

## 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

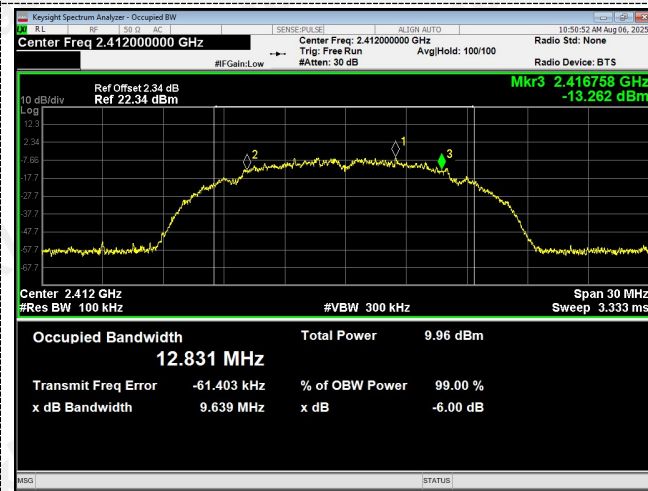
Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11b	01	9.639	≥500	Pass
	06	8.719		
	11	7.868		
802.11g	01	16.282	≥500	Pass
	06	16.078		
	11	16.323		
802.11n(HT20)	01	16.275	≥500	Pass
	06	16.427		
	11	16.536		
802.11n(HT40)	03	35.098	≥500	Pass
	06	34.424		
	09	33.159		

Note:

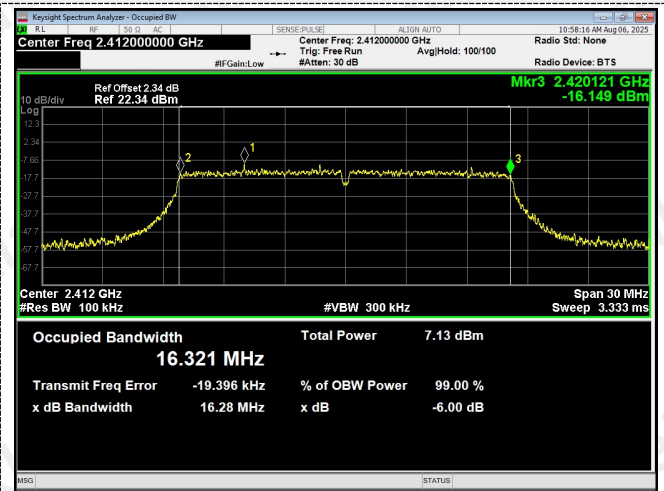
- 1) Measured peak power spectrum density at difference data rate for each mode and recorded worst case for each mode.
  - 2) Test results including cable loss;
  - 3) Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;
- Please refer to following plots;

## Test Graphs

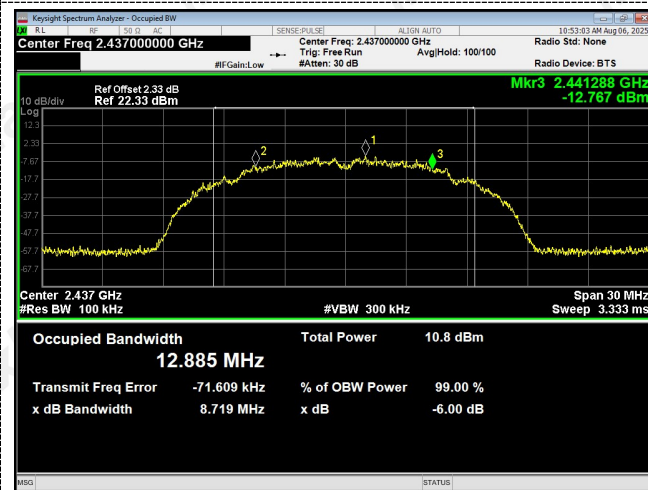
802.11b



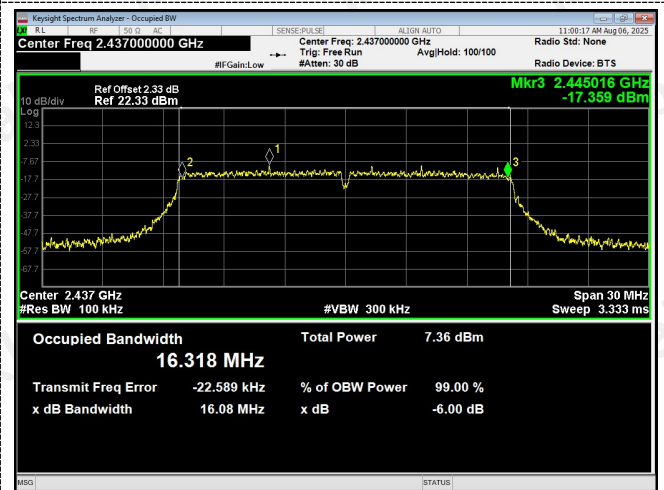
802.11g



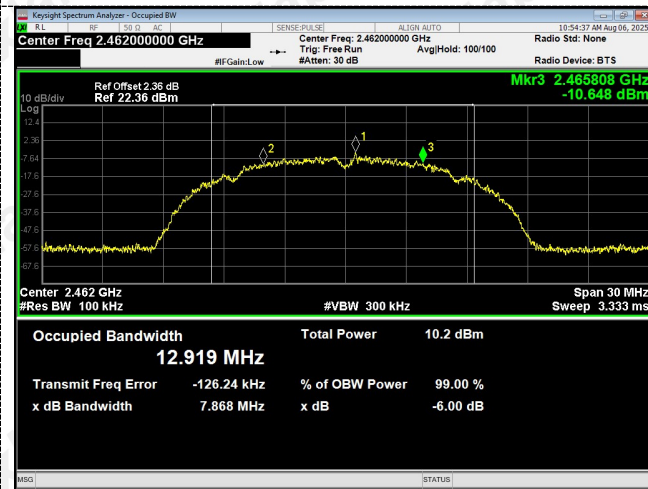
CH01



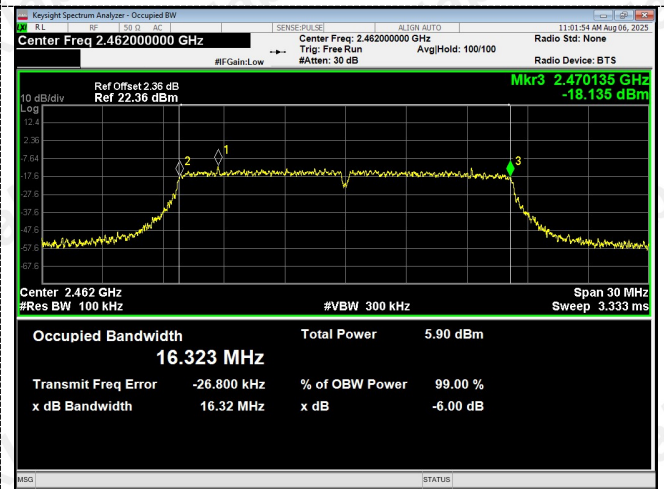
CH01



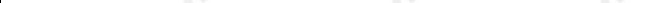
CH06



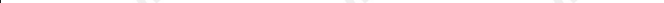
CH06



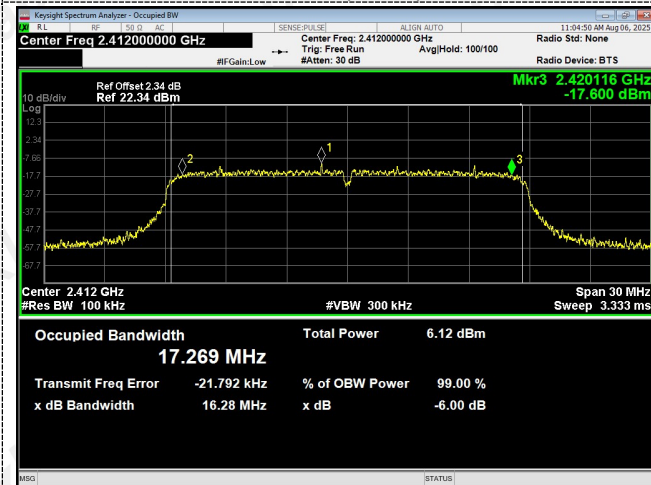
CH11



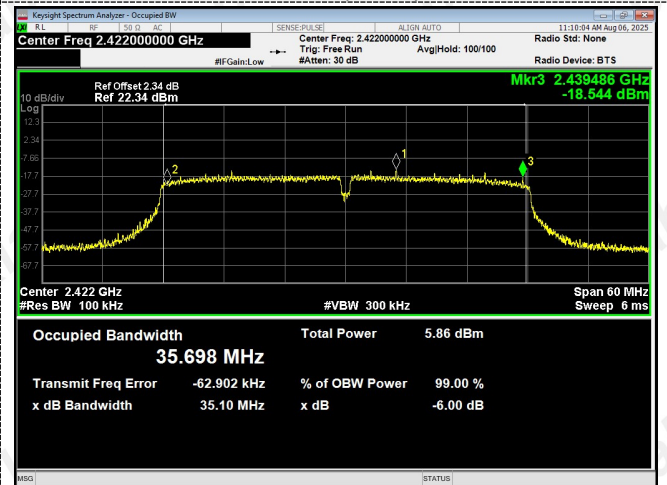
CH11



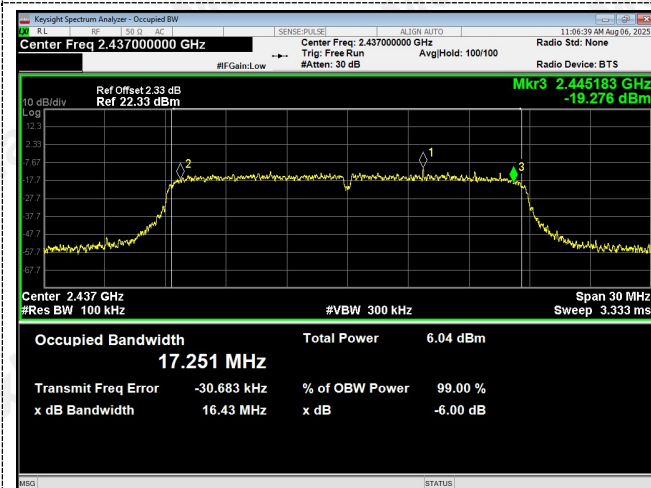
802.11n(HT20)



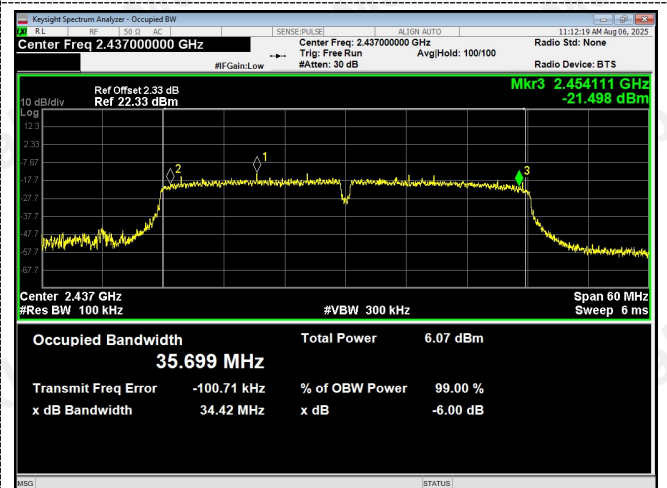
802.11n(HT40)



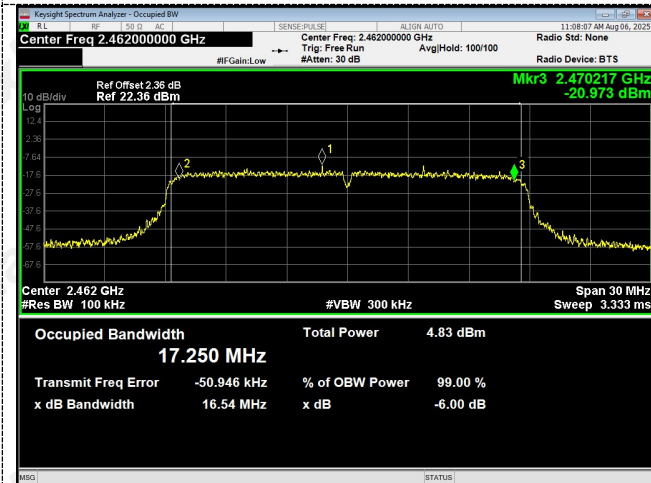
CH01



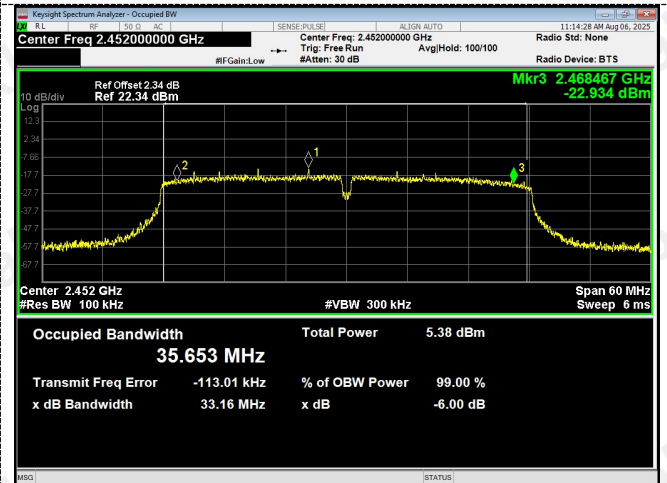
CH03



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 conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies 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 settings are made of the in-band reference level, band edge and out-of-band emissions.

### Test Configuration



### Test Results

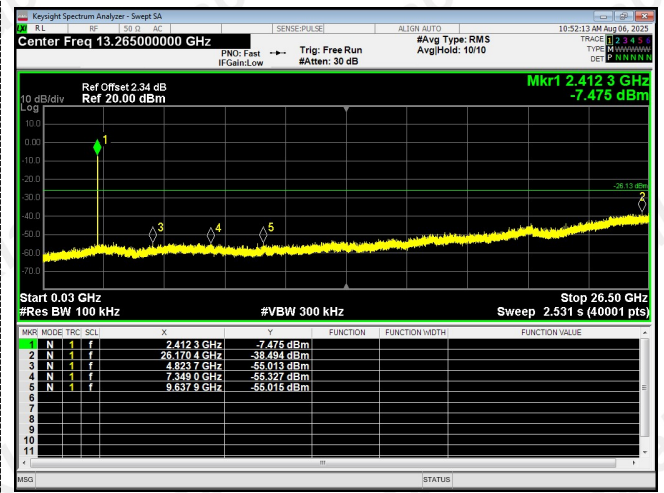
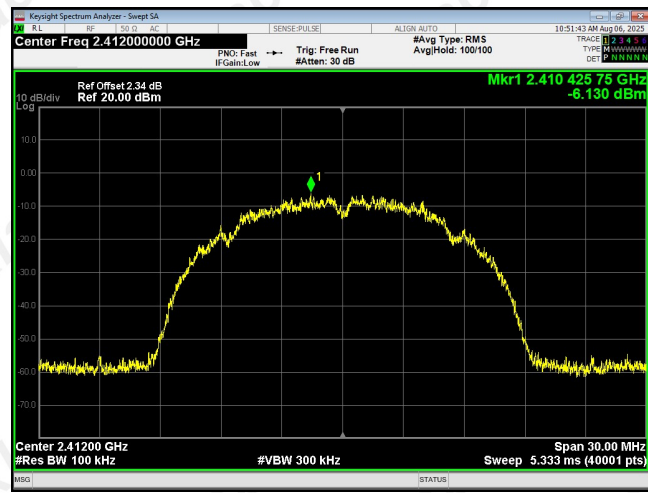
Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and band edge measurement data. And record the worst data in the report.

Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
b	2412	-32.36	-20	Pass
b	2437	-33.39	-20	Pass
b	2462	-32.98	-20	Pass
g	2412	-28.85	-20	Pass
g	2437	-28.71	-20	Pass
g	2462	-25.76	-20	Pass
n20	2412	-27.66	-20	Pass
n20	2437	-27.17	-20	Pass
n20	2462	-27.16	-20	Pass
n40	2422	-24.29	-20	Pass
n40	2437	-24.47	-20	Pass
n40	2452	-24.66	-20	Pass

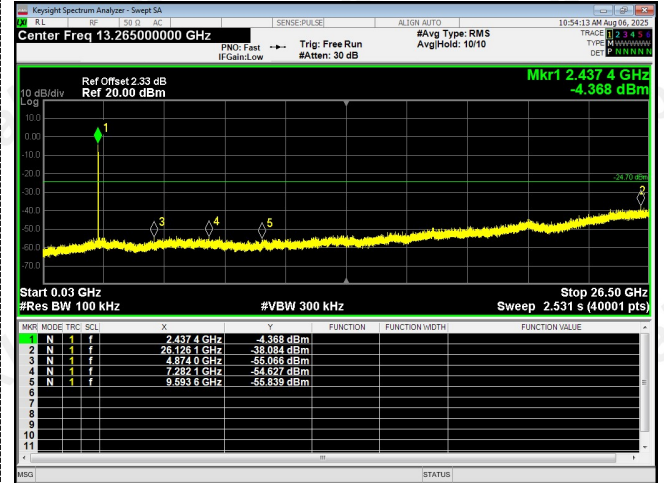
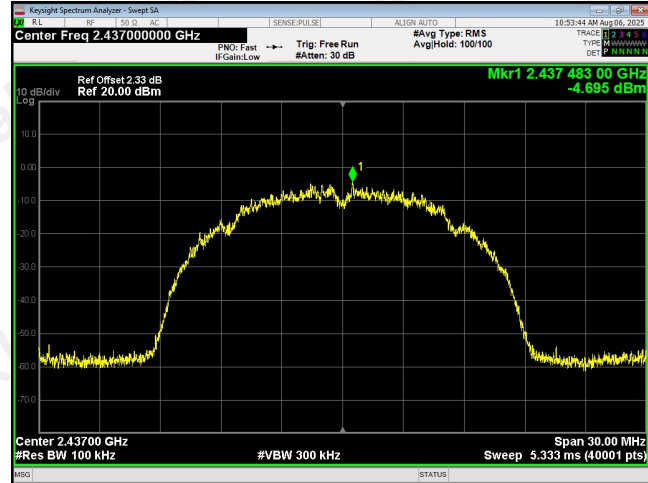
Test plot as follows:



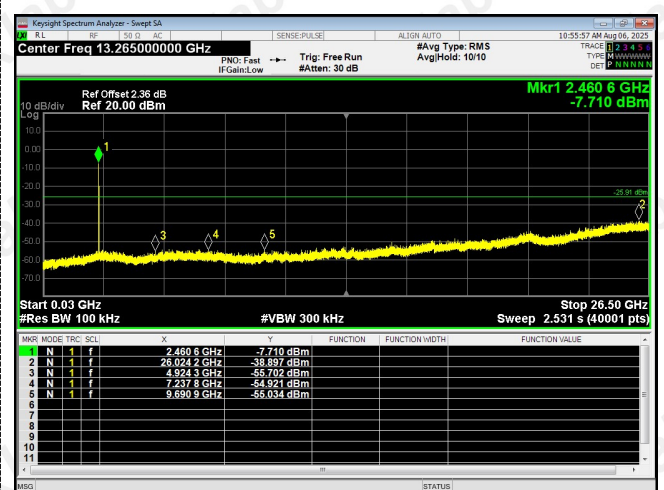
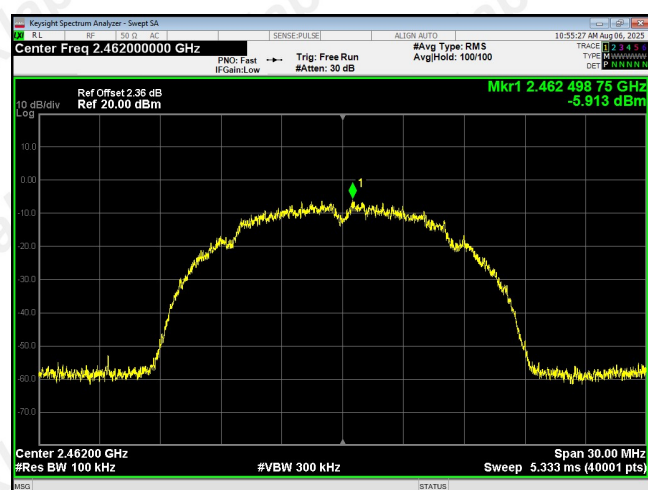
### 802.11b



### CH01

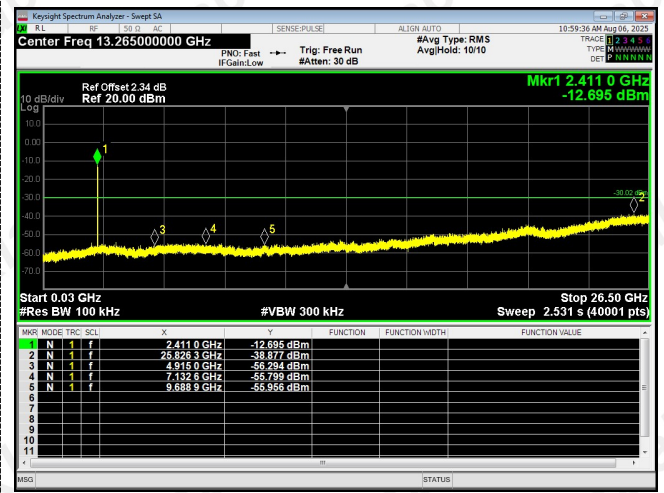
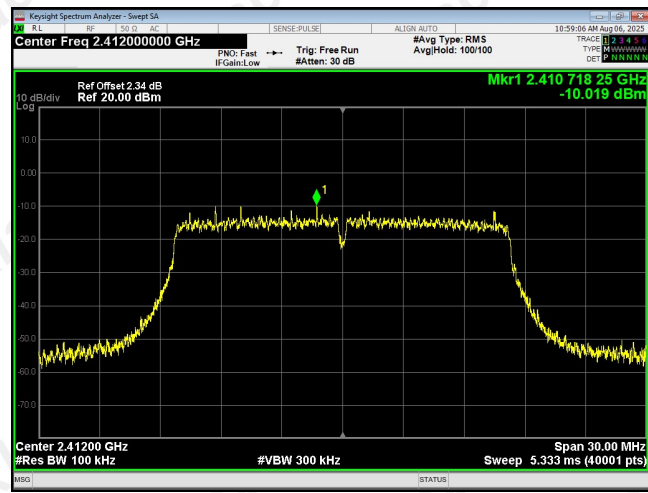


### CH06

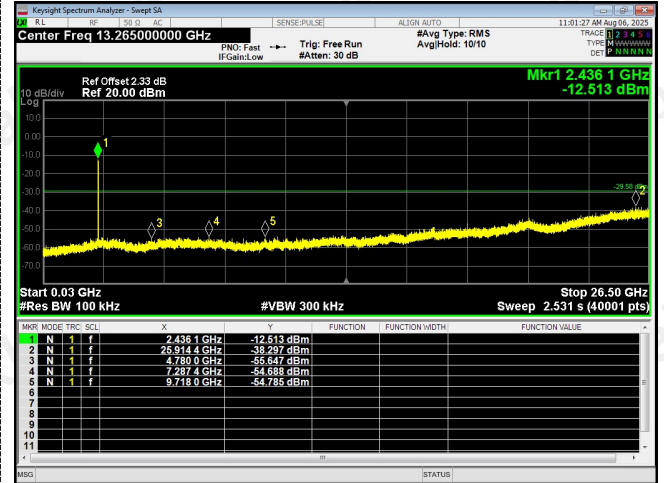
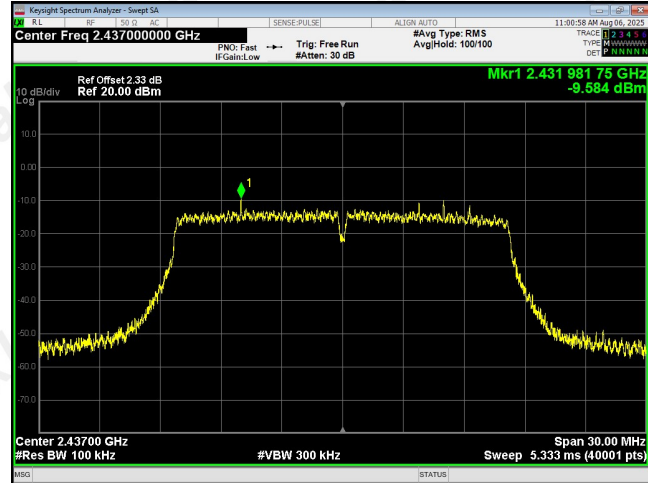


### CH11

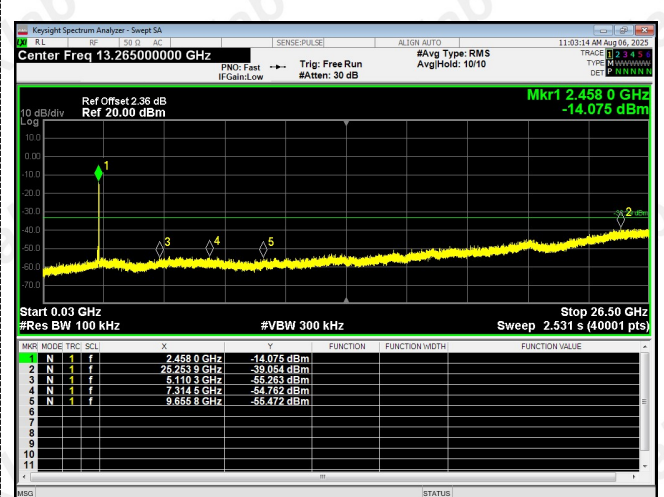
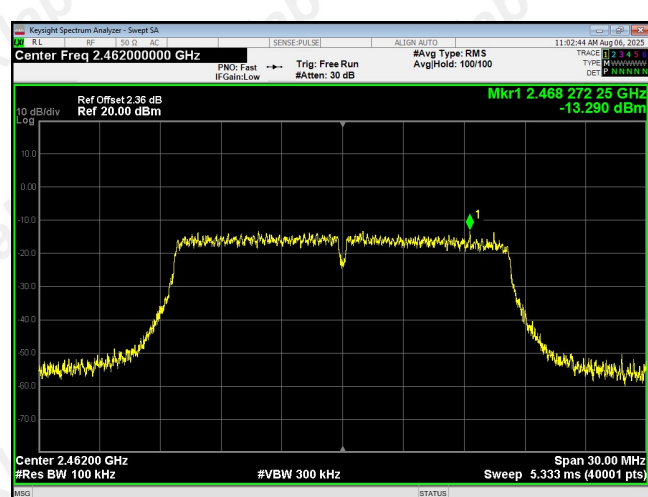
### 802.11g



### CH01



### CH06



### CH11