

ANNEX A: Test Result

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the loop antenna is coplanar, the others are vertical and horizontal. and the worst case was recorded.

1. Unwanted Emission

1.1. NearLink SLE

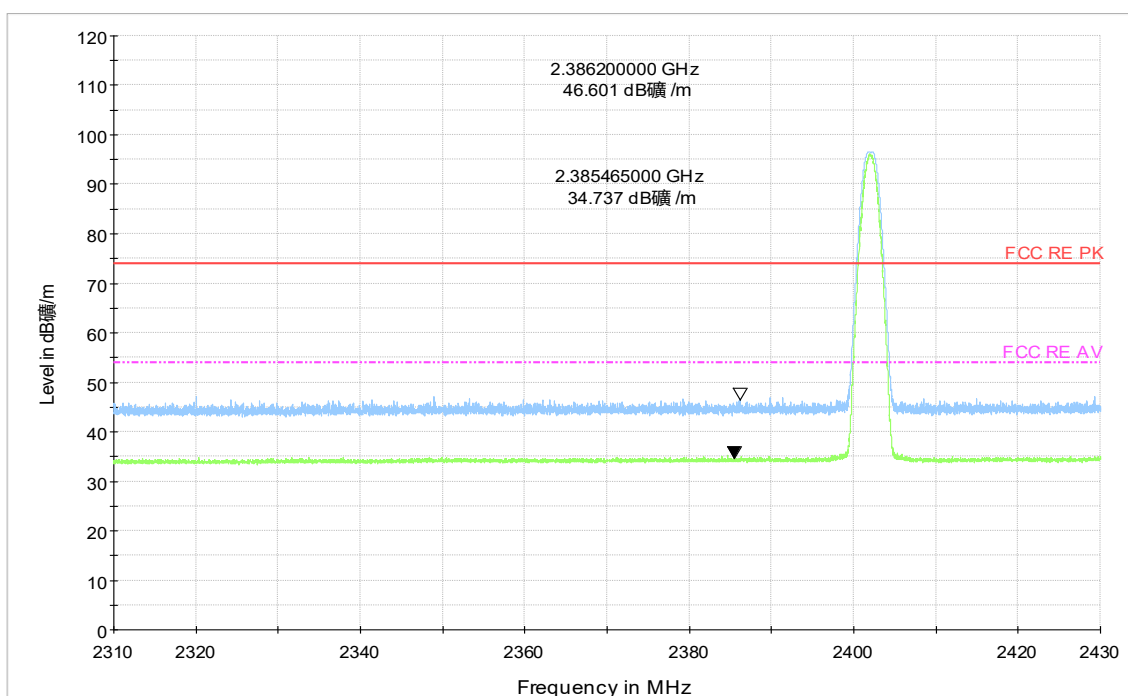
The following graphs display the maximum values of horizontal and vertical by software.
Blue trace uses the peak detection, Green trace uses the average detection.

After the pretest, NearLink SLE (1M) was selected as the worst Mode for NearLink SLE.

A symbol ($\text{dB}\mu\text{V/m}$) in the test plot below means ($\text{dB}\mu\text{V/m}$)

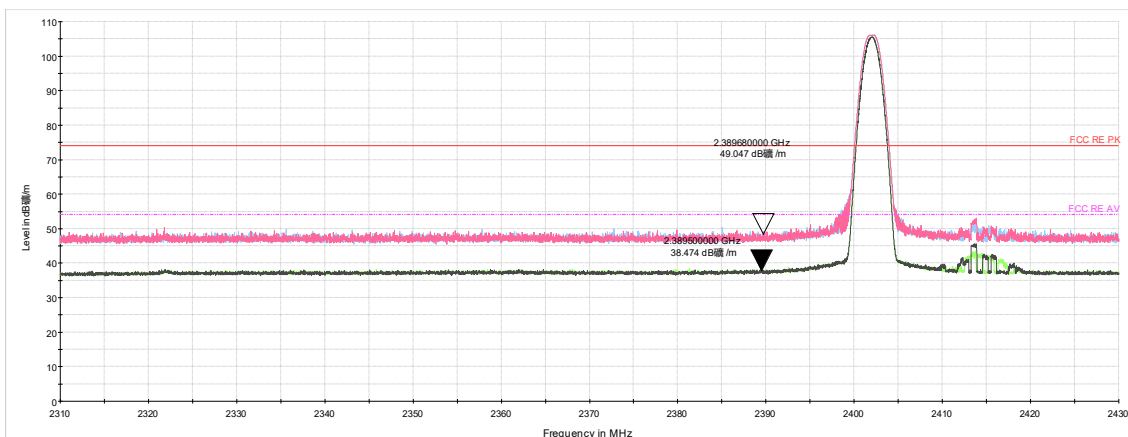
The signal beyond the limit is carrier.

KR272



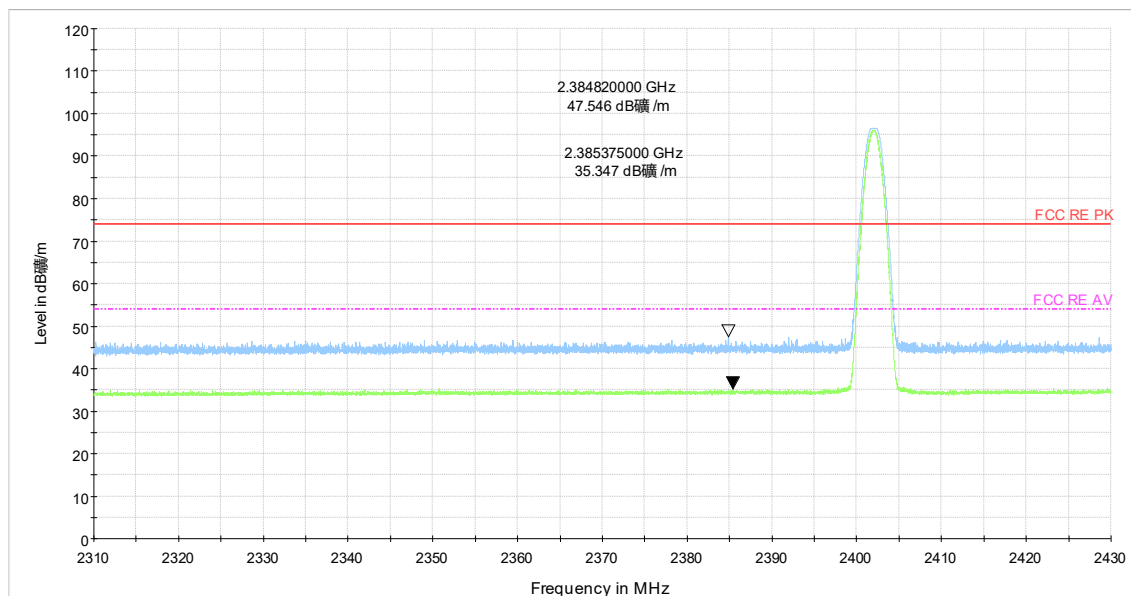
NearLink SLE 2402MHz: Peak + Average

KR274



NearLink SLE 2402MHz: Peak + Average

KR276



NearLink SLE 2402MHz: Peak + Average

Result of RE

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier. The Radiates Emission from 9kHz to 30MHz and 18GHz to 26.5GHz are more than 20dB below the limit are not reported.

Remark:

1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)
2. Margin = Limit – Quasi-Peak/ MAX Peak/ Average
3. The following graphs display the maximum values of coaxial and coplanar for 9k-30MHz; horizontal and vertical for above 30MHz by software.
4. For below 1GHz

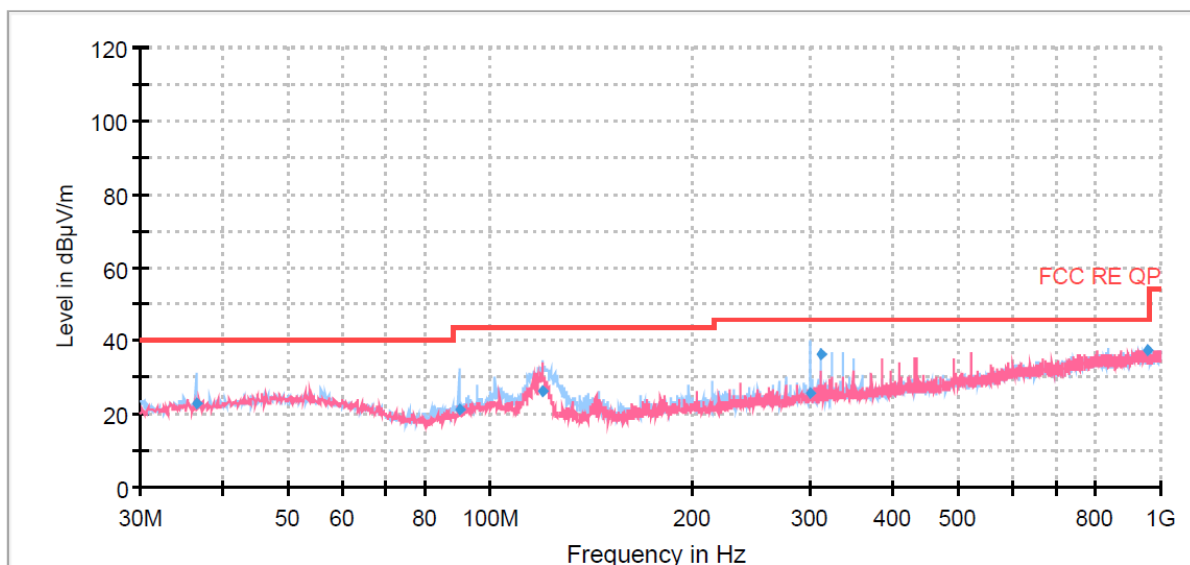


For above 1GHz

Continuous TX mode:

KR272

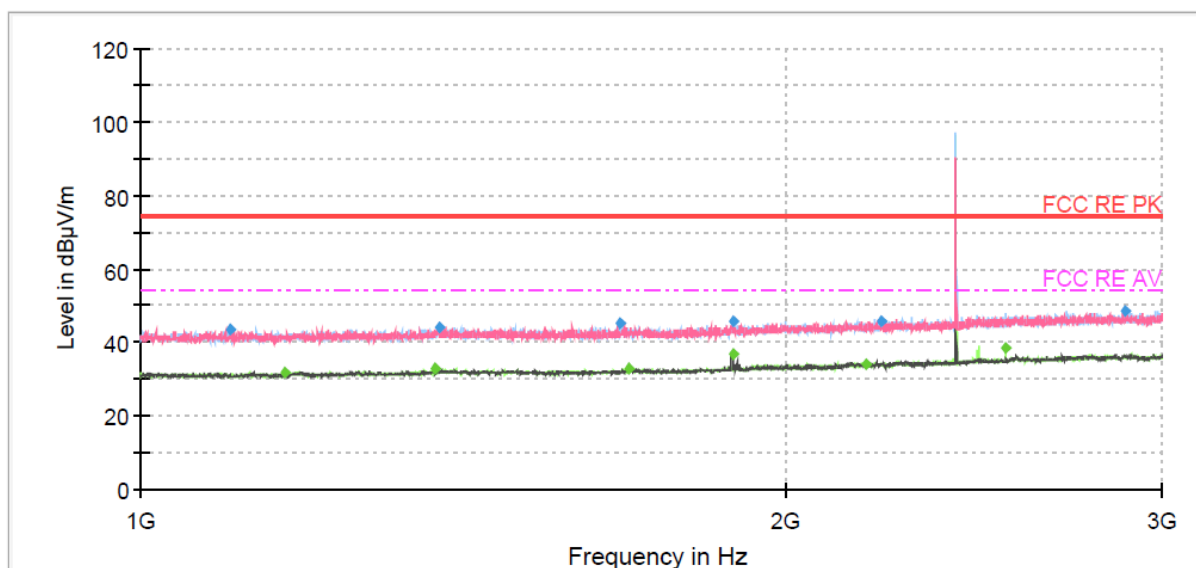
NearLink SLE 2402MHz



Radiates Emission from 30MHz to 1GHz

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.31	22.93	40.00	17.07	1000.00	100.0	H	297.00	18
89.78	21.44	43.50	22.06	1000.00	200.0	H	323.00	17
119.85	26.05	43.50	17.45	1000.00	100.0	H	354.00	17
299.42	25.85	46.00	20.15	1000.00	100.0	H	314.00	21
311.42	36.47	46.00	9.53	1000.00	100.0	H	354.00	21
955.02	37.65	46.00	8.35	1000.00	199.0	H	0.00	32

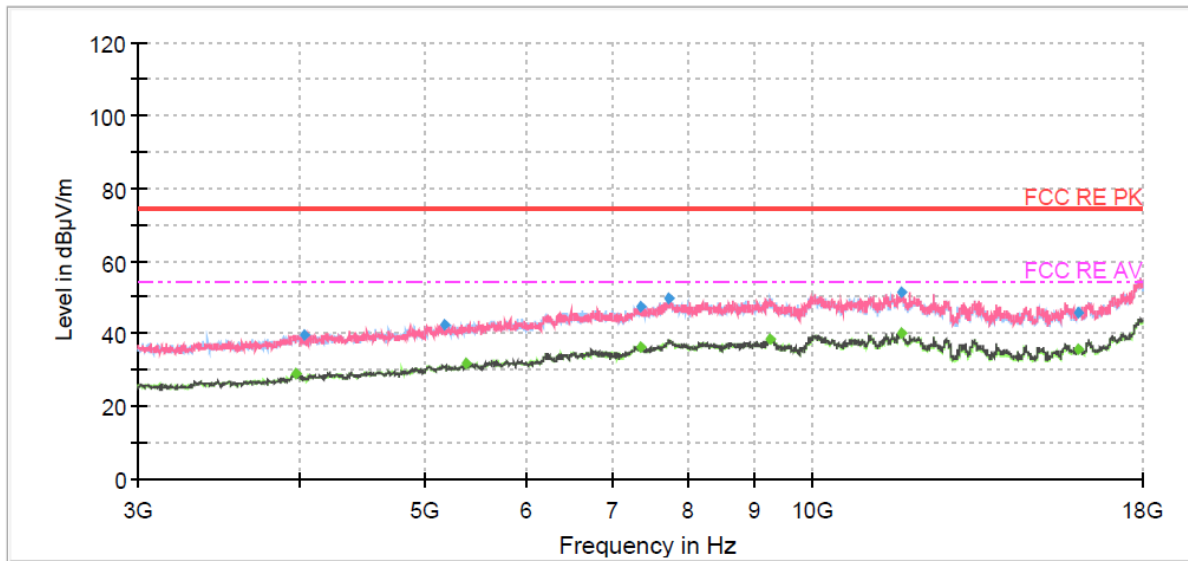


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1101.25	43.64	---	74.00	30.36	500.00	200.0	H	351.00	-12
1167.50	---	31.94	54.00	22.06	500.00	100.0	V	340.00	-12
1372.50	---	32.77	54.00	21.23	500.00	200.0	H	258.00	-11
1379.25	44.25	---	74.00	29.75	500.00	200.0	V	8.00	-11
1675.75	44.93	---	74.00	29.07	500.00	200.0	H	25.00	-10
1688.25	---	32.85	54.00	21.15	500.00	100.0	V	0.00	-10
1890.75	46.04	---	74.00	27.96	500.00	200.0	V	8.00	-9
1891.75	---	36.99	54.00	17.01	500.00	100.0	V	133.00	-9
2183.50	---	34.27	54.00	19.73	500.00	100.0	H	7.00	-7
2220.00	45.81	---	74.00	28.19	500.00	200.0	H	258.00	-7
2533.50	---	38.71	54.00	15.29	500.00	200.0	H	354.00	-6
2882.00	48.72	---	74.00	25.28	500.00	100.0	V	352.00	-5



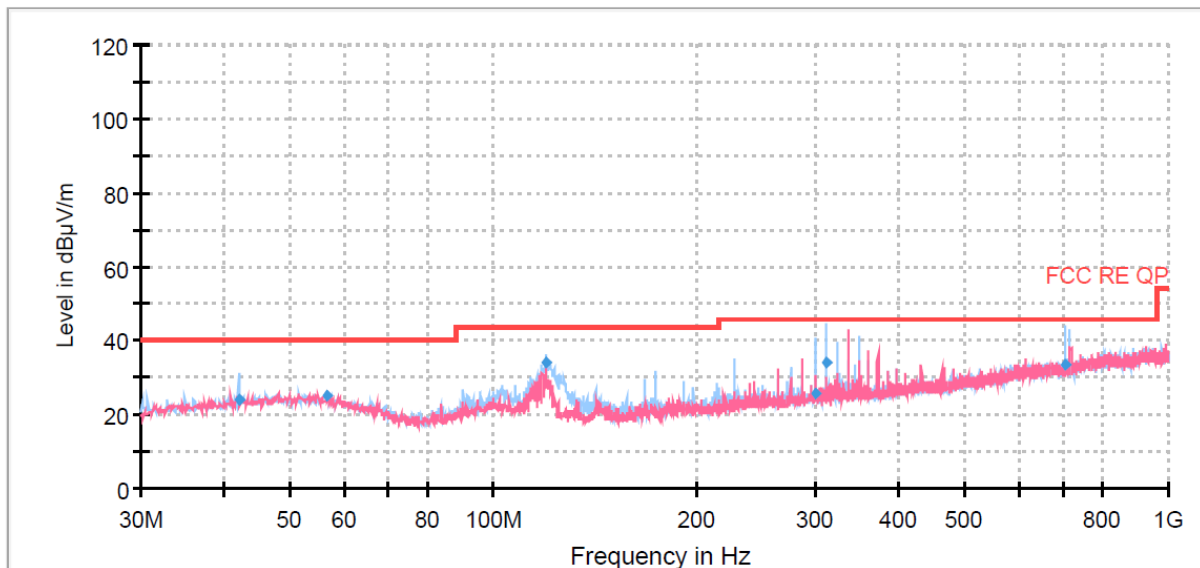
Radiates Emission from 3GHz to 18GHz

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3965.63	---	29.13	54.00	24.87	500.00	100.0	H	1.00	-11
4035.00	39.74	---	74.00	34.26	500.00	100.0	H	37.00	-12
5184.38	42.51	---	74.00	31.49	500.00	200.0	H	334.00	-8
5383.13	---	31.96	54.00	22.04	500.00	200.0	V	47.00	-8
7340.63	---	36.46	54.00	17.54	500.00	100.0	V	344.00	-1
7342.50	47.72	---	74.00	26.28	500.00	100.0	V	262.00	-1
7732.50	49.91	---	74.00	24.09	500.00	100.0	H	5.00	1
9241.88	---	38.69	54.00	15.31	500.00	200.0	V	70.00	2
11696.25	---	40.44	54.00	13.56	500.00	200.0	V	173.00	6
11698.13	51.58	---	74.00	22.42	500.00	200.0	H	187.00	6
16014.38	---	35.74	54.00	18.26	500.00	200.0	H	220.00	7
16027.50	45.86	---	74.00	28.14	500.00	200.0	H	23.00	7

KR274

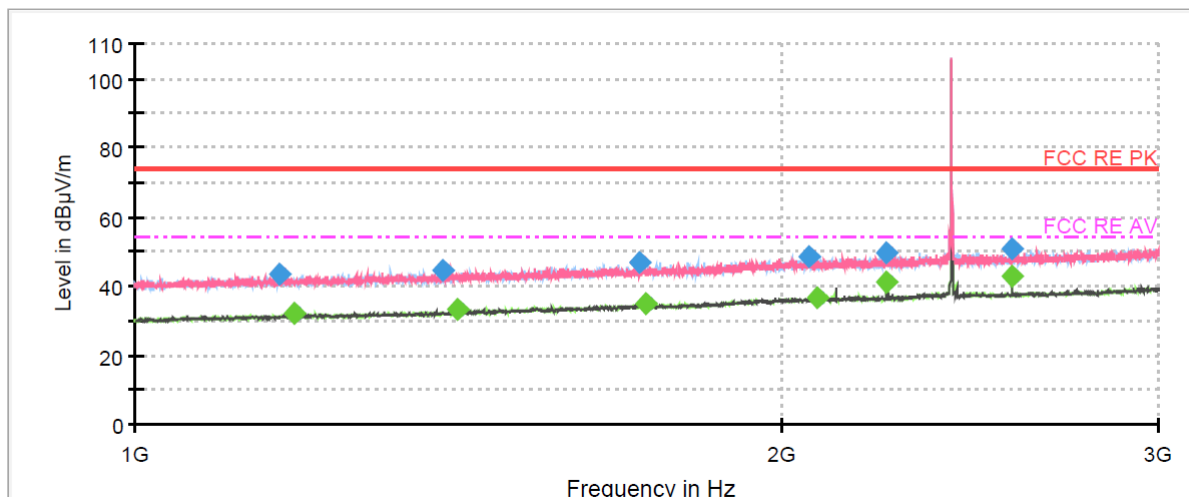
NearLink SLE 2402MHz



Radiates Emission from 30MHz to 1GHz

Final Result

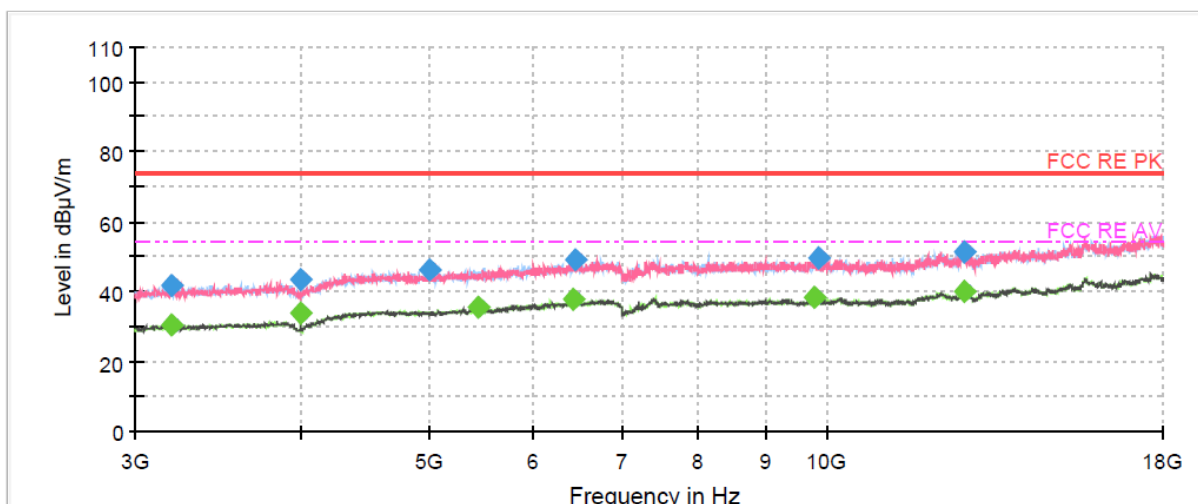
Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.88	24.00	40.00	16.00	1000.00	100.0	H	141.00	19
56.55	24.92	40.00	15.08	1000.00	100.0	H	357.00	20
119.73	33.97	43.50	9.53	1000.00	100.0	H	319.00	17
299.42	25.88	46.00	20.12	1000.00	100.0	H	0.00	21
311.54	34.30	46.00	11.70	1000.00	100.0	H	0.00	21
705.36	33.77	46.00	12.23	1000.00	100.0	H	0.00	28



Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1168.250000	43.25	---	74.00	30.75	500.0	200.0	H	117.0	-6
1185.000000	---	31.96	54.00	22.04	500.0	100.0	V	71.0	-6
1391.750000	44.41	---	74.00	29.59	500.0	200.0	H	162.0	-5
1413.750000	---	33.11	54.00	20.89	500.0	200.0	H	217.0	-4
1719.500000	46.67	---	74.00	27.33	500.0	200.0	V	116.0	-2
1729.250000	---	34.70	54.00	19.30	500.0	100.0	H	326.0	-2
2063.000000	48.29	---	74.00	25.71	500.0	200.0	V	34.0	0
2078.250000	---	36.62	54.00	17.38	500.0	200.0	H	335.0	0
2242.000000	---	41.17	54.00	12.83	500.0	100.0	V	25.0	1
2242.250000	49.64	---	74.00	24.36	500.0	100.0	V	208.0	1
2561.750000	50.66	---	74.00	23.34	500.0	200.0	V	357.0	2
2562.000000	---	42.95	54.00	11.05	500.0	200.0	V	71.0	2



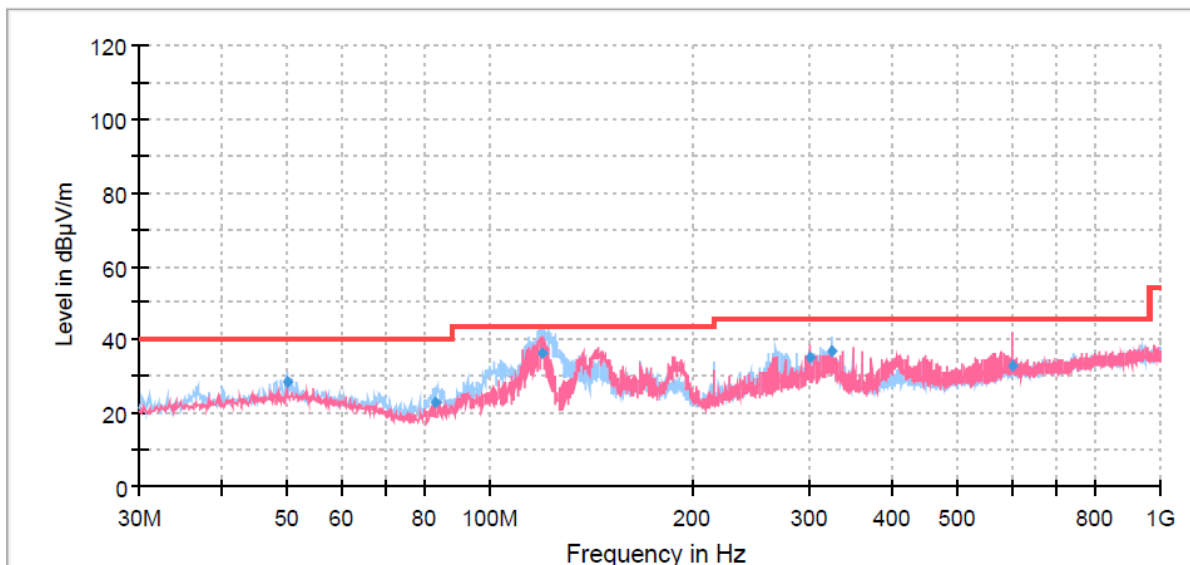
Radiates Emission from 3GHz to 18GHz

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3189.375000	41.72	---	74.00	32.28	500.0	200.0	H	218.0	-7
3196.875000	---	30.25	54.00	23.75	500.0	200.0	V	134.0	-7
4003.125000	---	33.98	54.00	20.02	500.0	200.0	H	310.0	-6
4003.125000	43.31	---	74.00	30.69	500.0	200.0	V	44.0	-6
5004.375000	46.36	---	74.00	27.64	500.0	200.0	V	225.0	-2
5446.875000	---	35.28	54.00	18.72	500.0	200.0	V	14.0	0
6435.000000	---	37.53	54.00	16.47	500.0	200.0	V	4.0	1
6448.125000	48.84	---	74.00	25.16	500.0	200.0	H	188.0	1
9791.250000	---	38.60	54.00	15.40	500.0	200.0	V	225.0	3
9858.750000	49.86	---	74.00	24.14	500.0	200.0	H	358.0	3
12710.625000	---	39.88	54.00	14.12	500.0	200.0	V	0.0	5
12720.000000	51.62	---	74.00	22.38	500.0	200.0	V	205.0	5

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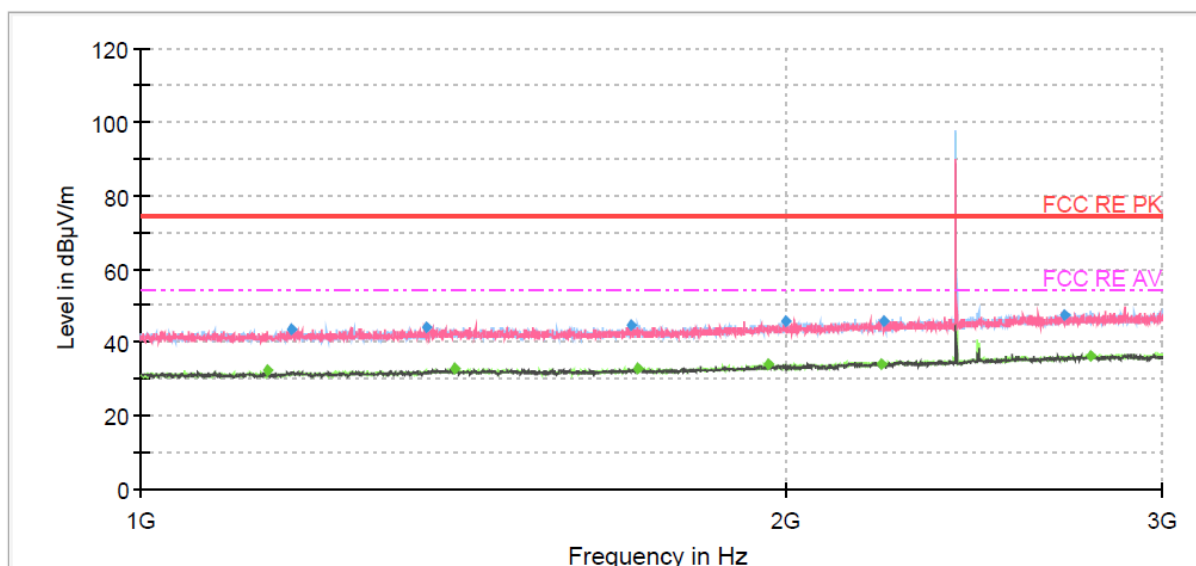
NearLink SLE 2402MHz



Radiates Emission from 30MHz to 1GHz

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
49.76	28.70	40.00	11.30	1000.00	100.0	H	35.00	20
82.74	22.75	40.00	17.25	1000.00	100.0	H	44.00	15
119.73	36.39	43.50	7.11	1000.00	100.0	H	359.00	17
299.42	35.22	46.00	10.78	1000.00	200.0	V	215.00	21
323.30	37.08	46.00	8.92	1000.00	100.0	H	0.00	21
600.12	33.18	46.00	12.82	1000.00	100.0	V	111.00	27

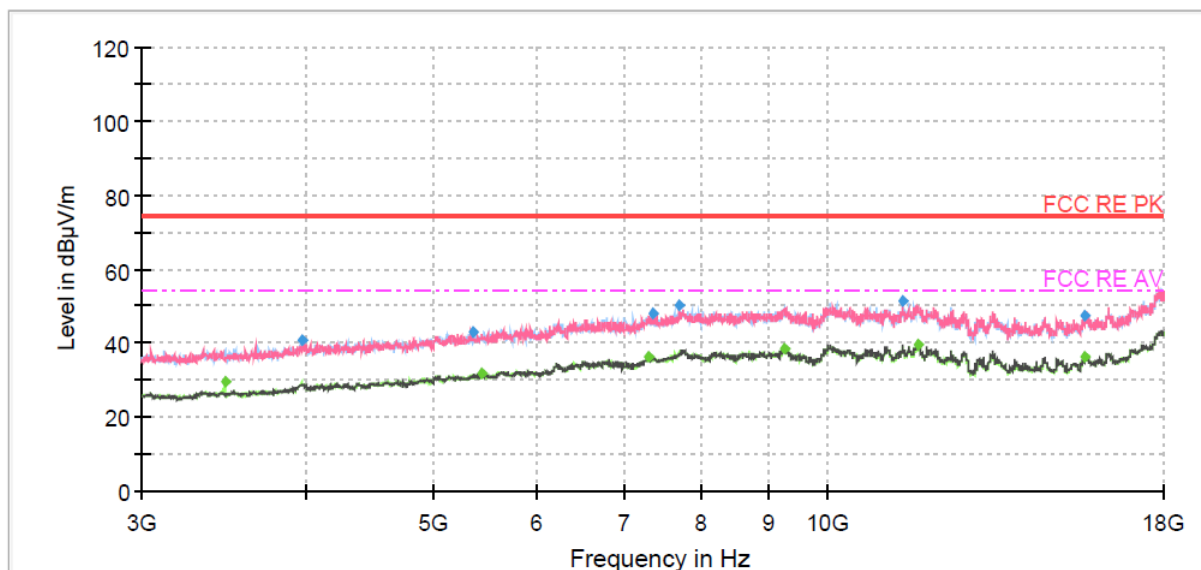


Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1146.00	---	32.34	54.00	21.66	500.00	100.0	H	2.00	-12
1174.25	43.75	---	74.00	30.25	500.00	200.0	H	359.00	-12
1358.25	44.25	---	74.00	29.75	500.00	100.0	V	358.00	-11
1400.75	---	33.09	54.00	20.91	500.00	100.0	H	2.00	-11
1693.00	44.75	---	74.00	29.25	500.00	200.0	H	337.00	-10
1707.75	---	33.19	54.00	20.81	500.00	100.0	H	47.00	-10
1961.75	---	34.12	54.00	19.88	500.00	200.0	H	73.00	-8
2000.00	45.56	---	74.00	28.44	500.00	100.0	V	234.00	-8
2219.75	---	34.19	54.00	19.81	500.00	100.0	H	138.00	-7
2223.25	46.04	---	74.00	27.96	500.00	100.0	H	47.00	-7
2699.75	47.39	---	74.00	26.61	500.00	200.0	V	12.00	-5
2778.75	---	36.51	54.00	17.49	500.00	100.0	V	247.00	-5



Radiates Emission from 3GHz to 18GHz

Final Result

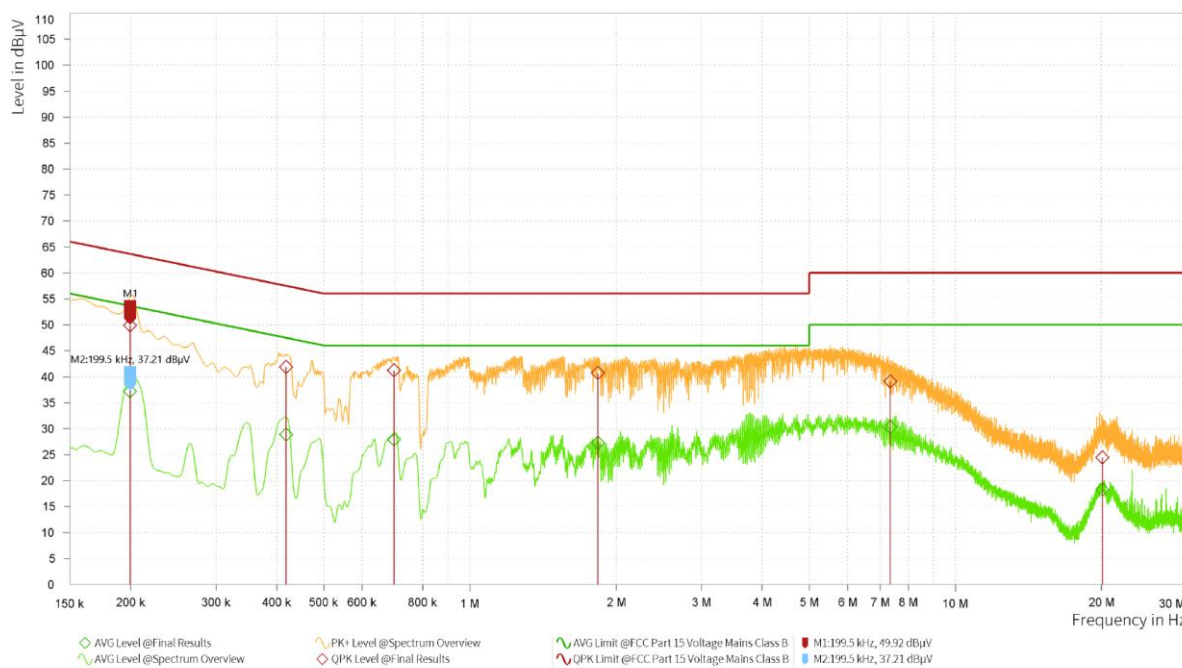
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3466.88	---	29.79	54.00	24.21	500.00	100.0	H	0.00	-13
3967.50	40.56	---	74.00	33.44	500.00	200.0	V	157.00	-11
5358.75	43.20	---	74.00	30.80	500.00	200.0	V	157.00	-8
5435.63	---	31.67	54.00	22.33	500.00	100.0	H	54.00	-8
7297.50	---	36.35	54.00	17.65	500.00	200.0	H	277.00	0
7344.38	48.17	---	74.00	25.83	500.00	200.0	H	0.00	-1
7708.13	50.11	---	74.00	23.89	500.00	100.0	V	359.00	1
9258.75	---	38.59	54.00	15.41	500.00	200.0	V	14.00	2
11396.25	51.22	---	74.00	22.78	500.00	100.0	H	93.00	5
11692.50	---	39.61	54.00	14.39	500.00	200.0	V	0.00	6
15682.50	47.20	---	74.00	26.80	500.00	100.0	H	263.00	7
15697.50	---	36.36	54.00	17.64	500.00	200.0	H	262.00	7

2. Conducted Emission

2.1. NearLink SLE

During the test, the Conducted Emission was performed in all modes with all channels. The test data of the worst-case condition was recorded in this report.

KR272

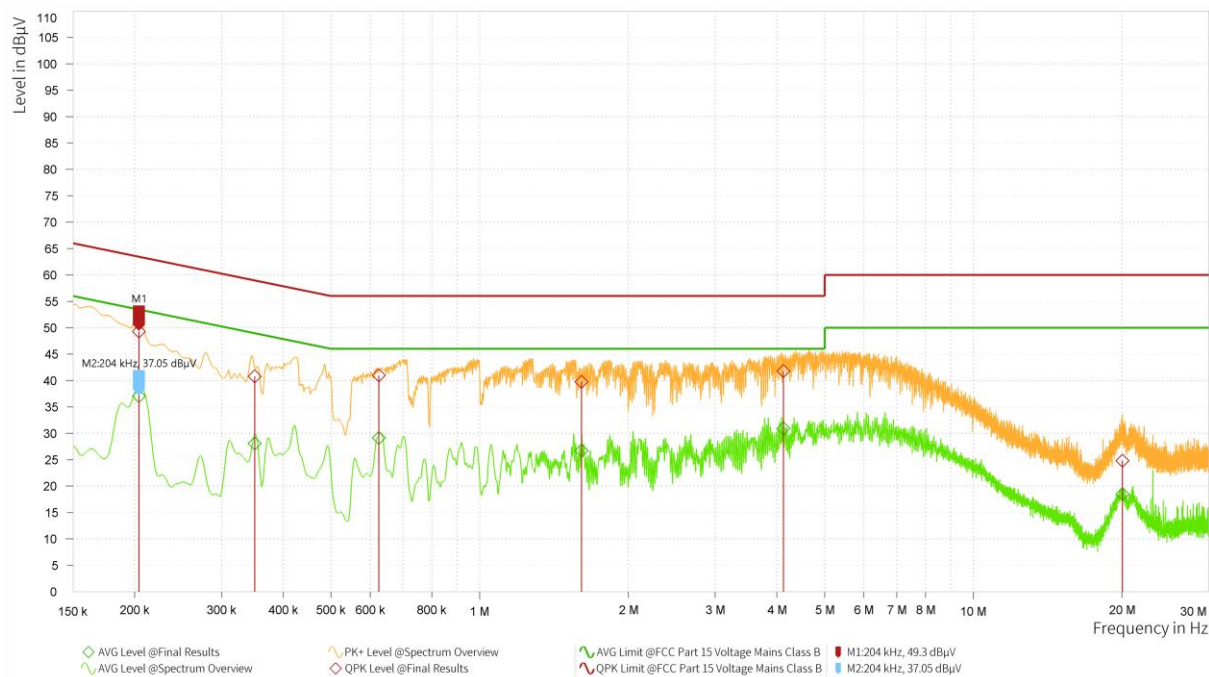


EMI Final Results

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
1	0.200	49.92	63.63	13.72	37.21	53.63	16.42	21.01	L1	9.000	1.000
1	0.418	41.89	57.49	15.60	28.83	47.49	18.66	20.86	L1	9.000	1.000
1	0.697	41.22	56.00	14.78	27.94	46.00	18.06	20.57	L1	9.000	1.000
1	1.835	40.72	56.00	15.28	27.28	46.00	18.72	19.70	L1	9.000	1.000
1	7.346	39.10	60.00	20.90	30.32	50.00	19.68	19.41	L1	9.000	1.000
1	20.092	24.44	60.00	35.56	18.23	50.00	31.77	19.66	L1	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

L line Conducted Emission from 150 kHz to 30 MHz

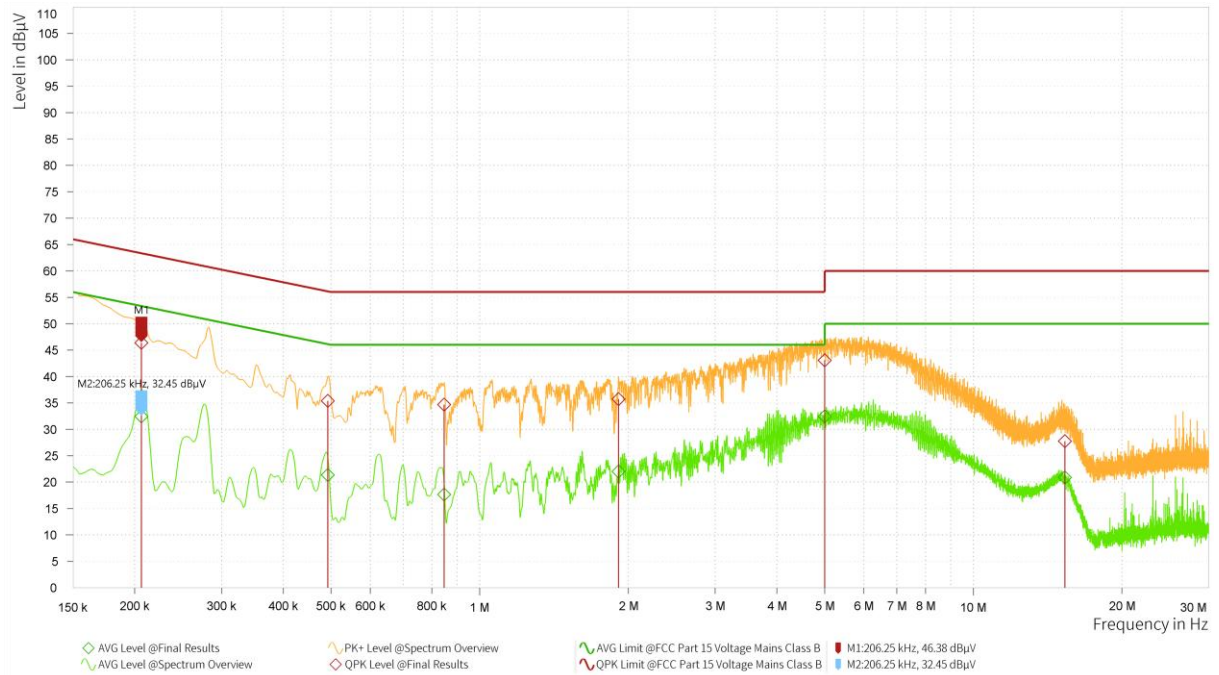


Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.204	49.30	63.45	14.15	37.05	53.45	16.39	21.02	N	9.000	1.000
0.350	40.79	58.96	18.17	28.10	48.96	20.86	20.93	N	9.000	1.000
0.625	40.98	56.00	15.02	29.14	46.00	16.86	20.66	N	9.000	1.000
1.608	39.77	56.00	16.23	26.69	46.00	19.31	19.80	N	9.000	1.000
4.124	41.80	56.00	14.20	30.91	46.00	15.09	19.43	N	9.000	1.000
20.060	24.79	60.00	35.21	18.50	50.00	31.50	19.71	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz

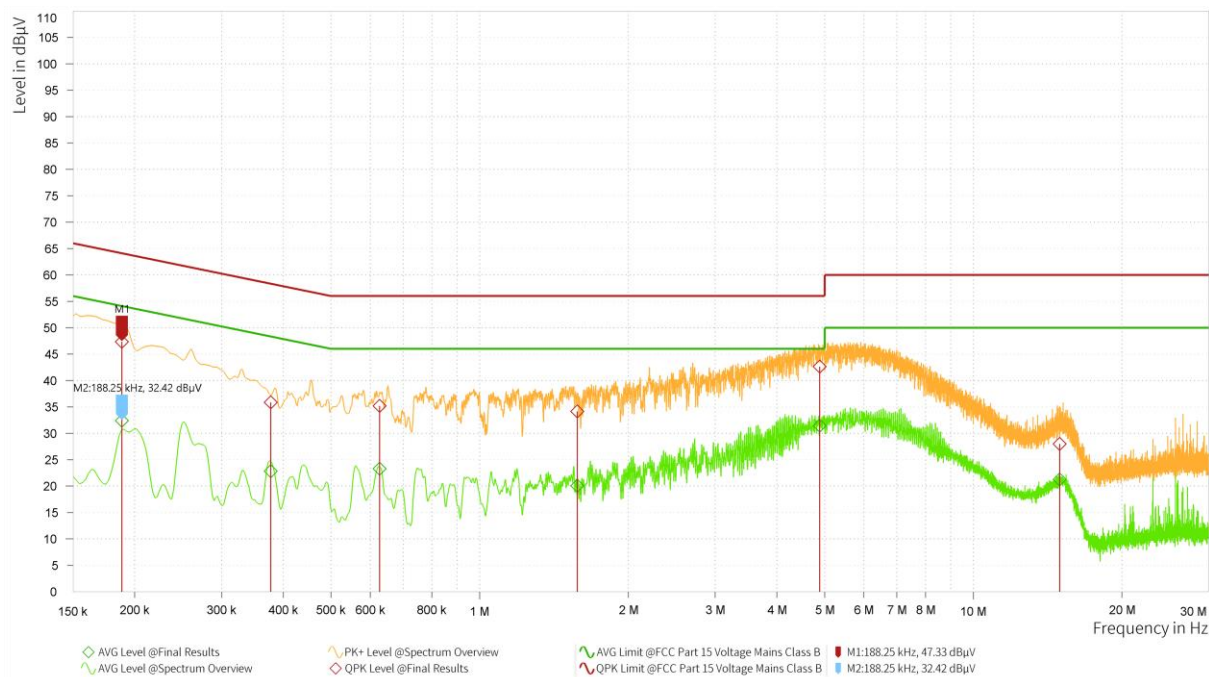
KR274



Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.206	46.38	63.35	16.97	32.45	53.35	20.90	21.01	L1	9.000	1.000
0.492	35.38	56.13	20.76	21.35	46.13	24.79	20.78	L1	9.000	1.000
0.848	34.69	56.00	21.31	17.65	46.00	28.35	20.29	L1	9.000	1.000
1.912	35.72	56.00	20.28	22.03	46.00	23.97	19.68	L1	9.000	1.000
5.000	43.06	56.00	12.94	32.42	46.00	13.58	19.40	L1	9.000	1.000
15.333	27.76	60.00	32.24	20.86	50.00	29.14	19.51	L1	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

L line Conducted Emission from 150 kHz to 30 MHz

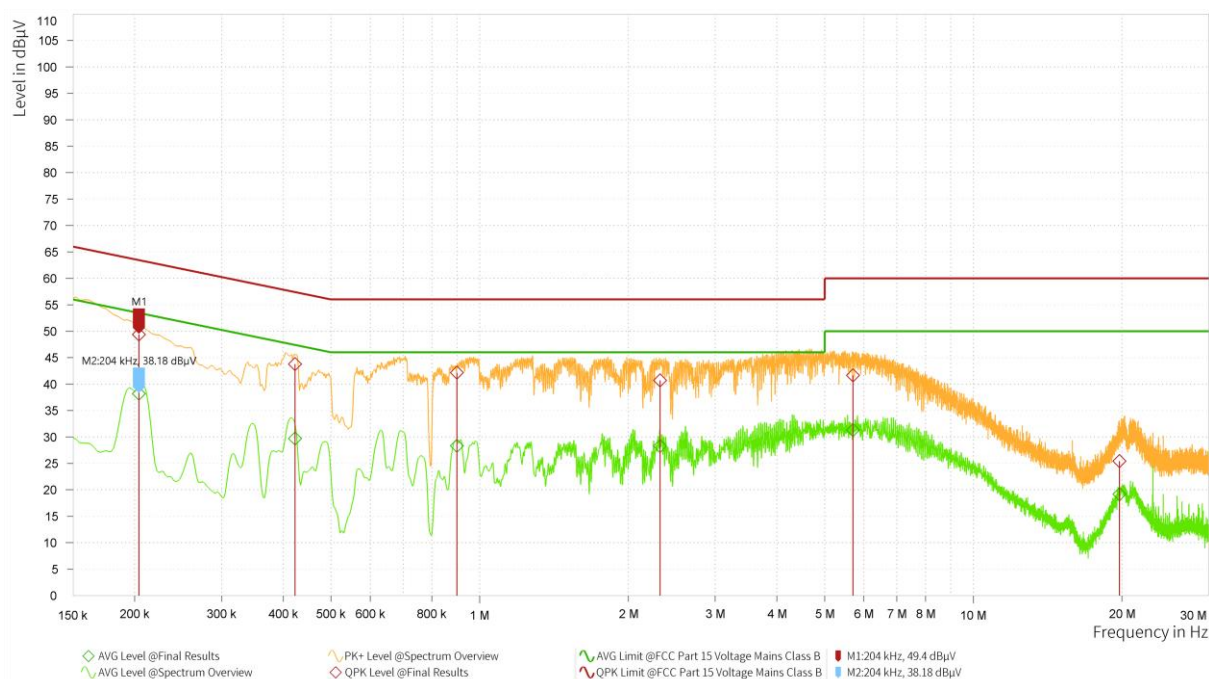


Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.188	47.33	64.11	16.79	32.42	54.11	21.70	21.03	N	9.000	1.000
0.377	35.88	58.34	22.46	22.83	48.34	25.51	20.91	N	9.000	1.000
0.627	35.19	56.00	20.81	23.28	46.00	22.72	20.66	N	9.000	1.000
1.577	34.14	56.00	21.86	20.08	46.00	25.92	19.81	N	9.000	1.000
4.886	42.63	56.00	13.37	31.46	46.00	14.54	19.41	N	9.000	1.000
14.964	27.96	60.00	32.04	21.26	50.00	28.74	19.53	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz

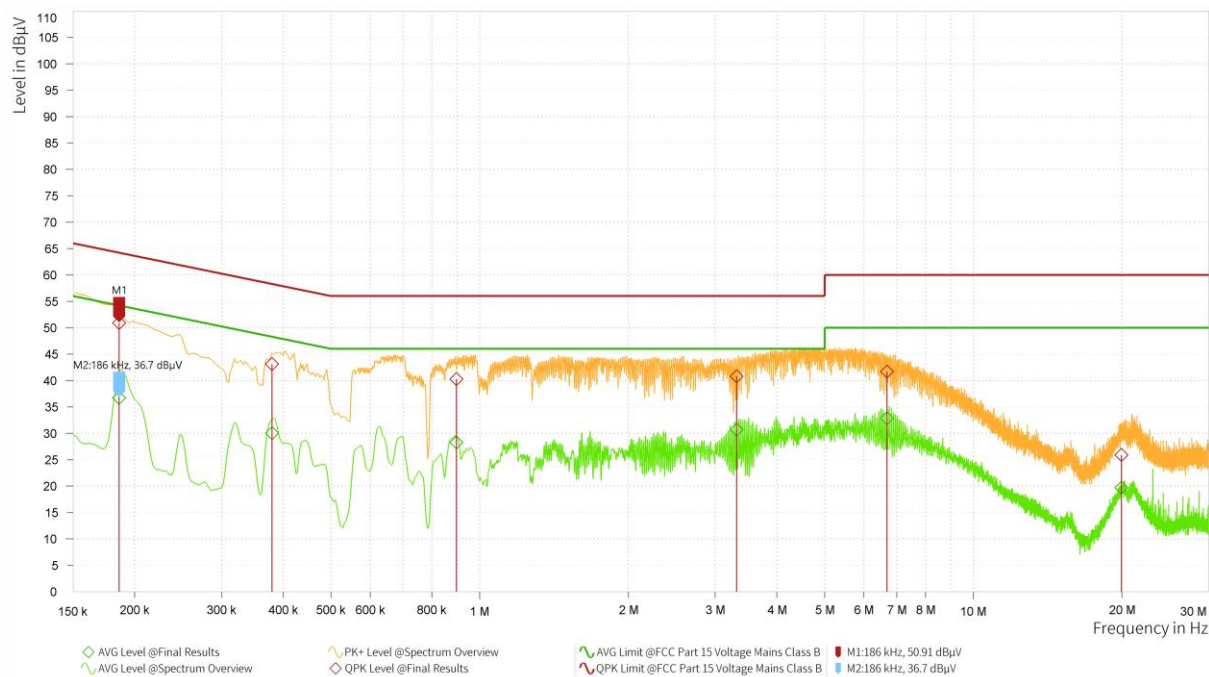
KR276



Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.204	49.40	63.45	14.05	38.18	53.45	15.27	21.01	L1	9.000	1.000
0.422	43.77	57.40	13.63	29.69	47.40	17.72	20.85	L1	9.000	1.000
0.899	42.19	56.00	13.81	28.31	46.00	17.69	20.24	L1	9.000	1.000
2.319	40.69	56.00	15.31	28.26	46.00	17.74	19.58	L1	9.000	1.000
5.708	41.63	60.00	18.37	31.31	50.00	18.69	19.40	L1	9.000	1.000
19.768	25.44	60.00	34.56	19.15	50.00	30.85	19.65	L1	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

L line Conducted Emission from 150 kHz to 30 MHz



Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.186	50.91	64.21	13.30	36.70	54.21	17.52	21.03	N	9.000	1.000
0.380	43.13	58.29	15.16	30.04	48.29	18.25	20.91	N	9.000	1.000
0.897	40.27	56.00	15.73	28.26	46.00	17.74	20.25	N	9.000	1.000
3.314	40.79	56.00	15.21	30.67	46.00	15.33	19.47	N	9.000	1.000
6.689	41.69	60.00	18.31	32.87	50.00	17.13	19.41	N	9.000	1.000
19.957	25.90	60.00	34.10	19.70	50.00	30.30	19.71	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz