power averaging), if available. Otherwise, use the sample detector mode.
8. Do not use sweep triggering. Allow the sweep to “free run.”

9. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
10. Compute power by integrating the spectrum across the OBW of the signal using the Instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
11. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.

4.1.4 Test Setup



4.1.5Test Results

See Appendix A.1.

4.2 6dB and 99% Bandwidth Measurement

4.2.1 Limit of 6dB and 99% Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz

4.2.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test.

4.2.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 11.8.
2. The RF output of EUT 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. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1% to 5% of the 99% OBW and the VBW is set to 3 times of the RBW.
6. Measure and record the results in the test report.

4.2.4 Test Setup

4.2.5 Test Results

See Appendix A.2.

4.3 Power Spectral Density Measurement

4.3.1 Limit of Power Spectral Density

Rule Part 15.247(e) specifies that" For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.3.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test.

4.3.3 Test Procedures

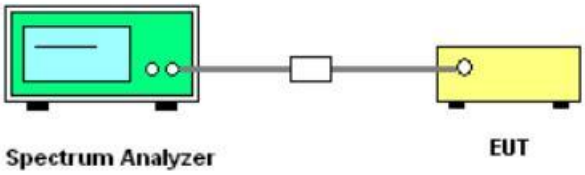
The testing follows ANSI C63.10-2013 clause 11.10.5.

Method AVGPSD-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction.

The following procedure is applicable when the EUT cannot be configured to transmit continuously (i.e., D < 98%), when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty cycle is constant (i.e., duty cycle variations are less than ±2%):

1. Measure the duty cycle (D) of the transmitter output signal as described in 11.6.
2. Set instrument center frequency to DTS channel center frequency.
3. Set span to at least 1.5 times the OBW.
4. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
5. Set VBW ≥ [3 × RBW].
6. Detector = power averaging (rms) or sample detector (when rms not available).
7. Ensure that the number of measurement points in the sweep ≥ [2 × span / RBW].
8. Sweep time = auto couple.
9. Do not use sweep triggering; allow sweep to "free run."
10. Employ trace averaging (rms) mode over a minimum of 100 traces.
11. Use the peak marker function to determine the maximum amplitude level.
12. Add [10 log (1 / D)], where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.
13. If measured value exceeds requirement specified by regulatory agency, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

4.3.4 Test Setup



4.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.3.

4.4 Conducted Band Edges and Spurious Emission Measurement

4.4.1 Limit of Conducted Band Edges and Spurious Emission

All harmonics/spurious must be at least 20 dB down from the highest emission level within the authorized band， In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

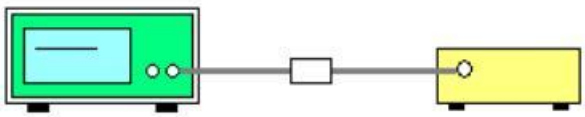
4.4.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test

4.4.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 11.13.
2. The RF output of EUT 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 RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

4.4.4 Test Setup



4.4.5 Test Result

Please refer to Appendix A.4.

4.5 Radiated Band Edges and Spurious Emission Measurement

4.5.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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	8
Above 960	500	3

4.5.2 Measuring Instruments

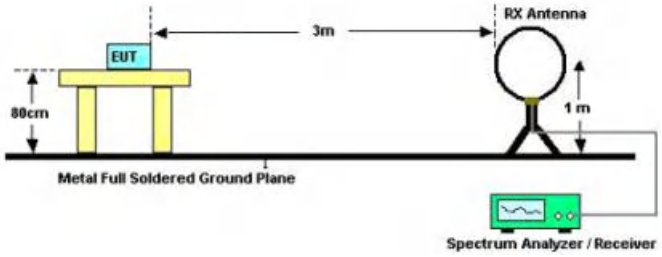
The section 3.3 of List of Measuring Equipment of this test report is used for test.

4.5.3 Test Procedures

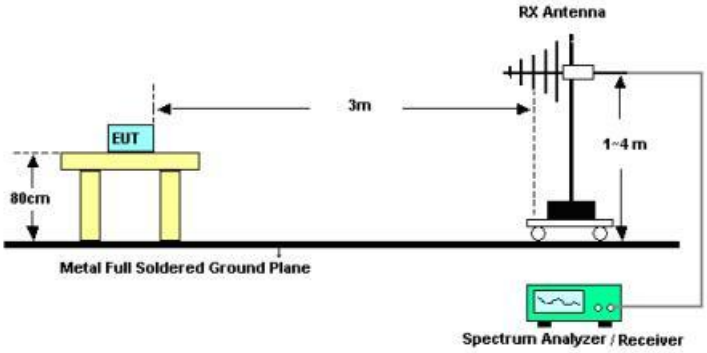
1. The testing follows ANSI C63.10-2013 clause 11.11 & 11.12
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level -Pre-amp Factor = Level
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured.
   (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
   (3) Set RBW = 1 MHz, VBW= 3MHz for ≥ 1 GHz for peak measurement
   For average measurement:
   VBW= 10 Hz, when duty cycle is no less than 98 percent.
   VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

4.5.4 Test Setup

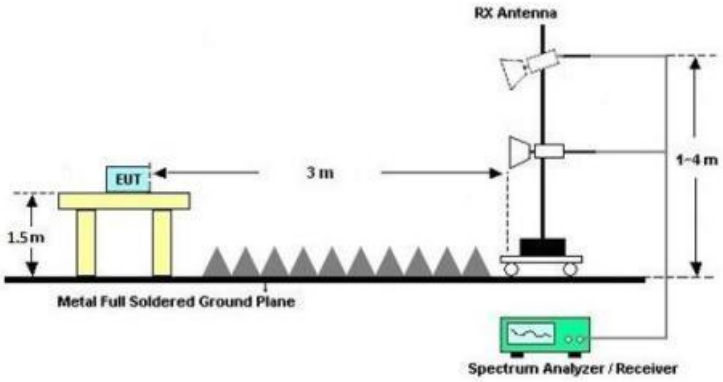
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



4.5.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

4.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.1.

4.5.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHzwhichever is lower)

Please refer to Appendix B.1.

4.5.8 Duty Cycle

Please refer to Appendix B.2.

4.6 AC Conducted Emission Measurement

4.6.1 Limit of AC Conducted Emission

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 of emission (MHz)	Conducted limit (dBμV)	
	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.

4.6.2 Measuring Instruments

The section 3.3 of List of Measuring Equipment of this test report is used for test.

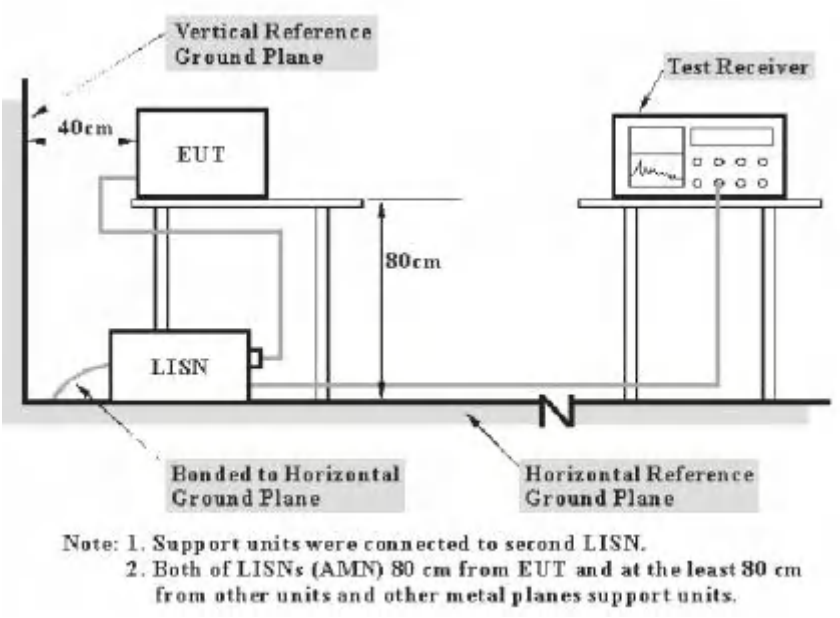
4.6.3 Test Procedures

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.

4.6.4 Test Equipment

Instrument	Manufacturer	Model	Asset No.	Cal. Interval	Cal. Due Date
EMI Test Receiver	R&S	ESR 3	PWB0061	1 Year	2024/10/11
LISN	R&S	ENV216	PWB0062	1 Year	2024/10/11
Shielded Chamber	MIX-BEP	SR 433	PWB0002	3 Years	2024/08/08
Test Software	R&S	ELEKTRA V4.20.2	/	/	/

4.6.5 Test Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

4.6.6 Test Result

Test Site	EMC 02 Shielding Room	Test Time	2024/01/30
Engineer	Kane sun	Test Voltage	120Vac/60Hz

Ambient condition

Temperature	Relative humidity	Pressure
20.3℃ to 20.7℃	40%RH to 41%RH	101.89kPa to 102.09kPa

4.6.7 Test Results

Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	CAV Level [dBµV]	CAV: AVG Limit [dBµV]	CAV Margin [dB]	Correction [dB]	Line
0.182	45.24	64.42	19.18	33.82	54.42	20.60	9.52	L1
0.267	42.17	61.21	19.05	31.11	51.21	20.10	9.52	L1
0.420	40.68	57.45	16.77	29.54	47.45	17.90	9.52	L1
0.555	33.43	56.00	22.57	20.82	46.00	25.18	9.52	L1
1.505	30.25	56.00	25.75	13.46	46.00	32.54	9.53	L1
5.987	26.34	60.00	33.66	6.62	50.00	43.38	9.56	L1
0.200	46.16	63.63	17.47	34.15	53.63	19.48	9.52	N
0.258	44.50	61.50	16.99	32.85	51.50	18.65	9.53	N

0.438	41.87	57.10	15.23	27.70	47.10	19.40	9.53	N
0.951	29.41	56.00	26.59	15.57	46.00	30.43	9.53	N
5.064	26.63	60.00	33.37	6.12	50.00	43.88	9.56	N
25.634	19.76	60.00	40.24	8.67	50.00	41.33	9.67	N

Test Graphs

150KHz to 30MHz_L1	150KHz to 30MHz_N
	

4.6.8 Uncertainty Measurement

Where relevant,the following measurement uncertainty levels have been estimated for tests performed on the EUT. The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

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

CASE	Uncertainty
Continuous Emission (AC port)	2.92 dB

4.7 Antenna Requirements

4.7.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 rule.

4.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

4.7.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

Appendix A – Test Results of Conducted Test

A.1 Conducted Output Power

Test Result Average

Test Mode	Antenna	Frequency [MHz]	Average power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	Ant1	2412	18.51	95.74	0.19	18.70	≤30.00	-0.10	18.60	≤36.00	PASS
11B	Ant2	2412	17.87	95.74	0.19	18.06	≤30.00	-0.10	17.96	≤36.00	PASS
11B	Ant1	2437	18.42	95.65	0.19	18.61	≤30.00	-0.10	18.51	≤36.00	PASS
11B	Ant2	2437	17.76	95.75	0.19	17.95	≤30.00	-0.10	17.85	≤36.00	PASS
11B	Ant1	2462	18.39	95.70	0.19	18.58	≤30.00	-0.10	18.48	≤36.00	PASS
11B	Ant2	2462	17.75	95.65	0.19	17.94	≤30.00	-0.10	17.84	≤36.00	PASS
11B-CDD	Ant1	2412	15.99	95.86	0.18	16.17	≤30.00	-0.10	16.07	≤36.00	PASS
11B-CDD	Ant2	2412	15.30	95.65	0.19	15.49	≤30.00	-0.10	15.39	≤36.00	PASS
11B-CDD	total	2412	---	---	---	18.85	≤30.00	---	18.75	≤36.00	PASS
11B-CDD	Ant1	2437	15.70	95.70	0.19	15.89	≤30.00	-0.10	15.79	≤36.00	PASS
11B-CDD	Ant2	2437	15.05	95.74	0.19	15.24	≤30.00	-0.10	15.14	≤36.00	PASS
11B-CDD	total	2437	---	---	---	18.59	≤30.00	---	18.49	≤36.00	PASS
11B-CDD	Ant1	2462	15.65	95.74	0.19	15.84	≤30.00	-0.10	15.74	≤36.00	PASS
11B-CDD	Ant2	2462	15.02	95.70	0.19	15.21	≤30.00	-0.10	15.11	≤36.00	PASS
11B-CDD	total	2462	---	---	---	18.55	≤30.00	---	18.45	≤36.00	PASS
11G	Ant1	2412	16.21	79.57	0.99	17.20	≤30.00	-0.10	17.10	≤36.00	PASS
11G	Ant2	2412	16.38	79.81	0.98	17.36	≤30.00	-0.10	17.26	≤36.00	PASS
11G	Ant1	2437	16.50	79.57	0.99	17.49	≤30.00	-0.10	17.39	≤36.00	PASS
11G	Ant2	2437	16.50	79.57	0.99	17.49	≤30.00	-0.10	17.39	≤36.00	PASS
11G	Ant1	2462	16.35	79.57	0.99	17.34	≤30.00	-0.10	17.24	≤36.00	PASS
11G	Ant2	2462	16.08	79.57	0.99	17.07	≤30.00	-0.10	16.97	≤36.00	PASS
11G-CDD	Ant1	2412	13.49	79.81	0.98	14.47	≤30.00	-0.10	14.37	≤36.00	PASS
11G-CDD	Ant2	2412	13.43	79.57	0.99	14.42	≤30.00	-0.10	14.32	≤36.00	PASS
11G-CDD	total	2412	---	---	---	17.46	≤30.00	---	17.36	≤36.00	PASS
11G-CDD	Ant1	2437	13.55	79.81	0.98	14.53	≤30.00	-0.10	14.43	≤36.00	PASS
11G-CDD	Ant2	2437	13.55	79.81	0.98	14.53	≤30.00	-0.10	14.43	≤36.00	PASS
11G-CDD	total	2437	---	---	---	17.54	≤30.00	---	17.44	≤36.00	PASS
11G-CDD	Ant1	2462	13.94	79.57	0.99	14.93	≤30.00	-0.10	14.83	≤36.00	PASS
11G-CDD	Ant2	2462	14.55	79.57	0.99	15.54	≤30.00	-0.10	15.44	≤36.00	PASS
11G-CDD	total	2462	---	---	---	18.26	≤30.00	---	18.16	≤36.00	PASS
11N20SISO	Ant1	2412	15.97	78.64	1.04	17.01	≤30.00	-0.10	16.91	≤36.00	PASS

11N20SISO	Ant2	2412	16.31	78.39	1.06	17.37	≤30.00	-0.10	17.27	≤36.00	PASS
11N20SISO	Ant1	2437	15.66	78.77	1.04	16.70	≤30.00	-0.10	16.60	≤36.00	PASS
11N20SISO	Ant2	2437	16.44	78.67	1.04	17.48	≤30.00	-0.10	17.38	≤36.00	PASS
11N20SISO	Ant1	2462	16.11	78.64	1.04	17.15	≤30.00	-0.10	17.05	≤36.00	PASS
11N20SISO	Ant2	2462	16.15	78.64	1.04	17.19	≤30.00	-0.10	17.09	≤36.00	PASS
11N20MIMO	Ant1	2412	13.54	78.39	1.06	14.60	≤30.00	-0.10	14.50	≤36.00	PASS
11N20MIMO	Ant2	2412	13.52	78.45	1.05	14.57	≤30.00	-0.10	14.47	≤36.00	PASS
11N20MIMO	total	2412	---	---	---	17.60	≤30.00	---	17.50	≤36.00	PASS
11N20MIMO	Ant1	2437	13.53	78.80	1.03	14.56	≤30.00	-0.10	14.46	≤36.00	PASS
11N20MIMO	Ant2	2437	13.88	78.45	1.05	14.93	≤30.00	-0.10	14.83	≤36.00	PASS
11N20MIMO	total	2437	---	---	---	17.76	≤30.00	---	17.66	≤36.00	PASS
11N20MIMO	Ant1	2462	13.74	78.64	1.04	14.78	≤30.00	-0.10	14.68	≤36.00	PASS
11N20MIMO	Ant2	2462	14.49	78.45	1.05	15.54	≤30.00	-0.10	15.44	≤36.00	PASS
11N20MIMO	total	2462	---	---	---	18.19	≤30.00	---	18.09	≤36.00	PASS
11N40SISO	Ant1	2422	15.39	64.36	1.91	17.30	≤30.00	-0.10	17.20	≤36.00	PASS
11N40SISO	Ant2	2422	15.55	64.57	1.90	17.45	≤30.00	-0.10	17.35	≤36.00	PASS
11N40SISO	Ant1	2437	15.33	64.50	1.90	17.23	≤30.00	-0.10	17.13	≤36.00	PASS
11N40SISO	Ant2	2437	15.51	64.50	1.90	17.41	≤30.00	-0.10	17.31	≤36.00	PASS
11N40SISO	Ant1	2452	15.72	64.50	1.90	17.62	≤30.00	-0.10	17.52	≤36.00	PASS
11N40SISO	Ant2	2452	15.58	64.57	1.90	17.48	≤30.00	-0.10	17.38	≤36.00	PASS
11N40MIMO	Ant1	2422	12.90	64.50	1.90	14.80	≤30.00	-0.10	14.70	≤36.00	PASS
11N40MIMO	Ant2	2422	13.31	64.36	1.91	15.22	≤30.00	-0.10	15.12	≤36.00	PASS
11N40MIMO	total	2422	---	---	---	18.03	≤30.00	---	17.93	≤36.00	PASS
11N40MIMO	Ant1	2437	12.82	64.57	1.90	14.72	≤30.00	-0.10	14.62	≤36.00	PASS
11N40MIMO	Ant2	2437	12.97	64.57	1.90	14.87	≤30.00	-0.10	14.77	≤36.00	PASS
11N40MIMO	total	2437	---	---	---	17.81	≤30.00	---	17.71	≤36.00	PASS
11N40MIMO	Ant1	2452	13.13	64.50	1.90	15.03	≤30.00	-0.10	14.93	≤36.00	PASS
11N40MIMO	Ant2	2452	12.20	64.36	1.91	14.11	≤30.00	-0.10	14.01	≤36.00	PASS
11N40MIMO	total	2452	---	---	---	17.60	≤30.00	---	17.50	≤36.00	PASS

Note1: Average power with duty factor=Average power+DC Factor.

Note2: The Total Power =$10\log(10^{(\text{Power antenna1 in dBm}/10)}+10^{(\text{Power antenna2 in dBm}/10)}$.

Note3: The manufacturer declared the transmitter output signals is CDD mode. And N_{SS}=1.According to KDB 662911 D01Multiple Transmitter Output v02r01 2)f(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain,For power measurements on IEEE 802.11 devices.

Array Gain = 0 dB (i.e., no array gain) for N_{ANT} ≤4;

Array Gain = 0 dB (i.e., no array gain) for channel widths≥40 MHz for any N_{ANT};

Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with N_{ANT}≥5.

So directional gain = G_{ANT} + Array Gain <6dBi. So the power limit is 30dBm.

A.2 6dB and 99% Bandwidth

Test Result 6dB Bandwidth

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B-CDD	Ant1	2412	10.080	2407.000	2417.080	0.5	PASS
11B-CDD	Ant2	2412	10.080	2407.000	2417.080	0.5	PASS
11B-CDD	Ant1	2437	10.120	2432.000	2442.120	0.5	PASS
11B-CDD	Ant2	2437	10.120	2432.000	2442.120	0.5	PASS
11B-CDD	Ant1	2462	10.080	2457.000	2467.080	0.5	PASS
11B-CDD	Ant2	2462	10.120	2457.000	2467.120	0.5	PASS
11G-CDD	Ant1	2412	15.120	2404.520	2419.640	0.5	PASS
11G-CDD	Ant2	2412	15.280	2404.560	2419.840	0.5	PASS
11G-CDD	Ant1	2437	15.080	2429.520	2444.600	0.5	PASS
11G-CDD	Ant2	2437	14.080	2430.760	2444.840	0.5	PASS
11G-CDD	Ant1	2462	15.120	2454.480	2469.600	0.5	PASS
11G-CDD	Ant2	2462	12.560	2453.880	2466.440	0.5	PASS
11N20MIMO	Ant1	2412	15.040	2404.560	2419.600	0.5	PASS
11N20MIMO	Ant2	2412	15.680	2404.520	2420.200	0.5	PASS
11N20MIMO	Ant1	2437	15.000	2429.520	2444.520	0.5	PASS
11N20MIMO	Ant2	2437	15.920	2429.520	2445.440	0.5	PASS
11N20MIMO	Ant1	2462	15.120	2454.480	2469.600	0.5	PASS
11N20MIMO	Ant2	2462	13.160	2453.920	2467.080	0.5	PASS
11N40MIMO	Ant1	2422	35.120	2404.480	2439.600	0.5	PASS
11N40MIMO	Ant2	2422	29.120	2410.800	2439.920	0.5	PASS
11N40MIMO	Ant1	2437	35.120	2419.480	2454.600	0.5	PASS
11N40MIMO	Ant2	2437	26.640	2428.280	2454.920	0.5	PASS
11N40MIMO	Ant1	2452	35.040	2434.560	2469.600	0.5	PASS
11N40MIMO	Ant2	2452	26.320	2437.040	2463.360	0.5	PASS

Test Result 99% Bandwidth

Test Mode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.549	2404.7920	2419.3410	---	---
11B	Ant2	2412	14.546	2404.7849	2419.3309	---	---
11B	Ant1	2437	14.545	2429.7714	2444.3164	---	---
11B	Ant2	2437	14.556	2429.7662	2444.3222	---	---
11B	Ant1	2462	14.507	2454.7697	2469.2767	---	---
11B	Ant2	2462	14.511	2454.7673	2469.2783	---	---
11B-CDD	Ant1	2412	14.576	2404.7732	2419.3492	---	---

11B-CDD	Ant2	2412	14.582	2404.7670	2419.3490	---	---
11B-CDD	Ant1	2437	14.588	2429.7510	2444.3390	---	---
11B-CDD	Ant2	2437	14.620	2429.7371	2444.3571	---	---
11B-CDD	Ant1	2462	14.560	2454.7410	2469.3010	---	---
11B-CDD	Ant2	2462	14.579	2454.7354	2469.3144	---	---
11G	Ant1	2412	16.294	2403.9228	2420.2168	---	---
11G	Ant2	2412	16.305	2403.9144	2420.2194	---	---
11G	Ant1	2437	16.299	2428.9223	2445.2213	---	---
11G	Ant2	2437	16.283	2428.9339	2445.2169	---	---
11G	Ant1	2462	16.300	2453.9149	2470.2149	---	---
11G	Ant2	2462	16.305	2453.9103	2470.2153	---	---
11G-CDD	Ant1	2412	16.289	2403.9226	2420.2116	---	---
11G-CDD	Ant2	2412	16.292	2404.0122	2420.3042	---	---
11G-CDD	Ant1	2437	16.282	2428.9406	2445.2226	---	---
11G-CDD	Ant2	2437	16.246	2429.0568	2445.3028	---	---
11G-CDD	Ant1	2462	16.296	2453.9239	2470.2199	---	---
11G-CDD	Ant2	2462	16.106	2453.7951	2469.9011	---	---
11N20SISO	Ant1	2412	17.459	2403.3253	2420.7843	---	---
11N20SISO	Ant2	2412	17.455	2403.3302	2420.7852	---	---
11N20SISO	Ant1	2437	17.446	2428.3512	2445.7972	---	---
11N20SISO	Ant2	2437	17.448	2428.3507	2445.7987	---	---
11N20SISO	Ant1	2462	17.457	2453.3291	2470.7861	---	---
11N20SISO	Ant2	2462	17.449	2453.3383	2470.7873	---	---
11N20MIMO	Ant1	2412	17.456	2403.3341	2420.7901	---	---
11N20MIMO	Ant2	2412	17.425	2403.4728	2420.8978	---	---
11N20MIMO	Ant1	2437	17.448	2428.3539	2445.8019	---	---
11N20MIMO	Ant2	2437	17.366	2428.5317	2445.8977	---	---
11N20MIMO	Ant1	2462	17.460	2453.3272	2470.7872	---	---
11N20MIMO	Ant2	2462	17.248	2453.2121	2470.4601	---	---
11N40SISO	Ant1	2422	35.831	2404.1675	2439.9985	---	---
11N40SISO	Ant2	2422	35.897	2404.1299	2440.0269	---	---
11N40SISO	Ant1	2437	35.761	2419.1907	2454.9517	---	---
11N40SISO	Ant2	2437	35.780	2419.1430	2454.9230	---	---
11N40SISO	Ant1	2452	35.818	2434.1065	2469.9245	---	---
11N40SISO	Ant2	2452	35.848	2434.0974	2469.9454	---	---
11N40MIMO	Ant1	2422	35.847	2404.1577	2440.0047	---	---
11N40MIMO	Ant2	2422	35.635	2404.6603	2440.2953	---	---
11N40MIMO	Ant1	2437	35.762	2419.1990	2454.9610	---	---
11N40MIMO	Ant2	2437	35.495	2419.7512	2455.2462	---	---

11N40MIMO	Ant1	2452	35.835	2434.0826	2469.9176	---	---
11N40MIMO	Ant2	2452	34.580	2434.3727	2468.9527	---	---

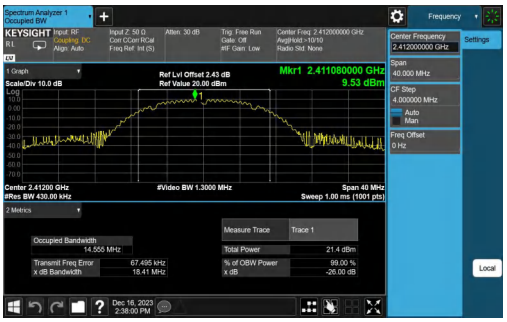
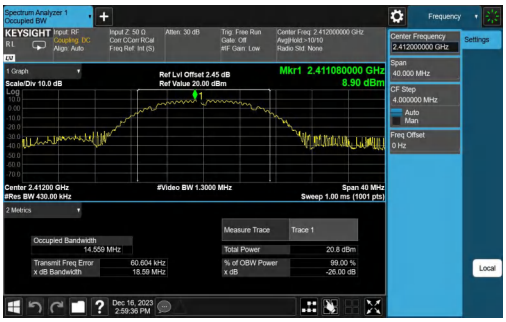
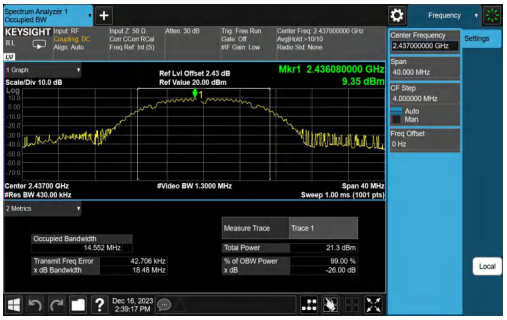
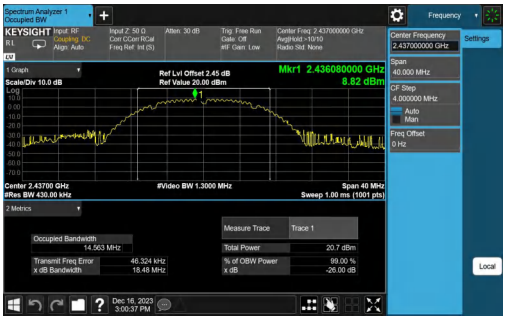
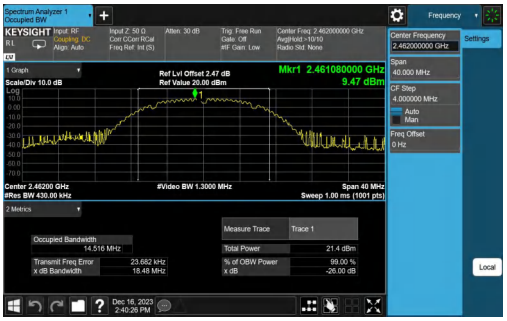
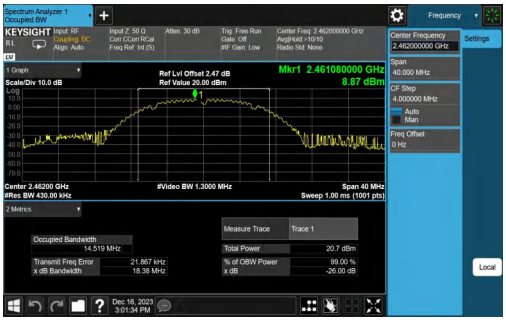
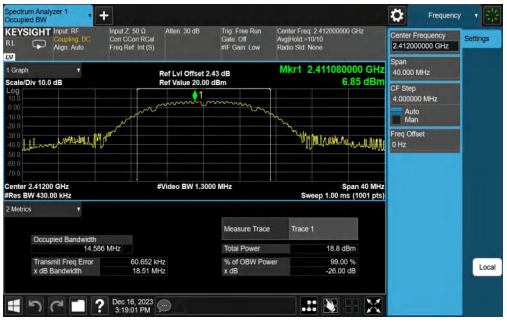
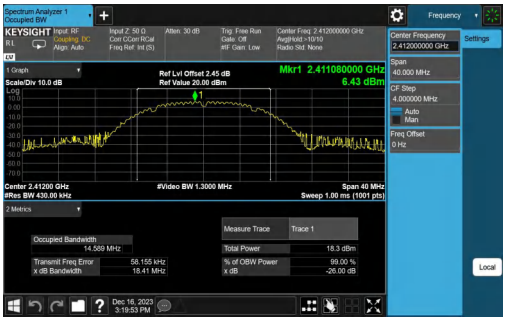
Test Graphs_6dB Bandwidth

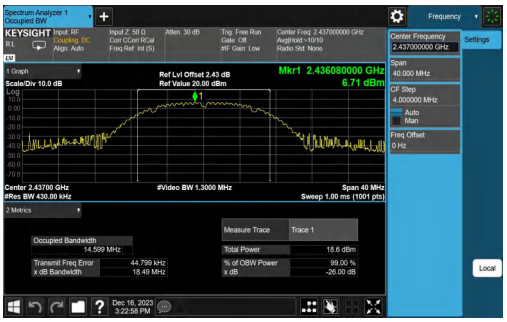
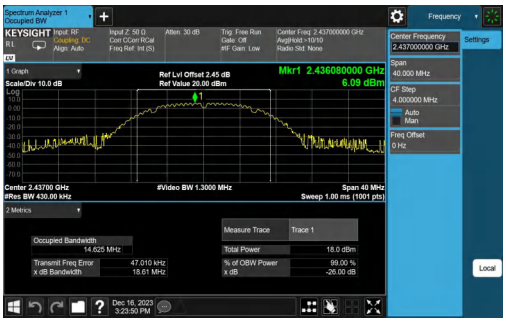
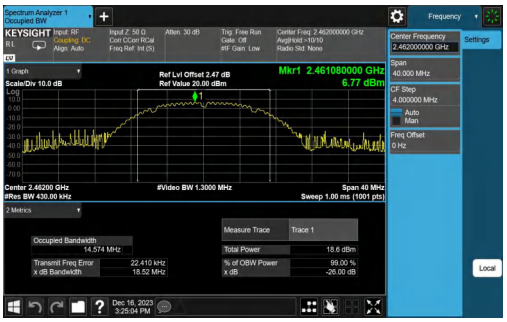
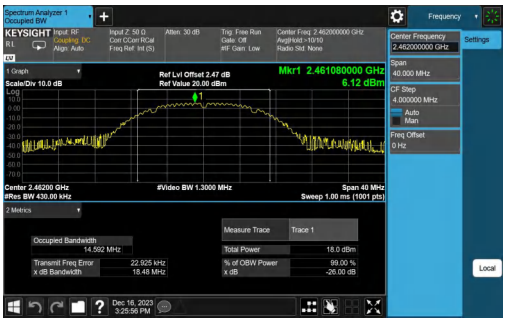
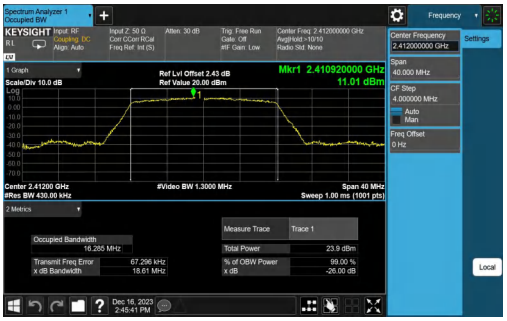
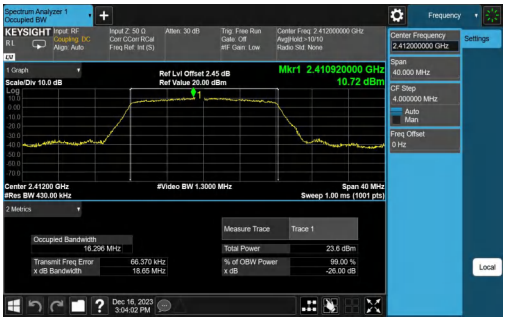
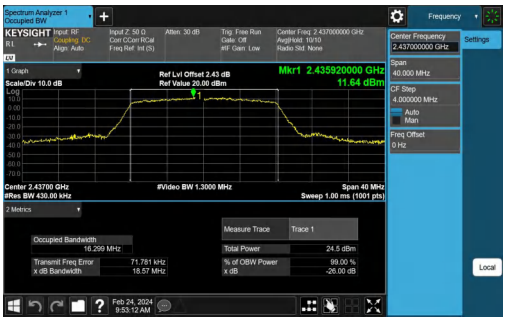
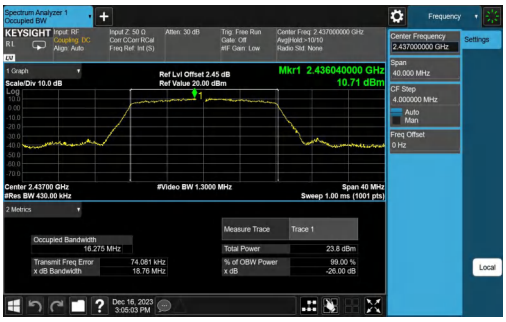
11B-CDD-Ant1-2412-PASS	11B-CDD-Ant2-2412-PASS
	
11B-CDD-Ant1-2437-PASS	11B-CDD-Ant2-2437-PASS
	
11B-CDD-Ant1-2462-PASS	11B-CDD-Ant2-2462-PASS
	
11G-CDD-Ant1-2412-PASS	11G-CDD-Ant2-2412-PASS
	

11G-CDD-Ant1-2437-PASS	11G-CDD-Ant2-2437-PASS
	
11G-CDD-Ant1-2462-PASS	11G-CDD-Ant2-2462-PASS
	
11N20MIMO-Ant1-2412-PASS	11N20MIMO-Ant2-2412-PASS
	
11N20MIMO-Ant1-2437-PASS	11N20MIMO-Ant2-2437-PASS
	

11N20MIMO-Ant1-2462-PASS	11N20MIMO-Ant2-2462-PASS
	
11N40MIMO-Ant1-2422-PASS	11N40MIMO-Ant2-2422-PASS
	
11N40MIMO-Ant1-2437-PASS	11N40MIMO-Ant2-2437-PASS
	
11N40MIMO-Ant1-2452-PASS	11N40MIMO-Ant2-2452-PASS
	

Test Graphs_99% Bandwidth

11B-Ant1-2412	11B-Ant2-2412
	
11B-Ant1-2437	**11B-Ant2-2437**
	
11B-Ant1-2462	**11B-Ant2-2462**
	
11B-CDD-Ant1-2412	**11B-CDD-Ant2-2412**
	

11B-CDD-Ant1-2437	11B-CDD-Ant2-2437
	
11B-CDD-Ant1-2462	**11B-CDD-Ant2-2462**
	
11G-Ant1-2412	**11G-Ant2-2412**
	
11G-Ant1-2437	**11G-Ant2-2437**
	

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	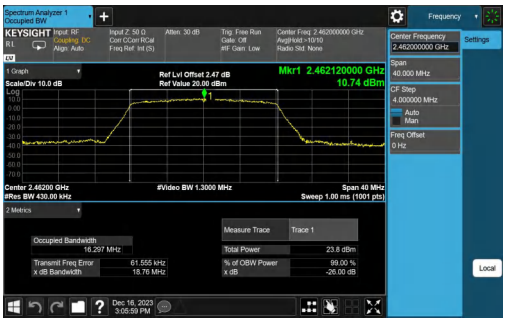
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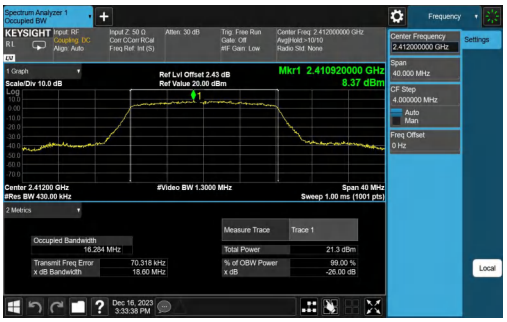	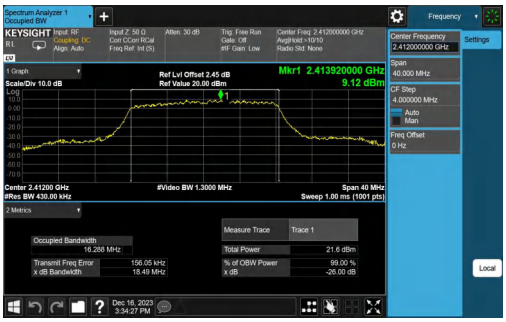
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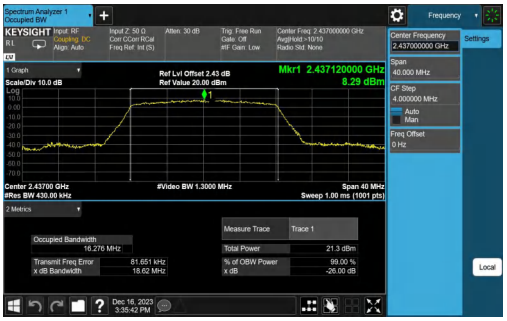	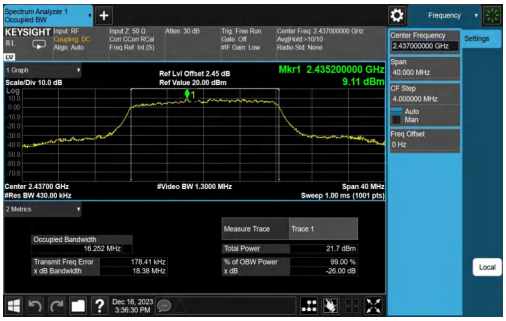
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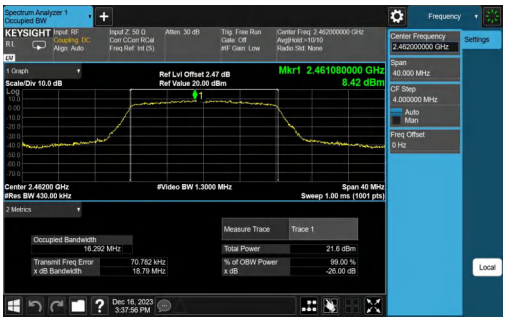	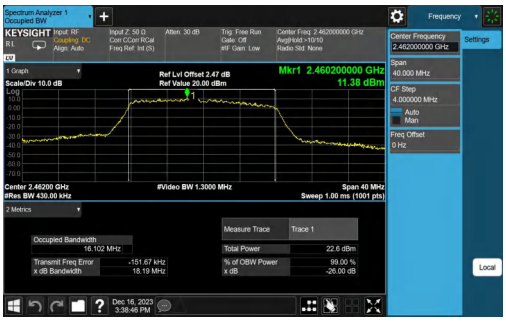

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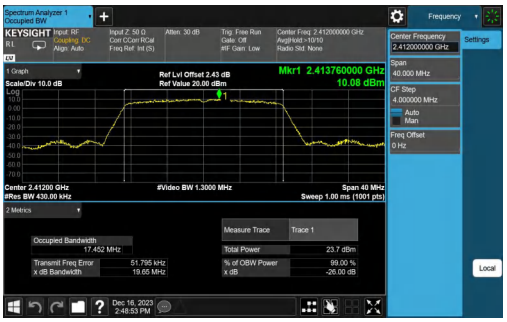	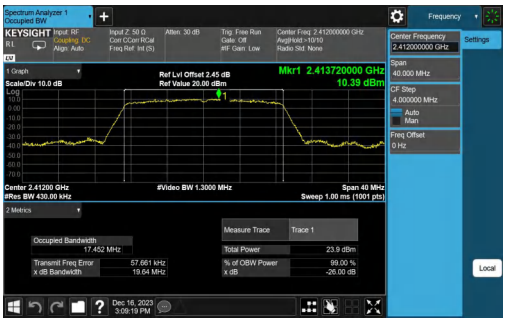
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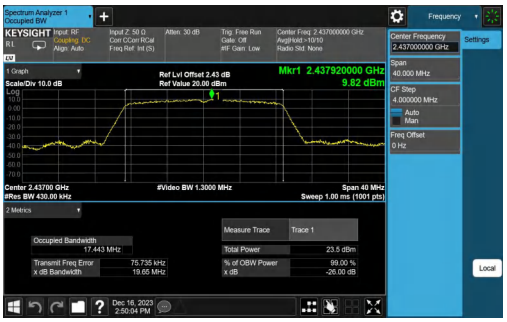	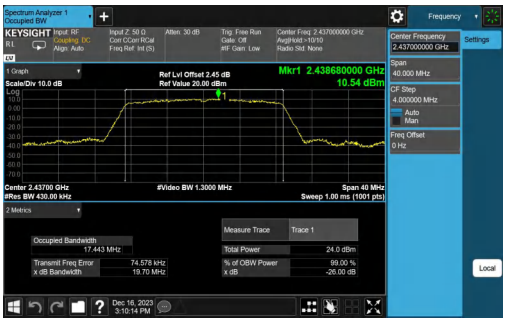
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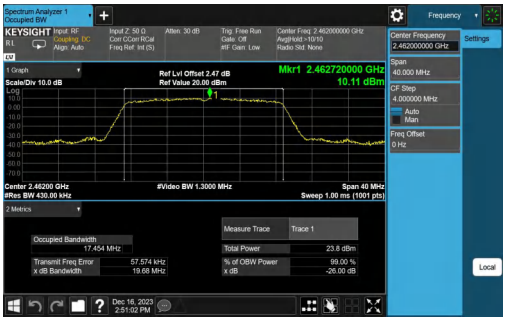	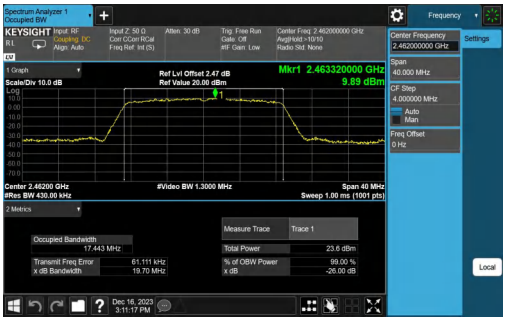
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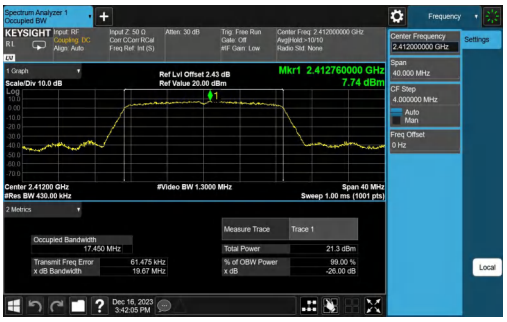	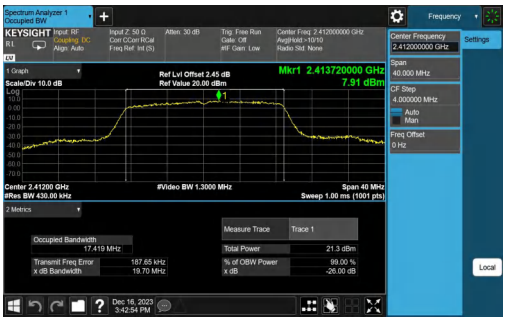

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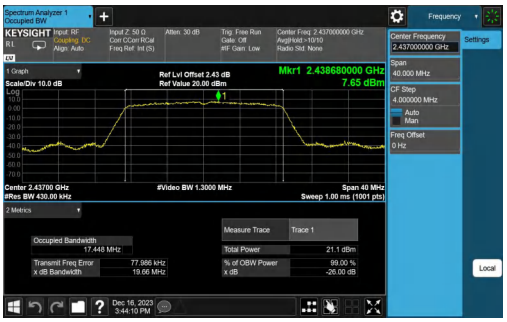	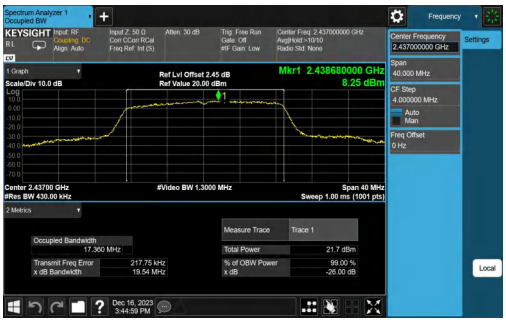
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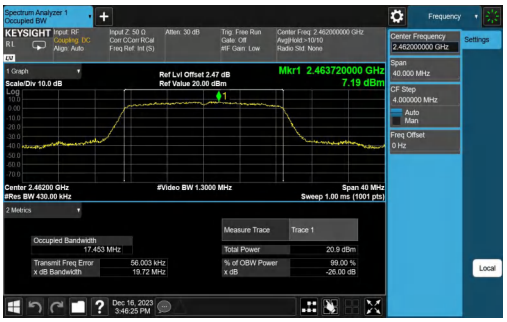	
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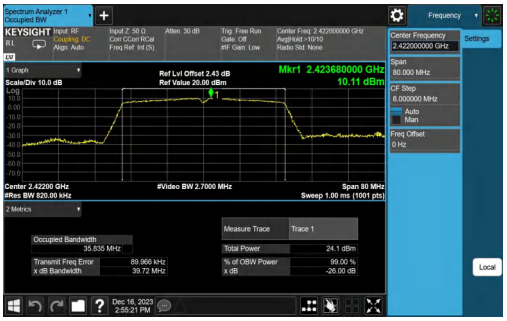	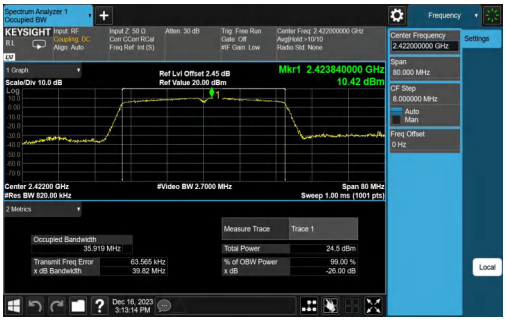
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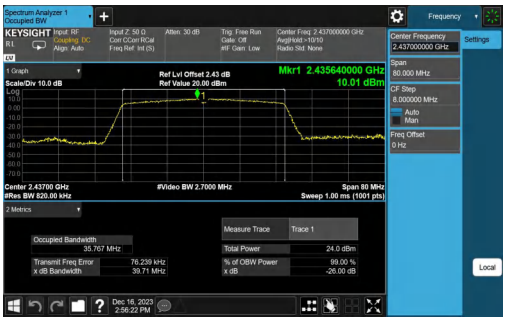	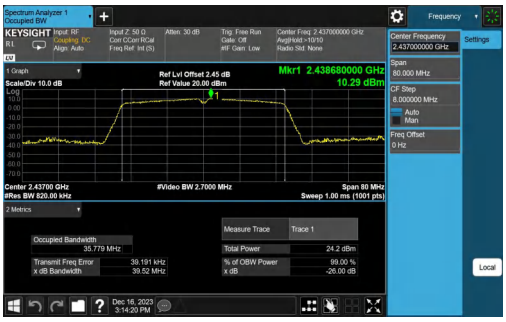

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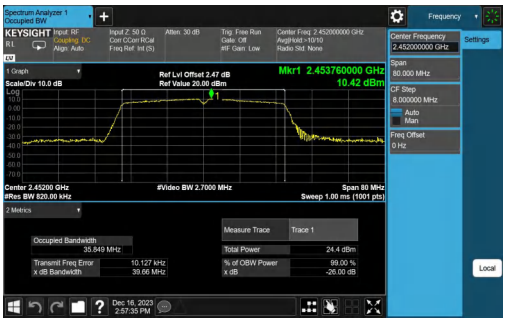	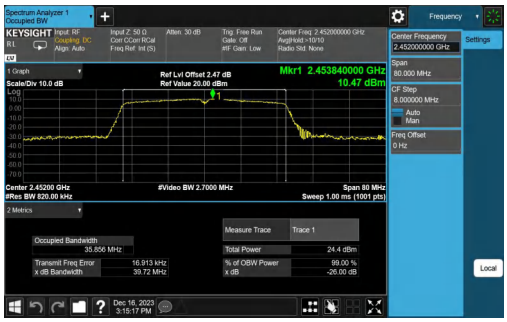
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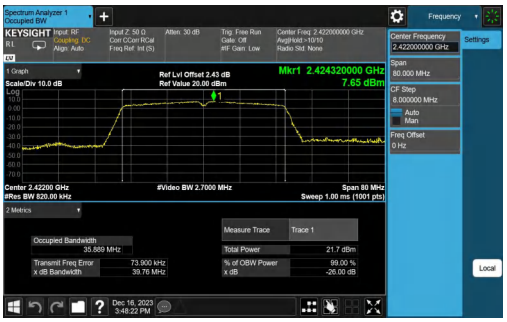	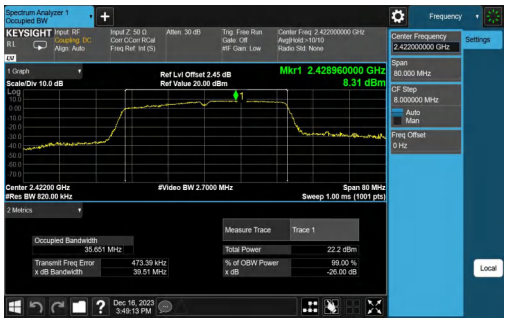
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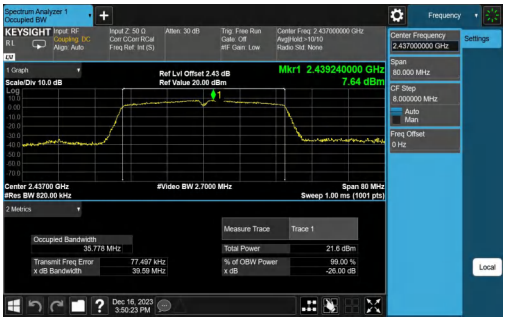	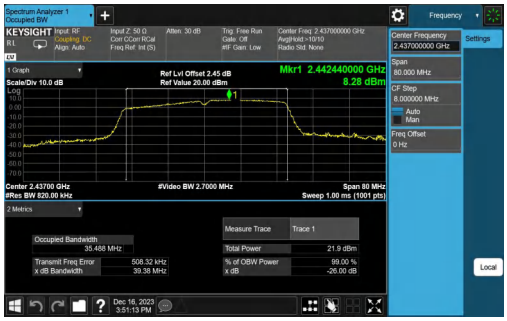
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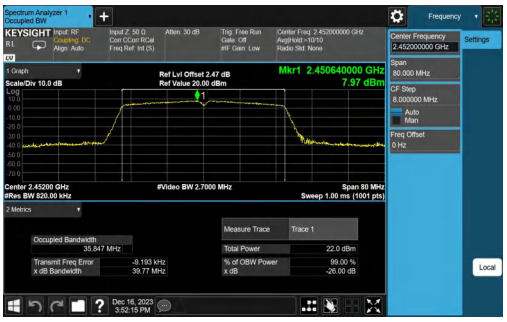
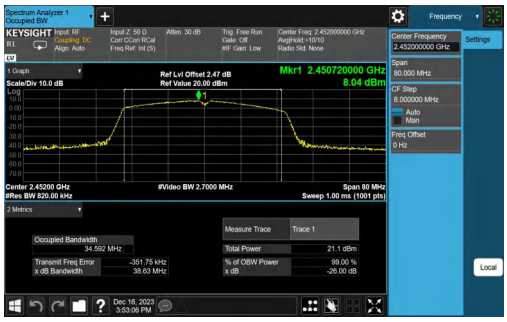
	

A.3 Power Spectral Density

Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-13.07	≤8.00	PASS
11B	Ant2	2412	-14.40	≤8.00	PASS
11B	Ant1	2437	-13.31	≤8.00	PASS
11B	Ant2	2437	-14.39	≤8.00	PASS
11B	Ant1	2462	-13.98	≤8.00	PASS
11B	Ant2	2462	-14.04	≤8.00	PASS
11B-CDD	Ant1	2412	-15.63	≤8.00	PASS
11B-CDD	Ant2	2412	-16.74	≤8.00	PASS
11B-CDD	total	2412	-13.14	≤8.00	PASS
11B-CDD	Ant1	2437	-16.05	≤8.00	PASS
11B-CDD	Ant2	2437	-16.82	≤8.00	PASS
11B-CDD	total	2437	-13.41	≤8.00	PASS
11B-CDD	Ant1	2462	-16.44	≤8.00	PASS
11B-CDD	Ant2	2462	-17.05	≤8.00	PASS
11B-CDD	total	2462	-13.72	≤8.00	PASS
11G	Ant1	2412	-15.78	≤8.00	PASS
11G	Ant2	2412	-15.74	≤8.00	PASS
11G	Ant1	2437	-15.02	≤8.00	PASS
11G	Ant2	2437	-15.44	≤8.00	PASS
11G	Ant1	2462	-15.64	≤8.00	PASS
11G	Ant2	2462	-16.29	≤8.00	PASS
11G-CDD	Ant1	2412	-18.86	≤8.00	PASS
11G-CDD	Ant2	2412	-18.05	≤8.00	PASS
11G-CDD	total	2412	-15.43	≤8.00	PASS
11G-CDD	Ant1	2437	-17.51	≤8.00	PASS
11G-CDD	Ant2	2437	-18.37	≤8.00	PASS
11G-CDD	total	2437	-14.91	≤8.00	PASS
11G-CDD	Ant1	2462	-18.41	≤8.00	PASS
11G-CDD	Ant2	2462	-16.86	≤8.00	PASS
11G-CDD	total	2462	-14.56	≤8.00	PASS
11N20SISO	Ant1	2412	-15.26	≤8.00	PASS
11N20SISO	Ant2	2412	-15.77	≤8.00	PASS
11N20SISO	Ant1	2437	-15.66	≤8.00	PASS
11N20SISO	Ant2	2437	-15.71	≤8.00	PASS
11N20SISO	Ant1	2462	-16.01	≤8.00	PASS

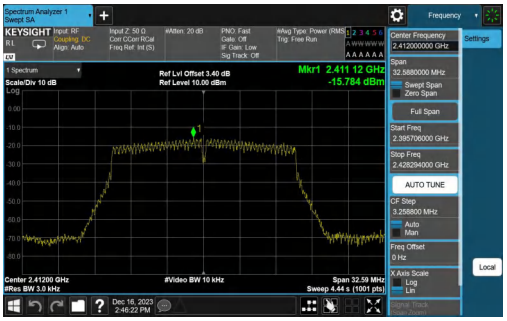
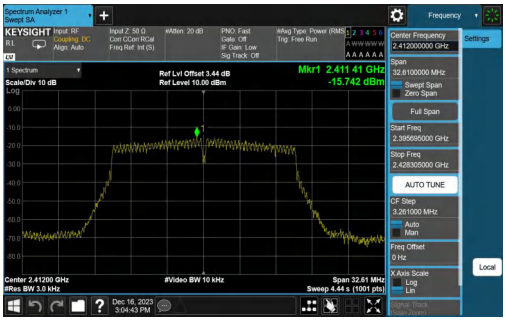
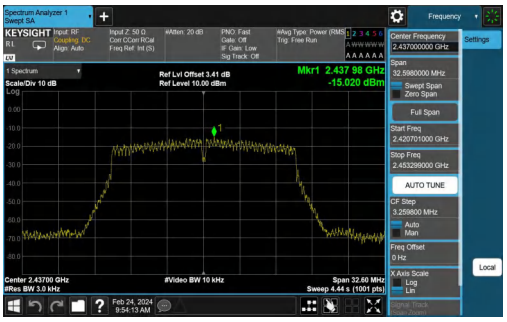
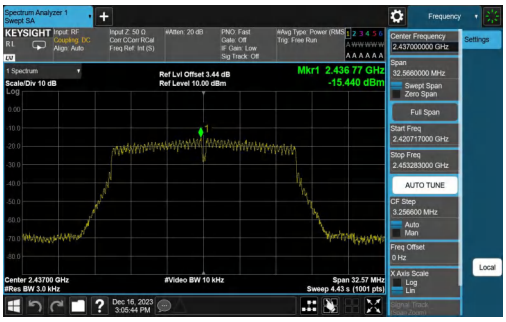
11N20SISO	Ant2	2462	-15.58	≤8.00	PASS
11N20MIMO	Ant1	2412	-18.15	≤8.00	PASS
11N20MIMO	Ant2	2412	-18.33	≤8.00	PASS
11N20MIMO	total	2412	-15.23	≤8.00	PASS
11N20MIMO	Ant1	2437	-18.53	≤8.00	PASS
11N20MIMO	Ant2	2437	-17.15	≤8.00	PASS
11N20MIMO	total	2437	-14.78	≤8.00	PASS
11N20MIMO	Ant1	2462	-18.25	≤8.00	PASS
11N20MIMO	Ant2	2462	-17.52	≤8.00	PASS
11N20MIMO	total	2462	-14.86	≤8.00	PASS
11N40SISO	Ant1	2422	-18.36	≤8.00	PASS
11N40SISO	Ant2	2422	-18.16	≤8.00	PASS
11N40SISO	Ant1	2437	-19.26	≤8.00	PASS
11N40SISO	Ant2	2437	-17.96	≤8.00	PASS
11N40SISO	Ant1	2452	-17.86	≤8.00	PASS
11N40SISO	Ant2	2452	-18.92	≤8.00	PASS
11N40MIMO	Ant1	2422	-21.61	≤8.00	PASS
11N40MIMO	Ant2	2422	-21.21	≤8.00	PASS
11N40MIMO	total	2422	-18.40	≤8.00	PASS
11N40MIMO	Ant1	2437	-21.56	≤8.00	PASS
11N40MIMO	Ant2	2437	-20.71	≤8.00	PASS
11N40MIMO	total	2437	-18.10	≤8.00	PASS
11N40MIMO	Ant1	2452	-21.57	≤8.00	PASS
11N40MIMO	Ant2	2452	-20.49	≤8.00	PASS
11N40MIMO	total	2452	-17.99	≤8.00	PASS

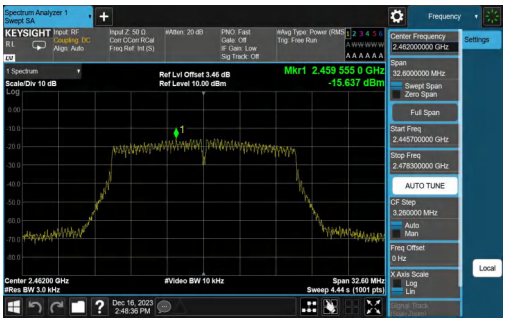
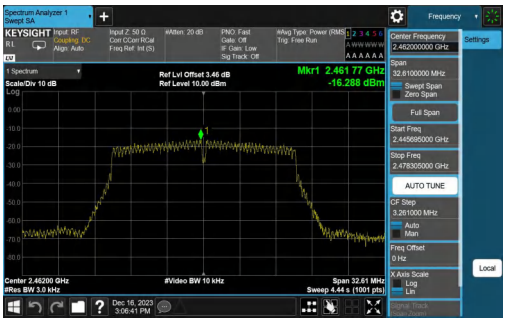
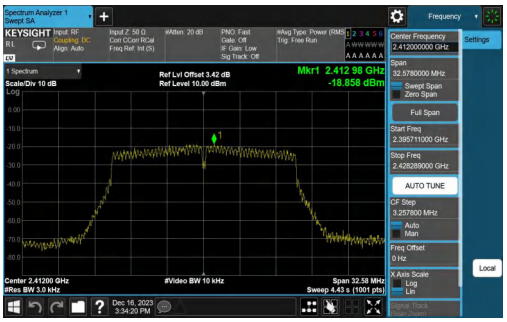
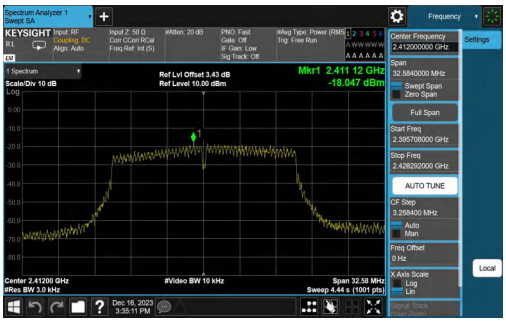
Note1: For Total PSD,according to KDB 662911 D01 Multiple Transmitter Output v02r01 2)a),the power spectral density=10log($10^{(\text{PSD antenna1 in dBm/10})}+10^{(\text{PSD antenna2 in dBm/10})}$).

Note2: The manufacturer declared the transmitter output signals is CDD mode. And N_{SS}=1. According to KDB 662911D01 Multiple Transmitter Output v02r01 F2)f(i): If all antennas have the same gain, Directional gain = G_{ANT} + Array Gain.For PSD measurements on all devices,Array Gain=10log(N_{ANT}/N_{SS})dB, so directional gain=G_{ANT}+Array Gain=-0.10+10log(2/1)=2.91<6dBi.So the power limit is 8dBm/MHz.

Test Graphs

11B-Ant1-2412-PASS	11B-Ant2-2412-PASS
	
11B-Ant1-2437-PASS	11B-Ant2-2437-PASS
	
11B-Ant1-2462-PASS	11B-Ant2-2462-PASS
	
11B-CDD-Ant1-2412-PASS	11B-CDD-Ant2-2412-PASS
	

11B-CDD-Ant1-2437-PASS	11B-CDD-Ant2-2437-PASS
	
11B-CDD-Ant1-2462-PASS	**11B-CDD-Ant2-2462-PASS**
	
11G-Ant1-2412-PASS	**11G-Ant2-2412-PASS**
	
11G-Ant1-2437-PASS	**11G-Ant2-2437-PASS**
	

11G-Ant1-2462-PASS	11G-Ant2-2462-PASS
	
11G-CDD-Ant1-2412-PASS	11G-CDD-Ant2-2412-PASS
	
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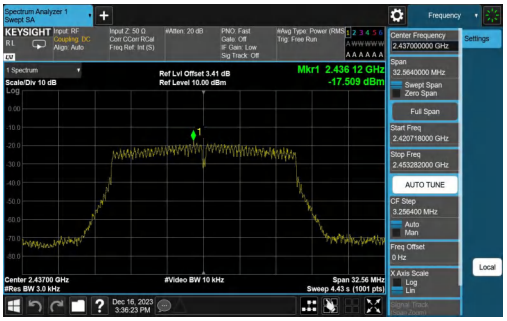
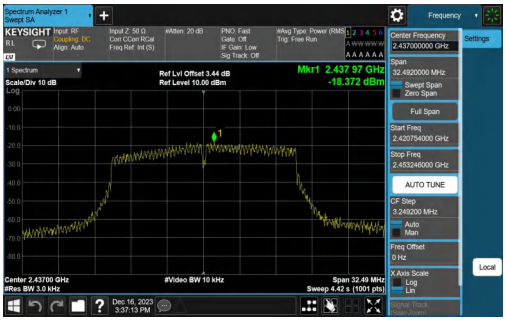
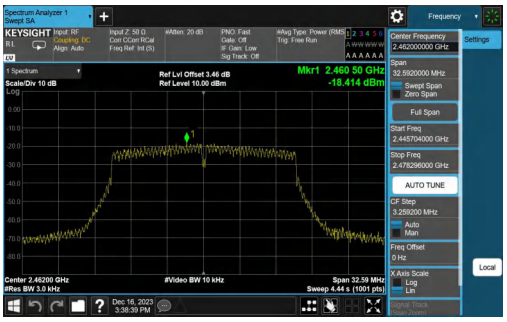
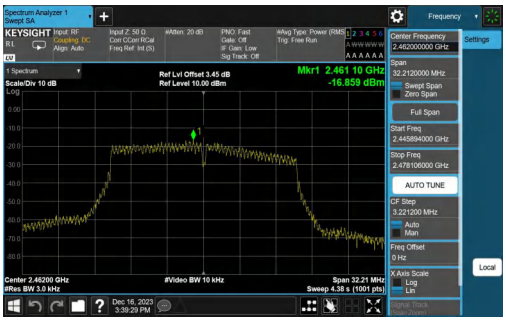
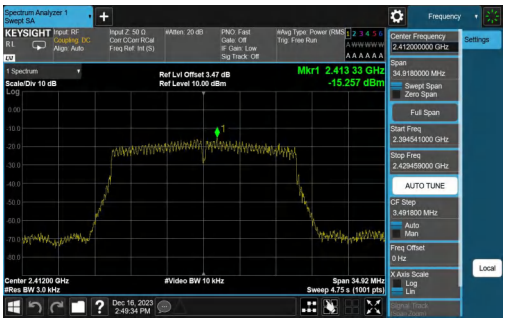
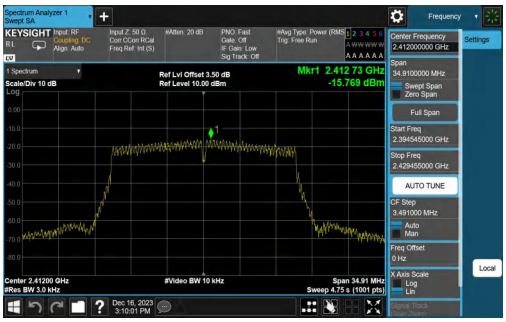
	
11G-CDD-Ant1-2462-PASS	11G-CDD-Ant2-2462-PASS
	

11N20SISO-Ant1-2412-PASS	11N20SISO-Ant2-2412-PASS
	
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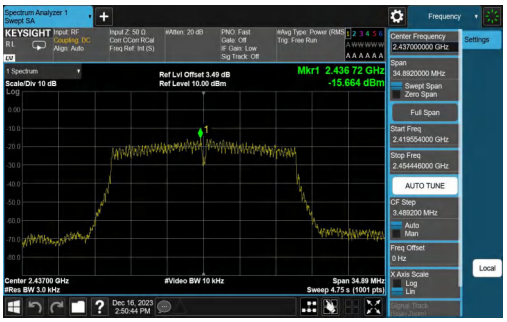
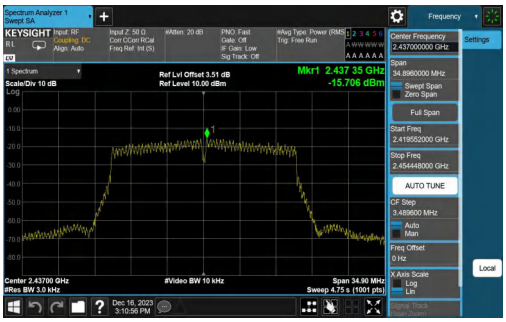
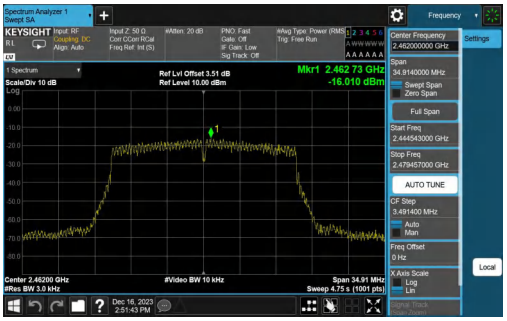
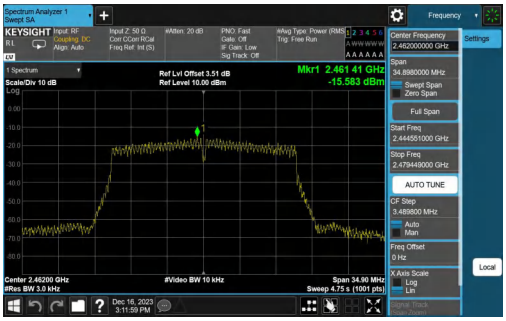
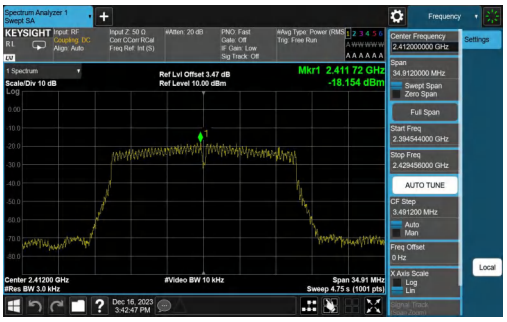
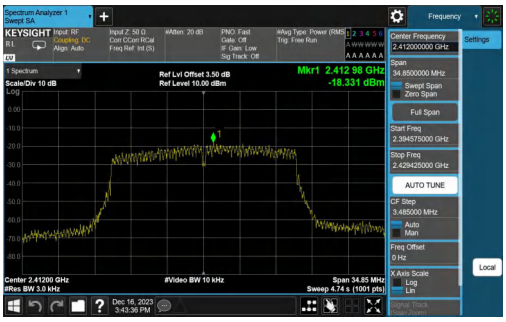
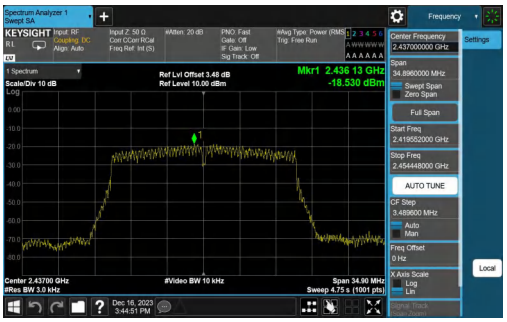
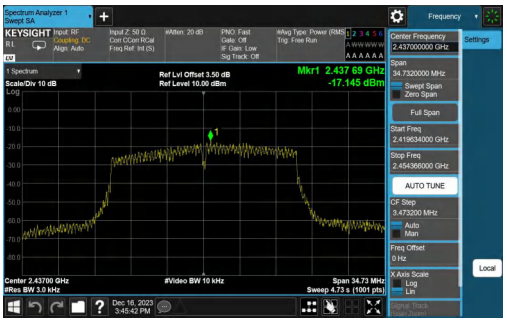
	
11N20SISO-Ant1-2462-PASS	11N20SISO-Ant2-2462-PASS
	
11N20MIMO-Ant1-2412-PASS	11N20MIMO-Ant2-2412-PASS
	

11N20MIMO-Ant1-2437-PASS	11N20MIMO-Ant2-2437-PASS
	
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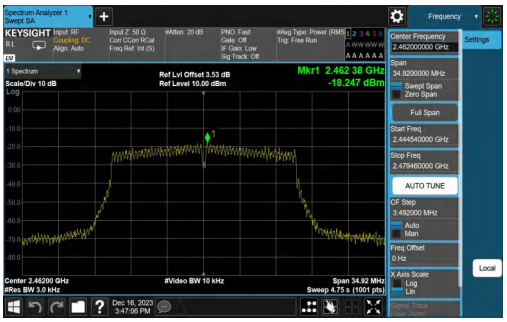
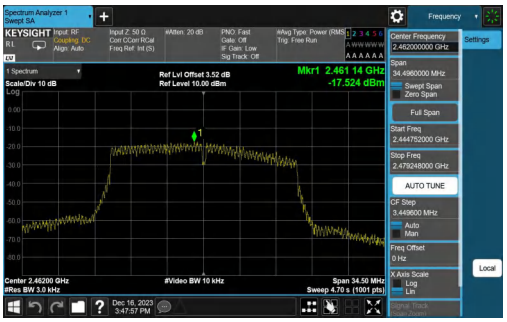
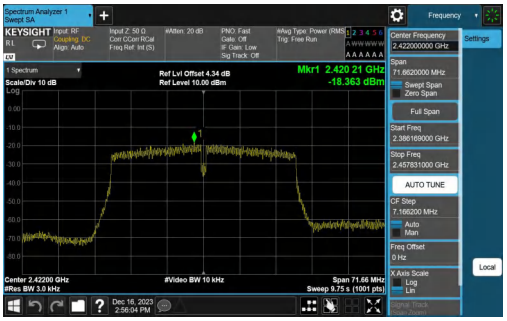
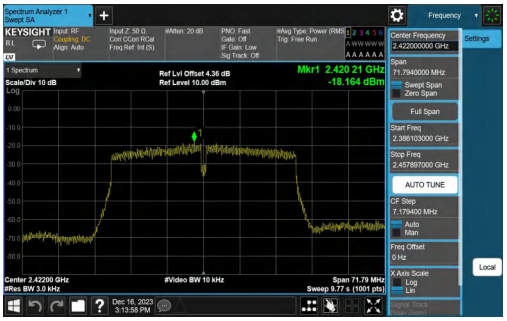
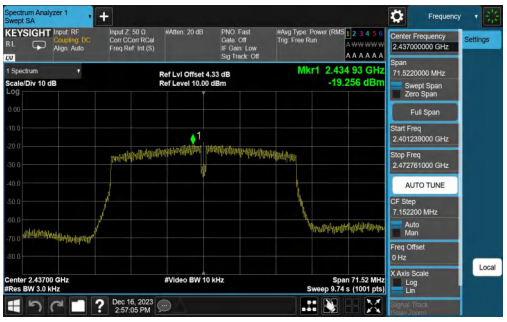
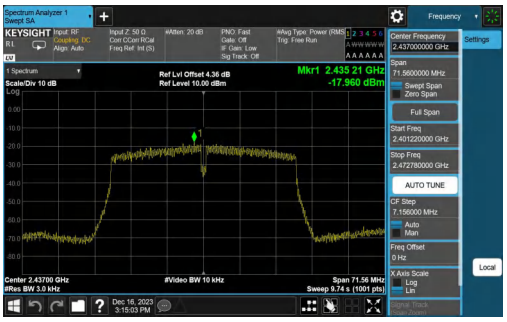
	
11N40SISO-Ant1-2422-PASS	**11N40SISO-Ant2-2422-PASS**
	
11N40SISO-Ant1-2437-PASS	**11N40SISO-Ant2-2437-PASS**
	

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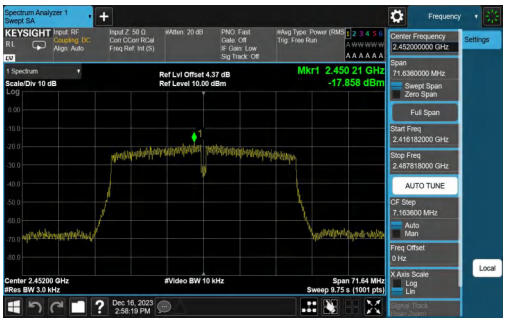
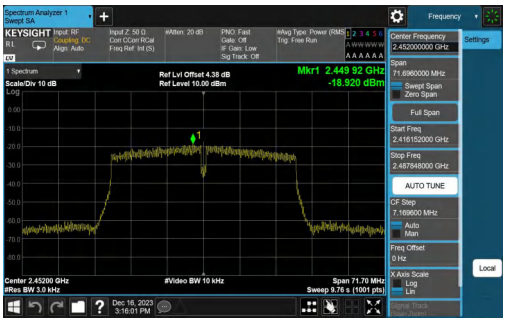
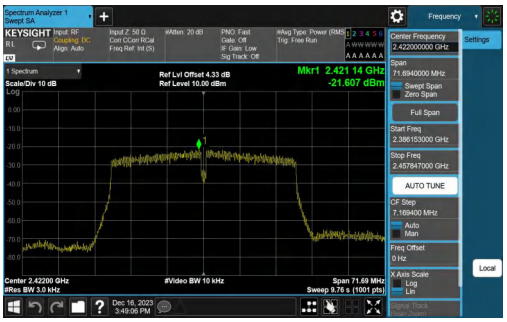
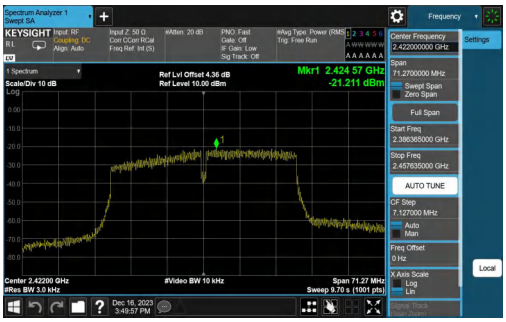
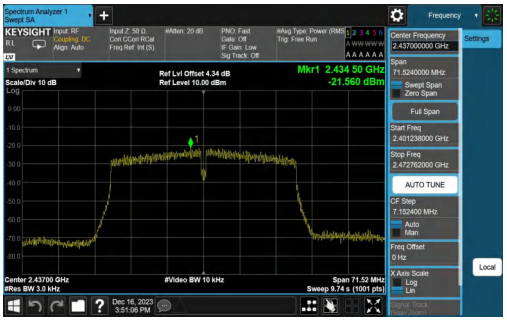
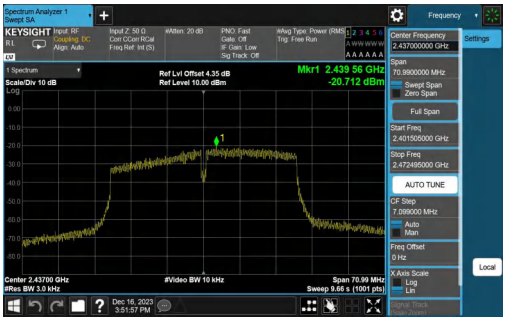
	
11N40MIMO-Ant1-2422-PASS	11N40MIMO-Ant2-2422-PASS
	
11N40MIMO-Ant1-2437-PASS	11N40MIMO-Ant2-2437-PASS
	
11N40MIMO-Ant1-2452-PASS	11N40MIMO-Ant2-2452-PASS