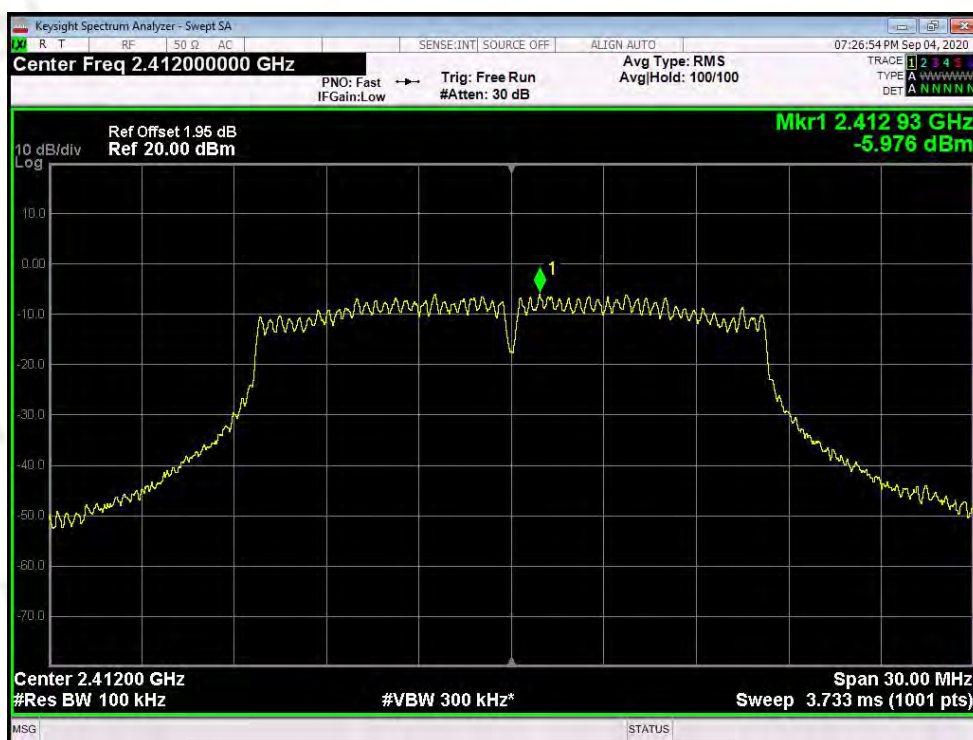


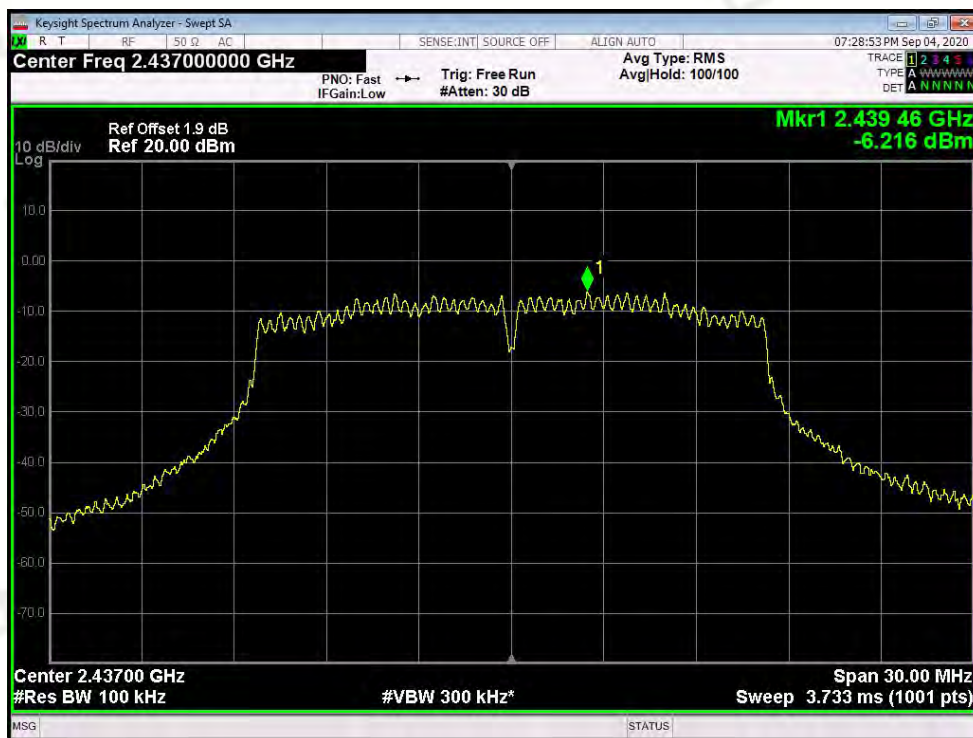
Temperature:	25 °C	Humidity:	50%		
Test By:	PEI	Test Date:	September 04, 2020		
Test Result:	PASS				
TX 802.11b Mode					
Frequency (MHz)	Power Density (dBm)			Limit (dBm)	Result
	ANT A(dBm)	ANT B(dBm)	TOTAL(dBm)		
2412	-5.976	-5.518	--	8	PASS
2437	-6.216	-5.399	--	8	PASS
2462	-6.359	-6.179	--	8	PASS

Antenna A

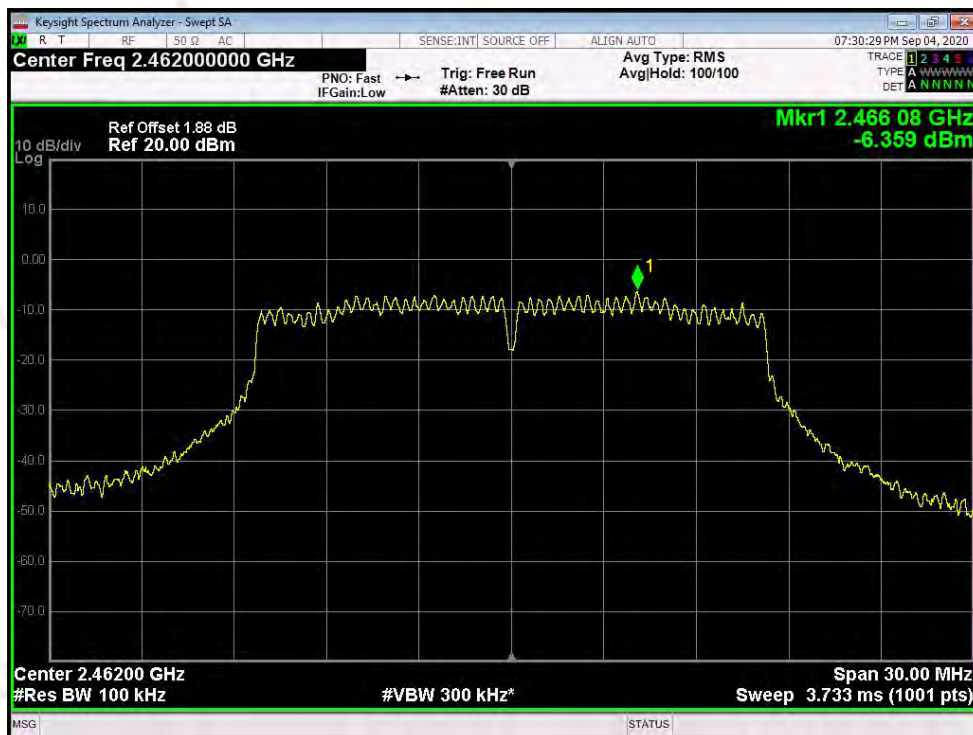
802.11g Low Channel



802.11g Middle Channel

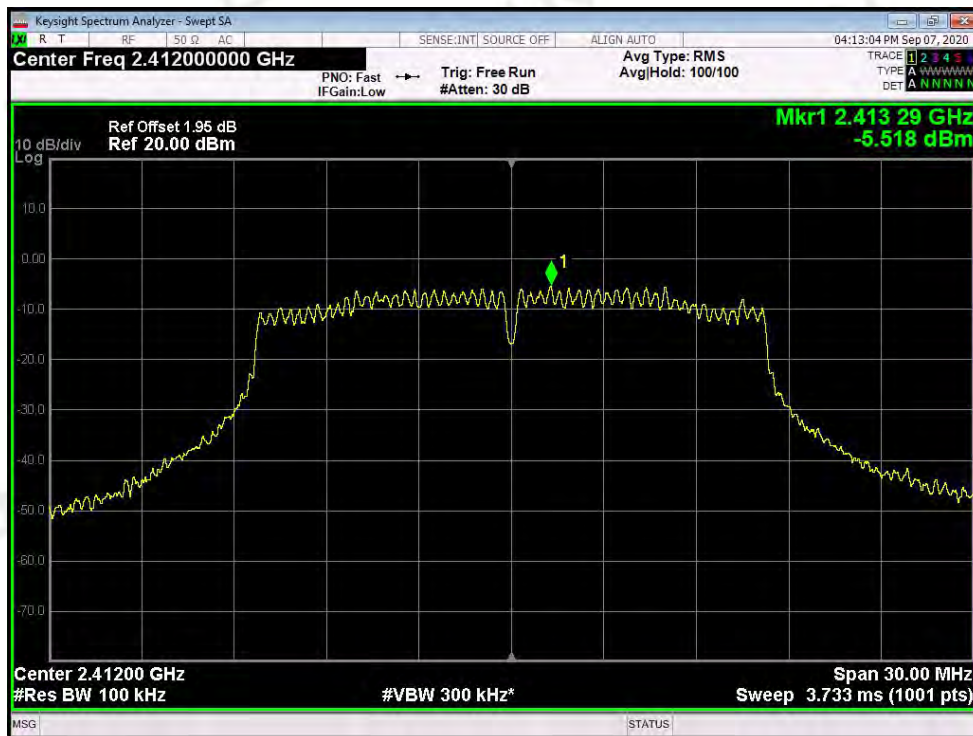


802.11g High Channel

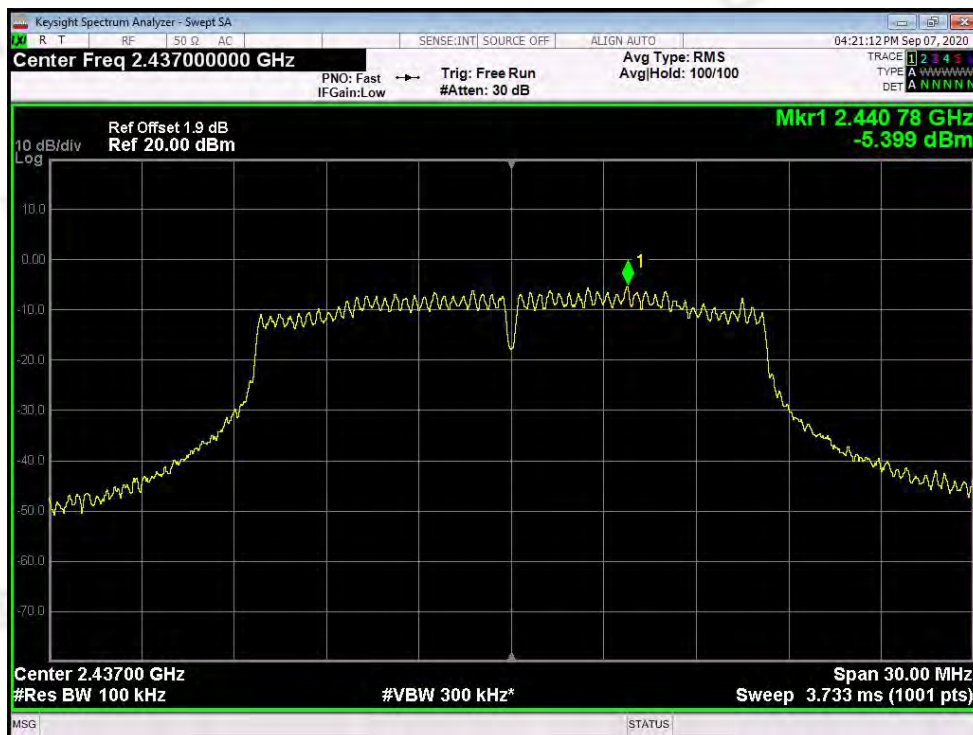


Antenna B

802.11g Low Channel



802.11g Middle Channel



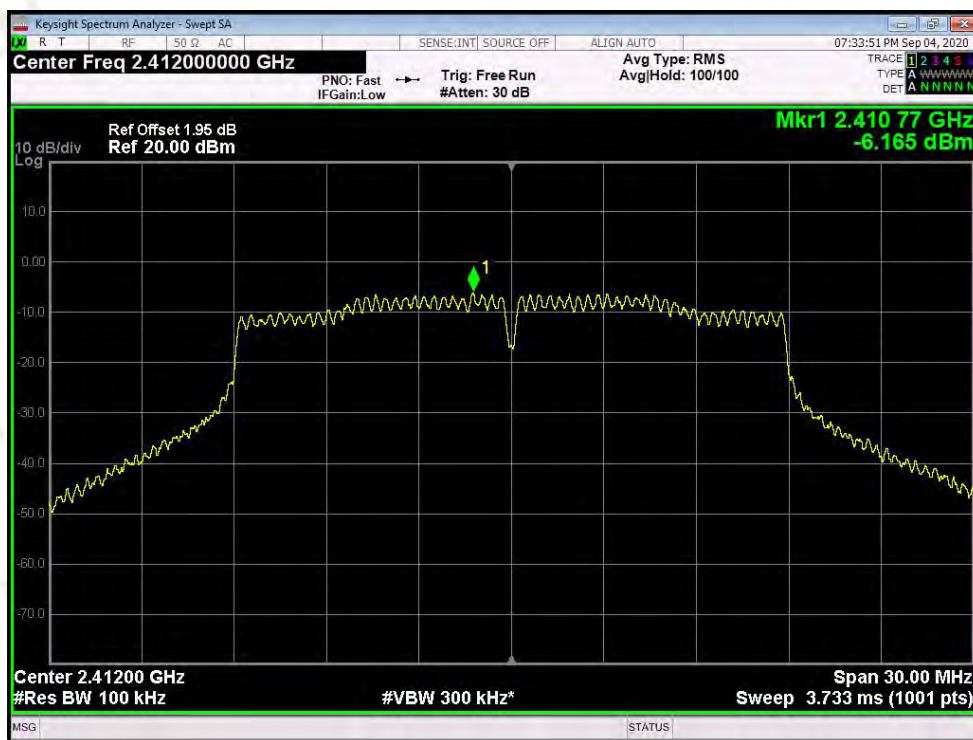
802.11g High Channel



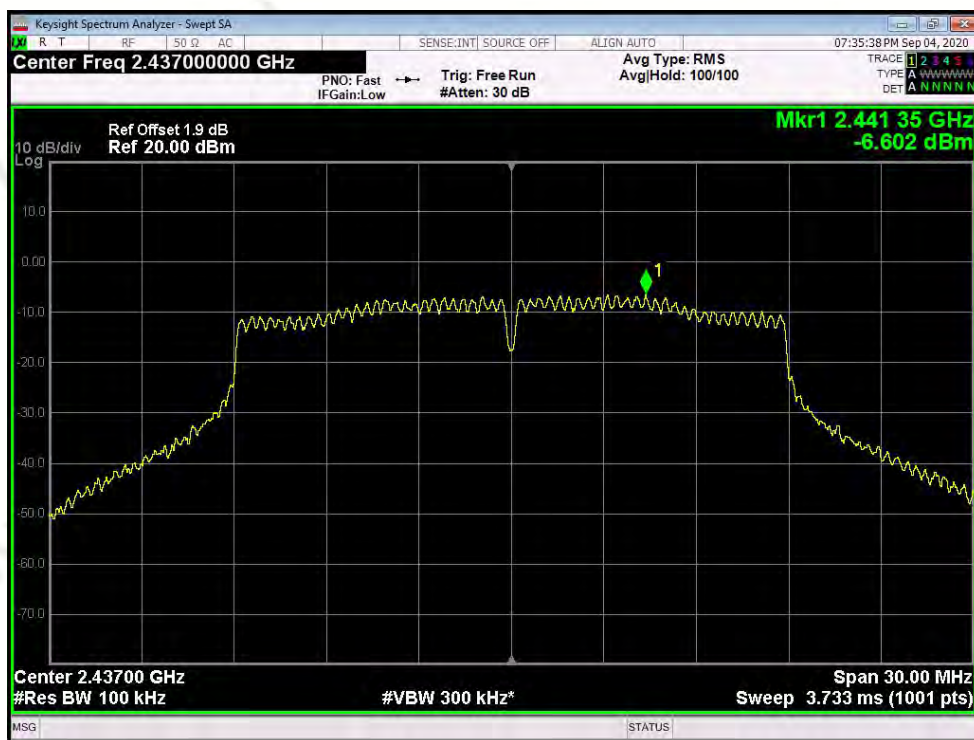
Temperature:	25 °C	Humidity:	50%		
Test By:	PEI	Test Date:	September 04, 2020		
Test Result:	PASS				
TX 802.11n HT20 Mode					
Frequency (MHz)	Power Density (dBm)			Limit (dBm)	Result
	ANT A(dBm)	ANT B(dBm)	TOTAL(dBm)		
2412	-6.165	-6.056	-5.593	8	PASS
2437	-6.602	-6.311	-5.997	8	PASS
2462	-6.349	-6.533	-5.924	8	PASS

Antenna A

802.11n(HT20) Low Channel



802.11n(HT20) Middle Channel

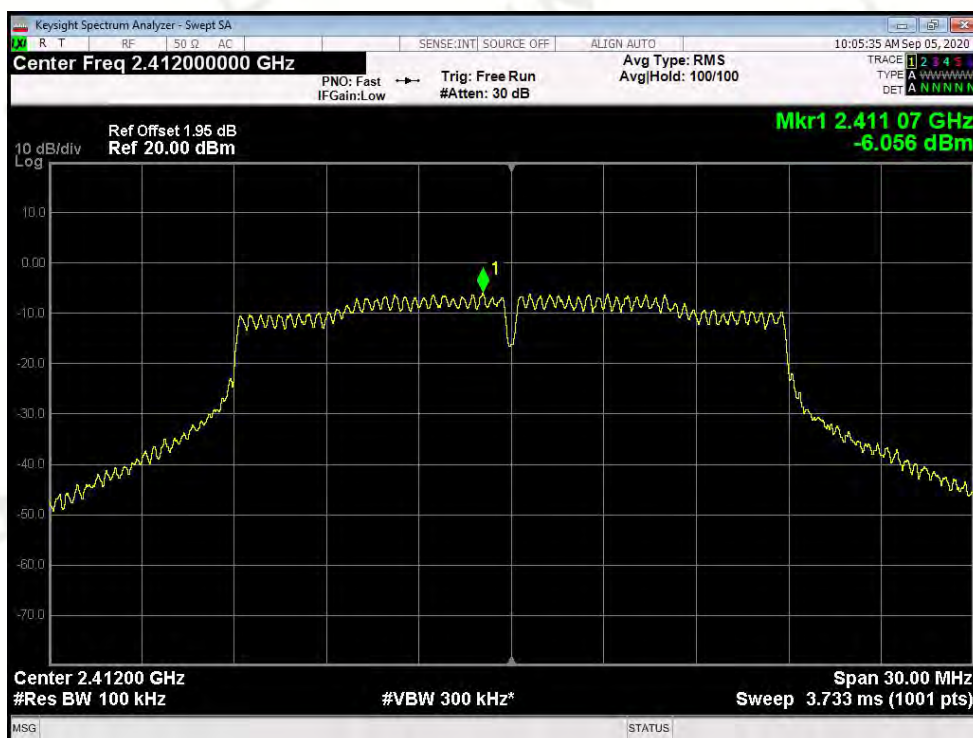


802.11n(HT20) High Channel



Antenna B

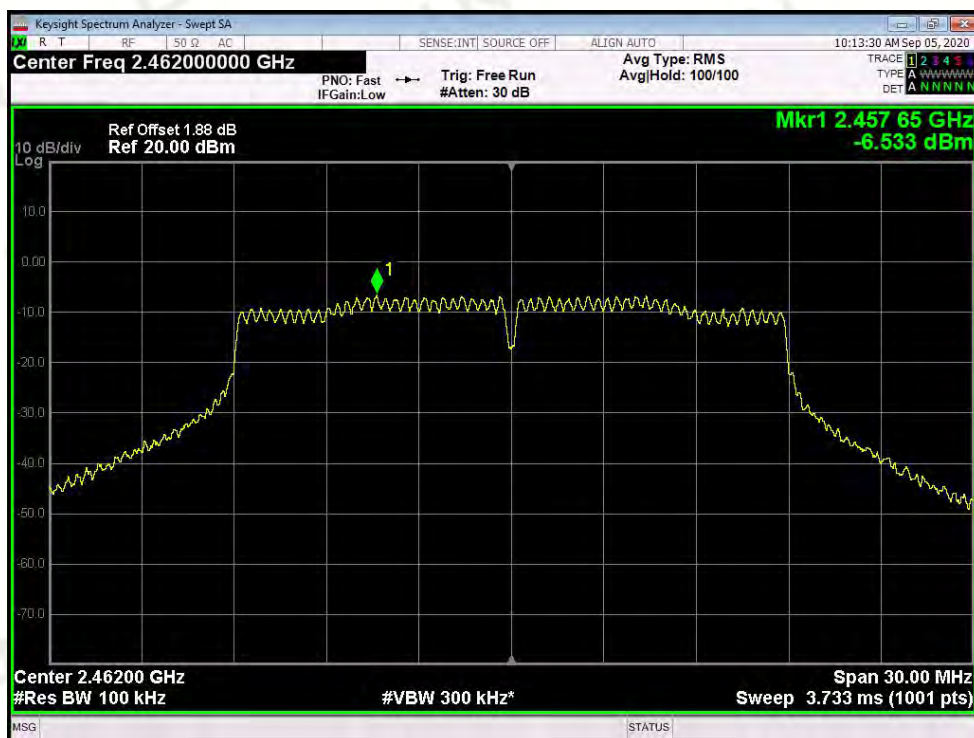
802.11n(HT20) Low Channel



802.11n(HT20) Middle Channel



802.11n(HT20) High Channel



Temperature:	25 °C	Humidity:	50%		
Test By:	PEI	Test Date:	September 04, 2020		
Test Result:	PASS				
TX 802.11n HT40 Mode					
Frequency (MHz)	Power Density (dBm)			Limit (dBm)	Result
	ANT A(dBm)	ANT B(dBm)	TOTAL(dBm)		
2422	-9.56	-9.173	-9.572	8	PASS
2437	-9.861	-9.618	-9.328	8	PASS
2452	-9.744	-9.579	-9.296	8	PASS

Antenna A

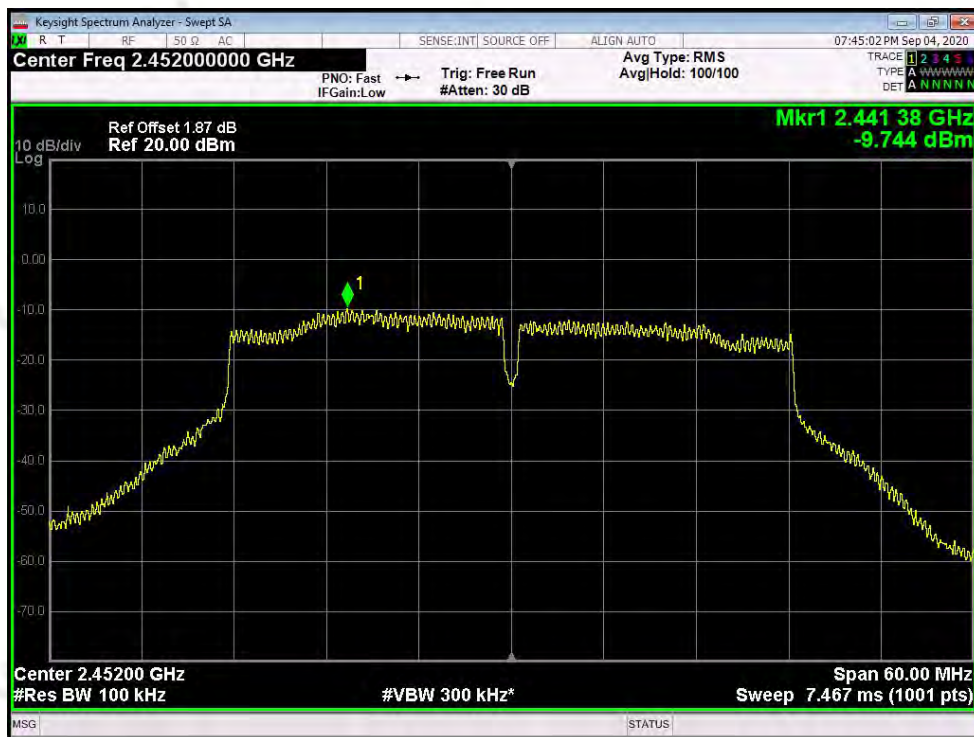
802.11n(HT40) Low Channel



802.11n(HT40) Middle Channel

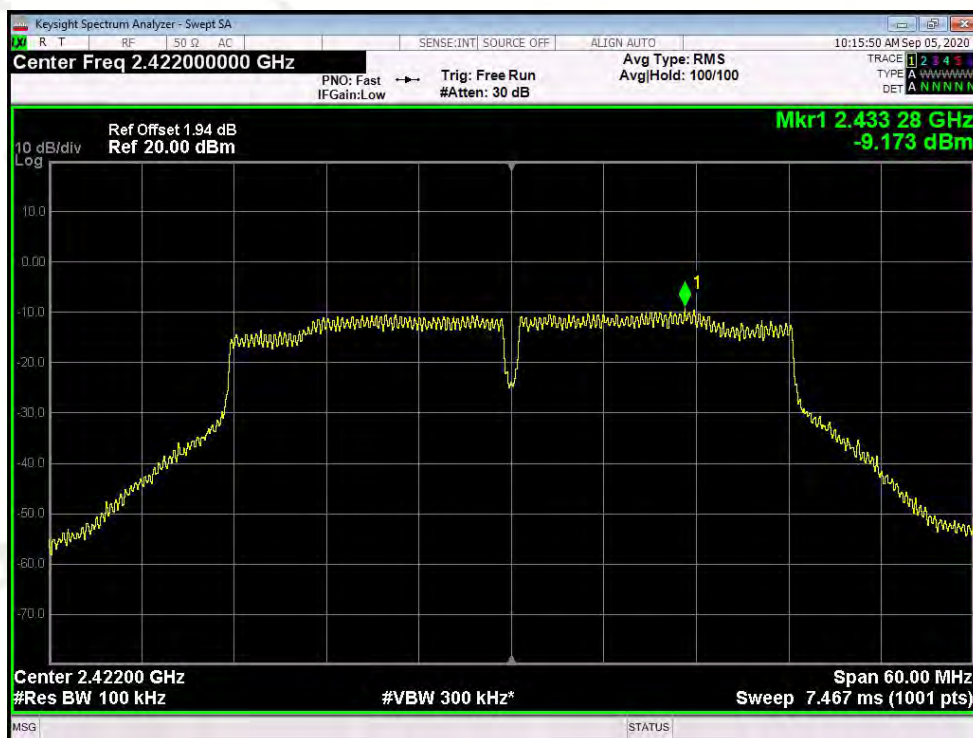


802.11n(HT40) High Channel



Antenna B

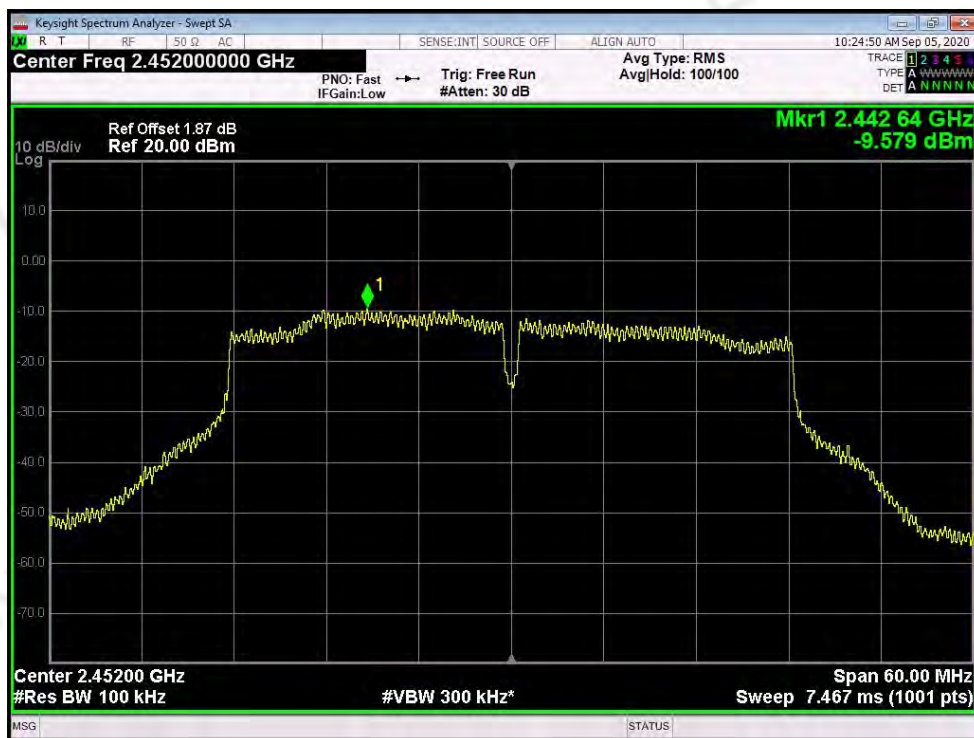
802.11n(HT40) Low Channel



802.11n(HT40) Middle Channel



802.11n(HT40) High Channel



9. Band Edge and Conducted Spurious Emissions

9.1 Requirement and Measurement Procedure

In any 100KHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer was set as below.

A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Level	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	If $D \geq 98$ then $VBW \geq 3 \cdot RBW$, If $D \leq 98$ then $VBW \geq 1/T$

9.2 Test SET-UP (Block Diagram of Configuration)



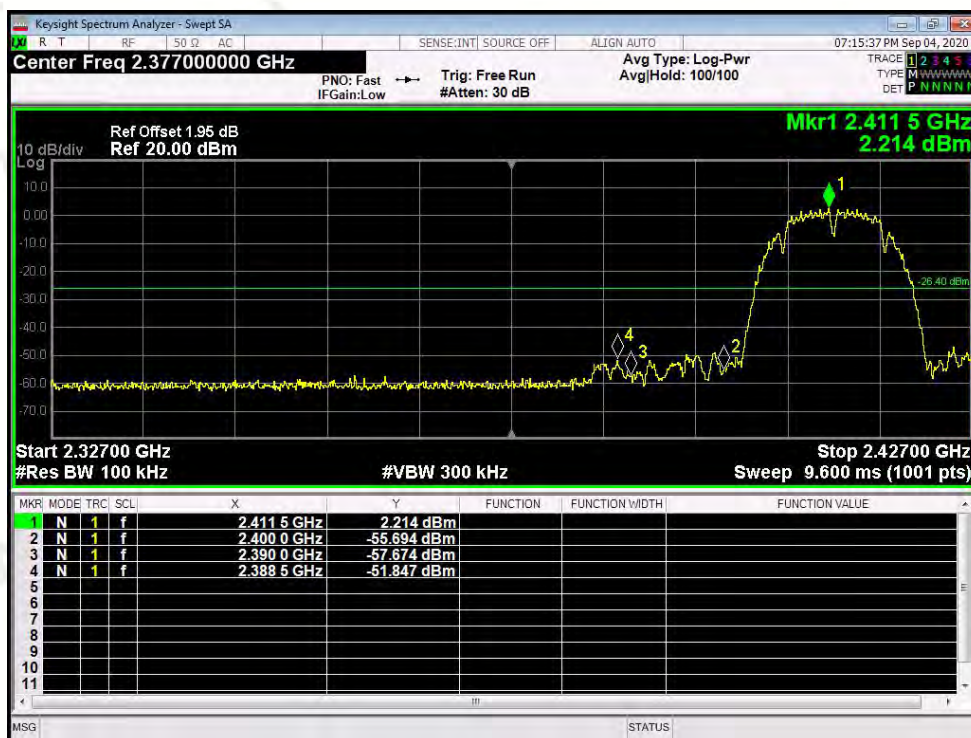
9.3 Measurement Results

The test plots and table showed all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20dB below the highest level of the desired power in the passband. Please refer to below plots.

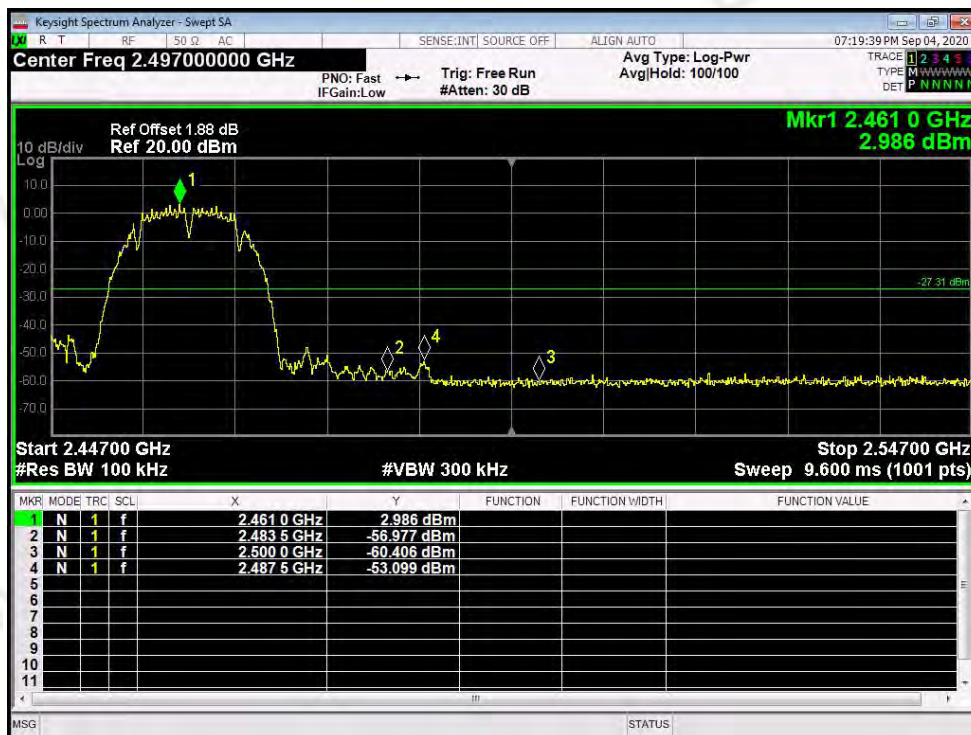
Note: We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and MCS0 for 802.11n mode.

Antenna A Band Edge

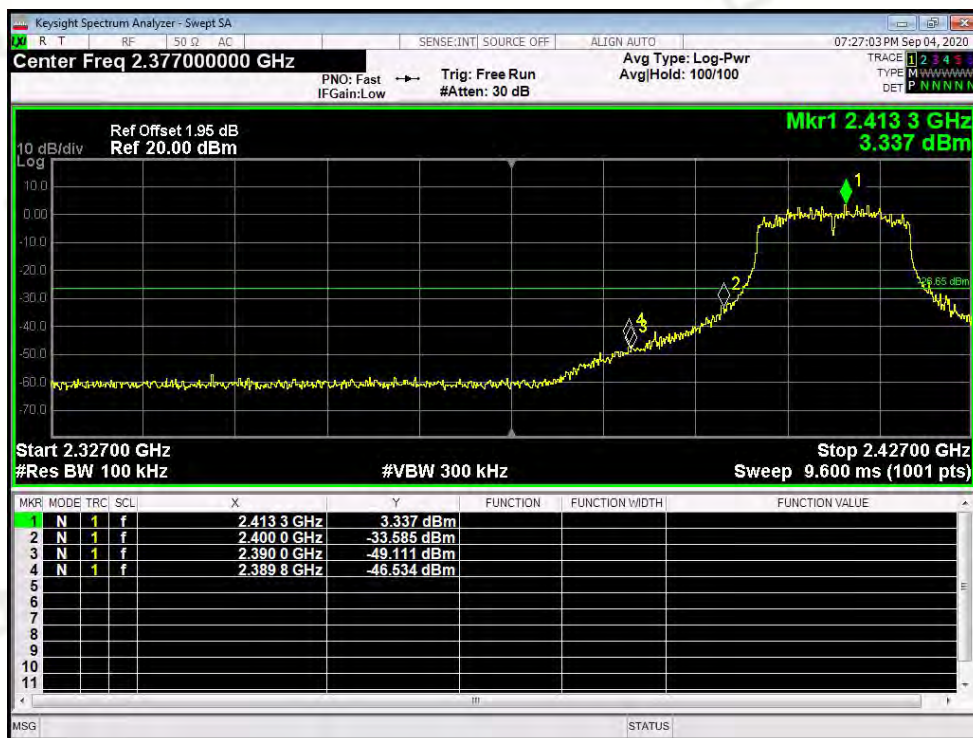
802.11b Low Channel



802.11b High Channel



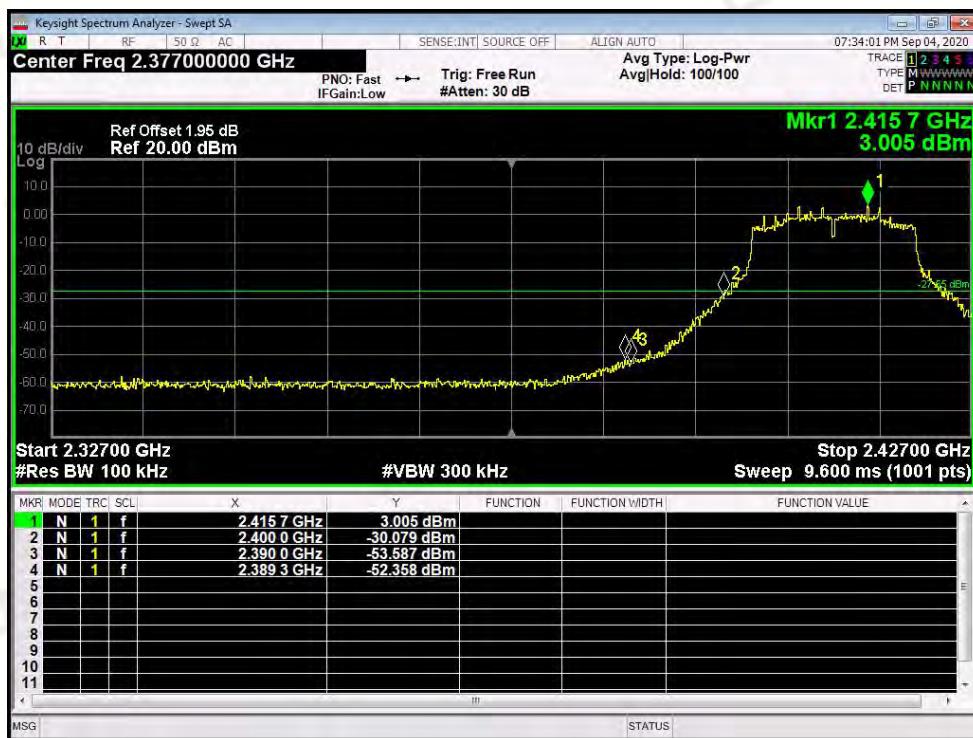
802.11g Low Channel



802.11g High Channel



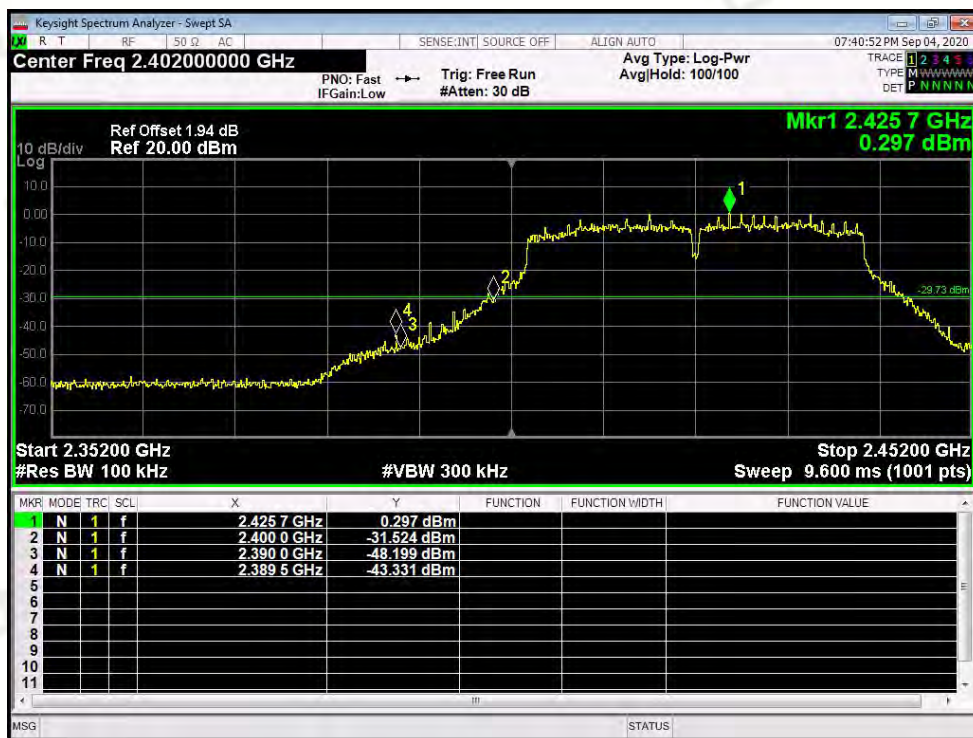
802.11n(HT20) Low Channel



802.11n(HT20) High Channel



802.11n(HT40) Low Channel

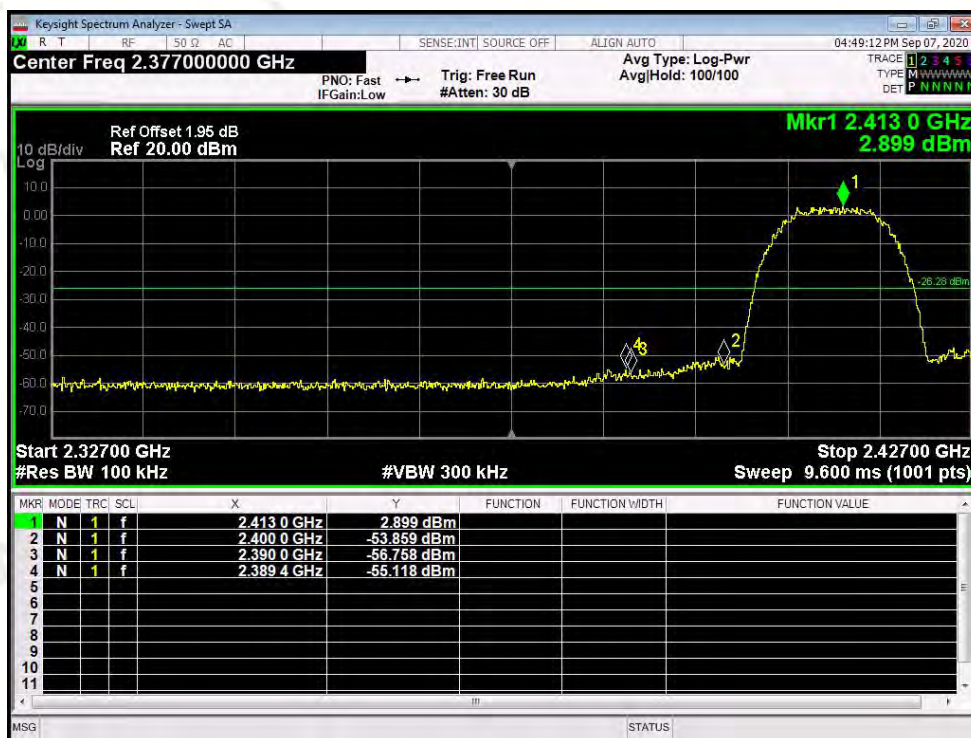


802.11n(HT40) High Channel

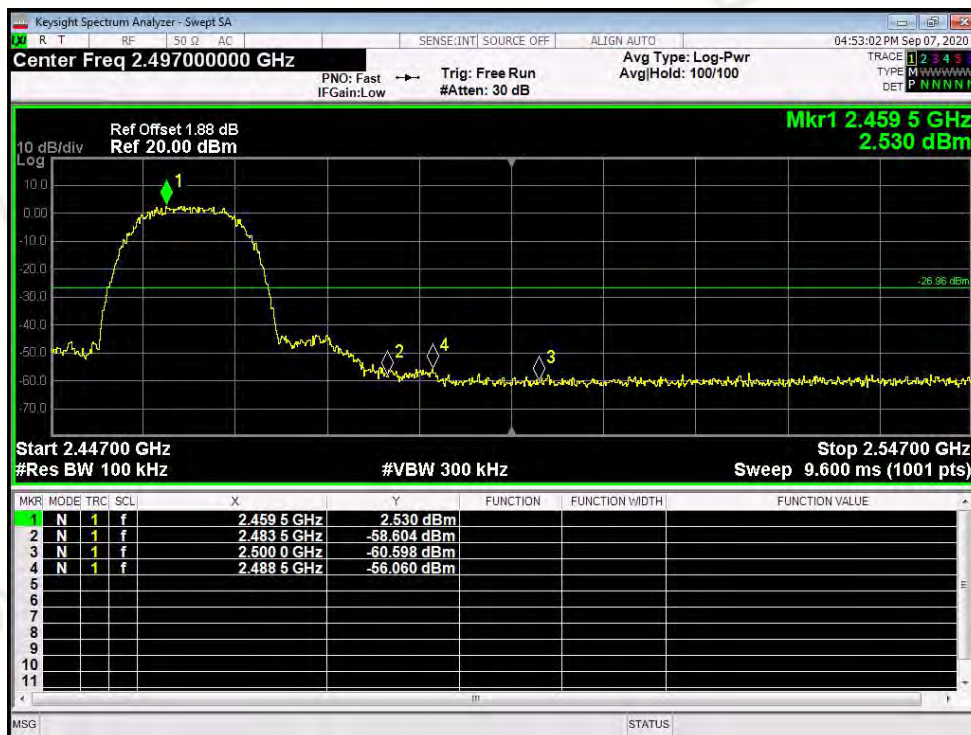


Antenna B Band Edge

802.11b Low Channel



802.11b High Channel



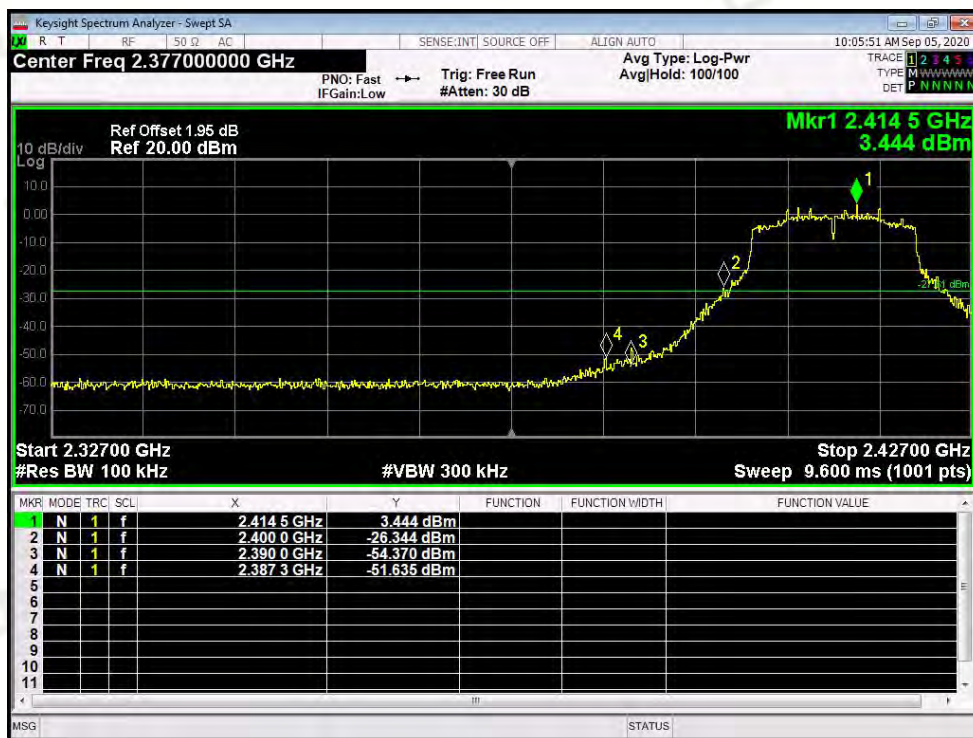
802.11g Low Channel



802.11g High Channel



802.11n(HT20) Low Channel



802.11n(HT20) High Channel



802.11n(HT40) Low Channel



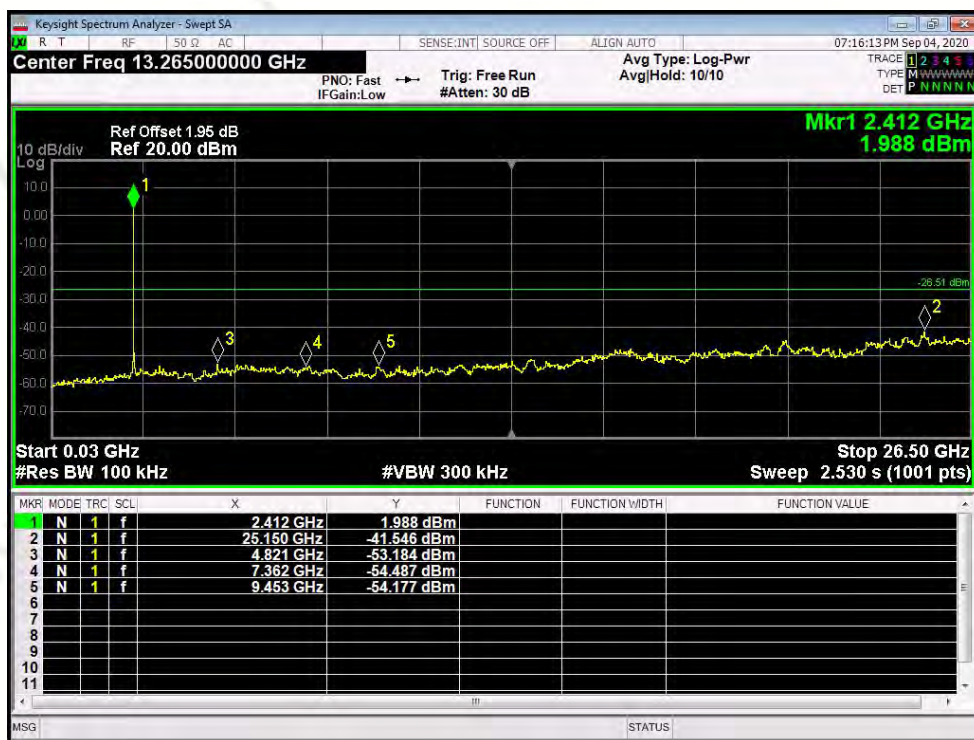
802.11n(HT40) High Channel



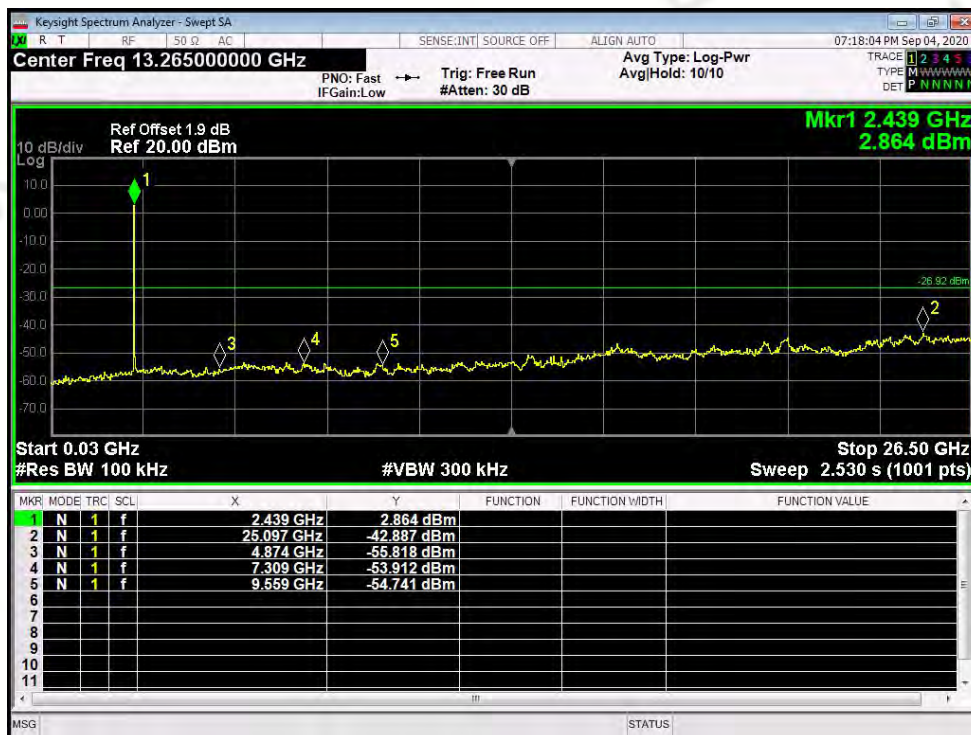
Conducted Spurious Emissions

Antenna A

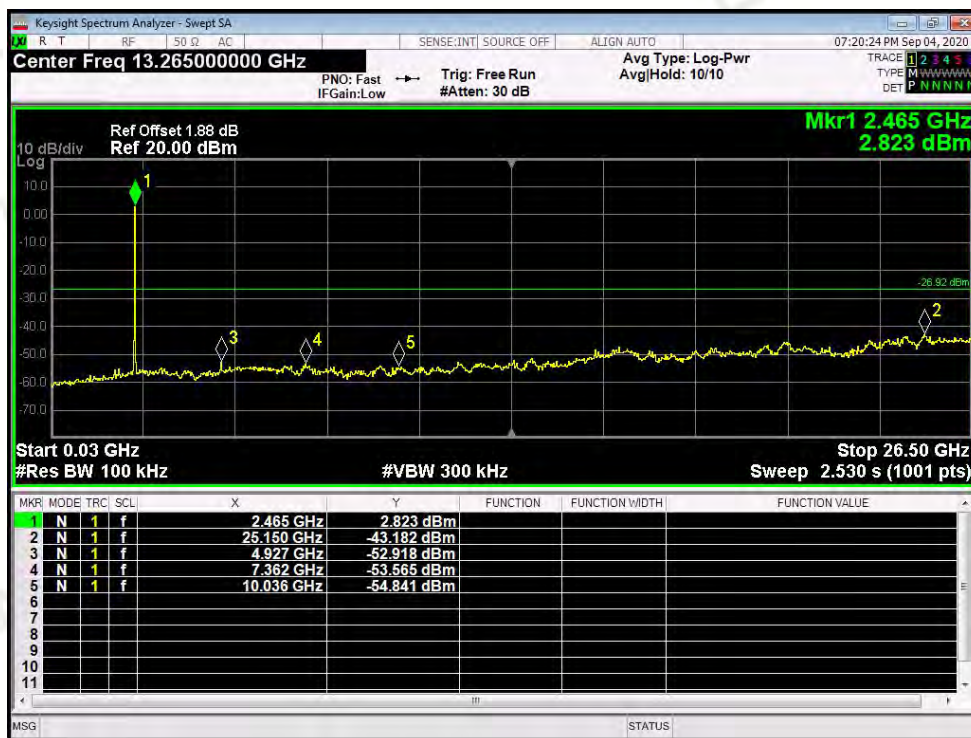
802.11b Low Channel



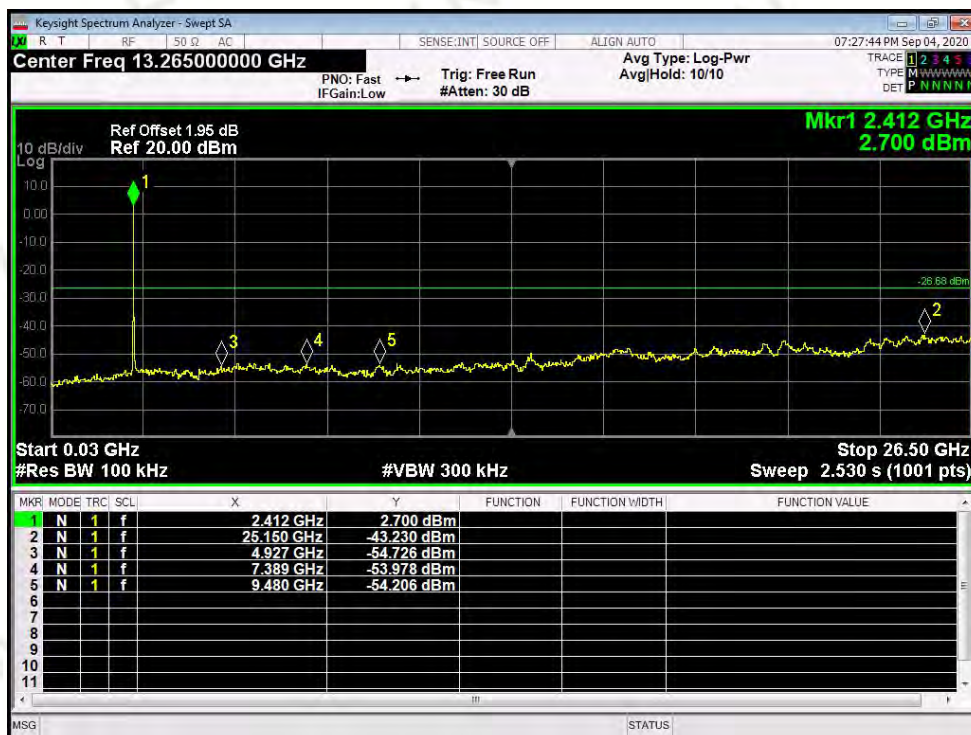
802.11b Middle Channel



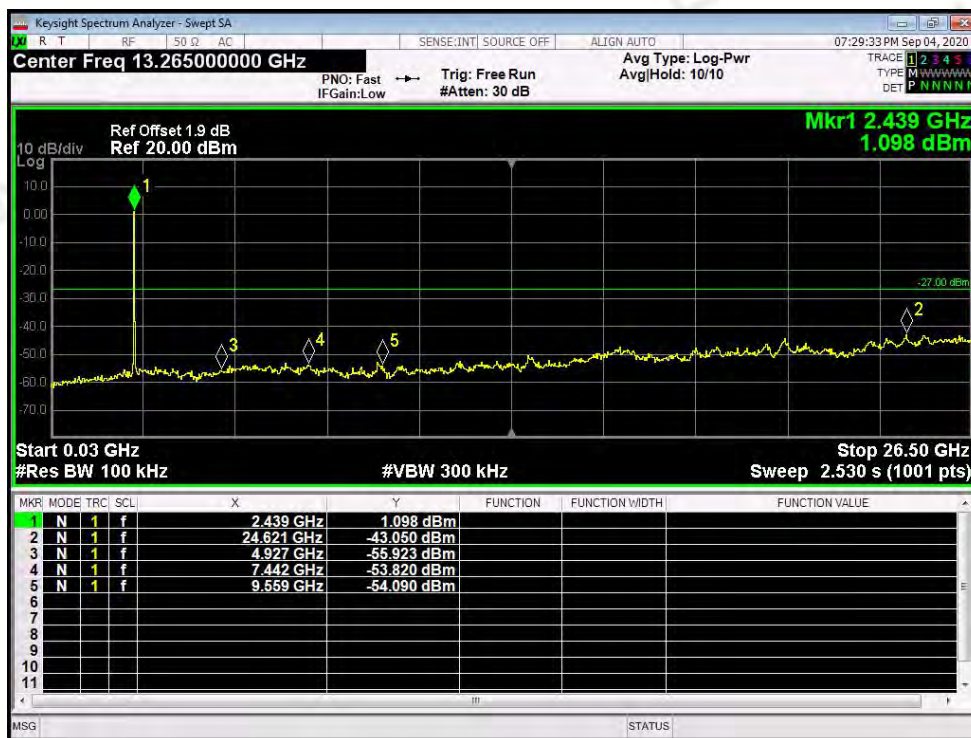
802.11b High Channel



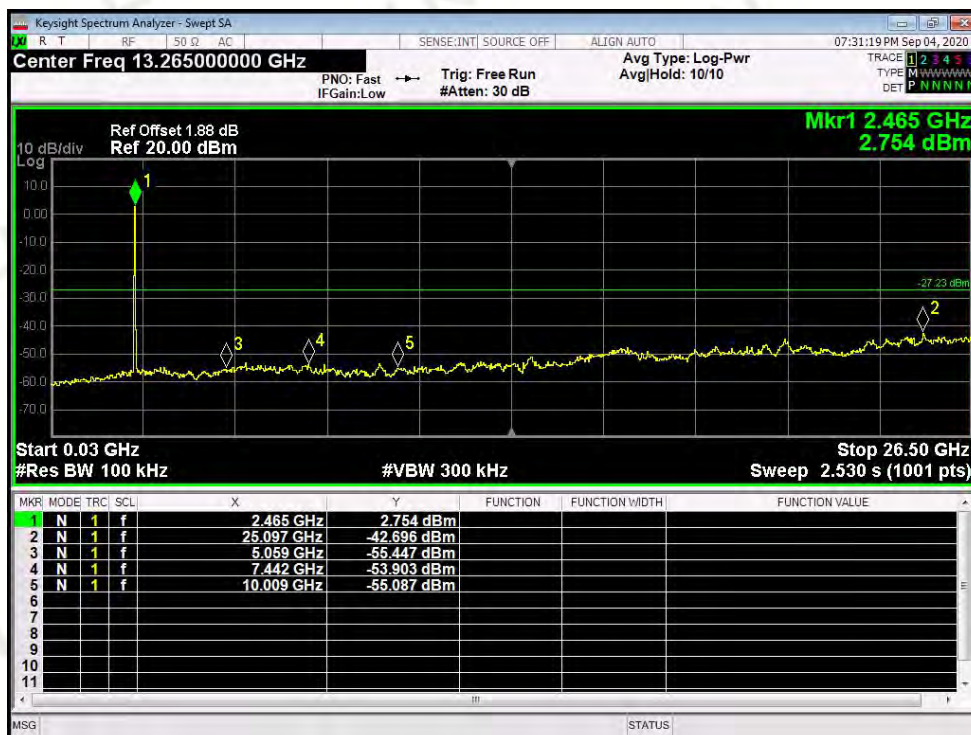
802.11g Low Channel



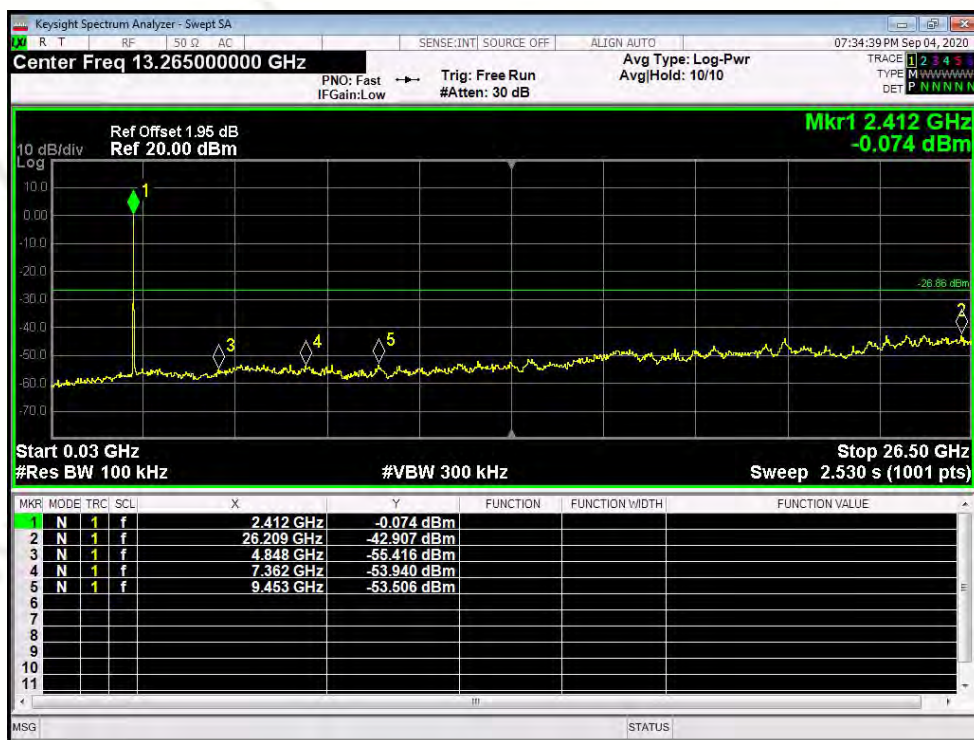
802.11g Middle Channel



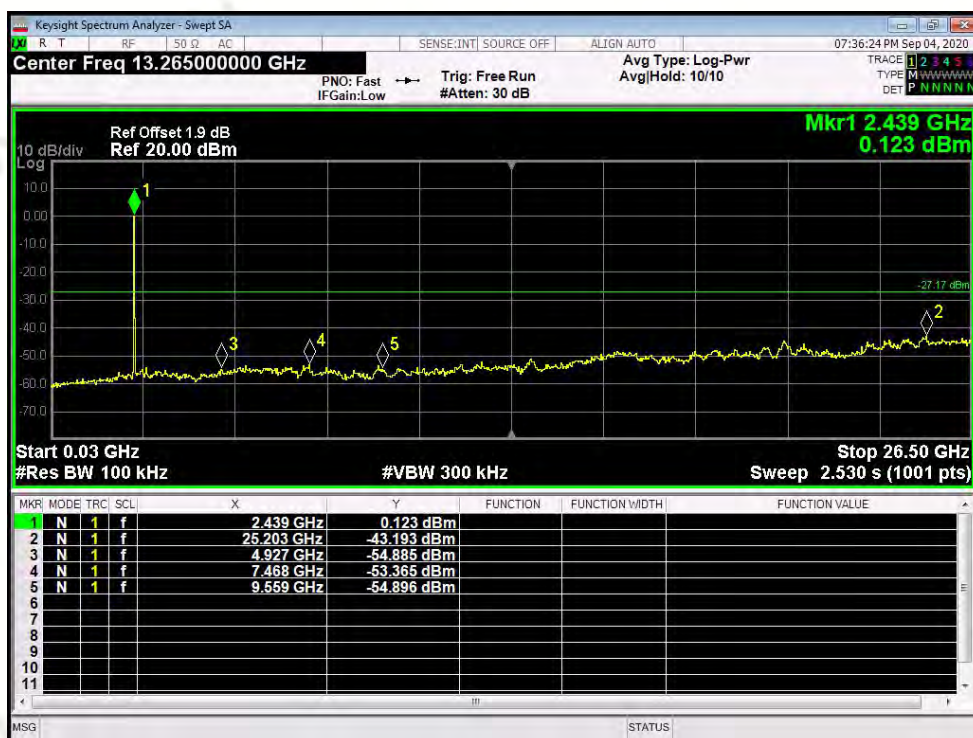
802.11g High Channel



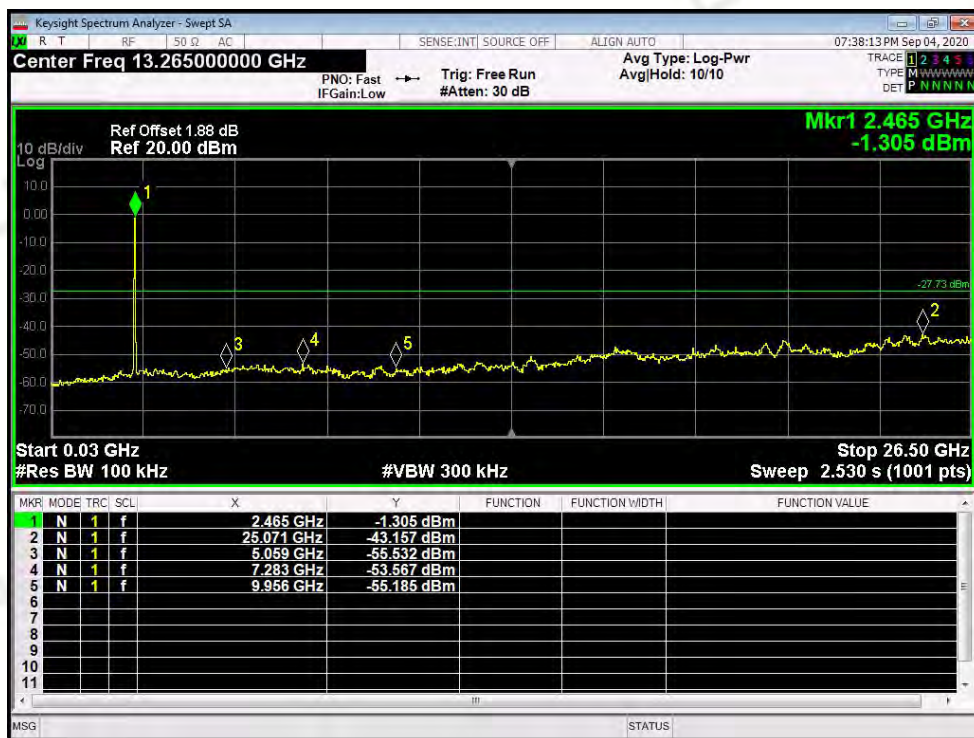
802.11n HT20 Low Channel



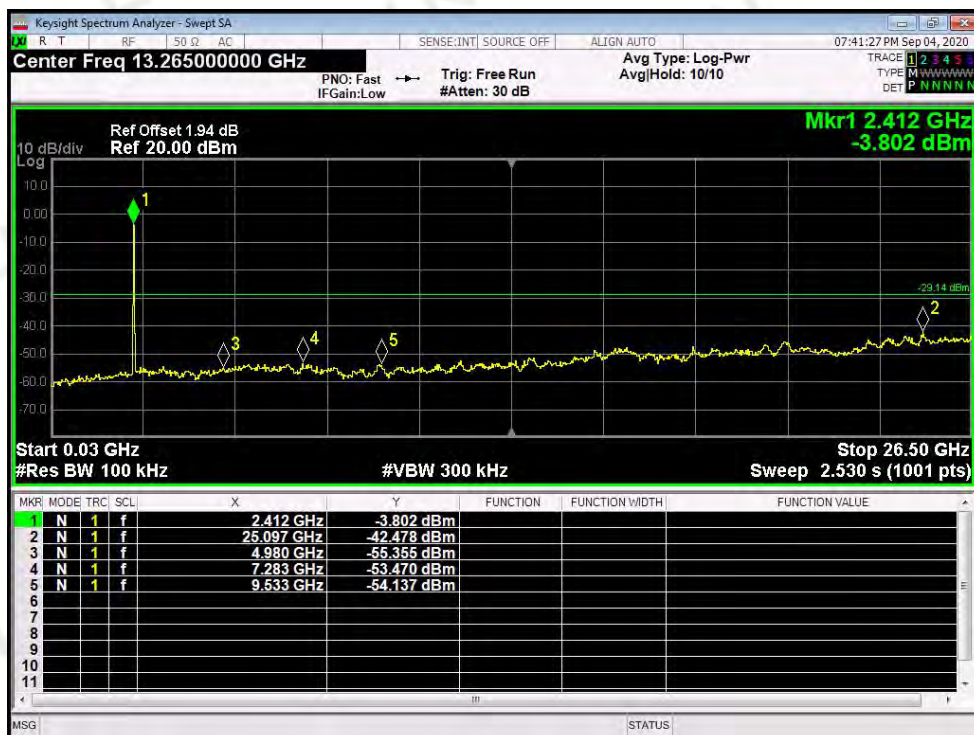
802.11n HT20 Middle Channel



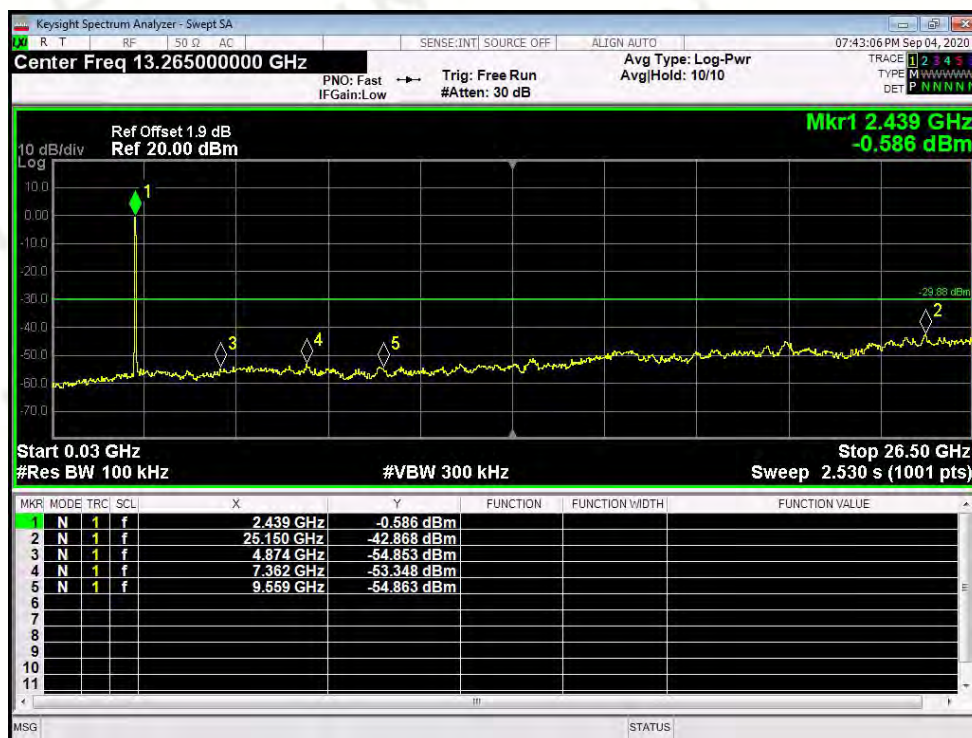
802.11n HT20 High Channel



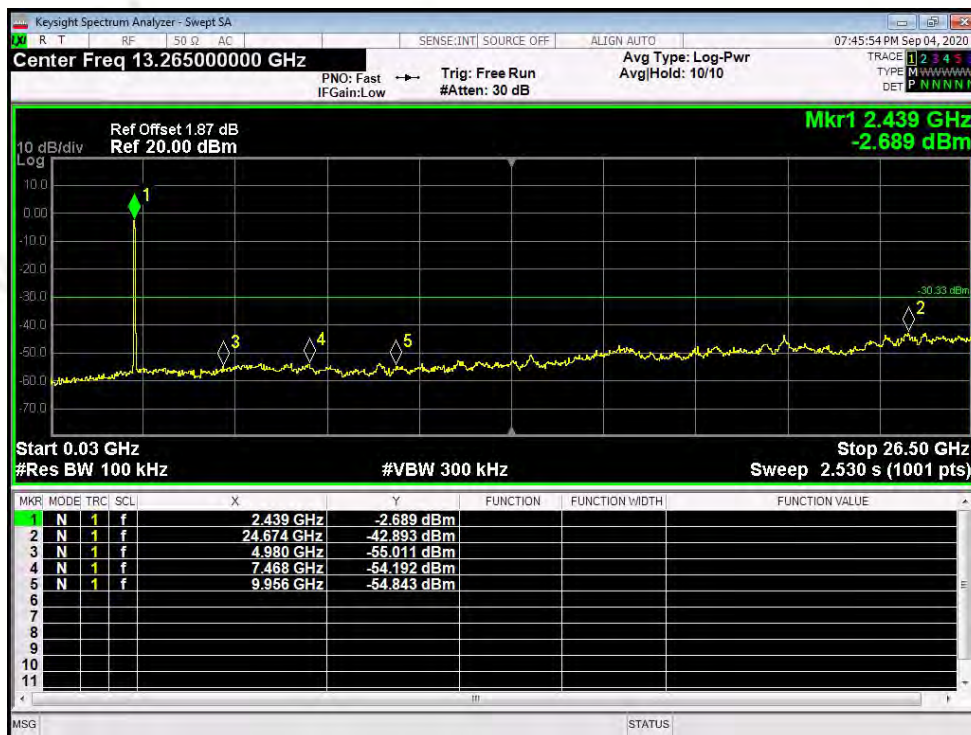
802.11n HT40 Low Channel



802.11n HT40 Middle Channel

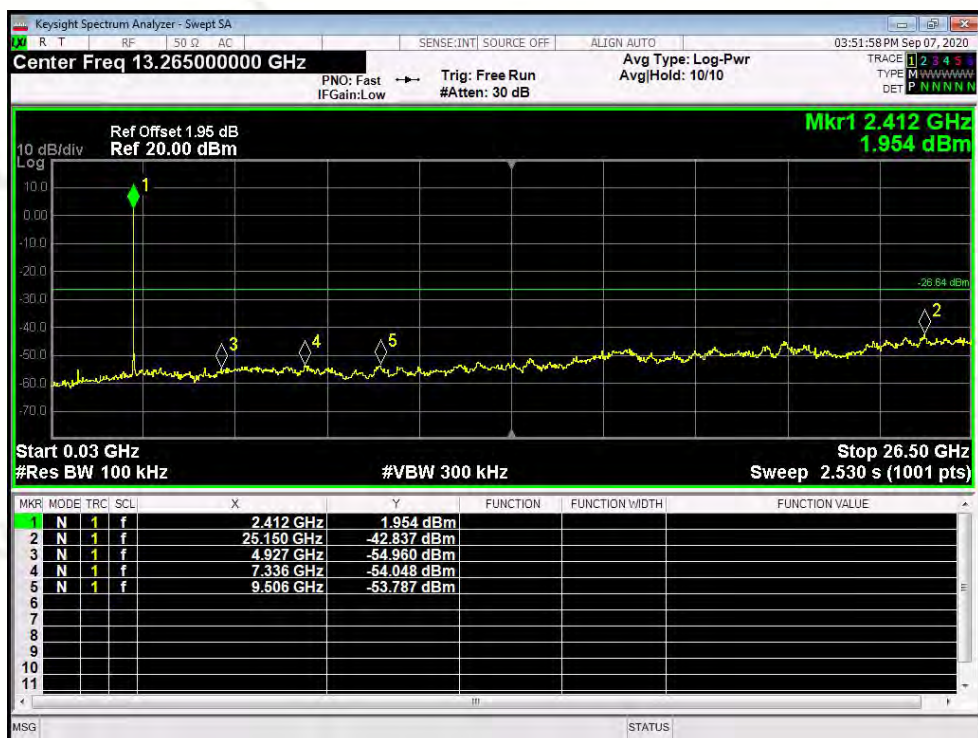


802.11n HT40 High Channel

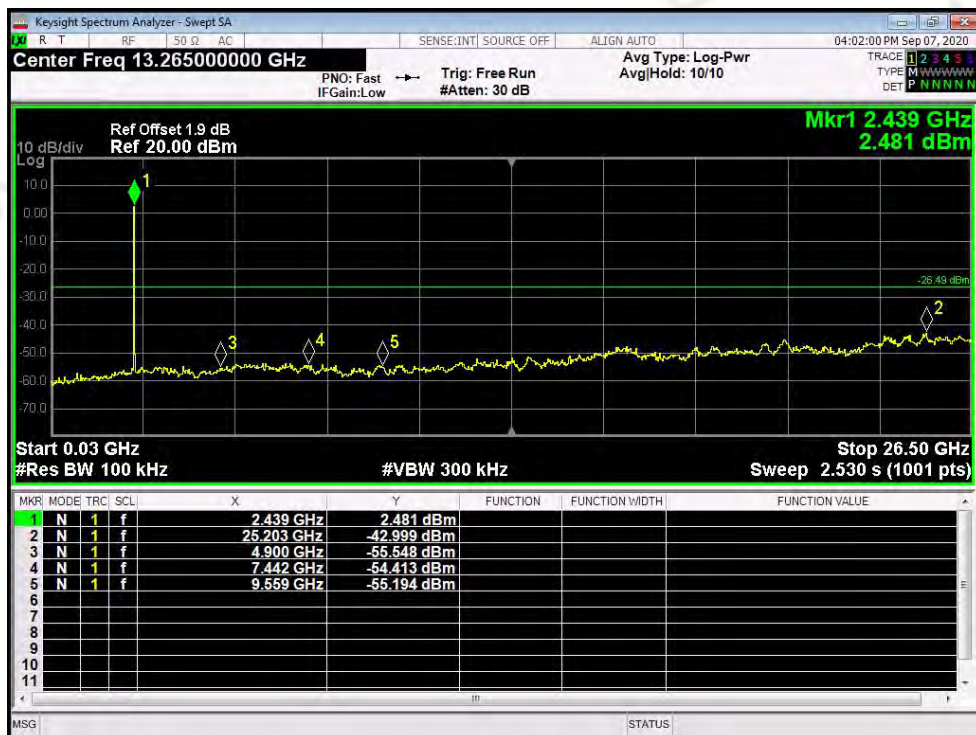


Antenna B

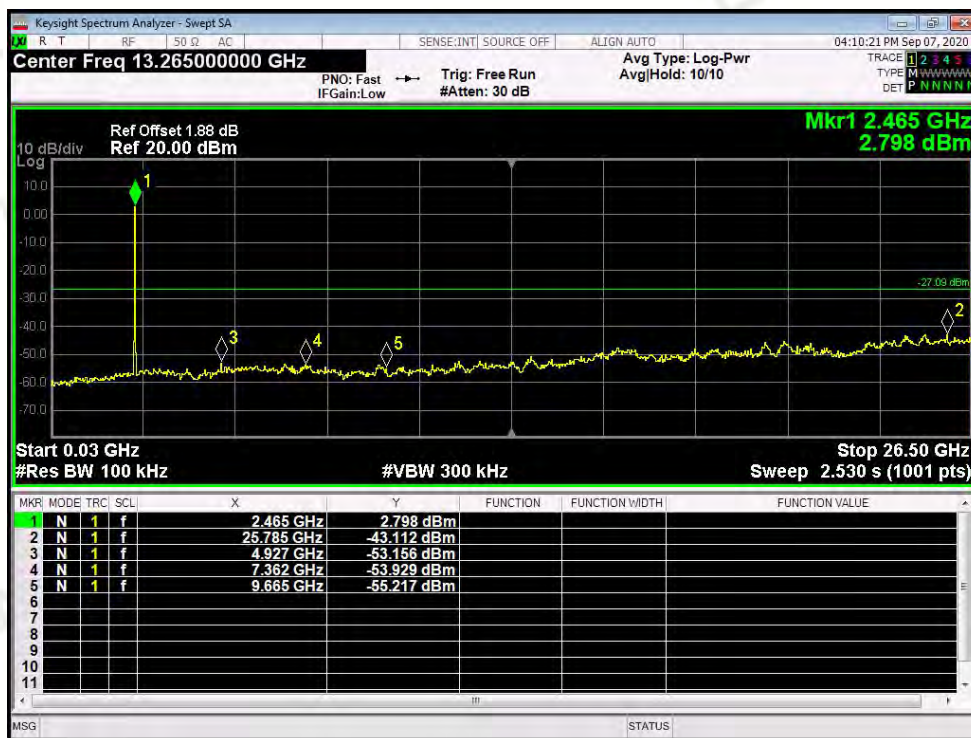
802.11b Low Channel



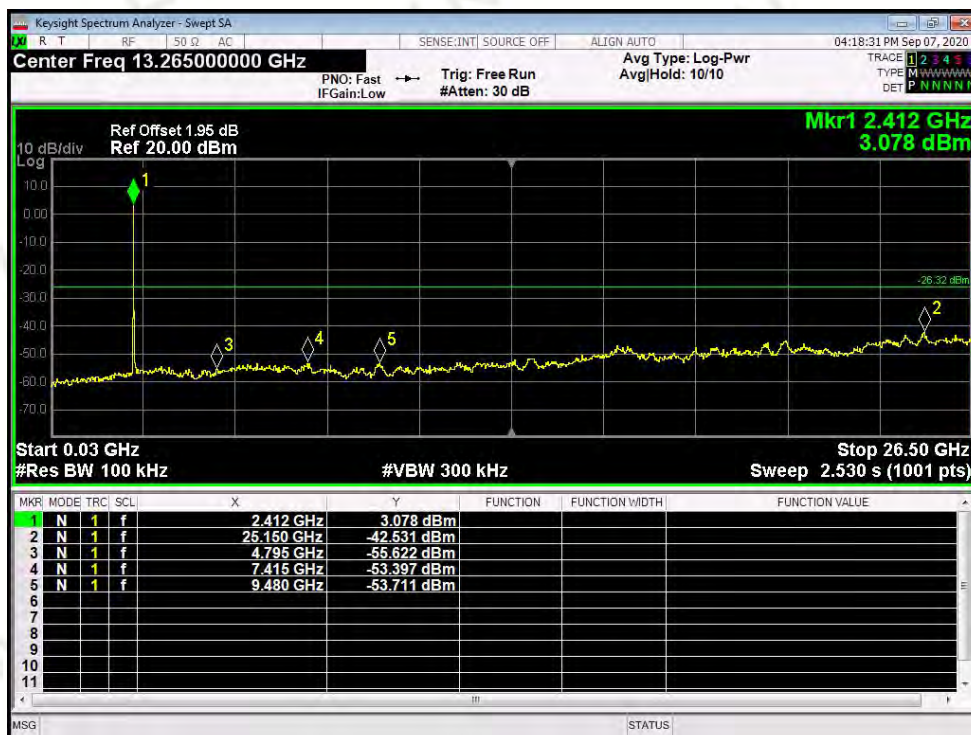
802.11b Middle Channel



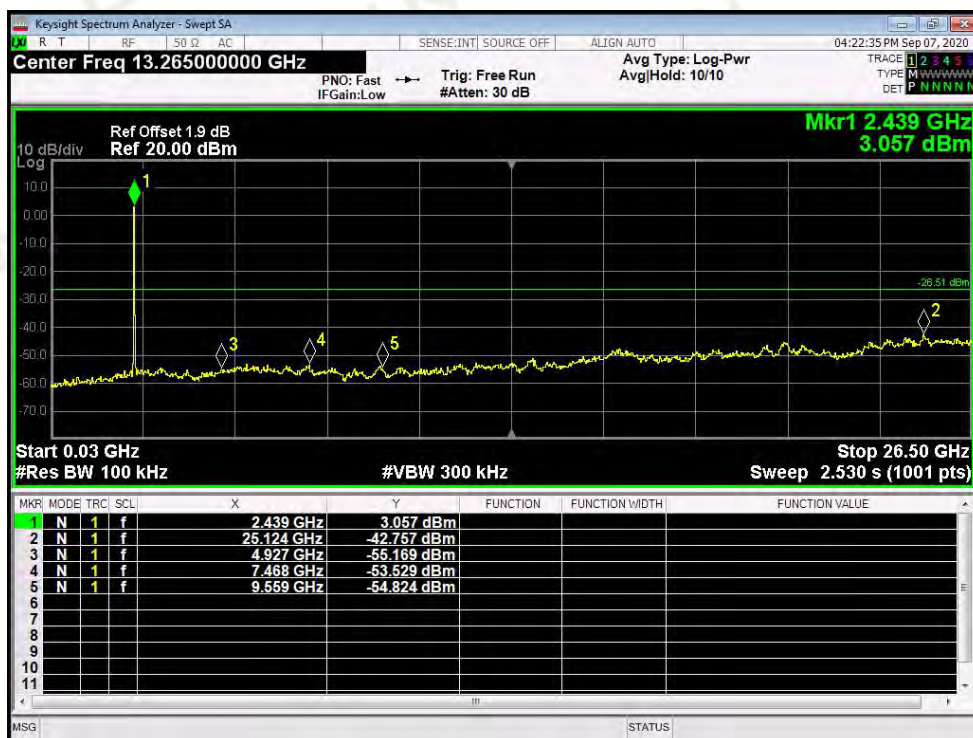
802.11b High Channel



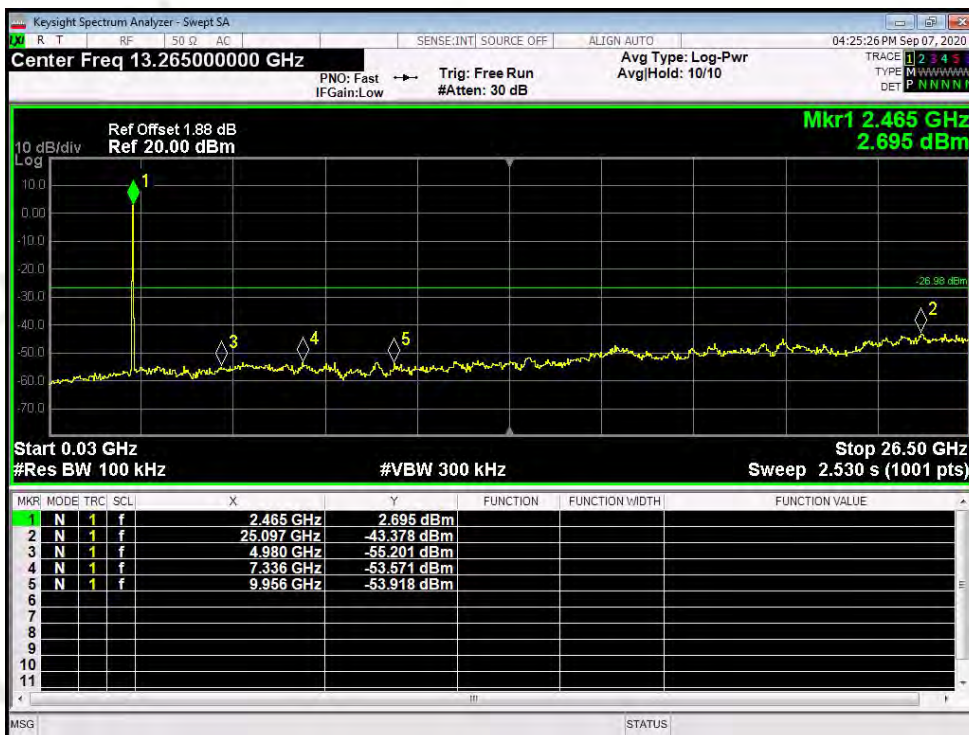
802.11g Low Channel



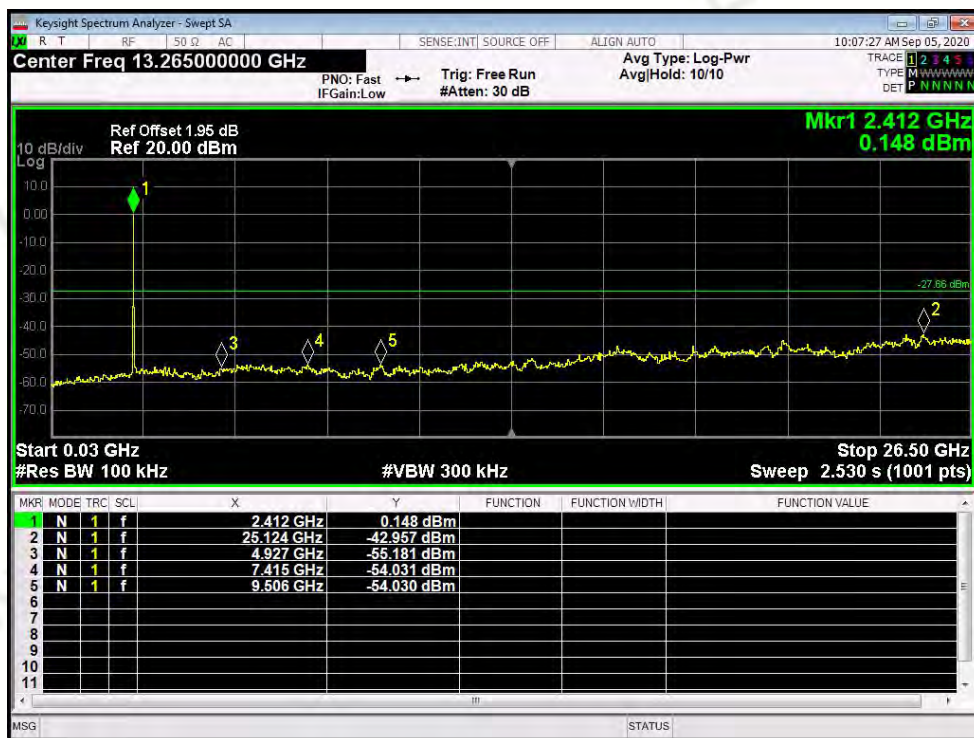
802.11g Middle Channel



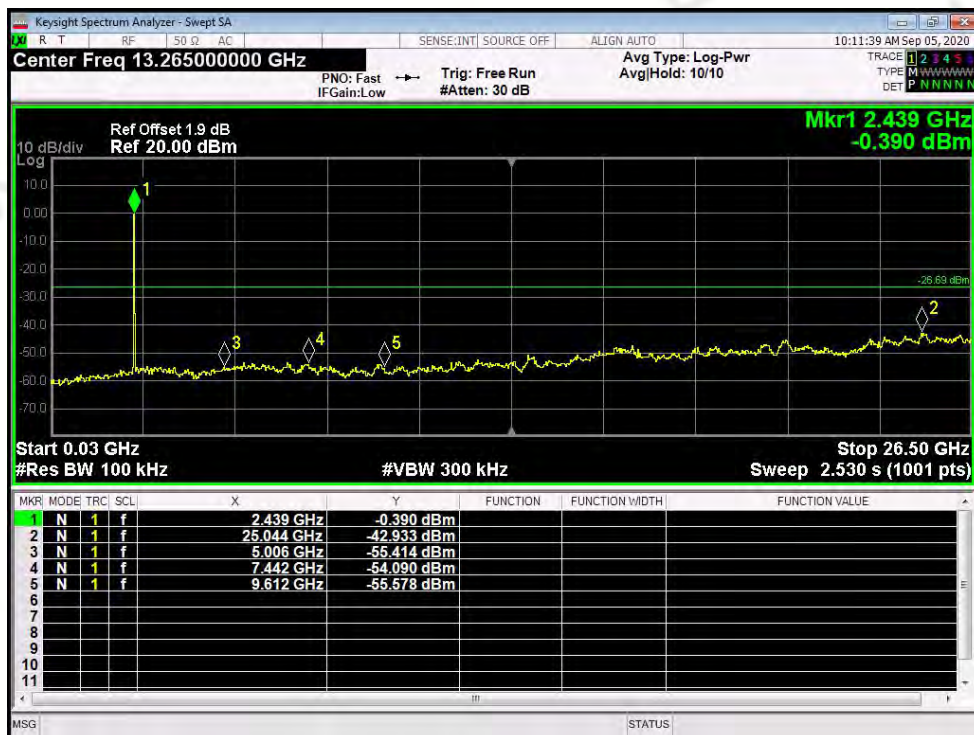
802.11g High Channel



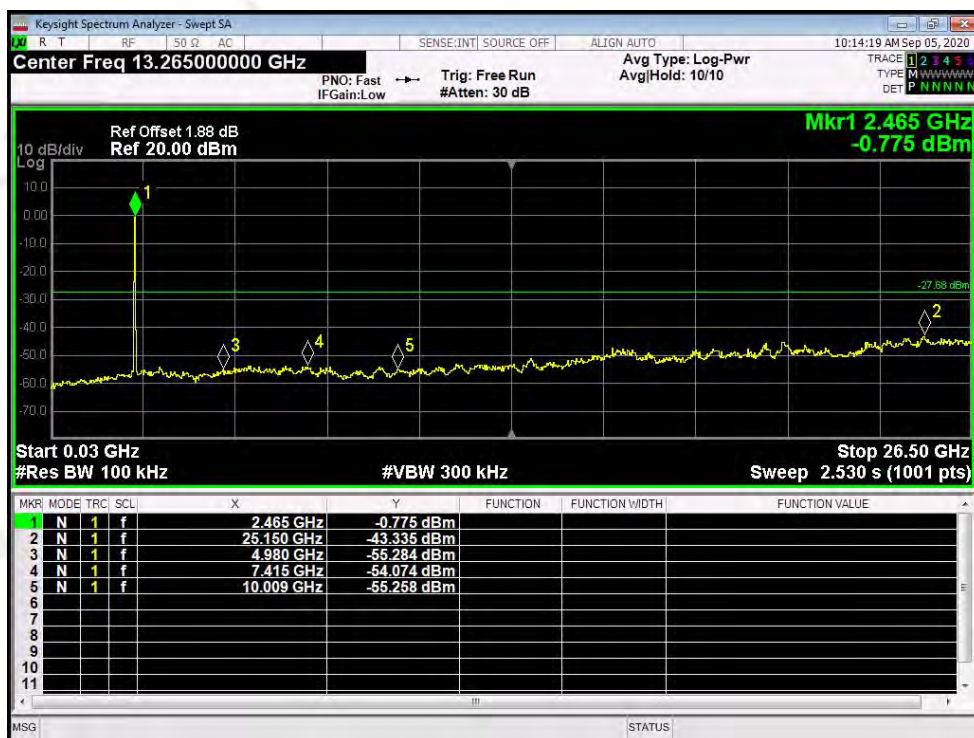
802.11n HT20 Low Channel



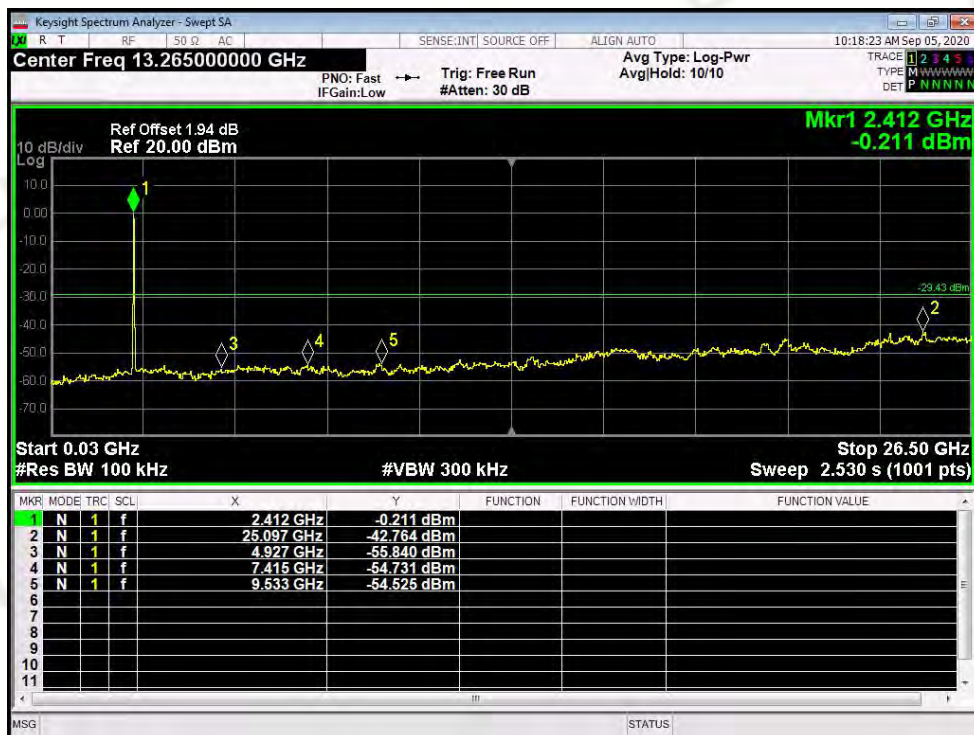
802.11n HT20 Middle Channel



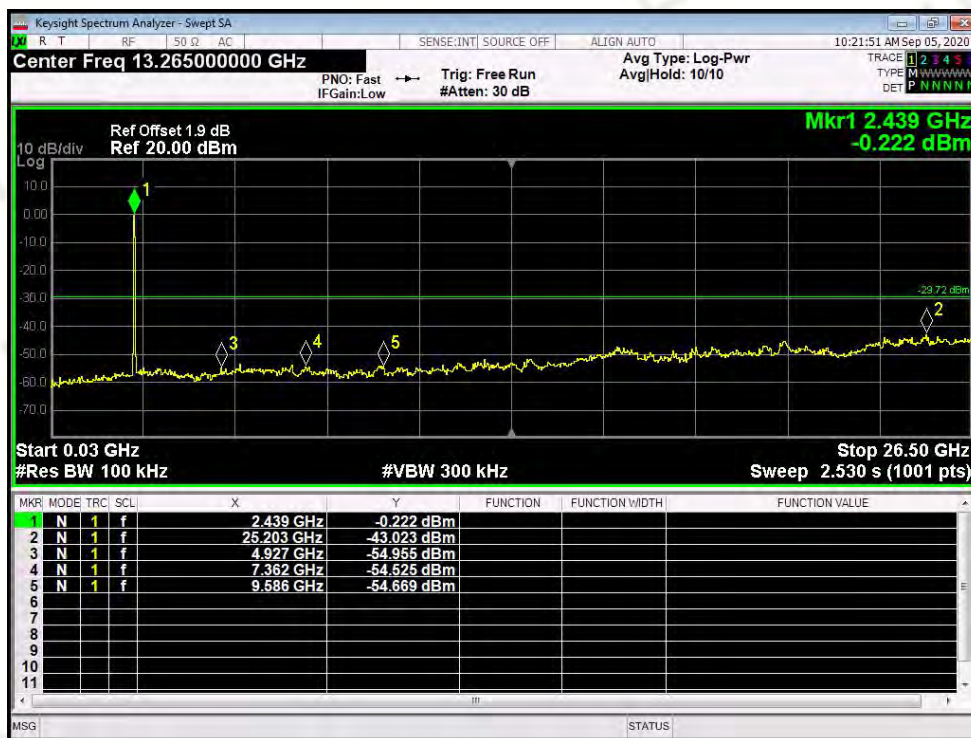
802.11n HT20 High Channel



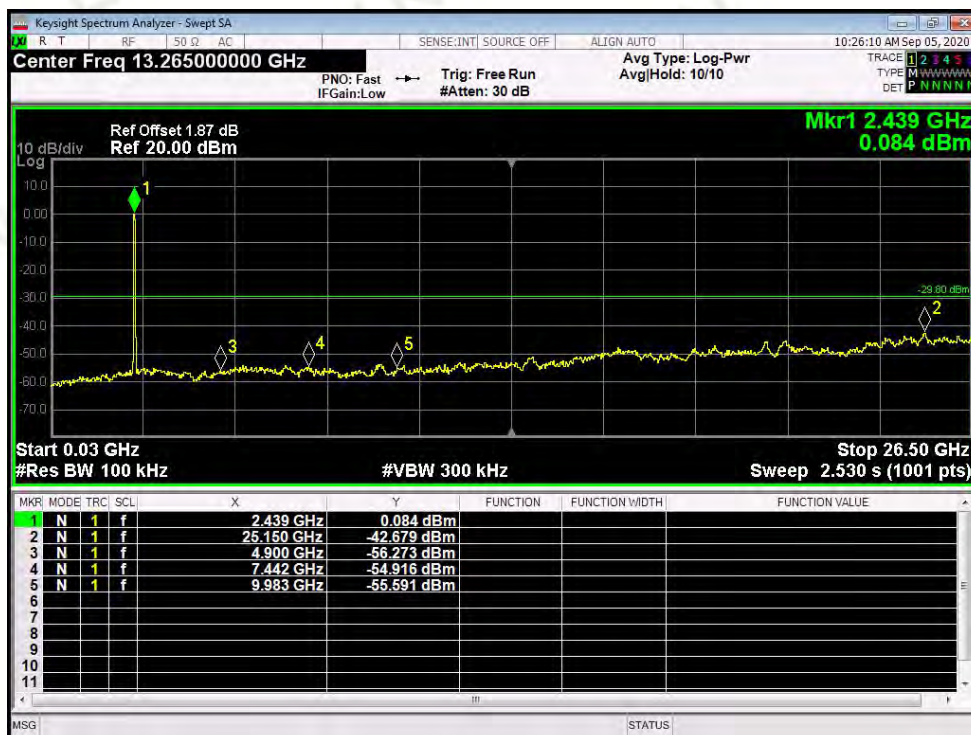
802.11n HT40 Low Channel



802.11n HT40 Middle Channel



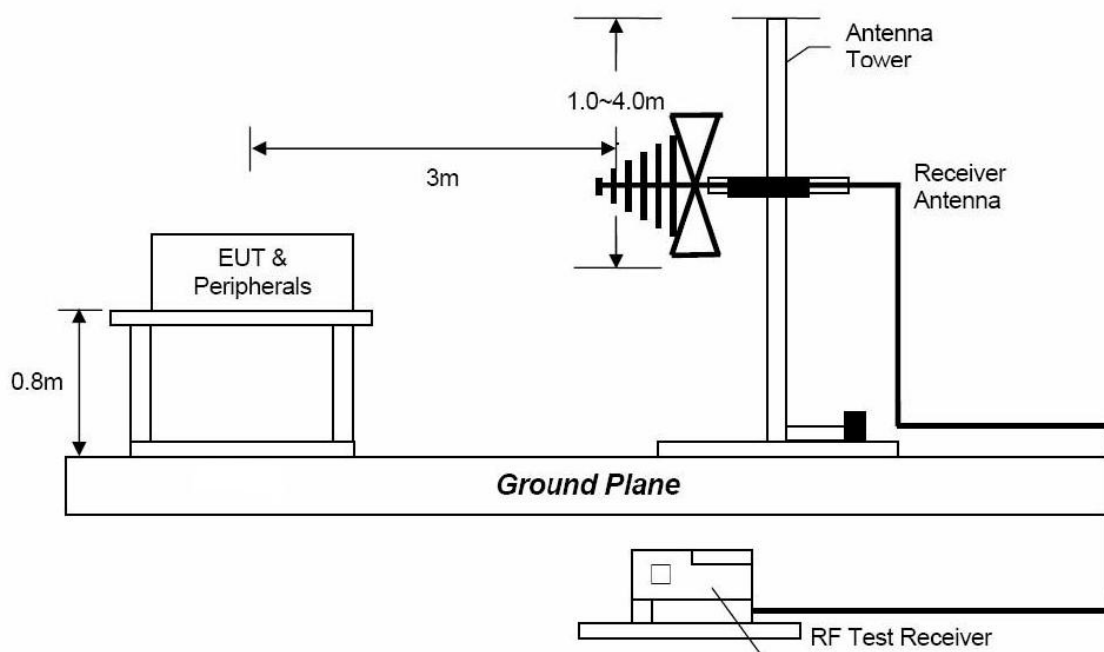
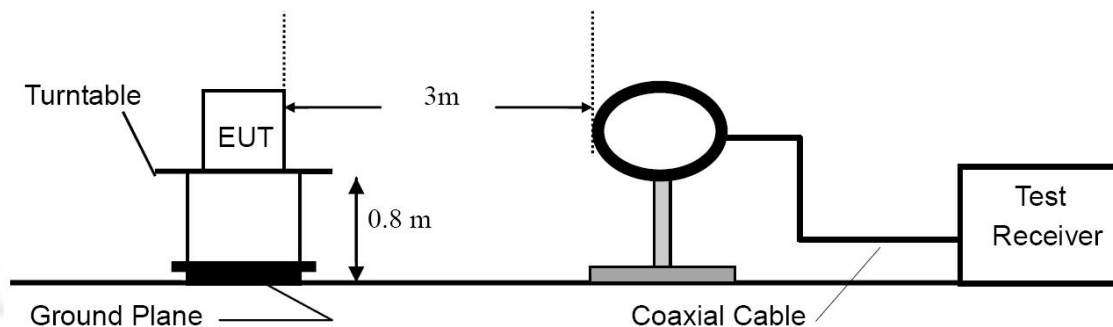
802.11n HT40 High Channel



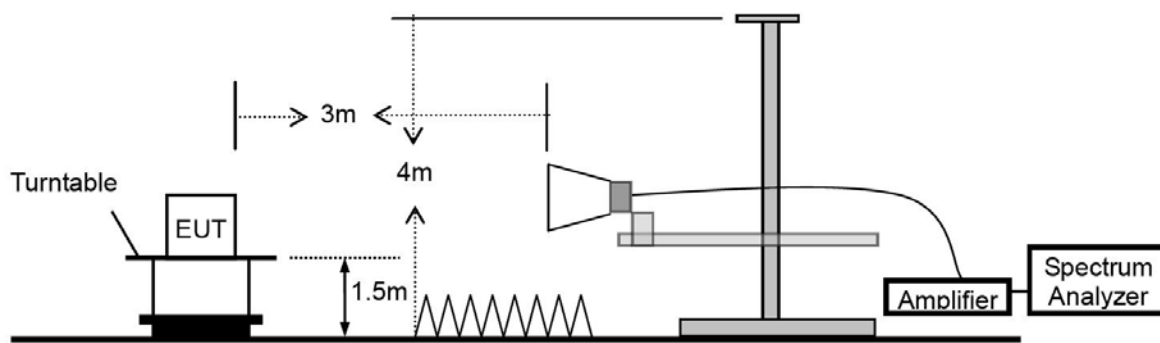
10. Radiated Spurious Emissions and Restricted Bands

10.1 Test SET-UP (Block Diagram of Configuration)

10.1.1 Radiated Emission Test Set-Up, Frequency Below 30MHz



10.1.2 Radiated Emission Test Set-Up, Frequency above 1GHz



10.2 Measurement Procedure

- Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- For the radiated emission test above 1GHz:
The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Level	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	If $D \geq 98$ then $VBW \geq 3 \cdot RBW$, If $D \leq 98$ then $VBW \geq 1/T$

10.3 Limit

Frequency range MHz	Distance Meters	Field Strengths Limit (15.209)
		$\mu V/m$
0.009 ~ 0.490	300	$2400/F(kHz)$
0.490 ~ 1.705	30	$24000/F(kHz)$
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960	3	500

Remark : (1) Emission level $(dB)\mu V = 20 \log$ Emission level $\mu V/m$

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
- (4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
- (5) §15.247(d) specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

Pass

Please refer to following plots of the worst case

Note:

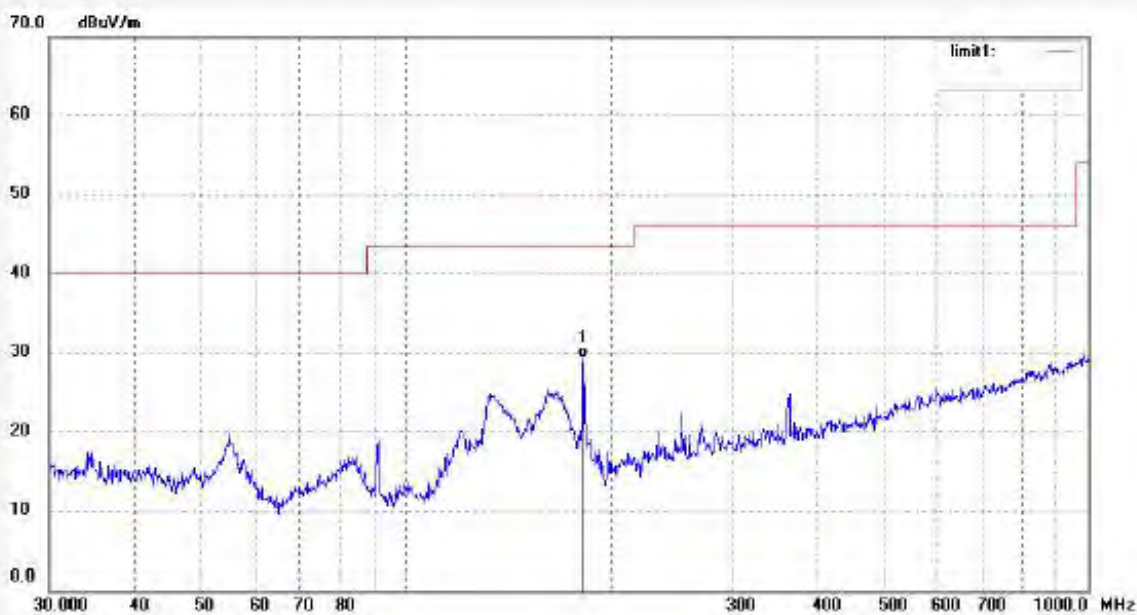
1. We tested 802.11b/g/n mode the all data rate and recorded the worst case data for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and MCS0 for 802.11n mode.
2. Below 30MHz, the emissions are lower than 20dB below the allowable limit. Therefore, 9kHz-30MHz data were not recorded.

E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11b	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2412MHz	Test Results:	PASS

Job No.: Data 2020 #91
 Standard: FCC Class B 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: MKD-100
 Mode: TX 2412MHz
 Model: MKD-100
 Manufacturer: Estone

Polarization: Horizontal
 Power Source: DC 11.1V
 Date: 2020/09/07
 Time:
 Engineer Signature: PEI
 Distance: 3m

Note: 802.11b



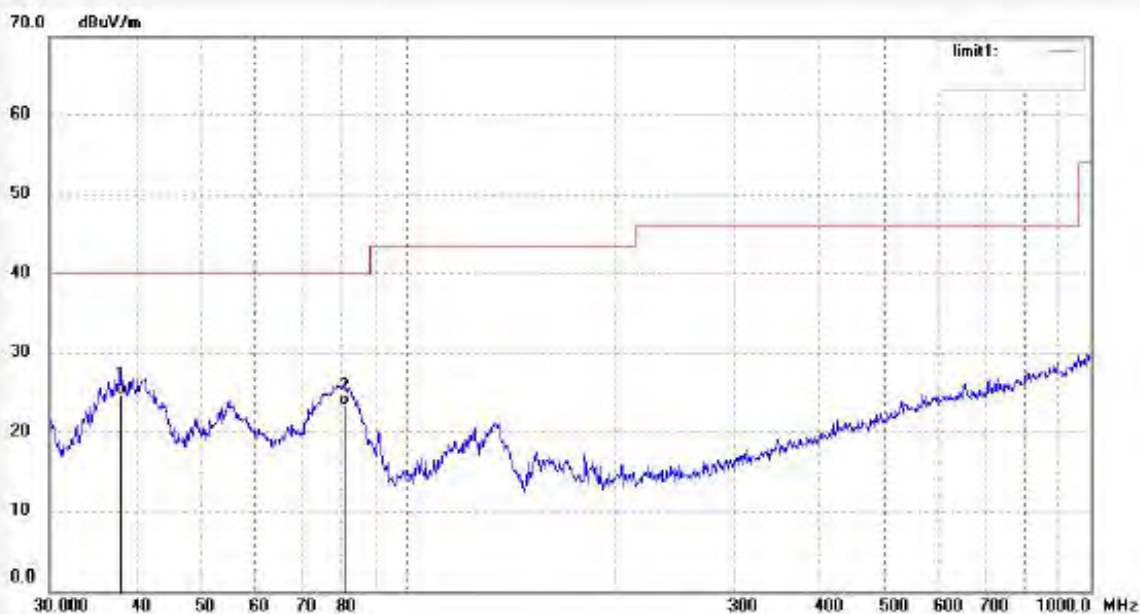
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	181.9201	42.53	-13.18	29.35	43.50	-14.15	QP			

E.U.T:	MDK-100	Polarization:	Vertical
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11b	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2412MHz	Test Results:	PASS

Job No.: Data 2020 #92
 Standard: FCC Class B 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: MKD-100
 Mode: TX 2412MHz
 Model: MKD-100
 Manufacturer: Estone

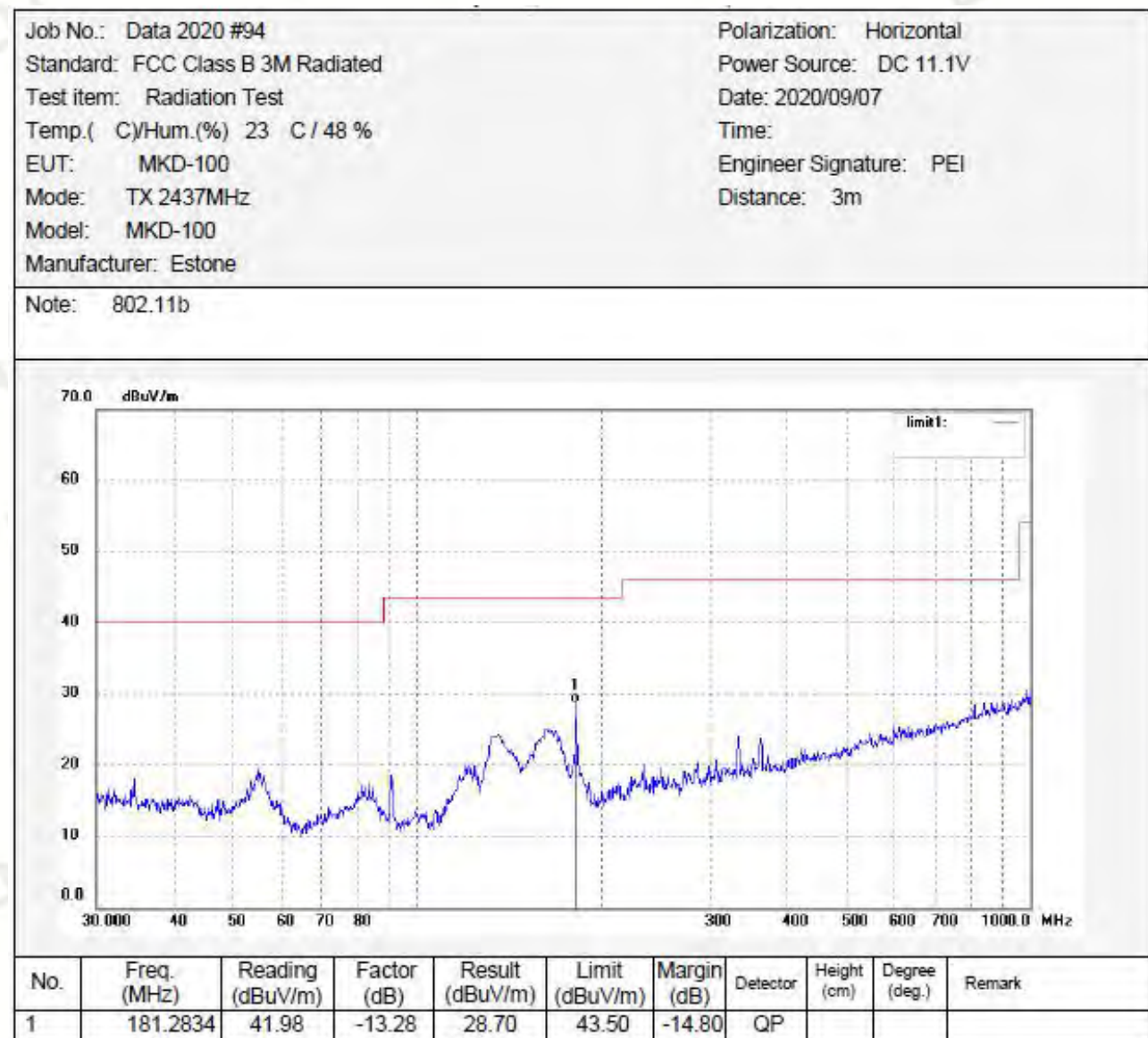
Polarization: Vertical
 Power Source: DC 11.1V
 Date: 2020/09/07
 Time:
 Engineer Signature: PEI
 Distance: 3m

Note: 802.11b

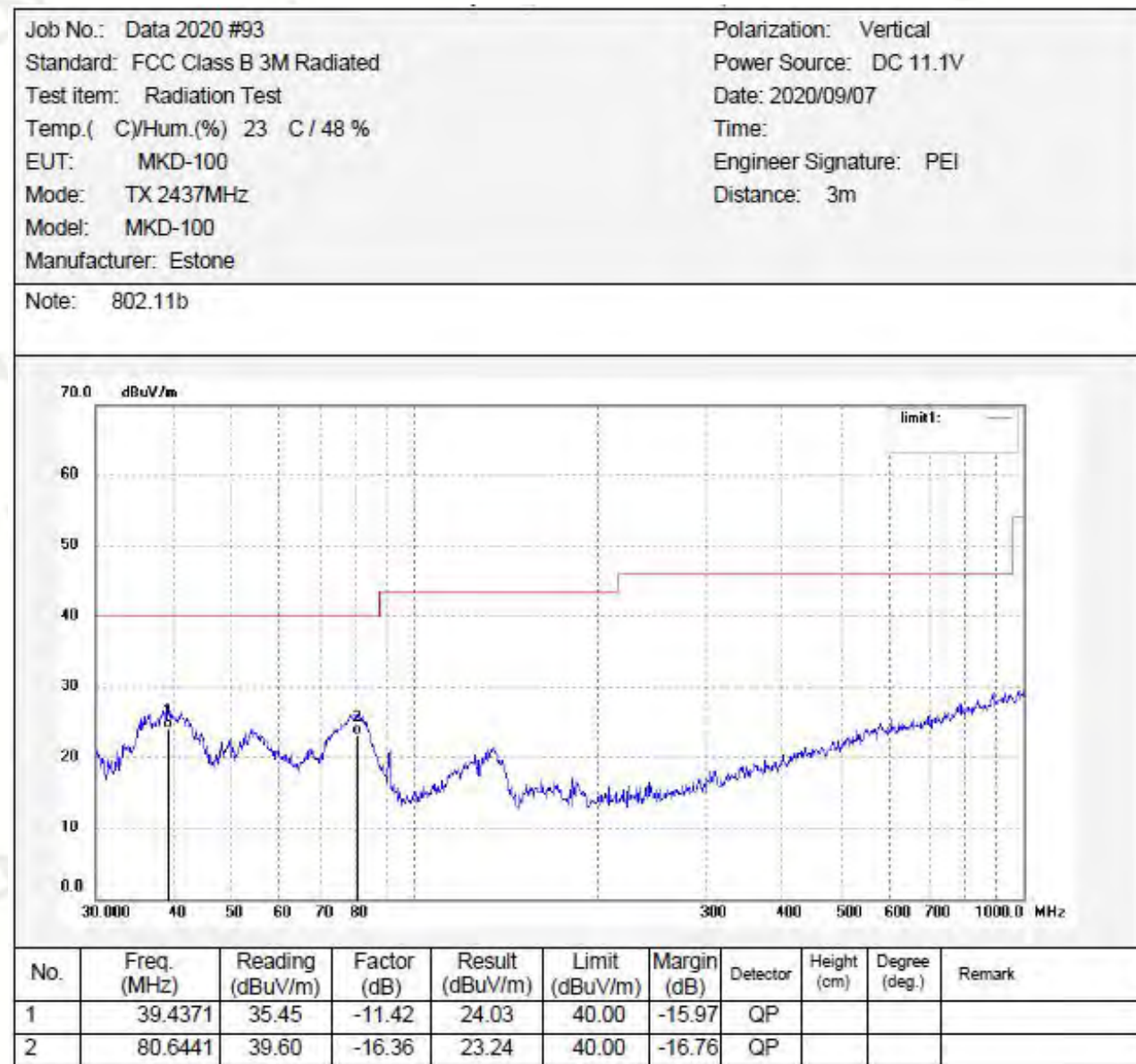


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.0783	35.95	-11.11	24.84	40.00	-15.16	QP			
2	80.9275	39.65	-16.31	23.34	40.00	-16.66	QP			

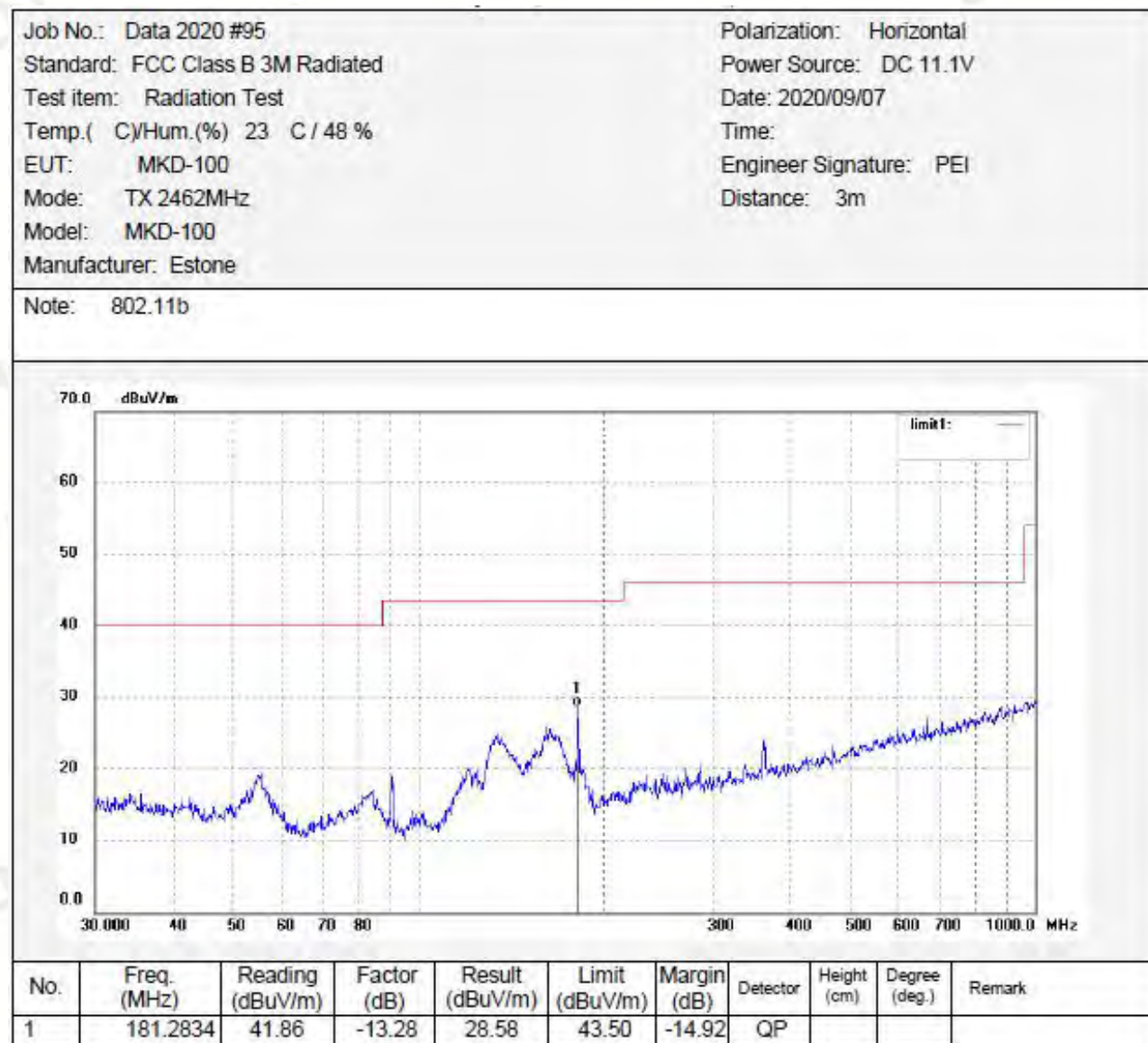
E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11b	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2437MHz	Test Results:	PASS



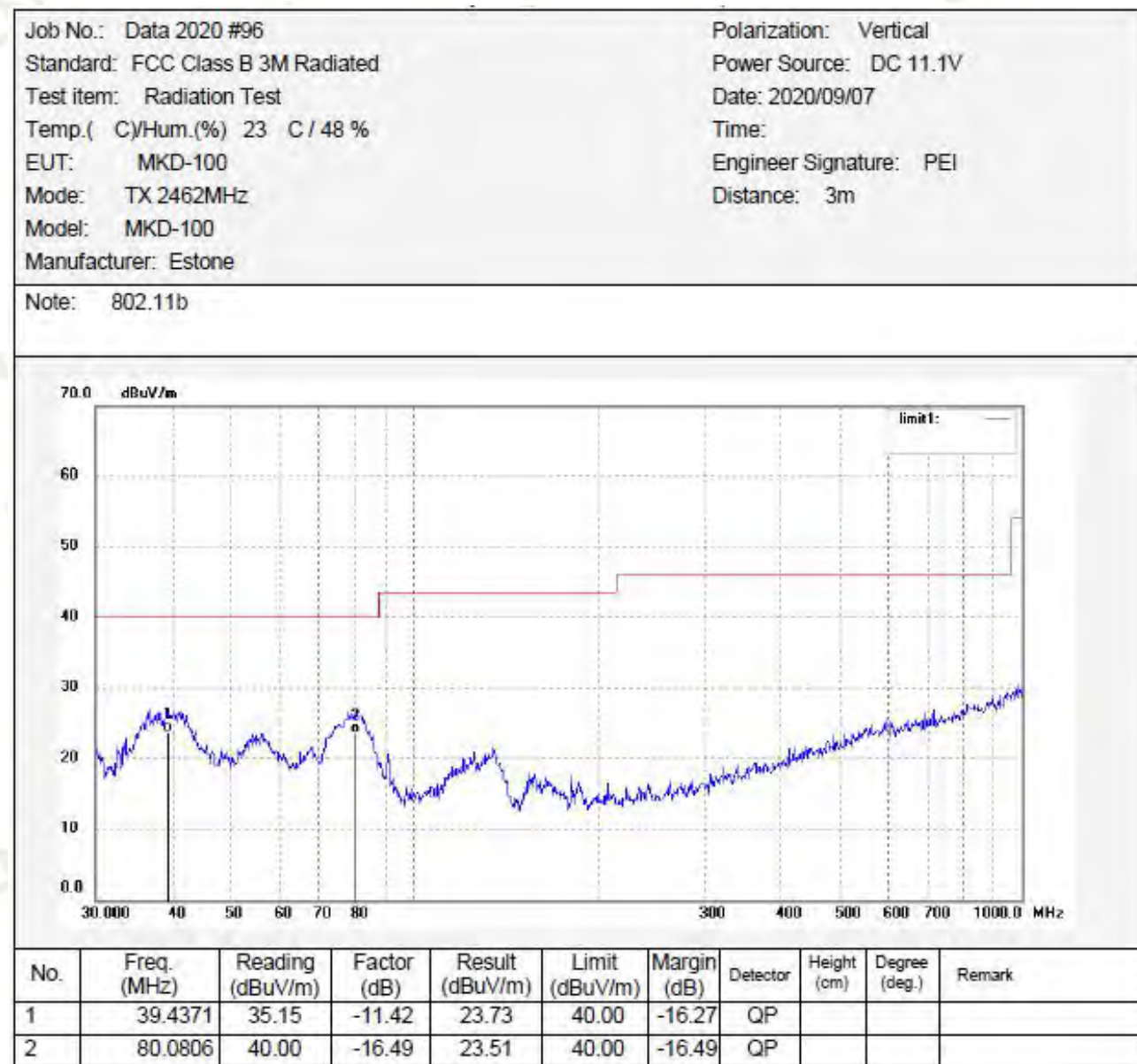
E.U.T:	MDK-100	Polarization:	Vertical
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11b	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2437MHz	Test Results:	PASS



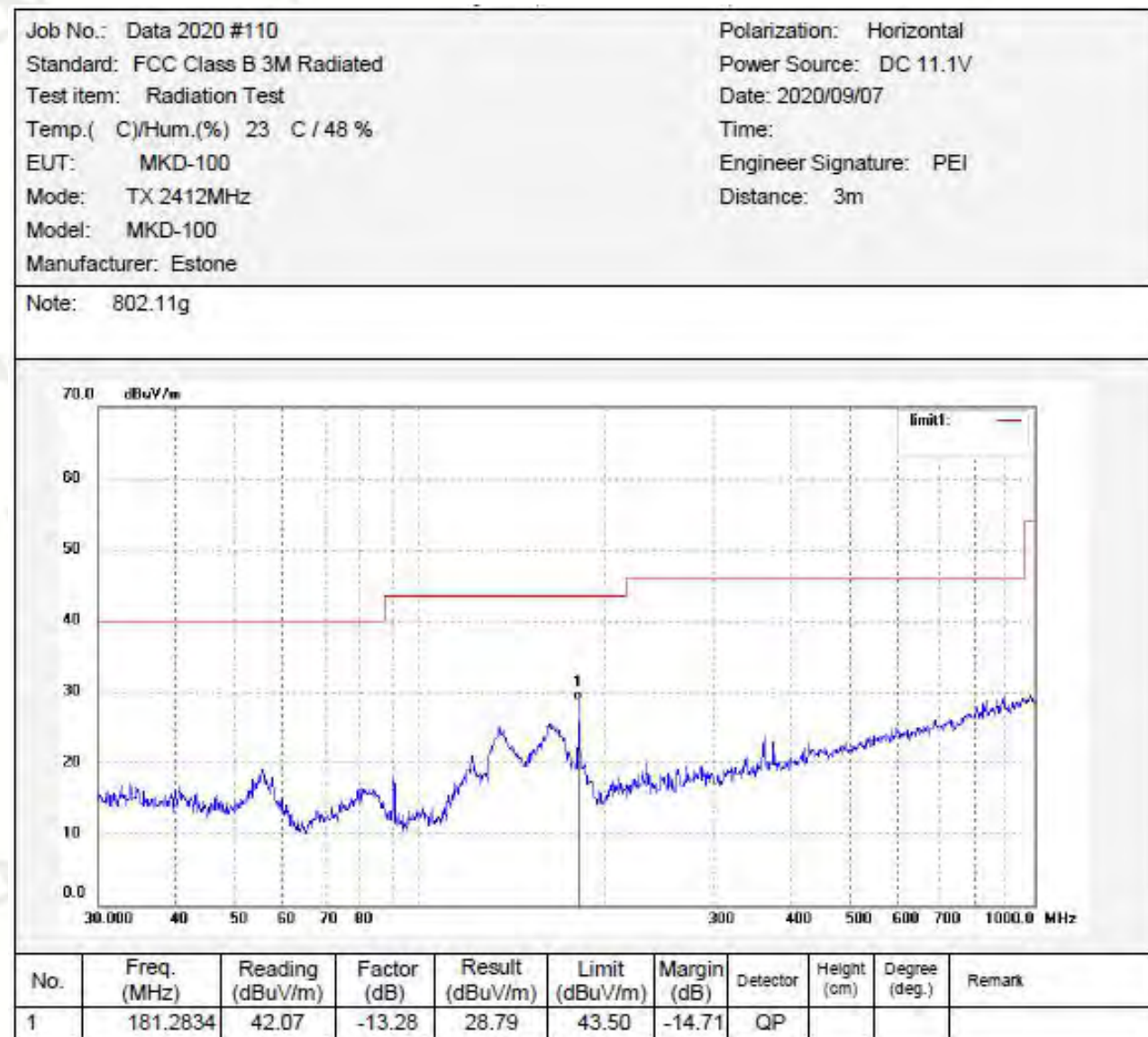
E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11b	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2462MHz	Test Results:	PASS



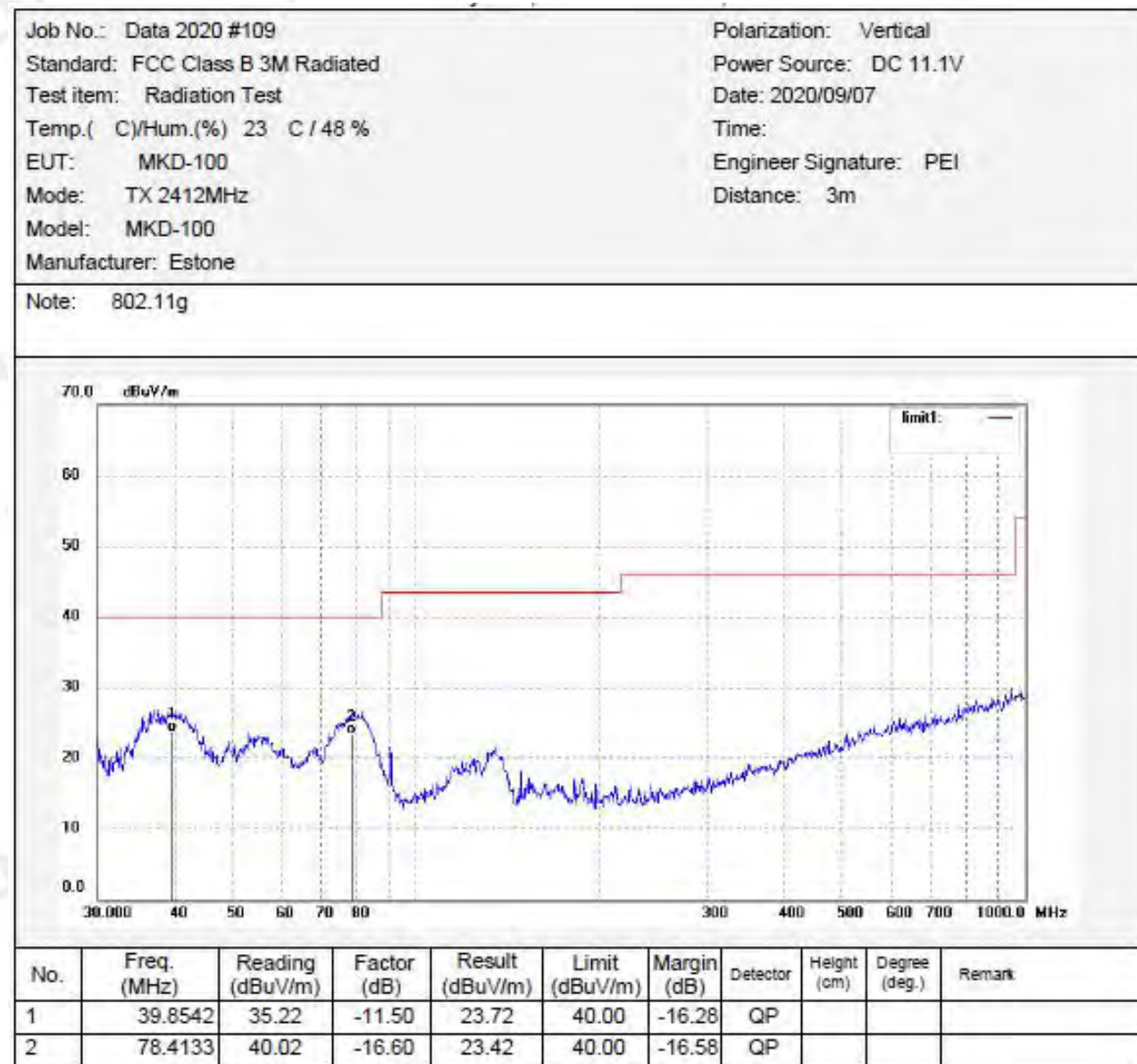
E.U.T:	MDK-100	Polarization:	Vertical
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11b	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2462MHz	Test Results:	PASS



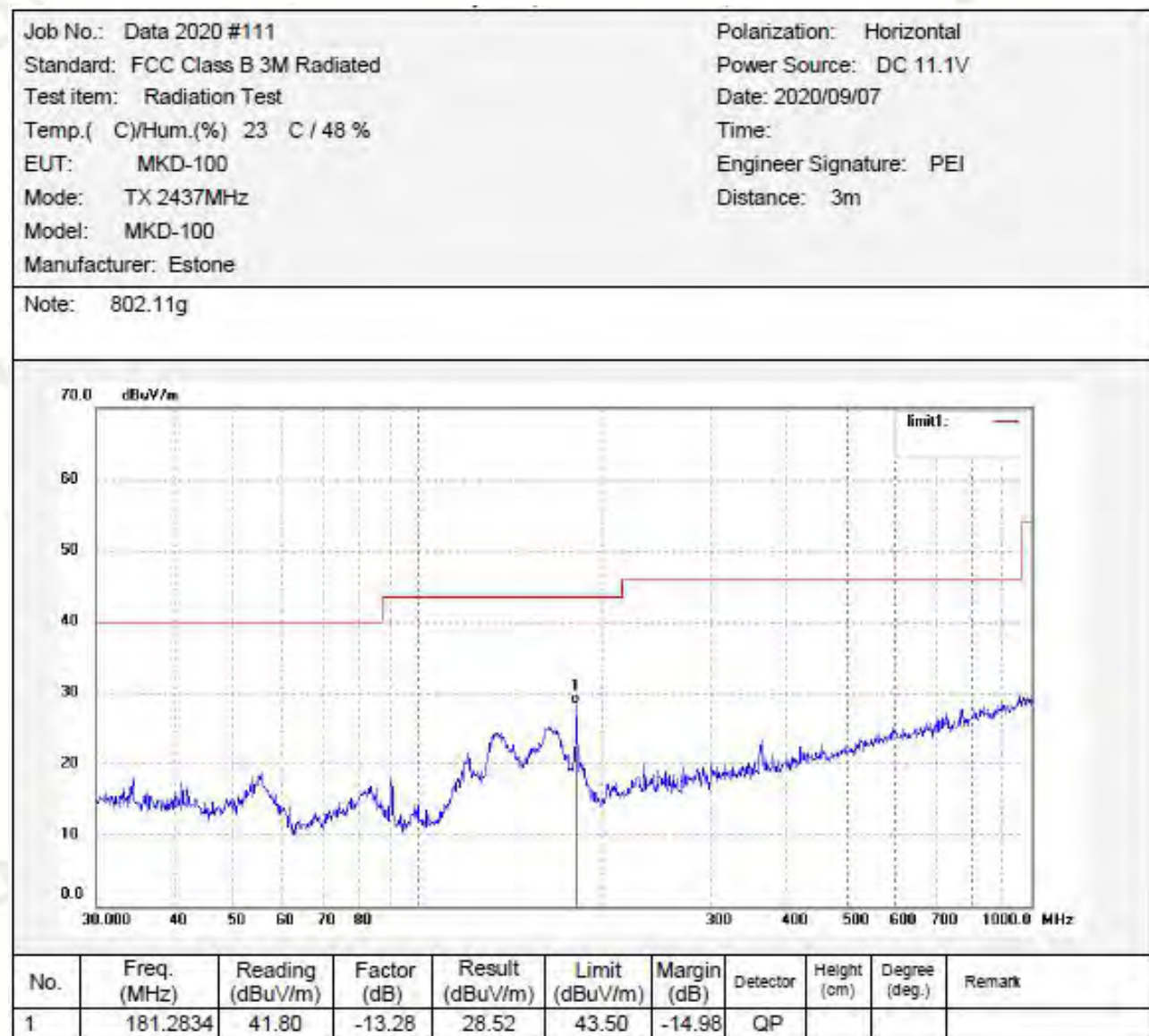
E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11g	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2412MHz	Test Results:	PASS



E.U.T:	MDK-100	Polarization:	Vertical
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11g	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2412MHz	Test Results:	PASS



E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11g	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2437MHz	Test Results:	PASS

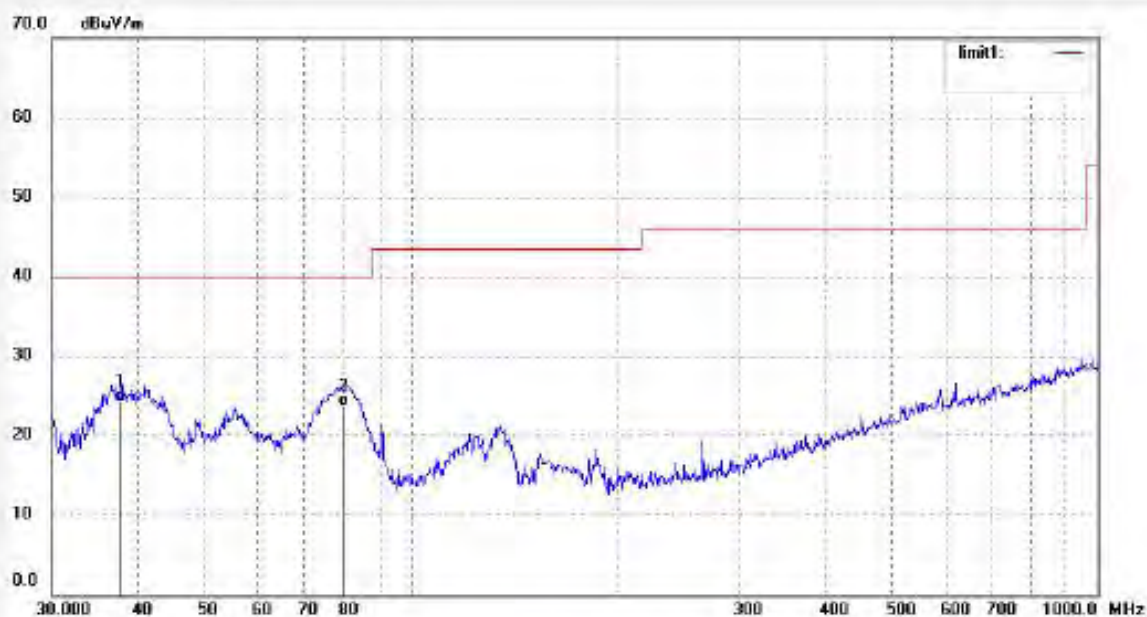


E.U.T:	MDK-100	Polarization:	Vertical
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11g	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2437MHz	Test Results:	PASS

Job No.: Data 2020 #112
 Standard: FCC Class B 3M Radiated
 Test item: Radiation Test
 Temp.(C)/Hum.(%) 23 C / 48 %
 EUT: MKD-100
 Mode: TX 2437MHz
 Model: MKD-100
 Manufacturer: Estone

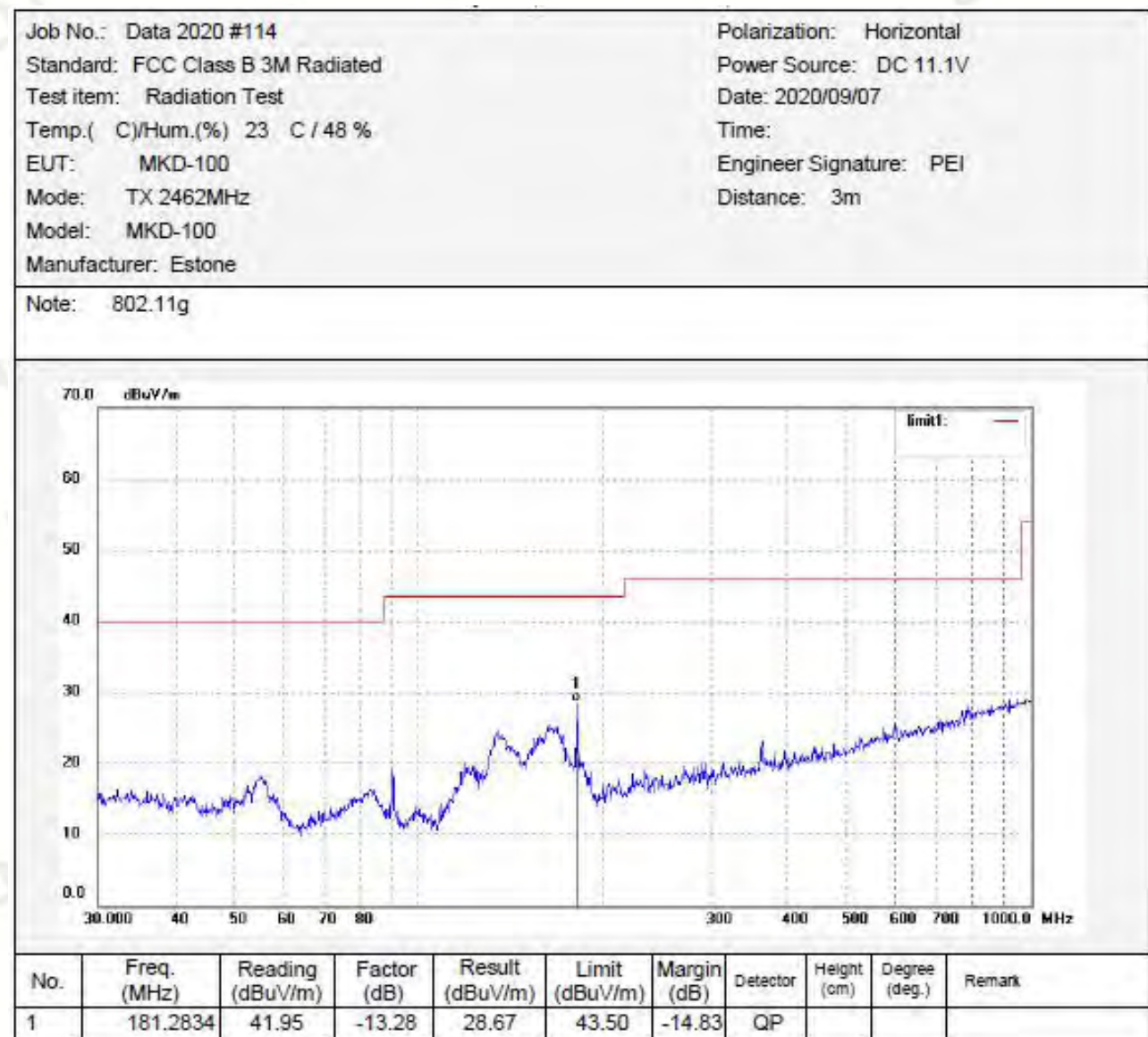
Polarization: Vertical
 Power Source: DC 11.1V
 Date: 2020/09/07
 Time:
 Engineer Signature: PEI
 Distance: 3m

Note: 802.11g

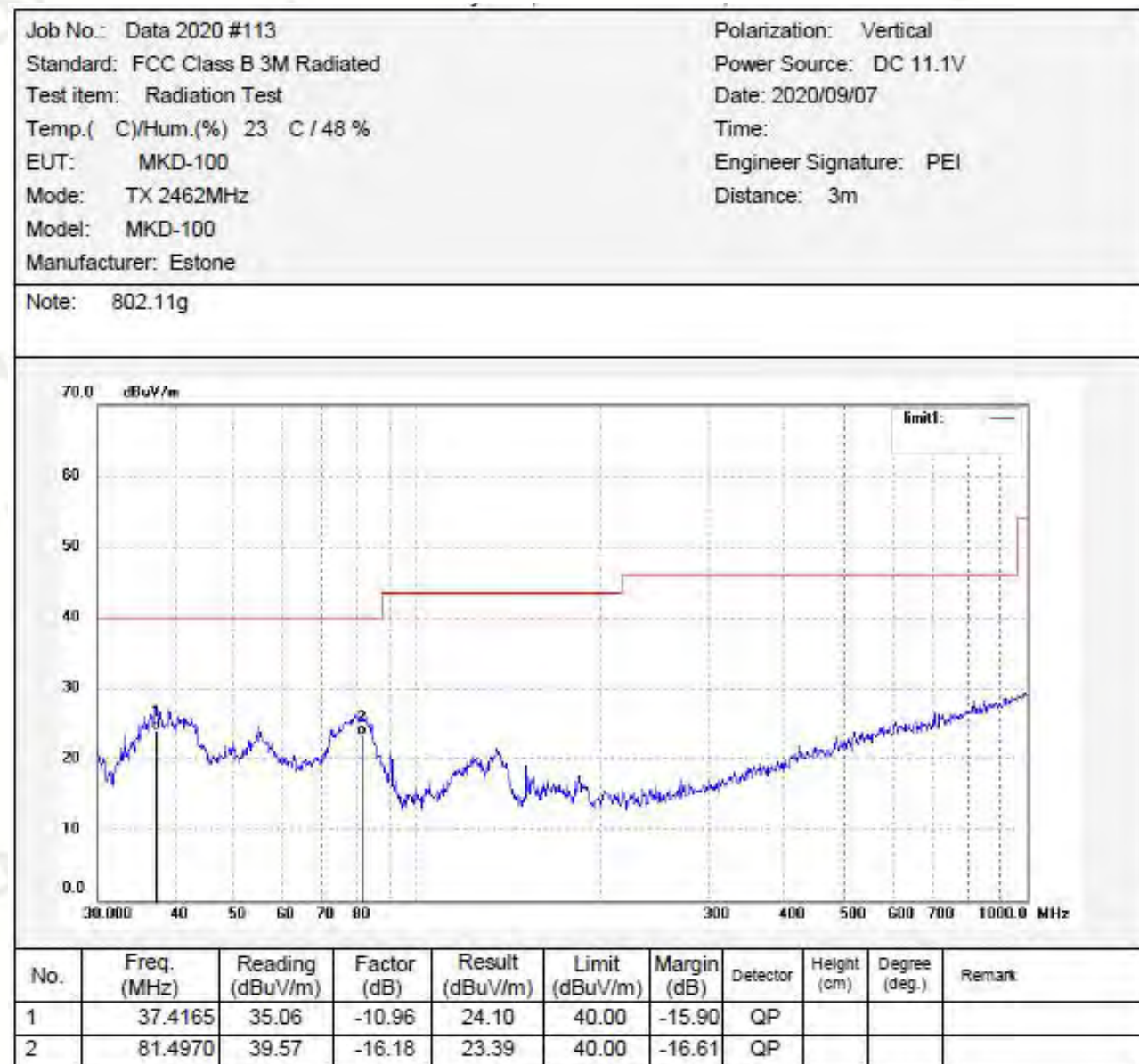


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	37.8121	35.21	-11.05	24.16	40.00	-15.84	QP			
2	79.8002	40.28	-16.52	23.76	40.00	-16.24	QP			

E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11g	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2462MHz	Test Results:	PASS



E.U.T:	MDK-100	Polarization:	Vertical
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11g	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2462MHz	Test Results:	PASS



E.U.T:	MDK-100	Polarization:	Horizontal
Model No.:	MDK-100	Temperature:	23 °C
Modulation Type:	802.11n HT20	Humidity:	48 %
Frequency Range:	30MHz-1GHz	Test By:	PEI
Test Distance:	3m	Test Voltage	DC 11.1V
Test Mode:	TX 2412MHz	Test Results:	PASS

