

ANNEX A: Test Result

1. Unwanted Emission

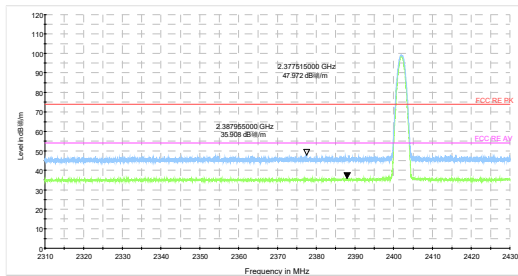
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (Y axis) and the loop antenna is vertical, the others are vertical and horizontal. and the worst case was recorded.

1.1. Bluetooth

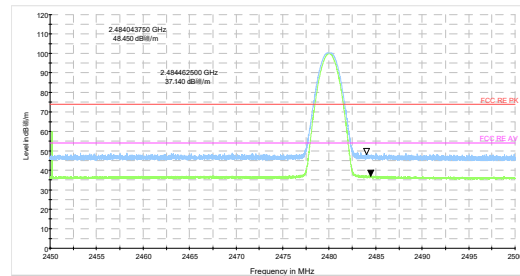
The following graphs display the maximum values of horizontal and vertical by software. Blue trace uses the peak detection, Green trace uses the average detection.

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

The signal beyond the limit is carrier.

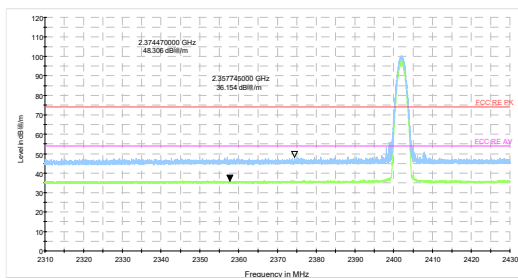


DH5-Channel 0: Peak + Average

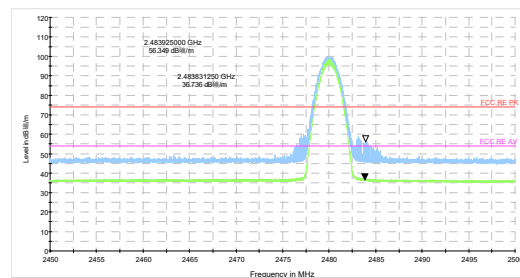


DH5-Channel 78: Peak + Average

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.

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

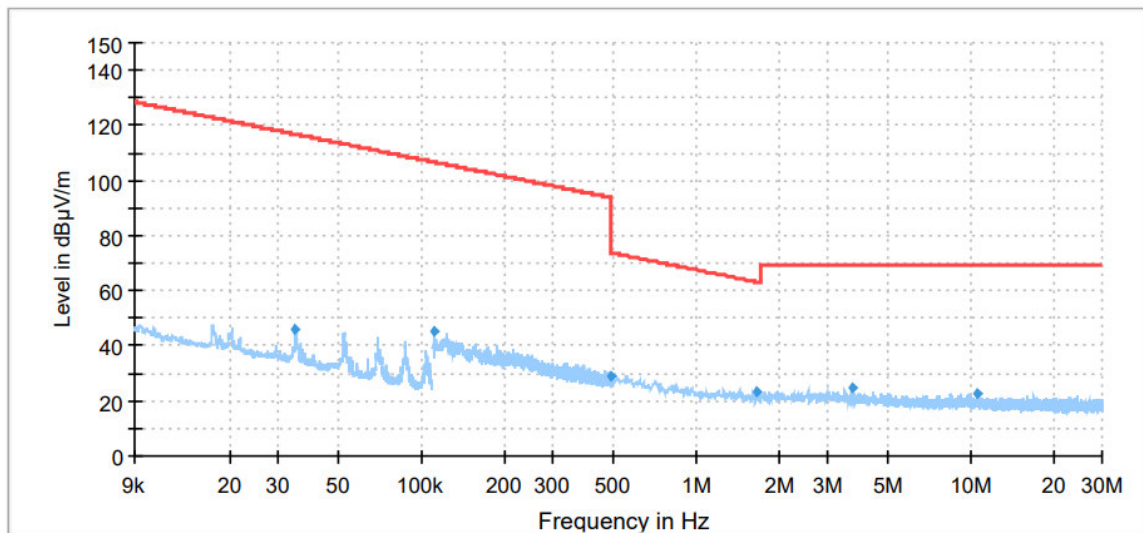
For above 1GHz

 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

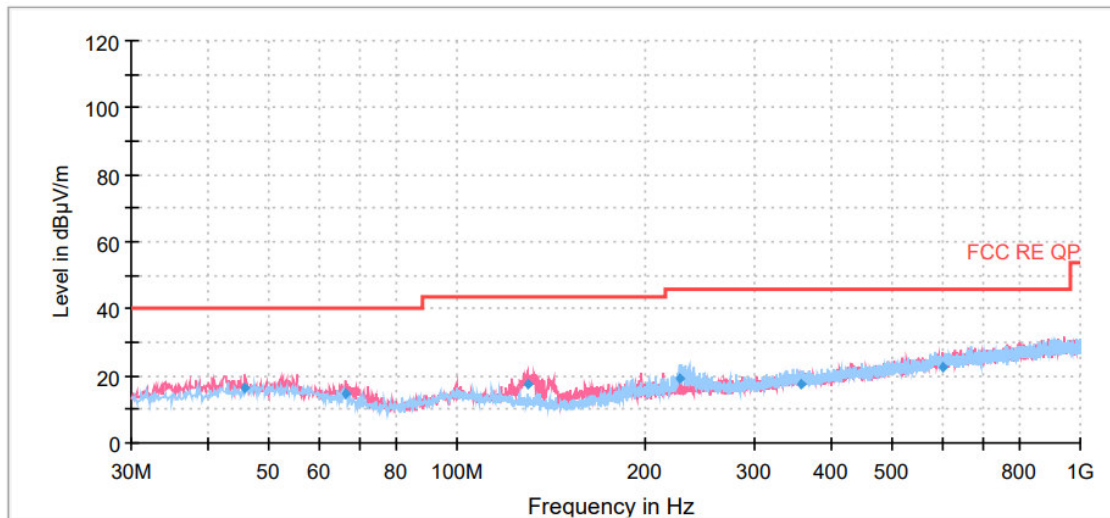
Continuous TX mode:

During the test, the Radiates Emission from 9kHz 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 9kHz to 30MHz

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Pol	Azimuth (deg)	Corr. (dB/m)
0.03	46.16	116.81	70.65	500.00	V	112.00	17
0.11	45.35	106.67	61.32	150.00	V	130.00	17
0.49	29.03	93.80	64.77	150.00	V	180.00	17
1.67	23.15	63.16	40.01	150.00	V	187.00	17
3.69	24.55	69.50	44.95	150.00	V	164.00	17
10.62	22.92	69.50	46.58	150.00	V	343.00	17

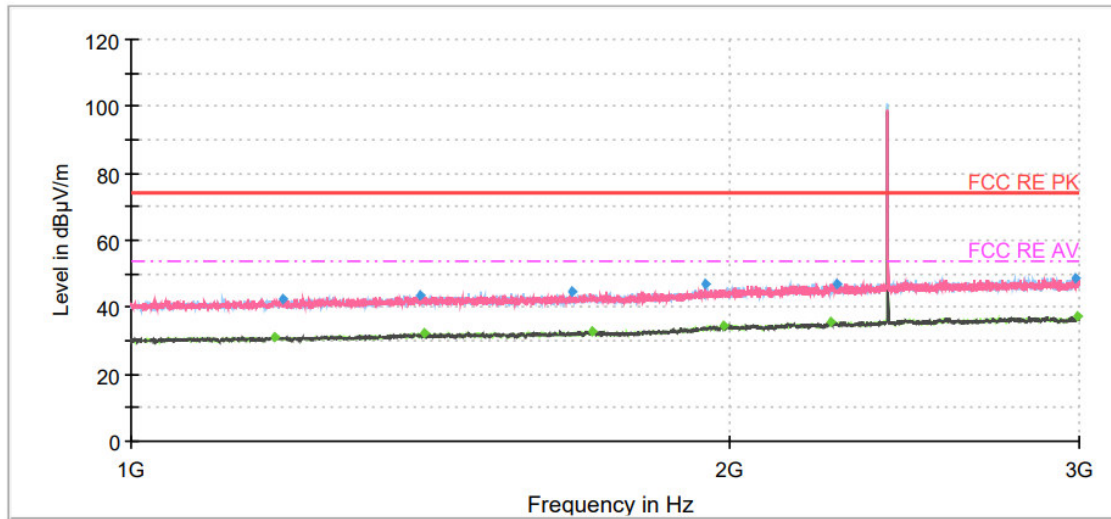


Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
45.76	16.20	40.00	23.80	200.00	108.0	V	4.00	20
66.38	14.94	40.00	25.06	200.00	112.0	V	17.00	17
130.15	17.30	43.50	26.20	200.00	100.0	V	215.00	16
228.37	19.26	46.00	26.74	200.00	122.0	H	342.00	19
355.80	17.67	46.00	28.33	200.00	107.0	H	353.00	22
600.36	22.78	46.00	23.22	200.00	185.0	V	334.00	27

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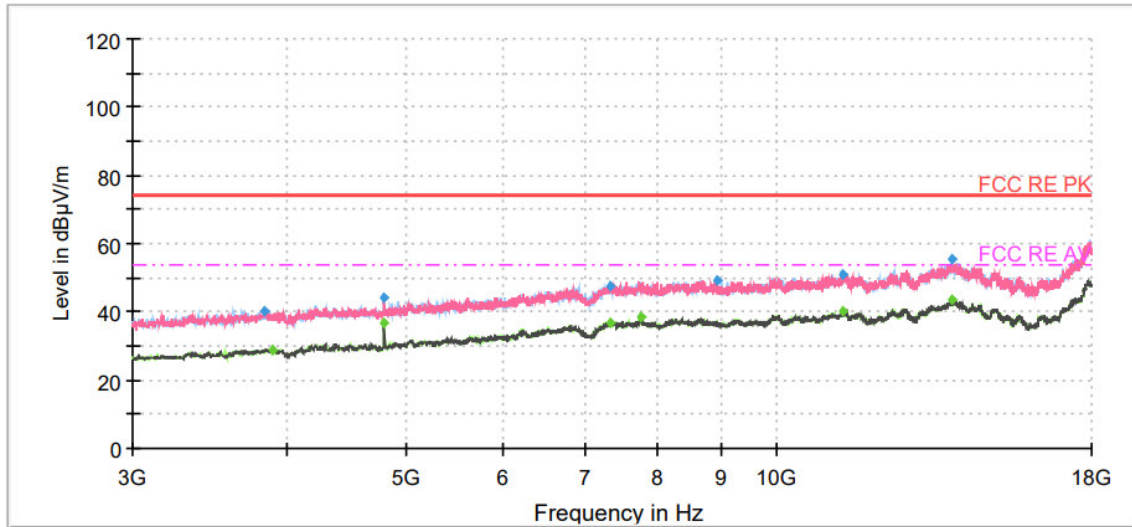
DH5-Channel 0



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)
1182.25	---	31.22	54.00	22.78	500.00	200.0	V	254.00	-4
1191.00	42.73	---	74.00	31.27	500.00	100.0	V	0.00	-4
1396.50	43.54	---	74.00	30.46	500.00	200.0	V	339.00	-3
1405.75	---	32.43	54.00	21.57	500.00	200.0	V	359.00	-3
1667.00	44.89	---	74.00	29.11	500.00	200.0	H	202.00	-2
1706.25	---	32.91	54.00	21.09	500.00	200.0	H	202.00	-2
1945.50	46.95	---	74.00	27.05	500.00	200.0	V	325.00	0
1985.75	---	34.77	54.00	19.23	500.00	200.0	H	131.00	0
2247.50	---	35.60	54.00	18.40	500.00	200.0	V	352.00	1
2262.25	46.99	---	74.00	27.01	500.00	100.0	V	0.00	2
2988.50	48.65	---	74.00	25.35	500.00	200.0	V	349.00	4
2995.75	---	37.47	54.00	16.53	500.00	200.0	H	5.00	4

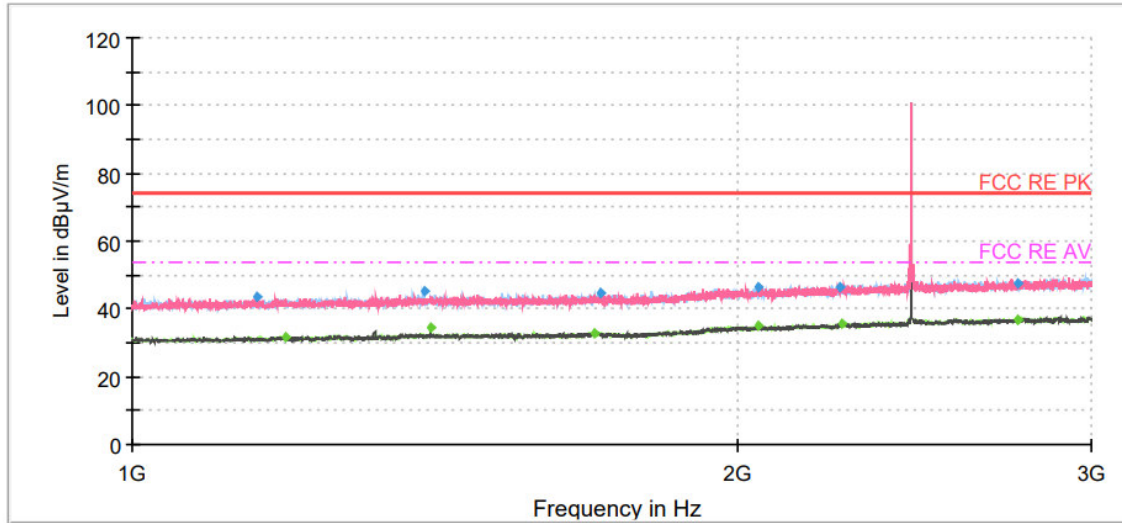


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3843.75	40.40	---	74.00	33.60	500.00	100.0	H	358.00	-4
3898.13	---	29.14	54.00	24.86	500.00	200.0	H	36.00	-4
4803.75	---	36.98	54.00	17.02	500.00	100.0	H	303.00	-2
4803.75	43.98	---	74.00	30.02	500.00	200.0	H	303.00	-2
7314.38	---	37.07	54.00	16.93	500.00	100.0	V	32.00	5
7333.13	47.67	---	74.00	26.33	500.00	200.0	H	345.00	5
7768.13	---	38.35	54.00	15.65	500.00	200.0	V	107.00	6
8936.25	49.21	---	74.00	24.79	500.00	100.0	H	0.00	6
11306.25	50.86	---	74.00	23.14	500.00	100.0	H	129.00	9
11315.63	---	40.27	54.00	13.73	500.00	200.0	H	314.00	9
13846.88	55.43	---	74.00	18.57	500.00	100.0	H	349.00	12
13869.38	---	43.30	54.00	10.70	500.00	100.0	V	24.00	12

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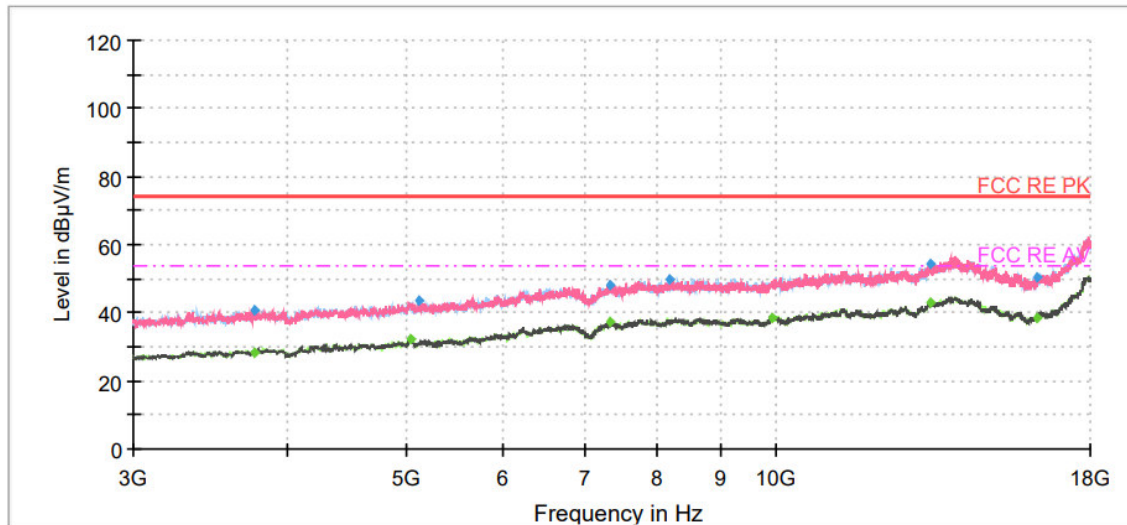
DH5-Channel 39



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)
1152.50	43.62	---	74.00	30.38	500.00	100.0	V	347.00	-4
1192.75	---	31.94	54.00	22.06	500.00	200.0	H	356.00	-4
1398.00	45.45	---	74.00	28.55	500.00	100.0	H	152.00	-3
1408.00	---	34.54	54.00	19.46	500.00	200.0	H	206.00	-3
1696.50	---	33.05	54.00	20.95	500.00	100.0	V	356.00	-2
1711.50	44.77	---	74.00	29.23	500.00	200.0	H	263.00	-2
2048.25	---	35.05	54.00	18.95	500.00	200.0	H	0.00	1
2048.50	46.23	---	74.00	27.77	500.00	200.0	H	290.00	1
2251.50	46.39	---	74.00	27.61	500.00	100.0	H	80.00	2
2253.50	---	35.81	54.00	18.19	500.00	100.0	H	138.00	2
2756.25	47.39	---	74.00	26.61	500.00	100.0	V	326.00	3
2759.00	---	36.75	54.00	17.25	500.00	200.0	V	3.00	3

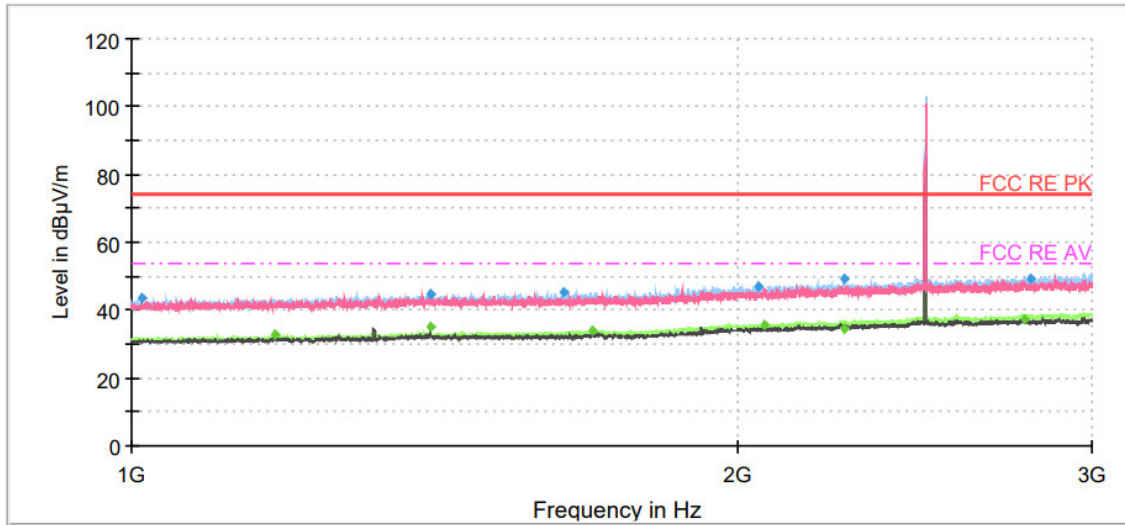


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3757.50	---	28.56	54.00	25.44	500.00	200.0	H	36.00	-5
3757.50	40.81	---	74.00	33.19	500.00	100.0	H	9.00	-5
5040.00	---	32.22	54.00	21.78	500.00	200.0	V	205.00	0
5111.25	43.52	---	74.00	30.48	500.00	200.0	H	310.00	-1
7314.38	48.29	---	74.00	25.71	500.00	200.0	V	94.00	5
7323.75	---	37.10	54.00	16.90	500.00	100.0	H	2.00	5
8188.13	49.76	---	74.00	24.24	500.00	100.0	H	45.00	7
9905.63	---	38.31	54.00	15.69	500.00	100.0	H	0.00	7
13310.63	---	42.87	54.00	11.13	500.00	100.0	H	134.00	11
13340.63	54.55	---	74.00	19.45	500.00	200.0	V	18.00	11
16290.00	50.66	---	74.00	23.34	500.00	200.0	V	79.00	8
16305.00	---	38.63	54.00	15.37	500.00	200.0	H	354.00	8

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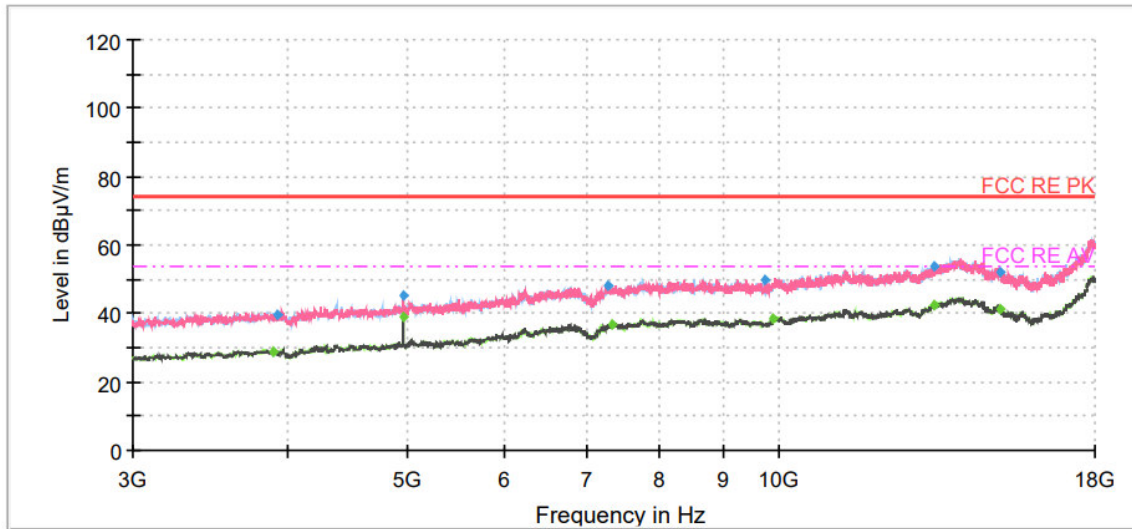
DH5-Channel 78



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)
1012.00	43.54	---	74.00	30.46	500.00	100.0	V	302.00	-5
1177.50	---	32.85	54.00	21.15	500.00	200.0	H	355.00	-4
1407.50	44.60	---	74.00	29.40	500.00	200.0	H	271.00	-3
1408.00	---	34.91	54.00	19.09	500.00	200.0	H	215.00	-3
1640.75	45.55	---	74.00	28.45	500.00	200.0	H	258.00	-2
1692.00	---	33.95	54.00	20.05	500.00	200.0	H	346.00	-2
2046.25	47.10	---	74.00	26.90	500.00	200.0	H	353.00	1
2061.50	---	35.80	54.00	18.20	500.00	200.0	H	271.00	1
2258.25	49.38	---	74.00	24.62	500.00	200.0	H	353.00	2
2259.25	---	34.81	54.00	19.19	500.00	100.0	V	44.00	2
2776.50	---	37.61	54.00	16.39	500.00	200.0	H	0.00	3
2796.00	49.33	---	74.00	24.67	500.00	200.0	H	258.00	3



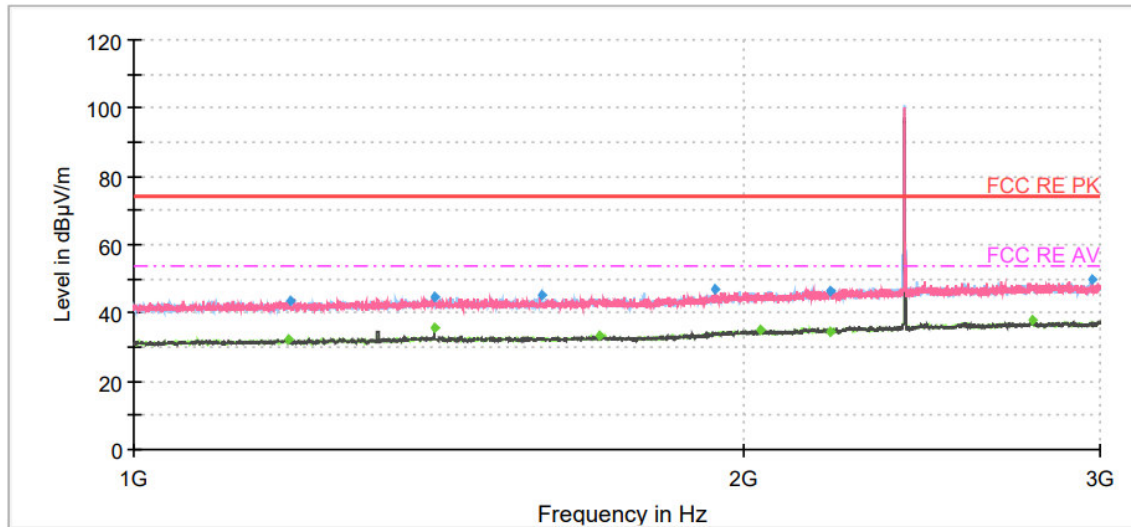
Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3901.88	---	29.00	54.00	25.00	500.00	200.0	H	241.00	-4
3920.63	39.89	---	74.00	34.11	500.00	200.0	H	353.00	-5
4959.38	---	39.12	54.00	14.88	500.00	100.0	H	14.00	-1
4959.38	45.43	---	74.00	28.57	500.00	100.0	H	14.00	-1
7276.88	47.94	---	74.00	26.06	500.00	200.0	H	241.00	5
7306.88	---	37.04	54.00	16.96	500.00	200.0	H	0.00	5
9718.13	49.98	---	74.00	24.02	500.00	100.0	V	192.00	7
9898.13	---	38.52	54.00	15.48	500.00	200.0	H	52.00	7
13310.63	53.52	---	74.00	20.48	500.00	100.0	V	359.00	11
13316.25	---	42.72	54.00	11.28	500.00	200.0	V	36.00	11
15099.38	---	41.27	54.00	12.73	500.00	100.0	H	1.00	9
15106.88	52.31	---	74.00	21.69	500.00	200.0	H	52.00	9

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.

EDR

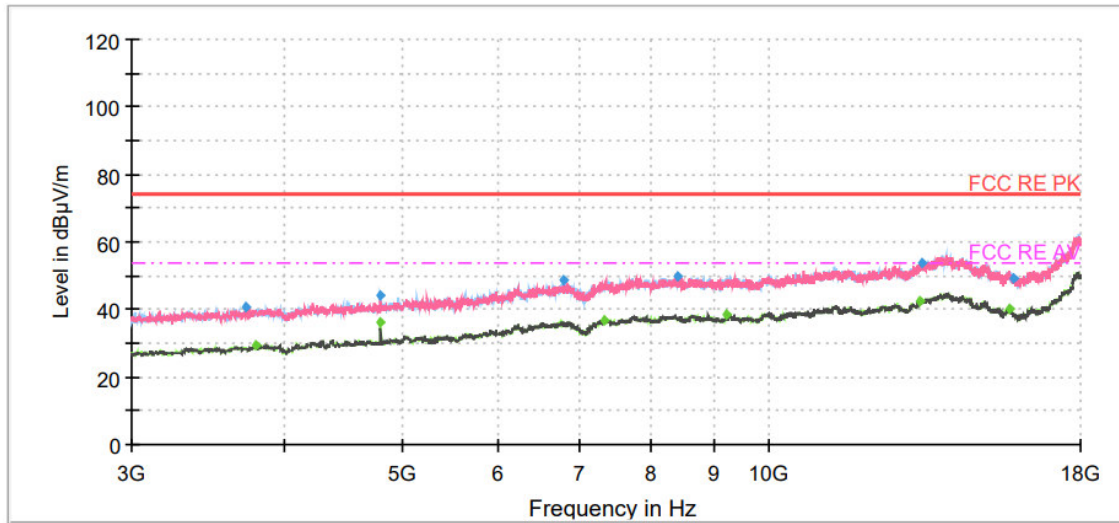
3DH5-Channel 0



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)
1192.50	---	32.41	54.00	21.59	500.00	100.0	V	204.00	-4
1196.00	43.52	---	74.00	30.48	500.00	200.0	V	0.00	-4
1407.75	44.87	---	74.00	29.13	500.00	100.0	V	8.00	-3
1408.00	---	35.50	54.00	18.50	500.00	200.0	V	359.00	-3
1588.50	45.09	---	74.00	28.91	500.00	200.0	H	21.00	-2
1696.50	---	33.38	54.00	20.62	500.00	100.0	V	1.00	-2
1935.50	46.83	---	74.00	27.17	500.00	100.0	V	0.00	0
2040.25	---	34.84	54.00	19.16	500.00	200.0	H	115.00	0
2208.75	---	34.70	54.00	19.30	500.00	100.0	H	158.00	1
2209.25	46.14	---	74.00	27.86	500.00	100.0	H	351.00	1
2773.75	---	37.71	54.00	16.29	500.00	200.0	V	88.00	3
2971.50	49.71	---	74.00	24.29	500.00	100.0	V	0.00	4

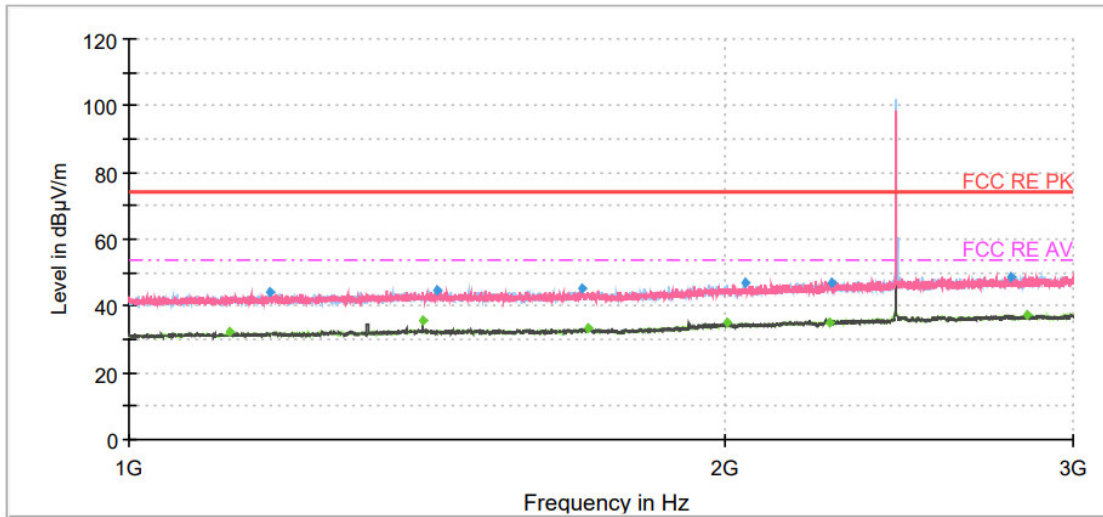


Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3716.25	40.92	---	74.00	33.08	500.00	100.0	H	16.00	-5
3795.00	---	29.52	54.00	24.48	500.00	200.0	H	0.00	-5
4803.75	---	36.26	54.00	17.74	500.00	200.0	H	52.00	-2
4803.75	44.12	---	74.00	29.88	500.00	100.0	H	8.00	-2
6778.13	48.72	---	74.00	25.28	500.00	200.0	H	68.00	4
7308.75	---	37.04	54.00	16.96	500.00	100.0	H	199.00	5
8407.50	49.61	---	74.00	24.39	500.00	200.0	H	23.00	7
9223.13	---	38.43	54.00	15.57	500.00	100.0	H	0.00	7
13276.88	---	42.61	54.00	11.39	500.00	100.0	H	0.00	11
13310.63	53.95	---	74.00	20.05	500.00	100.0	V	0.00	11
15729.38	---	40.14	54.00	13.86	500.00	100.0	H	0.00	8
15885.00	49.03	---	74.00	24.97	500.00	100.0	H	22.00	7

EDR

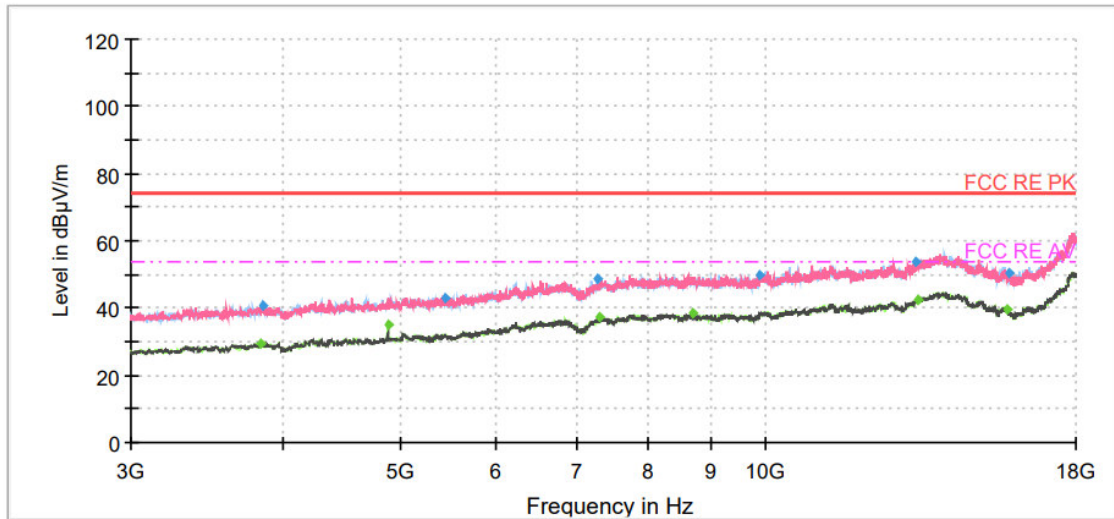
3DH5-Channel 39



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)
1124.25	---	32.48	54.00	21.52	500.00	100.0	H	0.00	-4
1178.00	43.89	---	74.00	30.12	500.00	200.0	H	141.00	-4
1408.00	---	35.49	54.00	18.51	500.00	100.0	V	6.00	-3
1430.50	44.76	---	74.00	29.24	500.00	200.0	V	246.00	-3
1693.75	45.39	---	74.00	28.61	500.00	100.0	V	76.00	-2
1706.50	---	33.22	54.00	20.78	500.00	100.0	H	319.00	-2
2005.50	---	34.89	54.00	19.11	500.00	200.0	V	60.00	1
2050.00	46.95	---	74.00	27.05	500.00	200.0	V	358.00	1
2258.25	---	35.03	54.00	18.97	500.00	100.0	H	340.00	2
2263.50	46.80	---	74.00	27.20	500.00	200.0	H	48.00	2
2788.00	48.91	---	74.00	25.09	500.00	200.0	H	97.00	3
2840.00	---	37.52	54.00	16.48	500.00	200.0	H	30.00	3

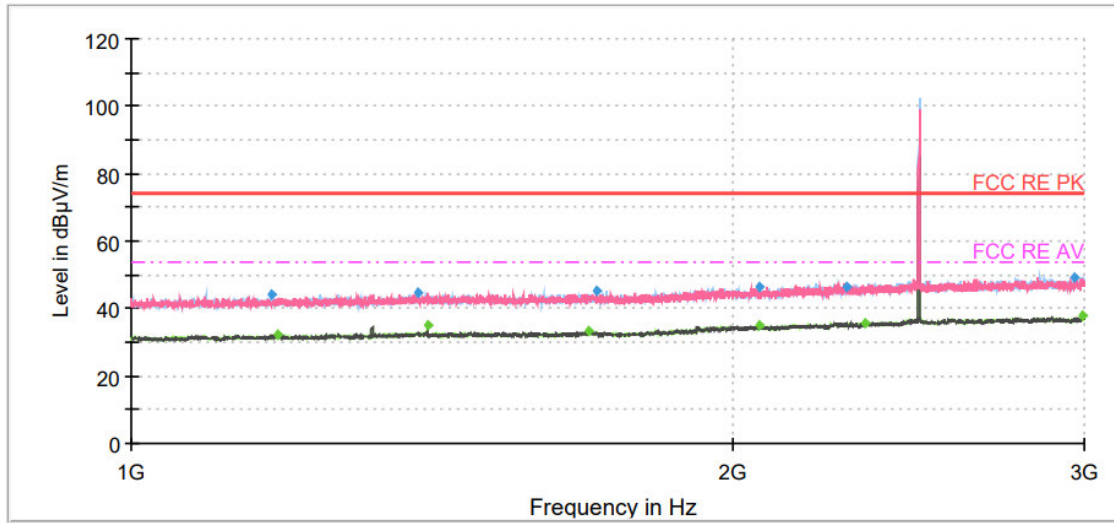


Radiates Emission from 3GHz to 18GHz

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)
3843.75	---	29.64	54.00	24.36	500.00	100.0	V	7.00	-4
3858.75	40.80	---	74.00	33.20	500.00	100.0	H	0.00	-4
4880.63	---	35.27	54.00	18.73	500.00	200.0	H	5.00	-1
5443.13	43.23	---	74.00	30.77	500.00	100.0	H	101.00	0
7267.50	48.51	---	74.00	25.49	500.00	100.0	H	357.00	5
7297.50	---	37.33	54.00	16.67	500.00	200.0	H	358.00	6
8696.25	---	38.69	54.00	15.31	500.00	100.0	H	230.00	7
9875.63	49.76	---	74.00	24.24	500.00	200.0	V	342.00	7
13275.00	53.57	---	74.00	20.43	500.00	200.0	V	351.00	11
13310.63	---	42.69	54.00	11.31	500.00	100.0	H	316.00	11
15781.88	---	39.65	54.00	14.35	500.00	100.0	V	131.00	8
15860.63	50.40	---	74.00	23.60	500.00	200.0	H	8.00	7

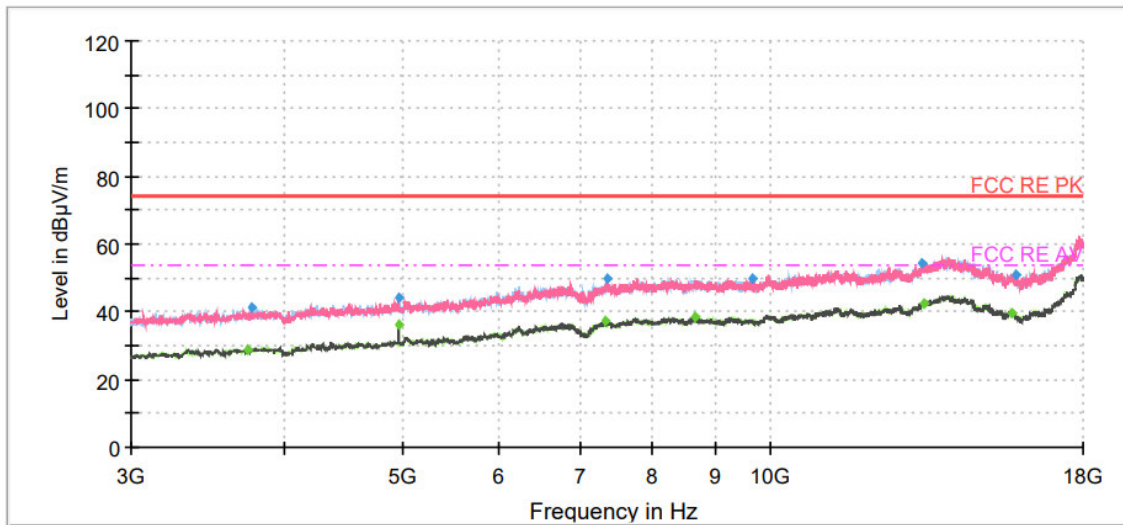
3DH5-Channel 78



Note: The signal beyond the limit is carrier.

Radiates Emission from 1GHz to 3GHz

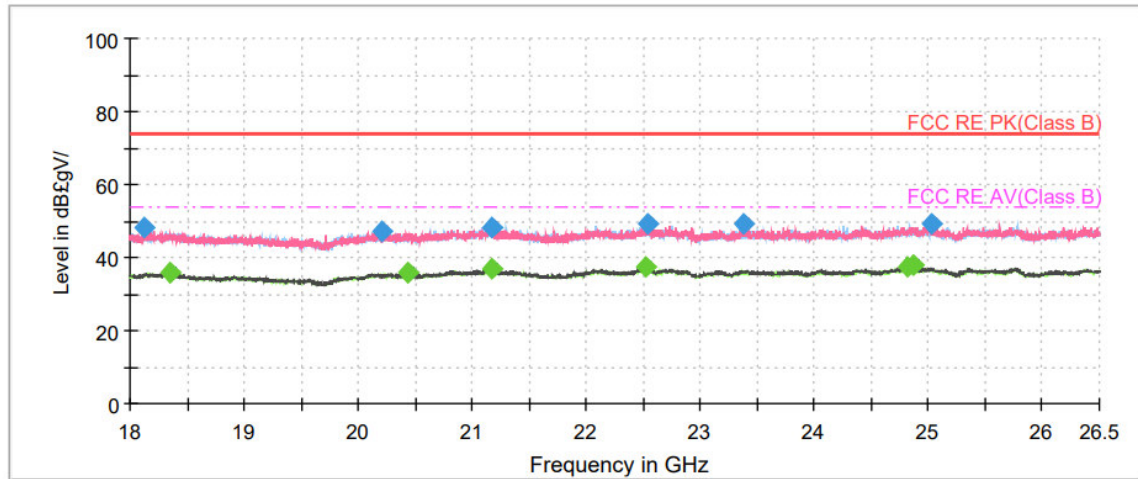
Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1174.75	44.22	---	74.00	29.78	500.00	200.0	H	129.00	-4
1182.75	---	32.17	54.00	21.83	500.00	200.0	V	307.00	-4
1392.50	44.74	---	74.00	29.26	500.00	100.0	V	185.00	-3
1407.75	---	35.33	54.00	18.67	500.00	100.0	V	255.00	-3
1695.50	---	33.40	54.00	20.60	500.00	100.0	V	2.00	-2
1710.00	45.08	---	74.00	28.92	500.00	200.0	V	358.00	-2
2061.00	---	34.86	54.00	19.14	500.00	200.0	H	62.00	1
2061.75	46.36	---	74.00	27.64	500.00	200.0	V	158.00	1
2280.25	46.63	---	74.00	27.37	500.00	200.0	H	144.00	2
2329.25	---	35.60	54.00	18.40	500.00	200.0	H	62.00	2
2966.75	49.21	---	74.00	24.79	500.00	100.0	H	201.00	3
2993.25	---	37.66	54.00	16.34	500.00	200.0	V	245.00	4



Radiates Emission from 3GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3731.25	---	28.79	54.00	25.21	500.00	100.0	H	290.00	-5
3759.38	41.32	---	74.00	32.68	500.00	200.0	V	294.00	-5
4959.38	---	36.19	54.00	17.81	500.00	100.0	H	13.00	-1
4959.38	43.99	---	74.00	30.01	500.00	100.0	H	13.00	-1
7312.50	---	37.14	54.00	16.86	500.00	200.0	V	0.00	5
7348.13	49.56	---	74.00	24.44	500.00	200.0	V	347.00	5
8656.88	---	38.59	54.00	15.41	500.00	200.0	V	358.00	7
9650.63	49.66	---	74.00	24.34	500.00	100.0	V	32.00	7
13269.38	54.38	---	74.00	19.62	500.00	100.0	V	0.00	11
13342.50	---	42.69	54.00	11.31	500.00	100.0	H	275.00	11
15751.88	---	39.81	54.00	14.19	500.00	100.0	H	0.00	8
15871.88	50.68	---	74.00	23.32	500.00	200.0	V	347.00	7

During the test, the Radiates Emission from 18GHz to 26.5GHz was performed in all modes with all channels. The test data of the worst-case condition was recorded in this report.



Radiates Emission from 18GHz to 26.5GHz

Frequency (MHz)	MaxPeak (dBµgV/m)	Average (dBµgV/m)	Limit (dBµgV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
18115.812500	48.18	---	74.00	25.82	500.0	100.0	V	203.0	-6.1
18345.312500	---	35.73	54.00	18.27	500.0	200.0	H	165.0	-6.0
20204.687500	46.96	---	74.00	27.04	500.0	200.0	H	339.0	-5.8
20442.687500	---	35.70	54.00	18.30	500.0	200.0	H	282.0	-5.2
21164.125000	---	36.81	54.00	17.19	500.0	100.0	V	312.0	-4.3
21168.375000	48.11	---	74.00	25.89	500.0	200.0	V	46.0	-4.3
22519.875000	---	37.29	54.00	16.71	500.0	100.0	V	173.0	-3.6
22547.500000	49.11	---	74.00	24.89	500.0	100.0	V	232.0	-3.5
23374.125000	48.99	---	74.00	25.01	500.0	100.0	V	1.0	-3.5
24820.187500	---	37.30	54.00	16.70	500.0	100.0	V	93.0	-2.4
24870.125000	---	37.76	54.00	16.24	500.0	100.0	V	0.0	-2.4
25024.187500	49.27	---	74.00	24.73	500.0	200.0	H	0.0	-2.4

2. Conducted Emission

2.1. Bluetooth

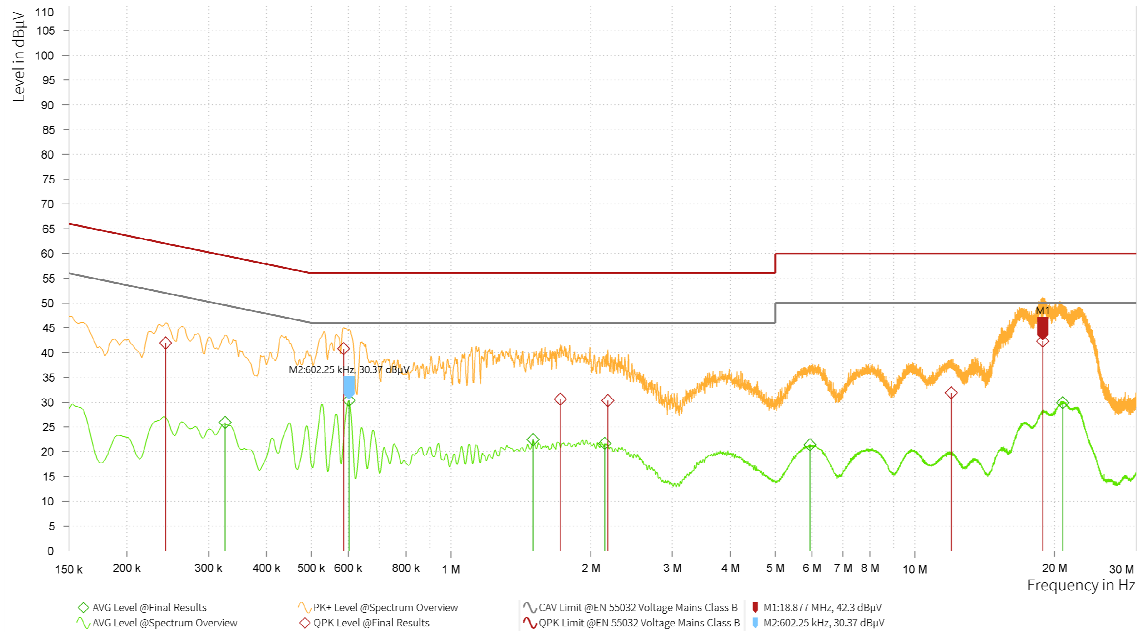
During the test, the Conducted Emission was performed in all modes with all channels. The test data of the worst-case condition was recorded in this report.



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]
0.152				33.94	55.88	21.93	20.90	L1	9.000	1.000
0.161	48.02	65.40	17.38				20.89	L1	9.000	1.000
0.598	41.73	56.00	14.27				20.68	L1	9.000	1.000
0.602				30.63	46.00	15.37	20.67	L1	9.000	1.000
1.282	30.78	56.00	25.22				19.96	L1	9.000	1.000
1.923				22.86	46.00	23.14	19.67	L1	9.000	1.000
2.123				22.16	46.00	23.84	19.62	L1	9.000	1.000
2.218	31.00	56.00	25.00				19.60	L1	9.000	1.000
6.036				21.56	50.00	28.44	19.40	L1	9.000	1.000
12.127	32.21	60.00	27.79				19.43	L1	9.000	1.000
19.329	41.71	60.00	18.29				19.64	L1	9.000	1.000
21.149				29.79	50.00	20.21	19.70	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]
0.242	41.91	62.02	20.11				20.99	N	9.000	1.000
0.326				25.90	49.57	23.66	20.94	N	9.000	1.000
0.587	40.80	56.00	15.20				20.70	N	9.000	1.000
0.602				30.37	46.00	15.63	20.68	N	9.000	1.000
1.502				22.42	46.00	23.58	19.85	N	9.000	1.000
1.721	30.59	56.00	25.41				19.75	N	9.000	1.000
2.146				21.67	46.00	24.33	19.62	N	9.000	1.000
2.177	30.31	56.00	25.69				19.61	N	9.000	1.000
5.944				21.39	50.00	28.61	19.41	N	9.000	1.000
11.981	31.87	60.00	28.13				19.45	N	9.000	1.000
18.877	42.30	60.00	17.70				19.67	N	9.000	1.000
20.837				29.88	50.00	20.12	19.74	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz