4.5 6dB Bandwidth

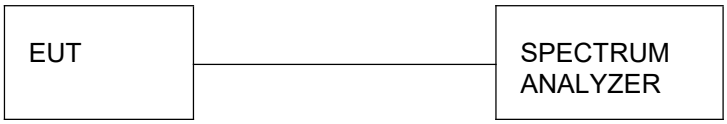
Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

Test Configuration



Test Results

Ant 1

Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11b	01	9.760	≥500	Pass
	06	10.080		
	11	10.080		
802.11g	01	13.480	≥500	Pass
	06	14.400		
	11	15.040		
802.11n(HT20)	01	15.120	≥500	Pass
	06	13.840		
	11	13.880		
802.11n(HT40)	03	35.040	≥500	Pass
	06	35.040		
	09	33.840		
802.11ax(HT20)	01	16.400	≥500	Pass
	06	13.760		
	11	16.400		
802.11ax(HT40)	03	35.040	≥500	Pass
	06	35.040		
	09	33.760		

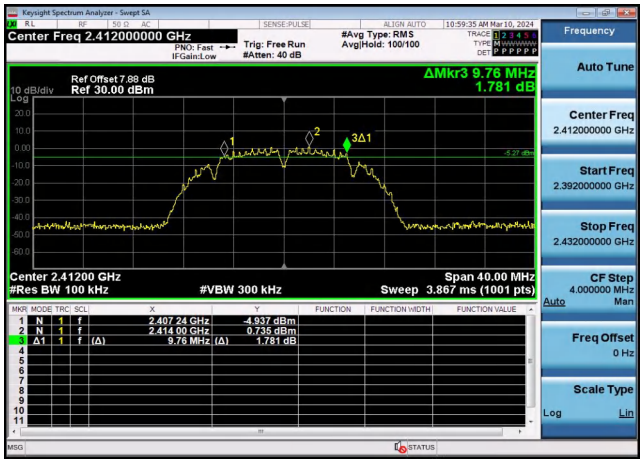
Ant 2

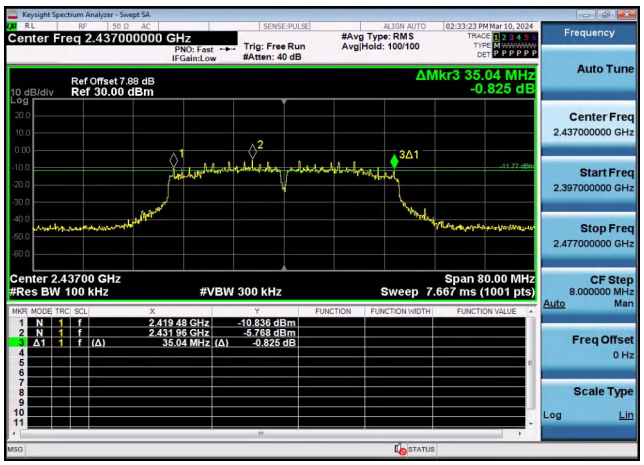
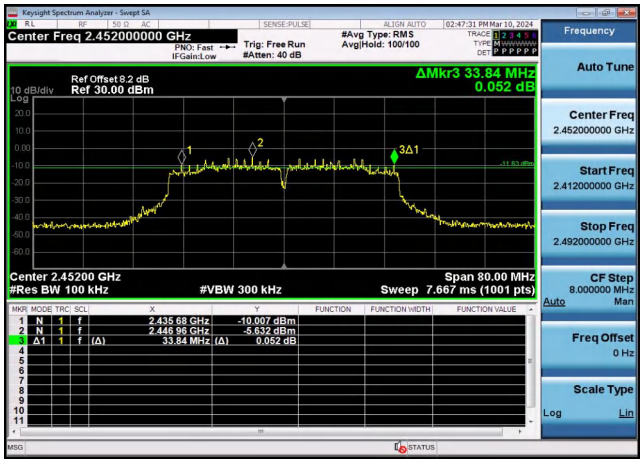
Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11b	01	10.120	≥500	Pass
	06	10.080		
	11	10.080		
802.11g	01	15.120	≥500	Pass
	06	15.120		
	11	15.080		
802.11n(HT20)	01	15.120	≥500	Pass
	06	15.120		
	11	15.120		
802.11n(HT40)	03	35.040	≥500	Pass
	06	35.040		
	09	35.040		
802.11ax(HT20)	01	16.520	≥500	Pass
	06	16.360		
	11	16.400		
802.11ax(HT40)	03	35.040	≥500	Pass
	06	35.040		
	09	32.640		

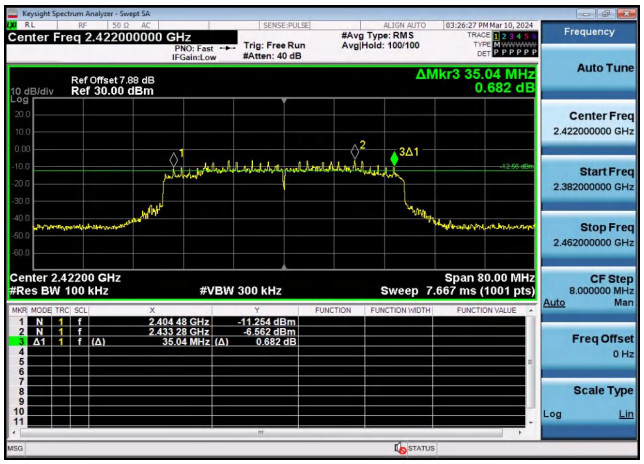
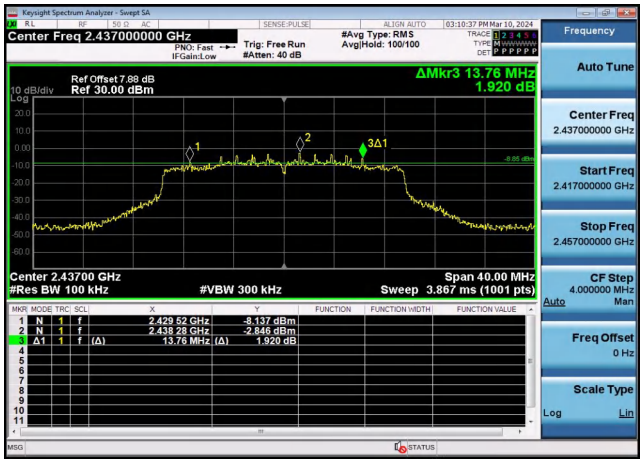
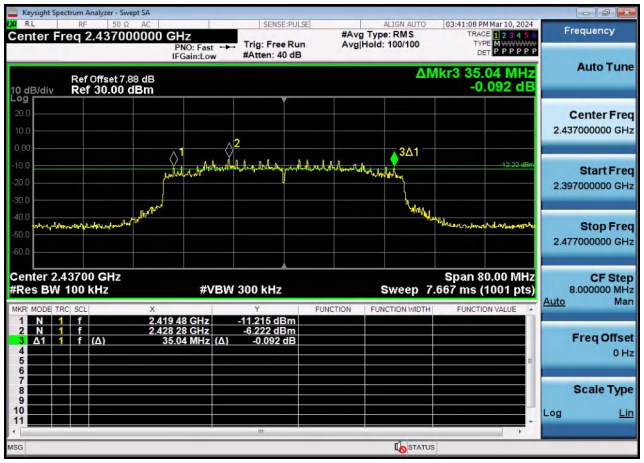
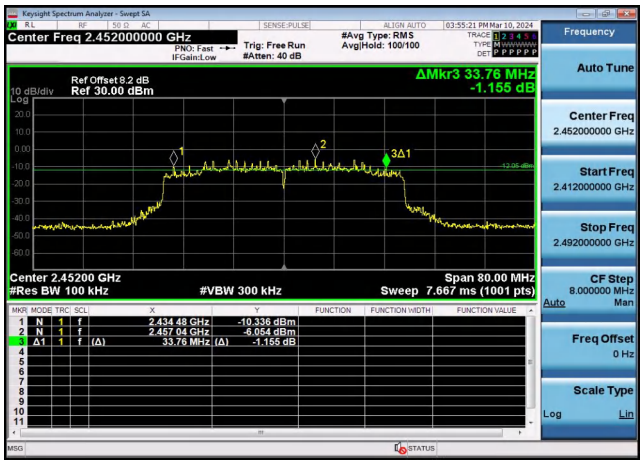
Note:
1) Measured peak power spectrum density at difference data rate for each mode and recorded worst case for each mode.
2) Test results including cable loss;
3) Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40; 8.6Mbps at IEEE 802.11ax HT20; 17.2Mbps at IEEE 802.11ax HT40.

Please refer to following plots;

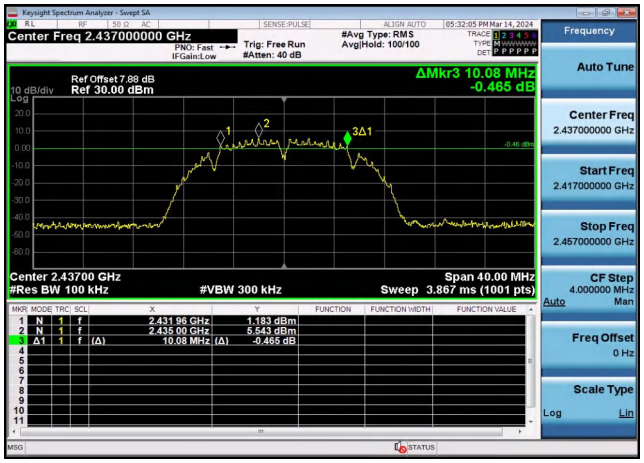
Ant 1

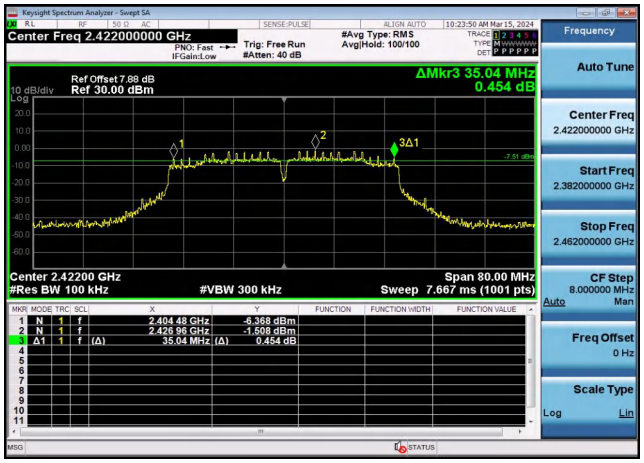
802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

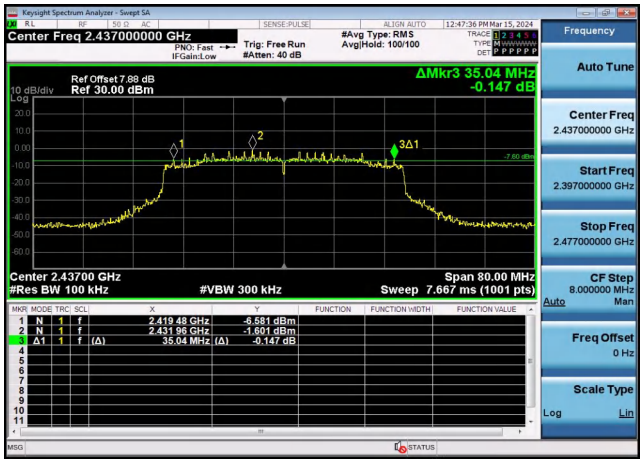
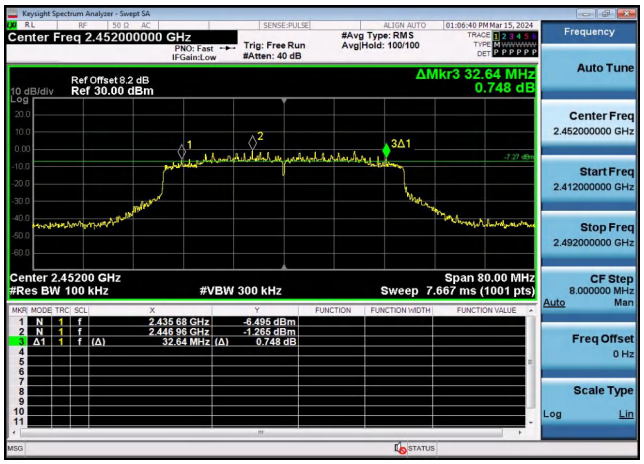
802.11n(HT20)	802.11n(HT40)
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

802.11ax(HT20)	802.11ax(HT40)
	
CH01	*CH03*
	
CH06	*CH06*
	
CH11	*CH09*

Ant 2

802.11b	802.11g
	
CH01	CH01
	
CH06	CH06
	
CH11	CH11

802.11n(HT20)	802.11n(HT40)
	
CH01	CH03
	
CH06	CH06
	
CH11	CH09

802.11ax(HT20)	802.11ax(HT40)
	
CH01	*CH03*
	
CH06	*CH06*
	
CH11	*CH09*

4.6 Out-of-band Emissions

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF con-ducted or a radiated measurement, pro-vided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter com-plies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Test Procedure

Connect the transmitter output to spectrum analyzer using a low loss RF cable, and set the spectrum analyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

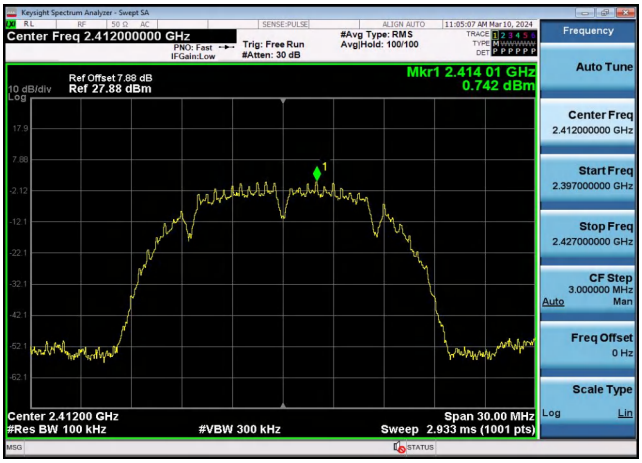
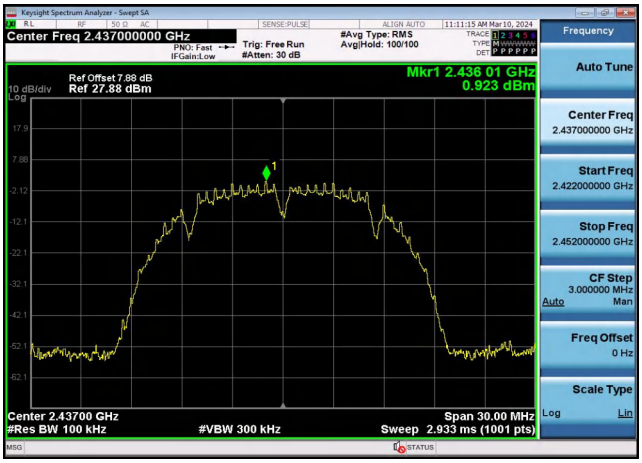
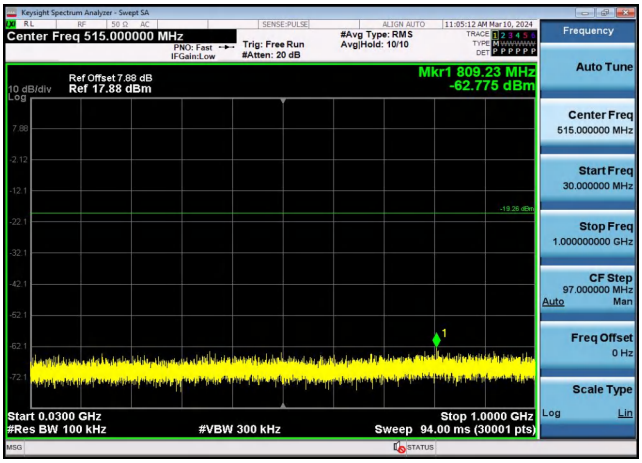
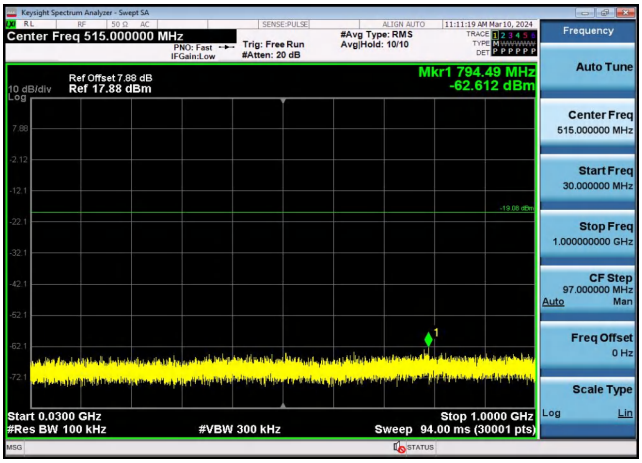
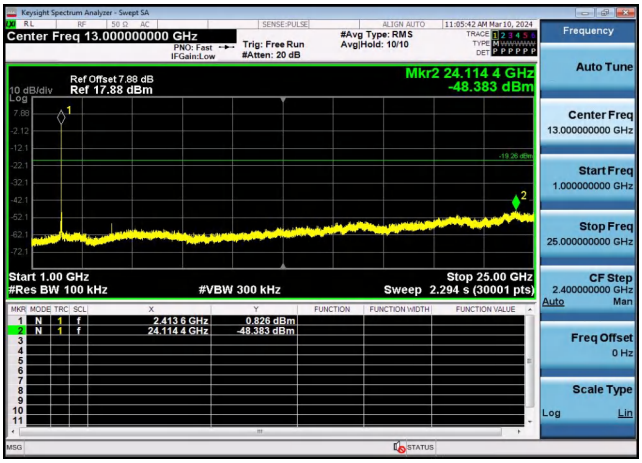
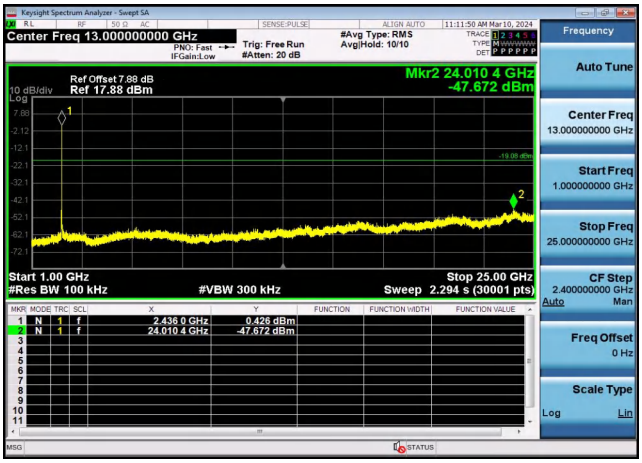
Test Configuration

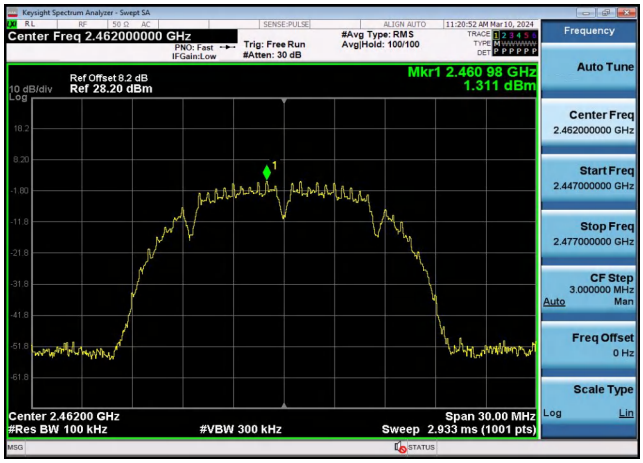
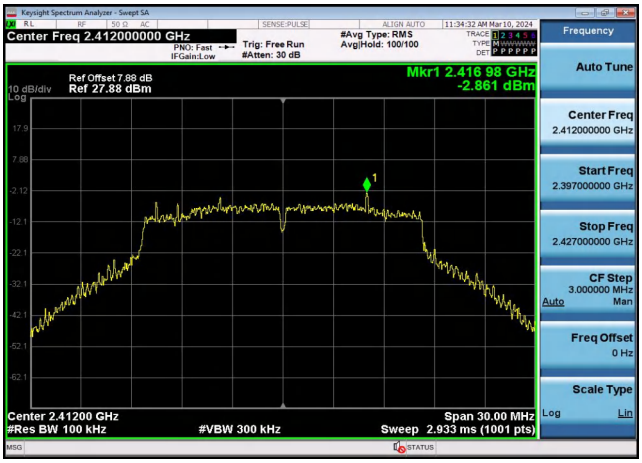
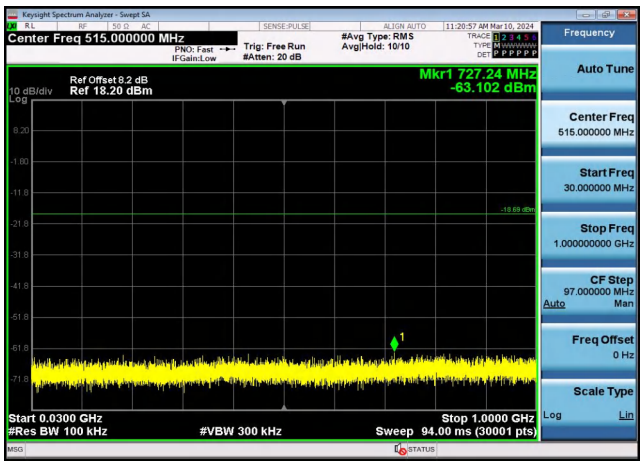
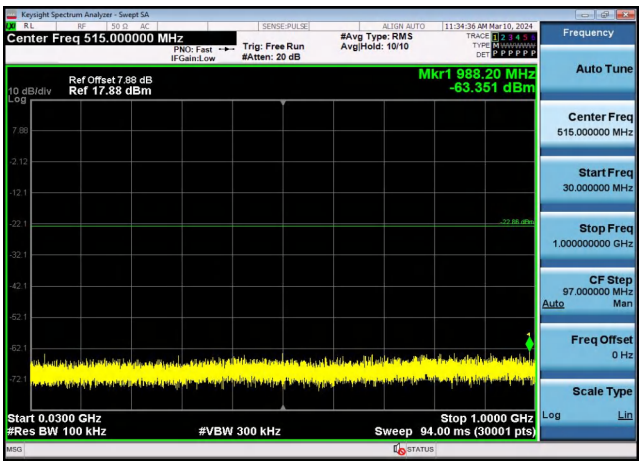
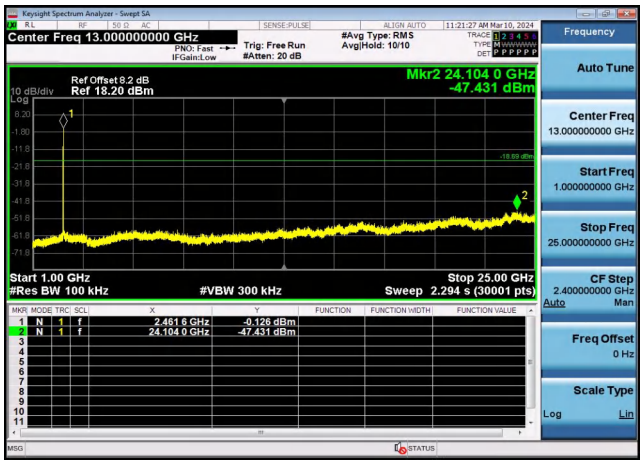
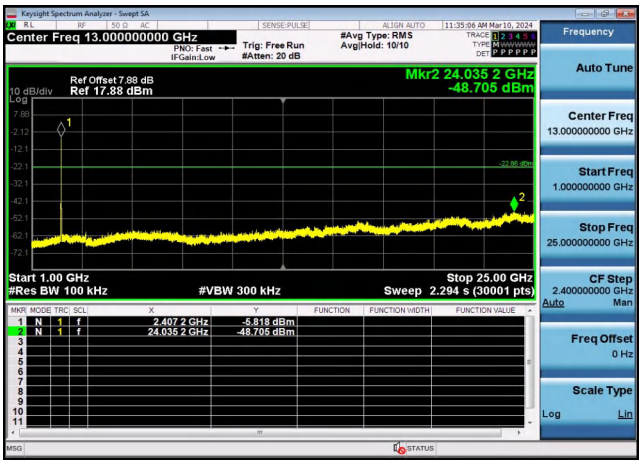
Test Results

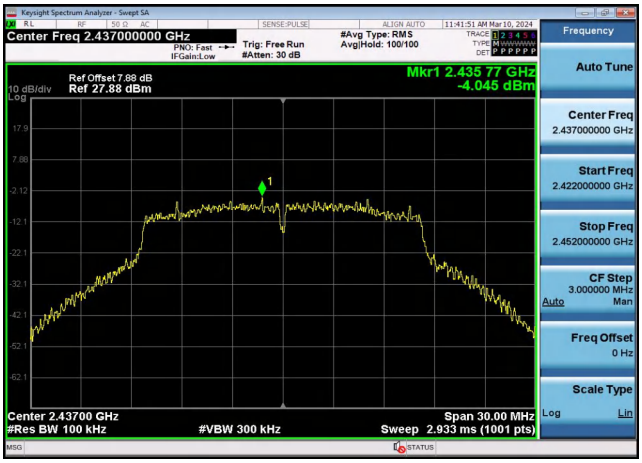
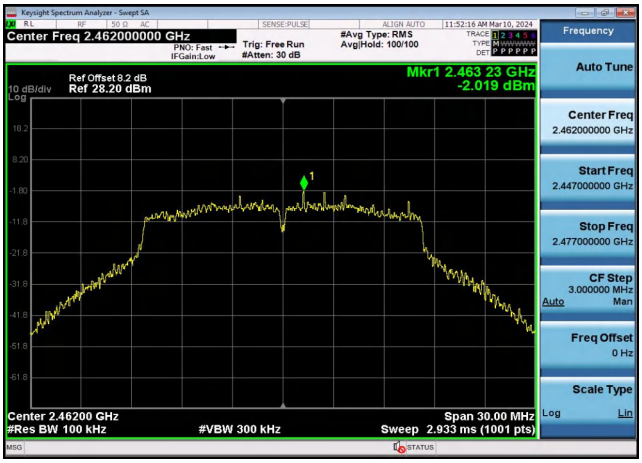
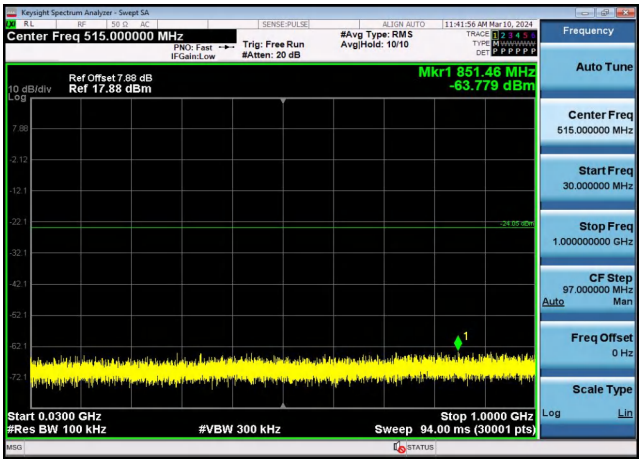
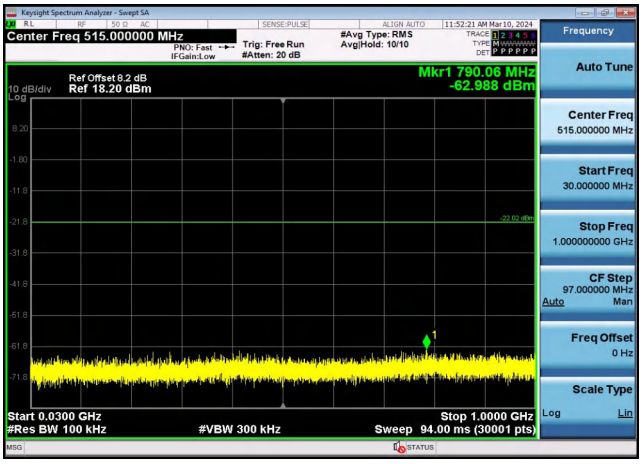
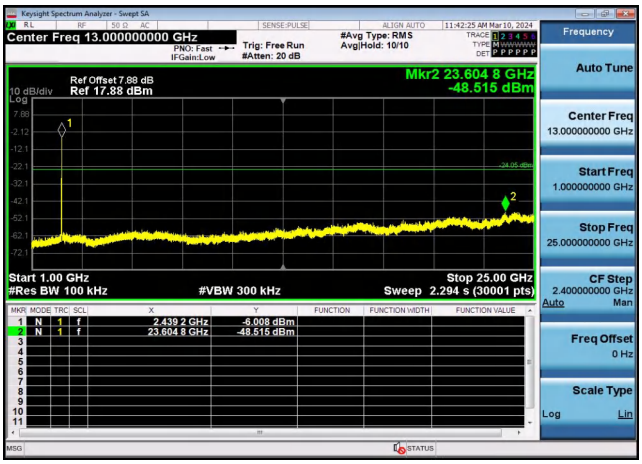
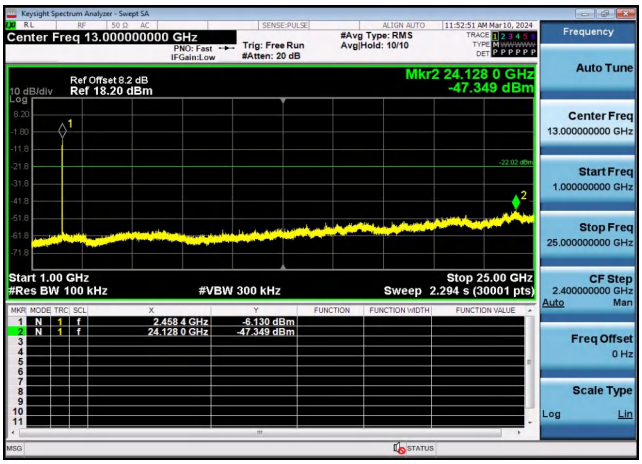
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandage measurement data. And record the worst data in the report.

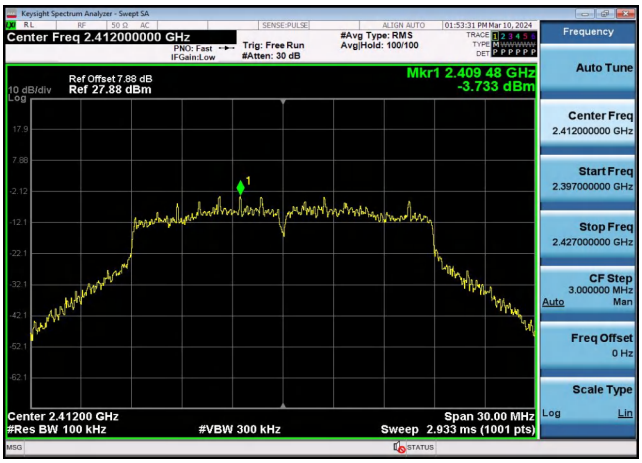
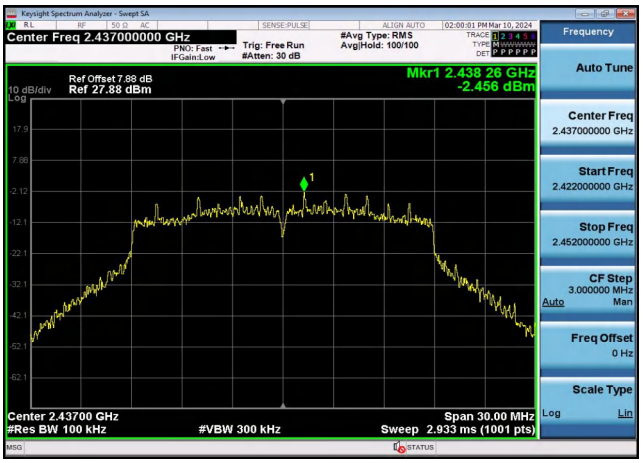
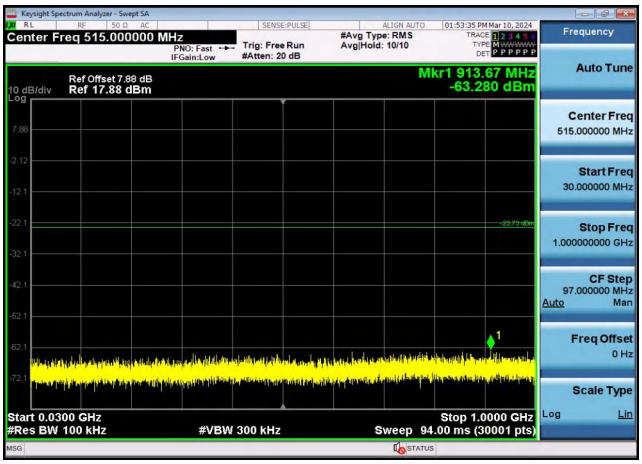
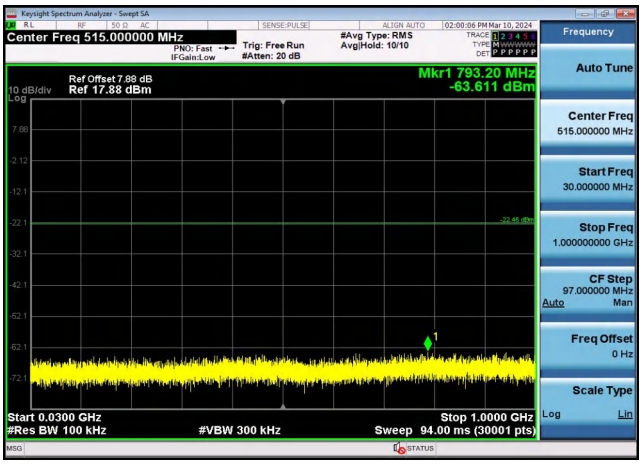
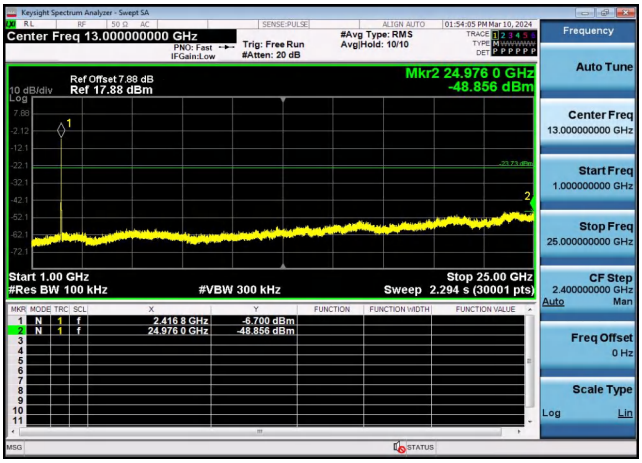
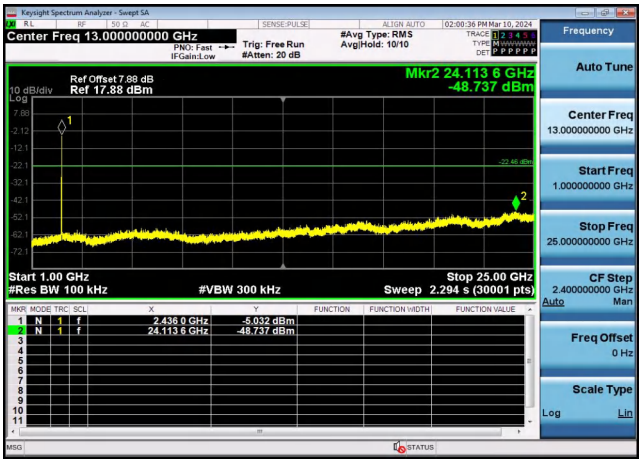
Test plot as follows:

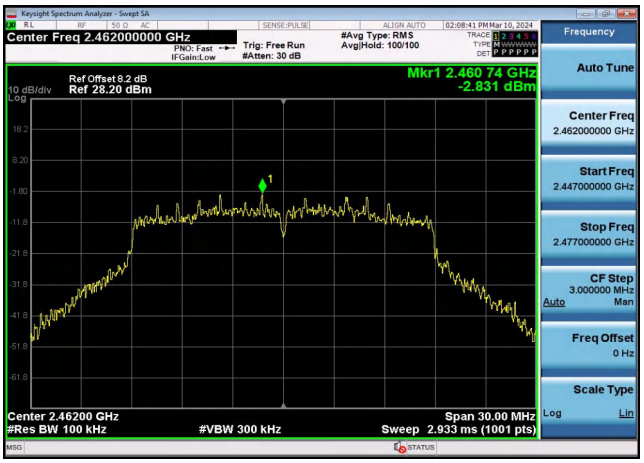
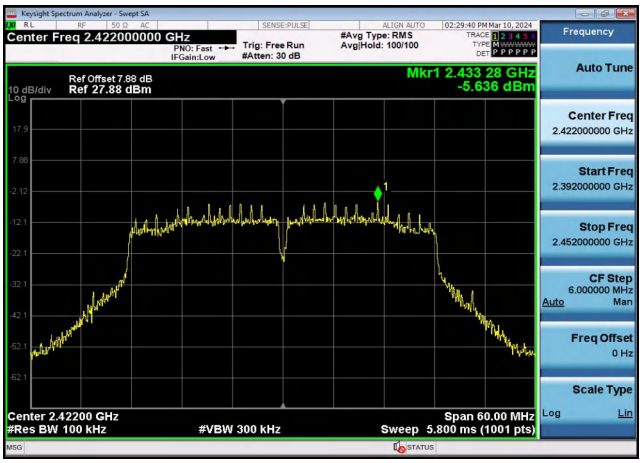
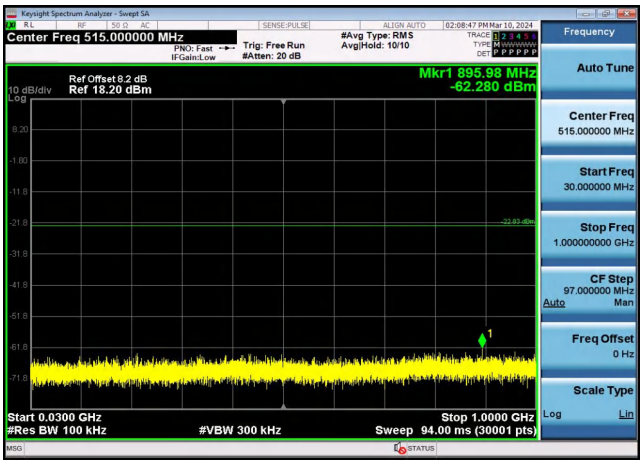
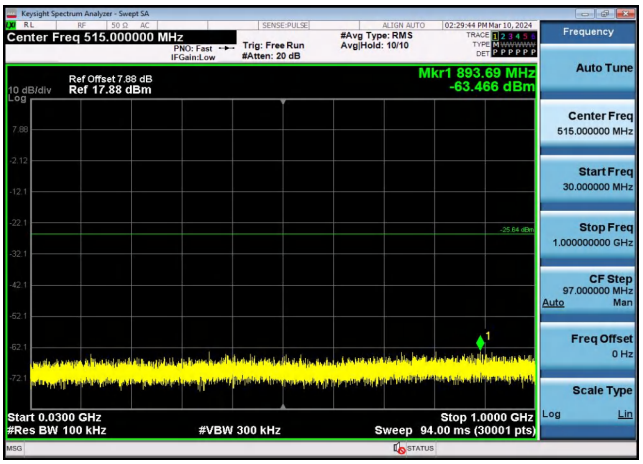
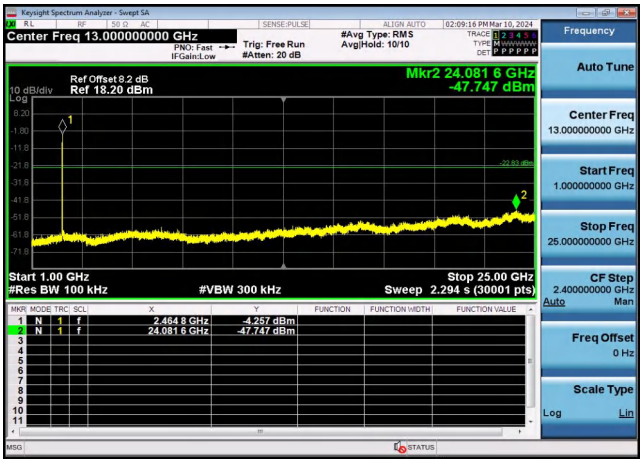
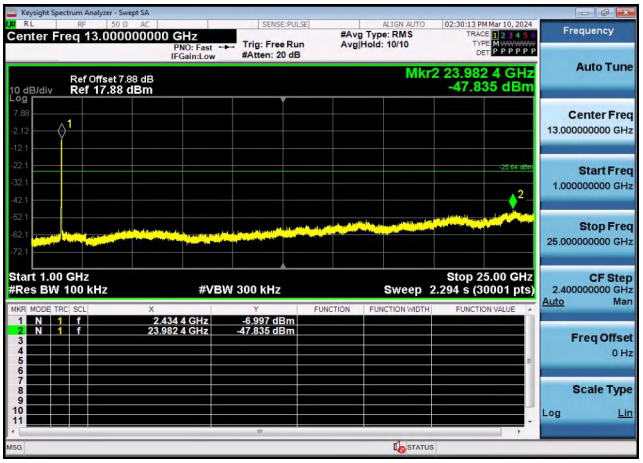
Ant 1

802.11b	
	
CH01	***CH06***
	
30MHz-1GHz	30MHz-1GHz
	
1GHz -25GHz	1GHz -25GHz

802.11b	802.11g
	
CH11	CH01
	
30MHz-1GHz	30MHz-1GHz
	
1GHz -25GHz	1GHz -25GHz

802.11g	
	
CH06	***CH11***
	
30MHz-1GHz	30MHz-1GHz
	
1GHz -25GHz	1GHz -25GHz

802.11n(HT20)	
	
CH01	***CH06***
	
30MHz-1GHz	30MHz-1GHz
	
1GHz -25GHz	1GHz -25GHz

802.11n(HT20)	*802.11n(HT40)*
	
CH11	*CH03*
	
30MHz-1GHz	30MHz-1GHz
	
1GHz -25GHz	1GHz -25GHz