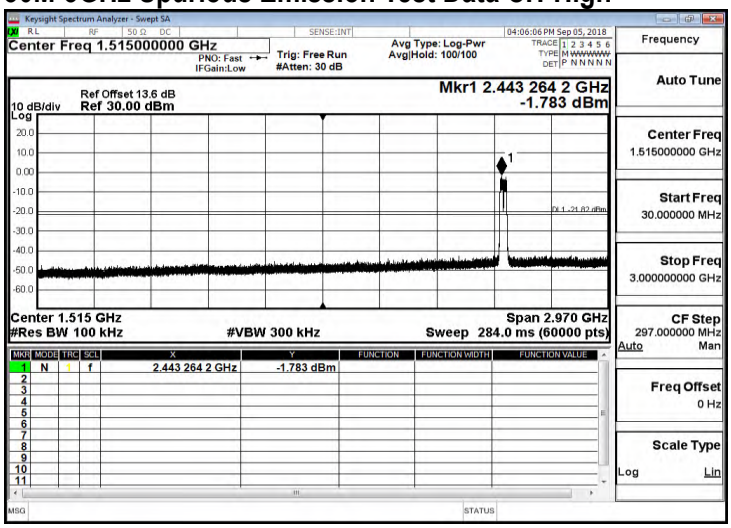
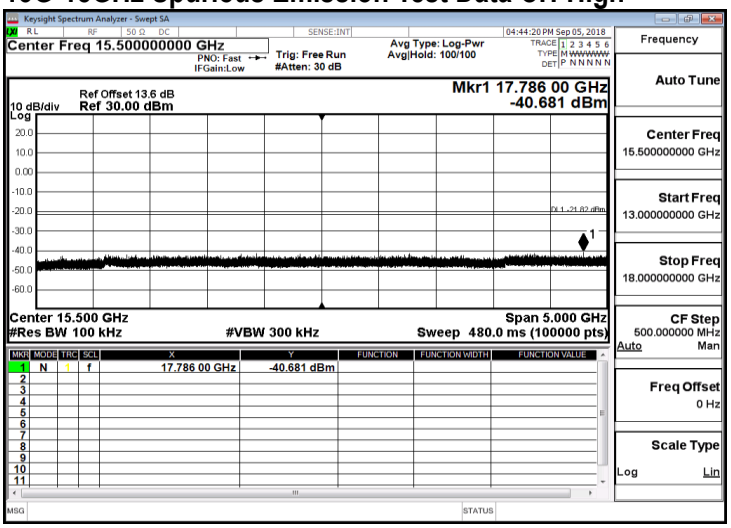
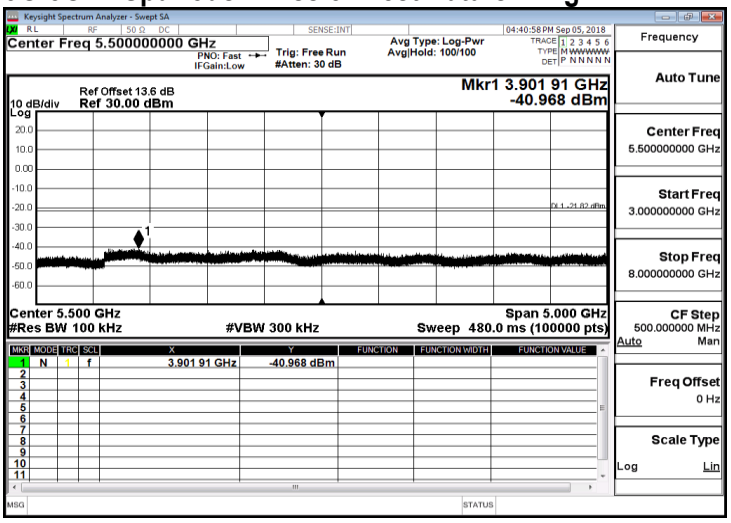
30M-3GHz Spurious Emission Test Data CH-High



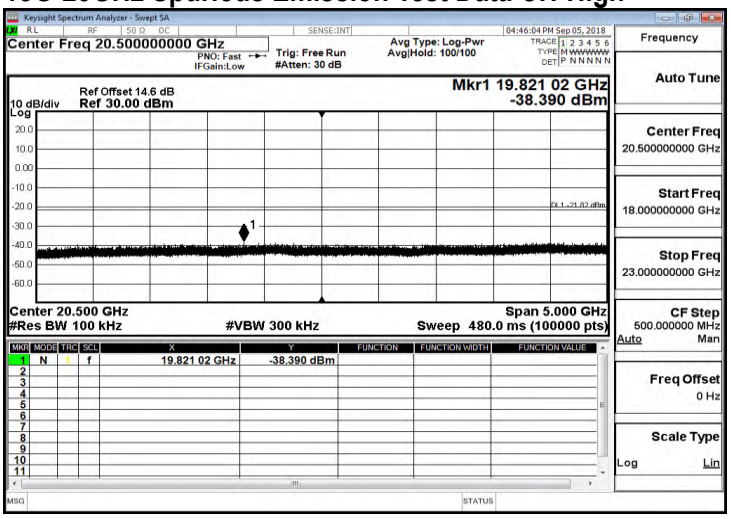
13G-18GHz Spurious Emission Test Data CH-High



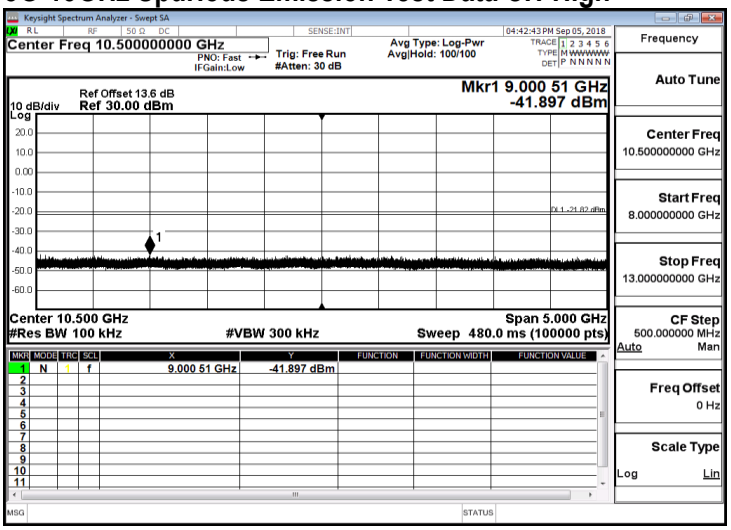
3G-8GHz Spurious Emission Test Data CH-High



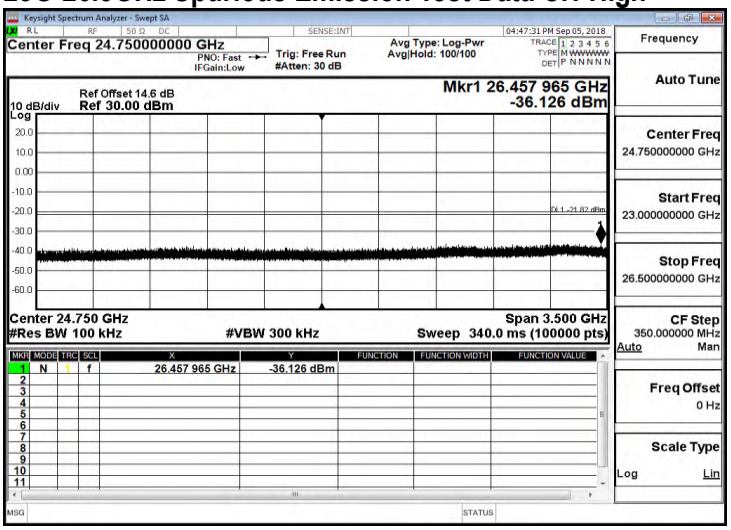
18G-23GHz Spurious Emission Test Data CH-High



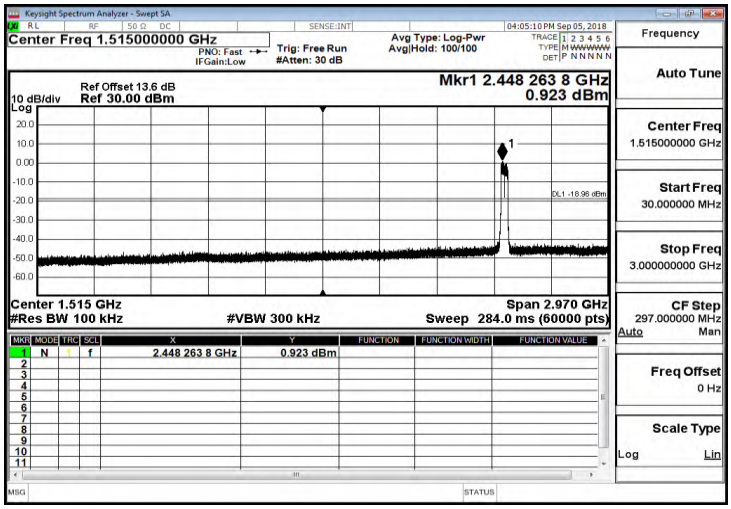
8G-13GHz Spurious Emission Test Data CH-High



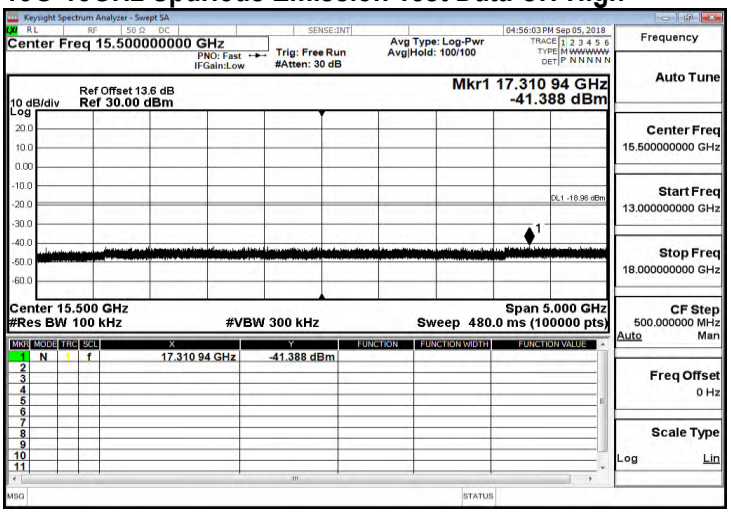
23G-26.5GHz Spurious Emission Test Data CH-High



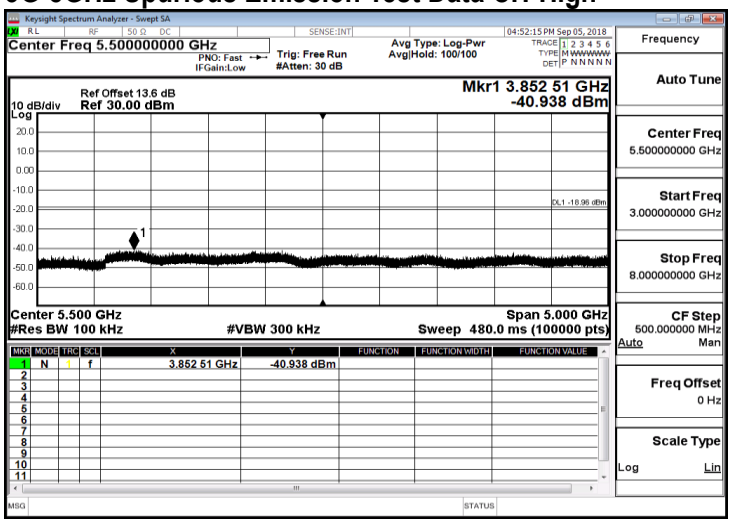
30M-3GHz Spurious Emission Test Data CH-High 2457MHz



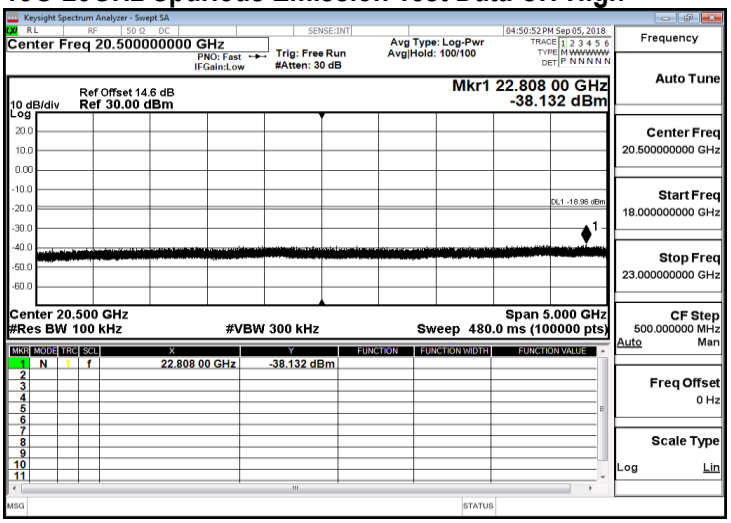
13G-18GHz Spurious Emission Test Data CH-High



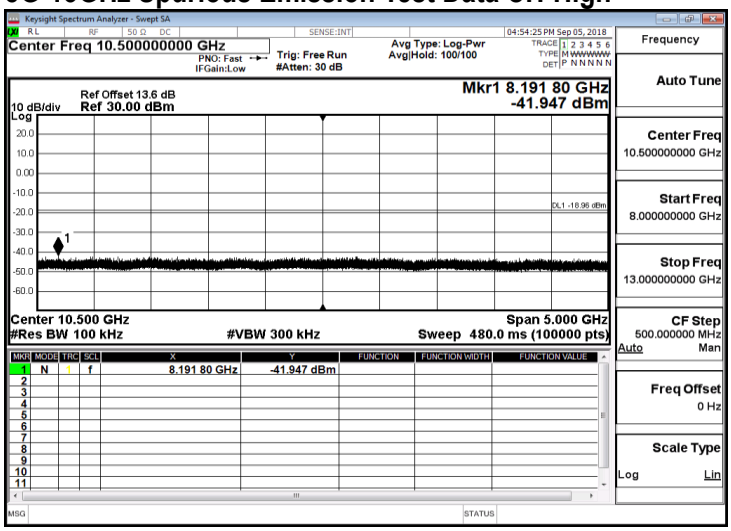
3G-8GHz Spurious Emission Test Data CH-High



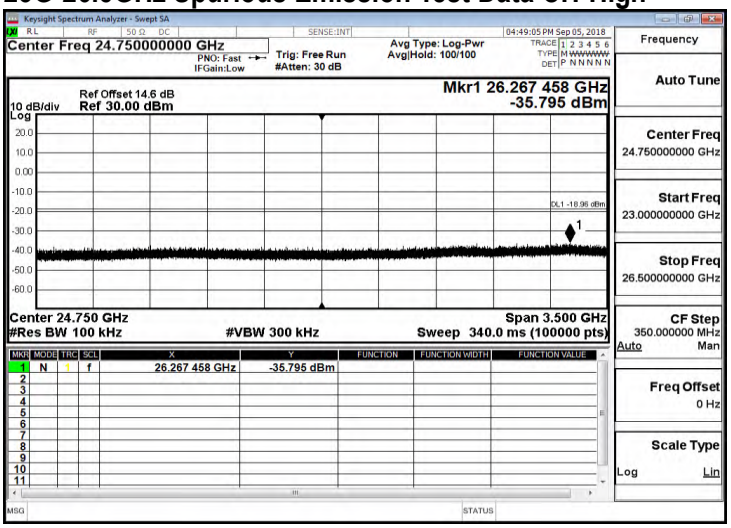
18G-23GHz Spurious Emission Test Data CH-High



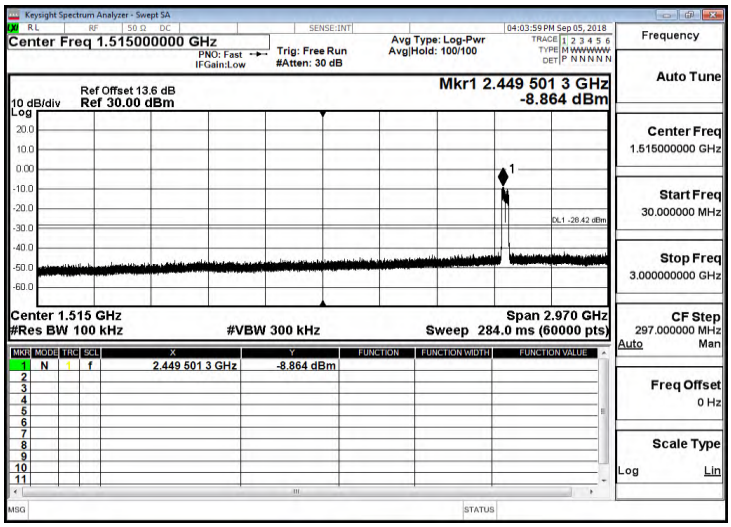
8G-13GHz Spurious Emission Test Data CH-High



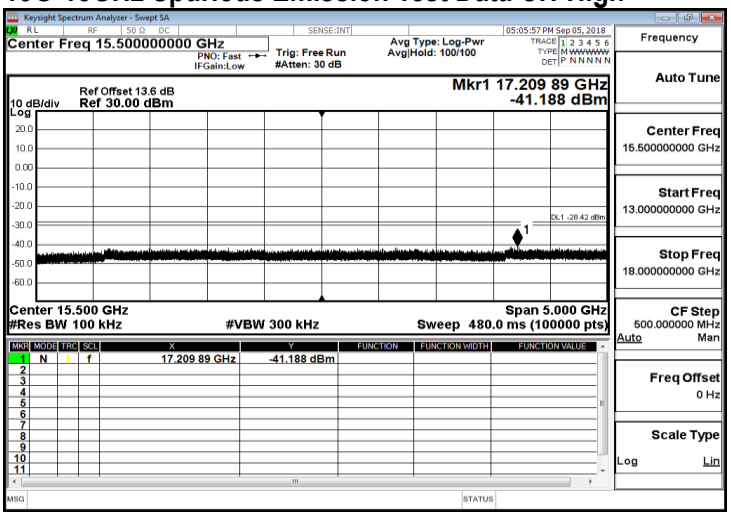
23G-26.5GHz Spurious Emission Test Data CH-High



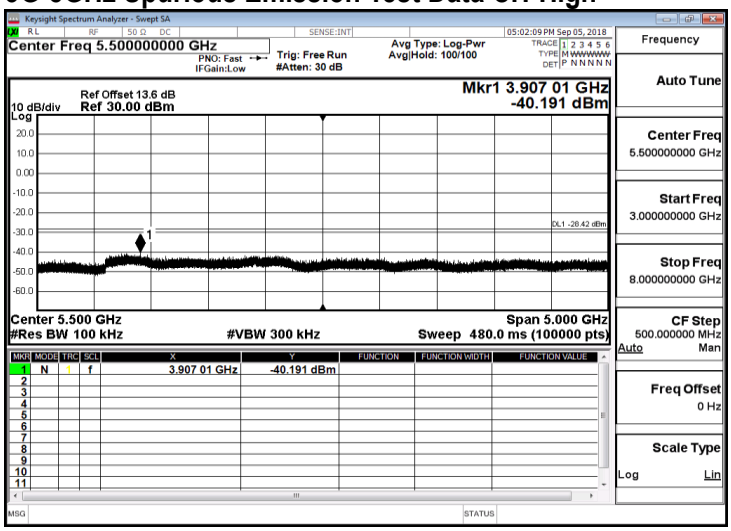
30M-3GHz Spurious Emission Test Data CH-High 2462MHz



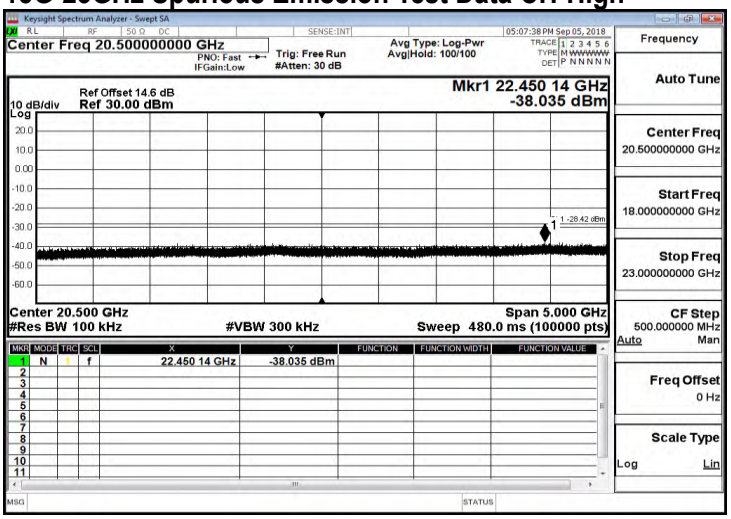
13G-18GHz Spurious Emission Test Data CH-High



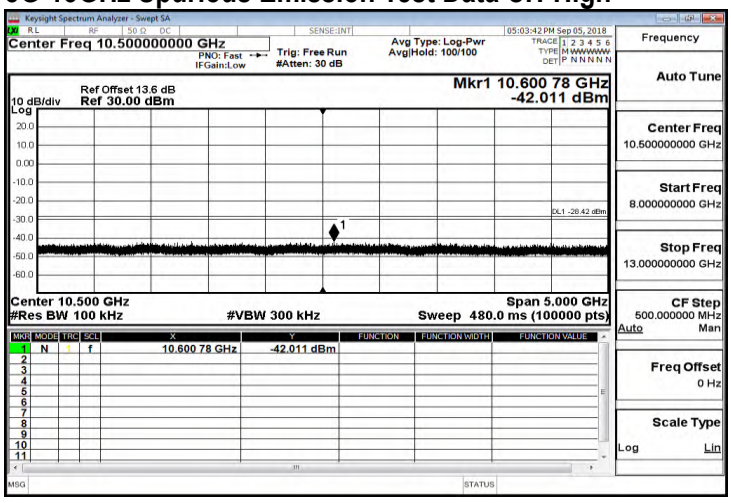
3G-8GHz Spurious Emission Test Data CH-High



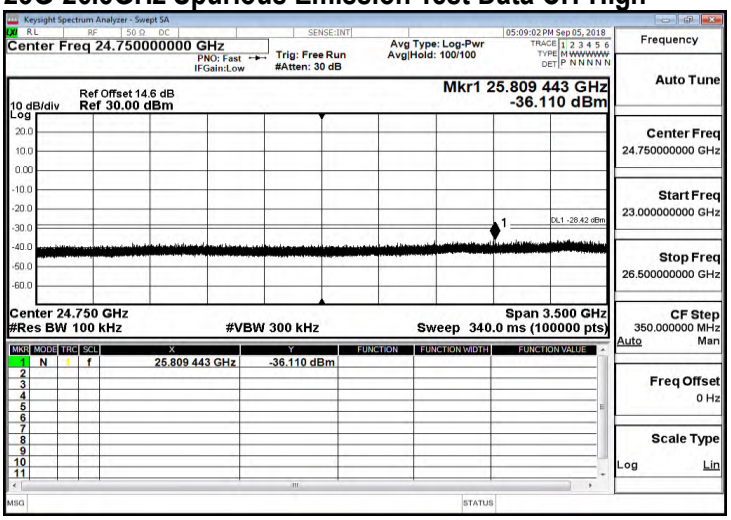
18G-23GHz Spurious Emission Test Data CH-High



8G-13GHz Spurious Emission Test Data CH-High



23G-26.5GHz Spurious Emission Test Data CH-High



11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

11.1Standard Applicable

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. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 & RSS-Gen §8.8, 8.9 limit as below.

And according to §15.33(a) (1) & RSS-Gen §6.13(a), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

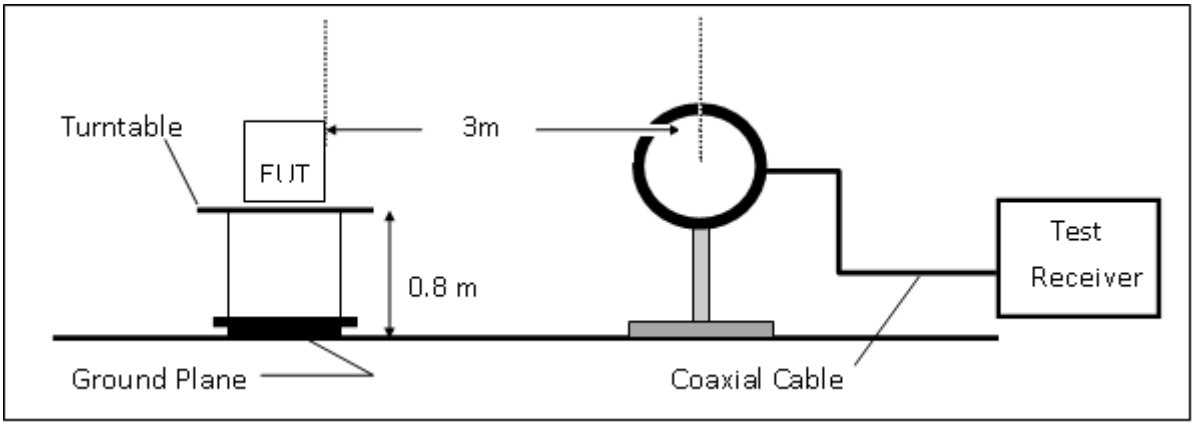
1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m)

11.2Measurement Equipment Used:

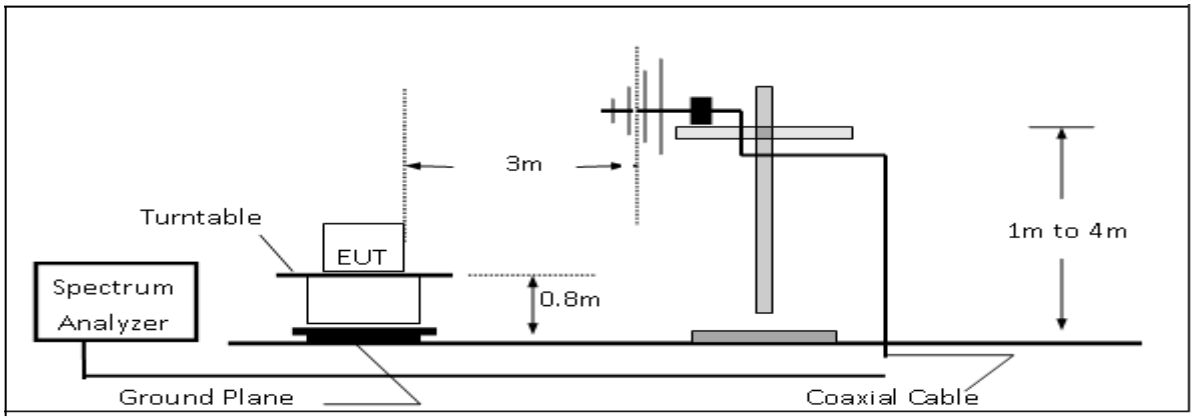
966 Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Broadband Antenna	SCHWAZBECK	VULB 9168	9168-617	2017/10/27	2018/10/26
Horn Antenna	Schwarzbeck	BBHA9120D	1341	2018/06/07	2019/06/06
Horn Antenna	SCHWAZBECK	BBHA9170	184	2017/12/12	2018/12/11
Loop Antenna	ETS.LINDGREN	6502	148045	2017/09/26	2018/09/25
3m Site NSA	SGS	966 chamber D	N/A	2018/07/06	2019/07/05
EMI Test Receiver	R&S	ESU 40	100363	2018/04/11	2019/04/10
Pre-Amplifier	EMC Instruments	EMC184045B	980135	2017/10/27	2018/10/26
Pre-Amplifier	EMC Instruments	EMC9135	980234	2017/12/26	2018/12/25
Pre-Amplifier	EMC Instruments	EMC12630SE	980271	2017/12/26	2018/12/25
Attenuator	Marvelous	WATT-218FS-10	RF246	2017/12/26	2018/12/25
Highpass Filter	Micro Tronics	BRM50701-01	G008	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	EMC106-SM-SM -7200	150703	2017/12/26	2018/12/25
Coaxial Cable	Huber Suhner	RG 214/U	W22.03	2017/12/26	2018/12/25
Notebook	Lenovo	L420	S0012467	N/A	N/A

11.3Test SET-UP

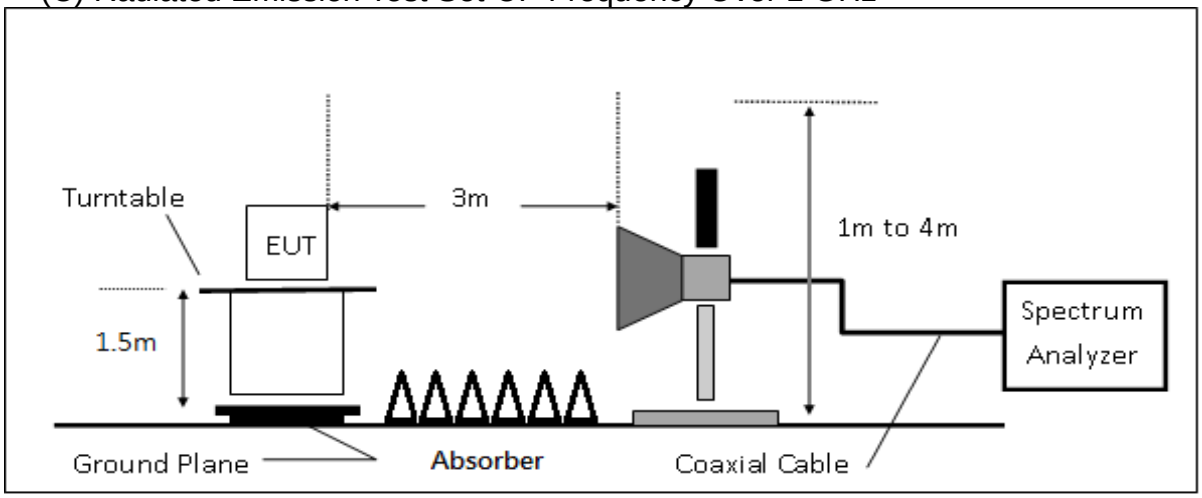
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



11.4Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.
6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
12. Repeat above procedures until all default test channel measured were complete.

11.5Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dB/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

11.6Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

Radiated emission below 30MHz is measured in a 9m*9m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site. And there is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

After Pre-scanned the low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

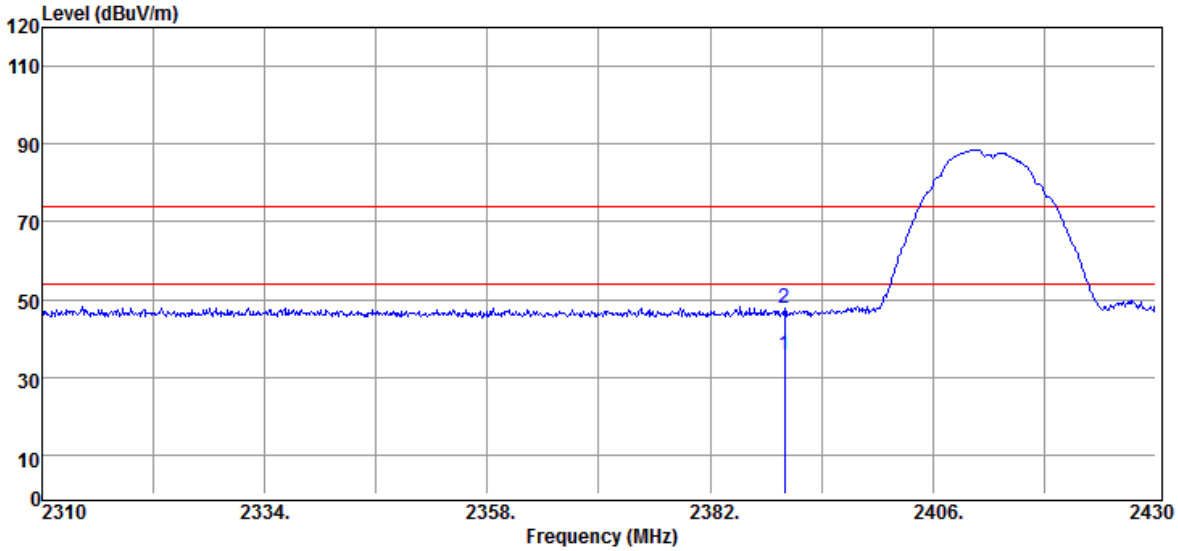
11.7Measurement Result

Note: WLAN/BT coexistence cases were investigated and there are no new emissions to report.

Refer to next page spectrum analyzer data chart and tabular data sheets.

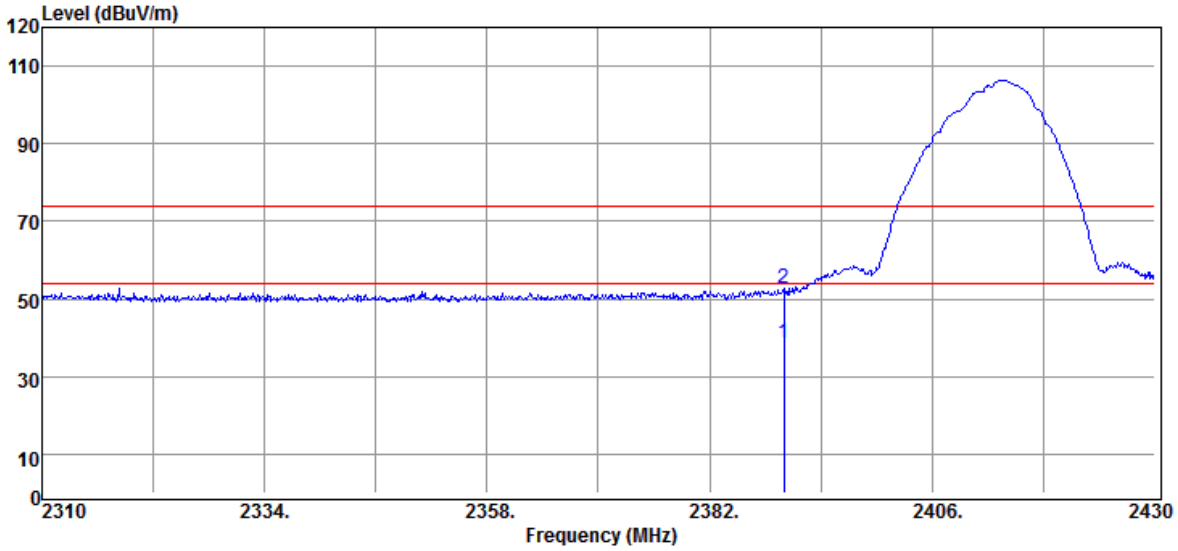
Radiated Band Edge Measurement Result (802.11b)

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



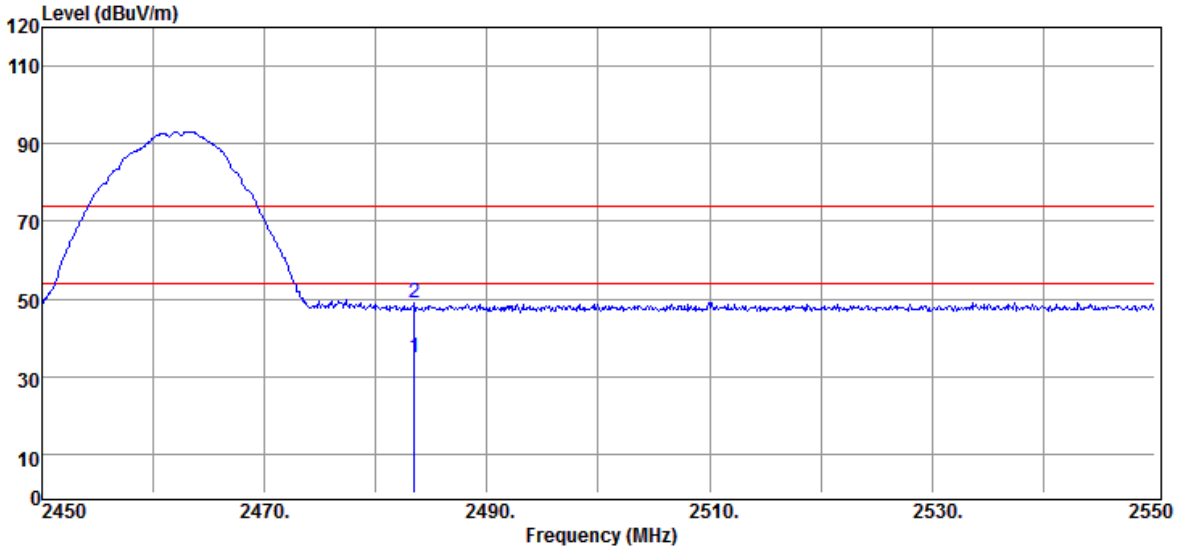
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Average	41.35	-5.57	35.78	54.00	-18.22
2390.00	Peak	53.26	-5.57	47.69	74.00	-26.31

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



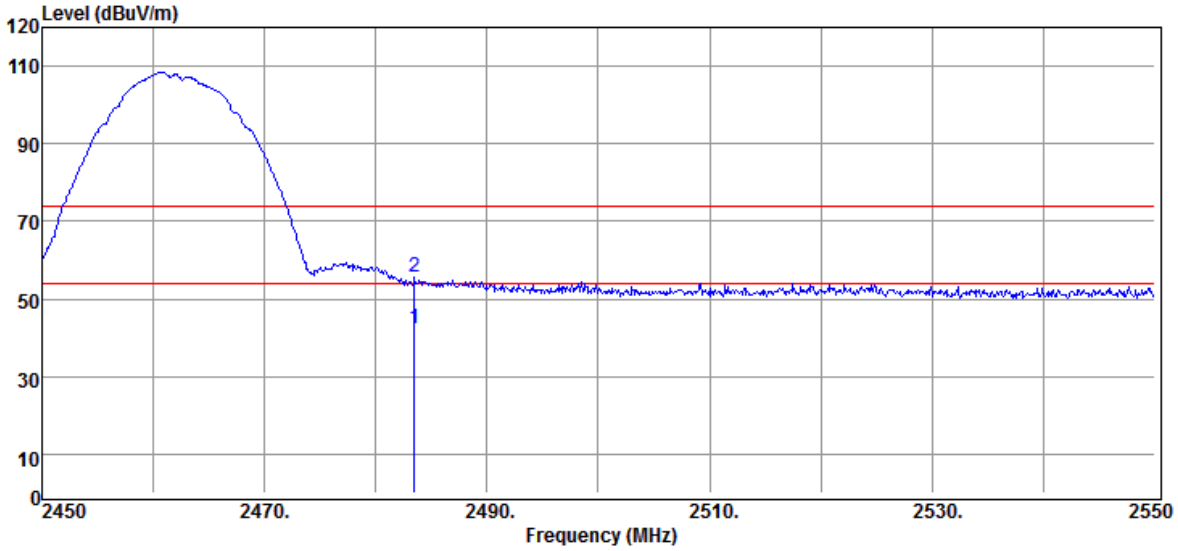
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Average	44.17	-5.57	38.60	54.00	-15.40
2390.00	Peak	58.16	-5.57	52.59	74.00	-21.41

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



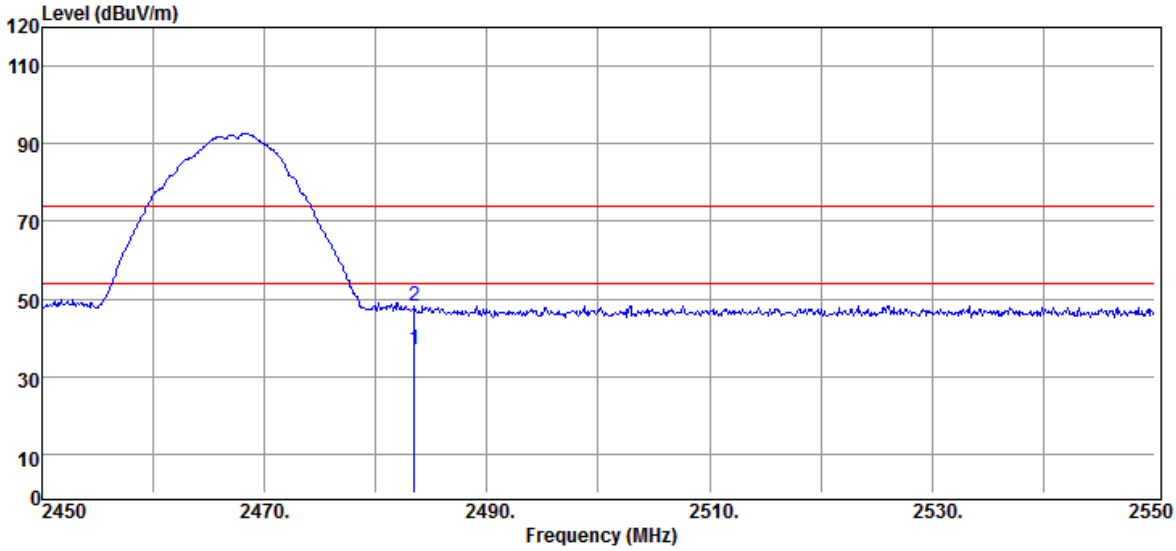
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	39.65	-4.90	34.75	54.00	-19.25
2483.50	Peak	53.69	-4.90	48.79	74.00	-25.21

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



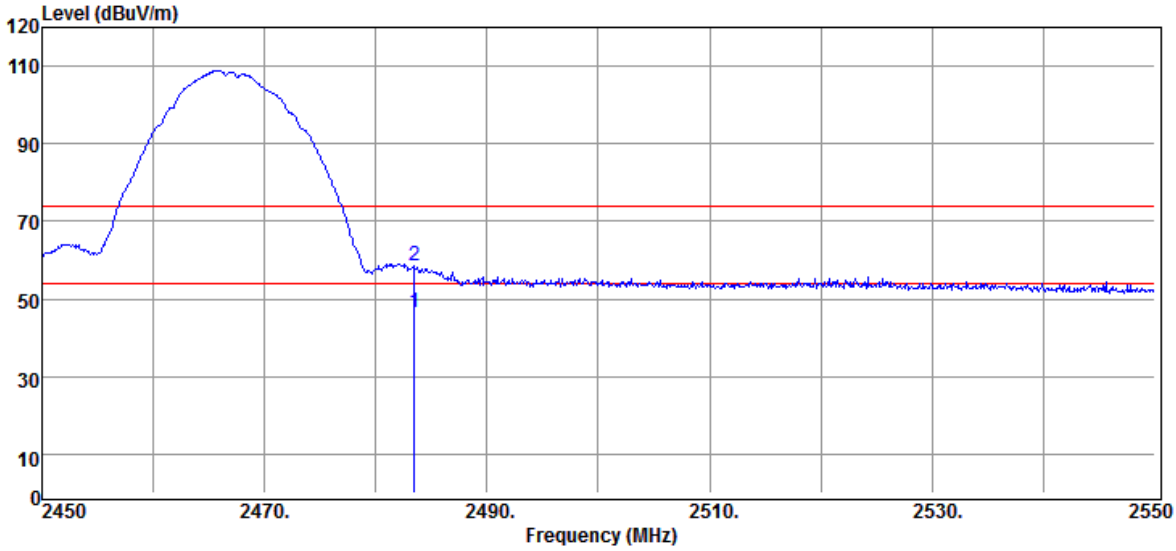
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	47.39	-4.90	42.49	54.00	-11.51
2483.50	Peak	60.52	-4.90	55.62	74.00	-18.38

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



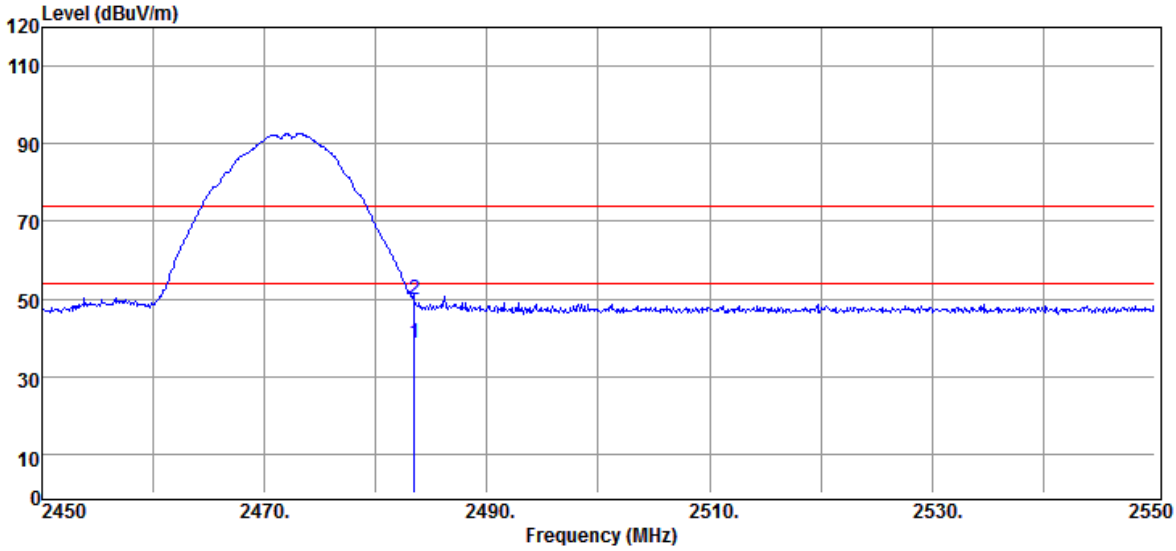
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.05	-4.90	37.15	54.00	-16.85
2483.50	Peak	53.20	-4.90	48.30	74.00	-25.70

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



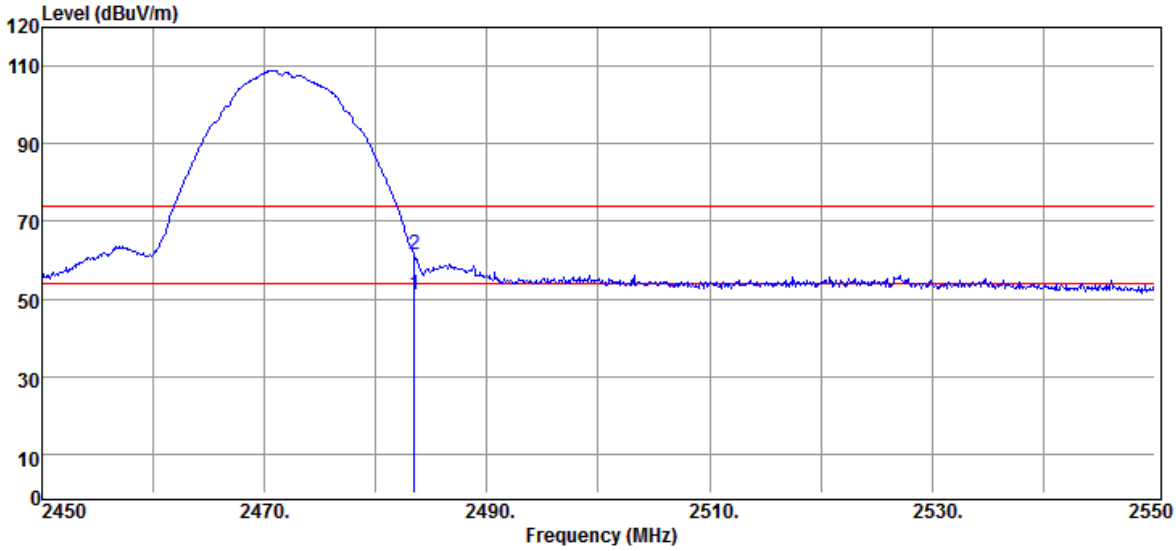
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	51.55	-4.90	46.65	54.00	-7.35
2483.50	Peak	63.52	-4.90	58.62	74.00	-15.38

Operation Mode	:802.11b	Test Date	:2018-08-06
Test Mode	:BE CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	43.51	-4.90	38.61	54.00	-15.39
2483.50	Peak	54.83	-4.90	49.93	74.00	-24.07

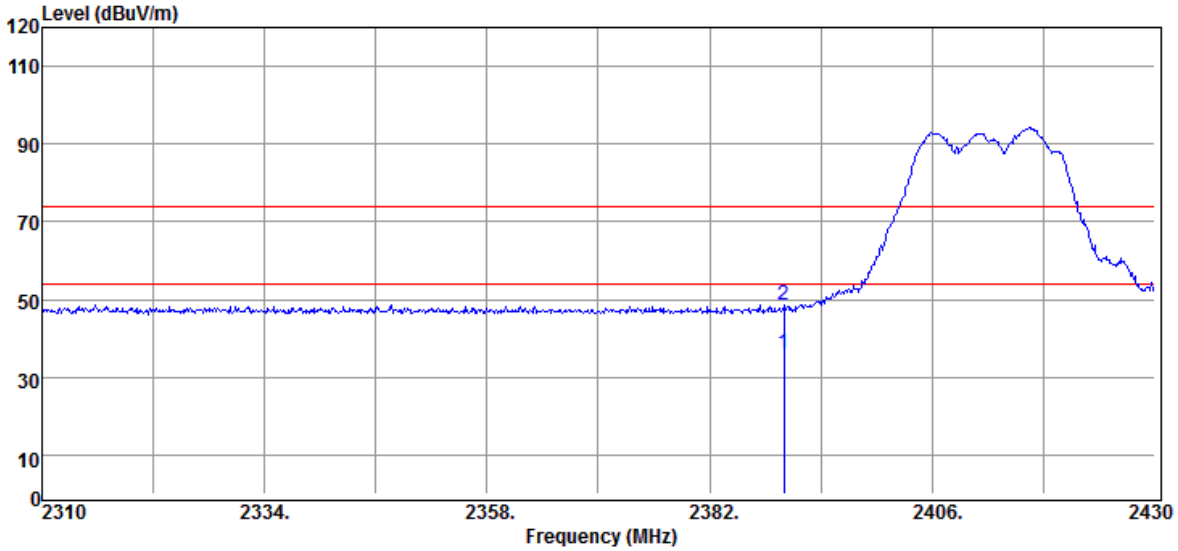
Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:BE CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.90	-4.90	51.00	54.00	-3.00
2483.50	Peak	66.27	-4.90	61.37	74.00	-12.63

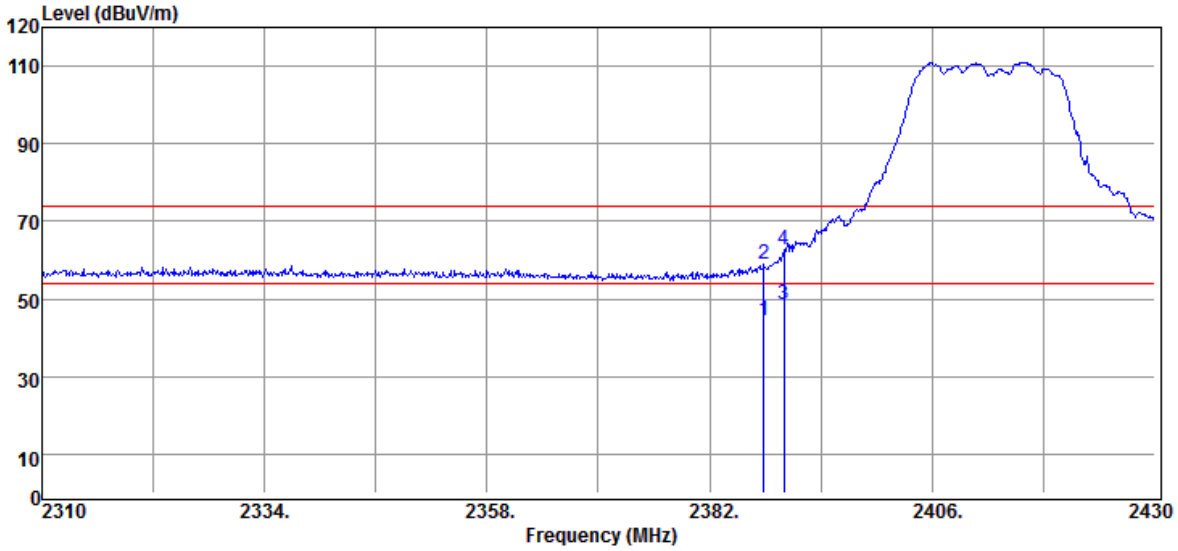
Radiated Band Edge Measurement Result (802.11g)

Operation Mode	:802.11g	Test Date	:2018-08-06
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



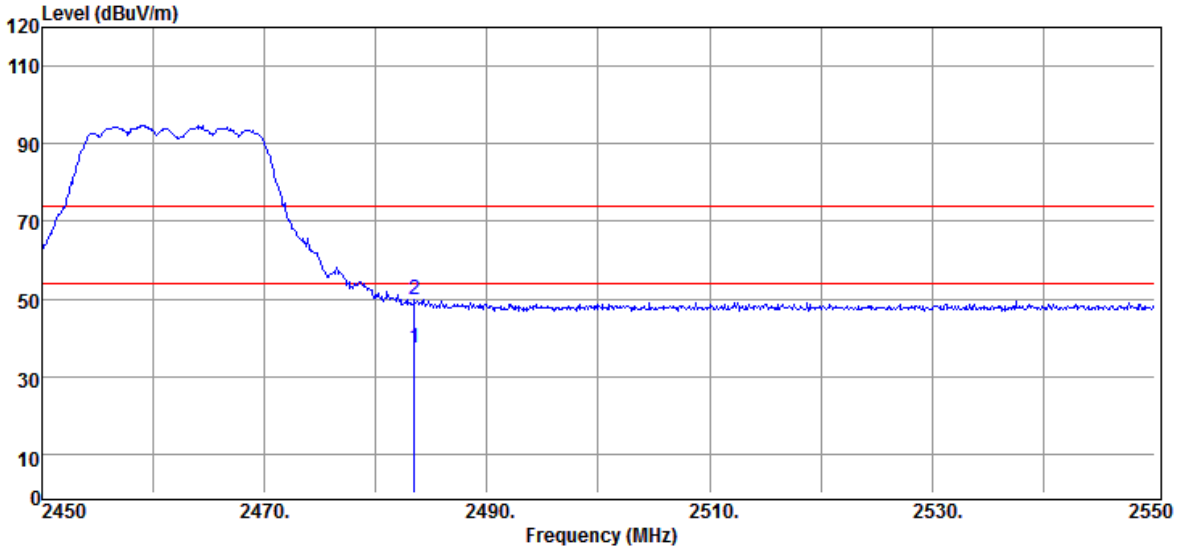
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Average	41.67	-5.57	36.10	54.00	-17.90
2390.00	Peak	54.15	-5.57	48.58	74.00	-25.42

Operation Mode	:802.11g	Test Date	:2018-08-06
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



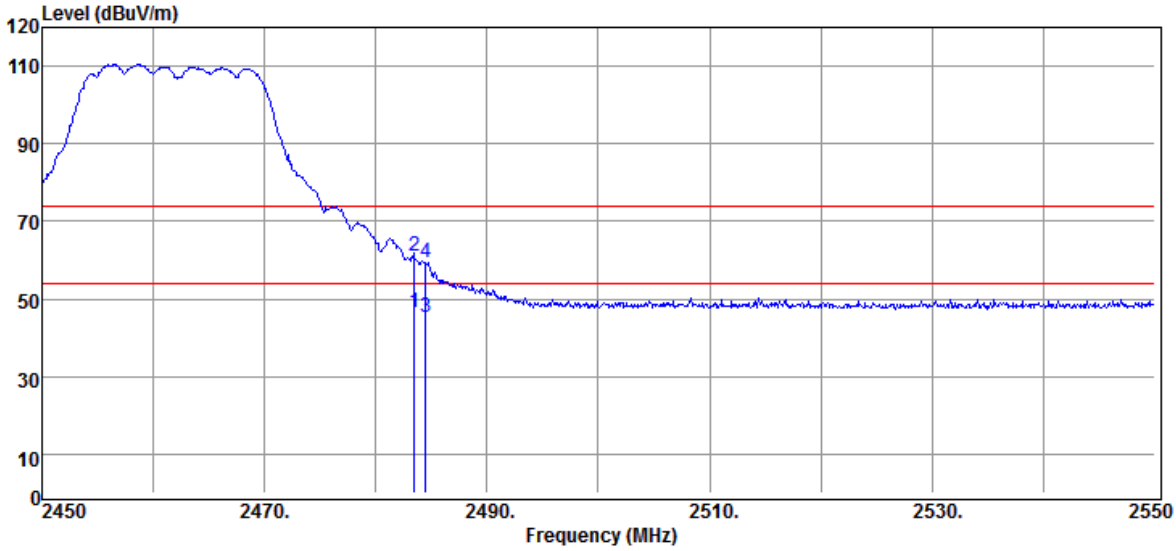
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2387.88	Average	50.12	-5.58	44.54	54.00	-9.46
2387.88	Peak	64.38	-5.58	58.80	74.00	-15.20
2390.00	Average	54.22	-5.57	48.65	54.00	-5.35
2390.00	Peak	68.34	-5.57	62.77	74.00	-11.23

Operation Mode	:802.11g	Test Date	:2018-08-06
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



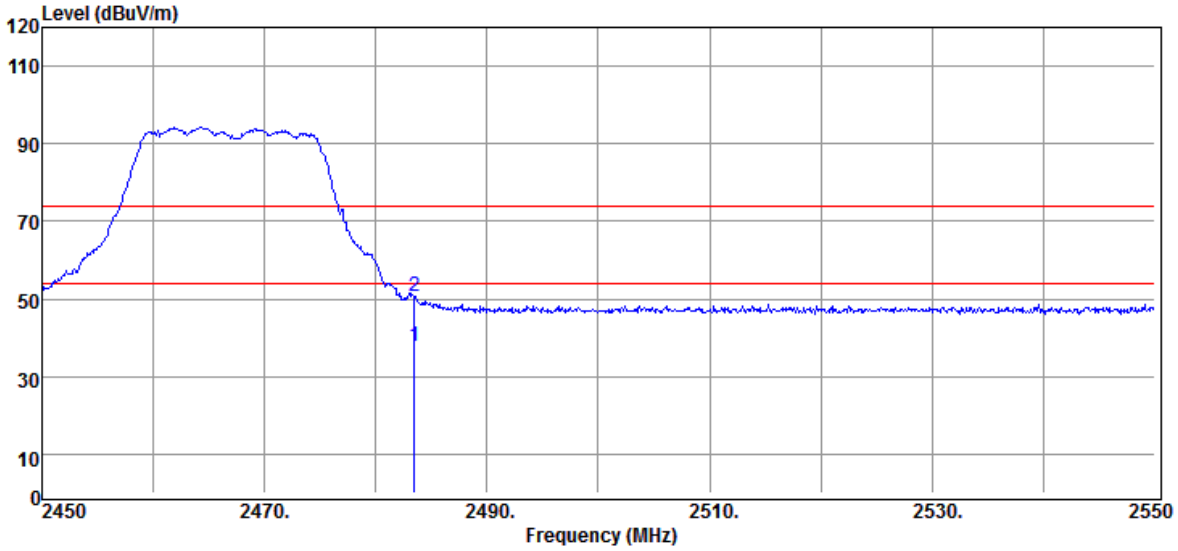
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.12	-4.90	37.22	54.00	-16.78
2483.50	Peak	54.90	-4.90	50.00	74.00	-24.00

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



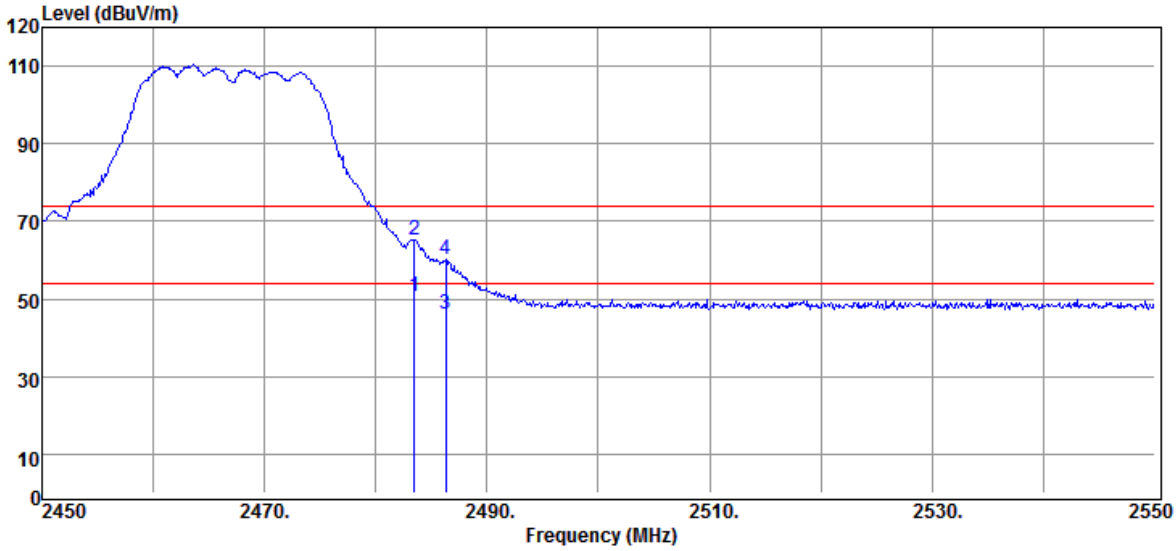
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	51.36	-4.90	46.46	54.00	-7.54
2483.50	Peak	65.86	-4.90	60.96	74.00	-13.04
2484.50	Average	50.02	-4.90	45.12	54.00	-8.88
2484.50	Peak	64.40	-4.90	59.50	74.00	-14.50

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:BE CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



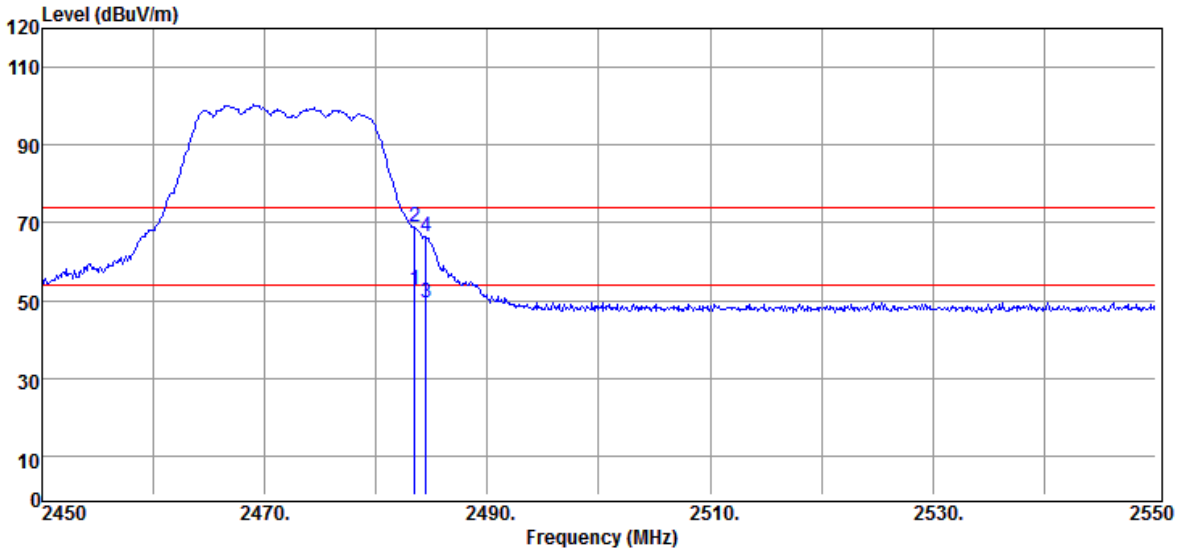
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.54	-4.90	37.64	54.00	-16.36
2483.50	Peak	55.65	-4.90	50.75	74.00	-23.25

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:BE CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



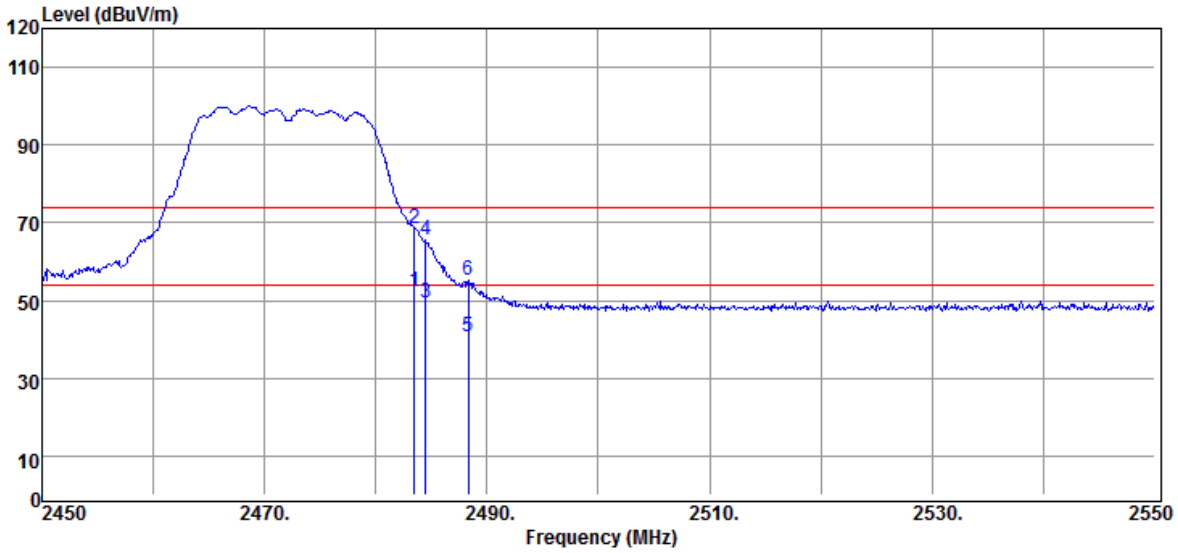
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.57	-4.90	50.67	54.00	-3.33
2483.50	Peak	70.24	-4.90	65.34	74.00	-8.66
2486.30	Average	51.05	-4.87	46.18	54.00	-7.82
2486.30	Peak	65.26	-4.87	60.39	74.00	-13.61

Operation Mode	:802.11g	Test Date	:2018-09-21
Test Mode	:BE CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
2483.50	Average	57.72	-4.90	52.82	54.00	-1.18
2483.50	Peak	73.63	-4.90	68.73	74.00	-5.27
2484.50	Average	54.37	-4.90	49.47	54.00	-4.53
2484.50	Peak	71.34	-4.90	66.44	74.00	-7.56

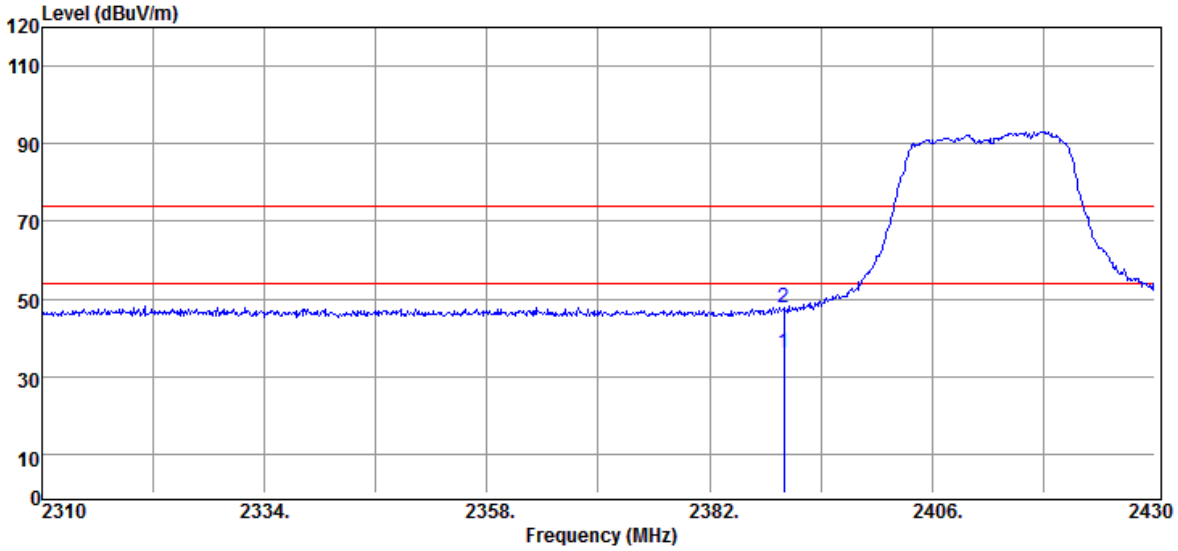
Operation Mode	:802.11g	Test Date	:2018-09-21
Test Mode	:BE CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
2483.50	Average	57.35	-4.90	52.45	54.00	-1.55
2483.50	Peak	73.58	-4.90	68.68	74.00	-5.32
2484.50	Average	54.39	-4.90	49.49	54.00	-4.51
2484.50	Peak	70.49	-4.90	65.59	74.00	-8.41
2488.30	Average	45.57	-4.86	40.71	54.00	-13.29
2488.30	Peak	60.27	-4.86	55.41	74.00	-18.59

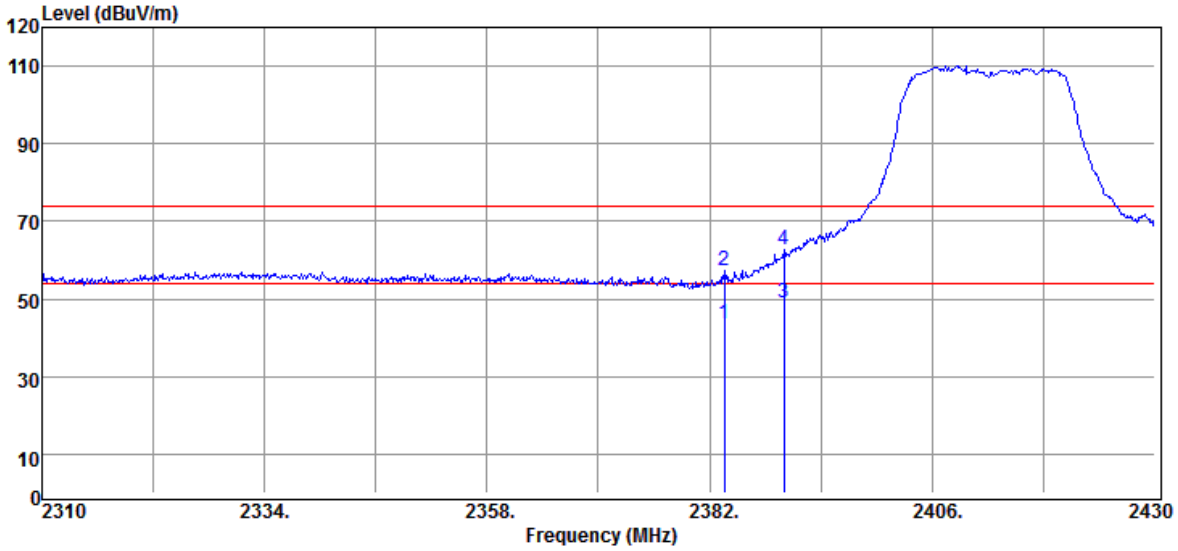
Radiated Band Edge Measurement Result (802.11_HT20)

Operation Mode	:802.11n20	Test Date	:2018-08-06
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



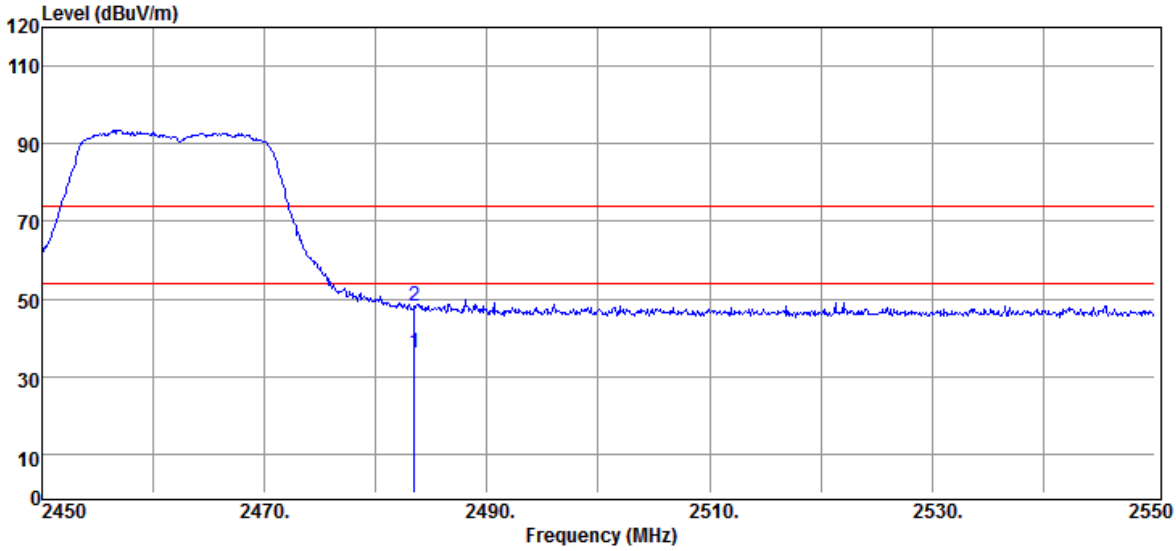
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.00	Average	41.70	-5.57	36.13	54.00	-17.87
2390.00	Peak	53.35	-5.57	47.78	74.00	-26.22

Operation Mode	:802.11n20	Test Date	:2018-08-06
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



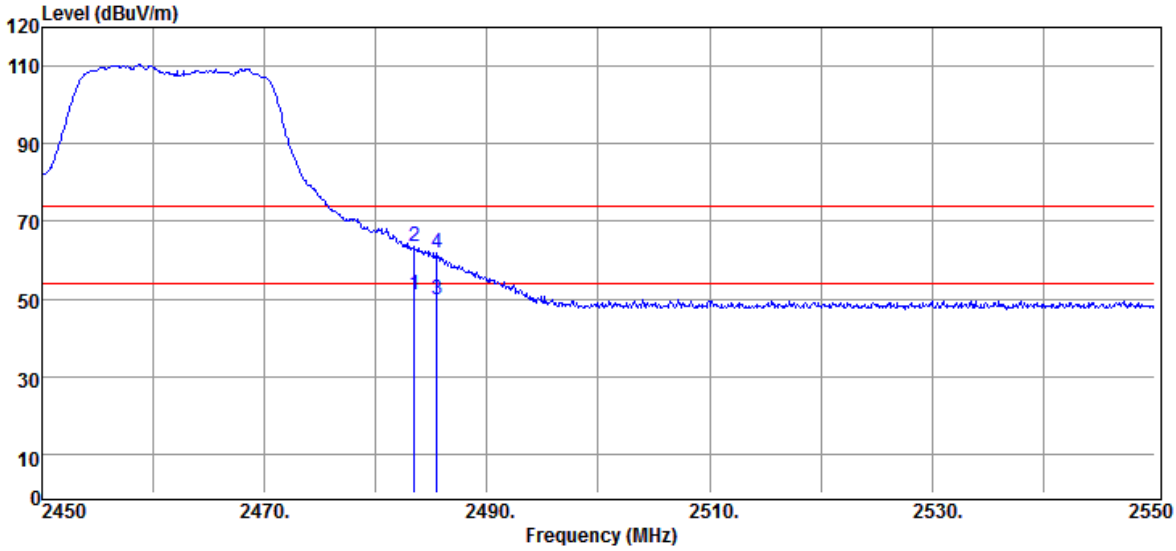
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2383.56	Average	49.02	-5.57	43.45	54.00	-10.55
2383.56	Peak	62.72	-5.57	57.15	74.00	-16.85
2390.00	Average	54.66	-5.57	49.09	54.00	-4.91
2390.00	Peak	68.24	-5.57	62.67	74.00	-11.33

Operation Mode	:802.11n20	Test Date	:2018-08-06
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



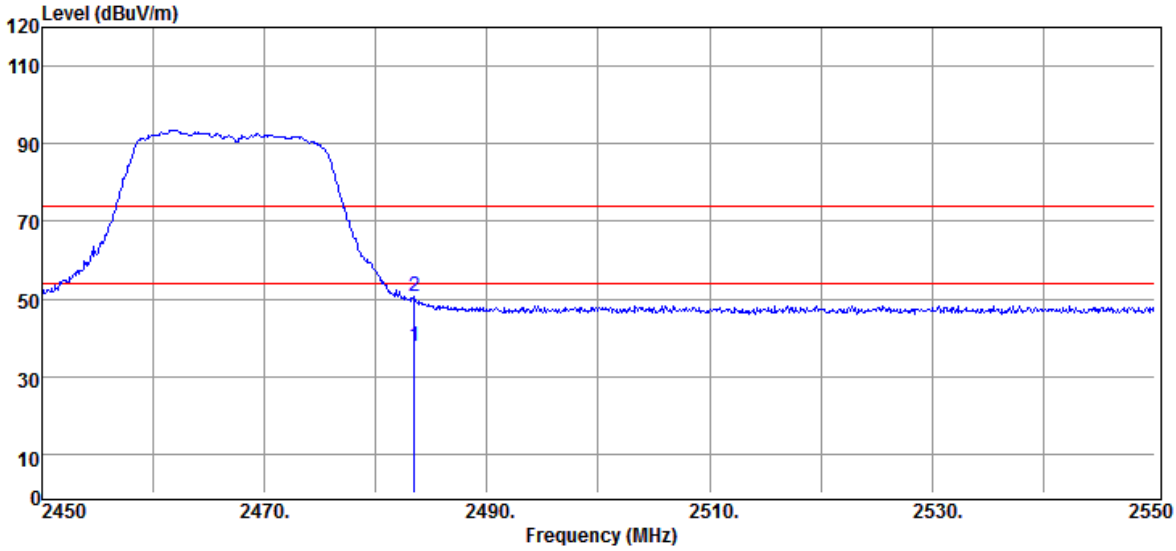
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	40.92	-4.90	36.02	54.00	-17.98
2483.50	Peak	52.90	-4.90	48.00	74.00	-26.00

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



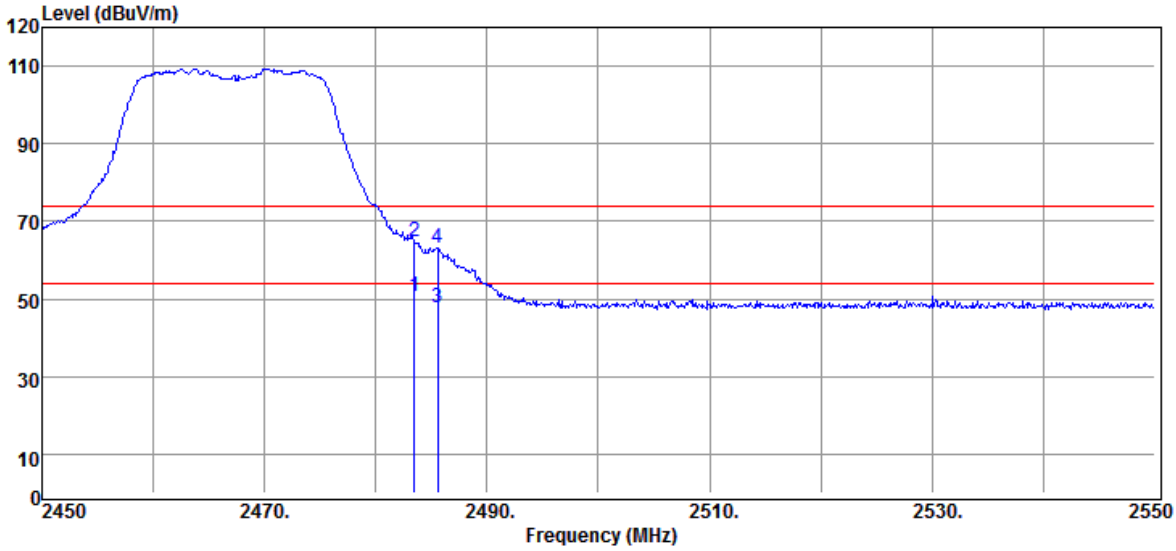
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.84	-4.90	50.94	54.00	-3.06
2483.50	Peak	68.50	-4.90	63.60	74.00	-10.40
2485.50	Average	54.54	-4.89	49.65	54.00	-4.35
2485.50	Peak	66.85	-4.89	61.96	74.00	-12.04

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:BE CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



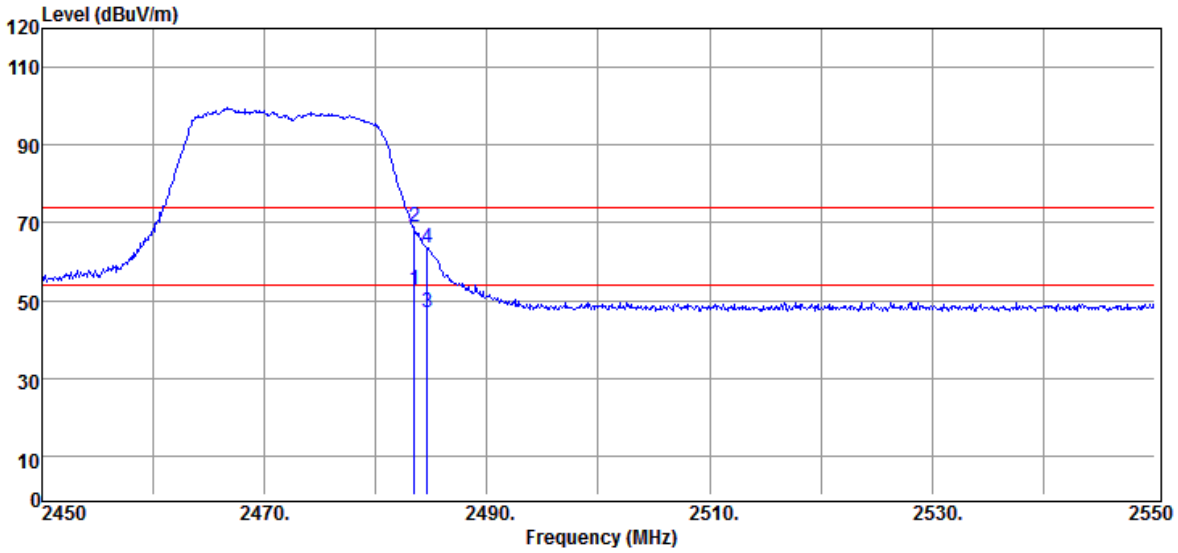
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.54	-4.90	37.64	54.00	-16.36
2483.50	Peak	55.58	-4.90	50.68	74.00	-23.32

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:BE CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



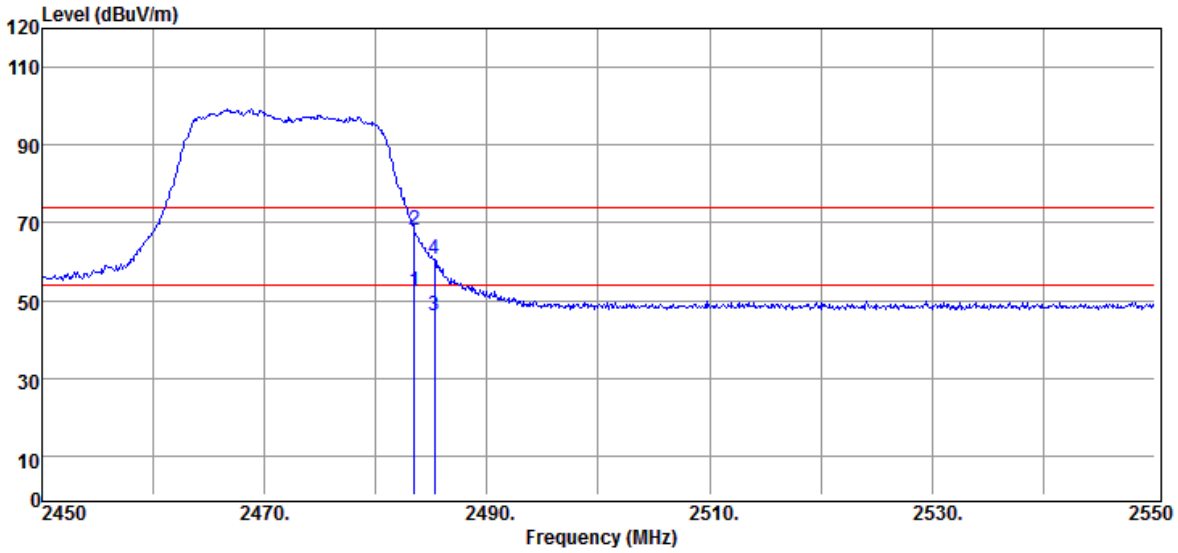
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.40	-4.90	50.50	54.00	-3.50
2483.50	Peak	69.73	-4.90	64.83	74.00	-9.17
2485.60	Average	52.56	-4.88	47.68	54.00	-6.32
2485.60	Peak	67.87	-4.88	62.99	74.00	-11.01

Operation Mode	:802.11n20	Test Date	:2018-09-21
Test Mode	:BE CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
2483.50	Average	57.65	-4.90	52.75	54.00	-1.25
2483.50	Peak	73.66	-4.90	68.76	74.00	-5.24
2484.60	Average	52.01	-4.90	47.11	54.00	-6.89
2484.60	Peak	68.50	-4.90	63.60	74.00	-10.40

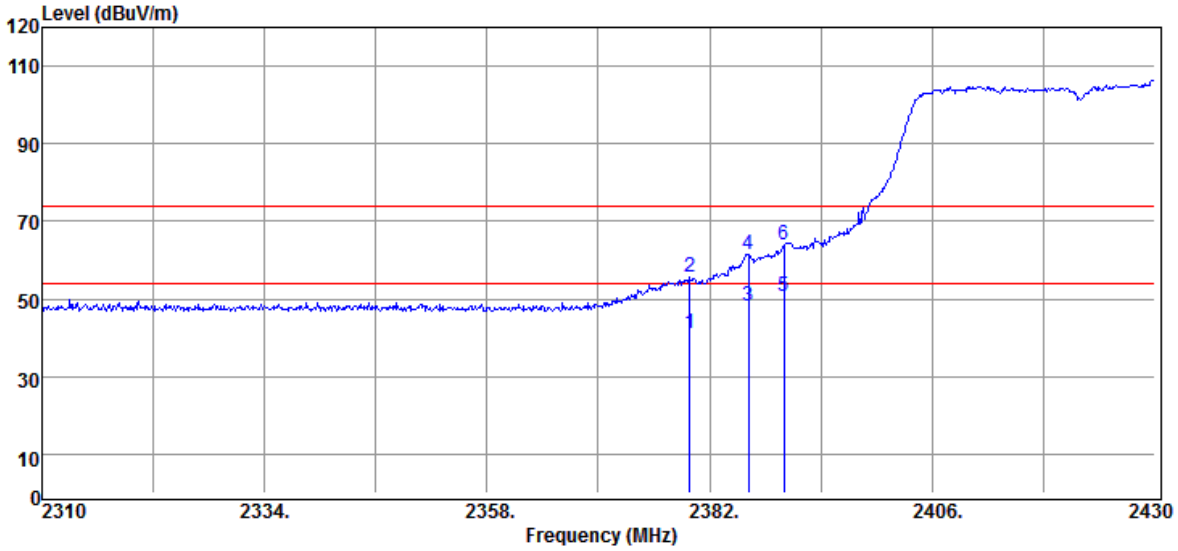
Operation Mode	:802.11n20	Test Date	:2018-09-21
Test Mode	:BE CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
2483.50	Average	57.31	-4.90	52.41	54.00	-1.59
2483.50	Peak	73.04	-4.90	68.14	74.00	-5.86
2485.30	Average	50.88	-4.89	45.99	54.00	-8.01
2485.30	Peak	65.37	-4.89	60.48	74.00	-13.52

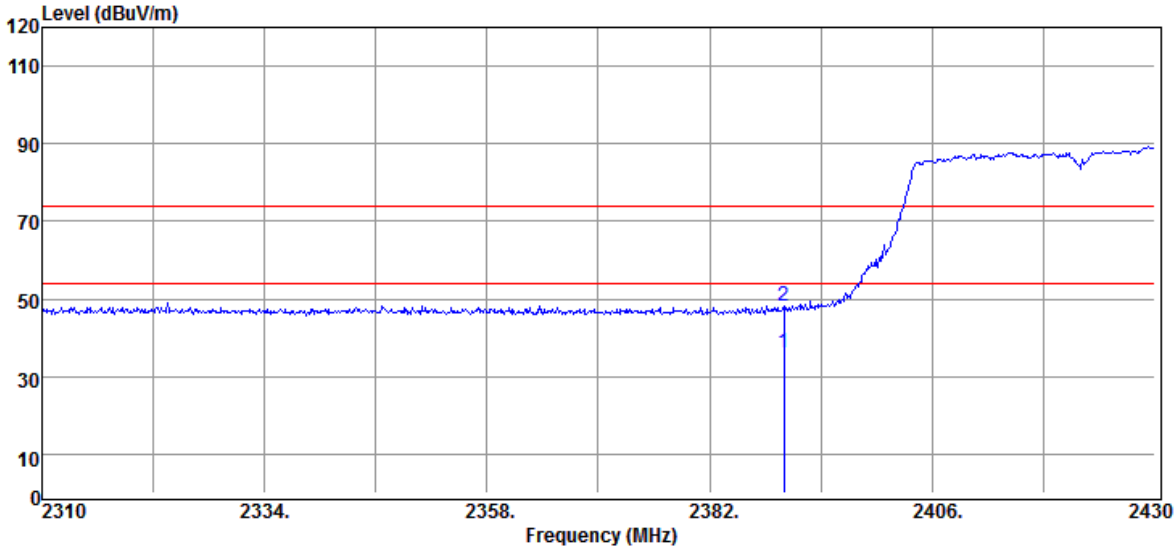
Radiated Band Edge Measurement Result (802.11_HT40)

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2422 MHz	Engineer	:Jerry



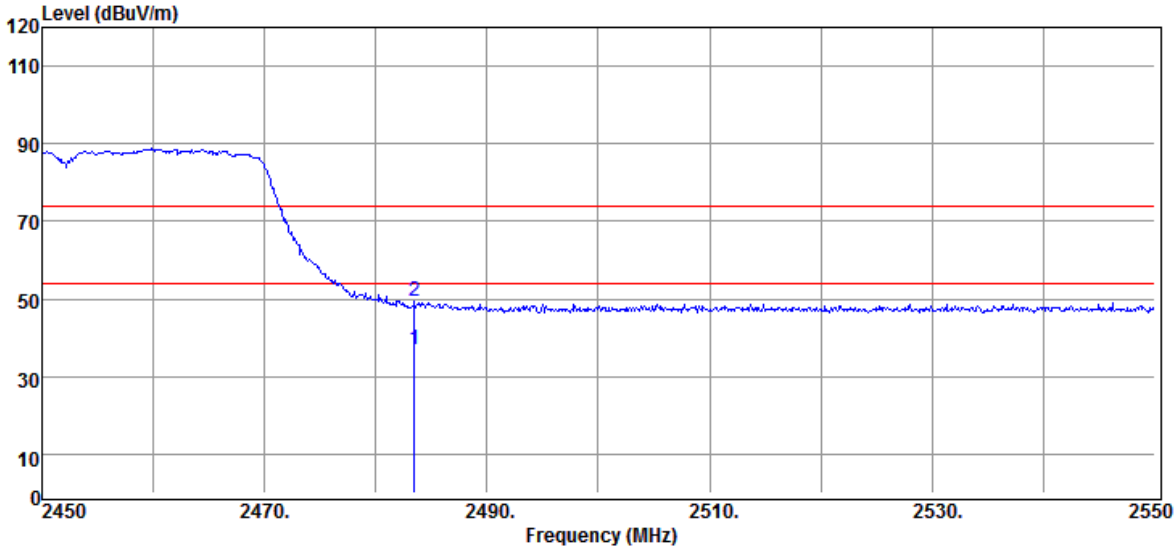
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2379.84	Average	46.73	-5.57	41.16	54.00	-12.84
2379.84	Peak	61.04	-5.57	55.47	74.00	-18.53
2386.20	Average	53.90	-5.57	48.33	54.00	-5.67
2386.20	Peak	67.06	-5.57	61.49	74.00	-12.51
2390.00	Average	56.25	-5.57	50.68	54.00	-3.32
2390.00	Peak	69.65	-5.57	64.08	74.00	-9.92

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2422 MHz	Engineer	:Jerry



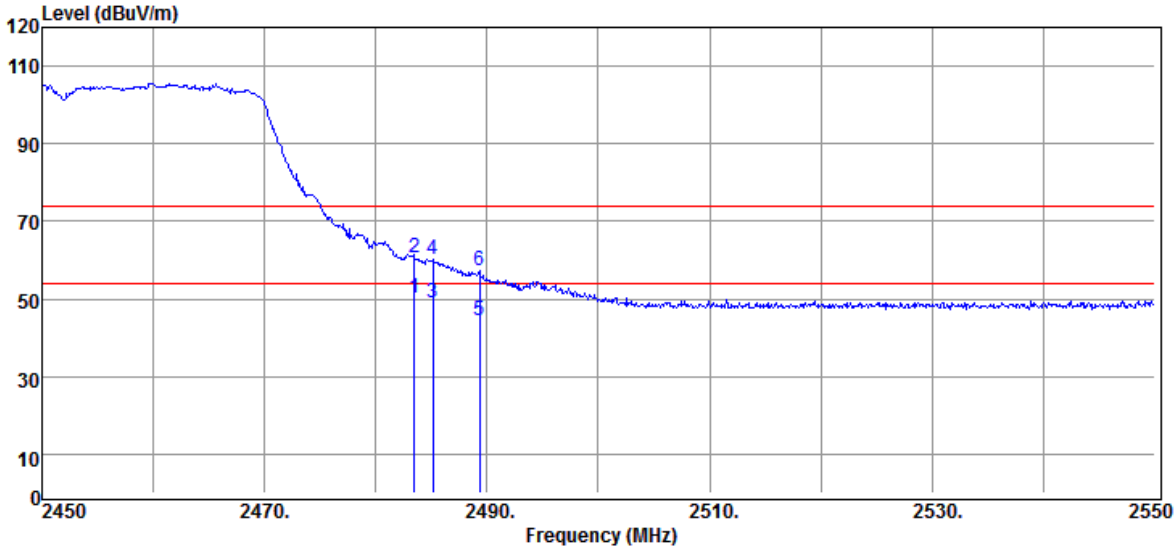
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2390.04	Average	41.73	-5.58	36.15	54.00	-17.85
2390.04	Peak	53.58	-5.58	48.00	74.00	-26.00

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2452 MHz	Engineer	:Jerry



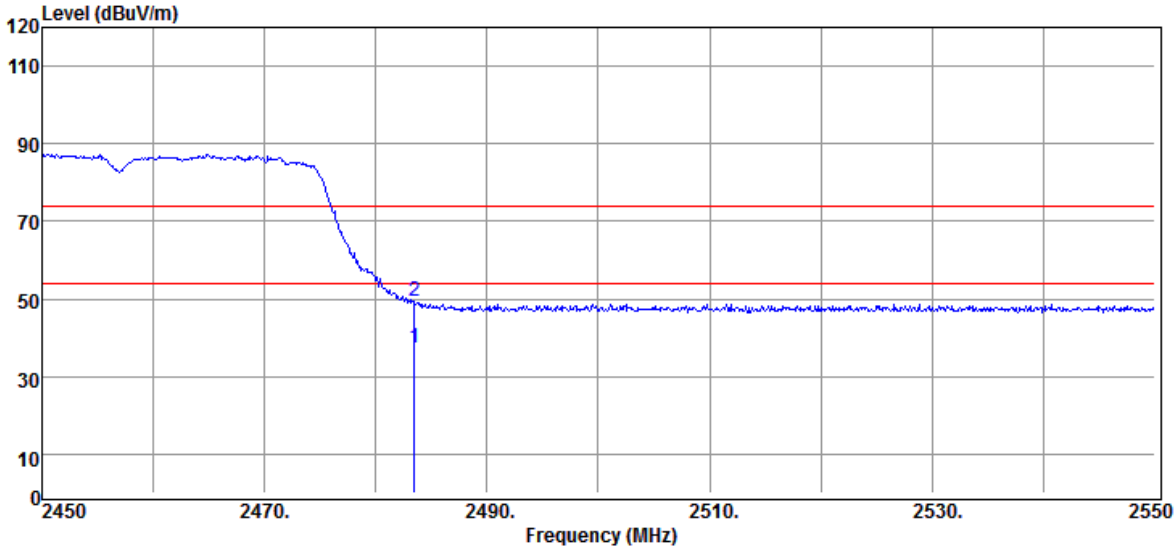
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.04	-4.90	37.14	54.00	-16.86
2483.50	Peak	54.43	-4.90	49.53	74.00	-24.47

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2452 MHz	Engineer	:Jerry



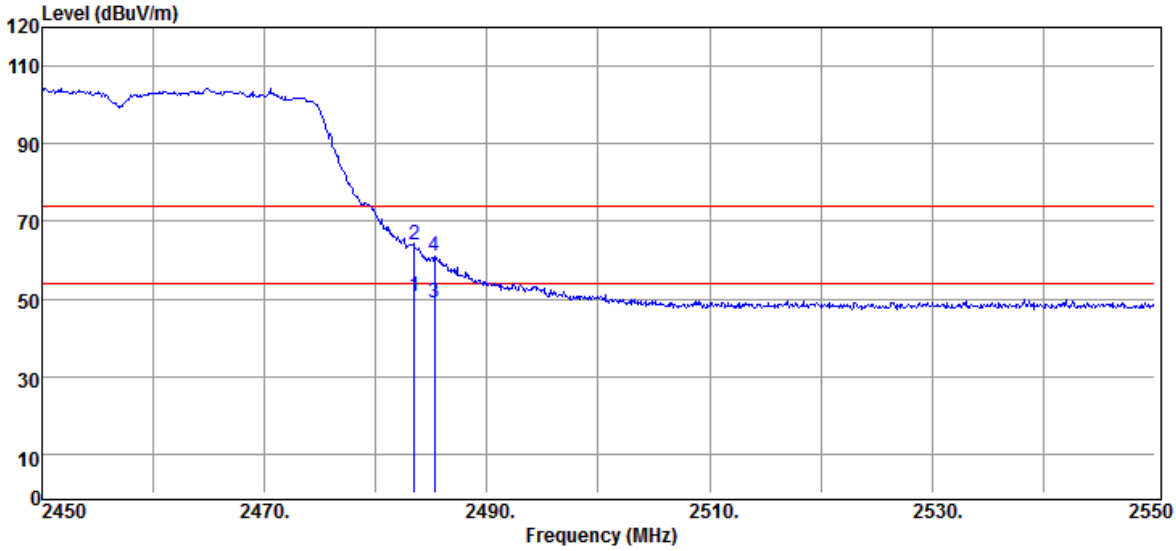
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Average	55.23	-4.90	50.33	54.00	-3.67
2483.50	Peak	65.68	-4.90	60.78	74.00	-13.22
2485.10	Average	53.69	-4.89	48.80	54.00	-5.20
2485.10	Peak	64.95	-4.89	60.06	74.00	-13.94
2489.30	Average	49.23	-4.85	44.38	54.00	-9.62
2489.30	Peak	62.14	-4.85	57.29	74.00	-16.71

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH 10	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2457 MHz	Engineer	:Jerry



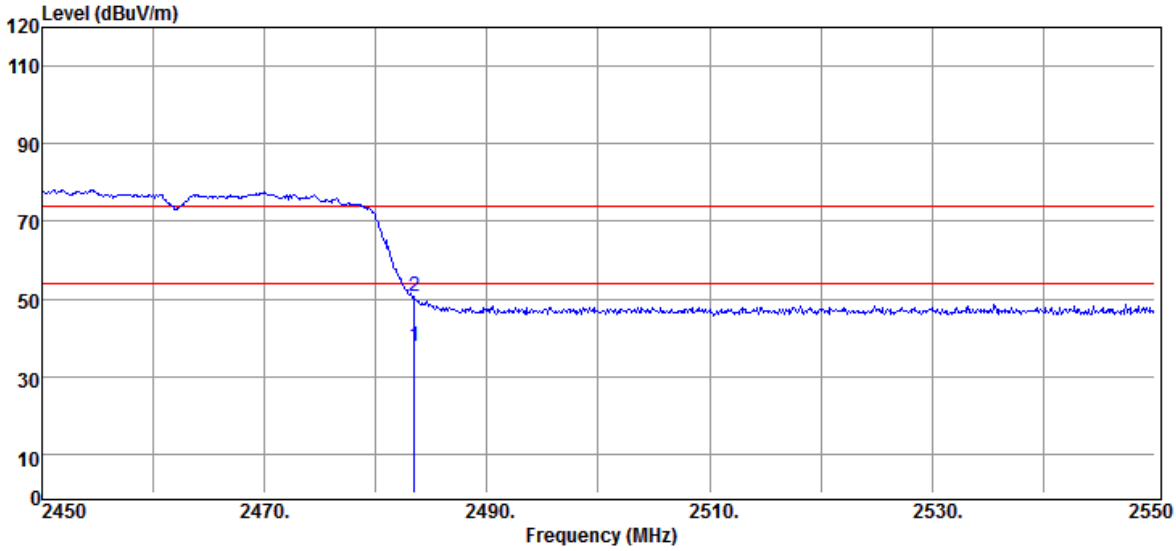
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.40	-4.90	37.50	54.00	-16.50
2483.50	Peak	54.28	-4.90	49.38	74.00	-24.62

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH 10	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2457 MHz	Engineer	:Jerry



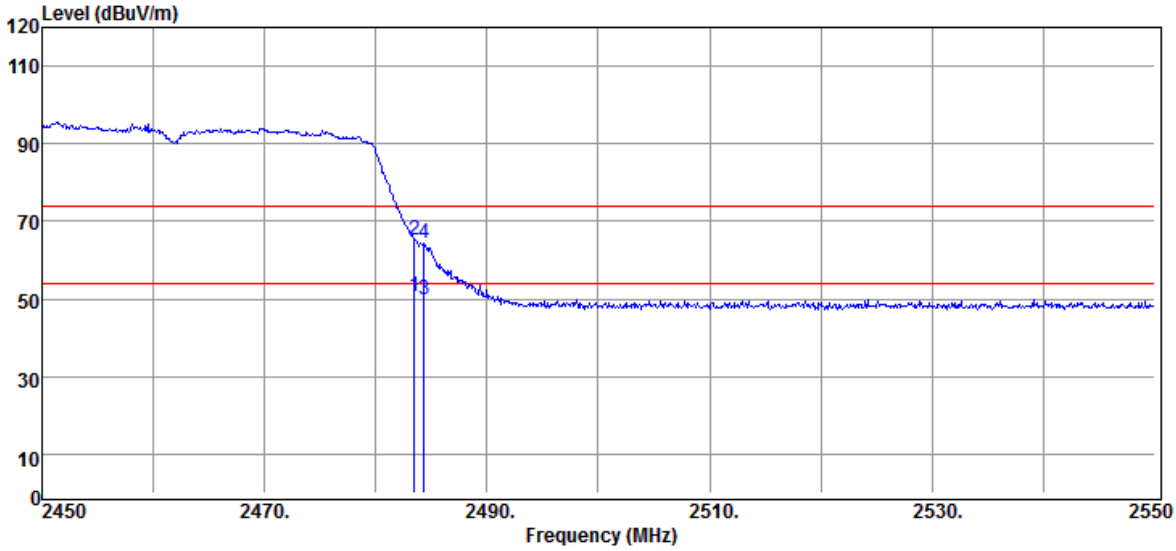
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.37	-4.90	50.47	54.00	-3.53
2483.50	Peak	69.04	-4.90	64.14	74.00	-9.86
2485.30	Average	53.69	-4.89	48.80	54.00	-5.20
2485.30	Peak	65.74	-4.89	60.85	74.00	-13.15

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH 11	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.83	-4.90	37.93	54.00	-16.07
2483.50	Peak	55.38	-4.90	50.48	74.00	-23.52

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:BE CH 11	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry

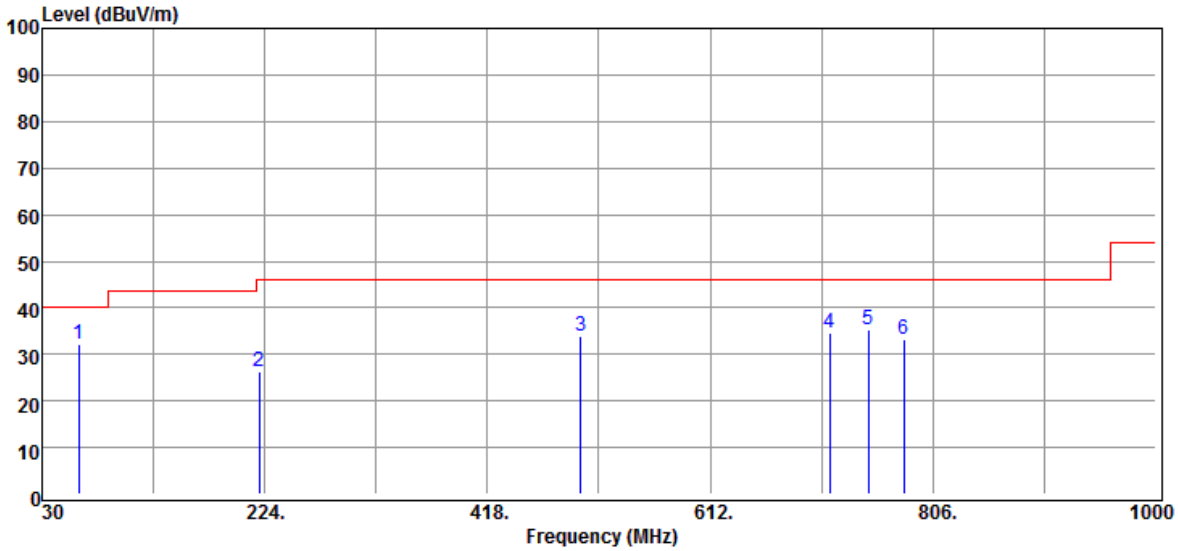


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	55.36	-4.90	50.46	54.00	-3.54
2483.50	Peak	70.06	-4.90	65.16	74.00	-8.84
2484.30	Average	54.70	-4.90	49.80	54.00	-4.20
2484.30	Peak	69.31	-4.90	64.41	74.00	-9.59

Below 1GHz Worst-Case Data:

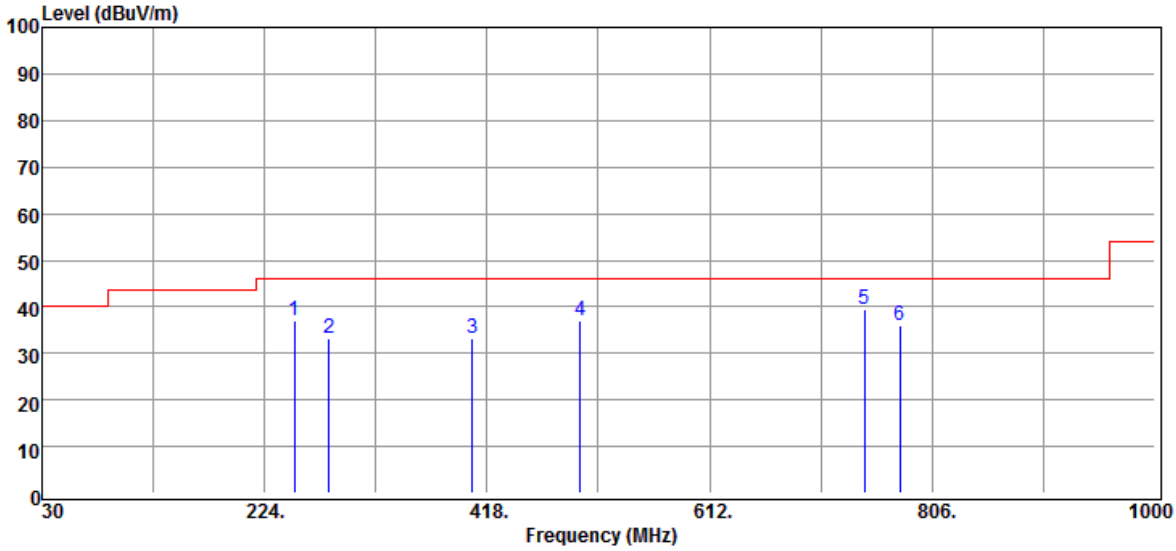
Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



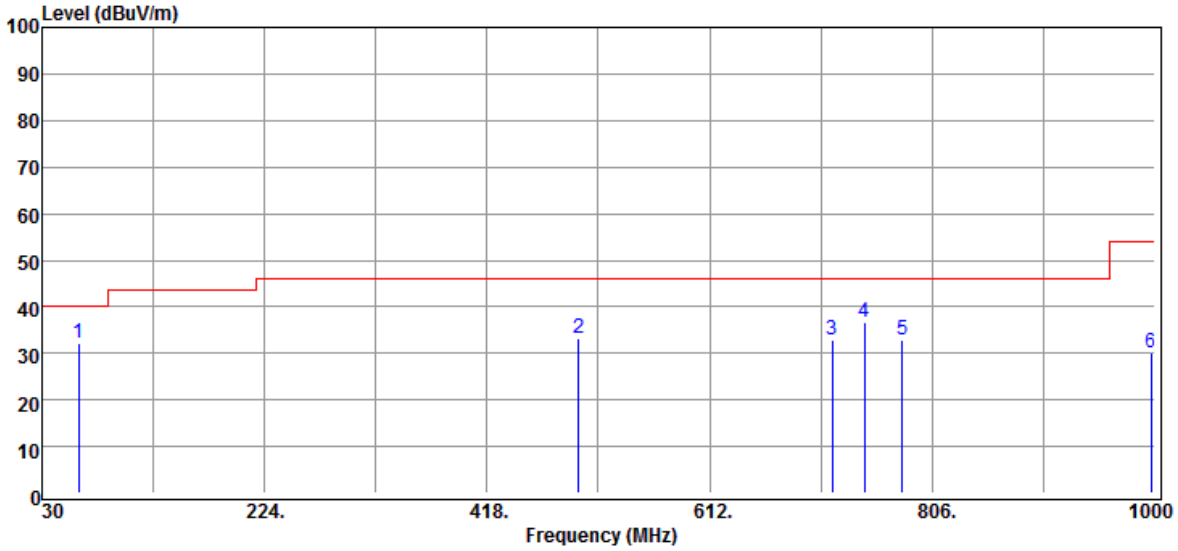
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
62.01	Peak	50.18	-17.98	32.20	40.00	-7.80
219.15	Peak	44.81	-18.68	26.13	46.00	-19.87
499.48	Peak	45.03	-11.13	33.90	46.00	-12.10
715.79	Peak	42.36	-7.90	34.46	46.00	-11.54
749.74	Peak	42.21	-6.78	35.43	46.00	-10.57
780.78	Peak	40.42	-7.09	33.33	46.00	-12.67

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



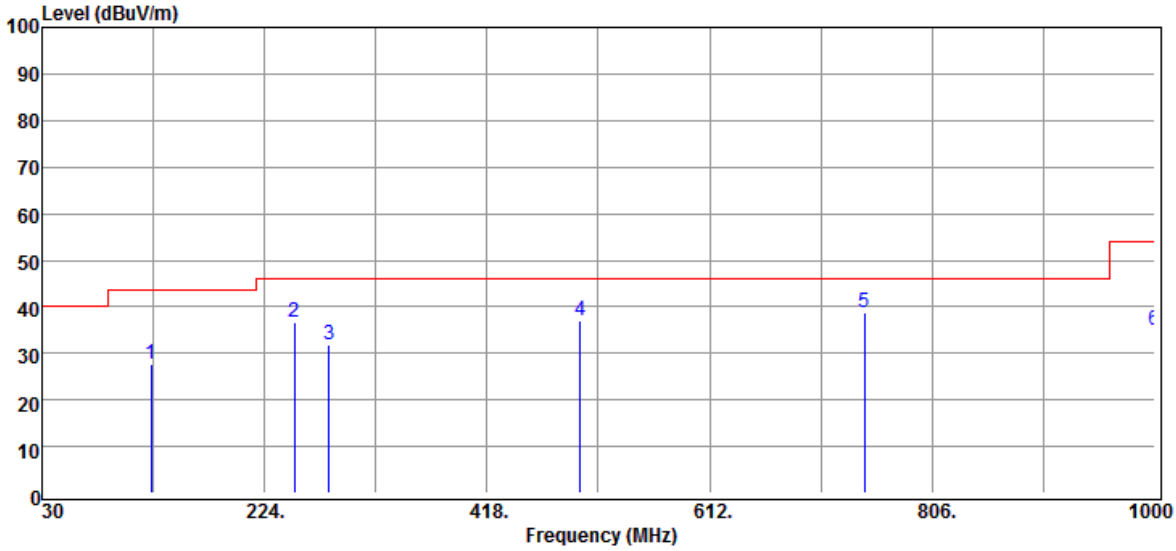
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
250.19	Peak	53.97	-16.91	37.06	46.00	-8.94
280.26	Peak	49.03	-15.84	33.19	46.00	-12.81
405.39	Peak	45.75	-12.57	33.18	46.00	-12.82
499.48	Peak	48.00	-11.13	36.87	46.00	-9.13
746.83	Peak	46.38	-6.84	39.54	46.00	-6.46
777.87	Peak	42.98	-7.06	35.92	46.00	-10.08

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2437 MHz	Engineer	:Jerry



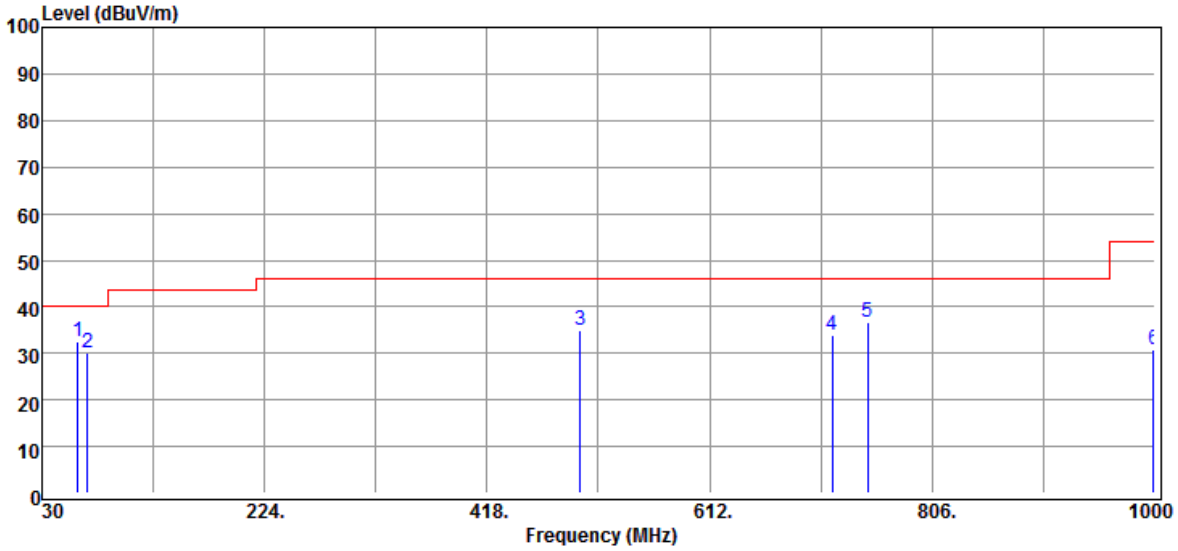
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
62.01	Peak	50.08	-17.98	32.10	40.00	-7.90
497.54	Peak	44.22	-11.12	33.10	46.00	-12.90
718.70	Peak	40.56	-7.82	32.74	46.00	-13.26
746.83	Peak	43.51	-6.84	36.67	46.00	-9.33
779.81	Peak	39.92	-7.10	32.82	46.00	-13.18
997.09	Peak	34.06	-3.80	30.26	54.00	-23.74

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2437 MHz	Engineer	:Jerry



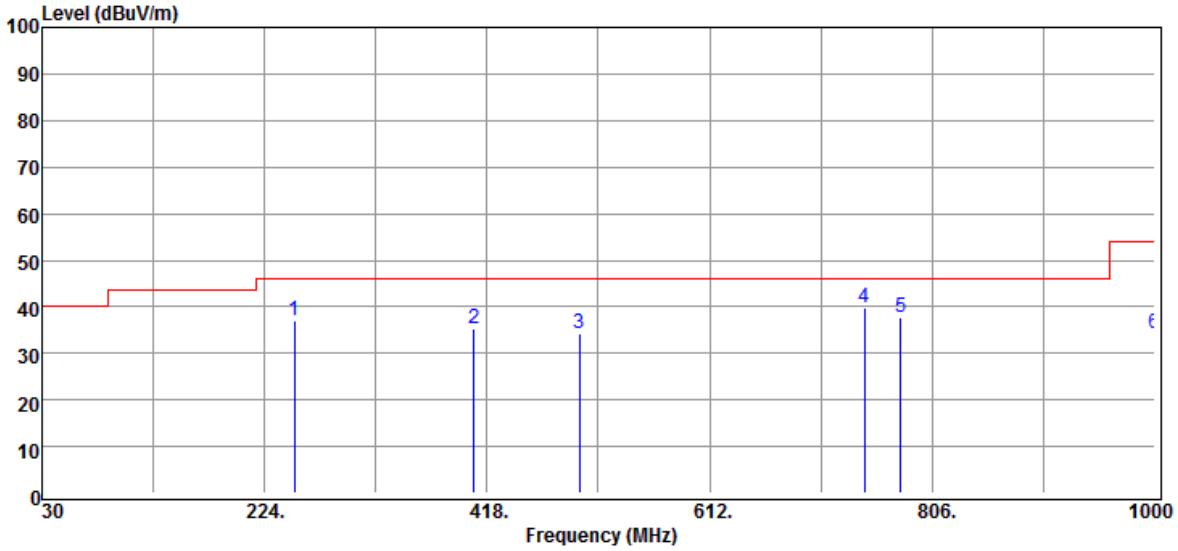
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
125.06	Peak	48.33	-20.78	27.55	43.50	-15.95
250.19	Peak	53.71	-16.91	36.80	46.00	-9.20
280.26	Peak	47.80	-15.84	31.96	46.00	-14.04
499.48	Peak	48.10	-11.13	36.97	46.00	-9.03
746.83	Peak	45.68	-6.84	38.84	46.00	-7.16
1000.00	Peak	38.76	-3.77	34.99	54.00	-19.01

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



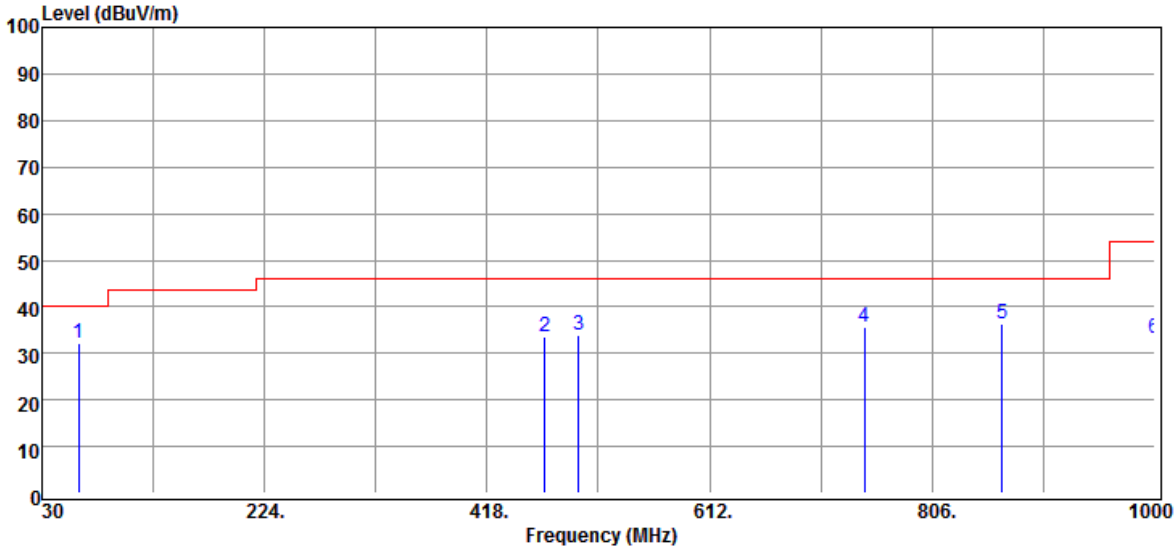
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
61.04	Peak	50.16	-17.79	32.37	40.00	-7.63
69.77	Peak	49.57	-19.43	30.14	40.00	-9.86
499.48	Peak	46.14	-11.13	35.01	46.00	-10.99
718.70	Peak	41.83	-7.82	34.01	46.00	-11.99
749.74	Peak	43.36	-6.78	36.58	46.00	-9.42
999.03	Peak	34.65	-3.78	30.87	54.00	-23.13

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



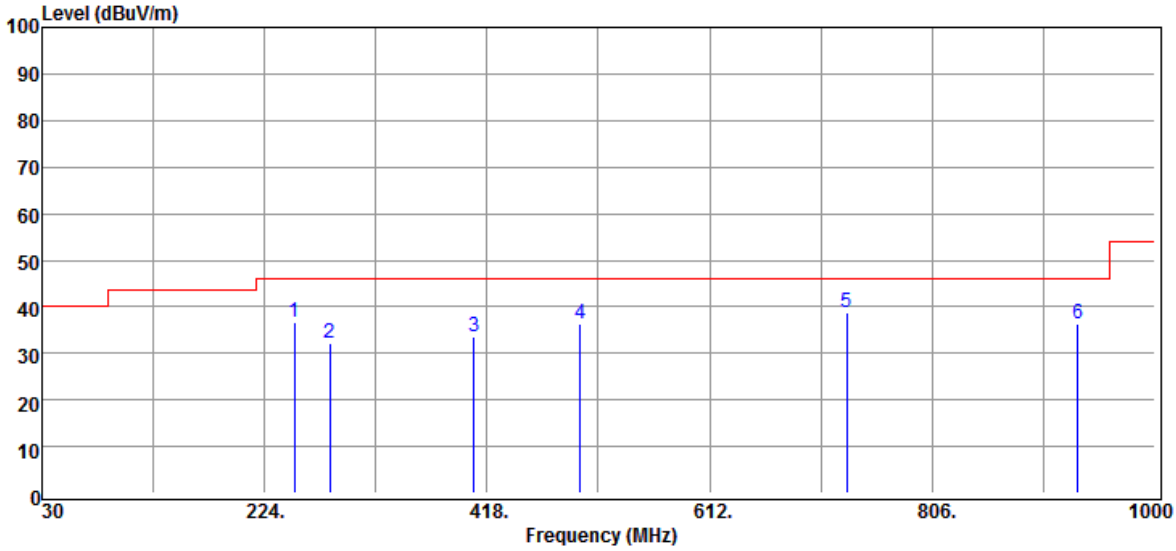
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
250.19	Peak	53.82	-16.91	36.91	46.00	-9.09
406.36	Peak	47.75	-12.52	35.23	46.00	-10.77
498.51	Peak	45.54	-11.12	34.42	46.00	-11.58
746.83	Peak	46.65	-6.84	39.81	46.00	-6.19
778.84	Peak	44.96	-7.08	37.88	46.00	-8.12
1000.00	Peak	37.99	-3.77	34.22	54.00	-19.78

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



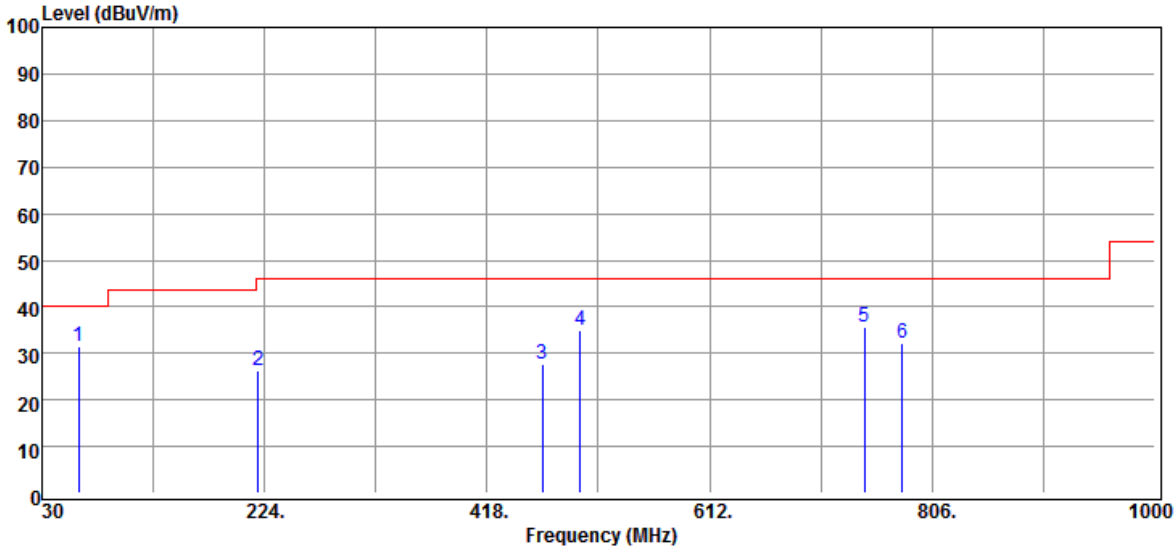
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
62.01	Peak	50.20	-17.98	32.22	40.00	-7.78
468.44	Peak	45.14	-11.42	33.72	46.00	-12.28
497.54	Peak	45.08	-11.12	33.96	46.00	-12.04
746.83	Peak	42.55	-6.84	35.71	46.00	-10.29
867.11	Peak	41.32	-5.01	36.31	46.00	-9.69
1000.00	Peak	37.01	-3.77	33.24	54.00	-20.76

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



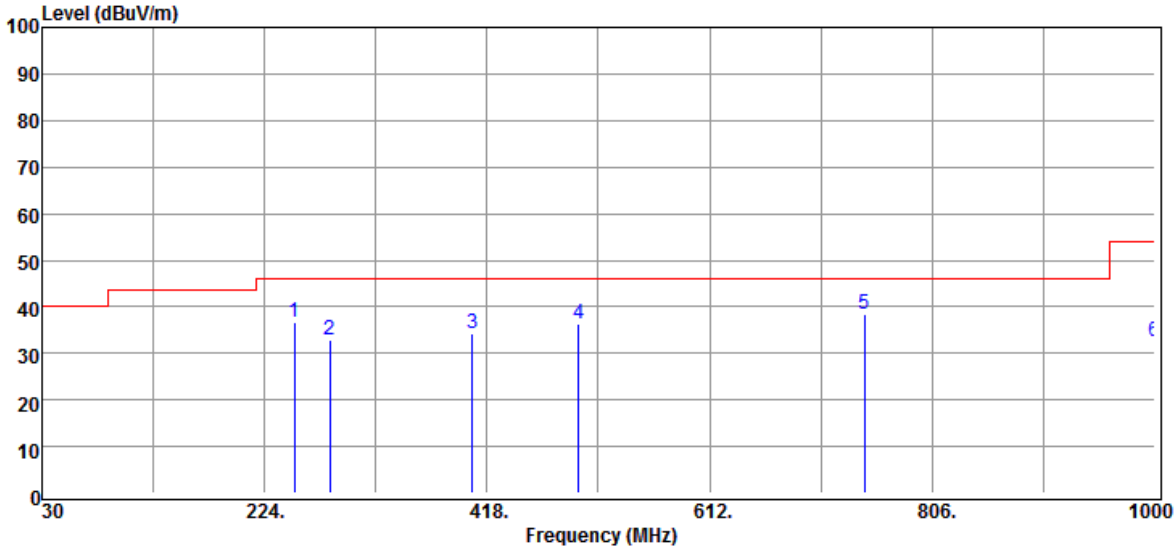
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
250.19	Peak	53.76	-16.91	36.85	46.00	-9.15
281.23	Peak	48.67	-16.35	32.32	46.00	-13.68
406.36	Peak	46.19	-12.52	33.67	46.00	-12.33
499.48	Peak	47.32	-11.13	36.19	46.00	-9.81
731.31	Peak	45.98	-7.24	38.74	46.00	-7.26
933.07	Peak	40.66	-4.47	36.19	46.00	-9.81

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
62.01	Peak	49.53	-17.98	31.55	40.00	-8.45
218.18	Peak	45.02	-18.68	26.34	46.00	-19.66
466.50	Peak	39.12	-11.48	27.64	46.00	-18.36
499.48	Peak	45.99	-11.13	34.86	46.00	-11.14
746.83	Peak	42.58	-6.84	35.74	46.00	-10.26
779.81	Peak	39.42	-7.10	32.32	46.00	-13.68

Operation Mode	:802.11g	Test Date	:2018-08-08
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry

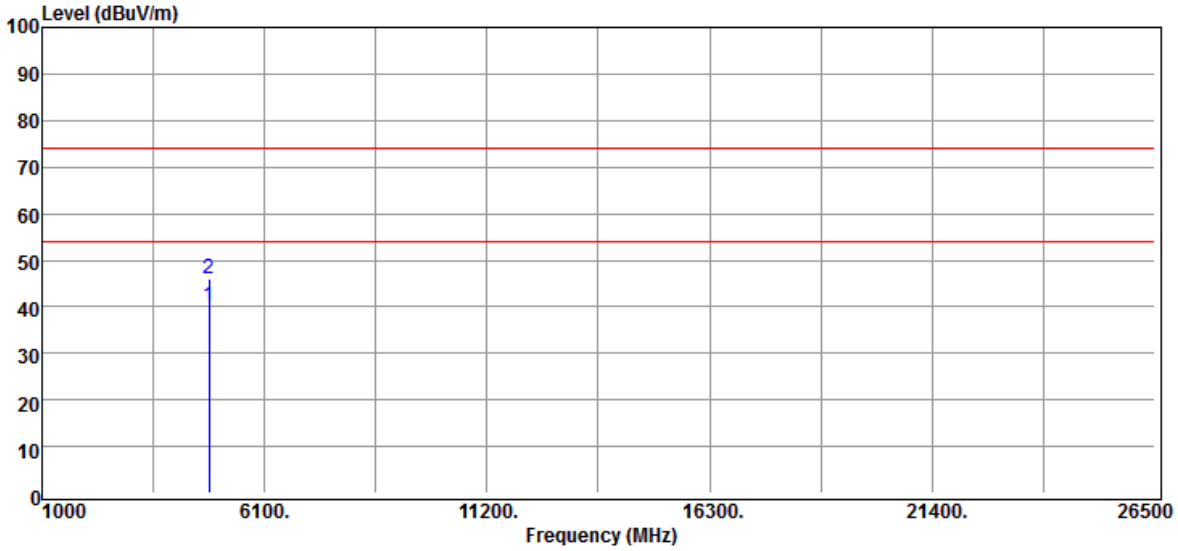


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
250.19	Peak	53.74	-16.91	36.83	46.00	-9.17
281.23	Peak	49.20	-16.35	32.85	46.00	-13.15
405.39	Peak	46.91	-12.57	34.34	46.00	-11.66
497.54	Peak	47.58	-11.12	36.46	46.00	-9.54
746.83	Peak	45.30	-6.84	38.46	46.00	-7.54
1000.00	Peak	36.40	-3.77	32.63	54.00	-21.37

Above 1GHz Data:

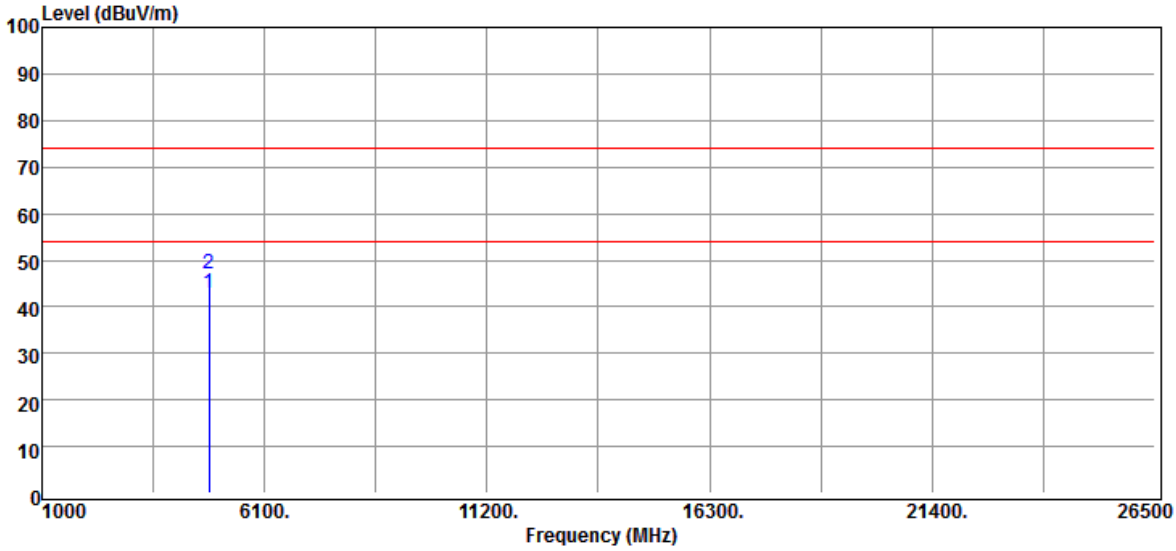
Radiated Spurious Emission Measurement Result (802.11 b)

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



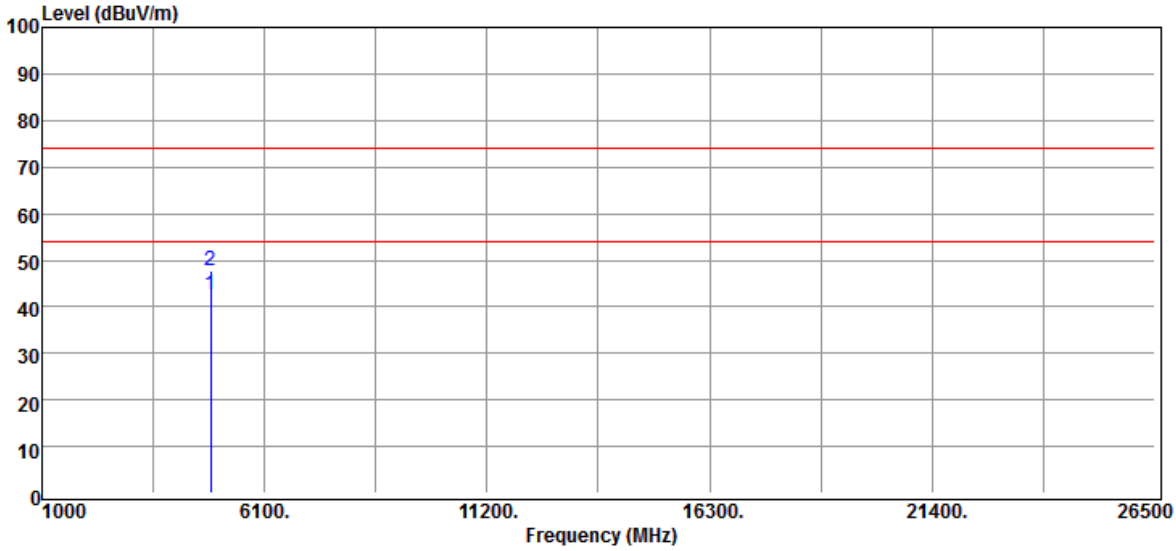
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Average	39.76	0.38	40.14	54.00	-13.86
4824.00	Peak	45.76	0.38	46.14	74.00	-27.86

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



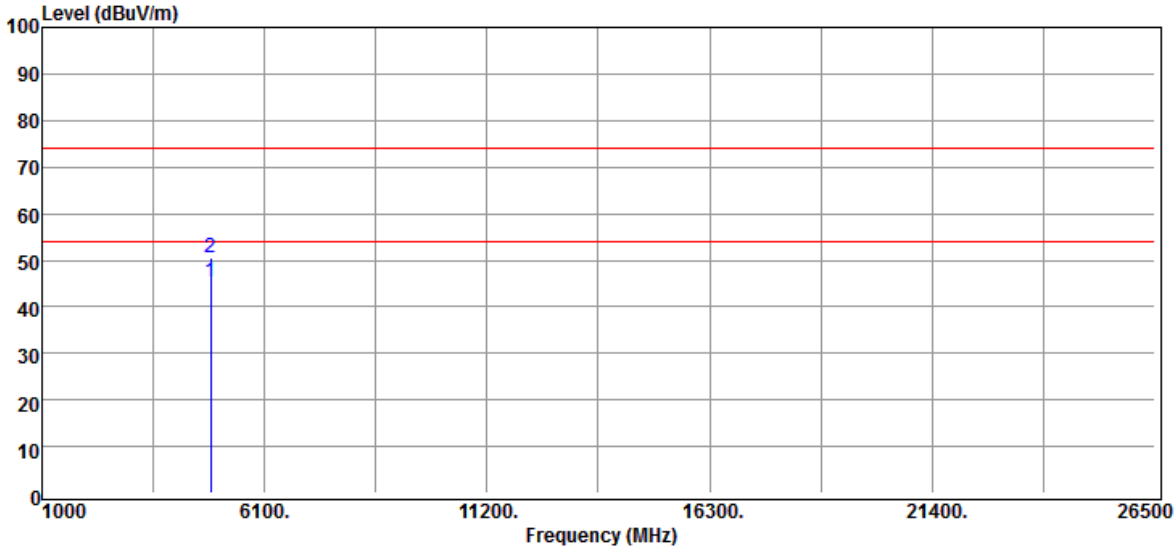
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Average	42.57	0.38	42.95	54.00	-11.05
4824.00	Peak	46.58	0.38	46.96	74.00	-27.04

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2437 MHz	Engineer	:Jerry



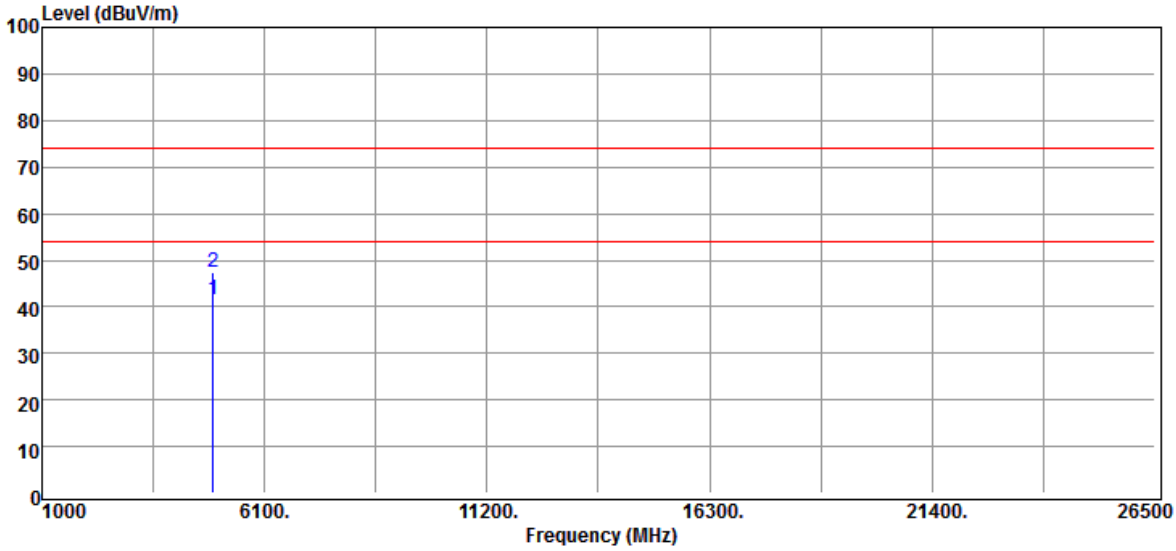
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	41.83	0.66	42.49	54.00	-11.51
4874.00	Peak	47.24	0.66	47.90	74.00	-26.10

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2437 MHz	Engineer	:Jerry



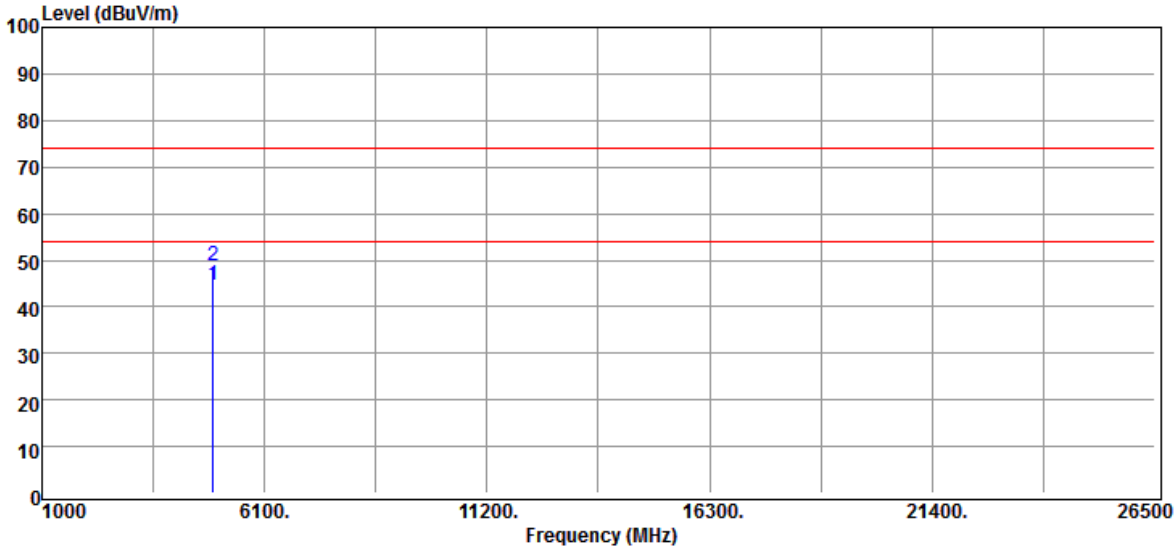
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	44.63	0.66	45.29	54.00	-8.71
4874.00	Peak	49.74	0.66	50.40	74.00	-23.60

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



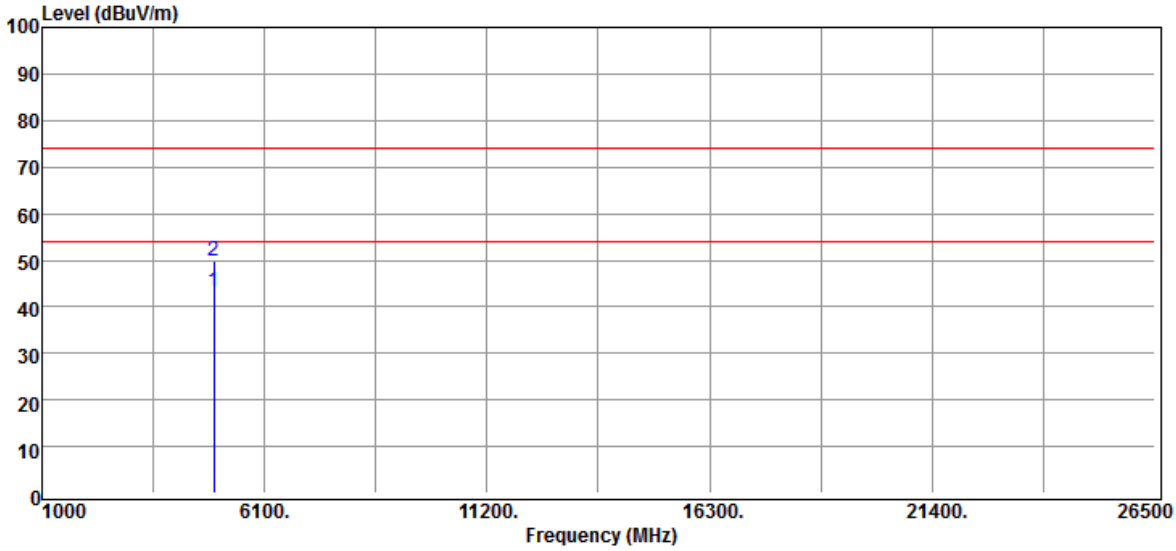
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	40.39	0.97	41.36	54.00	-12.64
4924.00	Peak	46.26	0.97	47.23	74.00	-26.77

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



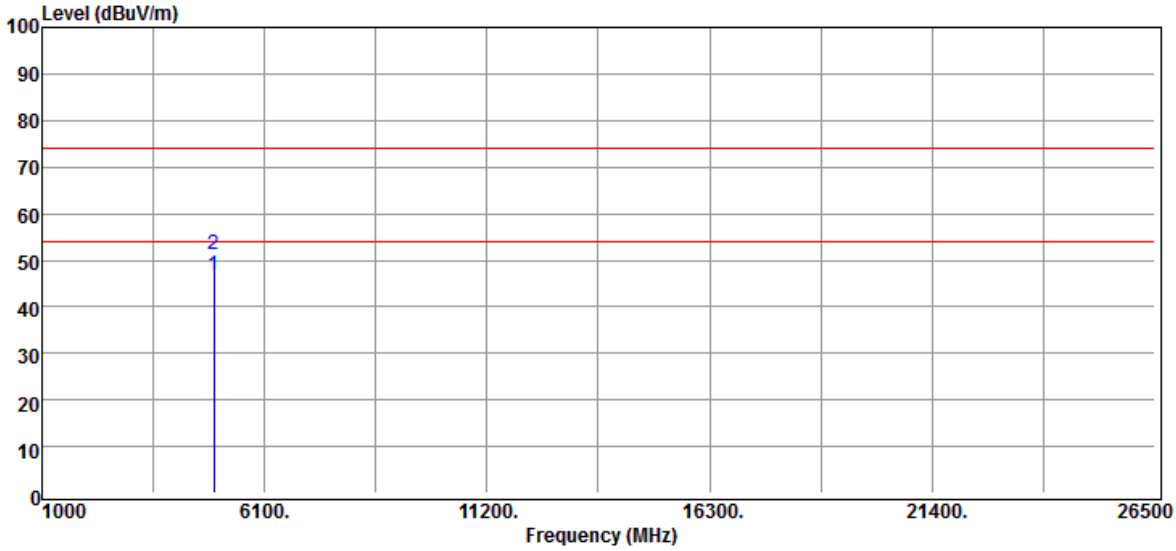
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	43.70	0.97	44.67	54.00	-9.33
4924.00	Peak	47.74	0.97	48.71	74.00	-25.29

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



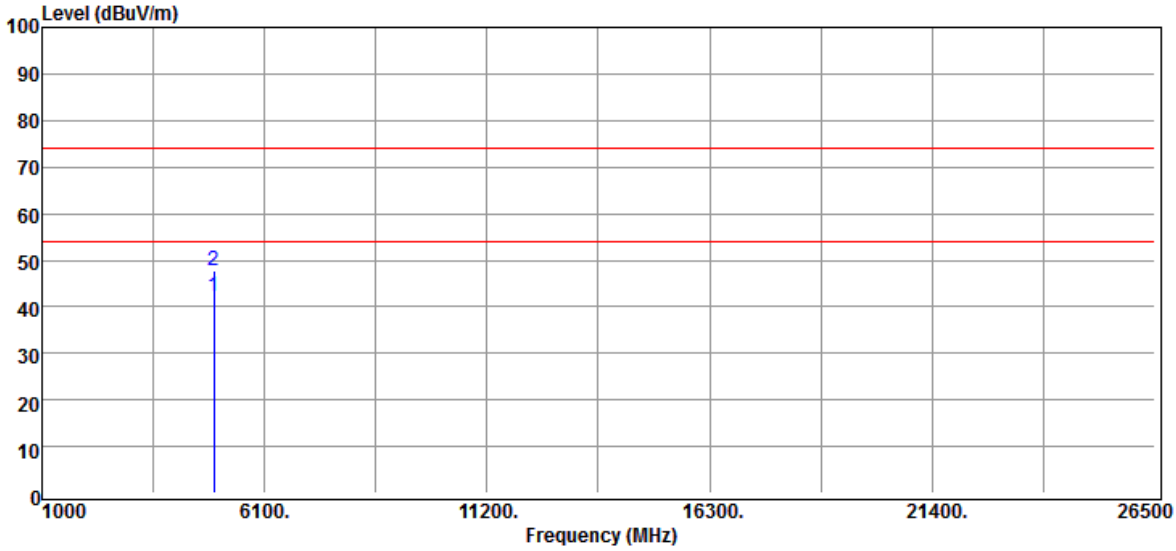
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4934.00	Average	42.27	1.05	43.32	54.00	-10.68
4934.00	Peak	48.90	1.05	49.95	74.00	-24.05

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



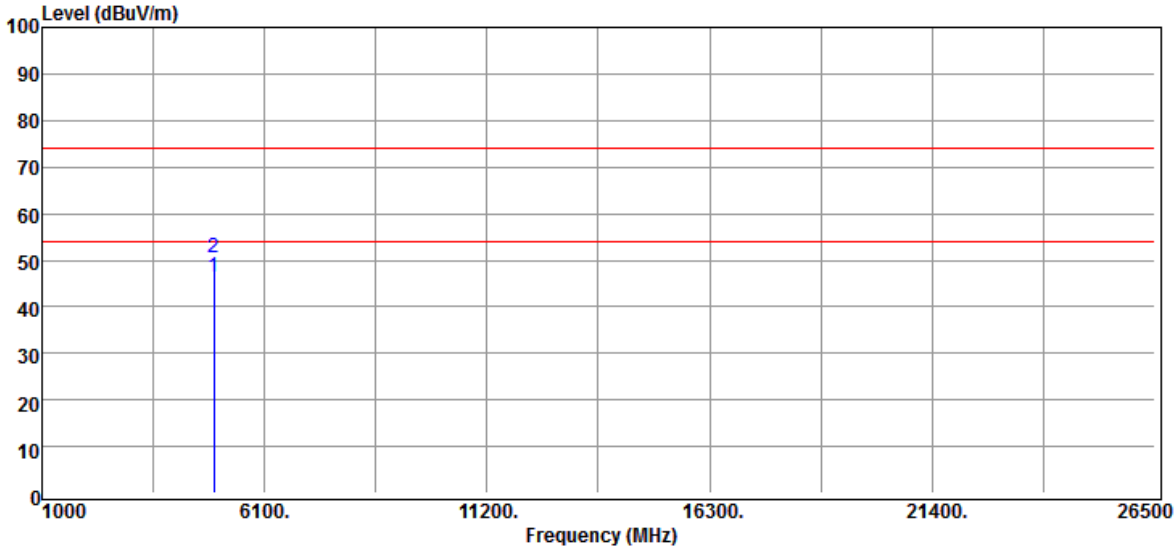
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4934.00	Average	45.83	1.05	46.88	54.00	-7.12
4934.00	Peak	50.23	1.05	51.28	74.00	-22.72

Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4944.00	Average	41.13	1.12	42.25	54.00	-11.75
4944.00	Peak	46.66	1.12	47.78	74.00	-26.22

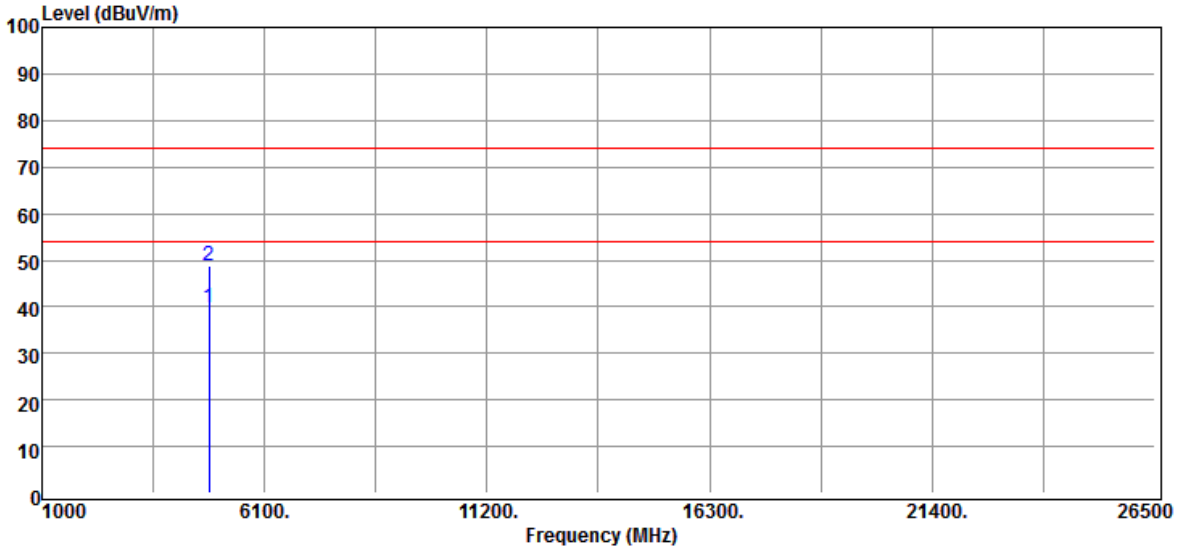
Operation Mode	:802.11b	Test Date	:2018-08-09
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4944.00	Average	45.37	1.12	46.49	54.00	-7.51
4944.00	Peak	49.24	1.12	50.36	74.00	-23.64

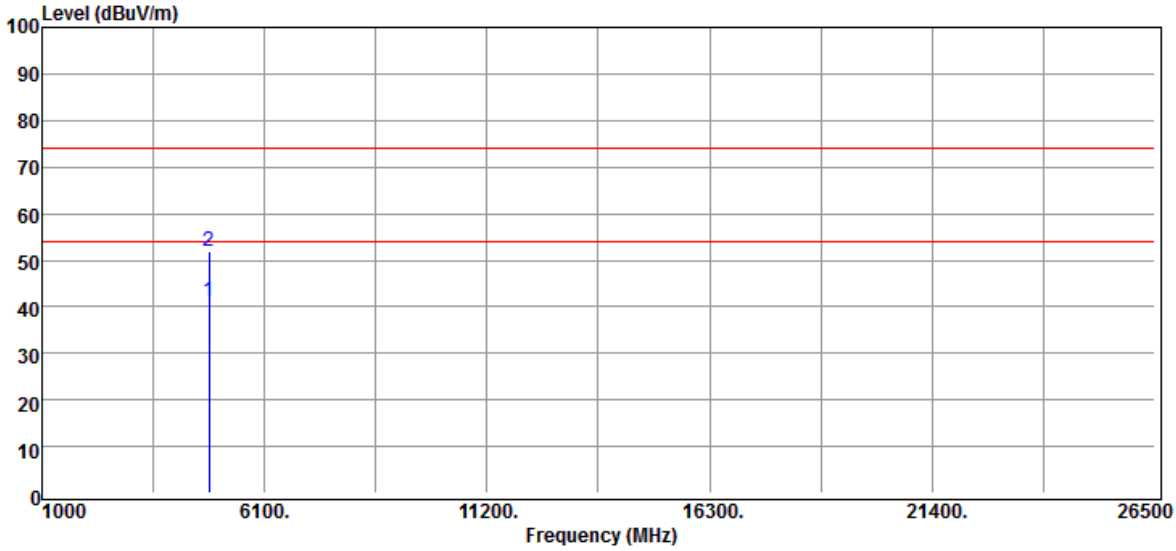
Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



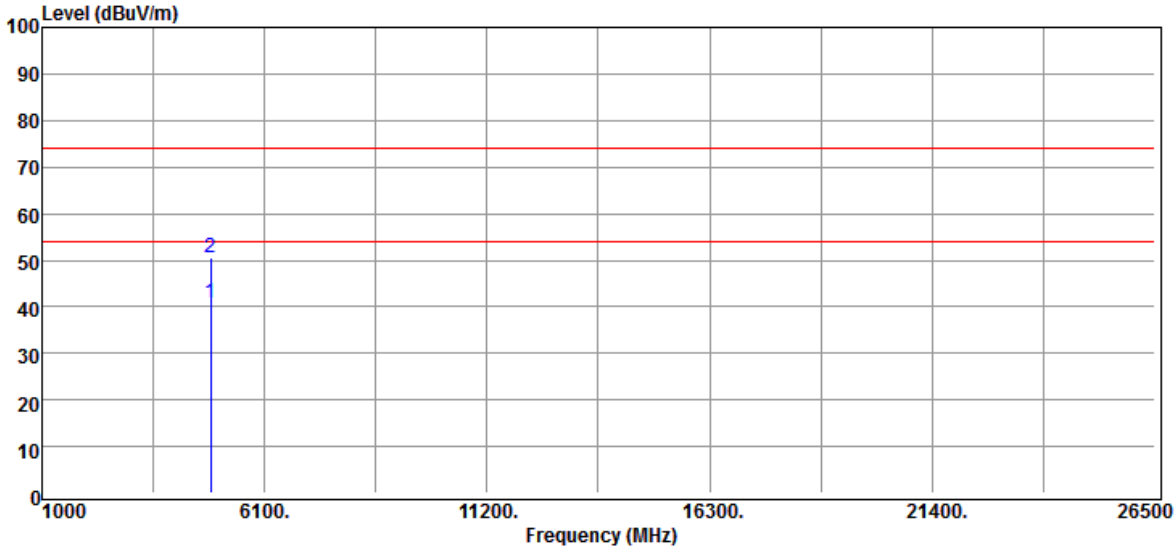
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Average	39.52	0.38	39.90	54.00	-14.10
4824.00	Peak	48.55	0.38	48.93	74.00	-25.07

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



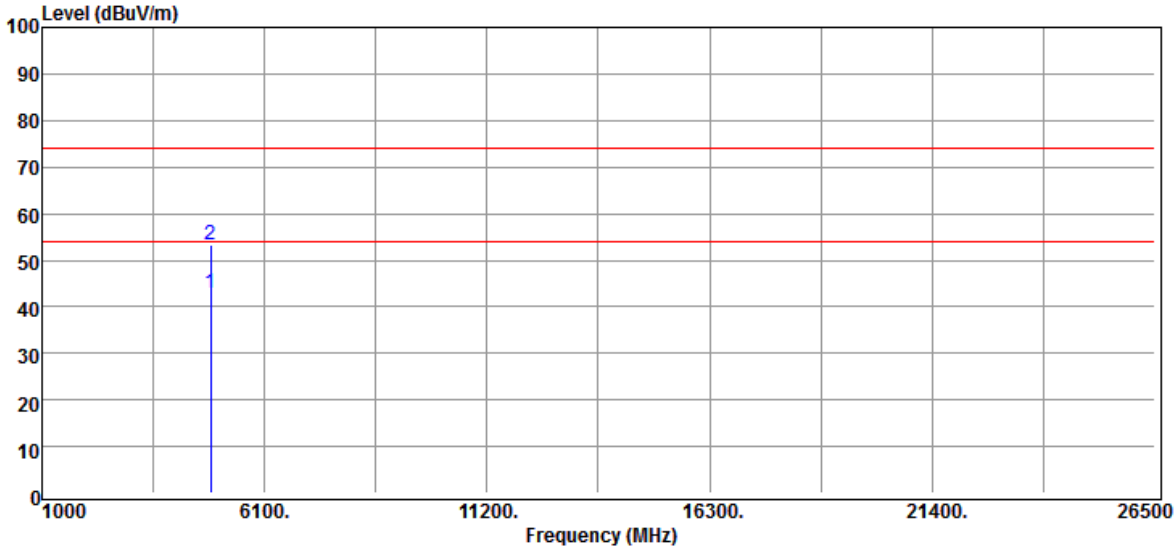
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Average	40.63	0.38	41.01	54.00	-12.99
4824.00	Peak	51.59	0.38	51.97	74.00	-22.03

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2437 MHz	Engineer	:Jerry



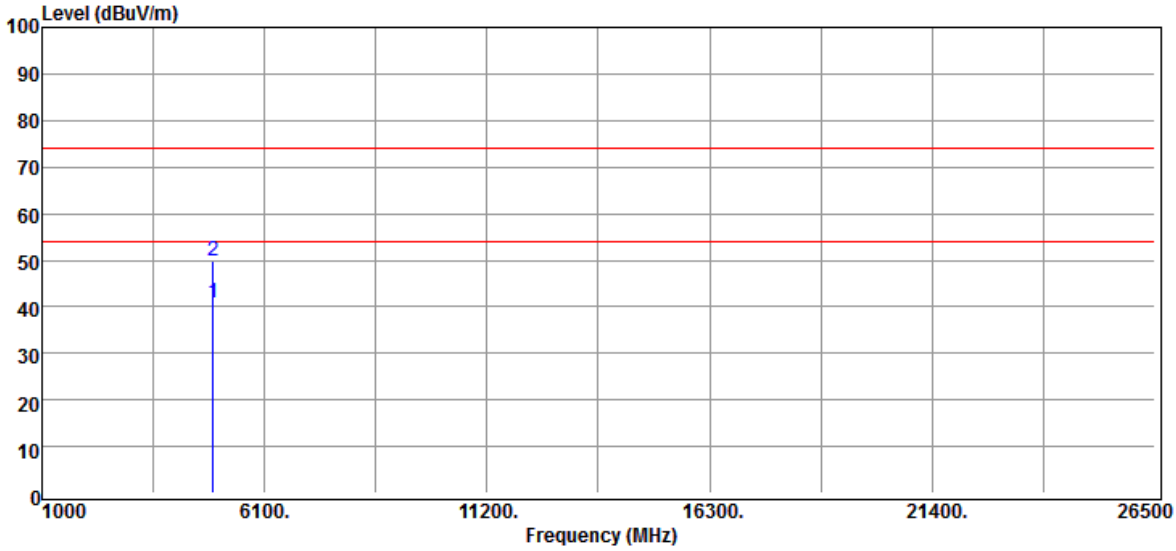
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	40.32	0.66	40.98	54.00	-13.02
4874.00	Peak	49.83	0.66	50.49	74.00	-23.51

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2437 MHz	Engineer	:Jerry



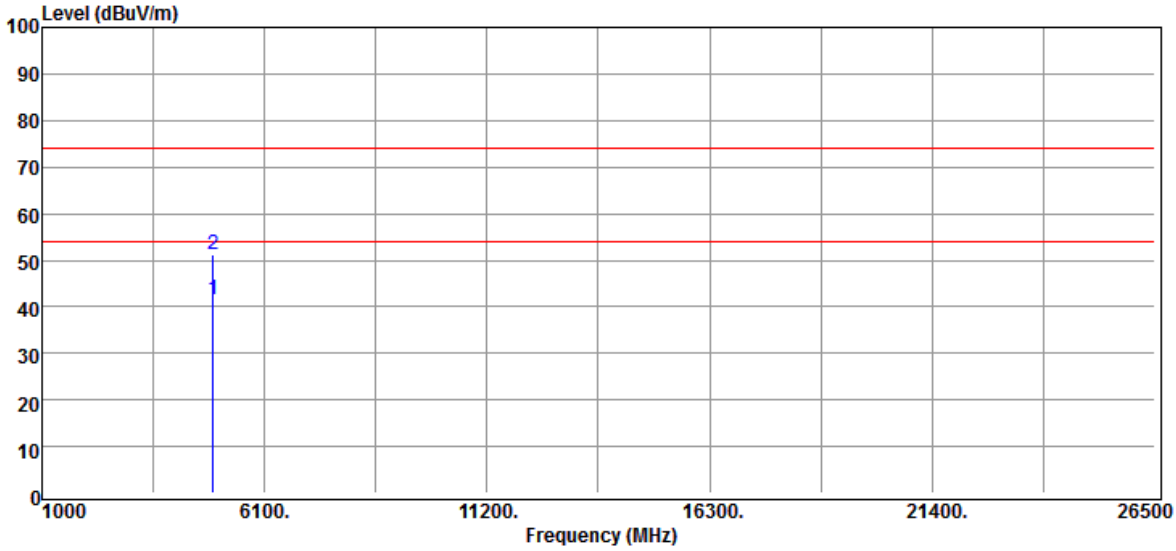
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	42.18	0.66	42.84	54.00	-11.16
4874.00	Peak	52.53	0.66	53.19	74.00	-20.81

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



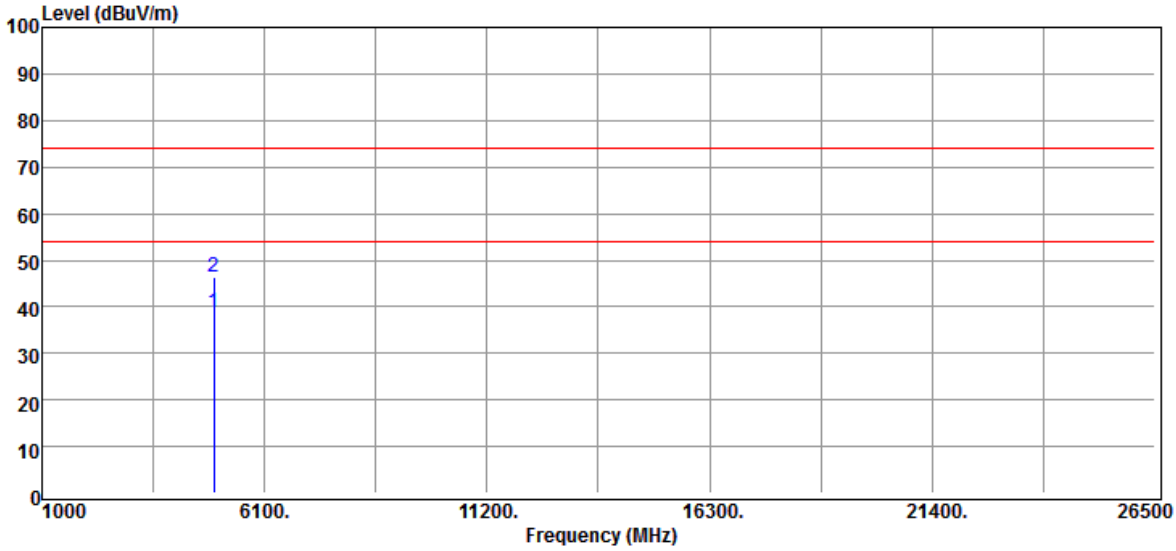
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	39.86	0.97	40.83	54.00	-13.17
4924.00	Peak	48.73	0.97	49.70	74.00	-24.30

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



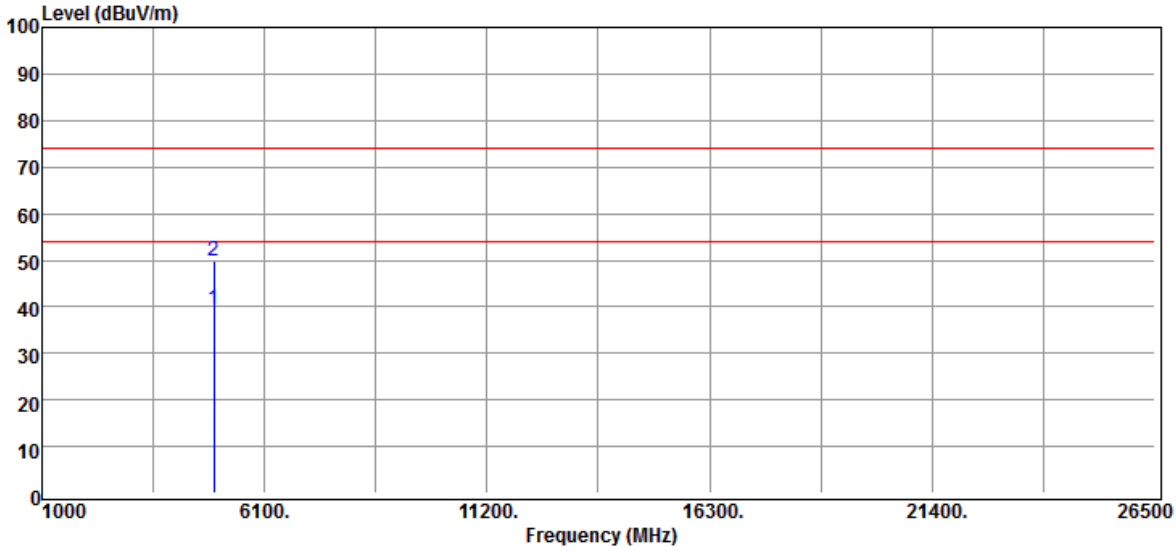
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	40.55	0.97	41.52	54.00	-12.48
4924.00	Peak	50.39	0.97	51.36	74.00	-22.64

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



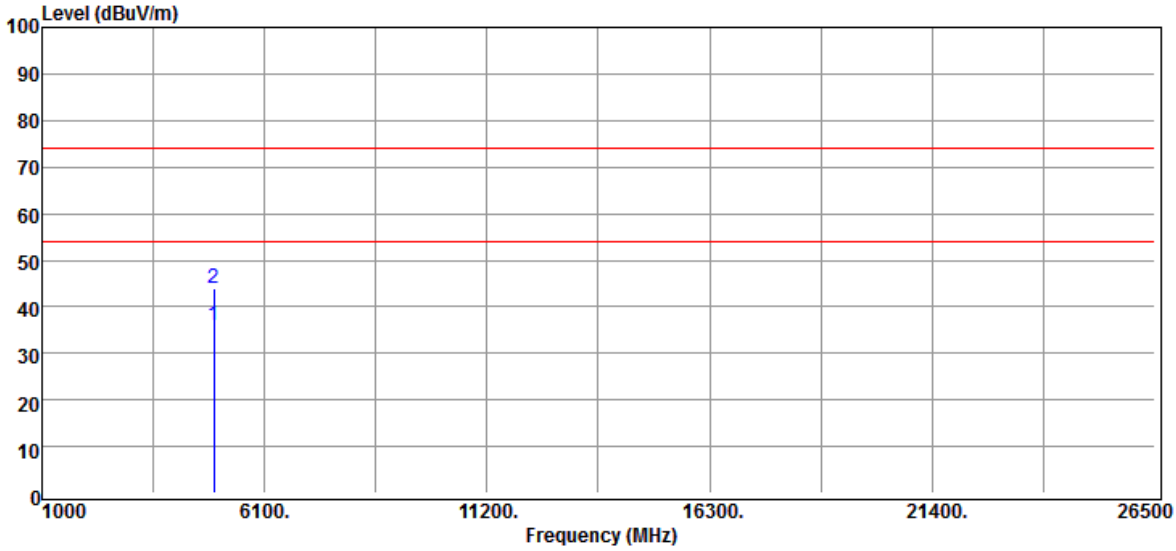
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4934.00	Average	37.55	1.05	38.60	54.00	-15.40
4934.00	Peak	45.25	1.05	46.30	74.00	-27.70

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



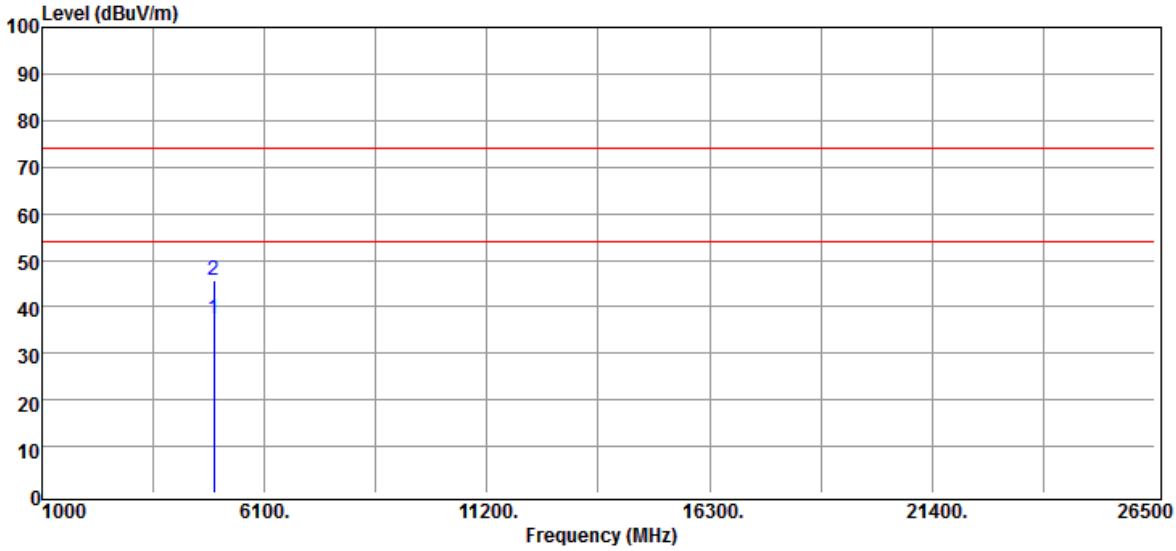
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4934.00	Average	38.53	1.05	39.58	54.00	-14.42
4934.00	Peak	48.67	1.05	49.72	74.00	-24.28

Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4944.00	Average	35.02	1.12	36.14	54.00	-17.86
4944.00	Peak	42.83	1.12	43.95	74.00	-30.05

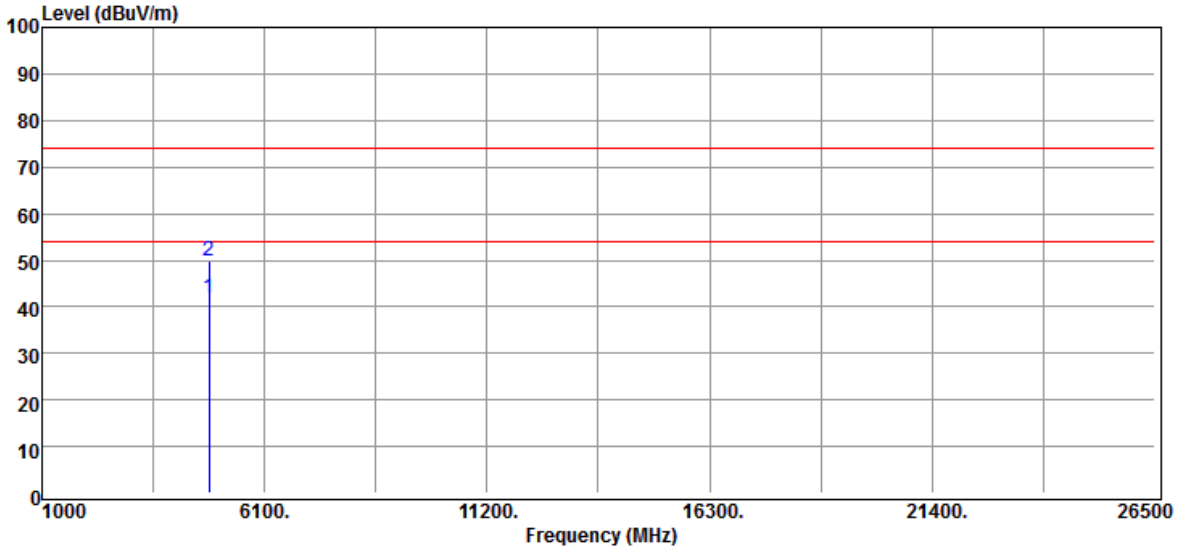
Operation Mode	:802.11g	Test Date	:2018-08-09
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4944.00	Average	36.29	1.12	37.41	54.00	-16.59
4944.00	Peak	44.58	1.12	45.70	74.00	-28.30

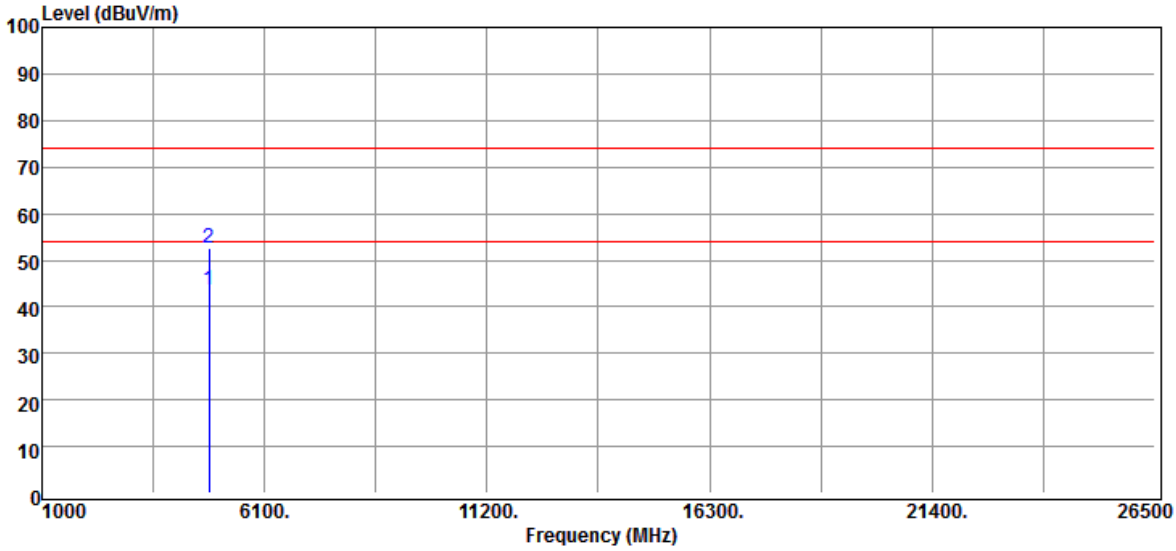
Radiated Spurious Emission Measurement Result (802.11n_HT20)

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



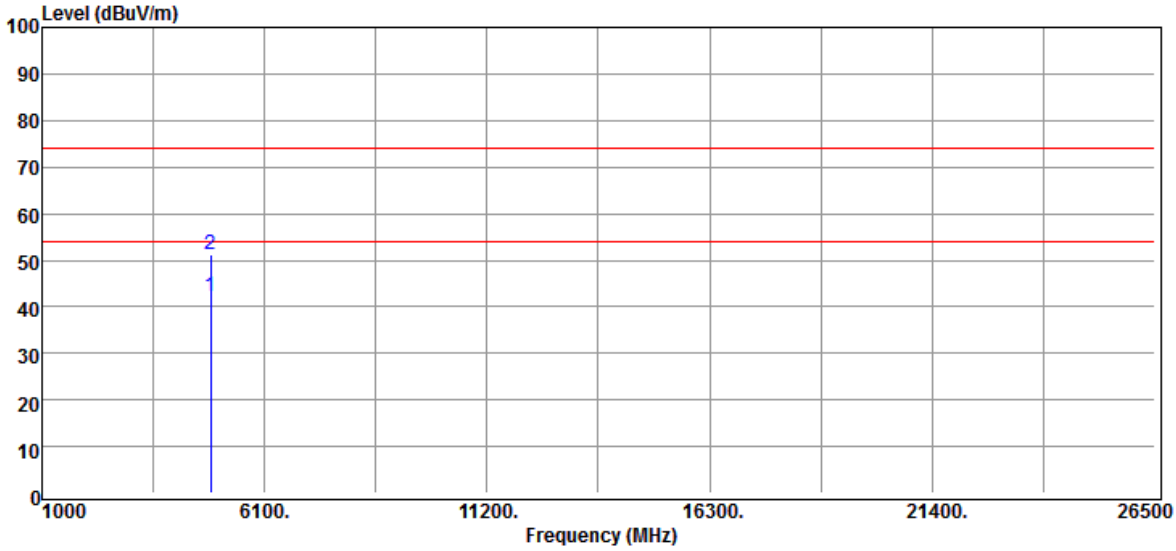
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Average	41.38	0.38	41.76	54.00	-12.24
4824.00	Peak	49.58	0.38	49.96	74.00	-24.04

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2412 MHz	Engineer	:Jerry



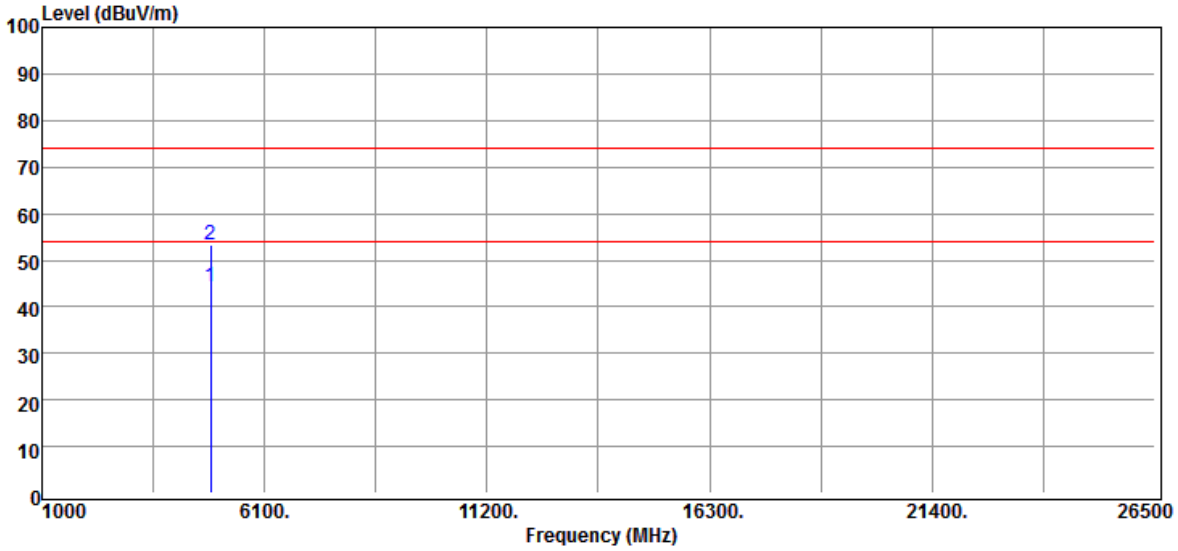
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4824.00	Average	43.27	0.38	43.65	54.00	-10.35
4824.00	Peak	52.35	0.38	52.73	74.00	-21.27

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2437 MHz	Engineer	:Jerry



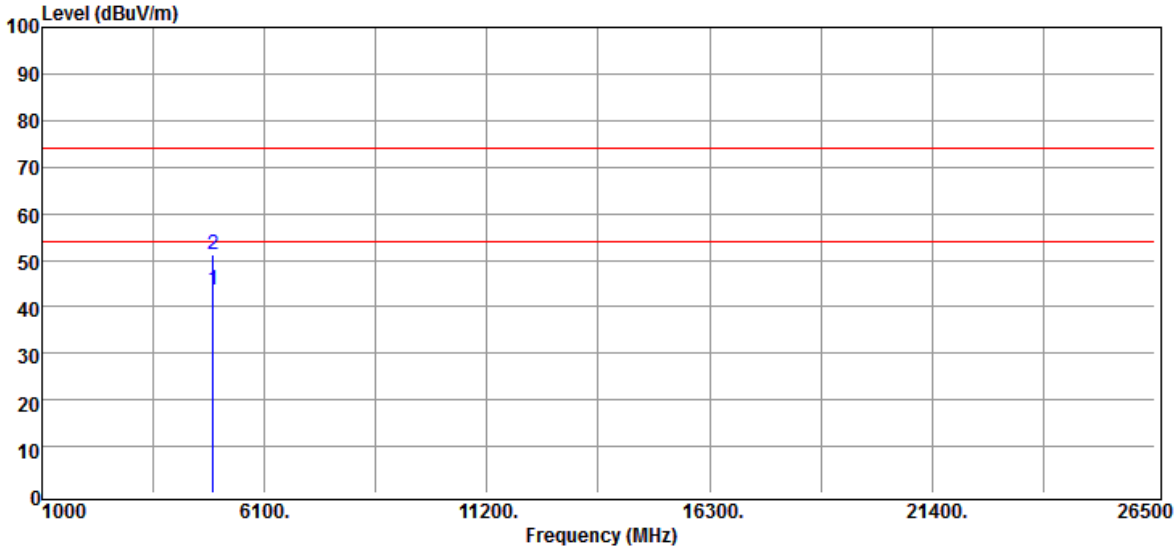
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	41.69	0.66	42.35	54.00	-11.65
4874.00	Peak	50.53	0.66	51.19	74.00	-22.81

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2437 MHz	Engineer	:Jerry



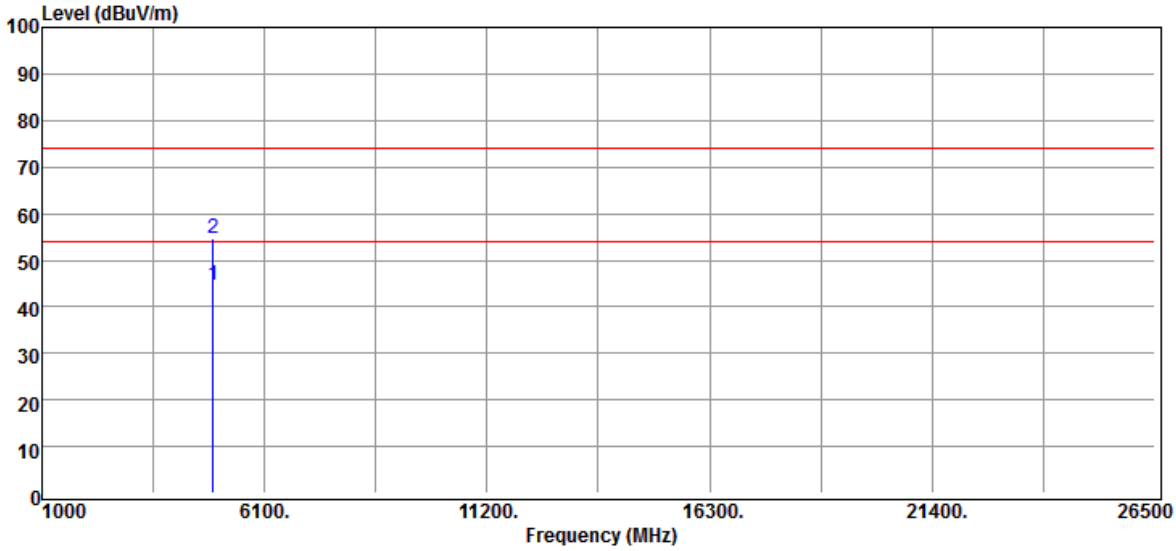
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	43.67	0.66	44.33	54.00	-9.67
4874.00	Peak	52.77	0.66	53.43	74.00	-20.57

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



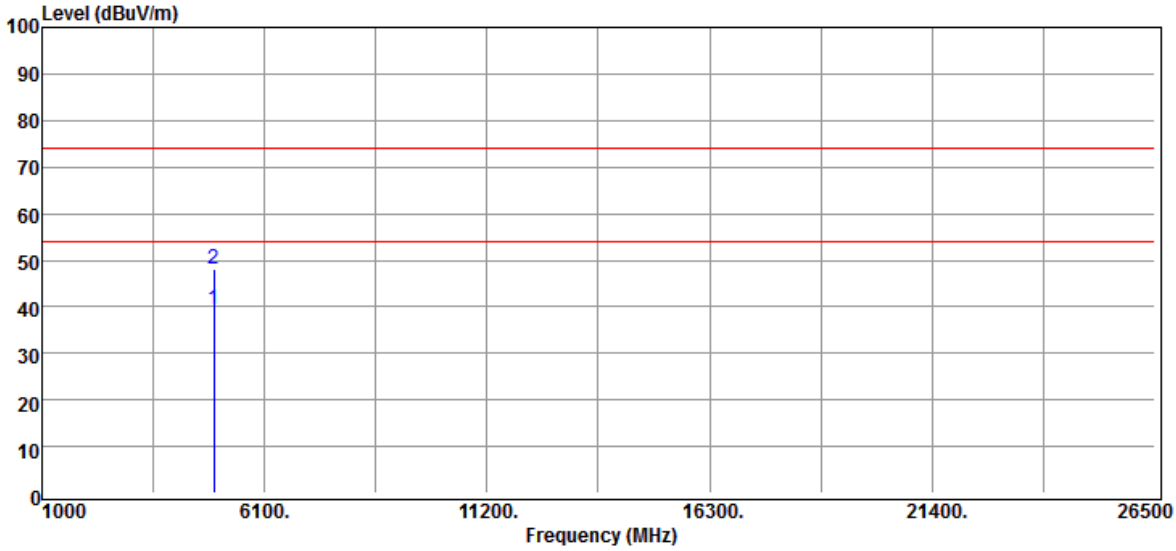
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	42.53	0.97	43.50	54.00	-10.50
4924.00	Peak	50.28	0.97	51.25	74.00	-22.75

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



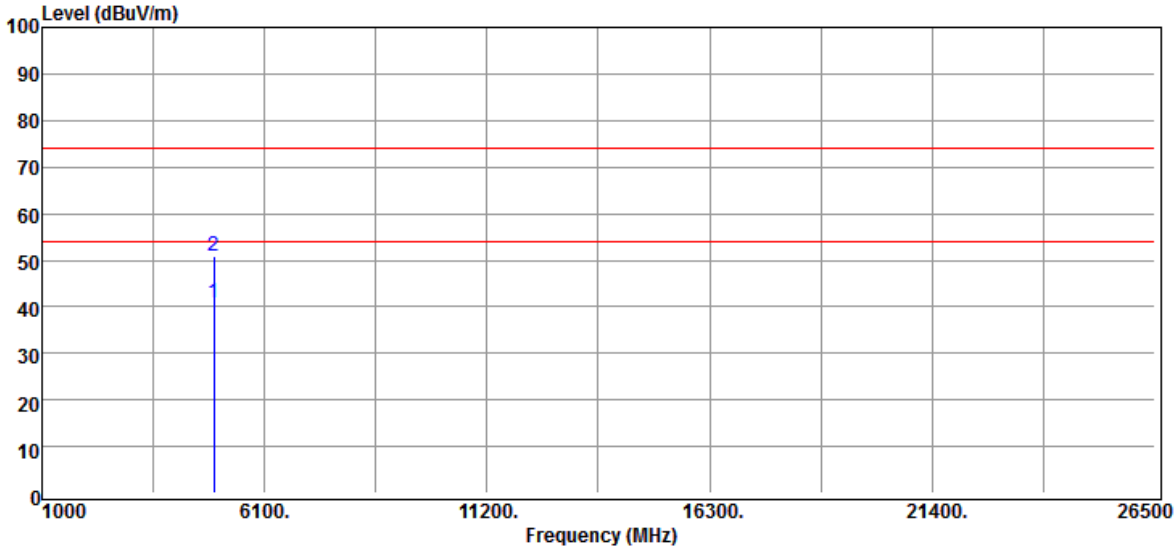
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	43.78	0.97	44.75	54.00	-9.25
4924.00	Peak	53.70	0.97	54.67	74.00	-19.33

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2467 MHz	Engineer	:Jerry



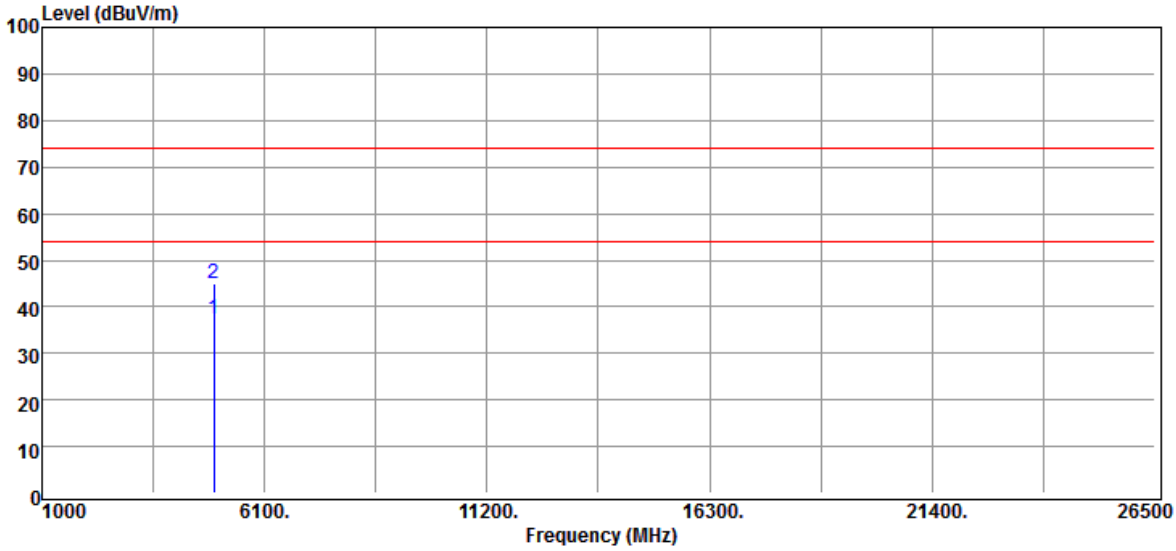
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4934.00	Average	38.35	1.05	39.40	54.00	-14.60
4934.00	Peak	46.88	1.05	47.93	74.00	-26.07

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH 12	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2467 MHz	Engineer	:Jerry



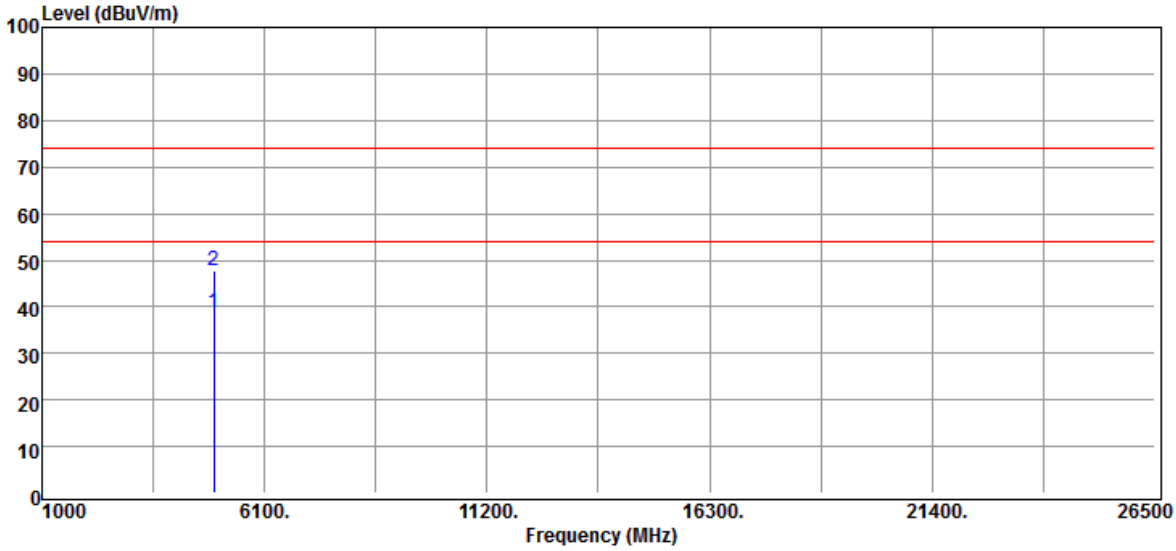
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4934.00	Average	39.77	1.05	40.82	54.00	-13.18
4934.00	Peak	49.88	1.05	50.93	74.00	-23.07

Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4944.00	Average	36.23	1.12	37.35	54.00	-16.65
4944.00	Peak	43.89	1.12	45.01	74.00	-28.99

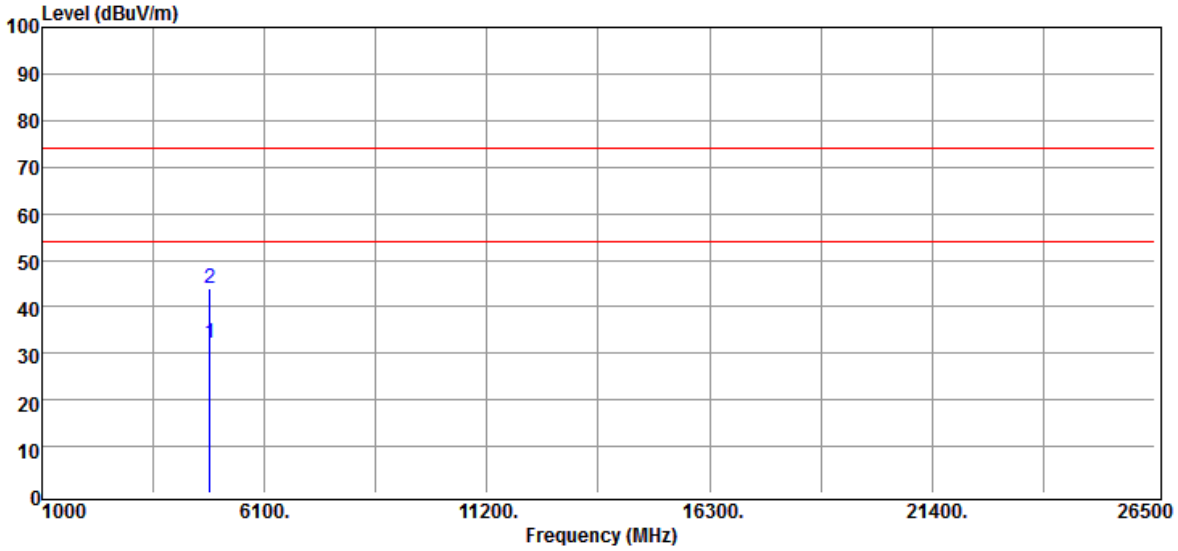
Operation Mode	:802.11n20	Test Date	:2018-08-09
Test Mode	:Tx CH 13	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2472 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4944.00	Average	37.55	1.12	38.67	54.00	-15.33
4944.00	Peak	46.57	1.12	47.69	74.00	-26.31

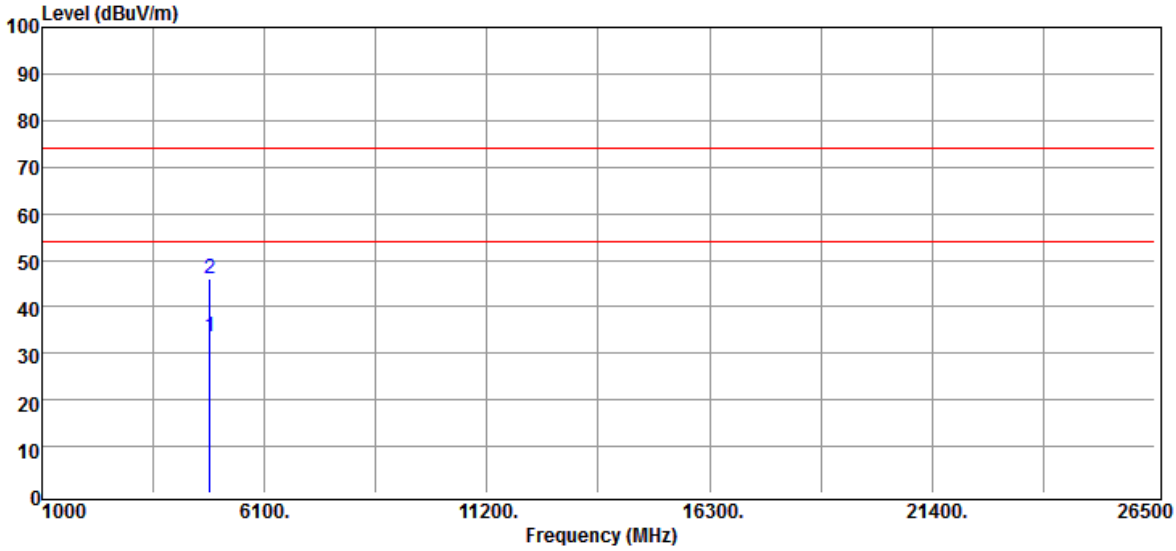
Radiated Spurious Emission Measurement Result (802.11n_HT40)

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2422 MHz	Engineer	:Jerry



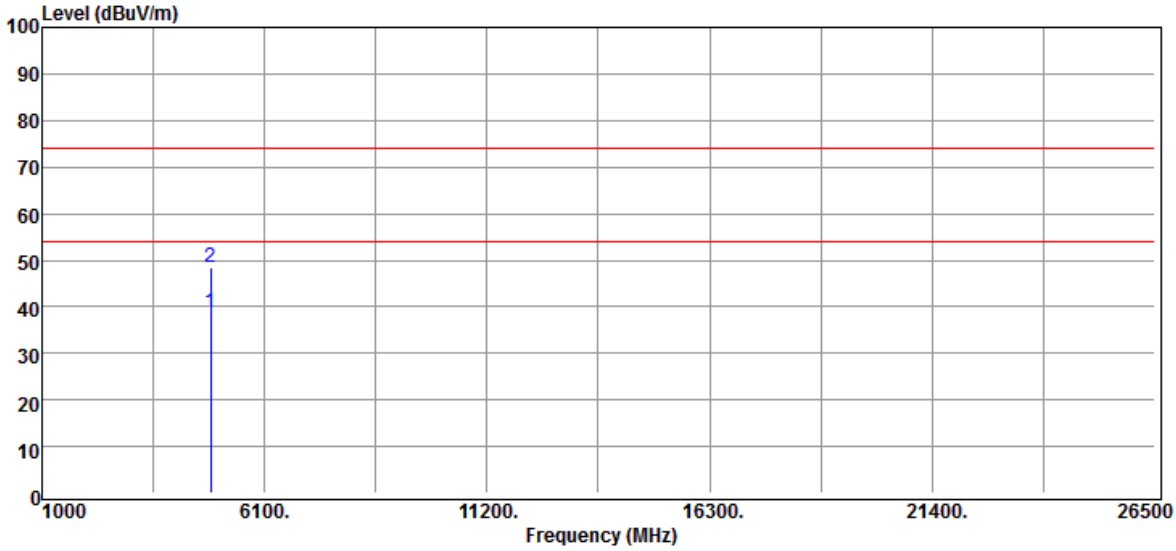
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4844.00	Average	31.52	0.49	32.01	54.00	-21.99
4844.00	Peak	43.28	0.49	43.77	74.00	-30.23

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2422 MHz	Engineer	:Jerry



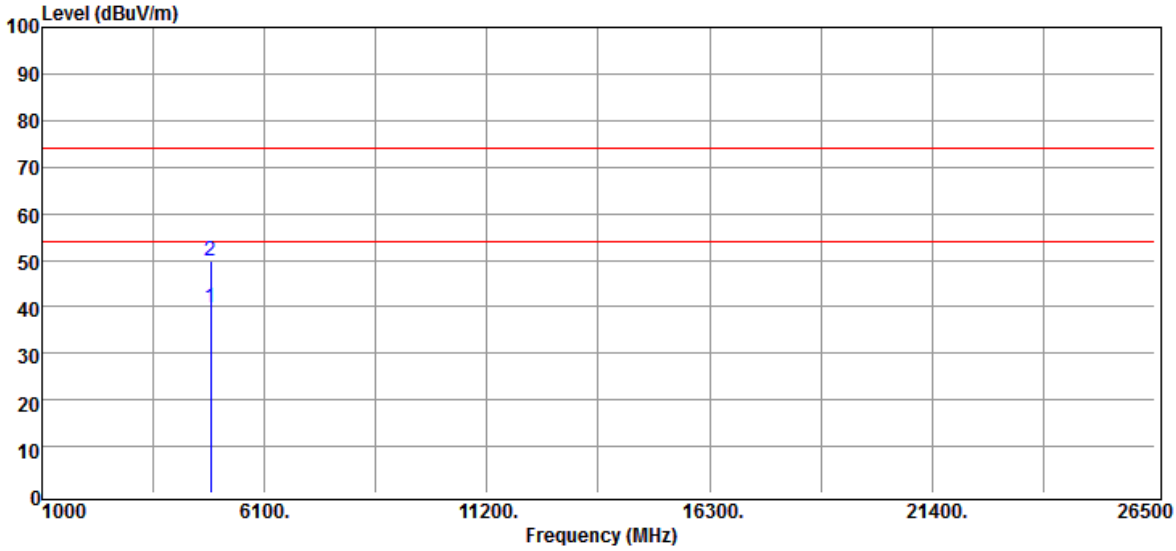
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4844.00	Average	33.17	0.49	33.66	54.00	-20.34
4844.00	Peak	45.70	0.49	46.19	74.00	-27.81

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2437 MHz	Engineer	:Jerry



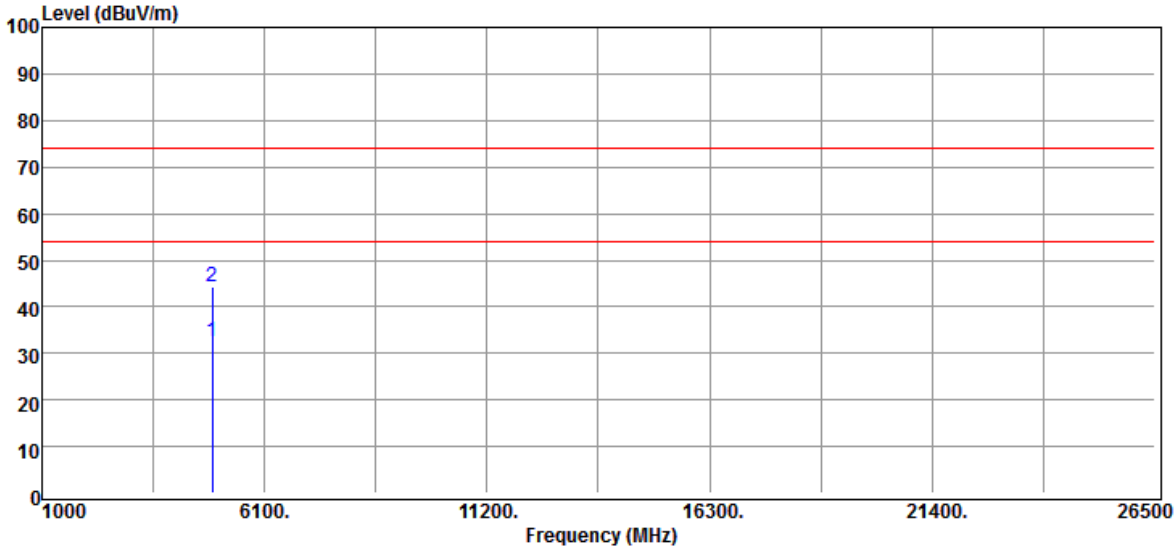
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	38.02	0.66	38.68	54.00	-15.32
4874.00	Peak	47.83	0.66	48.49	74.00	-25.51

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH Mid	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2437 MHz	Engineer	:Jerry



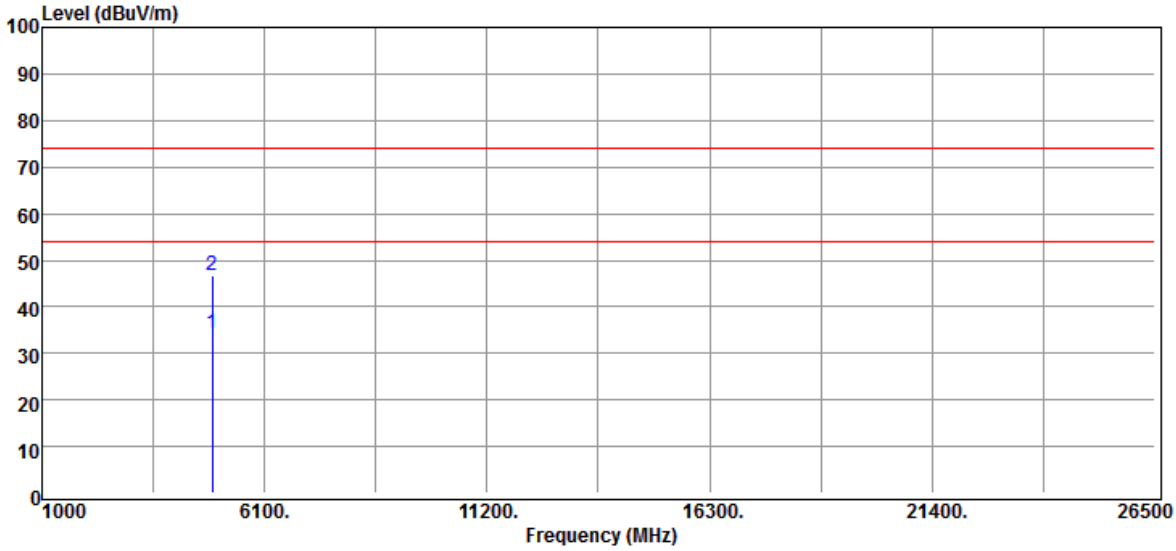
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	39.26	0.66	39.92	54.00	-14.08
4874.00	Peak	49.23	0.66	49.89	74.00	-24.11

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2452 MHz	Engineer	:Jerry



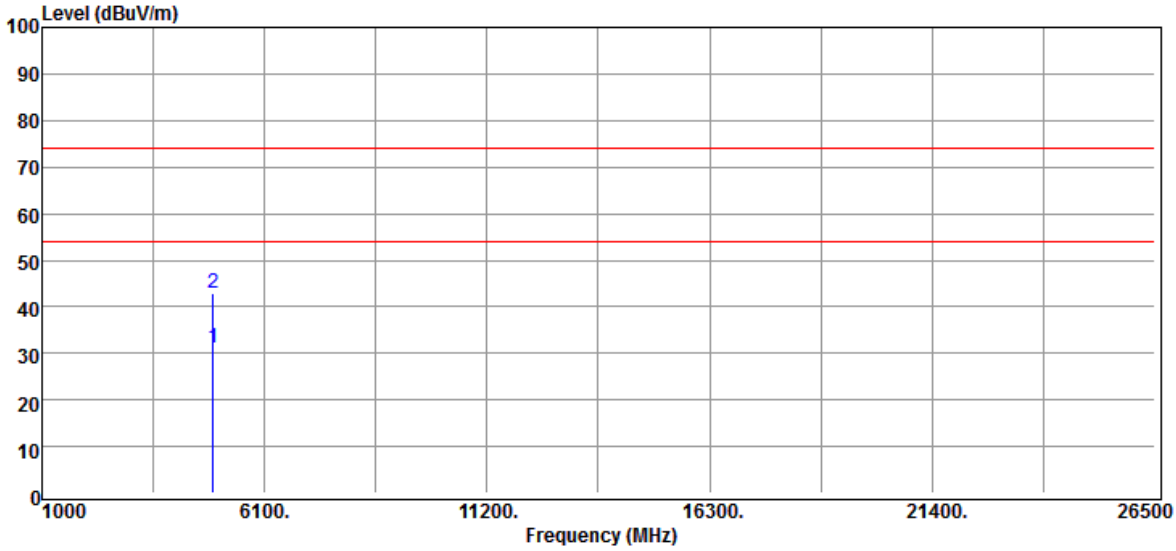
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4904.00	Average	31.69	0.84	32.53	54.00	-21.47
4904.00	Peak	43.51	0.84	44.35	74.00	-29.65

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH High	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2452 MHz	Engineer	:Jerry



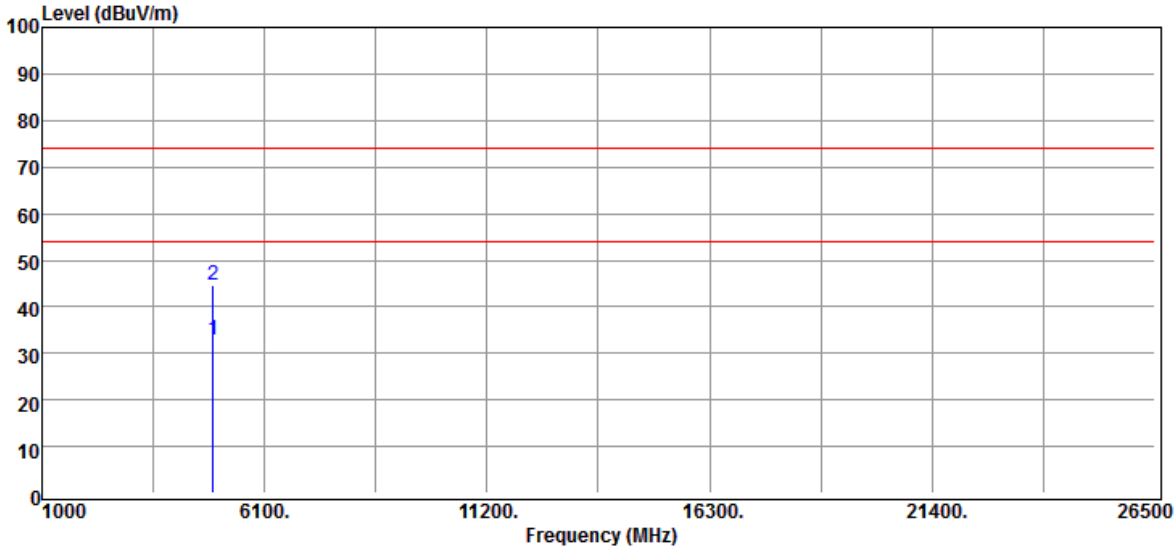
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4904.00	Average	33.28	0.84	34.12	54.00	-19.88
4904.00	Peak	45.72	0.84	46.56	74.00	-27.44

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH 10	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2457 MHz	Engineer	:Jerry



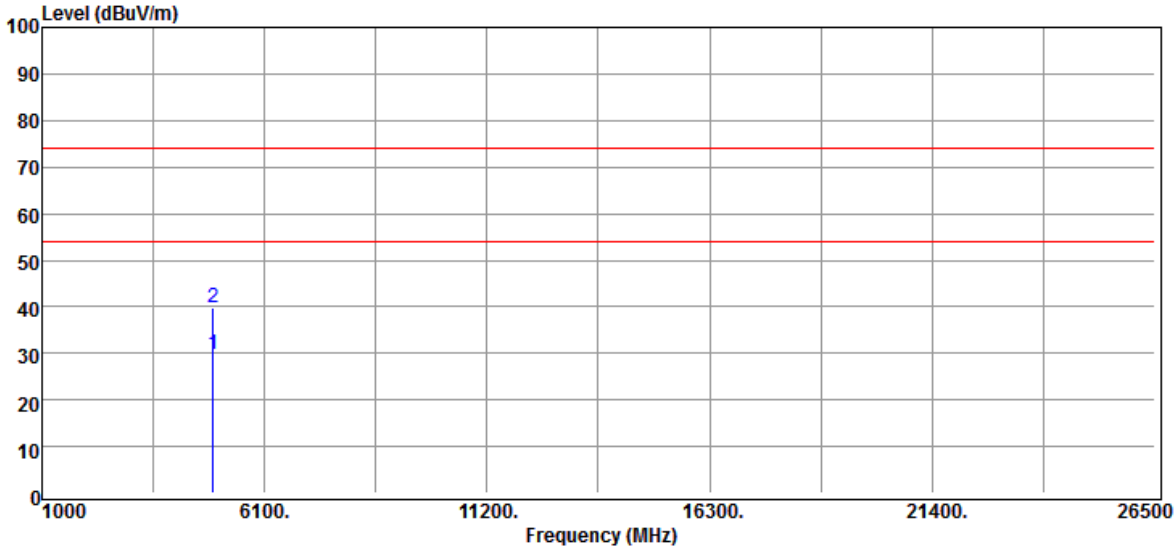
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4914.00	Average	30.10	0.91	31.01	54.00	-22.99
4914.00	Peak	42.13	0.91	43.04	74.00	-30.96

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH 10	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2457 MHz	Engineer	:Jerry



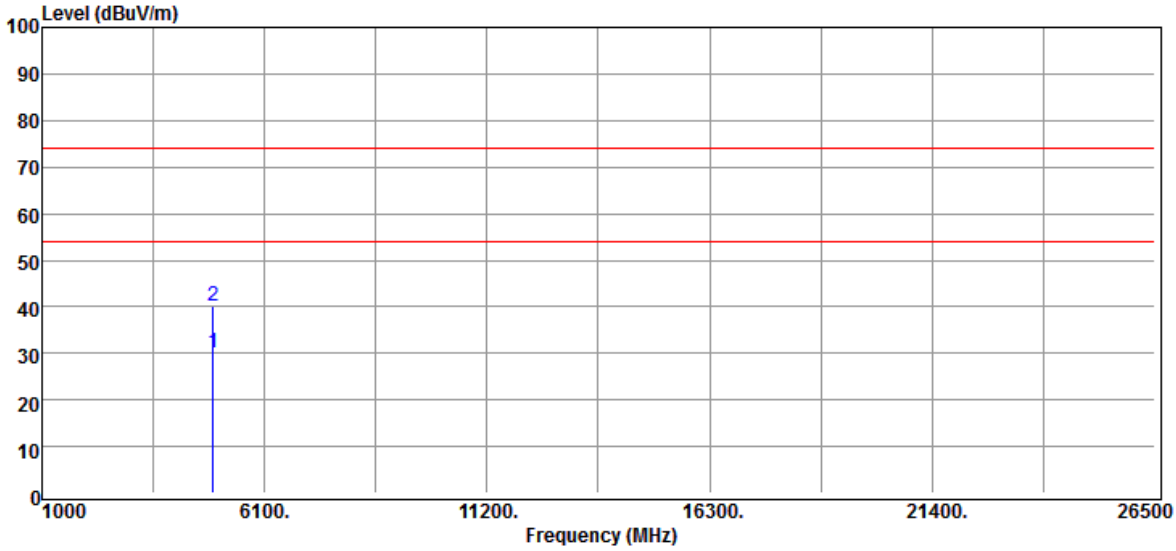
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4914.00	Average	32.05	0.91	32.96	54.00	-21.04
4914.00	Peak	43.87	0.91	44.78	74.00	-29.22

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH 11	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:2462 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	28.70	0.97	29.67	54.00	-24.33
4924.00	Peak	38.67	0.97	39.64	74.00	-34.36

Operation Mode	:802.11n40	Test Date	:2018-08-09
Test Mode	:Tx CH 11	Temp./Humi.	:25/60
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:2462 MHz	Engineer	:Jerry



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4924.00	Average	29.02	0.97	29.99	54.00	-24.01
4924.00	Peak	39.26	0.97	40.23	74.00	-33.77

12 PEAK POWER SPECTRAL DENSITY

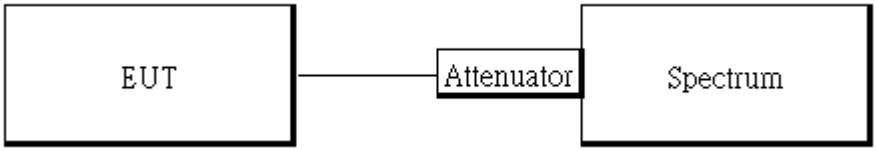
12.1Standard Applicable

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

12.2Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/20	2019/06/19
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25
DC Block	PASTERNACK	PE8210	RF29	2017/12/26	2018/12/25
Notebook	Lenovo	L420	S0011721	N/A	N/A

12.3Test Set-up



12.4Measurement Procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 3 kHz. & the VBW = 10 kHz
5. For defining Restricted Band Edge Limit:
   Set the RBW = 100kHz & VBW = 300 kHz.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level.
11. 802.11n MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application for the test of PSD at MIMO mode, the highest emission of worst case is employing.

Frequency (MHz)	Effective Legacy Gain (dBi)	PSD Limit (dBm)
2412~2462	4.80	8

12.5Test Results:

POWER DENSITY 802.11b			
Freq. (MHz)	PPSD (dBm)	Limit (dBm)	Result
2412	-5.064	8.00	PASS
2437	-5.356	8.00	PASS
2462	-4.817	8.00	PASS
2467	-4.884	8.00	PASS
2472	-5.029	8.00	PASS

POWER DENSITY 802.11g			
Freq. (MHz)	PPSD (dBm)	Limit (dBm)	Result
2412	-8.159	8.00	PASS
2437	-7.843	8.00	PASS
2462	-10.902	8.00	PASS

POWER DENSITY 802.11n HT20			
Freq. (MHz)	PPSD (dBm)	Limit (dBm)	Result
2412	-10.080	8.00	PASS
2437	-9.646	8.00	PASS
2462	-9.765	8.00	PASS

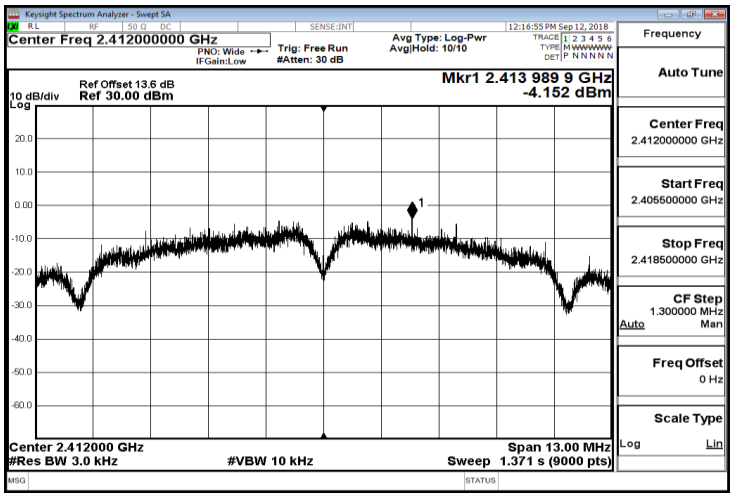
POWER DENSITY 802.11n HT40			
Freq. (MHz)	PPSD (dBm)	Limit (dBm)	Result
2422	-12.821	8.00	PASS
2437	-11.862	8.00	PASS
2452	-17.597	8.00	PASS

offset *10.60* *dB for SISO mode*
offset *13.60* *dB for MIMO mode*

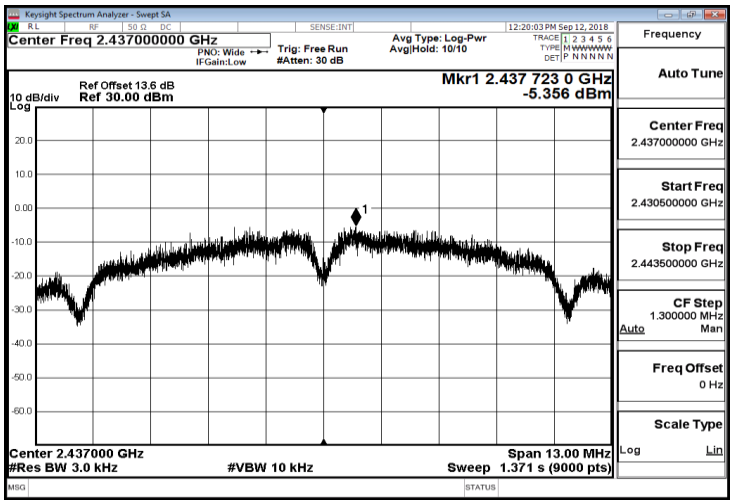
**Refer to next page for plots*

802.11b

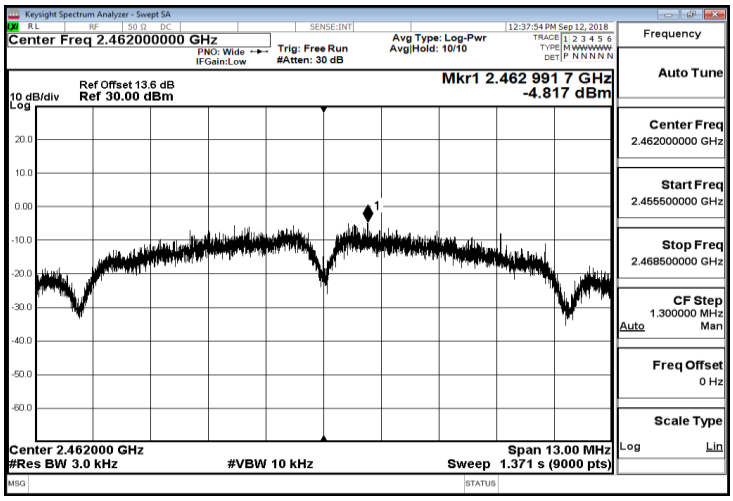
Power Spectral Density Test Plot (CH-Low)



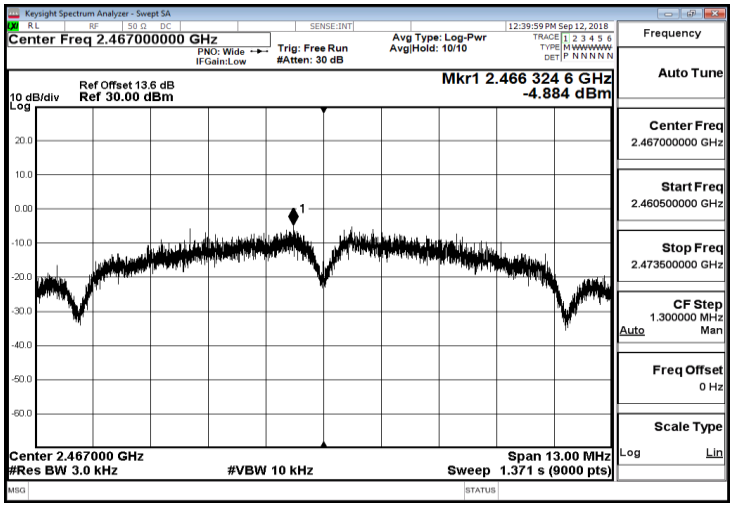
Power Spectral Density Test Plot (CH-Mid)



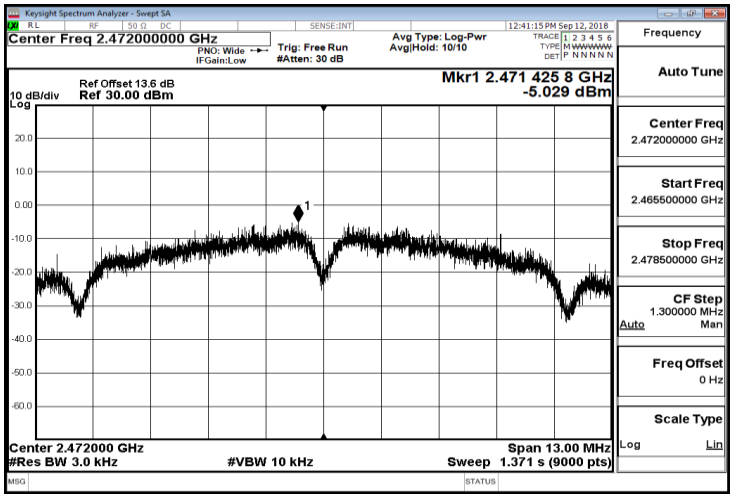
Power Spectral Density Test Plot (CH-High)



Power Spectral Density Test Plot (CH-High) 2467MHz



Power Spectral Density Test Plot (CH-High) 2472 MHz



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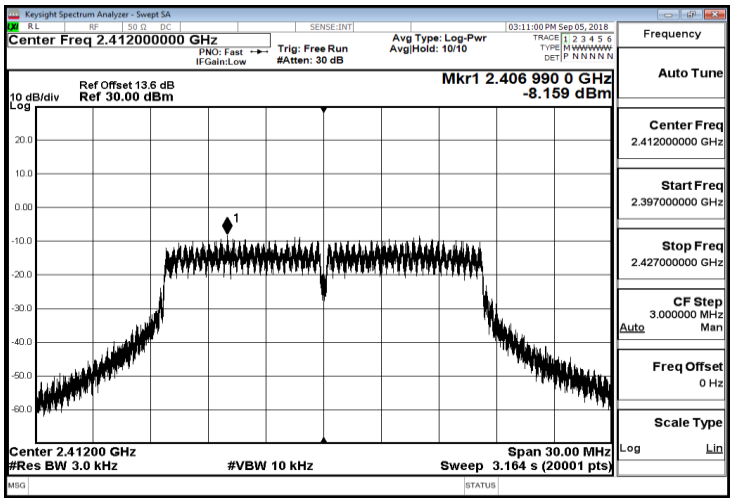
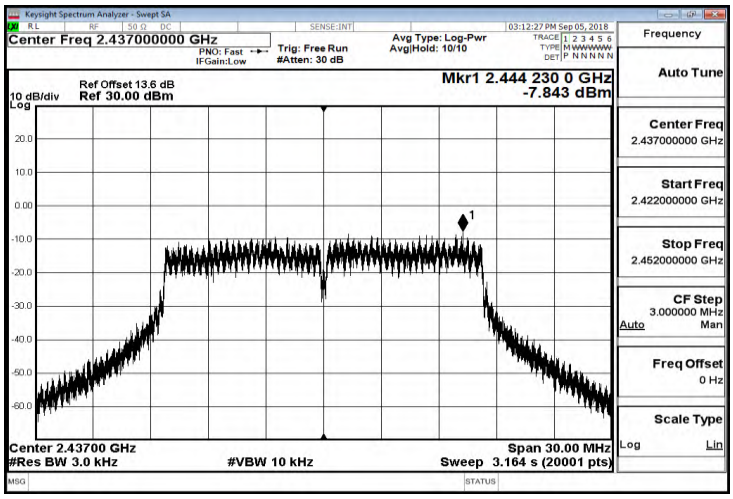
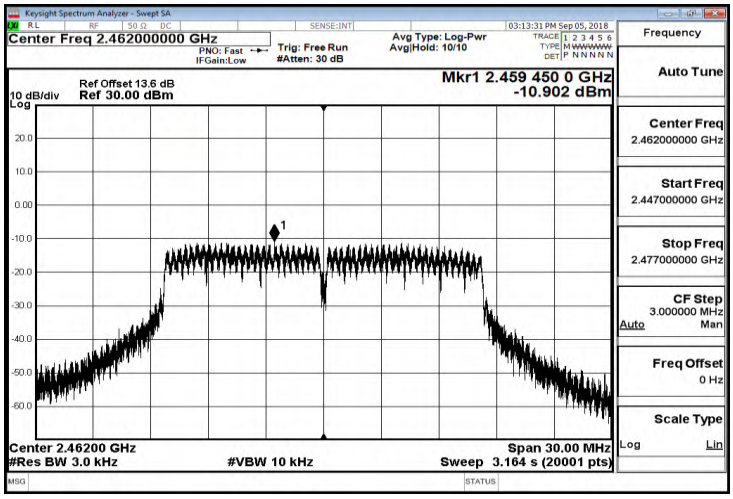
Power Spectral Density Test Plot (CH-Low)



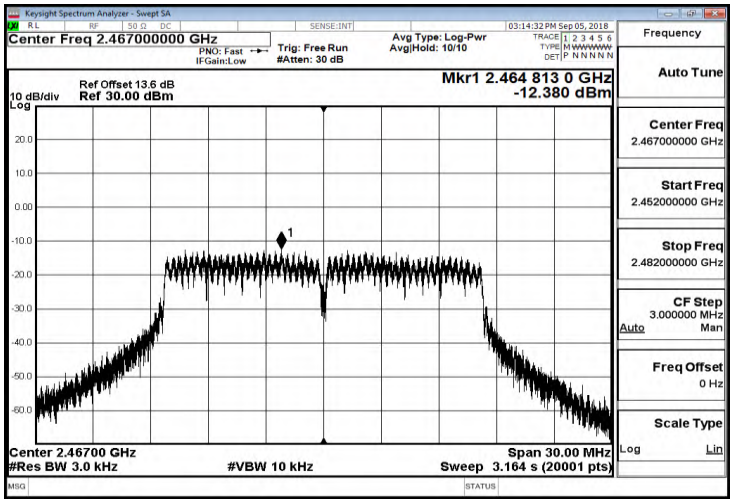
Power Spectral Density Test Plot (CH-Mid)



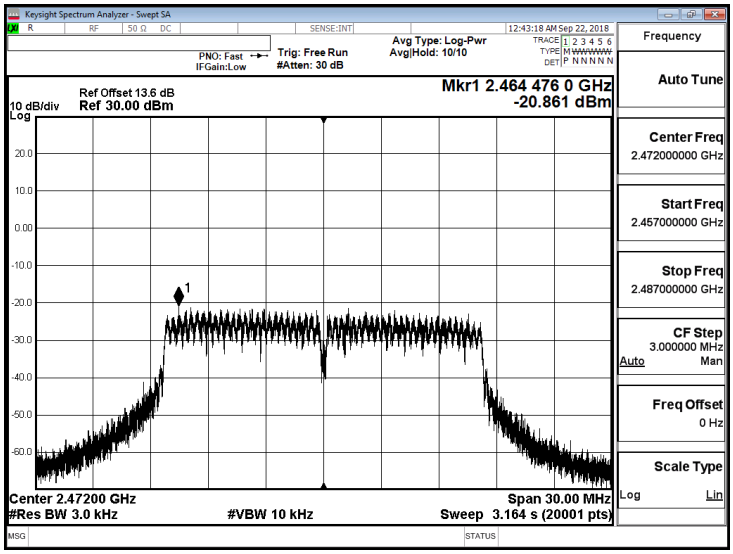
Power Spectral Density Test Plot (CH-High)



Power Spectral Density Test Plot (CH-High) 2467MHz



Power Spectral Density Test Plot (CH-High) 2472MHz



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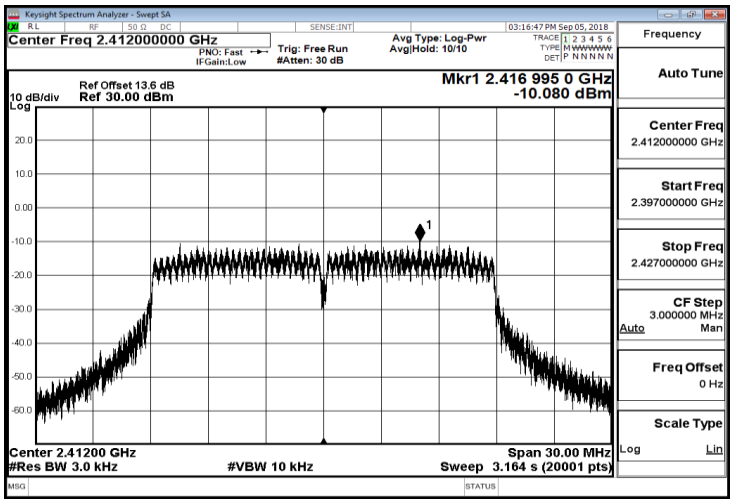
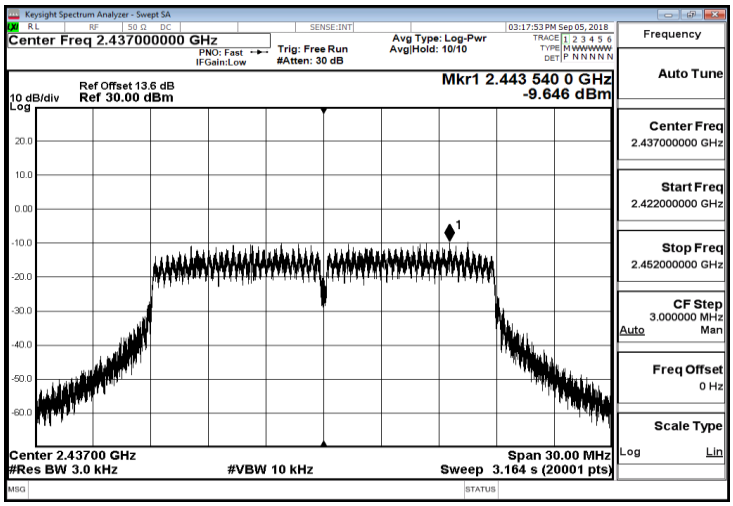
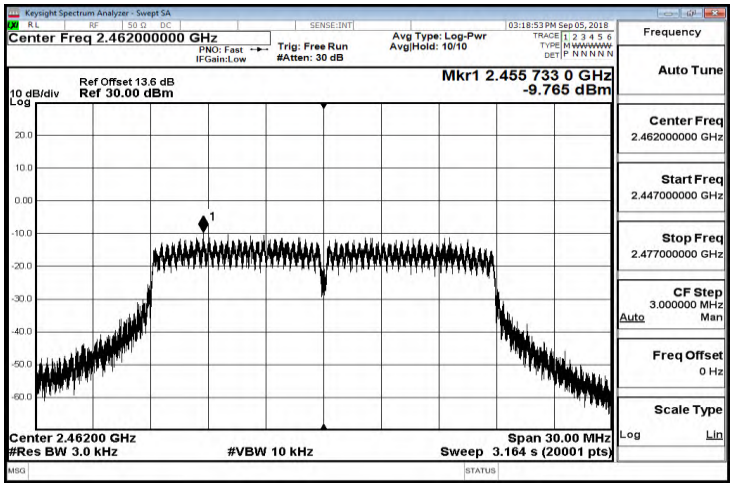
Power Spectral Density Test Plot (CH-Low)



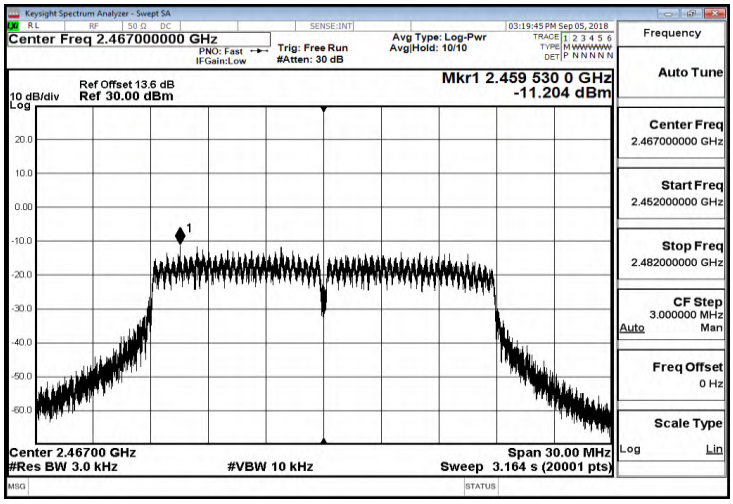
Power Spectral Density Test Plot (CH-Mid)



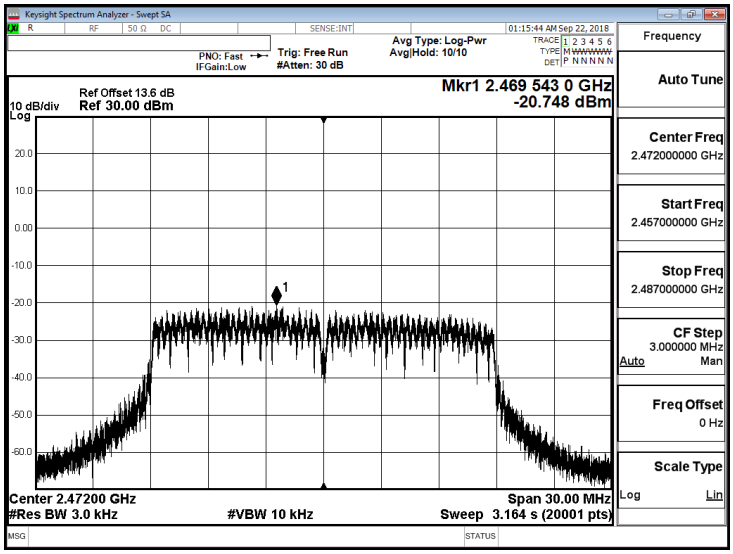
Power Spectral Density Test Plot (CH-High)



Power Spectral Density Test Plot (CH-High) 2467MHz



Power Spectral Density Test Plot (CH-High) 2472MHz



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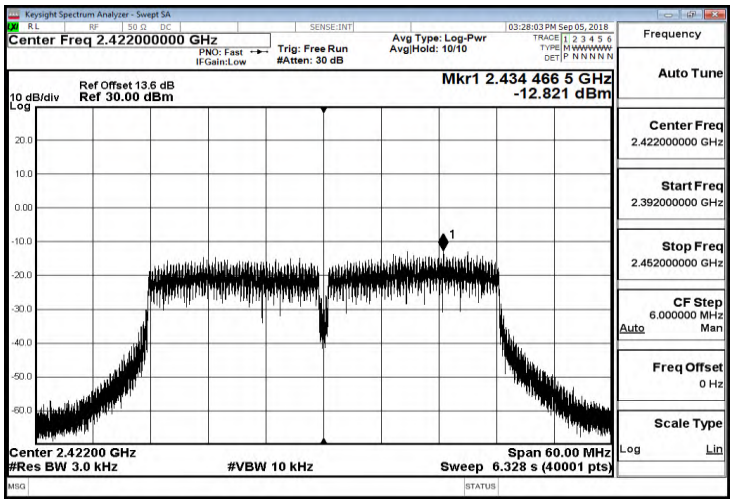
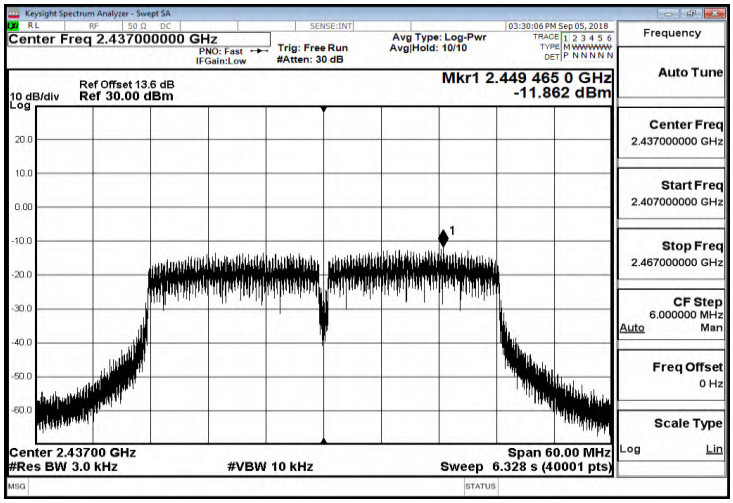
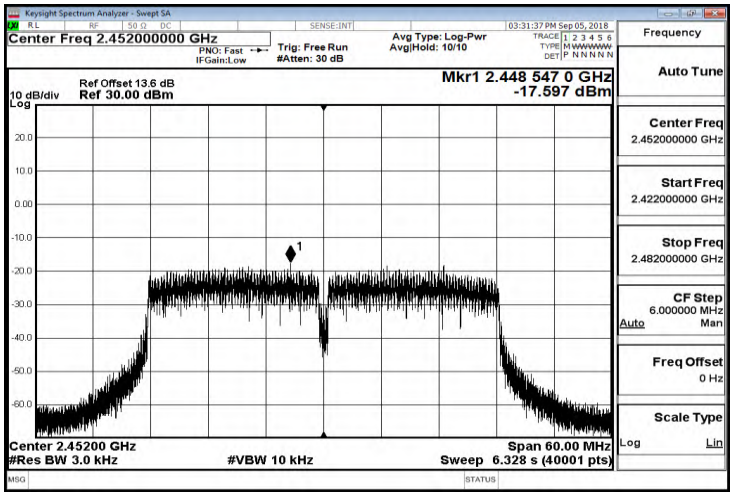
Power Spectral Density Test Plot (CH-Low)



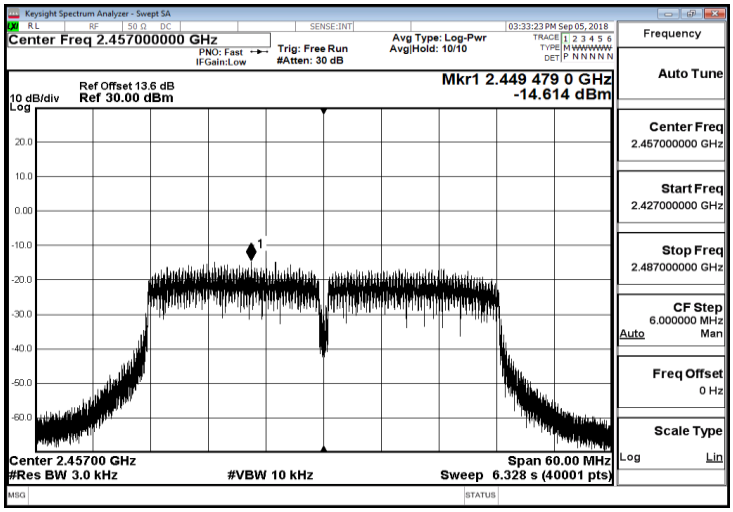
Power Spectral Density Test Plot (CH-Mid)



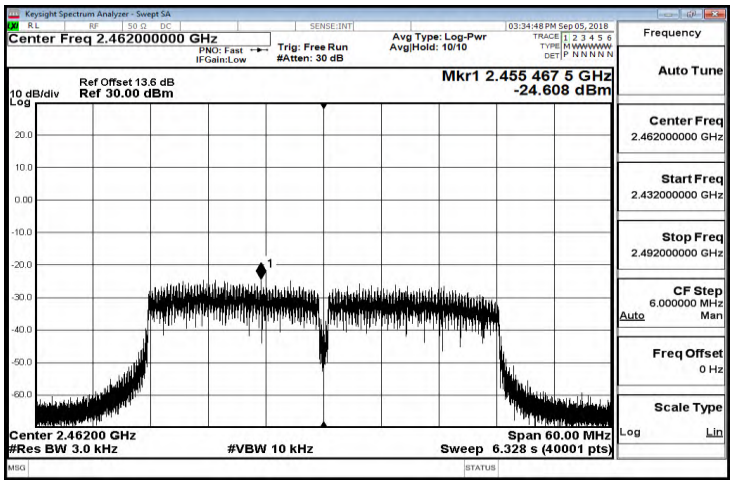
Power Spectral Density Test Plot (CH-High)



Power Spectral Density Test Plot (CH-High) 2457MHz



Power Spectral Density Test Plot (CH-High) 2462MHz



13 ANTENNA REQUIREMENT

13.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

13.2 Antenna Connected Construction

The antenna is designed with unique type RF connector and no consideration of replacement. Please see EUT photo for details.

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

~ End of Report ~