

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.

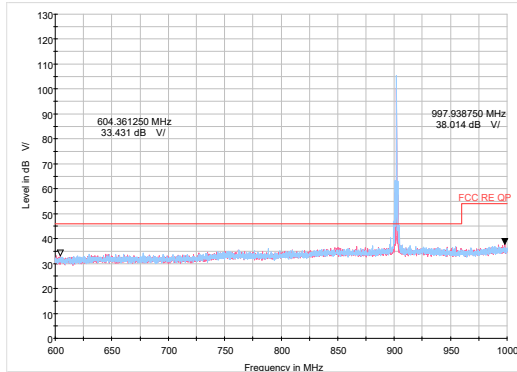
1. Unwanted Emission

1.1. LoRa

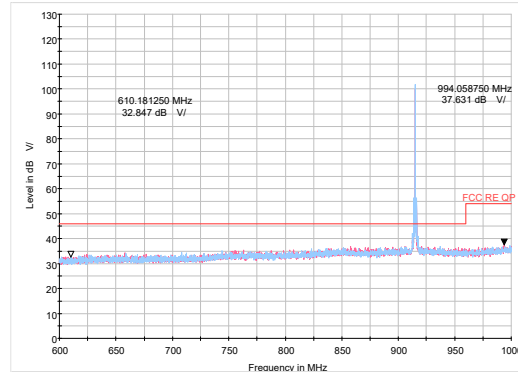
The following graphs display the maximum values of horizontal and vertical by software. Blue trace uses the peak detection, Red trace uses the average detection.

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

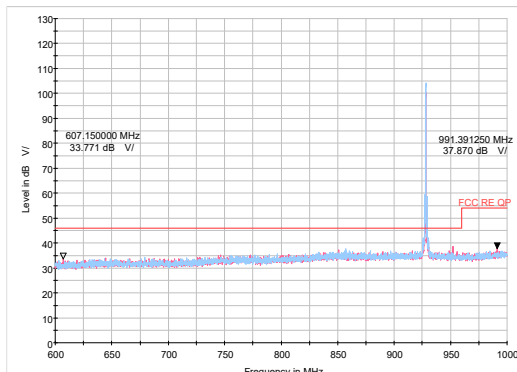
The signal beyond the limit is carrier.



903MHz Peak+ Average



915MHz Peak+Average



927.5MHz 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 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 (dB μ V/m) in the test plot below means (dB μ V/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**

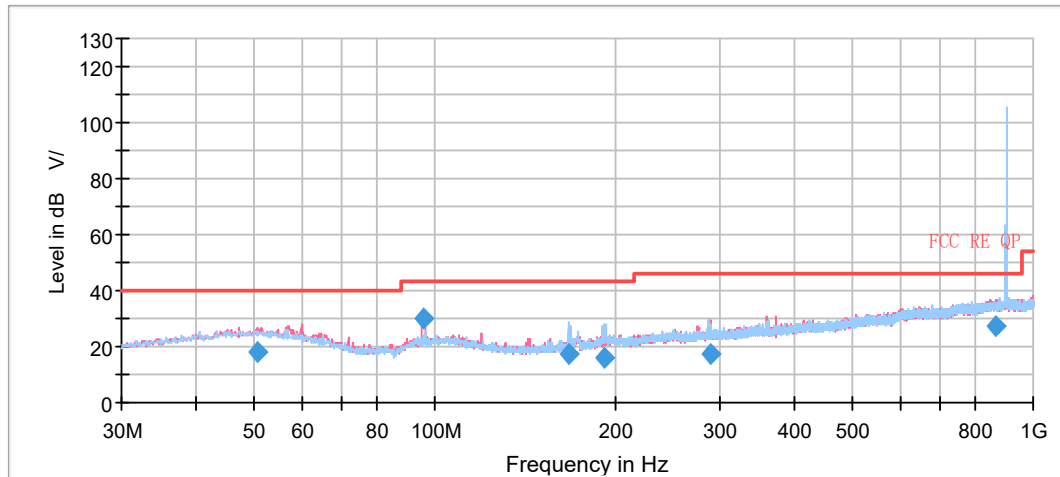
 QP Level @Spectrum Overview H
  QP Level @Spectrum Overview V
  QP Level @Final Results
  QP Limit

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:

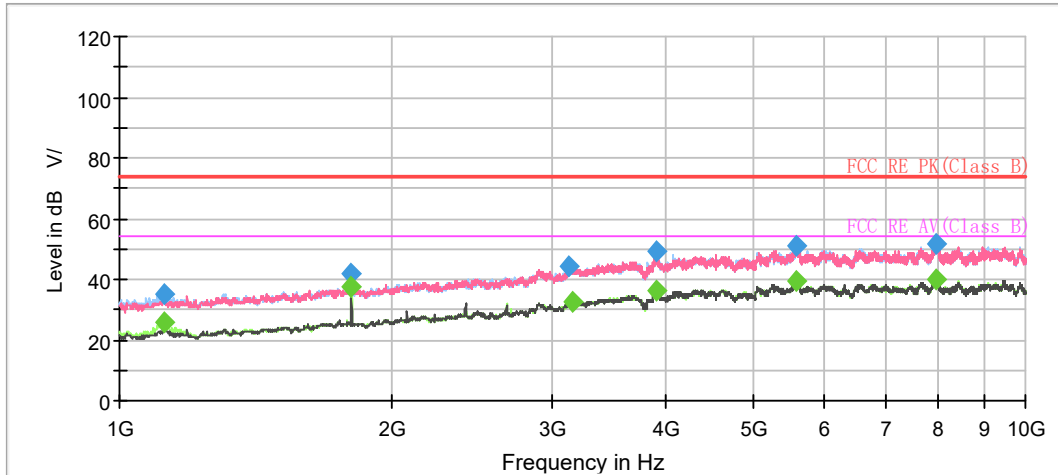
903MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 30MHz to 1GHz

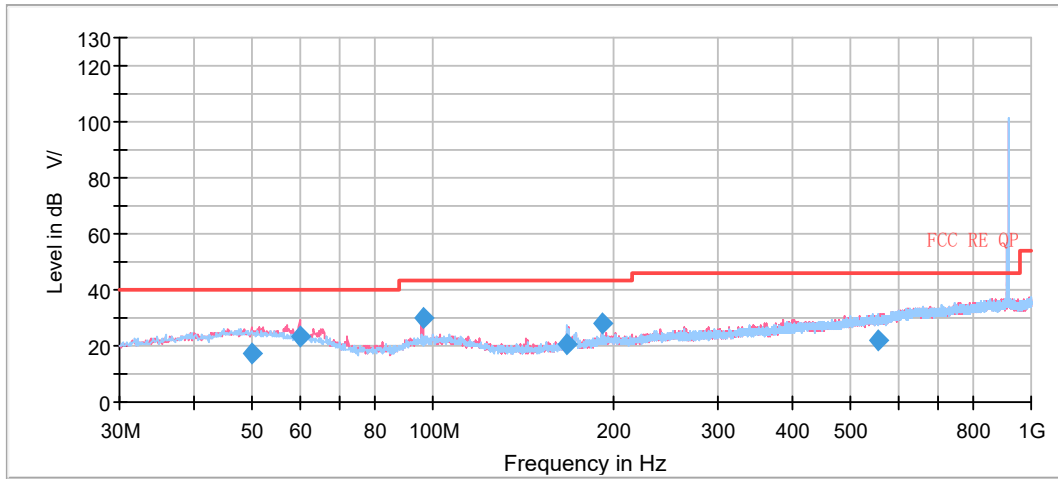
Frequency (MHz)	Quasi-Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
50.612500	18.01	40.00	21.99	100.0	V	110.0	21.2
96.081250	29.87	43.50	13.63	100.0	V	235.0	18.7
168.103750	17.16	43.50	26.34	125.0	H	80.0	16.5
191.990000	15.70	43.50	27.80	179.0	H	67.0	18.8
288.383750	17.23	46.00	28.77	117.0	V	110.0	20.9
866.867500	27.57	46.00	18.43	175.0	V	336.0	30.7



Radiates Emission from 1GHz to 10GHz

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)
1120.375000	35.21	---	74.00	38.79	500.0	100.0	H	161.0	-15.3
1120.375000	---	25.83	54.00	28.17	500.0	100.0	H	161.0	-15.3
1803.250000	41.94	---	74.00	32.06	500.0	100.0	H	108.0	-9.2
1803.250000	---	37.82	54.00	16.18	500.0	100.0	H	108.0	-9.2
3139.750000	44.04	---	74.00	29.96	500.0	200.0	H	39.0	-0.9
3162.250000	---	32.65	54.00	21.35	500.0	200.0	V	112.0	-1.0
3908.125000	48.98	---	74.00	25.02	500.0	200.0	H	2.0	3.7
3910.375000	---	36.49	54.00	17.51	500.0	200.0	H	309.0	3.6
5582.125000	50.79	---	74.00	23.21	500.0	200.0	V	285.0	7.6
5595.625000	---	39.61	54.00	14.39	500.0	200.0	H	169.0	8.0
7962.625000	---	39.98	54.00	14.02	500.0	100.0	H	225.0	9.9
7978.375000	51.52	---	74.00	22.48	500.0	100.0	V	317.0	9.9

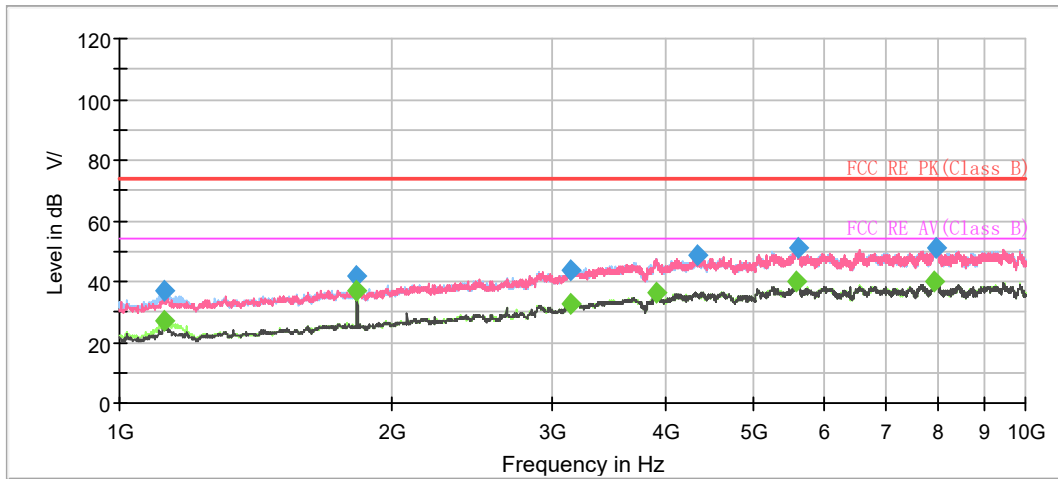
915MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 30MHz to 1GHz

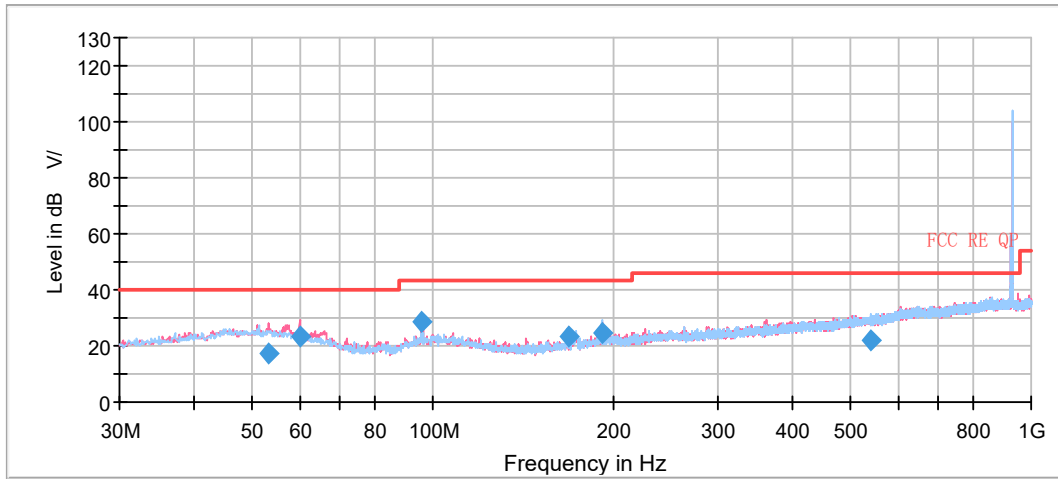
Frequency (MHz)	Quasi-Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
49.763750	17.07	40.00	22.93	112.0	V	0.0	21.2
59.948750	23.19	40.00	16.81	105.0	V	149.0	19.7
96.323750	30.16	43.50	13.34	107.0	V	95.0	18.7
167.618750	20.80	43.50	22.70	212.0	H	250.0	16.5
191.626250	27.83	43.50	15.67	185.0	H	57.0	18.7
555.861250	21.91	46.00	24.09	195.0	H	250.0	26.2



Radiates Emission from 1GHz to 10GHz

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)
1120.375000	---	26.96	54.00	27.04	500.0	100.0	H	148.0	-15.3
1121.500000	36.72	---	74.00	37.28	500.0	100.0	H	157.0	-15.3
1829.125000	---	36.82	54.00	17.18	500.0	100.0	H	104.0	-9.4
1829.125000	41.84	---	74.00	32.16	500.0	100.0	H	104.0	-9.4
3142.000000	43.74	---	74.00	30.26	500.0	200.0	V	104.0	-0.9
3142.000000	---	32.49	54.00	21.51	500.0	200.0	V	104.0	-0.9
3914.875000	---	36.46	54.00	17.54	500.0	200.0	V	159.0	3.3
4335.625000	48.44	---	74.00	25.56	500.0	200.0	H	21.0	3.2
5595.625000	---	39.74	54.00	14.26	500.0	200.0	V	238.0	8.0
5601.250000	50.93	---	74.00	23.07	500.0	100.0	H	201.0	7.6
7942.375000	---	39.96	54.00	14.04	500.0	200.0	H	181.0	9.9
7975.000000	50.79	---	74.00	23.21	500.0	100.0	V	131.0	9.9

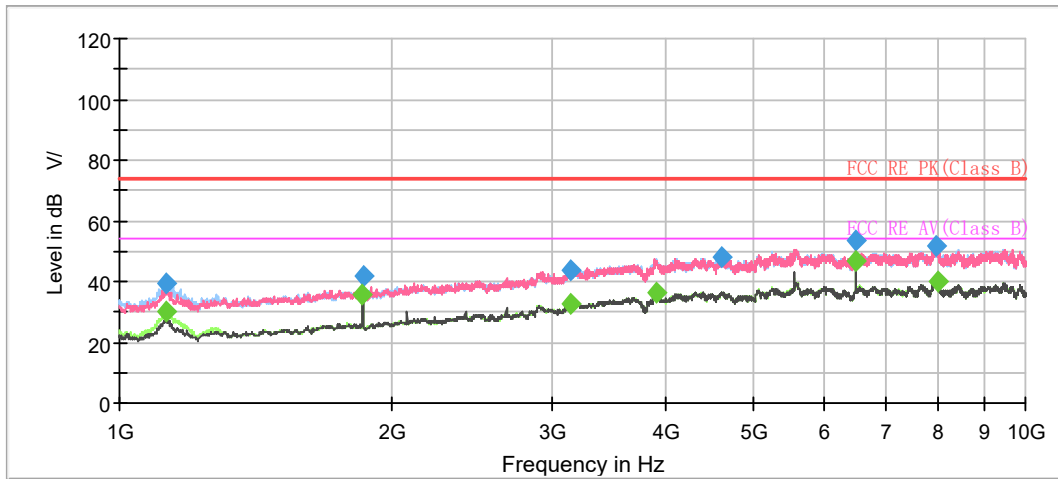
927.5MHz



Note: The signal beyond the limit is carrier.

Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
53.280000	17.30	40.00	22.70	185.0	V	70.0	21.0
59.948750	23.66	40.00	16.34	112.0	V	0.0	19.7
95.717500	28.66	43.50	14.84	107.0	V	179.0	18.6
168.467500	23.48	43.50	20.02	103.0	V	142.0	16.5
191.505000	24.51	43.50	18.99	212.0	H	45.0	18.7
540.462500	21.83	46.00	24.17	195.0	H	268.0	26.1



Radiates Emission from 1GHz to 10GHz

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)
1123.750000	---	29.92	54.00	24.08	500.0	100.0	H	163.0	-15.3
1126.000000	39.39	---	74.00	34.61	500.0	200.0	H	132.0	-15.3
1855.000000	---	35.92	54.00	18.08	500.0	100.0	H	110.0	-9.5
1856.125000	42.04	---	74.00	31.96	500.0	100.0	H	110.0	-9.5
3144.250000	43.93	---	74.00	30.07	500.0	100.0	H	229.0	-0.9
3154.375000	---	32.61	54.00	21.39	500.0	100.0	H	354.0	-1.0
3911.500000	---	36.44	54.00	17.56	500.0	100.0	H	326.0	3.5
4630.375000	47.98	---	74.00	26.02	500.0	100.0	H	66.0	3.9
6495.625000	53.30	---	74.00	20.70	500.0	100.0	V	150.0	6.0
6495.625000	---	46.94	54.00	7.06	500.0	100.0	V	150.0	6.0
7969.375000	51.54	---	74.00	22.46	500.0	200.0	V	241.0	9.9
7988.500000	---	39.97	54.00	14.03	500.0	100.0	H	58.0	9.9

2. Conducted Emission

The equipment is not connected to the public network, so test items do not apply.