

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 stand-up position (Z axis) and the loop antenna is vertical, the others are vertical and horizontal. and the worst case was recorded.

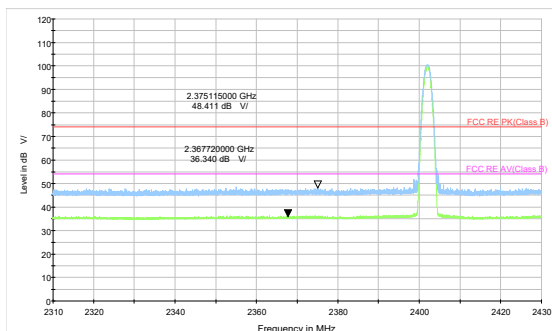
1. Unwanted Emission

1.1. Bluetooth

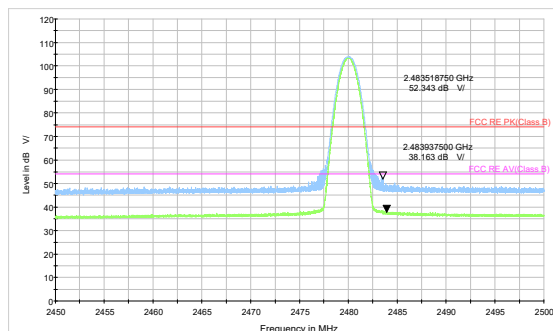
The following graphs display the maximum values of horizontal and vertical by software. Blue trace uses the peak detection, Green trace uses the average detection.

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

The signal beyond the limit is carrier.

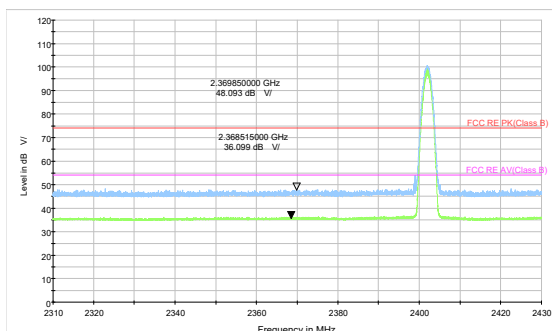


DH5-Channel 0: Peak + Average

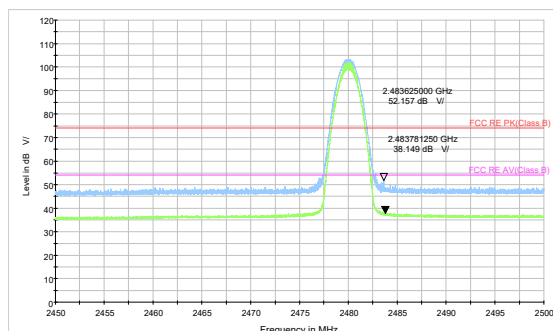


DH5-Channel 78: Peak + Average

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.



3DH5-Channel 0: Peak + Average



3DH5-Channel 78: 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. A symbol ($\text{dB } \mu\text{V/m}$) in the test plot below means (dB $\mu\text{V/m}$)
4. The following graphs display the maximum values of horizontal and vertical by software.
5. For below 1GHz

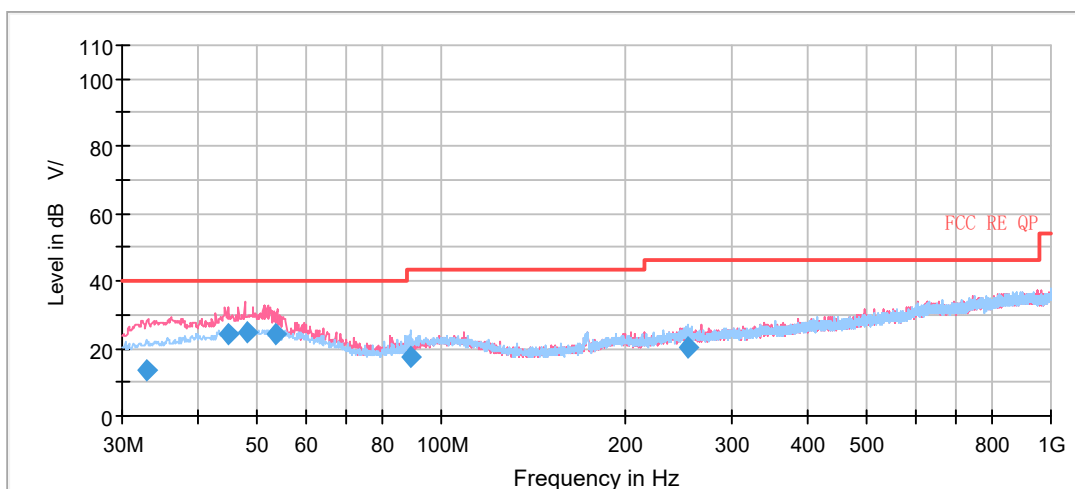
~ QP Level @Spectrum Overview H
 ~ QP Level @Spectrum Overview V
 ◆ QP Level @Final Results
 — QP Limit

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:

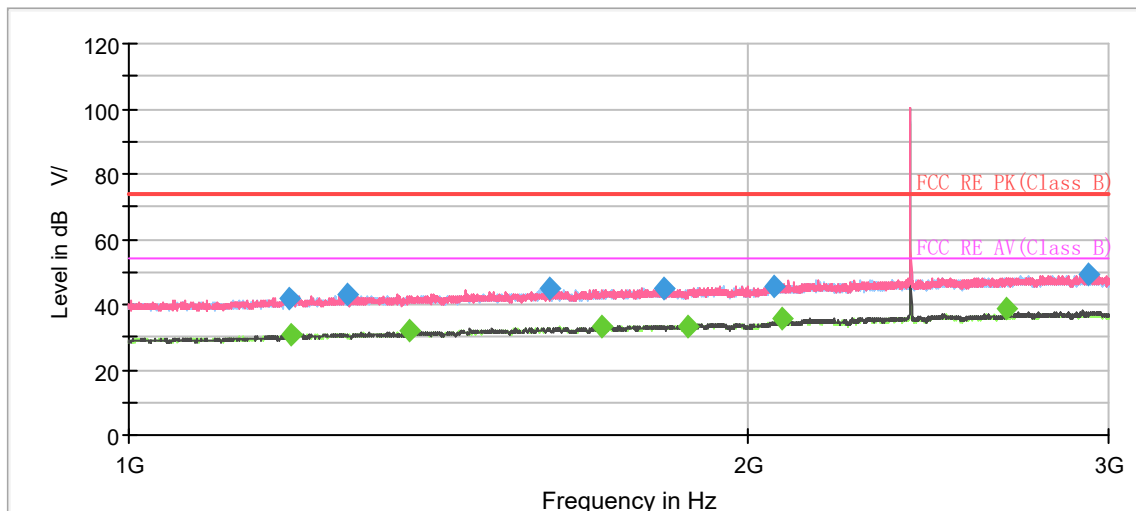
During the test, the Radiates Emission from 30MHz to 1GHz was performed in all modes with all channels. The test data of the worst-case condition was recorded in this report.



Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dB $\mu\text{V/m}$)	Limit (dB $\mu\text{V/m}$)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
32.985000	13.77	40.00	26.23	101.0	V	352.0	17.8
44.747500	24.21	40.00	15.79	98.0	V	24.0	21.0
48.182500	24.97	40.00	15.03	118.0	V	144.0	21.2
53.527500	24.37	40.00	15.63	103.0	V	8.0	20.9
89.248750	17.43	43.50	26.07	220.0	H	204.0	17.0
254.028750	20.50	46.00	25.50	100.0	H	278.0	20.5

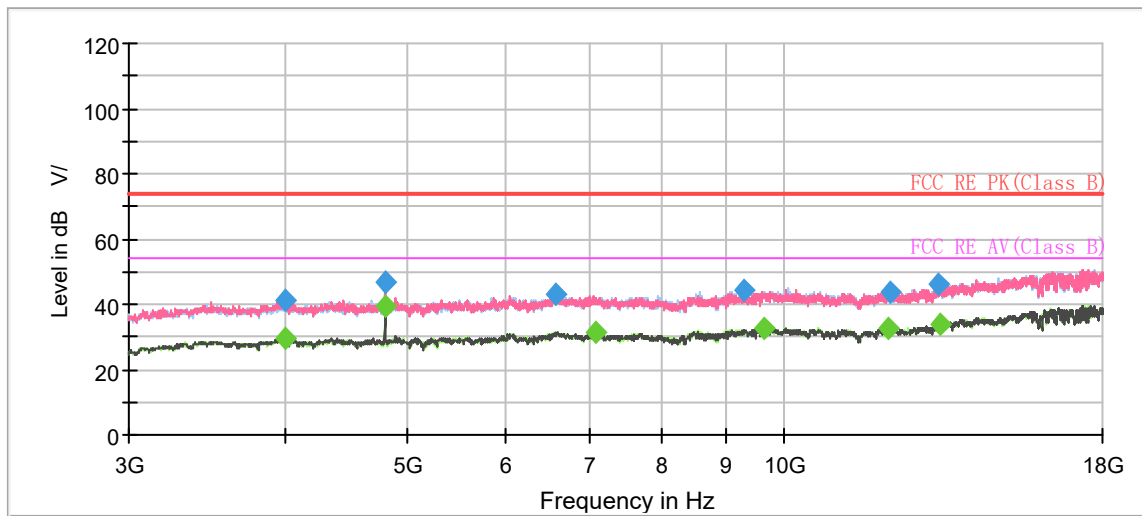
DH5-Channel 0



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

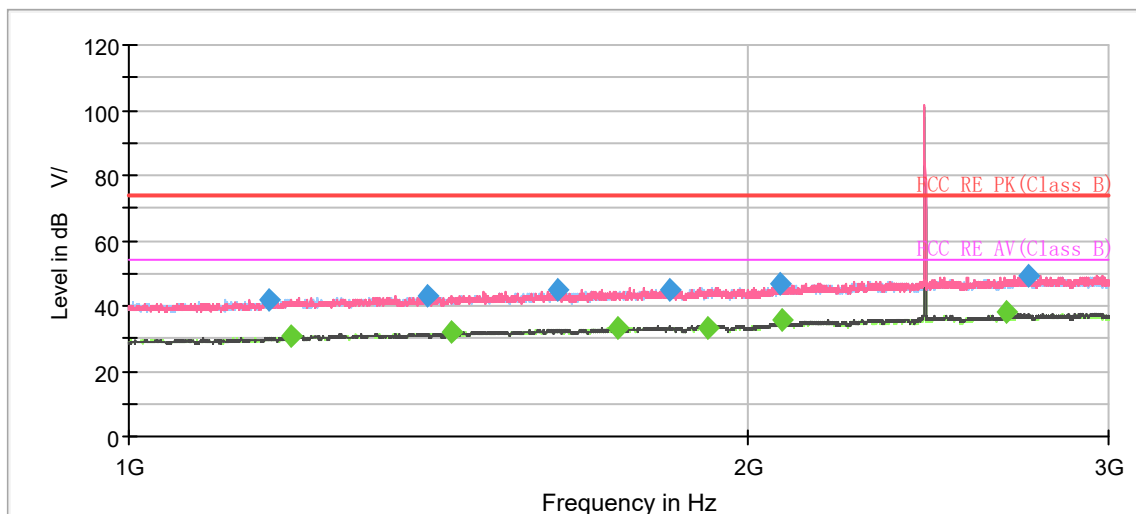
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1196.750000	42.07	---	74.00	31.93	500.0	100.0	V	148.0	-8.9
1199.250000	---	30.62	54.00	23.38	500.0	200.0	V	351.0	-8.8
1278.250000	43.15	---	74.00	30.85	500.0	100.0	H	166.0	-8.4
1371.000000	---	31.84	54.00	22.16	500.0	200.0	H	344.0	-7.7
1601.750000	44.84	---	74.00	29.16	500.0	200.0	V	282.0	-6.3
1699.000000	---	33.27	54.00	20.73	500.0	100.0	V	9.0	-6.0
1823.250000	44.95	---	74.00	29.05	500.0	100.0	H	280.0	-5.3
1870.250000	---	33.01	54.00	20.99	500.0	200.0	H	55.0	-5.1
2060.250000	45.82	---	74.00	28.18	500.0	200.0	H	24.0	-4.1
2078.750000	---	35.81	54.00	18.19	500.0	100.0	V	72.0	-3.9
2673.250000	---	38.70	54.00	15.30	500.0	200.0	V	301.0	-1.8
2933.000000	49.29	---	74.00	24.71	500.0	200.0	V	65.0	-1.0



Radiates Emission from 3GHz to 18GHz

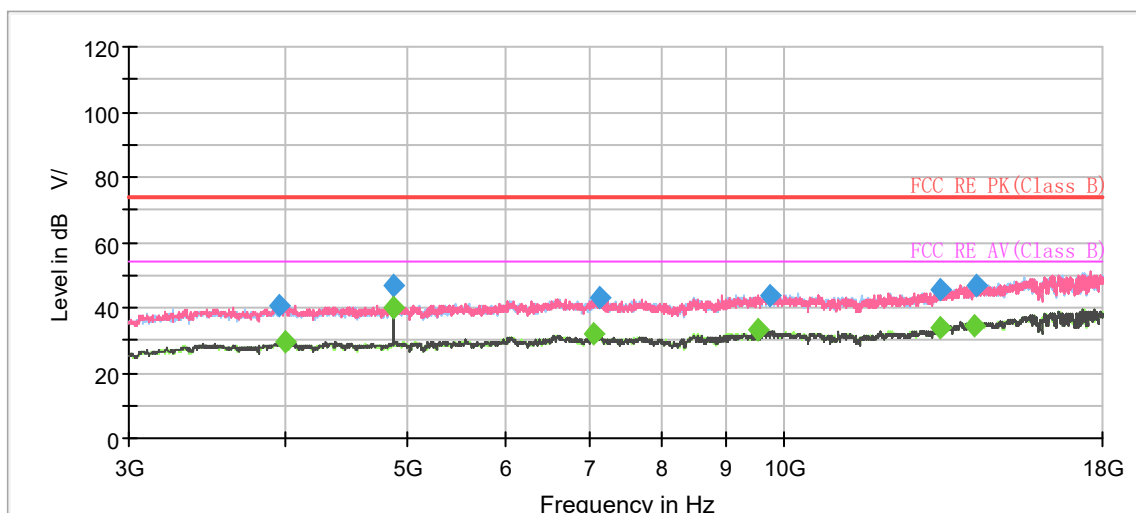
Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3997.500000	41.33	---	74.00	32.67	500.0	200.0	H	345.0	-6.8
4005.000000	---	29.59	54.00	24.41	500.0	200.0	V	245.0	-6.8
4803.750000	---	39.36	54.00	14.64	500.0	200.0	H	108.0	-6.1
4803.750000	46.56	---	74.00	27.44	500.0	200.0	H	108.0	-6.1
6588.750000	42.97	---	74.00	31.03	500.0	200.0	H	122.0	-3.4
7072.500000	---	31.55	54.00	22.45	500.0	100.0	V	136.0	-3.0
9290.625000	44.11	---	74.00	29.89	500.0	200.0	H	0.0	-0.9
9650.625000	---	32.70	54.00	21.30	500.0	100.0	H	237.0	-0.5
12142.500000	---	32.46	54.00	21.54	500.0	200.0	H	1.0	0.3
12163.125000	43.93	---	74.00	30.07	500.0	200.0	H	87.0	0.3
13308.750000	46.15	---	74.00	27.85	500.0	100.0	H	209.0	2.3
13344.375000	---	33.99	54.00	20.01	500.0	200.0	V	337.0	2.3

DH5-Channel 39



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1169.000000	41.99	---	74.00	32.01	500.0	200.0	H	2.0	-9.4
1200.000000	---	30.57	54.00	23.43	500.0	200.0	H	91.0	-8.8
1398.000000	43.34	---	74.00	30.66	500.0	100.0	V	256.0	-7.6
1436.500000	---	31.76	54.00	22.24	500.0	100.0	H	157.0	-7.3
1615.750000	45.01	---	74.00	28.99	500.0	100.0	V	92.0	-6.3
1729.500000	---	32.98	54.00	21.02	500.0	200.0	V	186.0	-5.8
1834.000000	45.01	---	74.00	28.99	500.0	200.0	H	78.0	-5.2
1914.500000	---	33.51	54.00	20.49	500.0	200.0	V	84.0	-4.9
2076.500000	46.64	---	74.00	27.36	500.0	100.0	V	17.0	-4.0
2079.000000	---	35.89	54.00	18.11	500.0	100.0	V	204.0	-3.9
2673.000000	---	38.36	54.00	15.64	500.0	200.0	V	262.0	-1.8
2741.250000	49.52	---	74.00	24.48	500.0	200.0	V	166.0	-1.5

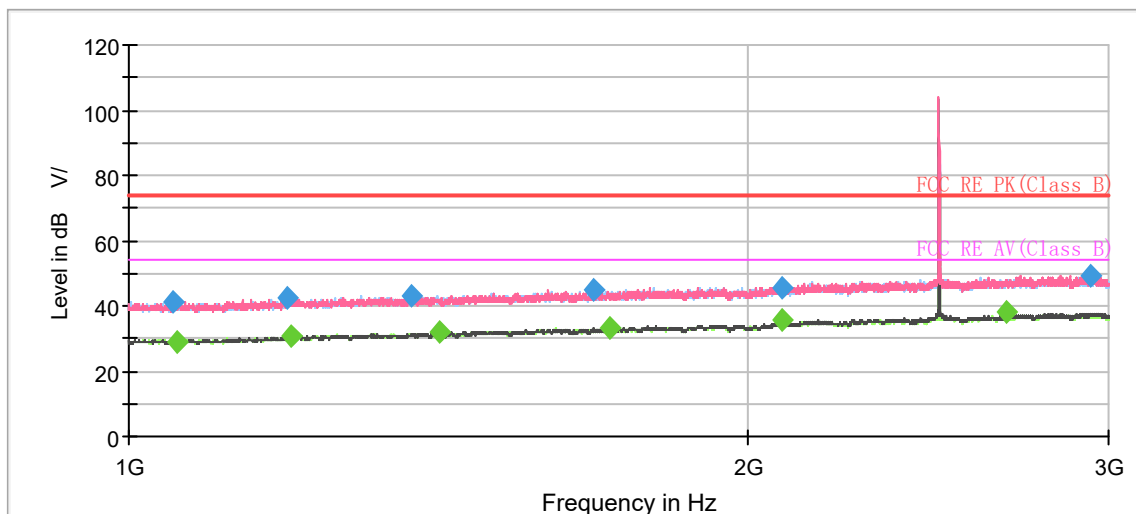
Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz



Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3960.000000	40.82	---	74.00	33.18	500.0	200.0	V	243.0	-7.1
4005.000000	---	29.58	54.00	24.42	500.0	100.0	V	117.0	-6.8
4880.625000	---	40.00	54.00	14.00	500.0	200.0	H	113.0	-5.7
4880.625000	46.95	---	74.00	27.05	500.0	100.0	H	134.0	-5.7
7057.500000	---	31.96	54.00	22.04	500.0	100.0	H	276.0	-3.1
7134.375000	42.84	---	74.00	31.16	500.0	100.0	V	258.0	-2.9
9532.500000	---	33.02	54.00	20.98	500.0	100.0	H	0.0	-0.2
9776.250000	43.95	---	74.00	30.05	500.0	100.0	V	56.0	-0.5
13351.875000	45.53	---	74.00	28.47	500.0	100.0	H	64.0	2.4
13351.875000	---	33.90	54.00	20.10	500.0	100.0	H	64.0	2.4
14201.250000	---	34.63	54.00	19.37	500.0	200.0	H	85.0	4.0
14255.625000	46.76	---	74.00	27.24	500.0	100.0	V	312.0	4.2

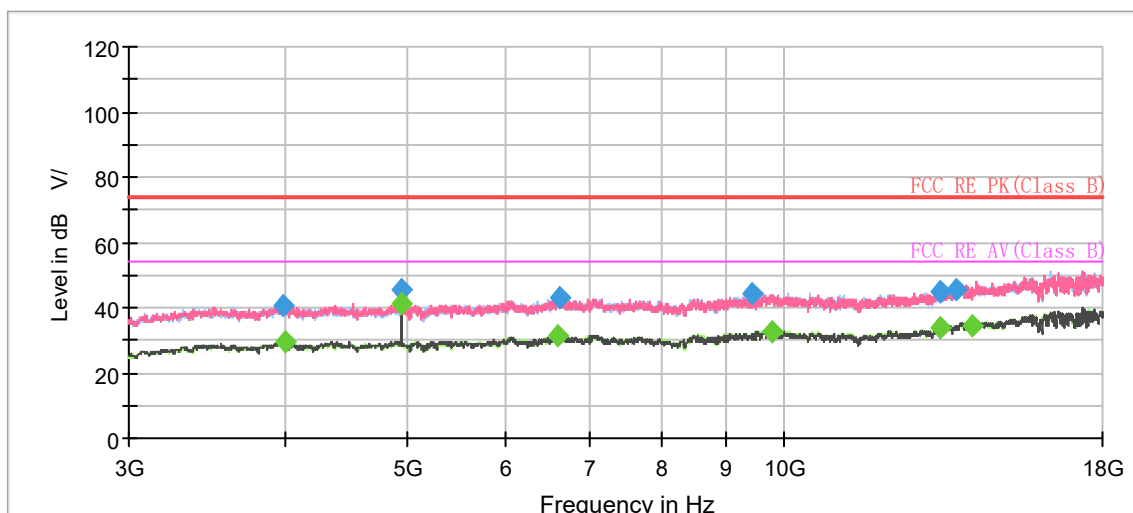
Radiates Emission from 3GHz to 18GHz

DH5-Channel 78



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1051.750000	41.42	---	74.00	32.58	500.0	200.0	H	97.0	-10.5
1055.750000	---	29.14	54.00	24.86	500.0	200.0	H	340.0	-10.4
1194.000000	42.32	---	74.00	31.68	500.0	200.0	H	84.0	-8.9
1199.250000	---	30.66	54.00	23.34	500.0	200.0	V	141.0	-8.8
1371.500000	43.26	---	74.00	30.74	500.0	100.0	H	346.0	-7.7
1416.750000	---	31.91	54.00	22.09	500.0	200.0	H	134.0	-7.4
1685.500000	45.03	---	74.00	28.97	500.0	200.0	V	198.0	-6.0
1714.500000	---	33.33	54.00	20.67	500.0	100.0	V	313.0	-5.9
2078.000000	45.80	---	74.00	28.20	500.0	200.0	V	271.0	-3.9
2079.000000	---	35.92	54.00	18.08	500.0	100.0	V	20.0	-3.9
2673.250000	---	38.33	54.00	15.67	500.0	200.0	V	297.0	-1.8
2938.500000	49.49	---	74.00	24.51	500.0	200.0	V	207.0	-0.9

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

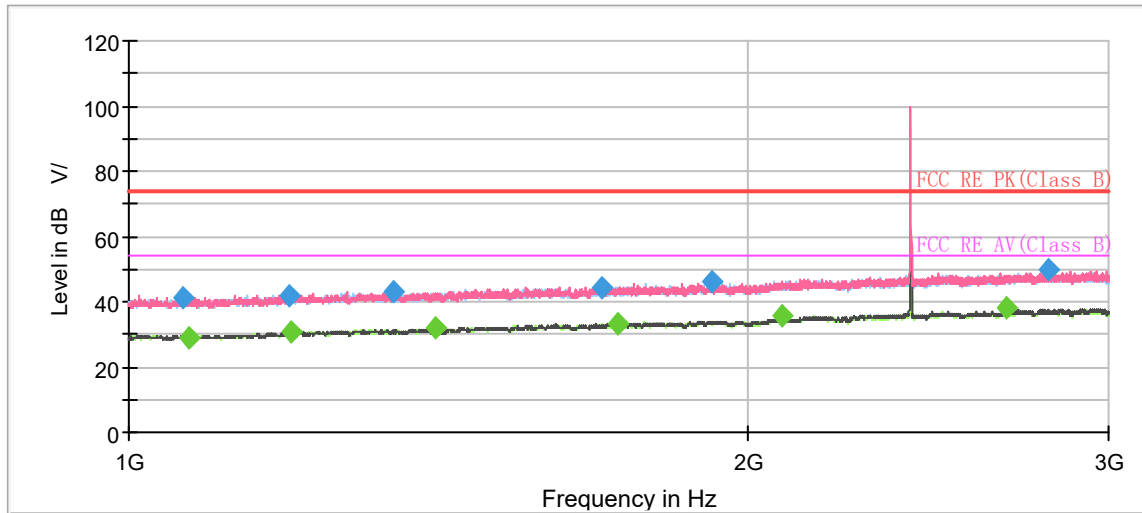


Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3980.625000	40.81	---	74.00	33.19	500.0	200.0	V	226.0	-6.9
3997.500000	---	29.30	54.00	24.70	500.0	200.0	H	314.0	-6.8
4959.375000	---	41.19	54.00	12.81	500.0	200.0	H	110.0	-5.4
4959.375000	45.84	---	74.00	28.16	500.0	200.0	H	110.0	-5.4
6603.750000	---	31.48	54.00	22.52	500.0	100.0	H	302.0	-3.3
6626.250000	43.19	---	74.00	30.81	500.0	200.0	H	358.0	-3.4
9457.500000	44.61	---	74.00	29.39	500.0	200.0	V	340.0	-0.2
9789.375000	---	32.77	54.00	21.23	500.0	100.0	H	231.0	-0.5
13346.250000	45.20	---	74.00	28.80	500.0	100.0	V	40.0	2.4
13346.250000	---	33.86	54.00	20.14	500.0	100.0	V	40.0	2.4
13741.875000	45.52	---	74.00	28.48	500.0	100.0	V	126.0	3.4
14182.500000	---	34.58	54.00	19.42	500.0	200.0	V	347.0	4.0

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.

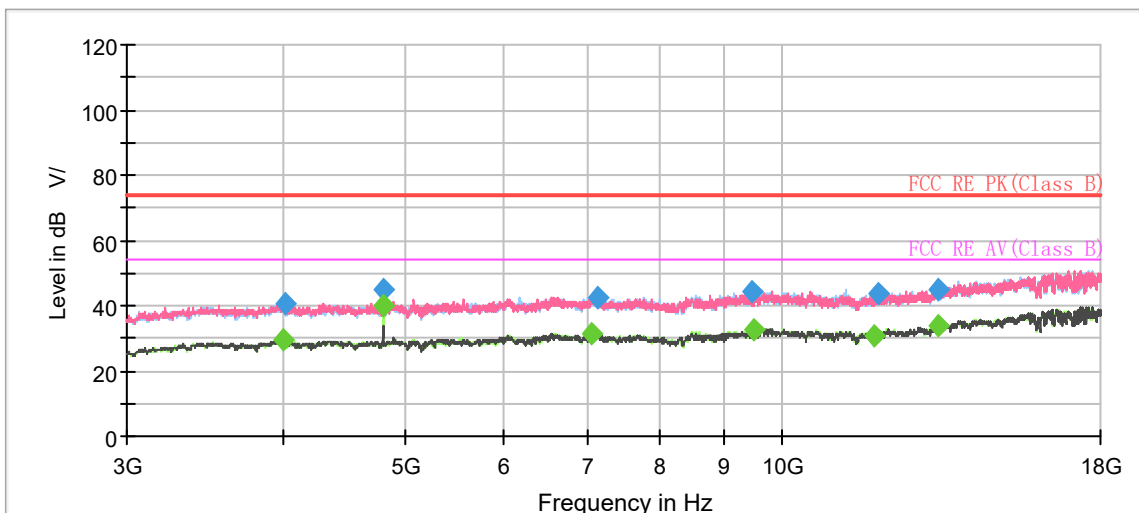
3DH5-Channel 0



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1062.500000	41.31	---	74.00	32.69	500.0	200.0	H	0.0	-10.4
1070.250000	---	28.98	54.00	25.02	500.0	100.0	H	244.0	-10.3
1197.000000	42.13	---	74.00	31.87	500.0	200.0	V	55.0	-8.9
1199.500000	---	30.62	54.00	23.38	500.0	100.0	V	337.0	-8.8
1344.000000	43.29	---	74.00	30.71	500.0	200.0	V	34.0	-8.0
1410.500000	---	31.78	54.00	22.22	500.0	100.0	H	104.0	-7.5
1699.250000	44.59	---	74.00	29.41	500.0	100.0	V	11.0	-6.0
1732.000000	---	33.22	54.00	20.78	500.0	200.0	V	355.0	-5.8
1921.250000	46.42	---	74.00	27.58	500.0	200.0	V	172.0	-4.9
2079.000000	---	35.61	54.00	18.39	500.0	100.0	V	50.0	-3.9
2673.250000	---	38.40	54.00	15.60	500.0	200.0	V	209.0	-1.8
2807.000000	49.66	---	74.00	24.34	500.0	200.0	V	348.0	-1.2

Note: The signal beyond the limit is carrier.

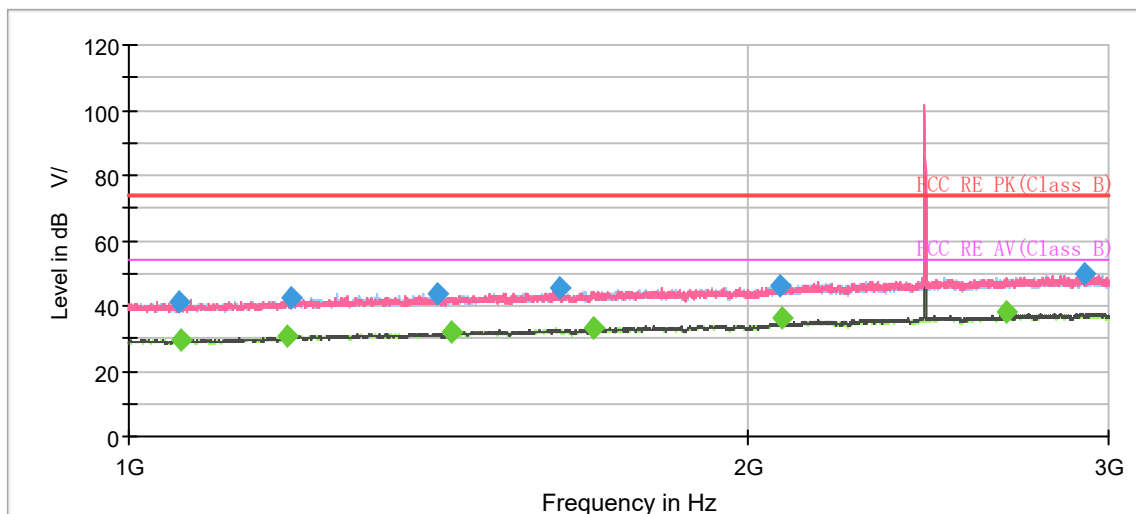
Radiates Emission from 1GHz to 3GHz



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4001.250000	---	29.37	54.00	24.63	500.0	100.0	V	39.0	-6.8
4010.625000	40.45	---	74.00	33.55	500.0	200.0	V	34.0	-6.8
4803.750000	---	39.72	54.00	14.28	500.0	200.0	H	101.0	-6.1
4803.750000	44.97	---	74.00	29.03	500.0	200.0	H	101.0	-6.1
7065.000000	---	31.33	54.00	22.67	500.0	200.0	V	211.0	-3.1
7132.500000	42.55	---	74.00	31.45	500.0	200.0	V	48.0	-2.9
9468.750000	44.47	---	74.00	29.53	500.0	100.0	V	198.0	-0.1
9523.125000	---	32.76	54.00	21.24	500.0	100.0	H	93.0	-0.1
11868.750000	---	30.83	54.00	23.17	500.0	100.0	H	0.0	0.0
11945.625000	43.67	---	74.00	30.33	500.0	100.0	H	134.0	0.1
13338.750000	44.92	---	74.00	29.08	500.0	100.0	V	8.0	2.3
13340.625000	---	33.83	54.00	20.17	500.0	100.0	V	351.0	2.3

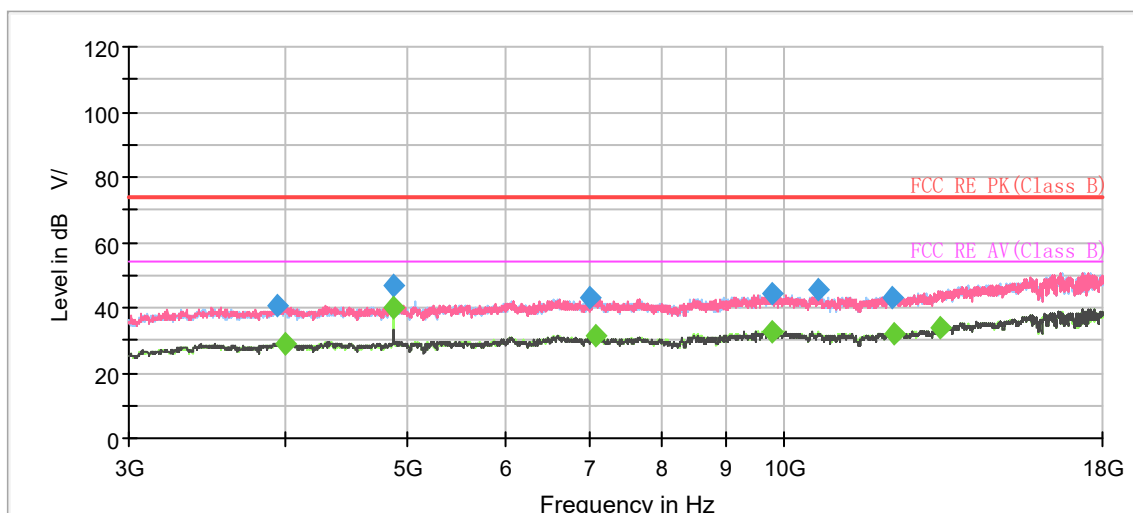
Radiates Emission from 3GHz to 18GHz

3DH5-Channel 39



Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1057.250000	41.14	---	74.00	32.86	500.0	100.0	H	284.0	-10.4
1061.250000	---	29.29	54.00	24.71	500.0	100.0	H	297.0	-10.4
1194.500000	---	30.61	54.00	23.39	500.0	200.0	V	136.0	-8.9
1200.750000	42.45	---	74.00	31.55	500.0	100.0	V	211.0	-8.8
1414.750000	43.71	---	74.00	30.29	500.0	200.0	V	0.0	-7.5
1437.250000	---	31.72	54.00	22.28	500.0	200.0	V	270.0	-7.3
1621.000000	45.45	---	74.00	28.55	500.0	200.0	V	200.0	-6.3
1685.750000	---	33.28	54.00	20.72	500.0	100.0	V	280.0	-6.0
2075.500000	45.95	---	74.00	28.05	500.0	200.0	V	72.0	-4.0
2079.000000	---	36.10	54.00	17.90	500.0	100.0	V	320.0	-3.9
2673.250000	---	38.15	54.00	15.85	500.0	200.0	V	21.0	-1.8
2920.250000	49.72	---	74.00	24.28	500.0	200.0	H	238.0	-1.0

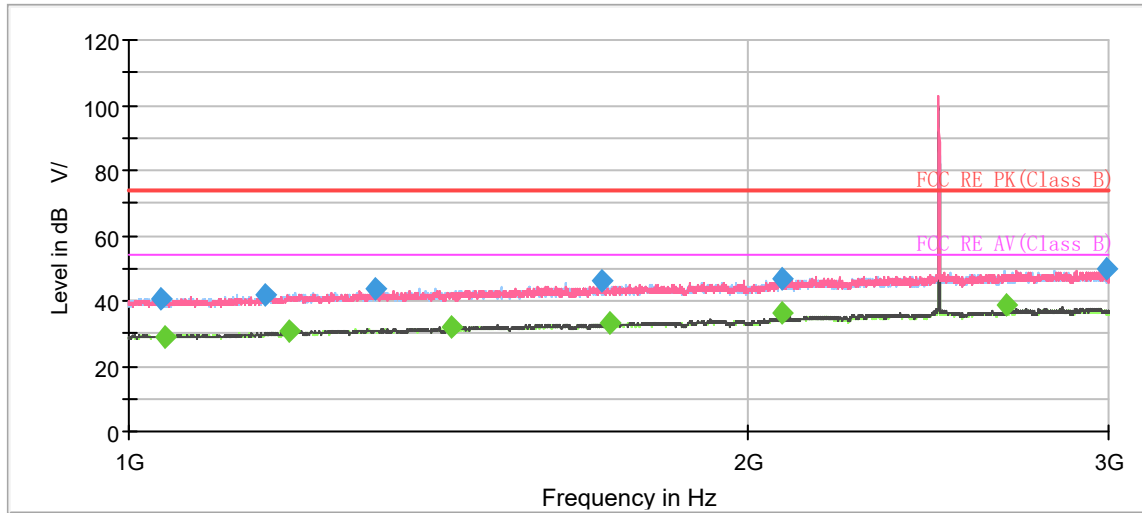
Note: The signal beyond the limit is carrier.
Radiates Emission from 1GHz to 3GHz



Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3943.125000	40.34	---	74.00	33.66	500.0	100.0	V	41.0	-7.2
3997.500000	---	29.20	54.00	24.80	500.0	100.0	V	273.0	-6.8
4880.625000	---	40.01	54.00	13.99	500.0	200.0	H	115.0	-5.7
4880.625000	46.90	---	74.00	27.10	500.0	200.0	H	115.0	-5.7
7006.875000	42.88	---	74.00	31.12	500.0	100.0	H	233.0	-3.0
7087.500000	---	31.68	54.00	22.32	500.0	200.0	V	248.0	-3.0
9787.500000	44.28	---	74.00	29.72	500.0	200.0	V	114.0	-0.5
9789.375000	---	32.86	54.00	21.14	500.0	200.0	V	0.0	-0.5
10655.625000	45.28	---	74.00	28.72	500.0	200.0	H	353.0	-0.8
12243.750000	42.96	---	74.00	31.04	500.0	200.0	H	180.0	0.3
12247.500000	---	32.23	54.00	21.77	500.0	100.0	H	132.0	0.3
13329.375000	---	33.78	54.00	20.22	500.0	100.0	V	109.0	2.3

Radiates Emission from 3GHz to 18GHz

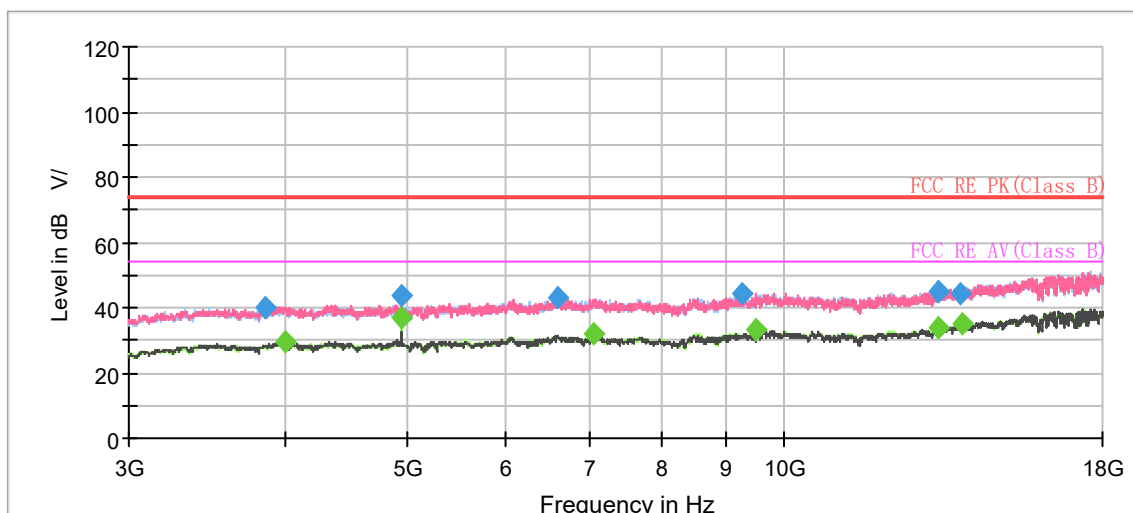
3DH5-Channel 78



Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1035.750000	40.76	---	74.00	33.24	500.0	200.0	H	229.0	-10.5
1041.250000	---	28.98	54.00	25.02	500.0	200.0	H	64.0	-10.5
1165.750000	42.07	---	74.00	31.93	500.0	100.0	V	14.0	-9.5
1196.250000	---	30.72	54.00	23.28	500.0	200.0	V	226.0	-8.9
1317.750000	43.77	---	74.00	30.23	500.0	100.0	V	190.0	-8.1
1435.500000	---	31.85	54.00	22.15	500.0	100.0	H	327.0	-7.4
1697.750000	46.27	---	74.00	27.73	500.0	100.0	V	8.0	-6.0
1714.000000	---	33.14	54.00	20.86	500.0	200.0	V	289.0	-5.9
2079.000000	---	36.01	54.00	17.99	500.0	100.0	V	46.0	-3.9
2079.250000	46.78	---	74.00	27.22	500.0	100.0	V	152.0	-3.9
2673.250000	---	38.54	54.00	15.46	500.0	100.0	V	127.0	-1.8
2990.250000	49.80	---	74.00	24.20	500.0	200.0	V	58.0	-0.6

Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz



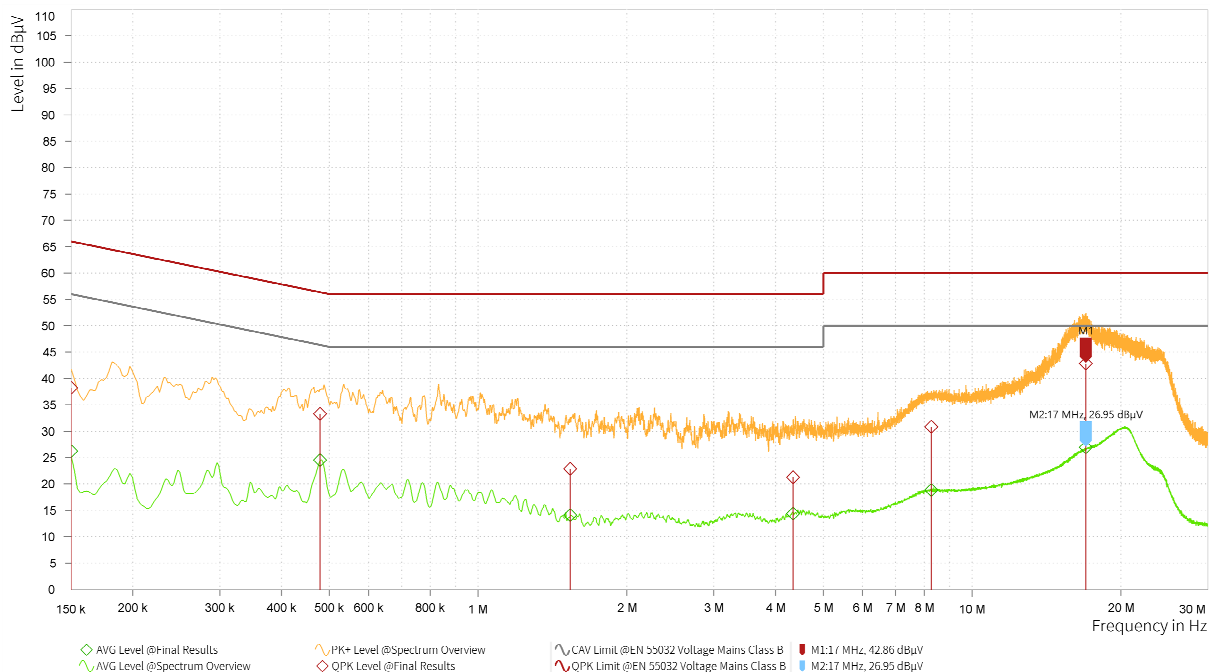
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3860.625000	40.21	---	74.00	33.79	500.0	100.0	V	246.0	-7.4
4005.000000	---	29.25	54.00	24.75	500.0	200.0	H	224.0	-6.8
4959.375000	---	36.79	54.00	17.21	500.0	200.0	H	109.0	-5.4
4959.375000	43.55	---	74.00	30.45	500.0	200.0	H	109.0	-5.4
6607.500000	42.93	---	74.00	31.07	500.0	100.0	H	117.0	-3.3
7061.250000	---	31.78	54.00	22.22	500.0	100.0	H	211.0	-3.1
9270.000000	44.28	---	74.00	29.72	500.0	100.0	H	253.0	-0.9
9526.875000	---	33.23	54.00	20.77	500.0	100.0	H	0.0	-0.2
13312.500000	---	33.86	54.00	20.14	500.0	100.0	H	154.0	2.3
13321.875000	45.02	---	74.00	28.98	500.0	100.0	H	66.0	2.3
13860.000000	44.35	---	74.00	29.65	500.0	100.0	H	196.0	3.9
13914.375000	---	35.12	54.00	18.88	500.0	200.0	V	334.0	3.9

Radiates Emission from 3GHz to 18GHz

2. Conducted Emission

2.1. Bluetooth

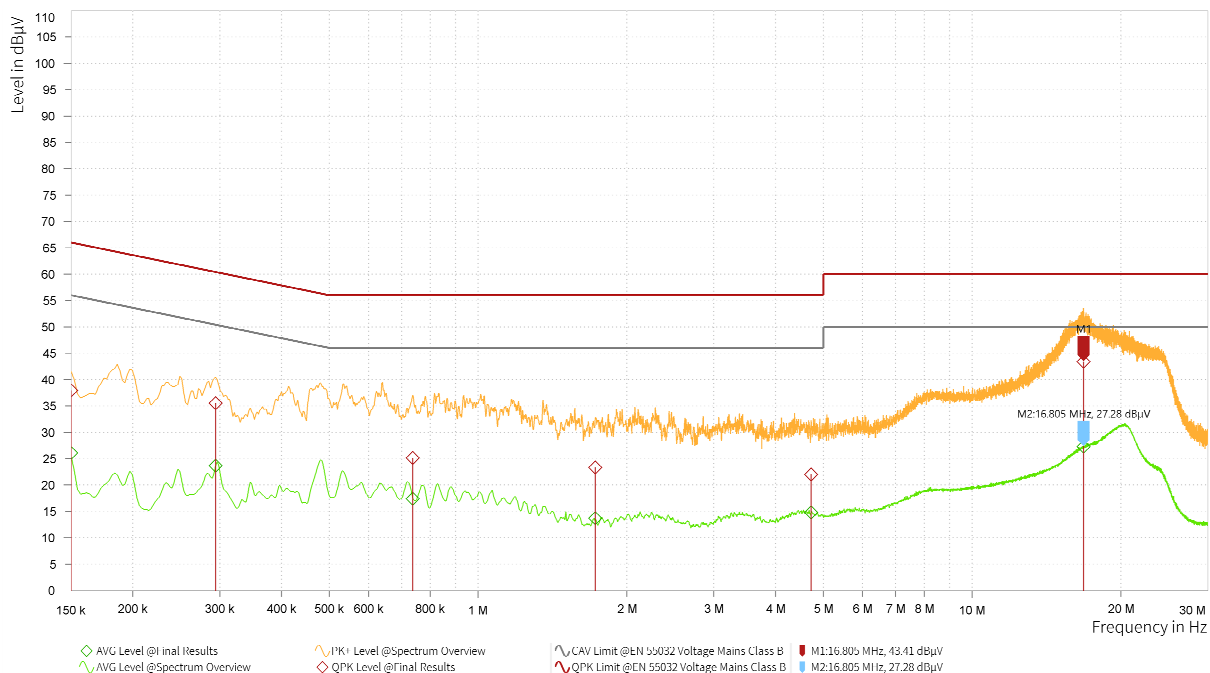
During the test, the Conducted Emission was performed in all modes with all channels. The test data of the worst-case condition was recorded in this report.



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]
0.150	38.25	66.00	27.75	26.25	56.00	29.75	20.90	L1	9.000	1.000
0.479	33.28	56.37	23.08	24.51	46.37	21.85	20.80	L1	9.000	1.000
1.536	22.84	56.00	33.16	14.08	46.00	31.92	19.82	L1	9.000	1.000
4.342	21.24	56.00	34.76	14.40	46.00	31.60	19.42	L1	9.000	1.000
8.266	30.84	60.00	29.16	18.84	50.00	31.16	19.41	L1	9.000	1.000
17.000	42.86	60.00	17.14	26.95	50.00	23.05	19.56	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]
0.150	37.96	66.00	28.04	26.09	56.00	29.91	20.91	N	9.000	1.000
0.294	35.51	60.41	24.90	23.66	50.41	26.75	20.96	N	9.000	1.000
0.737	25.16	56.00	30.84	17.42	46.00	28.58	20.40	N	9.000	1.000
1.727	23.33	56.00	32.67	13.72	46.00	32.28	19.75	N	9.000	1.000
4.722	22.03	56.00	33.97	14.81	46.00	31.19	19.42	N	9.000	1.000
16.805	43.41	60.00	16.59	27.28	50.00	22.72	19.60	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz