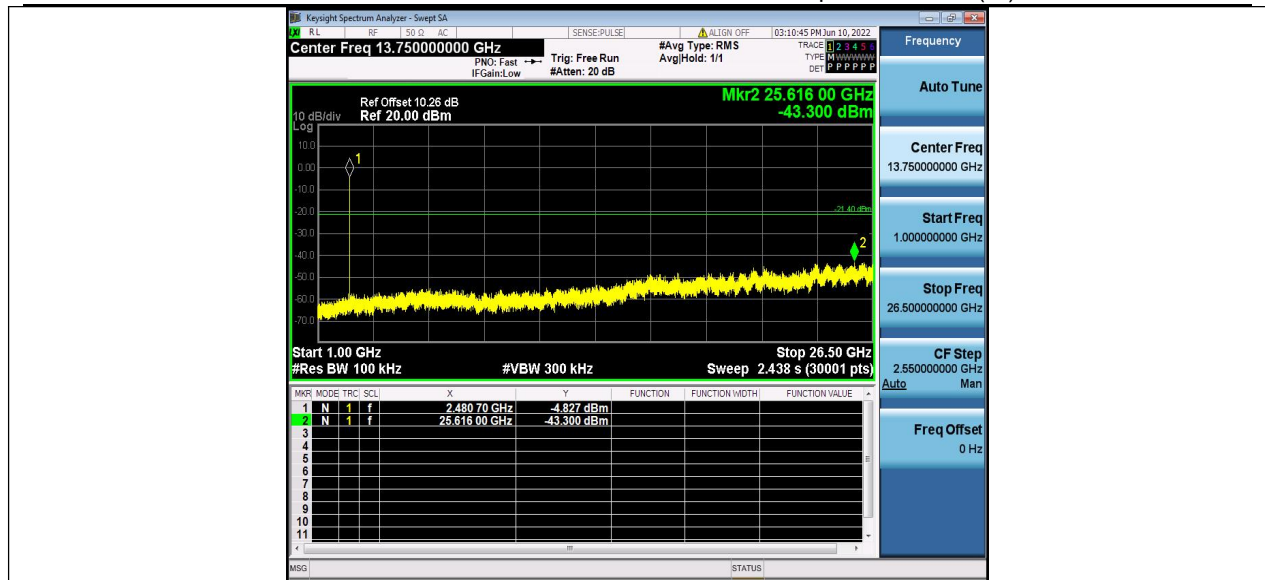




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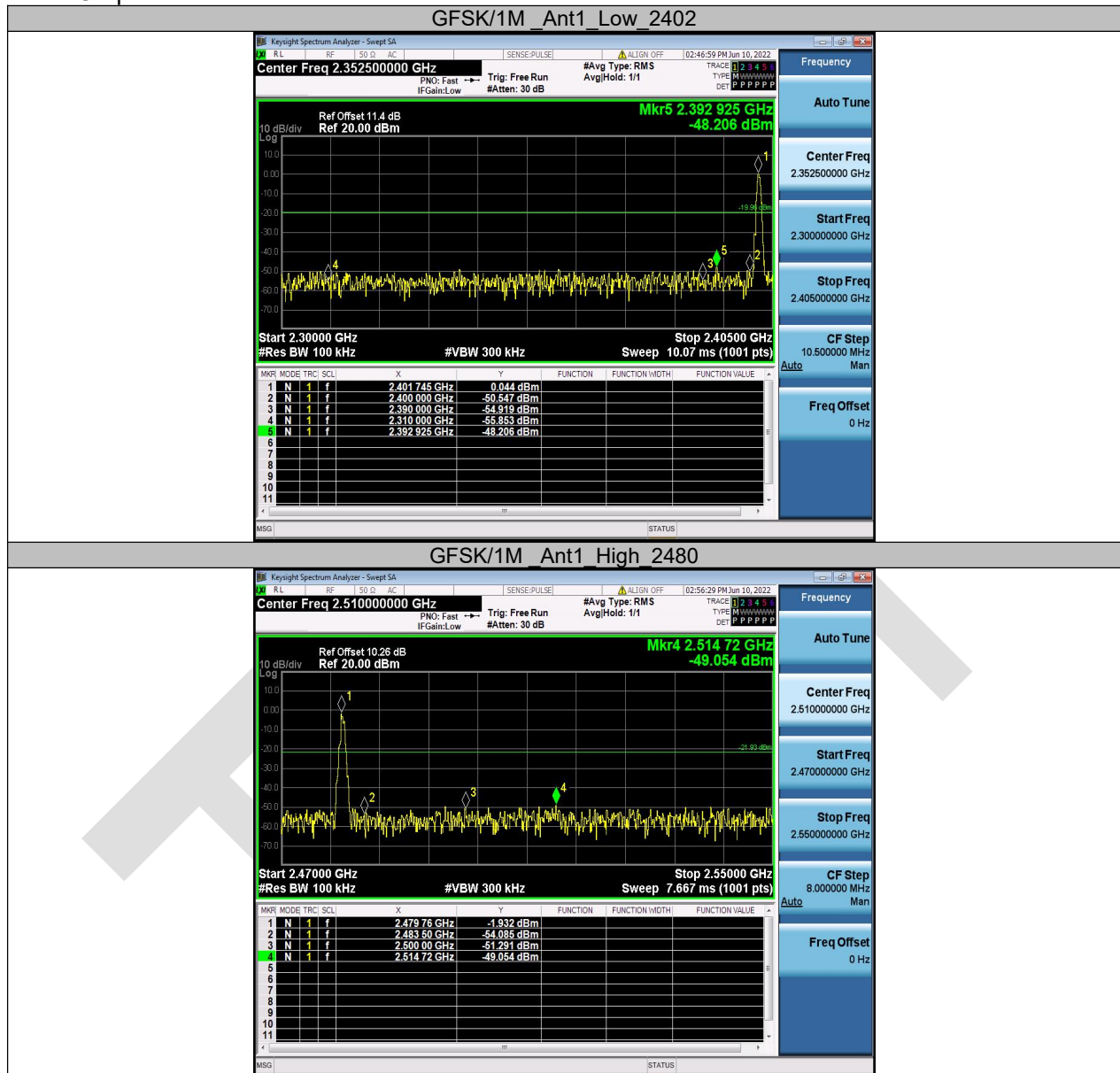
A.4 Band Edge (Authorize band-edge)

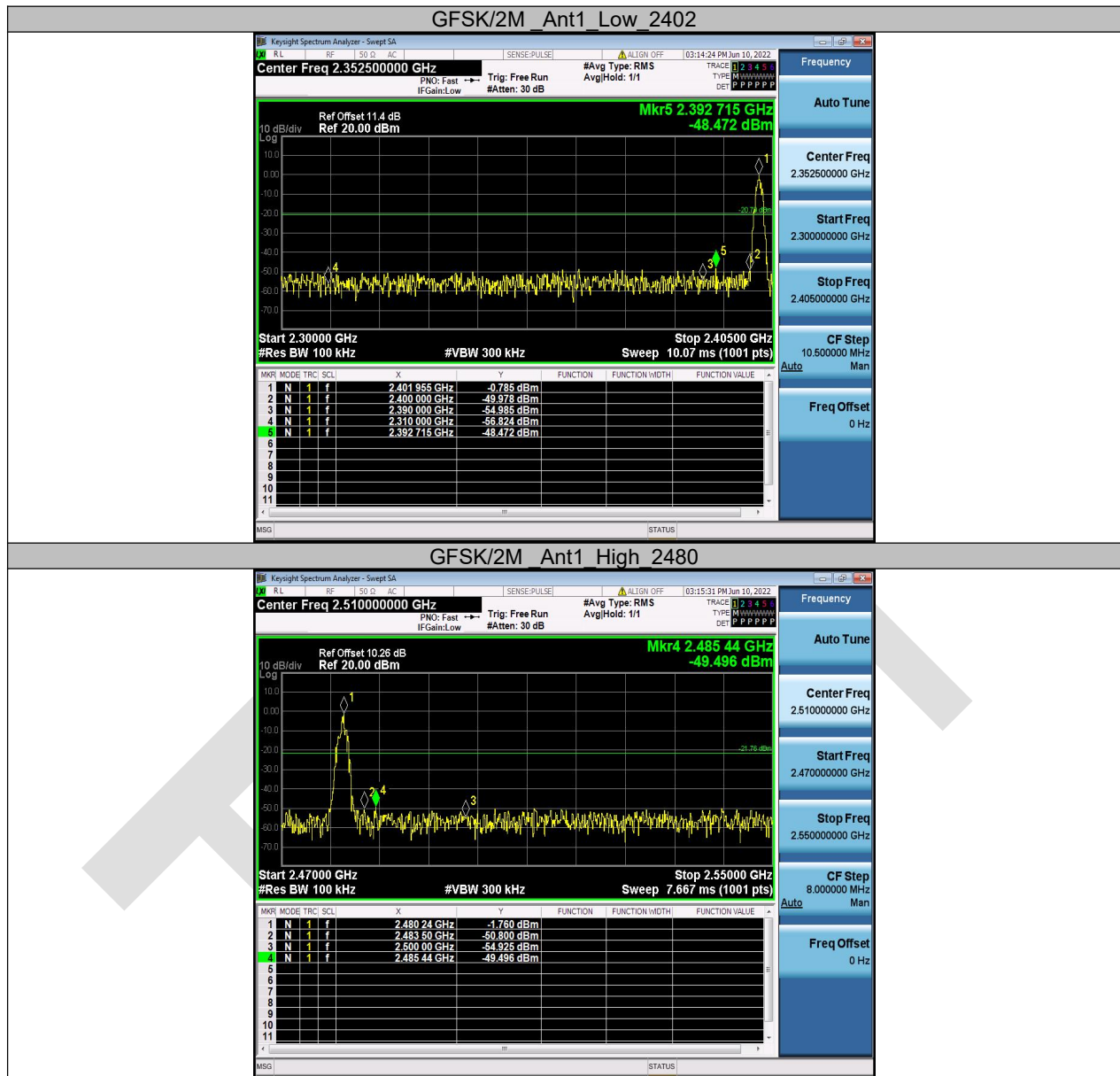
Test Result:

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
GFSK/1M	Ant1	Low	2402	0.04	-48.21	≤-19.96	PASS
		High	2480	-1.93	-49.05	≤-21.93	PASS
GFSK/2M	Ant1	Low	2402	-0.79	-48.47	≤-20.79	PASS
		High	2480	-1.76	-49.5	≤-21.76	PASS



Test Graphs





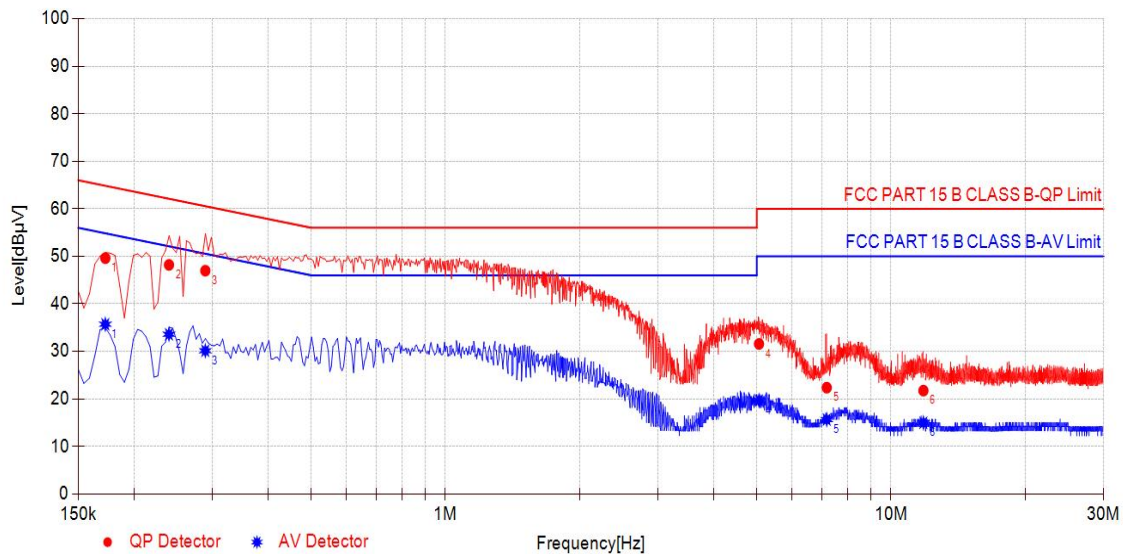


A.5 AC Power Line Conducted Emission

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

Test Data and Plots:

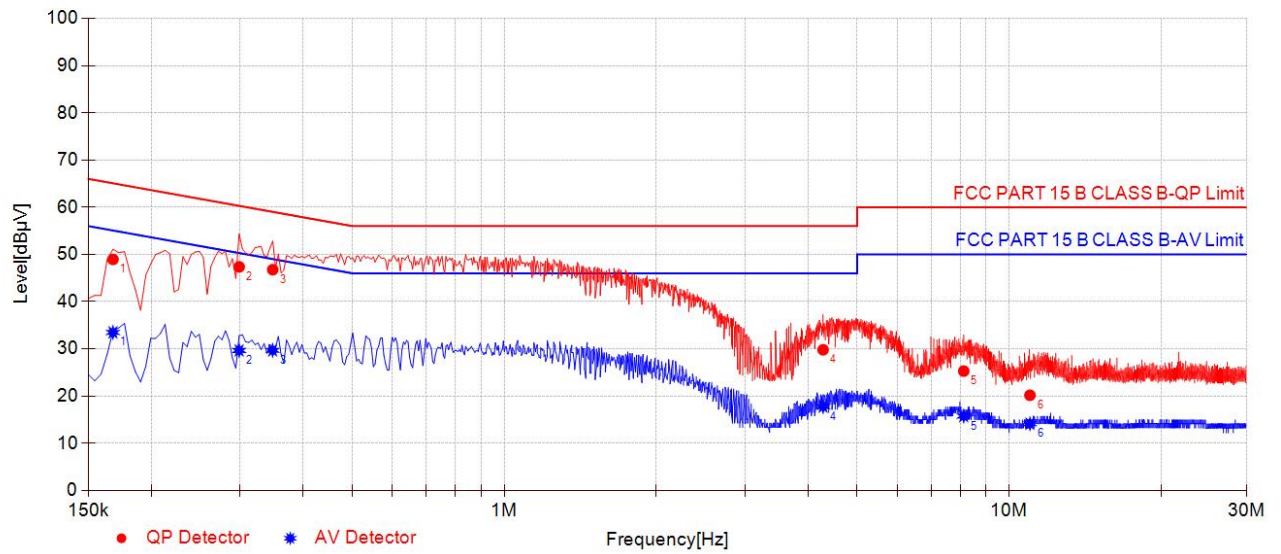
PHASE L



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	0.1726	30.07	49.61	64.84	15.23	16.16	35.70	54.84	19.14	PASS	L
2	0.2398	28.69	48.20	62.10	13.90	14.08	33.59	52.10	18.51	PASS	L
3	0.2893	27.40	46.97	60.54	13.57	10.56	30.13	50.54	20.41	PASS	L
4	5.0547	11.94	31.58	60.00	28.42	0.01	19.65	50.00	30.35	PASS	L
5	7.1735	2.73	22.36	60.00	37.64	-3.98	15.65	50.00	34.35	PASS	L
6	11.8189	2.04	21.75	60.00	38.25	-4.74	14.97	50.00	35.03	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	0.1679	29.37	48.94	65.07	16.13	13.90	33.47	55.07	21.60	PASS	N
2	0.2985	27.71	47.36	60.28	12.92	10.00	29.65	50.28	20.63	PASS	N
3	0.3478	27.10	46.77	59.01	12.24	10.00	29.67	49.01	19.34	PASS	N
4	4.2792	10.00	29.80	56.00	26.20	-2.04	17.76	46.00	28.24	PASS	N
5	8.1251	5.56	25.29	60.00	34.71	-3.98	15.75	50.00	34.25	PASS	N
6	10.9885	0.46	20.16	60.00	39.84	-5.57	14.13	50.00	35.87	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.

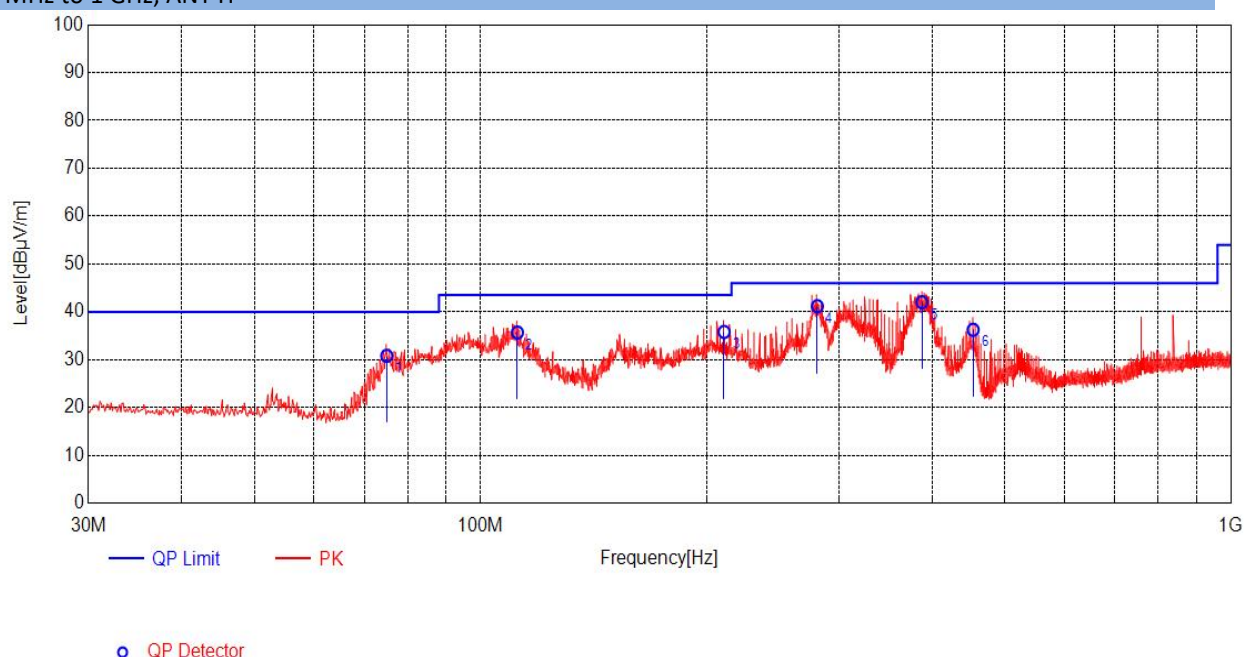
Note 3: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

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:

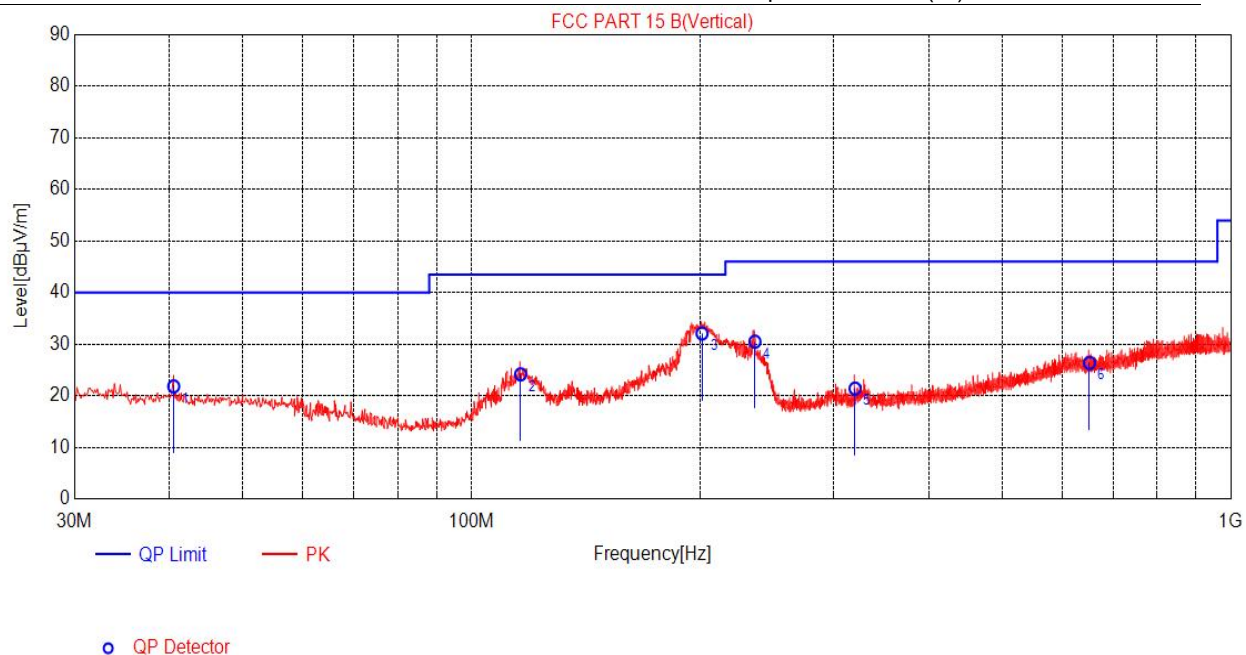
30 MHz to 1 GHz, ANT H



Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	117.7850	14.50	19.99	43.50	23.51	200	263	Horizontal
2	168.5888	15.12	25.67	43.50	17.83	200	235	Horizontal
3	195.3850	12.28	29.15	43.50	14.35	100	257	Horizontal
4	228.3650	12.83	33.85	46.00	12.15	200	145	Horizontal
5	286.5650	14.18	24.24	46.00	21.76	100	110	Horizontal
6	320.0300	14.85	27.25	46.00	18.75	100	273	Horizontal

30 MHz to 1 GHz, ANT V

**Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.5488	15.69	21.84	40.00	18.16	100	275	Vertical
2	116.0875	14.49	24.17	43.50	19.33	200	287	Vertical
3	201.2050	12.19	32.08	43.50	11.42	100	183	Vertical
4	236.2463	13.02	30.50	46.00	15.50	100	241	Vertical
5	320.0300	14.85	21.41	46.00	24.59	200	224	Vertical
6	651.5275	21.34	26.37	46.00	19.63	200	52	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	3410.854	-3.30	40.03	36.73	74.00	37.27	Peak
2	8074.047	8.84	36.11	44.95	74.00	29.05	Peak
3	11302.480	14.57	34.10	48.67	74.00	25.33	Peak

1M,CH0,2402MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	8047.836	9.00	35.59	44.59	74.00	29.41	Peak
2	11298.390	14.58	34.29	48.87	74.00	25.13	Peak
3	14325.370	18.10	33.48	51.58	74.00	22.42	Peak

1M,CH19,2440MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7938.100	9.20	35.40	44.60	74.00	29.40	Peak
2	11454.580	14.31	34.08	48.39	74.00	25.61	Peak
3	14634.020	17.60	33.71	51.30	74.00	22.70	Peak

1M,CH19,2440MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	8039.118	8.99	35.81	44.80	74.00	29.20	Peak
2	11294.310	14.56	34.42	48.98	74.00	25.02	Peak
3	14315.030	18.10	32.68	50.79	74.00	23.21	Peak

1M,CH39,2480MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	8492.950	8.64	35.79	44.43	74.00	29.57	Peak
2	11504.350	14.74	33.87	48.62	74.00	25.38	Peak
3	14268.550	18.08	32.60	50.67	74.00	23.33	Peak

1M,CH39,2480MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	6195.508	3.80	37.93	41.73	74.00	32.27	Peak
2	11322.910	14.43	34.07	48.50	74.00	25.50	Peak
3	14186.310	18.07	33.39	51.46	74.00	22.54	Peak



2M,CH0,2402MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7923.773	9.14	35.63	44.76	74.00	29.24	Peak
2	11132.260	14.56	34.25	48.81	74.00	25.19	Peak
3	13922.270	17.93	32.92	50.85	74.00	23.15	Peak

2M,CH0,2402MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	9424.284	10.48	36.10	46.58	74.00	27.42	Peak
2	11359.790	14.24	35.04	49.28	74.00	24.72	Peak
3	13922.270	17.93	32.04	49.97	74.00	24.03	Peak

2M,CH19,2440MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7371.404	7.45	37.32	44.77	74.00	29.23	Peak
2	11722.530	14.47	34.01	48.47	74.00	25.53	Peak
3	14346.090	18.09	32.99	51.07	74.00	22.93	Peak

2M,CH19,2440MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7926.636	9.15	35.10	44.25	74.00	29.75	Peak
2	11140.310	14.48	34.31	48.80	74.00	25.20	Peak
3	13927.300	17.97	32.76	50.73	74.00	23.27	Peak

2M,CH39,2480MHz, ANT H

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7804.442	8.61	36.28	44.89	74.00	29.11	Peak
2	11310.650	14.51	34.99	49.50	74.00	24.50	Peak
3	14761.460	17.60	33.35	50.95	74.00	23.05	Peak

2M,CH39,2480MHz, ANT V

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7898.049	9.03	36.62	45.66	74.00	28.34	Peak
2	11136.290	14.52	34.90	49.42	74.00	24.58	Peak
3	14734.820	17.57	33.97	51.54	74.00	22.46	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	21850.190	-18.33	59.33	41.00	74.00	33.00	Peak
2	22956.870	-19.34	59.66	40.31	74.00	33.69	Peak
3	23536.930	-16.86	59.27	42.41	74.00	31.59	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	21826.210	-18.52	60.37	41.85	74.00	32.15	Peak
2	23485.300	-16.88	59.86	42.99	74.00	31.01	Peak
3	24696.970	-15.76	59.99	44.23	74.00	29.77	Peak



A.7 Band Edge (Restricted band-edge)

Test Result:

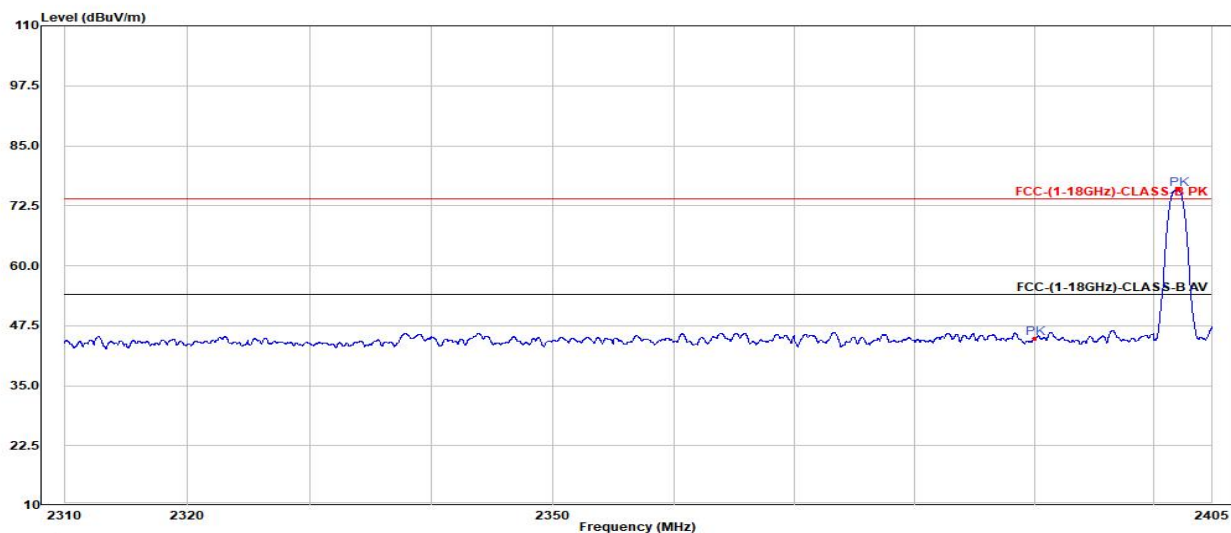
Note:

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

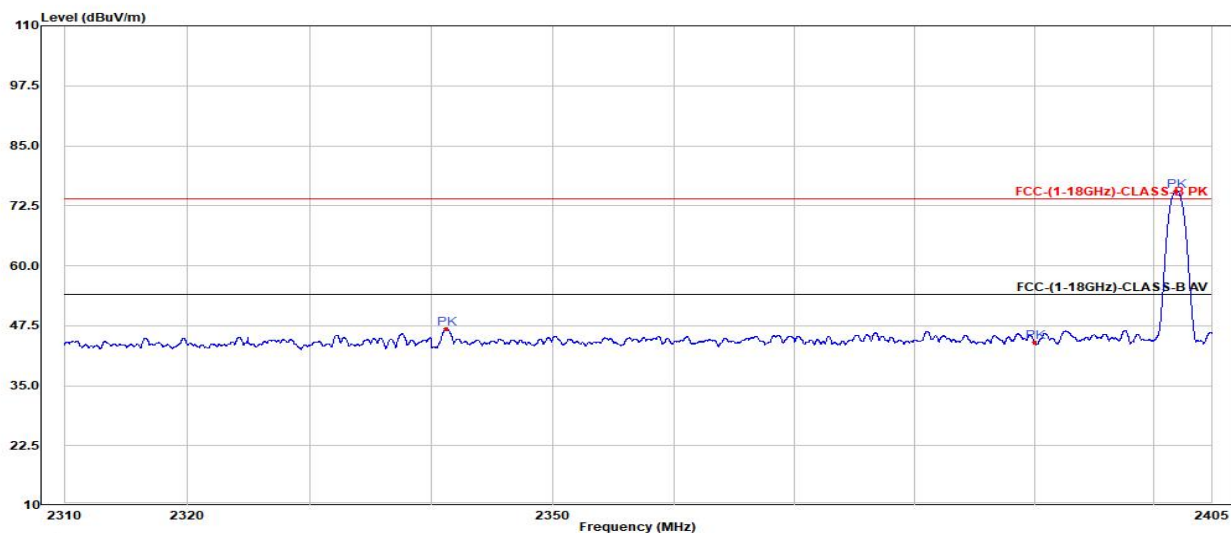
GFSK/1M_Ant1_Low_2402_H



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2389.995	33.98	10.97	44.95	74.00	29.05	Peak
2	2402.085	34.00	41.88	75.88	74.00	N/A	Peak

GFSK/1M_Ant1_Low_2402_V

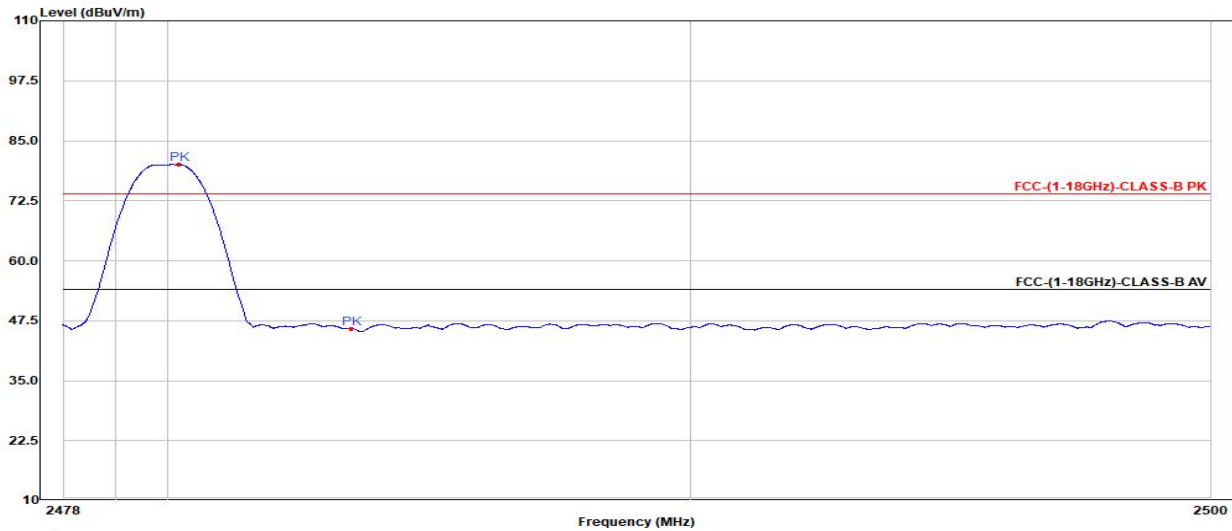


Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2341.215	33.76	13.07	46.83	74.00	27.17	Peak
2	2390.000	33.98	10.10	44.08	74.00	29.92	Peak
3	2401.920	34.00	41.59	75.59	74.00	-1.59	Peak



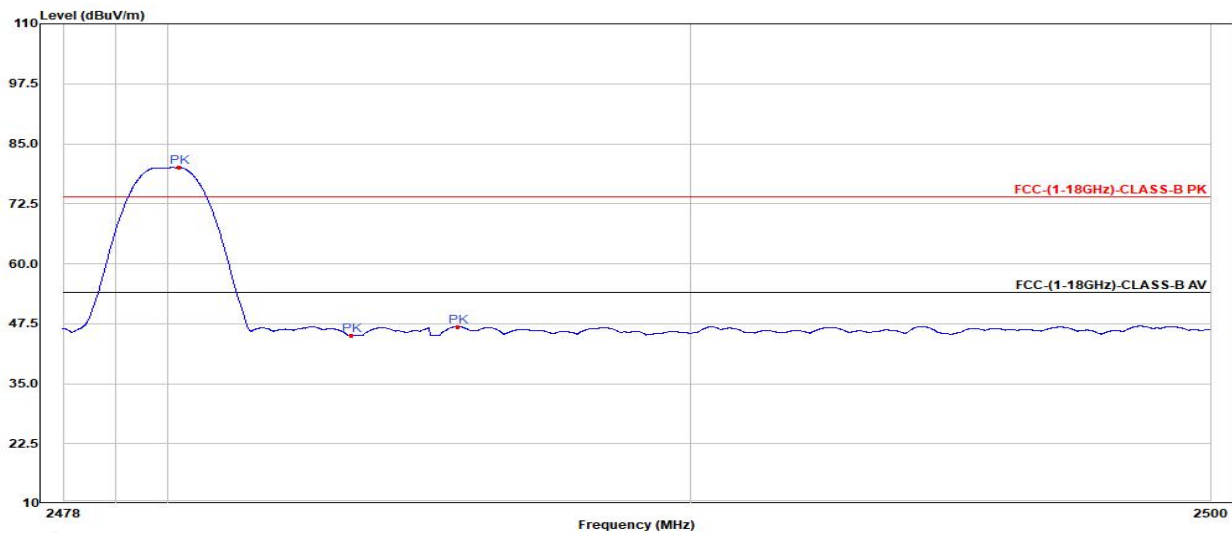
GFSK/1M_Ant1_High_2480_H



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2480.208	34.25	45.83	80.08	74.00	-6.08	Peak
2	2483.500	34.27	11.62	45.88	74.00	28.12	Peak

GFSK/1M_Ant1_High_2480_V

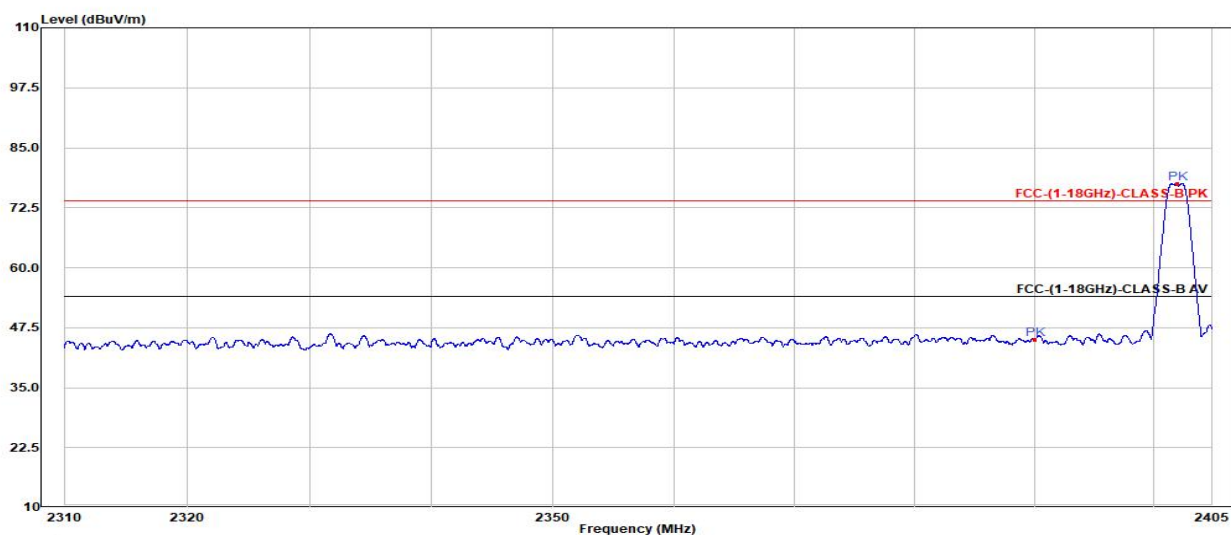


Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2480.208	34.25	45.83	80.08	74.00	-6.08	Peak
2	2483.500	34.27	10.81	45.08	74.00	28.92	Peak
3	2485.540	34.28	12.61	46.89	74.00	27.11	Peak



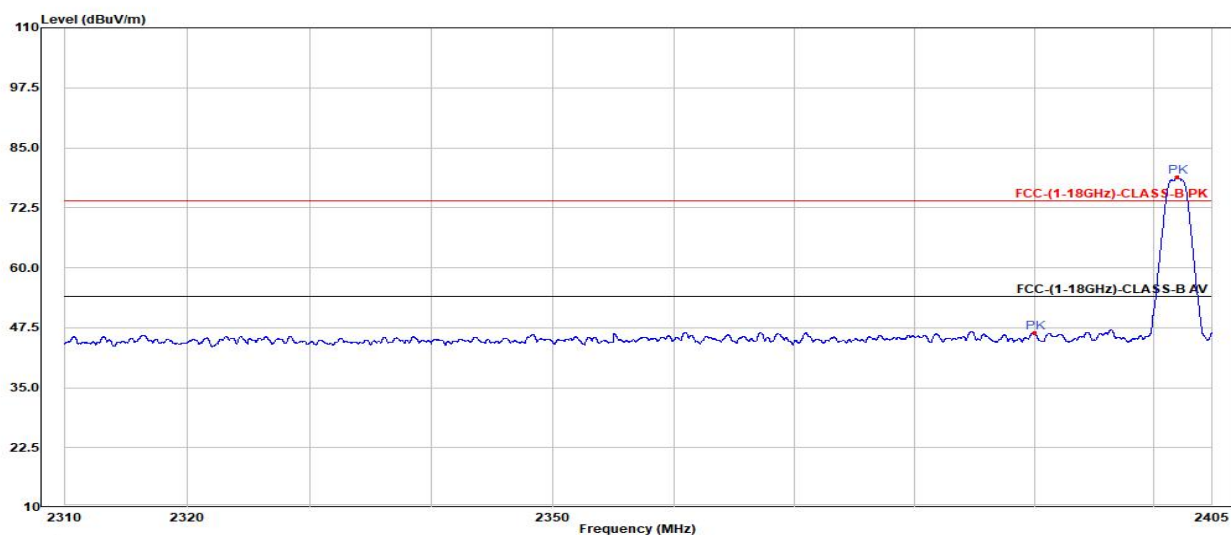
GFSK/2M_Ant1_Low_2402_H



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2389.995	33.98	11.13	45.11	74.00	28.89	Peak
2	2401.995	34.00	43.63	77.63	74.00	-3.63	Peak

GFSK/2M_Ant1_Low_2402_V

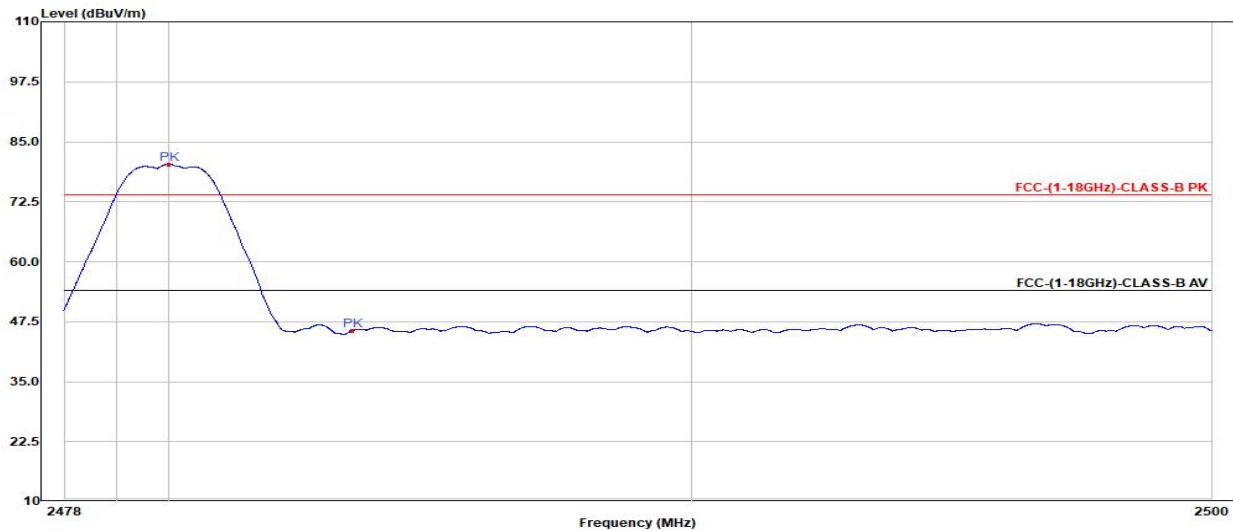


Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.000	33.98	12.50	46.48	74.00	27.52	Peak
2	2401.995	34.00	45.01	79.01	74.00	-5.01	Peak



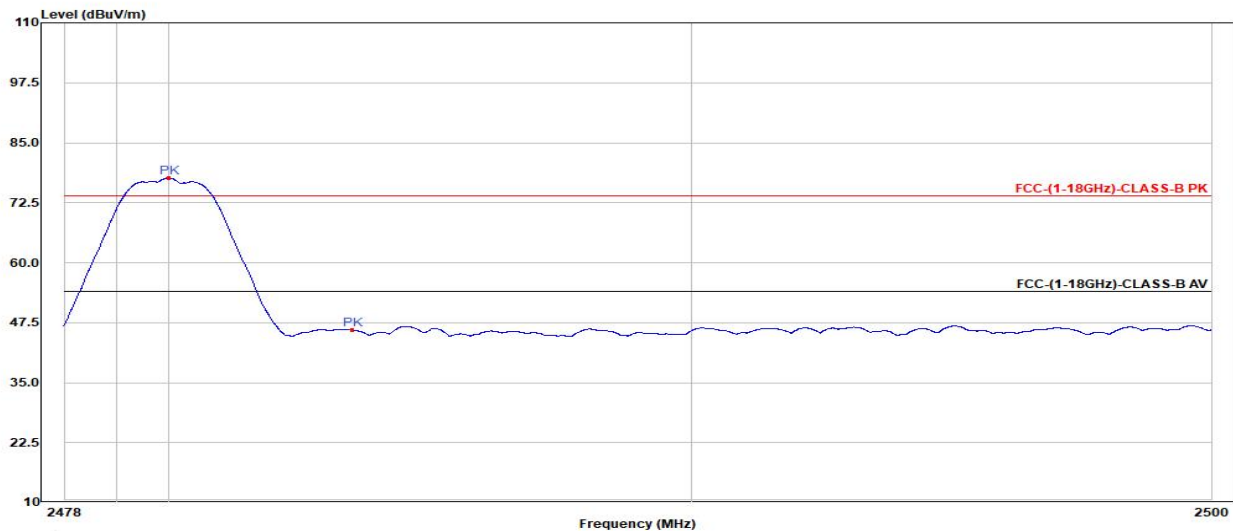
GFSK/2M_Ant1_High_2480_H



Trace:

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2479.990	34.24	46.11	80.35	74.00	-6.35	Peak
2	2483.500	34.27	11.36	45.63	74.00	28.37	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	2479.990	34.24	43.39	77.63	74.00	-3.63	Peak
2	2483.500	34.27	11.72	45.99	74.00	28.01	Peak



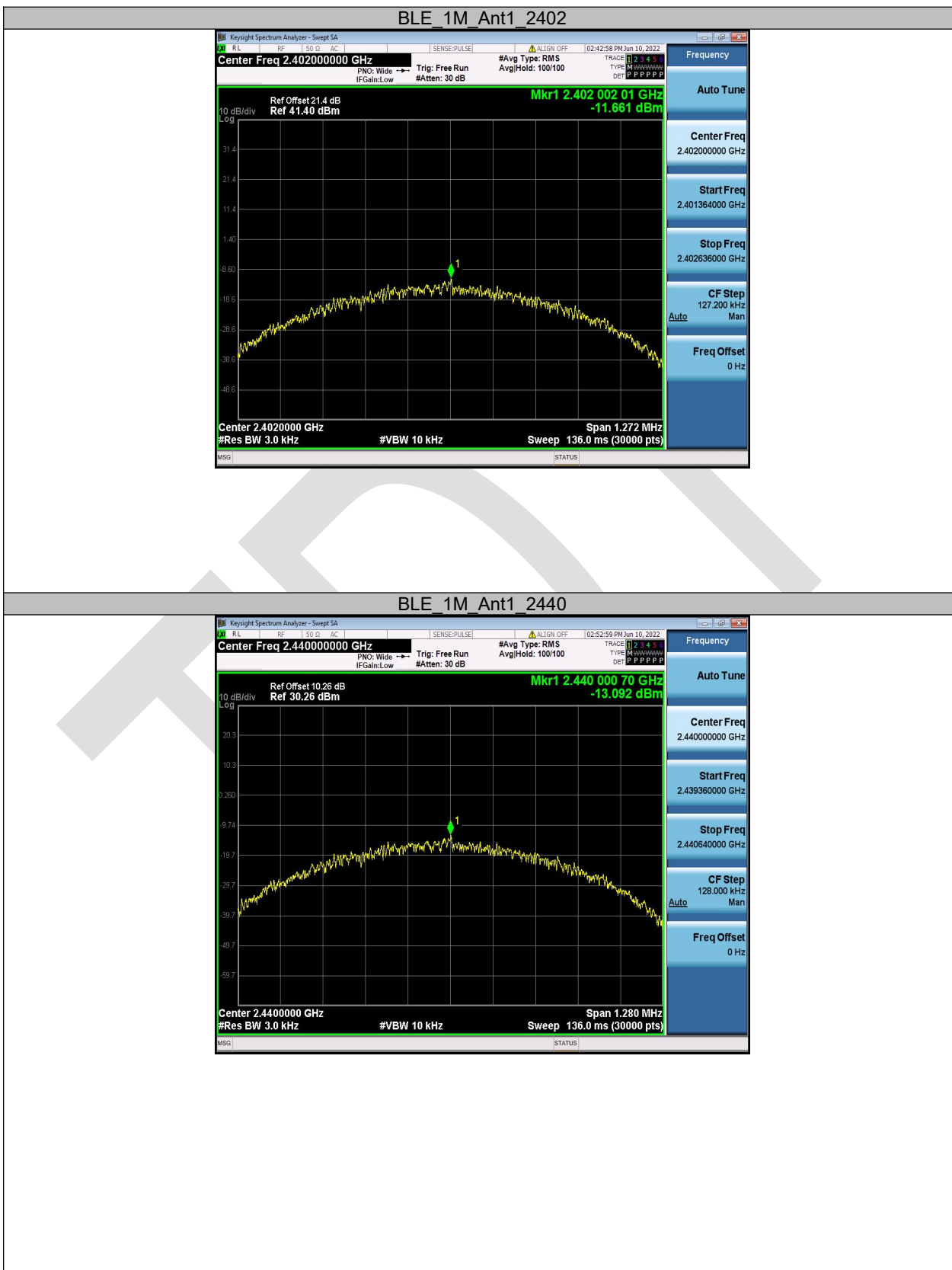
A.8 Power Spectral Density

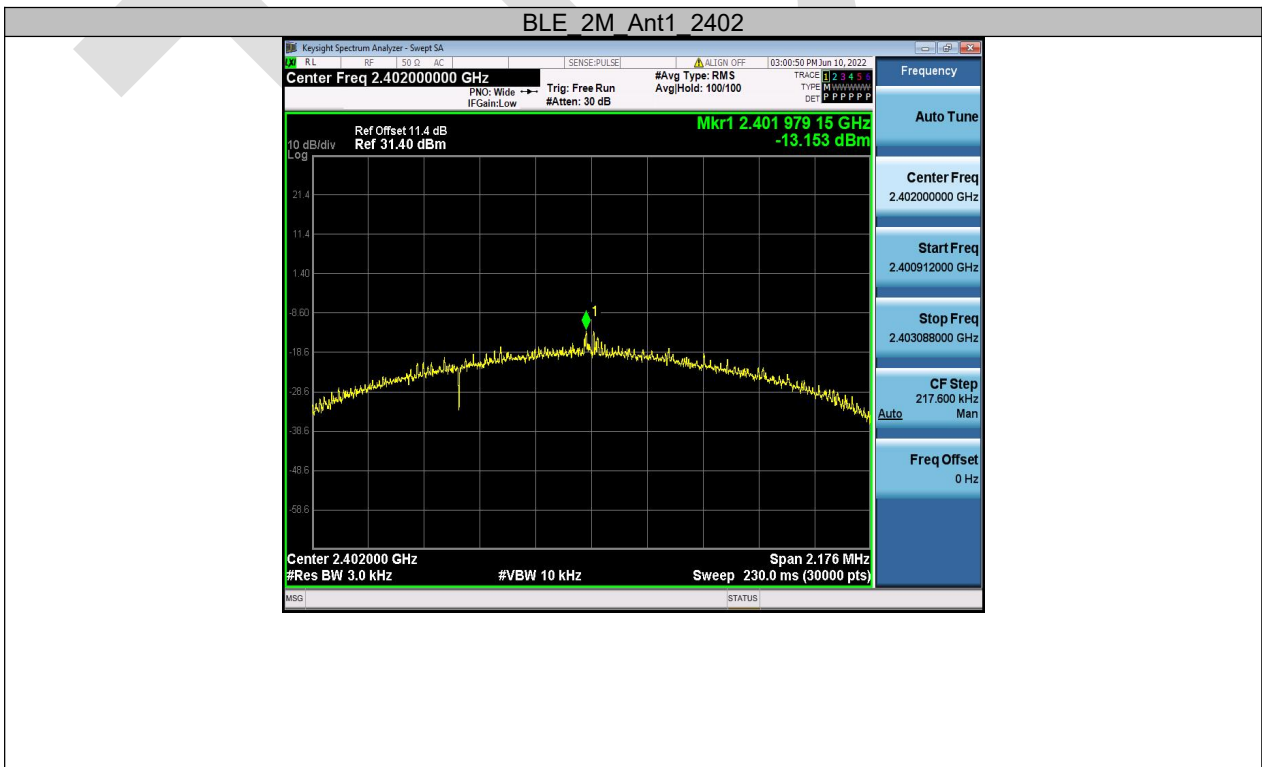
Test Result:

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-11.66	<=8	PASS
		2440	-13.09	<=8	PASS
		2480	-13.36	<=8	PASS
BLE_2M	Ant1	2402	-13.15	<=8	PASS
		2440	-14.91	<=8	PASS
		2480	-15.11	<=8	PASS



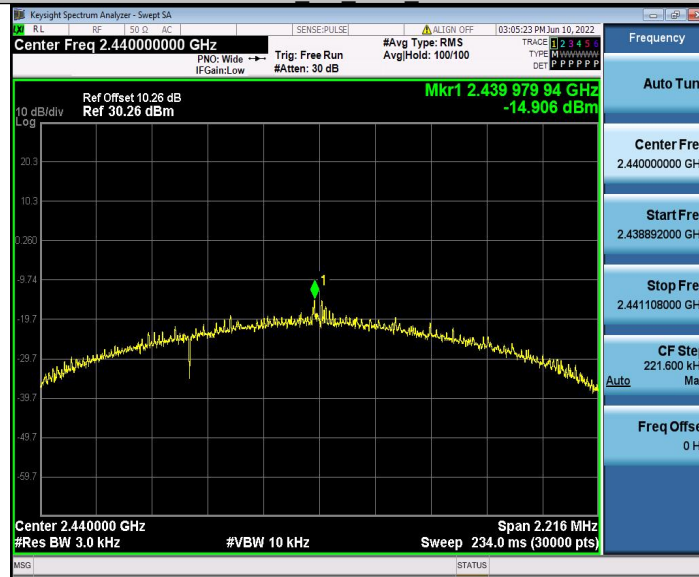
Test Graphs







BLE 2M Ant1 2440



BLE 2M Ant1 2480





Annex B Test Setup Photograph

Please refer the document “RZBG(W)20220421002-2 RF Test Setup Photos”.pdf

Annex C EUT Internal Photograph

Please refer the document “RZBG(W) 20220421002-3 EUT Internal Photos”.pdf

Annex D EUT External Photograph

Please refer the document “RZBG(W) 20220421002-6 EUT External Photos”.pdf



Annex E Revision History

Version	Issue Date	Revisions Content
Rev.01	Jun.23.2022	Initial Issue

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