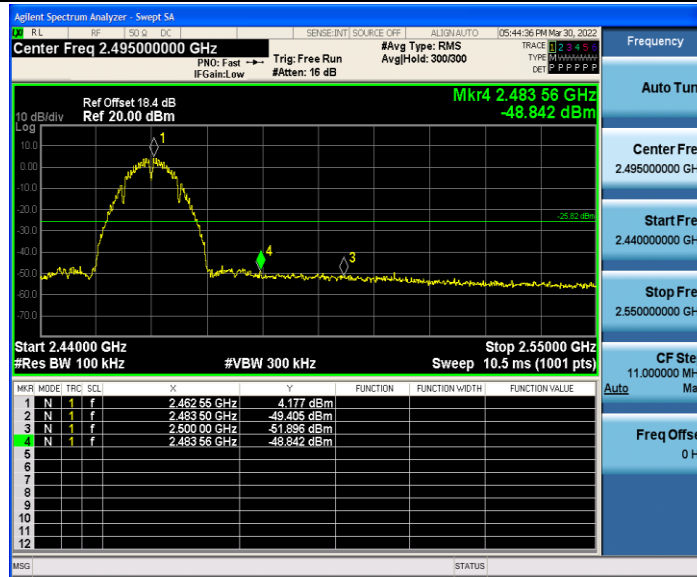




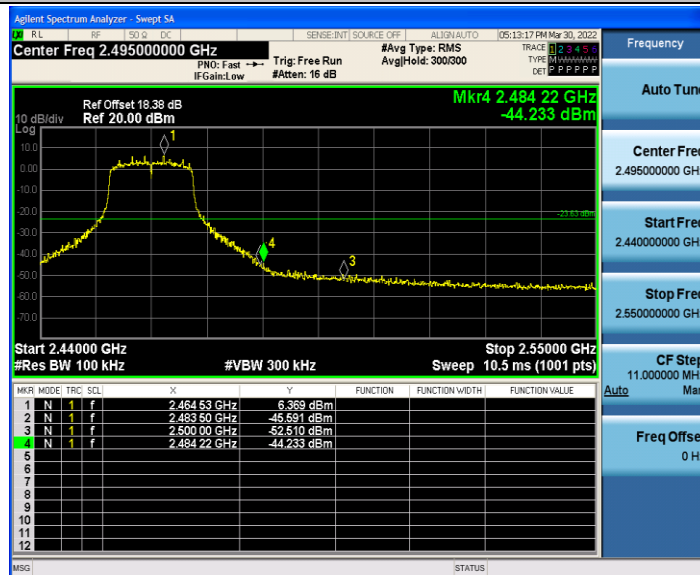
11G_Ant1_Low_2412



11G_Ant2_Low_2412



11G_Ant1_High_2462



11G_Ant2_High_2462



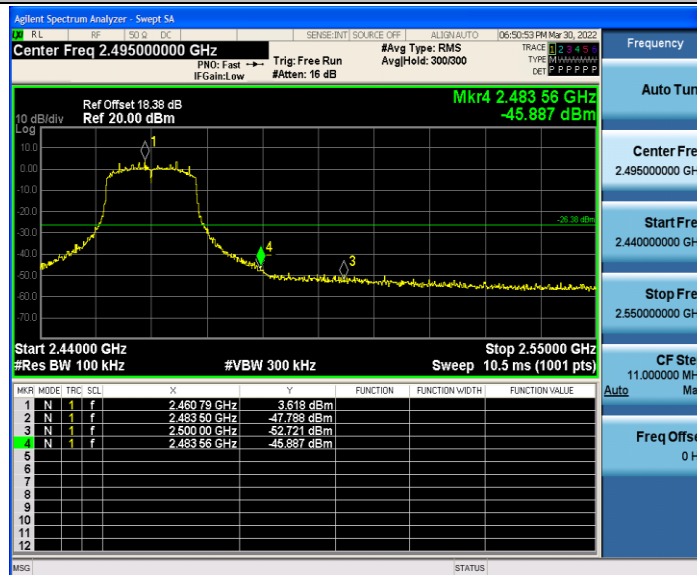
11N20MIMO_Ant1_Low_2412



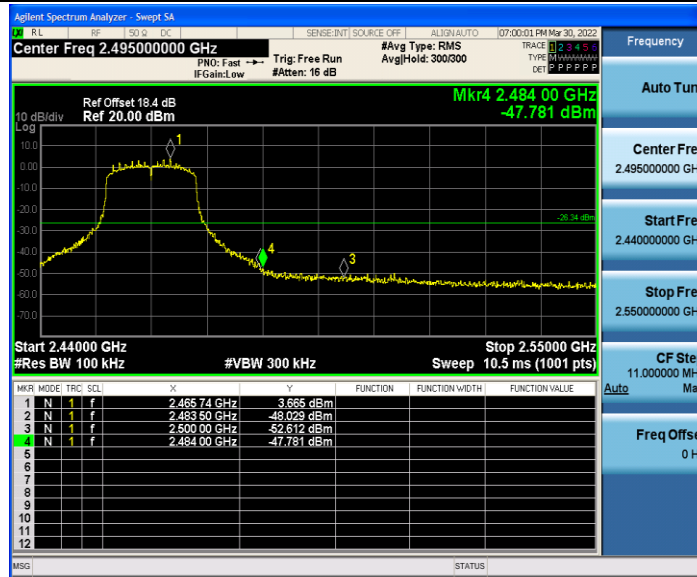
11N20MIMO_Ant2_Low_2412



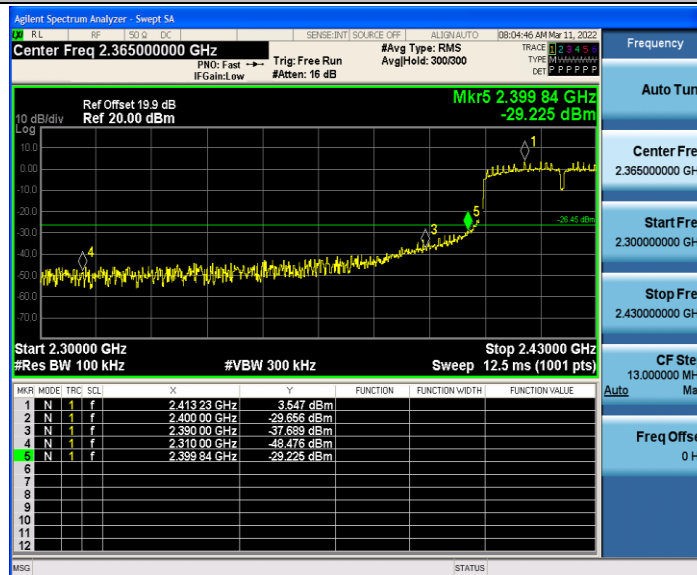
11N20MIMO_Ant1_High_2462



11N20MIMO_Ant2_High_2462



11N40MIMO_Ant1_Low_2422



11N40MIMO_Ant2_Low_2422



11N40MIMO_Ant1_High_2452



11N40MIMO_Ant2_High_2452



3.4 6dB Bandwidth

3.4.1 Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

3.4.2 Test Peripherals

Support Equipment				
No.	Equipment	Brand Name	Model Name	Remarks
1	Record PC	Lenovo	M4500T	NA
2	Control PC	Lenovo	M4500T	NA

3.4.3 Test Procedure

Test Method	
☒ Conducted Measurement	☐ Radiated Measurement
Test Channels	
☒ Lowest, Middle and Highest Channel	☐ Lowest and Highest Channel
Environmental conditions	
☒ Normal	☐ Normal and Extreme
Note: ☒ : Test ☐ : No Test	

a) The EUT shall be connected to the spectrum analyser, and the spectrum analyser is set as follow:

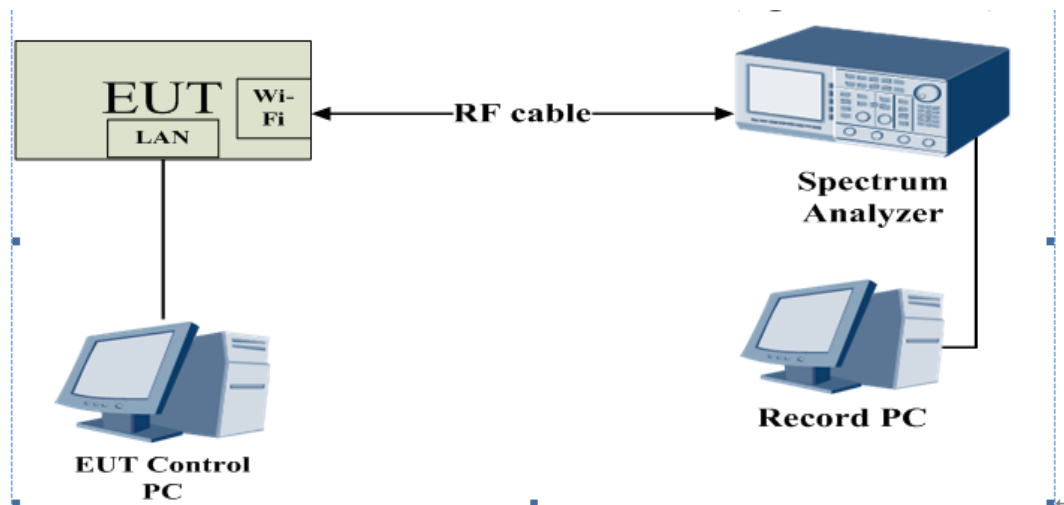
Centre Frequency	The centre frequency of the channel under test
RBW	100kHz
VBW	300kHz
Frequency span	2x Nominal Channel Bandwidth
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto Couple

b) Wait for the trace to stabilize then find the peak value of the trace and place the analyser marker on this peak.

c) Use the -6dB bandwidth function of the spectrum analyser to measure the 6dB Bandwidth of the EUT. This value shall be recorded.

d) Make sure that the power envelope is sufficiently above the noise floor of the analyser to avoid the noise signals left and right from the power envelope being taken into account by this measurement.

3.4.4 Test Setup



3.4.5 Test Result

6dB Bandwidth

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.040	2408.000	2416.040	0.5	PASS
	Ant2	2412	7.960	2408.040	2416.000	0.5	PASS
	Ant1	2437	8.040	2432.960	2441.000	0.5	PASS
	Ant2	2437	7.120	2433.440	2440.560	0.5	PASS
	Ant1	2462	7.040	2458.480	2465.520	0.5	PASS
	Ant2	2462	8.080	2457.960	2466.040	0.5	PASS
11G	Ant1	2412	14.800	2404.760	2419.560	0.5	PASS
	Ant2	2412	14.400	2404.480	2418.880	0.5	PASS
	Ant1	2437	15.440	2429.440	2444.880	0.5	PASS
	Ant2	2437	15.040	2429.720	2444.760	0.5	PASS
	Ant1	2462	14.680	2454.480	2469.160	0.5	PASS
	Ant2	2462	15.040	2454.520	2469.560	0.5	PASS
11N20MIMO	Ant1	2412	15.200	2404.440	2419.640	0.5	PASS
	Ant2	2412	15.480	2404.080	2419.560	0.5	PASS
	Ant1	2437	15.360	2429.160	2444.520	0.5	PASS
	Ant2	2437	15.080	2429.520	2444.600	0.5	PASS
	Ant1	2462	15.480	2454.440	2469.920	0.5	PASS
	Ant2	2462	15.080	2454.480	2469.560	0.5	PASS
11N40MIMO	Ant1	2422	35.040	2404.480	2439.520	0.5	PASS
	Ant2	2422	35.040	2404.480	2439.520	0.5	PASS
	Ant1	2437	34.960	2419.560	2454.520	0.5	PASS
	Ant2	2437	34.960	2419.560	2454.520	0.5	PASS
	Ant1	2452	34.960	2434.480	2469.440	0.5	PASS
	Ant2	2452	34.960	2434.480	2469.440	0.5	PASS

11B_Ant1_2412



11B_Ant2_2412



11B_Ant1_2437



11B_Ant2_2437



11B_Ant1_2462



11B_Ant2_2462



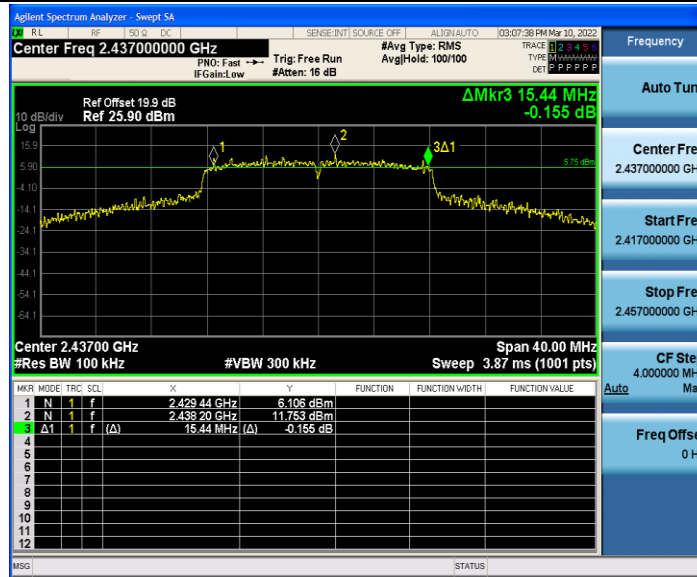
11G_Ant1_2412



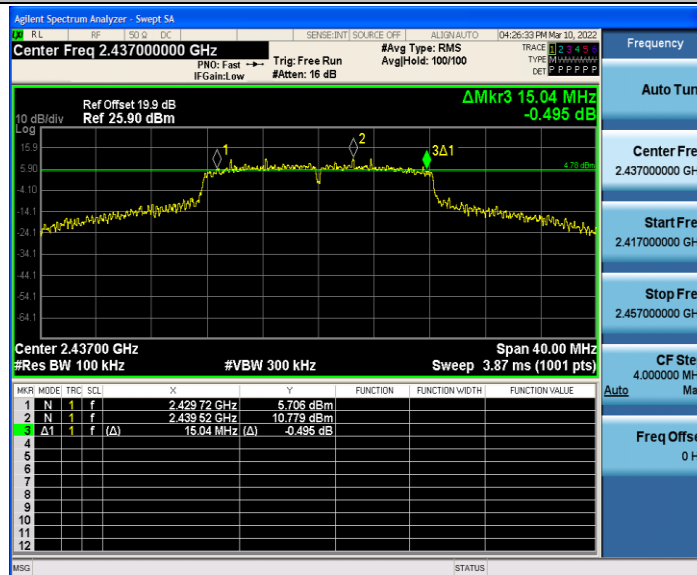
11G_Ant2_2412



11G_Ant1_2437



11G_Ant2_2437



11G_Ant1_2462



11G_Ant2_2462



11N20MIMO_Ant1_2412



11N20MIMO_Ant2_2412



11N20MIMO_Ant1_2437



11N20MIMO_Ant2_2437



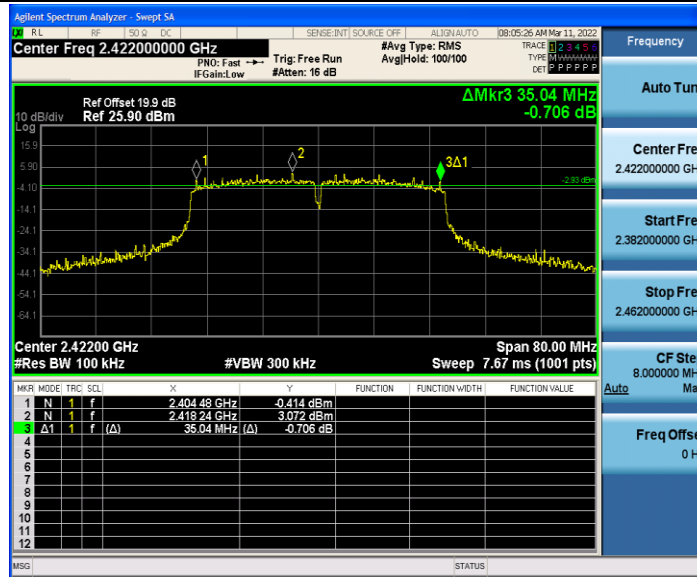
11N20MIMO_Ant1_2462



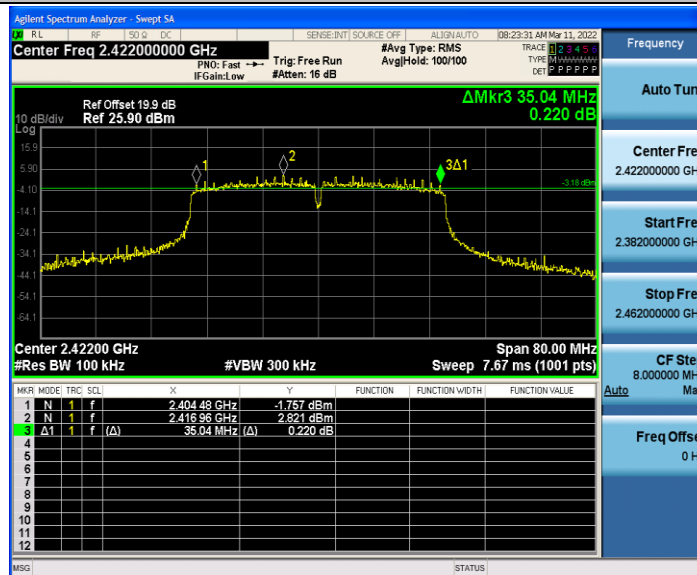
11N20MIMO_Ant2_2462



11N40MIMO_Ant1_2422



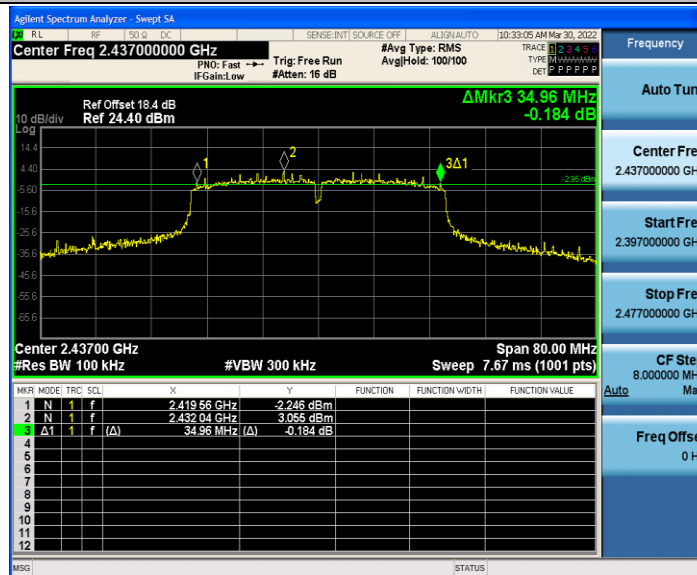
11N40MIMO_Ant2_2422



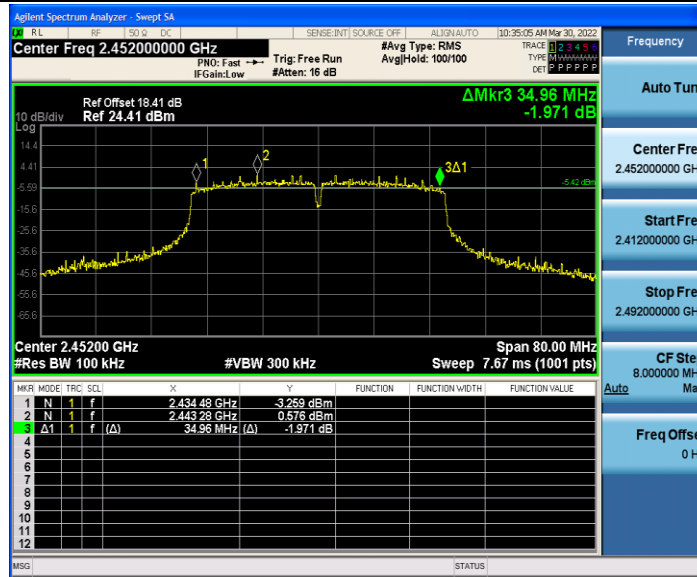
11N40MIMO_Ant1_2437



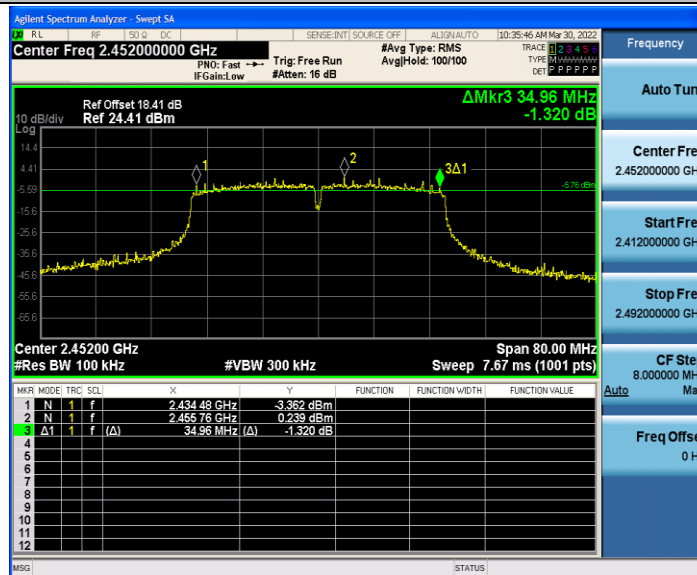
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



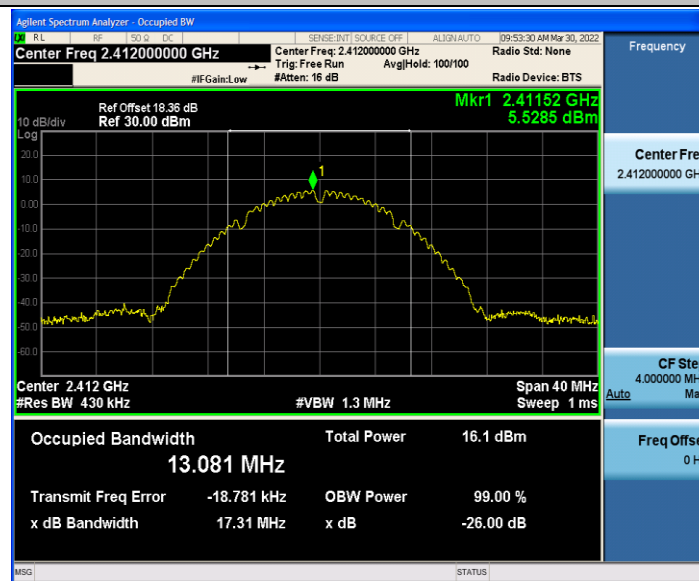
11N40MIMO_Ant2_2452



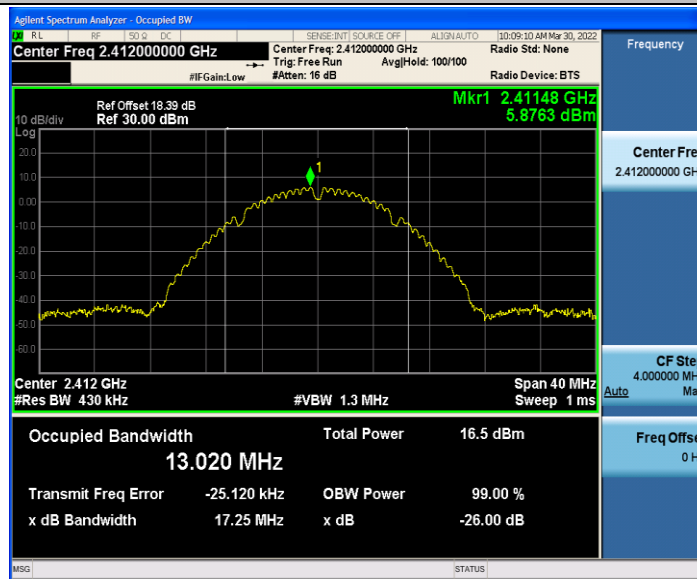
Occupied Channel Bandwidth

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	13.081	2405.441	2418.522	---	---
	Ant2	2412	13.020	2405.465	2418.485	---	---
	Ant1	2437	13.072	2430.453	2443.525	---	---
	Ant2	2437	13.047	2430.464	2443.511	---	---
	Ant1	2462	13.058	2455.473	2468.531	---	---
	Ant2	2462	13.052	2455.492	2468.544	---	---
11G	Ant1	2412	16.530	2403.742	2420.272	---	---
	Ant2	2412	16.430	2403.781	2420.211	---	---
	Ant1	2437	20.252	2426.725	2446.977	---	---
	Ant2	2437	18.941	2427.316	2446.257	---	---
	Ant1	2462	16.442	2453.785	2470.227	---	---
	Ant2	2462	16.428	2453.796	2470.224	---	---
11N20MIMO	Ant1	2412	17.560	2403.233	2420.793	---	---
	Ant2	2412	17.543	2403.228	2420.771	---	---
	Ant1	2437	19.448	2427.167	2446.615	---	---
	Ant2	2437	20.426	2426.780	2447.206	---	---
	Ant1	2462	17.492	2453.269	2470.761	---	---
	Ant2	2462	17.532	2453.266	2470.798	---	---
11N40MIMO	Ant1	2422	35.898	2404.054	2439.952	---	---
	Ant2	2422	35.865	2404.072	2439.937	---	---
	Ant1	2437	35.991	2418.978	2454.969	---	---
	Ant2	2437	36.138	2418.877	2455.015	---	---
	Ant1	2452	35.963	2434.000	2469.963	---	---
	Ant2	2452	35.962	2434.042	2470.004	---	---

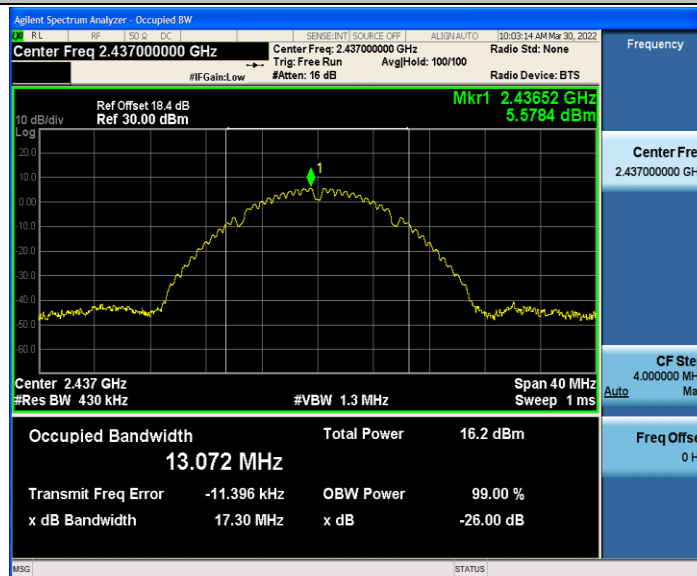
11B_Ant1_2412



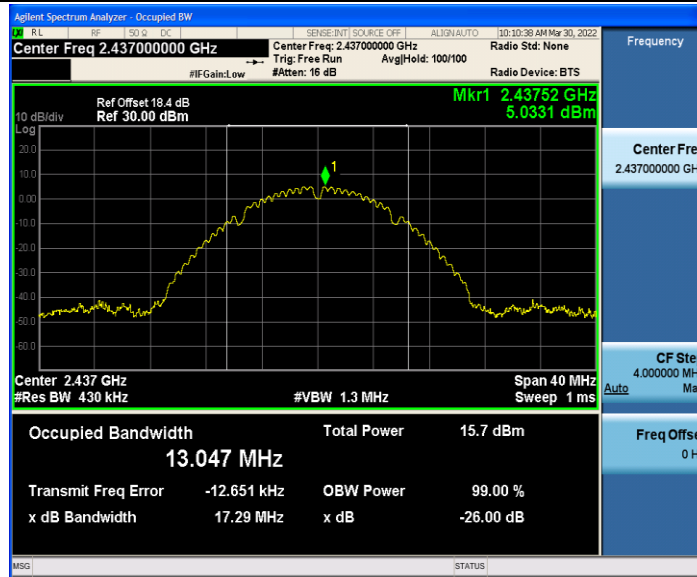
11B_Ant2_2412



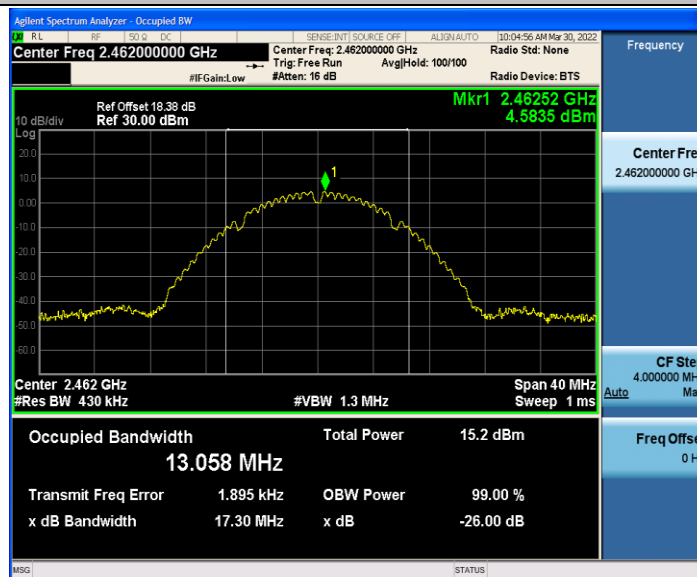
11B_Ant1_2437



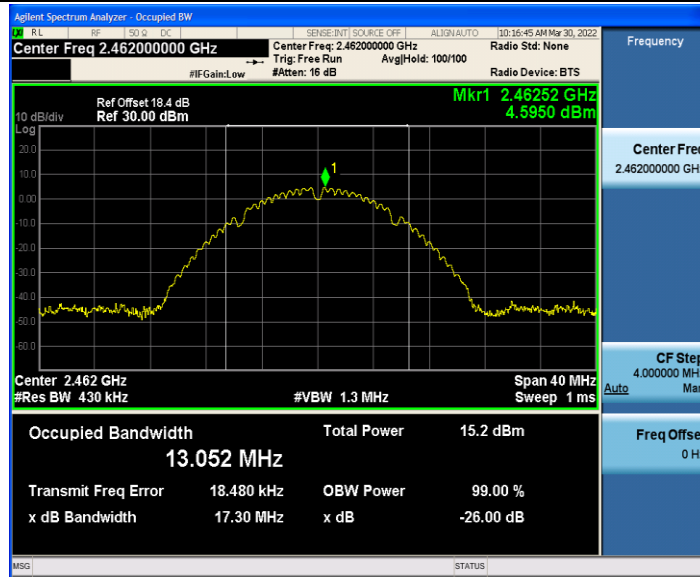
11B_Ant2_2437



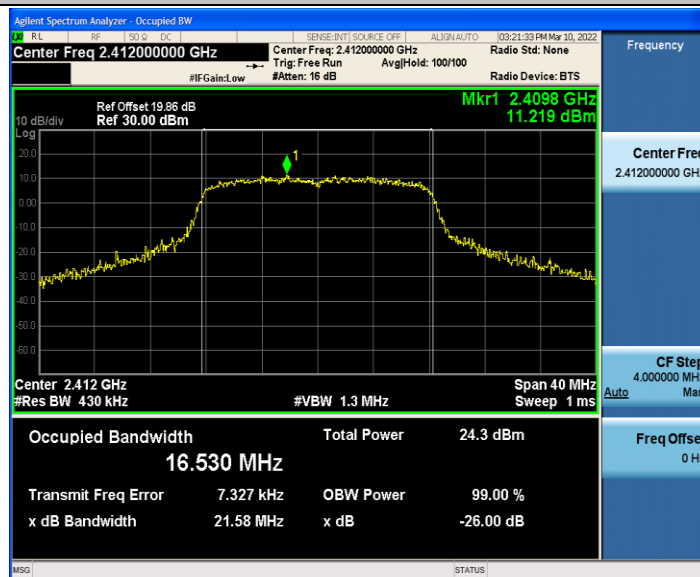
11B_Ant1_2462



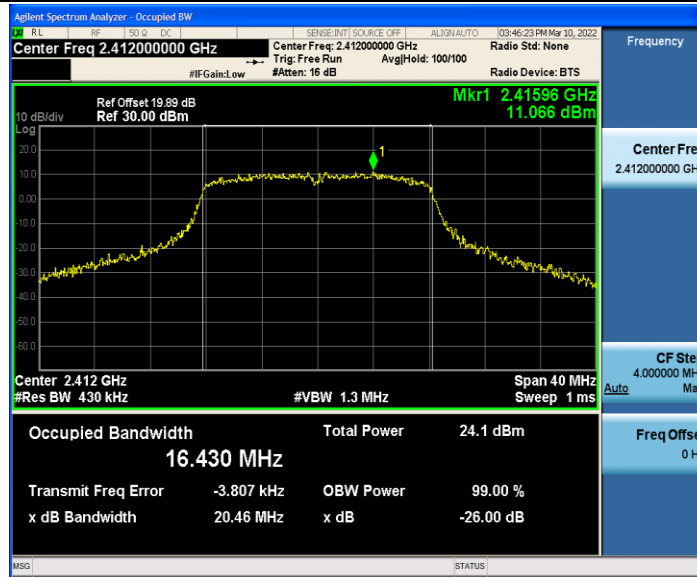
11B_Ant2_2462



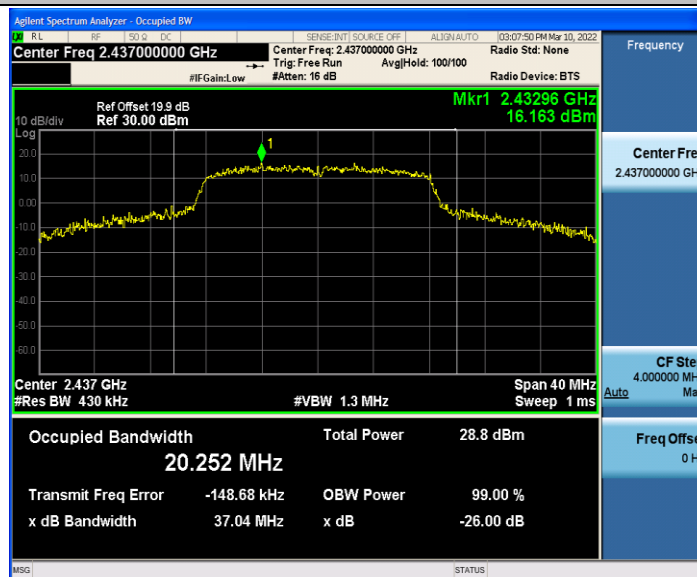
11G_Ant1_2412



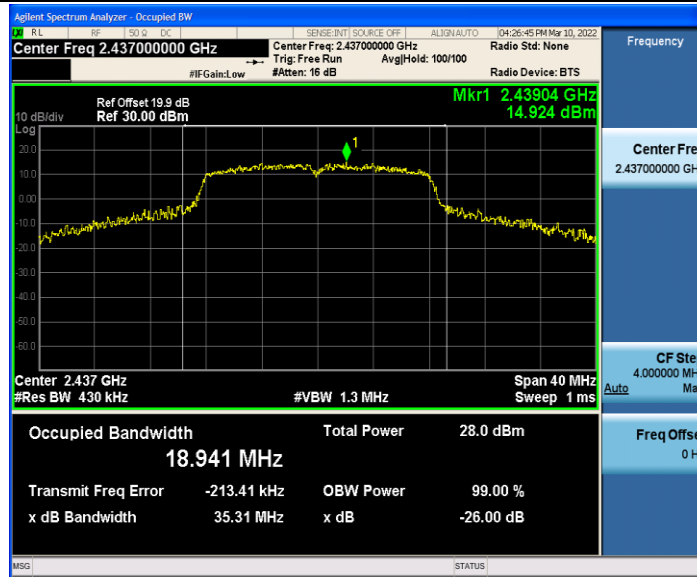
11G_Ant2_2412



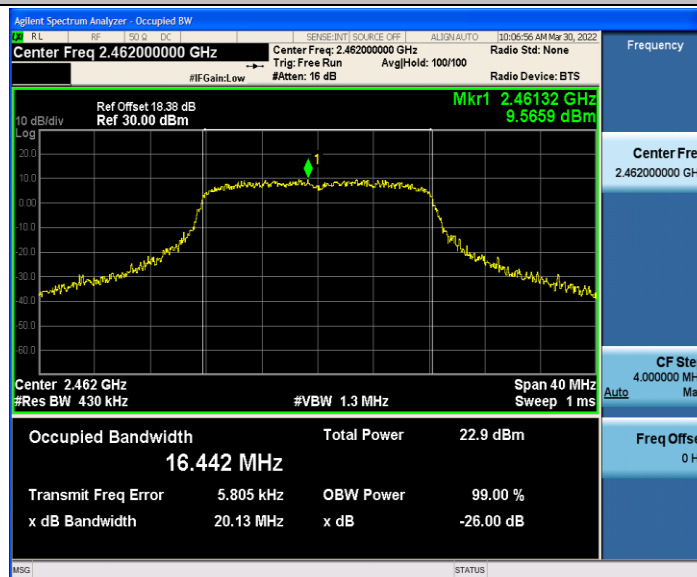
11G_Ant1_2437



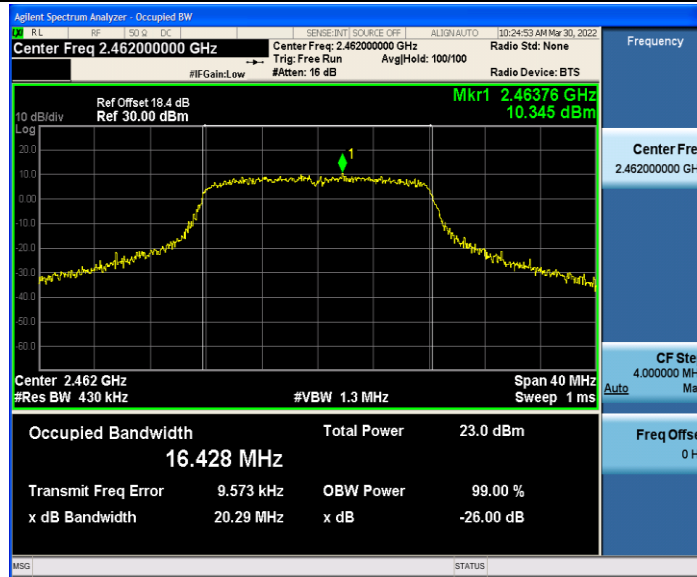
11G_Ant2_2437



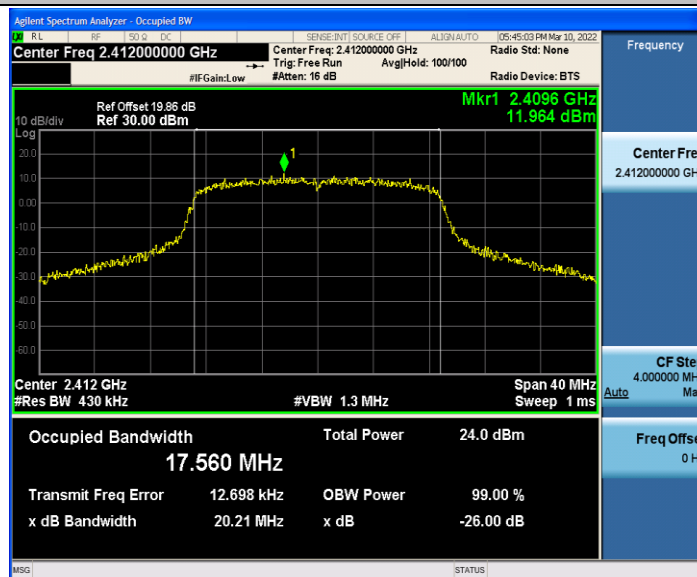
11G_Ant1_2462



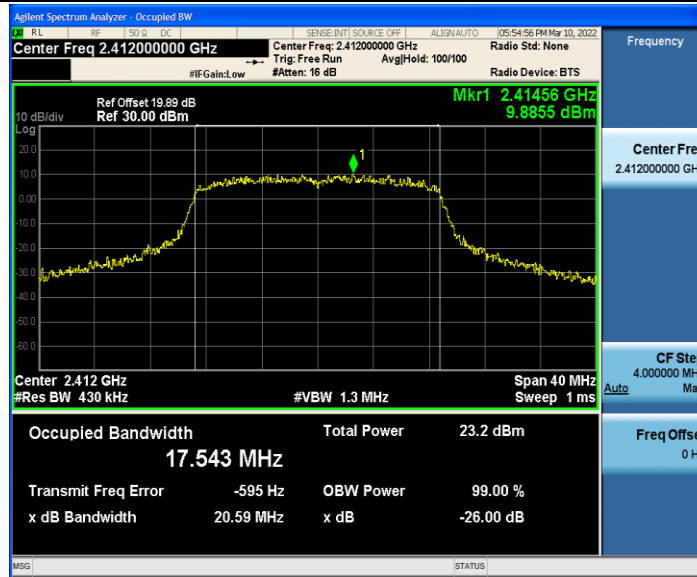
11G_Ant2_2462



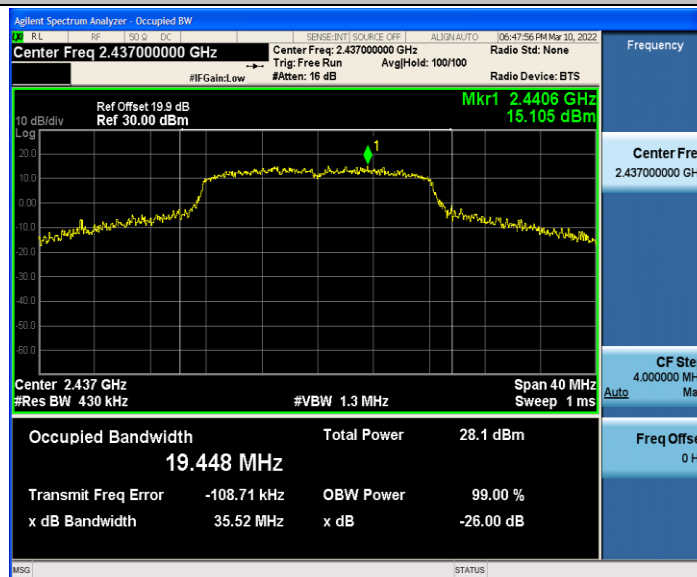
11N20MIMO_Ant1_2412



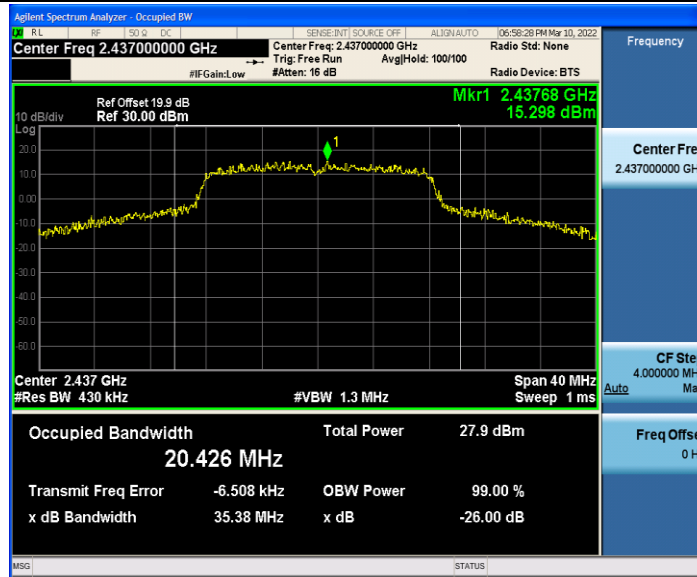
11N20MIMO_Ant2_2412



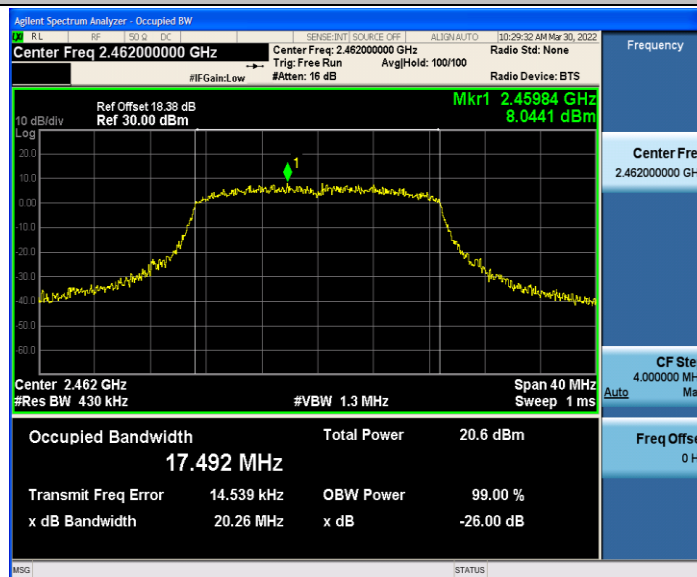
11N20MIMO_Ant1_2437



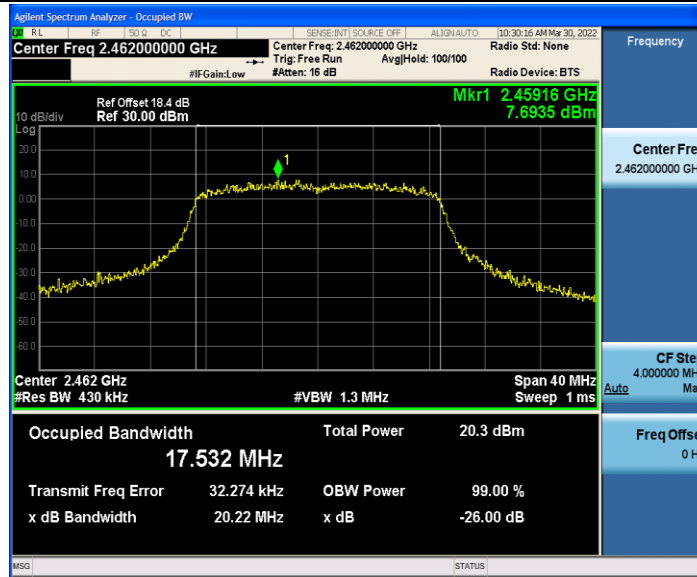
11N20MIMO_Ant2_2437



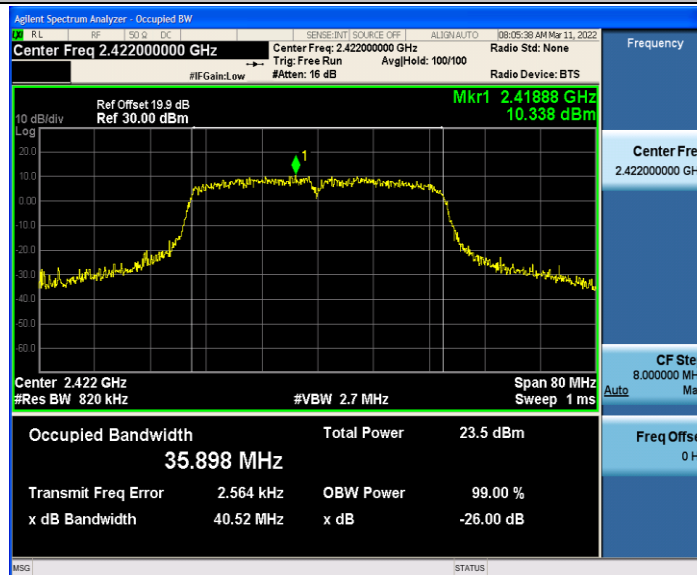
11N20MIMO_Ant1_2462



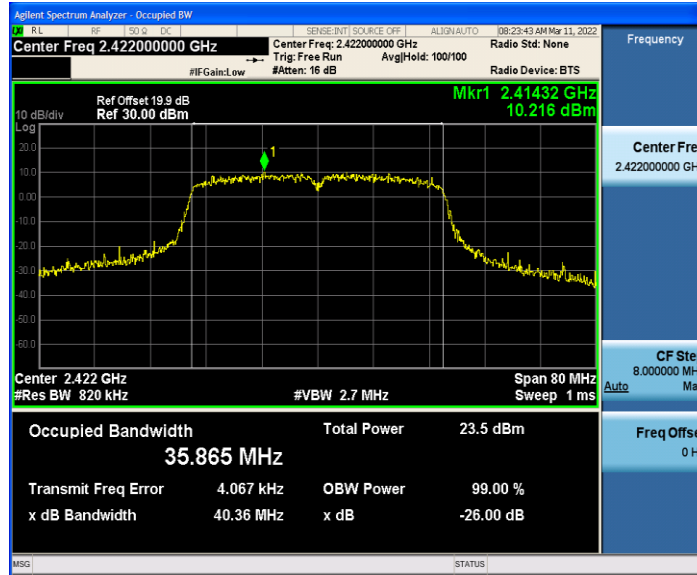
11N20MIMO_Ant2_2462



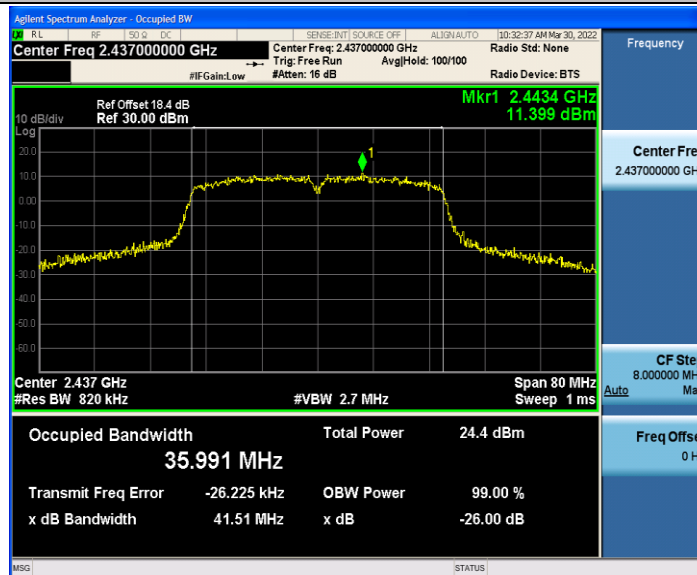
11N40MIMO_Ant1_2422



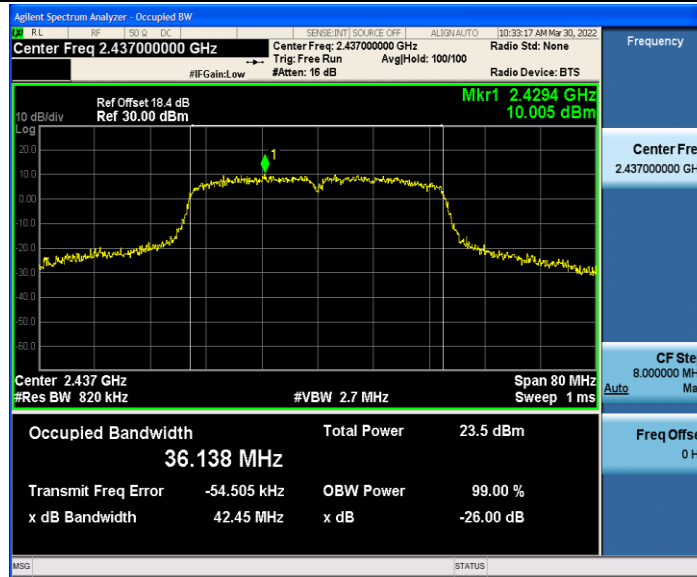
11N40MIMO_Ant2_2422



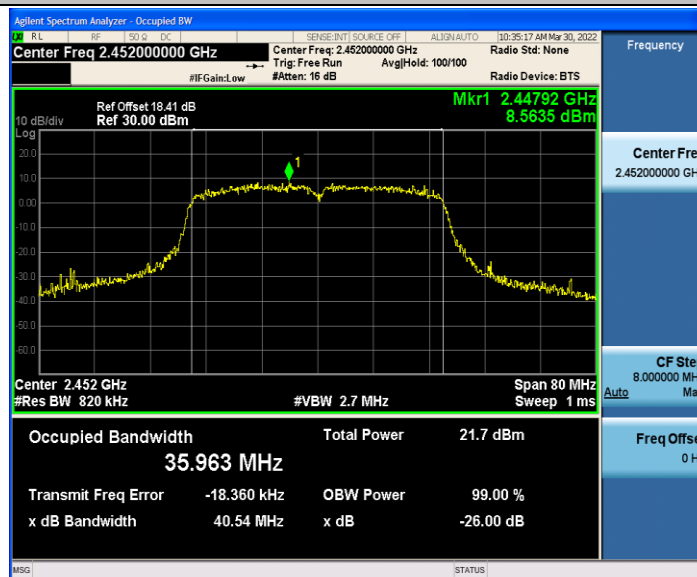
11N40MIMO_Ant1_2437



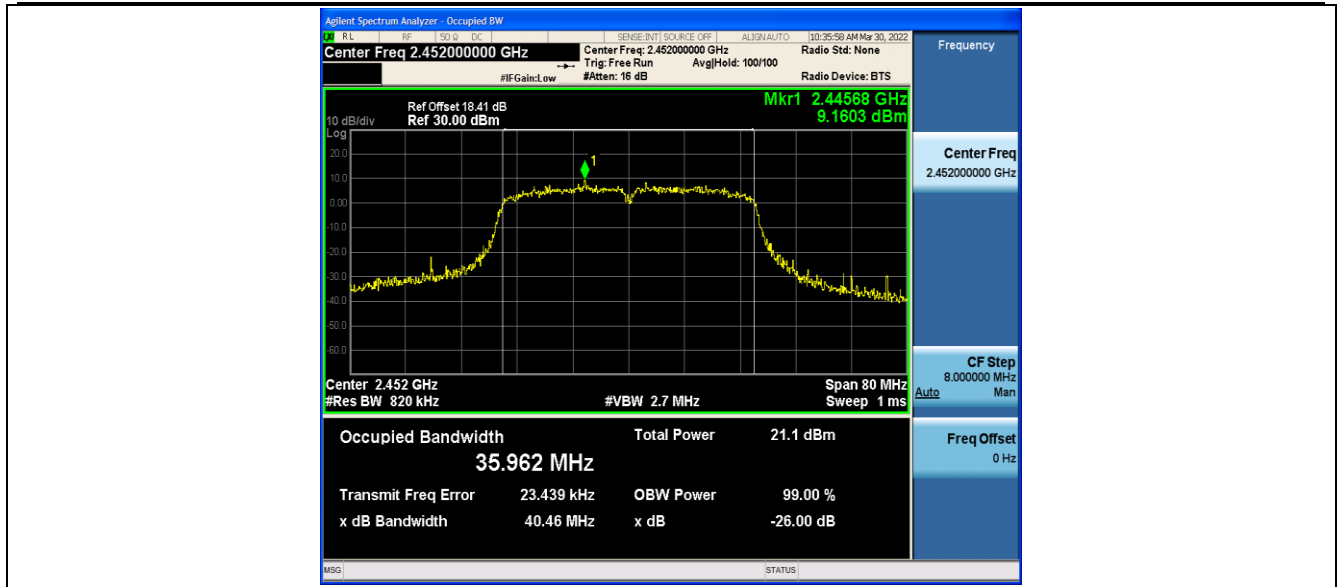
11N40MIMO_Ant2_2437



11N40MIMO_Ant1_2452



11N40MIMO_Ant2_2452



3.5 Maximum conducted (average) output power

3.5.1 Limit

For systems using digital modulation in the 2400~2483.5MHz, The Maximum output Power shall not exceed 1W(30dBm)

3.5.2 Test Peripherals

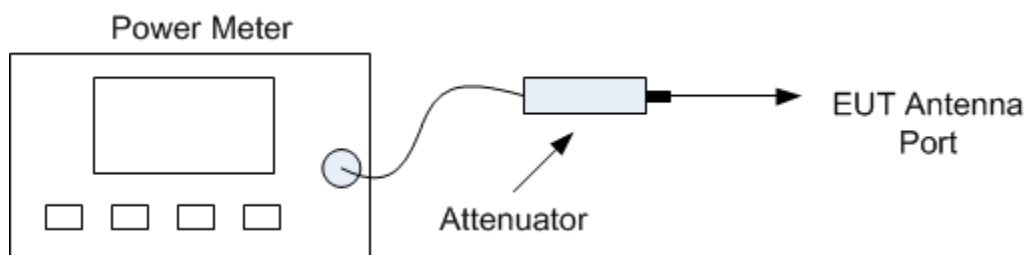
Support Equipment				
No.	Equipment	Brand Name	Model Name	Remarks
1	Record PC	Lenovo	M4500T	NA
2	Control PC	Lenovo	M4500T	NA

3.5.3 Test Procedure

Test Method	
☒ Conducted Measurement	☐ Radiated Measurement
Test Channels	
☒ Lowest, Middle and Highest Channel	☐ Lowest and Highest Channel
Environmental conditions	
☒ Normal	☐ Normal and Extreme
Note: ● : Test ○ : No Test	

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.
- The maximum output power was performed in accordance with method 11.9.2.3 of ANSI C63.10.

3.5.4 Test Setup



3.5.5 Table of Parameters of Text Software Setting

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

For Power Setting value

Test Software Version	Command					
Frequency (MHz)	2412		2437		2462	
Antenna	Ant1	Ant2	Ant1	Ant2	Ant1	Ant2
IEEE 802.11b	16	16	16	16	15	15
IEEE 802.11g	20	20	25	25	20	20
Frequency (MHz)	2412		2437		2462	
IEEE 802.11n (20MHz)	20		25		18	
Frequency (MHz)	2422		2437		2452	
IEEE 802.11n (40MHz)	19		21		18	

3.5.6 The Result

Test Mode	Antenna	Channel	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	13.15	≤28.49	PASS
	Ant2	2412	13.51	≤28.49	PASS
	Ant1	2437	13.22	≤28.49	PASS
	Ant2	2437	12.69	≤28.49	PASS
	Ant1	2462	12.23	≤28.49	PASS
	Ant2	2462	12.24	≤28.49	PASS
11G	Ant1	2412	17.00	≤28.49	PASS
	Ant2	2412	18.11	≤28.49	PASS
	Ant1	2437	22.60	≤28.49	PASS
	Ant2	2437	21.40	≤28.49	PASS
	Ant1	2462	16.90	≤28.49	PASS
	Ant2	2462	16.89	≤28.49	PASS
11N20MIMO	Ant1	2412	17.64	≤28.49	PASS
	Ant2	2412	16.97	≤28.49	PASS
	total	2412	20.33	≤28.49	PASS
	Ant1	2437	21.71	≤28.49	PASS
	Ant2	2437	21.36	≤28.49	PASS
	total	2437	24.55	≤28.49	PASS
	Ant1	2462	14.19	≤28.49	PASS
	Ant2	2462	14.32	≤28.49	PASS
	total	2462	17.27	≤28.49	PASS
11N40MIMO	Ant1	2422	16.52	≤28.49	PASS
	Ant2	2422	16.30	≤28.49	PASS
	total	2422	19.42	≤28.49	PASS
	Ant1	2437	17.29	≤28.49	PASS
	Ant2	2437	16.44	≤28.49	PASS
	total	2437	19.90	≤28.49	PASS
	Ant1	2452	14.42	≤28.49	PASS
	Ant2	2452	13.75	≤28.49	PASS
	total	2452	17.11	≤28.49	PASS

Frequency Band	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	Correlated chains directional gain (dBi)	Peak Power Limit (dBm)
2400 MHz to 2483.5 MHz	4.50	4.50	7.51	28.49
Basic methodology with $NANT$ transmit antennas, each with the same directional gain $GANT$ dBi, being driven by $NANT$ transmitter outputs of equal power. Directional gain is to be computed as follows: If any transmit signals are <i>correlated</i> with each other, Directional gain = $GANT + 10 \log(NANT)$ dBi				

3.6 Power Spectral Density

3.6.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

3.6.2 Test Peripherals

Support Equipment				
No.	Equipment	Brand Name	Model Name	Remarks
1	Record PC	Lenovo	M4500T	NA
2	Control PC	Lenovo	M4500T	NA

3.6.3 Test Procedure

Test Method	
☒ Conducted Measurement	☐ Radiated Measurement
Test Channels	
☒ Lowest, Middle and Highest Channel	☐ Lowest and Highest Channel
Environmental conditions	
☒ Normal	☐ Normal and Extreme
Note: ☒ : Test ☐ : No Test	

a) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below. Spectrum analyser settings as following:

RBW	3 kHz
VBW	10 kHz
Detector Mode	RMS
Trace Mode	Max Hold
Sweep Time	Auto

b) Wait for the trace to stabilize. Use the peak marker function to determine the maximum amplitude level within the RBW.

c) The value defined in step b shall be compared to the limits and be recorded .