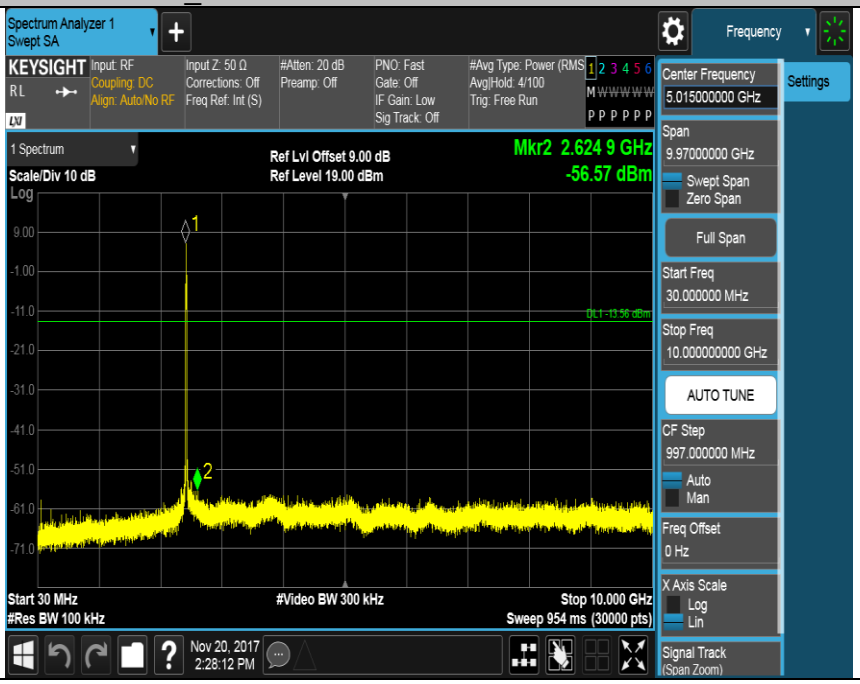
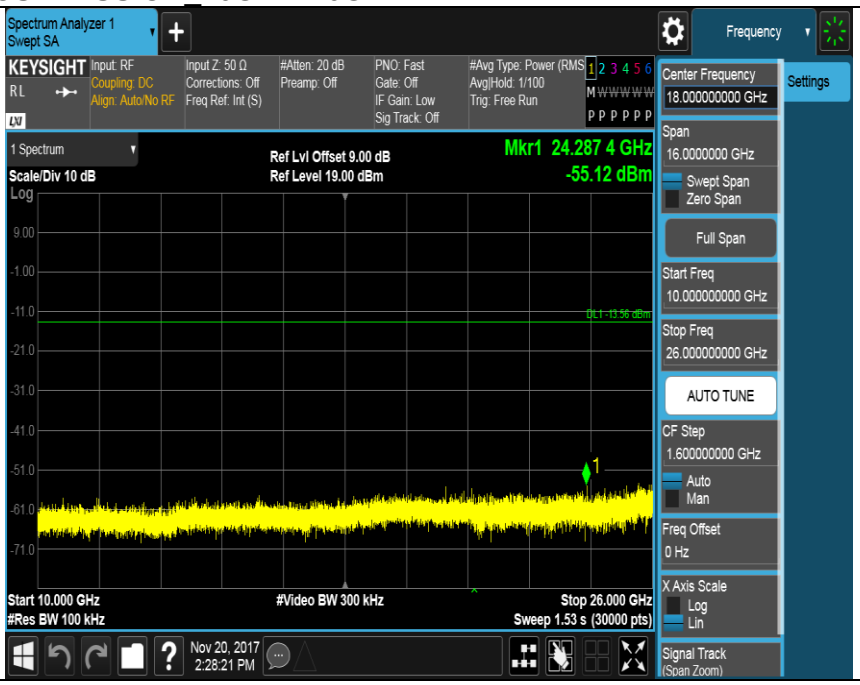
Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



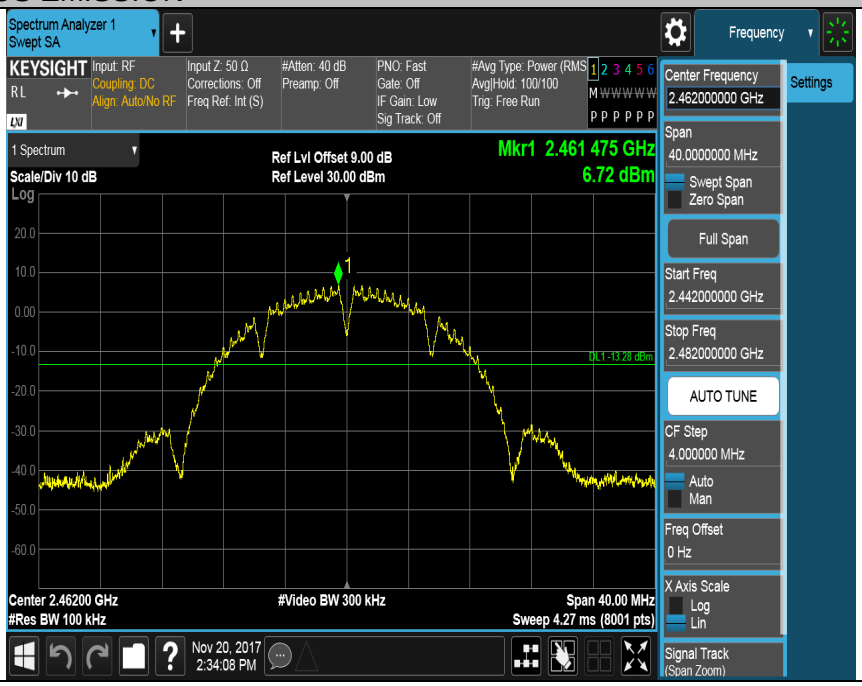
MCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11B	HCH	PASS

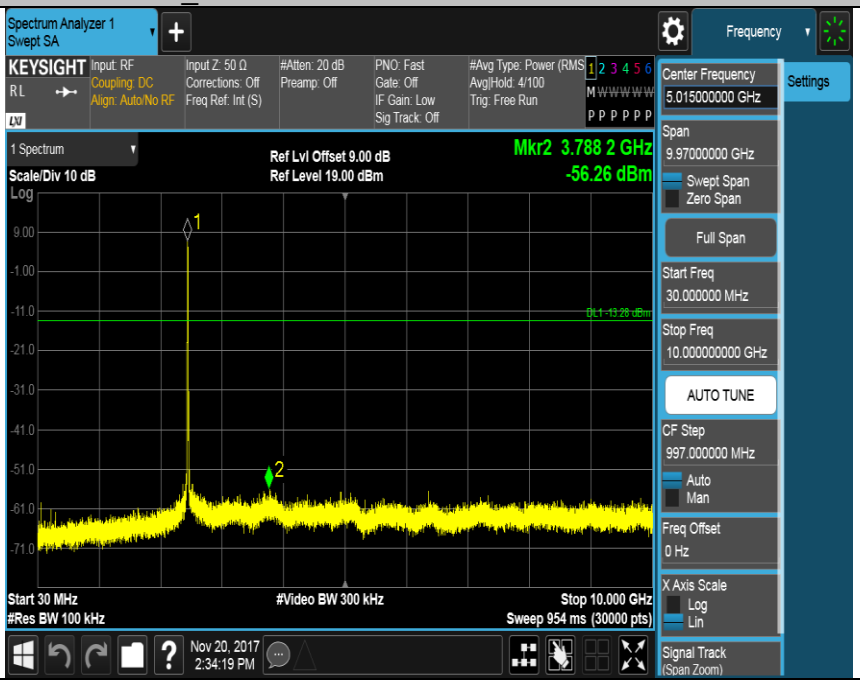
Pref test Plot

HCH SPURIOUS EMISSION

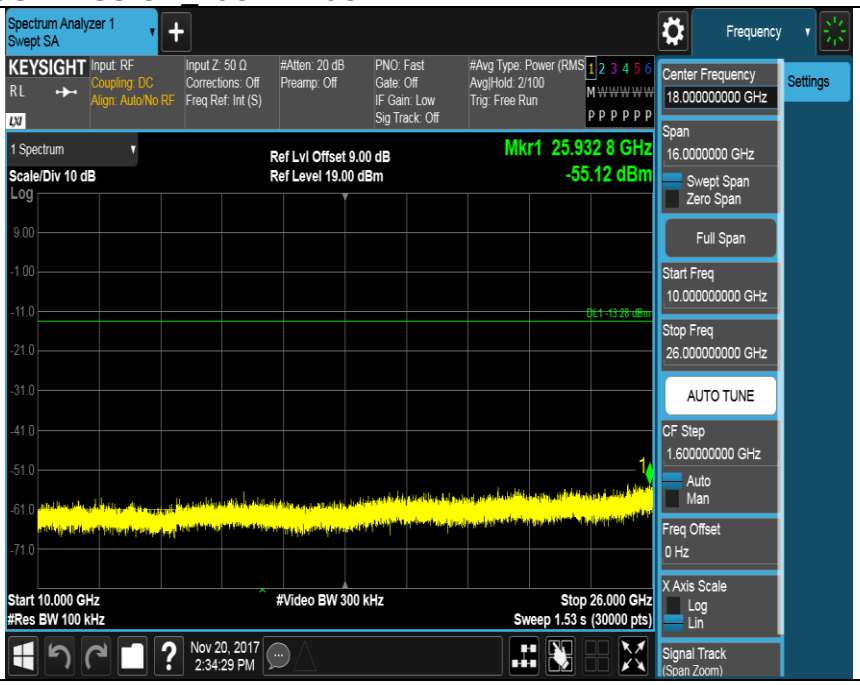


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~10GHz

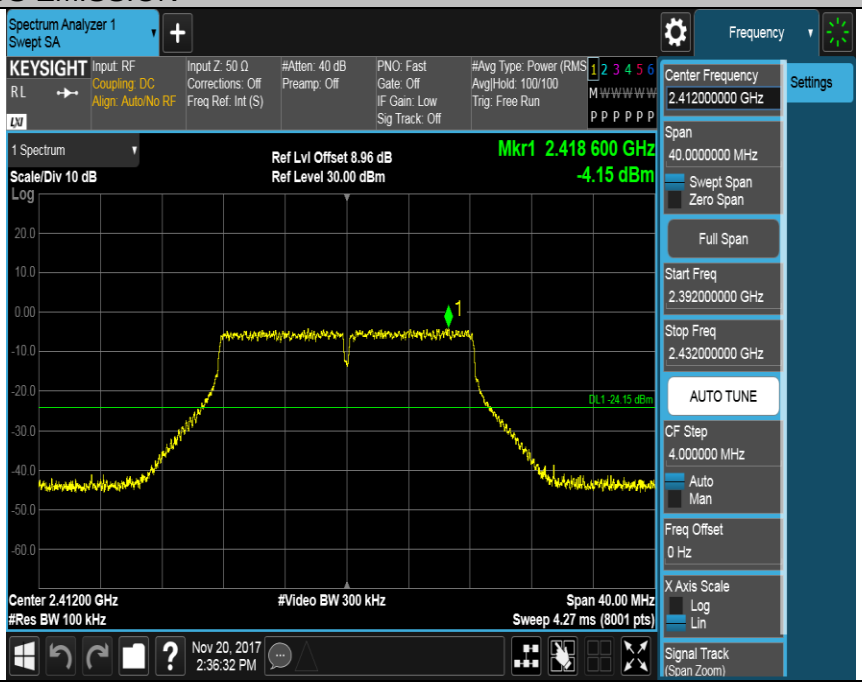


HCH SPURIOUS EMISSION_10GHz~26GHz



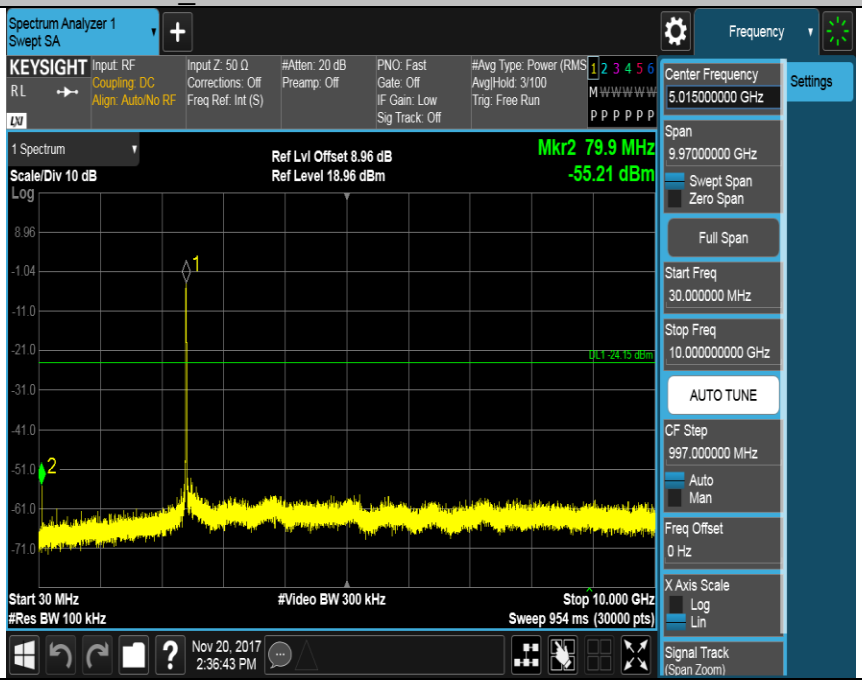
Test Mode	Channel	Verdict
11G	LCH	PASS

Pref test Plot

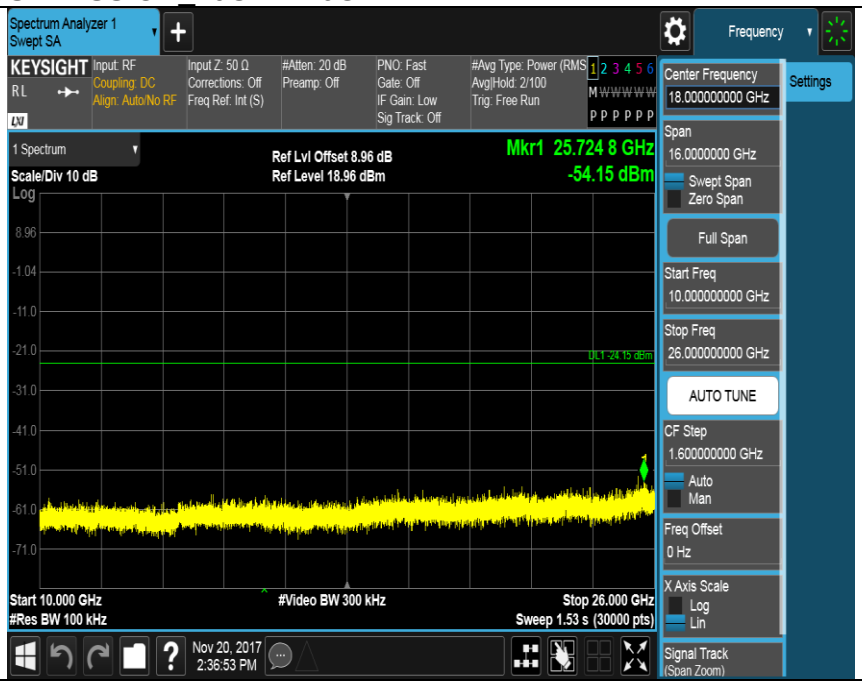
LCH SPURIOUS EMISSION


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz



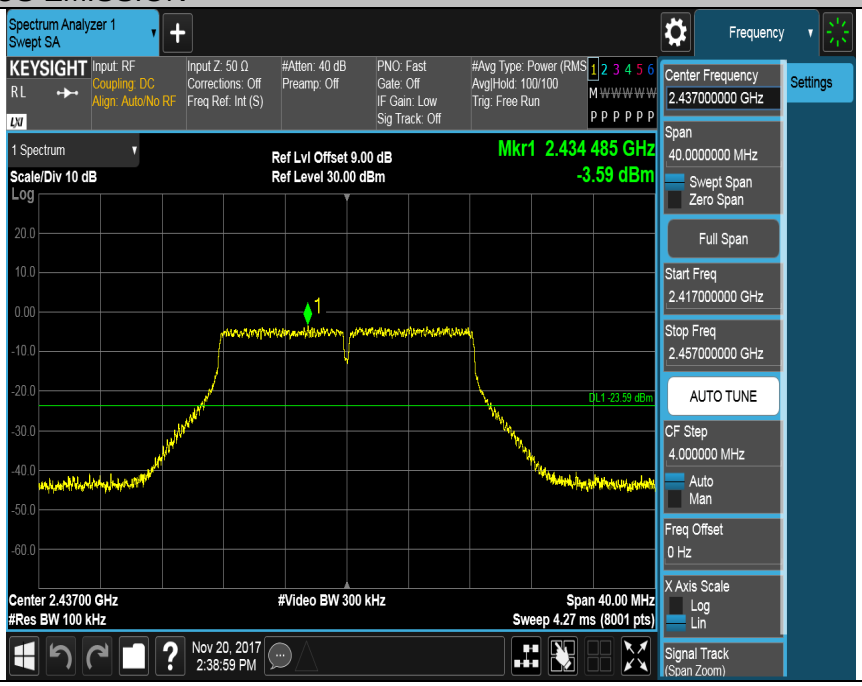
LCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11G	MCH	PASS

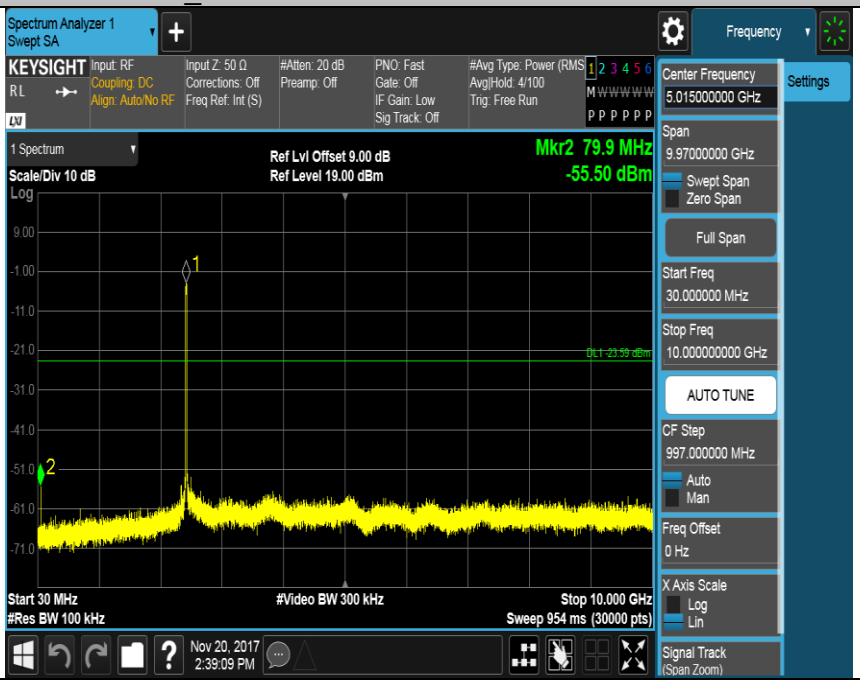
Pref test Plot

MCH SPURIOUS EMISSION

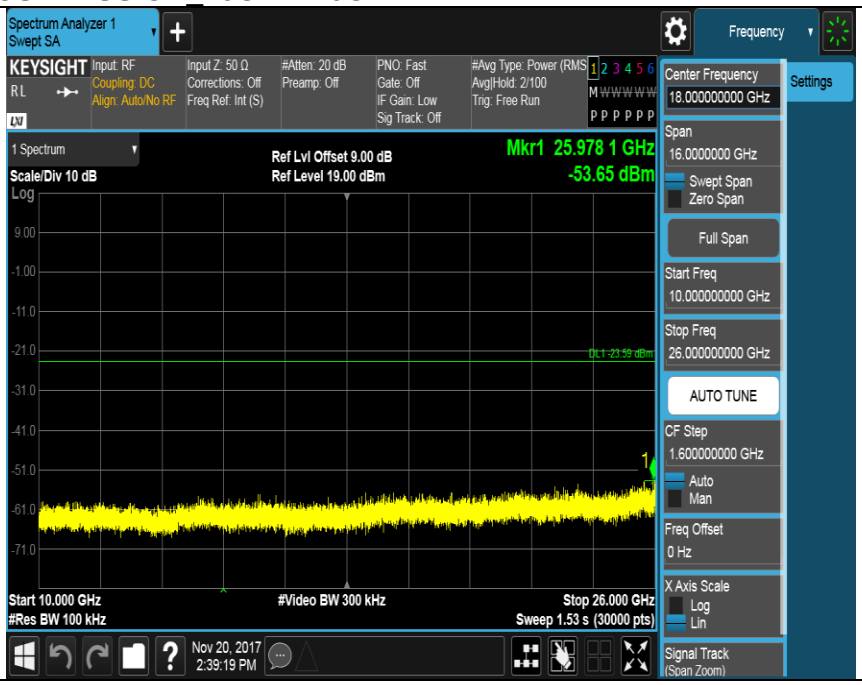


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



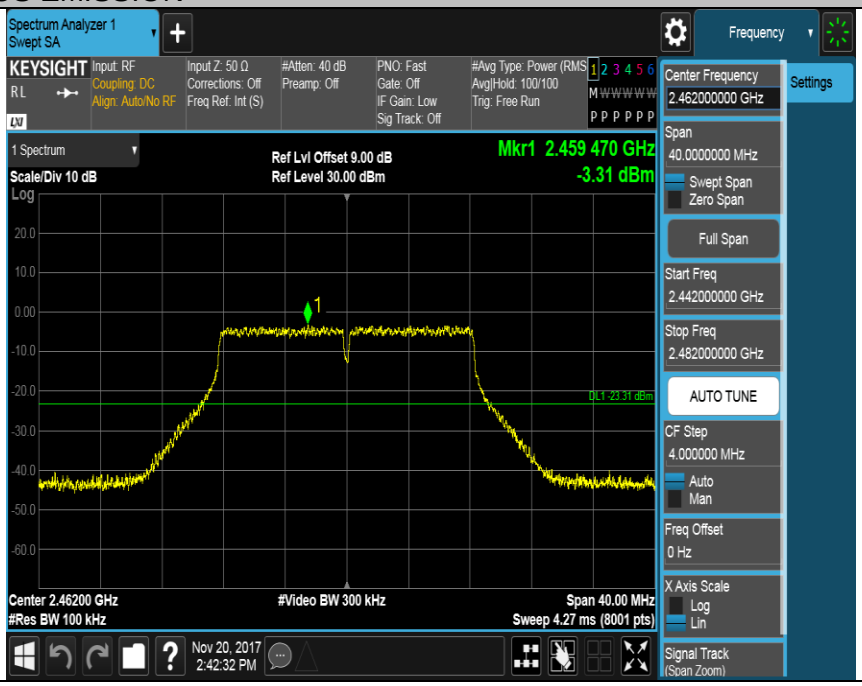
MCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11G	HCH	PASS

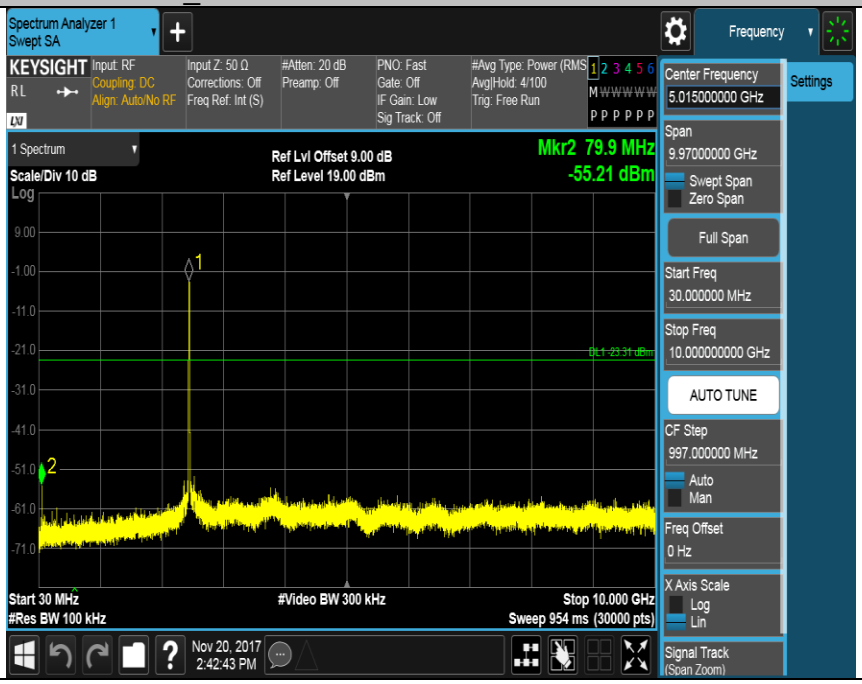
Pref test Plot

HCH SPURIOUS EMISSION

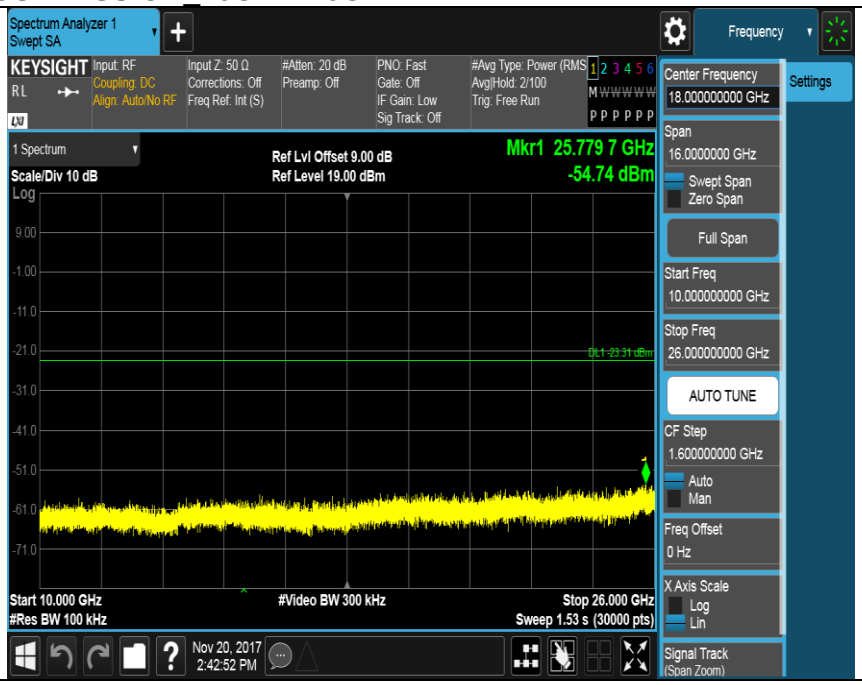


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~10GHz



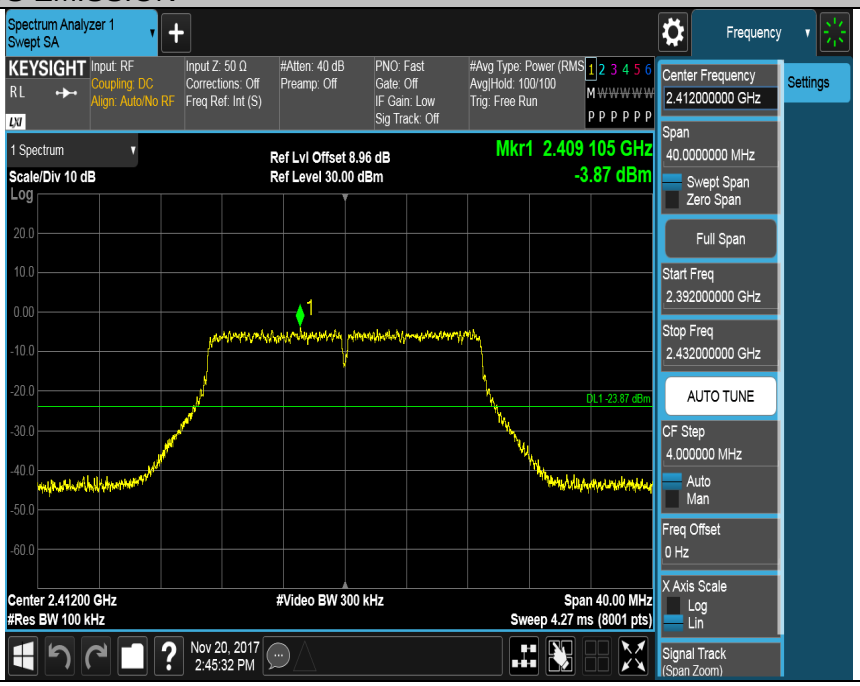
HCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11NSISO20	LCH	PASS

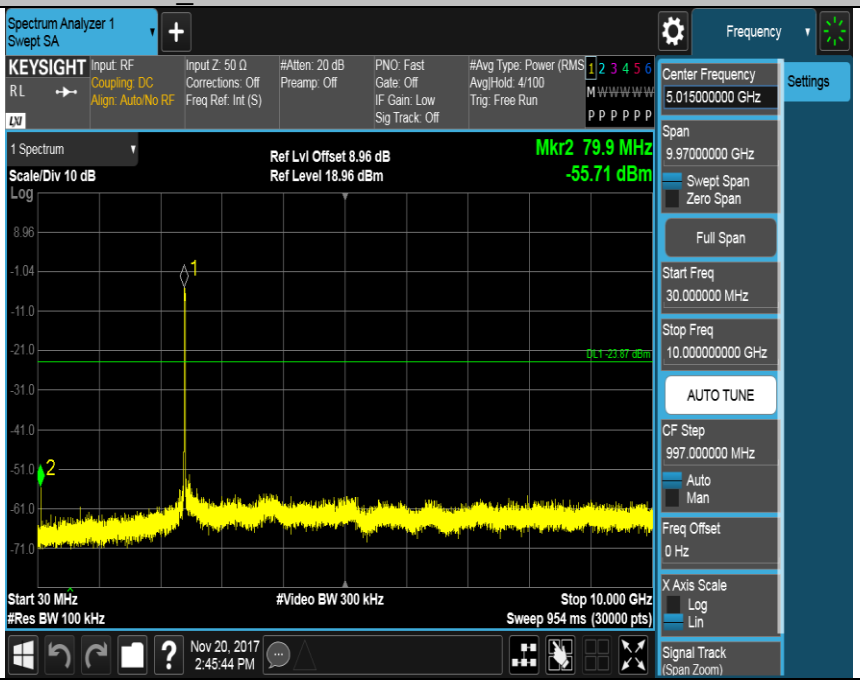
Pref test Plot

LCH SPURIOUS EMISSION

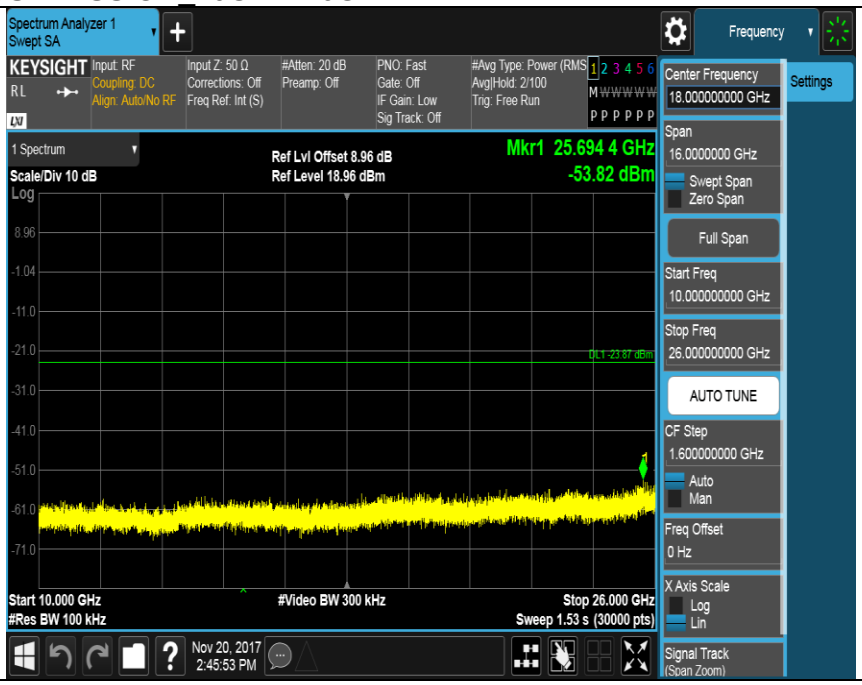


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz



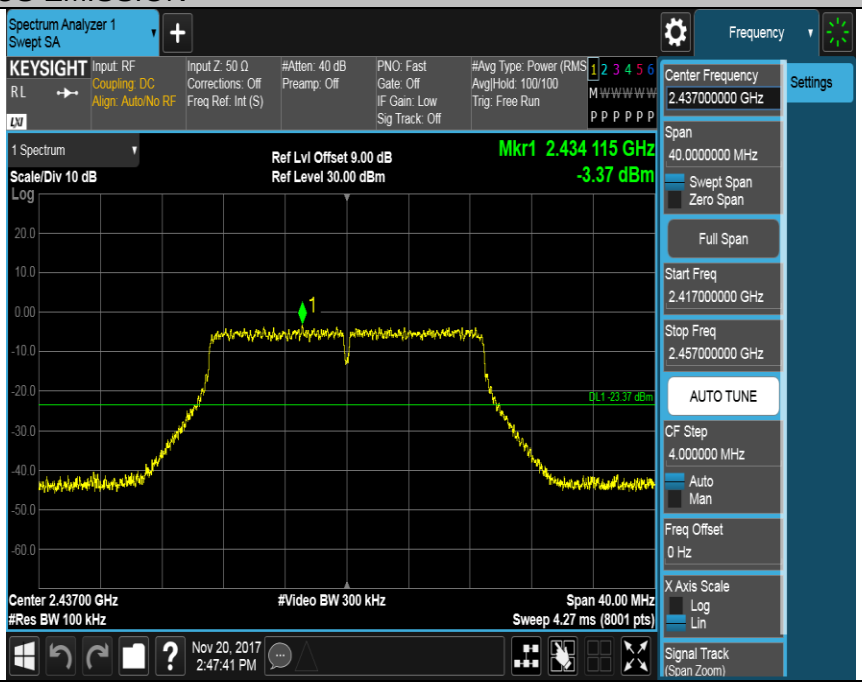
LCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11NSISO20	MCH	PASS

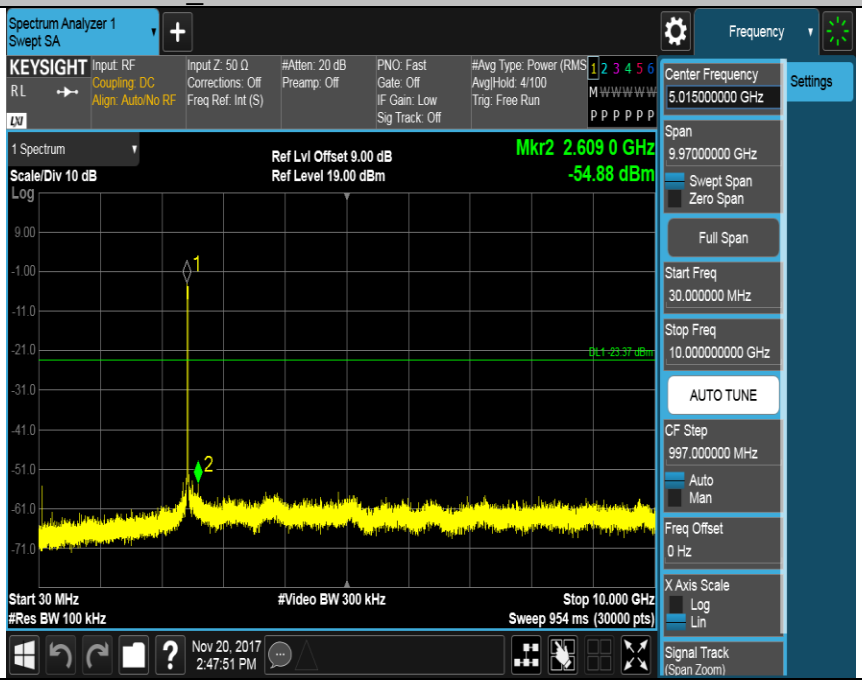
Pref test Plot

MCH SPURIOUS EMISSION

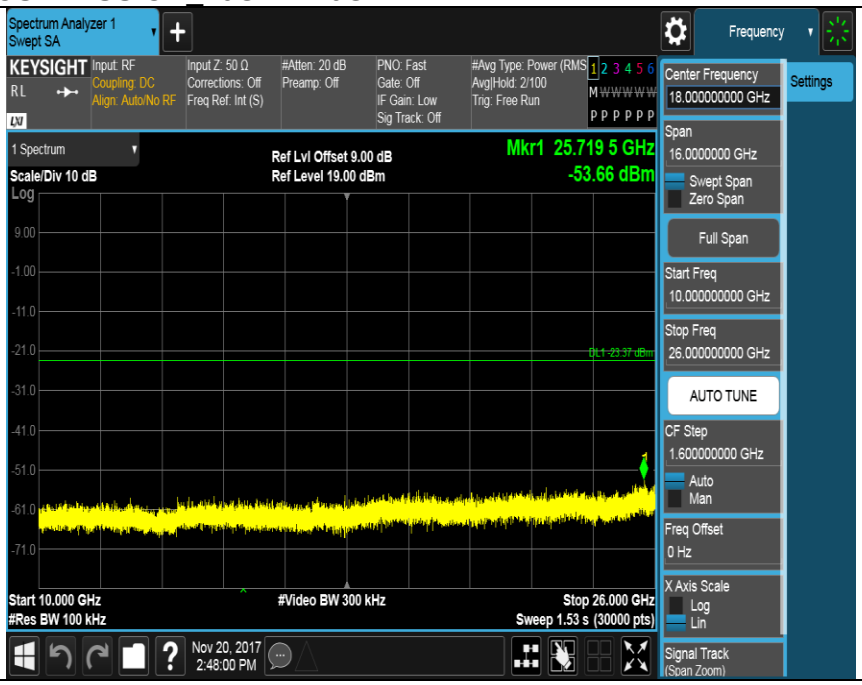


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



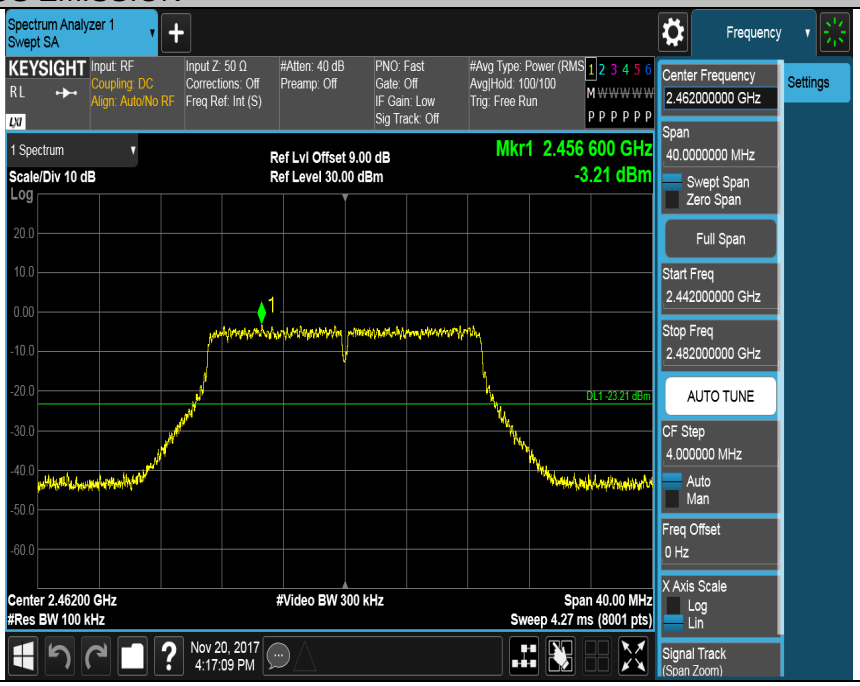
MCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11NSISO20	HCH	PASS

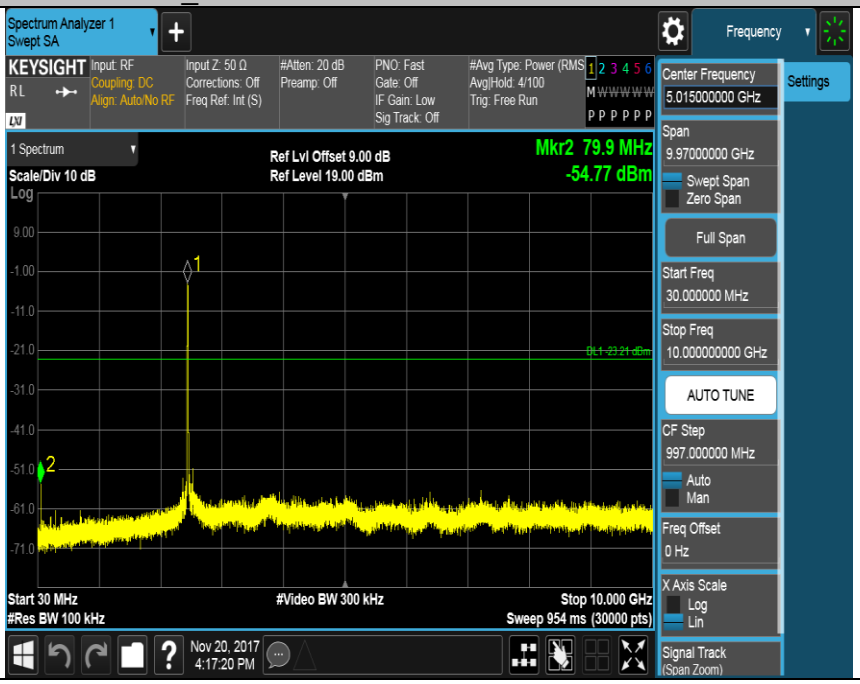
Pref test Plot

HCH SPURIOUS EMISSION

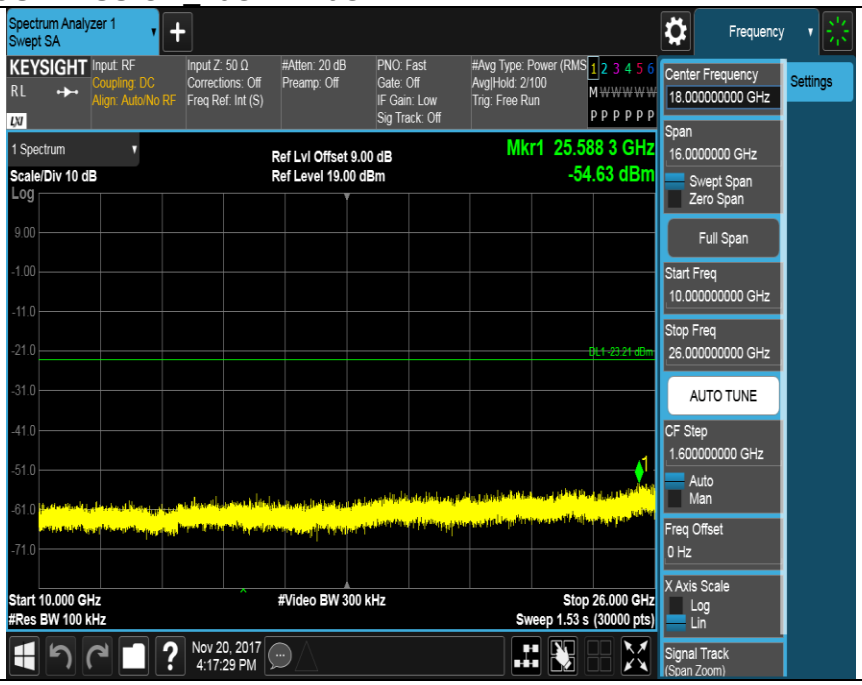


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~10GHz

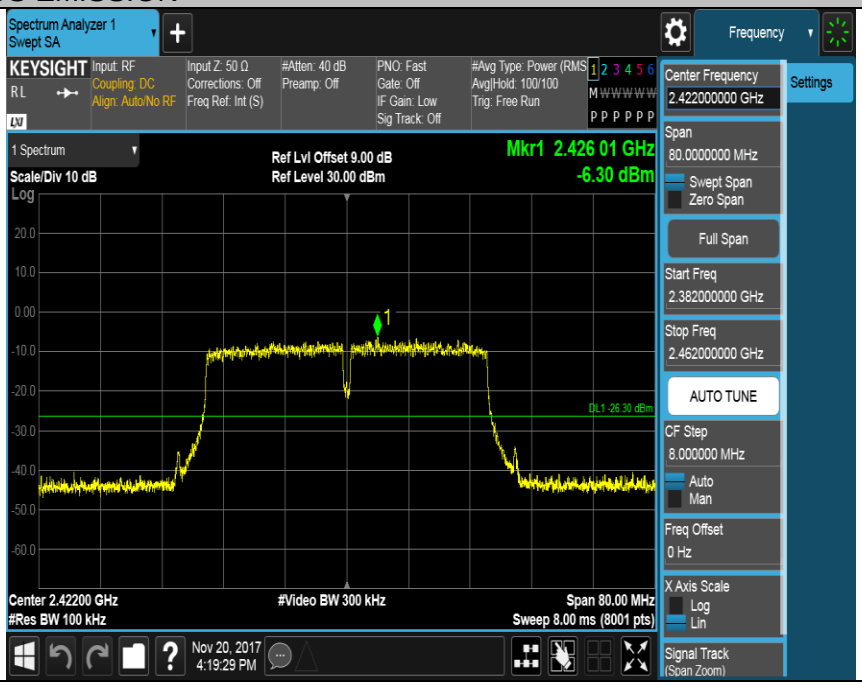


HCH SPURIOUS EMISSION_10GHz~26GHz



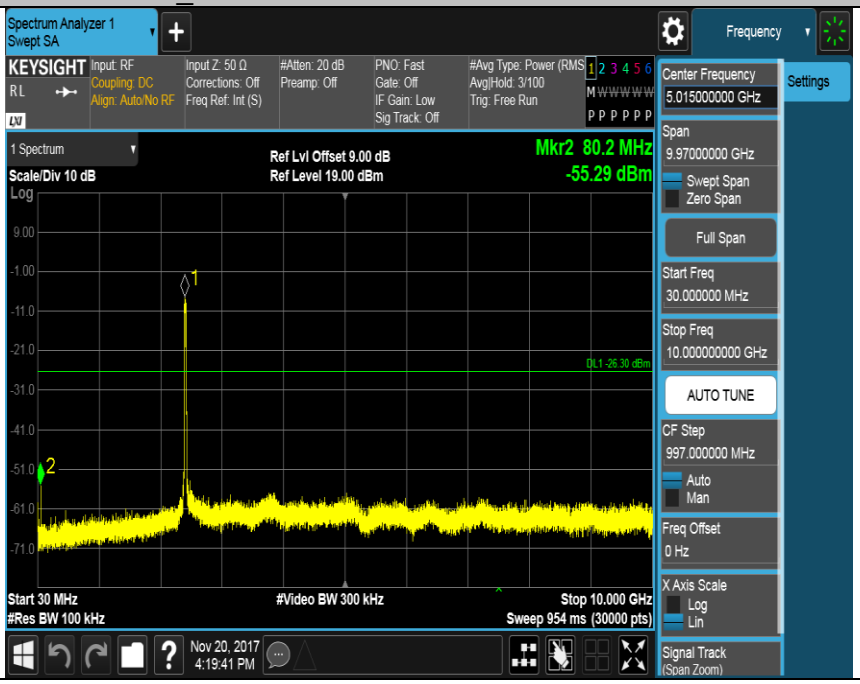
Test Mode	Channel	Verdict
11NSISO40	LCH	PASS

Pref test Plot

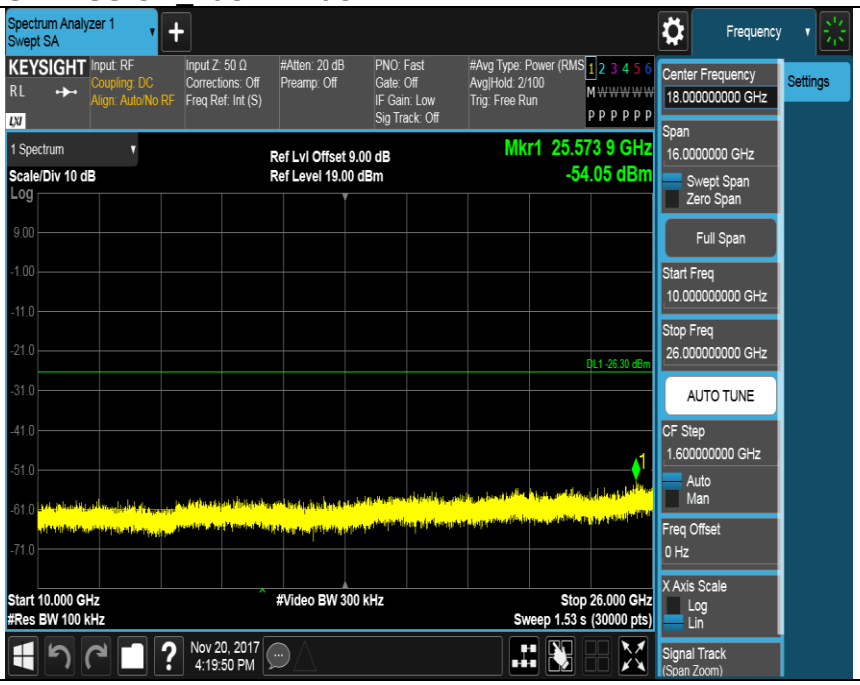
LCH SPURIOUS EMISSION


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~10GHz

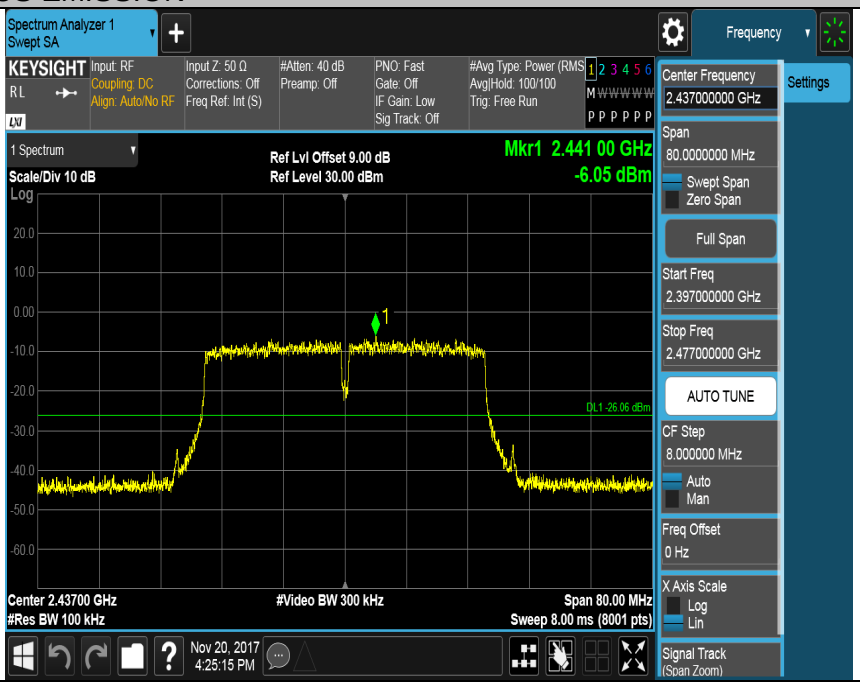


LCH SPURIOUS EMISSION_10GHz~26GHz



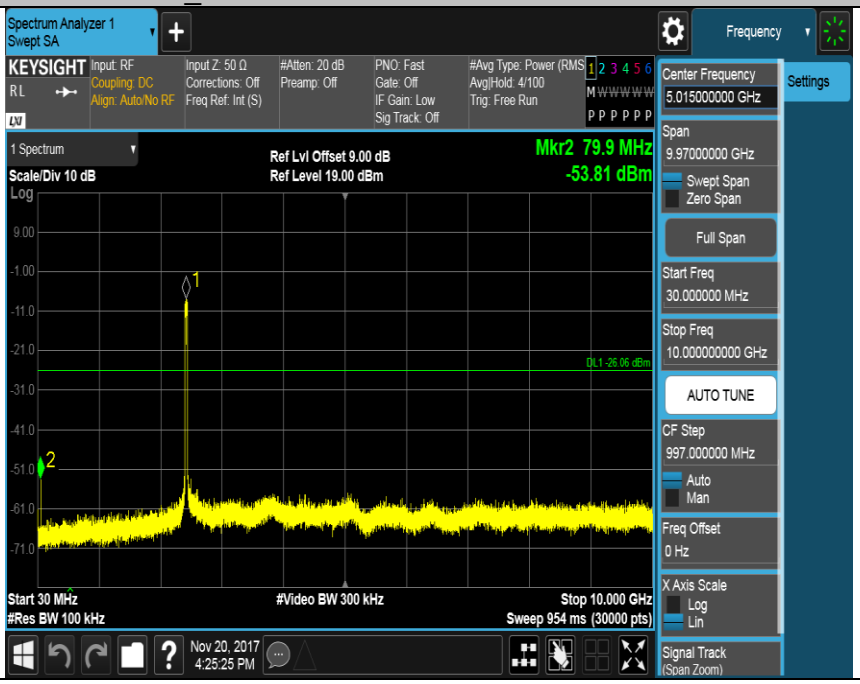
Test Mode	Channel	Verdict
11NSISO40	MCH	PASS

Pref test Plot

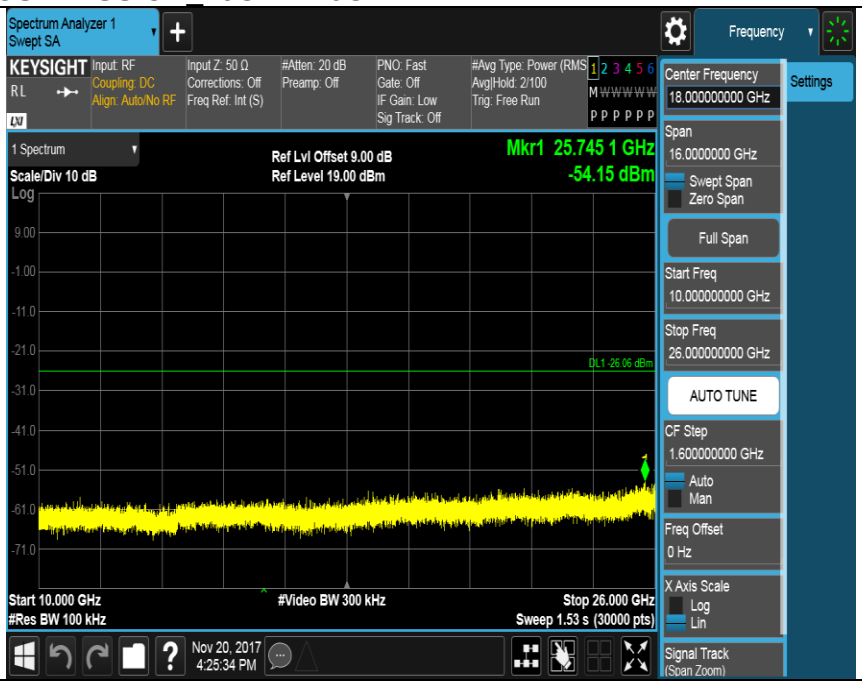
MCH SPURIOUS EMISSION


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~10GHz



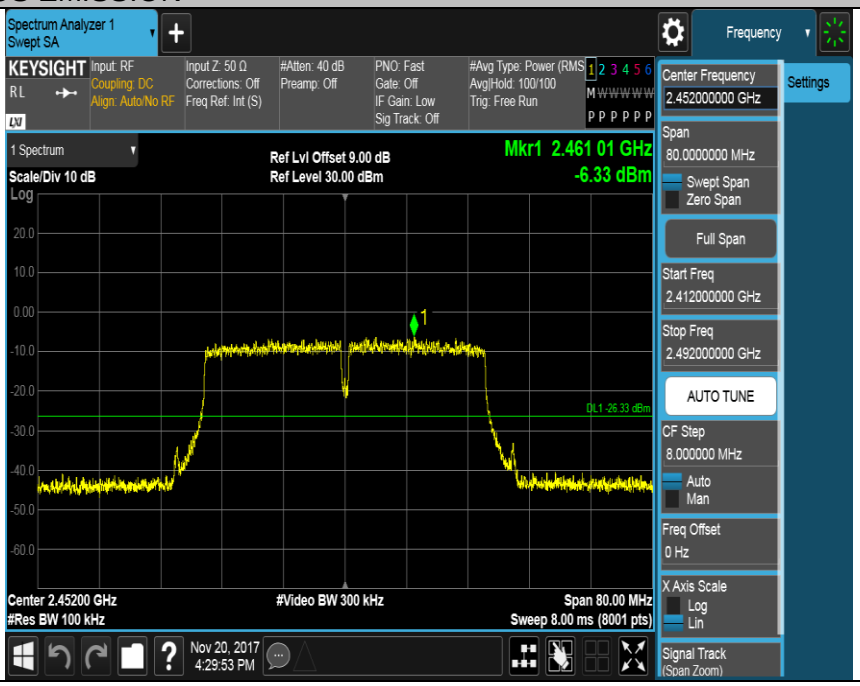
MCH SPURIOUS EMISSION_10GHz~26GHz



Test Mode	Channel	Verdict
11NSISO40	HCH	PASS

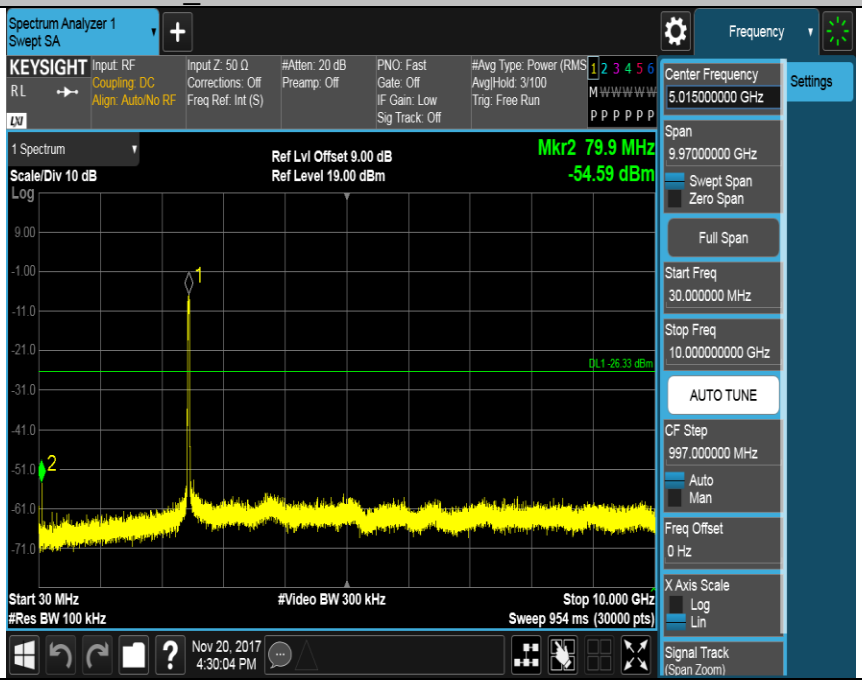
Pref test Plot

HCH SPURIOUS EMISSION

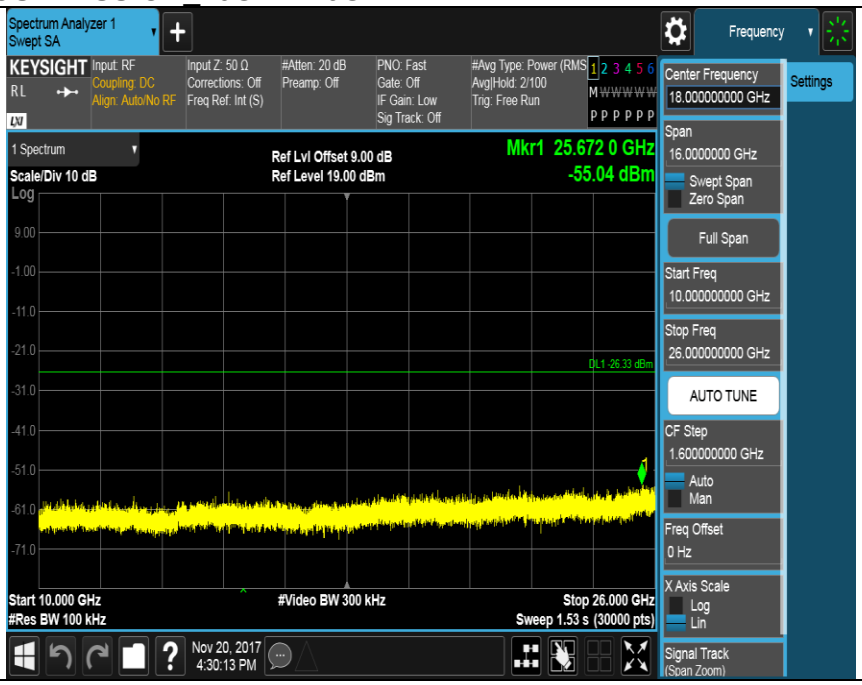


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~10GHz



HCH SPURIOUS EMISSION_10GHz~26GHz



6.6. RADIATED TEST RESULTS

6.6.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to FCC KDB 558074

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

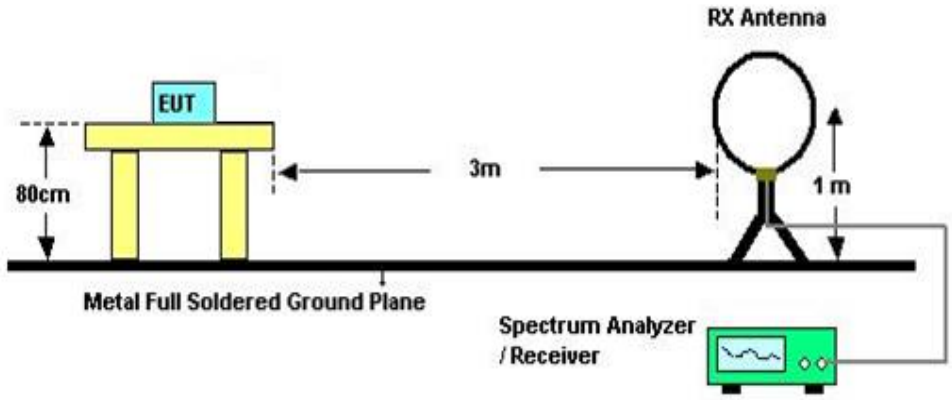
Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Note: [1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2]Above 38.6c

TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

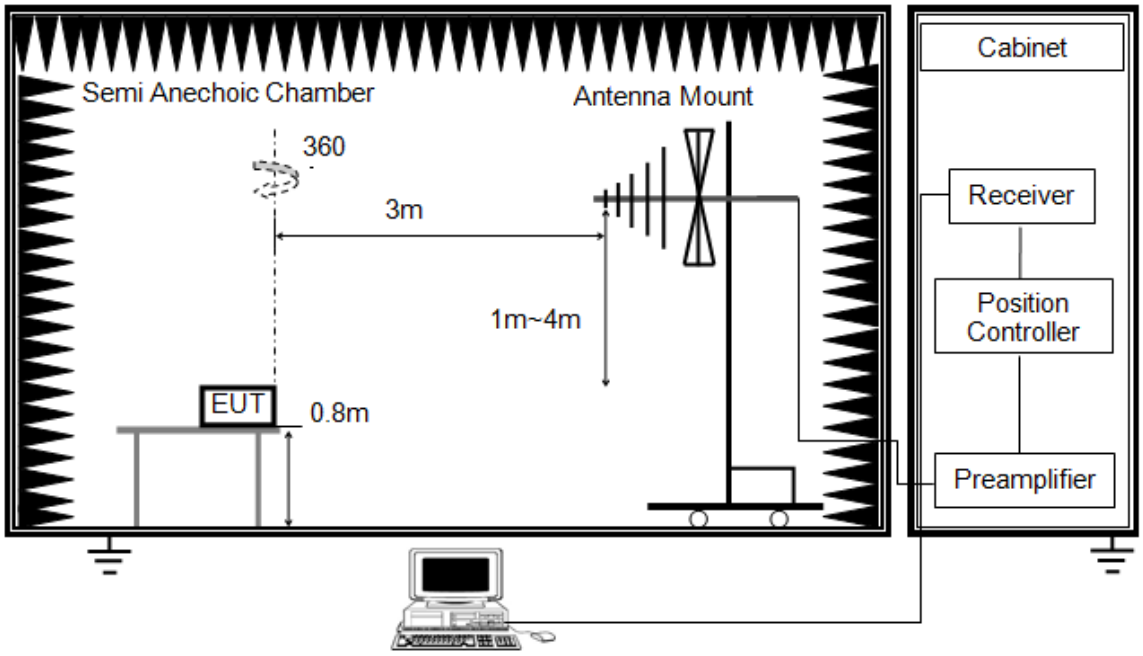
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Below 1G



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

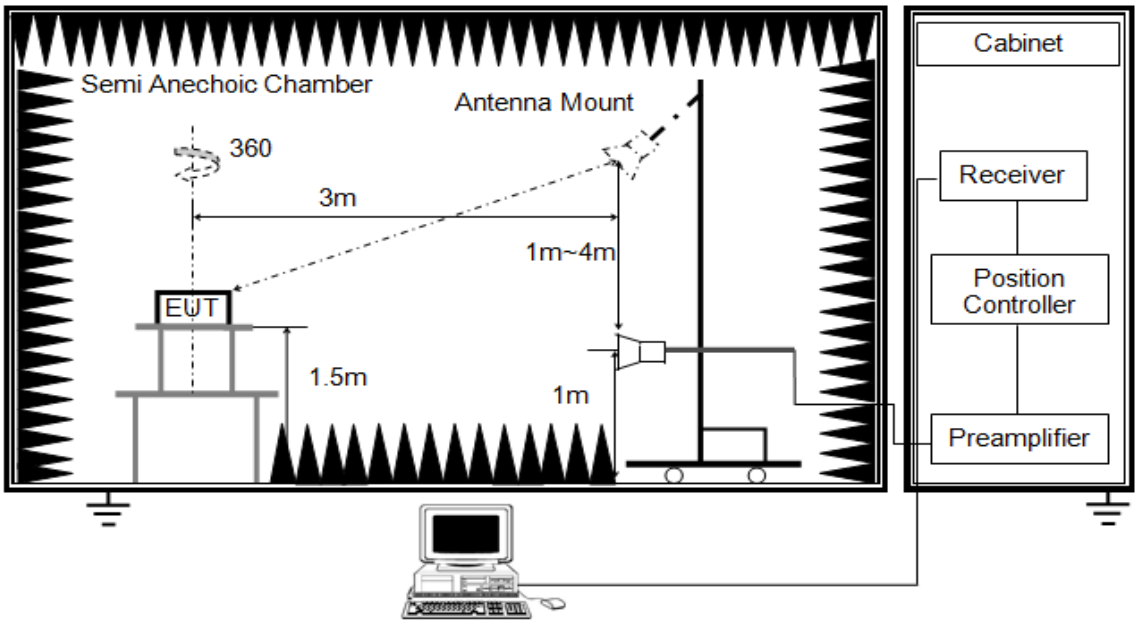
3. The EUT was placed on a turntable with 0.8 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

6. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

ABOVE 1G



The setting of the spectrum analyser

RBW	1M
VBW	PEAK:3M AVG: See note6
Sweep	Auto
Detector	Peak/Average(10Hz)
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5m above ground.

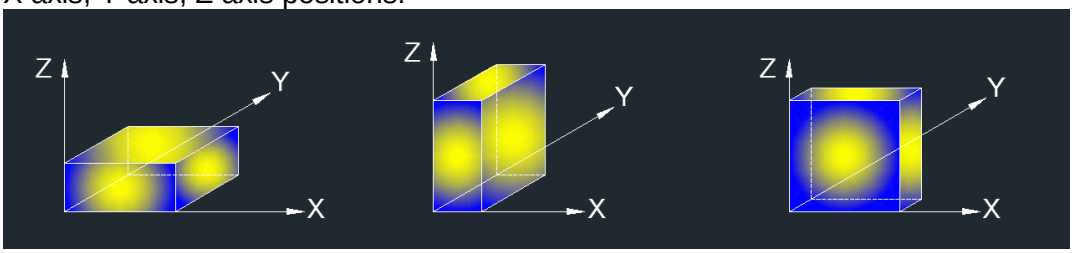
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with set VBW ≤RBW/100, but not less than 10Hz video bandwidth with peak detector， max hold to be run for at least 50 traces for average measurements..

8. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

X axis, Y axis, Z axis positions:



Note: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Z axis) data recorded in the report.

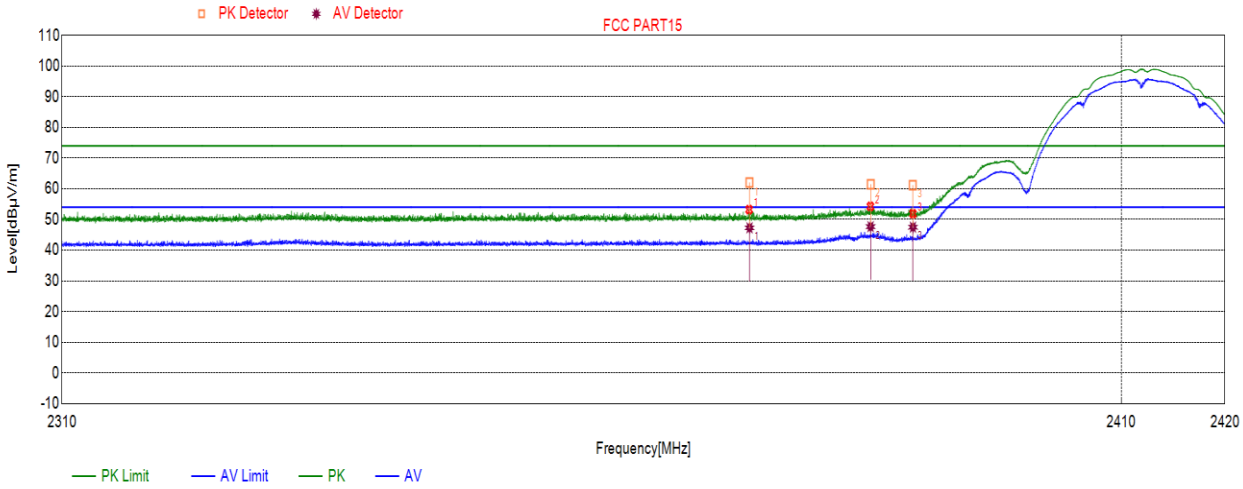
6.6.2. RESTRICTED BANDEDGE

Test Result Table

Test Mode	Channel	Puw(dBm)	Verdict
11B	LCH	<Limit	PASS
	MCH	<Limit	PASS
	HCH	<Limit	PASS
11G	LCH	<Limit	PASS
	MCH	<Limit	PASS
	HCH	<Limit	PASS
11NSISO20	LCH	<Limit	PASS
	MCH	<Limit	PASS
	HCH	<Limit	PASS
11NSISO40	LCH	<Limit	PASS
	MCH	<Limit	PASS
	HCH	<Limit	PASS

Test Graphs:

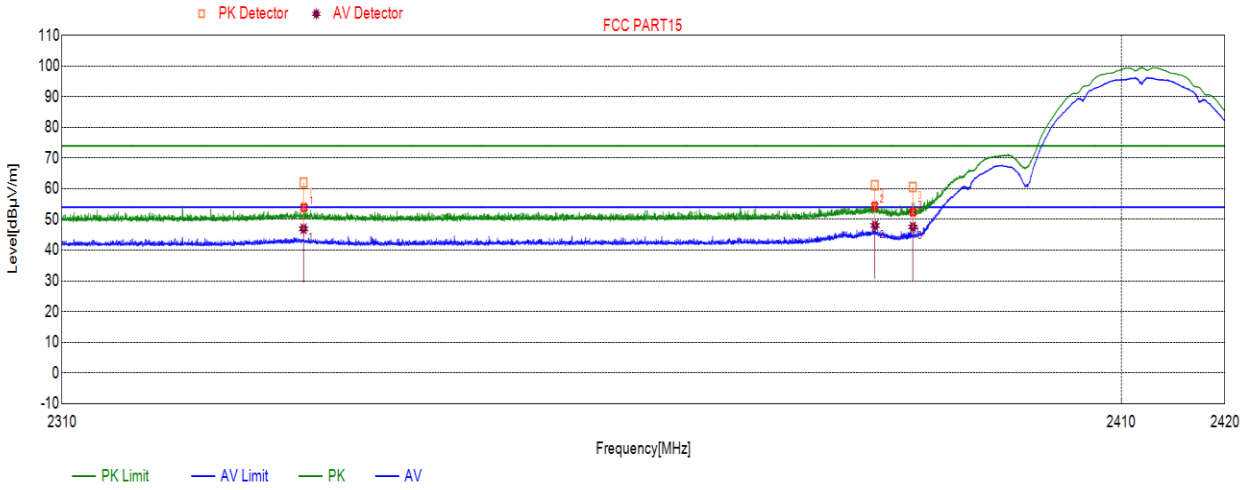
Test Mode	Channel	Polarization	Verdict
11B	LCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2374.4306	61.94	74.00	-12.06	peak
		47.29	54.00	-6.71	average
2	2385.9549	61.51	74.00	-12.49	peak
		47.68	54.00	-6.32	average
3	2390.0000	61.26	74.00	-12.74	peak
		47.50	54.00	-6.50	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

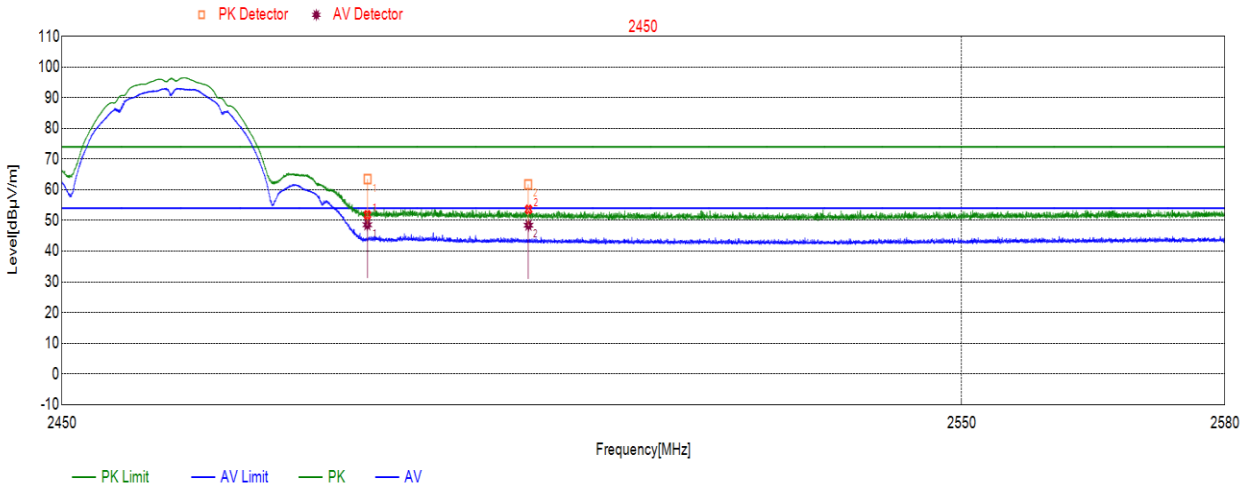
Test Mode	Channel	Polarization	Verdict
11B	LCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2332.4432	61.87	74.00	-12.13	peak
		46.98	54.00	-7.02	average
2	2386.3793	61.10	74.00	-12.90	peak
		48.04	54.00	-5.96	average
3	2390.0000	60.64	74.00	-13.36	peak
		47.58	54.00	-6.42	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

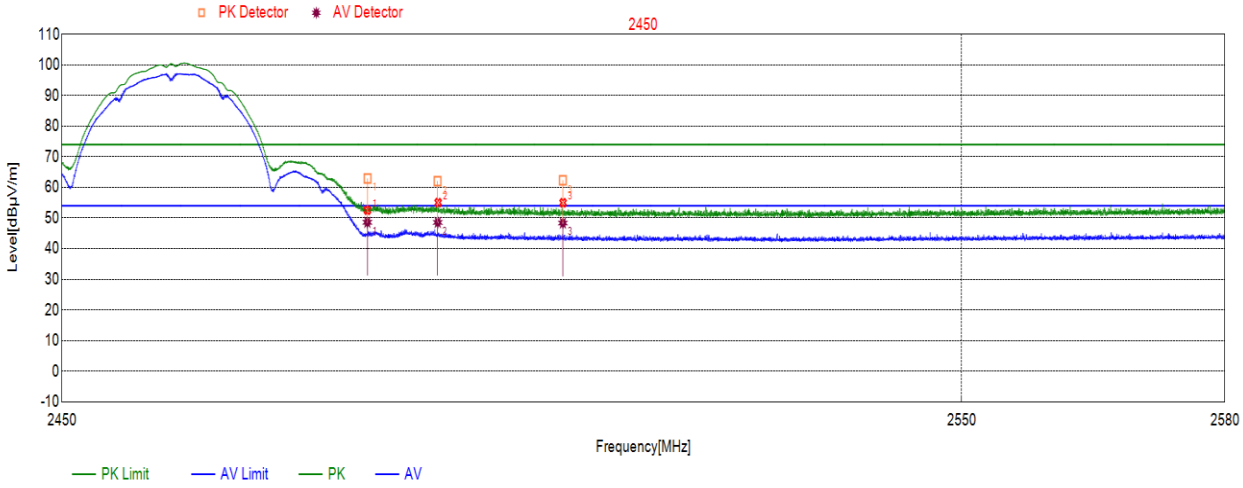
Test Mode	Channel	Polarization	Verdict
11B	HCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.5000	63.37	74.00	-10.63	peak
		48.61	54.00	-5.39	average
2	2501.3578	61.74	74.00	-12.26	peak
		48.47	54.00	-5.53	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

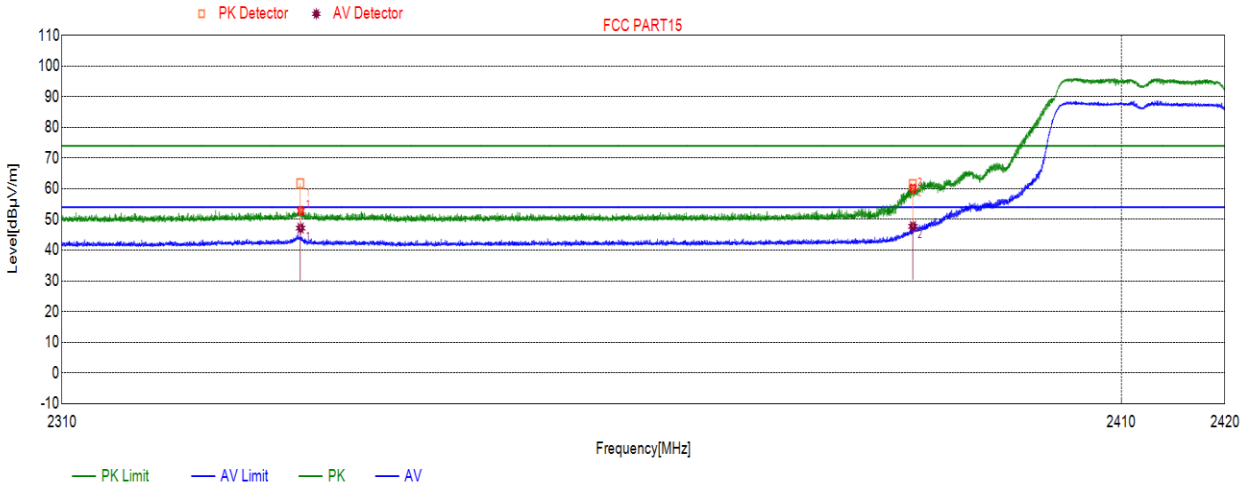
Test Mode	Channel	Polarization	Verdict
11B	HCH	Vertical	PASS



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	63.02	74.00	-10.98	peak
		48.62	54.00	-5.38	average
2	2491.2848	61.93	74.00	-12.07	peak
		48.58	54.00	-5.42	average
3	2505.1830	62.19	74.00	-11.81	peak
		48.37	54.00	-5.63	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

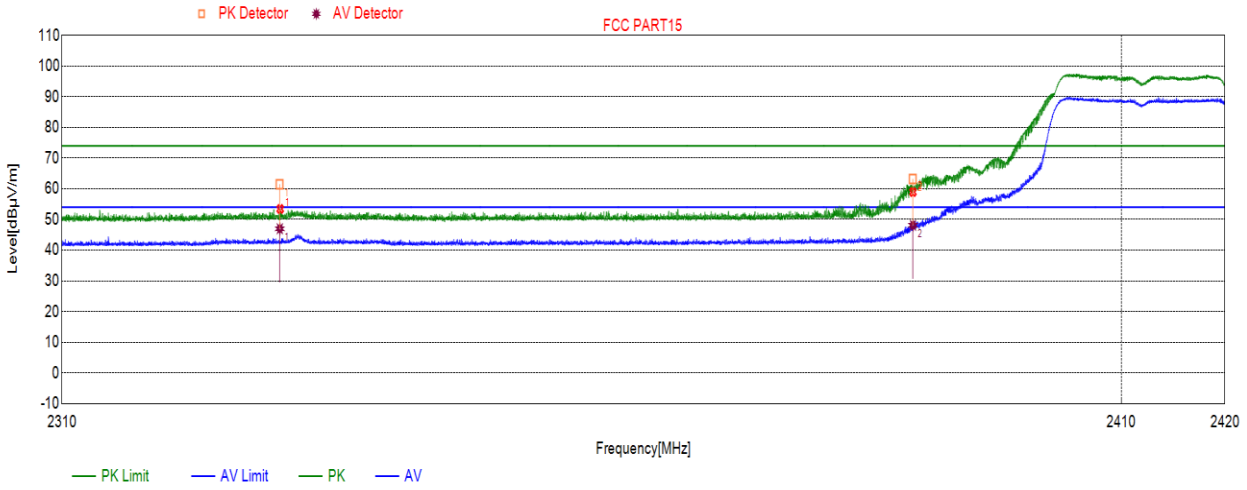
Test Mode	Channel	Polarization	Verdict
11G	LCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2332.1676	61.65	74.00	-12.35	peak
		47.20	54.00	-6.80	average
2	2390.0000	61.52	74.00	-12.48	peak
		47.77	54.00	-6.23	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

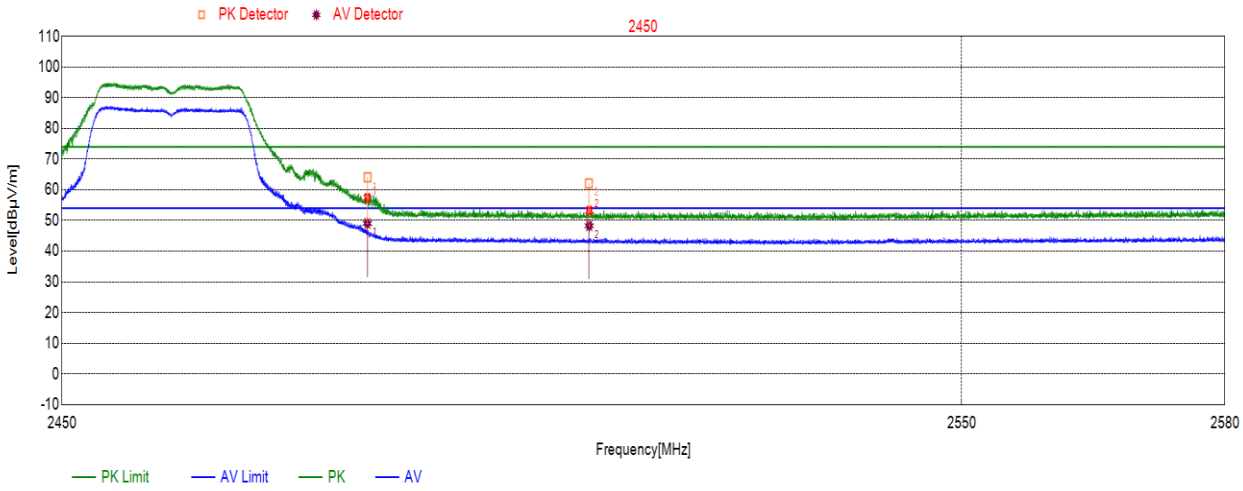
Test Mode	Channel	Polarization	Verdict
11G	LCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2330.2288	61.56	74.00	-12.44	peak
		46.99	54.00	-7.01	average
2	2390.0000	63.23	74.00	-10.77	peak
		48.11	54.00	-5.89	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

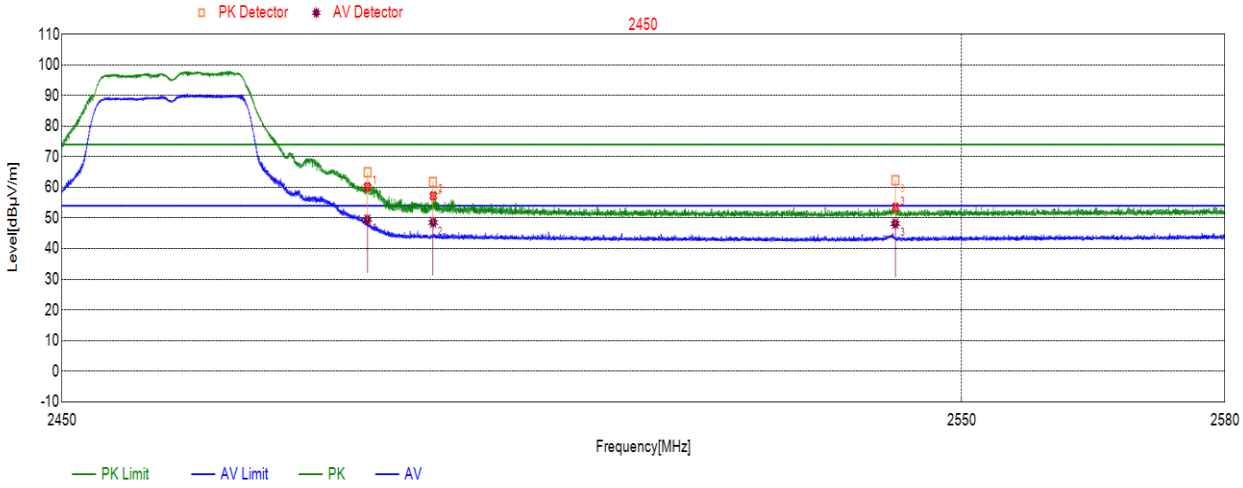
Test Mode	Channel	Polarization	Verdict
11G	HCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.5000	63.92	74.00	-10.08	peak
		49.05	54.00	-4.95	average
2	2508.1195	62.14	74.00	-11.86	peak
		48.30	54.00	-5.70	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

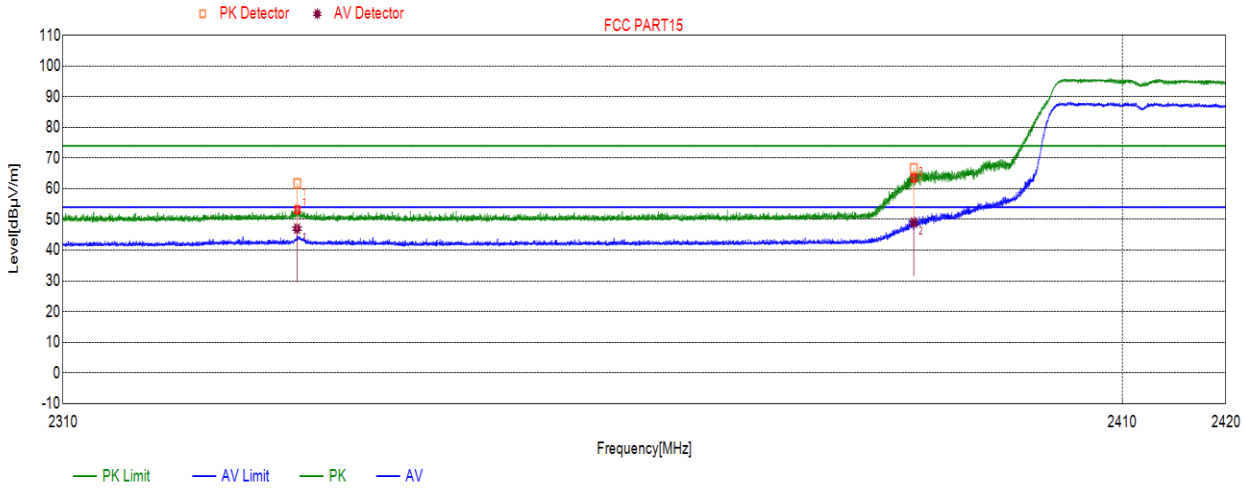
Test Mode	Channel	Polarization	Verdict
11G	HCH	Vertical	PASS



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	65.05	74.00	-8.95	peak
		49.50	54.00	-4.50	average
2	2490.7778	61.84	74.00	-12.16	peak
		48.57	54.00	-5.43	average
3	2542.4762	62.35	74.00	-11.65	peak
		48.20	54.00	-5.80	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

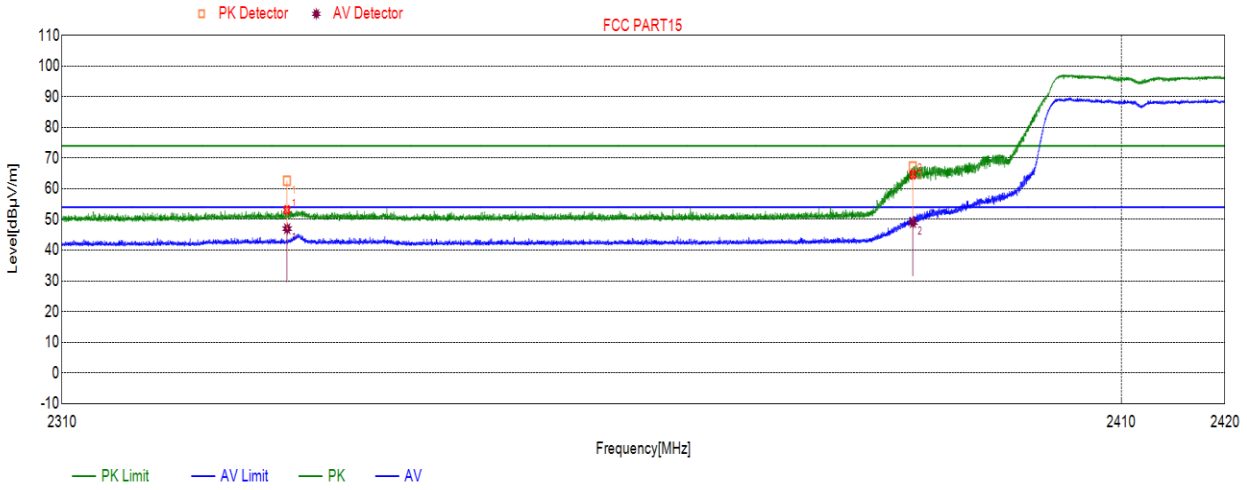
Test Mode	Channel	Polarization	Verdict
11NSISO20	LCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2331.7421	61.60	74.00	-12.40	peak
		47.02	54.00	-6.98	average
2	2390.0000	66.78	74.00	-7.22	peak
		48.94	54.00	-5.06	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

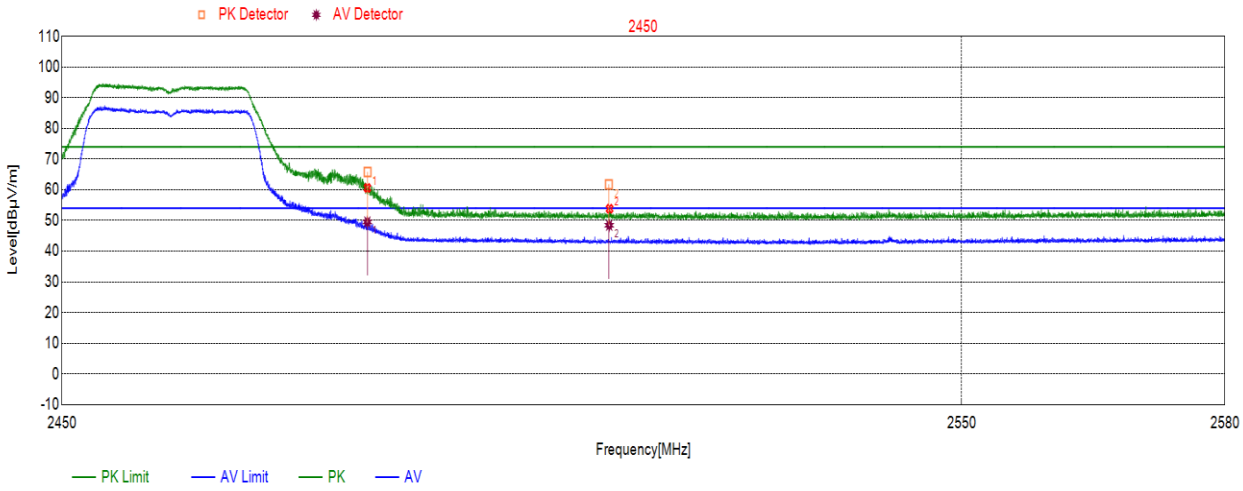
Test Mode	Channel	Polarization	Verdict
11NSISO20	LCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2330.9127	62.50	74.00	-11.50	peak
		47.01	54.00	-6.99	average
2	2390.0000	67.11	74.00	-6.89	peak
		49.02	54.00	-4.98	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

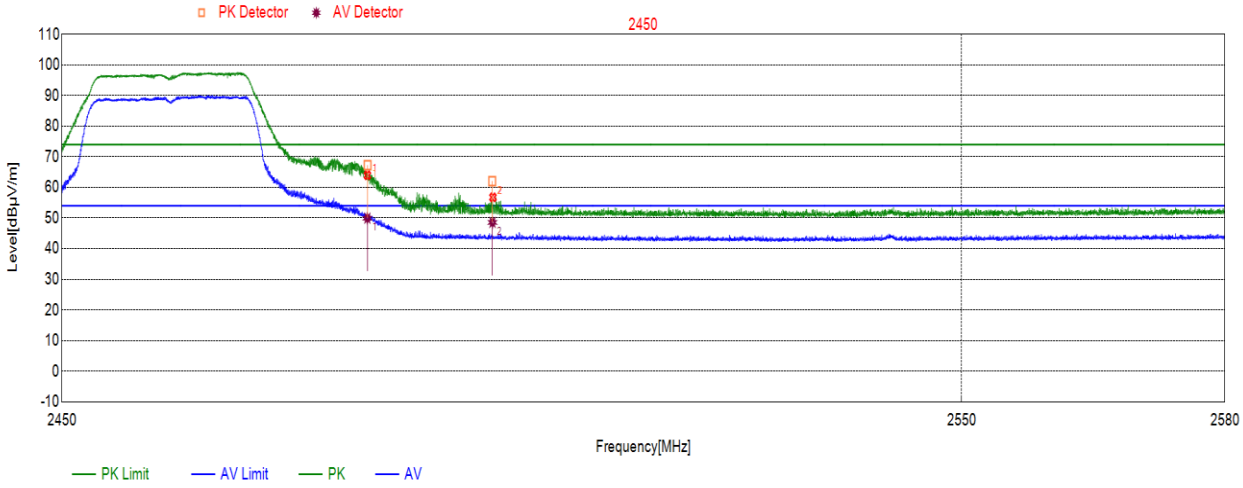
Test Mode	Channel	Polarization	Verdict
11NSISO20	HCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.5000	65.84	74.00	-8.16	peak
		49.53	54.00	-4.47	average
2	2510.3492	61.64	74.00	-12.36	peak
		48.45	54.00	-5.55	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

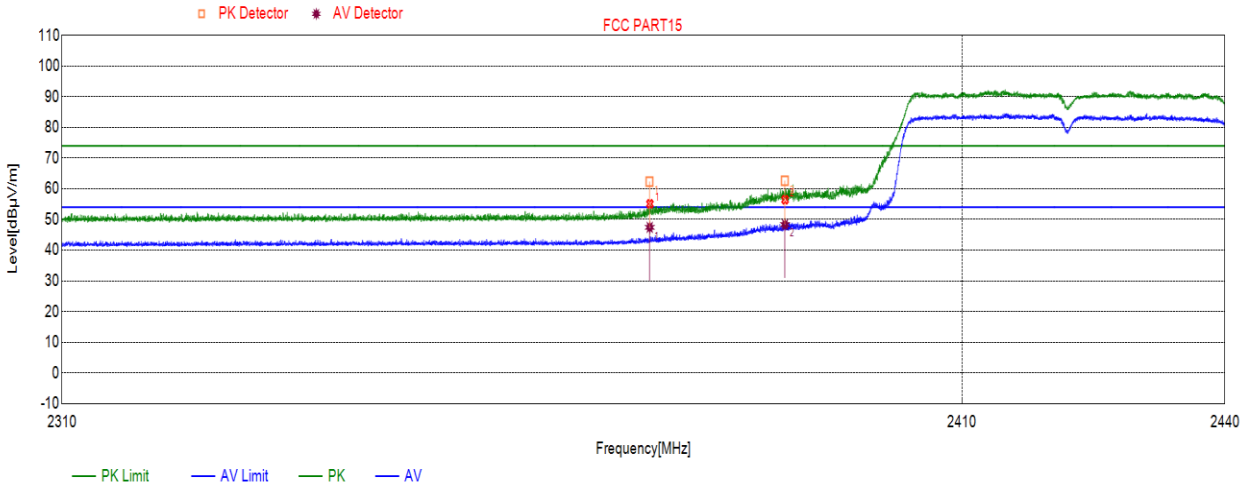
Test Mode	Channel	Polarization	Verdict
11NSISO20	HCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.5000	67.17	74.00	-6.83	peak
		49.97	54.00	-4.03	average
2	2497.3535	61.87	74.00	-12.13	peak
		48.58	54.00	-5.42	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

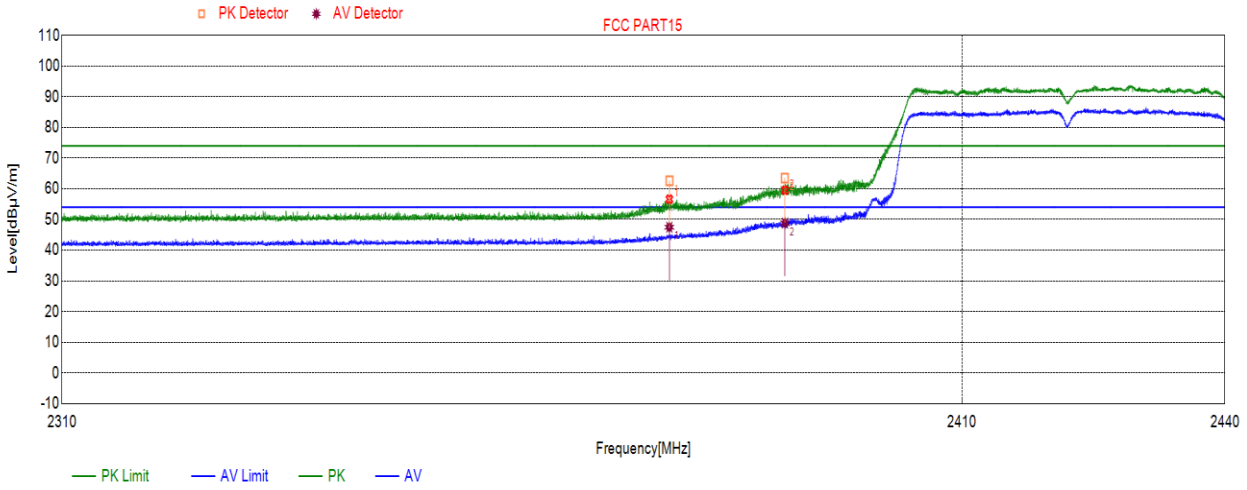
Test Mode	Channel	Polarization	Verdict
11NSISO40	LCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2374.8300	62.42	74.00	-11.58	peak
		47.45	54.00	-6.55	average
2	2390.0000	62.47	74.00	-11.53	peak
		48.34	54.00	-5.66	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

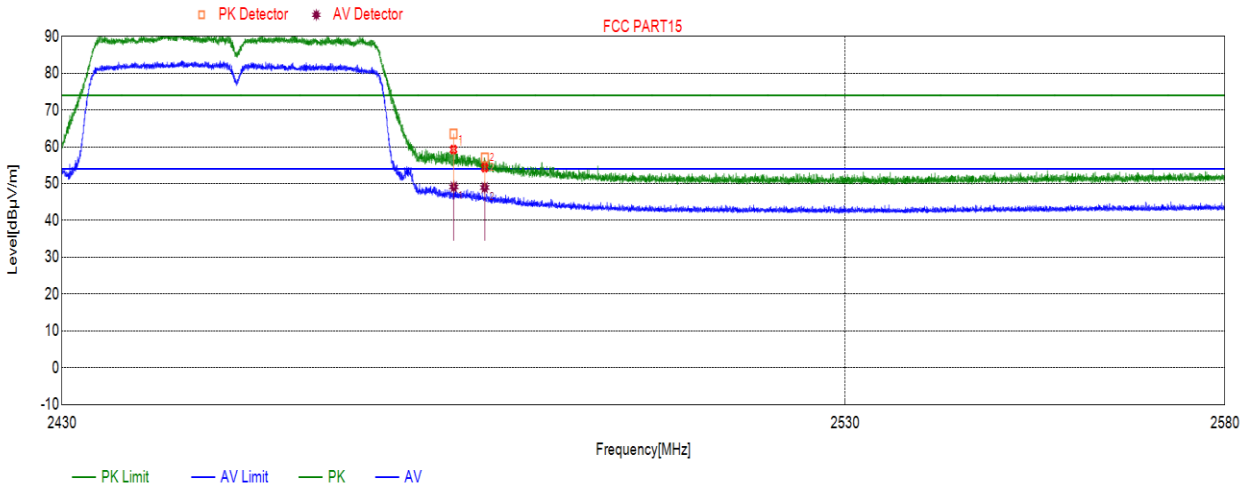
Test Mode	Channel	Polarization	Verdict
11NSISO40	LCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2377.0207	62.61	74.00	-11.39	peak
		47.49	54.00	-6.51	average
2	2390.0000	63.52	74.00	-10.48	peak
		48.84	54.00	-5.16	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

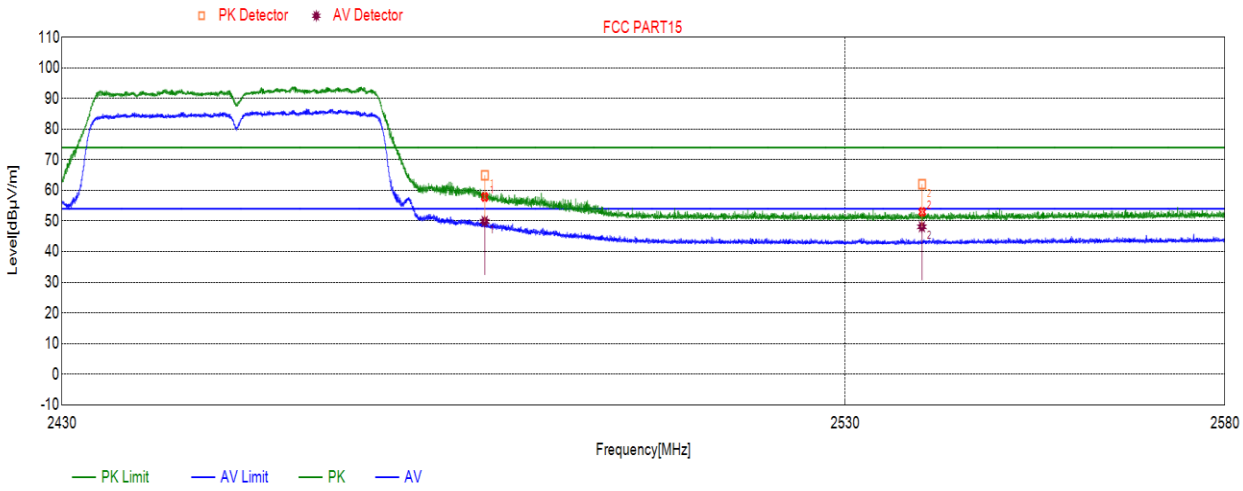
Test Mode	Channel	Polarization	Verdict
11NSISO40	HCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2479.5572	63.50	74.00	-10.50	peak
		49.14	54.00	-4.86	average
2	2483.5000	56.95	74.00	-17.05	peak
		48.96	54.00	-5.04	average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

Test Mode	Channel	Polarization	Verdict
11NSISO40	HCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.5000	64.91	74.00	-9.09	peak
		49.94	54.00	-4.06	average
2	2540.0677	61.93	74.00	-12.07	peak
		48.14	54.00	-5.86	average

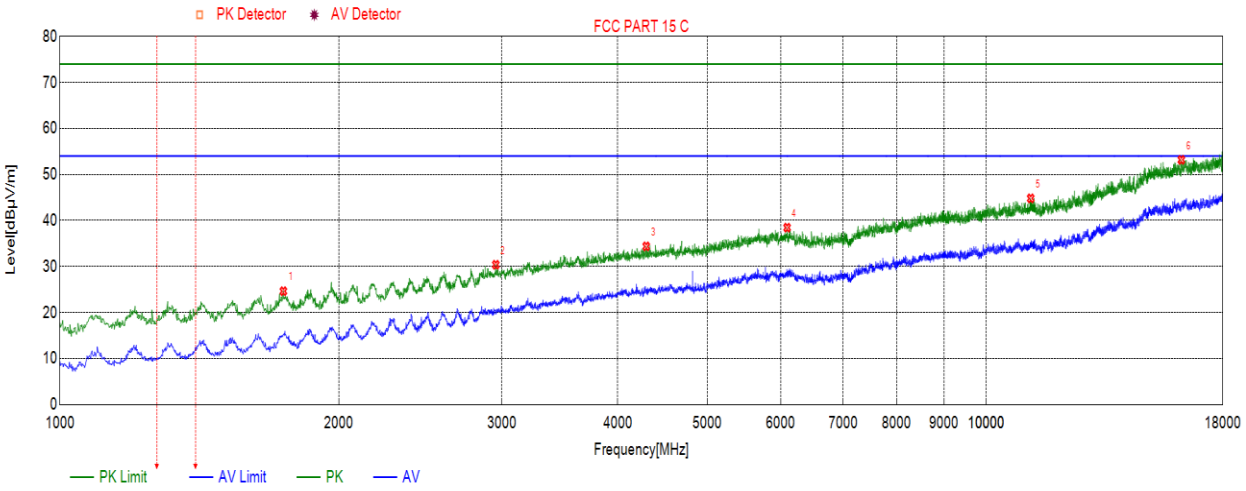
Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
3. For average power measurement, set the VBW to Minimum VBW=10 Hz.

6.6.3. SPURIOUS EMISSIONS

Part I: 1GHz~18GHz

HARMONICS AND SPURIOUS EMISSIONS

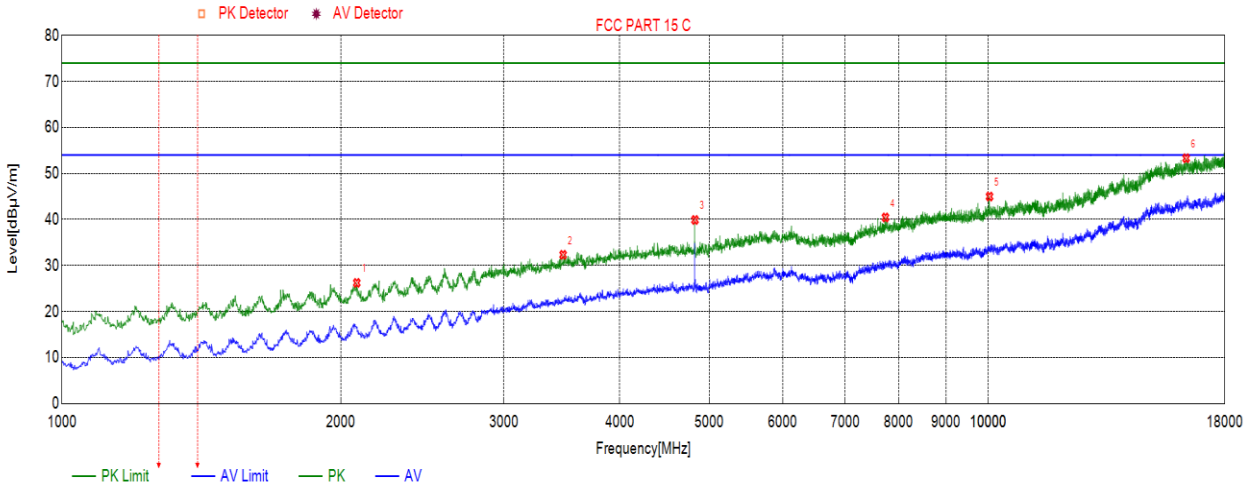
Test Mode	Channel	Polarization	Verdict
11B	LCH	Horizontal	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (Peak) (dBuV/m)	Margin (Peak) (dB)	Limit (Ave) (dBuV/m)	Margin (Ave) (dB)	Remark
1	1742.9743	24.64	74.00	-49.36	54.00	-29.36	peak
2	2955.1955	30.39	74.00	-43.61	54.00	-23.61	peak
3	4294.9295	34.38	74.00	-39.62	54.00	-19.62	peak
4	6095.4095	38.45	74.00	-35.55	54.00	-15.55	peak
5	11167.0167	44.81	74.00	-29.19	54.00	-9.19	peak
6	16238.6239	53.19	74.00	-20.81	54.00	-0.81	peak

Note: 1.If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Test Mode	Channel	Polarization	Verdict
11B	LCH	Vertical	PASS



No.	Frequency (MHz)	Result (dBuV/m)	Limit (Peak) (dBuV/m)	Margin (Peak) (dB)	Limit (Ave) (dBuV/m)	Margin (Ave) (dB)	Remark
1	2081.3081	26.23	74.00	-47.77	54.00	-27.77	peak
2	3475.4475	32.34	74.00	-41.66	54.00	-21.66	peak
3	4823.6824	39.90	74.00	-34.10	54.00	-14.1	peak
4	7744.5745	40.44	74.00	-33.56	54.00	-13.56	peak
5	10031.3031	44.99	74.00	-29.01	54.00	-9.01	peak
6	16350.8351	53.32	74.00	-20.68	54.00	-0.68	peak

Note: 1.If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.