

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

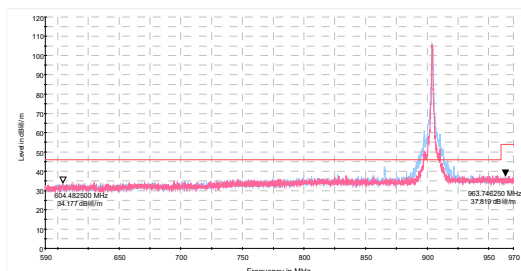
1.1. Sub-G

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

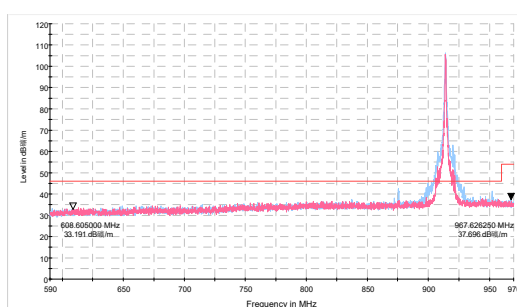
A symbol ($\text{dB } \mu\text{V/m}$) in the test plot below means (dB $\mu\text{V/m}$)

The signal beyond the limit is carrier.

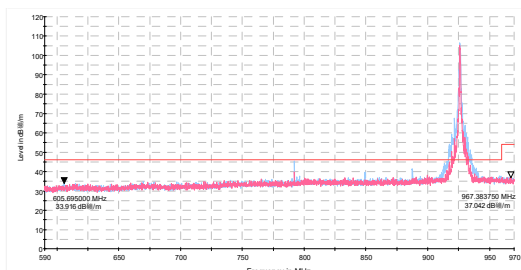
STRAIGHTHEAD Antenna



904MHz Peak+ Average

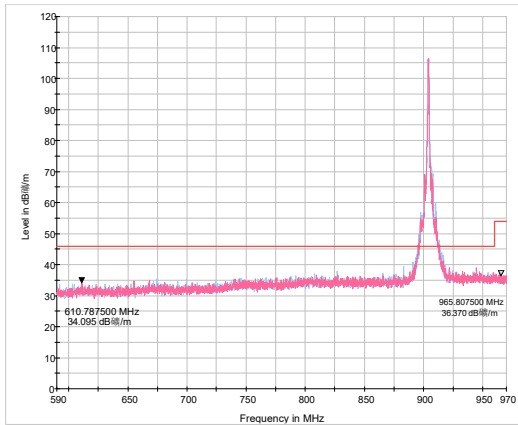


914MHz Peak+Average

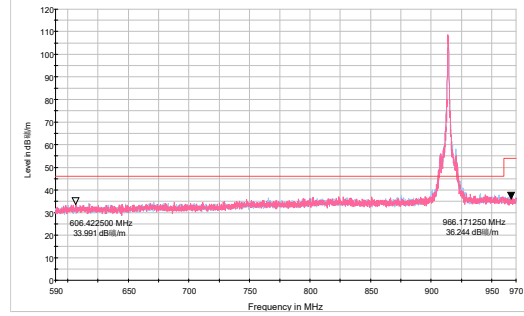


926MHz Peak+Average

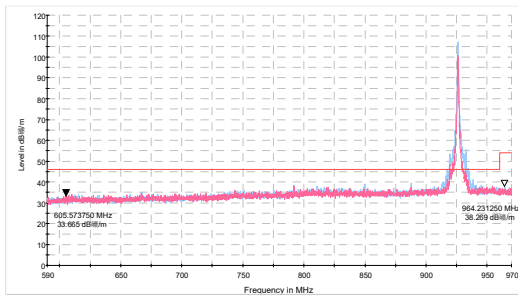
ELBOW Antenna



904MHz Peak+ Average



914MHz Peak+Average



926MHz 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. A symbol (dB_{μV/m}) in the test plot below means (dB_{μV/m})
4. **The following graphs display the maximum values of coaxial and coplanar for 9k-30MHz; horizontal and vertical for above 30MHz by software.**
5. **For below 1GHz**

 QP Level @Spectrum Overview H
  QP Level @Spectrum Overview V
  QP Level @Final Results
  QP Limit

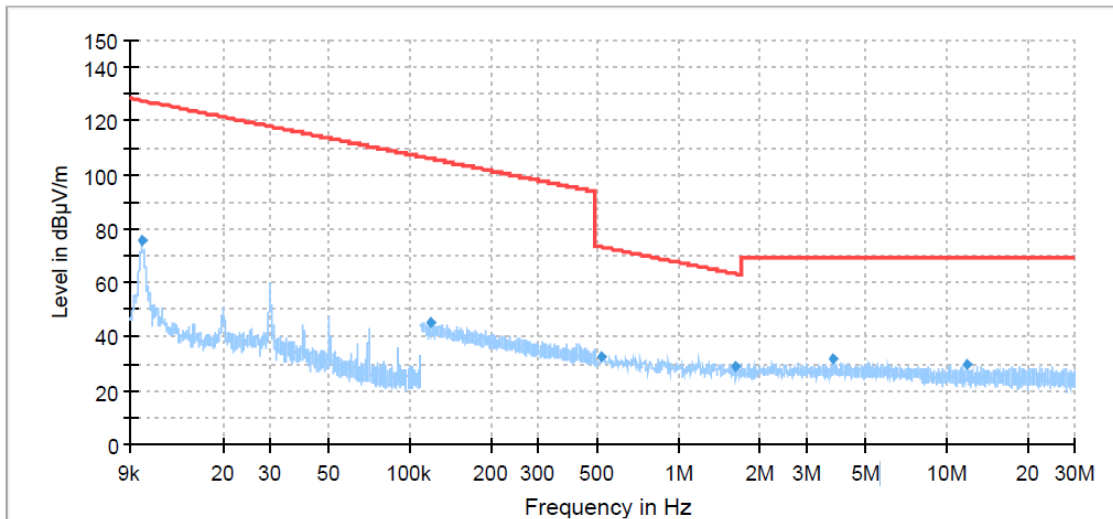
For above 1GHz

 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:

STRAIGHTHEAD Antenna

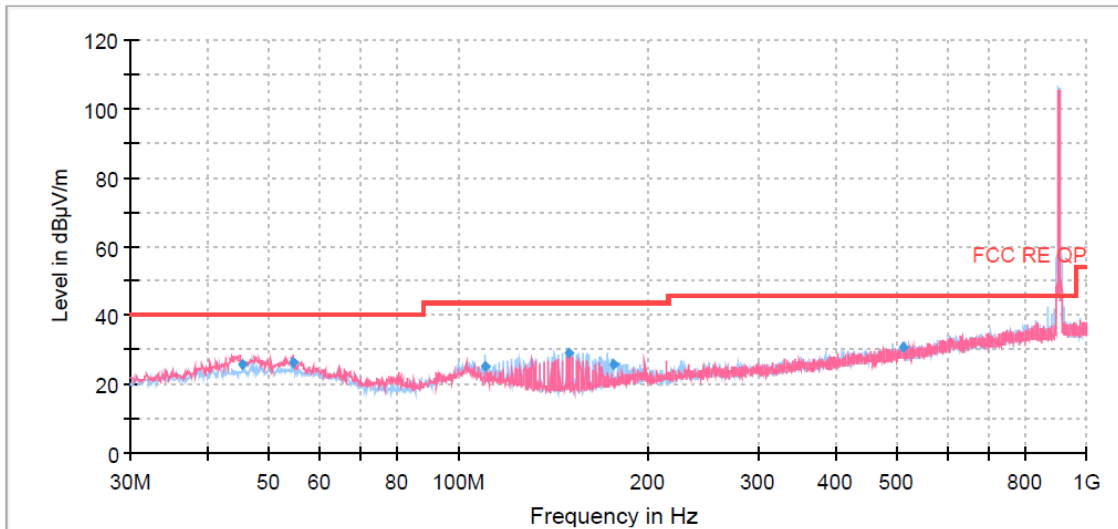
904MHz



Radiates Emission from 9kHz to 30MHz

Final Result

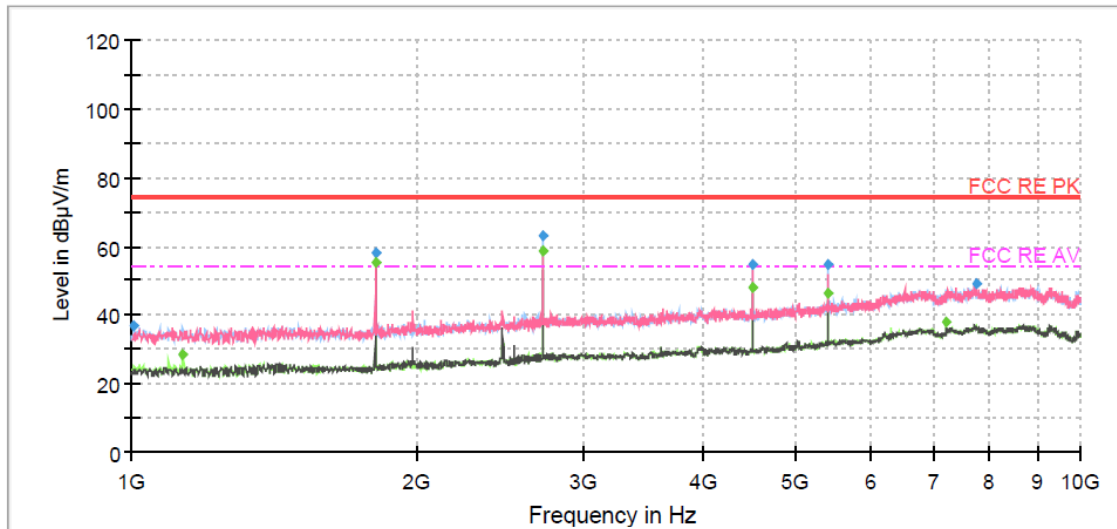
Frequency (MHz)	MaxPeak (dB _{μV/m})	Limit (dB _{μV/m})	Margin (dB)	Meas. Time (ms)	Azimuth (deg)	Corr. (dB/m)
0.01	75.98	127.61	51.63	500.00	0.00	18
0.12	45.40	106.08	60.68	150.00	148.00	17
0.52	32.44	73.35	40.92	150.00	311.00	17
1.63	28.92	63.35	34.43	150.00	340.00	17
3.75	31.91	69.50	37.59	150.00	52.00	17
11.83	29.92	69.50	39.58	150.00	213.00	17



Note: The signal beyond the limit is carrier.
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)
45.27	25.42	40.00	14.58	1000.00	174.0	V	87.00	20
54.69	26.17	40.00	13.83	1000.00	100.0	V	2.00	20
110.35	24.91	43.50	18.59	1000.00	225.0	H	0.00	18
150.24	29.28	43.50	14.22	1000.00	225.0	H	325.00	15
176.95	25.83	43.50	17.67	1000.00	198.0	H	0.00	16
512.01	30.51	46.00	15.49	1000.00	200.0	H	278.00	26



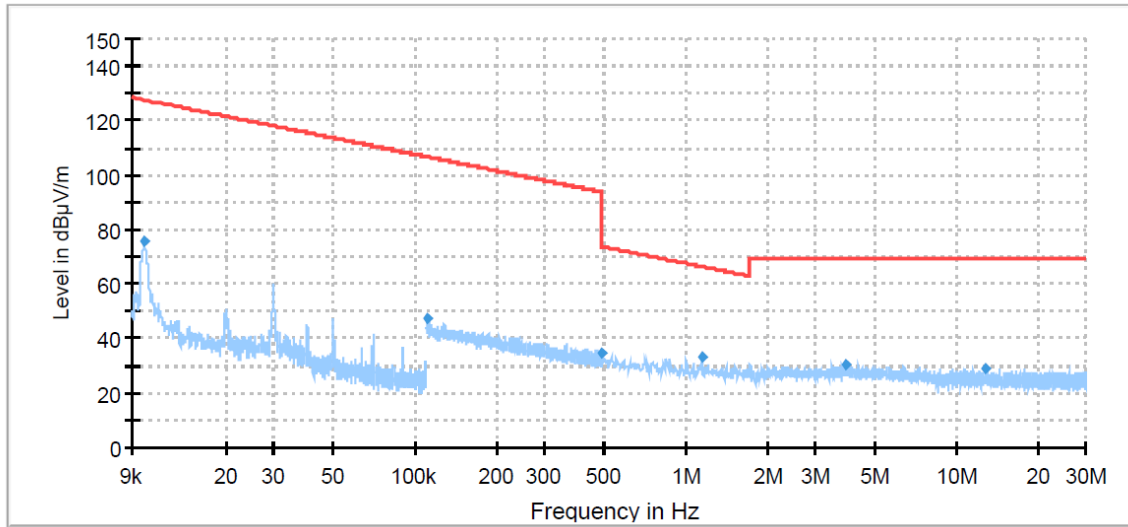
Radiates Emission from 1GHz to 10GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Duty cycle	Factor	Final Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1005.63	36.66	---	74.00	37.34	0.5	6.02	43.36	500.00	100.0	H	226.00	-17
1133.88	---	28.40	54.00	25.60	0.5	6.02	31.62	500.00	200.0	H	106.00	-16
1807.75	---	55.32	54.00	-1.32	0.5	6.02	4.70	500.00	200.0	V	216.00	-13
1807.75	58.13	---	74.00	15.87	0.5	6.02	21.89	500.00	100.0	V	232.00	-13
2711.13	63.12	---	74.00	10.88	0.5	6.02	16.90	500.00	200.0	H	268.00	-9
2711.13	---	58.39	54.00	-4.39	0.5	6.02	1.63	500.00	200.0	H	268.00	-9
4519.00	---	47.76	54.00	6.24	0.5	6.02	12.26	500.00	200.0	H	19.00	-4
4521.25	54.95	---	74.00	19.05	0.5	6.02	25.07	500.00	200.0	H	19.00	-4
5422.38	---	46.35	54.00	7.65	0.5	6.02	13.67	500.00	200.0	H	354.00	-2
5422.38	54.72	---	74.00	19.28	0.5	6.02	25.30	500.00	200.0	H	354.00	-2
7233.63	---	37.90	54.00	16.10	0.5	6.02	22.12	500.00	200.0	H	106.00	1
7757.88	49.18	---	74.00	24.82	0.5	6.02	30.84	500.00	100.0	V	142.00	2

Note: Factor = $20 \log (1/\text{Duty cycle}) = 6.02$

Final Margin = Margin + Factor

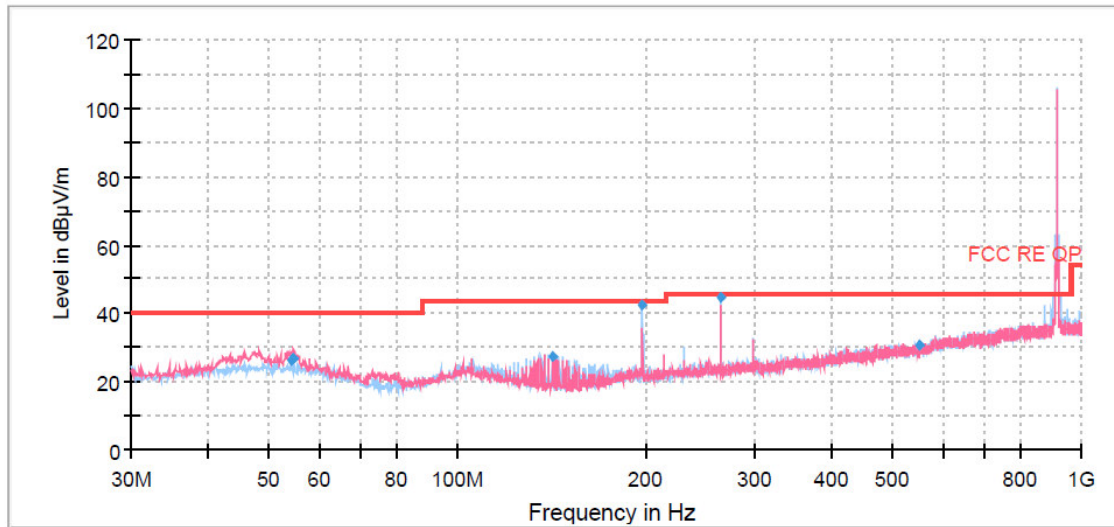
914MHz



Radiates Emission from 9kHz to 30MHz

Final Result

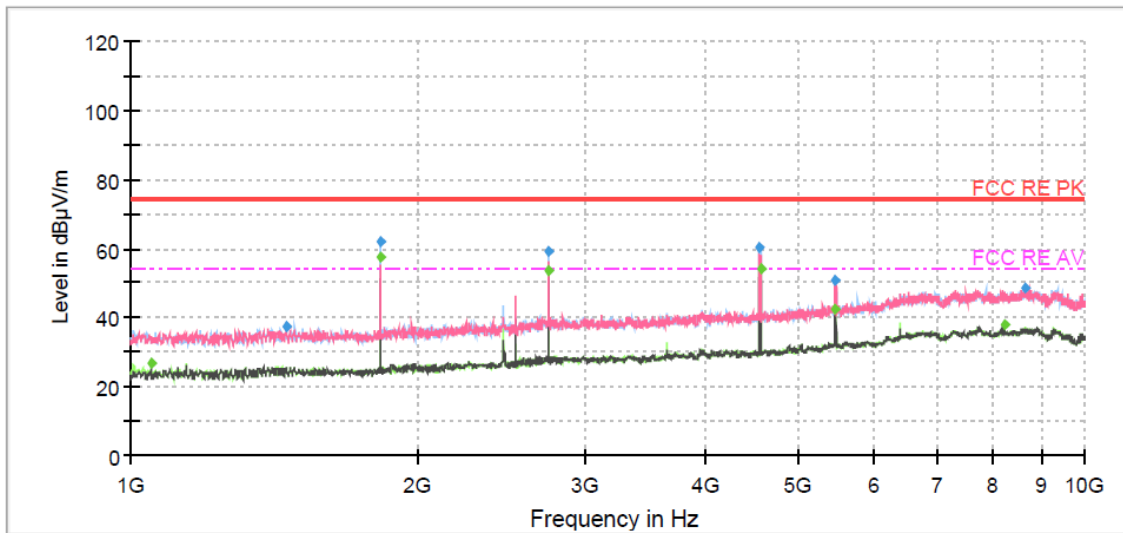
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Azimuth (deg)	Corr. (dB/m)
0.01	75.96	127.64	51.68	500.00	0.00	18
0.11	47.42	106.71	59.29	150.00	57.00	17
0.49	34.32	93.80	59.48	150.00	325.00	17
1.14	32.92	66.44	33.52	150.00	157.00	17
3.87	30.58	69.50	38.92	150.00	263.00	17
12.85	29.10	69.50	40.40	150.00	310.00	17



Note: The signal beyond the limit is carrier.
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)
54.00	26.09	40.00	13.91	1000.00	101.0	V	103.00	20
54.70	26.73	40.00	13.27	1000.00	102.0	V	346.00	20
141.95	27.37	43.50	16.13	1000.00	184.0	H	309.00	15
198.01	42.31	43.50	1.19	1000.00	175.0	H	130.00	18
264.01	44.55	46.00	1.45	1000.00	125.0	H	70.00	20
550.85	30.97	46.00	15.03	1000.00	125.0	H	17.00	26



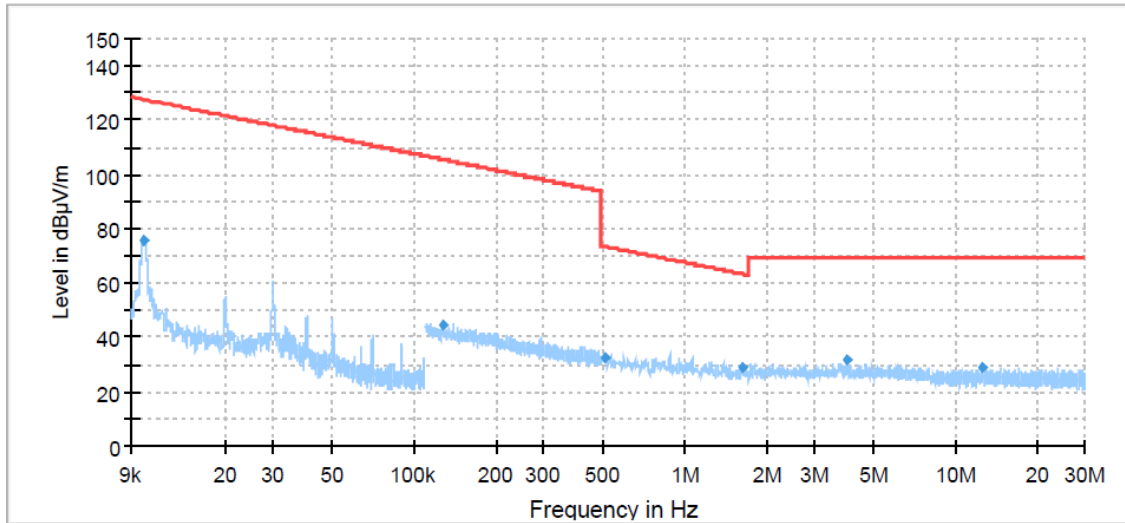
Radiates Emission from 1GHz to 10GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Duty cycle	Factor	Final Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1049.50	---	27.00	54.00	27.00	0.5	6.02	33.02	500.00	100.0	V	138.00	-16
1454.50	37.58	---	74.00	36.42	0.5	6.02	42.44	500.00	100.0	H	262.00	-14
1828.00	---	57.63	54.00	-3.63	0.5	6.02	2.39	500.00	200.0	H	14.00	-13
1828.00	61.96	---	74.00	12.04	0.5	6.02	18.06	500.00	200.0	H	14.00	-13
2741.50	---	53.72	54.00	0.28	0.5	6.02	6.30	500.00	100.0	H	146.00	-9
2741.50	58.95	---	74.00	15.05	0.5	6.02	21.07	500.00	100.0	H	146.00	-9
4568.50	60.22	---	74.00	13.78	0.5	6.02	19.80	500.00	200.0	H	14.00	-4
4570.75	---	54.35	54.00	-0.35	0.5	6.02	5.67	500.00	200.0	H	14.00	-4
5483.13	50.85	---	74.00	23.15	0.5	6.02	29.17	500.00	100.0	V	138.00	-2
5483.13	---	42.37	54.00	11.63	0.5	6.02	17.65	500.00	200.0	V	122.00	-2
8228.13	---	38.15	54.00	15.85	0.5	6.02	21.87	500.00	200.0	V	350.00	2
8656.75	48.62	---	74.00	25.38	0.5	6.02	31.40	500.00	200.0	V	284.00	4

Note: Factor = $20 \log (1/\text{Duty cycle}) = 6.02$

Final Margin = Margin + Factor

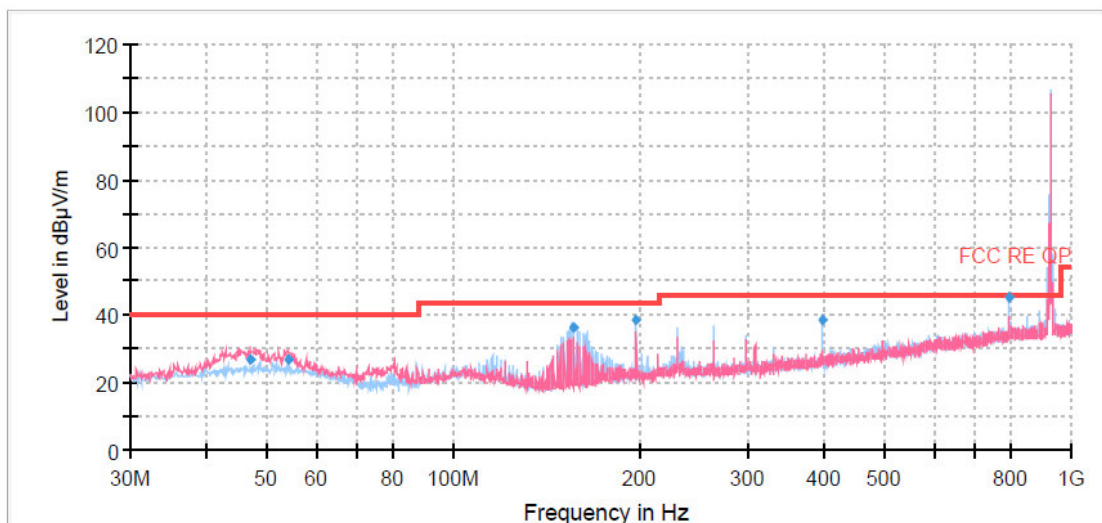
926MHz



Radiates Emission from 9kHz to 30MHz

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Azimuth (deg)	Corr. (dB/m)
0.01	76.01	127.59	51.59	500.00	57.00	18
0.13	44.72	105.44	60.73	150.00	333.00	17
0.50	32.23	73.54	41.31	150.00	357.00	17
1.63	29.31	63.33	34.03	150.00	234.00	17
3.99	32.02	69.50	37.48	150.00	357.00	17
12.44	29.32	69.50	40.18	150.00	357.00	17

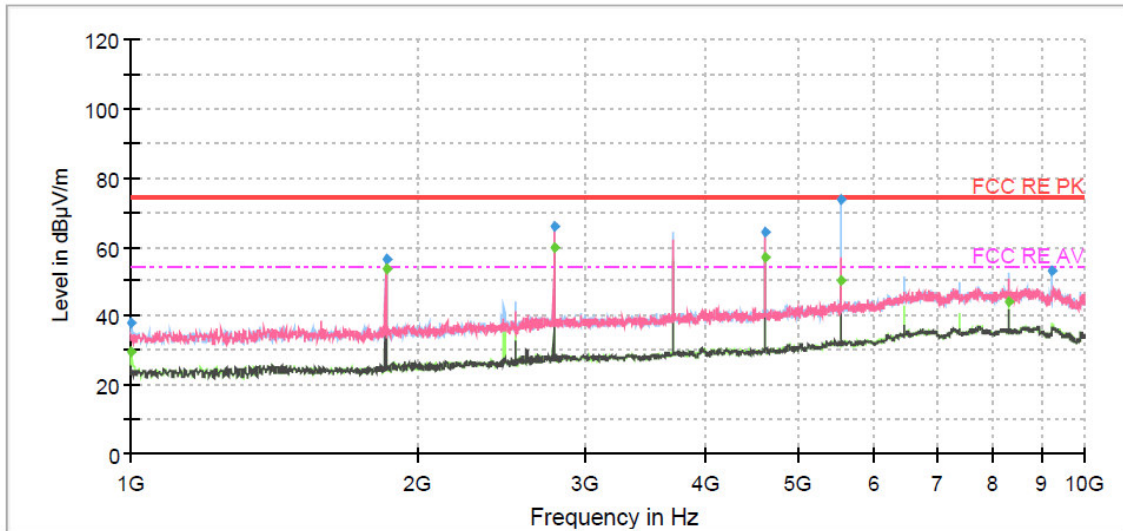


Note: The signal beyond the limit is carrier.

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)
47.10	26.88	40.00	13.12	1000.00	100.0	V	60.00	20
54.13	26.66	40.00	13.34	1000.00	100.0	V	24.00	20
156.83	36.28	43.50	7.22	1000.00	198.0	H	2.00	15
198.01	38.38	43.50	5.12	1000.00	175.0	H	331.00	18
396.01	38.37	46.00	7.63	1000.00	100.0	H	37.00	23
792.02	45.48	46.00	0.52	1000.00	109.0	H	120.00	30



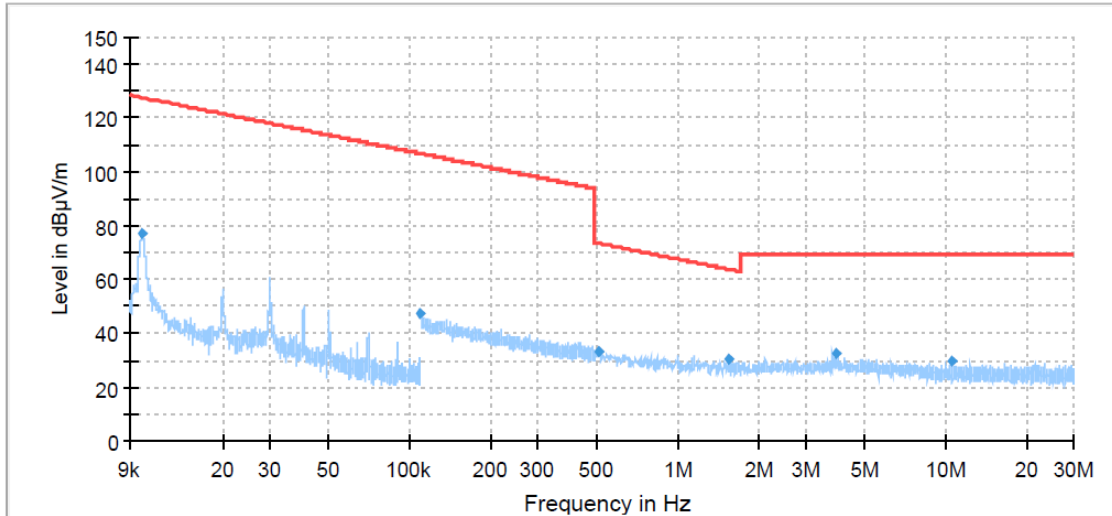
Radiates Emission from 1GHz to 10GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Duty cycle	Factor	Final Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1002.25	---	29.81	54.00	24.19	0.5	6.02	30.21	500.00	100.0	H	93.00	-17
1002.25	38.18	---	74.00	35.82	0.5	6.02	41.84	500.00	200.0	H	269.00	-17
1851.63	---	53.82	54.00	0.18	0.5	6.02	6.20	500.00	100.0	H	123.00	-13
1851.63	56.54	---	74.00	17.46	0.5	6.02	23.48	500.00	100.0	H	123.00	-13
2776.38	65.99	---	74.00	8.01	0.5	6.02	14.03	500.00	100.0	V	197.00	-8
2777.50	---	59.86	54.00	-5.86	0.5	6.02	0.16	500.00	100.0	V	197.00	-8
4629.25	---	56.87	54.00	-2.87	0.5	6.02	3.15	500.00	200.0	V	163.00	-4
4630.38	64.36	---	74.00	9.64	0.5	6.02	15.66	500.00	200.0	V	163.00	-4
5555.13	73.61	---	74.00	0.39	0.5	6.02	6.41	500.00	200.0	H	56.00	-2
5557.38	---	49.97	54.00	4.03	0.5	6.02	10.05	500.00	100.0	V	359.00	-2
8336.13	---	43.83	54.00	10.17	0.5	6.02	16.19	500.00	200.0	H	328.00	2
9260.88	52.78	---	74.00	21.22	0.5	6.02	27.24	500.00	100.0	H	2.00	6

Note: Factor = $20 \log (1/\text{Duty cycle}) = 6.02$

Final Margin = Margin + Factor

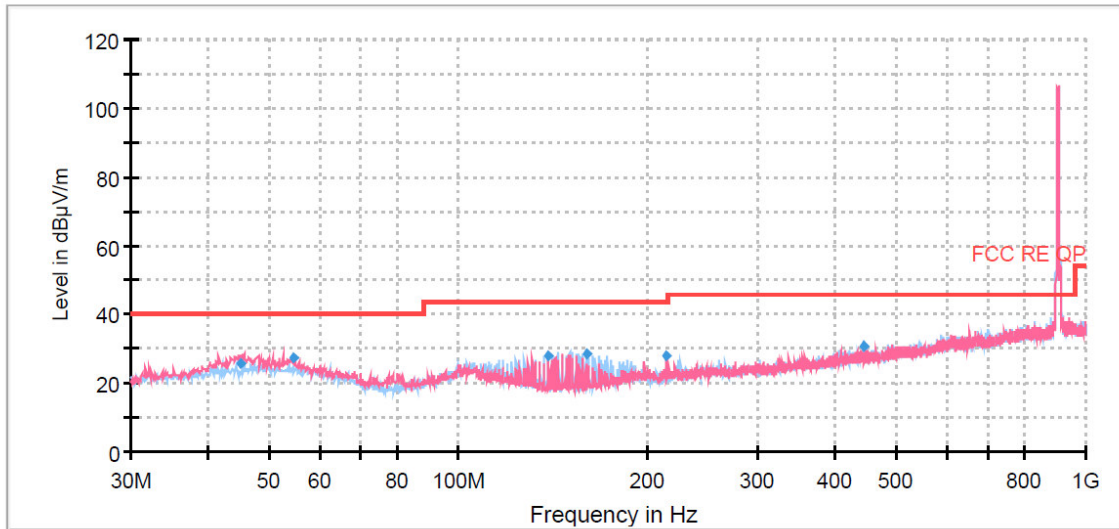
ELBOW Antenna
904MHz



Radiates Emission from 9kHz to 30MHz

Final Result

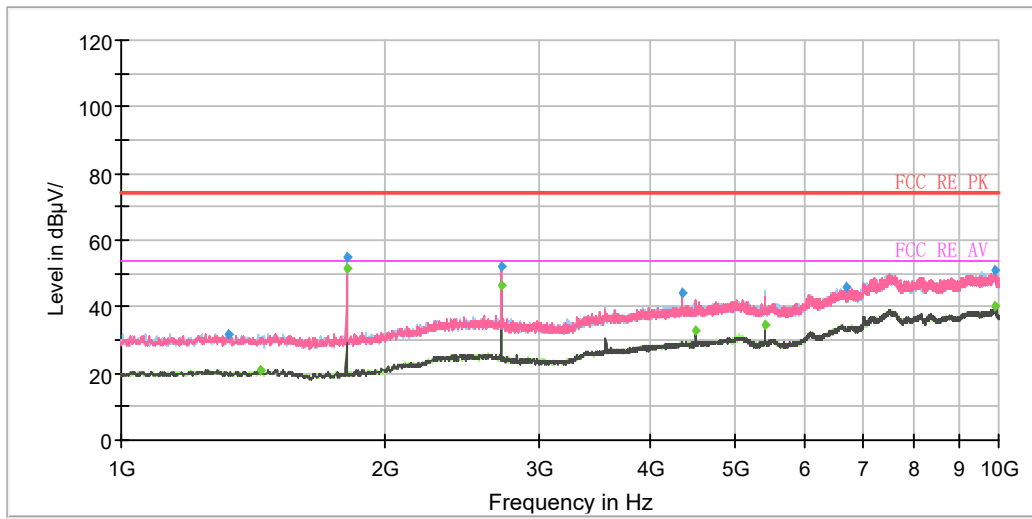
Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Azimuth (deg)	Corr. (dB/m)
0.01	76.93	127.62	50.69	500.00	3.00	18
0.11	47.63	106.78	59.15	150.00	84.00	17
0.51	33.47	73.48	40.01	150.00	2.00	17
1.56	30.56	63.76	33.19	150.00	28.00	17
3.88	32.77	69.50	36.73	150.00	239.00	17
10.57	29.38	69.50	40.12	150.00	327.00	17



Note: The signal beyond the limit is carrier.
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)
44.92	25.59	40.00	14.41	1000.00	100.0	V	144.00	20
54.69	27.08	40.00	12.92	1000.00	100.0	V	110.00	20
138.84	27.69	43.50	15.81	1000.00	175.0	H	322.00	15
159.78	28.59	43.50	14.91	1000.00	198.0	H	0.00	16
214.50	28.17	43.50	15.33	1000.00	213.0	V	194.00	18
443.06	30.68	46.00	15.32	1000.00	200.0	H	132.00	24



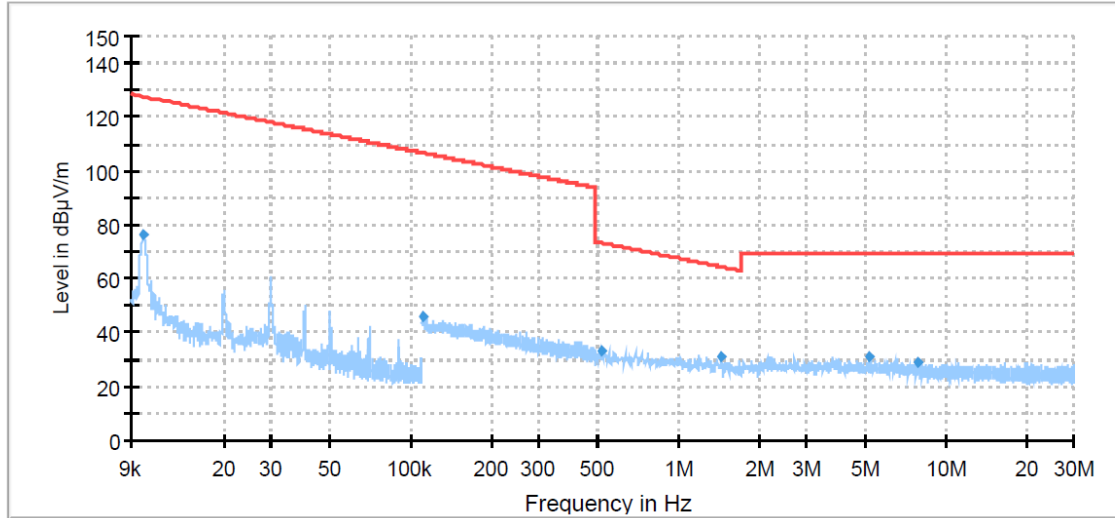
Radiates Emission from 1GHz to 10GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Duty cycle	Factor	Final Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
1328.50	31.97	---	74.00	42.03	0.5	6.02	48.05	500.00	200.0	H	21.00
1439.88	---	20.95	54.00	33.05	0.5	6.02	39.07	500.00	200.0	H	0.00
1806.63	54.73	---	74.00	19.27	0.5	6.02	25.29	500.00	200.0	H	93.00
1807.75	---	51.74	54.00	2.26	0.5	6.02	8.28	500.00	200.0	H	93.00
2711.13	---	46.53	54.00	7.47	0.5	6.02	13.49	500.00	200.0	V	325.00
2712.25	52.12	---	74.00	21.88	0.5	6.02	27.90	500.00	200.0	V	325.00
4357.00	44.03	---	74.00	29.97	0.5	6.02	35.99	500.00	200.0	V	135.00
4521.25	---	32.68	54.00	21.32	0.5	6.02	27.34	500.00	200.0	H	358.00
5424.63	---	34.53	54.00	19.47	0.5	6.02	25.49	500.00	200.0	H	93.00
6703.75	45.93	---	74.00	28.07	0.5	6.02	34.09	500.00	200.0	V	21.00
9887.50	---	39.97	54.00	14.03	0.5	6.02	20.05	500.00	200.0	H	256.00
9899.88	51.19	---	74.00	22.81	0.5	6.02	28.83	500.00	200.0	H	343.00

Note: Factor = $20 \log (1 / \text{Duty cycle}) = 6.02$

Final Margin = Margin + Factor

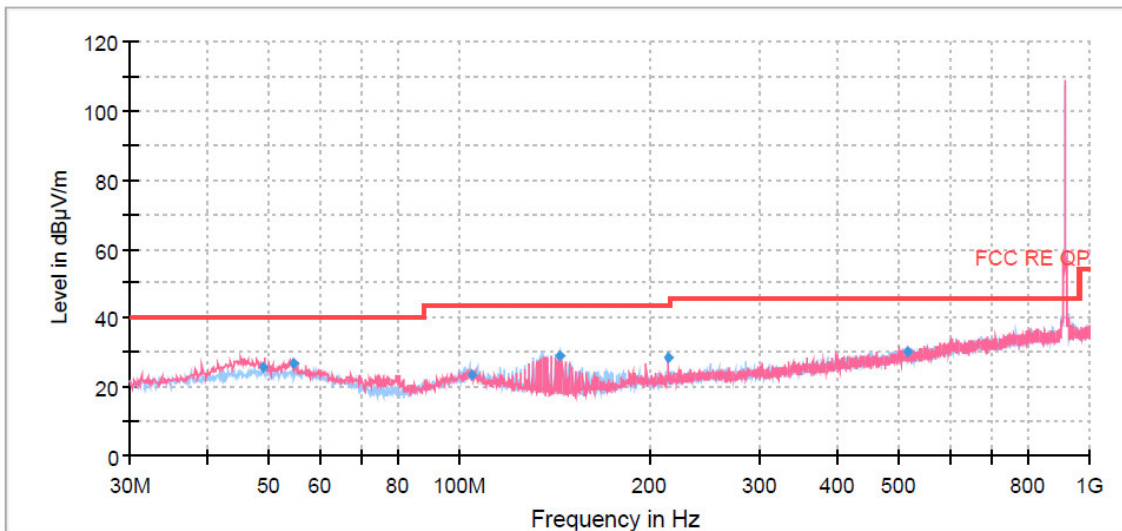
914MHz



Radiates Emission from 9kHz to 30MHz

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Azimuth (deg)	Corr. (dB/m)
0.01	76.50	127.58	51.08	500.00	18.00	18
0.11	46.25	106.73	60.47	150.00	353.00	17
0.52	33.47	73.29	39.82	150.00	349.00	17
1.45	30.88	64.37	33.50	150.00	185.00	17
5.19	31.11	69.50	38.39	150.00	185.00	17
7.88	29.28	69.50	40.22	150.00	27.00	17

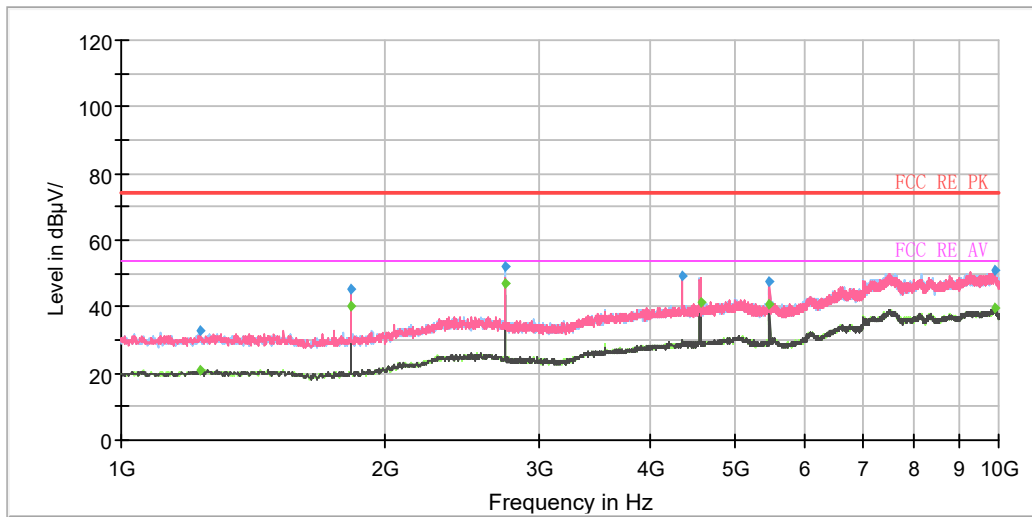


Note: The signal beyond the limit is carrier.

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)
48.64	25.70	40.00	14.30	1000.00	110.0	V	126.00	20
54.69	26.81	40.00	13.19	1000.00	101.0	V	22.00	20
104.37	23.17	43.50	20.33	1000.00	101.0	V	0.00	18
143.77	28.80	43.50	14.70	1000.00	175.0	H	320.00	15
214.50	28.19	43.50	15.31	1000.00	212.0	V	0.00	18
515.01	30.23	46.00	15.77	1000.00	100.0	V	332.00	26



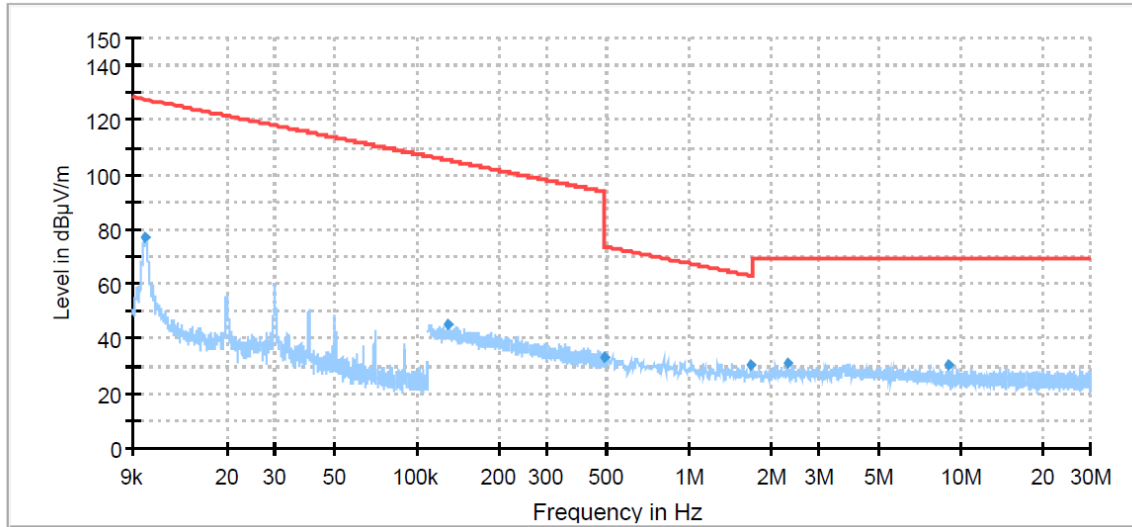
Radiates Emission from 1GHz to 10GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Duty cycle	Factor	Final Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
1231.75	32.56	---	74.00	41.44	0.5	6.02	47.46	500.00	200.0	V	2.00
1232.88	---	21.07	54.00	32.93	0.5	6.02	38.95	500.00	200.0	H	350.00
1826.88	45.09	---	74.00	28.91	0.5	6.02	34.93	500.00	200.0	V	137.00
1828.00	---	40.29	54.00	13.71	0.5	6.02	19.73	500.00	200.0	V	137.00
2741.50	---	47.07	54.00	6.93	0.5	6.02	12.95	500.00	200.0	H	318.00
2742.63	51.82	---	74.00	22.18	0.5	6.02	28.20	500.00	200.0	H	318.00
4355.88	49.15	---	74.00	24.85	0.5	6.02	30.87	500.00	200.0	V	0.00
4570.75	---	41.34	54.00	12.66	0.5	6.02	18.68	500.00	200.0	V	0.00
5485.38	47.51	---	74.00	26.49	0.5	6.02	32.51	500.00	200.0	V	185.00
5485.38	---	40.69	54.00	13.31	0.5	6.02	19.33	500.00	200.0	V	185.00
9901.00	---	39.67	54.00	14.33	0.5	6.02	20.35	500.00	200.0	H	0.00
9906.63	51.09	---	74.00	22.91	0.5	6.02	28.93	500.00	200.0	H	226.00

Note: Factor = $20 \log(1/\text{Duty cycle}) = 6.02$

Final Margin = Margin + Factor

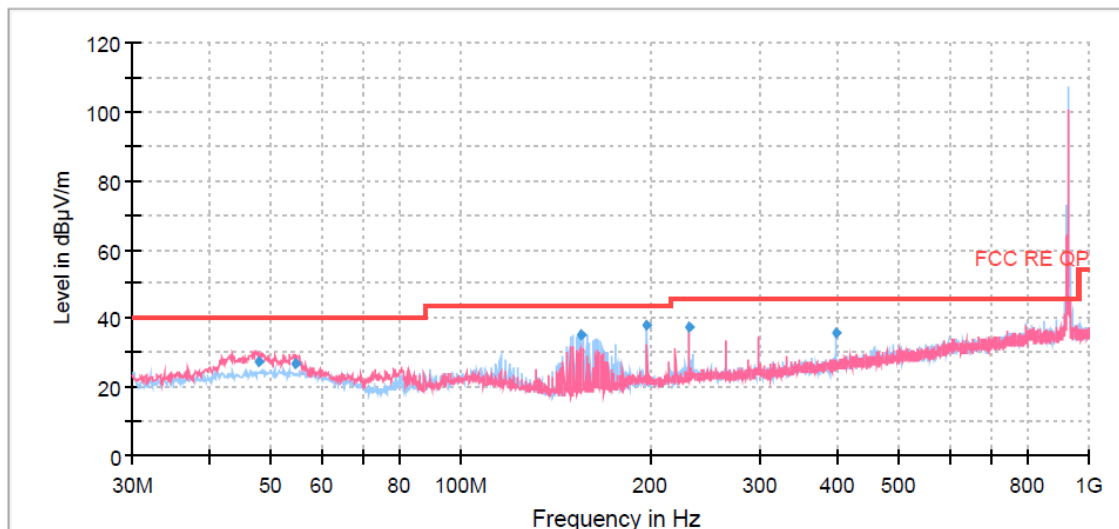
926MHz



Radiates Emission from 9kHz to 30MHz

Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Azimuth (deg)	Corr. (dB/m)
0.01	77.12	127.60	50.48	500.00	359.00	18
0.13	44.95	105.30	60.35	150.00	0.00	17
0.49	32.90	93.80	60.90	150.00	219.00	17
1.68	30.30	63.08	32.78	150.00	347.00	17
2.30	30.79	69.50	38.71	150.00	208.00	17
8.93	30.17	69.50	39.33	150.00	182.00	17

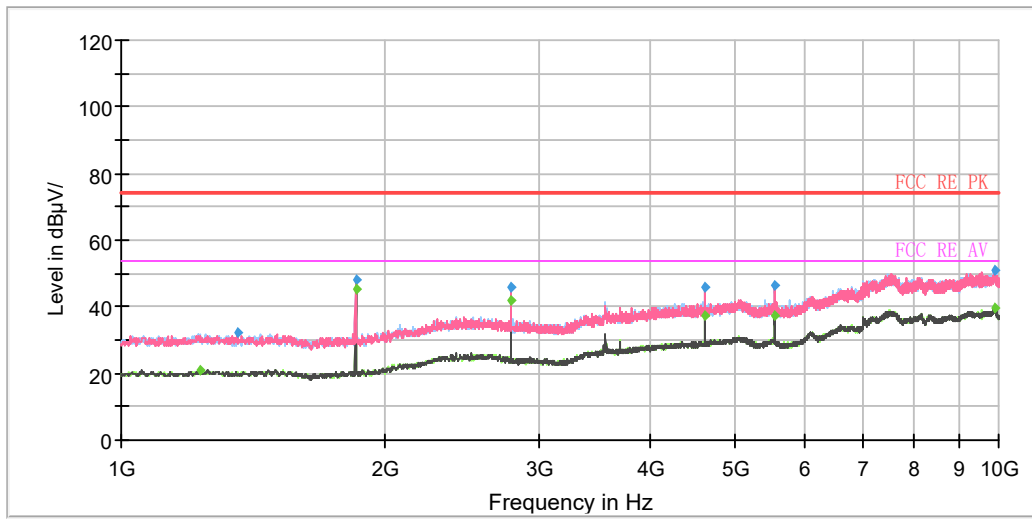


Note: The signal beyond the limit is carrier.

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)
47.66	27.12	40.00	12.88	1000.00	100.0	V	59.00	20
54.69	27.03	40.00	12.97	1000.00	100.0	V	101.00	20
154.97	35.38	43.50	8.12	1000.00	184.0	H	334.00	15
198.01	37.73	43.50	5.77	1000.00	174.0	H	118.00	18
230.99	37.19	46.00	8.81	1000.00	174.0	H	125.00	19
396.01	35.69	46.00	10.31	1000.00	100.0	H	44.00	23



Radiates Emission from 1GHz to 10GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Duty cycle	Factor	Final Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)
1229.50	---	20.90	54.00	33.10	0.5	6.02	39.12	500.00	200.0	V	22.00
1355.50	32.01	---	74.00	41.99	0.5	6.02	48.01	500.00	200.0	V	89.00
1851.63	48.29	---	74.00	25.71	0.5	6.02	31.73	500.00	200.0	V	65.00
1851.63	---	45.14	54.00	8.86	0.5	6.02	14.88	500.00	200.0	V	65.00
2776.38	45.97	---	74.00	28.03	0.5	6.02	34.05	500.00	200.0	H	93.00
2777.50	---	41.74	54.00	12.26	0.5	6.02	18.28	500.00	200.0	H	93.00
4630.38	---	37.23	54.00	16.77	0.5	6.02	22.79	500.00	200.0	V	10.00
4631.50	46.10	---	74.00	27.90	0.5	6.02	33.92	500.00	200.0	V	10.00
5555.13	---	37.51	54.00	16.49	0.5	6.02	22.51	500.00	200.0	V	112.00
5555.13	46.32	---	74.00	27.68	0.5	6.02	33.70	500.00	200.0	V	112.00
9881.88	50.90	---	74.00	23.10	0.5	6.02	29.12	500.00	200.0	H	303.00
9890.88	---	39.49	54.00	14.51	0.5	6.02	20.53	500.00	200.0	H	46.00

Note: Factor = 20 log (1/ Duty cycle) = 6.02

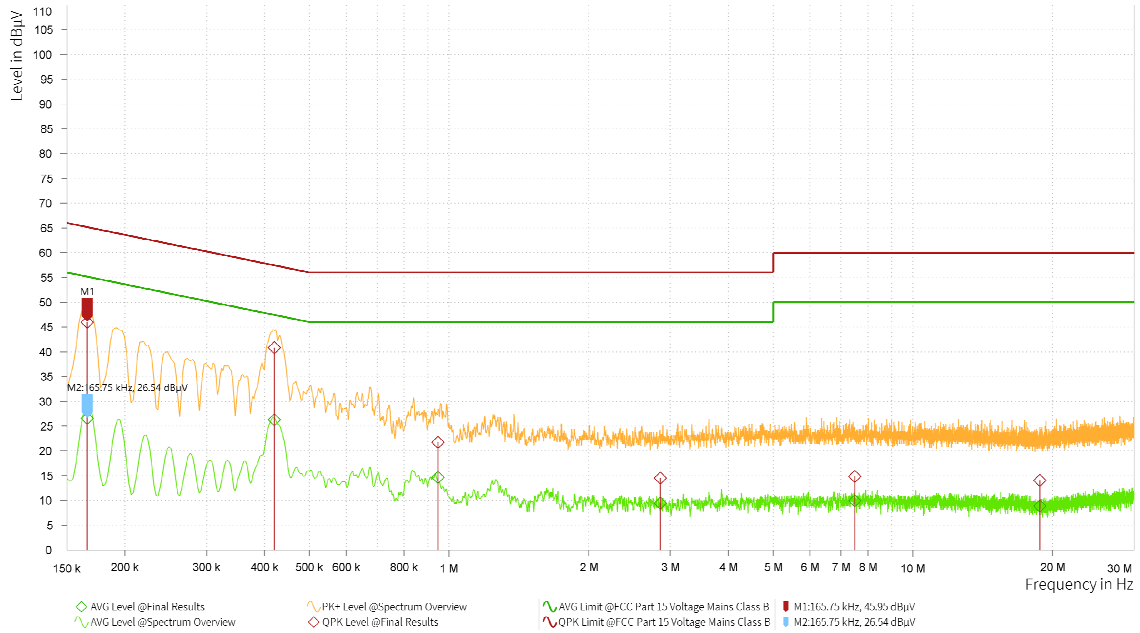
Final Margin = Margin + Factor

2. Conducted Emission

2.1. Sub-G

During the test, the Conducted Emission was performed in all modes with all channel. The test data of the worst-case condition (**STRAIGHTHEAD Antenna, 926MHz**) was recorded in this report.

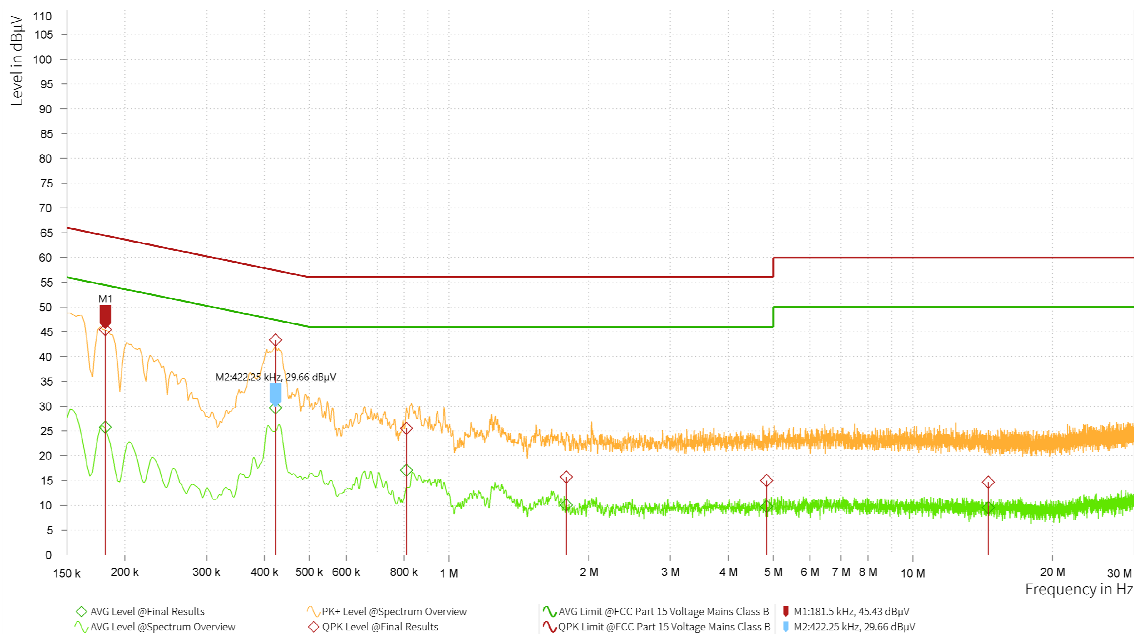
STRAIGHTHEAD Antenna



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]
0.166	45.95	65.17	19.22	26.54	55.17	28.63	20.89	L1	9.000	1.000
0.420	40.83	57.45	16.62	26.26	47.45	21.19	20.86	L1	9.000	1.000
0.947	21.71	56.00	34.29	14.65	46.00	31.35	20.20	L1	9.000	1.000
2.855	14.50	56.00	41.50	9.42	46.00	36.58	19.50	L1	9.000	1.000
7.496	14.86	60.00	45.14	9.93	50.00	40.07	19.41	L1	9.000	1.000
18.796	14.03	60.00	45.97	8.87	50.00	41.13	19.62	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]
0.182	45.43	64.42	18.99	25.76	54.42	28.66	21.04	N	9.000	1.000
0.422	43.33	57.40	14.07	29.66	47.40	17.74	20.86	N	9.000	1.000
0.809	25.51	56.00	30.49	17.06	46.00	28.94	20.33	N	9.000	1.000
1.790	15.71	56.00	40.29	10.03	46.00	35.97	19.73	N	9.000	1.000
4.837	15.01	56.00	40.99	9.76	46.00	36.24	19.41	N	9.000	1.000
14.557	14.66	60.00	45.34	9.52	50.00	40.48	19.52	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz