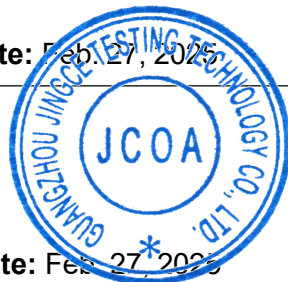
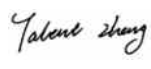


FCC AND ISCED CERTIFICATION TEST REPORT

Applicant:	Guangzhou Shikun Electronics Co., Ltd
Address:	No.6,Liankun Road,Huangpu District,Guangzhou,China
Manufacturer:	Guangzhou Shikun Electronics Co., Ltd
Address:	No.6,Liankun Road,Huangpu District,Guangzhou,China
Product Description:	IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module Integrated BT 2.1+EDR/4.2/5.1
Brand Name:	N/A
Tested Model:	SKO.WB663U.16
FCC ID:	2AR82-SKOWB663U16
IC:	N/A
Report No.:	JCF250121031-003
Received Date:	Jan. 22, 2025
Tested Date:	Jan. 22, 2025 - Feb. 27, 2025
Issued Date:	Feb. 27, 2025
Test Standards:	FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 3 August 2023
Test Procedure:	ANSI C63.10:2013, RSS-Gen Issue 5 A2, Feb. 2021
Test Result:	Pass

Prepared By:  <u>Kennys Zhang/Engineer</u>	Date: Feb. 27, 2025 
Reviewed By:  <u>Roger Li/Engineer</u>	Date: Feb. 27, 2025
Approved By:  <u>Talent Zhang/Engineer</u>	
Date: Feb. 27, 2025	

Note: The test results in this report apply exclusively to the tested model / sample. Without written approval of Guangzhou Jingce Testing Technology Co., Ltd. the test report shall not be reproduced except in full.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Feb. 27, 2025	Original Report	/

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1. Test Report Declare

Applicant:	Guangzhou Shikun Electronics Co., Ltd
Address:	No.6,Liankun Road,Huangpu District,Guangzhou,China
Manufacturer:	Guangzhou Shikun Electronics Co., Ltd
Address:	No.6,Liankun Road,Huangpu District,Guangzhou,China
Product Name:	IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module Integrated BT 2.1+EDR/4.2/5.1
Brand Name:	CVTE
Model Name:	SKO.WB663U.16
Difference Description:	N/A

We Declare:

The equipment described above is tested by Guangzhou Jingce Testing Technology Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangzhou Jingce Testing Technology Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests except as provided information by clients.

2. Summary of Test Results

Summary of Test Results			
Clause	Test Items	FCC/ISED Rules	Test Results
1	6dB Bandwidth and 99 % Occupied Bandwidth	FCC Part 15.247 (a) (2) RSS-247 Clause 5.2 (a) ISED RSS-Gen Clause 6.7	Pass
2	Peak Conducted Output Power	FCC Part 15.247 (b) (3) RSS-247 Clause 5.4 (d)	Pass
3	Power Spectral Density	FCC Part 15.247 (e) RSS-247 Clause 5.2 (b)	Pass
4	Conducted Bandedge and Spurious Emission	FCC Part 15.247 (d) RSS-247 Clause 5.5	Pass
5	Radiated Bandedge and Spurious Emission	FCC Part 15.247 (d) FCC Part 15.209 FCC Part 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Pass
6	Conducted Emission Test For AC Power Port	FCC Part 15.207 RSS-GEN Clause 8.8	Pass
7	Antenna Requirement	FCC Part 15.203 RSS-GEN Clause 6.8	Pass

3. Test Laboratory

Guangzhou Jingce Testing Technology Co., Ltd.

Add.: No.10, Hefeng No.1 street, Huangpu District, Guangzhou, Guangdong, People's Republic of China

Association for Laboratory Accreditation(A2LA). Certificate Number: 6594.03

FCC Designation Number: CN1381. Test Firm Registration Number: 486550

IC Test Firm Registration Number: 31808

Conformity Assessment Body identifier: CN0173

4. Equipment Under Test

4.1. Description of EUT

EUT Name:	IEEE 802.11b/g/n/a/ac 2T2R USB WiFi Module Integrated BT 2.1+EDR/4.2/5.1
Model Number:	SKO.WB663U.16
EUT Function Description:	Please refer to the user manual of this device
Power Supply:	DC 5.0V+/-0.5
Hardware Version:	N/A
Software Version:	N/A
Radio Specification:	IEEE802.11b/g/n
Operation Frequency:	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n HT20: 2412MHz—2462MHz IEEE 802.11n HT40: 2422MHz—2452MHz
Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n (HT20/40): OFDM (64QAM, 16QAM, QPSK, BPSK)
Data Rate:	IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: 14.4, 28.9, 43.3, 57.8, 86.7, 115.6, 130.0, 144.4Mbps IEEE 802.11n HT40: 30.0, 60.0, 90.0, 120.0, 180.0, 240.0, 270.0, 300.0 Mbps
Antenna Type:	ANT1: PCB Antenna, MAX. Gain: 2.75 dBi ANT2: PCB Antenna, MAX. Gain: 2.67 dBi

Note 1: EUT is the ab. of equipment under test.

Note 2: The antenna gain is declared by the customer and the laboratory is not responsible for the accuracy of the antenna gain.

4.2. Channel List

Channel List for 802.11b/g/n/ax (20 MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	4	2427	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452	/	/

Channel List for 802.11n/ax (40 MHz)					
Channel	Frequency (MHz)	Channel	Frequency(MHz)	Channel	Frequency (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442	/	/
5	2432	8	2447	/	/

4.3. Test Channel Configuration

Tested mode, channel and rand data rate information			
Mode	Data rate (Mbps) (see Note)	Channel	Frequency (MHz)
802.11b	1	Low: CH1	2412
	1	Middle: CH6	2437
	1	High: CH11	2462
802.11g	6	Low: CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
802.11n HT20	MCS 8	Low: CH1	2412
	MCS 8	Middle: CH6	2437
	MCS 8	High: CH11	2462
802.11n HT40	MCS 8	Low: CH3	2422
	MCS 8	Middle: CH6	2437
	MCS 8	High: CH9	2452

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

4.4. Test environment conditions

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

Temperature range:	21-25 °C
Humidity range:	40-75%
Pressure range:	86-106 kPa

4.5. Description of Available Antennas

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band				
Test Software		MobaXterm		
Modulation Mode	Transmit Antenna Number	Test Software Setting Value		
		Channel	ANT1	ANT2
802.11b	2	CH1	16	14
		CH6	16	14
		CH11	15	14
802.11g	2	CH1	0D	0C
		CH6	0D	0C
		CH11	0D	0C
802.11HT20	2	CH1	0C	0C
		CH6	0C	0C
		CH11	0C	0C
802.11n HT40	2	CH3	0C	0C
		CH6	0C	0C
		CH9	0C	0C

4.6. Description of Available Antennas

Test Mode	Transmit and Receive Mode	Description
802.11b	☒ 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11g	☒ 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11n HT20	☒ 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
802.11n HT40	☒ 2TX, 2RX	ANT 1 and ANT2 can be used as transmitting/receiving antenna.
Note: 1. Only 802.11n HT20/HT40 support MIMO mode 2. WLAN 2.4 GHz & WLAN 5G can't transmit simultaneously. (declared by client)		

5. Description of Test Setup

5.1. Accessory

Description of Accessories	Manufacturer	Model Number	Description	Remark
/	/	/	/	/

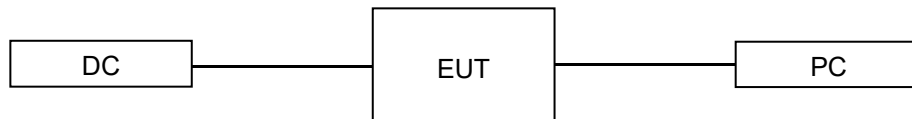
5.2. Support Equipment

Equipment	Brand Name	Model Name	P/N
PC	Lenovo	T480	/

5.3. Test Setup

The EUT can work in Fixed Frequency mode.

5.4. Setup Diagram for Tests



6. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
AC Power Conduction emission	1.37 dB
All Radiated emissions	5.4dB
Conducted emissions	3.09 dB
Occupied Channel Bandwidth	1.1%
Conducted Output power	0.82dB
Power Spectral Density	0.82dB

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

7. Measuring Instrument and Software Used

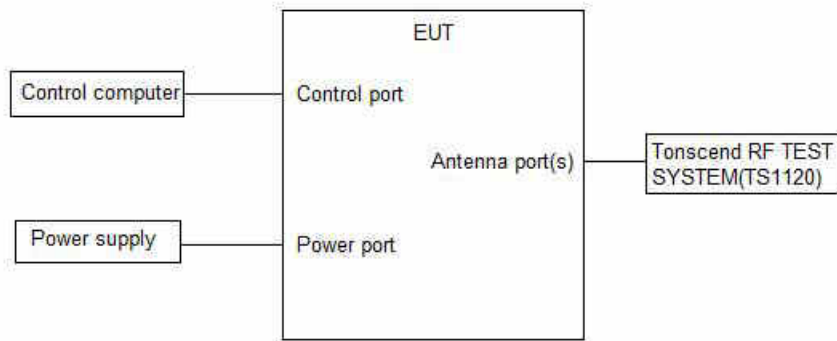
TS Test System						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
☒	Spectrum	Keysight	N9030B	MY56320512	Aug. 22, 2024	Aug. 21, 2025

	Analyzer					
☑	Vector Signal Generator	Keysight	N5182B	MY57300334	Aug. 22, 2024	Aug. 21, 2025
☑	Signal Generator	Keysight	N5171B	MY57280639	Aug. 22, 2024	Aug. 21, 2025
☑	DC POWER	Keysight	E342A	MY59020356	Aug. 29, 2024	Aug. 28, 2025
☑	Incubator thermometer	GWS	EL-02JA	21107288	Aug. 15, 2024	Aug. 14, 2025
☑	Control unit(Power sensor)	Tonscend	JS0806-2	/	Aug. 23, 2024	Aug. 22, 2025
☑	Spectrum Analyzer	Keysight	N9020B	MY60112206	Sep. 11, 2024	Sep. 10, 2025
☑	Control unit(Power sensor)	Tonscend	JS0806-2	21H8060465	Aug. 22, 2024	Aug. 21, 2025
☑	Spectrum Analyzer	Keysight	N9020B	MY60112811	Aug. 23, 2024	Aug. 22, 2025
☑	Signal Generator	Keysight	N5173B	MY62220145	Aug. 23, 2024	Aug. 22, 2025
☑	Vector Signal Generator	Keysight	N5182B	MY61252859	Aug. 22, 2024	Aug. 21, 2025
☑	DC POWER	Keysight	E3642A	MY40005294	Aug. 30, 2024	Aug. 29, 2025
☑	Control unit(Power sensor)	Tonscend	JS0806-2	24F80620865	Aug. 23, 2024	Aug. 22, 2025
Software						
Used	Description	Manufacturer	Name		Version	
☑	Test software	Tonscend	JS1120-3		V3.3.10	
RSE Test System						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
☑	EMI Receiver	R&S	ESR26	101424	Sep. 14, 2024	Sep. 13, 2025
☑	Hybrid Antenna	Schwarzbeck	VULB9163	01416	May. 22, 2024	May. 21, 2025
☑	Horn Antenna 1	Schwarzbeck	BBHA 9120 D	02910	Sep. 11, 2024	Sep. 10, 2025
☑	Horn Antenna 2	ETS	BBHA 9170	1090	Sep. 11, 2024	Sep. 10, 2025
☑	loop-antenna	Schwarzbeck	FMZB 1513-60	00030	Jan. 12,2025	Jan. 11, 2026
☑	Test path	/	Path2: WIFI-2.4G 1-3GHz	/	Aug. 23, 2024	Aug. 22, 2025
☑	Test path	/	Path7: ALL PASS 1-18GHz	/	Aug. 23, 2024	Aug. 22, 2025
☑	Test path	/	Path9: 3GHz High PASS 3-18GHz	/	Aug. 23, 2024	Aug. 22, 2025
☑	Test path	/	Path16: 30MHz-1GHz ALL PASS NO AMP	/	Aug. 23, 2024	Aug. 22, 2025
☑	Signal Pre-Amplifier	ETS	3116C-PA	00217677	Sep. 06, 2024	Sep. 05, 2025
☑	3m Fully-	YIHENG	9m*6m*6m	001	Sep. 05, 2023	Sep. 04, 2026

	anechoic Chamber					
Software						
Used	Description	Manufacturer	Name		Version	
☒	Test software	Tonscend	TS+		V5.0.0.0	
Conducted Emission Test For AC Power Port						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
☒	LISN	R&S	ENV216	102509	Aug. 22, 2024	Aug. 21, 2025
☒	EMI Receiver	R&S	ESR	102154	Aug. 22, 2024	Aug. 21, 2025
Software						
Used	Description	Manufacturer	Name		Version	
☒	Test software	EZ	EZ-EMC		EMEC-3A1	
Other Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
☒	Temperature & Humidity	Temperature	HTC-1	/	Sep. 04, 2024	Sep. 03, 2025

8. On Time and Duty Cycle

8.1. Block diagram of test setup



8.2. Limits

None; for reporting purposes only

8.3. Procedure

KDB 558074 Zero-Span Spectrum Analyzer Method

8.4. Results

Test Mode	Ant.	Freq. (MHz)	Transmission Duration (ms)	Transmission Period (ms)	Duty Cycle (%)
11B	Ant1	2412	8.38	8.43	99.41
	Ant2	2412	8.38	8.42	99.52
	Ant1	2437	8.38	8.41	99.64
	Ant2	2437	8.37	8.41	99.52
	Ant1	2462	8.38	8.42	99.52
	Ant2	2462	8.38	8.41	99.64
11G	Ant1	2412	1.39	1.43	97.20
	Ant2	2412	1.39	1.43	97.20
	Ant1	2437	1.39	1.43	97.20
	Ant2	2437	1.39	1.44	96.53
	Ant1	2462	1.39	1.44	96.53
	Ant2	2462	1.39	1.44	96.53
11N20MIMO	Ant1	2412	1.29	1.33	96.99
	Ant2	2412	1.29	1.33	96.99
	Ant1	2437	1.28	1.33	96.24
	Ant2	2437	1.29	1.33	96.99
	Ant1	2462	1.29	1.33	96.99
	Ant2	2462	1.29	1.33	96.99
11N40MIMO	Ant1	2422	0.64	0.68	94.12
	Ant2	2422	0.64	0.68	94.12
	Ant1	2437	0.64	0.68	94.12
	Ant2	2437	0.63	0.68	92.65
	Ant1	2452	0.63	0.68	92.65
	Ant2	2452	0.63	0.68	92.65

Note: Duty Cycle Correction Factor = $10\log(1/x)$.

Where: x is Duty Cycle (Linear)

Where: T is On Time

If that calculated VBW is not available on the analyzer, then the next higher value should be used.

For mode 11b, the duty cycle is greater than 98 %, so it can set VBW to 10 Hz.

8.5. Original test data





11B_Ant2_2437



11B_Ant1_2462



11B_Ant2_2462



11G_Ant1_2412



11G_Ant2_2412



11G_Ant1_2437



11G_Ant2_2437



11G_Ant1_2462



11G_Ant2_2462



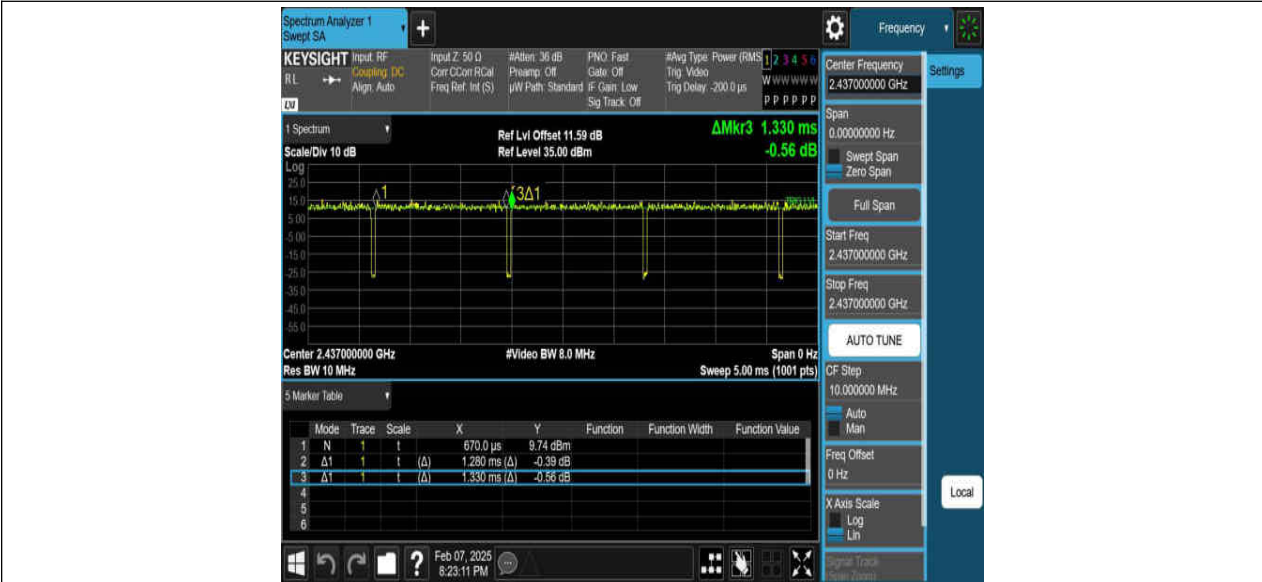
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11N20MIMO_Ant2_2412



11N20MIMO_Ant1_2437



11N20MIMO_Ant2_2437



11N20MIMO_Ant1_2462



11N20MIMO_Ant2_2462



11N40MIMO_Ant1_2422



11N40MIMO_Ant2_2422



11N40MIMO_Ant1_2437



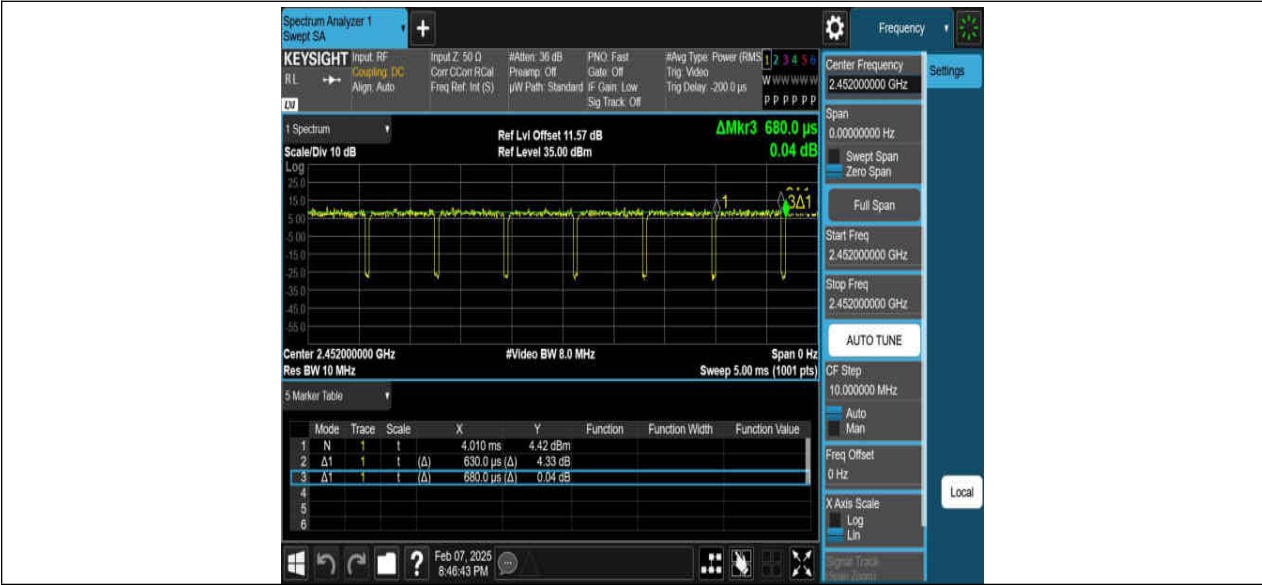
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



9. 6 dB DTS Bandwidth and 99 % Occupied Bandwidth

9.1. Block diagram of test setup

Same as section 8.1

9.2. Limits

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(a)(2) ISED RSS-247 5.2 (a)	6 dB Bandwidth	≥ 500 kHz	2400-2483.5
ISED RSS-Gen Clause 6.7	99 % Occupied Bandwidth	For reporting purposes only.	2400-2483.5

9.3. Test Procedure

Connect the UUT to the spectrum analyzer and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth :100 kHz For 99 % Occupied Bandwidth :1 % to 5 % of the occupied bandwidth
VBW	For 6 dB Bandwidth: $\geq 3 \times$ RBW For 99 % Occupied Bandwidth : $\geq 3 \times$ RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB and 99 % relative to the maximum level measured in the fundamental emission.

9.4. Results

6dB bandwidth:

Test Mode	Ant.	Freq. (MHz)	DTS BW (MHz)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
11B	Ant1	2412	8.560	2407.480	2416.040	0.5	PASS
	Ant2	2412	8.080	2407.960	2416.040	0.5	PASS
	Ant1	2437	7.600	2432.960	2440.560	0.5	PASS
	Ant2	2437	8.040	2432.960	2441.000	0.5	PASS
	Ant1	2462	8.080	2457.960	2466.040	0.5	PASS
	Ant2	2462	8.040	2458.000	2466.040	0.5	PASS
11G	Ant1	2412	15.640	2404.240	2419.880	0.5	PASS
	Ant2	2412	14.400	2405.120	2419.520	0.5	PASS
	Ant1	2437	15.040	2429.480	2444.520	0.5	PASS
	Ant2	2437	12.240	2430.760	2443.000	0.5	PASS
	Ant1	2462	14.360	2454.880	2469.240	0.5	PASS
	Ant2	2462	15.400	2454.120	2469.520	0.5	PASS
11N20MIMO	Ant1	2412	13.800	2404.440	2418.240	0.5	PASS
	Ant2	2412	16.280	2403.840	2420.120	0.5	PASS
	Ant1	2437	17.240	2428.240	2445.480	0.5	PASS
	Ant2	2437	15.440	2428.200	2443.640	0.5	PASS
	Ant1	2462	15.640	2453.880	2469.520	0.5	PASS
	Ant2	2462	15.720	2454.440	2470.160	0.5	PASS
11N40MIMO	Ant1	2422	32.640	2404.400	2437.040	0.5	PASS
	Ant2	2422	31.280	2405.760	2437.040	0.5	PASS

	Ant1	2437	35.040	2419.480	2454.520	0.5	PASS
	Ant2	2437	35.120	2419.400	2454.520	0.5	PASS
	Ant1	2452	35.040	2434.480	2469.520	0.5	PASS
	Ant2	2452	35.680	2434.480	2470.160	0.5	PASS

99 % bandwidth:

Test Mode	Ant.	Channel Freq. (MHz)	OCB (MHz)	FL (MHz)	FH (MHz)	Limit (MHz)	Verdict
11B	Ant1	2412	13.196	2405.3804	2418.5764	---	---
	Ant2	2412	13.262	2405.3506	2418.6126	---	---
	Ant1	2437	13.278	2430.3324	2443.6104	---	---
	Ant2	2437	13.273	2430.3582	2443.6312	---	---
	Ant1	2462	13.181	2455.3855	2468.5665	---	---
	Ant2	2462	13.217	2455.3844	2468.6014	---	---
11G	Ant1	2412	16.719	2403.6367	2420.3557	---	---
	Ant2	2412	16.666	2403.6489	2420.3149	---	---
	Ant1	2437	16.727	2428.6099	2445.3369	---	---
	Ant2	2437	16.816	2428.5939	2445.4099	---	---
	Ant1	2462	16.697	2453.6463	2470.3433	---	---
	Ant2	2462	16.662	2453.6607	2470.3227	---	---
11N20MIMO	Ant1	2412	17.693	2403.1468	2420.8398	---	---
	Ant2	2412	17.664	2403.1296	2420.7936	---	---
	Ant1	2437	17.716	2428.1009	2445.8169	---	---
	Ant2	2437	17.661	2428.0857	2445.7467	---	---
	Ant1	2462	17.693	2453.1617	2470.8547	---	---
	Ant2	2462	17.603	2453.2926	2470.8956	---	---
11N40MIMO	Ant1	2422	36.089	2403.9458	2440.0348	---	---
	Ant2	2422	35.730	2403.8538	2439.5838	---	---
	Ant1	2437	36.044	2418.9952	2455.0392	---	---
	Ant2	2437	36.125	2418.8014	2454.9264	---	---
	Ant1	2452	36.049	2433.9356	2469.9846	---	---
	Ant2	2452	36.147	2434.0268	2470.1738	---	---

9.5. Original test data

6dB bandwidth:



11B_Ant2_2437



11B_Ant1_2462



11B Ant2 2462



11G Ant1 2412



11G_Ant2_2412



11G_Ant1_2437



11G_Ant2_2437



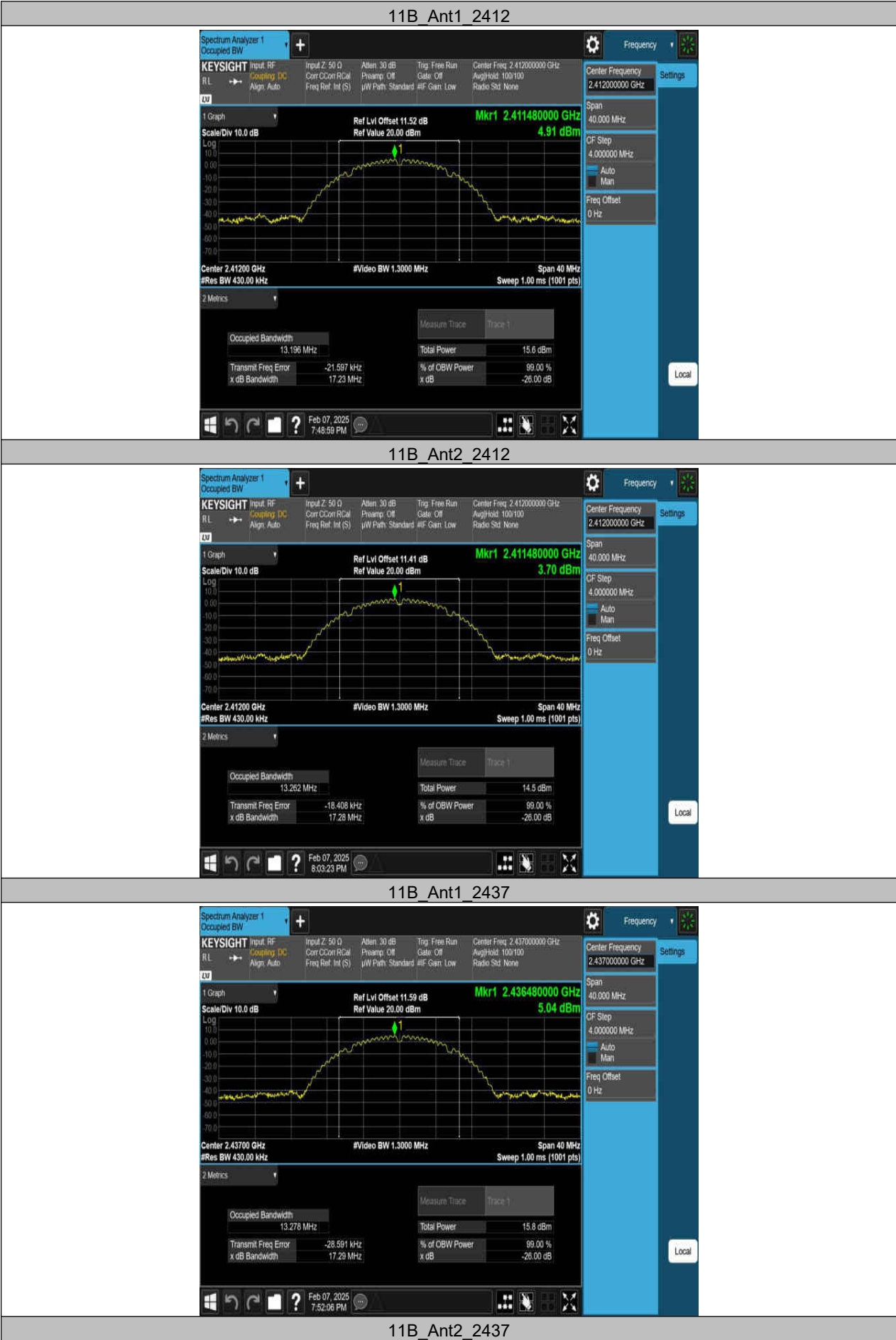








99 % bandwidth:





11B_Ant1_2462



11B_Ant2_2462



11G_Ant1_2412



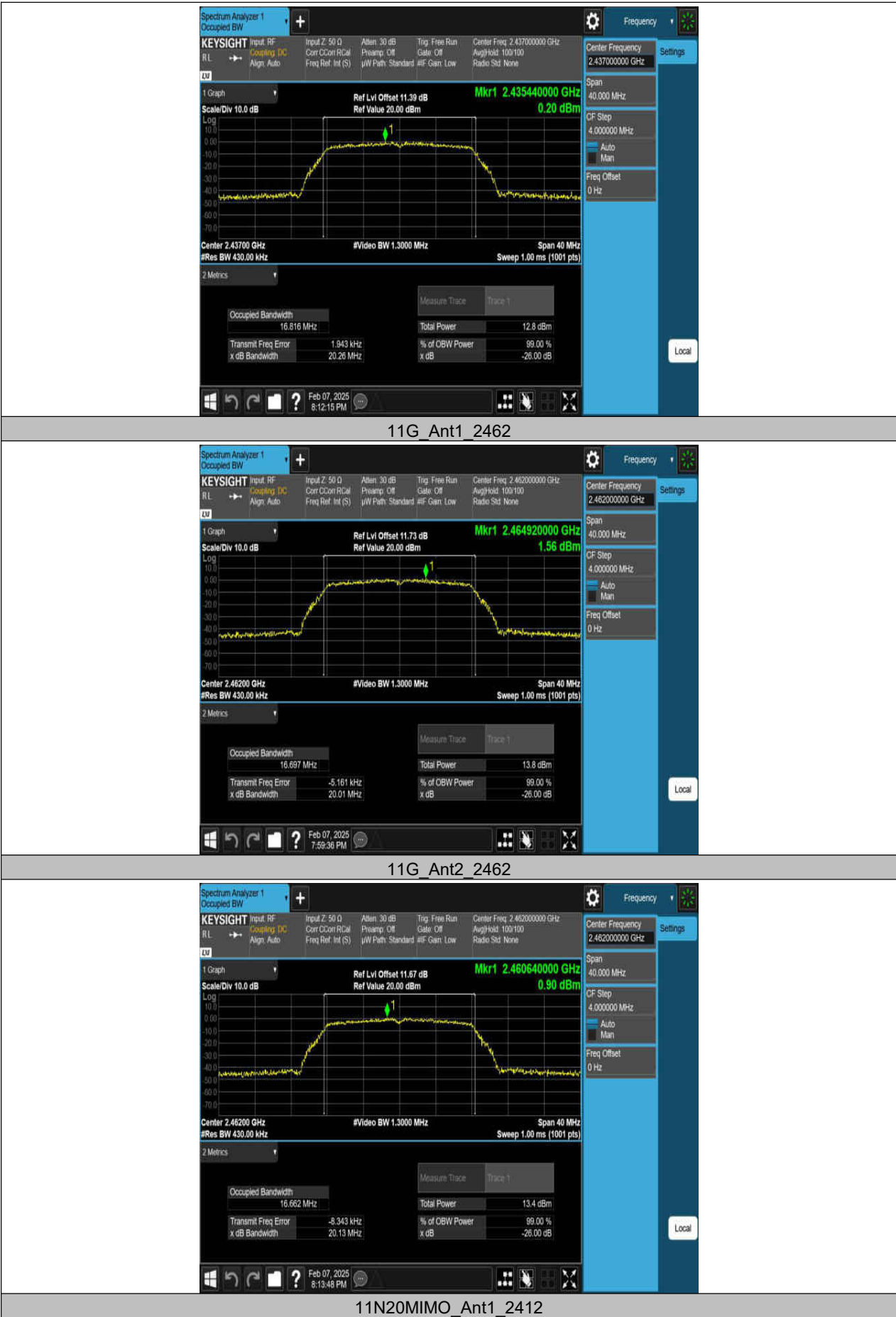
11G_Ant2_2412



11G_Ant1_2437



11G_Ant2_2437



Spectrum Analyzer 1

Occupied BW

KEYSIGHT

Input: RF

RL

Coasting: DC

Align: Auto

Input Z: 50 Ω

Corr: CCon: RCal

Freq Ref: Int (S)

Attenu: 30 dB

Preamp: Off

μ W Path: Standard

#IF Gain: Low

Trig: Free Run

Gate: Off

#IF Gain: Low

Center Freq: 2.46200000 GHz

Aug/Hold: 100/100

Radio Std: None

Center Frequency

2.46200000 GHz

Span

40.000 MHz

CF Step

4.000000 MHz

Auto

Man

Freq Offset

0 Hz

Local

1 Graph

Ref Lvl Offset 11.73 dB

Ref Value 20.00 dBm

Mkr1 2.464920000 GHz

1.56 dBm

Scale/Div 10.0 dB

Log

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

Center 2.46200 GHz

#Res BW 430.00 kHz

#Video BW 1.3000 MHz

Span 40 MHz

Sweep 1.00 ms (1001 pts)

2 Metrics

Measure Trace

Trace 1

Occupied Bandwidth

16.697 MHz

Total Power

13.8 dBm

Transmit Freq Error

-5.161 kHz

% of OBW Power

99.00 %

x dB Bandwidth

20.01 MHz

x dB

-26.00 dB

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7:59:36 PM

11G_Ant2_2462

Spectrum Analyzer 1

Occupied BW

KEYSIGHT

Input: RF

RL

Coasting: DC

Align: Auto

Input Z: 50 Ω

Corr: CCon: RCal

Freq Ref: Int (S)

Attenu: 30 dB

Preamp: Off

μ W Path: Standard

#IF Gain: Low

Trig: Free Run

Gate: Off

#IF Gain: Low

Center Freq: 2.46200000 GHz

Aug/Hold: 100/100

Radio Std: None

Center Frequency

2.46200000 GHz

Span

40.000 MHz

CF Step

4.000000 MHz

Auto

Man

Freq Offset

0 Hz

Local

1 Graph

Ref Lvl Offset 11.67 dB

Ref Value 20.00 dBm

Mkr1 2.460640000 GHz

0.90 dBm

Scale/Div 10.0 dB

Log

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

Center 2.46200 GHz

#Res BW 430.00 kHz

#Video BW 1.3000 MHz

Span 40 MHz

Sweep 1.00 ms (1001 pts)

2 Metrics

Measure Trace

Trace 1

Occupied Bandwidth

16.662 MHz

Total Power

13.4 dBm

Transmit Freq Error

-8.343 kHz

% of OBW Power

99.00 %

x dB Bandwidth

20.13 MHz

x dB

-26.00 dB

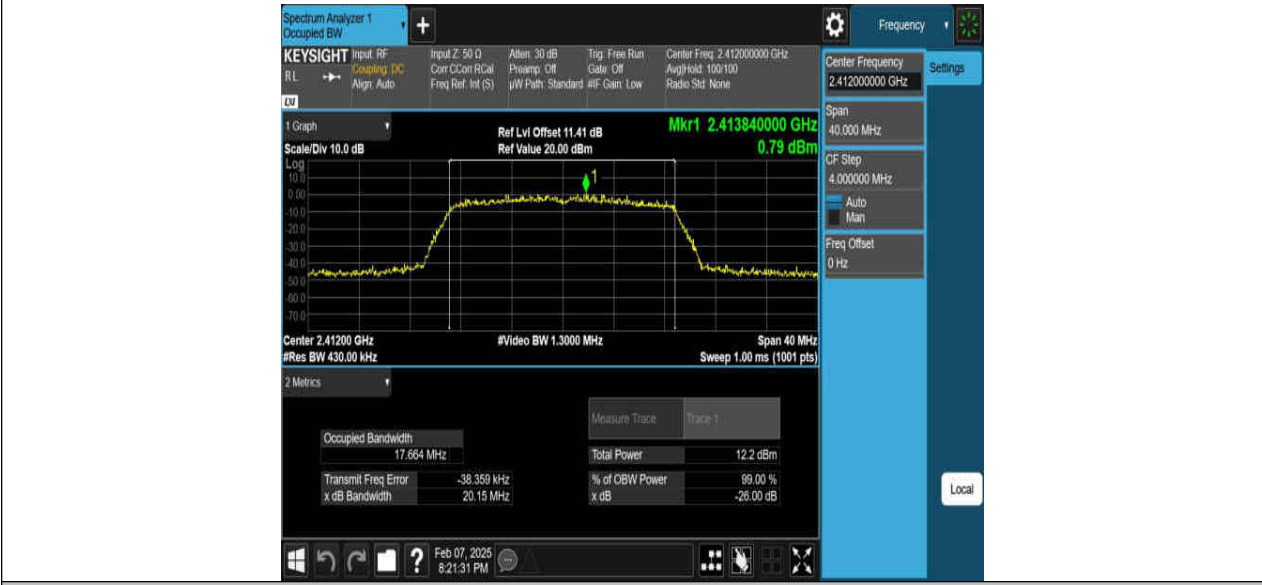
Feb 07, 2025

8:13:48 PM

11N20MIMO_Ant1_2412



11N20MIMO_Ant2_2412



11N20MIMO_Ant1_2437



11N20MIMO_Ant2_2437





11N40MIMO_Ant2_2422



11N40MIMO_Ant1_2437



11N40MIMO_Ant2_2437



10. Conducted Output Power

10.1. Block diagram of test setup

Same as section 8.1

10.2. Limits

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC 15.247(b)(3) ISED RSS-247 5.4 (d)	Peak Output Power	1 watt or 30 dBm	2400-2483.5

10.3. Test Procedure

Place the EUT on the table and set it in the transmitting mode.

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

Measure peak power each channel.

Peak Detector use for Peak result.

AVG Detector use for AVG result.

10.4. Results

Test Mode	Ant.	Freq. (MHz)	Peak Power (dBm)	Conducted Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Verdict
11B	Ant1	2412	15.31	≤30.00	18.06	≤36.00	PASS
	Ant2	2412	14.09	≤30.00	16.76	≤36.00	PASS
	Ant1	2437	15.38	≤30.00	18.13	≤36.00	PASS
	Ant2	2437	14.00	≤30.00	16.67	≤36.00	PASS
	Ant1	2462	14.96	≤30.00	17.71	≤36.00	PASS
	Ant2	2462	14.16	≤30.00	16.83	≤36.00	PASS
11G	Ant1	2412	14.60	≤30.00	17.35	≤36.00	PASS
	Ant2	2412	13.56	≤30.00	16.23	≤36.00	PASS
	Ant1	2437	14.36	≤30.00	17.11	≤36.00	PASS
	Ant2	2437	12.72	≤30.00	15.39	≤36.00	PASS
	Ant1	2462	14.27	≤30.00	17.02	≤36.00	PASS
	Ant2	2462	14.04	≤30.00	16.71	≤36.00	PASS
11N20MIMO	Ant1	2412	12.54	≤30.00	15.29	≤36.00	PASS
	Ant2	2412	12.90	≤30.00	15.57	≤36.00	PASS
	total	2412	15.73	≤30.00	18.48	≤36.00	PASS
	Ant1	2437	12.91	≤30.00	15.66	≤36.00	PASS
	Ant2	2437	12.62	≤30.00	15.29	≤36.00	PASS
	total	2437	15.78	≤30.00	18.53	≤36.00	PASS
	Ant1	2462	13.02	≤30.00	15.77	≤36.00	PASS
	Ant2	2462	13.08	≤30.00	15.75	≤36.00	PASS
11N40MIMO	total	2462	16.06	≤30.00	18.81	≤36.00	PASS
	Ant1	2422	12.87	≤30.00	15.62	≤36.00	PASS
	Ant2	2422	12.67	≤30.00	15.34	≤36.00	PASS
	total	2422	15.78	≤30.00	18.53	≤36.00	PASS
	Ant1	2437	13.11	≤30.00	15.86	≤36.00	PASS
	Ant2	2437	12.82	≤30.00	15.49	≤36.00	PASS
	total	2437	15.98	≤30.00	18.73	≤36.00	PASS
	Ant1	2452	13.09	≤30.00	15.84	≤36.00	PASS

	Ant2	2452	13.02	≤30.00	15.69	≤36.00	PASS
	total	2452	16.07	≤30.00	18.82	≤36.00	PASS

11. Power Spectral Density

11.1. Block diagram of test setup

Same as section 8.1

11.2. Limits

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3			
Section	Test Item	Limit	Frequency Range (MHz)
CFR 47 FCC §15.247 (e) ISED RSS-247 5.2 (b)	Power Spectral Density	8 dBm/3 kHz	2400-2483.5

11.3. Test Procedure

Connect the UUT to the spectrum analyzer and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

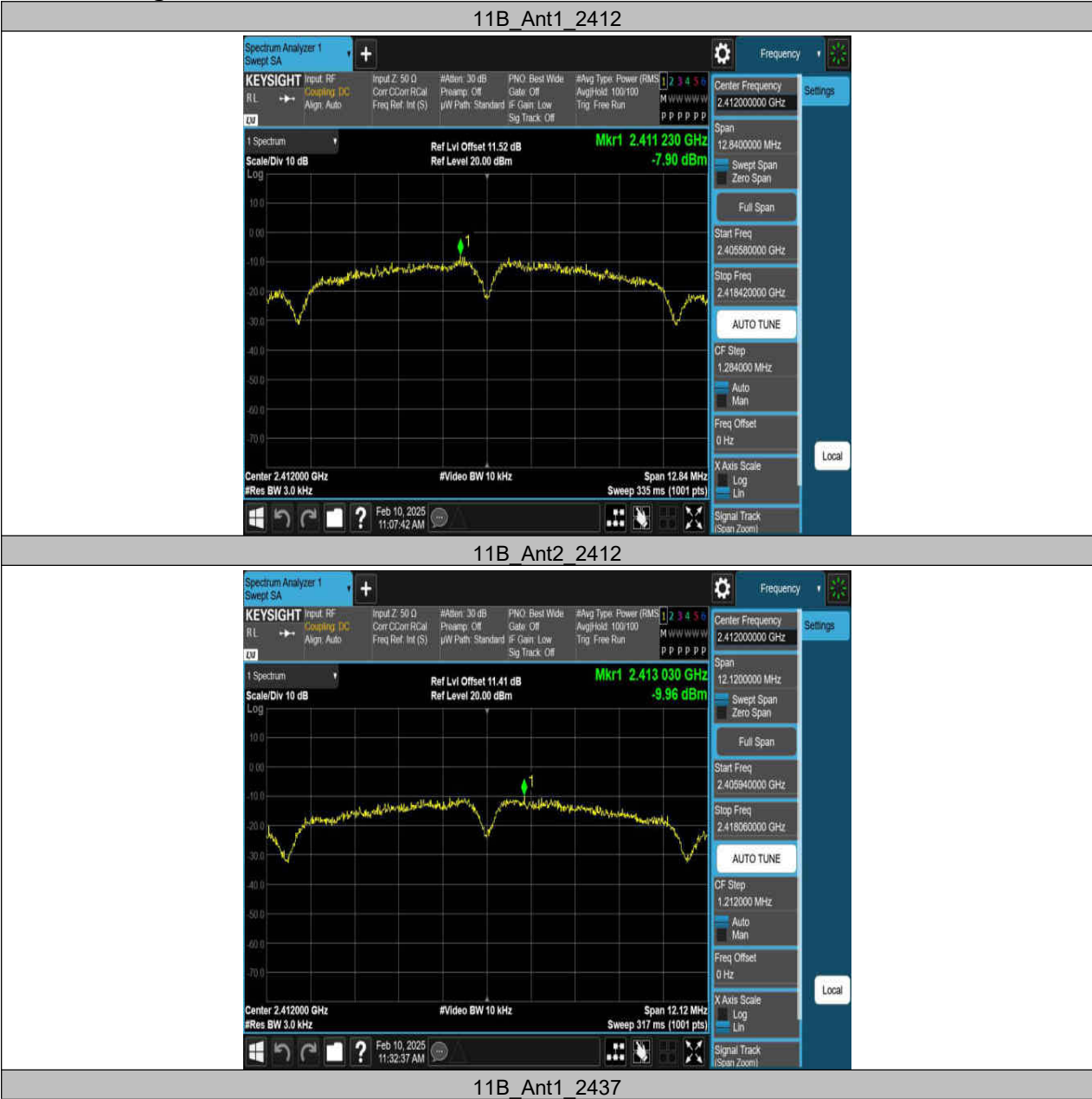
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

11.4. Results

Test Mode	Ant.	Freq. (MHz)	Result (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
11B	Ant1	2412	-7.90	≤ 8.00	PASS
	Ant2	2412	-9.96	≤ 8.00	PASS
	Ant1	2437	-9.09	≤ 8.00	PASS
	Ant2	2437	-10.56	≤ 8.00	PASS
	Ant1	2462	-9.97	≤ 8.00	PASS
	Ant2	2462	-9.13	≤ 8.00	PASS
11G	Ant1	2412	-15.40	≤ 8.00	PASS
	Ant2	2412	-16.46	≤ 8.00	PASS
	Ant1	2437	-15.29	≤ 8.00	PASS
	Ant2	2437	-16.42	≤ 8.00	PASS
	Ant1	2462	-16.10	≤ 8.00	PASS
	Ant2	2462	-13.69	≤ 8.00	PASS
11N20MIMO	Ant1	2412	-17.43	≤ 8.00	PASS
	Ant2	2412	-17.34	≤ 8.00	PASS
	total	2412	-14.37	≤ 8.00	PASS
	Ant1	2437	-16.68	≤ 8.00	PASS
	Ant2	2437	-17.17	≤ 8.00	PASS
	total	2437	-13.91	≤ 8.00	PASS
	Ant1	2462	-16.69	≤ 8.00	PASS
	Ant2	2462	-16.86	≤ 8.00	PASS
	total	2462	-13.76	≤ 8.00	PASS
11N40MIMO	Ant1	2422	-20.12	≤ 8.00	PASS

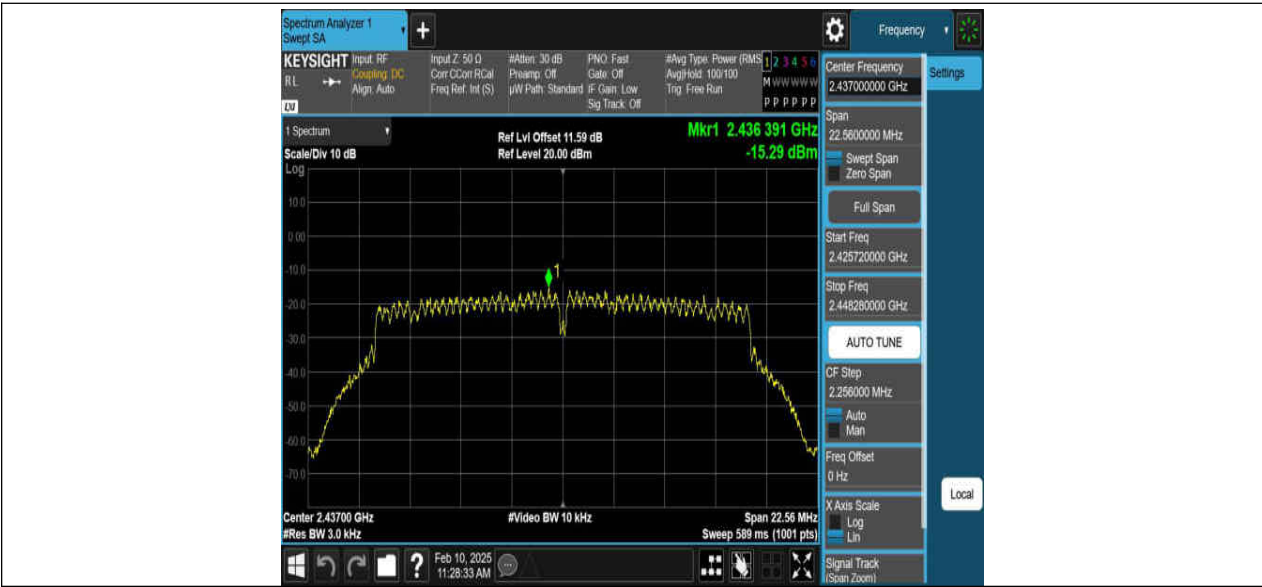
	Ant2	2422	-19.62	≤8.00	PASS
	total	2422	-16.85	≤8.00	PASS
	Ant1	2437	-19.92	≤8.00	PASS
	Ant2	2437	-19.90	≤8.00	PASS
	total	2437	-16.90	≤8.00	PASS
	Ant1	2452	-20.58	≤8.00	PASS
	Ant2	2452	-20.26	≤8.00	PASS
	total	2452	-17.41	≤8.00	PASS

11.5. Original test data

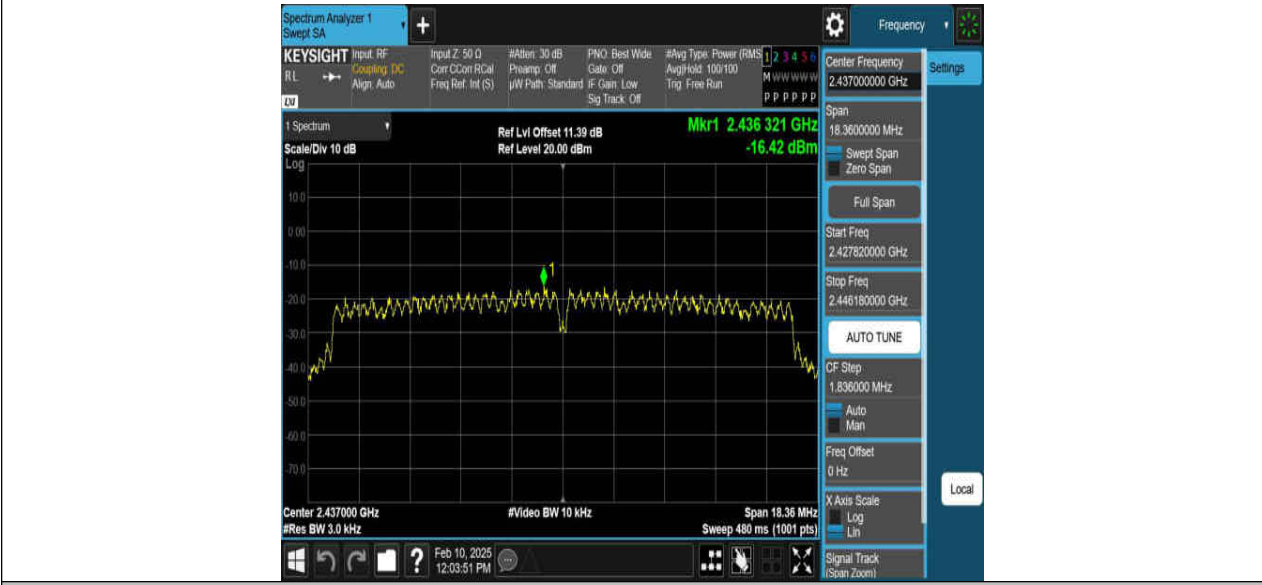




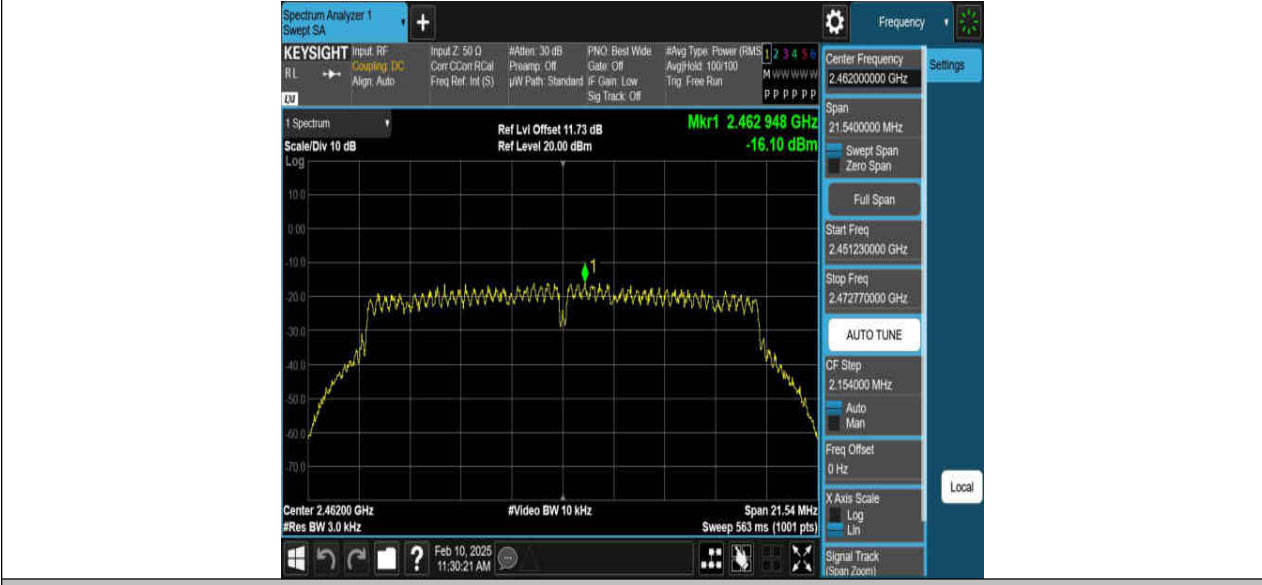




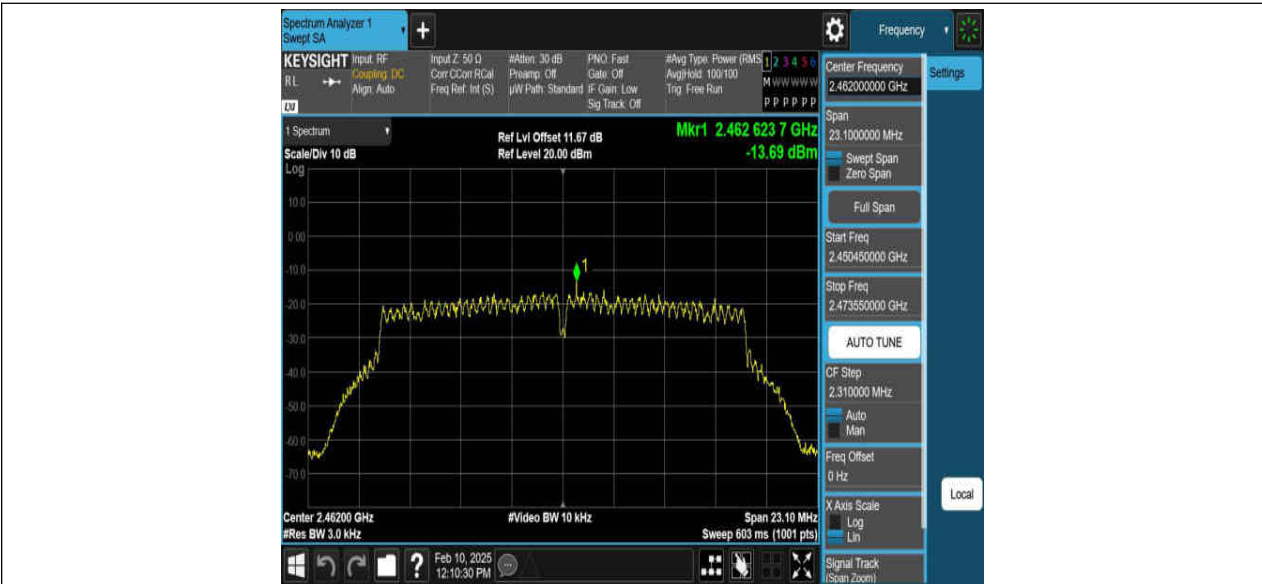
11G_Ant2_2437



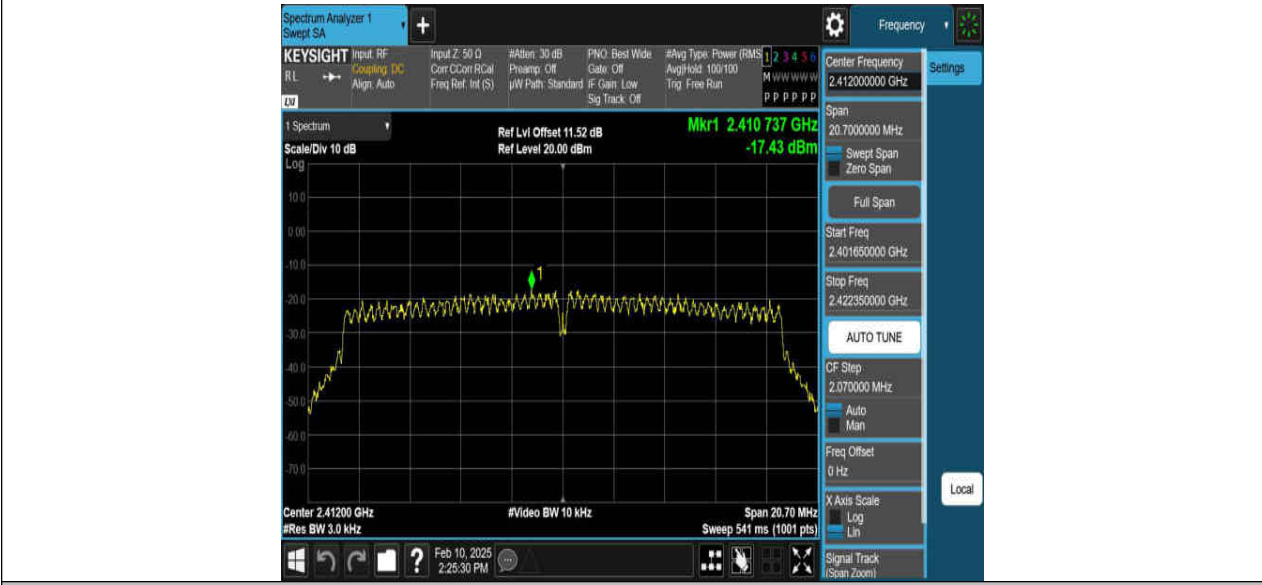
11G_Ant1_2462



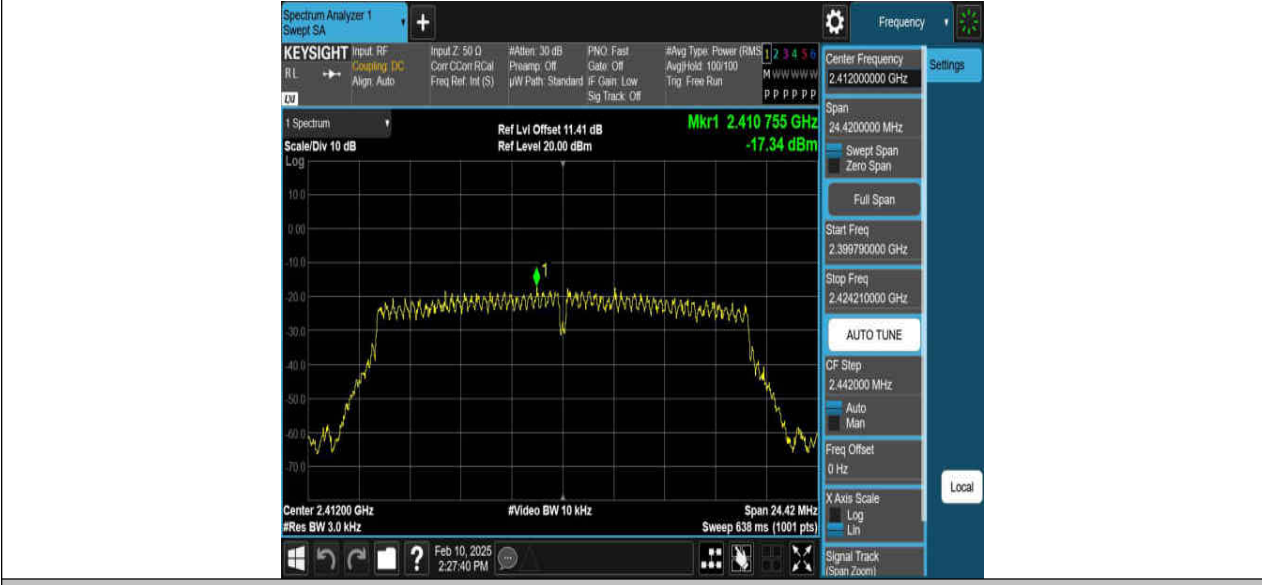
11G_Ant2_2462



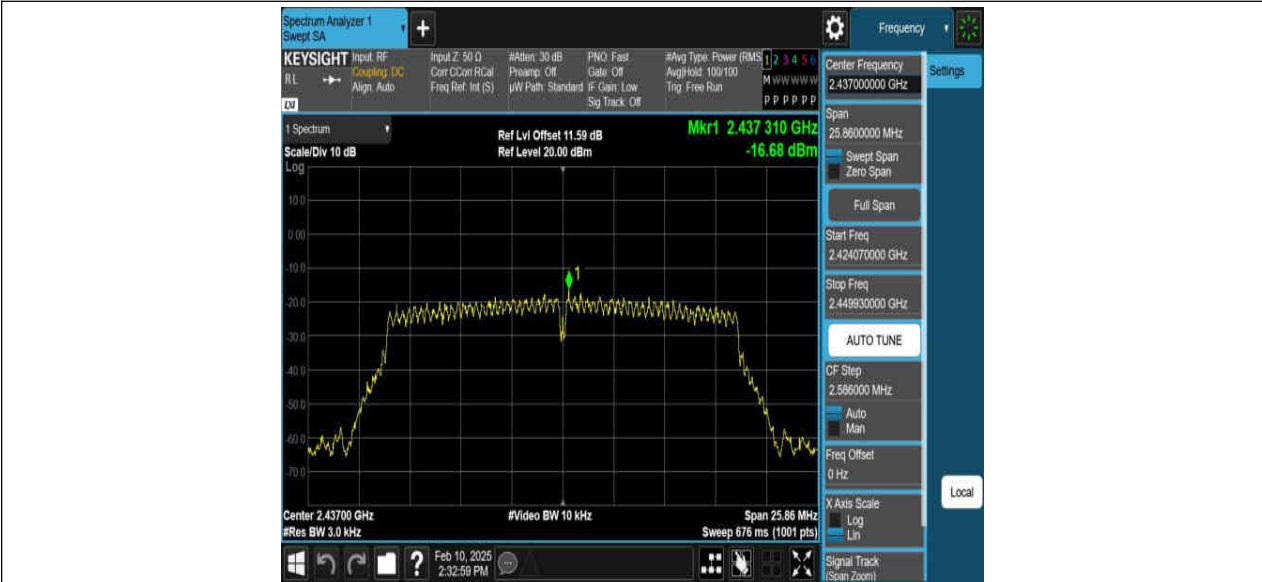
11N20MIMO_Ant1_2412



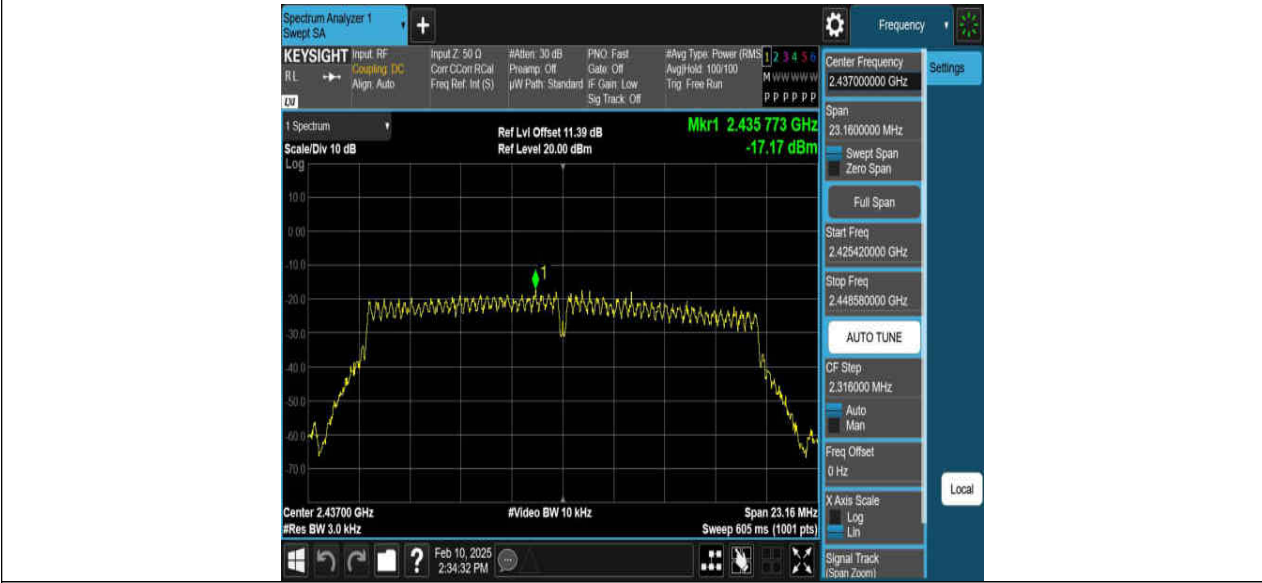
11N20MIMO_Ant2_2412



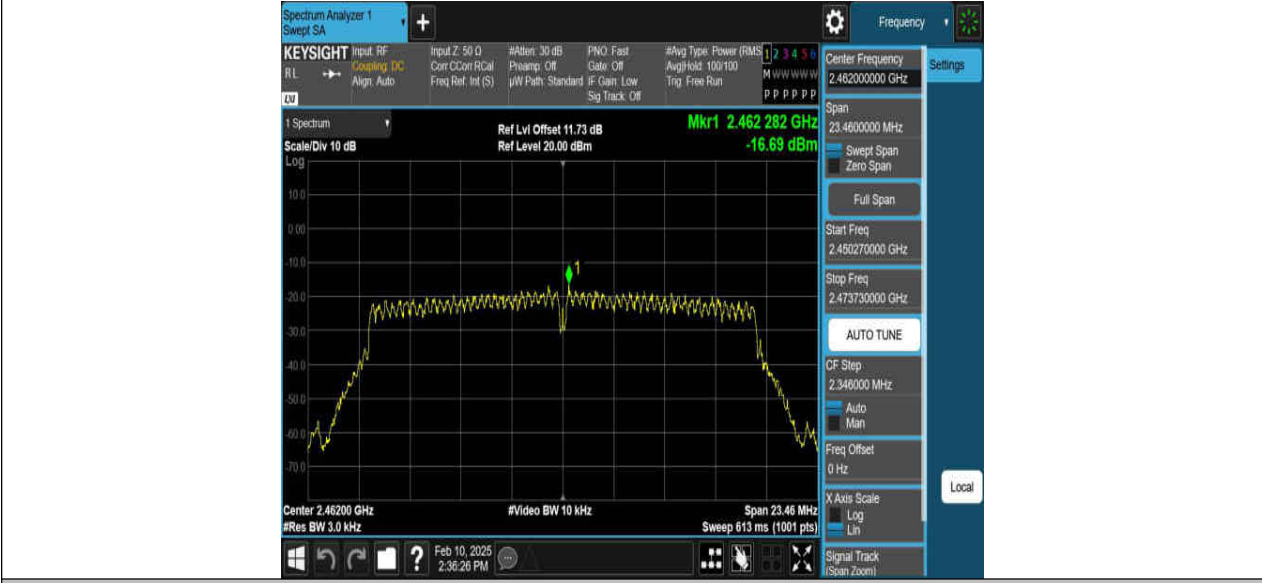
11N20MIMO_Ant1_2437



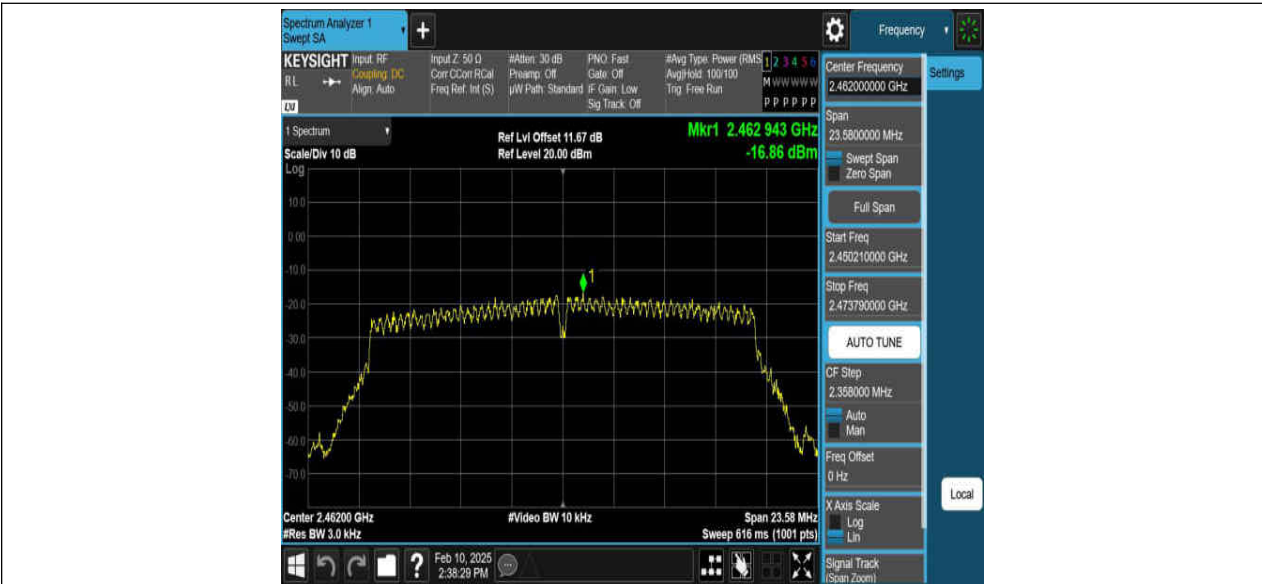
11N20MIMO_Ant2_2437



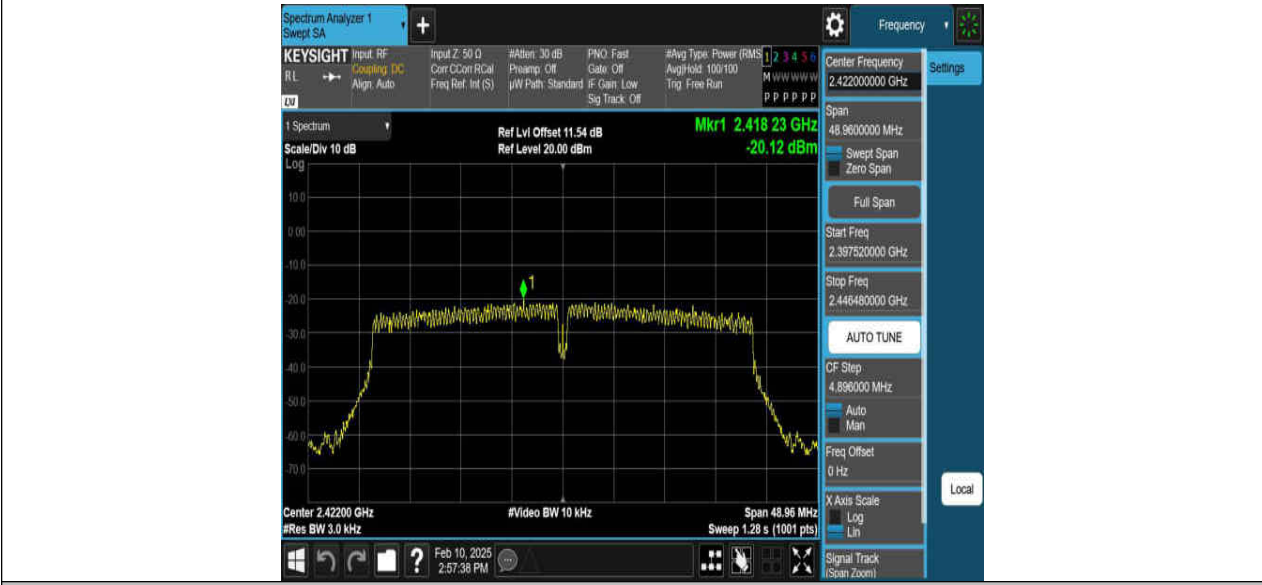
11N20MIMO_Ant1_2462



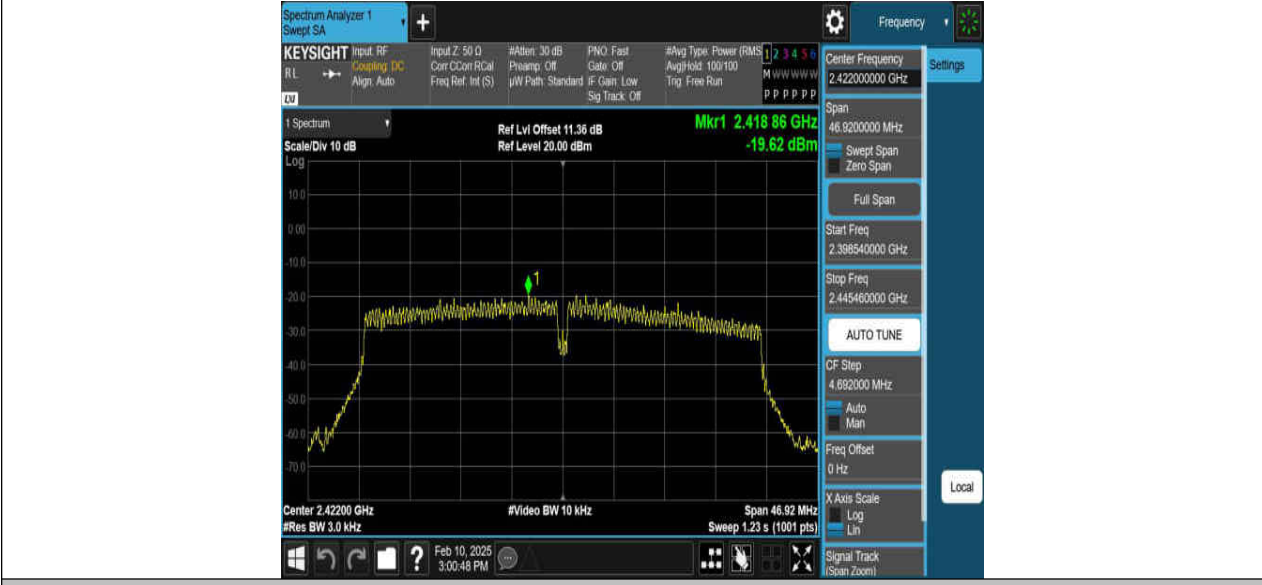
11N20MIMO_Ant2_2462



11N40MIMO_Ant1_2422

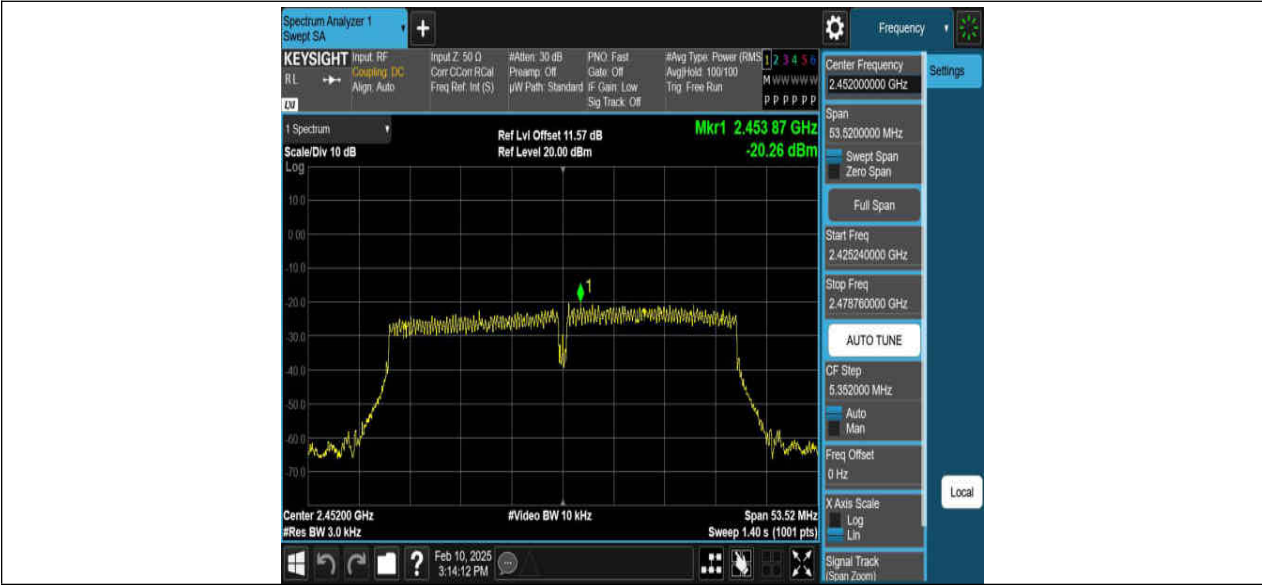


11N40MIMO_Ant2_2422



11N40MIMO_Ant1_2437





12. Conducted Band edge and Spurious Emissions

12.1. Block diagram of test setup

Same as section 8.1

12.2. Limits

CFR 47 FCC Part15 (15.247) Subpart C ISED RSS-247 ISSUE 3		
Section	Test Item	Limit
CFR 47 FCC §15.247 (d) ISED RSS-247 5.5	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

12.3. Test Procedure

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Connect the UUT to the spectrum analyzer and use the following settings:

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100 kHz
VBW	$\geq 3 \times \text{RBW}$
measurement points	$\geq \text{span}/\text{RBW}$
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level.

12.4. Test result

Test Mode	Ant.	Ch Name	Freq. (MHz)	Ref Level (dBm)	Result (dBm)	Limit (dBm)	Verdict
11B	Ant1	Low	2412	3.77	-44.11	≤ -16.23	PASS
	Ant2	Low	2412	2.79	-45.46	≤ -17.21	PASS
	Ant1	High	2462	3.56	-49.07	≤ -16.44	PASS
	Ant2	High	2462	2.58	-48.43	≤ -17.42	PASS
11G	Ant1	Low	2412	-3.58	-46.71	≤ -23.58	PASS
	Ant2	Low	2412	-4.14	-47.69	≤ -24.14	PASS
	Ant1	High	2462	-2.34	-47.91	≤ -22.34	PASS
	Ant2	High	2462	-2.91	-47.39	≤ -22.91	PASS
11N20MIMO	Ant1	Low	2412	-4.18	-46.05	≤ -24.18	PASS
	Ant2	Low	2412	-4.44	-47.35	≤ -24.44	PASS
	Ant1	High	2462	-3.69	-47.78	≤ -23.69	PASS

	Ant2	High	2462	-3.72	-47.73	≤-23.72	PASS
11N40MIMO	Ant1	Low	2422	-6.74	-46.61	≤-26.74	PASS
	Ant2	Low	2422	-6.33	-46.43	≤-26.33	PASS
	Ant1	High	2452	-6.81	-47.95	≤-26.81	PASS
	Ant2	High	2452	-7.40	-47.83	≤-27.4	PASS

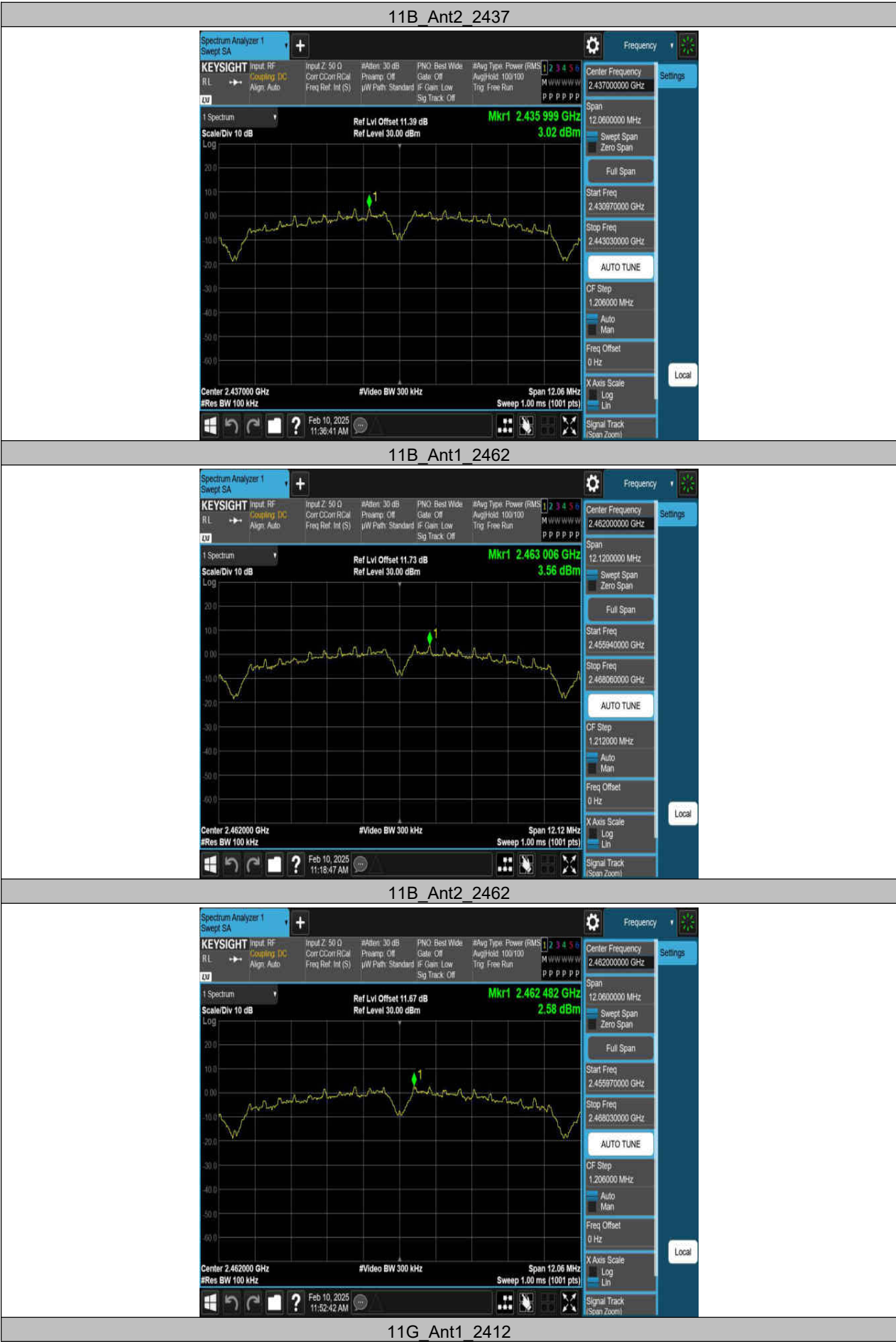
Test Mode	Ant.	Freq. (MHz)	Freq Range (Mhz)	Ref Level (dBm)	Result (dBm)	Limit (dBm)	Verdict
11B	Ant1	2412	30~1000	3.77	-62.05	≤-16.23	PASS
			1000~26500	3.77	-50.47	≤-16.23	PASS
	Ant2	2412	30~1000	2.79	-61.63	≤-17.21	PASS
			1000~26500	2.79	-50.36	≤-17.21	PASS
	Ant1	2437	30~1000	4.75	-62.43	≤-15.25	PASS
			1000~26500	4.75	-49.97	≤-15.25	PASS
	Ant2	2437	30~1000	3.02	-62.3	≤-16.98	PASS
			1000~26500	3.02	-50.78	≤-16.98	PASS
	Ant1	2462	30~1000	3.56	-61.91	≤-16.44	PASS
			1000~26500	3.56	-49.48	≤-16.44	PASS
	Ant2	2462	30~1000	2.58	-62.02	≤-17.42	PASS
			1000~26500	2.58	-50.47	≤-17.42	PASS
11G	Ant1	2412	30~1000	-3.58	-62.27	≤-23.58	PASS
			1000~26500	-3.58	-50.35	≤-23.58	PASS
	Ant2	2412	30~1000	-4.14	-62.87	≤-24.14	PASS
			1000~26500	-4.14	-50.87	≤-24.14	PASS
	Ant1	2437	30~1000	-3.84	-61.72	≤-23.84	PASS
			1000~26500	-3.84	-50.07	≤-23.84	PASS
	Ant2	2437	30~1000	-3.78	-62.65	≤-23.78	PASS
			1000~26500	-3.78	-50.53	≤-23.78	PASS
	Ant1	2462	30~1000	-2.34	-62.03	≤-22.34	PASS
			1000~26500	-2.34	-50.04	≤-22.34	PASS
	Ant2	2462	30~1000	-2.91	-61.78	≤-22.91	PASS
			1000~26500	-2.91	-49.9	≤-22.91	PASS
11N20MIMO	Ant1	2412	30~1000	-4.18	-61.99	≤-24.18	PASS
			1000~26500	-4.18	-49.99	≤-24.18	PASS
	Ant2	2412	30~1000	-4.44	-62.2	≤-24.44	PASS
			1000~26500	-4.44	-50.49	≤-24.44	PASS
	Ant1	2437	30~1000	-4.38	-61.67	≤-24.38	PASS
			1000~26500	-4.38	-49.34	≤-24.38	PASS
	Ant2	2437	30~1000	-4.68	-62.07	≤-24.68	PASS
			1000~26500	-4.68	-50.05	≤-24.68	PASS
	Ant1	2462	30~1000	-3.69	-62.02	≤-23.69	PASS
			1000~26500	-3.69	-50.02	≤-23.69	PASS
	Ant2	2462	30~1000	-3.72	-61.28	≤-23.72	PASS
			1000~26500	-3.72	-49.62	≤-23.72	PASS
11N40MIMO	Ant1	2422	30~1000	-6.74	-62.18	≤-26.74	PASS
			1000~26500	-6.74	-50.59	≤-26.74	PASS
	Ant2	2422	30~1000	-6.33	-62.83	≤-26.33	PASS
			1000~26500	-6.33	-50.26	≤-26.33	PASS
	Ant1	2437	30~1000	-6.25	-61.9	≤-26.25	PASS
			1000~26500	-6.25	-48.81	≤-26.25	PASS
	Ant2	2437	30~1000	-7.16	-62.29	≤-27.16	PASS
			30~1000	-7.16	-62.29	≤-27.16	PASS

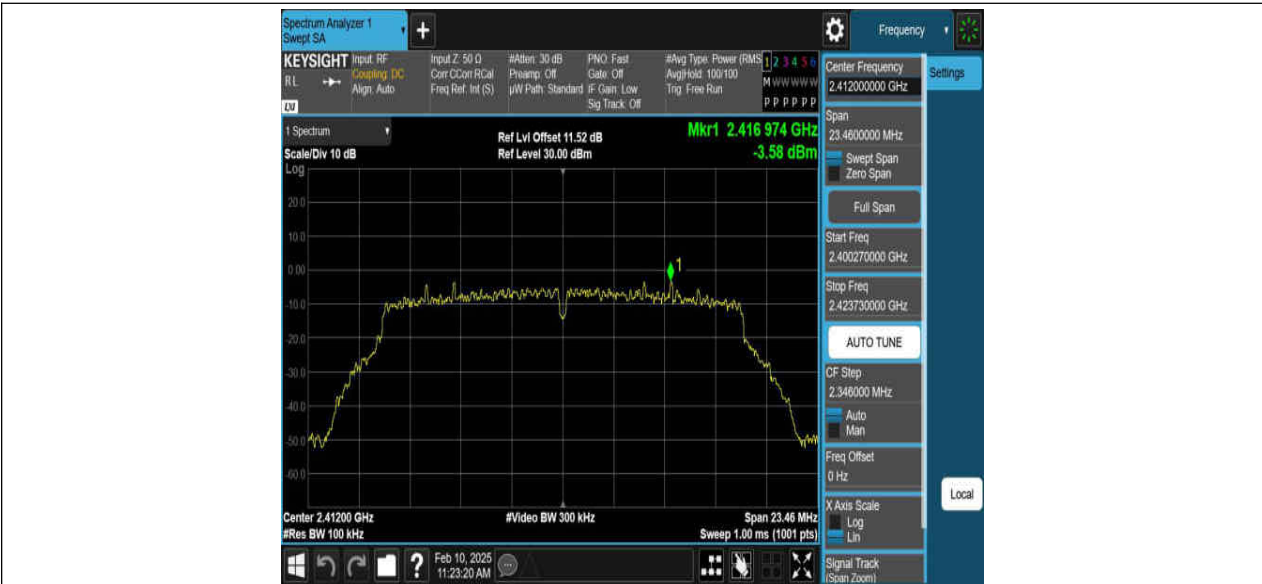
	Ant1	2452	1000~26500	-7.16	-50.85	≤-27.16	PASS
			30~1000	-6.81	-62.29	≤-26.81	PASS
			1000~26500	-6.81	-49.85	≤-26.81	PASS
	Ant2	2452	30~1000	-7.40	-62.34	≤-27.4	PASS
			1000~26500	-7.40	-50.4	≤-27.4	PASS

12.5. Original test data

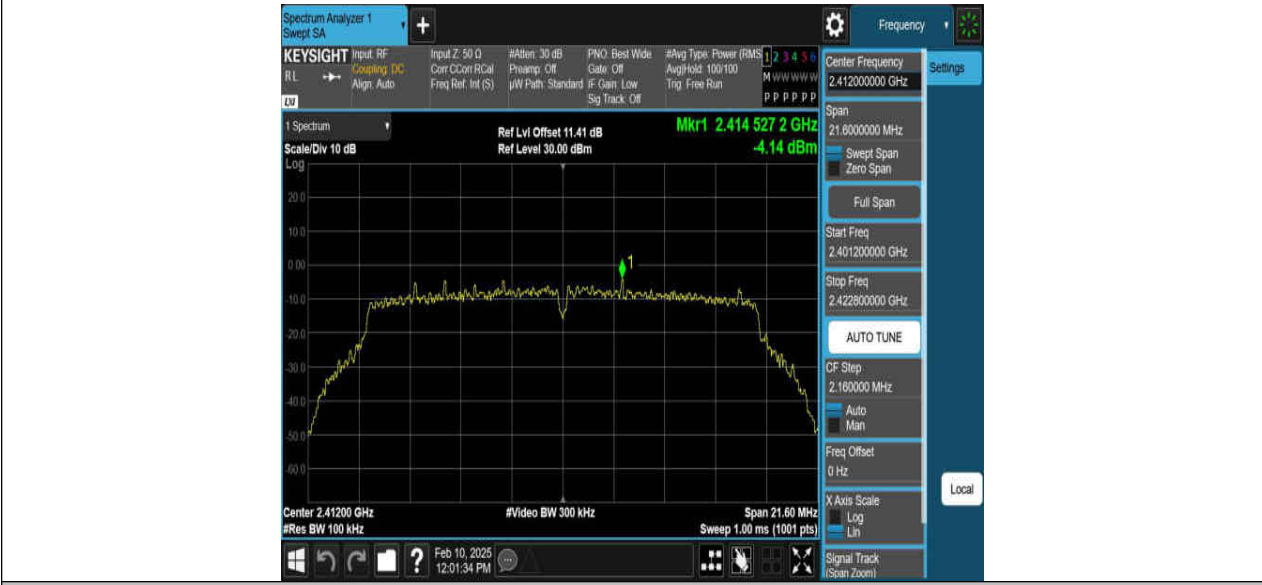
Reference level







11G_Ant2_2412



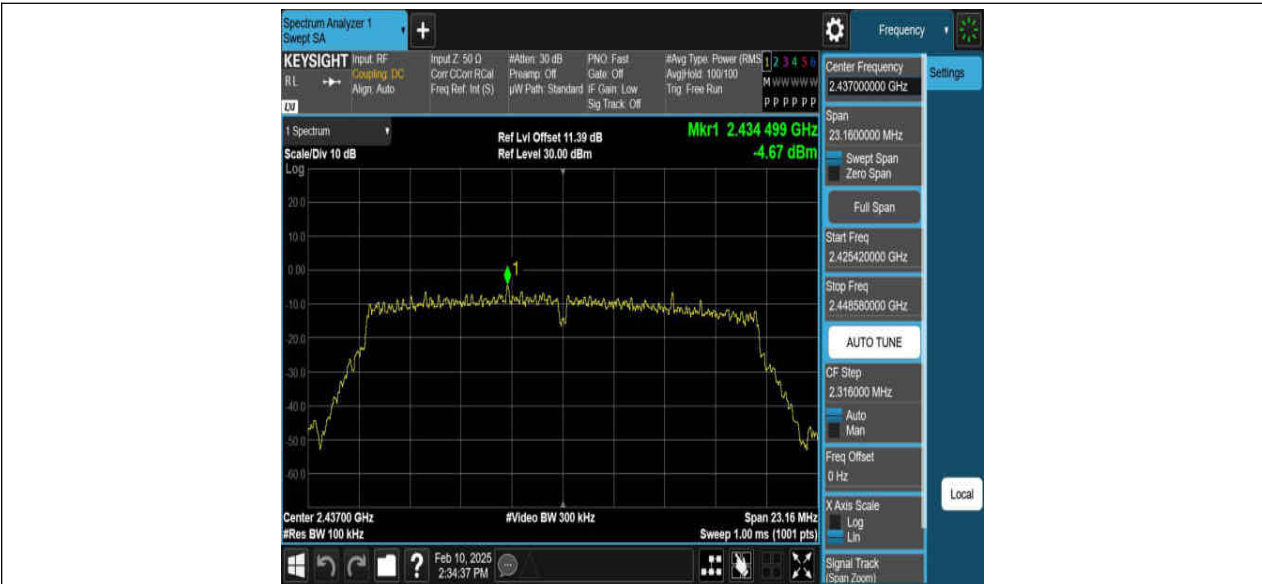
11G_Ant1_2437



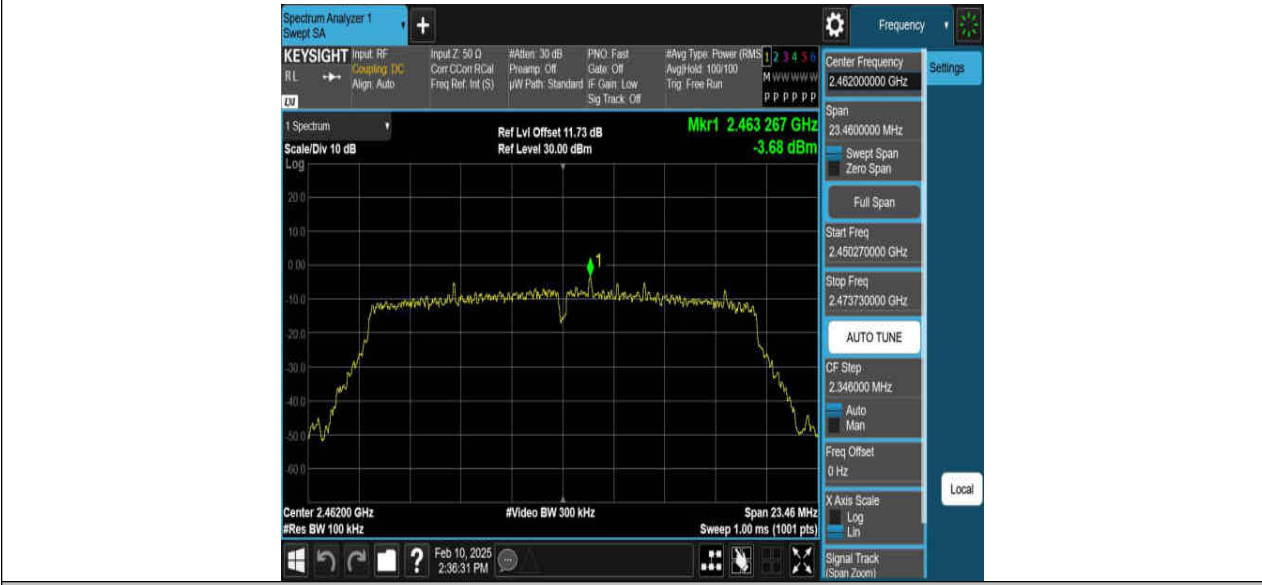
11G_Ant2_2437



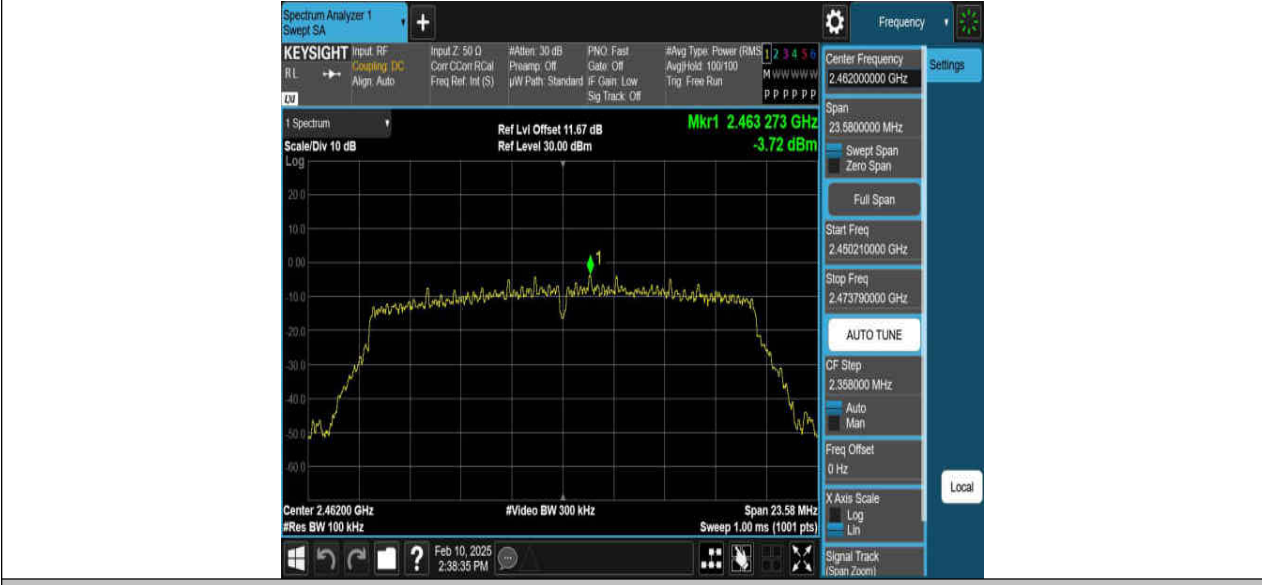




11N20MIMO_Ant1_2462



11N20MIMO_Ant2_2462



11N40MIMO_Ant1_2422