

**8. PEAK OUTPUT POWER TEST**

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

8.1 APPLIED PROCEDURES/LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP**8.5 EUT OPERATION CONDITIONS**

The EUT tested system was configured as the statements of chapter 3, Unless otherwise a special operating condition is specified in the follows during the testing.



8.6 TEST RESULT

Temperature :	26℃	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V

Test Mode	Test Channel (MHz)	Peak Output Power (dBm)	Limit (dBm)	Result
802.11b	2412	14.966	30.00	Pass
	2437	15.151		
	2462	14.530		
802.11g	2412	14.993	30.00	Pass
	2437	14.738		
	2462	14.252		
802.11n20	2412	14.351	30.00	Pass
	2437	14.219		
	2462	13.794		
802.11n40	2422	14.501	30.00	Pass
	2437	14.387		
	2452	14.287		



9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

9.1 APPLICABLE STANDARD

Typical regulatory requirements specify that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions⁸⁹:

The maximum peak conducted output power procedure was used to determine compliance as described in 11.9.1, then the peak output power 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 (i.e., 20 dBc).

9.2 TEST PROCEDURE

A. Reference level measurement, establish a reference level by using the following procedure:

- Set instrument center frequency to DTS channel center frequency.
- Set the span to ≥ 1.5 times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

B. Emission level measurement, establish an emission level by using the following procedure:

- Set the center frequency and span to encompass frequency range to be measured.
- Set the RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

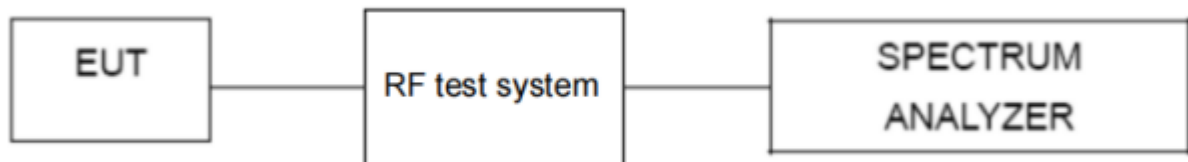
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.



9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP



9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of chapter 3, Unless otherwise a special operating condition is specified in the follows during the testing.

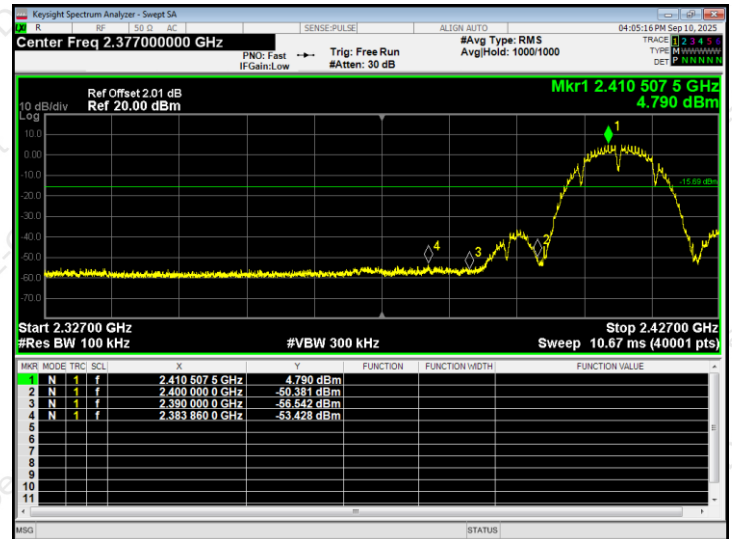
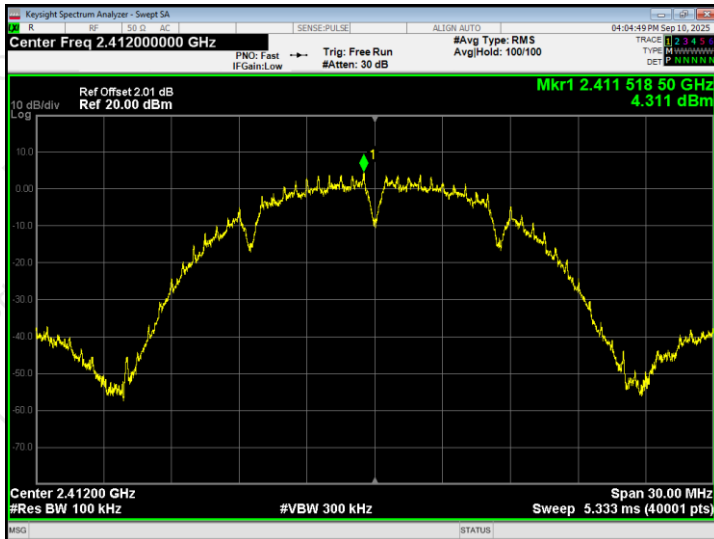


9.6 TEST RESULTS

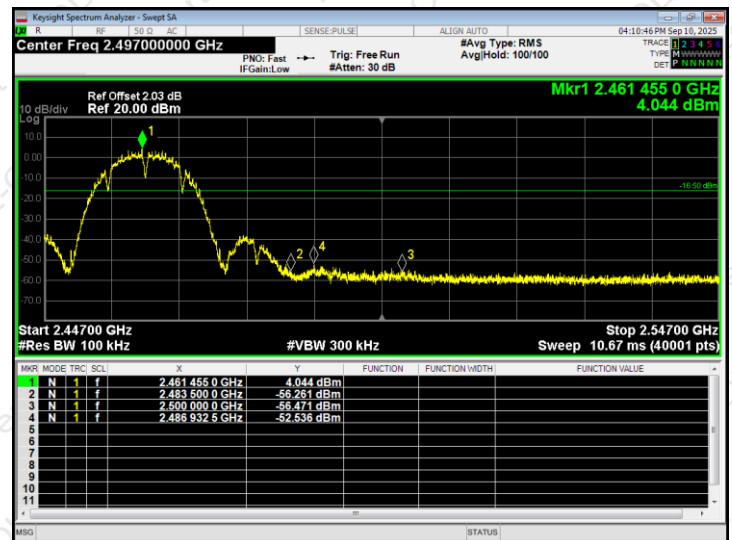
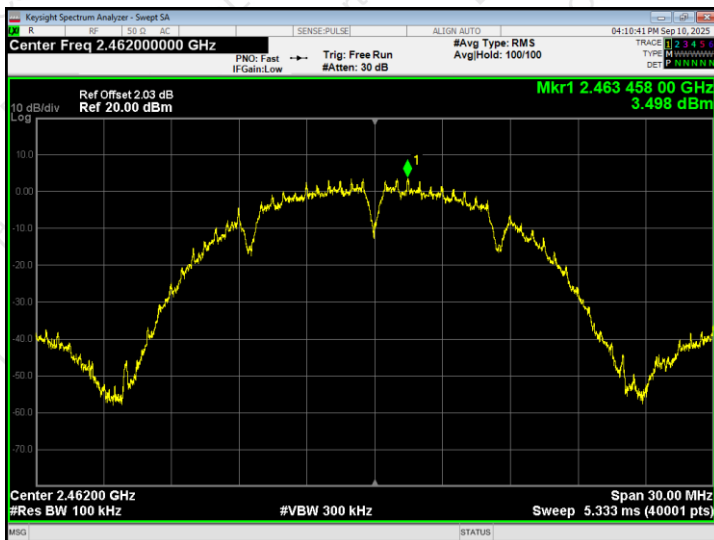
Band edge test plot as follows:

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V

802.11b - Lowest channel

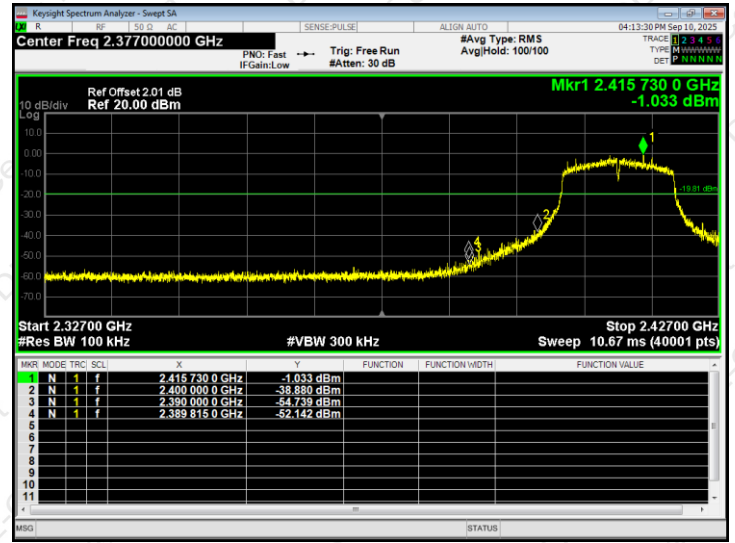
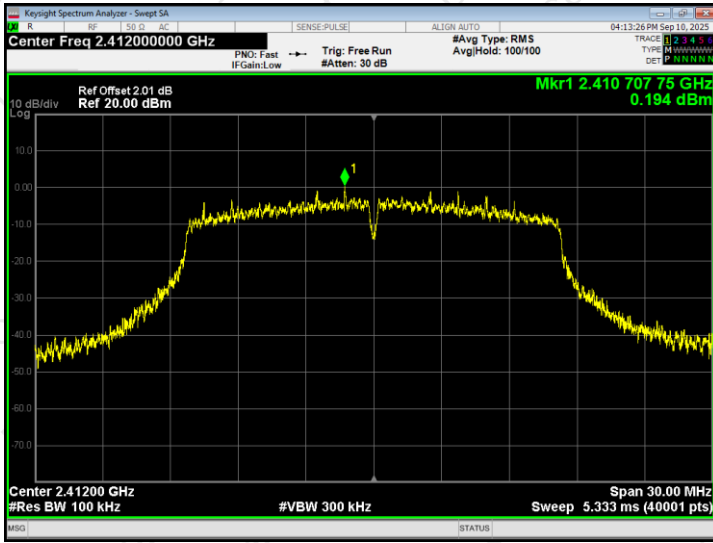


802.11b - Highest channel

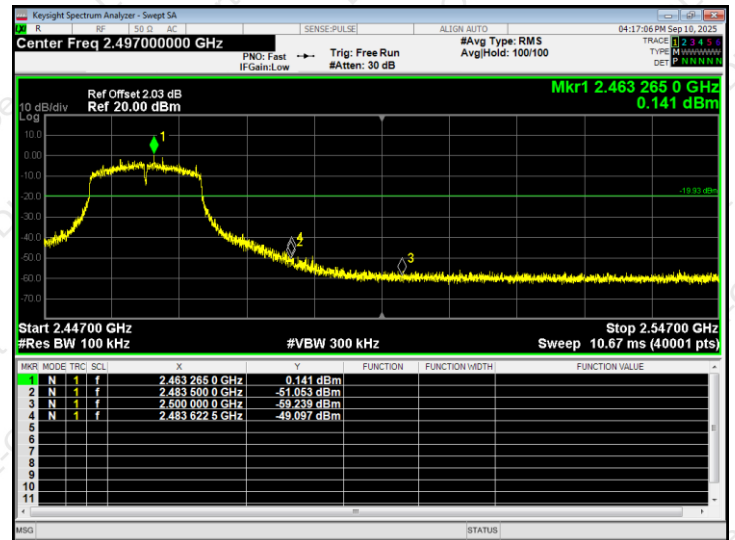
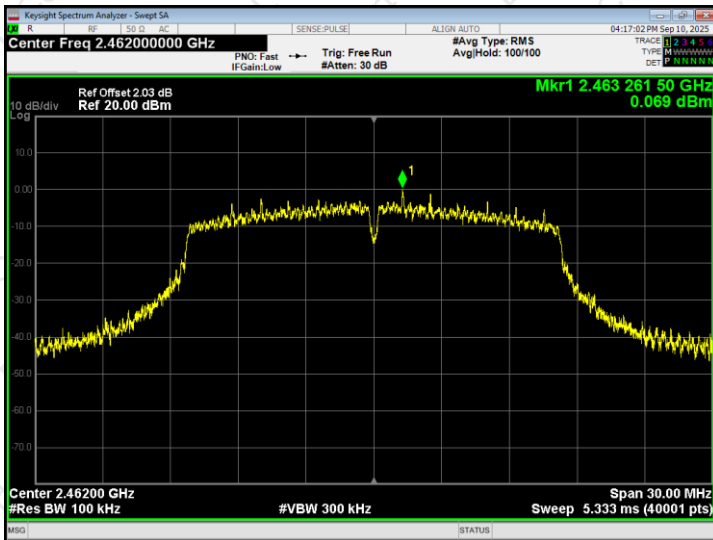




802.11g - Lowest channel

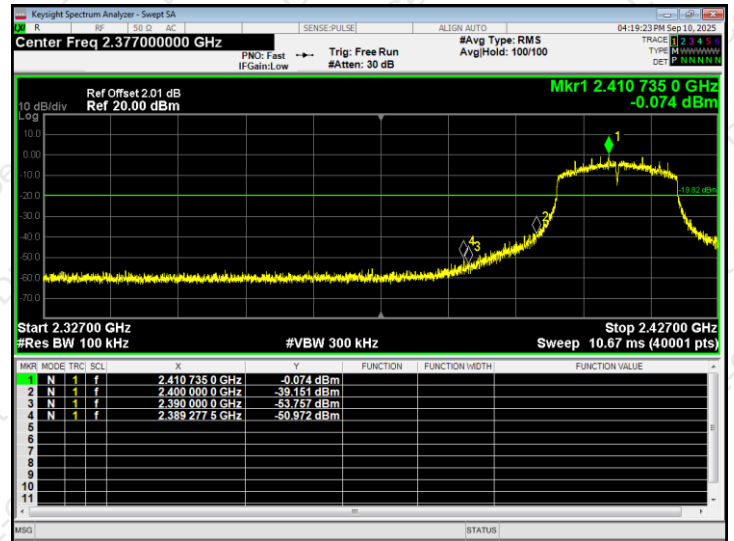
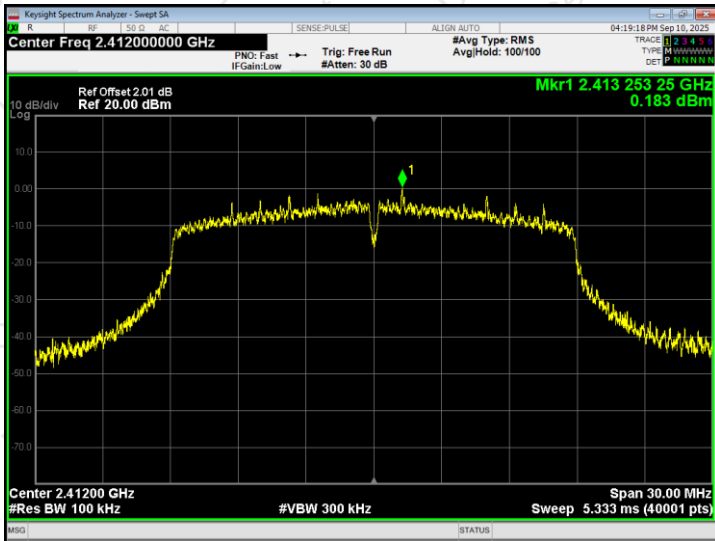


802.11g - Highest channel

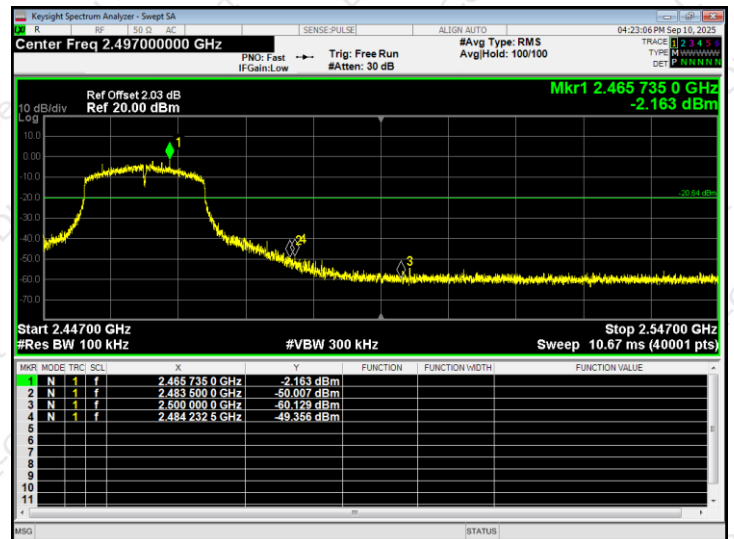
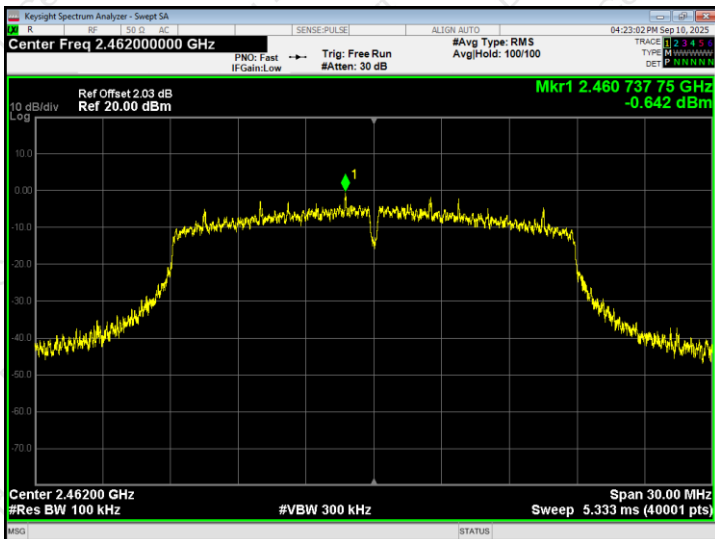




802.11n20 - Lowest channel



802.11n20 - Highest channel





Keysight Spectrum Analyzer - Sweep SA

R F 50.0 AC

SENSE-PULSE

ALIGN AUTO

04:25:46 PM Sep 18, 2025

M20

Center Freq 2.402000000 GHz

PNO: Fast

IF Gain: Low

Trig: Free Run

#Atten: 30 dB

#Avg Type: RMS

AvgHold: 100/100

TRACE 1 2 3 4 5

TYPE M

SET P

Mkr1 2.416 987 5 GHz

-3.200 dBm

10 dB/div

Log

Start 2.35200 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.45200 GHz

Sweep 10.67 ms (40001 pts)

MSO

STATUS

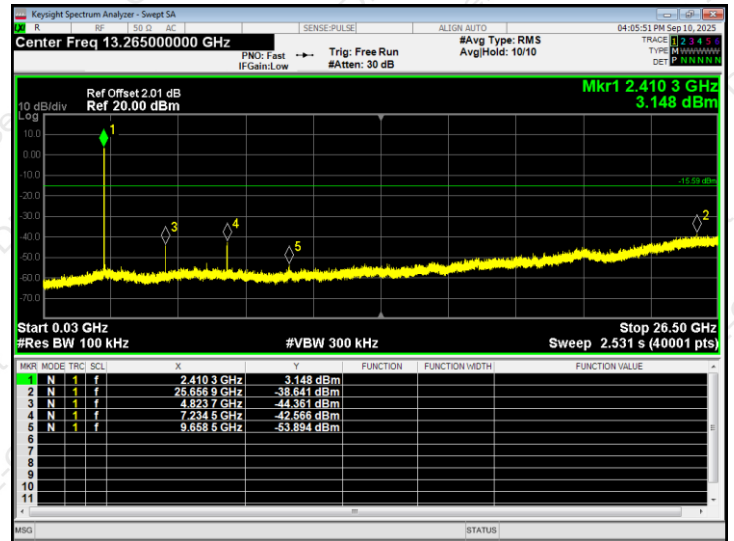
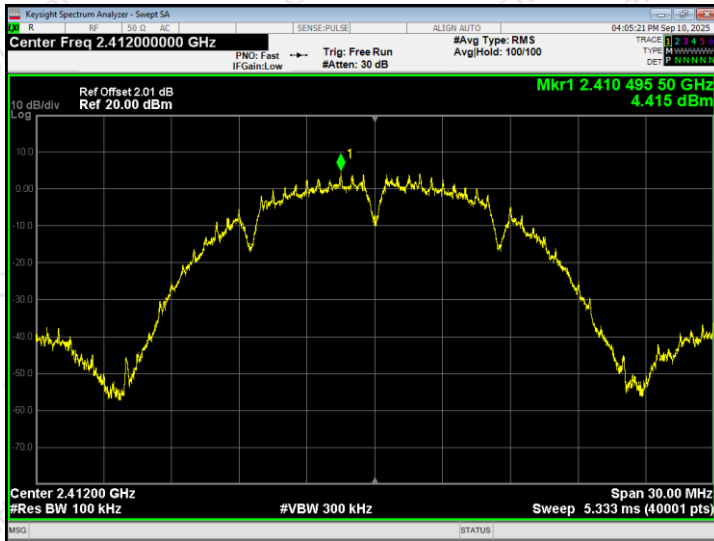
[illegible]



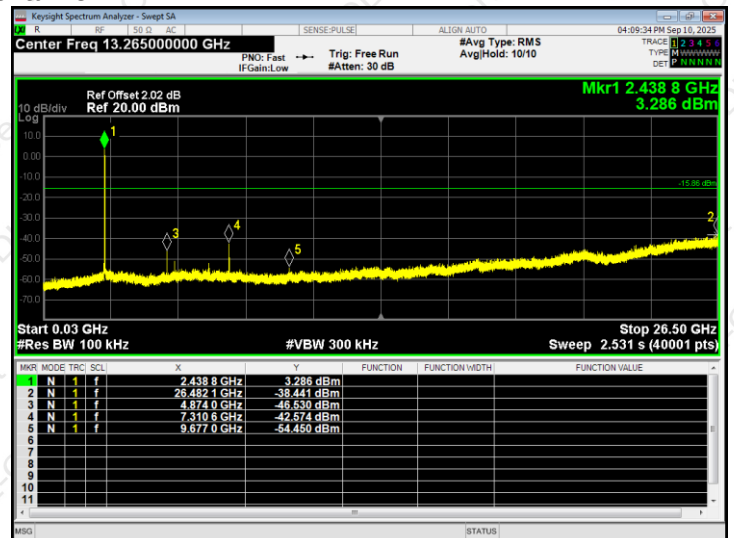
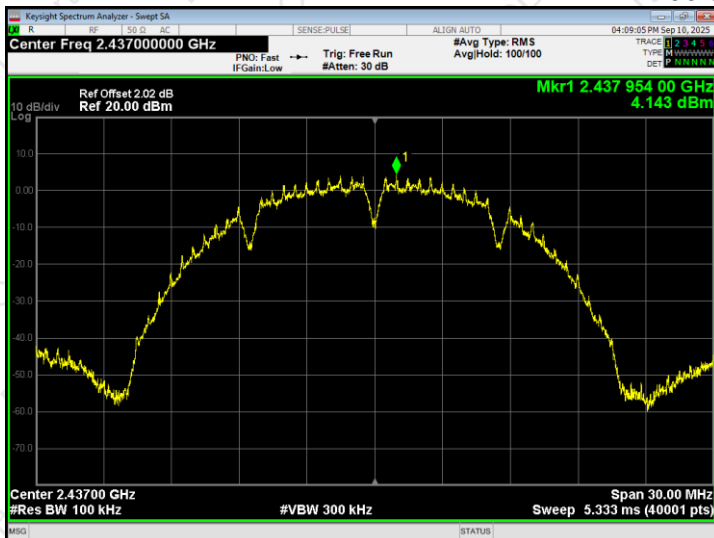
Spurious emission test plot as follows:

802.11b

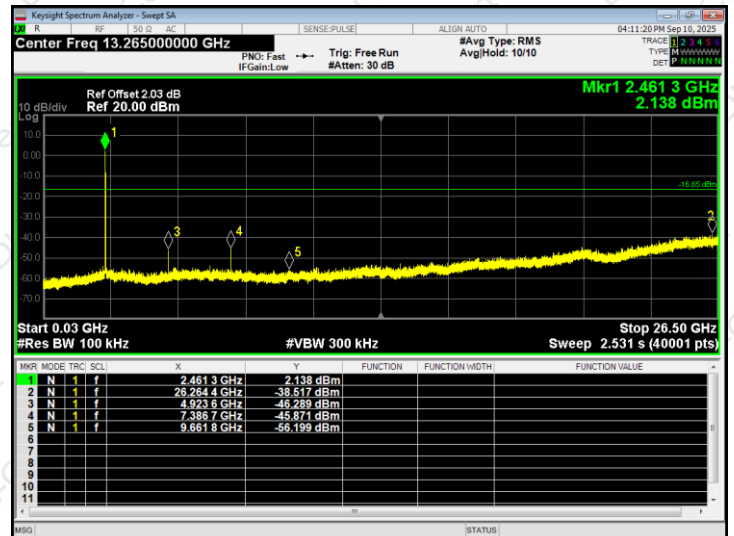
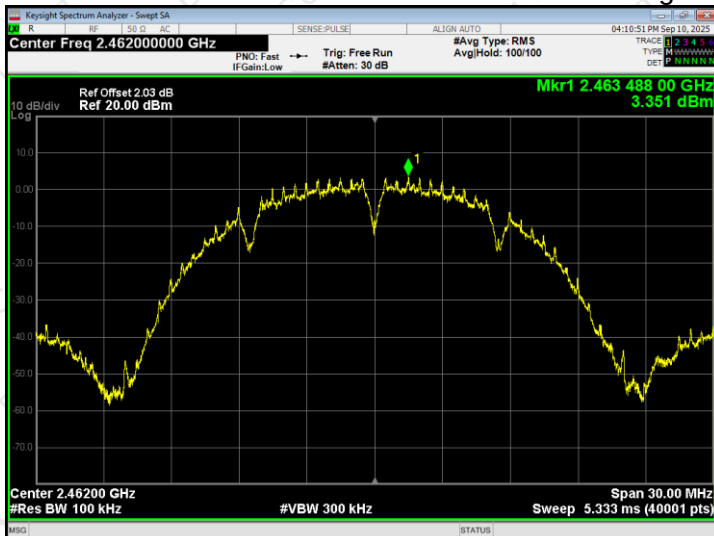
Lowest channel



Middle channel



Highest channel

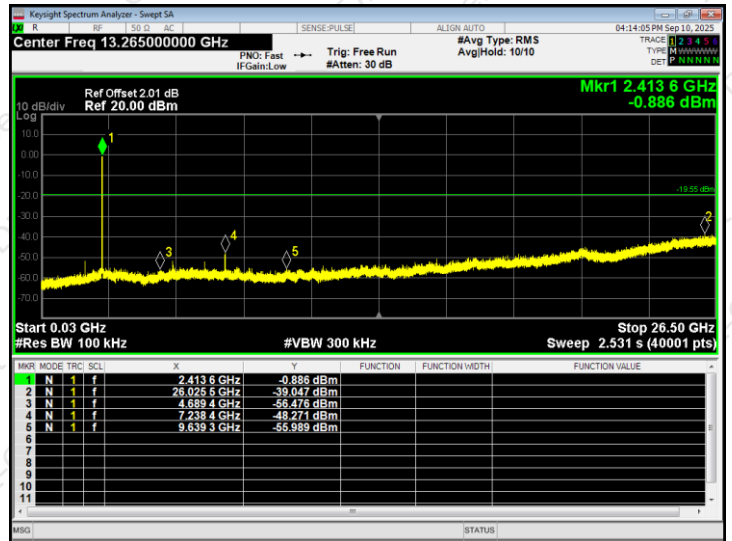
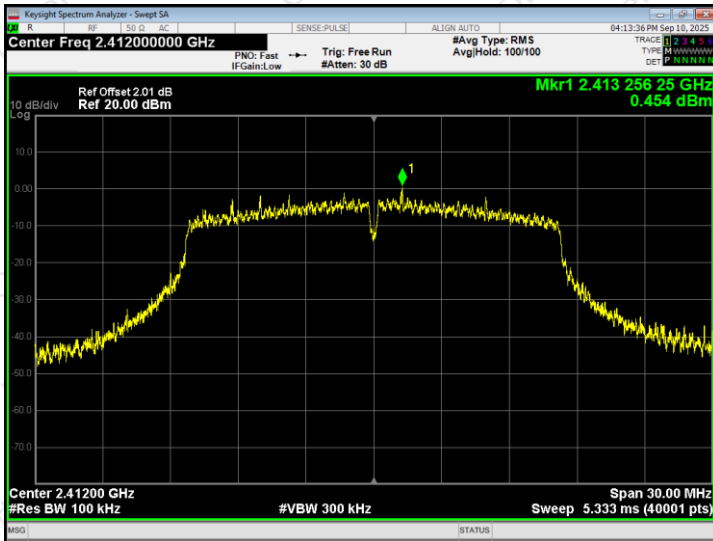


30MHz ~ 26.5GHz

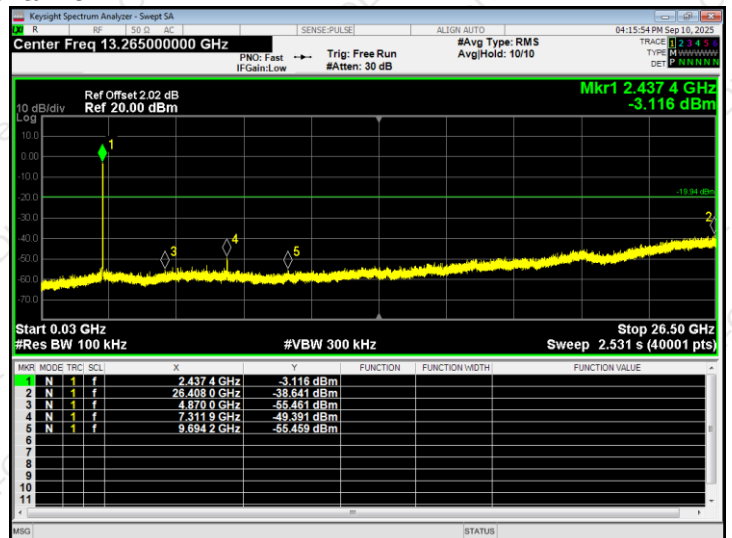
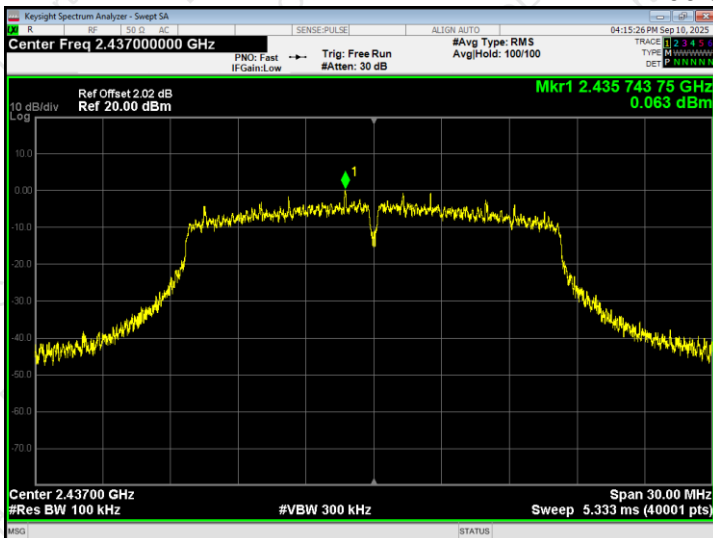


802.11g

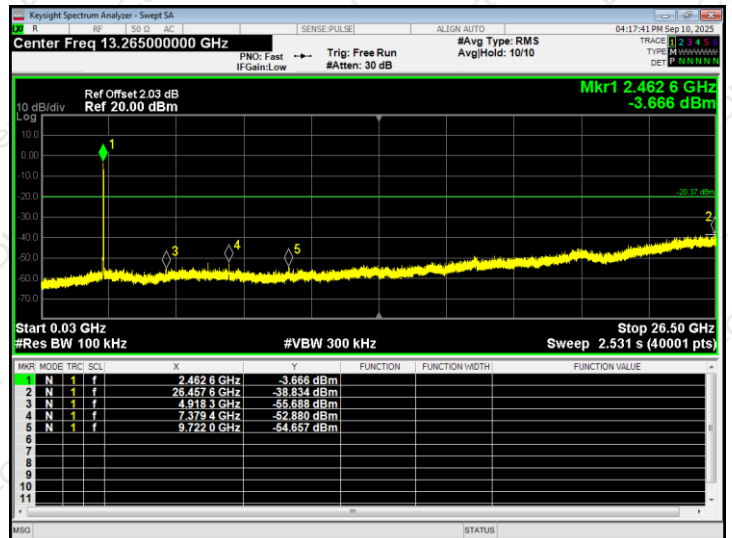
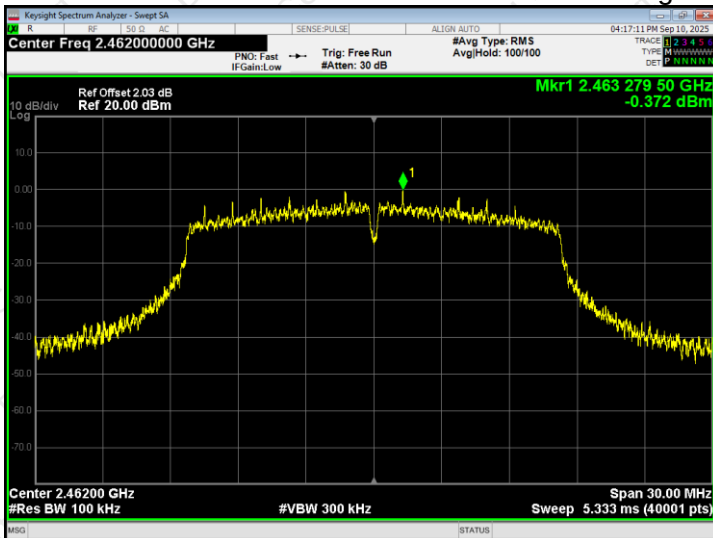
Lowest channel



Middle channel



Highest channel

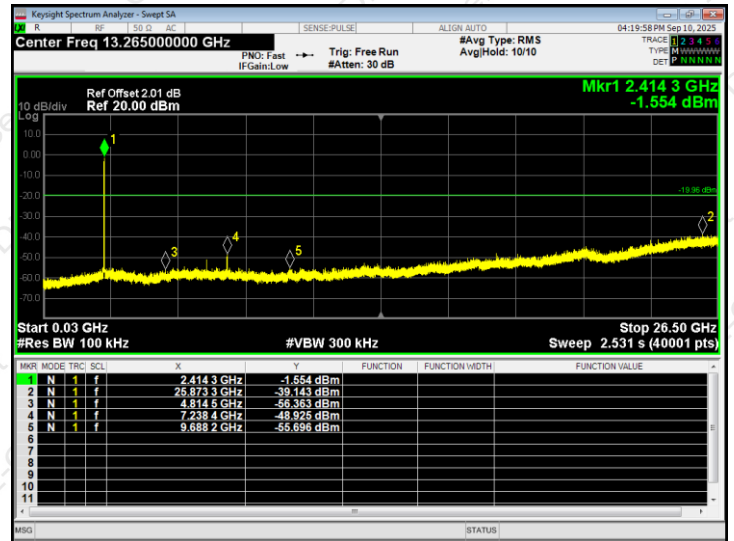
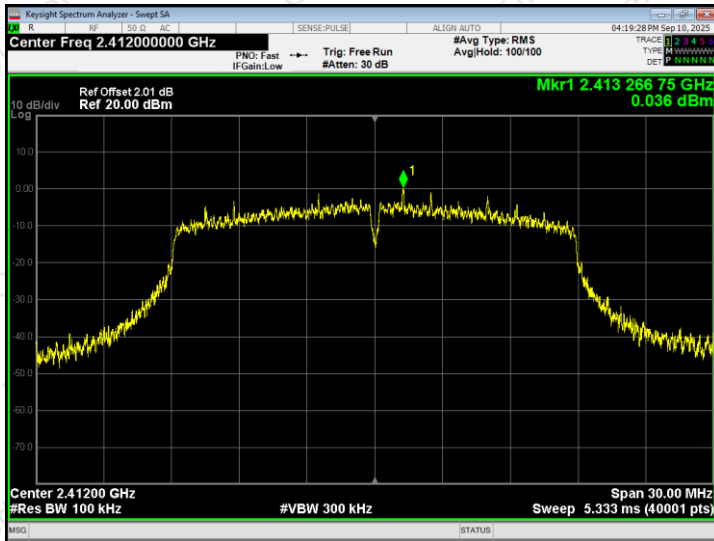


30MHz ~ 26.5GHz

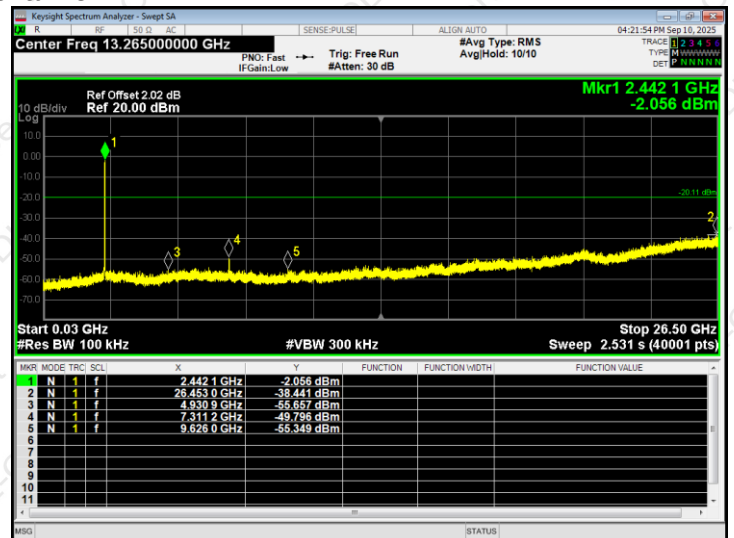
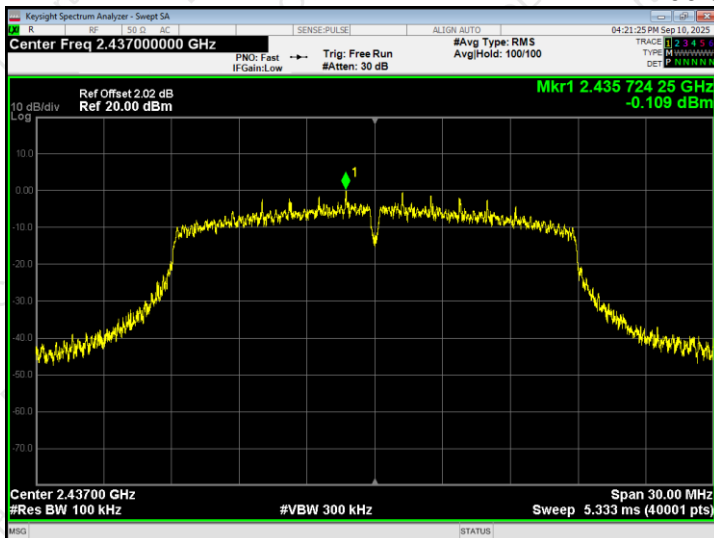


802.11n20

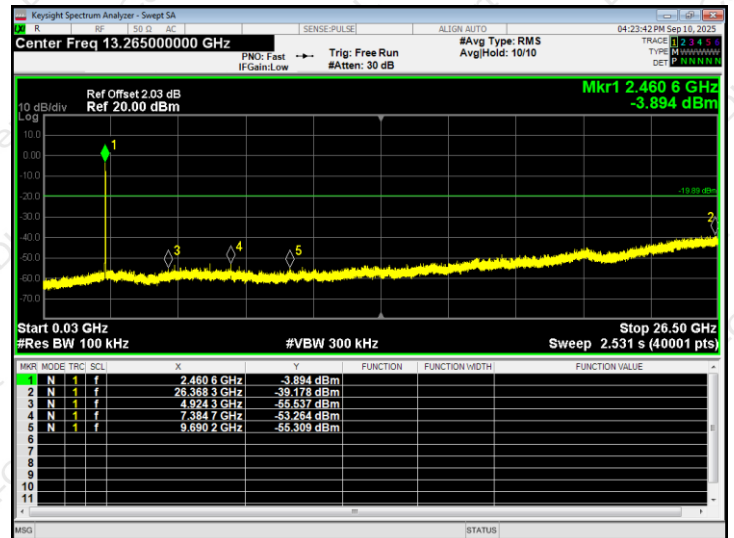
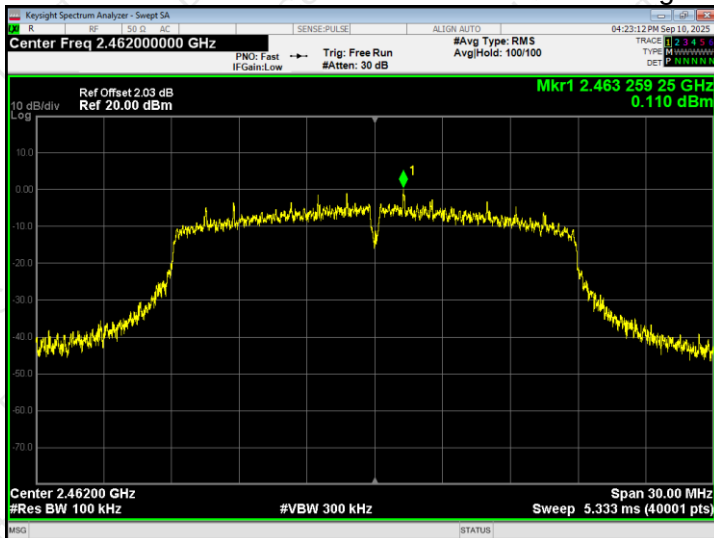
Lowest channel



Middle channel



Highest channel

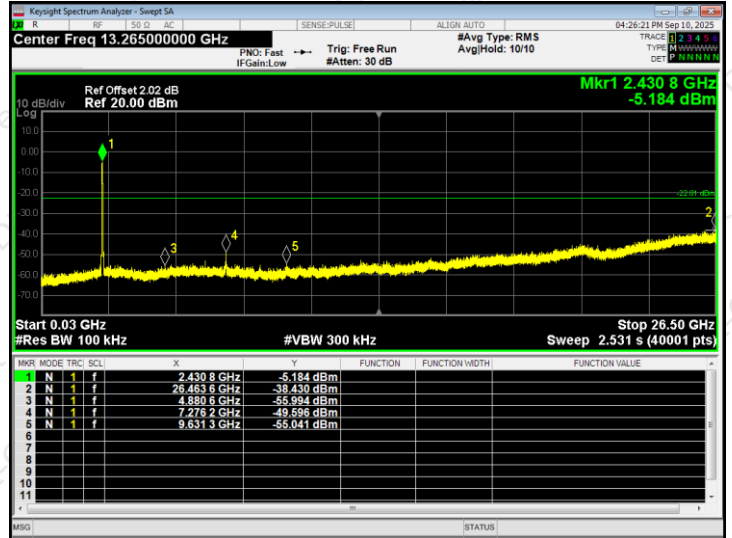
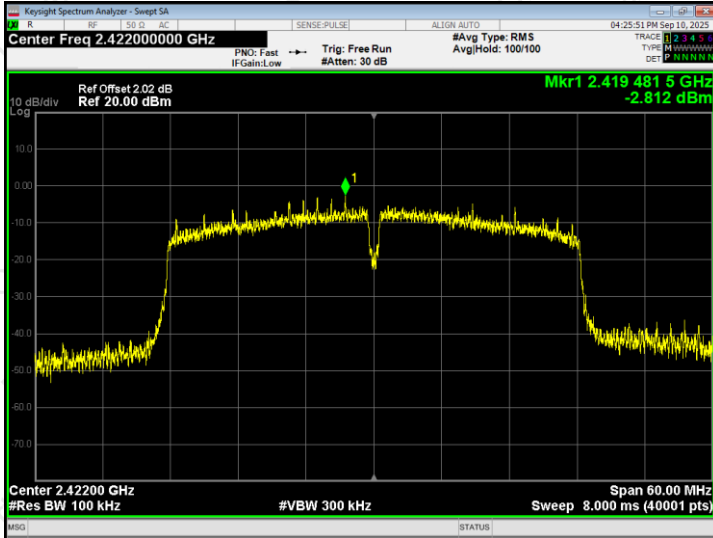


30MHz ~ 26.5GHz

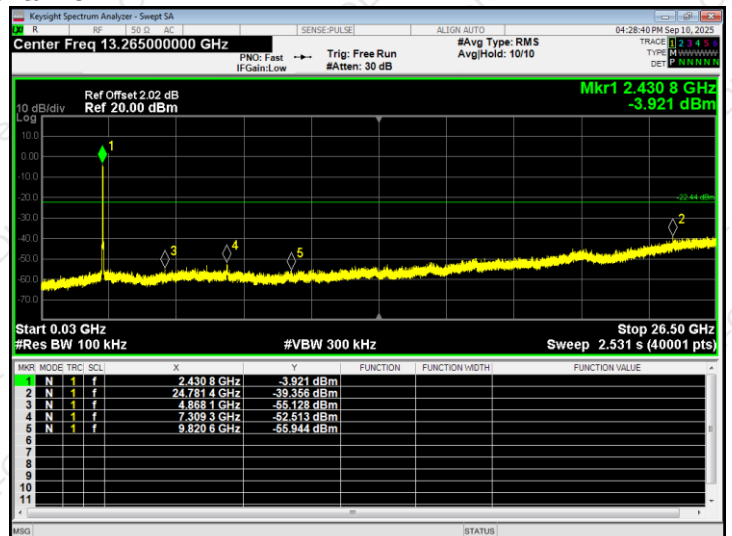
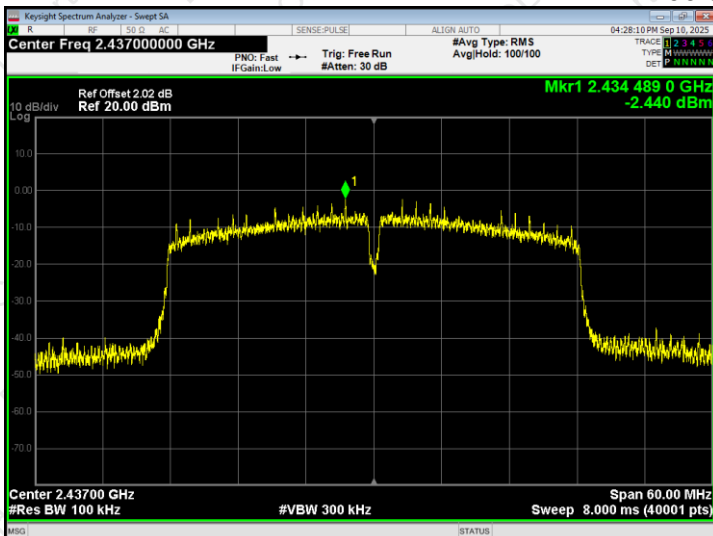


802.11n40

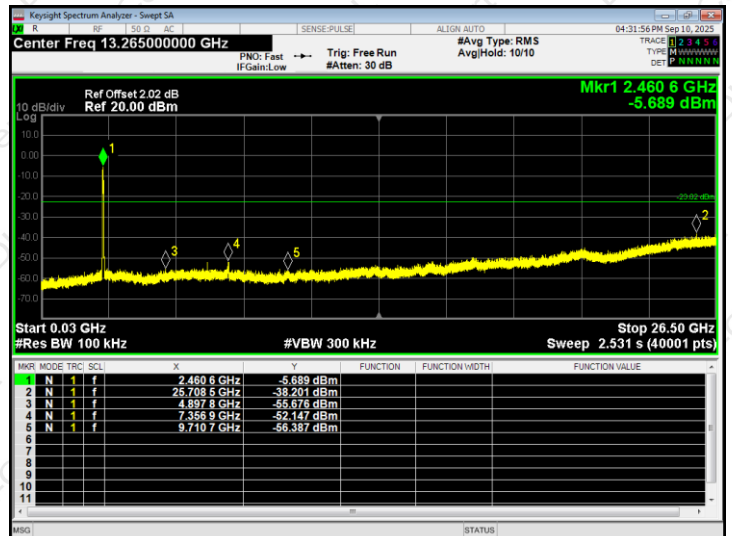
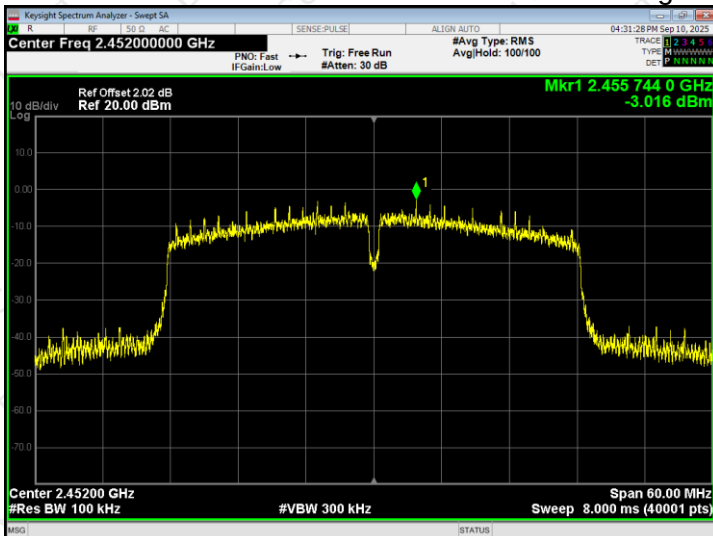
Lowest channel



Middle channel



Highest channel



30MHz ~ 26.5GHz



10. DUTY CYCLE

Test Method:	ANSI C63.10:2020
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10.1 APPLIED PROCEDURES / LIMIT

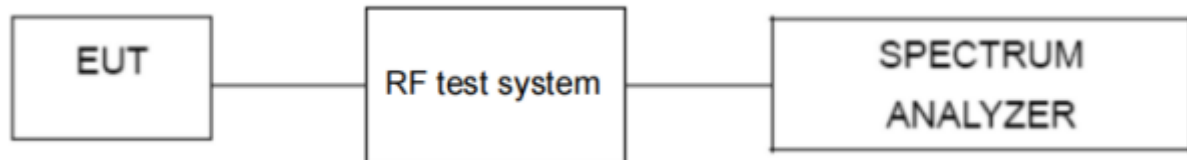
Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

- A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.
- The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
 - Set the center frequency of the instrument to the center frequency of the transmission.
 - Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
 - Set $VBW \geq RBW$. Set detector = peak or average.
 - The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$ and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if $T \leq 16.7 \mu s$.)

10.2 DEVIATION FROM STANDARD

No deviation.

10.3 TEST SETUP



10.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of chapter 3, Unless otherwise a special operating condition is specified in the follows during the testing.



10.5 TEST RESULTS

Temperature :	26°C	Relative Humidity :	54%
Pressure :	101kPa	Test Voltage :	DC 5V

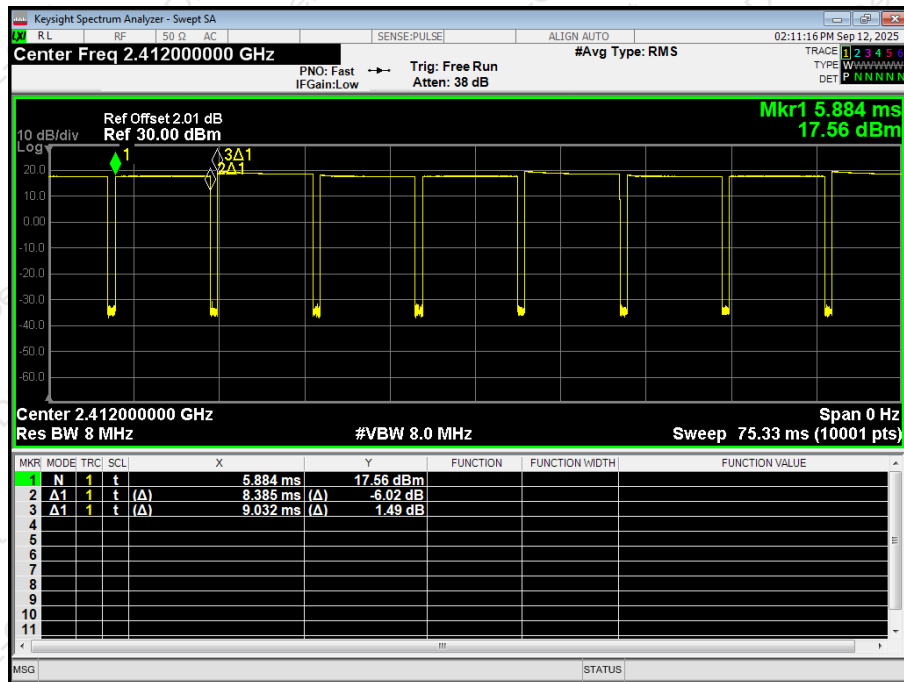
Test Mode	Test Frequency (MHz)	Duty Cycle (%)	Factor (dB)	Result
802.11b	2412	92.84	0.32	Pass
802.11g	2412	88.59	0.53	Pass
802.11n20	2412	68.03	1.67	Pass
802.11n40	2422	88.70	0.52	Pass

Note: Duty Cycle = Ton / Total * 100%;
Duty Cycle Correction Factor = 10log (1/Duty Cycle).



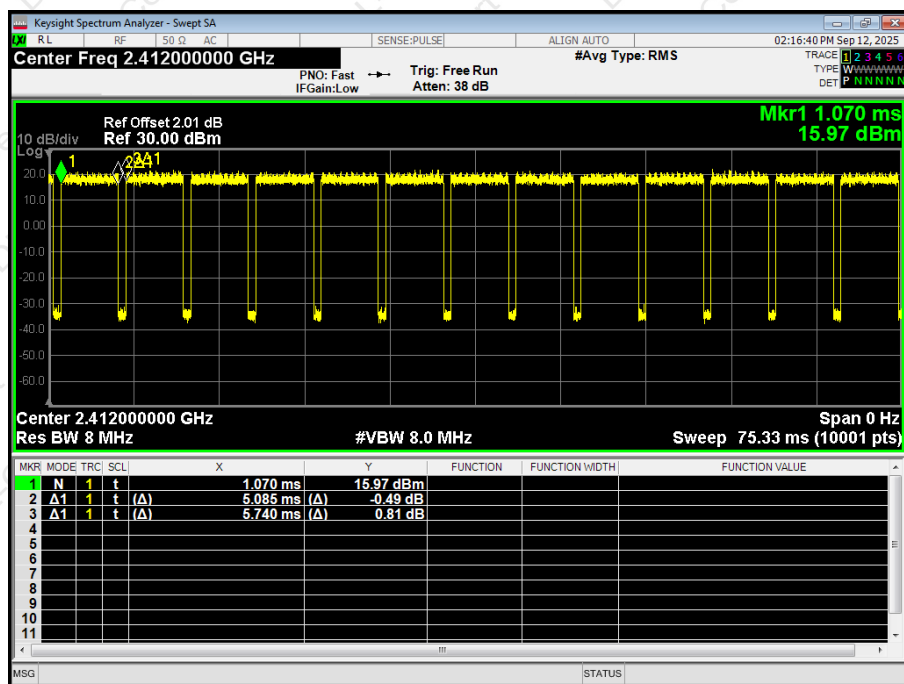
802.11b

2412MHz



802.11g

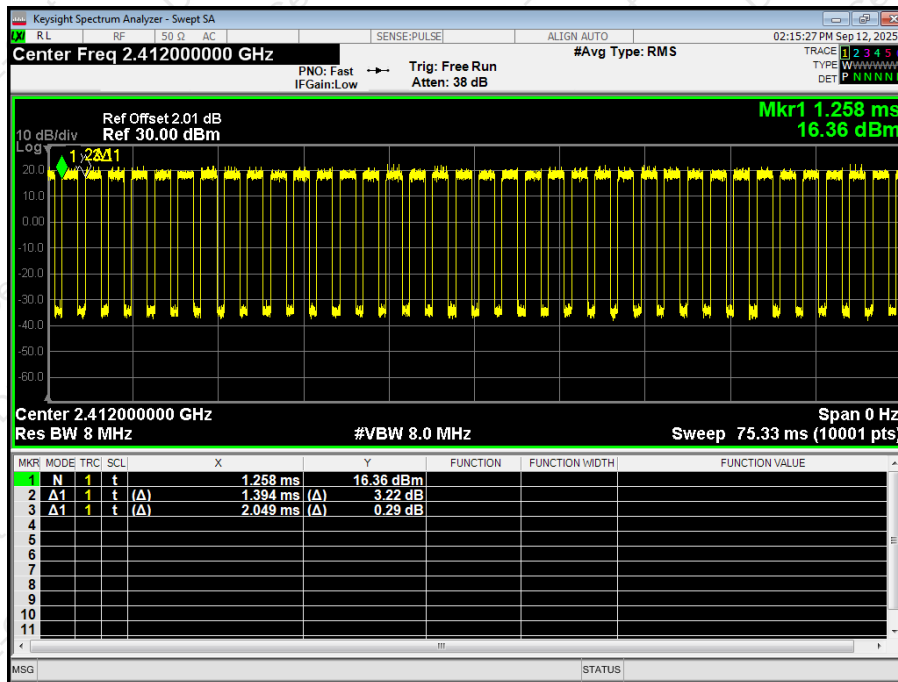
2412MHz





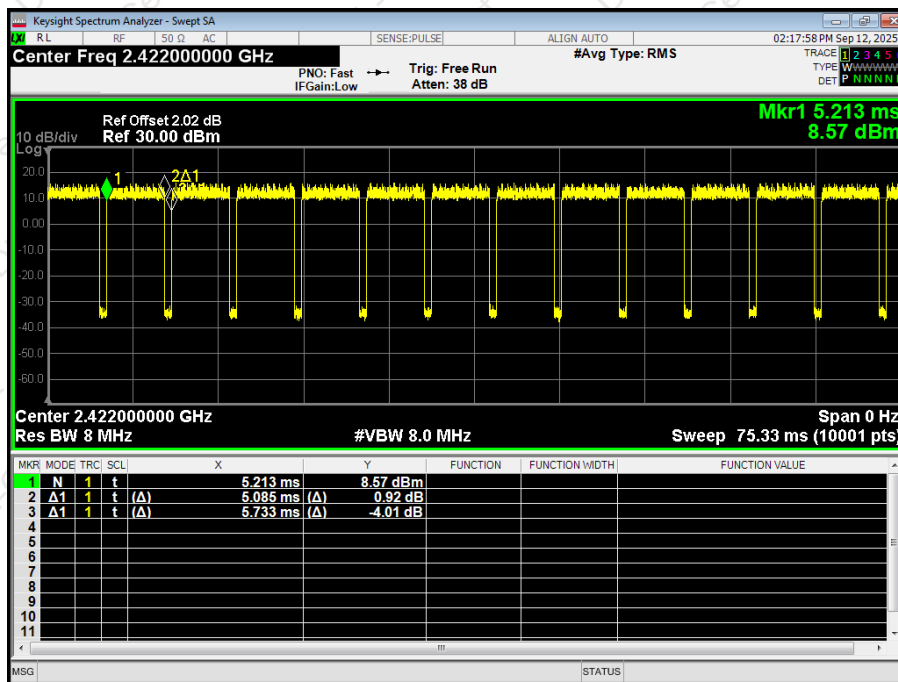
802.11n20

2412MHz



802.11n40

2422MHz



Note: All channel have been tested, and the report only reflects the worst case data.

**11. ANTENNA REQUIREMENT**

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antenna is PCB antenna, the best case gain of the antenna is 0.91dBi, reference to the appendix II for details.	



12. TEST SETUP PHOTO

Reference to the appendix I for details.

13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

***** END OF REPORT *****