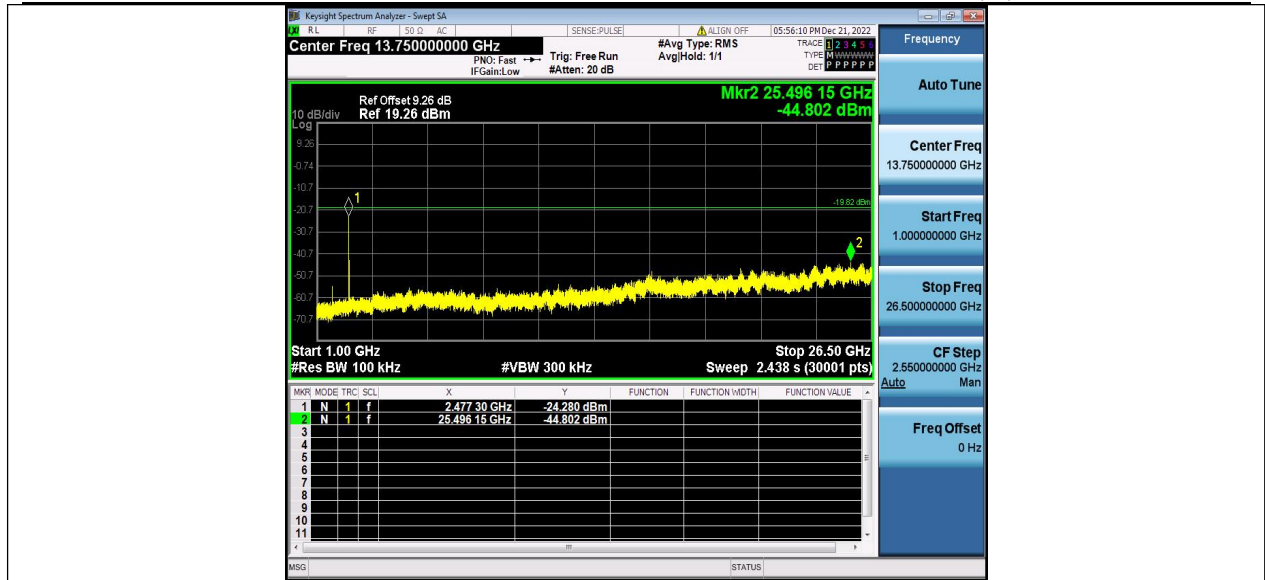




Test report No. RZBG(W)20221128001-4





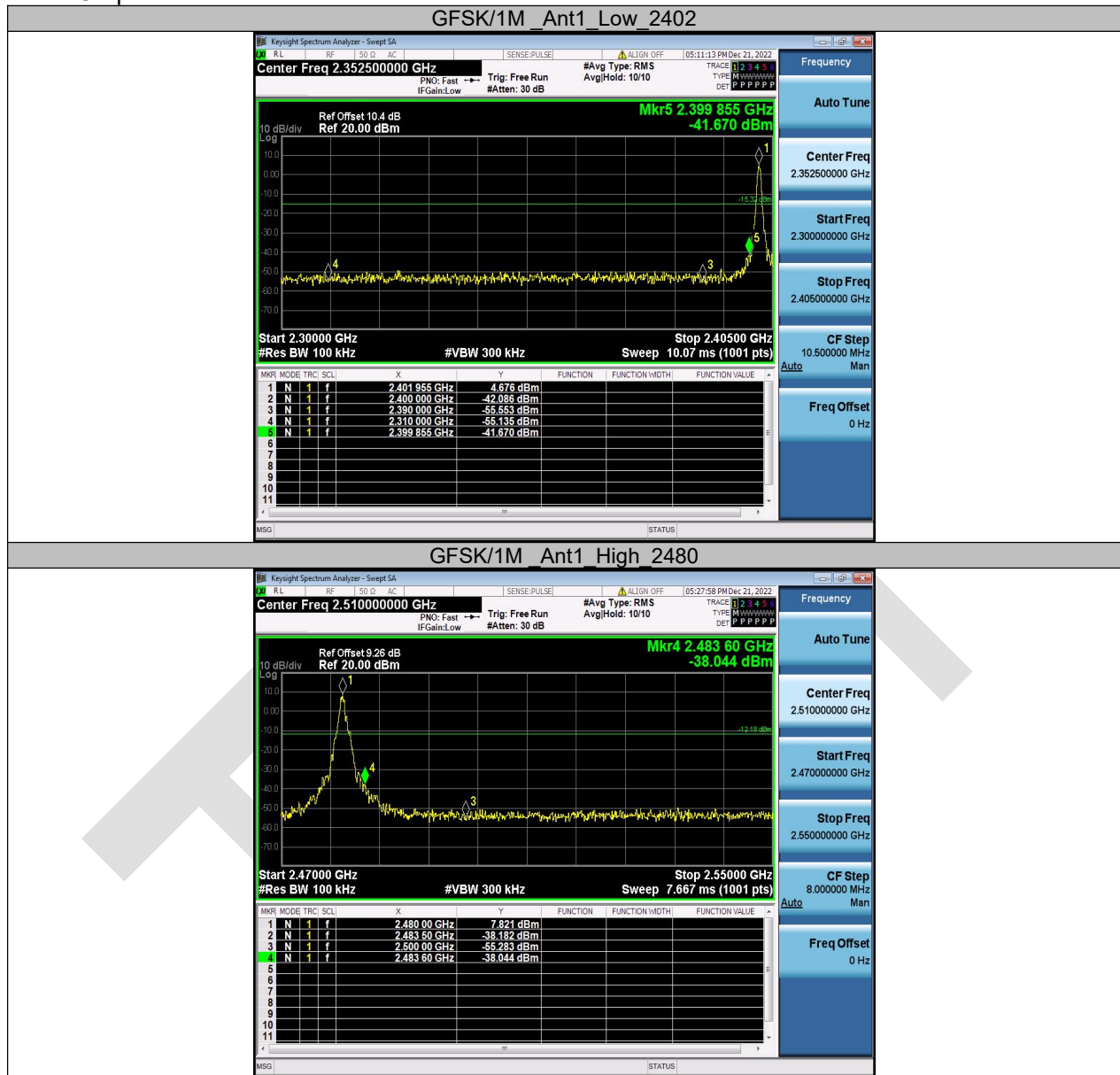
A.4 Band Edge (Authorize band-edge)

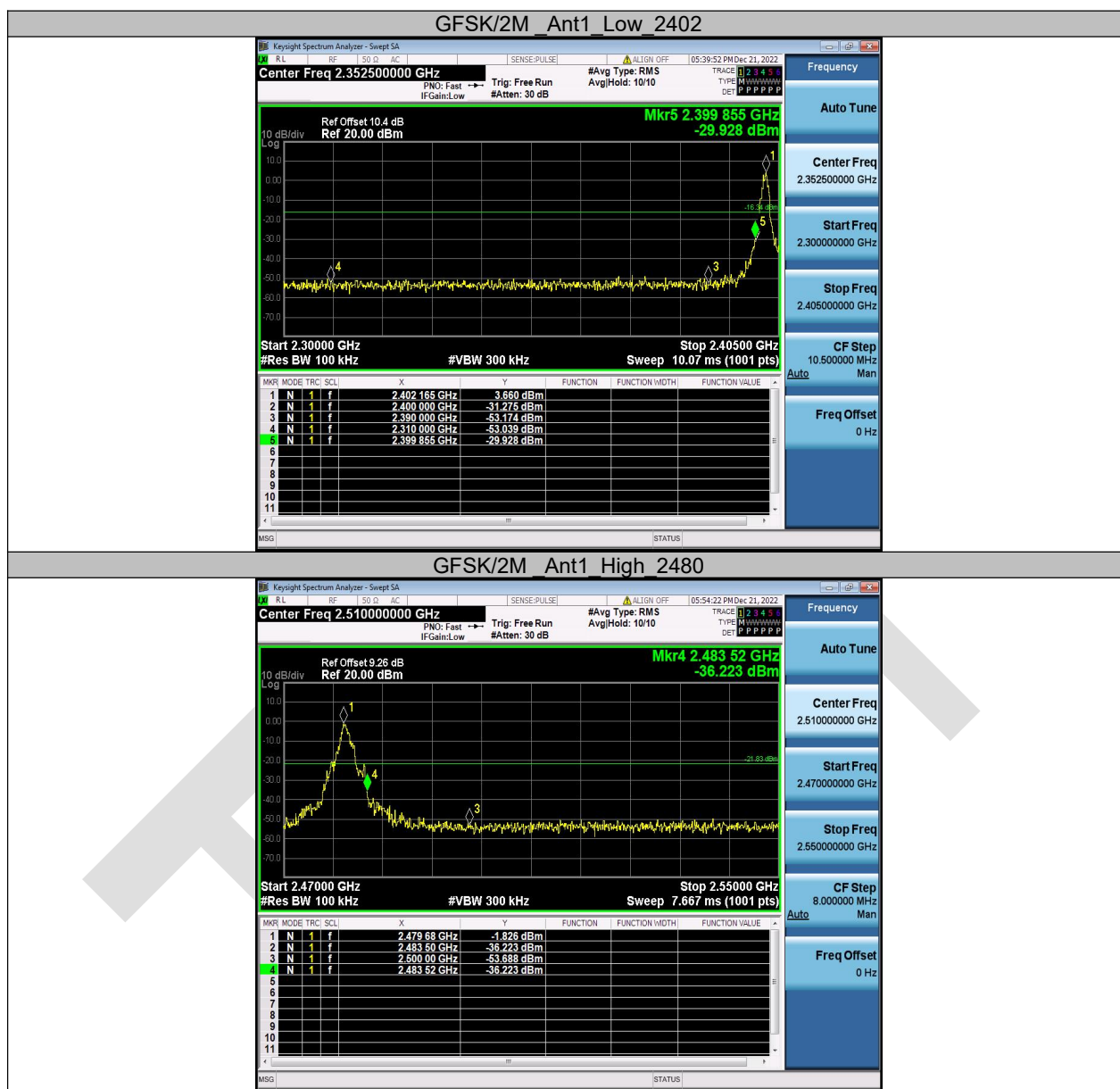
Test Result:

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
GFSK/1M	Ant1	Low	2402	4.68	-41.67	≤-15.32	PASS
		High	2480	7.82	-38.04	≤-12.18	PASS
GFSK/2M	Ant1	Low	2402	3.66	-29.93	≤-16.34	PASS
		High	2480	-1.83	-36.22	≤-21.83	PASS



Test Graphs





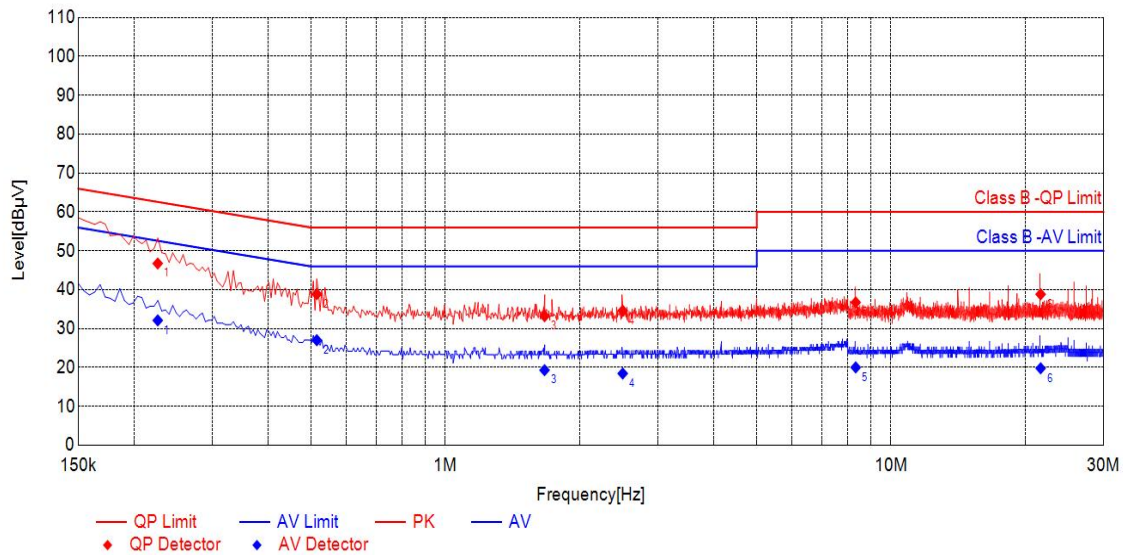


A.5 AC Power Line Conducted Emission

Note 1: The EUT is working in the Normal link mode.

Test Data and Plots:

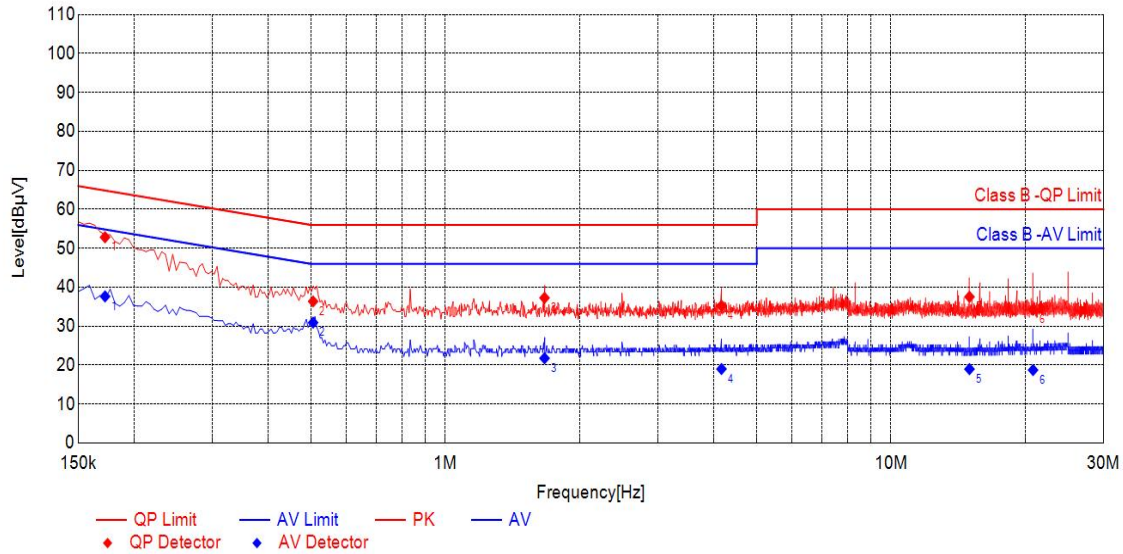
PHASE L



NO.	Freq. [MHz]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Result	Type
1	0.2263	27.02	46.76	62.58	15.82	12.39	32.13	52.58	20.45	PASS	L
2	0.5148	19.15	38.88	56.00	17.12	7.30	27.03	46.00	18.97	PASS	L
3	1.6697	13.42	33.20	56.00	22.80	-0.46	19.32	46.00	26.68	PASS	L
4	2.5001	14.69	34.63	56.00	21.37	-1.48	18.46	46.00	27.54	PASS	L
5	8.3328	16.71	36.74	60.00	23.26	0.01	20.04	50.00	29.96	PASS	L
6	21.6639	18.57	38.84	60.00	21.16	-0.46	19.81	50.00	30.19	PASS	L



PHASE N



NO.	Freq. [MHz]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Result	Type
1	0.1724	33.03	52.85	64.84	11.99	17.84	37.66	54.84	17.18	PASS	N
2	0.5050	16.65	36.37	56.00	19.63	11.21	30.93	46.00	15.07	PASS	N
3	1.6694	17.54	37.28	56.00	18.72	2.04	21.78	46.00	24.22	PASS	N
4	4.1652	15.26	35.24	56.00	20.76	-0.96	19.02	46.00	26.98	PASS	N
5	14.9984	17.60	37.55	60.00	22.45	-0.96	18.99	50.00	31.01	PASS	N
6	20.8360	13.99	34.23	60.00	25.77	-1.48	18.76	50.00	31.24	PASS	N



A.6 Radiated Emission

Note 1: The symbol of “--” in the table which means not application.

Note 2: For the test data above 1 GHz, According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

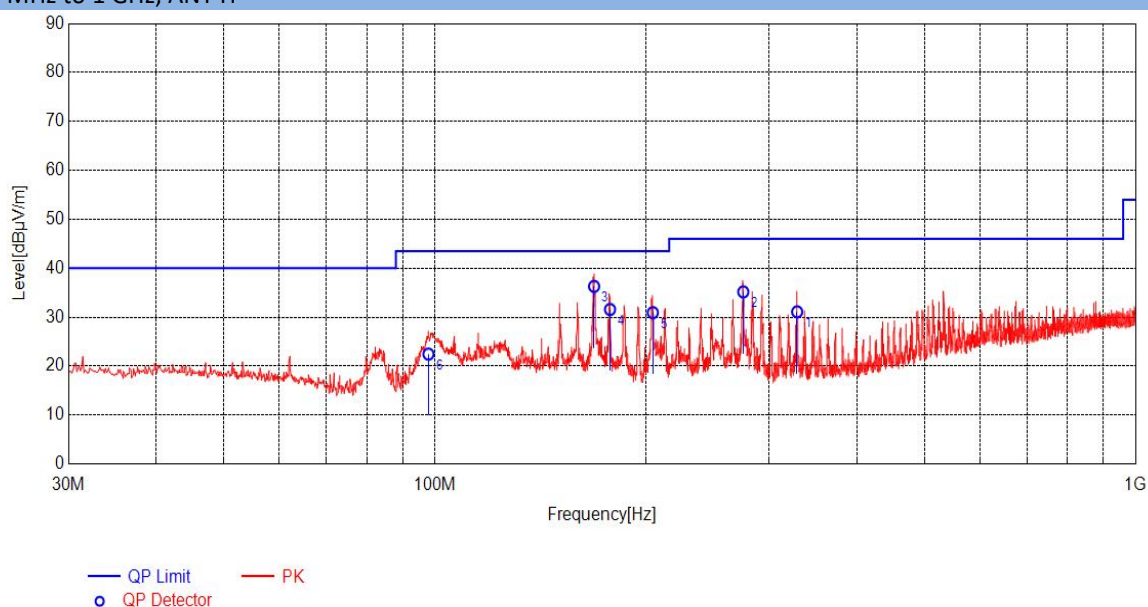
Note 3: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note 4: The EUT is working in the Normal link mode below 1 GHz.

Note 5: The emission in 18GHz-25GHz only show the worst test data, because of they are noisy.

Test Data and Plots:

30 MHz to 1 GHz, ANT H

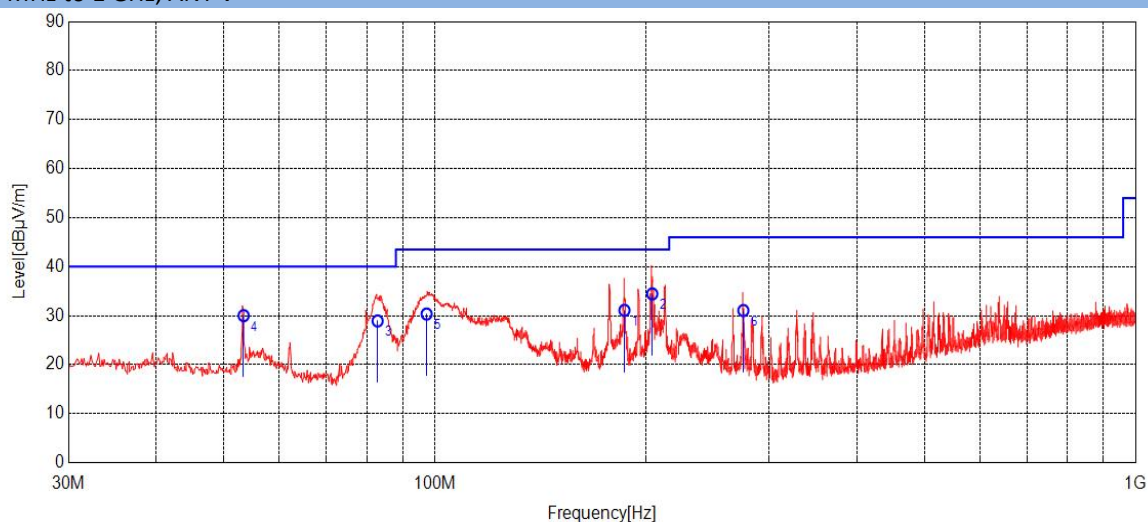


Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	328.9032	15.03	31.11	46.00	14.89	102.8	83.4	Horizontal
2	275.5499	13.93	35.18	46.00	10.82	108	93.3	Horizontal
3	168.7378	15.10	36.31	43.50	7.19	209.2	187.5	Horizontal
4	177.8359	13.74	31.59	43.50	11.91	220.4	191.2	Horizontal
5	204.6978	12.28	30.94	43.50	12.56	124.5	299.9	Horizontal
6	97.9364	11.68	22.47	43.50	21.03	190.1	11.1	Horizontal



30 MHz to 1 GHz, ANT V



— QP Limit — PK
○ QP Detector

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	186.4409	12.79	31.10	43.50	12.40	108.1	27.6	Vertical
2	204.2812	12.27	34.46	43.50	9.04	102.1	29.4	Vertical
3	82.8501	10.76	28.94	40.00	11.06	101.4	81	Vertical
4	53.3505	14.83	30.02	40.00	9.98	108	72.7	Vertical
5	97.3269	11.60	30.35	43.50	13.15	114.4	202.7	Vertical
6	275.5692	13.93	31.07	46.00	14.93	106.5	352	Vertical



above 1GHz(1GHz-18GHz):

1M,CH0,2402MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.60	-4.19	45.48	41.29	74.00	32.71	Peak

1M,CH0,2402MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.60	-4.19	44.48	40.29	74.00	33.71	Peak

1M,CH19,2440MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4879.40	-3.73	45.17	41.44	74.00	32.56	Peak

1M,CH19,2440MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4879.40	-3.73	46.17	42.44	74.00	31.56	Peak

1M,CH39,2480MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.30	-3.18	48.86	45.68	74.00	28.32	Peak

1M,CH39,2480MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.30	-3.18	47.60	44.42	74.00	29.58	Peak



2M,CH0,2402MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.60	-4.19	43.72	39.53	74.00	34.47	Peak

2M,CH0,2402MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4804.60	-4.19	44.72	40.53	74.00	33.47	Peak

2M,CH19,2440MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4879.40	-3.73	43.08	39.35	74.00	34.65	Peak

2M,CH19,2440MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4877.70	-3.75	42.69	38.94	74.00	35.06	Peak

2M,CH39,2480MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.30	-3.18	51.47	48.30	74.00	25.70	Peak

2M,CH39,2480MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.30	-3.18	46.56	43.38	74.00	30.62	Peak



1M ,CH39,2480MHz, ANT H(18GHz-25GHz)

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	23527.53	-16.86	61.35	44.49	74.00	29.51	Peak
2	24753.73	-15.49	59.68	44.19	74.00	29.81	Peak

1M ,CH39,2480MHz, ANT V(18GHz-25GHz)

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	23485.30	-16.88	61.86	44.98	74.00	29.02	Peak
2	24761.15	-15.54	59.92	44.39	74.00	29.61	Peak



A.7 Band Edge (Restricted band-edge)

Test Result:

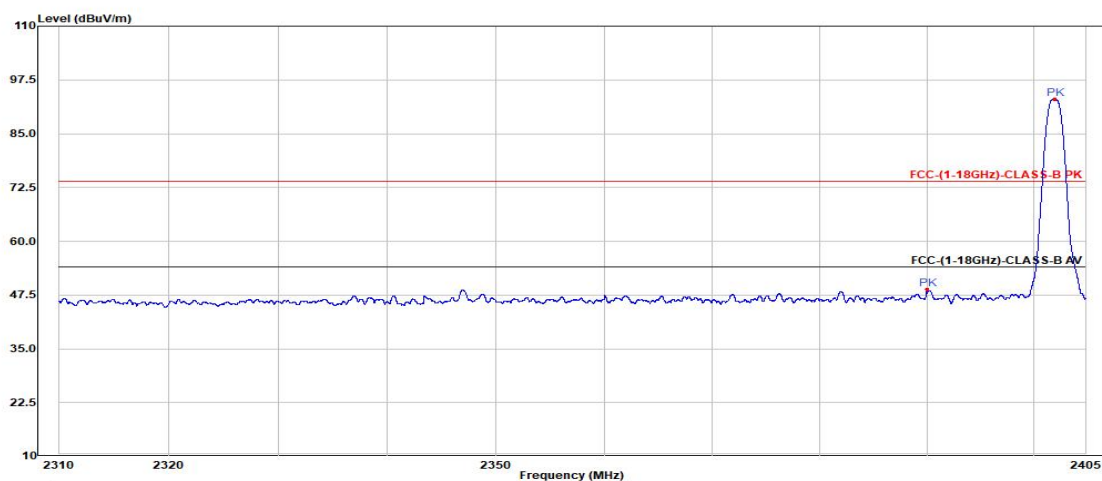
Note:

1. The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.
2. The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.
3. According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement



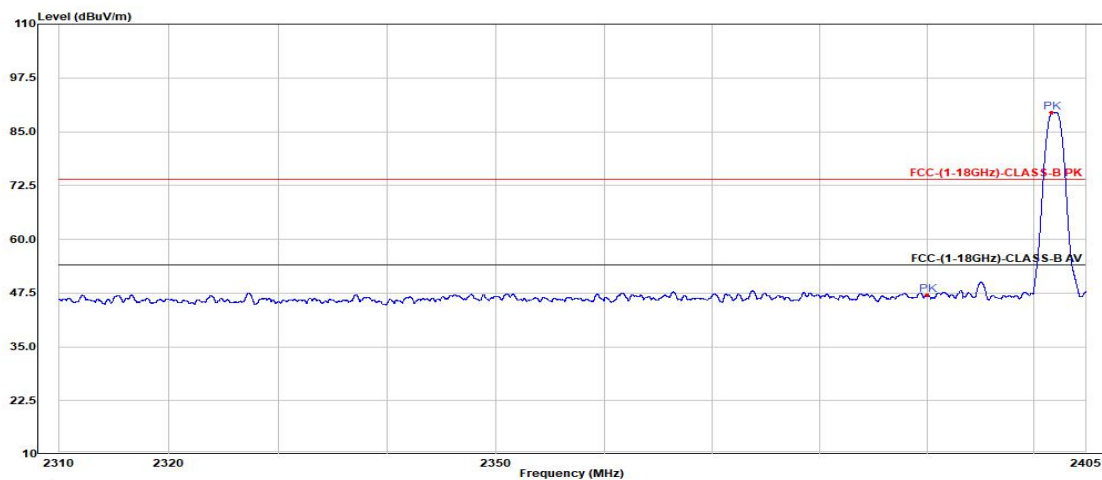
Test Graphs

GFSK/1M_Ant1_Low_2402_H



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.00	33.98	14.77	48.76	74.00	25.24	Peak
2	2401.98	34.00	58.98	92.98	74.00	N/A	Peak

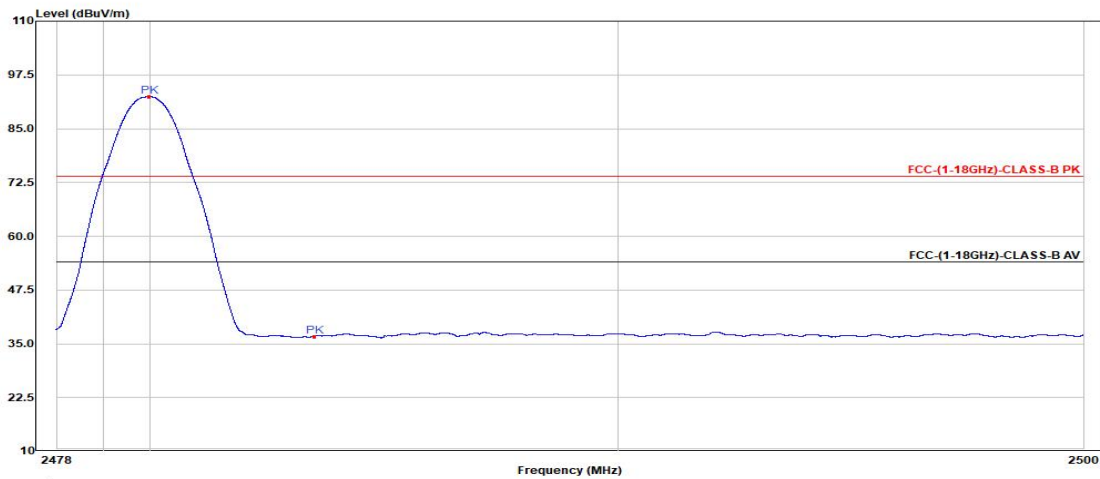
GFSK/1M_Ant1_Low_2402_V



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.00	33.98	13.16	47.14	74.00	26.86	Peak
2	2401.76	34.00	55.46	89.46	74.00	N/A	Peak



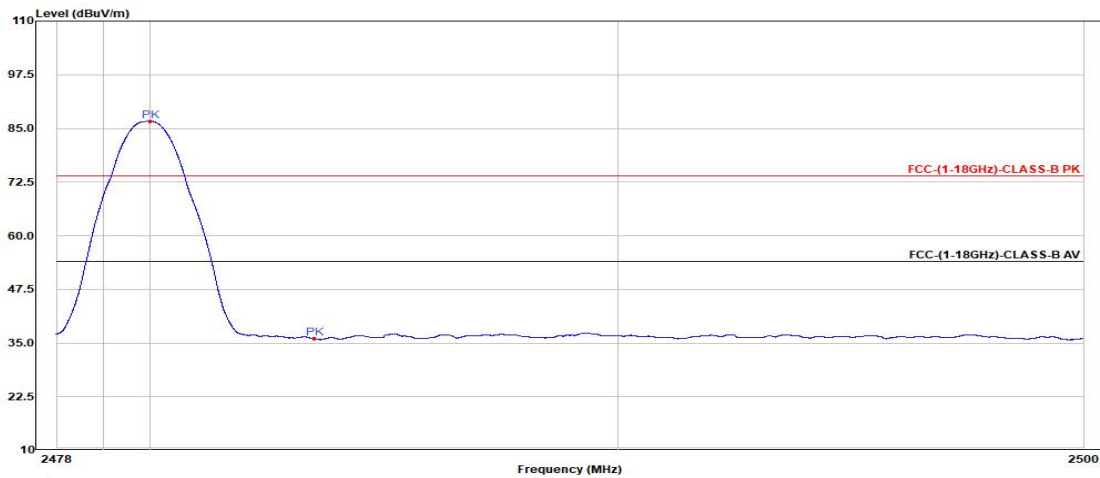
GFSK/1M_Ant1_High_2480_H



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2479.97	34.24	58.19	92.43	74.00	N/A	Peak
2	2483.50	34.27	2.50	36.77	74.00	37.23	Peak

GFSK/1M_Ant1_High_2480_V

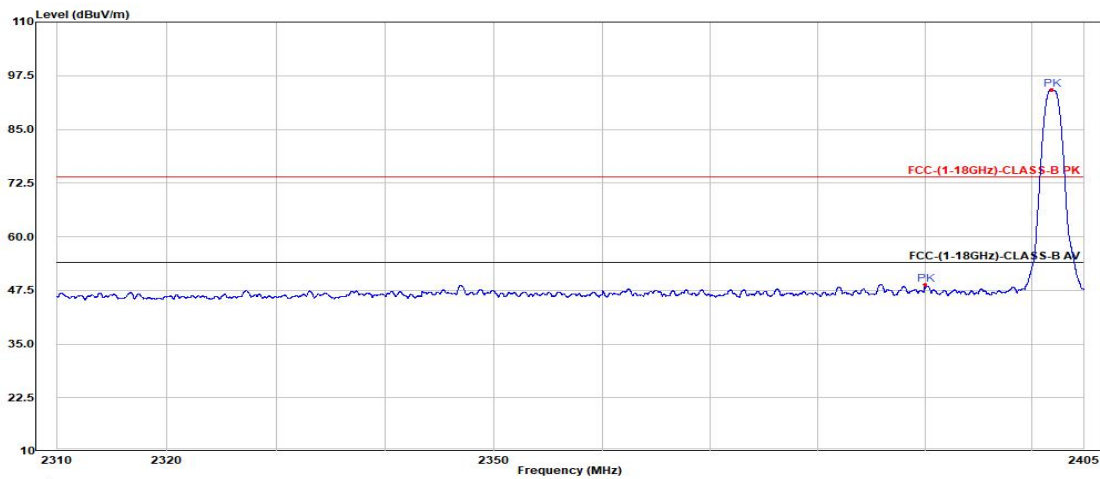


Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2480.00	34.24	52.47	86.72	74.00	N/A	Peak
2	2483.50	34.27	1.74	36.00	74.00	38.00	Peak

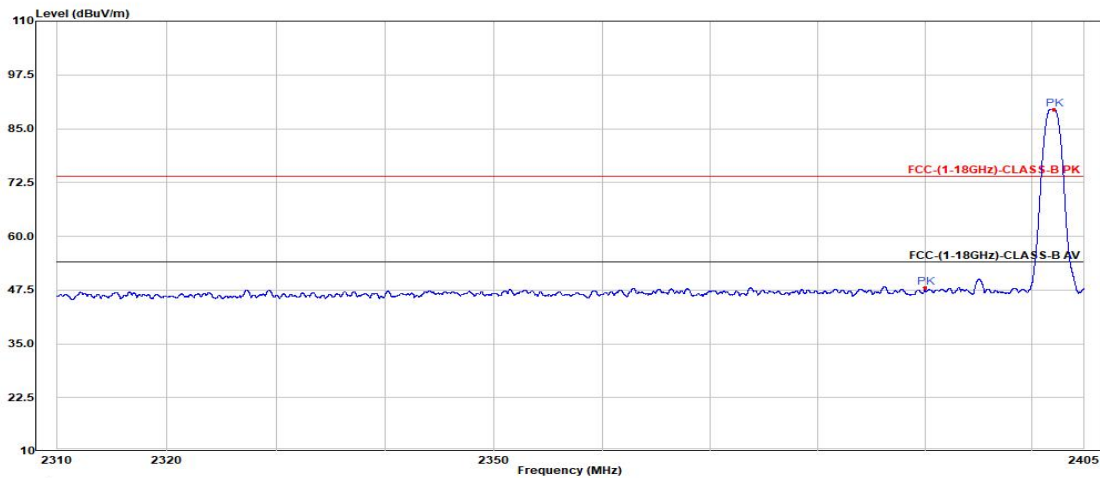


GFSK/2M_Ant1_Low_2402_H



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.00	33.98	14.77	48.76	74.00	25.24	Peak
2	2401.88	34.00	60.16	94.17	74.00	N/A	Peak

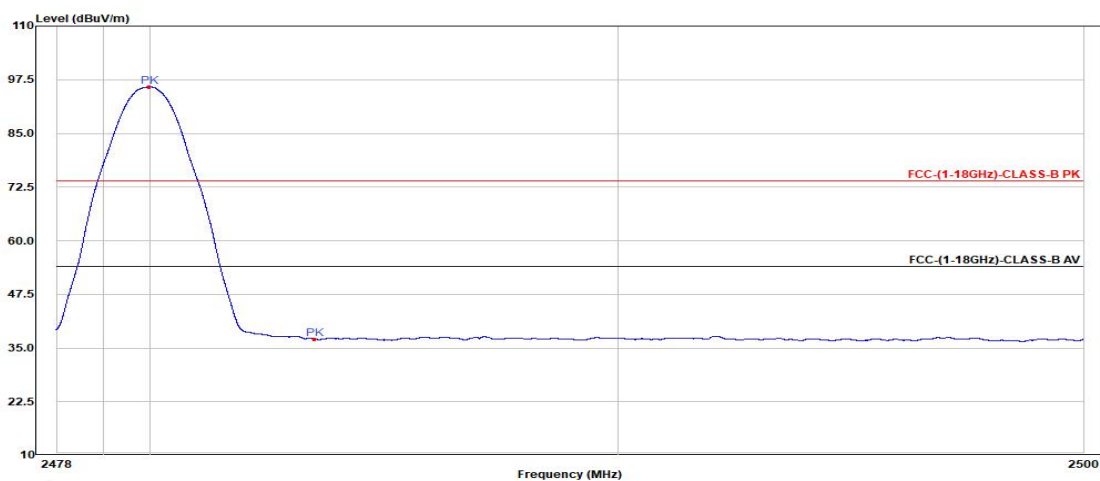
GFSK/2M_Ant1_Low_2402_V



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.00	33.98	14.16	48.14	74.00	25.86	Peak
2	2402.08	34.00	55.49	89.49	74.00	N/A	Peak



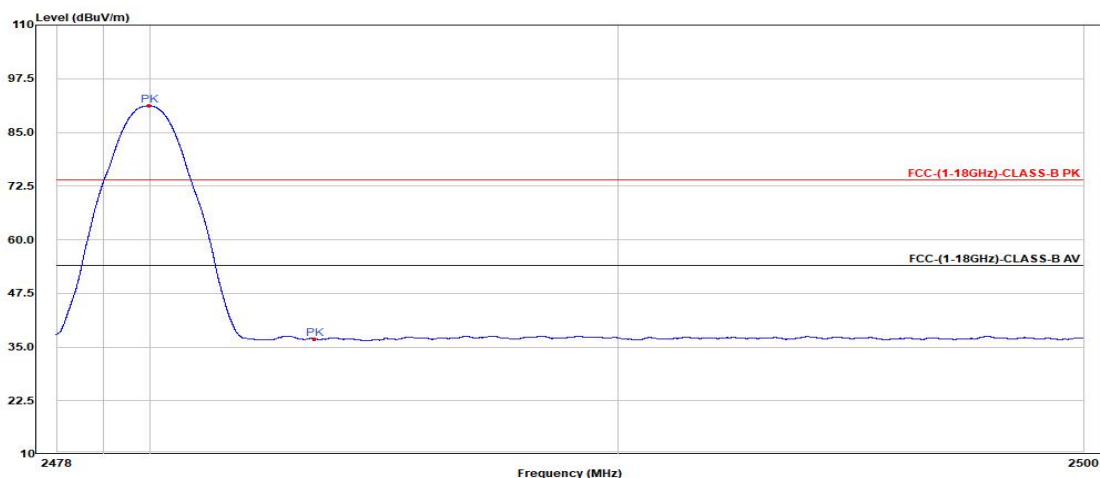
GFSK/2M_Ant1_High_2480_H



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2479.98	34.24	61.57	95.81	74.00	N/A	Peak
2	2483.50	34.27	2.88	37.14	74.00	36.86	Peak

GFSK/2M_Ant1_High_2480_V



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2479.97	34.24	56.97	91.22	74.00	N/A	Peak
2	2483.50	34.27	2.71	36.98	74.00	37.02	Peak



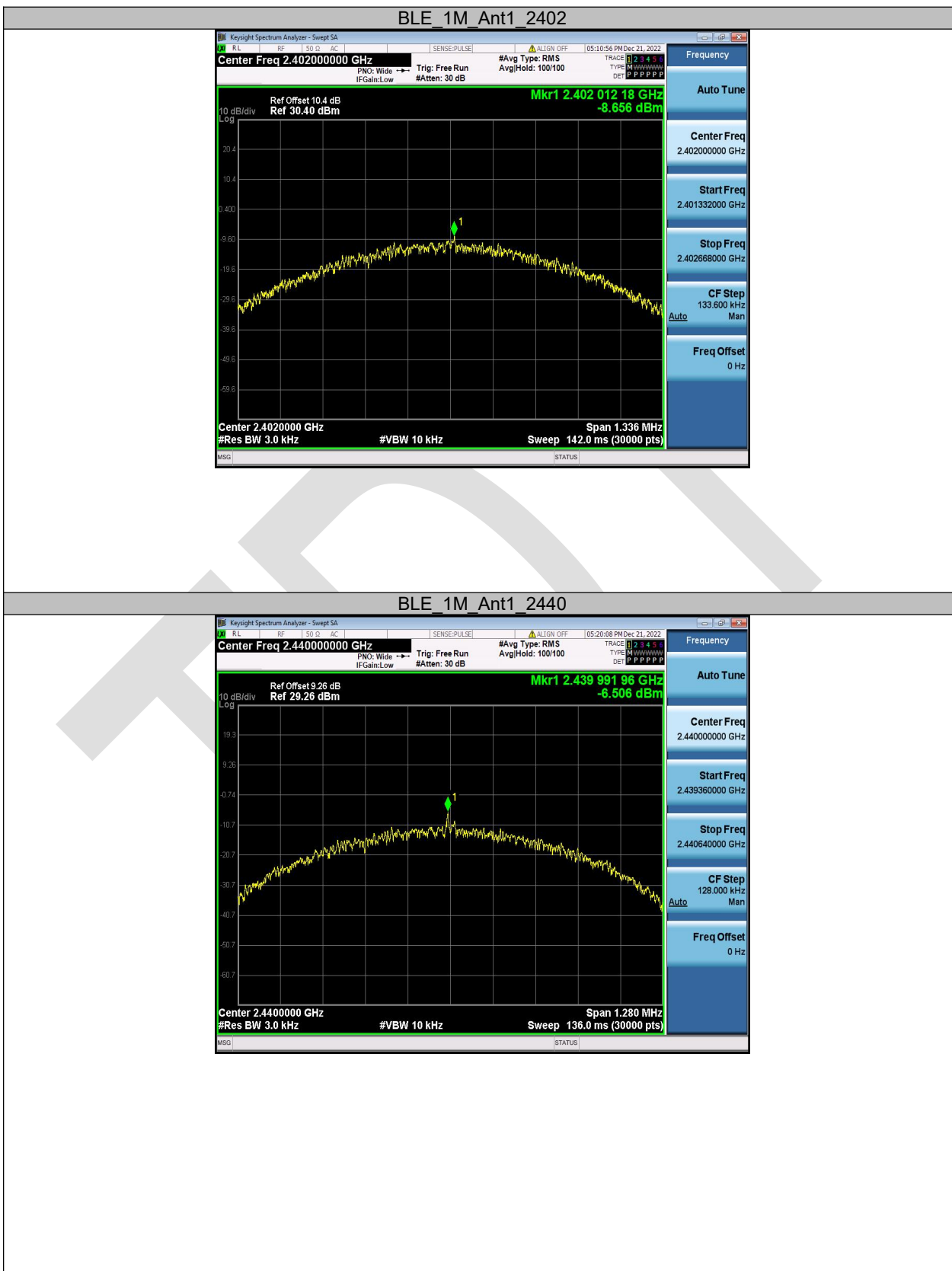
A.8 Power Spectral Density

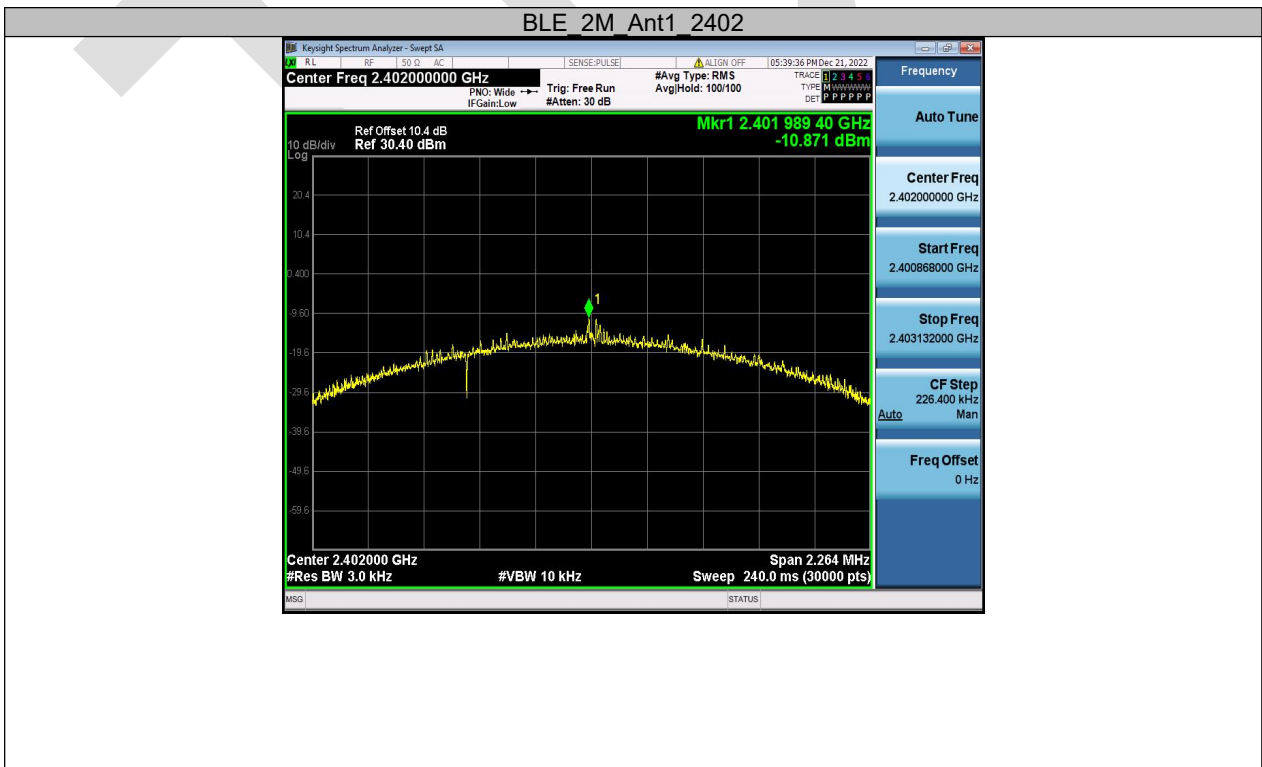
Test Result:

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-8.66	<=8	PASS
		2440	-6.51	<=8	PASS
		2480	-5.27	<=8	PASS
BLE_2M	Ant1	2402	-10.87	<=8	PASS
		2440	-9.04	<=8	PASS
		2480	-13.69	<=8	PASS



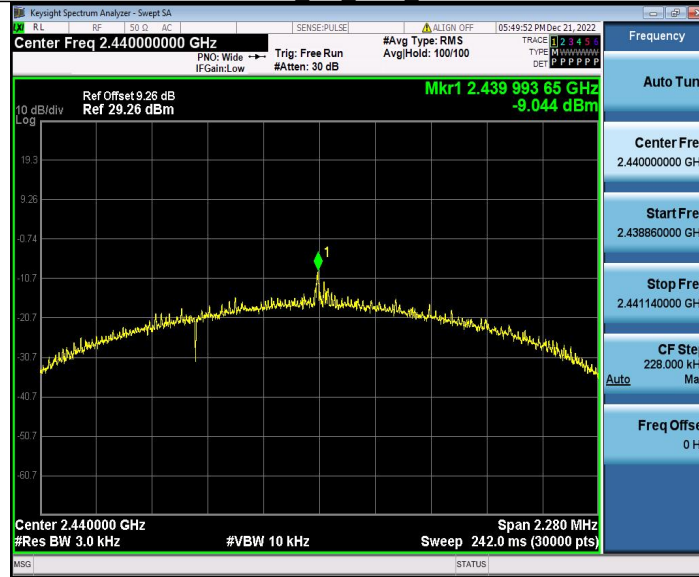
Test Graphs



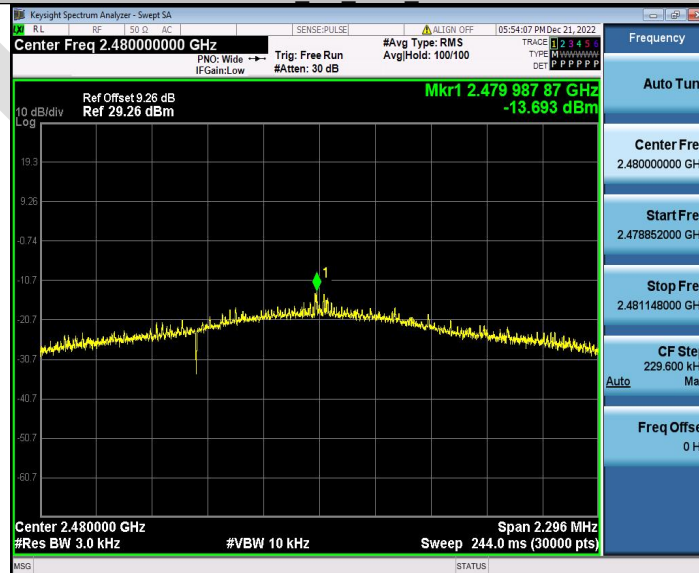




BLE 2M Ant1 2440



BLE 2M Ant1 2480





Annex B Test Setup Photograph

Please refer the document “RZBG(W)20221128001-2 RF Test Setup Photos”.pdf

Annex C EUT Internal Photograph

Please refer the document “RZBG(W) 20221128001-3 EUT Internal Photos”.pdf

Annex D EUT External Photograph

Please refer the document “RZBG(W) 20221128001-6 EUT External Photos”.pdf



Annex E Revision History

Version	Issue Date	Revisions Content
Rev.01	Dec.30.2022	Initial Issue
Rev.02	Jan.10.2023	Modify antenna type

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