

ANNEX A: Test Result

There is more than one Adapters, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 1) will be recorded in this report.

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 vertical, the others are vertical and horizontal. and the worst case was recorded.

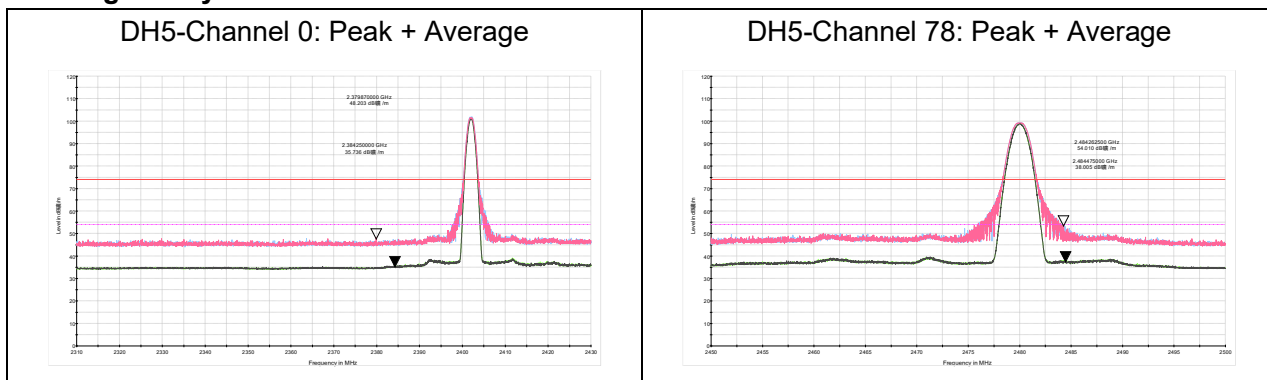
1. Unwanted Emission

1.1. Bluetooth

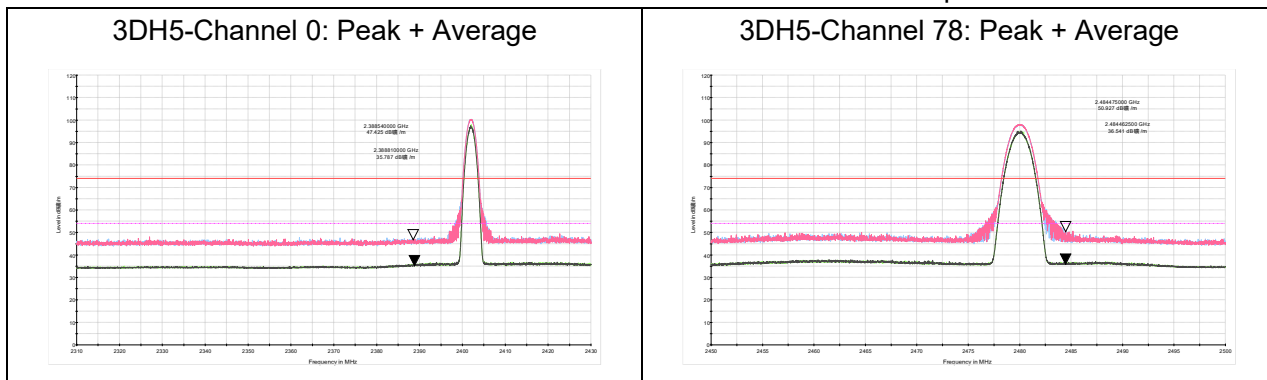
The following graphs display the maximum values of horizontal and vertical by software. Blue trace uses the peak detection, Green trace uses the average detection.

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.



The bandage was performed in all EDR mode (2DH5 and 3DH5), 3DH5 was selected as the worse condition. The test data of the worst-case condition was recorded in this report.



Result of RE

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier.
The Radiates Emission from 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 horizontal and vertical by software.**
4. **For below 1GHz**

~ QP Level @Spectrum Overview H
 ~ QP Level @Spectrum Overview V
 ◆ QP Level @Final Results
 — QP Limit

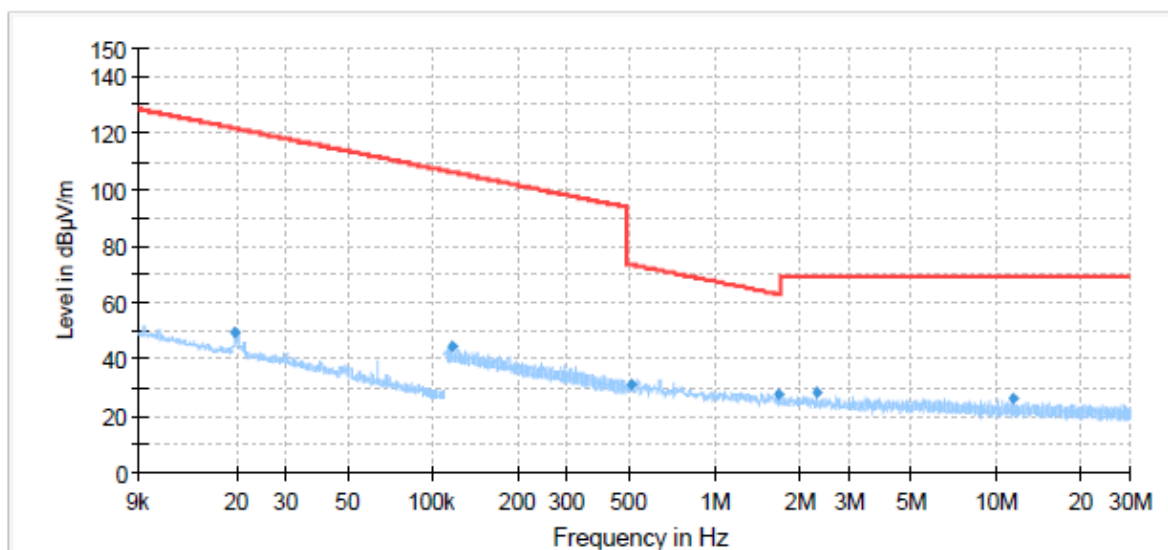
For above 1GHz

~ PK Level @Spectrum Overview H
 ~ PK Level @Spectrum Overview V
 ◆ PK Level @Final Results
 — PK Limit
~ AVG Level @Spectrum Overview H
 ~ AVG Level @Spectrum Overview V
 ◆ AVG Level @Final Results
 — AVG Limit

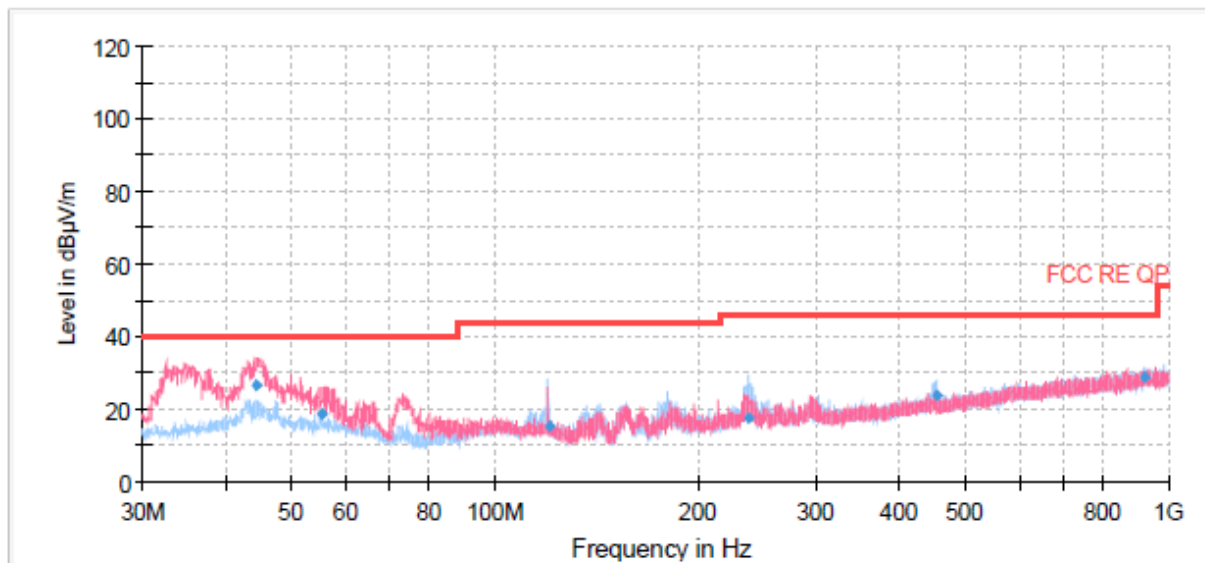
Continuous TX mode:

Test Voltage: 120V/60Hz.

During the test, the Radiates Emission from 9kHz to 1GHz was performed in all modes with all channels, Bluetooth 3DH5-Channel 78 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.



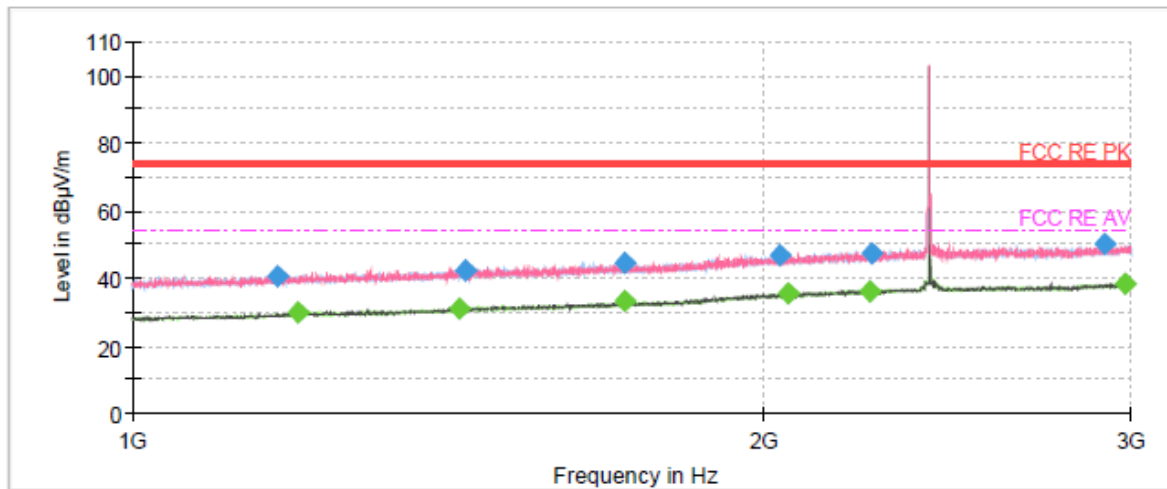
Radiates Emission from 9kHz to 30MHz



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
44.17	26.82	40.00	13.18	100.0	V	0.00	20
55.38	18.53	40.00	21.47	100.0	V	315.00	20
120.33	15.48	43.50	28.02	214.0	H	302.00	17
238.19	17.36	46.00	28.64	125.0	H	0.00	19
451.07	23.63	46.00	22.37	198.0	H	33.00	24
917.64	28.84	46.00	17.16	217.0	H	152.00	31

DH5-Channel 0

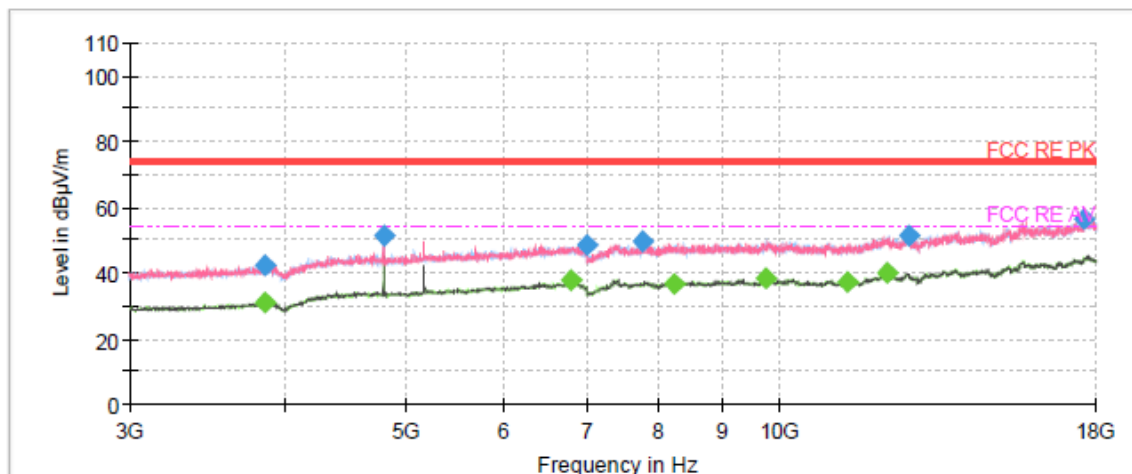


Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1173.000000	40.81	---	74.00	33.19	500.0	200.0	H	32.0	-6
1199.000000	---	29.67	54.00	24.33	500.0	100.0	H	30.0	-6
1433.500000	---	31.21	54.00	22.79	500.0	200.0	V	201.0	-4
1441.500000	42.55	---	74.00	31.45	500.0	100.0	H	107.0	-4
1717.250000	44.47	---	74.00	29.53	500.0	200.0	V	145.0	-2
1717.750000	---	33.03	54.00	20.97	500.0	200.0	H	307.0	-2
2038.750000	46.92	---	74.00	27.08	500.0	200.0	H	265.0	0
2058.500000	---	35.70	54.00	18.30	500.0	100.0	V	17.0	0
2247.750000	---	36.09	54.00	17.91	500.0	100.0	H	51.0	1
2254.750000	47.36	---	74.00	26.64	500.0	200.0	H	208.0	1
2911.750000	50.44	---	74.00	23.56	500.0	200.0	H	334.0	3
2983.000000	---	38.56	54.00	15.44	500.0	200.0	V	264.0	3

Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

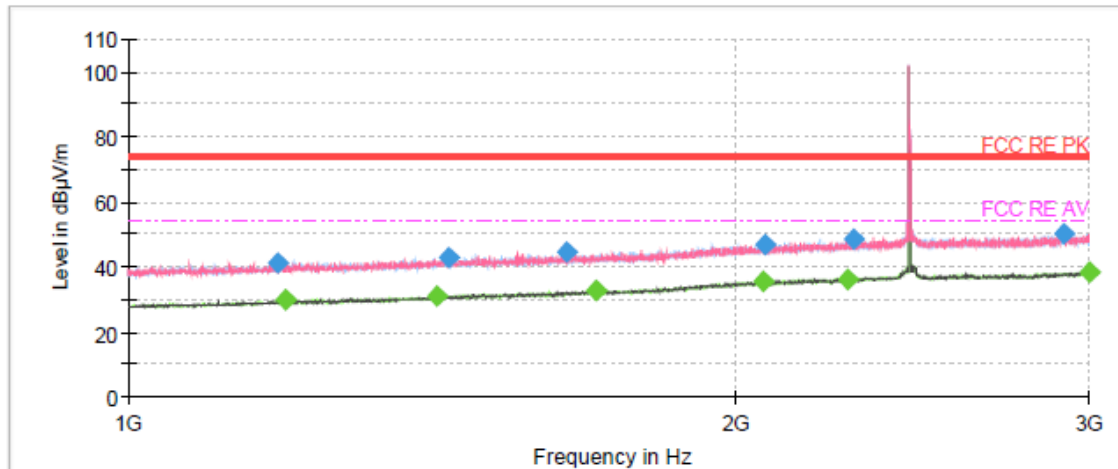


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3853.125000	42.37	---	74.00	31.63	500.0	100.0	V	172.0	-5
3856.875000	---	31.02	54.00	22.98	500.0	100.0	H	0.0	-5
4803.750000	51.36	---	74.00	22.64	500.0	100.0	V	34.0	-2
6804.375000	---	37.57	54.00	16.43	500.0	100.0	V	50.0	1
6993.750000	48.26	---	74.00	25.74	500.0	100.0	H	180.0	-1
7764.375000	49.41	---	74.00	24.59	500.0	100.0	V	96.0	2
8236.875000	---	36.92	54.00	17.08	500.0	200.0	H	112.0	3
9751.875000	---	38.47	54.00	15.53	500.0	200.0	V	88.0	3
11370.000000	---	37.34	54.00	16.66	500.0	200.0	H	81.0	2
12200.625000	---	39.97	54.00	14.03	500.0	200.0	V	156.0	5
12706.875000	51.55	---	74.00	22.45	500.0	100.0	V	318.0	5
17608.125000	56.28	---	74.00	17.72	500.0	200.0	H	226.0	10

Radiates Emission from 3GHz to 18GHz

DH5-Channel 39

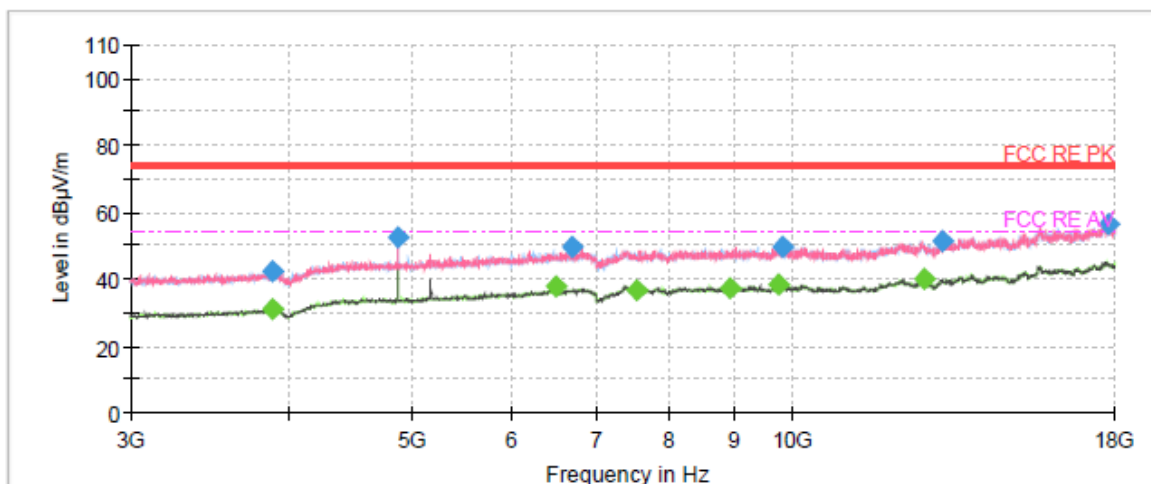


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1186.500000	40.93	---	74.00	33.07	500.0	100.0	V	342.0	-6
1197.750000	---	29.65	54.00	24.35	500.0	100.0	V	146.0	-6
1424.000000	---	31.17	54.00	22.83	500.0	100.0	V	95.0	-4
1440.750000	43.01	---	74.00	30.99	500.0	100.0	H	123.0	-4
1650.500000	44.44	---	74.00	29.56	500.0	100.0	V	293.0	-3
1708.750000	---	32.61	54.00	21.39	500.0	200.0	H	116.0	-2
2068.000000	---	35.70	54.00	18.30	500.0	200.0	V	263.0	0
2071.500000	47.06	---	74.00	26.94	500.0	200.0	V	26.0	0
2274.250000	---	35.93	54.00	18.07	500.0	100.0	H	25.0	1
2293.500000	48.25	---	74.00	25.75	500.0	100.0	H	4.0	1
2910.500000	49.97	---	74.00	24.03	500.0	100.0	H	123.0	3
2998.750000	---	38.56	54.00	15.44	500.0	100.0	H	4.0	3

Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

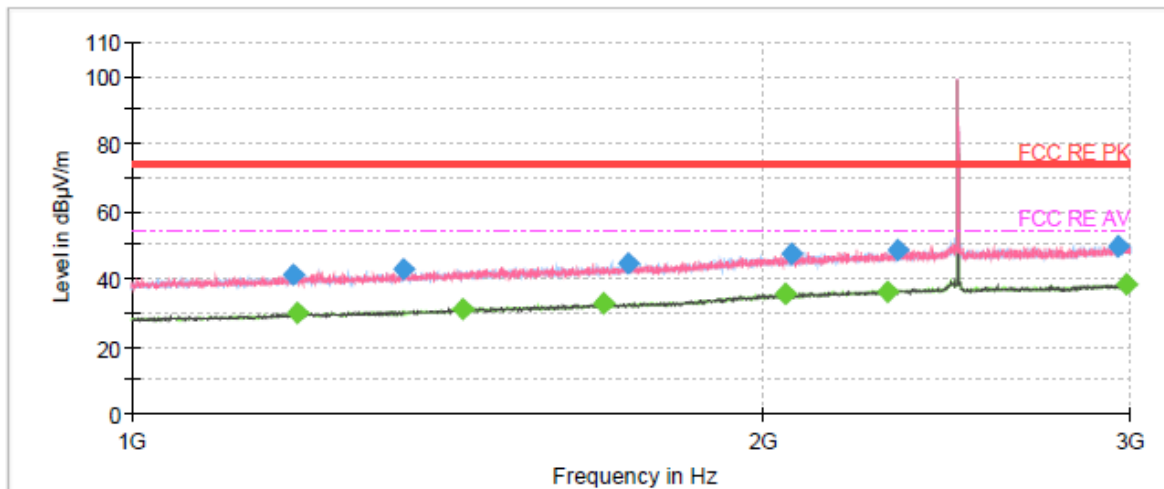


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3877.500000	42.49	---	74.00	31.51	500.0	200.0	V	22.0	-5
3888.750000	---	31.19	54.00	22.81	500.0	200.0	H	257.0	-5
4880.625000	52.25	---	74.00	21.75	500.0	200.0	V	29.0	-2
6508.125000	---	38.03	54.00	15.97	500.0	200.0	H	35.0	1
6708.750000	49.56	---	74.00	24.44	500.0	200.0	V	302.0	1
7541.250000	---	36.58	54.00	17.42	500.0	200.0	H	280.0	2
8921.250000	---	37.30	54.00	16.70	500.0	100.0	V	316.0	3
9768.750000	---	38.39	54.00	15.61	500.0	200.0	V	348.0	3
9838.125000	49.57	---	74.00	24.43	500.0	100.0	H	29.0	3
12738.750000	---	39.92	54.00	14.08	500.0	100.0	V	338.0	5
13147.500000	51.56	---	74.00	22.44	500.0	200.0	V	90.0	5
17801.250000	56.62	---	74.00	17.38	500.0	200.0	H	188.0	10

Radiates Emission from 3GHz to 18GHz

DH5-Channel 78

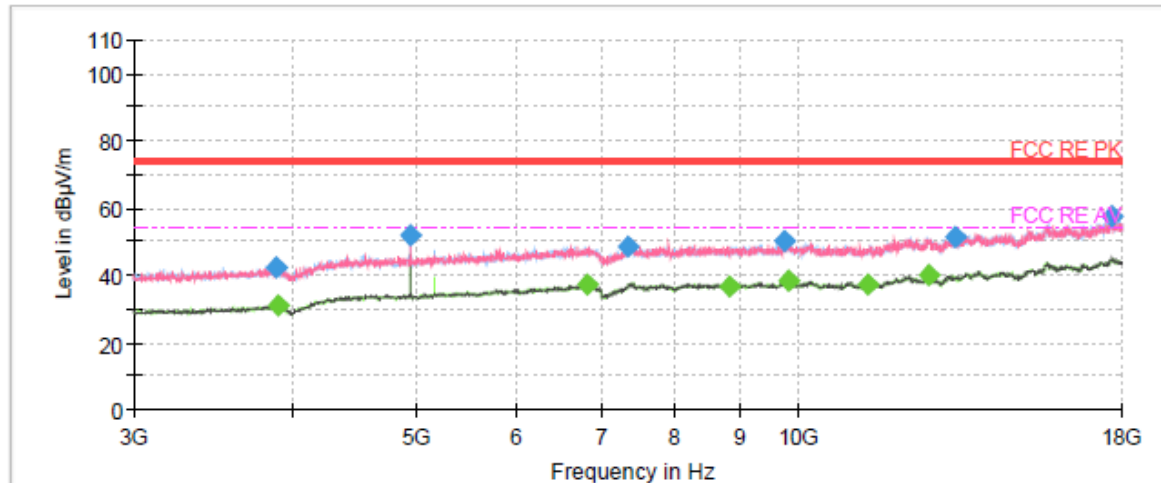


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1193.750000	40.98	---	74.00	33.02	500.0	100.0	V	221.0	-6
1198.500000	---	29.79	54.00	24.21	500.0	200.0	H	159.0	-6
1348.750000	42.77	---	74.00	31.23	500.0	100.0	H	265.0	-5
1437.500000	---	31.28	54.00	22.72	500.0	100.0	V	221.0	-4
1679.750000	---	32.64	54.00	21.36	500.0	100.0	H	46.0	-2
1727.000000	44.72	---	74.00	29.28	500.0	100.0	H	279.0	-2
2050.500000	---	35.45	54.00	18.55	500.0	100.0	V	326.0	0
2066.500000	47.53	---	74.00	26.47	500.0	100.0	V	193.0	0
2298.250000	---	36.30	54.00	17.70	500.0	100.0	V	0.0	1
2323.250000	48.72	---	74.00	25.28	500.0	200.0	V	145.0	1
2960.500000	49.86	---	74.00	24.14	500.0	200.0	V	167.0	3
2985.250000	---	38.41	54.00	15.59	500.0	200.0	V	265.0	3

Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



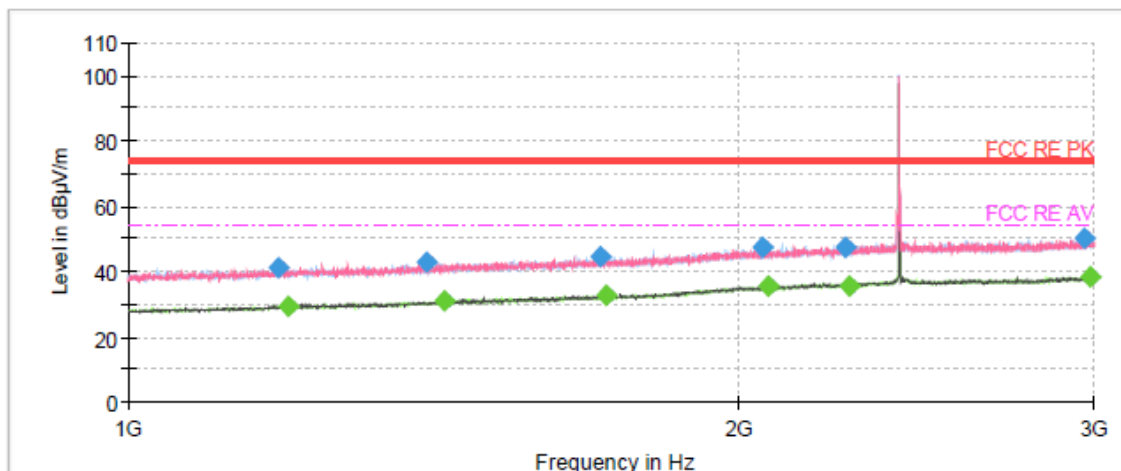
Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3886.875000	42.45	---	74.00	31.55	500.0	100.0	V	167.0	-5
3903.750000	---	30.97	54.00	23.03	500.0	200.0	H	98.0	-5
4959.375000	51.67	---	74.00	22.33	500.0	200.0	H	28.0	-2
6813.750000	---	37.18	54.00	16.82	500.0	100.0	H	161.0	1
7344.375000	48.67	---	74.00	25.33	500.0	200.0	H	304.0	2
8840.625000	---	36.69	54.00	17.31	500.0	100.0	H	16.0	3
9766.875000	50.03	---	74.00	23.97	500.0	100.0	V	228.0	3
9817.500000	---	38.31	54.00	15.69	500.0	100.0	V	303.0	3
11373.750000	---	37.29	54.00	16.71	500.0	200.0	V	58.0	2
12693.750000	---	40.26	54.00	13.74	500.0	200.0	H	161.0	5
13320.000000	51.38	---	74.00	22.62	500.0	100.0	V	242.0	5
17670.000000	57.74	---	74.00	16.26	500.0	100.0	V	326.0	10

Radiates Emission from 3GHz to 18GHz

The Radiates Emission was performed in all EDR mode (2DH5 and 3DH5), 3DH5 was selected as the worse condition. The test data of the worst-case condition was recorded in this report.

3DH5-Channel 0

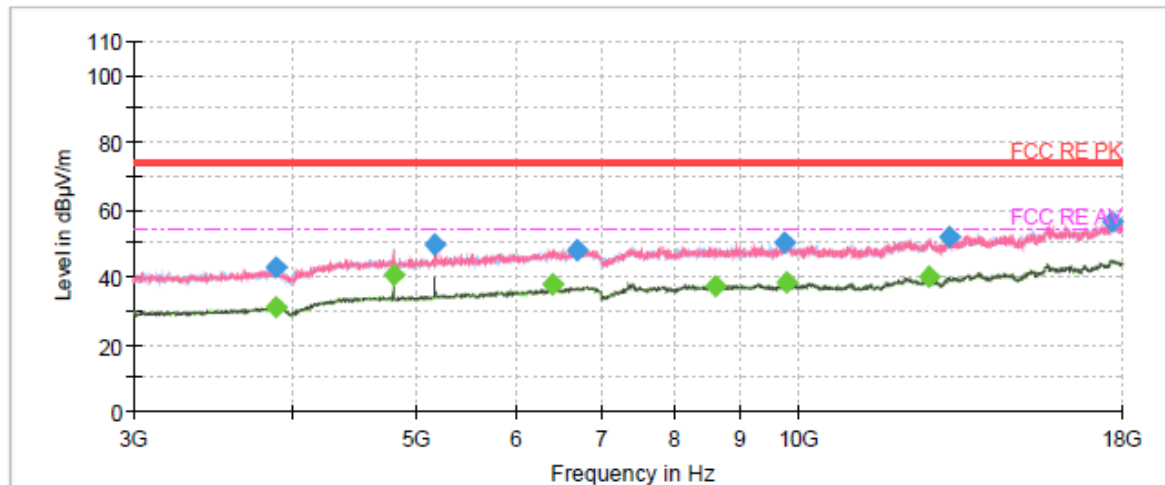


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1185.250000	41.43	---	74.00	32.57	500.0	200.0	V	96.0	-6
1198.500000	---	29.47	54.00	24.53	500.0	100.0	V	307.0	-6
1403.000000	42.72	---	74.00	31.28	500.0	100.0	V	230.0	-4
1433.000000	---	30.89	54.00	23.11	500.0	100.0	V	356.0	-4
1712.250000	44.30	---	74.00	29.70	500.0	100.0	H	138.0	-2
1723.250000	---	32.60	54.00	21.40	500.0	200.0	V	90.0	-2
2055.250000	47.42	---	74.00	26.58	500.0	100.0	V	286.0	0
2069.750000	---	35.58	54.00	18.42	500.0	100.0	H	138.0	0
2261.750000	47.33	---	74.00	26.67	500.0	100.0	H	6.0	1
2268.500000	---	35.81	54.00	18.19	500.0	100.0	H	293.0	1
2964.500000	49.98	---	74.00	24.02	500.0	200.0	V	96.0	3
2985.250000	---	38.42	54.00	15.58	500.0	200.0	V	222.0	3

Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

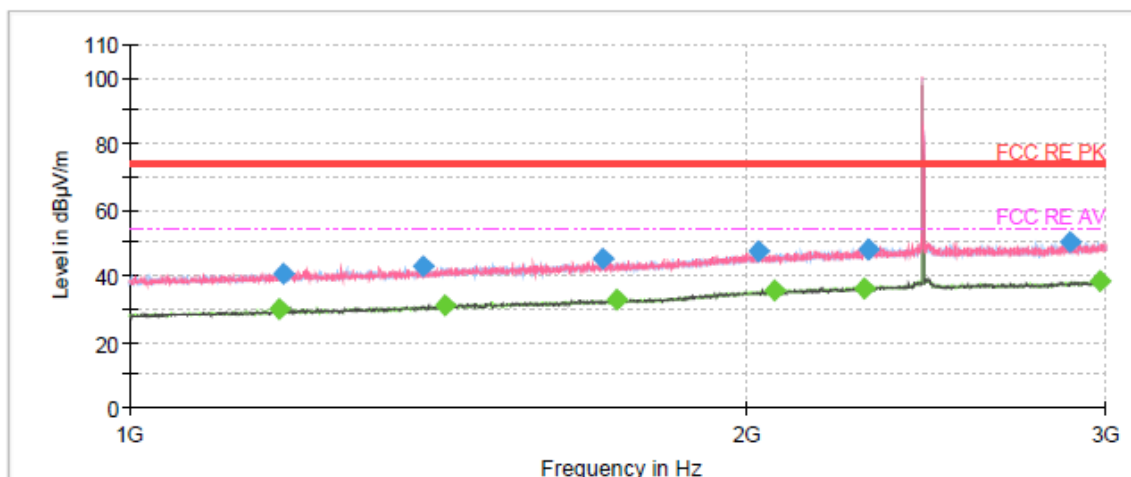


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3885.000000	42.87	---	74.00	31.13	500.0	200.0	V	9.0	-5
3886.875000	---	31.14	54.00	22.86	500.0	100.0	V	175.0	-5
4803.750000	---	40.68	54.00	13.32	500.0	100.0	V	35.0	-2
5182.500000	49.40	---	74.00	24.60	500.0	200.0	H	160.0	-1
6405.000000	---	37.78	54.00	16.22	500.0	100.0	H	31.0	1
6691.875000	48.13	---	74.00	25.87	500.0	100.0	H	106.0	1
8613.750000	---	37.36	54.00	16.64	500.0	100.0	V	351.0	3
9755.625000	50.18	---	74.00	23.82	500.0	200.0	H	288.0	3
9795.000000	---	38.36	54.00	15.64	500.0	100.0	V	289.0	3
12686.250000	---	40.14	54.00	13.86	500.0	100.0	H	106.0	5
13162.500000	51.76	---	74.00	22.24	500.0	100.0	V	328.0	5
17662.500000	56.55	---	74.00	17.45	500.0	100.0	V	159.0	10

Radiates Emission from 3GHz to 18GHz

3DH5-Channel 39

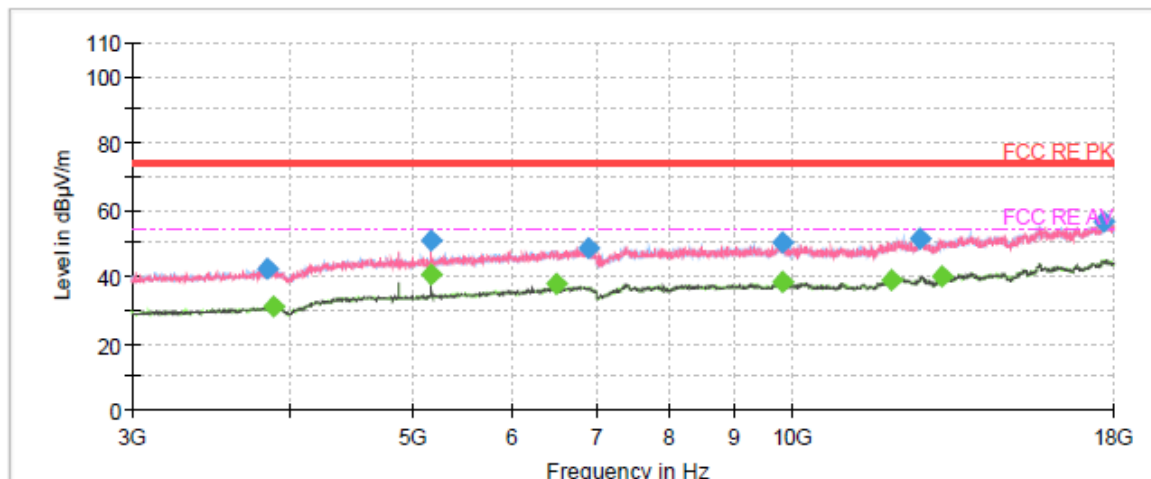


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1184.500000	---	29.81	54.00	24.19	500.0	100.0	H	135.0	-6
1189.250000	40.79	---	74.00	33.21	500.0	200.0	H	341.0	-6
1391.250000	42.77	---	74.00	31.23	500.0	200.0	H	144.0	-5
1425.750000	---	31.27	54.00	22.73	500.0	200.0	H	236.0	-4
1701.500000	44.97	---	74.00	29.03	500.0	200.0	H	278.0	-2
1729.750000	---	32.93	54.00	21.07	500.0	100.0	V	358.0	-2
2030.750000	47.23	---	74.00	26.77	500.0	200.0	V	251.0	0
2068.250000	---	35.43	54.00	18.57	500.0	200.0	V	188.0	0
2284.000000	---	35.90	54.00	18.10	500.0	100.0	H	0.0	1
2298.500000	47.81	---	74.00	26.19	500.0	200.0	V	153.0	1
2880.750000	50.44	---	74.00	23.56	500.0	100.0	H	0.0	3
2979.250000	---	38.47	54.00	15.53	500.0	100.0	H	51.0	3

Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

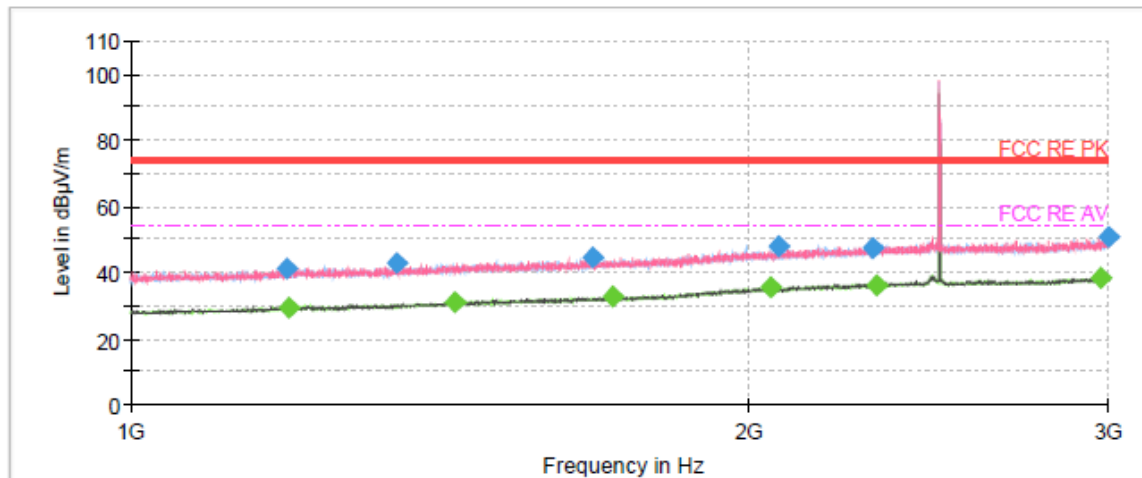


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3836.250000	42.24	---	74.00	31.76	500.0	100.0	V	326.0	-5
3883.125000	---	31.09	54.00	22.91	500.0	200.0	H	327.0	-5
5182.500000	50.55	---	74.00	23.45	500.0	200.0	H	3.0	-1
5182.500000	---	40.63	54.00	13.37	500.0	200.0	H	3.0	-1
6508.125000	---	37.59	54.00	16.41	500.0	100.0	V	90.0	1
6911.250000	48.44	---	74.00	25.56	500.0	100.0	H	43.0	1
9817.500000	---	38.37	54.00	15.63	500.0	100.0	V	98.0	3
9817.500000	49.95	---	74.00	24.05	500.0	100.0	H	134.0	3
12007.500000	---	38.68	54.00	15.32	500.0	100.0	V	358.0	4
12630.000000	51.56	---	74.00	22.44	500.0	200.0	V	226.0	5
13166.250000	---	39.91	54.00	14.09	500.0	200.0	H	267.0	5
17658.750000	56.30	---	74.00	17.70	500.0	200.0	V	126.0	10

Radiates Emission from 3GHz to 18GHz

3DH5-Channel 78

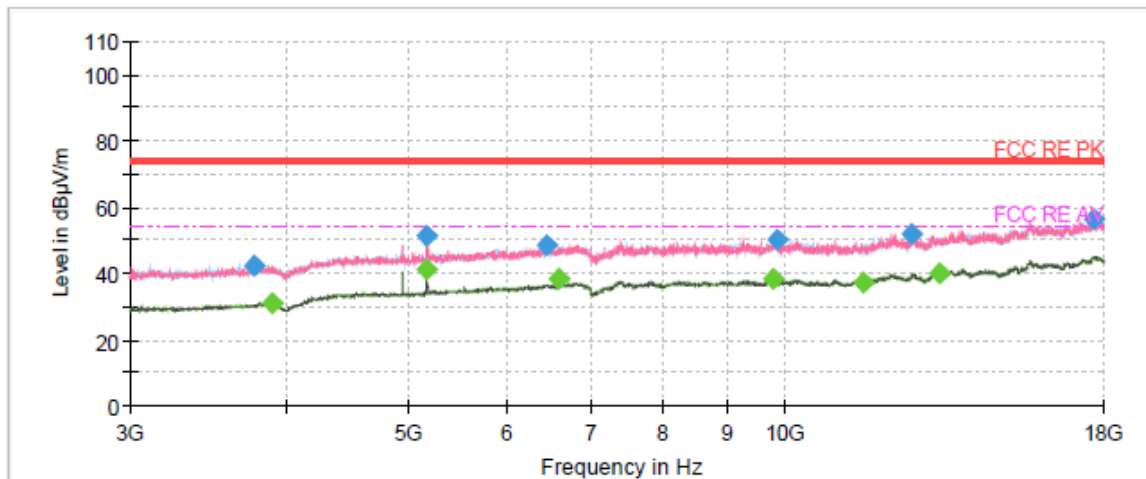


Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1191.000000	40.96	---	74.00	33.04	500.0	100.0	H	236.0	-6
1195.250000	---	29.46	54.00	24.54	500.0	100.0	H	82.0	-6
1349.500000	42.82	---	74.00	31.18	500.0	100.0	V	350.0	-5
1439.500000	---	31.24	54.00	22.76	500.0	100.0	H	0.0	-4
1680.000000	44.38	---	74.00	29.62	500.0	100.0	V	89.0	-2
1718.000000	---	32.74	54.00	21.26	500.0	100.0	H	166.0	-2
2051.000000	---	35.52	54.00	18.48	500.0	100.0	H	314.0	0
2070.750000	47.71	---	74.00	26.29	500.0	200.0	V	116.0	0
2300.000000	47.23	---	74.00	26.77	500.0	100.0	H	26.0	1
2310.750000	---	36.13	54.00	17.87	500.0	200.0	H	313.0	1
2972.000000	---	38.50	54.00	15.50	500.0	200.0	H	355.0	3
2997.000000	50.51	---	74.00	23.49	500.0	200.0	H	102.0	3

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)
3774.375000	42.32	---	74.00	31.68	500.0	100.0	H	101.0	-5
3900.000000	---	31.04	54.00	22.97	500.0	200.0	V	115.0	-5
5182.500000	---	41.36	54.00	12.64	500.0	200.0	V	24.0	-1
5182.500000	51.08	---	74.00	22.92	500.0	200.0	V	24.0	-1
6448.125000	48.62	---	74.00	25.38	500.0	100.0	H	294.0	1
6613.125000	---	38.22	54.00	15.78	500.0	100.0	V	58.0	1
9804.375000	---	38.39	54.00	15.61	500.0	100.0	H	334.0	3
9881.250000	49.97	---	74.00	24.03	500.0	100.0	V	250.0	3
11574.375000	---	37.07	54.00	16.93	500.0	100.0	H	341.0	3
12637.500000	51.94	---	74.00	22.06	500.0	100.0	H	341.0	5
13321.875000	---	40.29	54.00	13.71	500.0	100.0	H	86.0	5
17698.125000	56.29	---	74.00	17.71	500.0	200.0	H	182.0	10

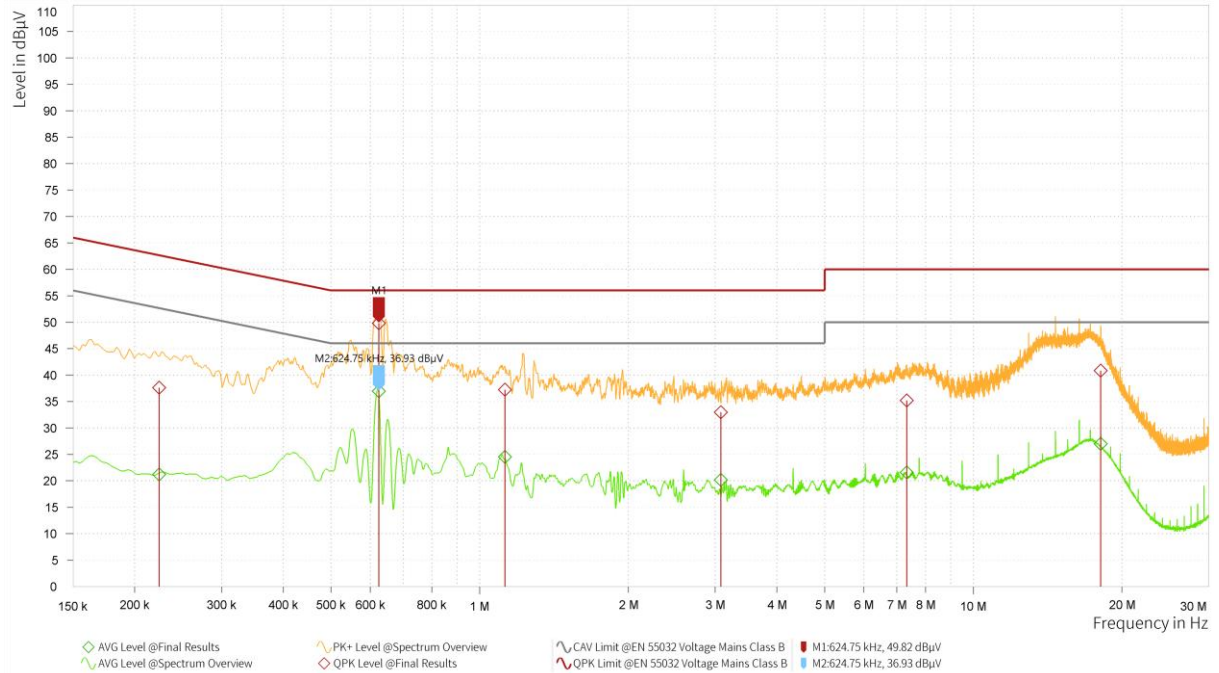
Radiates Emission from 3GHz to 18GHz

2. Conducted Emission

2.1. Bluetooth

During the test, the Conducted Emission was performed in all modes with all channels, Bluetooth 3DH5-Channel 78 are selected as the worst condition. The test data of the worst-case condition was recorded in this report.

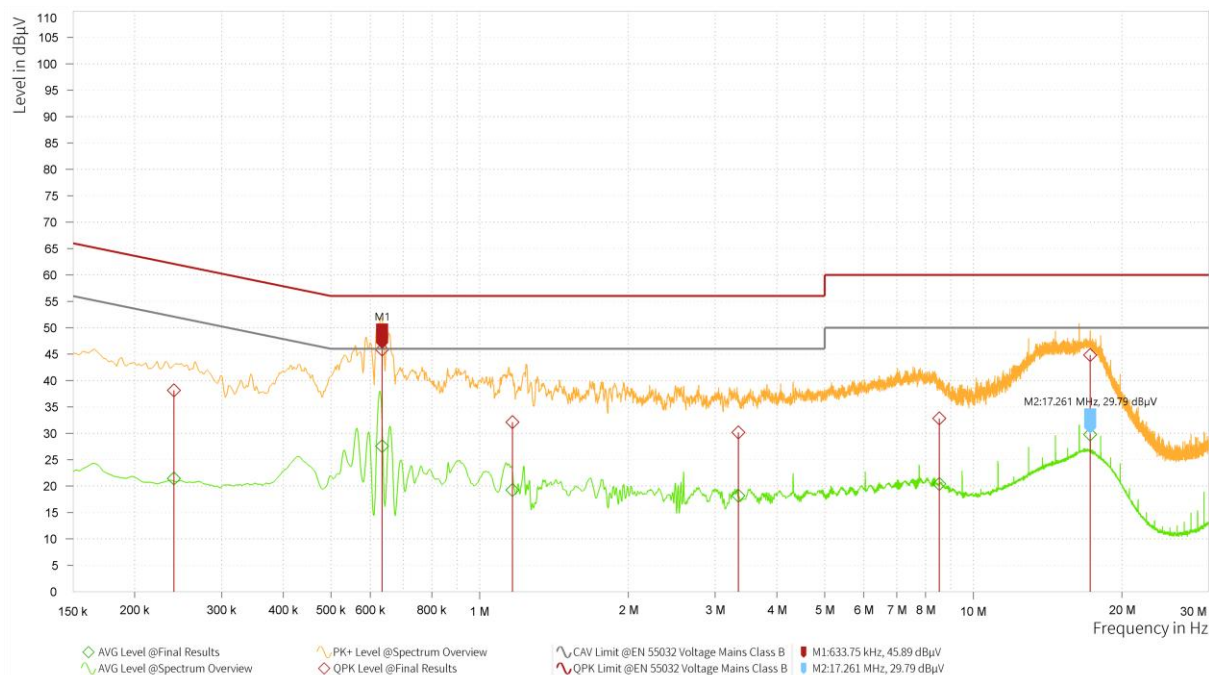
Test Voltage: 120V/60Hz.



Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG: CAV Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.224	37.64	62.66	25.02	21.19	52.66	31.47	21.00	L1	9.000	1.000
0.625	49.82	56.00	6.18	36.93	46.00	9.07	20.65	L1	9.000	1.000
1.124	37.24	56.00	18.76	24.53	46.00	21.47	20.07	L1	9.000	1.000
3.082	32.95	56.00	23.05	20.17	46.00	25.83	19.48	L1	9.000	1.000
7.330	35.21	60.00	24.79	21.59	50.00	28.41	19.41	L1	9.000	1.000
18.121	40.83	60.00	19.17	27.00	50.00	23.00	19.60	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: CAV Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.240	38.15	62.10	23.94	21.46	52.10	30.63	21.00	N	9.000	1.000
0.634	45.89	56.00	10.11	27.58	46.00	18.42	20.65	N	9.000	1.000
1.165	32.12	56.00	23.88	19.27	46.00	26.73	20.05	N	9.000	1.000
3.343	30.17	56.00	25.83	18.15	46.00	27.85	19.47	N	9.000	1.000
8.531	32.83	60.00	27.17	20.42	50.00	29.58	19.42	N	9.000	1.000
17.261	44.81	60.00	15.19	29.79	50.00	20.21	19.61	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz