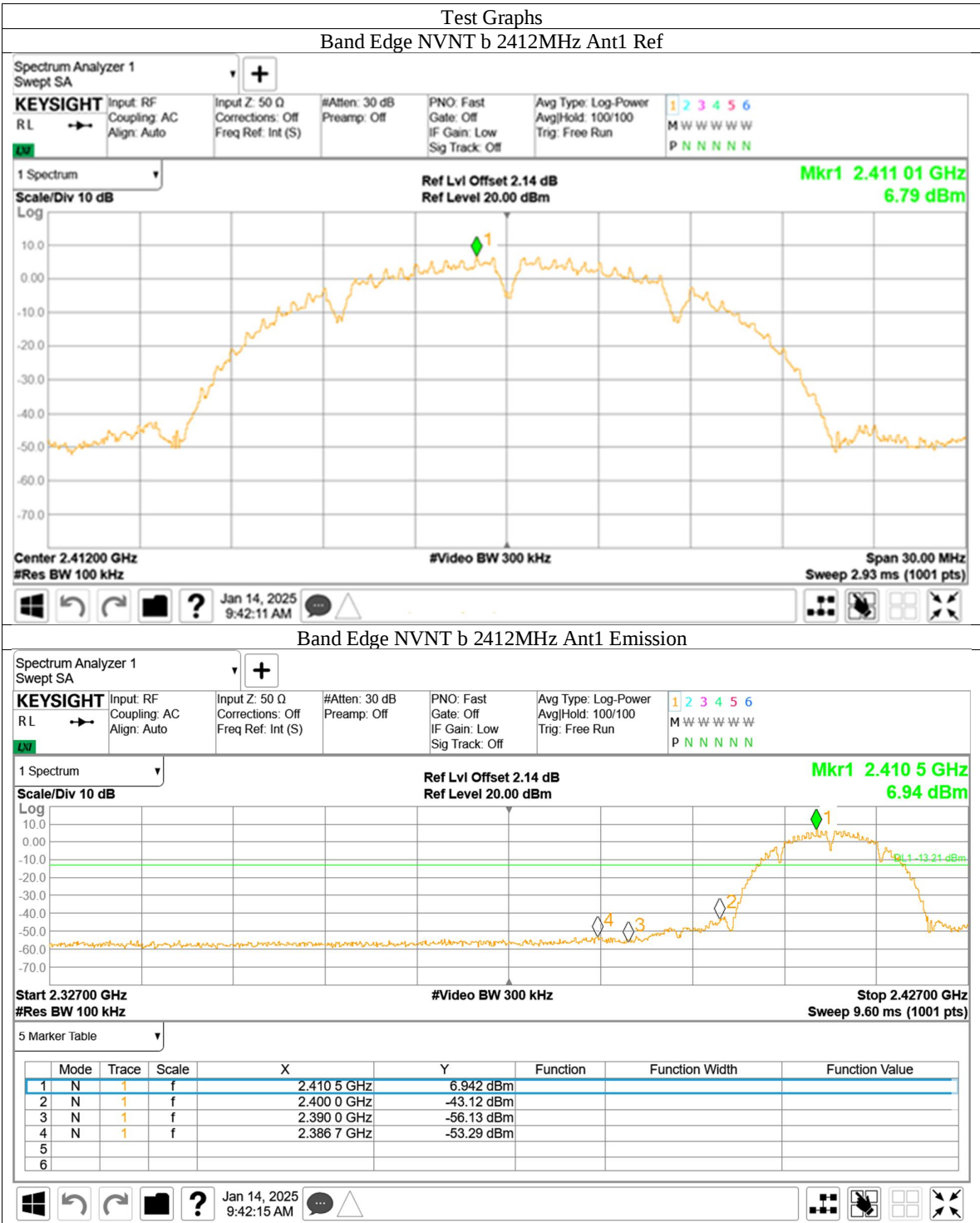
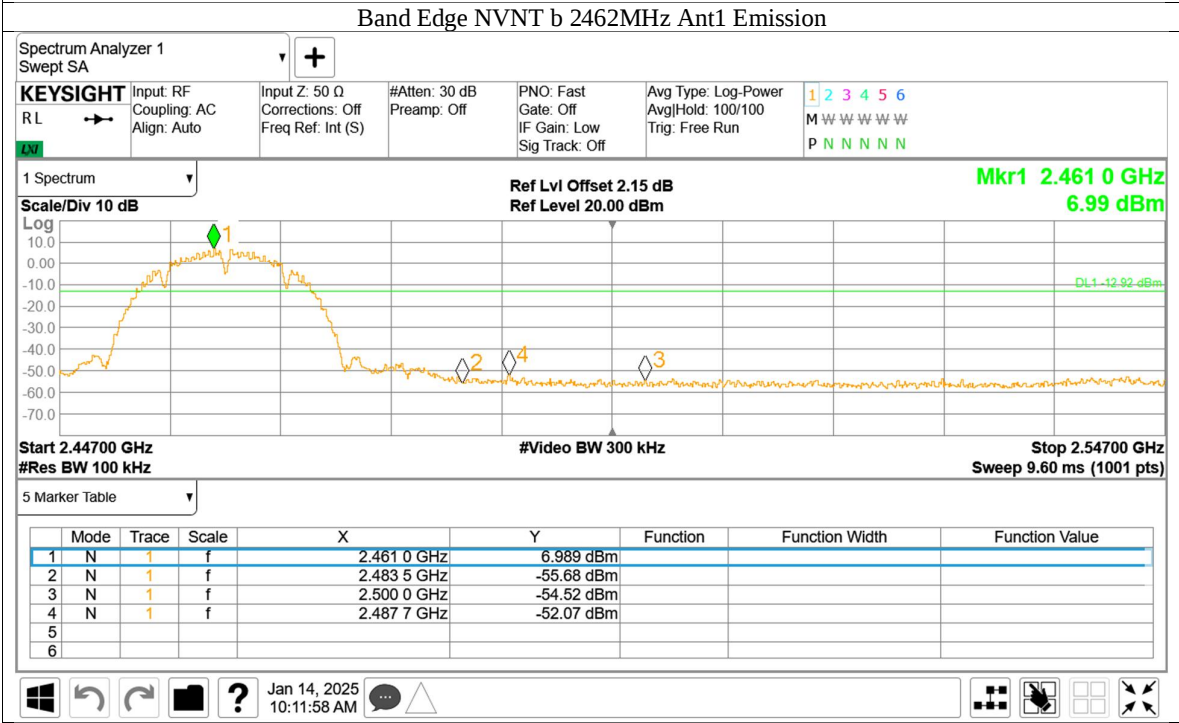
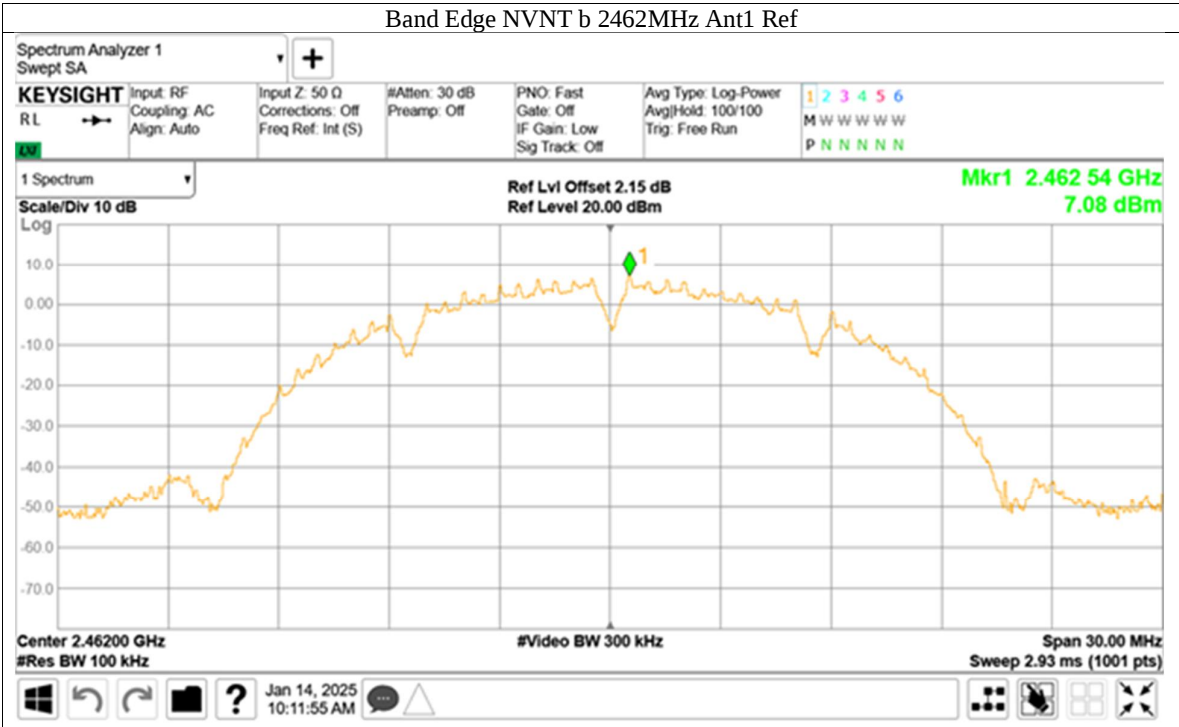
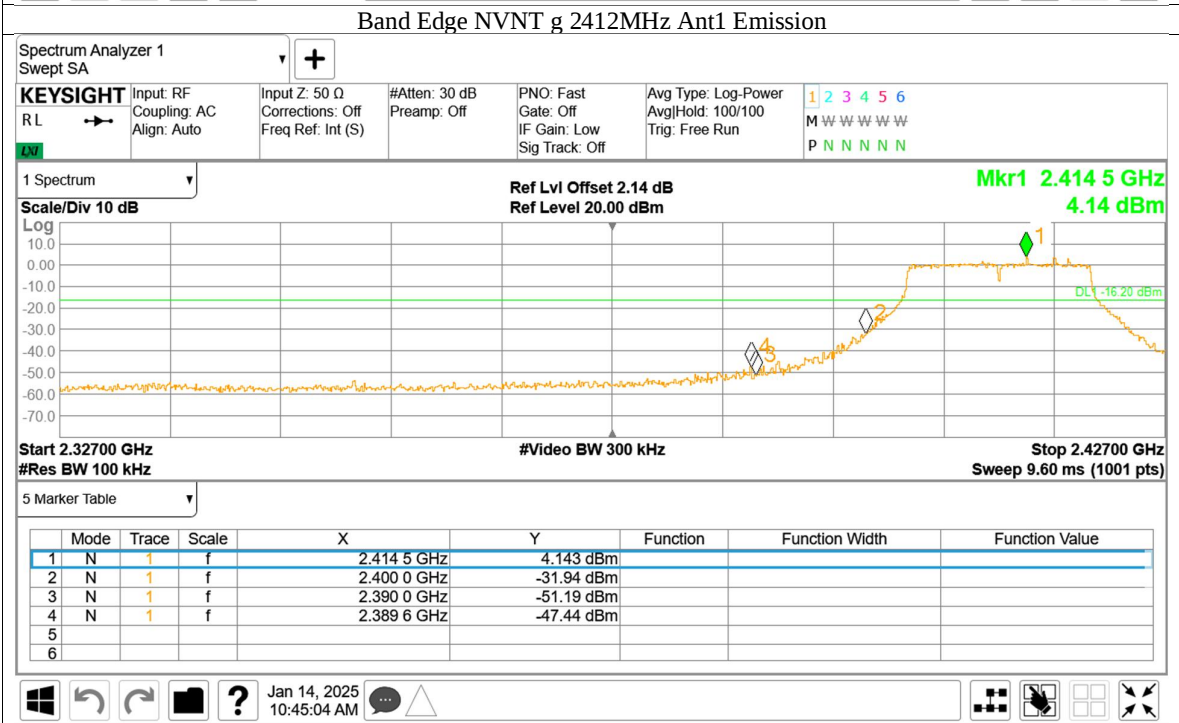
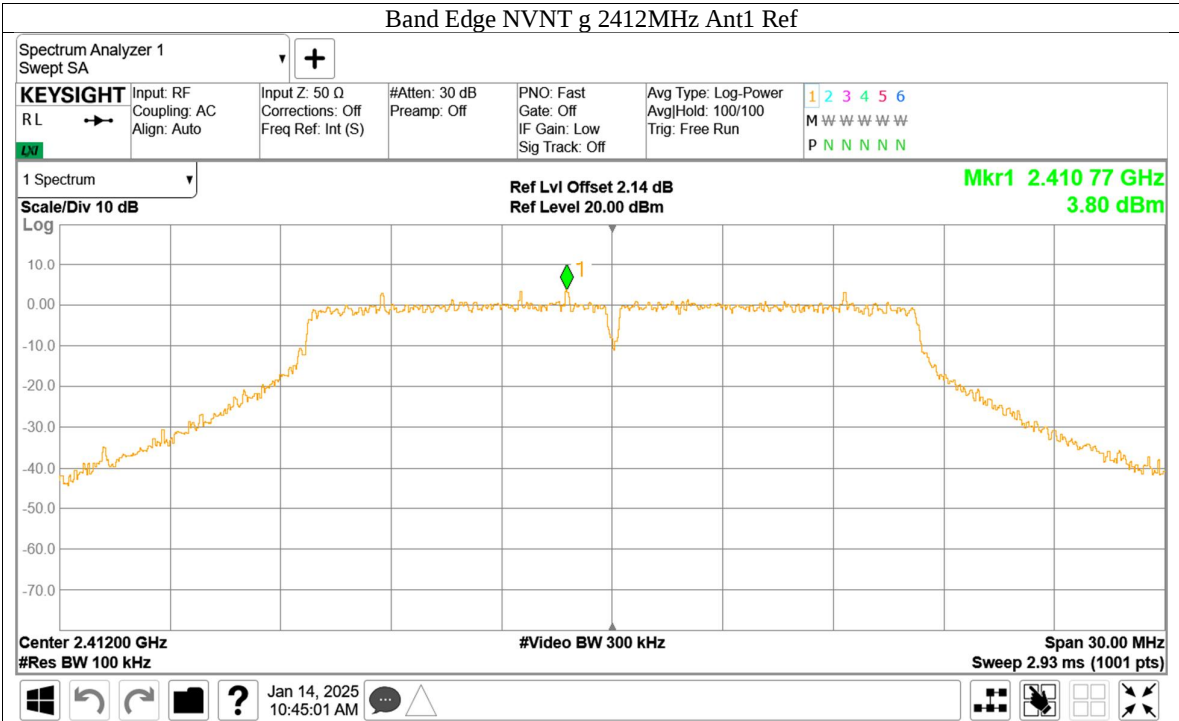


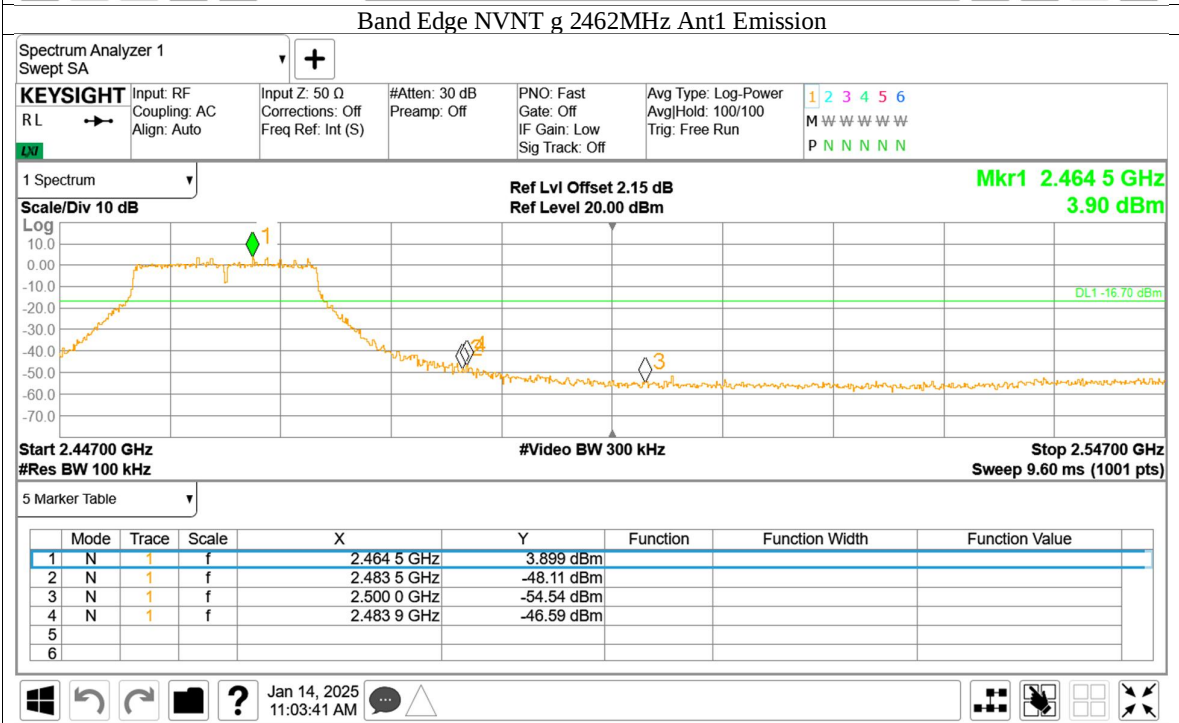
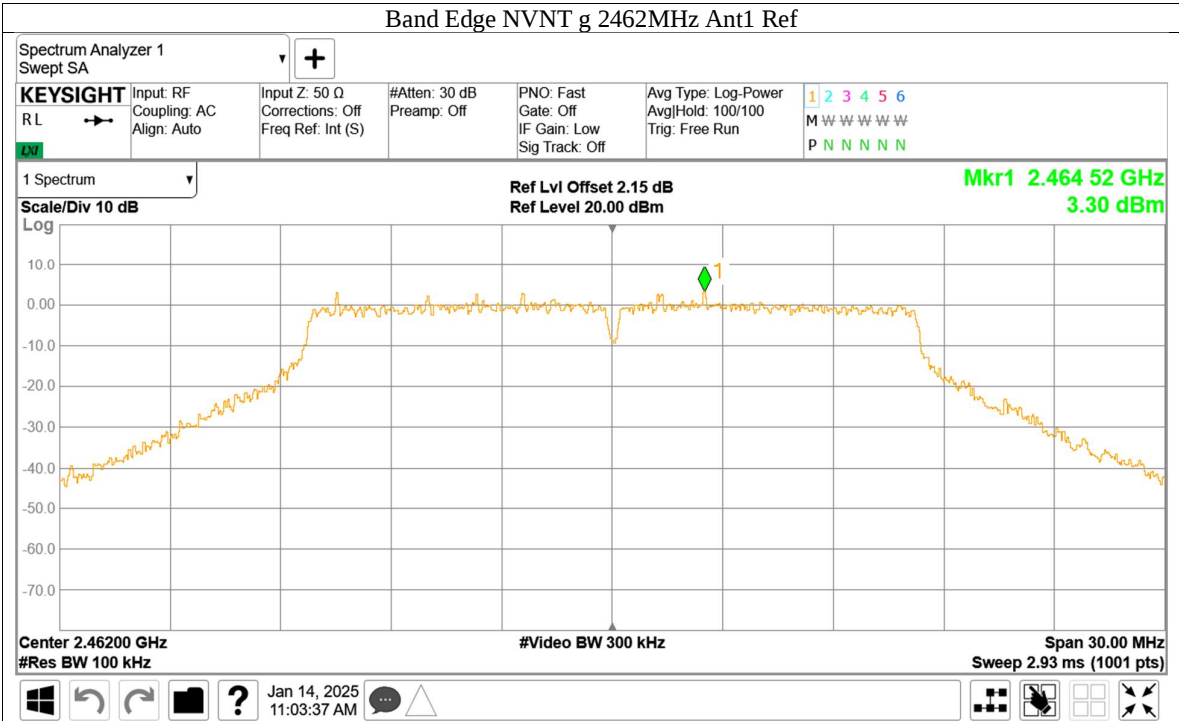


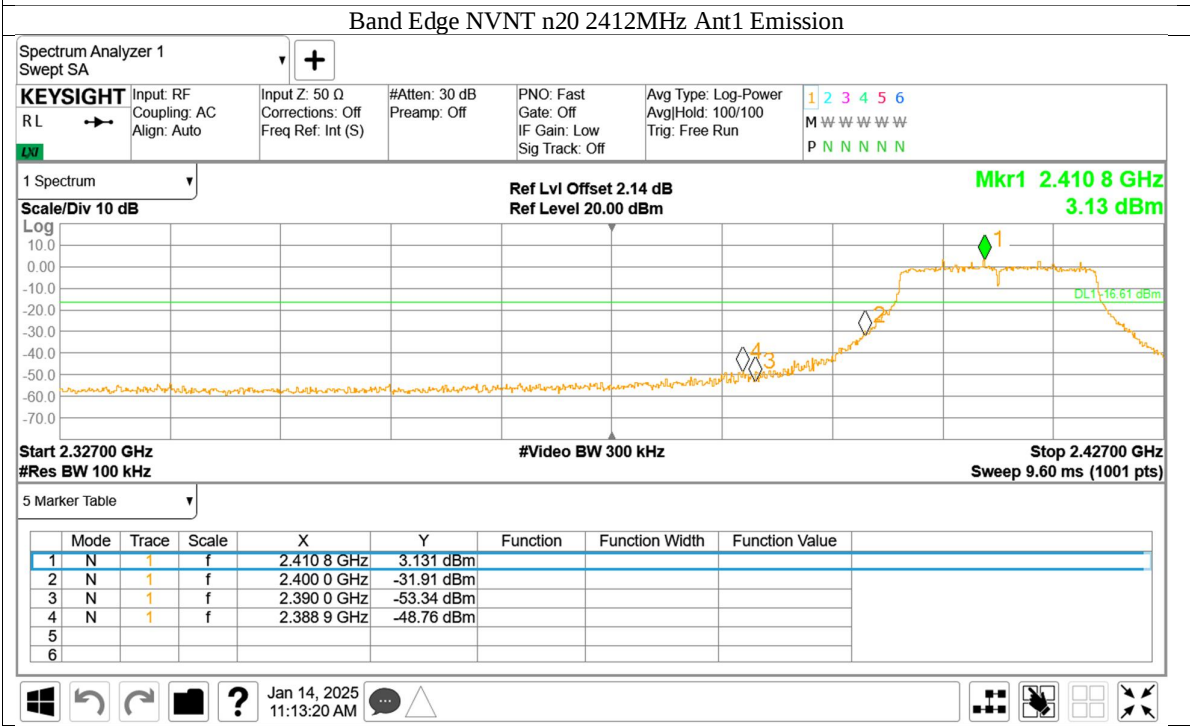
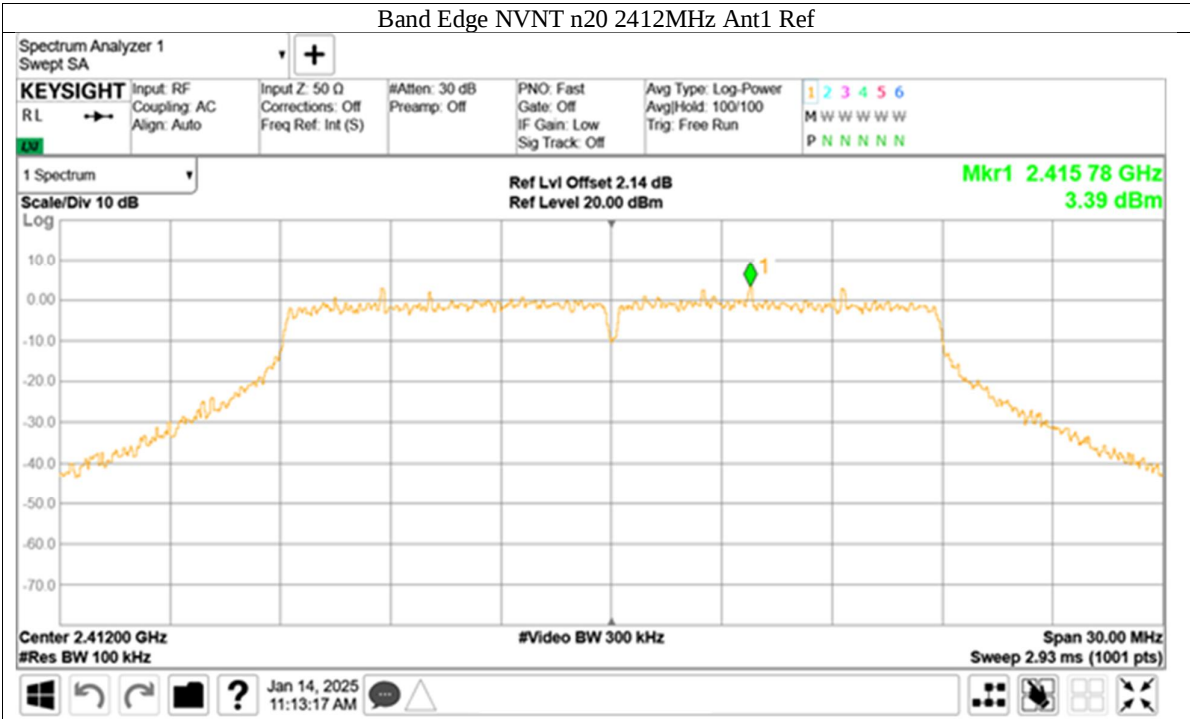
Test result

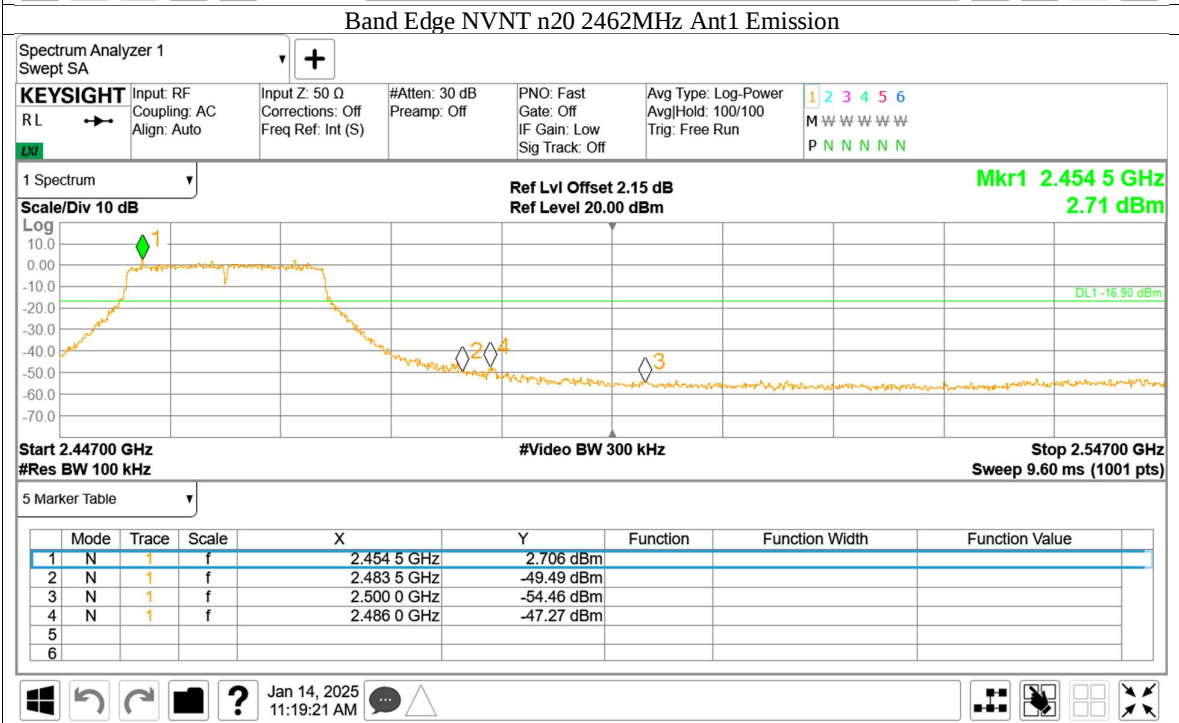
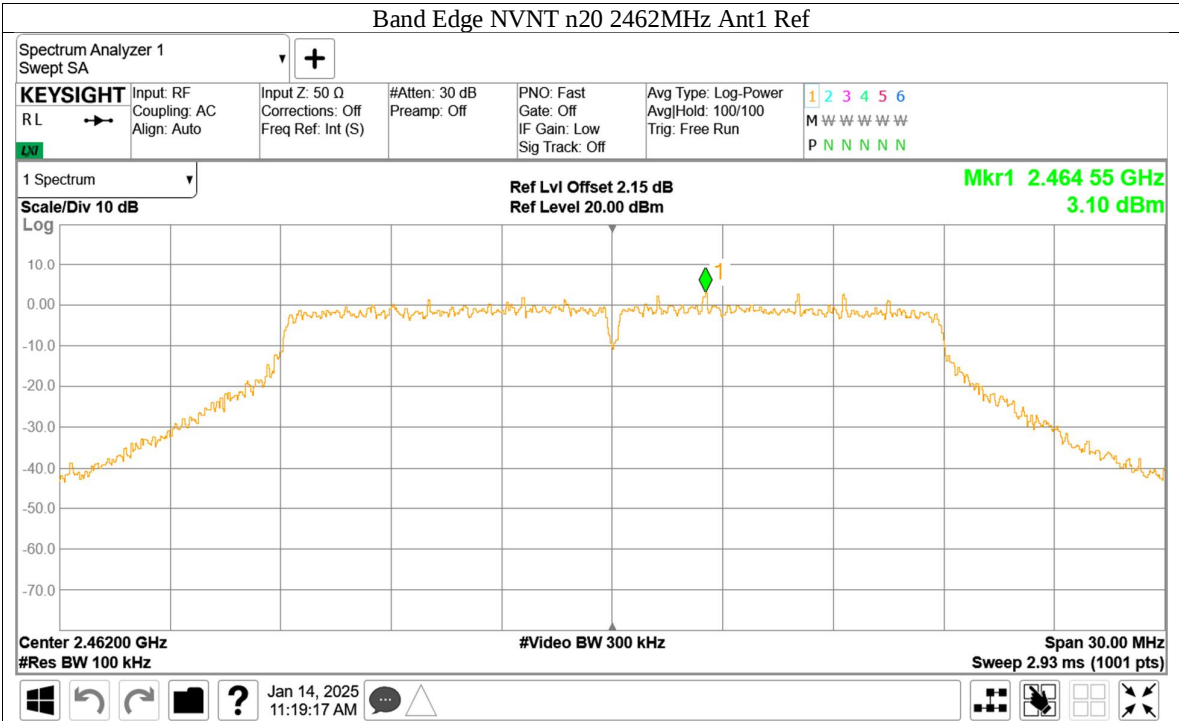












10.7 Spurious radiated emissions for transmitter

Test Method

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. 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.
4. 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.
5. Use the following spectrum analyzer settings According to C63.10
 - 1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz to 120kHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.
 - 2) For Peak unwanted emissions Above 1GHz:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.
Procedures for average unwanted emissions measurements above 1GHz
 - a) RBW = 1MHz.
 - b) $VBW \setminus [3 \times RBW]$.
 - c) Detector = RMS (power averaging), if $[span / (\# \text{ of points in sweep})] \setminus RBW / 2$.
Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
 - d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
 - e) Sweep time = auto.
 - f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of $1 / D$, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
 - g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is $[10 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.



2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels.

3) If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission (AV) at frequency above 1GHz.

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under § 15.247(b)(3) and RSS 247 section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in § 15.209(a) and RSS-Gen is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a) and RSS-Gen section 8.9, must also comply with the radiated emission limits specified in § 15.209(a) and RSS-Gen section 8.10.

Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength dB $\mu\text{V/m}$	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	AV	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

Note 1: Limit 3m(dB $\mu\text{V/m}$)=Limit 300m(dB $\mu\text{V/m}$)+40Log(300m/3m) (Below 30MHz)

Note 2: Limit 3m(dB $\mu\text{V/m}$)=Limit 30m(dB $\mu\text{V/m}$)+40Log(30m/3m) (Below 30MHz)

Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Test result**Worst case Radiated Emission 9KHz-30MHz****0.009-30MHz Radiated Emission****EUT Information**

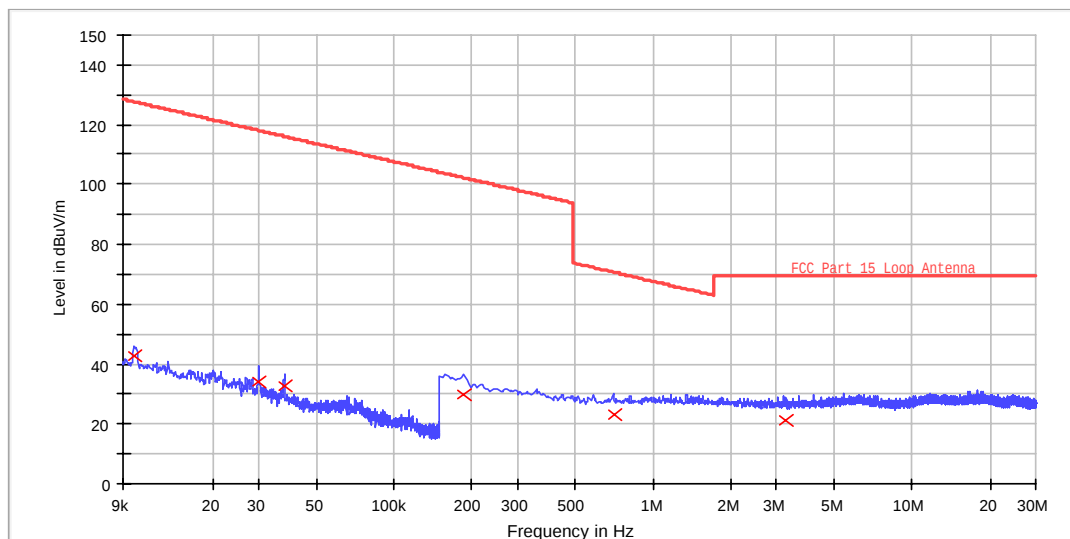
EUT Name: Wi-Fi and Bluetooth Module
 Model: TYAUX-J2
 Client: Hangzhou Tuya Information Technology Co., Ltd
 Op Cond: Power on and TX_2437MHz at g mode
 Operator: Chengjie Guo
 Test Spec: FCC Part 15.209(a)
 Comment: Horizontal
 Sample No: SHA-881229-1

Sweep Setup: RE_Loop E_pre [EMI radiated]

Hardware Setup: RE_Loop Antenna V
 Receiver: [ESR 3]
 Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
9 kHz - 150 kHz	70.5 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	3.731 kHz	PK+	9 kHz	0.01 s	0 dB

RE_Loop E_pre

**Limit and Margin**

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
0.009880	42.5	1000.0	0.200	100.0	H	0.0	19.6	85.193	127.709
0.030040	34.0	1000.0	0.200	100.0	H	0.0	18.9	84.041	118.050
0.037800	32.5	1000.0	0.200	100.0	H	0.0	18.9	83.519	116.054
0.186000	29.9	1000.0	9.000	100.0	H	0.0	18.7	72.322	102.214
0.706000	23.0	1000.0	9.000	100.0	H	0.0	18.7	47.624	70.628
3.270000	21.2	1000.0	9.000	100.0	H	0.0	19.1	48.304	69.542

0.009-30MHz Radiated Emission

EUT Information

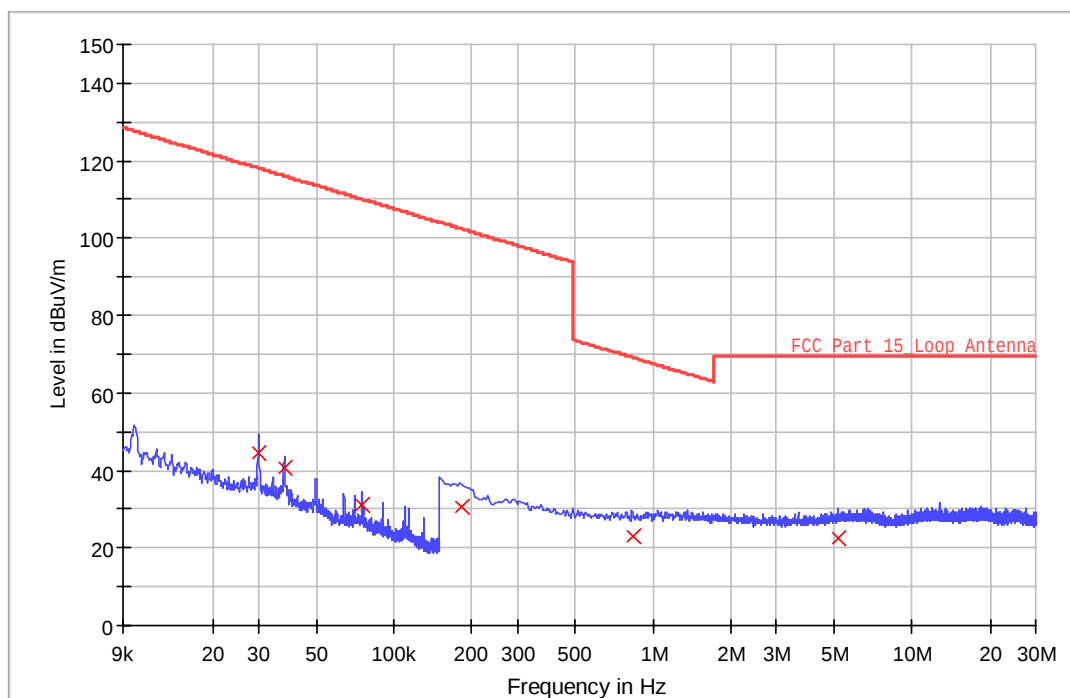
EUT Name: Wi-Fi and Bluetooth Module
 Model: TYAUX-J2
 Client: Hangzhou Tuya Information Technology Co., Ltd
 Op Cond: Power on and TX_2437MHz at g mode
 Operator: Chengjie Guo
 Test Spec: FCC Part 15.209(a)
 Comment: Vertical
 Sample No: SHA-881229-1

Sweep Setup: RE_Loop E_pre [EMI radiated]

Hardware Setup: RE_Loop Antenna V
 Receiver: [ESR 3]
 Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
9 kHz - 150 kHz	70.5 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	3.731 kHz	PK+	9 kHz	0.01 s	0 dB

RE_Loop E_pre



Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
0.030040	44.8	1000.0	0.200	155.0	V	0.0	18.9	73.267	118.050
0.037880	40.9	1000.0	0.200	155.0	V	0.0	18.9	75.099	116.036
0.075800	31.0	1000.0	0.200	155.0	V	0.0	18.8	79.017	110.011
0.182000	30.6	1000.0	9.000	155.0	V	0.0	18.7	71.820	102.402
0.830000	23.1	1000.0	9.000	155.0	V	0.0	18.7	46.139	69.223
5.174000	22.3	1000.0	9.000	155.0	V	0.0	19.1	47.234	69.542

Worst case Radiated Emission 30MHz-1GHz

30-1000MHz Radiated Emission**EUT Information**

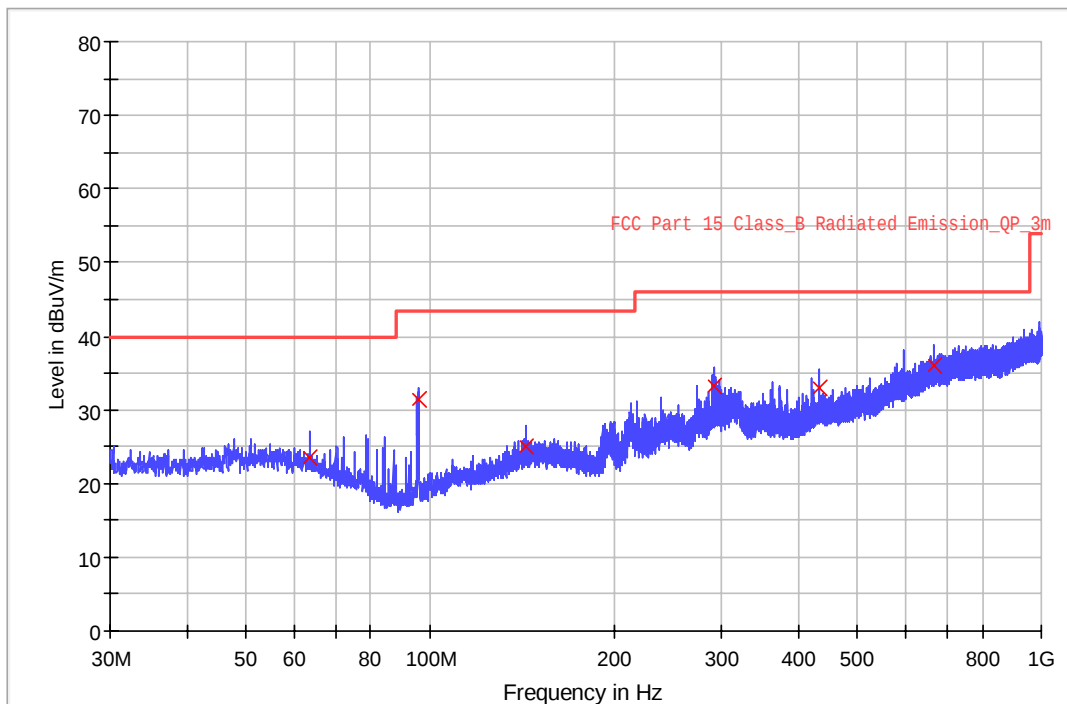
EUT Name: Wi-Fi and Bluetooth Module
Model: TYAUX-J2
Client: Hangzhou Tuya Information Technology Co., Ltd
Op Cond: Power on and TX_2437MHz at g mode
Operator: Chengjie Guo
Test Spec: FCC Part 15.209(a)
Comment: Horizontal
Sample No: SHA-881229-1

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup: RE_VULB9168
Receiver: [ESR 3]
Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.2 s	20 dB

RE_VULB9168_pre_Cont_30-1000





Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)
63.520000	23.5	1000.0	120.000	117.0	H	321.0	20.1	16.5
95.680000	31.5	1000.0	120.000	175.0	H	175.0	15.9	12.0
143.480000	25.2	1000.0	120.000	215.0	H	213.0	20.8	18.3
291.120000	33.2	1000.0	120.000	217.0	H	124.0	21.6	12.8
434.280000	33.0	1000.0	120.000	211.0	H	114.0	25.7	13.0
666.320000	36.0	1000.0	120.000	164.0	H	131.0	30.5	10.0

(continuation of the "Limit and Margin" table from column 16 ...)

Frequency (MHz)	Limit - QPK (dBuV/m)	Comment
63.520000	40.0	
95.680000	43.5	
143.480000	43.5	
291.120000	46.0	
434.280000	46.0	
666.320000	46.0	

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)
 Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)



30-1000MHz Radiated Emission

EUT Information

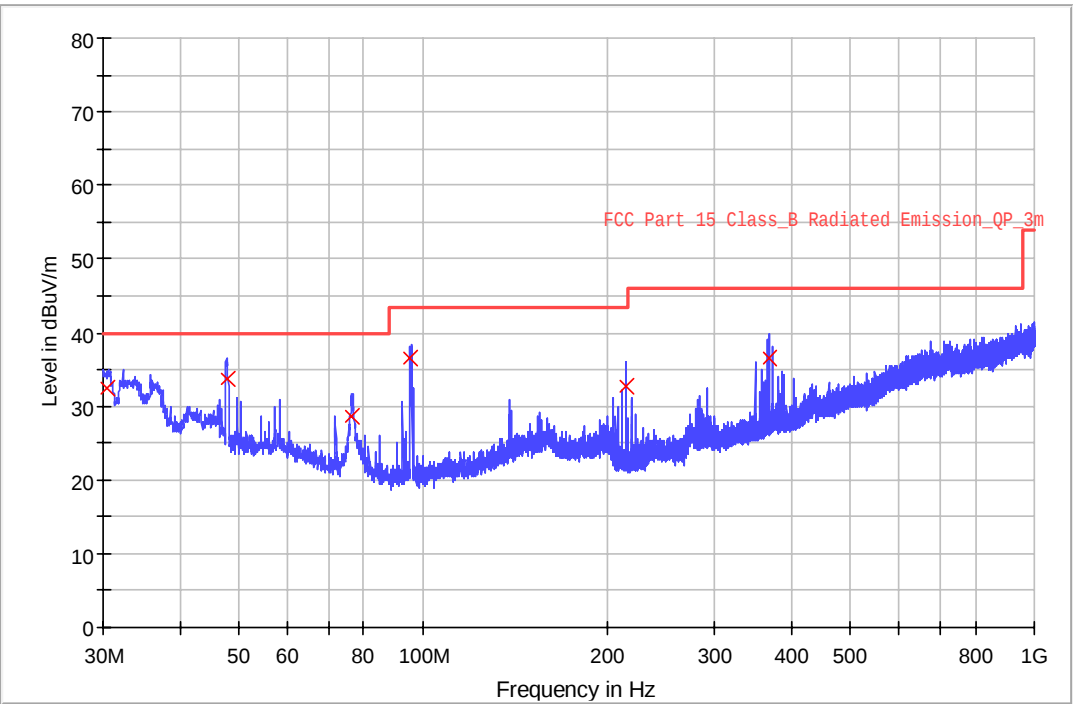
EUT Name: Wi-Fi and Bluetooth Module
Model: TYAUX-J2
Client: Hangzhou Tuya Information Technology Co., Ltd
Op Cond: Power on and TX_2437MHz at g mode
Operator: Chengjie Guo
Test Spec: FCC Part 15.209(a)
Comment: Vertical
Sample No: SHA-881229-1

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup: RE_VULB9168
Receiver: [ESR 3]
Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.2 s	20 dB

RE_VULB9168_pre_Cont_30-1000





Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - QPK (dB)
30.440000	32.5	1000.0	120.000	136.0	V	215.0	18.9	7.5
47.760000	33.6	1000.0	120.000	212.0	V	164.0	20.7	6.4
76.320000	28.6	1000.0	120.000	125.0	V	212.0	17.2	11.4
95.480000	36.5	1000.0	120.000	211.0	V	164.0	15.8	7.0
215.600000	32.7	1000.0	120.000	215.0	V	123.0	17.7	10.8
367.480000	36.7	1000.0	120.000	175.0	V	121.0	23.6	9.4

(continuation of the "Limit and Margin" table from column 16 ...)

Frequency (MHz)	Limit - QPK (dBuV/m)	Comment
30.440000	40.0	
47.760000	40.0	
76.320000	40.0	
95.480000	43.5	
215.600000	43.5	
367.480000	46.0	

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

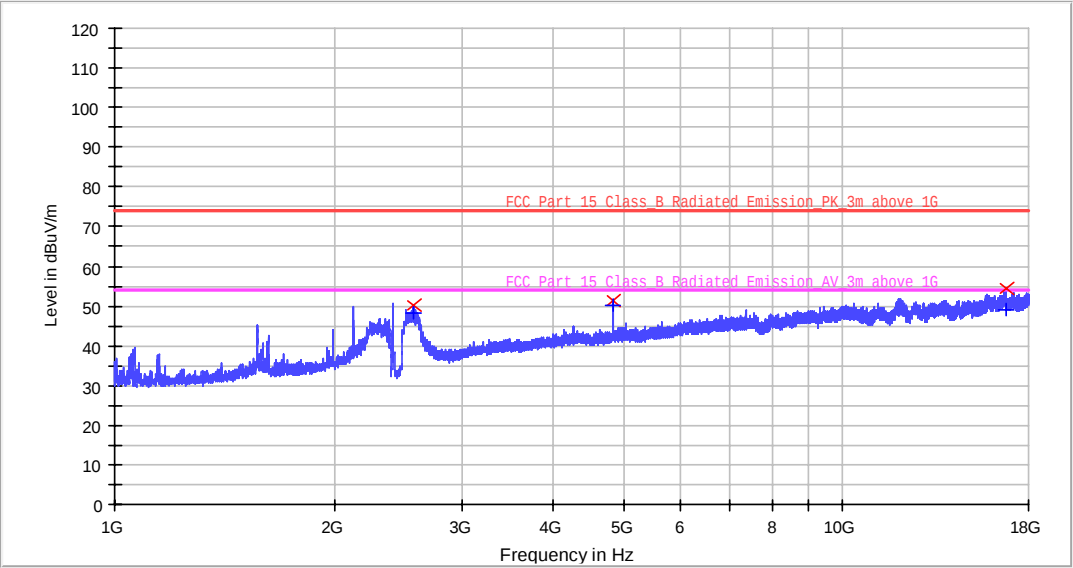
Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)



Radiated Emission 1-18 GHz

802.11B:2412MHz

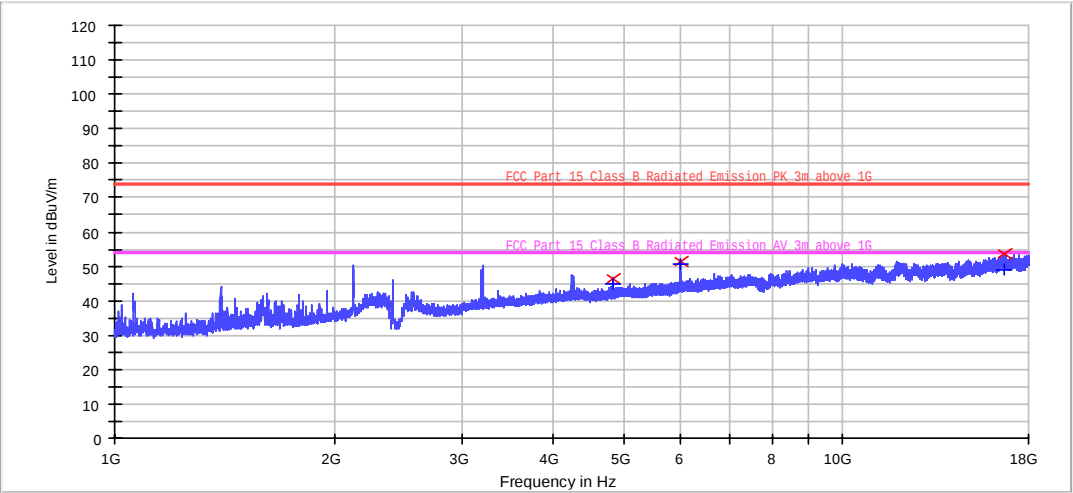
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2569.300000	50.1	48.5	1000.000	211.0	H	175.0	-9.9	23.9	74.0	5.5	54.0
4823.800000	51.3	50.1	1000.000	236.0	H	174.0	-2.6	22.7	74.0	3.9	54.0
16745.200000	54.3	49.0	1000.000	231.0	H	152.0	7.2	19.7	74.0	5.0	54.0

RE_HF907_BRF_Pre

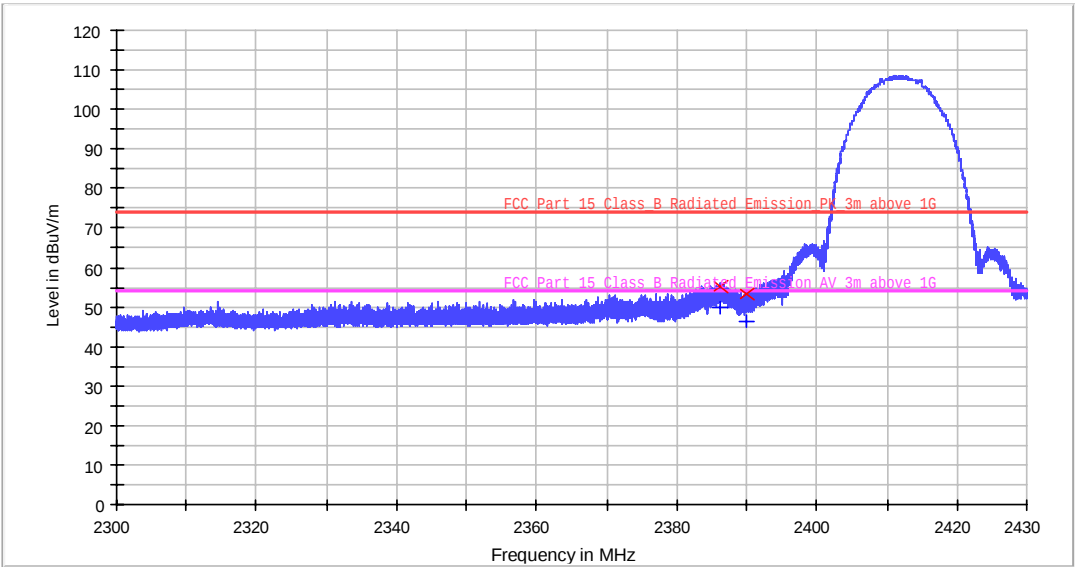


Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
4823.800000	46.5	44.8	1000.000	174.0	V	145.0	-2.6	27.5	74.0	9.2	54.0
5994.700000	51.6	50.5	1000.000	168.0	V	223.0	-0.8	22.4	74.0	3.5	54.0
16635.700000	53.7	49.1	1000.000	166.0	V	145.0	7.1	20.3	74.0	4.9	54.0



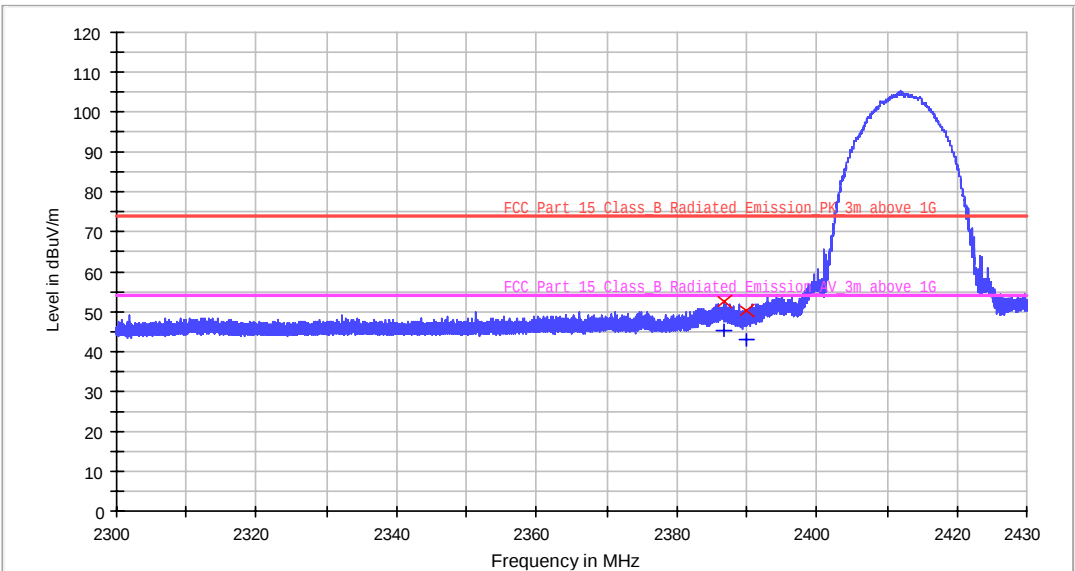
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2386.291563	55.1	49.9	1000.000	150.0	H	270.0	-0.8	18.9	74.0	4.1	54.0
2390.000000	53.3	46.5	1000.000	245.0	H	359.0	-0.8	20.7	74.0	7.5	54.0

RE_HF907_BRF_Pre



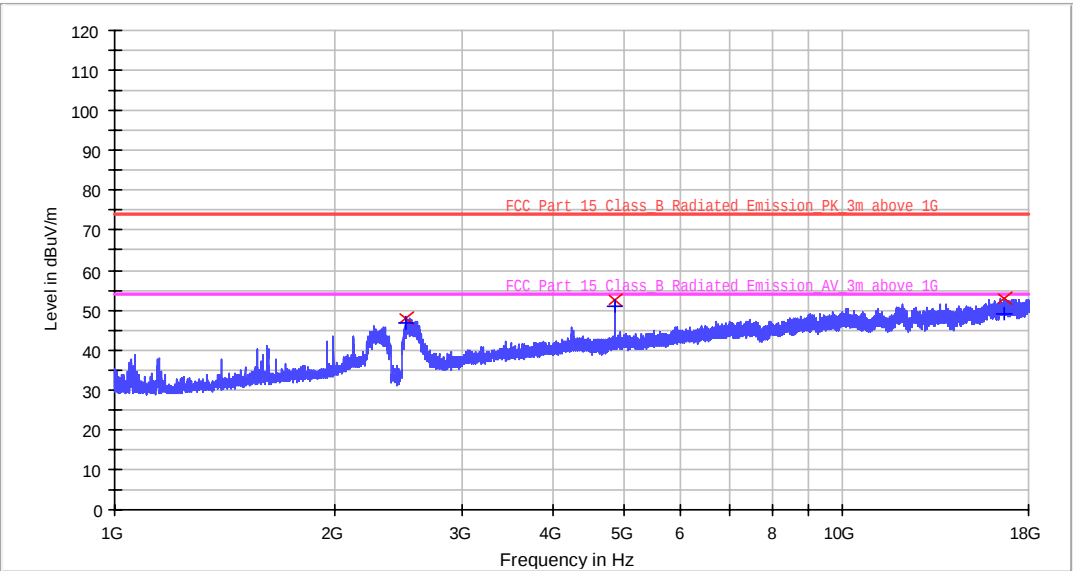
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2386.811563	52.4	45.1	1000.000	236.0	V	71.0	-0.8	21.6	74.0	8.9	54.0
2390.000000	50.2	43.0	1000.000	156.0	V	359.0	-0.8	23.8	74.0	11.0	54.0



802.11B:2437MHz

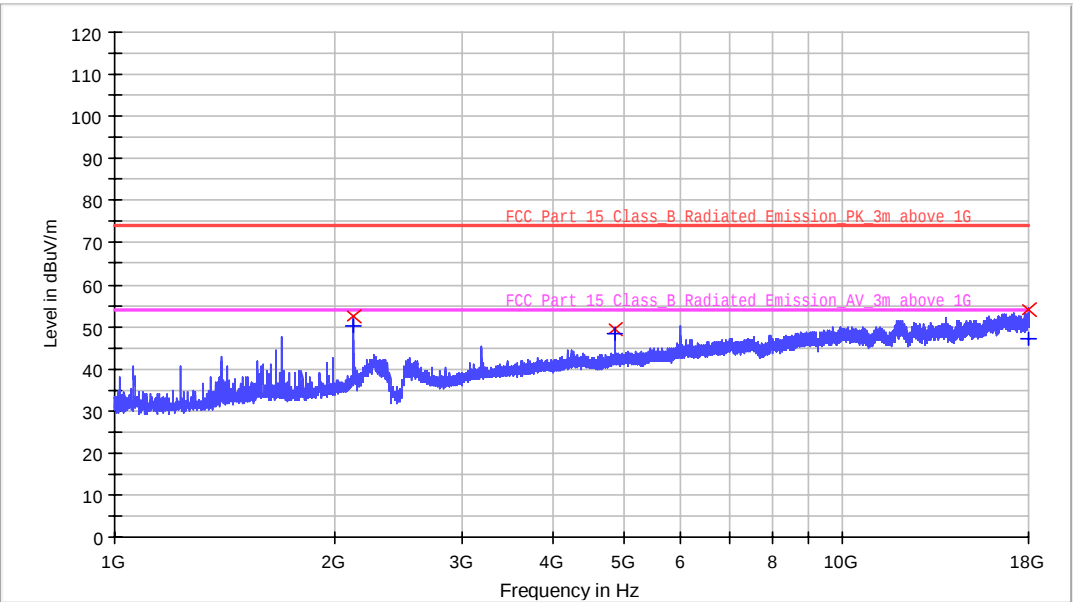
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2516.800000	48.1	46.9	1000.000	214.0	H	174.0	-10.1	25.9	74.0	7.1	54.0
4873.900000	52.6	51.2	1000.000	222.0	H	244.0	-2.5	21.4	74.0	2.8	54.0
16640.500000	53.1	49.1	1000.000	253.0	H	145.0	7.1	21.0	74.0	4.9	54.0

RE_HF907_BRF_Pre



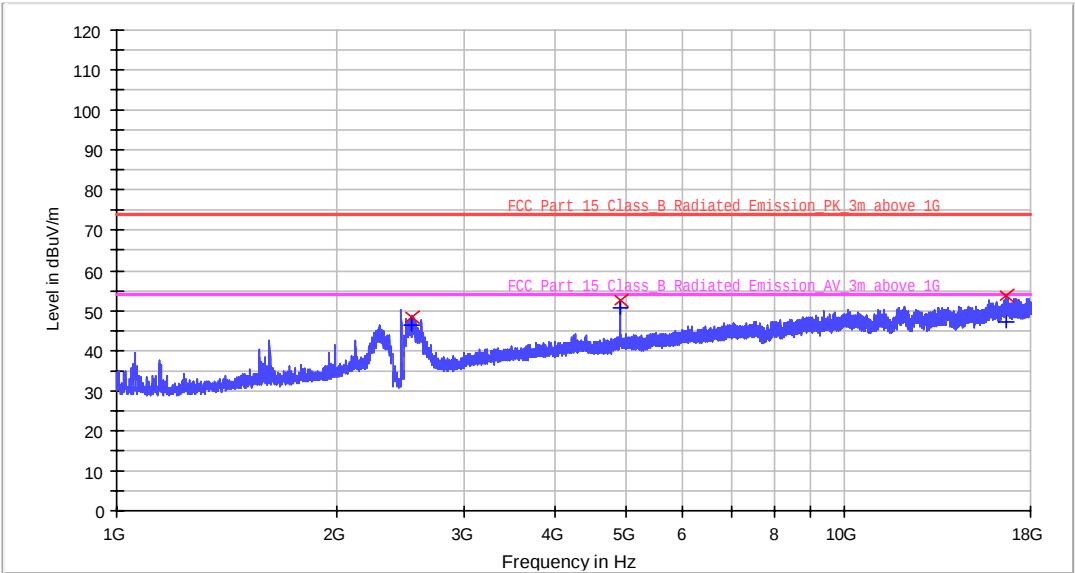
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2126.800000	52.5	50.2	1000.000	241.0	V	325.0	-11.4	21.5	74.0	3.8	54.0
4873.900000	49.3	48.2	1000.000	185.0	V	224.0	-2.5	24.7	74.0	5.8	54.0
17950.600000	54.2	47.2	1000.000	175.0	V	174.0	7.8	19.8	74.0	6.8	54.0



802.11B:2462MHz

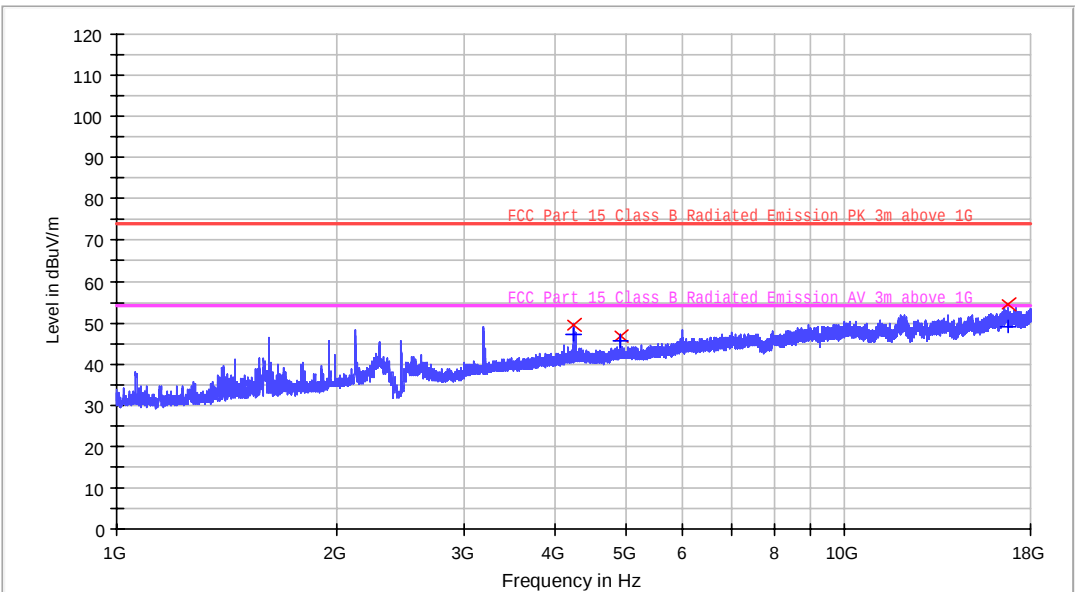
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2544.400000	48.3	46.5	1000.000	235.0	H	144.0	-9.9	25.7	74.0	7.5	54.0
4923.700000	52.3	50.8	1000.000	189.0	H	145.0	-2.3	21.7	74.0	3.2	54.0
16670.800000	53.6	47.1	1000.000	263.0	H	253.0	7.2	20.4	74.0	7.0	54.0

RE_HF907_BRF_Pre

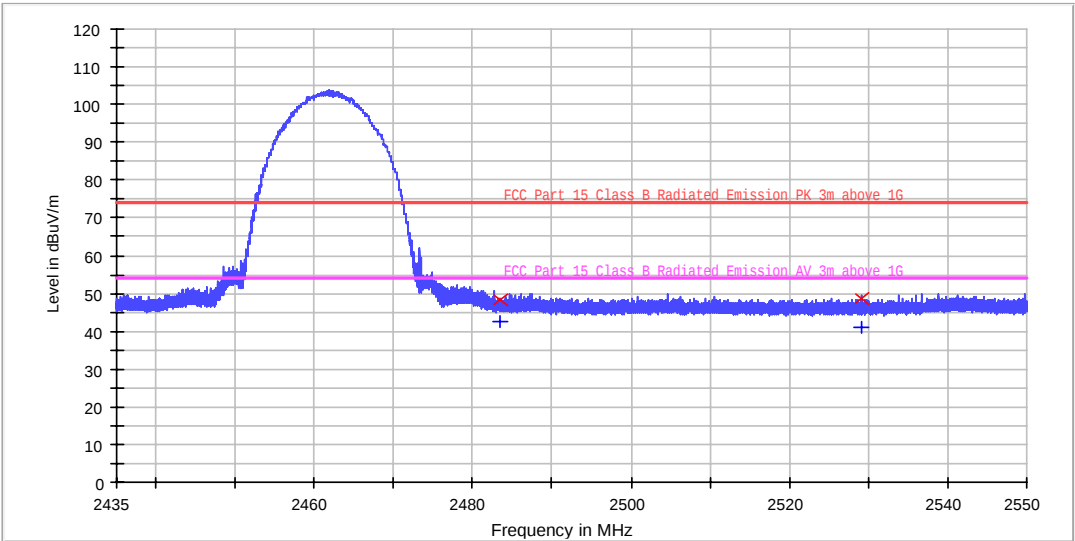


Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
4251.700000	49.5	47.1	1000.000	175.0	V	145.0	-3.8	24.5	74.0	6.9	54.0
4923.700000	46.9	45.5	1000.000	174.0	V	225.0	-2.3	27.1	74.0	8.5	54.0
16711.300000	54.3	49.0	1000.000	235.0	V	326.0	7.2	19.7	74.0	5.0	54.0



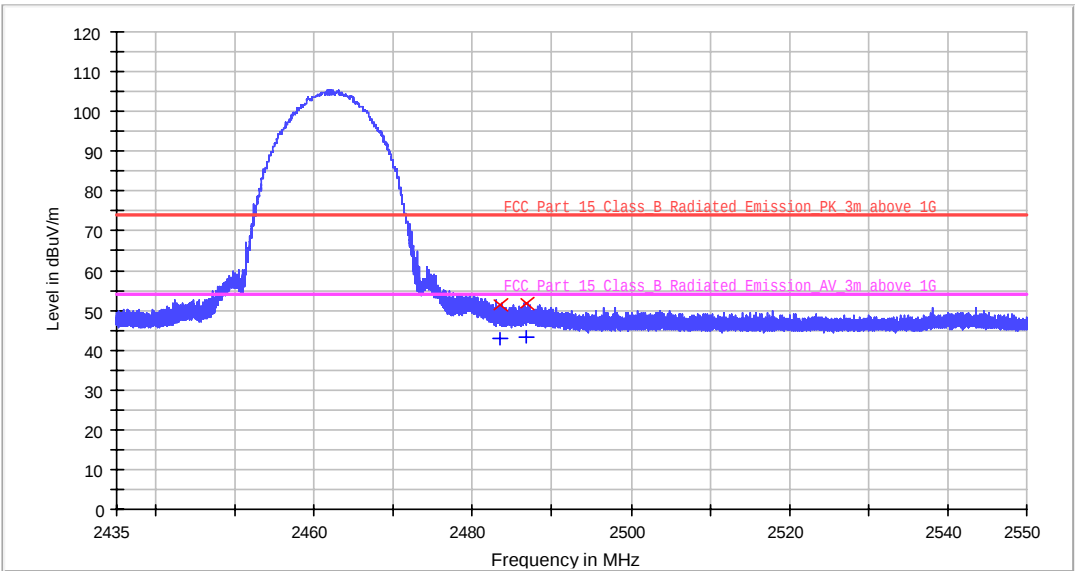
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2483.500000	48.4	42.6	1000.000	268.0	H	253.0	-0.3	25.6	74.0	11.4	54.0
2529.100000	48.6	41.0	1000.000	129.0	H	194.0	0.0	25.4	74.0	13.0	54.0

RE_HF907_BRF_Pre



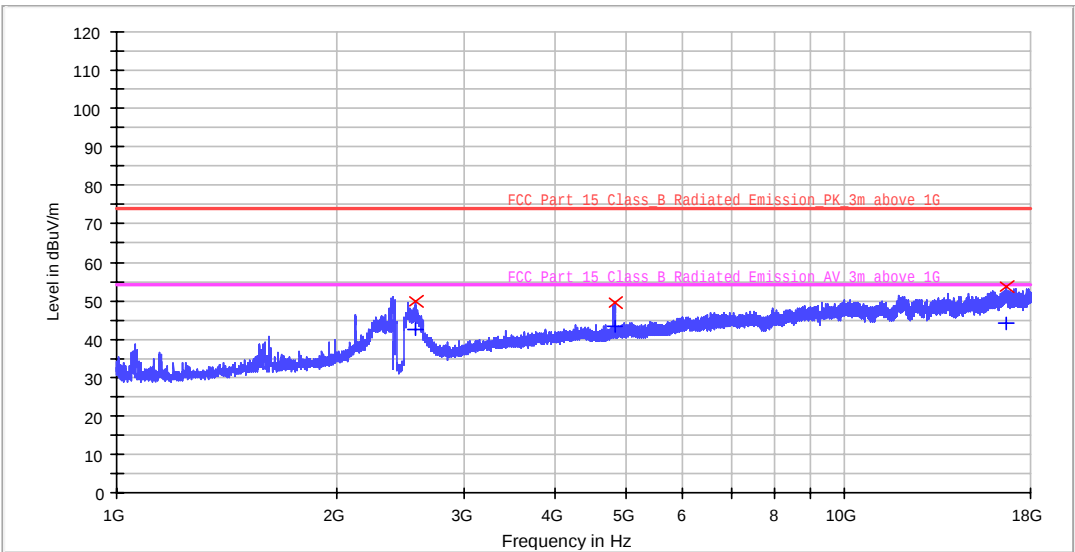
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2483.500000	51.2	42.9	1000.000	218.0	V	132.0	-0.3	22.8	74.0	11.1	54.0
2486.800000	51.6	43.3	1000.000	231.0	V	277.0	-0.3	22.4	74.0	10.7	54.0



802.11G:2412MHz

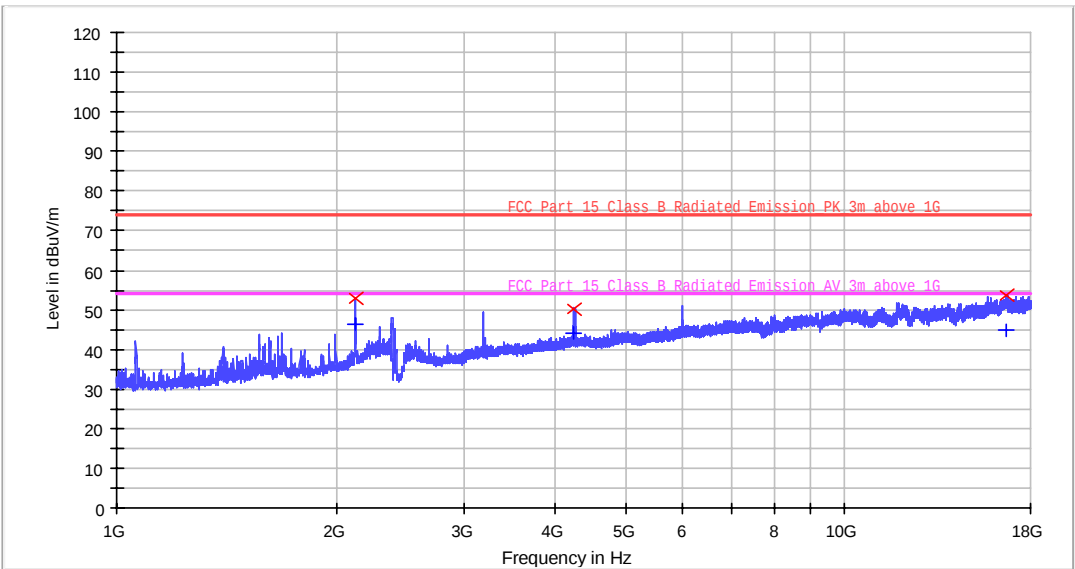
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2572.900000	49.7	42.6	1000.000	214.0	H	174.0	-9.8	24.4	74.0	11.5	54.0
4823.800000	49.5	43.3	1000.000	232.0	H	147.0	-2.6	24.5	74.0	10.7	54.0
16687.300000	53.7	44.1	1000.000	178.0	H	147.0	7.2	20.3	74.0	9.9	54.0

RE_HF907_BRF_Pre

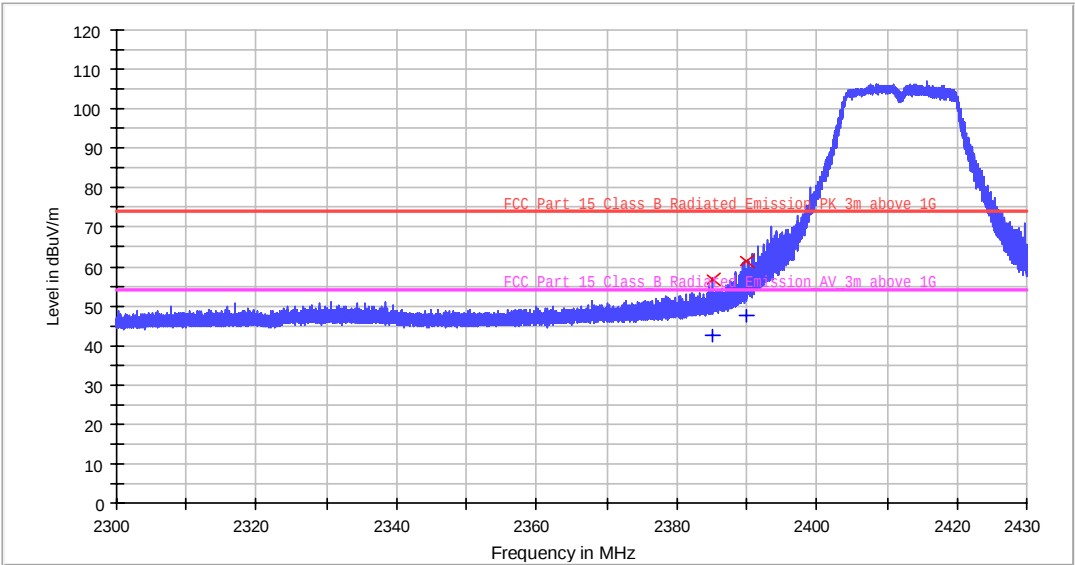


Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2128.900000	52.9	46.3	1000.000	174.0	V	152.0	-11.4	21.1	74.0	7.7	54.0
4248.100000	50.2	44.1	1000.000	185.0	V	329.0	-3.8	23.8	74.0	9.9	54.0
16644.100000	53.7	45.0	1000.000	241.0	V	145.0	7.1	20.3	74.0	9.0	54.0



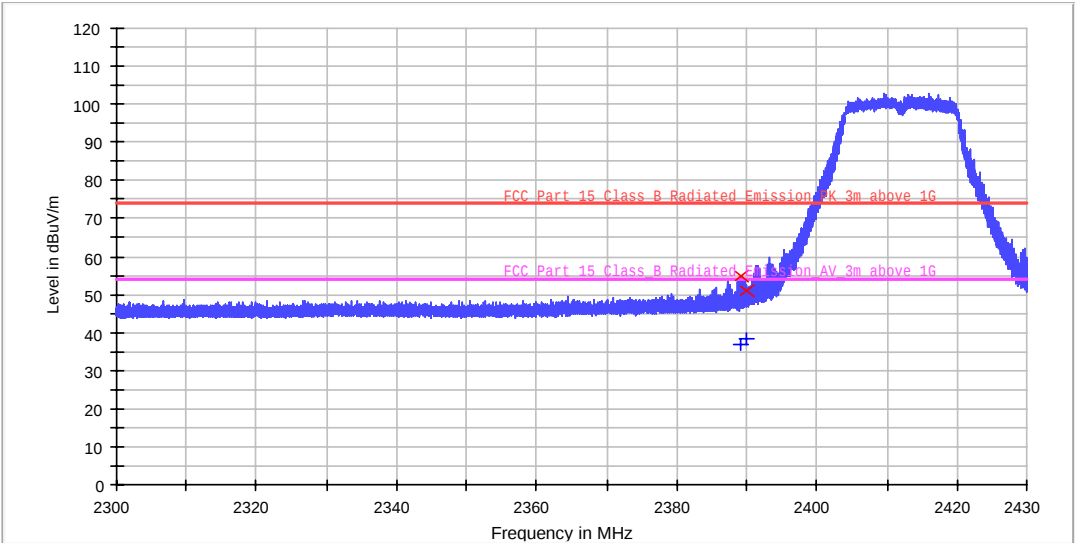
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2385.015938	56.7	42.4	1000.000	217.0	H	178.0	-0.8	17.3	74.0	11.6	54.0
2390.000000	61.4	47.4	1000.000	241.0	H	175.0	-0.8	12.6	74.0	6.6	54.0

RE_HF907_BRF_Pre



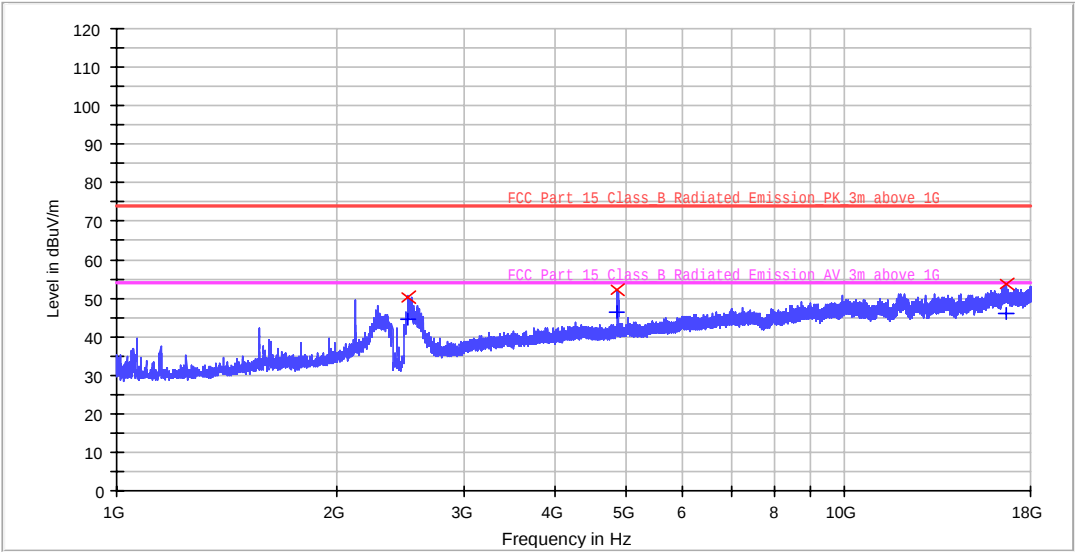
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2389.106875	55.0	36.8	1000.000	232.0	V	128.0	-0.8	19.0	74.0	17.2	54.0
2390.000000	51.2	38.3	1000.000	285.0	V	145.0	-0.8	22.8	74.0	15.7	54.0



802.11G:2437MHz

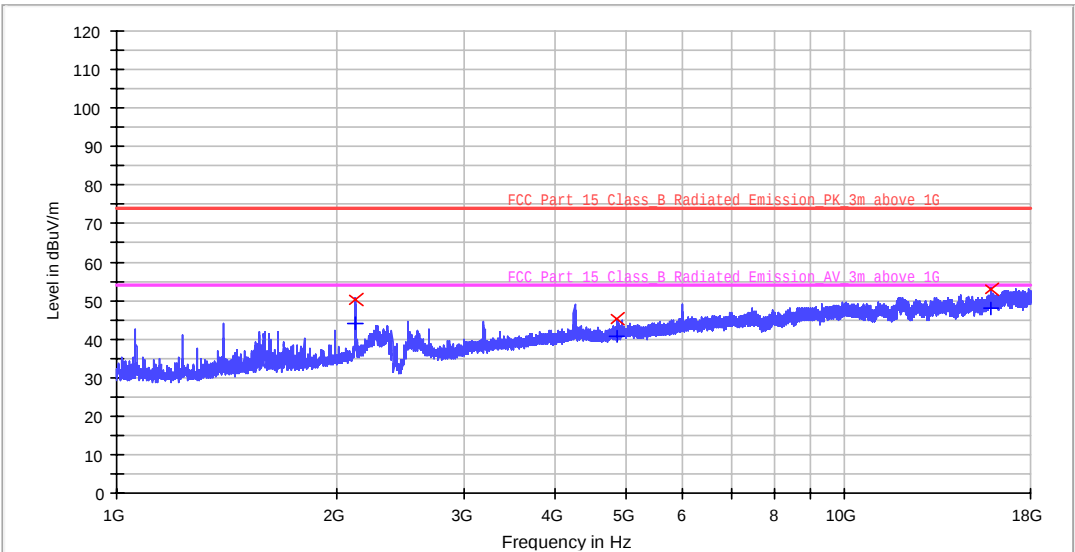
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2521.000000	50.4	44.3	1000.000	175.0	H	174.0	-10.1	23.6	74.0	9.7	54.0
4873.900000	52.3	46.5	1000.000	253.0	H	223.0	-2.5	21.7	74.0	7.5	54.0
16669.600000	53.9	45.9	1000.000	235.0	H	245.0	7.1	20.1	74.0	8.1	54.0

RE_HF907_BRF_Pre



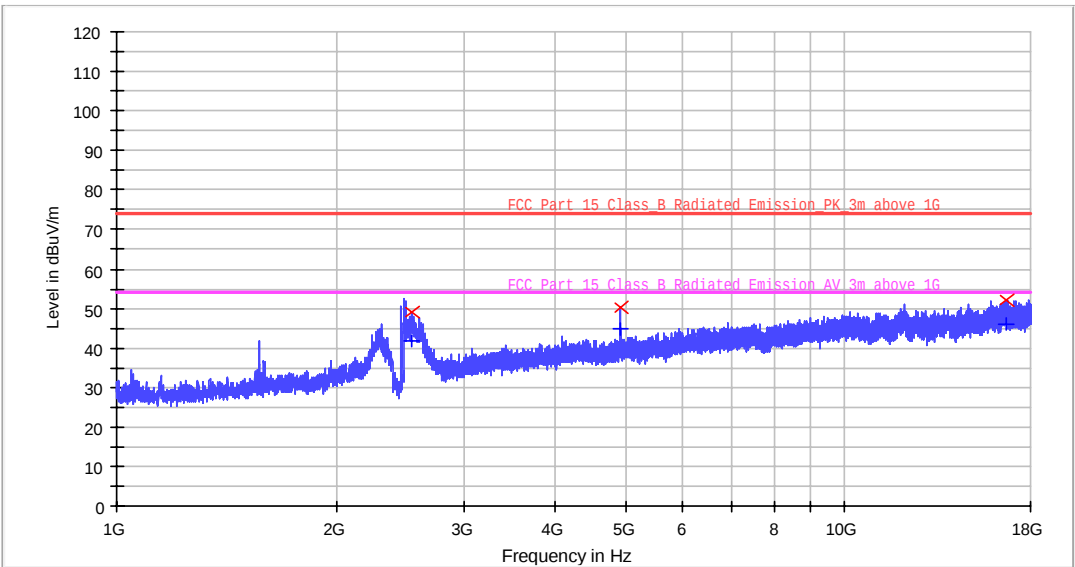
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2130.400000	50.4	44.1	1000.000	189.0	V	152.0	-11.4	23.6	74.0	9.9	54.0
4873.900000	45.3	40.6	1000.000	178.0	V	322.0	-2.5	28.7	74.0	13.4	54.0
15919.000000	53.0	48.1	1000.000	258.0	V	145.0	5.9	21.0	74.0	6.0	54.0



802.11G:2462MHz

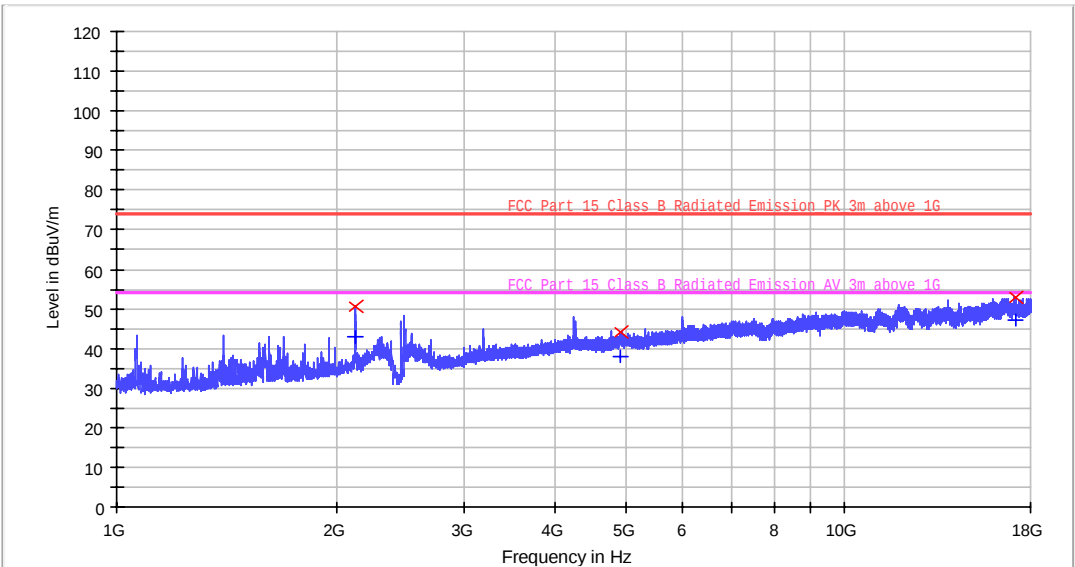
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2545.300000	49.0	41.7	1000.000	214.0	H	152.0	-9.9	25.0	74.0	12.3	54.0
4924.900000	50.2	44.7	1000.000	174.0	H	142.0	-2.3	23.8	74.0	9.3	54.0
16658.200000	52.2	46.0	1000.000	168.0	H	174.0	7.1	21.8	74.0	8.0	54.0

RE_HF907_BRF_Pre

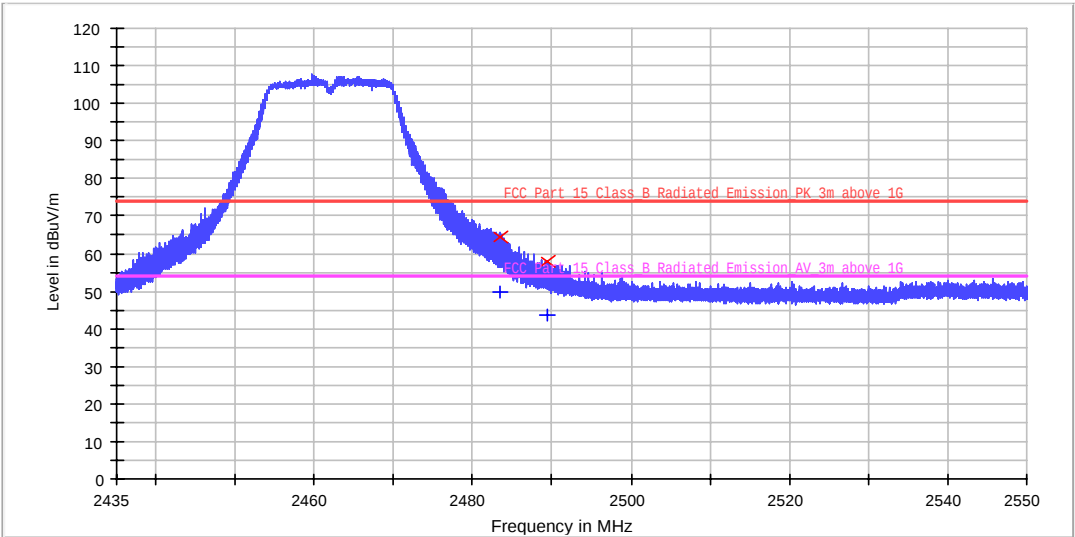


Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2127.400000	50.6	42.9	1000.000	241.0	V	153.0	-11.4	23.4	74.0	11.1	54.0
4925.500000	44.0	38.1	1000.000	211.0	V	174.0	-2.3	30.1	74.0	15.9	54.0
17142.100000	53.1	47.2	1000.000	174.0	V	214.0	7.3	20.9	74.0	6.8	54.0



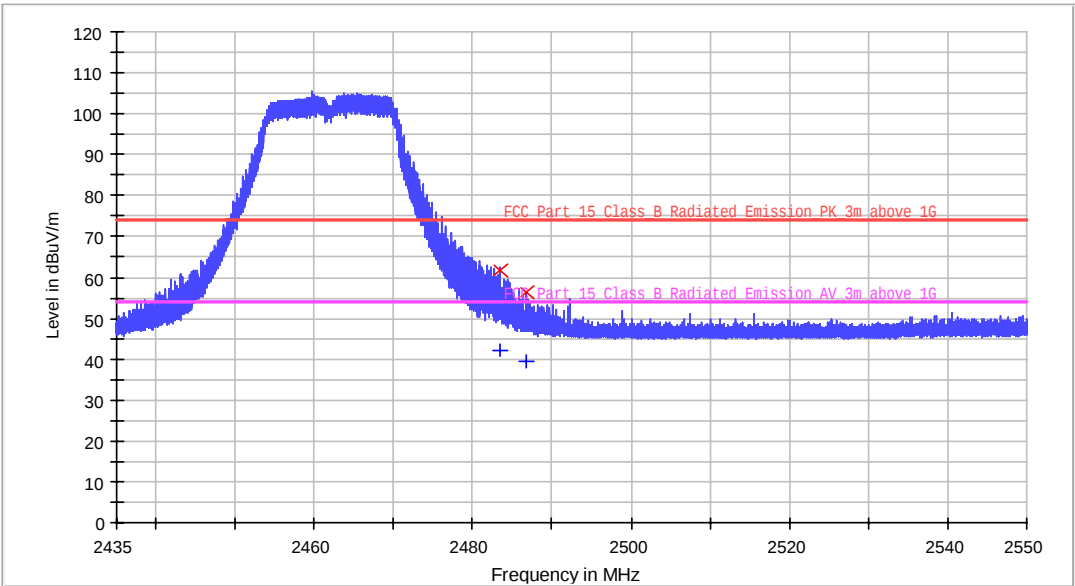
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2483.500000	64.3	49.7	1000.000	235.0	H	142.0	-0.3	9.7	74.0	4.3	54.0
2489.500000	57.9	43.9	1000.000	211.0	H	326.0	-0.3	16.1	74.0	10.1	54.0

RE_HF907_BRF_Pre



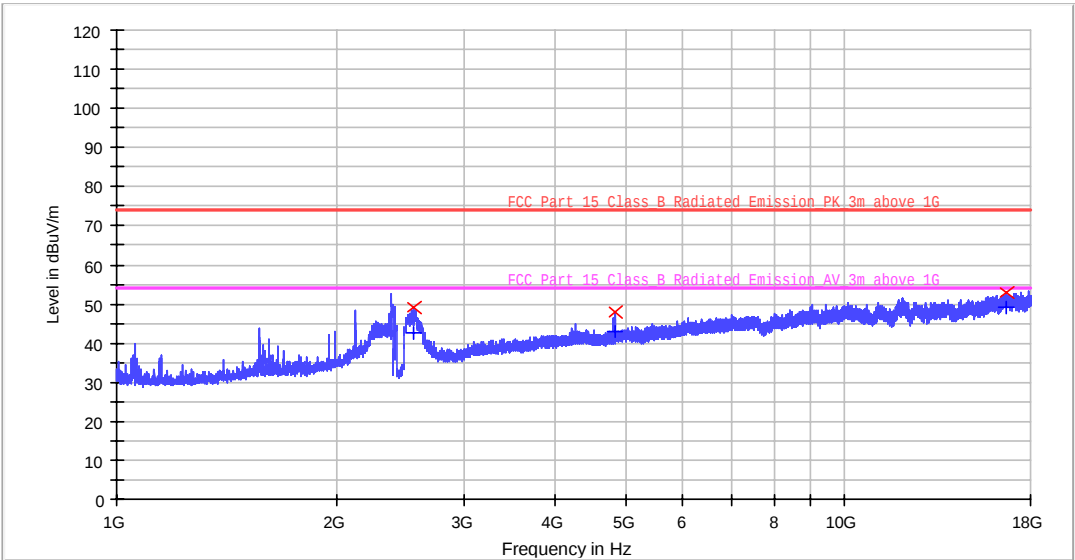
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2483.500000	61.7	42.1	1000.000	185.0	V	232.0	-0.3	12.3	74.0	11.9	54.0
2486.800000	56.2	39.4	1000.000	215.0	V	174.0	-0.3	17.8	74.0	14.6	54.0



802.11N20:2412MHz

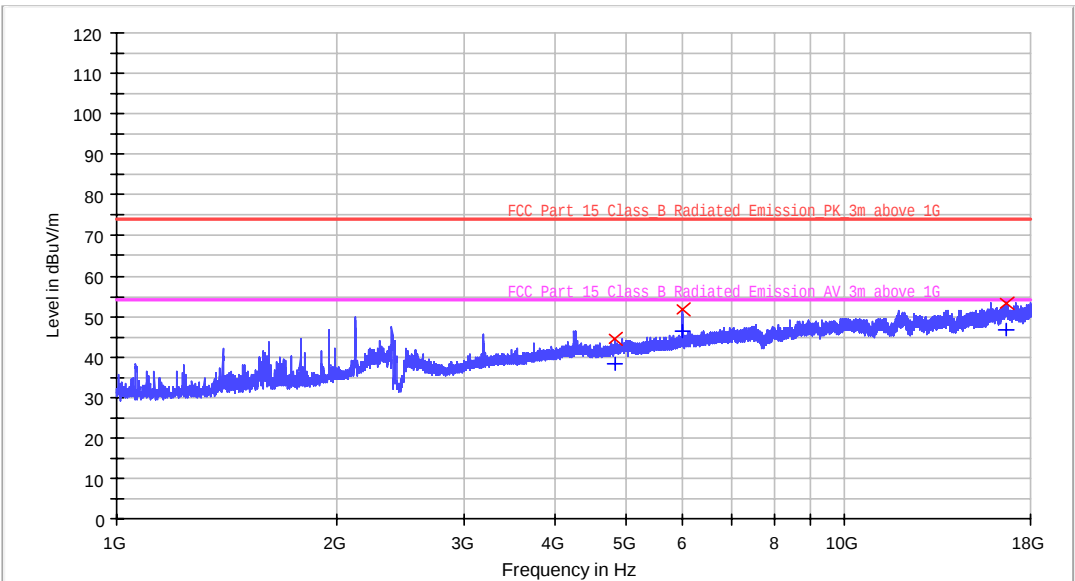
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2552.200000	49.2	42.7	1000.000	235.0	H	145.0	-9.9	24.8	74.0	11.3	54.0
4823.800000	48.1	42.9	1000.000	223.0	H	322.0	-2.6	25.9	74.0	11.1	54.0
16708.600000	53.1	49.0	1000.000	274.0	H	152.0	7.2	20.9	74.0	5.0	54.0

RE_HF907_BRF_Pre

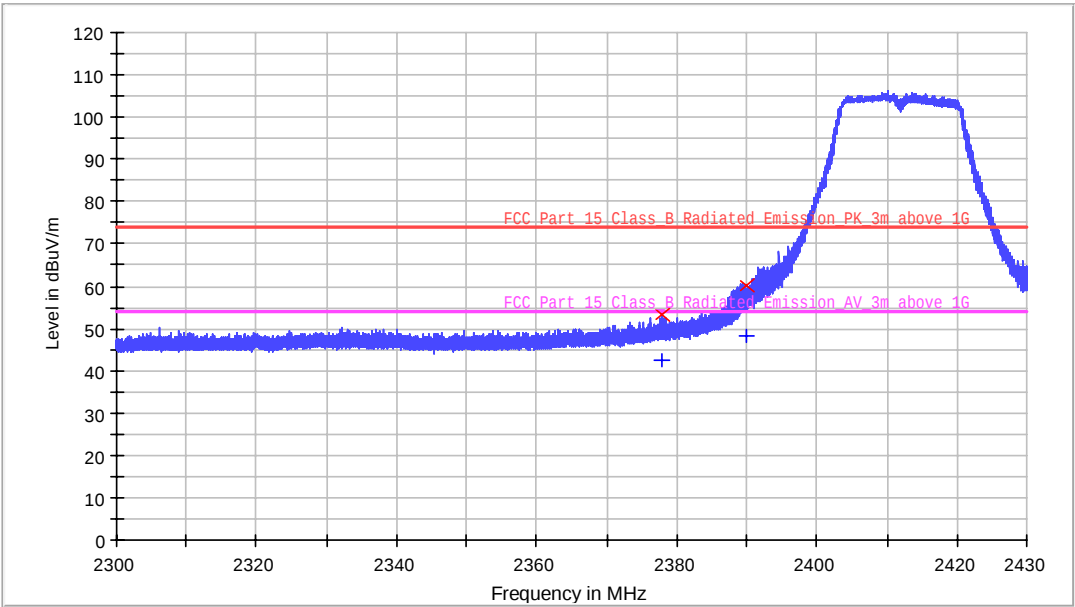


Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
4823.800000	44.4	38.4	1000.000	214.0	V	174.0	-2.6	29.7	74.0	15.6	54.0
5993.200000	51.6	46.3	1000.000	175.0	V	253.0	-0.8	22.4	74.0	7.7	54.0
16638.400000	53.3	46.8	1000.000	233.0	V	275.0	7.1	20.7	74.0	7.2	54.0



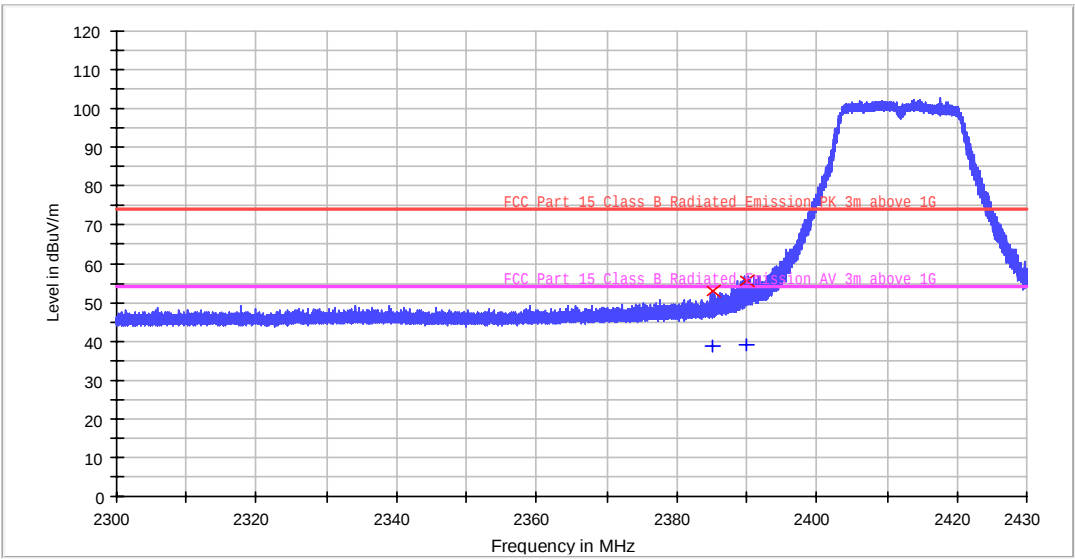
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2377.900000	53.3	42.4	1000.000	198.0	H	85.0	-0.8	20.7	74.0	11.6	54.0
2390.000000	60.1	48.4	1000.000	253.0	H	359.0	-0.8	13.9	74.0	5.6	54.0

RE_HF907_BRF_Pre



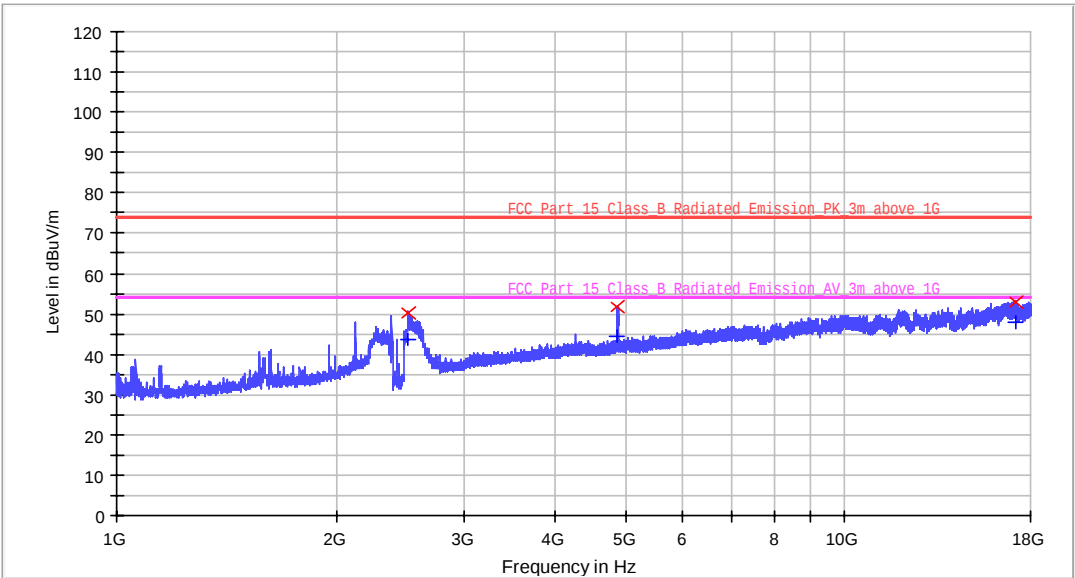
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2385.060000	52.9	38.6	1000.000	235.0	V	175.0	-0.8	21.1	74.0	15.4	54.0
2390.000000	55.7	39.2	1000.000	214.0	V	152.0	-0.8	18.3	74.0	14.8	54.0



802.11N20:2437MHz

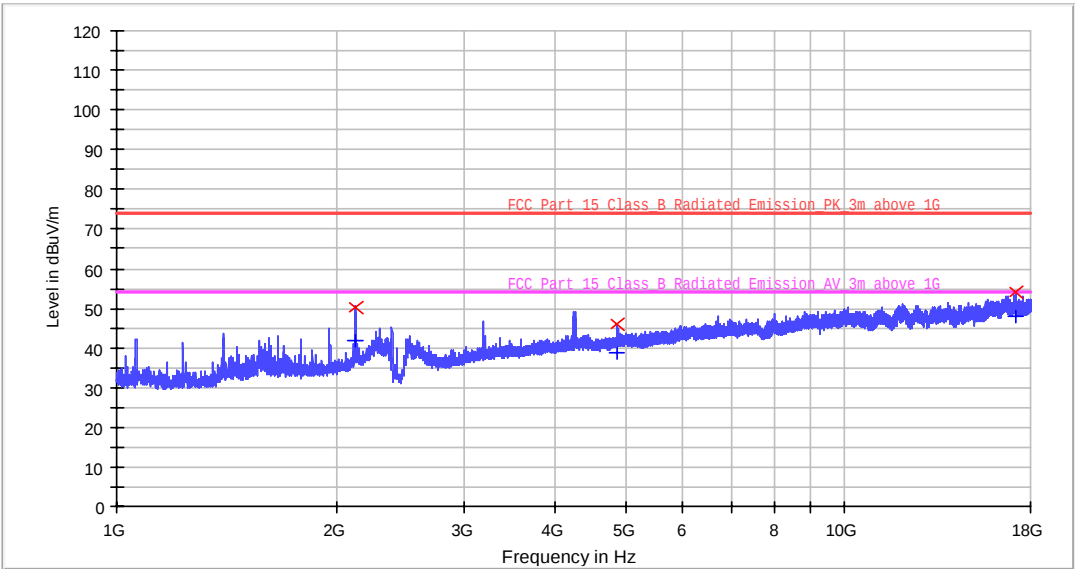
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2517.700000	50.2	43.5	1000.000	232.0	H	152.0	-10.1	23.8	74.0	10.5	54.0
4872.400000	51.8	44.4	1000.000	274.0	H	141.0	-2.5	22.2	74.0	9.6	54.0
17116.000000	53.0	47.9	1000.000	293.0	H	189.0	7.3	21.0	74.0	6.1	54.0

RE_HF907_BRF_Pre



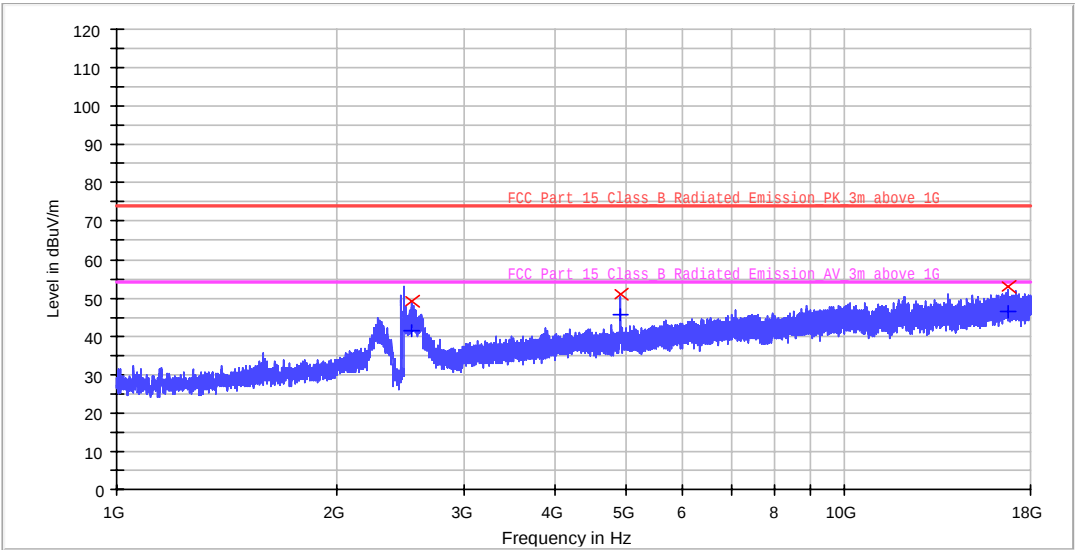
Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2125.300000	50.2	41.9	1000.000	175.0	V	124.0	-11.4	23.8	74.0	12.1	54.0
4871.200000	45.9	38.6	1000.000	235.0	V	176.0	-2.5	28.1	74.0	15.4	54.0
17124.100000	54.1	48.1	1000.000	243.0	V	136.0	7.3	19.9	74.0	5.9	54.0



802.11N20:2462MHz

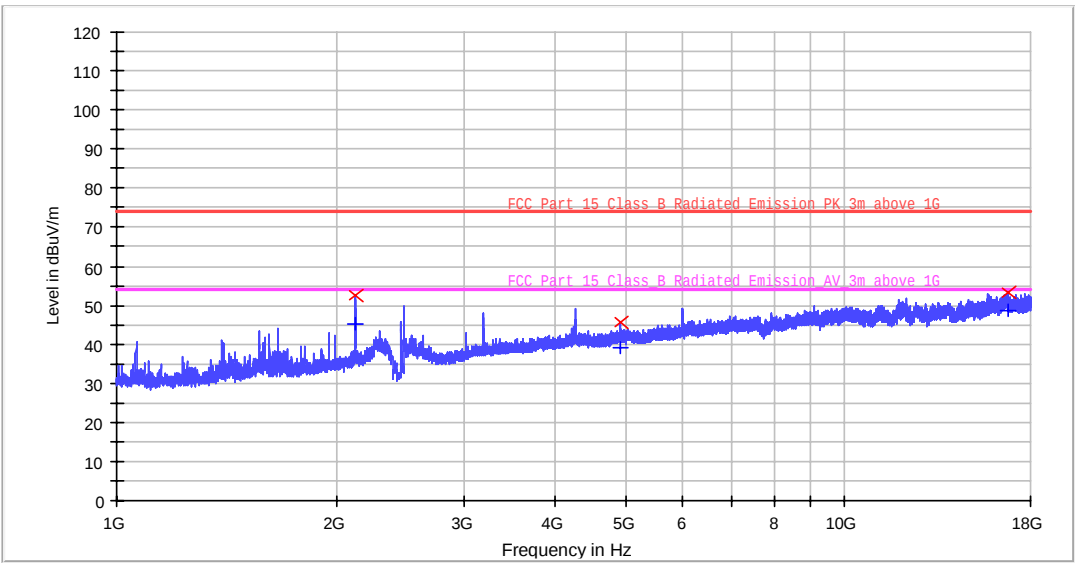
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2547.100000	48.9	41.2	1000.000	245.0	H	245.0	-9.9	25.1	74.0	12.8	54.0
4924.300000	50.9	45.7	1000.000	174.0	H	174.0	-2.3	23.1	74.0	8.3	54.0
16751.500000	53.1	46.6	1000.000	235.0	H	142.0	7.2	20.9	74.0	7.4	54.0

RE_HF907_BRF_Pre

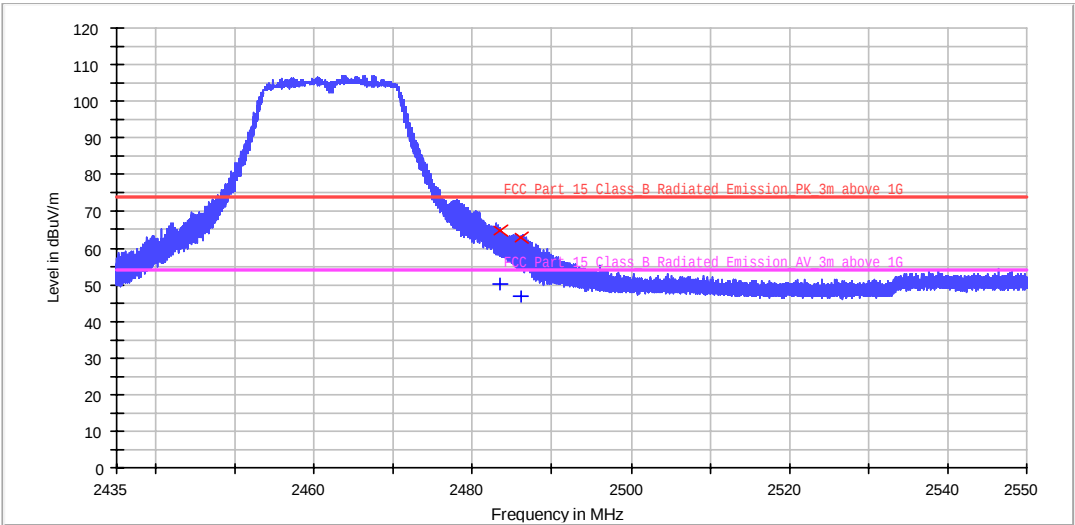


Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+	Limit - PK+	Margin - AV	Limit - AV
2130.400000	52.6	45.2	1000.000	175.0	V	223.0	-11.4	21.4	74.0	8.8	54.0
4929.700000	45.5	39.1	1000.000	147.0	V	174.0	-2.3	28.5	74.0	14.9	54.0
16764.700000	53.3	48.6	1000.000	178.0	V	142.0	7.1	20.7	74.0	5.5	54.0



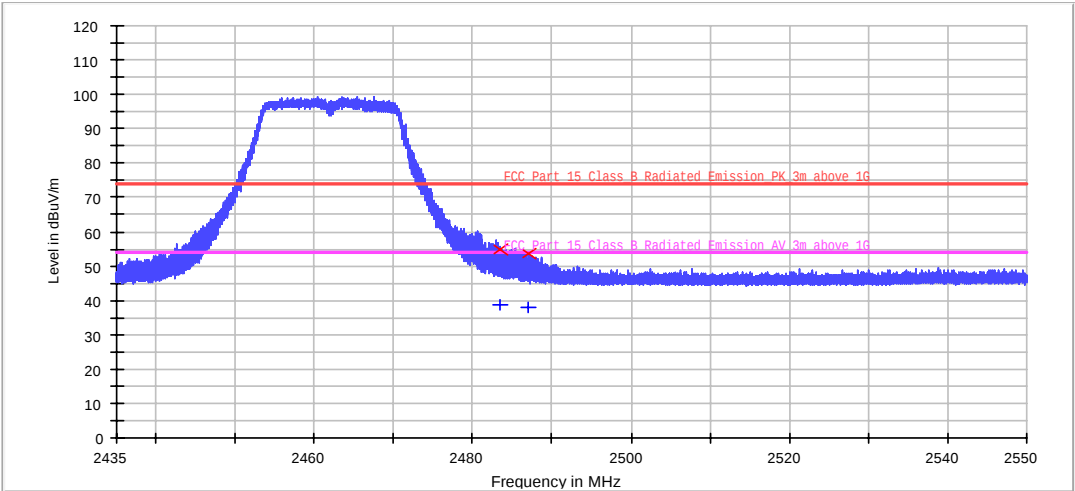
RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2483.500000	64.7	50.3	1000.000	198.0	H	359.0	-0.3	9.3	74.0	3.7	54.0
2486.200000	63.0	46.9	1000.000	235.0	H	158.0	-0.3	11.0	74.0	7.1	54.0

RE_HF907_BRF_Pre



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	AV (dBuV/m)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Margin - PK+ (dB)	Limit - PK+ (dBuV/)	Margin - AV (dB)	Limit - AV (dBuV/)
2483.500000	54.9	38.8	1000.000	211.0	V	60.0	-0.3	19.1	74.0	15.2	54.0
2487.100000	53.5	37.8	1000.000	165.0	V	32.0	-0.3	20.5	74.0	16.2	54.0

Worst case Radiated Emission 18-25 GHz

18-25GHz Radiated Emission

EUT Information

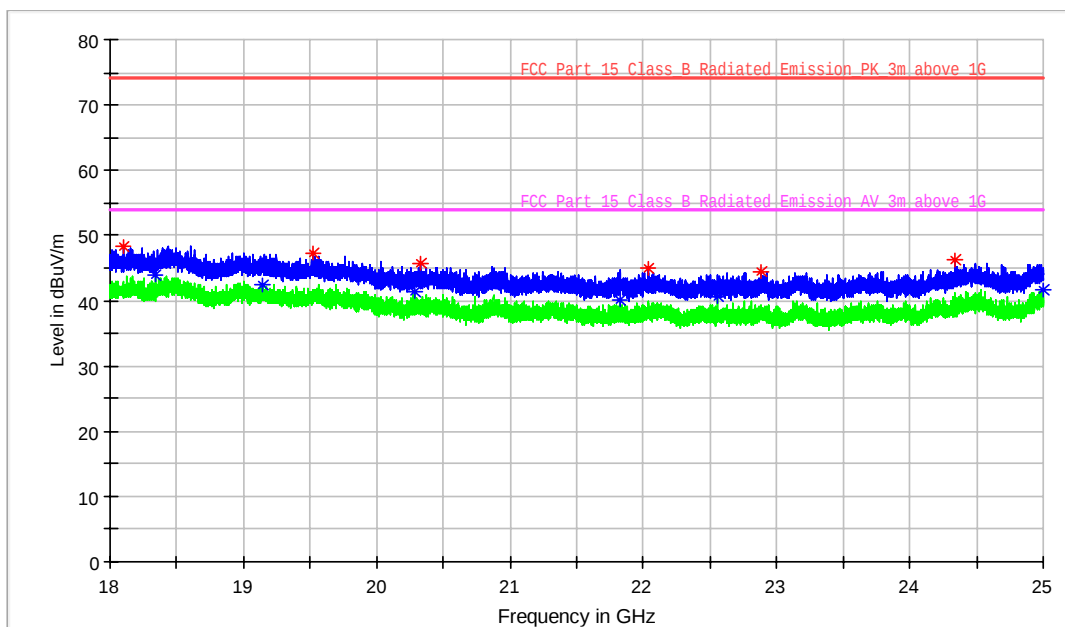
EUT Name: Wi-Fi and Bluetooth Module
 Model: TYAUX-J2
 Client: Hangzhou Tuya Information Technology Co., Ltd
 Op Cond: Power on and TX_2437MHz at g mode
 Operator: Chengjie Guo
 Test Spec: FCC Part 15.209(a)
 Comment: Horizontal
 Sample No: SHA-881229-1

Sweep Setup: RE_3116C_pre [EMI radiated]

Hardware Setup: RE_3116C
 Receiver: [FSV 40]
 Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
18 GHz - 25 GHz	500 kHz	PK+ ; AVG	1 MHz	0.05 s	0 dB

Full Spectrum



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
20322.500000	45.76	74.00	28.24	100.0	H	25.0	8.3
24342.500000	46.16	74.00	27.84	100.0	H	74.0	9.0
19524.500000	47.25	74.00	26.75	100.0	H	96.0	8.4
22889.500000	44.51	74.00	29.49	100.0	H	281.0	8.9
18105.000000	48.42	74.00	25.58	100.0	H	292.0	8.1
22034.000000	45.07	74.00	28.93	100.0	H	331.0	8.8

18-25GHz Radiated Emission

EUT Information

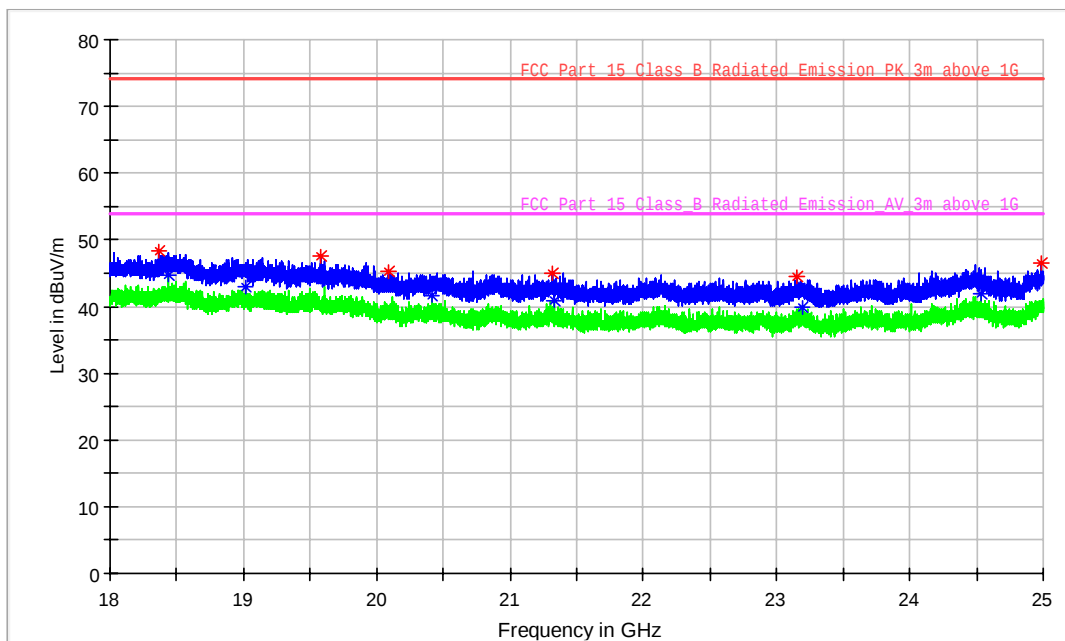
EUT Name: Wi-Fi and Bluetooth Module
 Model: TYAUX-J2
 Client: Hangzhou Tuya Information Technology Co., Ltd
 Op Cond: Power on and TX_2437MHz at g mode
 Operator: Chengjie Guo
 Test Spec: FCC Part 15.209(a)
 Comment: Vertical
 Sample No: SHA-881229-1

Sweep Setup: RE_3116C_pre [EMI radiated]

Hardware Setup: RE_3116C
 Receiver: [FSV 40]
 Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamplifier
18 GHz - 25 GHz	500 kHz	PK+ ; AVG	1 MHz	0.05 s	0 dB

Full Spectrum



Limit and Margin

Frequency (MHz)	MaxPeak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
24984.000000	46.44	---	74.00	27.56	100.0	V	125.0	9.0
18369.500000	48.29	---	74.00	25.71	100.0	V	156.0	8.1
23152.500000	44.59	---	74.00	29.41	100.0	V	200.0	8.9
20089.500000	45.37	---	74.00	28.63	100.0	V	225.0	8.3
19581.500000	47.61	---	74.00	26.39	100.0	V	257.0	8.4
21319.000000	44.89	---	74.00	29.11	100.0	V	268.0	8.6

Remark:

- (1) Emission level= Original Receiver Reading + Correct Factor
- (2) Correct Factor = Antenna Factor + Cable Loss -Amplifier gain
- (3) Margin = limit – Corrected Reading

11 Test Equipment List

List of Test Instruments
Test Site1

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
C	Signal spectrum analyzer	Agilent	N9020B	MY59050168	2024-2-19	2025-2-18
	Wideband power sensor	Rohde & Schwarz	NRP-Z81	105903	2024-2-10	2025-2-9
	10dB Attenuator	Aeroflex Weinschel	CG-4689	93459	2024-2-10	2025-2-9
RE	EMI Test Receiver	Rohde & Schwarz	ESR3	101906	2024-8-1	2025-7-31
	Signal Analyzer	Rohde & Schwarz	FSV40	101091	2024-8-1	2025-7-31
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	961	2024-8-30	2025-8-29
	Double-ridged waveguide horn antenna	Rohde & Schwarz	HF907	102868	2024-4-14	2025-4-13
	Pre-amplifier	Shenzhen HzEMC	HPA-081843	HYPA23026	2024-4-16	2025-4-15
	Loop antenna	Rohde & Schwarz	HFH2-Z2	100443	2024-6-26	2025-6-25
	Double Ridged Horn Antenna	ETS-Lindgren	3116C	00246076	2023-7-7	2026-7-6
	3m Semi-anechoic chamber	TDK	9X6X6	----	2024-5-8	2027-5-7
CE	EMI Test Receiver	Rohde & Schwarz	ESR3	101907	2024-8-1	2025-7-31
	LISN	Rohde & Schwarz	ENV216	101924	2024-8-1	2025-7-31

Measurement Software Information			
Test Item	Software	Manufacturer	Version
C	MTS 8310	MWRFTtest	3.0.0.0
	Power Viewer	Rohde & Schwarz	V 11.0
RE	EMC 32	Rohde & Schwarz	V10.50.40
CE	EMC 32	Rohde & Schwarz	V9.15.03

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth and 99% Occupied Bandwidth
- Power spectral density
- Spurious RF conducted emissions
- Band edge

12 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Conducted Disturbance at Mains Terminals	150kHz to 30MHz, LISN, 3.16dB
Radiated Disturbance	30MHz to 1GHz, 5.03dB (Horizontal) 5.12dB (Vertical) 1GHz to 18GHz, 5.49dB 18GHz to 40GHz, 5.63dB
Carrier power conducted measurement	50MHz~18GHz, 1.238dB
Spurious Emission Conducted Measurement	9kHz ~40GHz, 1.224dB

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.



13 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



14 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

-----End of Test Report-----