



## 2.13. Radiated Emission

### 2.13.1. Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ( $\mu\text{V}/\text{m}$ )	Measurement Distance (m)
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
Above 960	500	3

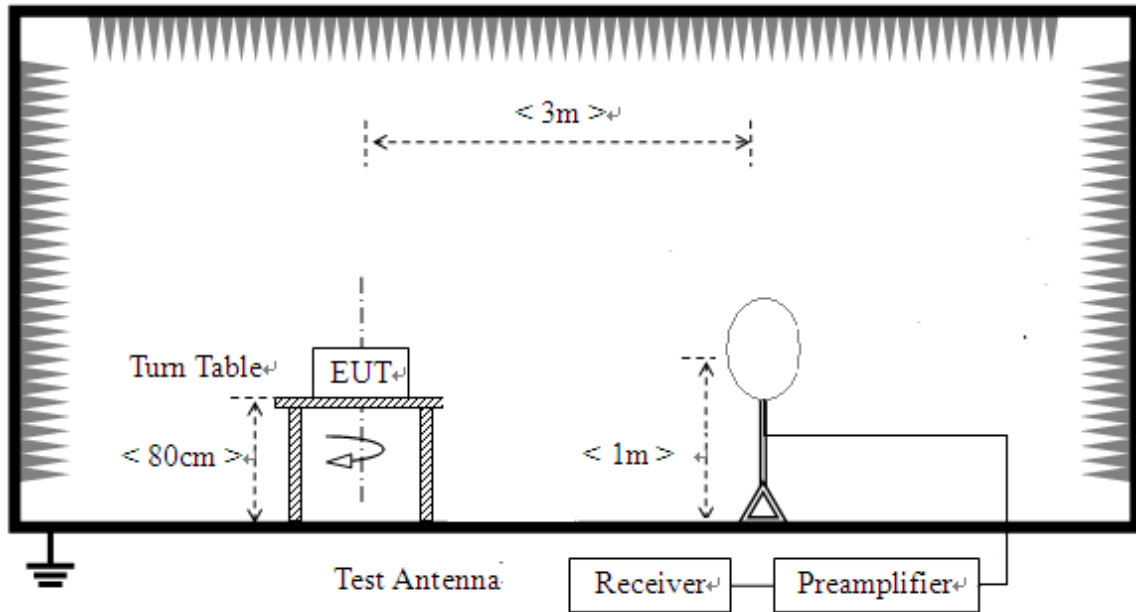
**Note1:** For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

**Note2:** For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK). In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

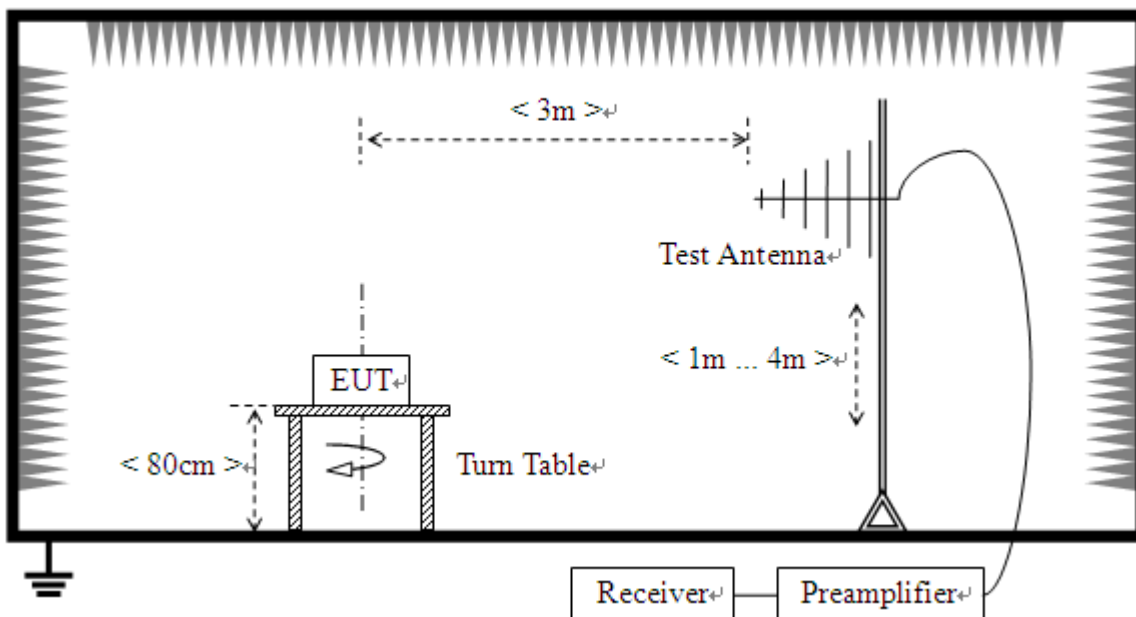
2.13.2. Test Description

Test Setup:

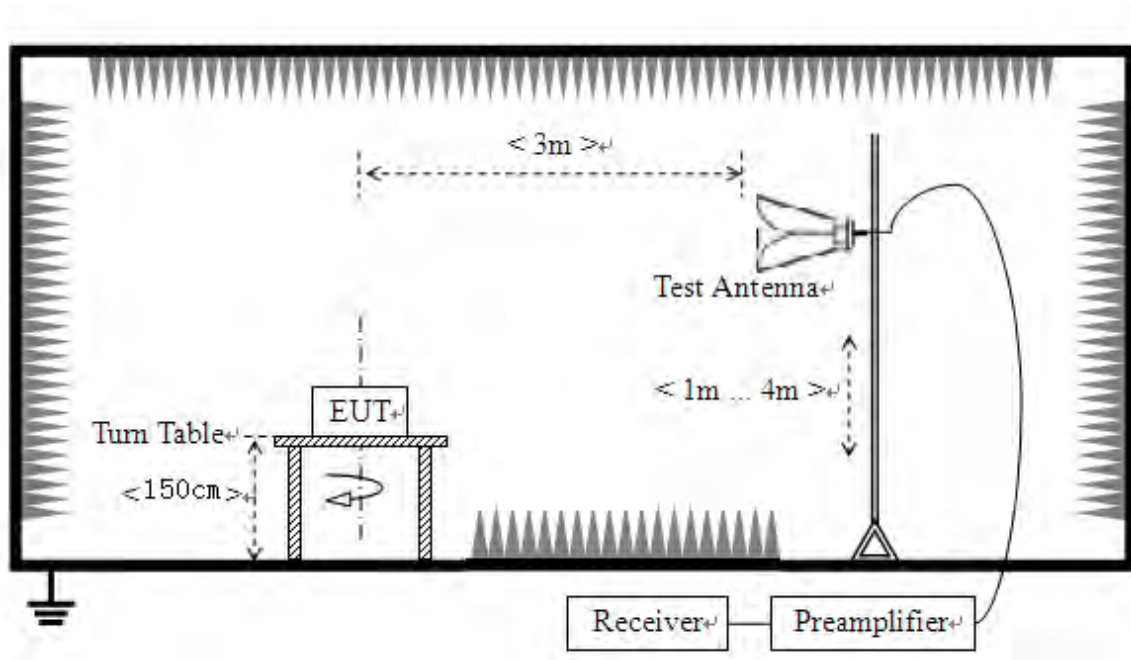
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to 1GHz



## 3) For radiated emissions above 1GHz



The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.



### 2.13.3. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V}/\text{m}] = U_R + A_T + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

$A_T$ : Total correction Factor except Antenna

$U_R$ : Receiver Reading

$G_{\text{preamp}}$ : Preamplifier Gain

$A_{\text{Factor}}$ : Antenna Factor at 3m

During the test, the total correction Factor  $A_T$  and  $A_{\text{Factor}}$  were built in test software.

**Note 1:** All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

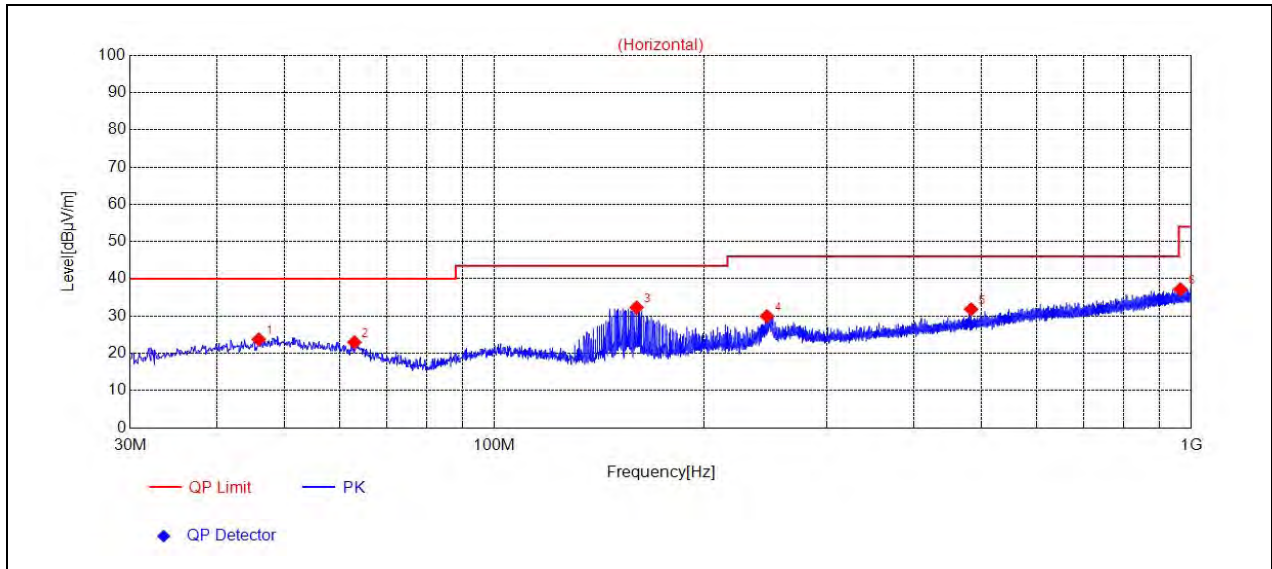
**Note 2:** For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

**Note 3:** For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.



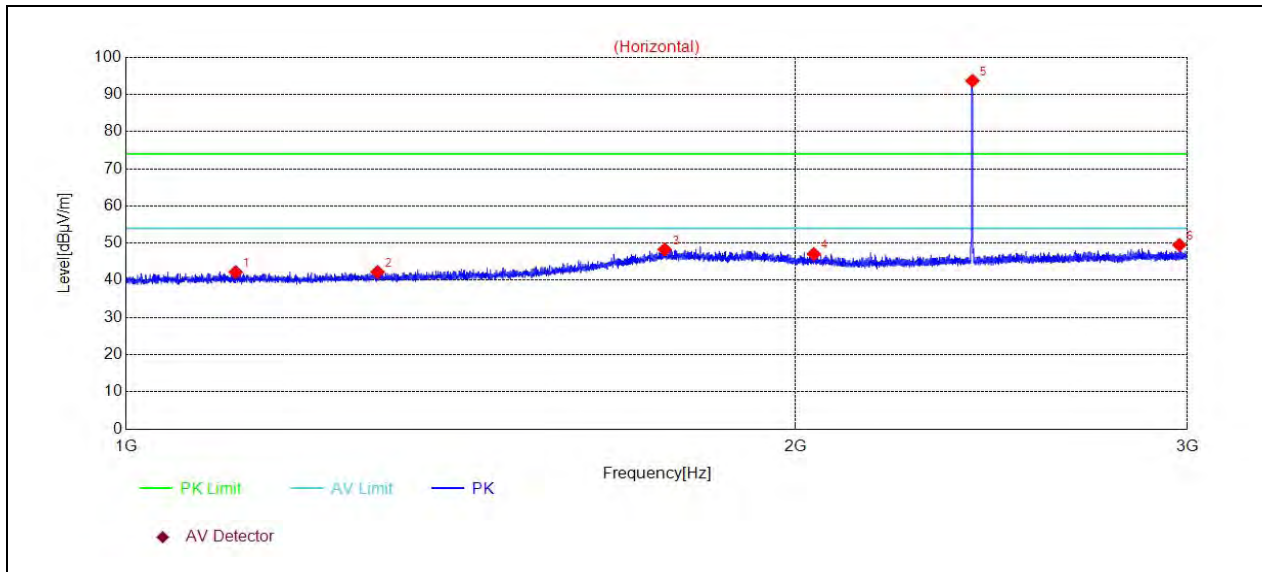
**GFSK Mode**

Plots for Channel 0



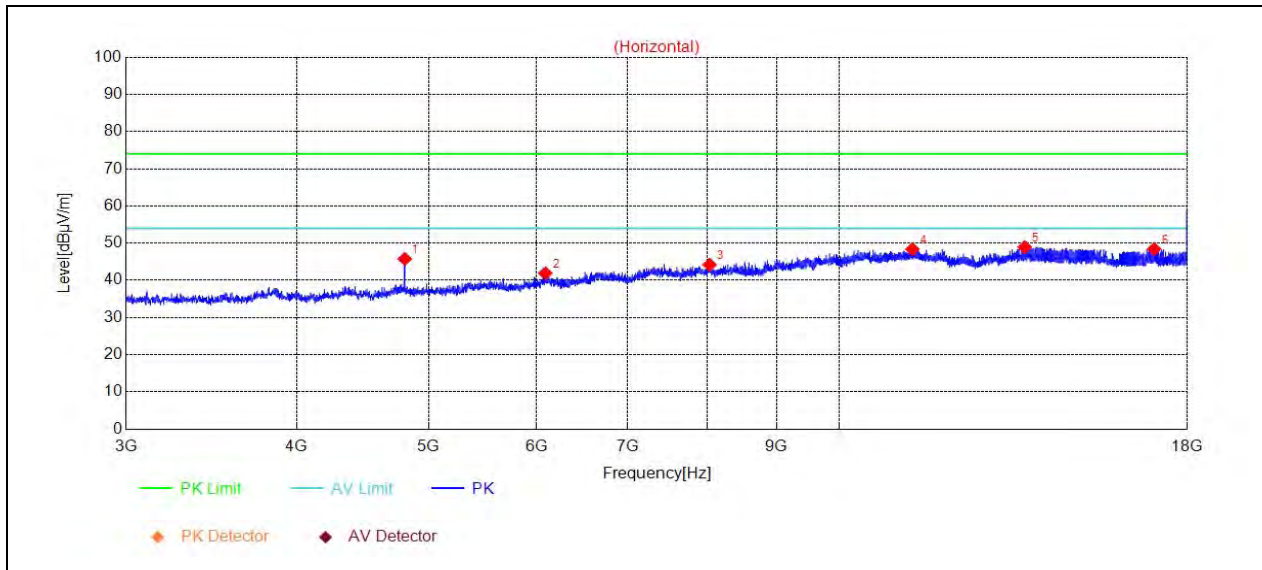
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	45.9080	23.75	-7.23	40.00	Horizontal	PK	PASS
2	62.9800	22.98	-9.20	40.00	Horizontal	PK	PASS
3	159.9800	32.29	-11.26	43.50	Horizontal	PK	PASS
4	246.1160	29.98	-7.04	46.00	Horizontal	PK	PASS
5	483.1840	31.84	-1.65	46.00	Horizontal	PK	PASS
6	964.6920	37.22	5.51	54.00	Horizontal	PK	PASS



(1GHz to 3GHz)

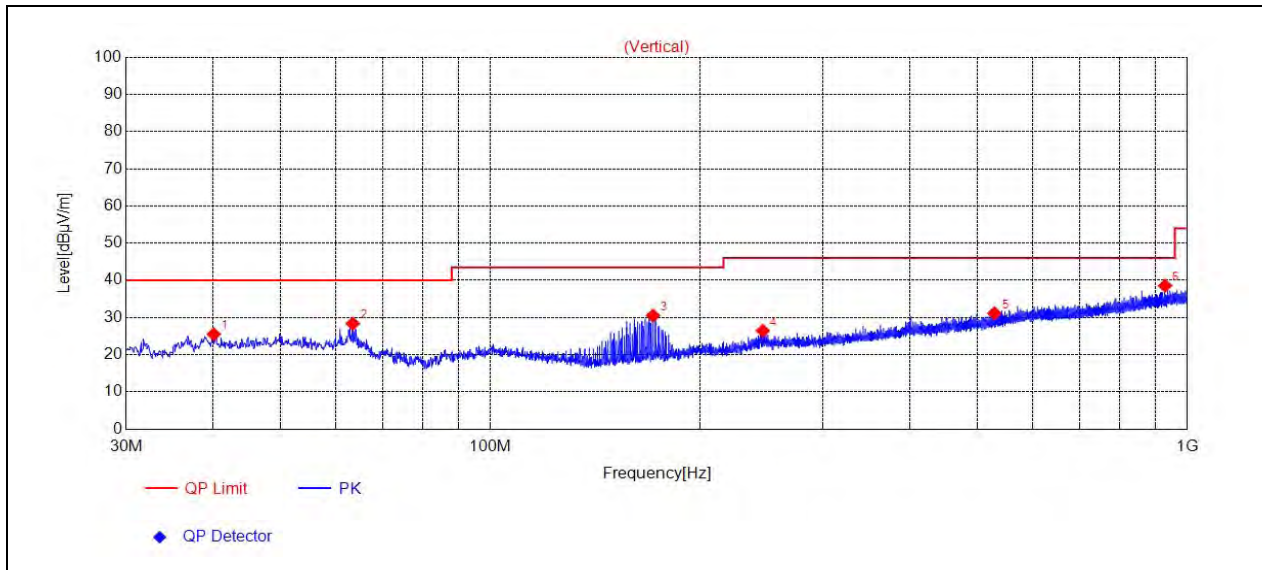
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1120.2000	42.21	-7.97	74.00	Horizontal	PK	PASS
2	1297.4000	42.24	-7.29	74.00	Horizontal	PK	PASS
3	1746.6000	48.30	-1.12	74.00	Horizontal	PK	PASS
4	2038.2000	47.06	-2.56	74.00	Horizontal	PK	PASS
5	2402.0000	93.66	-2.89	74.00	N/A	PK	N/A
6	2975.8000	49.51	-1.67	74.00	Horizontal	PK	PASS



(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	4803.0000	45.76	-5.44	74.00	Horizontal	PK	PASS
2	6088.5000	41.91	-2.69	74.00	Horizontal	PK	PASS
3	8034.0000	44.20	1.26	74.00	Horizontal	PK	PASS
4	11317.5000	48.37	6.12	74.00	Horizontal	PK	PASS
5	13681.5000	48.94	6.97	74.00	Horizontal	PK	PASS
6	17020.5000	48.42	10.81	74.00	Horizontal	PK	PASS

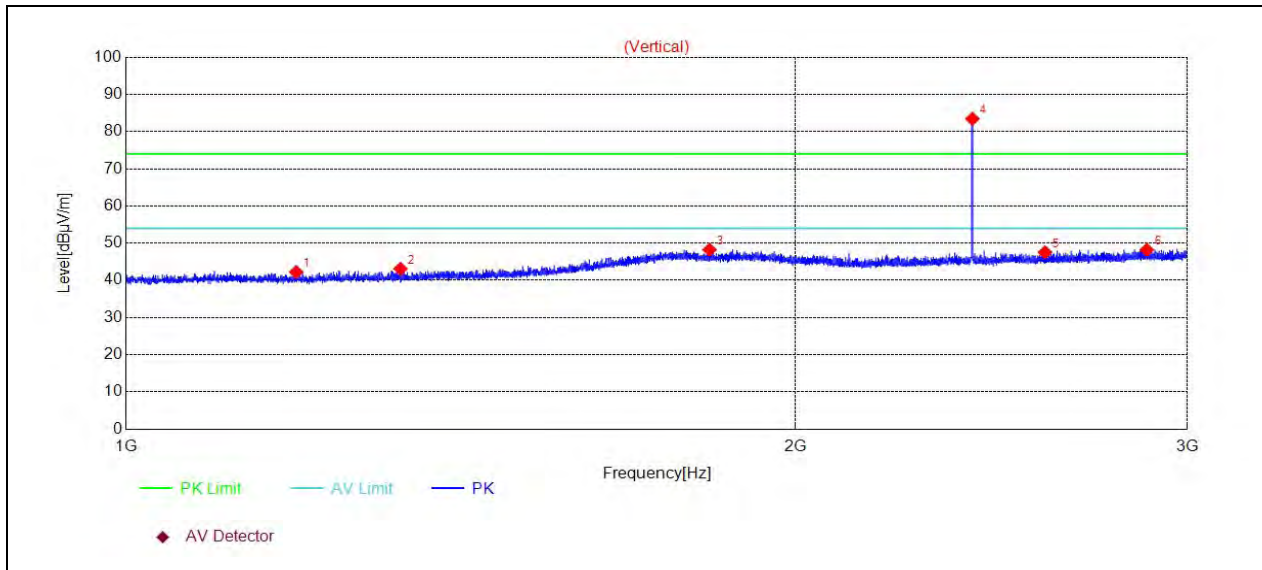




(30MHz to 1GHz)

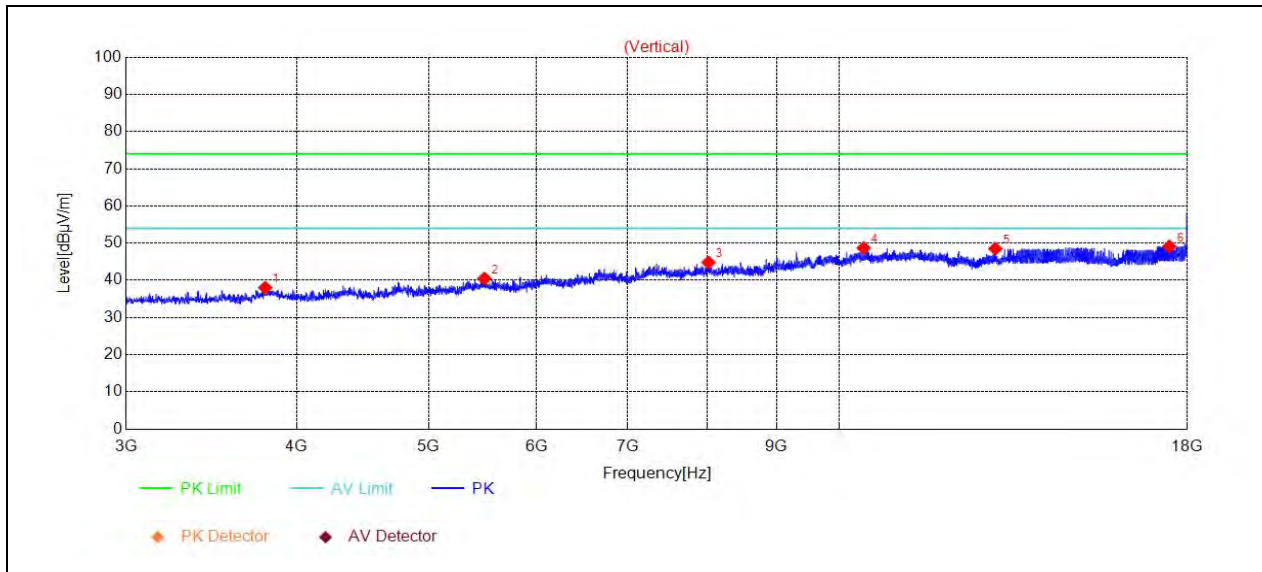
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	40.0880	25.51	-8.01	40.00	Vertical	PK	PASS
2	63.4650	28.38	-9.34	40.00	Vertical	PK	PASS
3	171.1350	30.51	-10.82	43.50	Vertical	PK	PASS
4	246.0190	26.43	-7.04	46.00	Vertical	PK	PASS
5	528.8710	31.13	-0.53	46.00	Vertical	PK	PASS
6	929.3840	38.56	5.13	46.00	Vertical	PK	PASS





(1GHz to 3GHz)

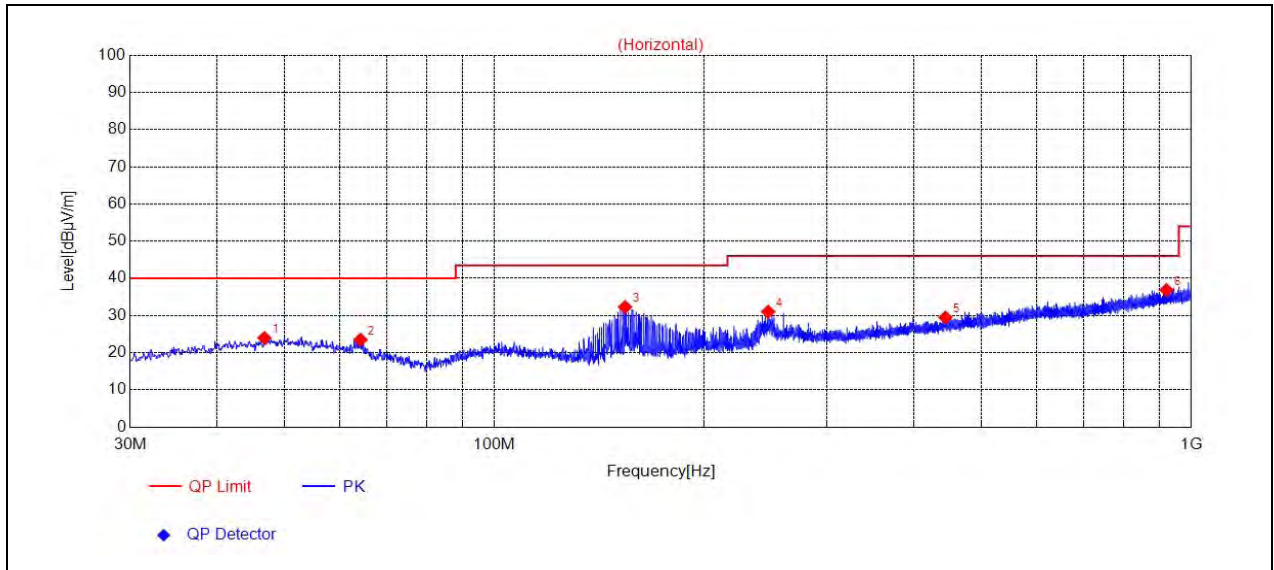
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1192.6000	42.24	-7.98	74.00	Vertical	PK	PASS
2	1328.6000	43.11	-7.18	74.00	Vertical	PK	PASS
3	1829.6000	48.25	-1.54	74.00	Vertical	PK	PASS
4	2401.8000	83.44	-2.89	74.00	N/A	PK	N/A
5	2589.2000	47.52	-2.47	74.00	Vertical	PK	PASS
6	2877.0000	48.21	-1.69	74.00	Vertical	PK	PASS



(3GHz to 18GHz)

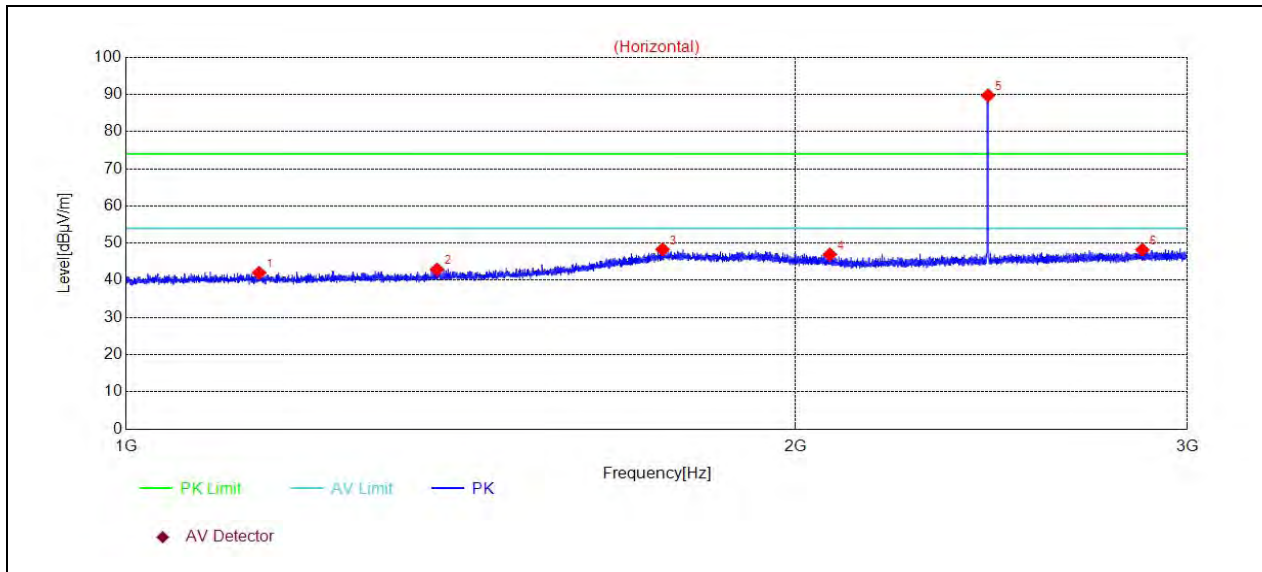
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	3795.0000	38.01	-7.68	74.00	Vertical	PK	PASS
2	5494.5000	40.46	-3.87	74.00	Vertical	PK	PASS
3	8020.5000	44.81	1.14	74.00	Vertical	PK	PASS
4	10425.0000	48.68	5.49	74.00	Vertical	PK	PASS
5	13020.0000	48.48	5.74	74.00	Vertical	PK	PASS
6	17461.5000	49.08	14.61	74.00	Vertical	PK	PASS

Plot for Channel 39



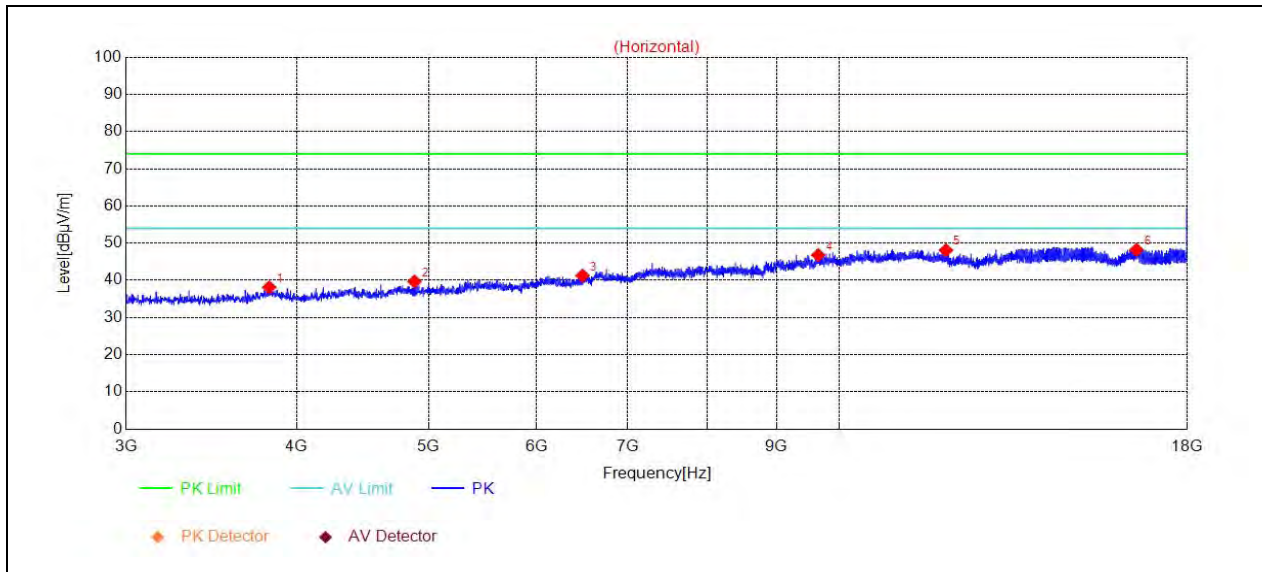
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	46.7810	23.96	-7.09	40.00	Horizontal	PK	PASS
2	64.2410	23.50	-9.57	40.00	Horizontal	PK	PASS
3	153.9660	32.28	-11.52	43.50	Horizontal	PK	PASS
4	247.0860	31.03	-7.01	46.00	Horizontal	PK	PASS
5	443.8990	29.48	-2.35	46.00	Horizontal	PK	PASS
6	921.2360	36.85	5.08	46.00	Horizontal	PK	PASS



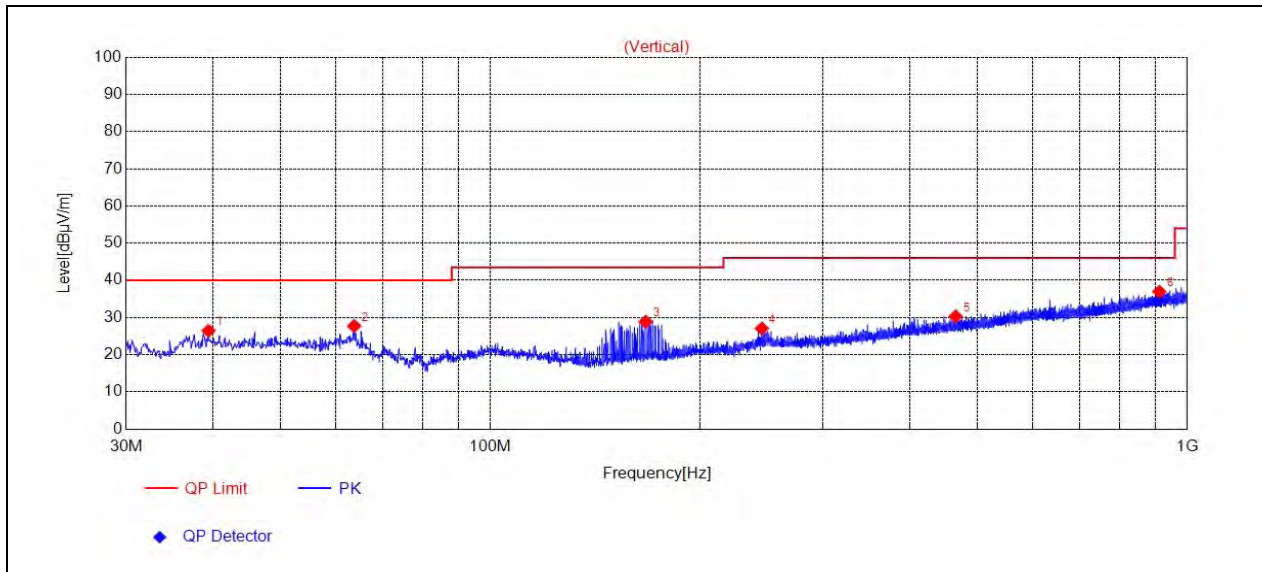
(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1147.8000	42.03	-7.88	74.00	Horizontal	PK	PASS
2	1379.8000	42.92	-6.88	74.00	Horizontal	PK	PASS
3	1742.6000	48.31	-1.21	74.00	Horizontal	PK	PASS
4	2072.2000	46.95	-2.90	74.00	Horizontal	PK	PASS
5	2441.0000	89.70	-2.88	74.00	N/A	PK	N/A
6	2863.8000	48.22	-1.65	74.00	Horizontal	PK	PASS



(3GHz to 18GHz)

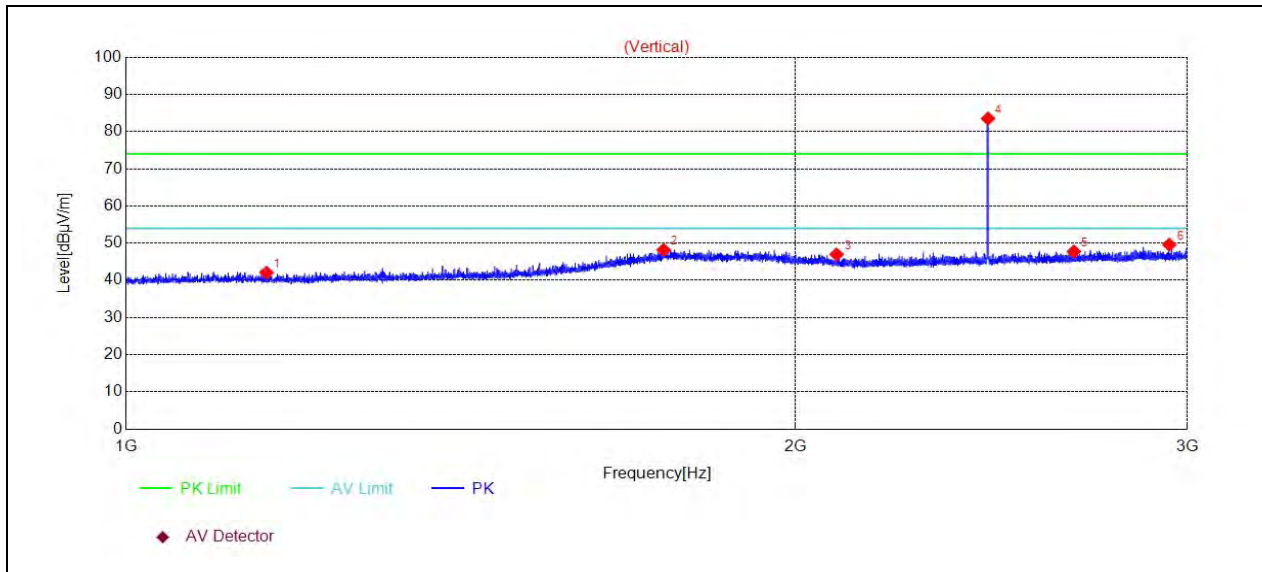
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3820.5000	38.12	-7.59	74.00	Horizontal	PK	PASS
2	4882.5000	39.68	-6.06	74.00	Horizontal	PK	PASS
3	6484.5000	41.27	-2.69	74.00	Horizontal	PK	PASS
4	9654.0000	46.78	5.21	74.00	Horizontal	PK	PASS
5	11976.0000	48.10	5.17	74.00	Horizontal	PK	PASS
6	16522.5000	48.22	8.30	74.00	Horizontal	PK	PASS



(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	39.4090	26.45	-8.22	40.00	Vertical	PK	PASS
2	63.7560	27.72	-9.43	40.00	Vertical	PK	PASS
3	167.0610	28.88	-10.99	43.50	Vertical	PK	PASS
4	245.1460	27.05	-7.07	46.00	Vertical	PK	PASS
5	465.2390	30.31	-1.93	46.00	Vertical	PK	PASS
6	912.0210	36.94	4.90	46.00	Vertical	PK	PASS

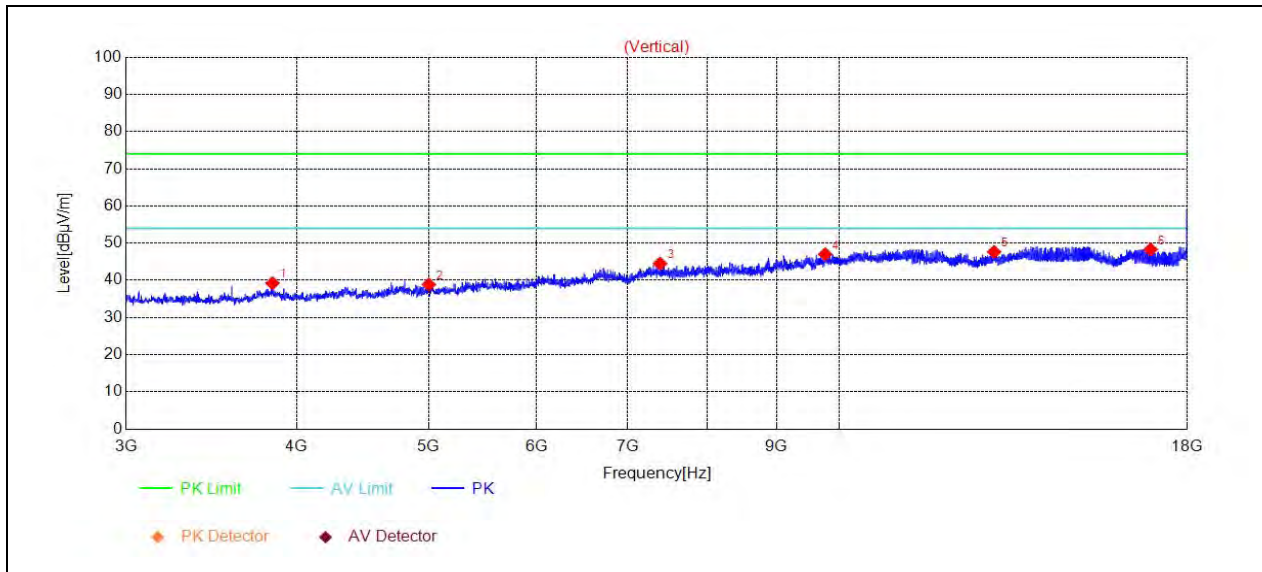




(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1156.6000	42.06	-7.89	74.00	Vertical	PK	PASS
2	1744.6000	48.17	-1.16	74.00	Vertical	PK	PASS
3	2086.8000	46.96	-3.14	74.00	Vertical	PK	PASS
4	2441.0000	83.50	-2.88	74.00	N/A	PK	N/A
5	2667.8000	47.74	-2.27	74.00	Vertical	PK	PASS
6	2944.8000	49.57	-1.83	74.00	Vertical	PK	PASS

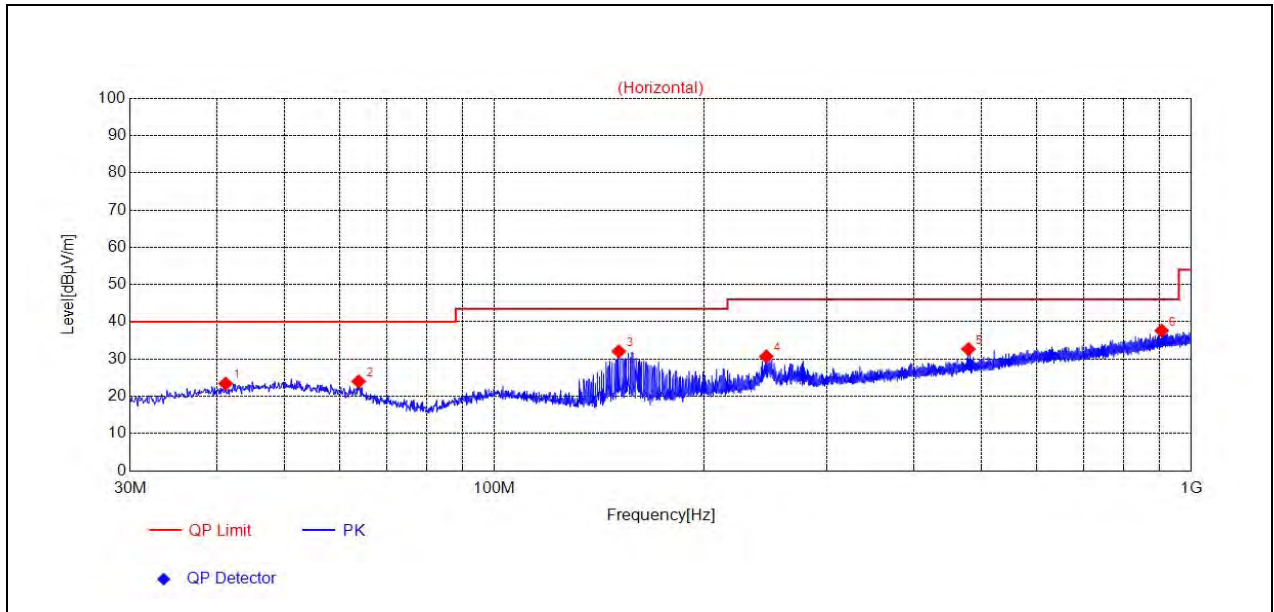




(3GHz to 18GHz)

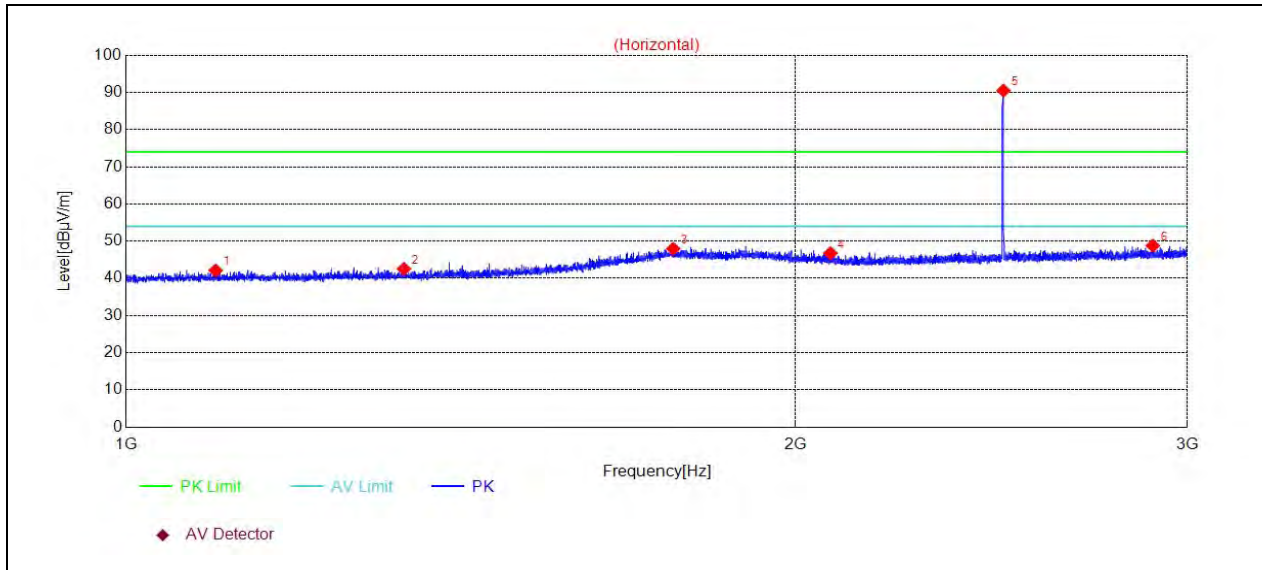
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3841.5000	39.24	-7.56	74.00	Vertical	PK	PASS
2	5002.5000	38.86	-5.37	74.00	Vertical	PK	PASS
3	7390.5000	44.50	-0.17	74.00	Vertical	PK	PASS
4	9768.0000	47.02	4.62	74.00	Vertical	PK	PASS
5	12991.5000	47.64	5.69	74.00	Vertical	PK	PASS
6	16920.0000	48.30	10.01	74.00	Vertical	PK	PASS

Plot for Channel 78



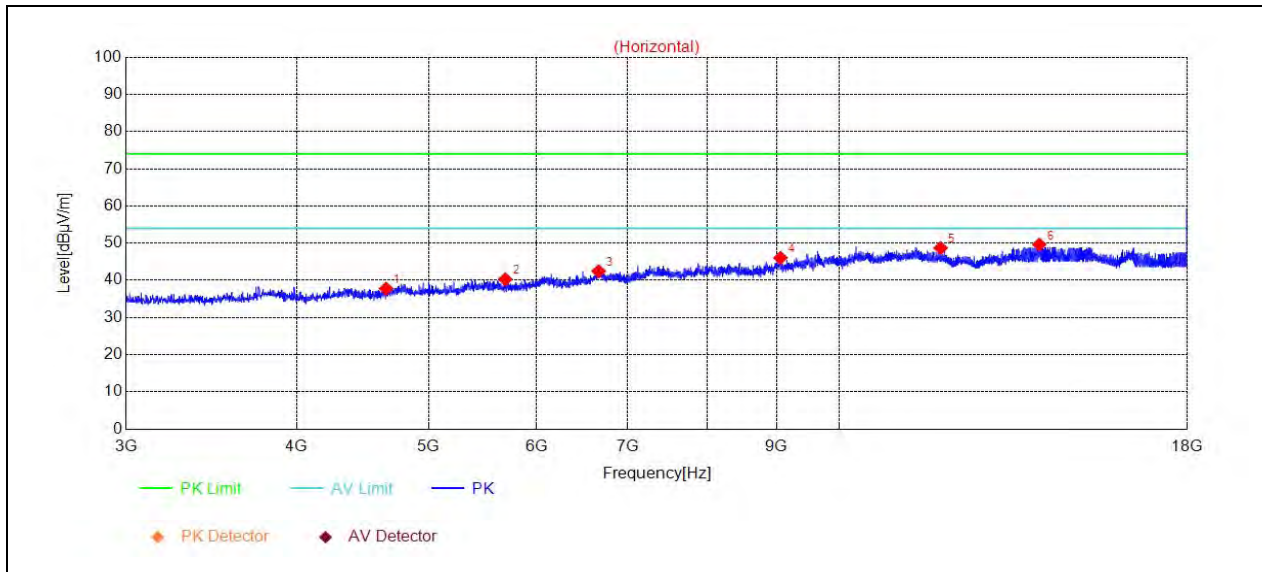
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	41.1550	23.41	-7.86	40.00	Horizontal	PK	PASS
2	63.8530	24.00	-9.46	40.00	Horizontal	PK	PASS
3	150.8620	32.08	-11.65	43.50	Horizontal	PK	PASS
4	245.6310	30.69	-7.05	46.00	Horizontal	PK	PASS
5	479.0130	32.66	-1.69	46.00	Horizontal	PK	PASS
6	907.1710	37.62	4.87	46.00	Horizontal	PK	PASS



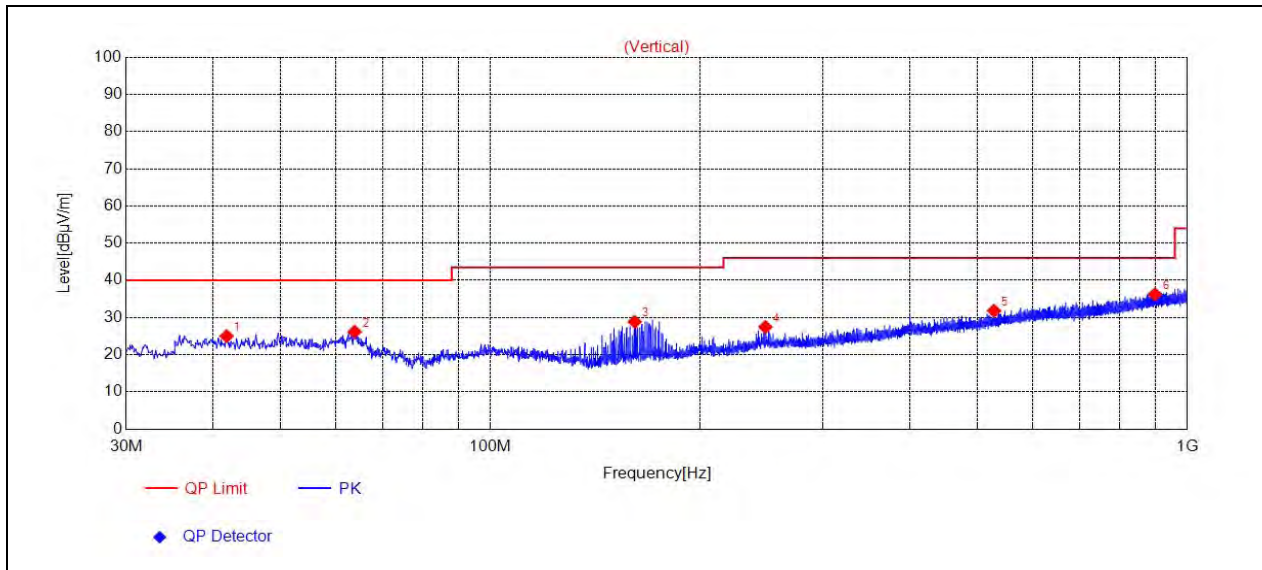
(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1097.2000	42.12	-8.05	74.00	Horizontal	PK	PASS
2	1333.4000	42.57	-7.17	74.00	Horizontal	PK	PASS
3	1762.0000	47.95	-1.11	74.00	Horizontal	PK	PASS
4	2073.4000	46.76	-2.92	74.00	Horizontal	PK	PASS
5	2480.2000	90.49	-2.68	74.00	N/A	PK	N/A
6	2895.0000	48.79	-1.75	74.00	Horizontal	PK	PASS



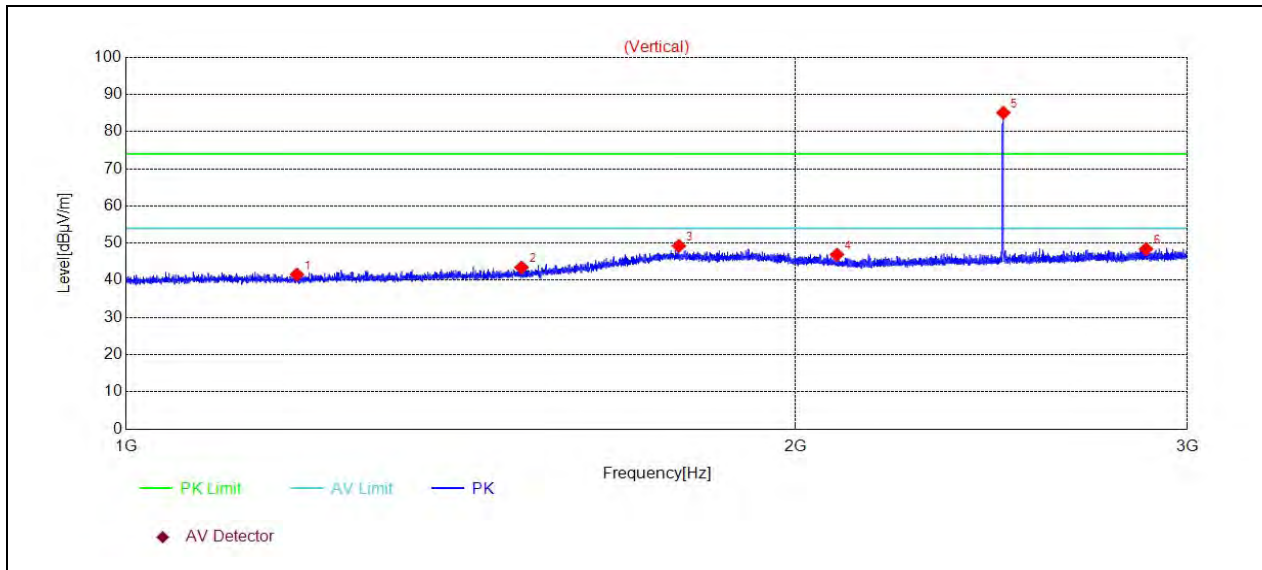
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	4654.5000	37.76	-6.59	74.00	Horizontal	PK	PASS
2	5691.0000	40.27	-4.42	74.00	Horizontal	PK	PASS
3	6663.0000	42.45	-1.33	74.00	Horizontal	PK	PASS
4	9057.0000	46.03	3.45	74.00	Horizontal	PK	PASS
5	11869.5000	48.70	5.36	74.00	Horizontal	PK	PASS
6	14022.0000	49.61	8.19	74.00	Horizontal	PK	PASS



(30MHz to 1GHz)

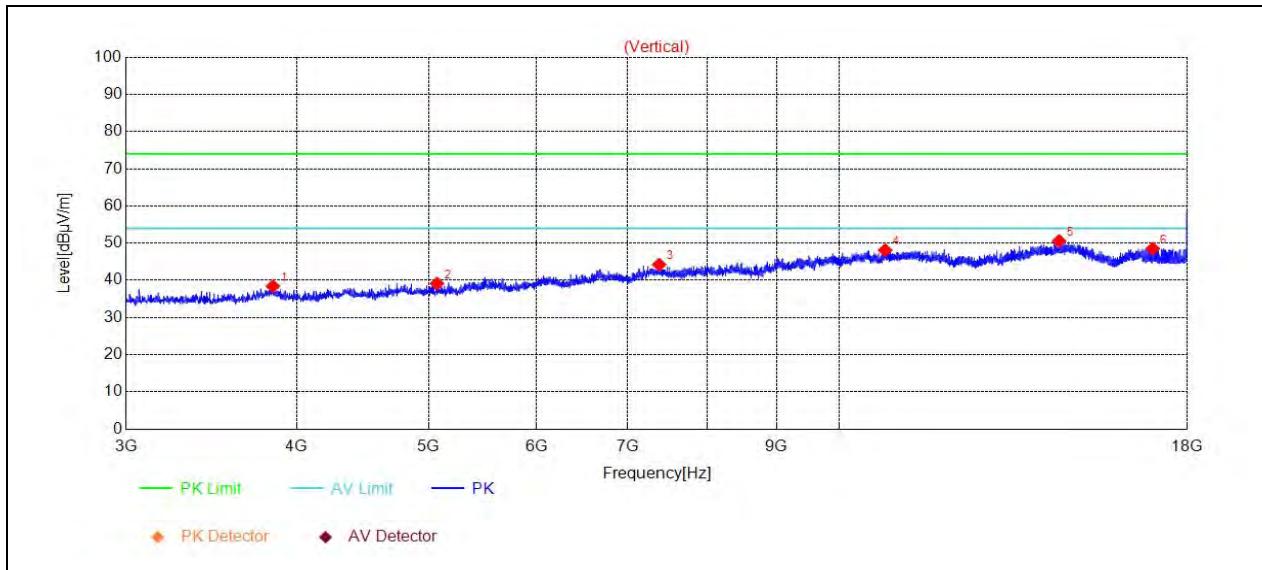
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	41.8340	25.01	-7.78	40.00	Vertical	PK	PASS
2	63.8530	26.16	-9.46	40.00	Vertical	PK	PASS
3	161.0470	28.85	-11.19	43.50	Vertical	PK	PASS
4	248.1530	27.44	-6.98	46.00	Vertical	PK	PASS
5	528.1920	31.80	-0.55	46.00	Vertical	PK	PASS
6	898.8290	36.26	4.90	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1193.6000	41.57	-7.98	74.00	Vertical	PK	PASS
2	1506.0000	43.46	-5.93	74.00	Vertical	PK	PASS
3	1772.4000	49.25	-1.17	74.00	Vertical	PK	PASS
4	2087.6000	46.92	-3.16	74.00	Vertical	PK	PASS
5	2480.0000	85.05	-2.68	74.00	N/A	PK	N/A
6	2874.8000	48.43	-1.68	74.00	Vertical	PK	PASS





(3GHz to 18GHz)

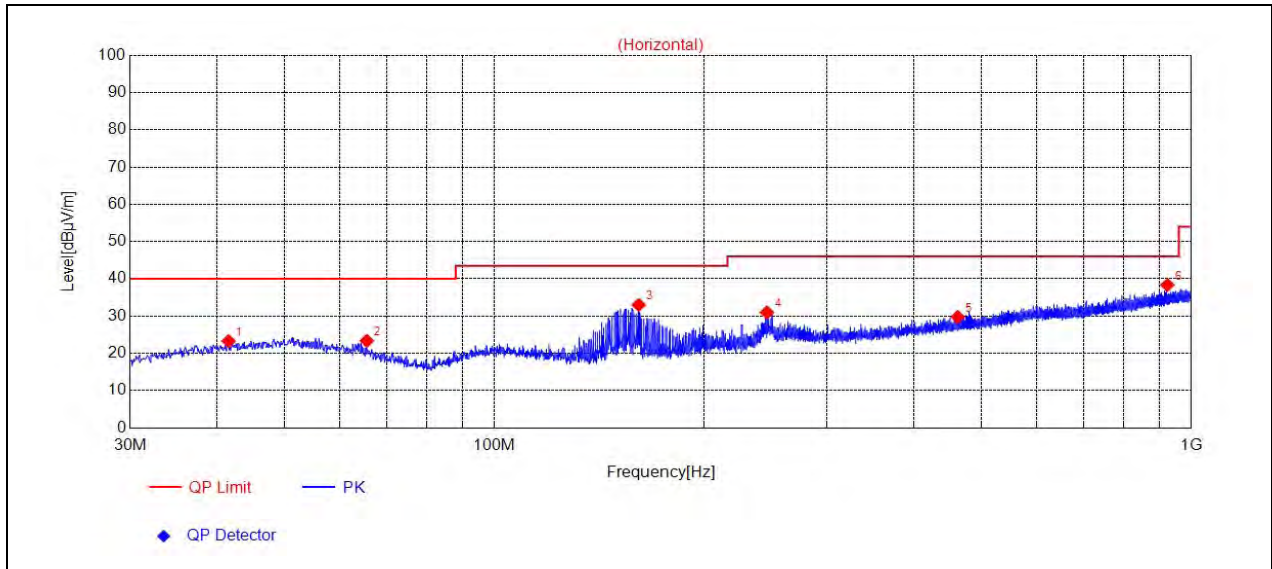
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	3844.5000	38.41	-7.55	74.00	Vertical	PK	PASS
2	5071.5000	39.12	-5.45	74.00	Vertical	PK	PASS
3	7380.0000	44.21	-0.21	74.00	Vertical	PK	PASS
4	10809.0000	48.10	5.82	74.00	Vertical	PK	PASS
5	14499.0000	50.56	8.91	74.00	Vertical	PK	PASS
6	16980.0000	48.50	10.62	74.00	Vertical	PK	PASS





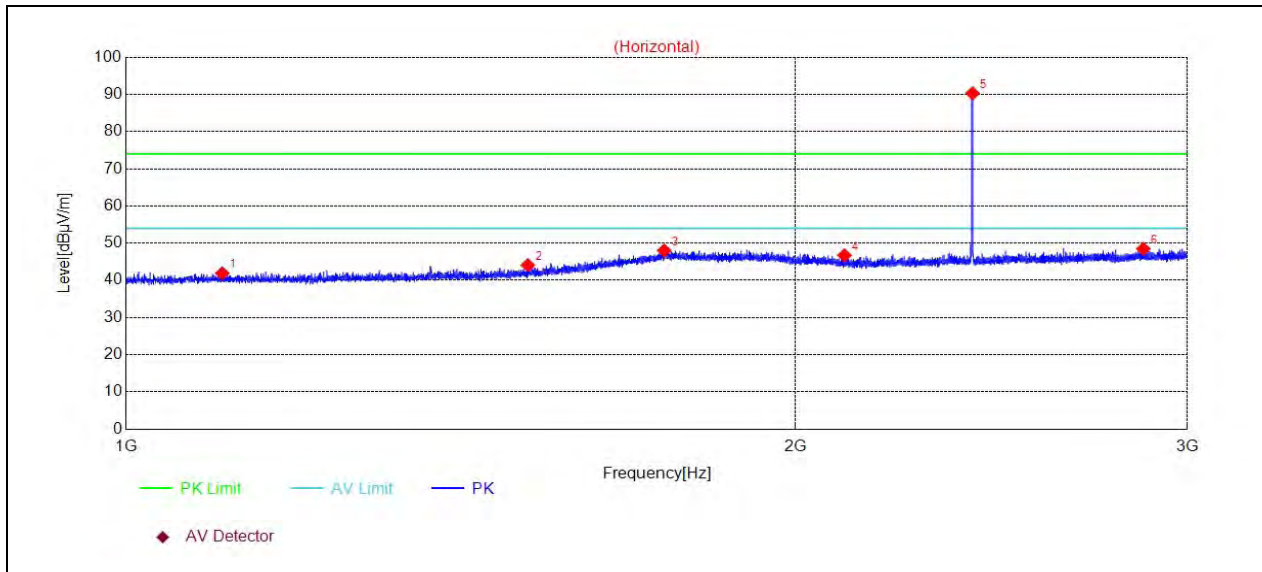
**$\pi/4$ -DQPSK Mode**

Plots for Channel 0



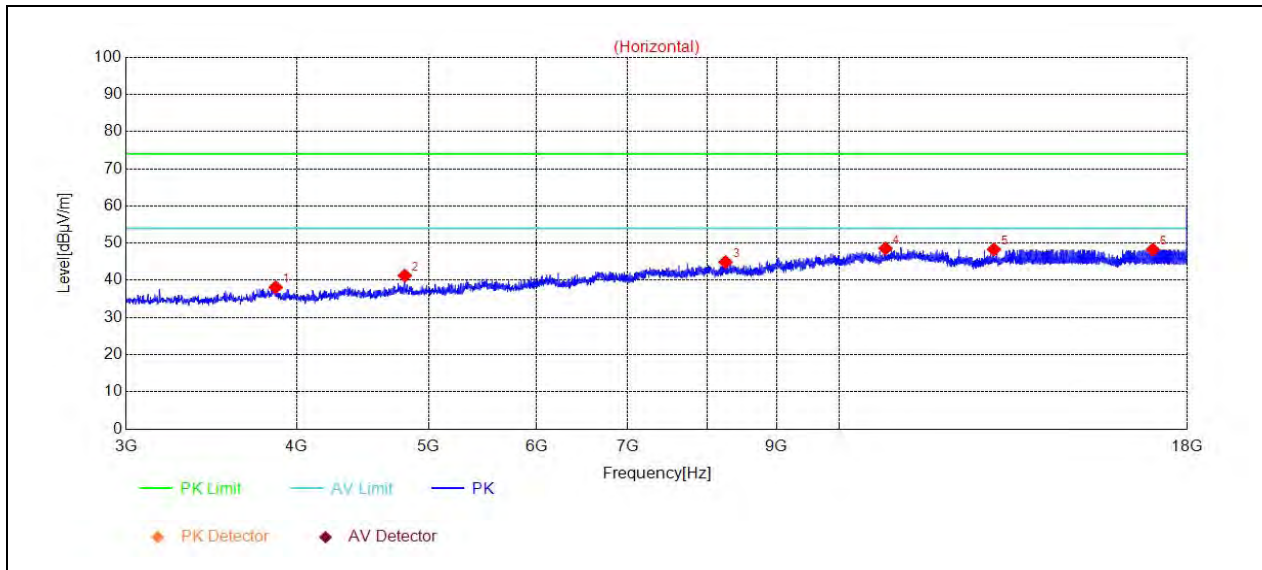
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	41.5430	23.29	-7.81	40.00	Horizontal	PK	PASS
2	65.5990	23.35	-9.94	40.00	Horizontal	PK	PASS
3	161.0470	33.01	-11.19	43.50	Horizontal	PK	PASS
4	246.1160	30.99	-7.04	46.00	Horizontal	PK	PASS
5	462.3290	29.76	-2.03	46.00	Horizontal	PK	PASS
6	924.1460	38.35	5.09	46.00	Horizontal	PK	PASS



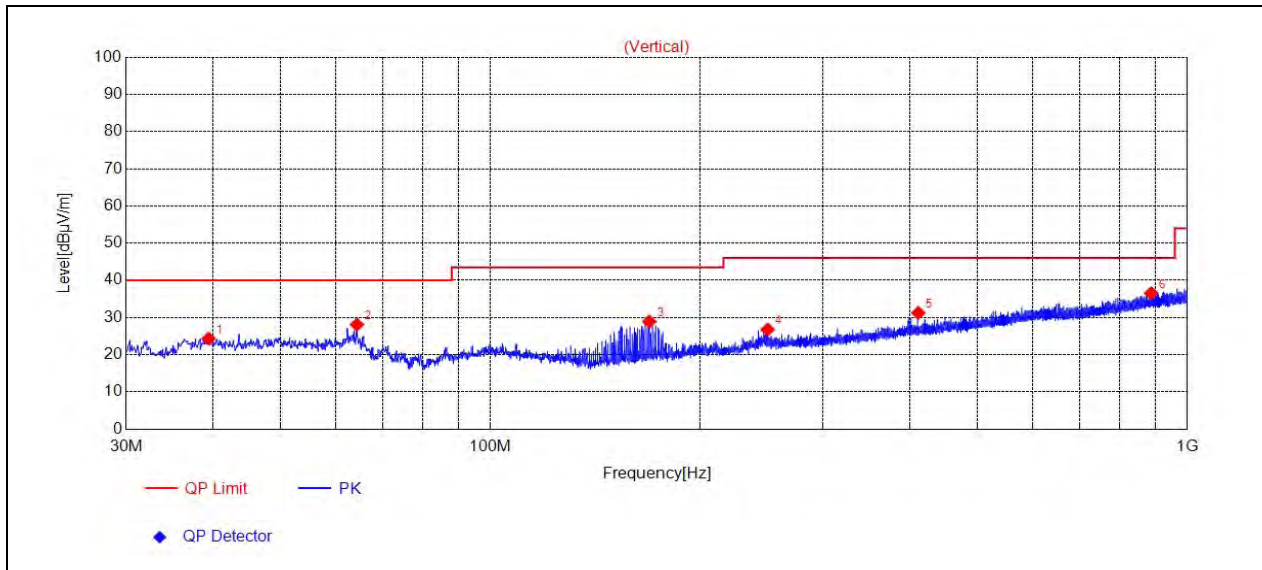
(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1104.8000	41.91	-8.01	74.00	Horizontal	PK	PASS
2	1515.8000	44.07	-5.81	74.00	Horizontal	PK	PASS
3	1745.8000	48.00	-1.14	74.00	Horizontal	PK	PASS
4	2103.8000	46.73	-3.37	74.00	Horizontal	PK	PASS
5	2402.2000	90.28	-2.89	74.00	N/A	PK	N/A
6	2866.8000	48.48	-1.66	74.00	Horizontal	PK	PASS



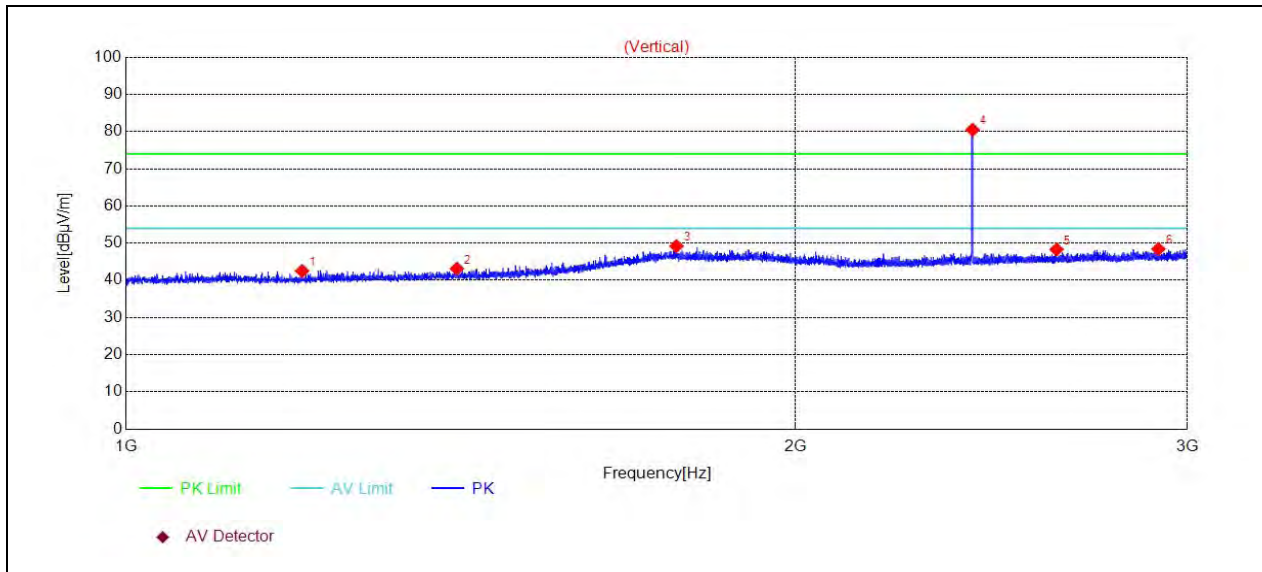
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3862.5000	38.14	-7.71	74.00	Horizontal	PK	PASS
2	4803.0000	41.26	-5.44	74.00	Horizontal	PK	PASS
3	8254.5000	44.91	1.65	74.00	Horizontal	PK	PASS
4	10813.5000	48.58	5.79	74.00	Horizontal	PK	PASS
5	12988.5000	48.31	5.67	74.00	Horizontal	PK	PASS
6	16983.0000	48.26	10.66	74.00	Horizontal	PK	PASS



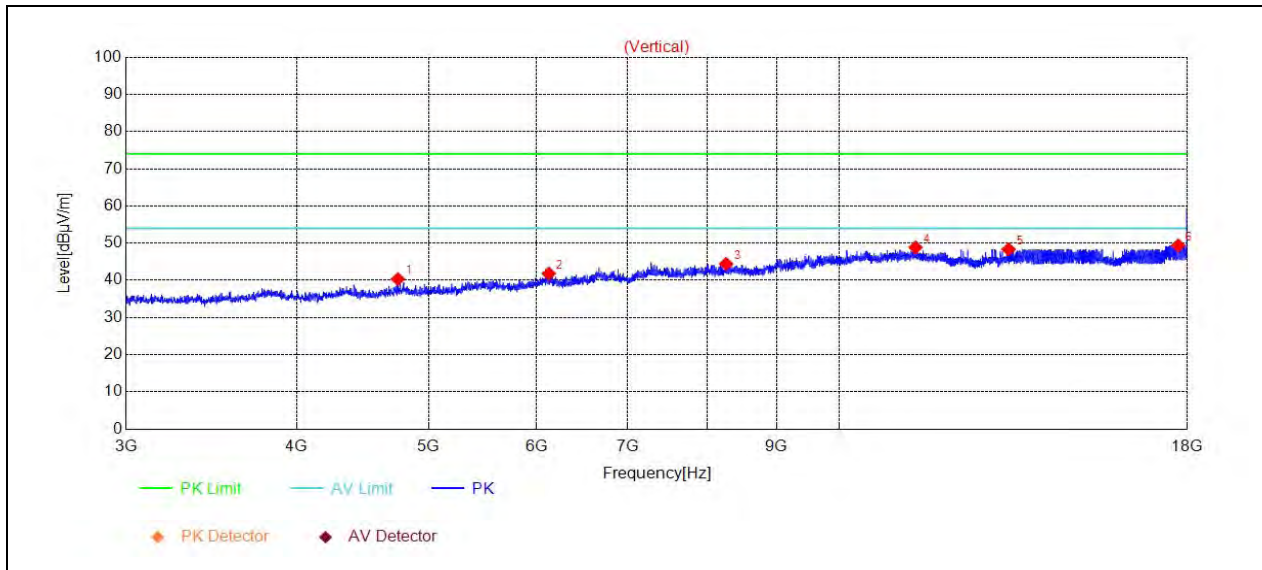
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	39.4090	24.34	-8.22	40.00	Vertical	PK	PASS
2	64.3380	28.08	-9.59	40.00	Vertical	PK	PASS
3	169.0980	28.93	-10.92	43.50	Vertical	PK	PASS
4	249.9960	26.78	-6.92	46.00	Vertical	PK	PASS
5	411.3070	31.25	-3.15	46.00	Vertical	PK	PASS
6	887.5770	36.54	4.71	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1200.0000	42.52	-8.00	74.00	Vertical	PK	PASS
2	1408.4000	43.13	-6.72	74.00	Vertical	PK	PASS
3	1768.0000	49.19	-1.15	74.00	Vertical	PK	PASS
4	2402.2000	80.48	-2.89	74.00	N/A	PK	N/A
5	2620.4000	48.30	-2.41	74.00	Vertical	PK	PASS
6	2911.6000	48.43	-1.79	74.00	Vertical	PK	PASS

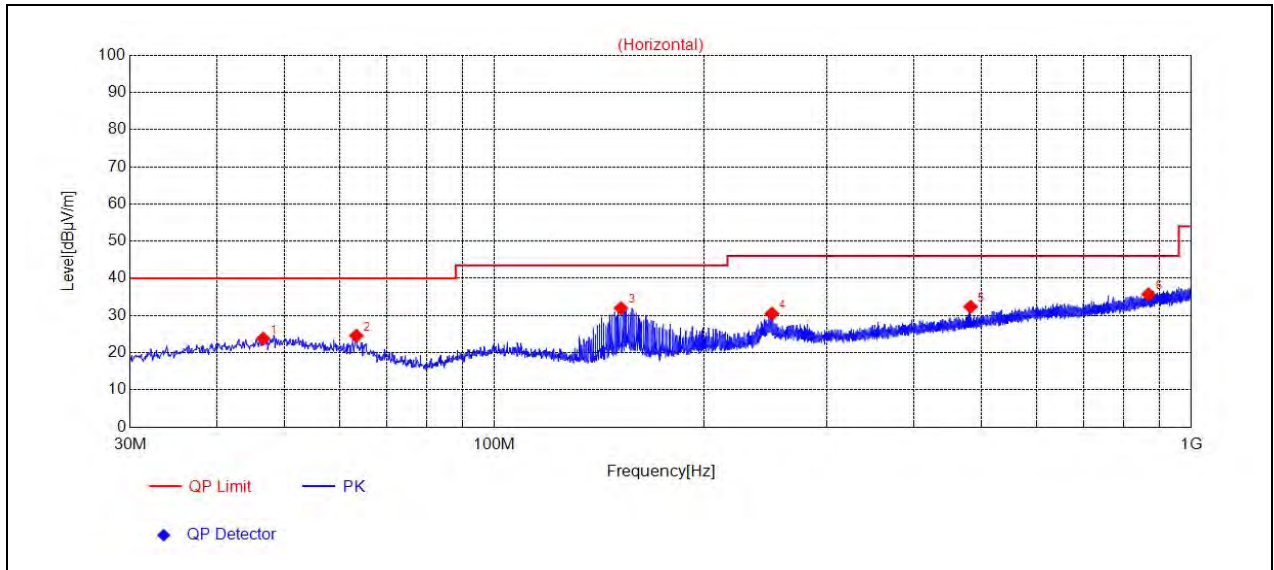


(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	4747.5000	40.33	-5.66	74.00	Vertical	PK	PASS
2	6124.5000	41.83	-2.73	74.00	Vertical	PK	PASS
3	8263.5000	44.40	1.64	74.00	Vertical	PK	PASS
4	11379.0000	48.87	6.08	74.00	Vertical	PK	PASS
5	13312.5000	48.35	6.04	74.00	Vertical	PK	PASS
6	17727.0000	49.38	17.15	74.00	Vertical	PK	PASS



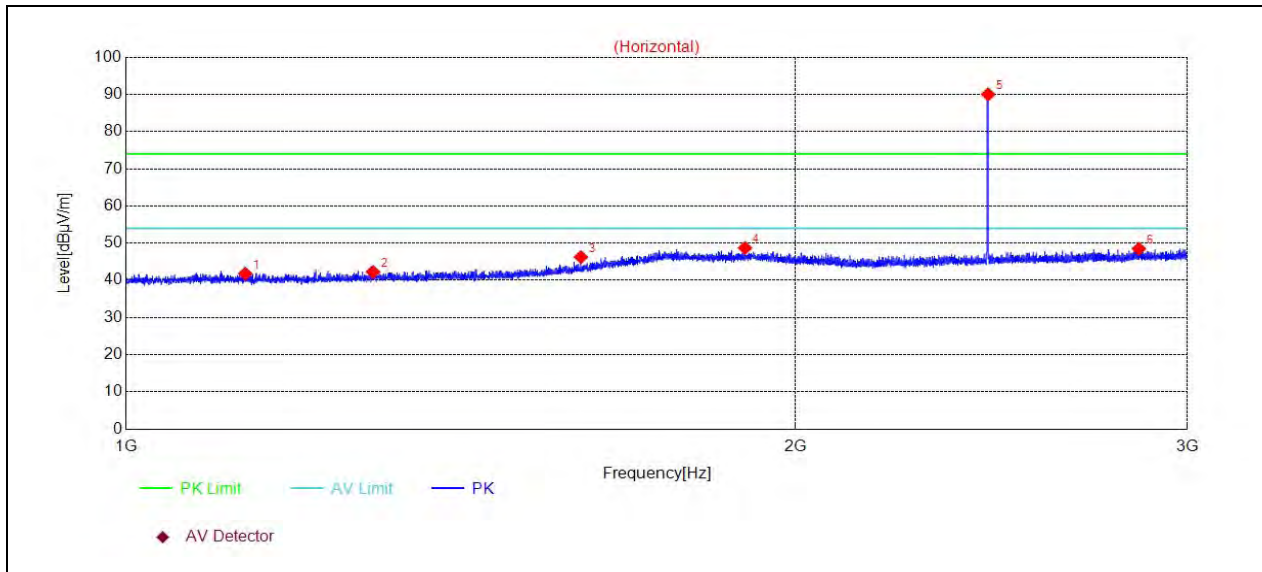
Plot for Channel 39



(30MHz to 1GHz)

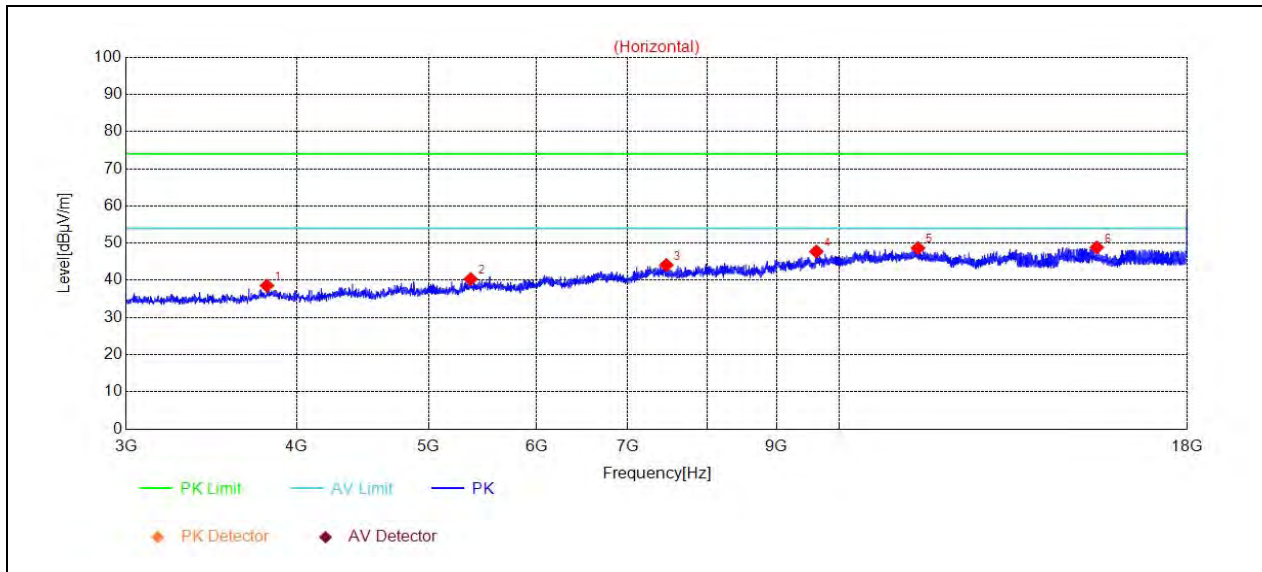
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	46.5870	23.79	-7.12	40.00	Horizontal	PK	PASS
2	63.3680	24.55	-9.32	40.00	Horizontal	PK	PASS
3	151.9290	32.01	-11.62	43.50	Horizontal	PK	PASS
4	250.1900	30.50	-6.91	46.00	Horizontal	PK	PASS
5	482.1170	32.35	-1.66	46.00	Horizontal	PK	PASS
6	868.2740	35.71	4.36	46.00	Horizontal	PK	PASS





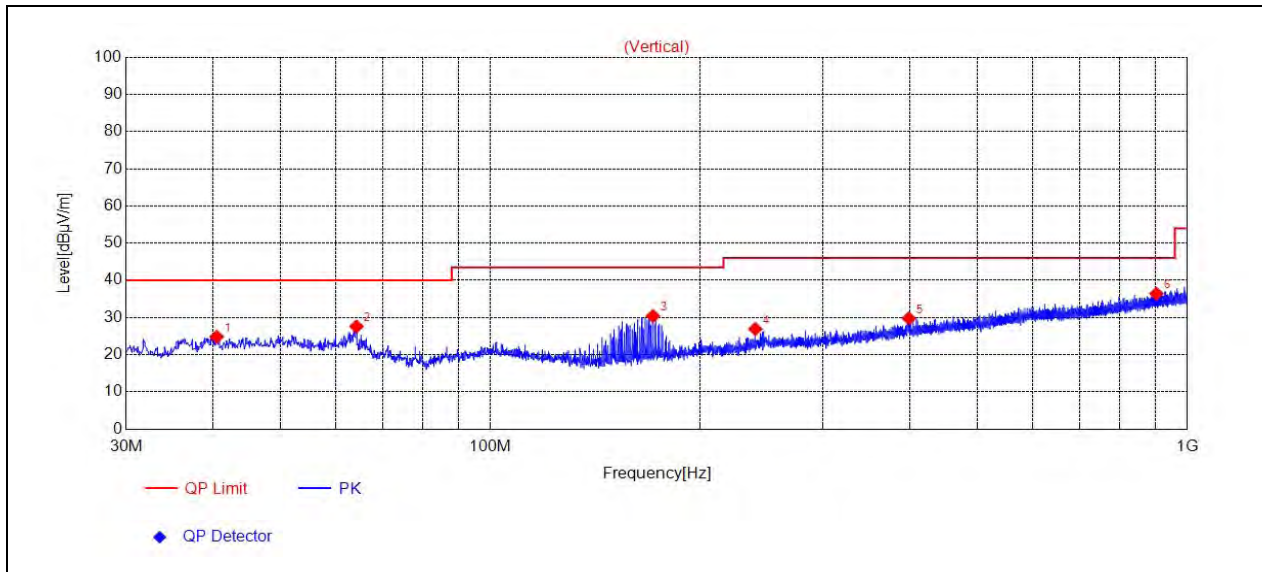
(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1131.4000	41.78	-7.93	74.00	Horizontal	PK	PASS
2	1291.4000	42.27	-7.32	74.00	Horizontal	PK	PASS
3	1601.4000	46.25	-4.43	74.00	Horizontal	PK	PASS
4	1898.0000	48.70	-1.40	74.00	Horizontal	PK	PASS
5	2441.2000	90.00	-2.88	74.00	N/A	PK	N/A
6	2853.6000	48.49	-1.61	74.00	Horizontal	PK	PASS



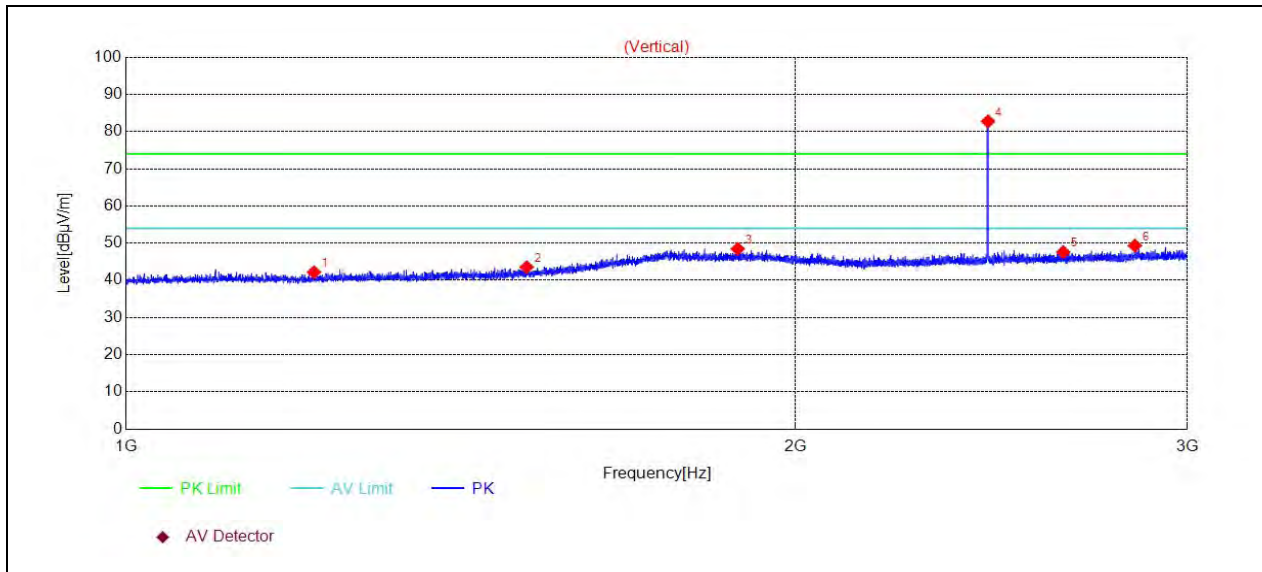
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	3805.5000	38.57	-7.62	74.00	Horizontal	PK	PASS
2	5368.5000	40.34	-4.17	74.00	Horizontal	PK	PASS
3	7470.0000	44.09	0.06	74.00	Horizontal	PK	PASS
4	9624.0000	47.74	4.70	74.00	Horizontal	PK	PASS
5	11425.5000	48.68	6.10	74.00	Horizontal	PK	PASS
6	15451.5000	48.85	7.01	74.00	Horizontal	PK	PASS



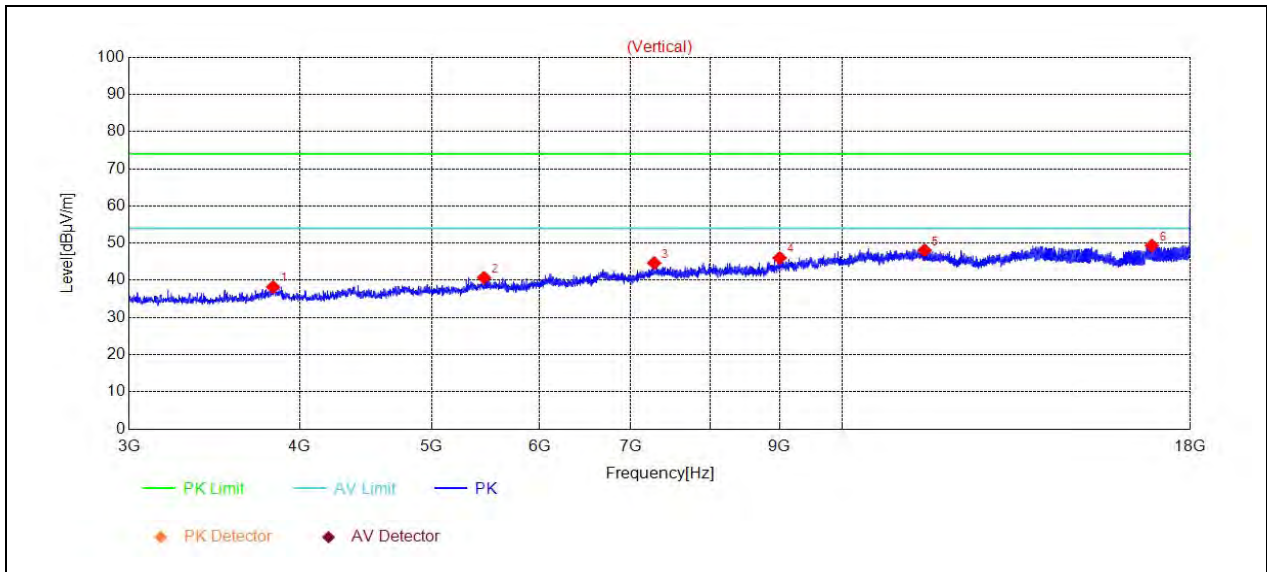
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	40.4760	24.83	-7.95	40.00	Vertical	PK	PASS
2	64.2410	27.58	-9.57	40.00	Vertical	PK	PASS
3	171.1350	30.40	-10.82	43.50	Vertical	PK	PASS
4	240.0050	26.93	-7.30	46.00	Vertical	PK	PASS
5	398.6000	29.80	-3.36	46.00	Vertical	PK	PASS
6	903.1940	36.40	4.90	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

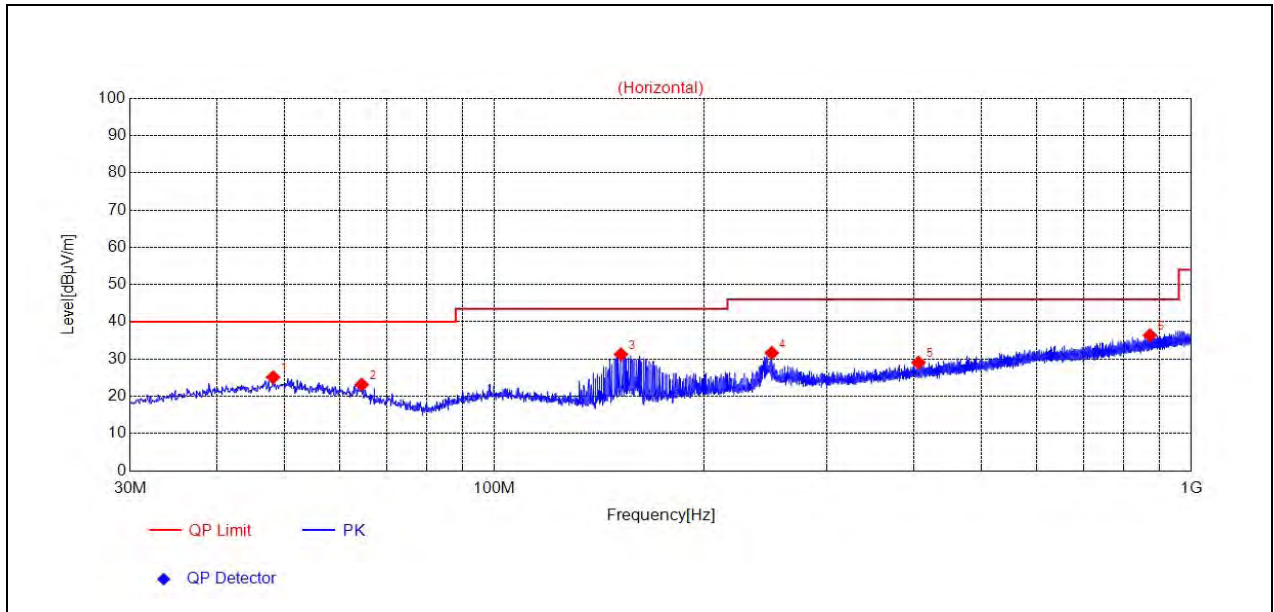
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1214.8000	42.20	-7.86	74.00	Vertical	PK	PASS
2	1514.0000	43.55	-5.83	74.00	Vertical	PK	PASS
3	1883.8000	48.46	-1.48	74.00	Vertical	PK	PASS
4	2441.0000	82.74	-2.88	74.00	N/A	PK	N/A
5	2638.6000	47.59	-2.39	74.00	Vertical	PK	PASS
6	2841.8000	49.32	-1.72	74.00	Vertical	PK	PASS



(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	3826.5000	38.20	-7.58	74.00	Vertical	PK	PASS
2	5463.0000	40.73	-4.11	74.00	Vertical	PK	PASS
3	7281.0000	44.64	-0.09	74.00	Vertical	PK	PASS
4	9000.0000	46.03	3.51	74.00	Vertical	PK	PASS
5	11493.0000	48.07	6.16	74.00	Vertical	PK	PASS
6	16869.0000	49.36	9.84	74.00	Vertical	PK	PASS

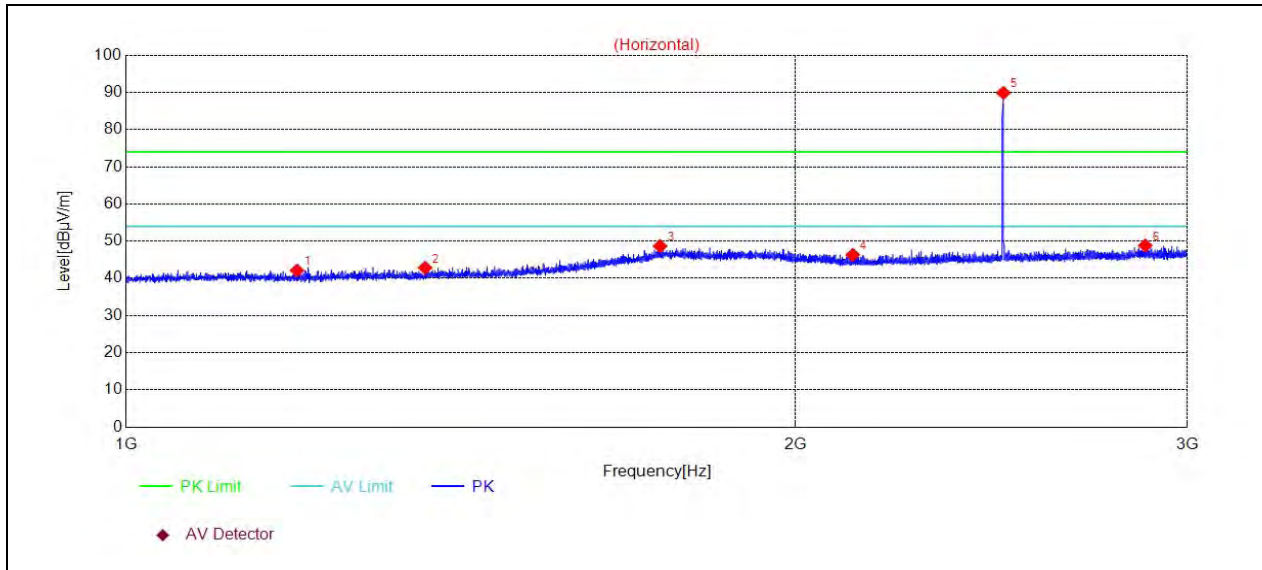
Plot for Channel 78



(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	48.1390	25.13	-6.85	40.00	Horizontal	PK	PASS
2	64.5320	23.14	-9.65	40.00	Horizontal	PK	PASS
3	151.9290	31.25	-11.62	43.50	Horizontal	PK	PASS
4	250.0930	31.63	-6.92	46.00	Horizontal	PK	PASS
5	406.0690	29.06	-3.26	46.00	Horizontal	PK	PASS
6	872.4450	36.39	4.43	46.00	Horizontal	PK	PASS

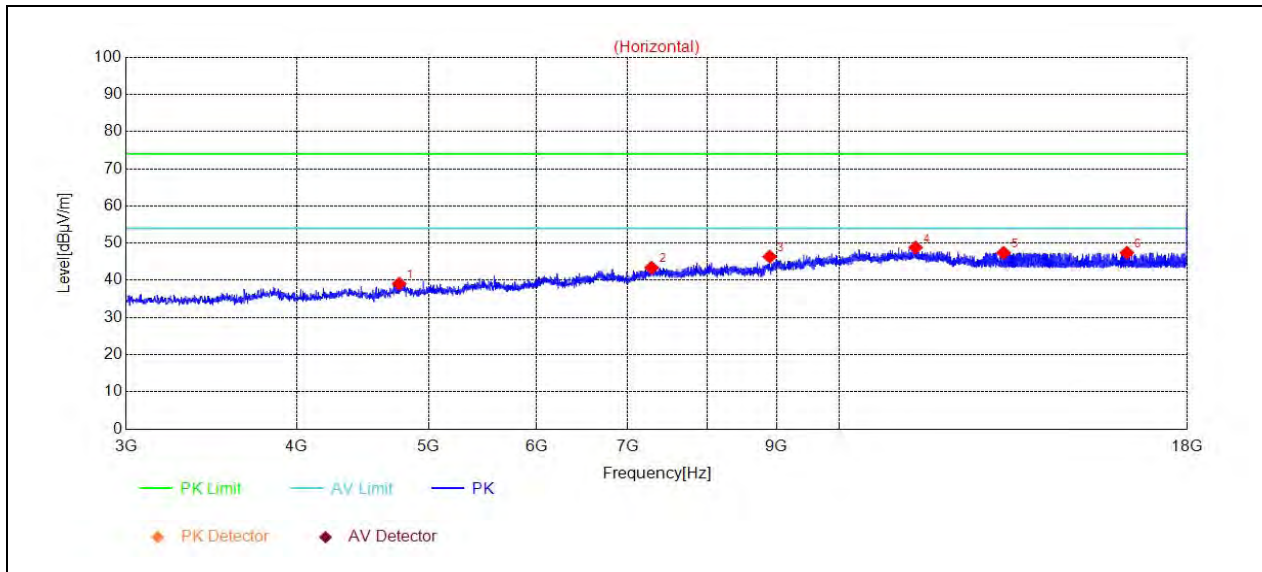




(1GHz to 3GHz)

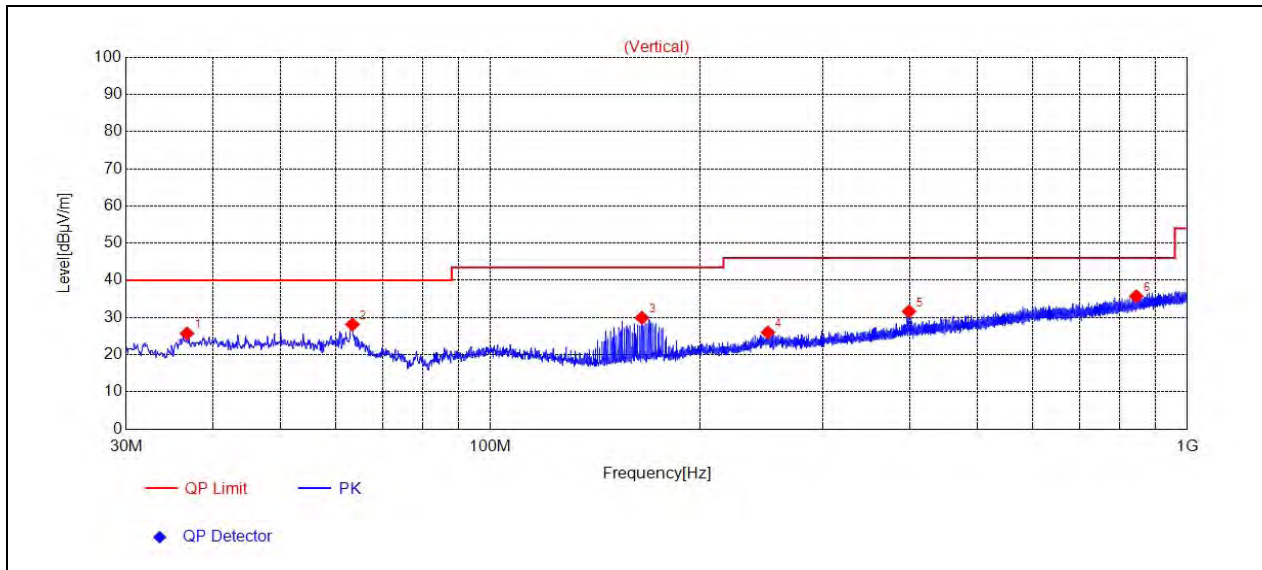
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1193.6000	42.12	-7.98	74.00	Horizontal	PK	PASS
2	1363.0000	42.83	-7.01	74.00	Horizontal	PK	PASS
3	1738.2000	48.66	-1.31	74.00	Horizontal	PK	PASS
4	2122.0000	46.31	-3.44	74.00	Horizontal	PK	PASS
5	2480.0000	89.87	-2.68	74.00	N/A	PK	N/A
6	2872.4000	48.84	-1.68	74.00	Horizontal	PK	PASS





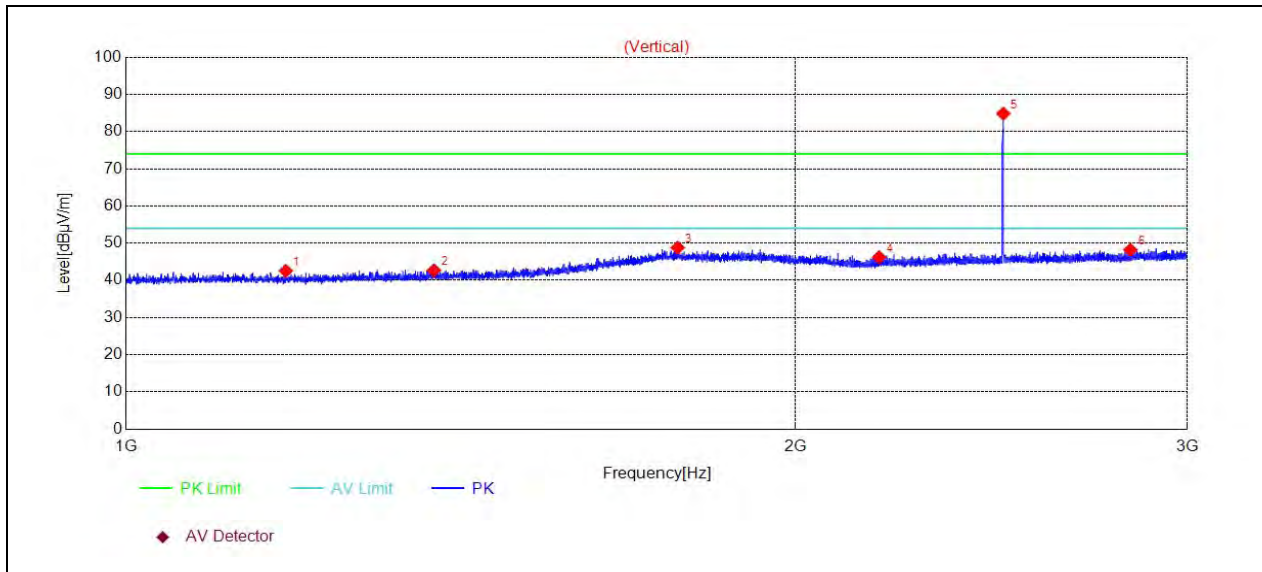
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	4758.0000	39.08	-5.59	74.00	Horizontal	PK	PASS
2	7287.0000	43.40	-0.06	74.00	Horizontal	PK	PASS
3	8893.5000	46.37	2.68	74.00	Horizontal	PK	PASS
4	11379.0000	48.81	6.08	74.00	Horizontal	PK	PASS
5	13200.0000	47.39	5.71	74.00	Horizontal	PK	PASS
6	16255.5000	47.39	7.28	74.00	Horizontal	PK	PASS



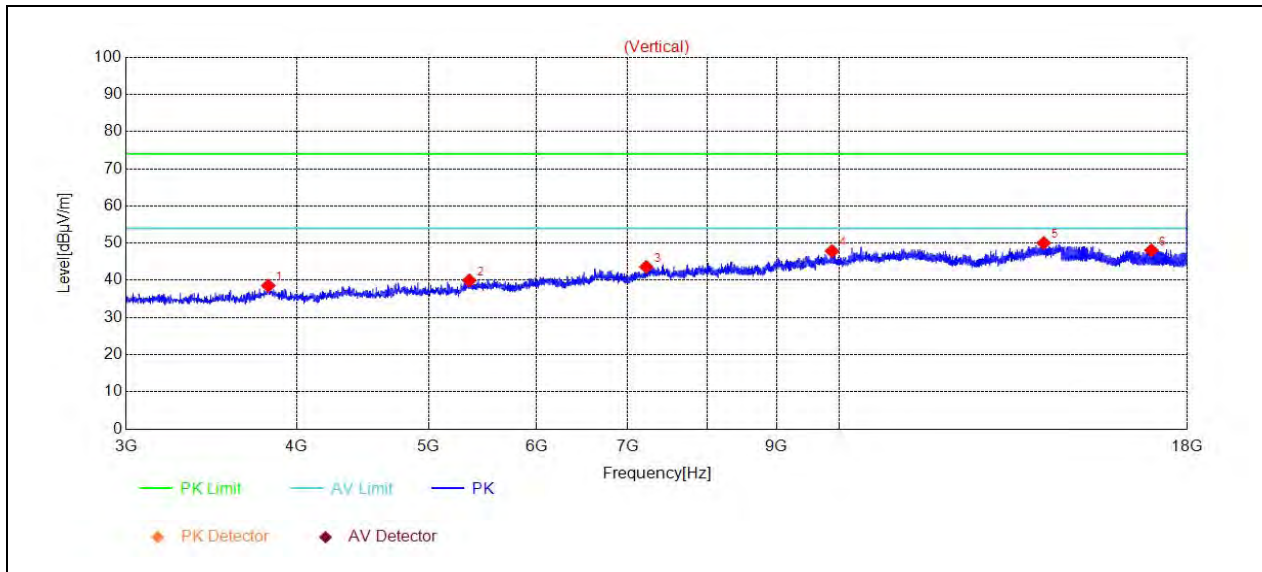
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	36.6930	25.72	-9.15	40.00	Vertical	PK	PASS
2	63.3680	28.14	-9.32	40.00	Vertical	PK	PASS
3	165.0240	29.94	-11.10	43.50	Vertical	PK	PASS
4	250.1900	26.00	-6.91	46.00	Vertical	PK	PASS
5	398.7940	31.65	-3.36	46.00	Vertical	PK	PASS
6	845.1880	35.71	3.97	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1179.8000	42.56	-7.95	74.00	Vertical	PK	PASS
2	1375.4000	42.70	-6.91	74.00	Vertical	PK	PASS
3	1770.2000	48.79	-1.16	74.00	Vertical	PK	PASS
4	2180.6000	46.20	-3.40	74.00	Vertical	PK	PASS
5	2480.0000	84.83	-2.68	74.00	N/A	PK	N/A
6	2828.4000	48.19	-1.92	74.00	Vertical	PK	PASS



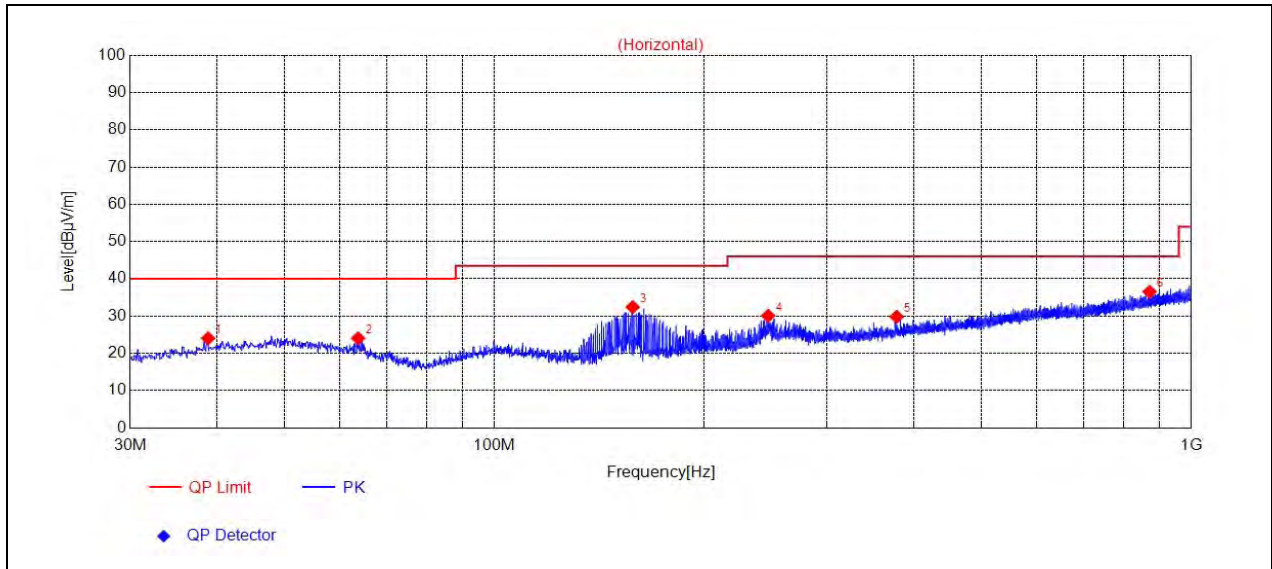
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3814.5000	38.55	-7.60	74.00	Vertical	PK	PASS
2	5356.5000	39.96	-4.09	74.00	Vertical	PK	PASS
3	7222.5000	43.60	-0.59	74.00	Vertical	PK	PASS
4	9882.0000	47.84	4.82	74.00	Vertical	PK	PASS
5	14127.0000	50.04	8.62	74.00	Vertical	PK	PASS
6	16944.0000	48.06	10.21	74.00	Vertical	PK	PASS



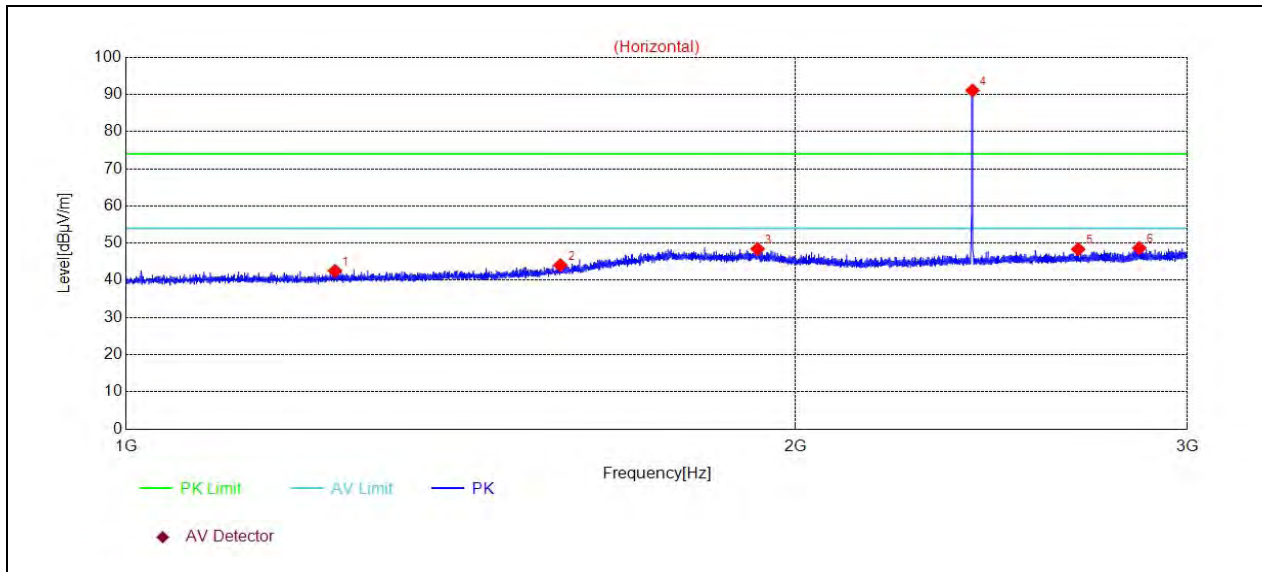
**8-DPSK Mode**

Plots for Channel 0



(30MHz to 1GHz)

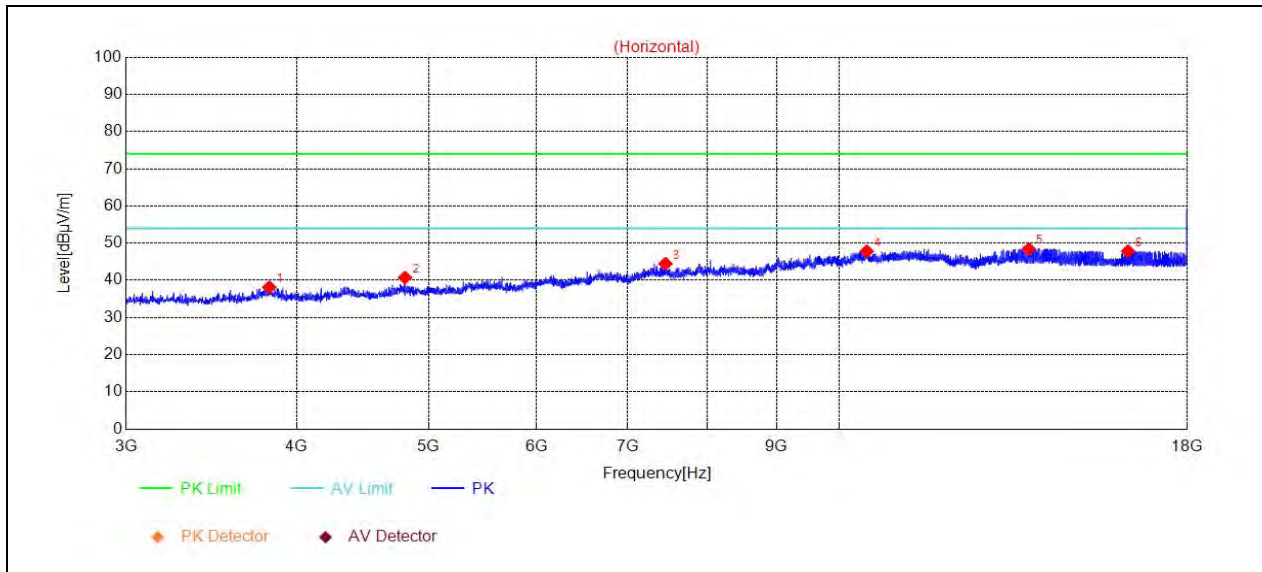
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	38.8270	24.04	-8.42	40.00	Horizontal	PK	PASS
2	63.7560	24.05	-9.43	40.00	Horizontal	PK	PASS
3	157.9430	32.42	-11.34	43.50	Horizontal	PK	PASS
4	247.0860	30.08	-7.01	46.00	Horizontal	PK	PASS
5	377.8420	29.81	-3.95	46.00	Horizontal	PK	PASS
6	871.4750	36.55	4.42	46.00	Horizontal	PK	PASS



(1GHz to 3GHz)

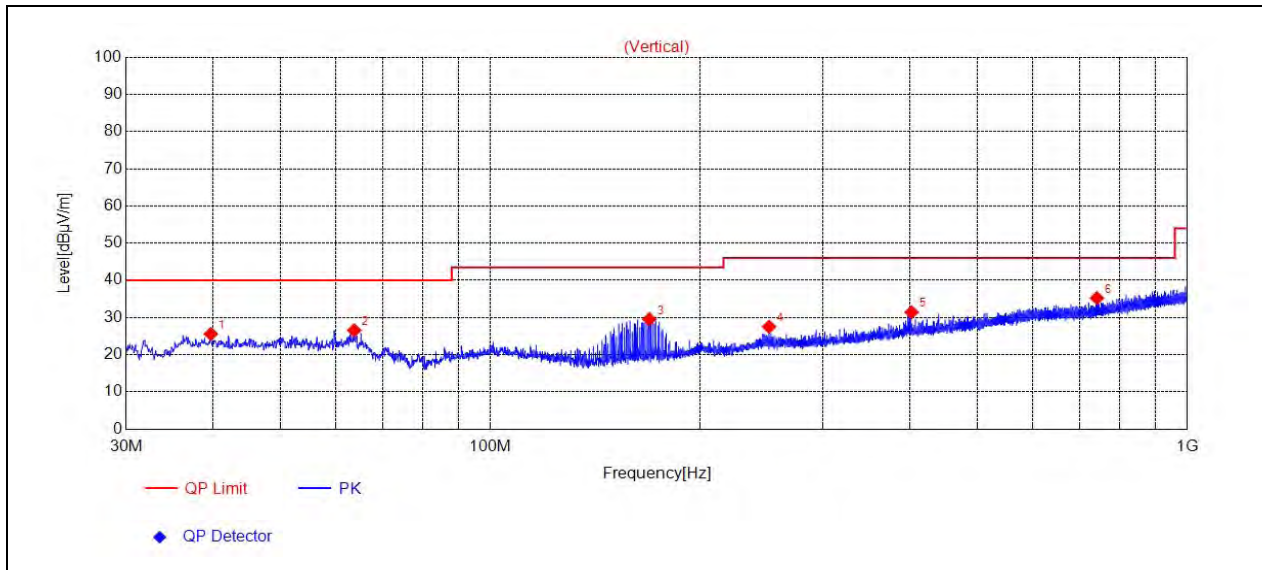
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1241.6000	42.55	-7.61	74.00	Horizontal	PK	PASS
2	1567.8000	44.07	-5.06	74.00	Horizontal	PK	PASS
3	1922.8000	48.44	-1.58	74.00	Horizontal	PK	PASS
4	2402.0000	91.05	-2.89	74.00	N/A	PK	N/A
5	2679.8000	48.36	-2.21	74.00	Horizontal	PK	PASS
6	2854.8000	48.69	-1.62	74.00	Horizontal	PK	PASS





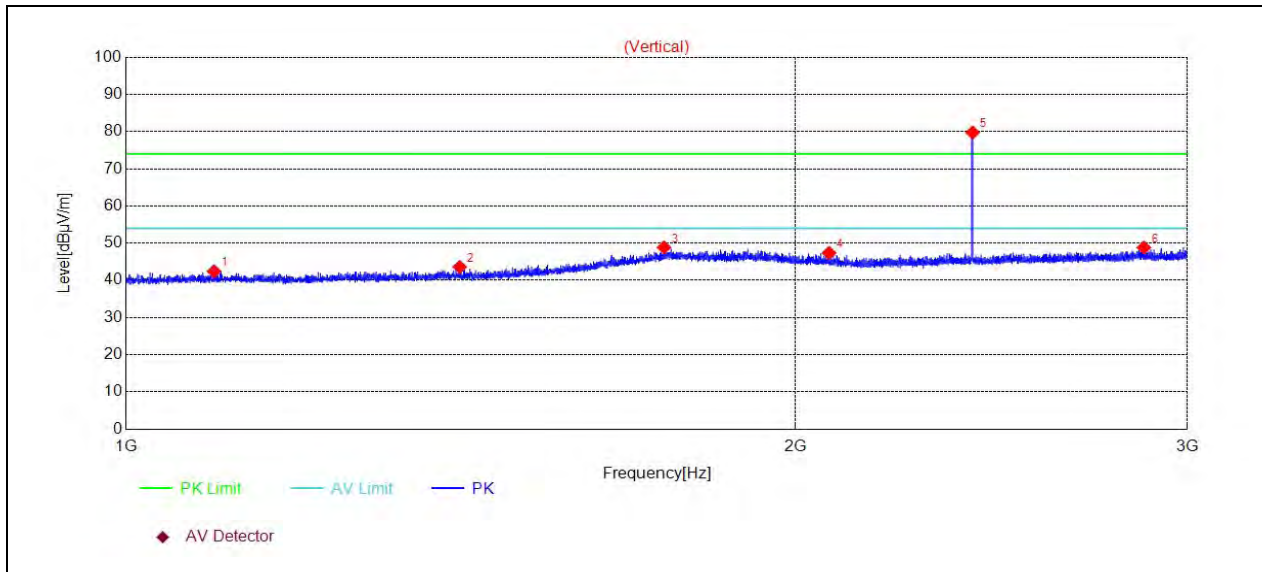
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	3820.5000	38.12	-7.59	74.00	Horizontal	PK	PASS
2	4804.5000	40.73	-5.45	74.00	Horizontal	PK	PASS
3	7458.0000	44.44	0.14	74.00	Horizontal	PK	PASS
4	10477.5000	47.80	5.76	74.00	Horizontal	PK	PASS
5	13773.0000	48.42	7.15	74.00	Horizontal	PK	PASS
6	16290.0000	47.82	7.58	74.00	Horizontal	PK	PASS



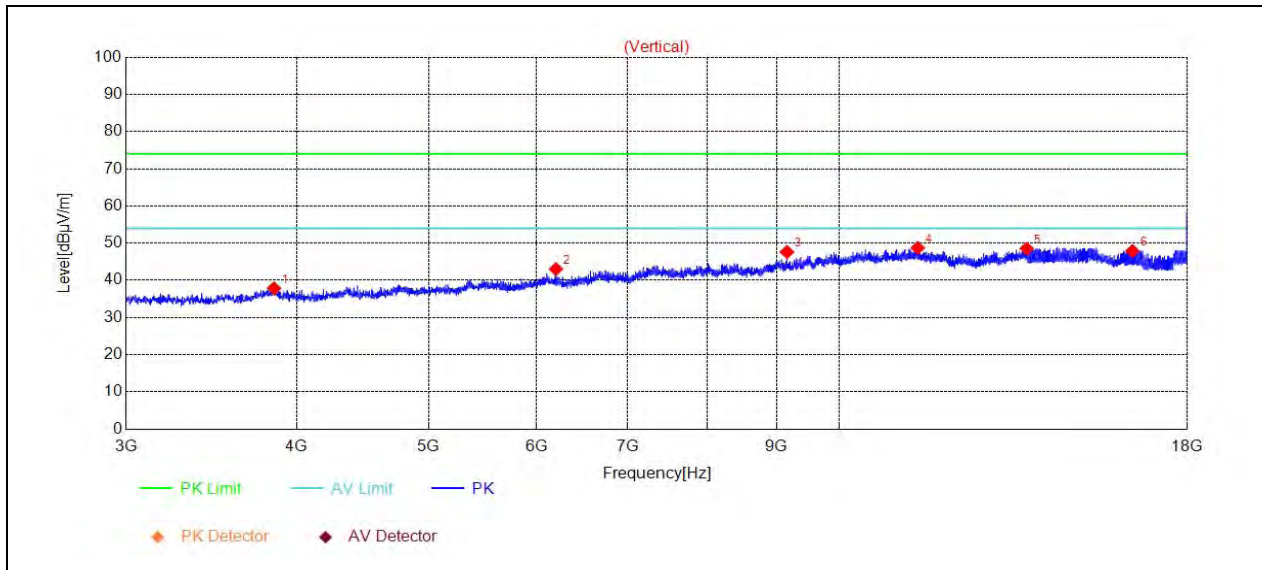
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	39.7000	25.58	-8.12	40.00	Vertical	PK	PASS
2	63.7560	26.57	-9.43	40.00	Vertical	PK	PASS
3	169.0980	29.54	-10.92	43.50	Vertical	PK	PASS
4	251.1600	27.52	-6.88	46.00	Vertical	PK	PASS
5	402.1890	31.43	-3.31	46.00	Vertical	PK	PASS
6	742.0770	35.23	2.34	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

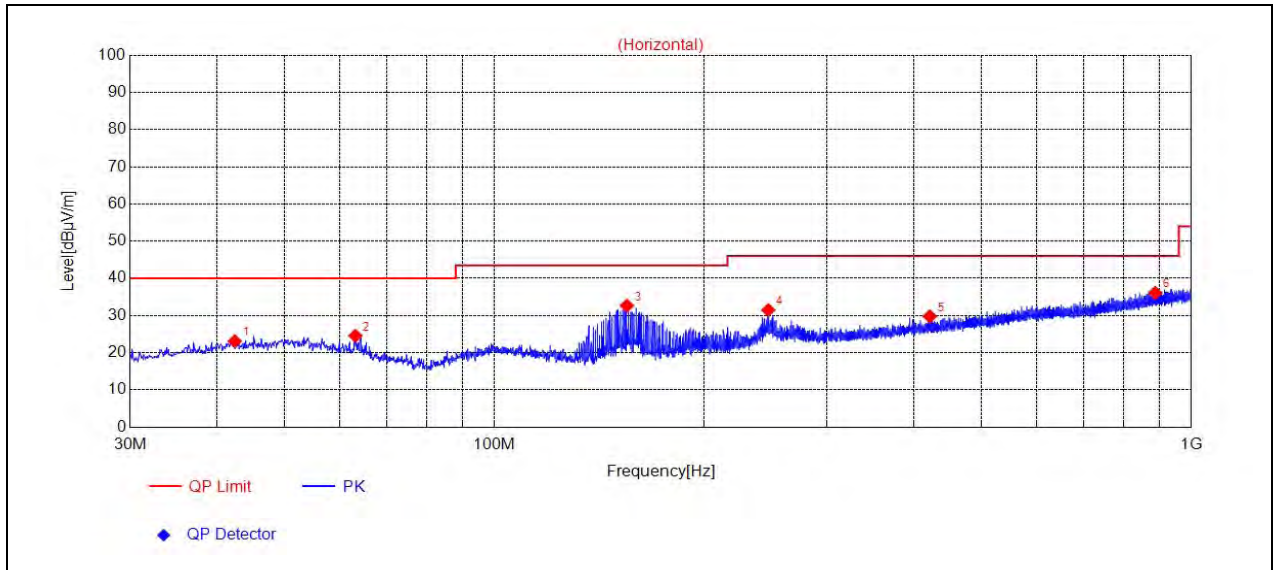
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1095.4000	42.44	-8.06	74.00	Vertical	PK	PASS
2	1412.6000	43.60	-6.72	74.00	Vertical	PK	PASS
3	1745.4000	48.86	-1.15	74.00	Vertical	PK	PASS
4	2070.6000	47.37	-2.88	74.00	Vertical	PK	PASS
5	2402.2000	79.74	-2.89	74.00	N/A	PK	N/A
6	2868.4000	48.80	-1.66	74.00	Vertical	PK	PASS



(3GHz to 18GHz)

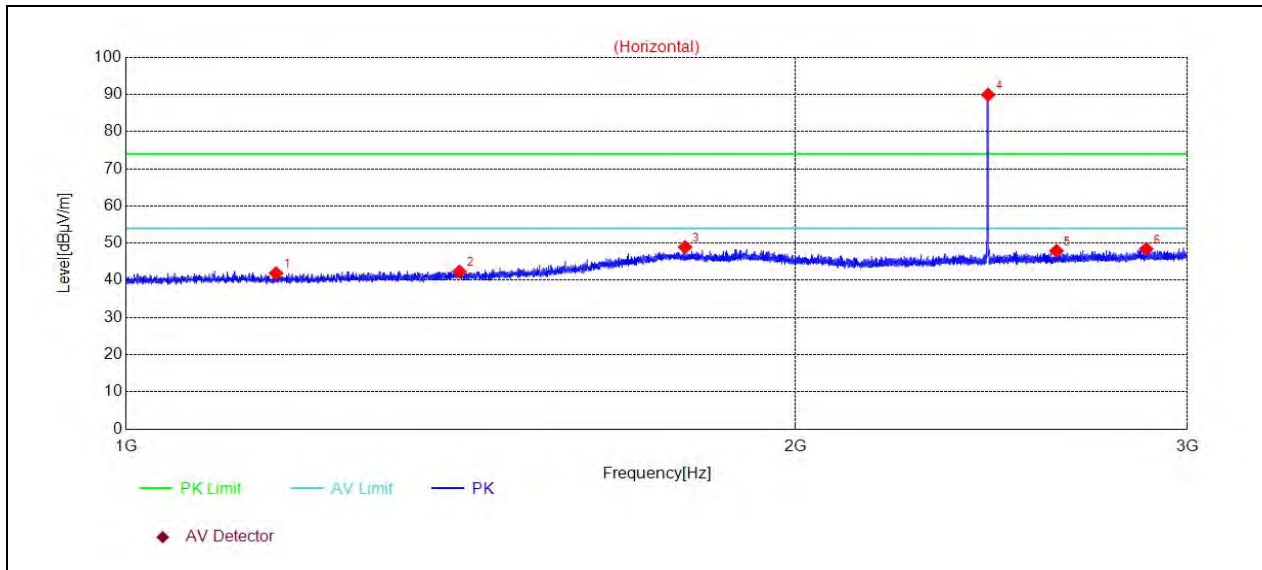
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3852.0000	37.84	-7.57	74.00	Vertical	PK	PASS
2	6199.5000	43.02	-2.84	74.00	Vertical	PK	PASS
3	9157.5000	47.62	3.54	74.00	Vertical	PK	PASS
4	11421.0000	48.74	6.09	74.00	Vertical	PK	PASS
5	13726.5000	48.52	7.05	74.00	Vertical	PK	PASS
6	16410.0000	47.90	7.95	74.00	Vertical	PK	PASS

Plot for Channel 39



(30MHz to 1GHz)

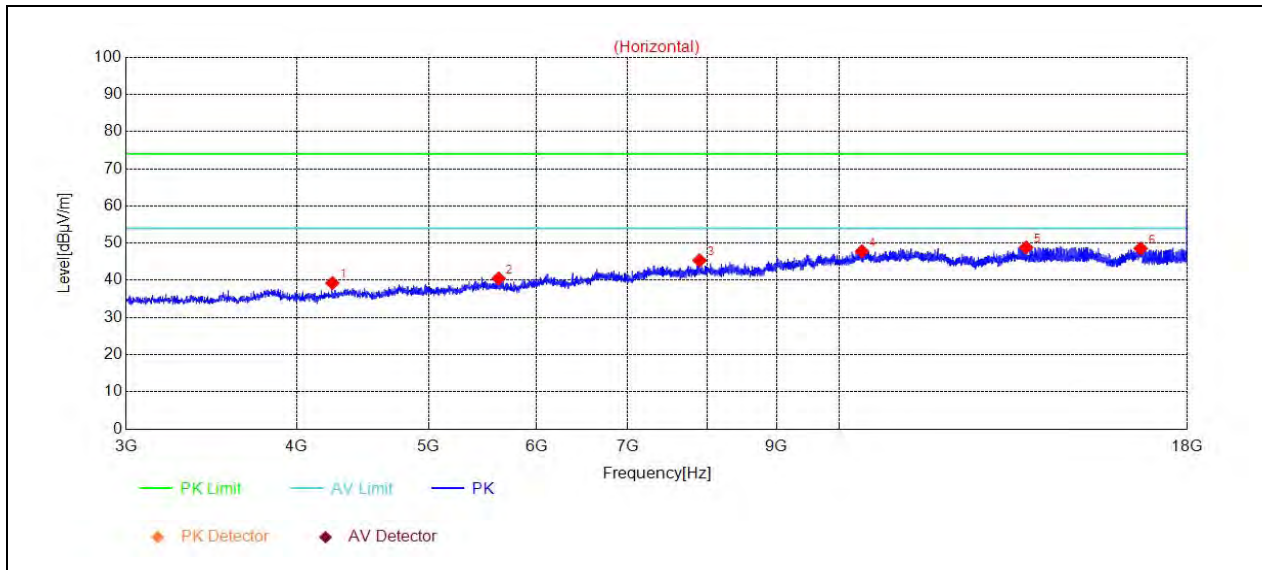
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	42.4160	23.10	-7.70	40.00	Horizontal	PK	PASS
2	63.1740	24.55	-9.26	40.00	Horizontal	PK	PASS
3	154.9360	32.65	-11.50	43.50	Horizontal	PK	PASS
4	247.1830	31.46	-7.00	46.00	Horizontal	PK	PASS
5	421.4920	29.77	-2.88	46.00	Horizontal	PK	PASS
6	887.9650	36.10	4.72	46.00	Horizontal	PK	PASS



(1GHz to 3GHz)

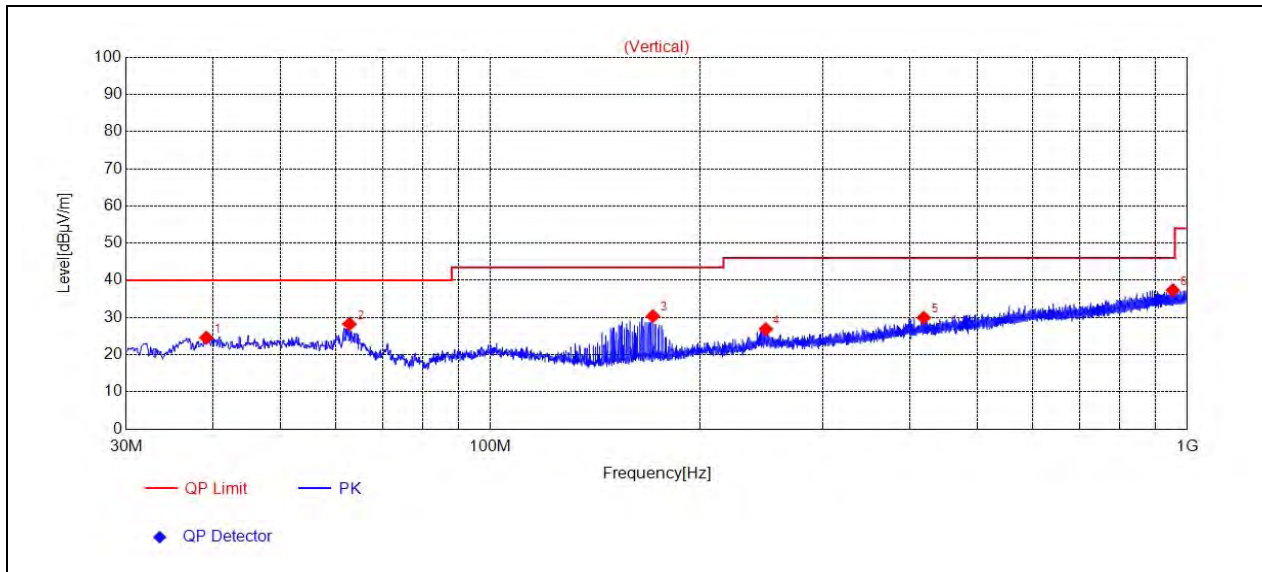
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1168.0000	41.90	-7.92	74.00	Horizontal	PK	PASS
2	1412.2000	42.40	-6.72	74.00	Horizontal	PK	PASS
3	1783.8000	48.92	-1.24	74.00	Horizontal	PK	PASS
4	2441.2000	89.91	-2.88	74.00	N/A	PK	N/A
5	2620.2000	47.92	-2.41	74.00	Horizontal	PK	PASS
6	2875.2000	48.42	-1.69	74.00	Horizontal	PK	PASS





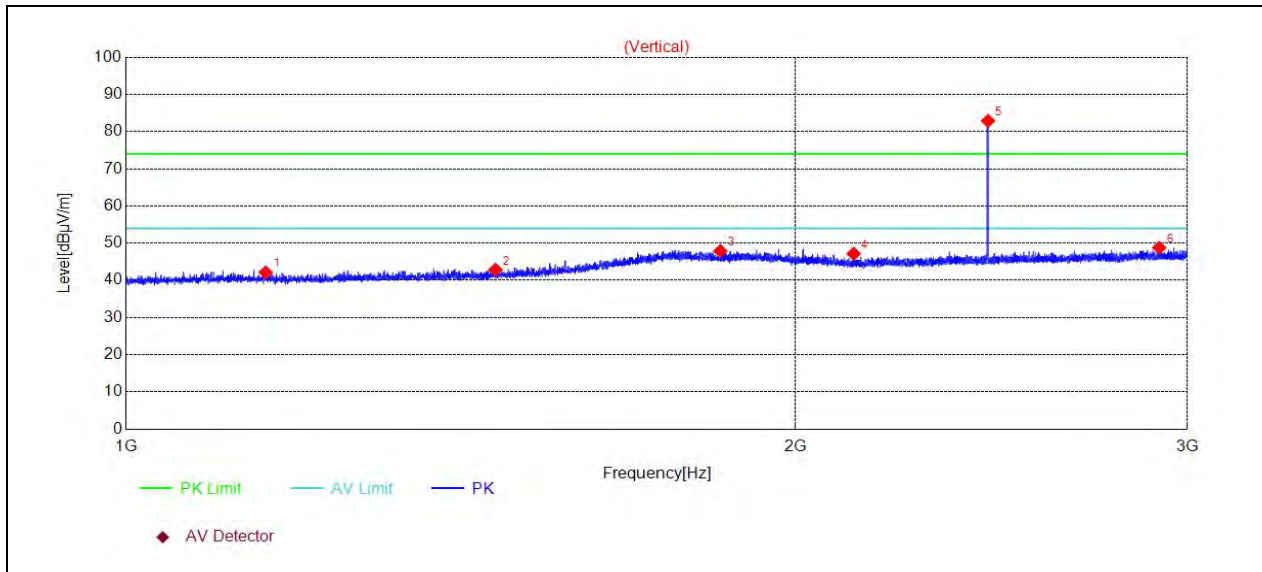
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	4251.0000	39.27	-7.53	74.00	Horizontal	PK	PASS
2	5628.0000	40.50	-4.10	74.00	Horizontal	PK	PASS
3	7900.5000	45.37	0.87	74.00	Horizontal	PK	PASS
4	10392.0000	47.80	5.37	74.00	Horizontal	PK	PASS
5	13711.5000	48.87	7.01	74.00	Horizontal	PK	PASS
6	16638.0000	48.56	8.96	74.00	Horizontal	PK	PASS



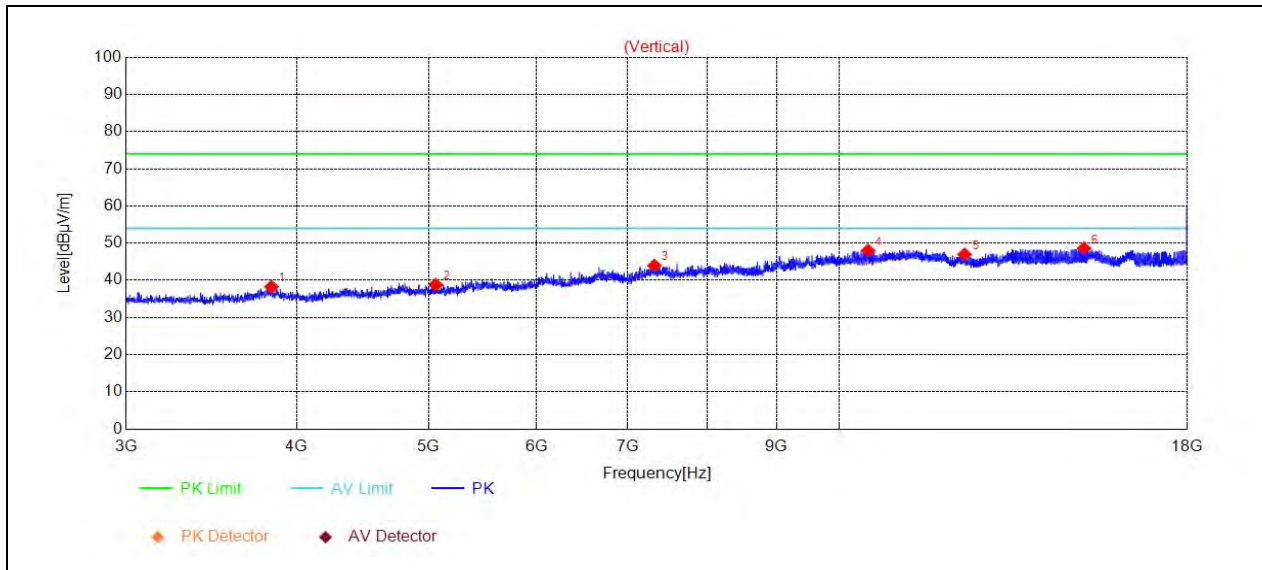
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	39.1180	24.59	-8.32	40.00	Vertical	PK	PASS
2	62.7860	28.25	-9.15	40.00	Vertical	PK	PASS
3	171.1350	30.36	-10.82	43.50	Vertical	PK	PASS
4	248.4440	26.89	-6.97	46.00	Vertical	PK	PASS
5	418.7760	29.97	-2.93	46.00	Vertical	PK	PASS
6	953.6340	37.35	5.44	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

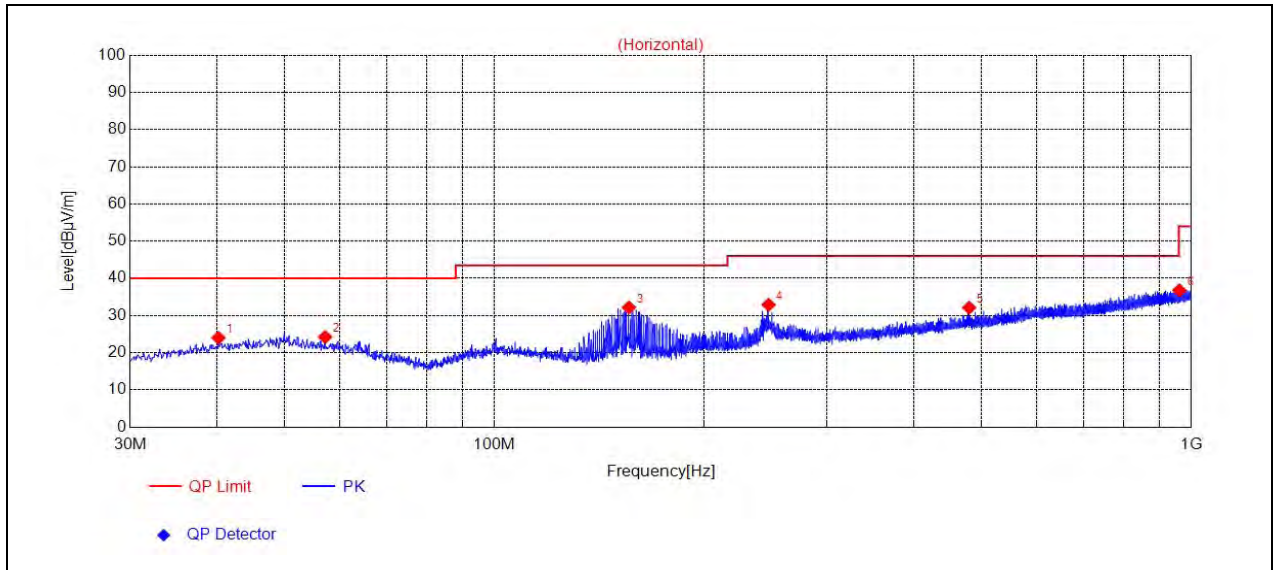
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1155.6000	42.13	-7.88	74.00	Vertical	PK	PASS
2	1465.8000	42.86	-6.49	74.00	Vertical	PK	PASS
3	1850.0000	47.88	-1.68	74.00	Vertical	PK	PASS
4	2124.0000	47.14	-3.45	74.00	Vertical	PK	PASS
5	2441.0000	82.88	-2.88	74.00	N/A	PK	N/A
6	2914.2000	48.76	-1.79	74.00	Vertical	PK	PASS



(3GHz to 18GHz)

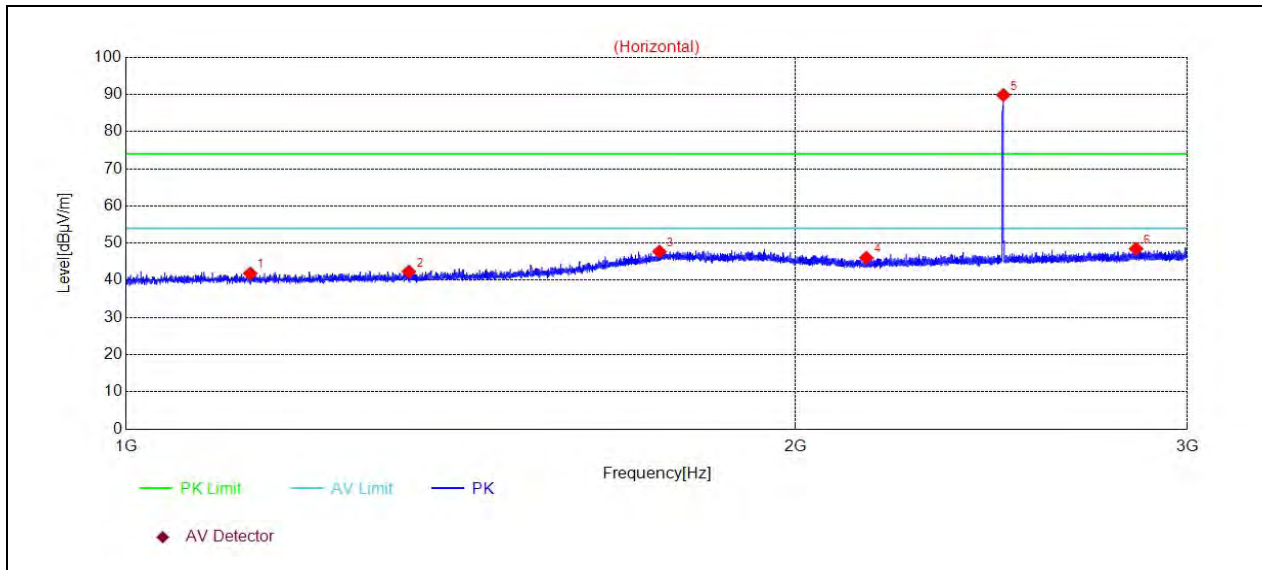
No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	3835.5000	38.26	-7.57	74.00	Vertical	PK	PASS
2	5061.0000	38.81	-5.52	74.00	Vertical	PK	PASS
3	7320.0000	43.95	-0.12	74.00	Vertical	PK	PASS
4	10500.0000	47.97	5.85	74.00	Vertical	PK	PASS
5	12360.0000	46.92	4.86	74.00	Vertical	PK	PASS
6	15120.0000	48.58	8.33	74.00	Vertical	PK	PASS

Plot for Channel 78



(30MHz to 1GHz)

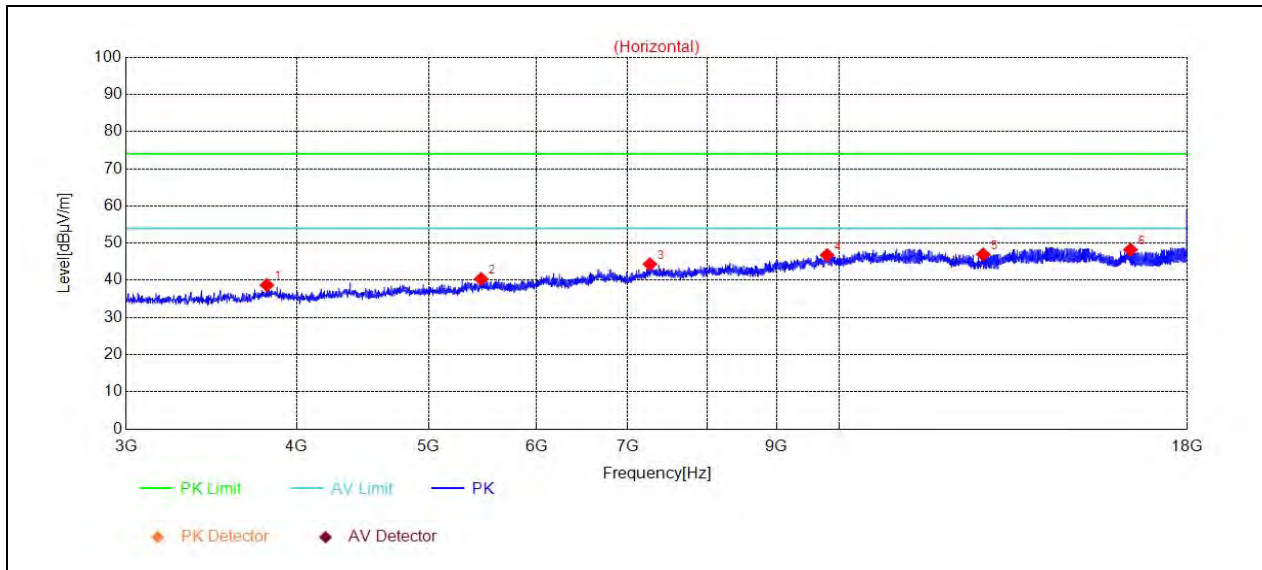
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	40.1850	24.01	-7.99	40.00	Horizontal	PK	PASS
2	57.1600	24.23	-7.86	40.00	Horizontal	PK	PASS
3	156.0030	32.16	-11.49	43.50	Horizontal	PK	PASS
4	247.4740	32.89	-7.00	46.00	Horizontal	PK	PASS
5	480.0800	32.11	-1.67	46.00	Horizontal	PK	PASS
6	961.6850	36.80	5.46	54.00	Horizontal	PK	PASS



(1GHz to 3GHz)

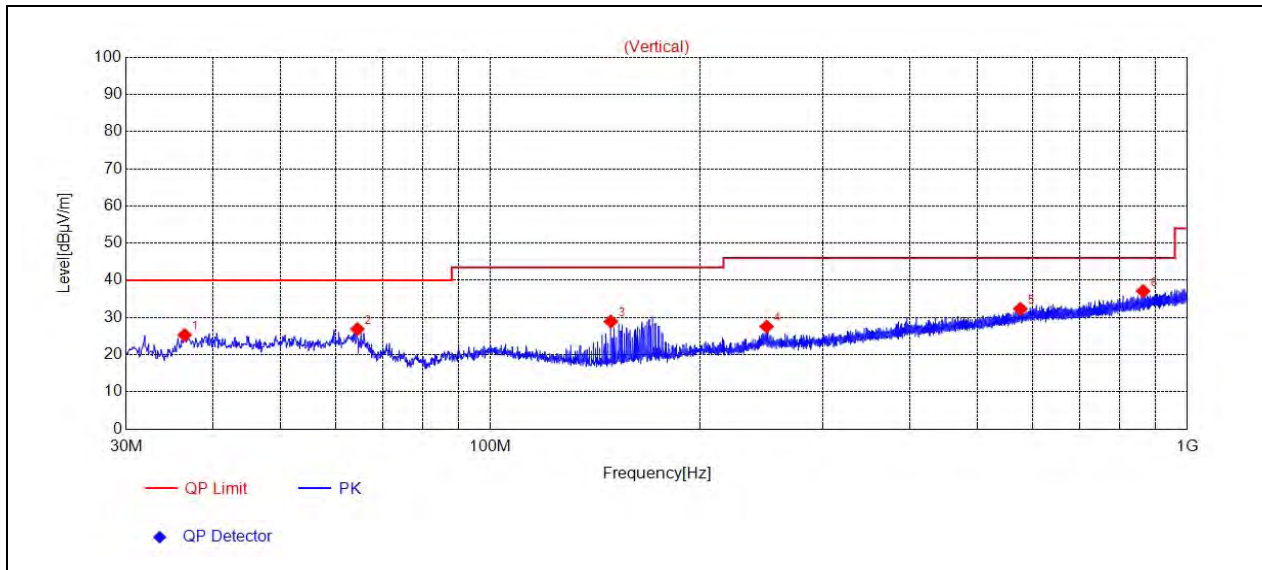
No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	1137.2000	41.84	-7.91	74.00	Horizontal	PK	PASS
2	1340.2000	42.35	-7.14	74.00	Horizontal	PK	PASS
3	1737.0000	47.71	-1.34	74.00	Horizontal	PK	PASS
4	2152.0000	46.04	-3.54	74.00	Horizontal	PK	PASS
5	2480.0000	89.81	-2.68	74.00	N/A	PK	N/A
6	2845.6000	48.46	-1.67	74.00	Horizontal	PK	PASS





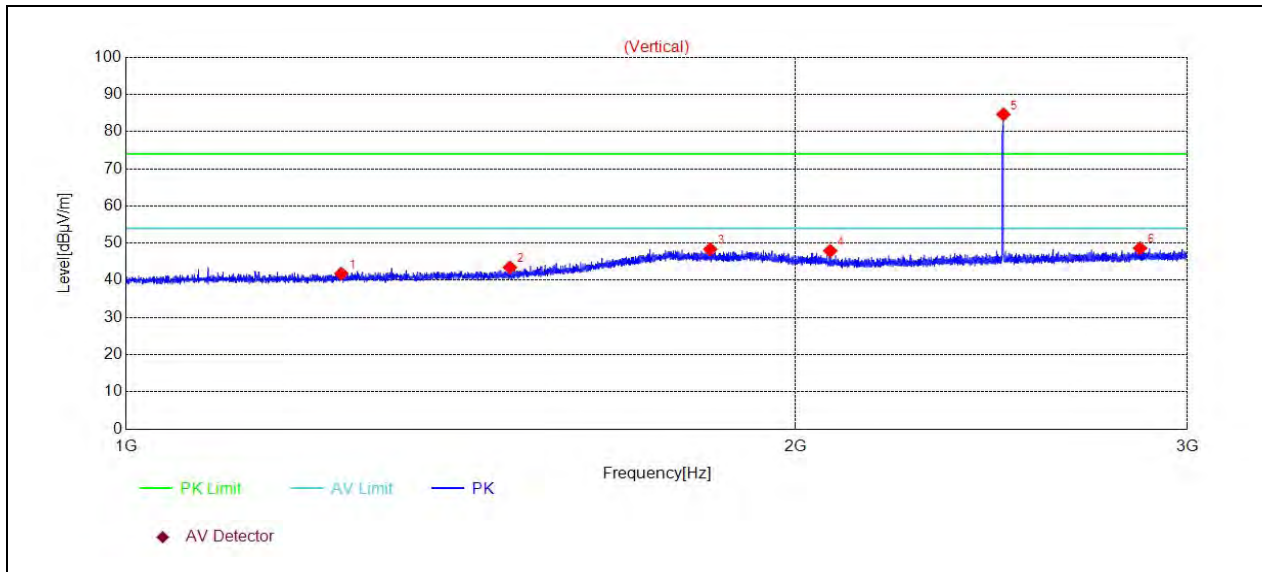
(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3805.5000	38.72	-7.62	74.00	Horizontal	PK	PASS
2	5464.5000	40.36	-4.10	74.00	Horizontal	PK	PASS
3	7266.0000	44.33	-0.18	74.00	Horizontal	PK	PASS
4	9799.5000	46.77	4.80	74.00	Horizontal	PK	PASS
5	12753.0000	46.96	4.93	74.00	Horizontal	PK	PASS
6	16351.5000	48.23	7.55	74.00	Horizontal	PK	PASS



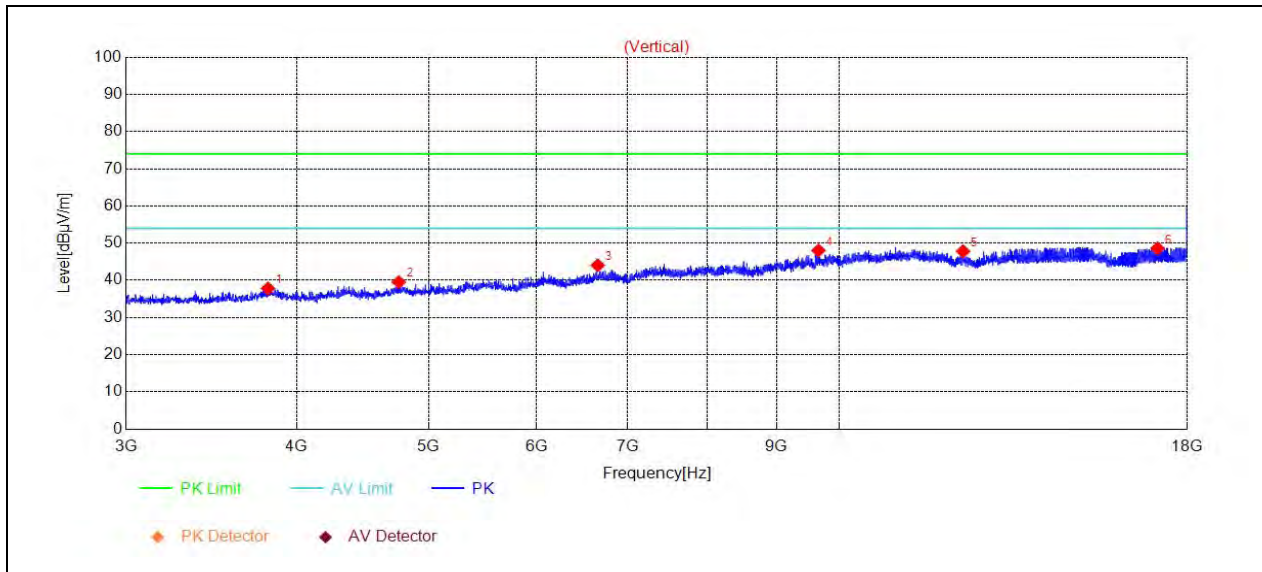
(30MHz to 1GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	36.4020	25.29	-9.24	40.00	Vertical	PK	PASS
2	64.4350	26.89	-9.62	40.00	Vertical	PK	PASS
3	148.9220	28.92	-11.72	43.50	Vertical	PK	PASS
4	249.1230	27.57	-6.95	46.00	Vertical	PK	PASS
5	576.1100	32.34	0.64	46.00	Vertical	PK	PASS
6	864.3940	37.09	4.29	46.00	Vertical	PK	PASS



(1GHz to 3GHz)

No.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Polarity	Detector	Verdict
1	1249.8000	41.81	-7.53	74.00	Vertical	PK	PASS
2	1488.0000	43.46	-6.18	74.00	Vertical	PK	PASS
3	1830.8000	48.38	-1.55	74.00	Vertical	PK	PASS
4	2073.2000	47.92	-2.92	74.00	Vertical	PK	PASS
5	2480.0000	84.63	-2.68	74.00	N/A	PK	N/A
6	2857.0000	48.64	-1.62	74.00	Vertical	PK	PASS



(3GHz to 18GHz)

No.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Polarity	Detector	Verdict
1	3813.0000	37.80	-7.61	74.00	Vertical	PK	PASS
2	4755.0000	39.51	-5.61	74.00	Vertical	PK	PASS
3	6652.5000	44.05	-1.31	74.00	Vertical	PK	PASS
4	9657.0000	48.02	5.19	74.00	Vertical	PK	PASS
5	12328.5000	47.80	4.88	74.00	Vertical	PK	PASS
6	17121.0000	48.60	11.15	74.00	Vertical	PK	PASS

## Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Number of Hopping Frequency	±5%
Peak Output Power	±2.22dB
Bandwidth	±5%
Carrier Frequency Separation	±5%
Time of Occupancy (Dwell time)	±5%
Conducted Spurious Emission	±2.77dB
Restricted Frequency Bands	±5%
Radiated Emission	±2.95dB
Conducted Emission	±2.44dB

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



## Annex B Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

<b>Laboratory Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Laboratory Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
<b>Telephone:</b>	+86 755 36698555
<b>Facsimile:</b>	+86 755 36698525

### 2. Identification of the Responsible Testing Location

<b>Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

### 3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.





#### 4. Test Equipments Utilized

##### 4.1 Conducted Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Bluetooth Base Station	6K00006210	MT8852B	Anritsu	2021.03.25	2022.03.24
Directional Coupler	17041703	DTO-5-30	ShangHaiHuaxiang	N/A	N/A
EXA Signal Analyzer	MY53470836	N9010A	Agilent	2021.03.25	2022.03.24
RF Cable (30MHz-26GHz)	CB01	RF01	Morlab	N/A	N/A
Coaxial Cable	CB02	RF02	Morlab	N/A	N/A
SMA Connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

##### 4.2 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2021.03.09	2022.03.08
LISN	812744	NSLK 8127	Schwarzbeck	2021.03.09	2022.03.08
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2021.07.21	2022.07.20
Coaxial Cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A

##### 4.3 List of Software Used

Description	Manufacturer	Software Version
Test System	Tonscend	V2.5.77.0418
TS+ -[JS32-CE]	Tonscend	V2.5.0.0
TS+ -[JS32-RE]	Tonscend	V2.5.5.0.6

**4.4 Radiated Test Equipments**

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2021.07.16	2022.07.15
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2019.05.24	2022.05.23
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2019.02.14	2022.02.13
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2019.07.26	2022.07.25
Test Antenna – Horn	BBHA9170 #774	BBHA9170	Schwarzbeck	2019.07.26	2022.07.25
Coaxial Cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L32 03	Tonscend	2021.07.16	2022.07.15
18-26.5GHz pre-Amplifier	46732	S10M100L38 02	Tonscend	2021.07.16	2022.07.15
26-40GHz pre-Amplifier	56774	S40M400L40 02	Tonscend	2021.07.16	2022.07.15
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	2021.07.16	2022.07.15
Anechoic Chamber	N/A	9m*6m*6m	CRT	2020.01.06	2023.01.05

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