5.7 Spurious RF Conducted Emissions

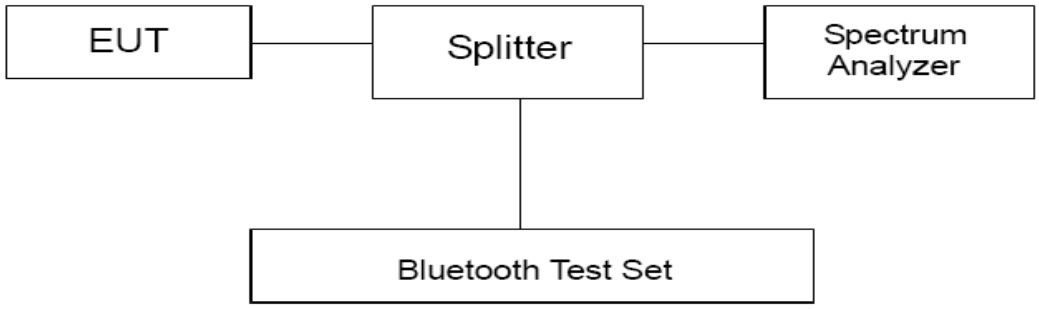
Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

The EUT was connected to the spectrum analyzer and Bluetooth test set via a power splitter with a known loss. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. The peak detector is used. Set RBW 100kHz and VBW 300 kHz, Sweep is set to AUTO.
The test is in transmitting mode.

Test setup



Limits

Rule Part 15.247(d) pacifies that “In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.”

Test Mode	Carrier frequency (MHz)	Reference value (dBm)	Limit
DH5	2402	11.850	-8.15
	2441	9.200	-10.80
	2480	6.610	-13.39
2DH5	2402	11.450	-8.55
	2441	8.570	-11.43
	2480	6.120	-13.88
3DH5	2402	11.570	-8.43
	2441	8.830	-11.17
	2480	6.400	-13.60

Measurement Uncertainty

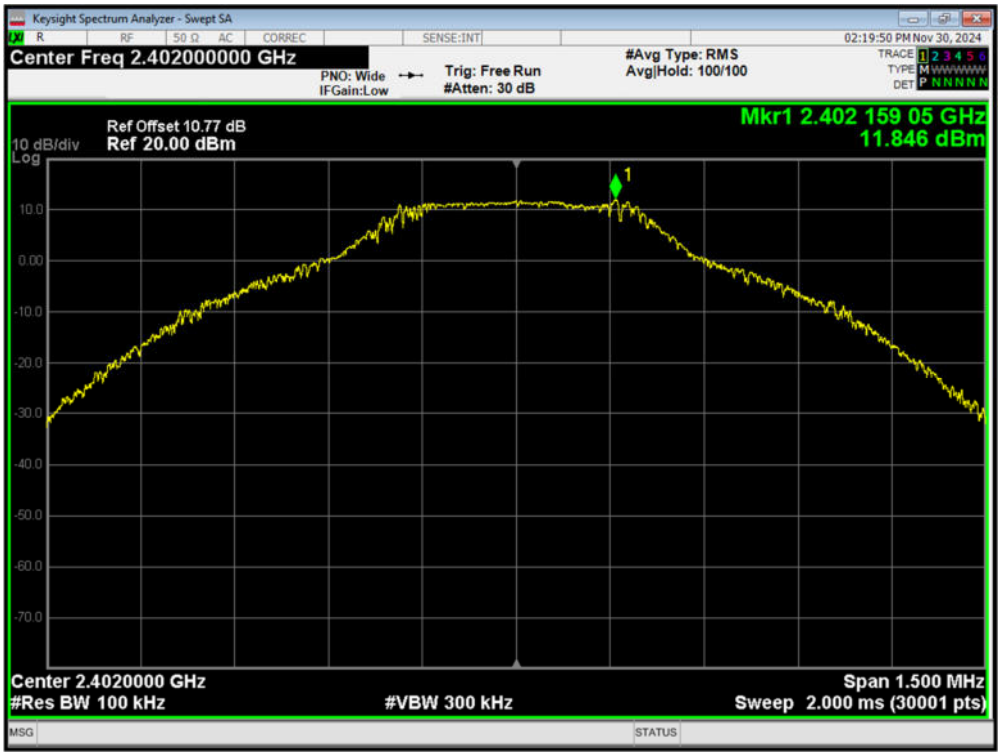
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

Frequency	Uncertainty
100kHz-2GHz	0.684 dB
2GHz-26GHz	1.407 dB

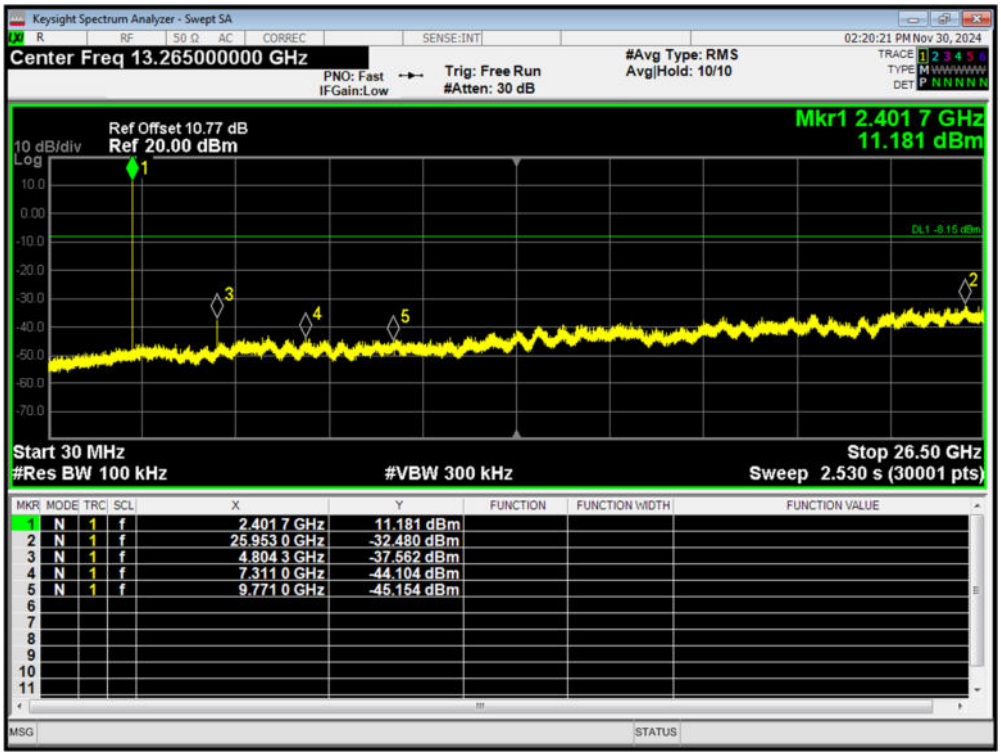
Test Results:

The signal beyond the limit is carrier.

Tx. Spurious 1-DH5 2402MHz Ref

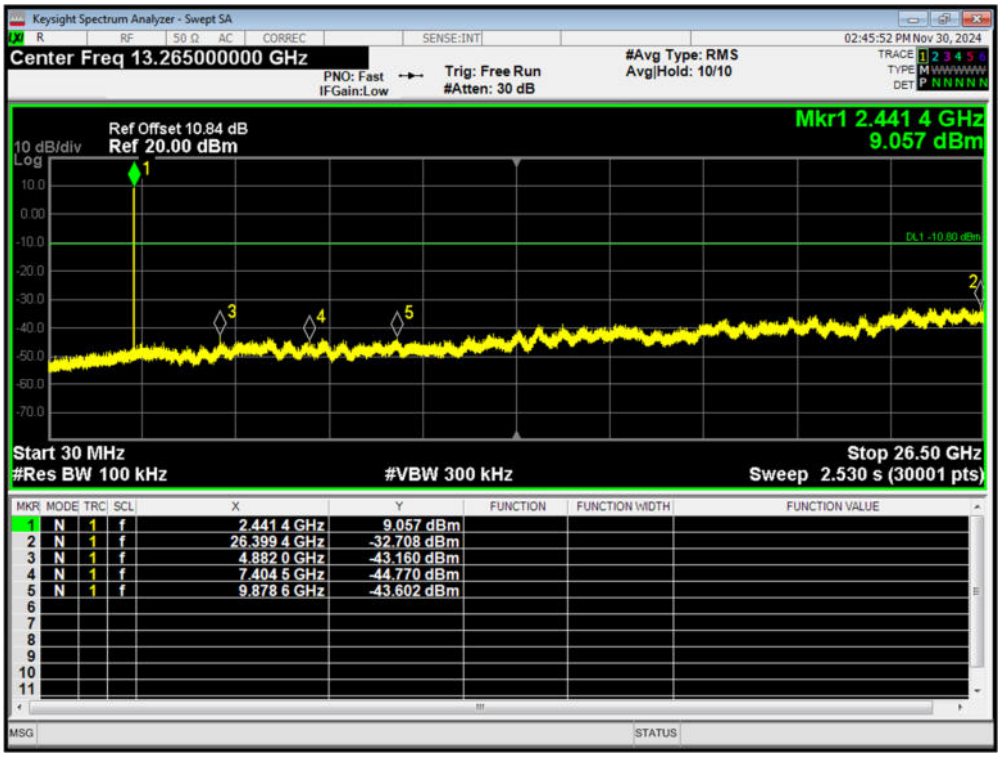


Tx. Spurious 1-DH5 2402MHz Emission

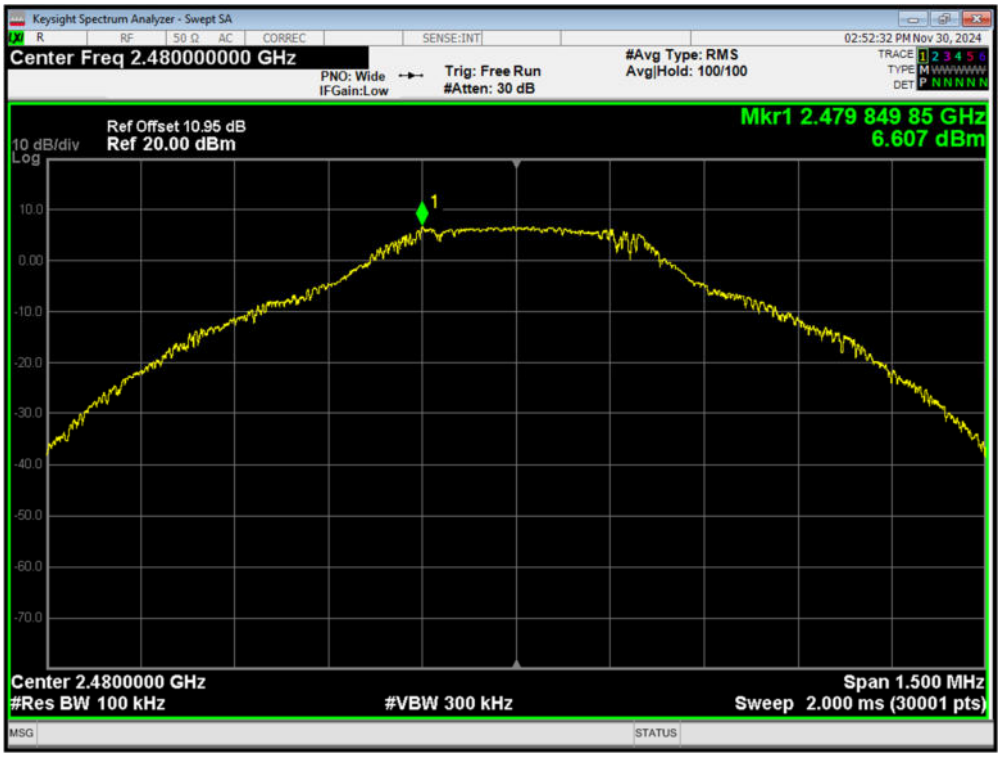


Tx. Spurious 1-DH5 2441MHz Ref

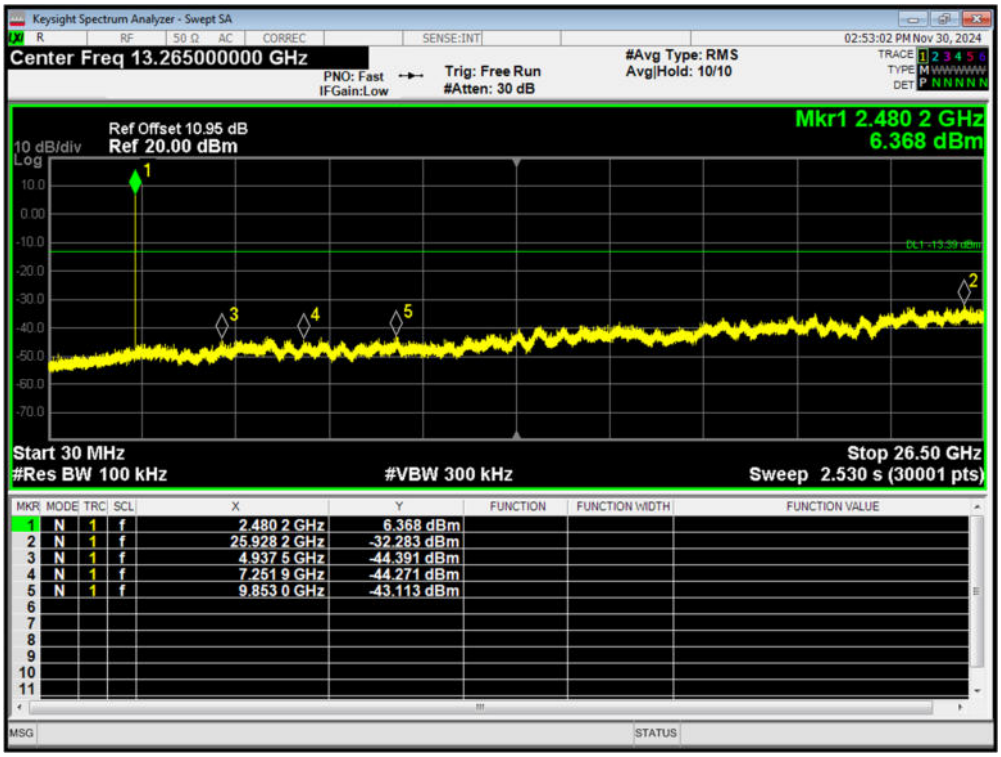
Tx. Spurious 1-DH5 2441MHz Emission



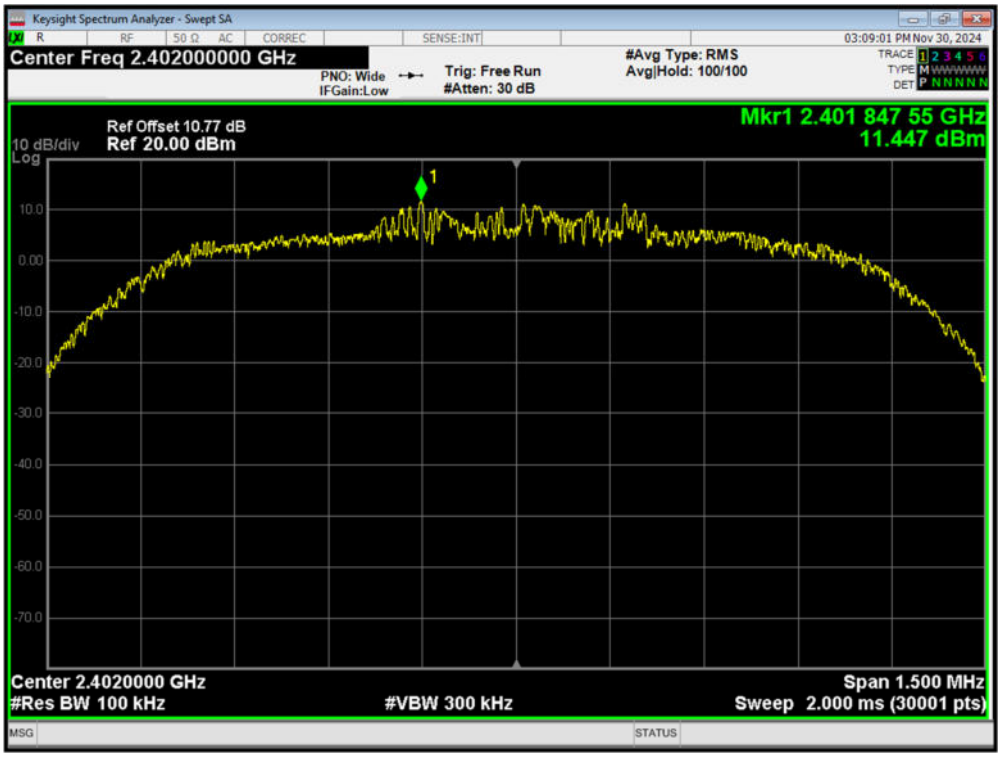
Tx. Spurious 1-DH5 2480MHz Ref



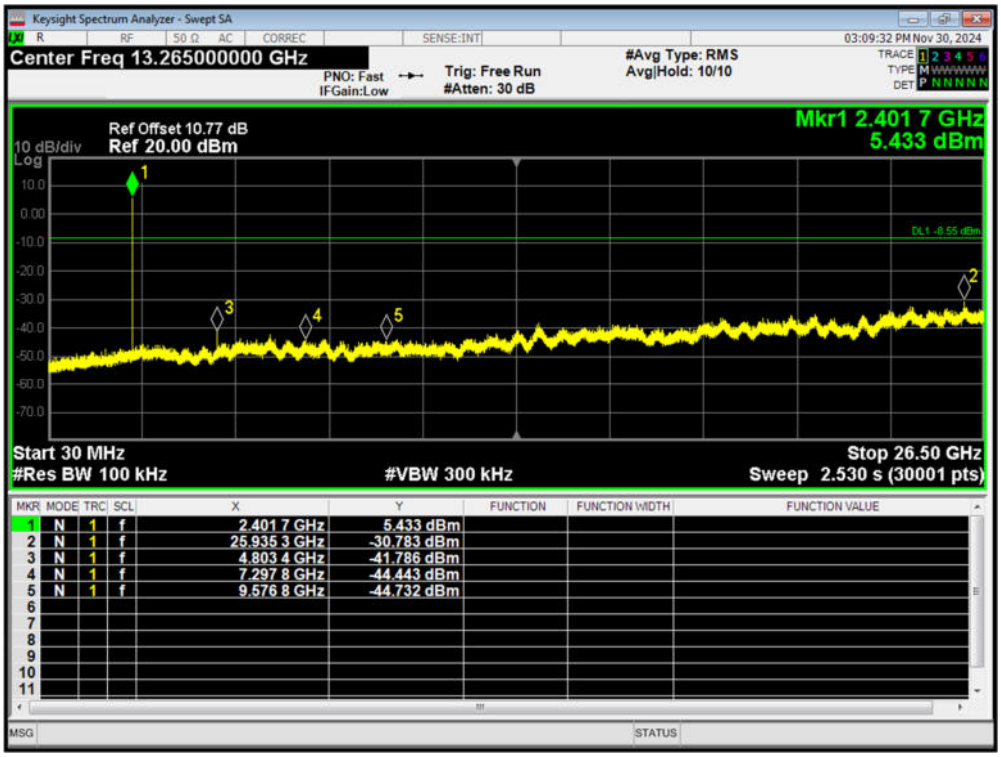
Tx. Spurious 1-DH5 2480MHz Emission



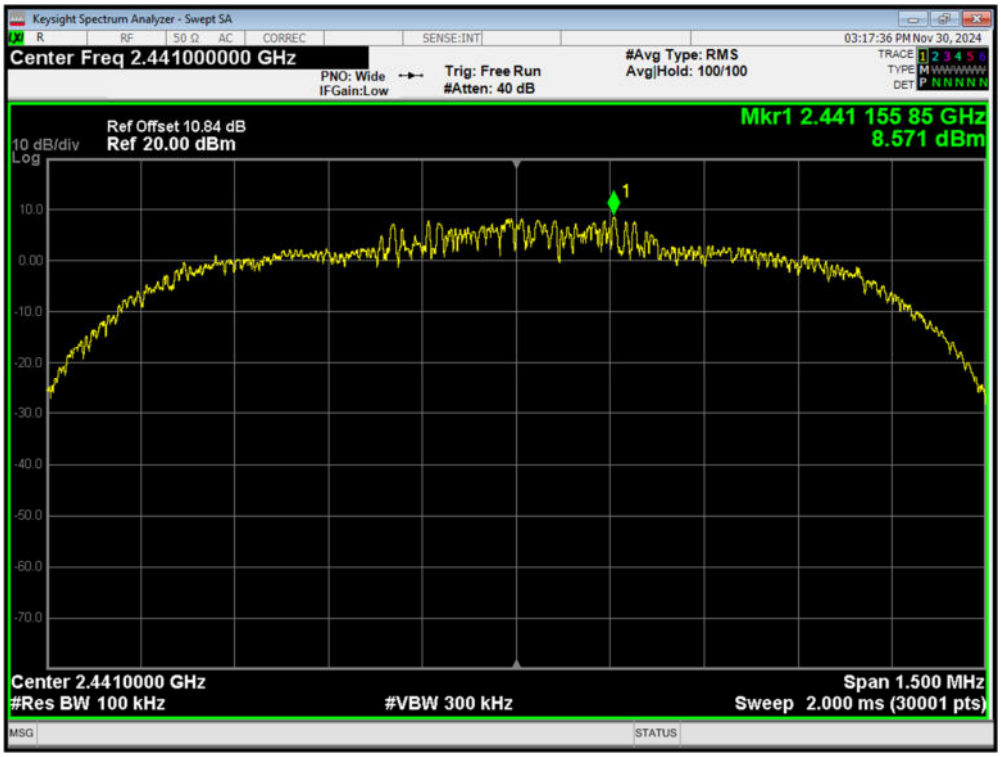
Tx. Spurious 2-DH5 2402MHz Ref



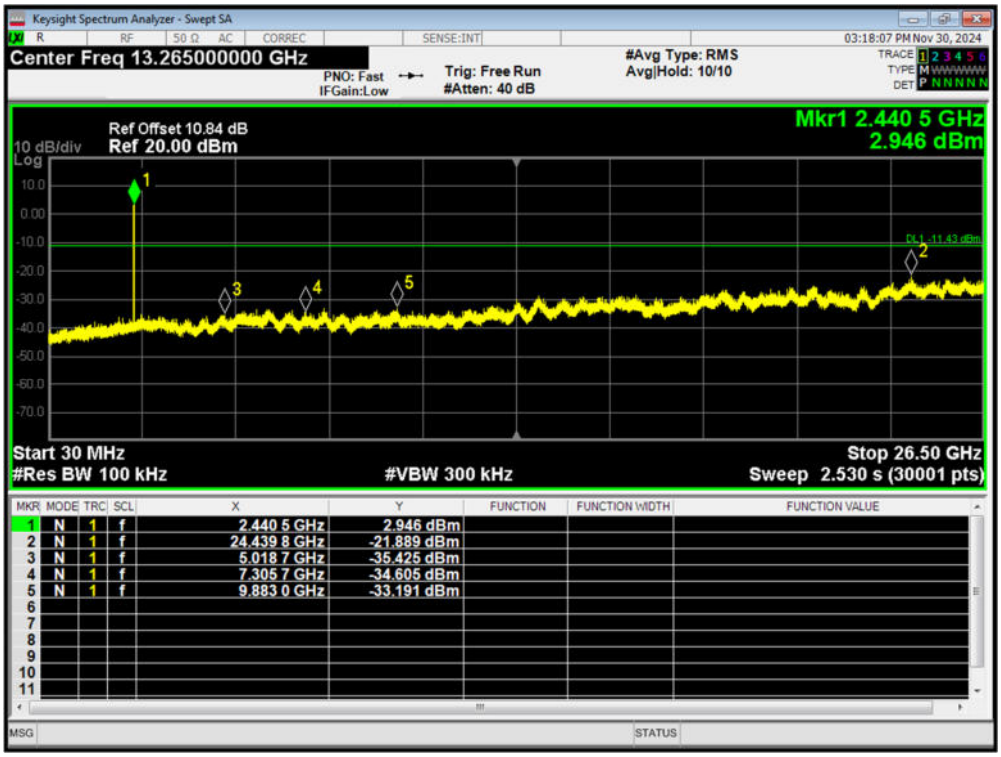
Tx. Spurious 2-DH5 2402MHz Emission



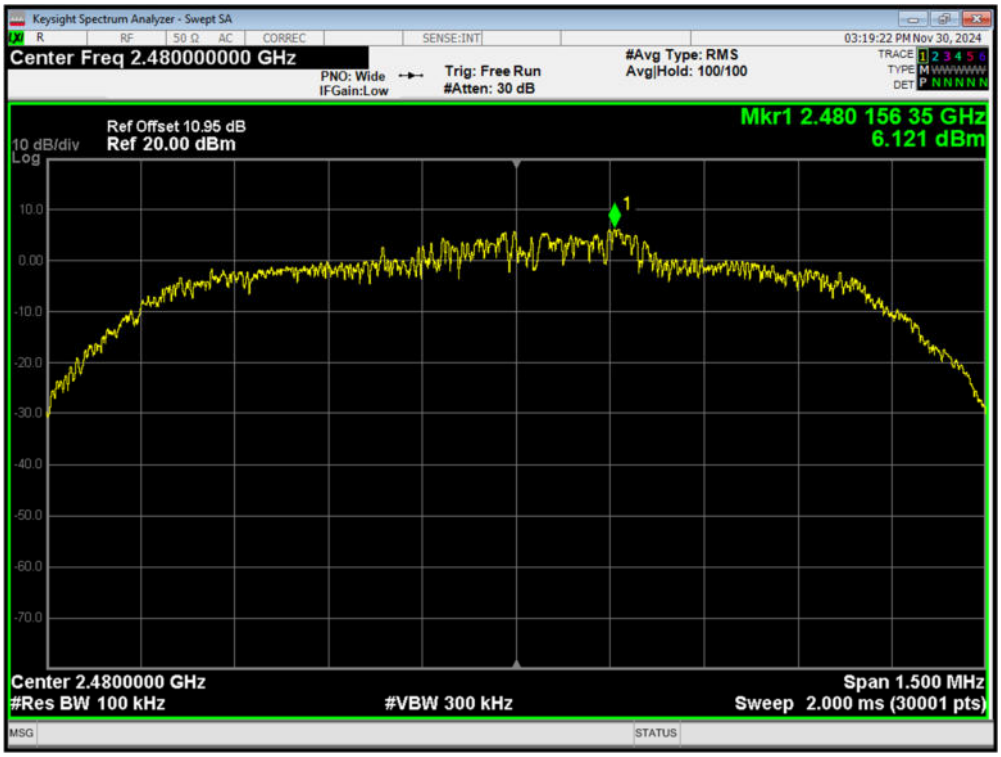
Tx. Spurious 2-DH5 2441MHz Ref



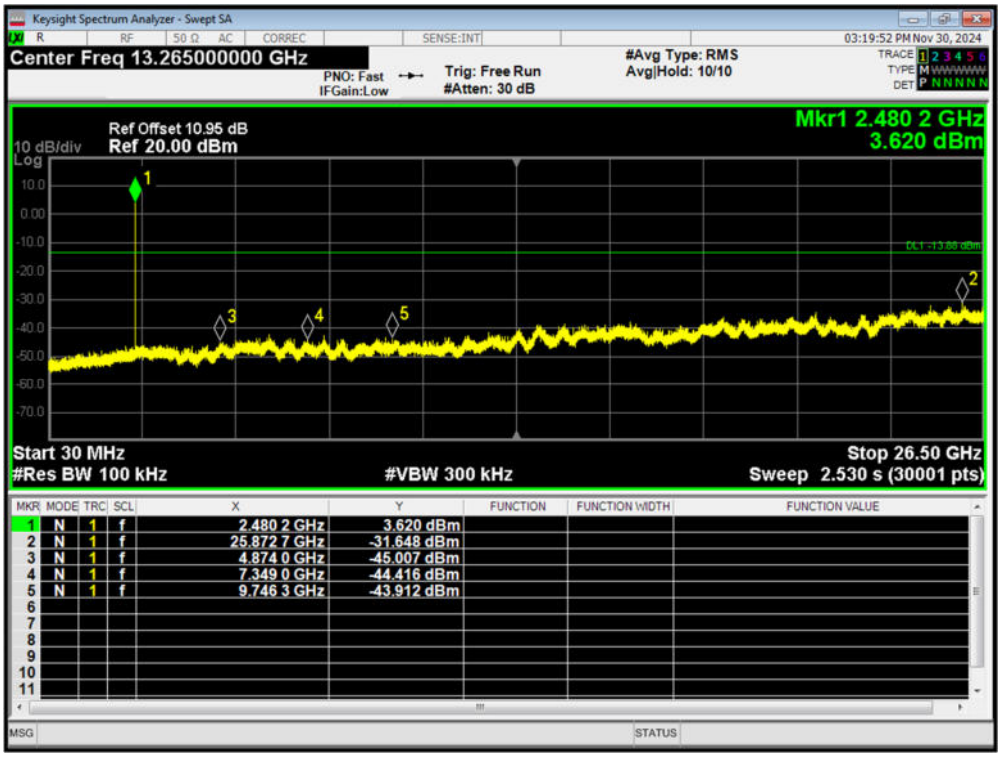
Tx. Spurious 2-DH5 2441MHz Emission



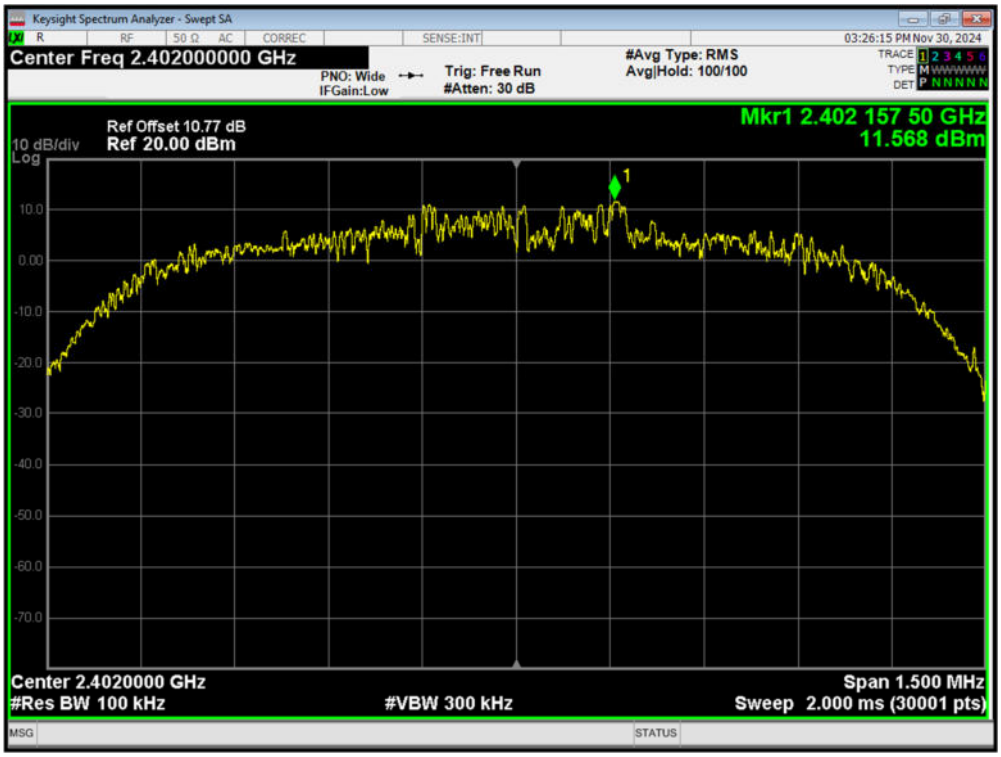
Tx. Spurious 2-DH5 2480MHz Ref



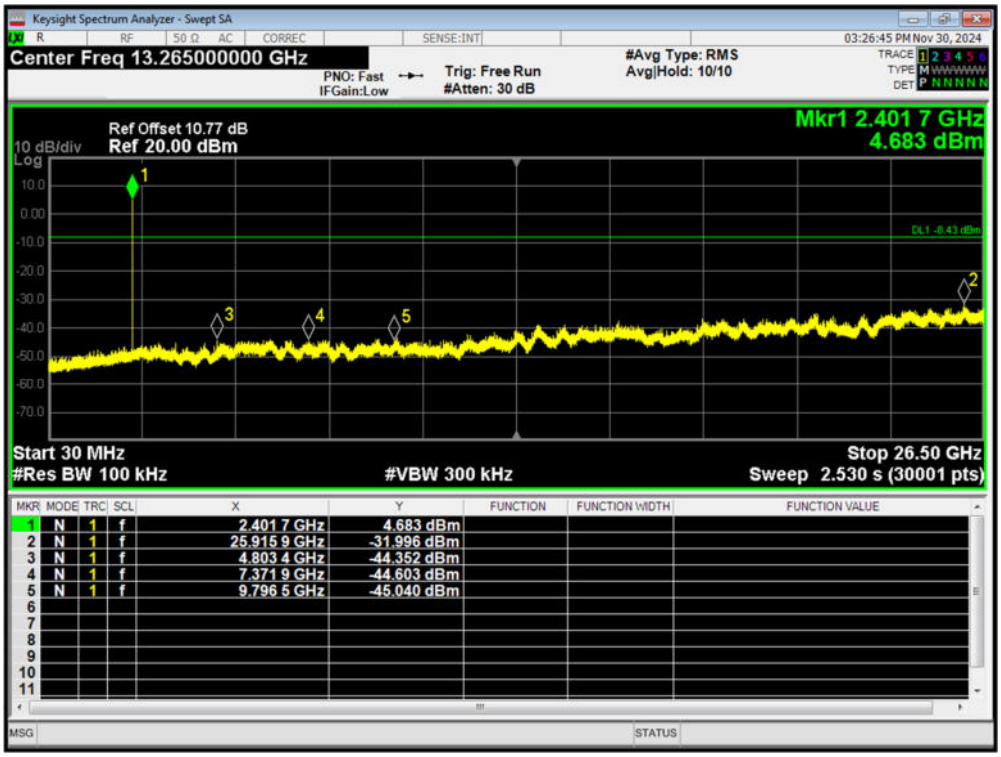
Tx. Spurious 2-DH5 2480MHz Emission



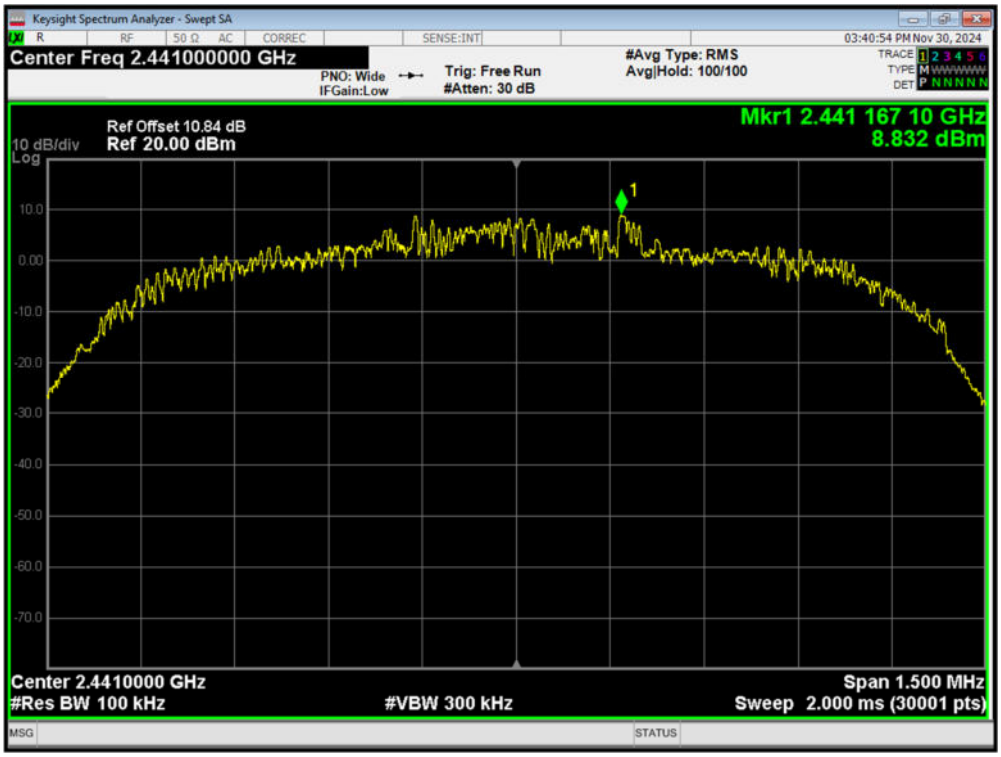
Tx. Spurious 3-DH5 2402MHz Ref



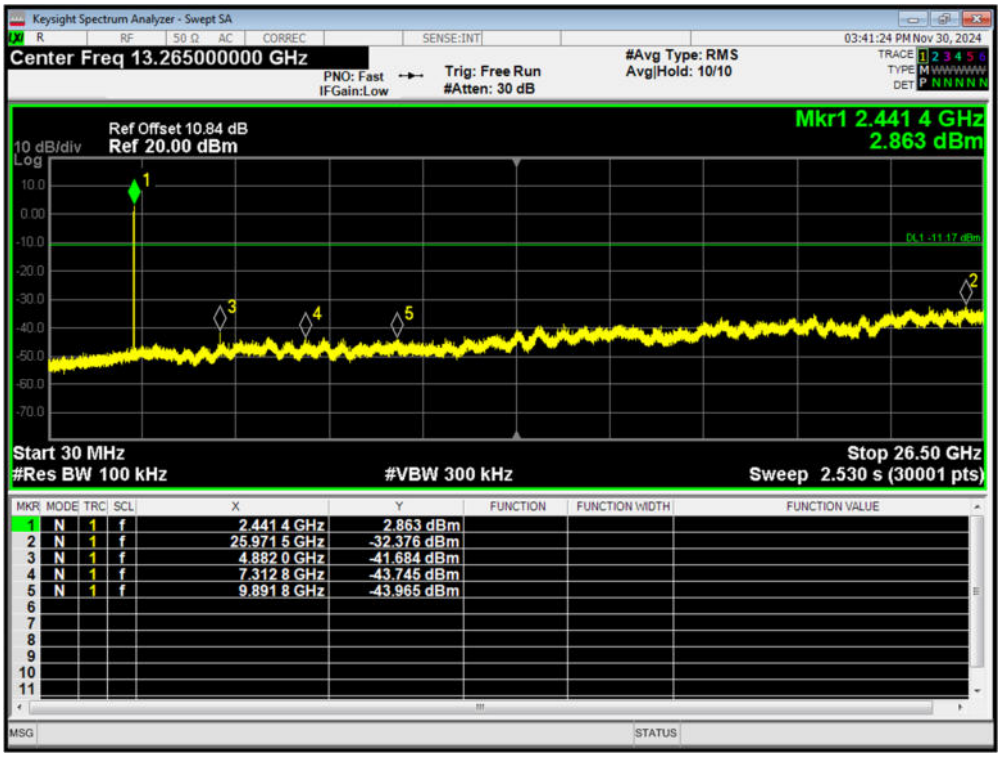
Tx. Spurious 3-DH5 2402MHz Emission



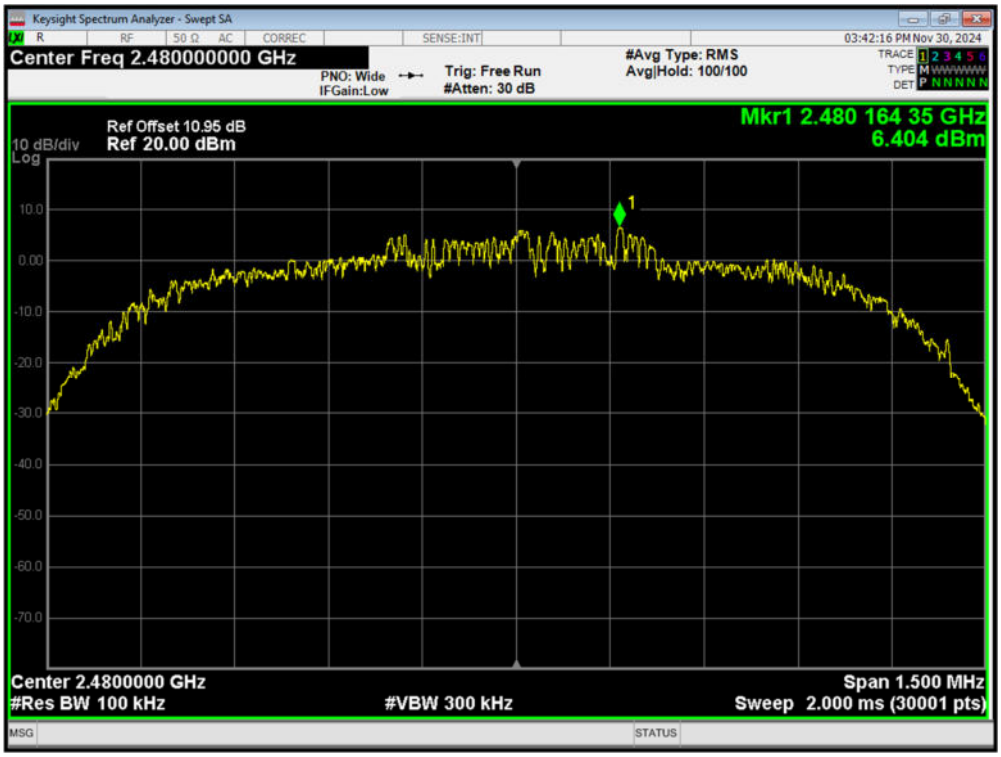
Tx. Spurious 3-DH5 2441MHz Ref



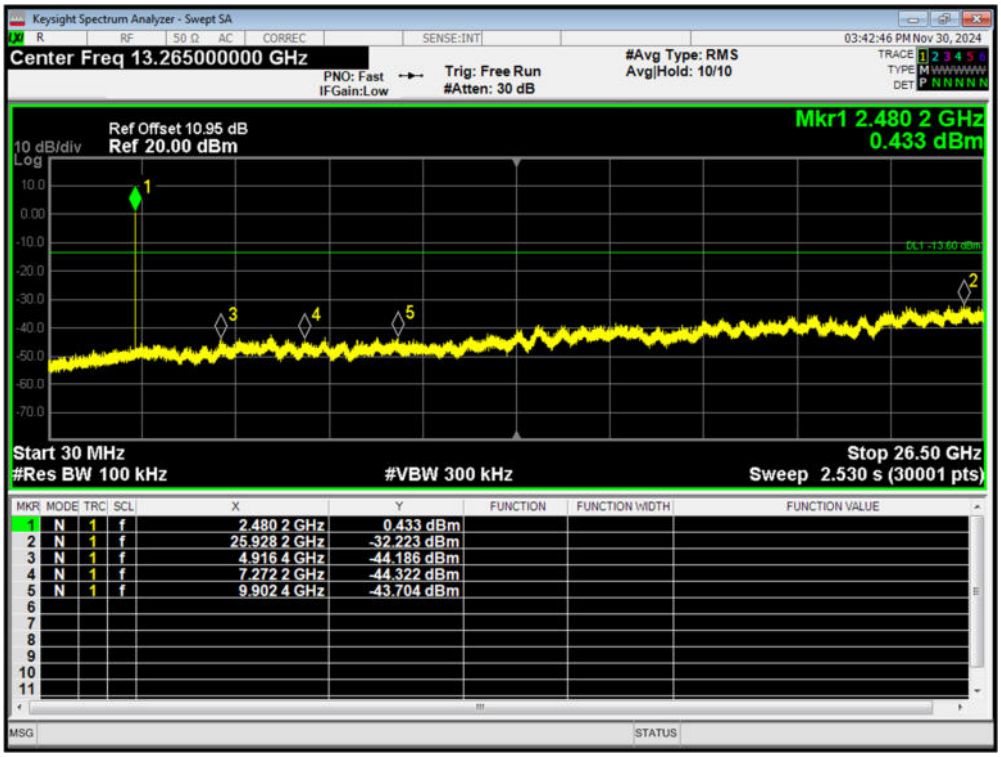
Tx. Spurious 3-DH5 2441MHz Emission



Tx. Spurious 3-DH5 2480MHz Ref



Tx. Spurious 3-DH5 2480MHz Emission



5.8 Unwanted Emission

Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Method of Measurement

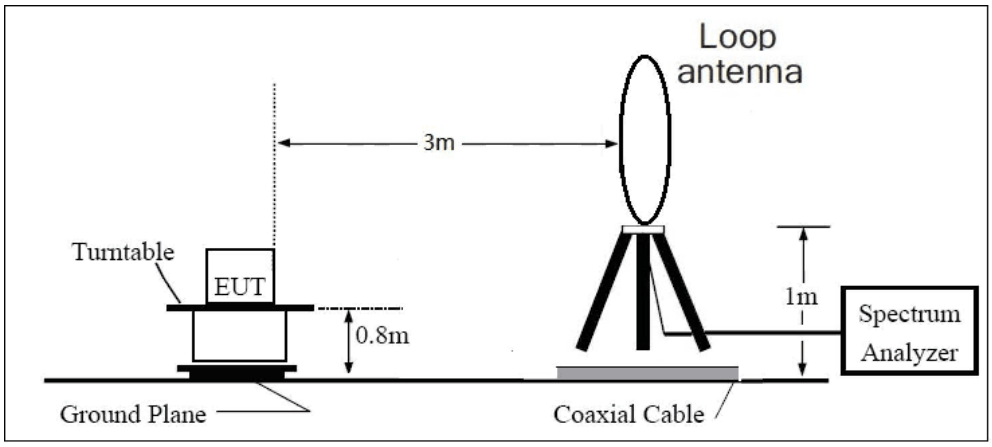
The test set-up was made in accordance to the general provisions of ANSI C63.10. The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna. The radiated emissions measurements were made in a typical installation configuration.
Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, and the emissions less than 20 dB below the permissible value are reported.
During the test, below 30MHz, the center of the loop shall be 1 meters; above 30MHz, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turntable shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.
Set the spectrum analyzer in the following:
9kHz~150 kHz
RBW=200Hz, VBW=1kHz/ Sweep=AUTO
150 kHz~30MHz
RBW=9kHz, VBW=30kHz,/ Sweep=AUTO
Below 1GHz
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz
(a) PEAK: RBW=1MHz VBW=3MHz/ Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=3MHz / Sweep=AUTO
detector; The measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
The dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit.
If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak- average correction factor, derived form the appropriate duty cycle calculation.
This setting method can refer to **KDB 558074 D01.**

This mode was measured in the following mode: EUT with cradle and EUT without cradle. The worst emission was found in EUT with cradle mode and the worst case was recorded.

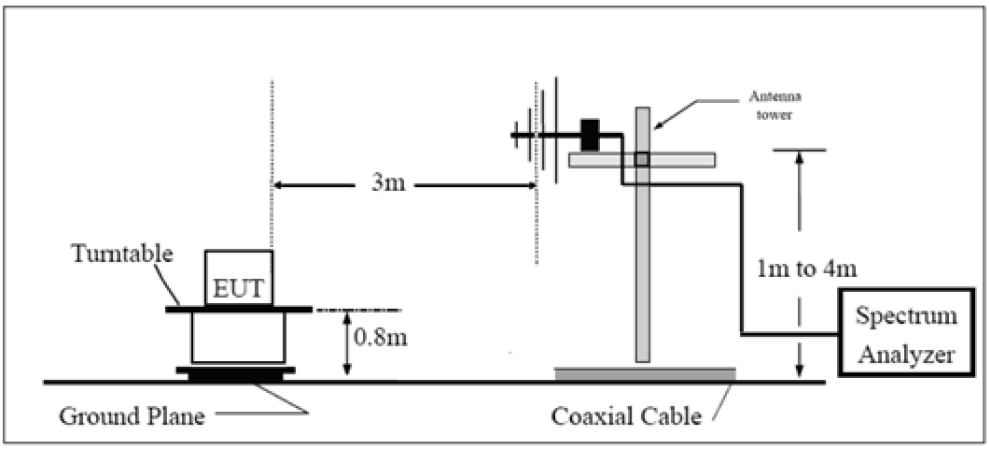
The test is in transmitting mode.

Test setup

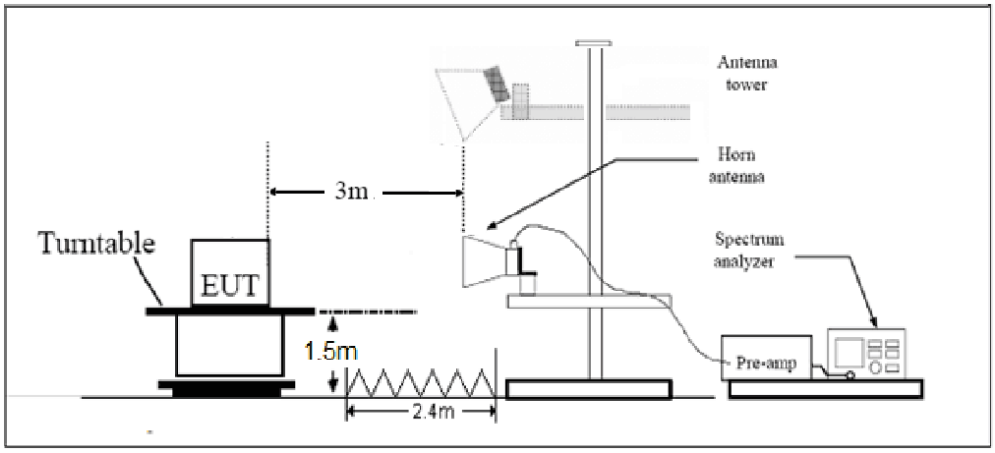
9kHz~ 30MHz



30MHz~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Limits

Rule Part 15.247(d) specifies that “In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).”

Limit in restricted band

Frequency of emission (MHz)	Field strength(μV/m)	Field strength(dBμV/m)
0.009–0.490	2400/F(kHz)	/
0.490–1.705	24000/F(kHz)	/
1.705–30.0	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above960	500	54

§15.35(b)

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

Peak Limit=74dBμV/m

Average Limit=54dBμV/m

Spurious Radiated Emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1] 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

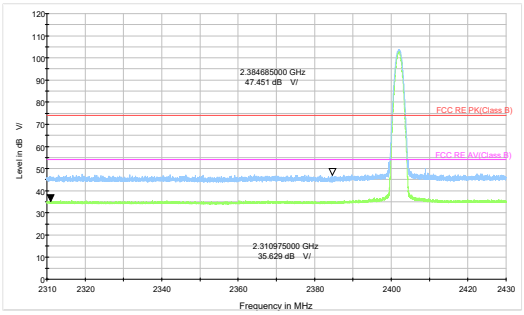
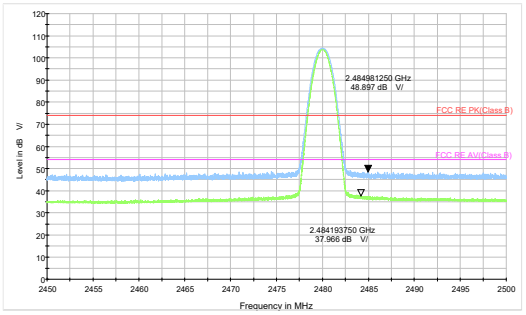
Frequency	Uncertainty
9kHz-30MHz	3.55 dB
30MHz-200MHz	4.17 dB
200MHz-1GHz	4.84 dB
1-18GHz	4.35 dB
18-26.5GHz	5.90 dB
26.5GHz~40GHz	5.92 dB

Test Results:

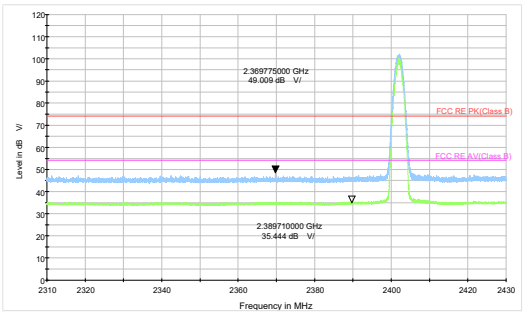
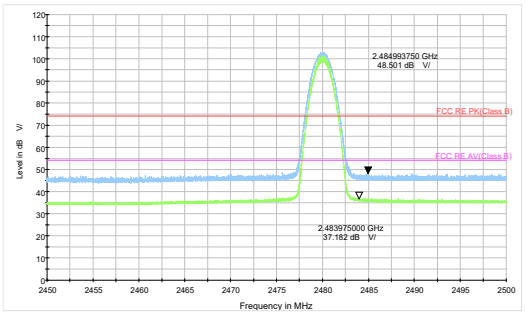
The following graphs display the maximum values of horizontal and vertical by software.
Blue trace uses the peak detection, Green trace uses the average detection.

A symbol (dB μV) in the test plot below means (dBμV/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

Test result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the Emissions in the frequency band 9kHz-30MHz are more than 20dB below the limit are not reported.

The following graphs display the maximum values of horizontal and vertical by software.
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

The following graphs display the maximum values of horizontal and vertical by software.
For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

Continuous TX mode:

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/) in the test plot below means (dBμV/m)**
4. **For below 1GHz**

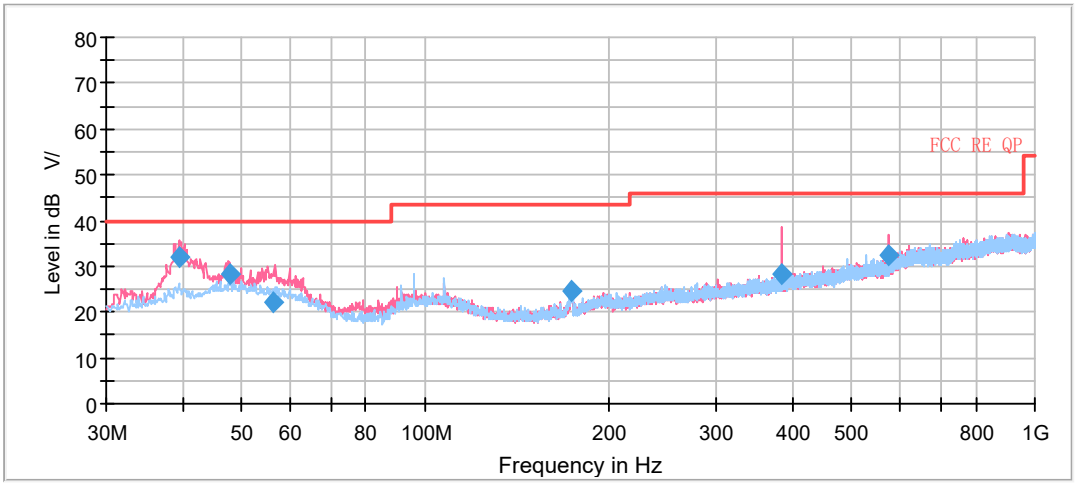
QP Level @Spectrum Overview H | QP Level @Spectrum Overview V | QP Level @Final Results | QP Limit

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:



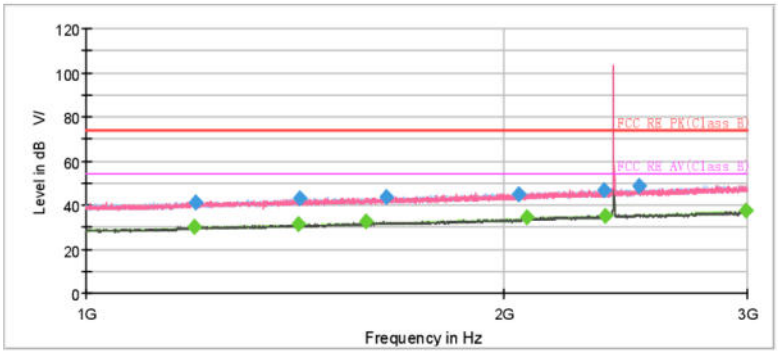
Radiates Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
39.457500	32.00	40.00	8.00	100.0	V	155.0	19.7
47.823750	28.12	40.00	11.88	122.0	V	104.0	21.1
56.235000	22.21	40.00	17.79	100.0	V	165.0	20.4
174.00250	24.67	43.50	18.83	100.0	H	253.0	20.1
383.93000	28.40	46.00	17.60	109.0	V	186.0	22.9
576.02875	32.24	46.00	13.76	222.0	V	131.0	26.3

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

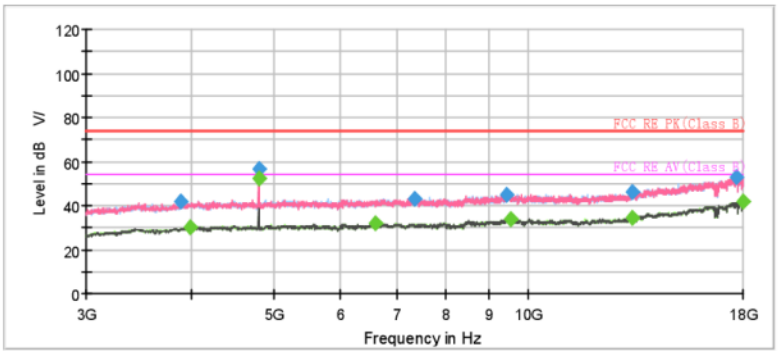
2. Margin = Limit – Quasi-Peak

DH5-Channel 0



Final_Result

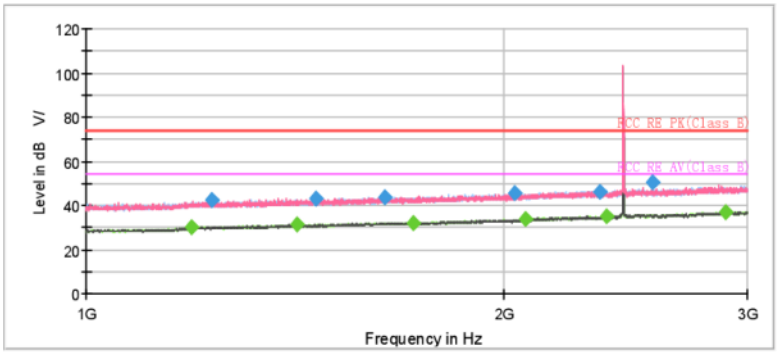
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.000000	---	30.05	54.00	23.95	500.0	100.0	V	137.0	-8.9
1199.000000	41.22	---	74.00	32.78	500.0	100.0	H	326.0	-8.8
1423.000000	---	31.57	54.00	22.43	500.0	200.0	H	347.0	-7.4
1424.750000	42.92	---	74.00	31.08	500.0	200.0	H	132.0	-7.4
1591.750000	---	32.37	54.00	21.63	500.0	200.0	H	20.0	-6.4
1647.750000	43.66	---	74.00	30.34	500.0	100.0	H	147.0	-6.2
2052.250000	45.14	---	74.00	28.86	500.0	200.0	V	0.0	-4.2
2078.500000	---	34.26	54.00	19.74	500.0	200.0	H	3.0	-3.9
2363.500000	46.48	---	74.00	27.52	500.0	100.0	V	186.0	-2.9
2369.250000	---	34.97	54.00	19.03	500.0	100.0	V	99.0	-2.8
2508.000000	48.39	---	74.00	25.61	500.0	200.0	V	276.0	-2.1
2995.250000	---	37.27	54.00	16.73	500.0	200.0	H	3.0	-0.6



Final_Result

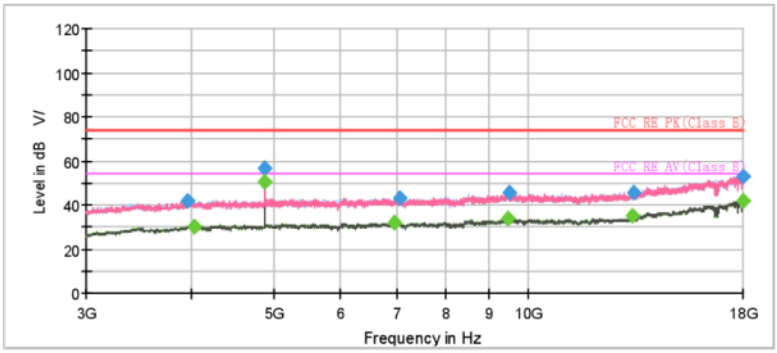
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3885.000000	41.66	---	74.00	32.34	500.0	100.0	H	148.0	-7.4
3978.750000	---	30.29	54.00	23.71	500.0	200.0	H	276.0	-6.9
4803.750000	---	52.19	54.00	1.81	500.0	100.0	V	332.0	-6.1
4803.750000	56.49	---	74.00	17.51	500.0	200.0	V	332.0	-6.1
6603.750000	---	31.76	54.00	22.24	500.0	100.0	V	49.0	-3.3
7344.375000	43.19	---	74.00	30.81	500.0	200.0	V	318.0	-3.0
9450.000000	45.12	---	74.00	28.88	500.0	200.0	H	232.0	-0.3
9530.625000	---	34.06	54.00	19.94	500.0	100.0	H	0.0	-0.2
13299.375000	46.24	---	74.00	27.76	500.0	100.0	V	275.0	2.3
13301.250000	---	34.73	54.00	19.27	500.0	200.0	H	116.0	2.3
17640.000000	52.93	---	74.00	21.07	500.0	100.0	V	0.0	10.2
17998.125000	---	41.85	54.00	12.15	500.0	200.0	V	357.0	11.1

DH5-Channel 39



Final_Result

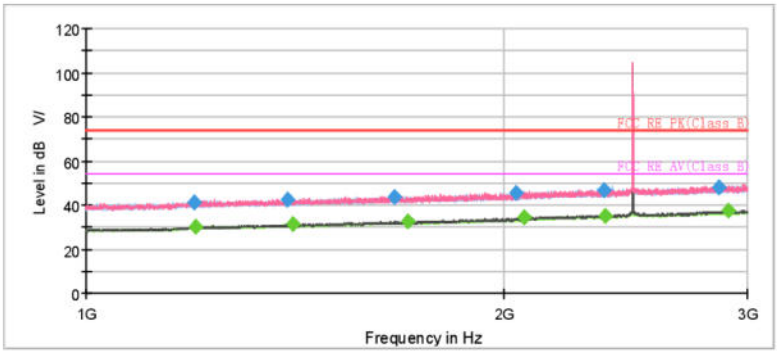
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1192.250000	---	29.96	54.00	24.04	500.0	200.0	H	116.0	-9.0
1233.500000	42.39	---	74.00	31.61	500.0	200.0	H	239.0	-8.7
1419.000000	---	31.28	54.00	22.72	500.0	200.0	H	341.0	-7.4
1465.250000	43.04	---	74.00	30.96	500.0	200.0	V	218.0	-7.2
1643.250000	43.79	---	74.00	30.21	500.0	200.0	H	299.0	-6.2
1723.500000	---	32.25	54.00	21.75	500.0	100.0	V	330.0	-5.9
2037.500000	45.32	---	74.00	28.68	500.0	100.0	V	303.0	-4.3
2074.000000	---	33.82	54.00	20.18	500.0	100.0	H	163.0	-4.0
2348.750000	46.37	---	74.00	27.63	500.0	200.0	V	326.0	-3.0
2374.500000	---	34.99	54.00	19.01	500.0	100.0	V	85.0	-2.8
2565.750000	50.60	---	74.00	23.40	500.0	200.0	V	57.0	-2.1
2897.250000	---	37.05	54.00	16.95	500.0	200.0	V	275.0	-1.1



Final_Result

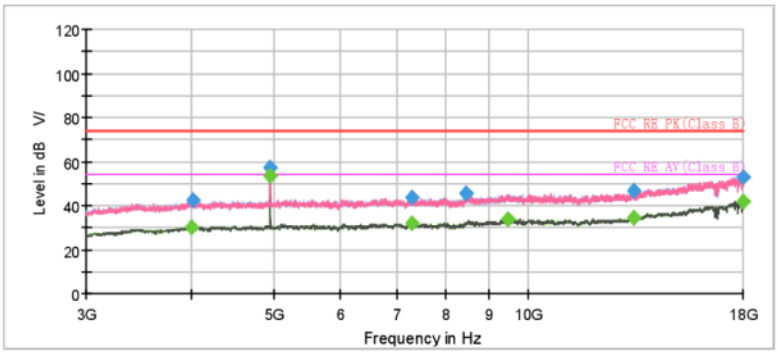
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3961.875000	41.65	---	74.00	32.35	500.0	100.0	H	29.0	-7.1
4033.125000	---	30.44	54.00	23.56	500.0	200.0	V	301.0	-6.8
4880.625000	---	50.36	54.00	3.64	500.0	100.0	V	335.0	-5.7
4882.500000	56.60	---	74.00	17.40	500.0	100.0	V	335.0	-5.7
6950.625000	---	31.74	54.00	22.26	500.0	200.0	V	214.0	-2.9
7063.125000	43.04	---	74.00	30.96	500.0	200.0	V	311.0	-3.1
9474.375000	---	33.97	54.00	20.03	500.0	100.0	H	250.0	0.0
9517.500000	45.28	---	74.00	28.72	500.0	100.0	V	151.0	-0.1
13310.625000	---	34.84	54.00	19.16	500.0	200.0	H	129.0	2.3
13348.125000	45.66	---	74.00	28.34	500.0	200.0	V	234.0	2.4
17998.125000	53.18	---	74.00	20.82	500.0	100.0	H	0.0	11.1
18000.000000	---	42.08	54.00	11.92	500.0	100.0	H	0.0	11.2

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)
1198.000000	41.17	---	74.00	32.83	500.0	100.0	V	15.0	-8.8
1198.250000	---	30.25	54.00	23.75	500.0	200.0	V	229.0	-8.8
1396.250000	42.63	---	74.00	31.37	500.0	100.0	H	105.0	-7.6
1410.500000	---	31.25	54.00	22.75	500.0	200.0	V	355.0	-7.5
1669.250000	43.74	---	74.00	30.26	500.0	200.0	V	273.0	-6.1
1707.750000	---	32.54	54.00	21.46	500.0	200.0	V	347.0	-5.9
2044.000000	45.37	---	74.00	28.63	500.0	200.0	V	256.0	-4.3
2072.750000	---	34.29	54.00	19.71	500.0	200.0	V	195.0	-4.0
2366.000000	46.64	---	74.00	27.36	500.0	100.0	H	49.0	-2.8
2367.500000	---	35.13	54.00	18.87	500.0	200.0	V	321.0	-2.8
2859.000000	48.03	---	74.00	25.97	500.0	200.0	V	195.0	-1.1
2909.000000	---	37.61	54.00	16.39	500.0	200.0	V	260.0	-1.0

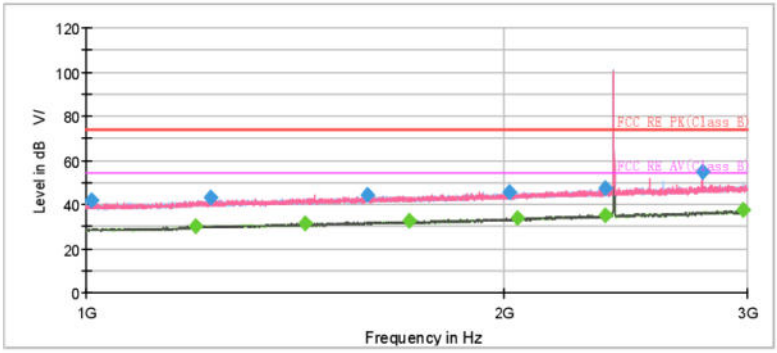


Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4001.250000	---	30.17	54.00	23.83	500.0	200.0	H	0.0	-6.8
4012.500000	42.17	---	74.00	31.83	500.0	200.0	V	187.0	-6.8
4959.375000	---	53.30	54.00	0.70	500.0	200.0	V	342.0	-5.4
4959.375000	57.48	---	74.00	16.52	500.0	200.0	V	342.0	-5.4
7286.250000	---	31.71	54.00	22.29	500.0	200.0	H	292.0	-3.0
7293.750000	43.45	---	74.00	30.55	500.0	200.0	V	333.0	-3.0
8467.500000	45.36	---	74.00	28.64	500.0	200.0	V	308.0	-1.9
9474.375000	---	34.02	54.00	19.98	500.0	200.0	V	117.0	0.0
13342.500000	46.56	---	74.00	27.44	500.0	200.0	V	79.0	2.3
13344.375000	---	34.76	54.00	19.24	500.0	200.0	H	225.0	2.3
18000.000000	---	41.92	54.00	12.08	500.0	200.0	H	245.0	11.2
18000.000000	53.17	---	74.00	20.83	500.0	200.0	H	245.0	11.2

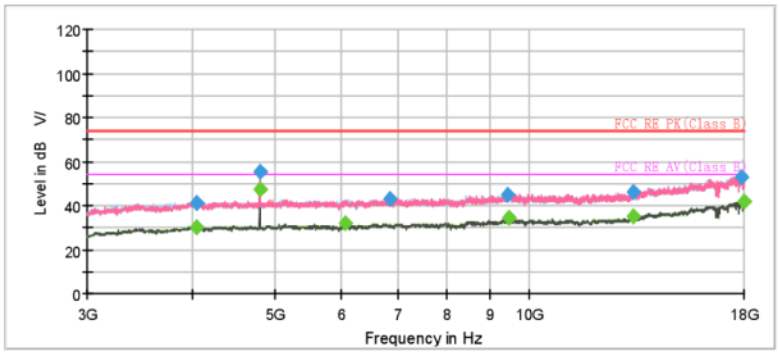
The Radiates Emission was performed in all EDR mode(2DH5 and 3DH5), 3DH5 was selected as the worse condition. The test data of the worst-case condition was recorded in this report.

3DH5-Channel 0



Final_Result

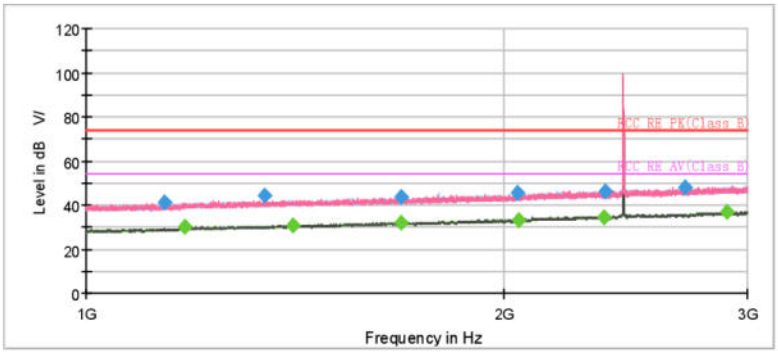
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1009.750000	41.74	---	74.00	32.26	500.0	100.0	V	98.0	-10.7
1200.500000	---	30.17	54.00	23.83	500.0	200.0	H	236.0	-8.8
1229.000000	43.33	---	74.00	30.67	500.0	200.0	V	161.0	-8.7
1440.000000	---	31.25	54.00	22.75	500.0	200.0	H	227.0	-7.3
1594.750000	44.49	---	74.00	29.51	500.0	200.0	V	93.0	-6.4
1710.250000	---	32.56	54.00	21.44	500.0	200.0	V	80.0	-5.9
2021.000000	45.65	---	74.00	28.35	500.0	100.0	V	295.0	-4.4
2046.750000	---	34.07	54.00	19.93	500.0	100.0	H	22.0	-4.2
2368.250000	47.44	---	74.00	26.56	500.0	200.0	H	318.0	-2.8
2371.500000	---	34.85	54.00	19.15	500.0	200.0	V	11.0	-2.8
2782.500000	54.70	---	74.00	19.30	500.0	200.0	V	196.0	-1.4
2977.500000	---	37.29	54.00	16.71	500.0	100.0	V	103.0	-0.7



Final_Result

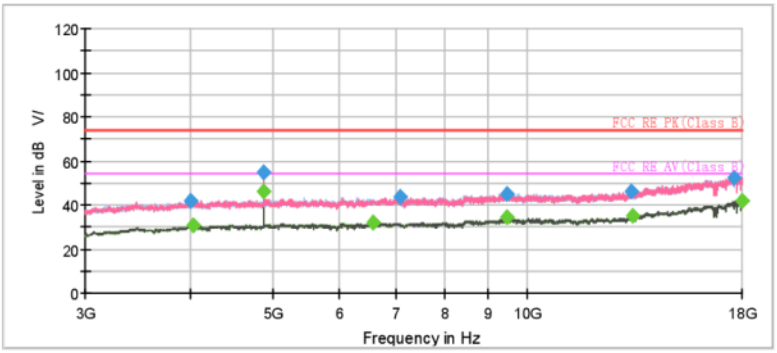
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4036.875000	---	30.25	54.00	23.75	500.0	200.0	H	34.0	-6.7
4036.875000	41.28	---	74.00	32.72	500.0	200.0	H	34.0	-6.7
4803.750000	---	47.12	54.00	6.88	500.0	200.0	V	343.0	-6.1
4803.750000	55.18	---	74.00	18.82	500.0	200.0	V	343.0	-6.1
6056.250000	---	31.83	54.00	22.17	500.0	200.0	H	121.0	-4.1
6841.875000	43.26	---	74.00	30.74	500.0	200.0	H	43.0	-3.2
9446.250000	45.03	---	74.00	28.97	500.0	200.0	H	121.0	-0.4
9483.750000	---	34.29	54.00	19.71	500.0	200.0	H	155.0	0.0
13320.000000	---	34.96	54.00	19.04	500.0	200.0	H	341.0	2.3
13327.500000	45.88	---	74.00	28.12	500.0	200.0	V	343.0	2.3
17895.000000	52.90	---	74.00	21.10	500.0	200.0	V	207.0	10.1
18000.000000	---	41.98	54.00	12.02	500.0	200.0	V	188.0	11.2

3DH5-Channel 39



Final_Result

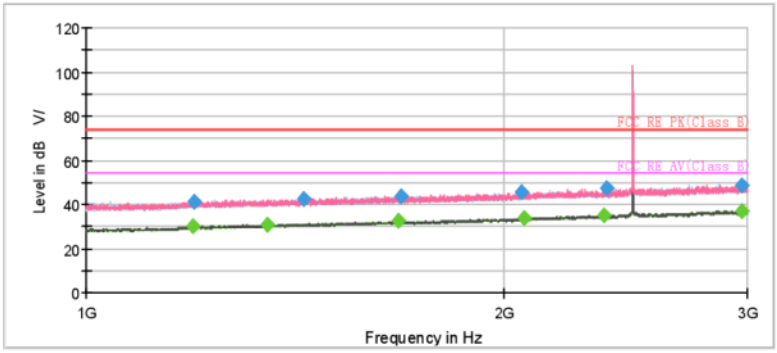
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1140.000000	41.10	---	74.00	32.90	500.0	100.0	V	198.0	-9.8
1177.000000	---	30.27	54.00	23.73	500.0	200.0	H	74.0	-9.3
1344.500000	44.24	---	74.00	29.76	500.0	200.0	V	348.0	-8.0
1409.750000	---	30.99	54.00	23.01	500.0	100.0	V	250.0	-7.5
1687.750000	---	32.18	54.00	21.82	500.0	200.0	H	35.0	-6.0
1689.750000	43.99	---	74.00	30.01	500.0	100.0	H	195.0	-6.0
2047.250000	45.47	---	74.00	28.53	500.0	100.0	H	74.0	-4.2
2052.250000	---	33.13	54.00	20.87	500.0	200.0	H	328.0	-4.2
2364.000000	---	34.60	54.00	19.40	500.0	100.0	H	49.0	-2.9
2368.500000	46.41	---	74.00	27.59	500.0	200.0	V	7.0	-2.8
2703.500000	48.03	---	74.00	25.97	500.0	100.0	V	335.0	-1.6
2897.750000	---	36.96	54.00	17.04	500.0	200.0	V	297.0	-1.0



Final_Result

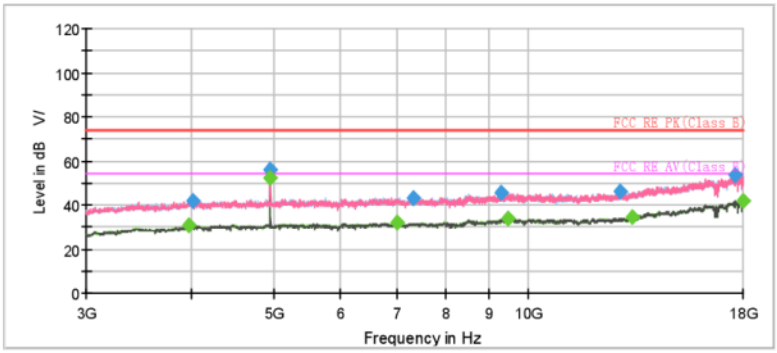
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
4005.000000	41.82	---	74.00	32.18	500.0	200.0	V	323.0	-6.8
4033.125000	---	30.48	54.00	23.52	500.0	100.0	H	110.0	-6.8
4880.625000	---	46.03	54.00	7.97	500.0	200.0	V	352.0	-5.7
4880.625000	54.47	---	74.00	19.53	500.0	200.0	V	352.0	-5.7
6571.875000	---	32.00	54.00	22.00	500.0	200.0	H	229.0	-3.4
7080.000000	43.58	---	74.00	30.42	500.0	100.0	V	260.0	-3.0
9466.875000	45.12	---	74.00	28.88	500.0	100.0	H	0.0	-0.1
9481.875000	---	34.16	54.00	19.84	500.0	100.0	V	141.0	0.0
13320.000000	46.36	---	74.00	27.64	500.0	200.0	V	67.0	2.3
13344.375000	---	34.96	54.00	19.04	500.0	100.0	V	342.0	2.3
17623.125000	52.61	---	74.00	21.39	500.0	200.0	V	329.0	10.2
17992.500000	---	42.00	54.00	12.00	500.0	100.0	V	8.0	11.1

3DH5-Channel 78



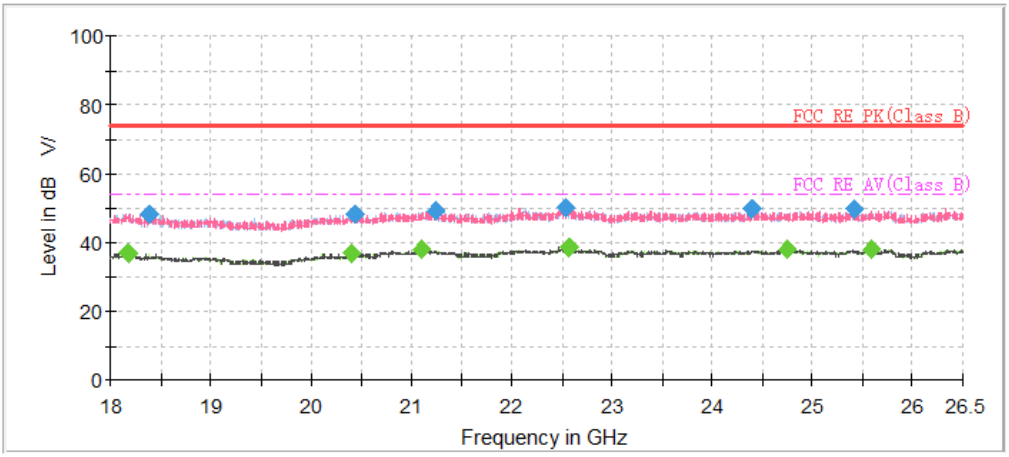
Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1193.250000	---	29.97	54.00	24.03	500.0	100.0	V	262.0	-8.9
1195.750000	41.10	---	74.00	32.90	500.0	200.0	V	244.0	-8.9
1352.750000	---	31.06	54.00	22.94	500.0	200.0	V	347.0	-7.9
1436.250000	42.36	---	74.00	31.64	500.0	100.0	H	0.0	-7.3
1679.250000	---	32.35	54.00	21.65	500.0	100.0	H	300.0	-6.0
1688.500000	43.85	---	74.00	30.15	500.0	200.0	H	279.0	-6.0
2061.250000	45.78	---	74.00	28.22	500.0	100.0	V	0.0	-4.1
2070.750000	---	33.78	54.00	20.22	500.0	200.0	H	171.0	-4.0
2364.500000	---	34.79	54.00	19.21	500.0	100.0	V	162.0	-2.9
2372.750000	47.12	---	74.00	26.88	500.0	200.0	V	154.0	-2.8
2972.250000	48.70	---	74.00	25.30	500.0	100.0	H	98.0	-0.7
2972.750000	---	36.97	54.00	17.03	500.0	100.0	V	288.0	-0.7



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)
3969.375000	---	30.57	54.00	23.44	500.0	200.0	H	347.0	-7.0
4012.500000	41.83	---	74.00	32.17	500.0	200.0	H	136.0	-6.8
4959.375000	---	52.50	54.00	1.50	500.0	200.0	V	330.0	-5.4
4959.375000	56.30	---	74.00	17.70	500.0	200.0	V	330.0	-5.4
7001.250000	---	31.99	54.00	22.01	500.0	200.0	H	18.0	-3.0
7312.500000	43.30	---	74.00	30.70	500.0	200.0	H	112.0	-3.0
9298.125000	45.44	---	74.00	28.56	500.0	200.0	H	41.0	-0.9
9470.625000	---	34.08	54.00	19.92	500.0	200.0	H	32.0	-0.1
12888.750000	46.09	---	74.00	27.91	500.0	200.0	V	271.0	0.9
13314.375000	---	34.71	54.00	19.29	500.0	200.0	V	311.0	2.3
17623.125000	53.54	---	74.00	20.46	500.0	200.0	V	203.0	10.2
17998.125000	---	42.12	54.00	11.88	500.0	200.0	H	52.0	11.1



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)
18179.562500	---	37.02	54.00	16.98	500.0	100.0	V	203.0	-5.8
18388.875000	48.46	---	74.00	25.54	500.0	100.0	V	322.0	-6.0
20399.125000	---	36.84	54.00	17.16	500.0	100.0	H	259.0	-5.2
20435.250000	48.11	---	74.00	25.89	500.0	200.0	H	145.0	-5.0
21103.562500	---	37.83	54.00	16.17	500.0	200.0	H	117.0	-4.1
21249.125000	49.44	---	74.00	24.56	500.0	200.0	H	355.0	-4.4
22543.250000	50.36	---	74.00	23.64	500.0	200.0	V	100.0	-3.4
22569.812500	---	38.53	54.00	15.47	500.0	200.0	V	246.0	-3.4
24390.937500	49.89	---	74.00	24.11	500.0	100.0	H	193.0	-3.1
24744.750000	---	37.84	54.00	16.16	500.0	100.0	H	161.0	-2.7
25410.937500	49.96	---	74.00	24.04	500.0	200.0	H	196.0	-2.6
25584.125000	---	37.97	54.00	16.03	500.0	100.0	H	193.0	-2.5

5.9 Conducted Emission

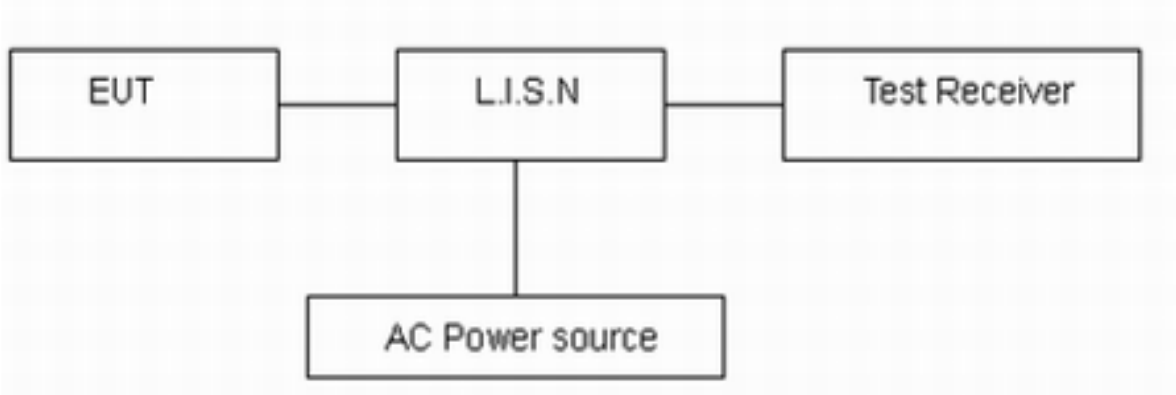
Ambient condition

Temperature	Relative humidity	Pressure
15°C ~ 35°C	20% ~ 80%	86 kPa ~ 106 kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.10. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz.The measurement result should include both L line and N line.
The test is in transmitting mode.

Test Setup



Note: AC Power source is used to 120V/60Hz.

Limits

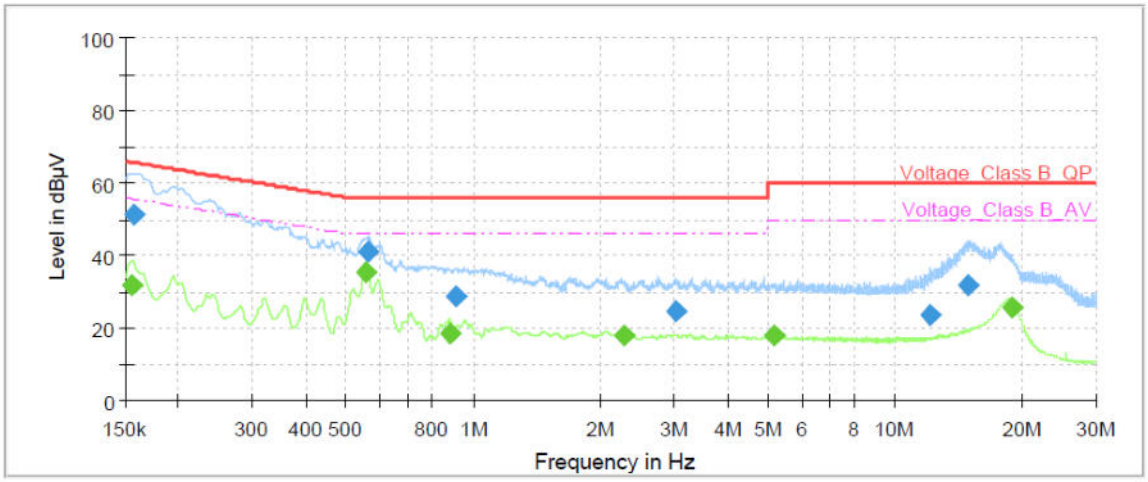
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50
*: Decreases with the logarithm of the frequency.		

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=2.69 dB.

Test Results:

Following plots, Blue trace uses the peak detection, Green trace uses the average detection.

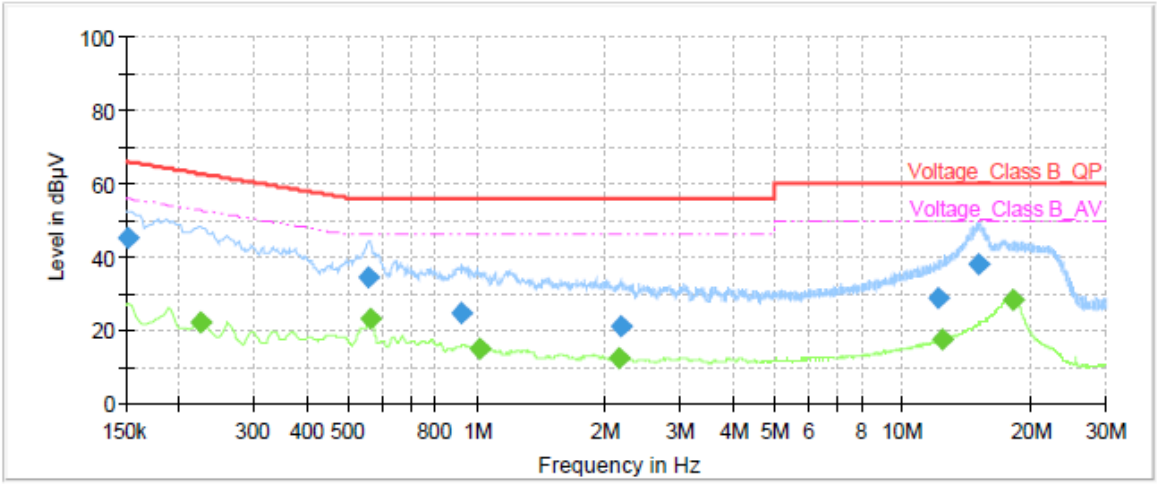


Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	31.56	55.75	24.19	1000.0	9.000	L1	ON	21.0
0.16	51.52	---	65.63	14.11	1000.0	9.000	L1	ON	21.0
0.56	---	35.20	46.00	10.80	1000.0	9.000	L1	ON	20.8
0.56	41.19	---	56.00	14.81	1000.0	9.000	L1	ON	20.8
0.88	---	18.35	46.00	27.65	1000.0	9.000	L1	ON	20.3
0.91	28.92	---	56.00	27.08	1000.0	9.000	L1	ON	20.3
2.29	---	18.02	46.00	27.98	1000.0	9.000	L1	ON	19.6
3.02	24.41	---	56.00	31.59	1000.0	9.000	L1	ON	19.6
5.17	---	17.79	50.00	32.21	1000.0	9.000	L1	ON	19.5
12.12	23.37	---	60.00	36.63	1000.0	9.000	L1	ON	19.6
14.95	31.65	---	60.00	28.35	1000.0	9.000	L1	ON	19.6
18.89	---	25.43	50.00	24.57	1000.0	9.000	L1	ON	19.7

Remark: Correct factor=cable loss + LISN factor

L line

Conducted Emission from 150 kHz to 30 MHz



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	45.19	---	65.88	20.69	1000.0	9.000	N	ON	21.0
0.22	---	22.02	52.66	30.64	1000.0	9.000	N	ON	21.1
0.56	34.51	---	56.00	21.49	1000.0	9.000	N	ON	20.8
0.56	---	22.93	46.00	23.07	1000.0	9.000	N	ON	20.8
0.92	24.65	---	56.00	31.35	1000.0	9.000	N	ON	20.3
1.02	---	15.06	46.00	30.94	1000.0	9.000	N	ON	20.2
2.16	---	12.15	46.00	33.85	1000.0	9.000	N	ON	19.7
2.17	20.80	---	56.00	35.20	1000.0	9.000	N	ON	19.7
12.14	28.68	---	60.00	31.32	1000.0	9.000	N	ON	19.6
12.33	---	17.22	50.00	32.78	1000.0	9.000	N	ON	19.6
15.07	37.92	---	60.00	22.08	1000.0	9.000	N	ON	19.6
18.13	---	28.45	50.00	21.55	1000.0	9.000	N	ON	19.7

Remark: Correct factor=cable loss + LISN factor

N line Conducted Emission from 150 kHz to 30 MHz

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Power Sensor	R&S	NRP18S	101954	2024-05-07	2025-05-06
Spectrum Analyzer	KEYSIGHT	N9020A	MY51330870	2024-05-07	2025-05-06
Radiated Emission					
EMI Test Receiver	R&S	ESR	102389	2024-05-07	2025-05-06
Signal Analyzer	R&S	FSV40	101298	2024-05-07	2025-05-06
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	01111	2022-10-25	2025-10-24
Horn Antenna	R&S	HF 907	102723	2023-11-24	2026-11-23
Amplifier	R&S	SCU18	10034	2024-05-08	2025-05-07
Horn Antenna	ETS-Lindgren	3160-09	00102643	2024-09-24	2027-09-23
Amplifier	MicroWave	KLNA-1804 0050	220826001	2024-05-08	2025-05-07
Software	R&S	EMC32	9.26.01	/	/
Conducted Emission					
Artificial main network	R&S	ENV216	102191	2022-12-10	2024-12-09
EMI Test Receiver	R&S	ESR	101667	2024-05-07	2025-05-06
Software	R&S	EMC32	10.35.10	/	/

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.

******** END OF REPORT ********