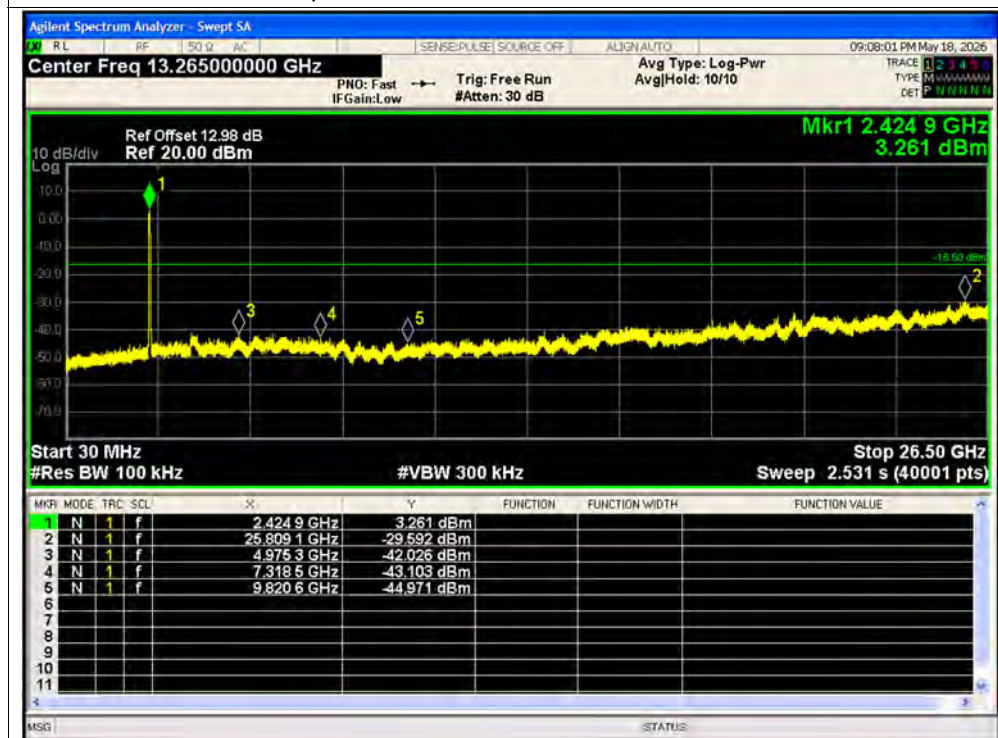




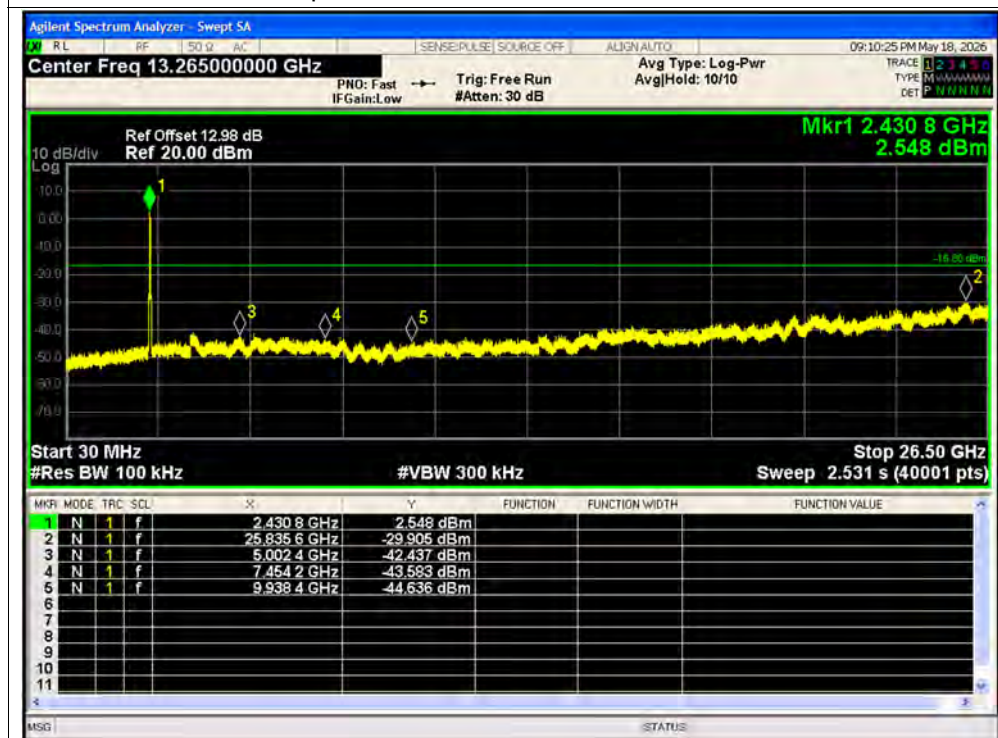
Tx. Spurious NVNT ac40 2422MHz Ant1 Ref



Tx. Spurious NVNT ac40 2422MHz Ant1 Emission



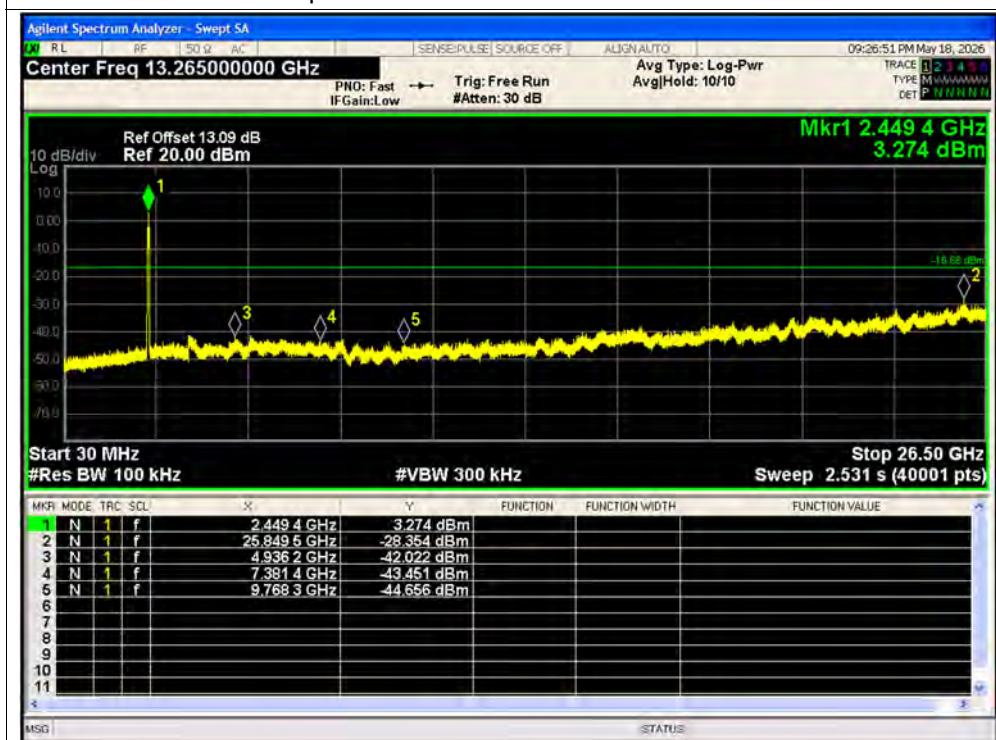
Tx. Spurious NVNT ac40 2437MHz Ant1 Ref



Tx. Spurious NVNT ac40 2437MHz Ant1 Emission



Tx. Spurious NVNT ac40 2452MHz Ant1 Ref



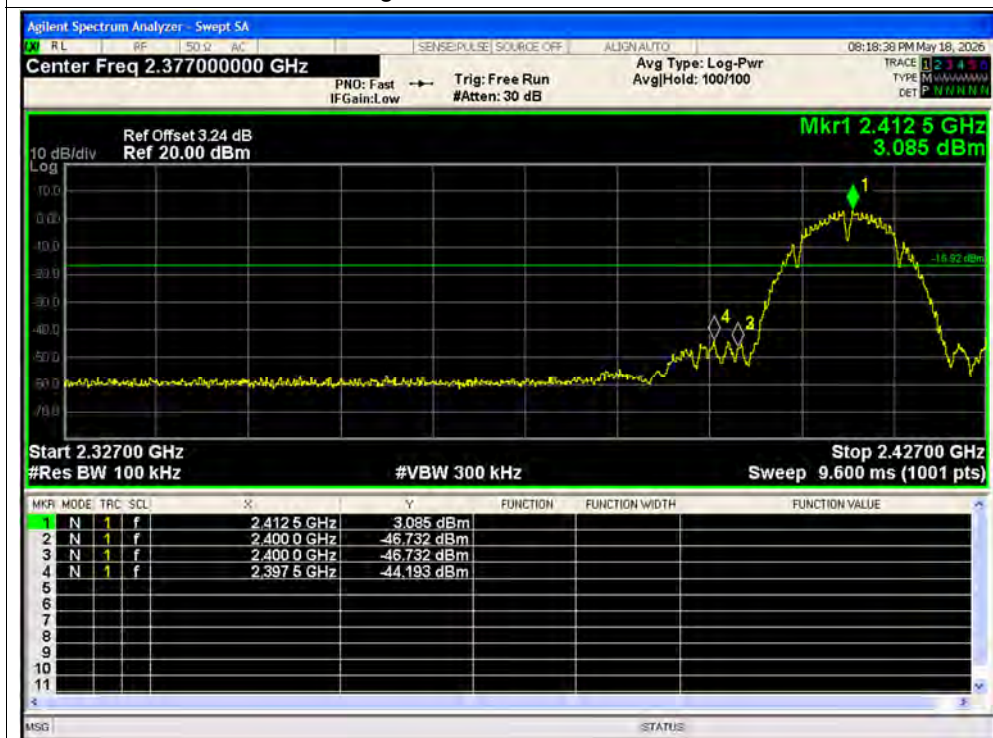
Tx. Spurious NVNT ac40 2452MHz Ant1 Emission

**A.6. Band Edge**

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	b	2412	Ant1	-47.27	-20	Pass
NVNT	b	2462	Ant1	-57.62	-20	Pass
NVNT	g	2412	Ant1	-34.95	-20	Pass
NVNT	g	2462	Ant1	-45.11	-20	Pass
NVNT	n20	2412	Ant1	-41.61	-20	Pass
NVNT	n20	2462	Ant1	-48.68	-20	Pass
NVNT	n40	2422	Ant1	-36.41	-20	Pass
NVNT	n40	2452	Ant1	-40.11	-20	Pass
NVNT	ac20	2412	Ant1	-42.75	-20	Pass
NVNT	ac20	2462	Ant1	-49.57	-20	Pass
NVNT	ac40	2422	Ant1	-36.19	-20	Pass
NVNT	ac40	2452	Ant1	-40.54	-20	Pass



Band Edge NVNT b 2412MHz Ant1 Ref



Band Edge NVNT b 2412MHz Ant1 Emission



Band Edge NVNT b 2462MHz Ant1 Ref



Band Edge NVNT b 2462MHz Ant1 Emission



Band Edge NVNT g 2412MHz Ant1 Ref



Band Edge NVNT g 2412MHz Ant1 Emission



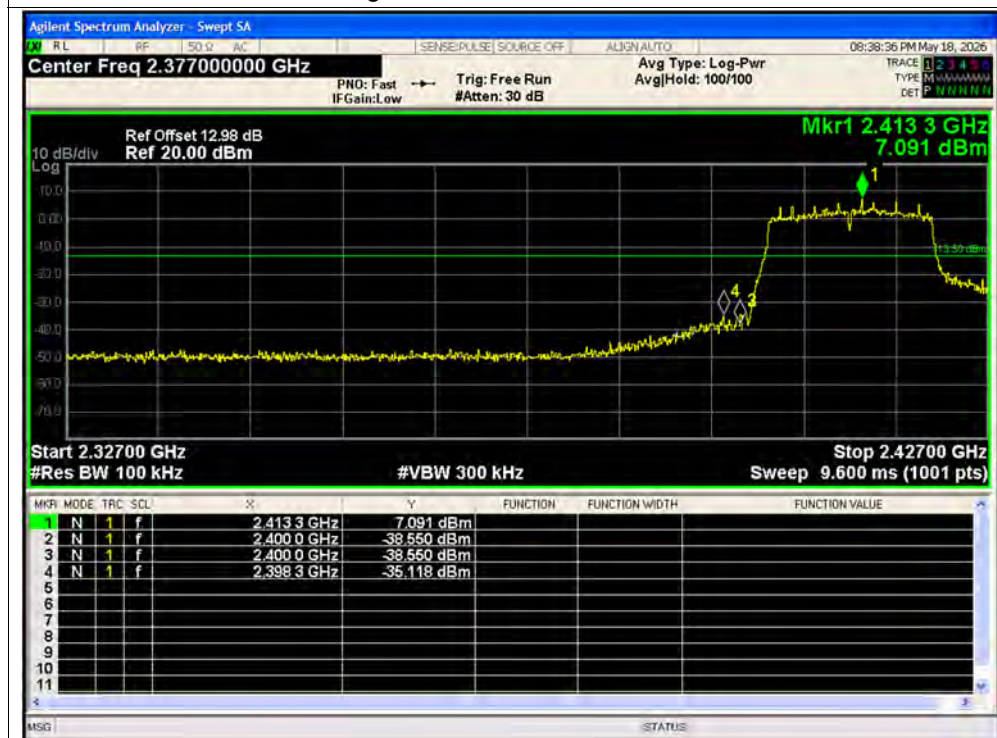
Band Edge NVNT g 2462MHz Ant1 Ref



Band Edge NVNT g 2462MHz Ant1 Emission



Band Edge NVNT n20 2412MHz Ant1 Ref



Band Edge NVNT n20 2412MHz Ant1 Emission



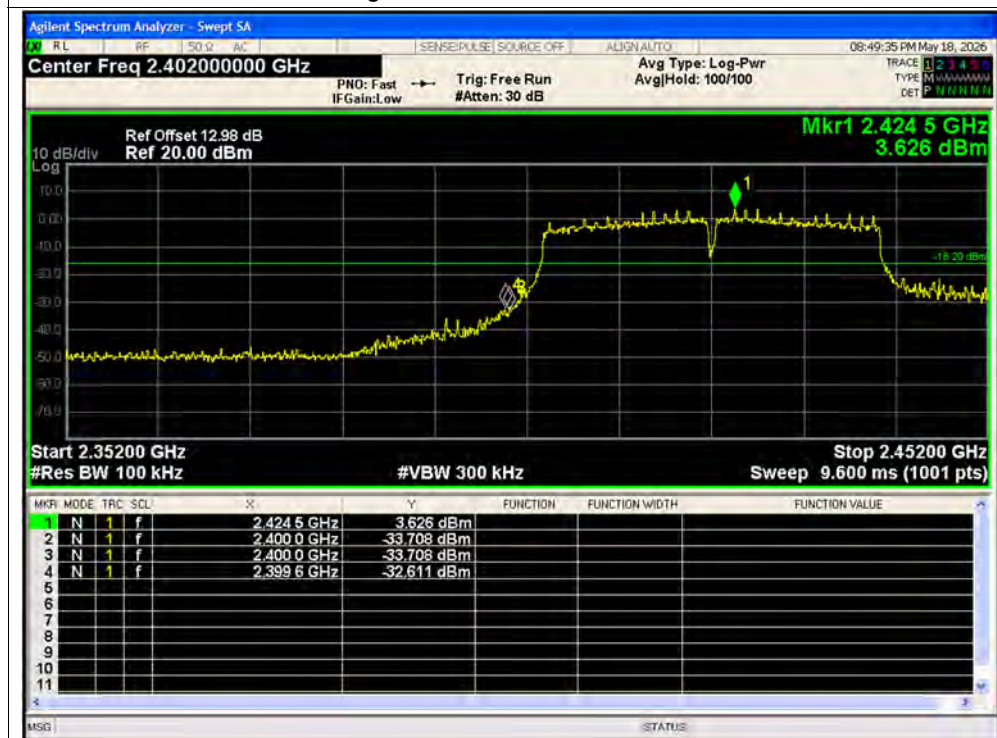
Band Edge NVNT n20 2462MHz Ant1 Ref



Band Edge NVNT n20 2462MHz Ant1 Emission



Band Edge NVNT n40 2422MHz Ant1 Ref



Band Edge NVNT n40 2422MHz Ant1 Emission



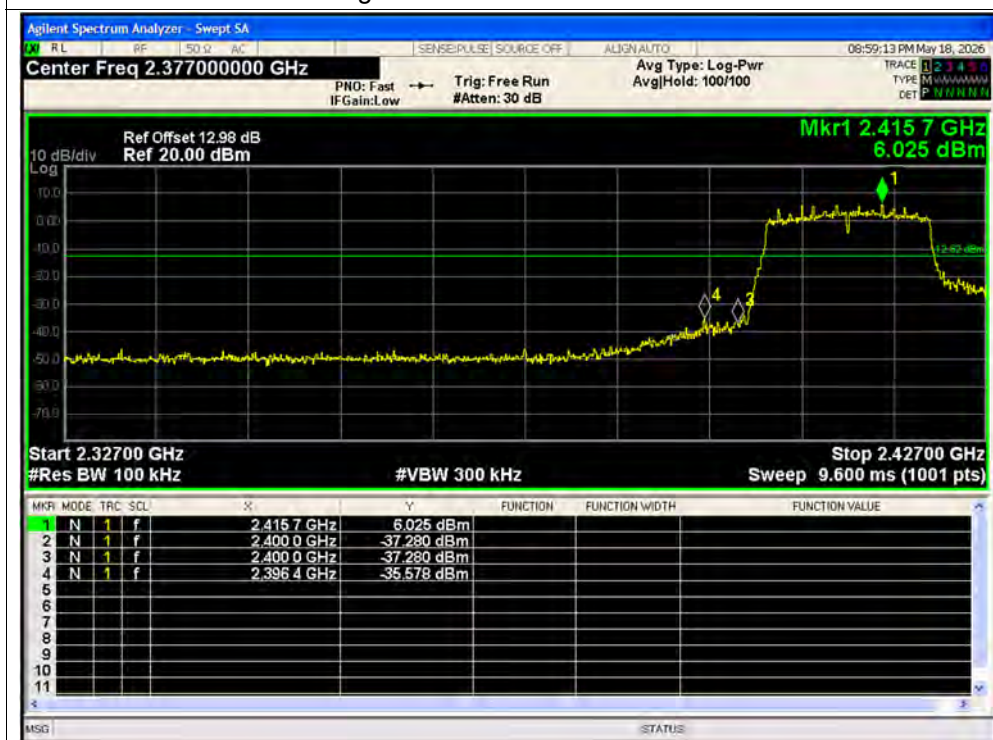
Band Edge NVNT n40 2452MHz Ant1 Ref



Band Edge NVNT n40 2452MHz Ant1 Emission



Band Edge NVNT ac20 2412MHz Ant1 Ref



Band Edge NVNT ac20 2412MHz Ant1 Emission



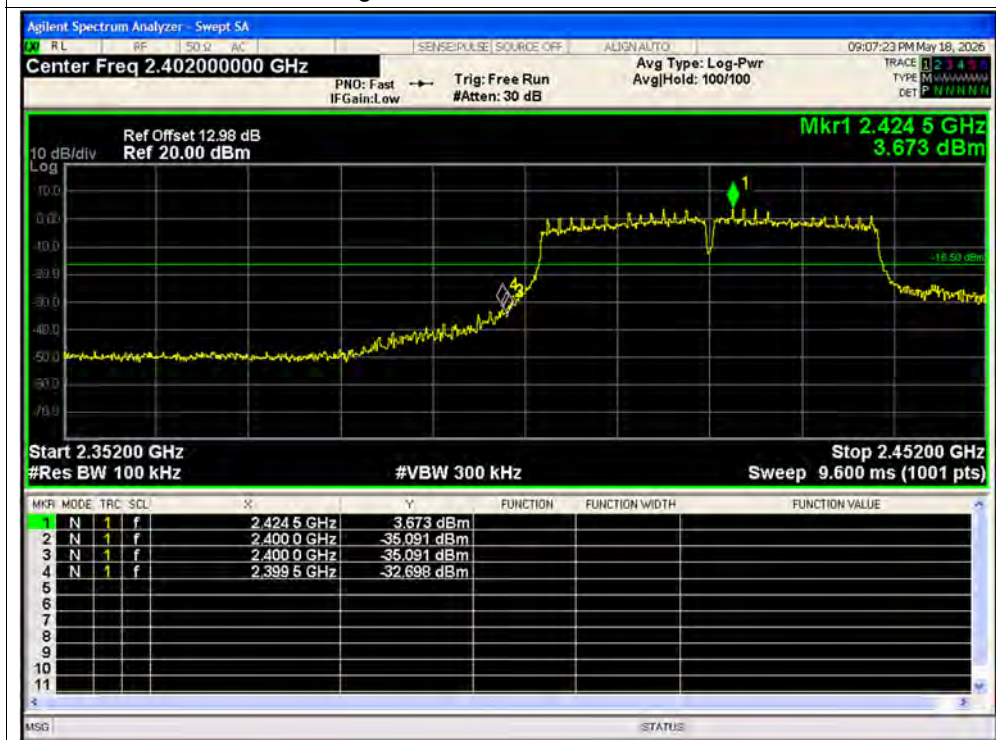
Band Edge NVNT ac20 2462MHz Ant1 Ref



Band Edge NVNT ac20 2462MHz Ant1 Emission



Band Edge NVNT ac40 2422MHz Ant1 Ref



Band Edge NVNT ac40 2422MHz Ant1 Emission



Band Edge NVNT ac40 2452MHz Ant1 Ref



Band Edge NVNT ac40 2452MHz Ant1 Emission

**A.7. Power Spectral Density**

Condition	Mode	Frequency (MHz)	Antenna	Conducted PSD (dBm/3kHz)	Duty Factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
NVNT	b	2412	Ant1	-0.30	0	-0.30	8	Pass
NVNT	b	2437	Ant1	-0.68	0	-0.68	8	Pass
NVNT	b	2462	Ant1	-1.51	0	-1.51	8	Pass
NVNT	g	2412	Ant1	-5.25	0	-5.25	8	Pass
NVNT	g	2437	Ant1	-4.94	0	-4.94	8	Pass
NVNT	g	2462	Ant1	-5.25	0	-5.25	8	Pass
NVNT	n20	2412	Ant1	-8	0	-8	8	Pass
NVNT	n20	2437	Ant1	-7.53	0	-7.53	8	Pass
NVNT	n20	2462	Ant1	-8.05	0	-8.05	8	Pass
NVNT	n40	2422	Ant1	-11.26	0	-11.26	8	Pass
NVNT	n40	2437	Ant1	-11.77	0	-11.77	8	Pass
NVNT	n40	2452	Ant1	-11.32	0	-11.32	8	Pass
NVNT	ac20	2412	Ant1	-7.84	0	-7.84	8	Pass
NVNT	ac20	2437	Ant1	-7.39	0	-7.39	8	Pass
NVNT	ac20	2462	Ant1	-8.44	0	-8.44	8	Pass
NVNT	ac40	2422	Ant1	-11.73	0	-11.73	8	Pass
NVNT	ac40	2437	Ant1	-11.94	0	-11.94	8	Pass
NVNT	ac40	2452	Ant1	-11.94	0	-11.94	8	Pass



PSD NVNT b 2412MHz Ant1



PSD NVNT b 2437MHz Ant1



PSD NVNT b 2462MHz Ant1



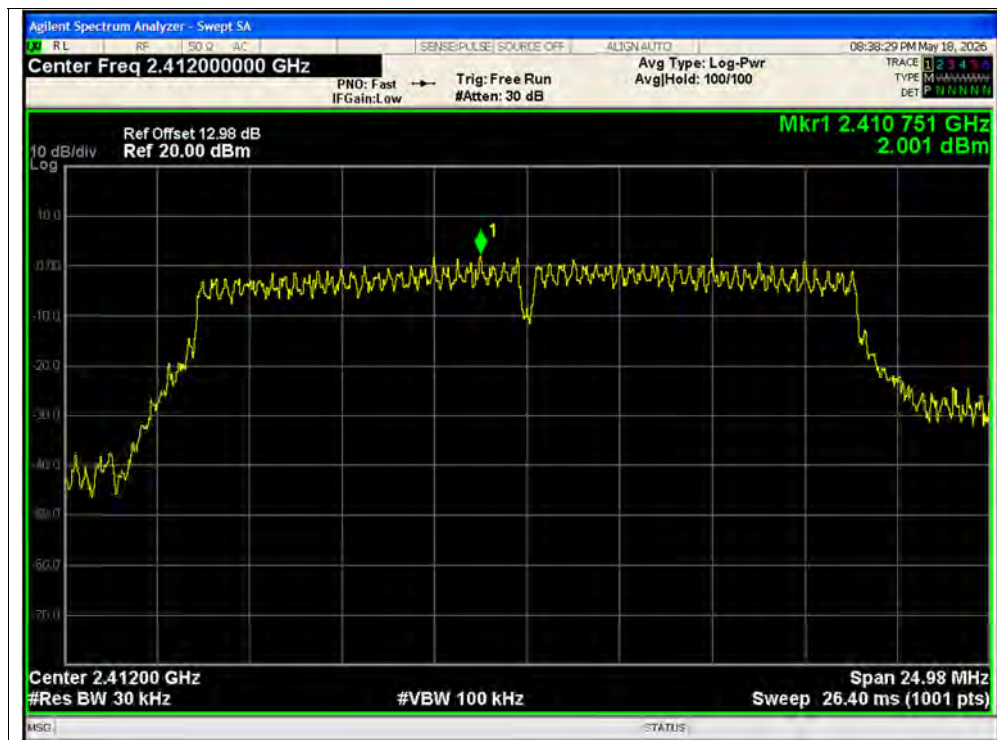
PSD NVNT g 2412MHz Ant1



PSD NVNT g 2437MHz Ant1



PSD NVNT g 2462MHz Ant1



PSD NVNT n20 2412MHz Ant1



PSD NVNT n20 2437MHz Ant1



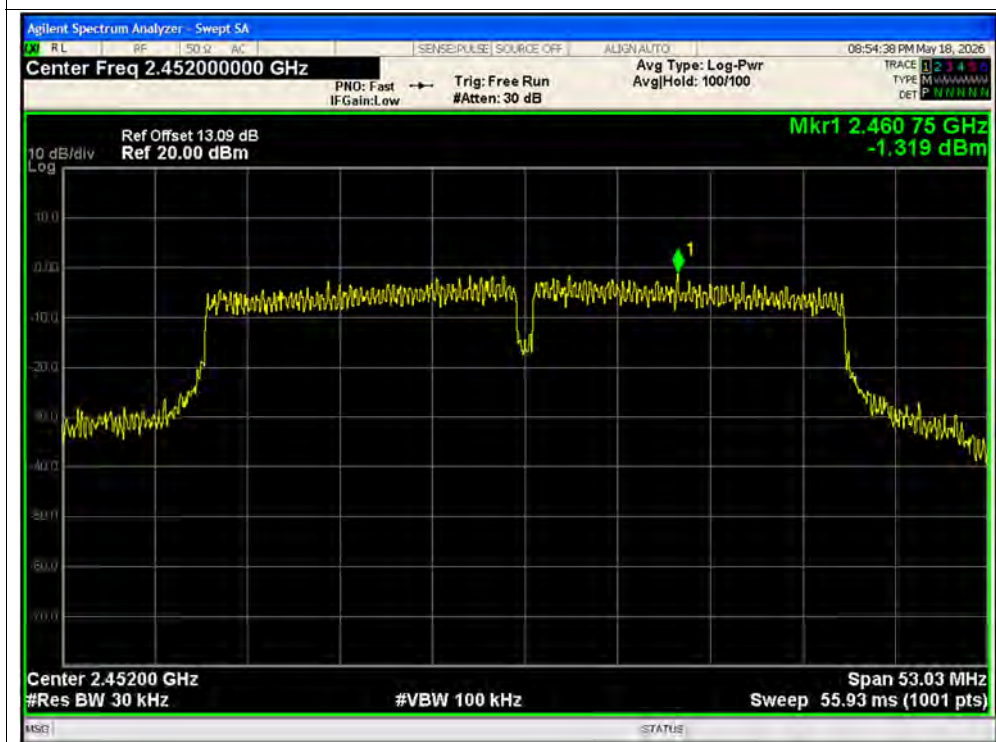
PSD NVNT n20 2462MHz Ant1



PSD NVNT n40 2422MHz Ant1



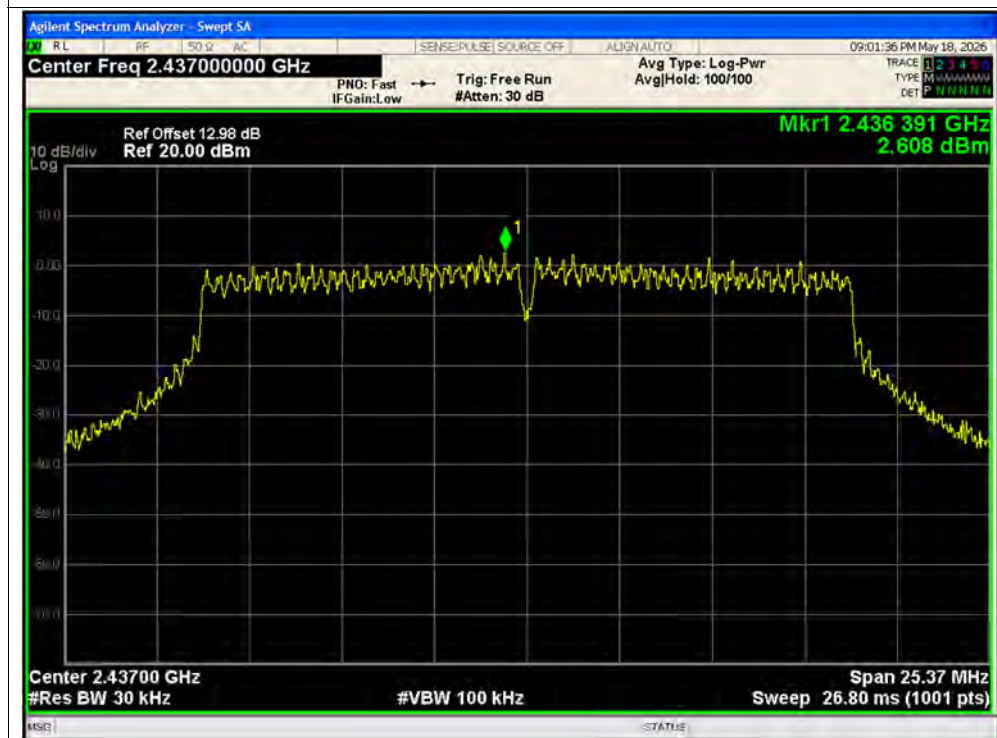
PSD NVNT n40 2437MHz Ant1



PSD NVNT n40 2452MHz Ant1



PSD NVNT ac20 2412MHz Ant1



PSD NVNT ac20 2437MHz Ant1



PSD NVNT ac20 2462MHz Ant1



PSD NVNT ac40 2422MHz Ant1



PSD NVNT ac40 2437MHz Ant1



PSD NVNT ac40 2452MHz Ant1



A.8. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+Adapter+USB cable+Earphone+WIFI TX

Test voltage: AC 120V/60Hz

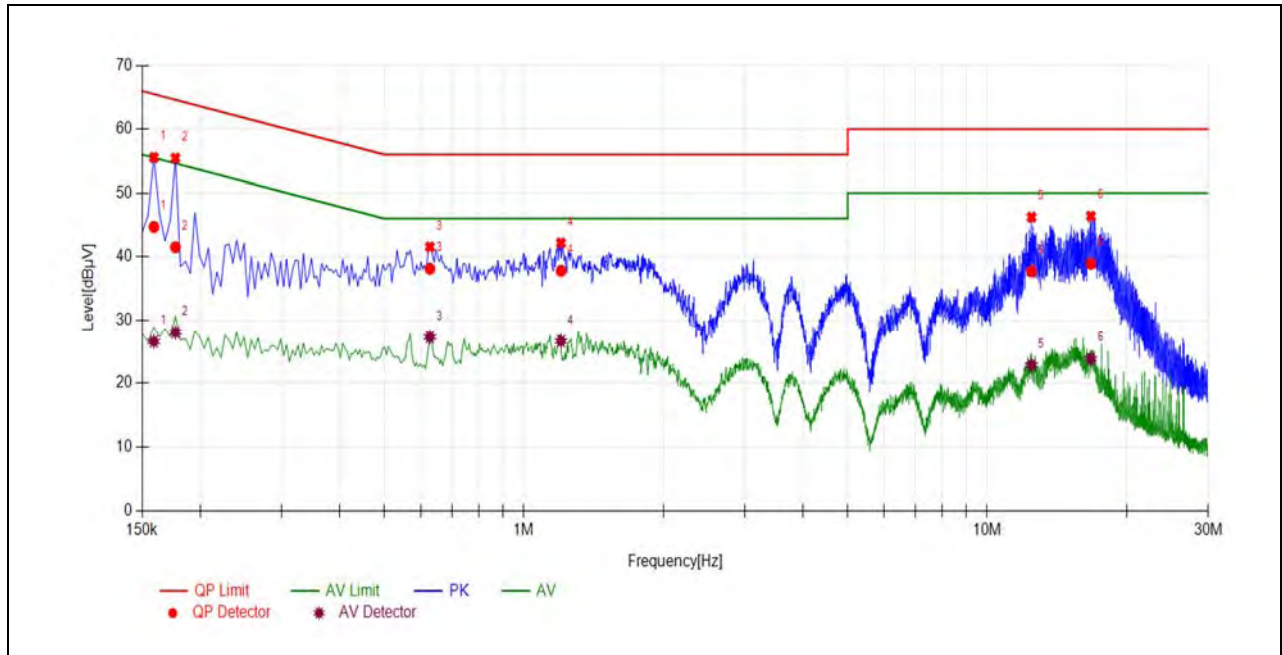
The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

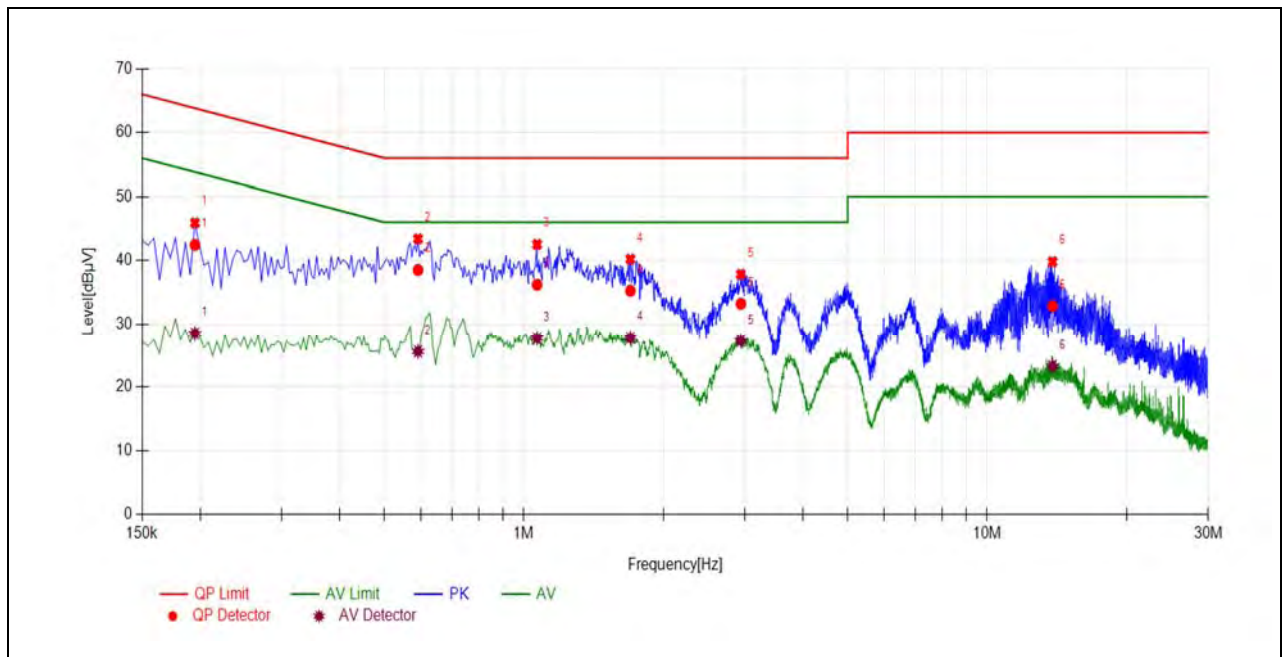
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1590	44.69	26.53	65.52	55.52	Line	PASS
2	0.1770	41.51	28.00	64.63	54.63		PASS
3	0.6270	38.11	27.25	56.00	46.00		PASS
4	1.2030	37.78	26.59	56.00	46.00		PASS
5	12.4654	37.70	22.81	60.00	50.00		PASS
6	16.7445	38.90	23.80	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1950	42.46	28.46	63.82	53.82	Neutral	PASS
2	0.5910	38.52	25.60	56.00	46.00		PASS
3	1.0680	36.21	27.71	56.00	46.00		PASS
4	1.6979	35.26	27.79	56.00	46.00		PASS
5	2.9401	33.21	27.29	56.00	46.00		PASS
6	13.8448	32.85	23.26	60.00	50.00		PASS

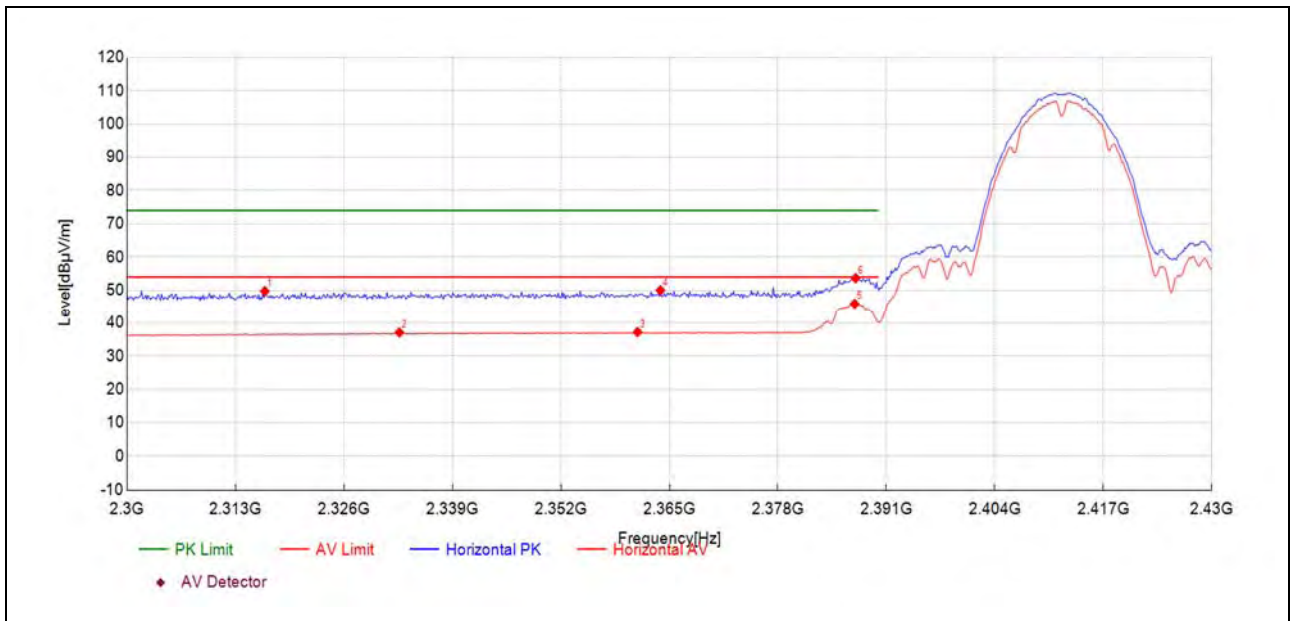
A.9. Restricted Frequency Bands

Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition was recorded in this test report.

Note 2 All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded for each bandwidth.

802.11b Mode

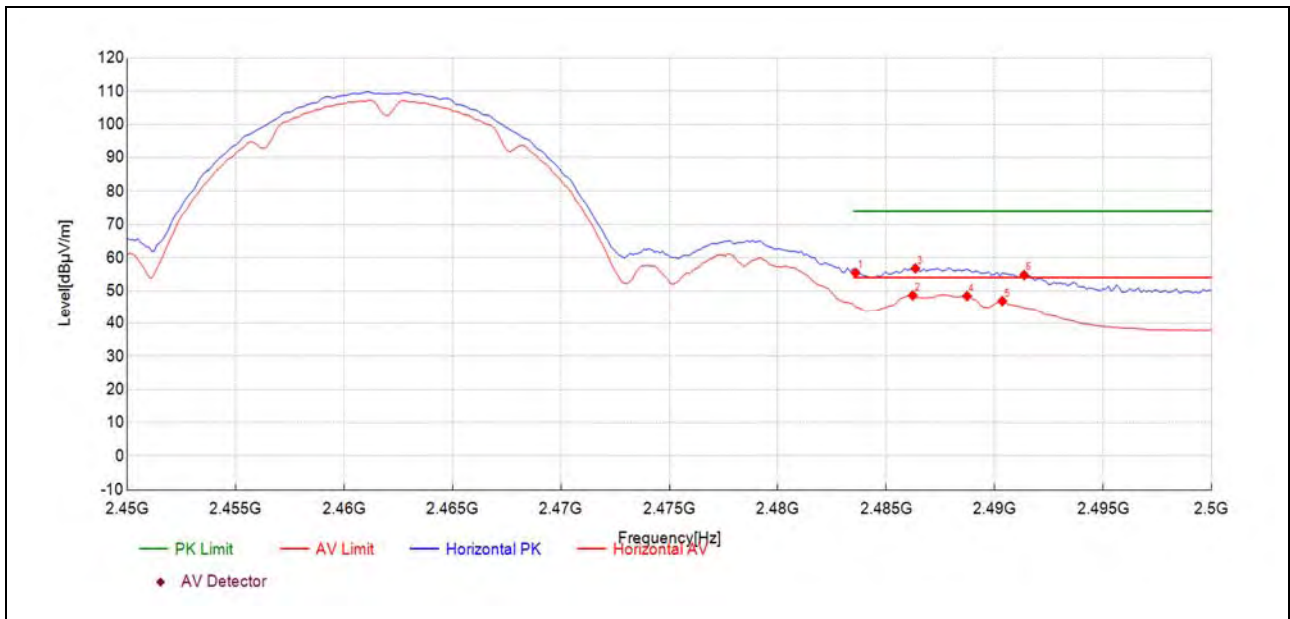
Plot for Channel 1



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2316.52	17.7	49.74	32.080	74.00	24.26	165	11	PK	PASS
2332.66	4.8	37.05	32.230	54.00	16.95	165	20	AV	PASS
2361.18	4.7	37.18	32.440	54.00	16.82	165	20	AV	PASS
2363.94	17.5	49.98	32.450	74.00	24.02	165	360	PK	PASS
2387.21	13.3	45.85	32.530	54.00	8.15	165	154	AV	PASS
2387.33	21.1	53.66	32.530	74.00	20.34	165	154	PK	PASS



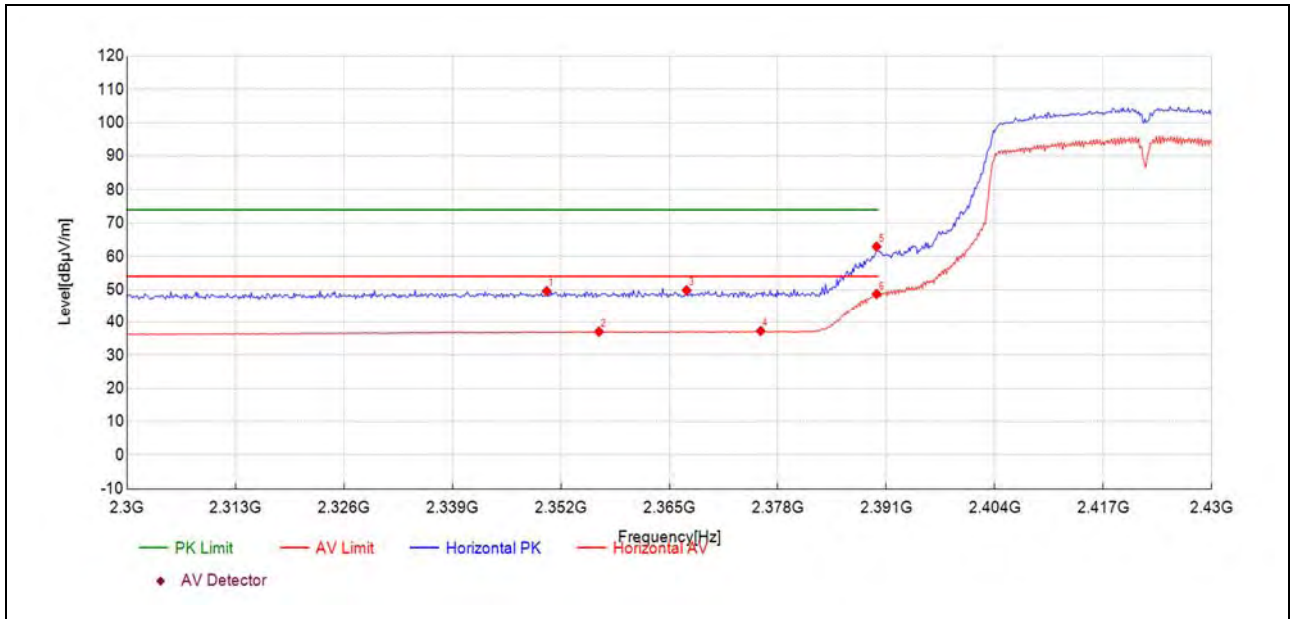
Plot for Channel 11



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.58	22.4	55.41	33.030	74.00	18.59	165	144	PK	PASS
2486.22	15.6	48.58	33.030	54.00	5.42	165	144	AV	PASS
2486.34	23.7	56.76	33.030	74.00	17.24	165	144	PK	PASS
2488.72	15.3	48.36	33.020	54.00	5.64	165	144	AV	PASS
2490.35	13.9	46.87	33.020	54.00	7.13	165	144	AV	PASS
2491.35	21.7	54.73	33.020	74.00	19.27	165	134	PK	PASS

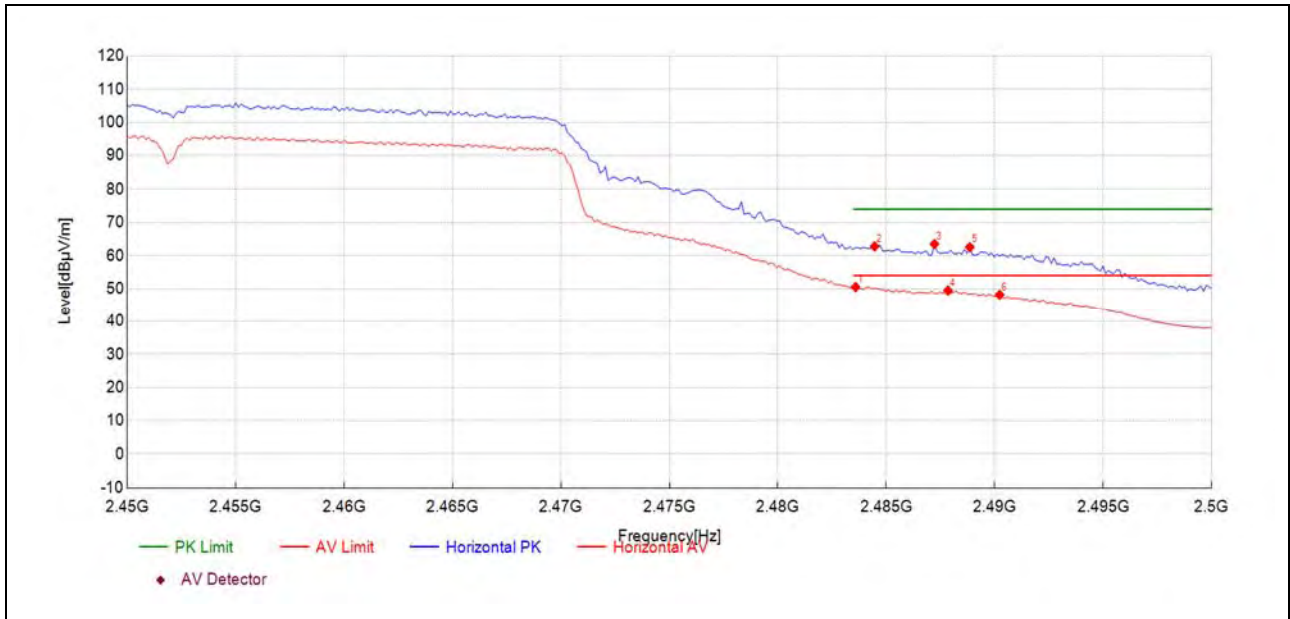
**802.11n (HT40) Mode**

Plot for Channel 3



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2350.30	17.1	49.53	32.400	74.00	24.47	165	128	PK	PASS
2356.55	4.6	37.05	32.420	54.00	16.95	165	244	AV	PASS
2367.06	17.3	49.79	32.460	74.00	24.21	165	359	PK	PASS
2375.95	4.8	37.26	32.490	54.00	16.74	165	90	AV	PASS
2389.84	30.4	62.96	32.540	74.00	11.04	165	138	PK	PASS
2389.84	16.2	48.69	32.540	54.00	5.31	165	138	AV	PASS

Plot for Channel 9



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2483.58	17.5	50.51	33.030	54.00	3.49	165	144	AV	PASS
2484.46	29.8	62.78	33.030	74.00	11.22	165	135	PK	PASS
2487.22	30.5	63.49	33.030	74.00	10.51	165	144	PK	PASS
2487.84	16.4	49.44	33.020	54.00	4.56	165	144	AV	PASS
2488.85	29.5	62.55	33.020	74.00	11.45	165	293	PK	PASS
2490.23	15.1	48.16	33.020	54.00	5.84	165	144	AV	PASS



A.10. Radiated Emission

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:

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

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

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

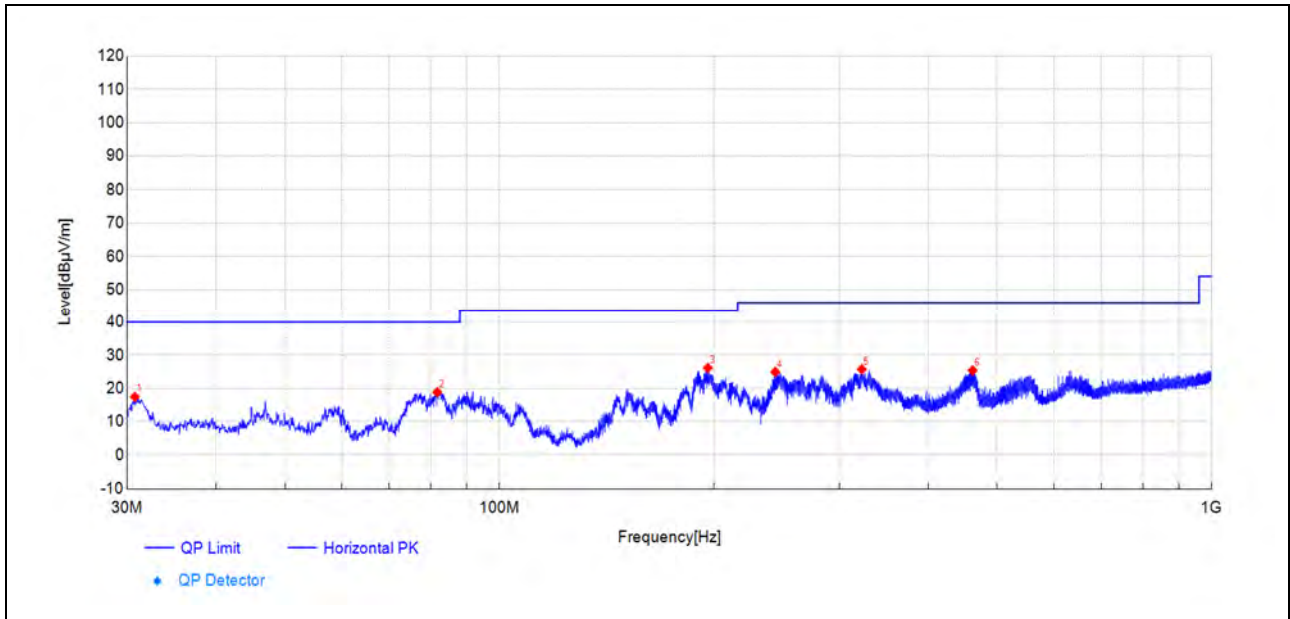
Note 1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

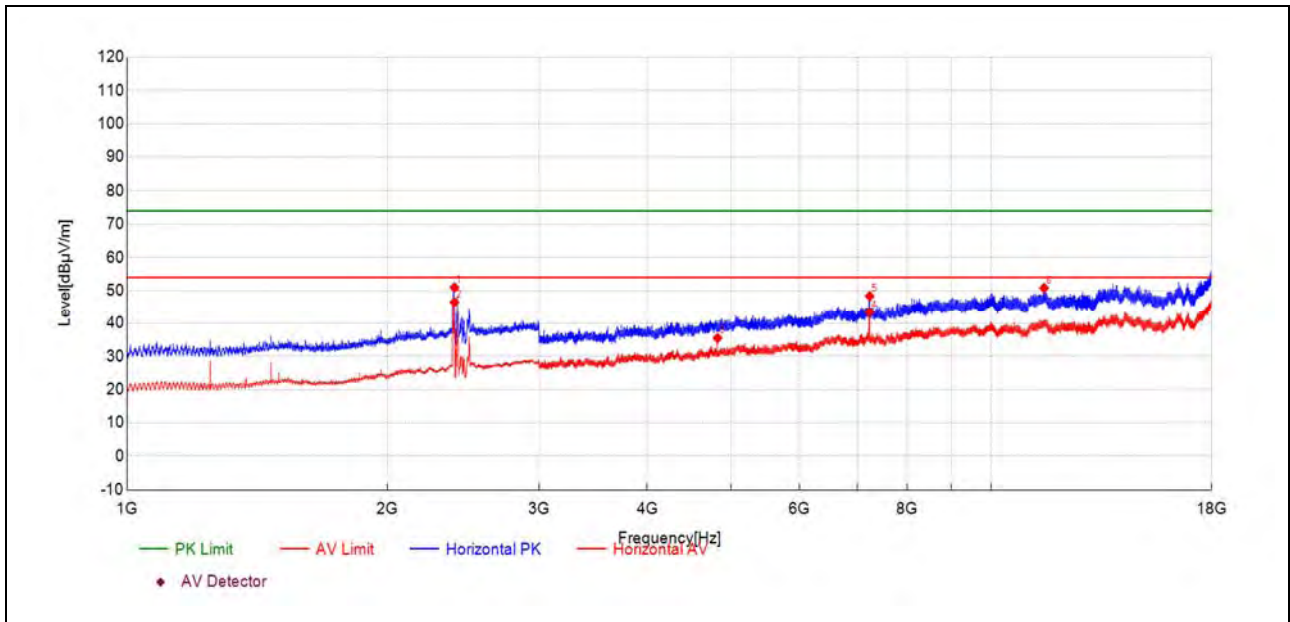
**802.11b Mode**

Plot for Channel 1



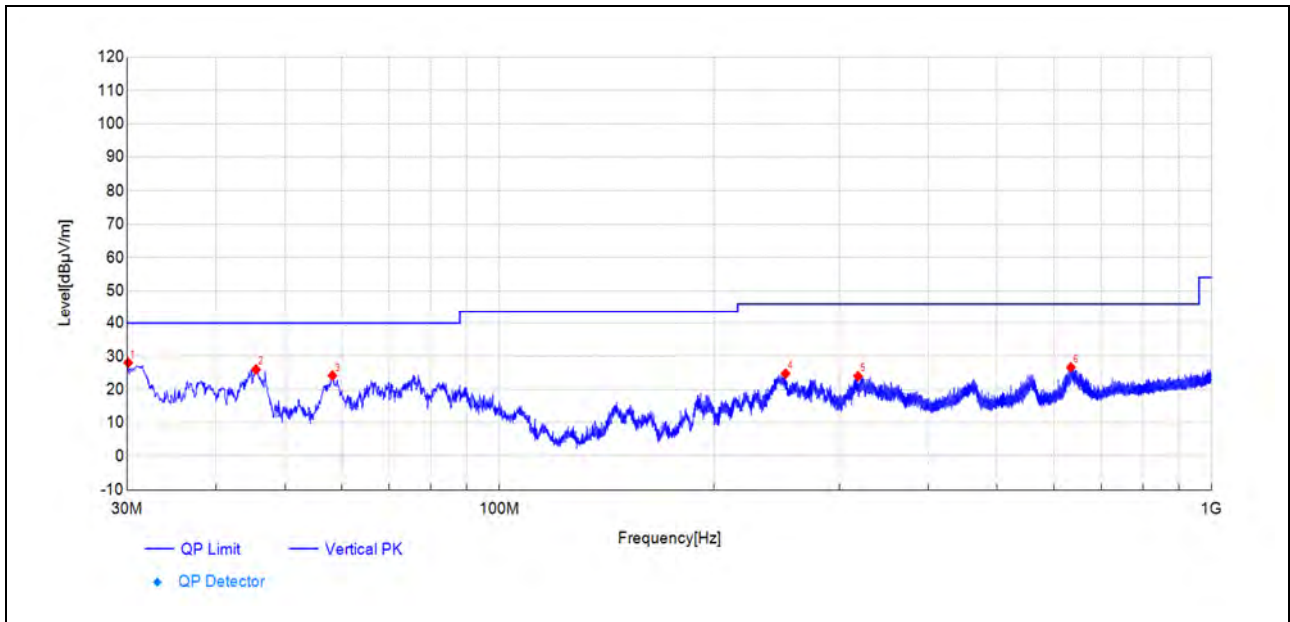
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
30.76	50.4	17.48	-32.950	40.00	22.52	165	50	PK	PASS
81.80	53.8	18.88	-34.880	40.00	21.12	165	287	PK	PASS
196.14	55.8	26.15	-29.620	43.50	17.35	165	238	PK	PASS
243.88	53.3	24.98	-28.300	46.00	21.02	165	238	PK	PASS
322.66	52.0	25.77	-26.240	46.00	20.23	165	62	PK	PASS
461.65	48.2	25.42	-22.770	46.00	20.58	165	275	PK	PASS



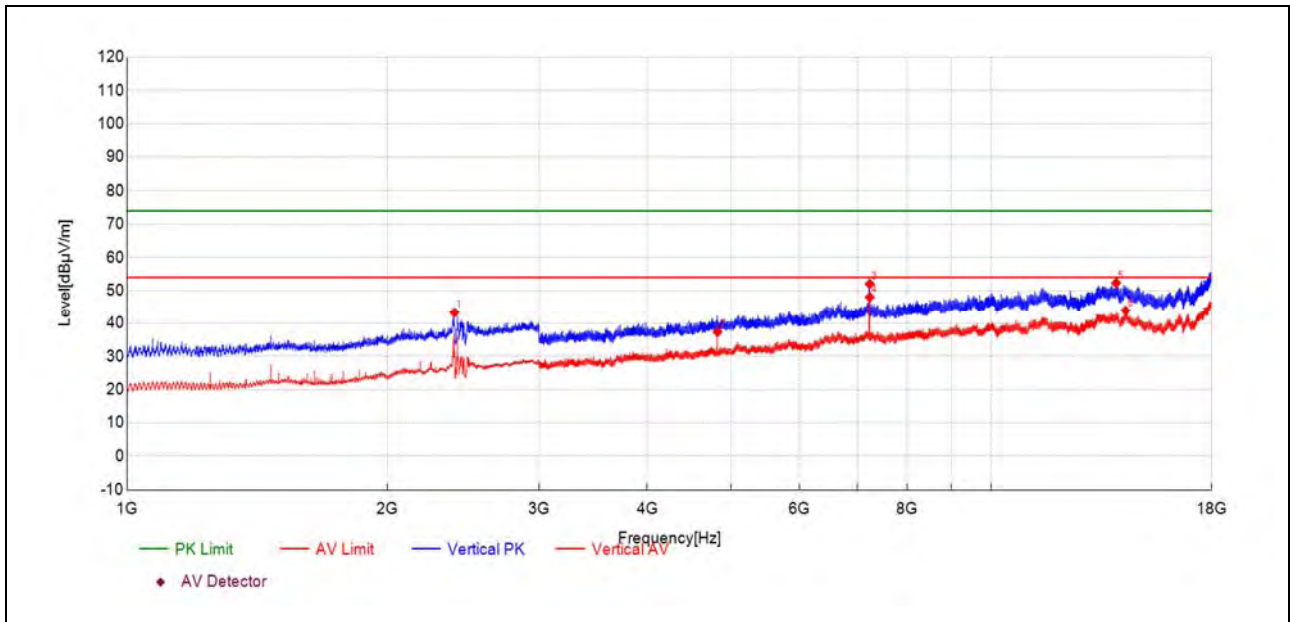
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2392.92	50.2	50.96	0.750	74.00	23.04	165	151	PK	PASS
2392.92	45.7	46.48	0.750	54.00	7.52	165	151	AV	PASS
4824.05	46.0	35.49	-10.550	54.00	18.51	165	61	AV	PASS
7234.84	47.4	43.46	-3.930	54.00	10.54	165	38	AV	PASS
7234.84	52.3	48.36	-3.930	74.00	25.64	165	38	PK	PASS
11514.24	48.1	50.79	2.680	74.00	23.21	165	11	PK	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
30.12	61.1	28.10	-33.030	40.00	11.90	165	262	PK	PASS
45.52	54.4	26.04	-28.320	40.00	13.96	165	248	PK	PASS
58.28	54.5	24.21	-30.330	40.00	15.79	165	353	PK	PASS
252.17	52.9	24.79	-28.070	46.00	21.21	165	173	PK	PASS
318.78	50.4	24.00	-26.420	46.00	22.00	165	85	PK	PASS
634.26	45.8	26.70	-19.130	46.00	19.30	165	262	PK	PASS

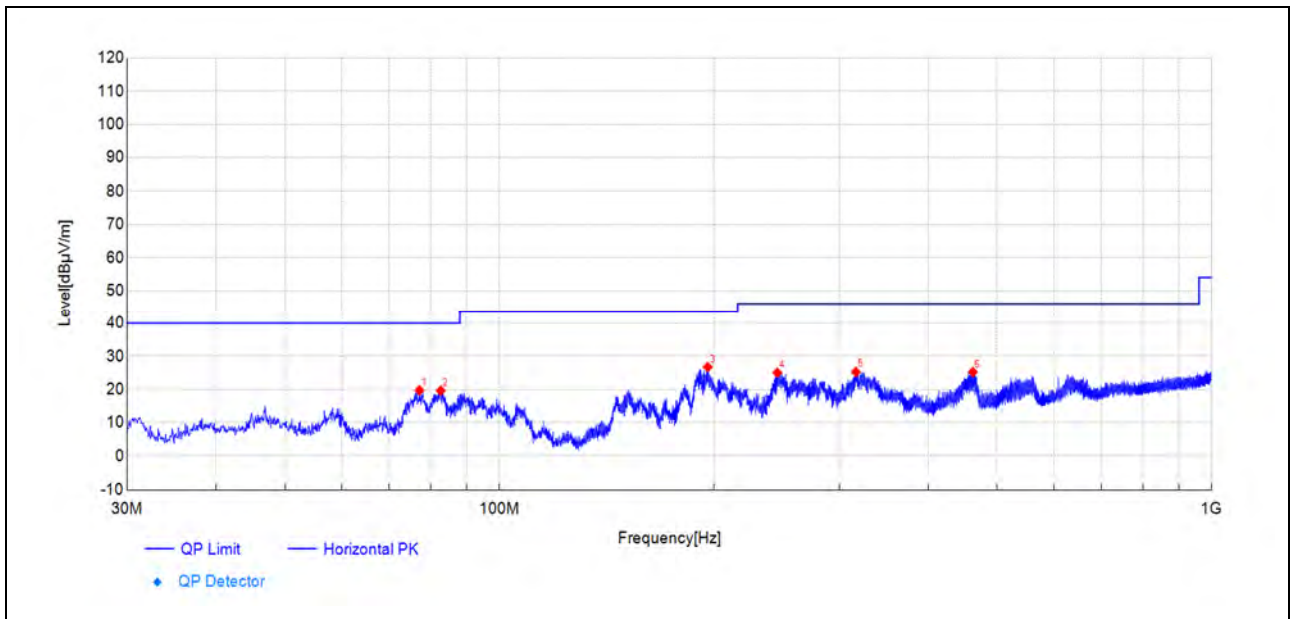


(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2392.92	42.6	43.31	0.750	74.00	30.69	165	77	PK	PASS
4824.05	47.9	37.35	-10.550	54.00	16.65	165	60	AV	PASS
7235.69	56.0	52.05	-3.930	74.00	21.95	165	88	PK	PASS
7236.98	52.0	48.04	-3.940	54.00	5.96	165	36	AV	PASS
13958.03	47.3	52.36	5.110	74.00	21.64	165	360	PK	PASS
14309.04	39.0	43.88	4.860	54.00	10.12	165	288	AV	PASS

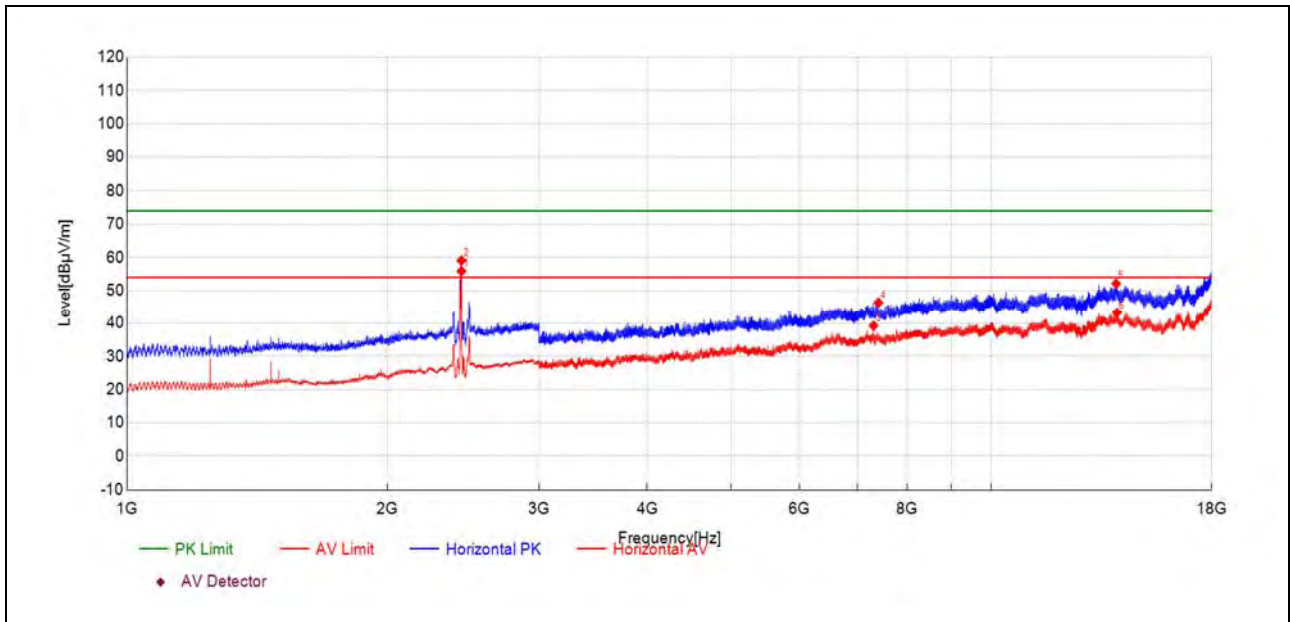


Plot for Channel 6



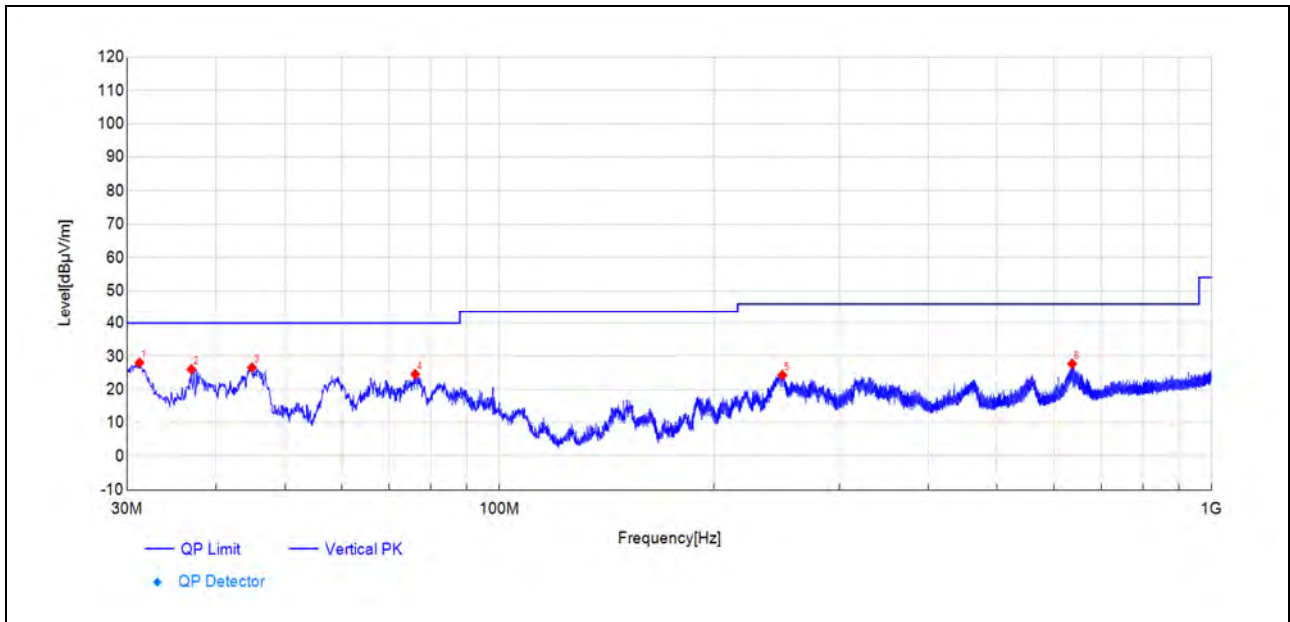
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
77.21	55.1	19.74	-35.310	40.00	20.26	165	275	PK	PASS
82.74	54.3	19.66	-34.670	40.00	20.34	165	287	PK	PASS
196.09	56.4	26.77	-29.620	43.50	16.73	165	249	PK	PASS
245.53	53.3	25.04	-28.250	46.00	20.96	165	249	PK	PASS
316.55	51.8	25.27	-26.520	46.00	20.73	165	263	PK	PASS
462.00	48.0	25.24	-22.760	46.00	20.76	165	275	PK	PASS



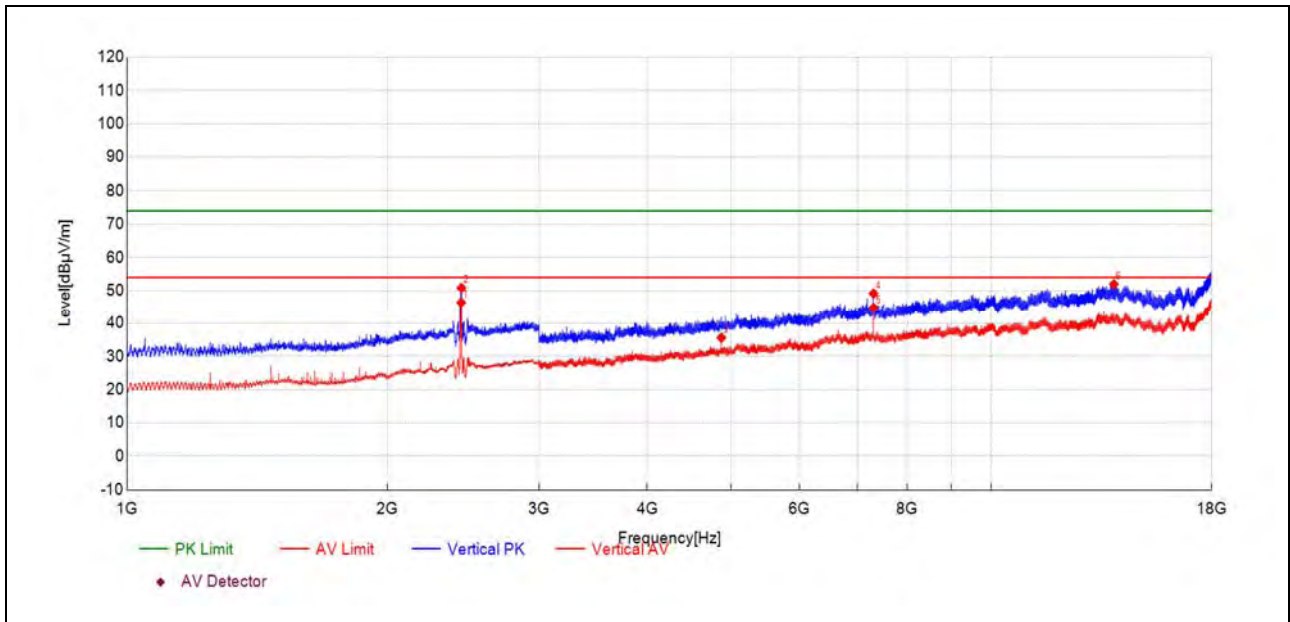
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2437.85	54.9	55.88	0.990	-	-	165	295	AV	NA
2437.85	58.1	59.06	0.990	-	-	165	295	PK	NA
7309.41	42.8	39.22	-3.600	54.00	14.78	165	38	AV	PASS
7404.98	50.2	46.34	-3.890	74.00	27.66	165	240	PK	PASS
13953.74	47.0	52.11	5.070	74.00	21.89	165	360	PK	PASS
13989.31	37.8	43.24	5.410	54.00	10.76	165	189	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
31.23	60.9	28.07	-32.830	40.00	11.93	165	11	PK	PASS
36.94	56.1	26.07	-30.070	40.00	13.93	165	357	PK	PASS
44.93	54.9	26.60	-28.330	40.00	13.40	165	160	PK	PASS
76.15	59.9	24.61	-35.250	40.00	15.39	165	11	PK	PASS
249.59	52.5	24.37	-28.130	46.00	21.63	165	122	PK	PASS
636.85	46.8	27.73	-19.050	46.00	18.27	165	286	PK	PASS

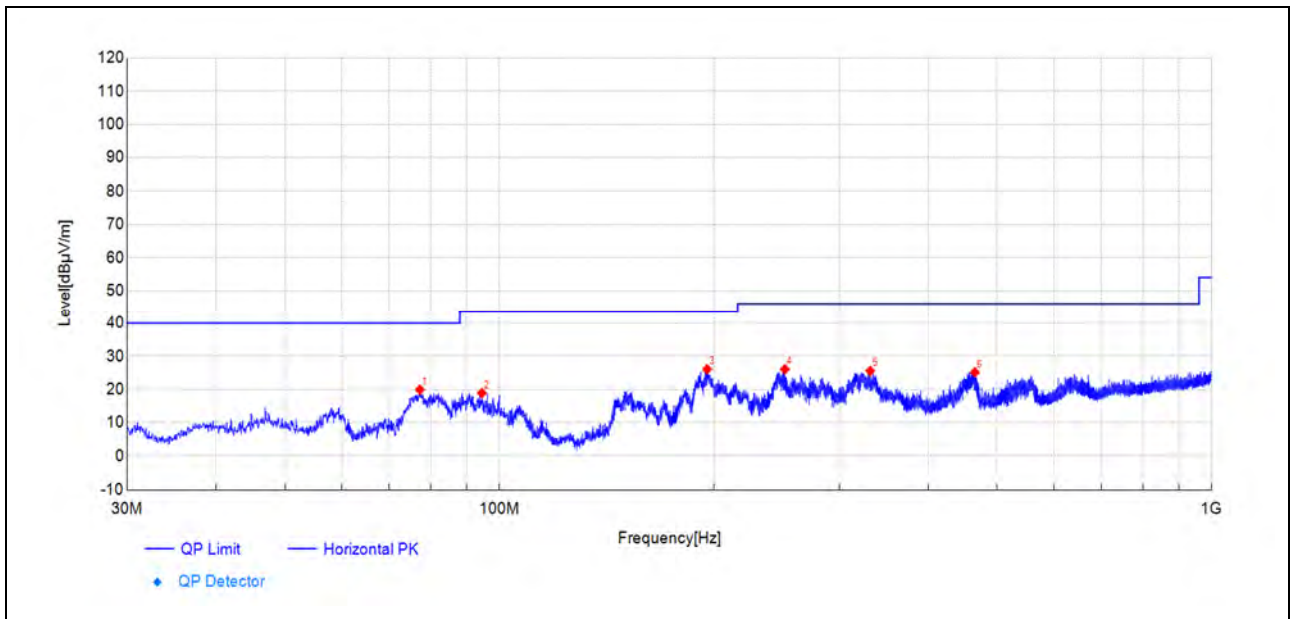


(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2436.39	45.4	46.39	0.980	-	-	165	0	AV	NA
2437.85	49.8	50.81	0.990	-	-	165	0	PK	NA
4873.77	45.7	35.59	-10.070	54.00	18.41	165	263	AV	PASS
7309.84	52.7	49.14	-3.600	74.00	24.86	165	86	PK	PASS
7310.27	48.4	44.78	-3.600	54.00	9.22	165	37	AV	PASS
13868.88	47.1	51.97	4.870	74.00	22.03	165	86	PK	PASS

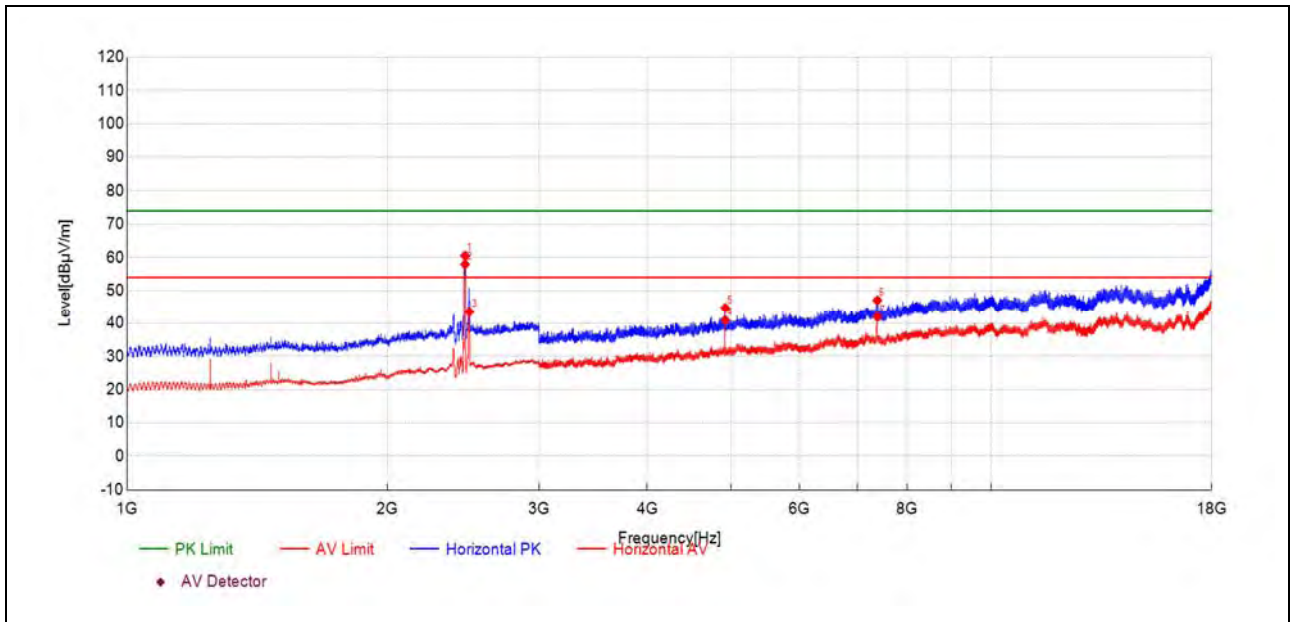


Plot for Channel 11



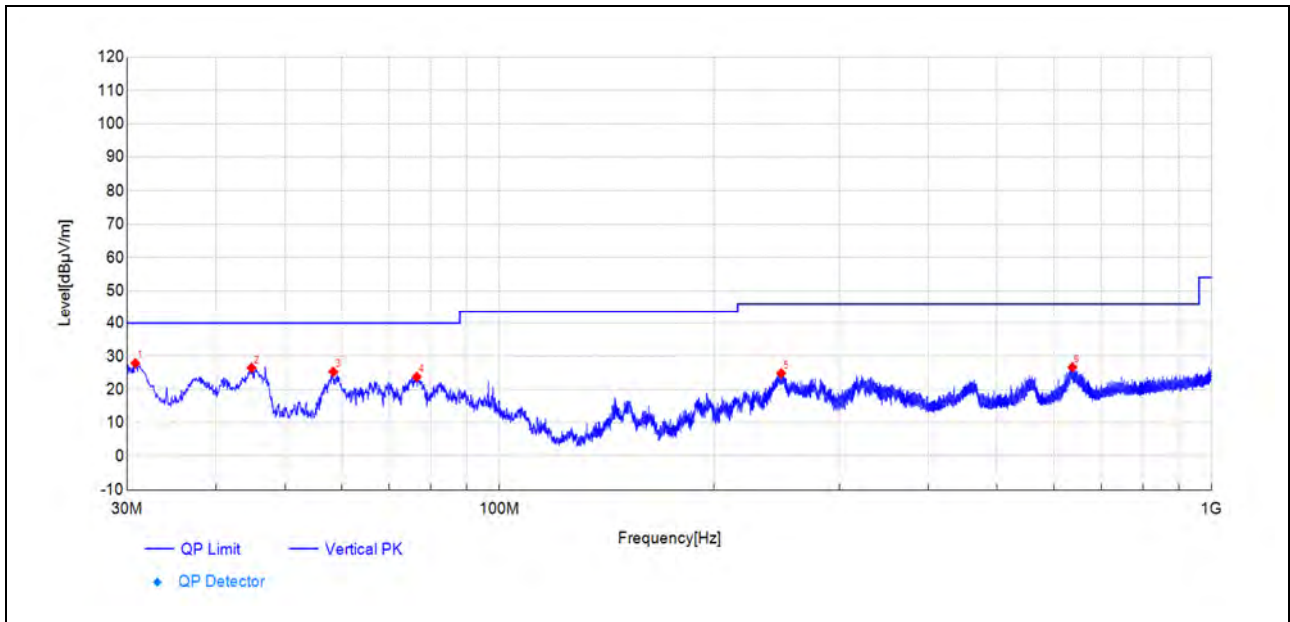
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
77.33	55.3	19.95	-35.310	40.00	20.05	165	299	PK	PASS
94.49	49.7	18.94	-30.780	43.50	24.56	165	86	PK	PASS
195.73	55.7	26.10	-29.610	43.50	17.40	165	212	PK	PASS
251.53	54.2	26.10	-28.080	46.00	19.90	165	236	PK	PASS
331.54	51.3	25.60	-25.660	46.00	20.40	165	250	PK	PASS
465.12	47.9	25.19	-22.690	46.00	20.81	165	299	PK	PASS



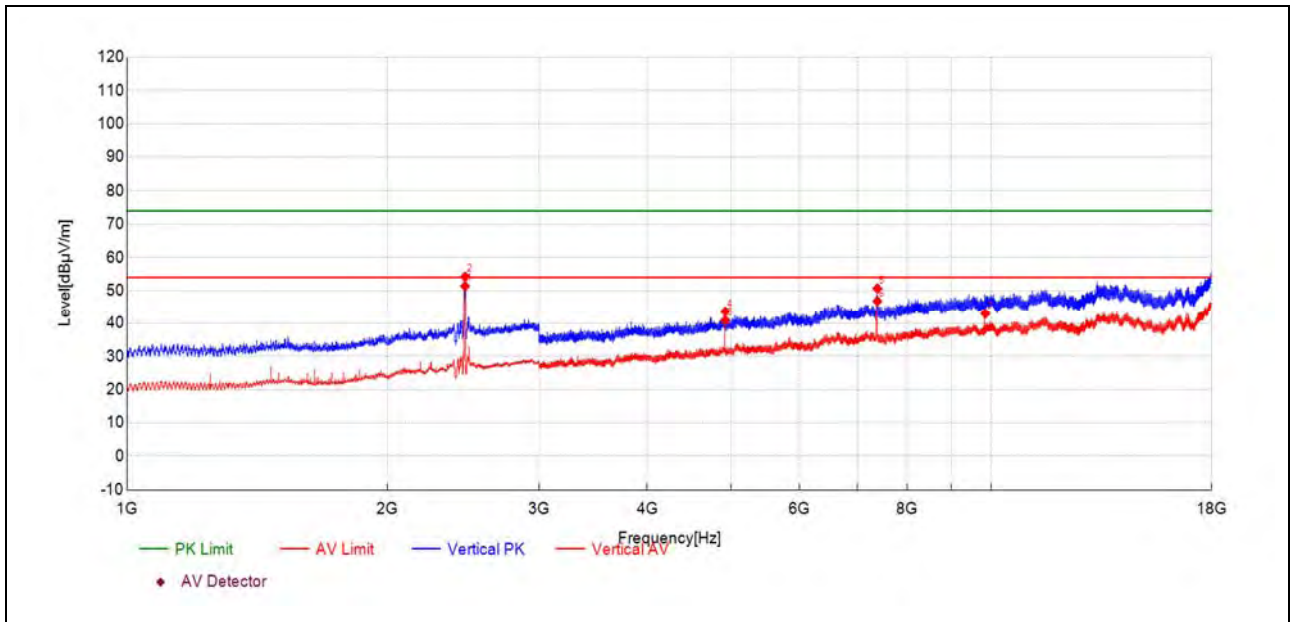
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2461.29	59.5	60.54	1.020	-	-	165	305	PK	NA
2461.29	56.9	57.92	1.020	-	-	165	305	AV	NA
2490.60	42.7	43.51	0.860	54.00	10.49	165	294	AV	PASS
4923.91	50.9	40.96	-9.970	54.00	13.04	165	60	AV	PASS
4923.91	54.7	44.74	-9.970	74.00	29.26	165	60	PK	PASS
7385.27	50.9	47.04	-3.830	74.00	26.96	165	37	PK	PASS
7386.98	45.7	41.91	-3.830	54.00	12.09	165	37	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
30.82	60.9	27.90	-32.950	40.00	12.10	165	261	PK	PASS
44.87	54.9	26.53	-28.330	40.00	13.47	165	284	PK	PASS
58.46	55.8	25.35	-30.400	40.00	14.65	165	197	PK	PASS
76.56	59.1	23.84	-35.280	40.00	16.16	165	10	PK	PASS
248.65	53.1	24.90	-28.160	46.00	21.10	165	185	PK	PASS
637.37	45.8	26.72	-19.040	46.00	19.28	165	272	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
2461.29	50.3	51.35	1.020	-	-	165	153	AV	NA
2461.78	53.2	54.23	1.020	-	-	165	153	PK	NA
4923.91	50.9	40.90	-9.970	54.00	13.10	165	111	AV	PASS
4923.91	53.6	43.62	-9.970	74.00	30.38	165	38	PK	PASS
7384.41	54.5	50.65	-3.830	74.00	23.35	165	140	PK	PASS
7385.27	50.7	46.83	-3.830	54.00	7.17	165	140	AV	PASS
9847.91	44.4	42.94	-1.470	54.00	11.06	165	341	AV	PASS



Notes

1. The report shall have report stamp or our company stamp.
2. The report shall be invalid without all the signatures of the editor and approver.
3. The report shall not be changed.
4. Any objections must be raised to Morlab within 15 days since the date when the report is received. It will not be taken into consideration beyond this limit.
5. Conformity declaration:
 - ☒ Morlab issues a statement of conformity based on the corresponding standards (default)
 - ☐ Morlab issues a statement of conformity based on the applicant requirement
6. Use of uncertainty of measurement for decisions on conformity (decision rule):

No decision rule is specified by the testing standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule).

————— END OF REPORT —————

