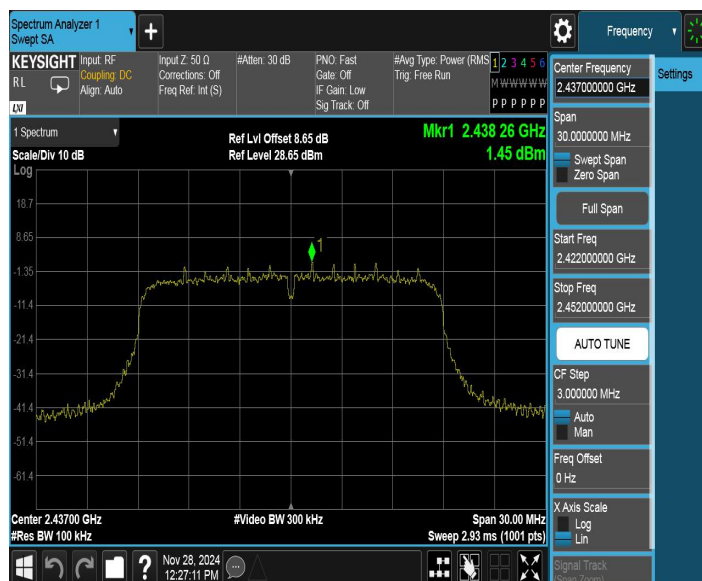


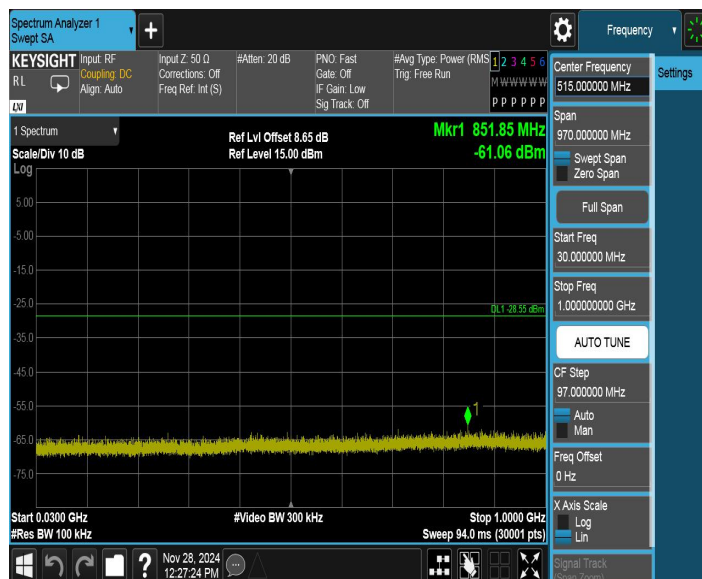
11N20SISO_Ant1_2412_1000~26500



11N20SISO_Ant1_2437_0~Reference



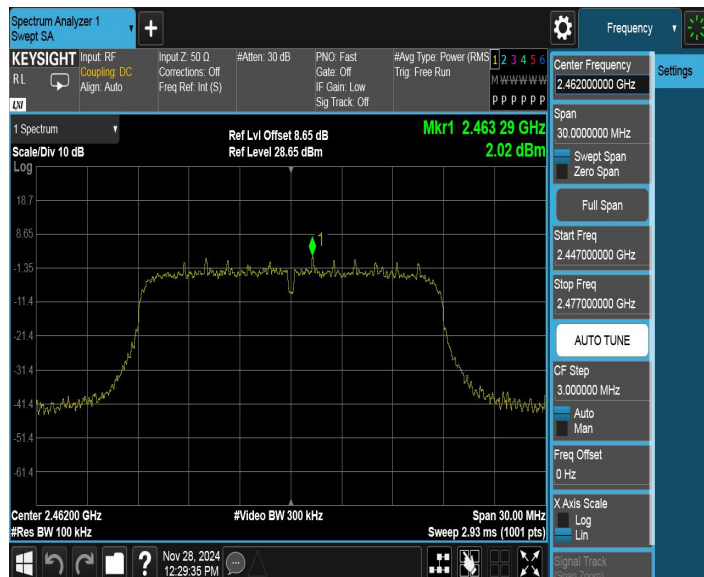
11N20SISO_Ant1_2437_30~1000



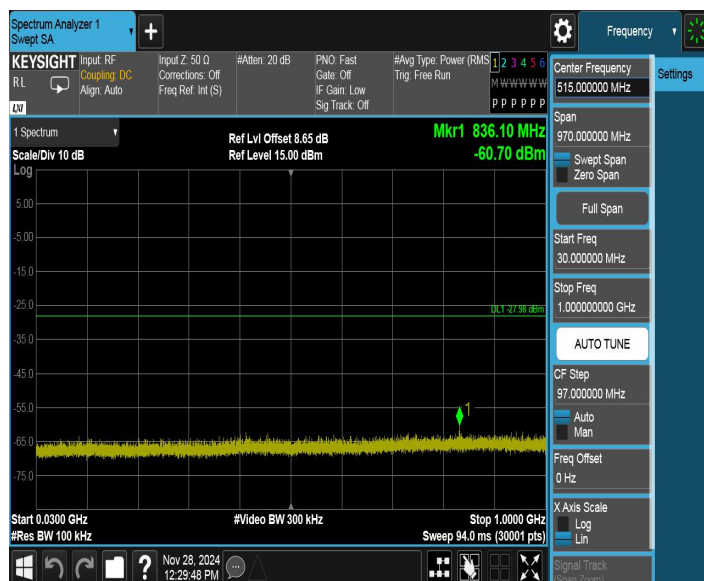
11N20SISO_Ant1_2437_1000~26500



11N20SISO_Ant1_2462_0~Reference



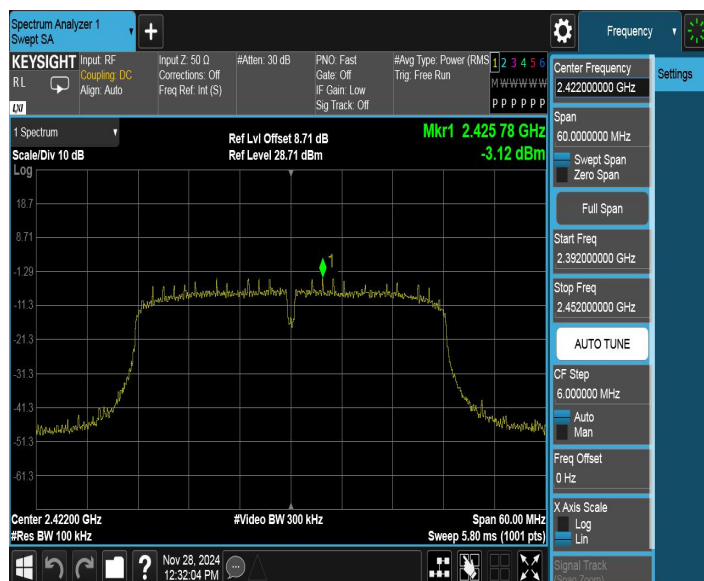
11N20SISO_Ant1_2462_30~1000



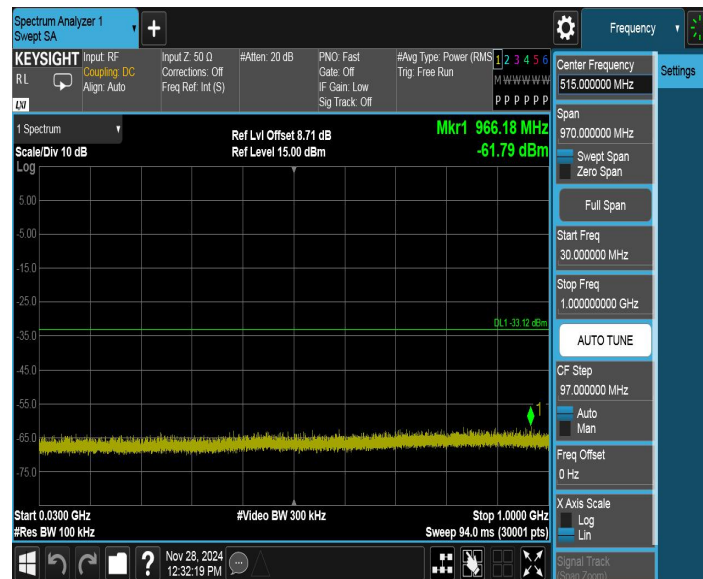
11N20SISO_Ant1_2462_1000~26500



11N40SISO_Ant1_2422_0~Reference



11N40SISO_Ant1_2422_30~1000



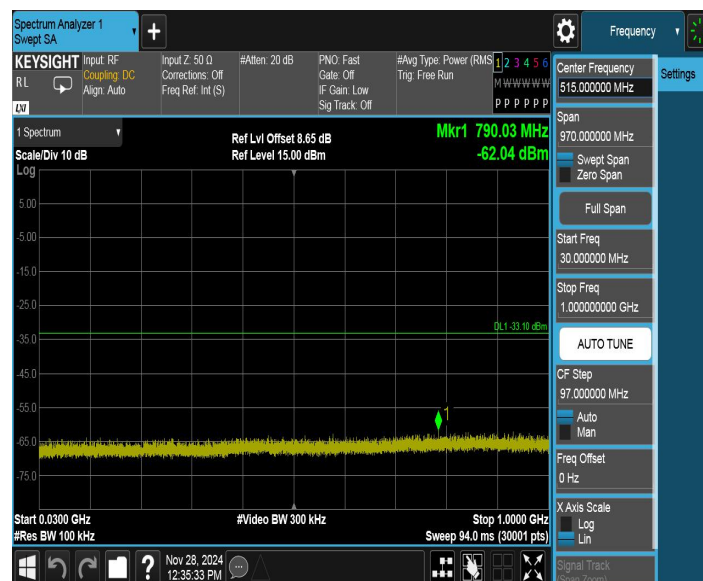
11N40SISO_Ant1_2422_1000~26500



11N40SISO_Ant1_2437_0~Reference



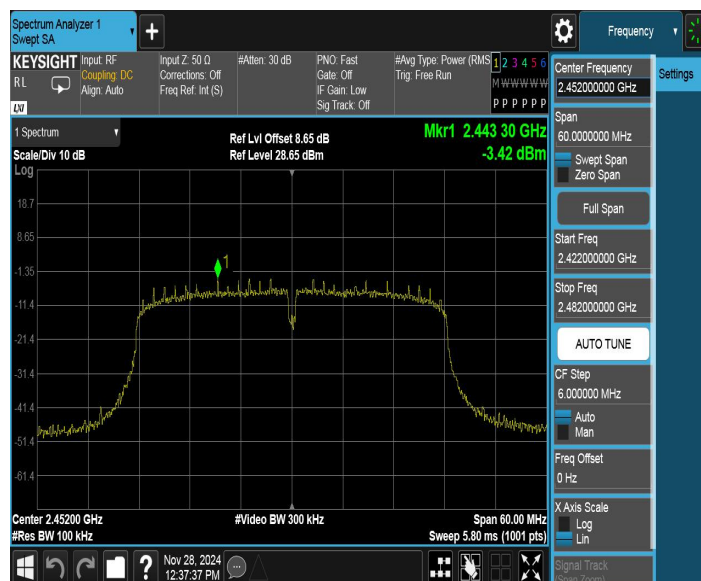
11N40SISO_Ant1_2437_30~1000



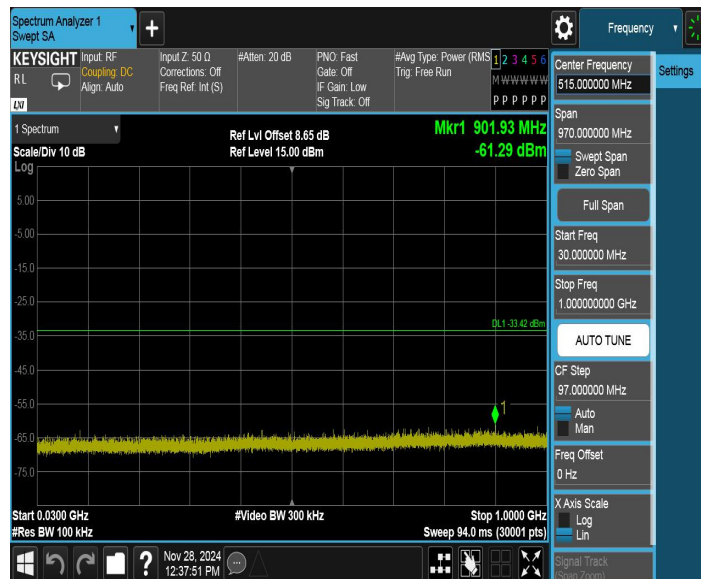
11N40SISO_Ant1_2437_1000~26500



11N40SISO_Ant1_2452_0~Reference



11N40SISO_Ant1_2452_30~1000



11N40SISO_Ant1_2452_1000~26500



7.6. Radiated Spurious Emission Measurement

7.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.6.2. Test Procedure Used

ANSI C63.10-2013 – Section 6.6.4.3

7.6.3. Test Setting

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold

- Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

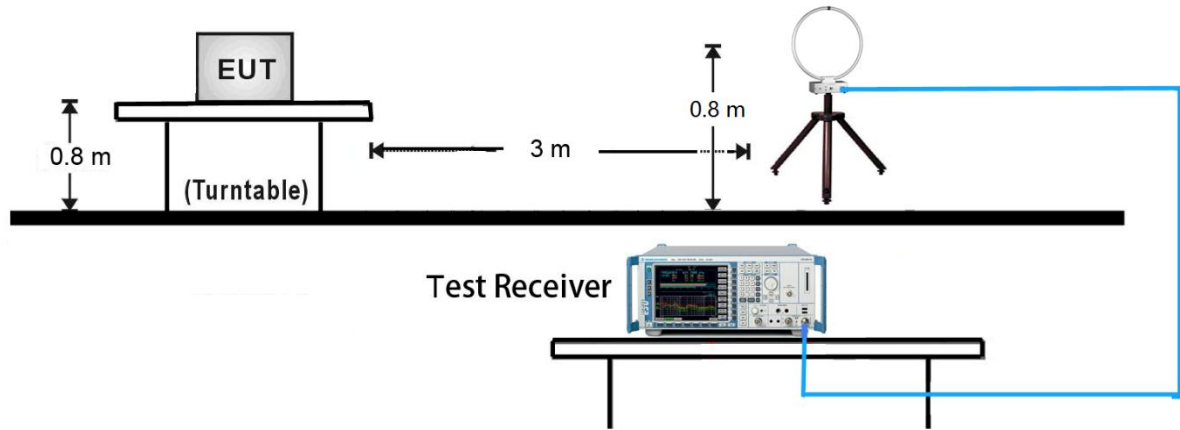
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

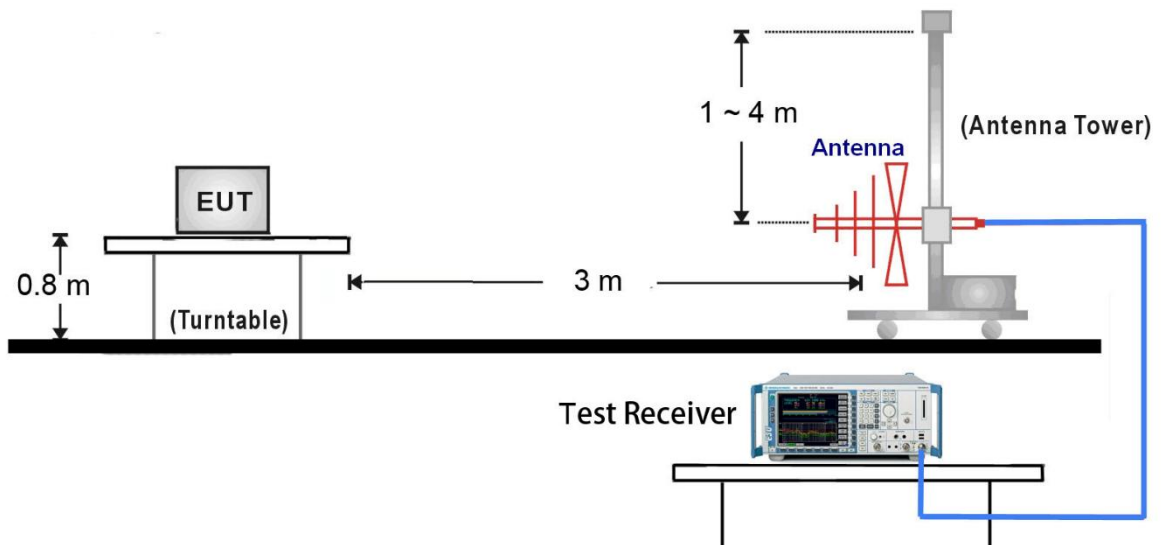
- Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- RBW = 1MHz
- VBW = 3MHz
- Detector = Power Average (RMS)
- Number of sweep point = 2001 (Number of sweep points must be $\geq 2 \times \text{span} / \text{RBW}$)
- Sweep time = auto
- Trace (RMS) averaging was performed over at least 100 traces.

7.6.4. Test Setup

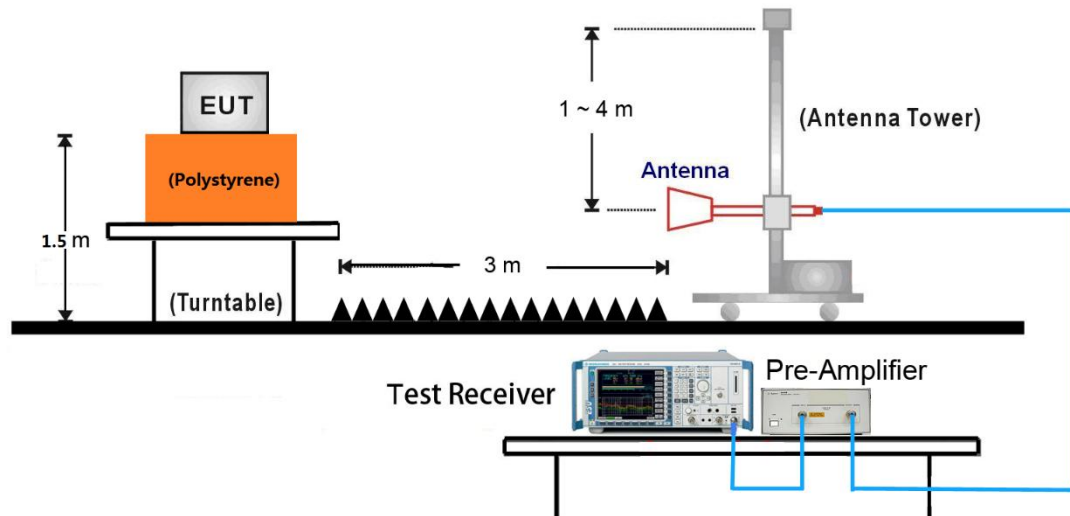
9kHz ~ 30MHz Test Setup:



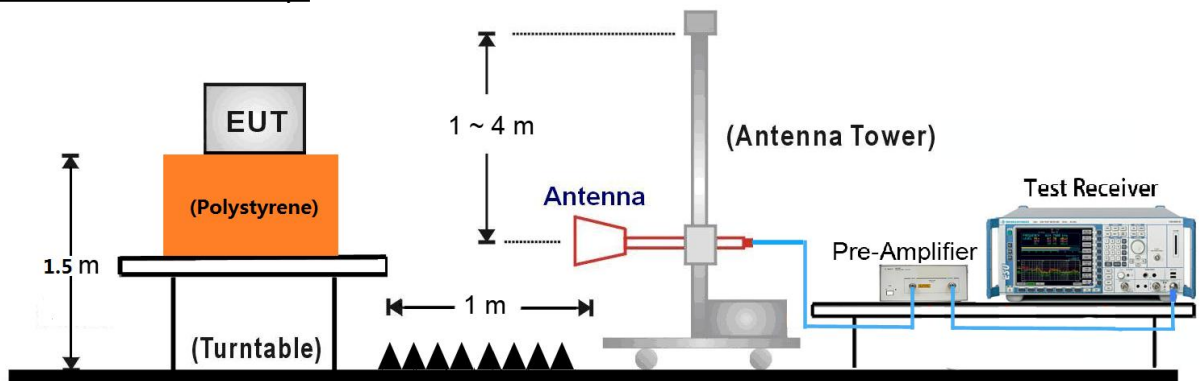
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:



18GHz ~ 25GHz Test Setup:

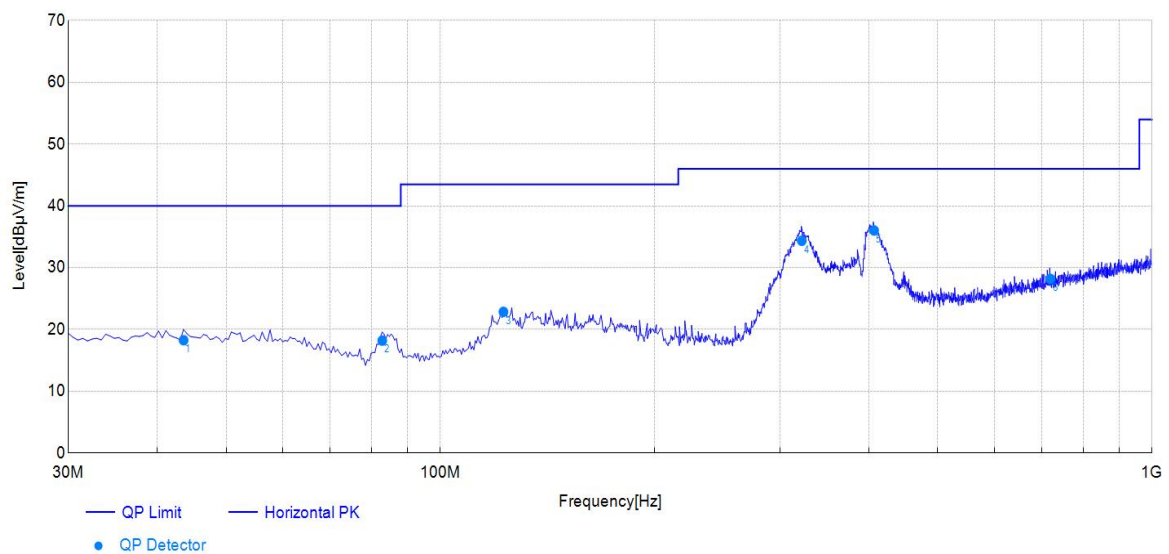


7.6.5. Test Result

The worst case of Radiated Emission below 1GHz:

30MHz – 1GHz Test Data

EUT:	IoT module	Polarity:	Horizontal
Model:	IOTD-2	SN:	N/A
Mode:	Transmit by 802.11b-CDD at Channel 2412MHz	Voltage:	DC 24V
Environment:	Temp: 25.1°C; Humi:48%	Engineer:	Stone Zhang



Final Data List

NO.	Frequency [MHz]	Factor [dB/m]	QP Reading [dBμV]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pol	Verdict
1	43.58	14.68	3.59	18.27	40.00	21.73	150	299	Horizontal	PASS
2	82.87	10.57	7.63	18.20	40.00	21.80	200	5	Horizontal	PASS
3	122.64	13.92	8.94	22.86	43.50	20.64	150	305	Horizontal	PASS
4	321.97	15.77	18.59	34.36	46.00	11.64	200	52	Horizontal	PASS
5	406.85	17.61	18.42	36.03	46.00	9.97	150	308	Horizontal	PASS
6	719.67	23.51	4.68	28.19	46.00	17.81	200	147	Horizontal	PASS

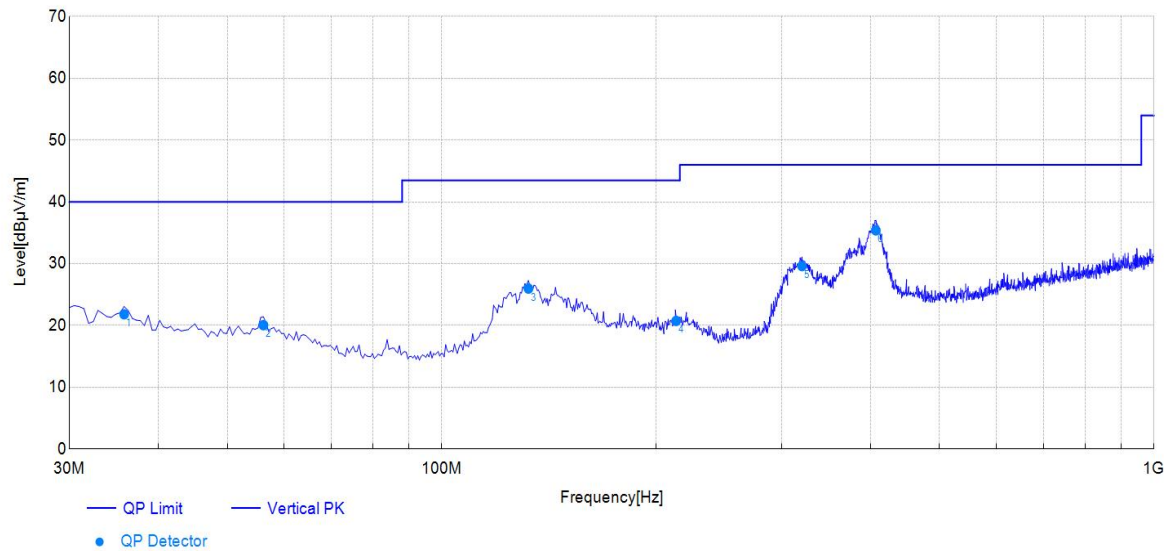
Note:

(1) Level=Reading + Factor

(2) Margin=Limit-Level

(3) The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

EUT:	IoT module	Polarity:	Vertical
Model:	IOTD-2	SN:	N/A
Mode:	Transmit by 802.11b at Channel 2412MHz	Voltage:	DC 24V
Environment:	Temp: 25.1°C; Humi:48%	Engineer:	Stone Zhang



Final Data List										
NO.	Frequency [MHz]	Factor [dB/m]	QP Reading [dBμV]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Pol	Verdict
1	35.82	14.28	7.54	21.82	40.00	18.18	150	356	Vertical	PASS
2	56.19	14.10	5.96	20.06	40.00	19.94	150	257	Vertical	PASS
3	132.34	14.56	11.42	25.98	43.50	17.52	200	39	Vertical	PASS
4	213.33	12.31	8.43	20.74	43.50	22.76	150	148	Vertical	PASS
5	320.52	15.75	13.87	29.62	46.00	16.38	200	272	Vertical	PASS
6	406.85	17.61	17.79	35.40	46.00	10.60	150	360	Vertical	PASS

Note:

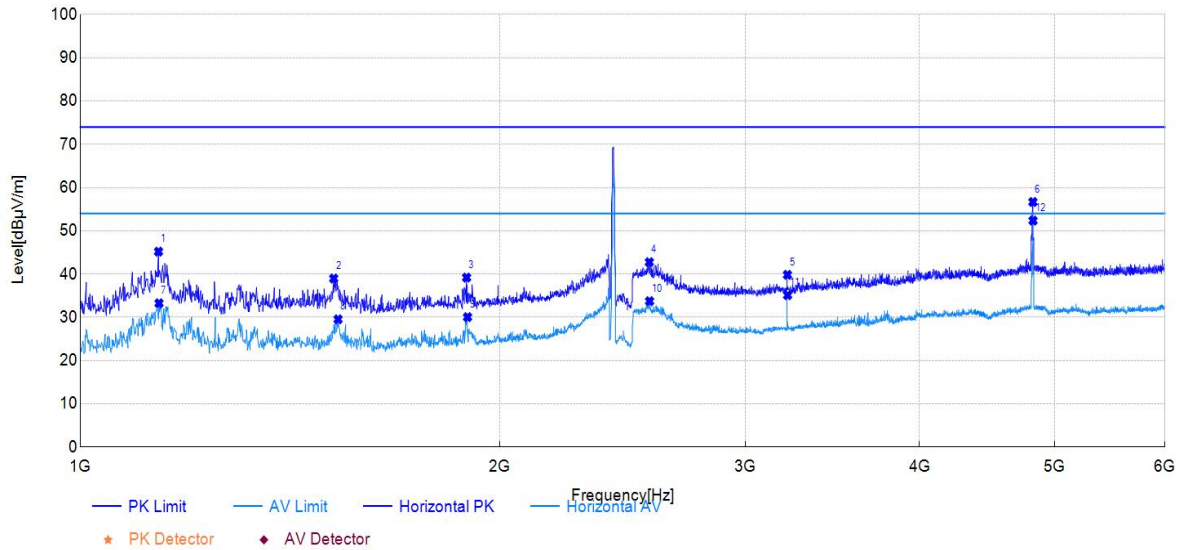
(1) Level=Reading + Factor

(2) Margin=Limit-Level

(3) The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

1GHz-6GHz

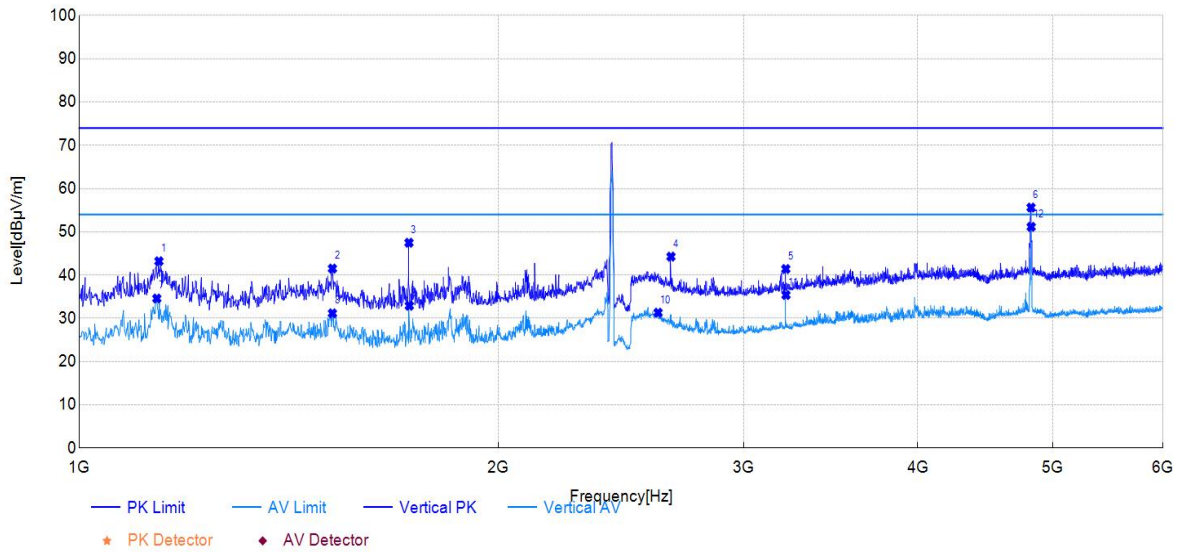
Test Mode:	802.11b	Test Date:	2024-11-01
Test Channel:	01	Test Engineer:	Stone Zhang



Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1138.00	68.89	45.19	-23.70	74.00	28.81	150	129	PK	Horizontal	PASS
2	1520.00	60.60	38.98	-21.62	74.00	35.02	150	36	PK	Horizontal	PASS
3	1893.00	58.26	39.19	-19.07	74.00	34.81	150	8	PK	Horizontal	PASS
4	2560.00	58.39	42.75	-15.64	74.00	31.25	150	27	PK	Horizontal	PASS
5	3216.00	53.35	39.83	-13.52	74.00	34.17	150	262	PK	Horizontal	PASS
6	4824.00	63.39	56.67	-6.72	74.00	17.33	150	248	PK	Horizontal	PASS
7	1139.00	56.94	33.25	-23.69	54.00	20.75	150	129	AV	Horizontal	PASS
8	1531.00	51.07	29.53	-21.54	54.00	24.47	150	32	AV	Horizontal	PASS
9	1896.00	49.09	30.04	-19.05	54.00	23.96	150	8	AV	Horizontal	PASS
10	2561.00	49.37	33.73	-15.64	54.00	20.27	150	41	AV	Horizontal	PASS
11	3217.00	48.64	35.12	-13.52	54.00	18.88	150	244	AV	Horizontal	PASS
12	4825.00	59.07	52.36	-6.71	54.00	1.64	150	253	AV	Horizontal	PASS

Note:(1) Level=Reading+Factor

(2) Margin=Limit-Level



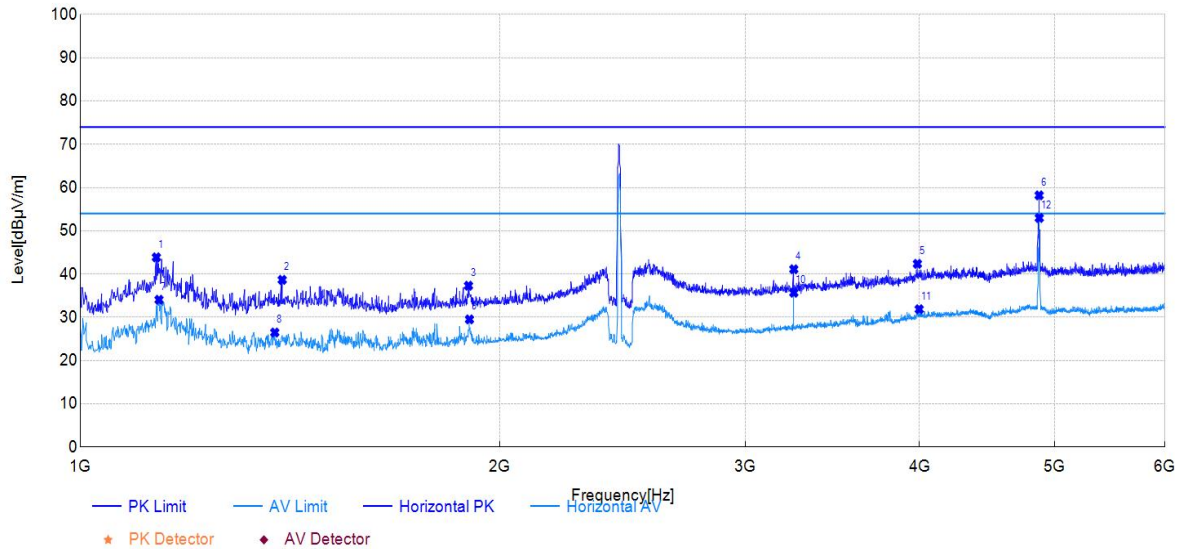
Suspected Data List

NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1141.00	65.87	43.20	-22.67	74.00	30.80	150	239	PK	Vertical	PASS
2	1520.00	62.34	41.50	-20.84	74.00	32.50	150	51	PK	Vertical	PASS
3	1725.00	66.97	47.47	-19.50	74.00	26.53	150	96	PK	Vertical	PASS
4	2660.00	59.73	44.26	-15.47	74.00	29.74	150	64	PK	Vertical	PASS
5	3216.00	54.46	41.40	-13.06	74.00	32.60	150	46	PK	Vertical	PASS
6	4824.00	62.89	55.61	-7.28	74.00	18.39	150	253	PK	Vertical	PASS
7	1137.00	57.26	34.58	-22.68	54.00	19.42	150	134	AV	Vertical	PASS
8	1520.00	51.99	31.15	-20.84	54.00	22.85	150	46	AV	Vertical	PASS
9	1726.00	52.39	32.90	-19.49	54.00	21.10	150	91	AV	Vertical	PASS
10	2604.00	47.01	31.30	-15.71	54.00	22.70	150	234	AV	Vertical	PASS
11	3217.00	48.44	35.38	-13.06	54.00	18.62	150	32	AV	Vertical	PASS
12	4825.00	58.42	51.15	-7.27	54.00	2.85	150	253	AV	Vertical	PASS

Note:(1) Level=Reading+Factor

(2) Margin=Limit-Level

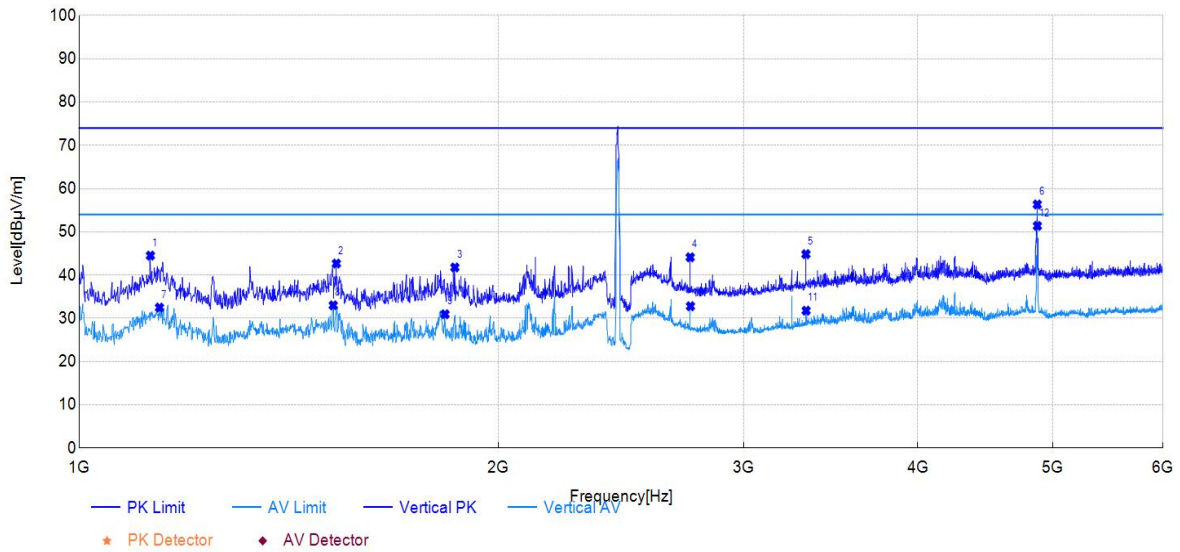
Test Mode:	802.11b	Test Date:	2024-11-01
Test Channel:	06	Test Engineer:	Stone Zhang



Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1134.00	67.57	43.87	-23.70	74.00	30.13	150	125	PK	Horizontal	PASS
2	1396.00	60.88	38.66	-22.22	74.00	35.34	150	125	PK	Horizontal	PASS
3	1899.00	56.36	37.31	-19.05	74.00	36.69	150	6	PK	Horizontal	PASS
4	3250.00	54.47	41.11	-13.36	74.00	32.89	150	255	PK	Horizontal	PASS
5	3986.00	51.04	42.37	-8.67	74.00	31.63	150	301	PK	Horizontal	PASS
6	4874.00	64.78	58.20	-6.58	74.00	15.80	150	250	PK	Horizontal	PASS
7	1139.00	57.75	34.06	-23.69	54.00	19.94	150	139	AV	Horizontal	PASS
8	1379.00	48.82	26.48	-22.34	54.00	27.52	150	32	AV	Horizontal	PASS
9	1902.00	48.54	29.52	-19.02	54.00	24.48	150	10	AV	Horizontal	PASS
10	3250.00	49.04	35.68	-13.36	54.00	18.32	150	255	AV	Horizontal	PASS
11	3998.00	40.46	31.86	-8.60	54.00	22.14	150	0	AV	Horizontal	PASS
12	4875.00	59.54	52.97	-6.57	54.00	1.03	150	255	AV	Horizontal	PASS

Note: (1) Level=Reading+Factor

(2) Margin=Limit-Level



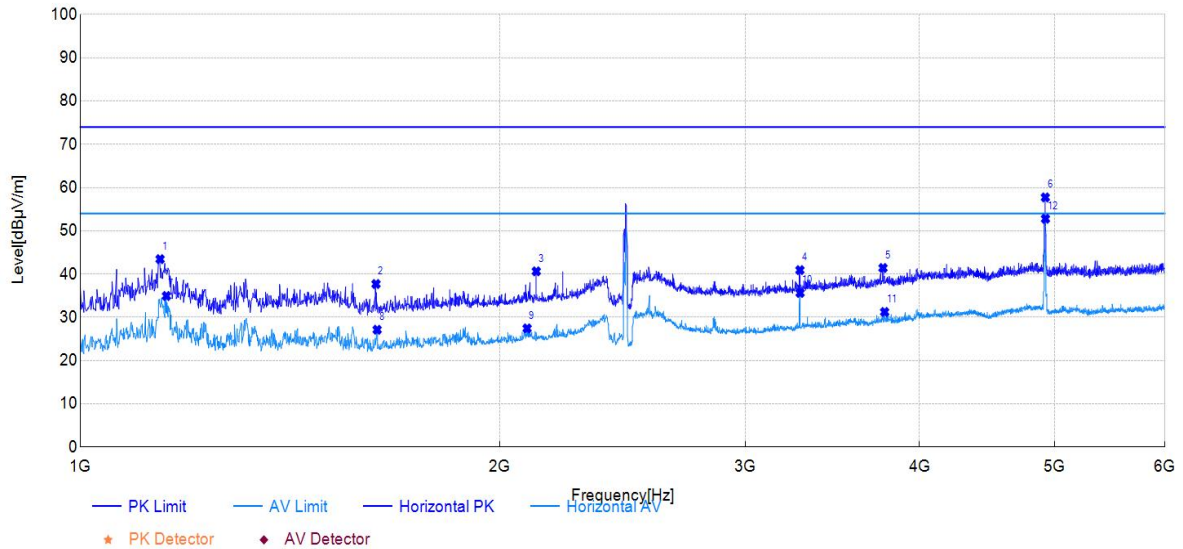
Suspected Data List

NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1125.00	67.22	44.50	-22.72	74.00	29.50	150	110	PK	Vertical	PASS
2	1530.00	63.44	42.67	-20.77	74.00	31.33	150	100	PK	Vertical	PASS
3	1861.00	60.46	41.76	-18.70	74.00	32.24	150	41	PK	Vertical	PASS
4	2746.00	59.35	44.11	-15.24	74.00	29.89	150	73	PK	Vertical	PASS
5	3325.00	57.28	44.83	-12.45	74.00	29.17	150	355	PK	Vertical	PASS
6	4874.00	63.50	56.32	-7.18	74.00	17.68	150	317	PK	Vertical	PASS
7	1142.00	55.14	32.48	-22.66	54.00	21.52	150	132	AV	Vertical	PASS
8	1522.00	53.83	33.00	-20.83	54.00	21.00	150	95	AV	Vertical	PASS
9	1831.00	49.75	30.94	-18.81	54.00	23.06	150	78	AV	Vertical	PASS
10	2747.00	48.03	32.79	-15.24	54.00	21.21	150	73	AV	Vertical	PASS
11	3326.00	44.20	31.76	-12.44	54.00	22.24	150	355	AV	Vertical	PASS
12	4875.00	58.53	51.36	-7.17	54.00	2.64	150	321	AV	Vertical	PASS

Note: (1) Level=Reading+Factor

(2) Margin=Limit-Level

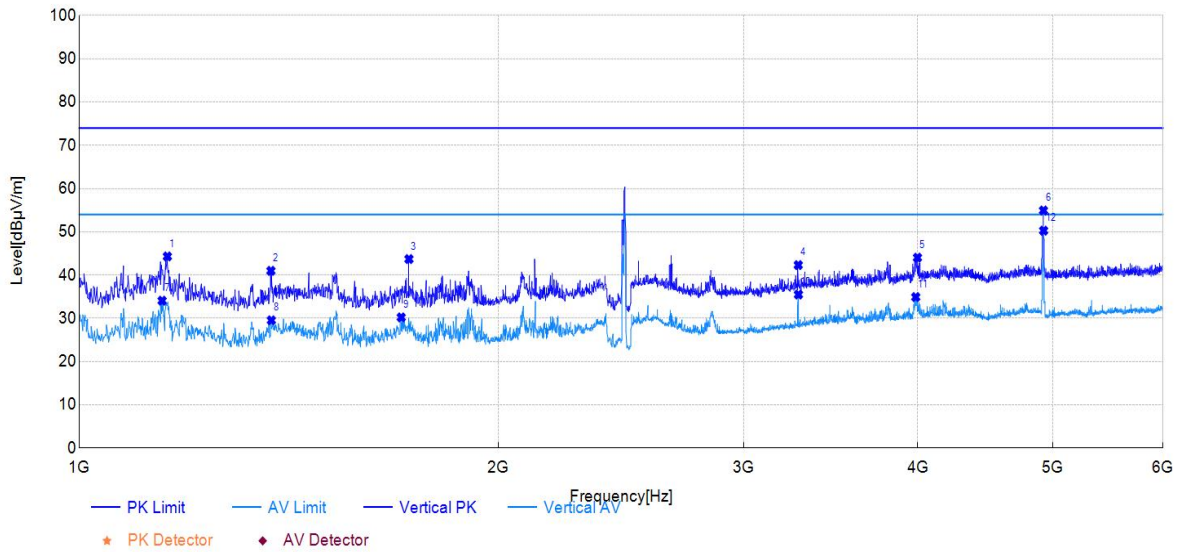
Test Mode:	802.11b	Test Date:	2024-11-01
Test Channel:	11	Test Engineer:	Stone Zhang



Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1141.00	67.13	43.45	-23.68	74.00	30.55	150	137	PK	Horizontal	PASS
2	1630.00	58.56	37.70	-20.86	74.00	36.30	150	152	PK	Horizontal	PASS
3	2124.00	58.17	40.63	-17.54	74.00	33.37	150	179	PK	Horizontal	PASS
4	3283.00	54.12	40.92	-13.20	74.00	33.08	150	241	PK	Horizontal	PASS
5	3766.00	51.88	41.41	-10.47	74.00	32.59	150	0	PK	Horizontal	PASS
6	4924.00	64.11	57.72	-6.39	74.00	16.28	150	249	PK	Horizontal	PASS
7	1153.00	58.57	34.93	-23.64	54.00	19.07	150	137	AV	Horizontal	PASS
8	1633.00	47.97	27.13	-20.84	54.00	26.87	150	152	AV	Horizontal	PASS
9	2092.00	45.12	27.43	-17.69	54.00	26.57	150	54	AV	Horizontal	PASS
10	3284.00	48.84	35.64	-13.20	54.00	18.36	150	259	AV	Horizontal	PASS
11	3776.00	41.62	31.23	-10.39	54.00	22.77	150	310	AV	Horizontal	PASS
12	4925.00	59.16	52.78	-6.38	54.00	1.22	150	249	AV	Horizontal	PASS

Note:(1) Level=Reading+Factor

(2) Margin=Limit-Level

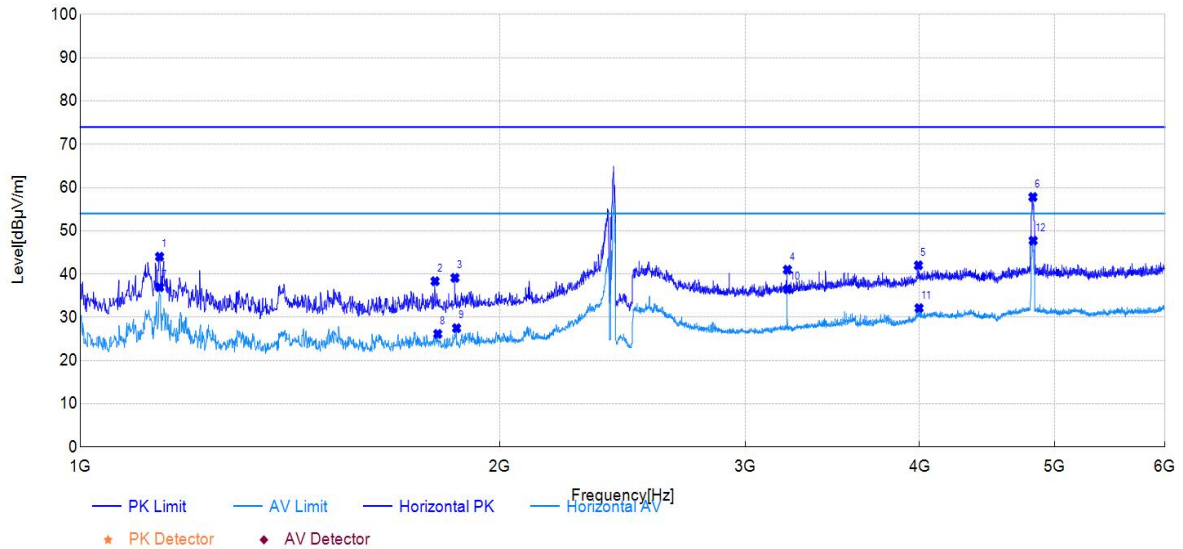


Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1157.00	66.91	44.30	-22.61	74.00	29.70	150	107	PK	Vertical	PASS
2	1373.00	62.48	40.98	-21.50	74.00	33.02	150	84	PK	Vertical	PASS
3	1725.00	63.20	43.70	-19.50	74.00	30.30	150	84	PK	Vertical	PASS
4	3283.00	54.97	42.31	-12.66	74.00	31.69	150	167	PK	Vertical	PASS
5	3998.00	52.32	44.02	-8.30	74.00	29.98	150	135	PK	Vertical	PASS
6	4924.00	61.96	54.93	-7.03	74.00	19.07	150	315	PK	Vertical	PASS
7	1147.00	56.71	34.07	-22.64	54.00	19.93	150	250	AV	Vertical	PASS
8	1374.00	51.03	29.54	-21.49	54.00	24.46	150	79	AV	Vertical	PASS
9	1703.00	49.88	30.22	-19.66	54.00	23.78	150	70	AV	Vertical	PASS
10	3284.00	48.15	35.49	-12.66	54.00	18.51	150	167	AV	Vertical	PASS
11	3987.00	43.26	34.91	-8.35	54.00	19.09	150	89	AV	Vertical	PASS
12	4925.00	57.29	50.27	-7.02	54.00	3.73	150	315	AV	Vertical	PASS

Note: (1) Level=Reading+Factor

(2) Margin=Limit-Level

Test Mode:	802.11g	Test Date:	2024-11-01
Test Channel:	01	Test Engineer:	Stone Zhang



Suspected Data List											
NO.	Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Det	Pol	Verdict
1	1140.00	67.70	44.01	-23.69	74.00	29.99	150	139	PK	Horizontal	PASS
2	1797.00	57.85	38.34	-19.51	74.00	35.66	150	148	PK	Horizontal	PASS
3	1857.00	58.36	39.13	-19.23	74.00	34.87	150	27	PK	Horizontal	PASS
4	3216.00	54.52	41.00	-13.52	74.00	33.00	150	234	PK	Horizontal	PASS
5	3993.00	50.64	42.01	-8.63	74.00	31.99	150	85	PK	Horizontal	PASS
6	4824.00	64.53	57.81	-6.72	74.00	16.19	150	261	PK	Horizontal	PASS
7	1140.00	60.65	36.96	-23.69	54.00	17.04	150	139	AV	Horizontal	PASS
8	1805.00	45.61	26.15	-19.46	54.00	27.85	150	0	AV	Horizontal	PASS
9	1862.00	46.69	27.48	-19.21	54.00	26.52	150	59	AV	Horizontal	PASS
10	3217.00	50.03	36.51	-13.52	54.00	17.49	150	261	AV	Horizontal	PASS
11	3997.00	40.72	32.12	-8.60	54.00	21.88	150	90	AV	Horizontal	PASS
12	4826.00	54.44	47.73	-6.71	54.00	6.27	150	256	AV	Horizontal	PASS

Note:(1) Level=Reading+Factor

(2) Margin=Limit-Level