



Appendix for Test report



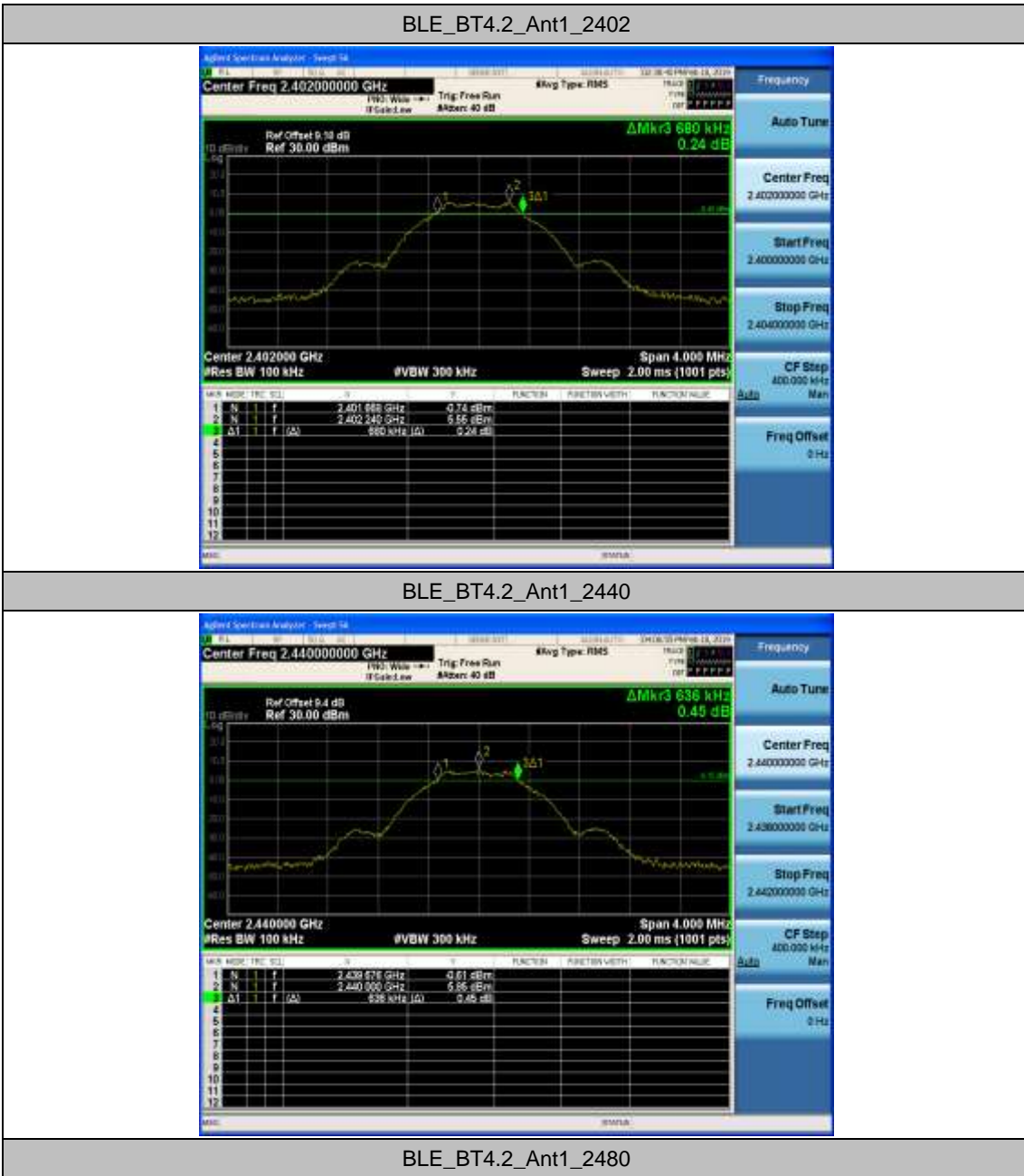
Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_BT4.2	Ant1	2402	0.680	2401.668	2402.348	---	PASS
		2440	0.636	2439.676	2440.312	---	PASS
		2480	0.652	2479.668	2480.320	---	PASS
BLE_BT5.0	Ant1	2402	1.068	2401.480	2402.548	---	PASS
		2440	1.100	2439.448	2440.548	---	PASS
		2480	1.108	2479.444	2480.552	---	PASS



Test Graphs





BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_BT4.2	Ant1	2402	1.0387	2401.487	2402.526	---	PASS
		2440	1.0359	2439.484	2440.520	---	PASS
		2480	1.0308	2479.490	2480.521	---	PASS
BLE_BT5.0	Ant1	2402	2.0604	2400.987	2403.048	---	PASS
		2440	2.0569	2438.986	2441.043	---	PASS
		2480	2.0627	2478.984	2481.047	---	PASS



Test Graphs





BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





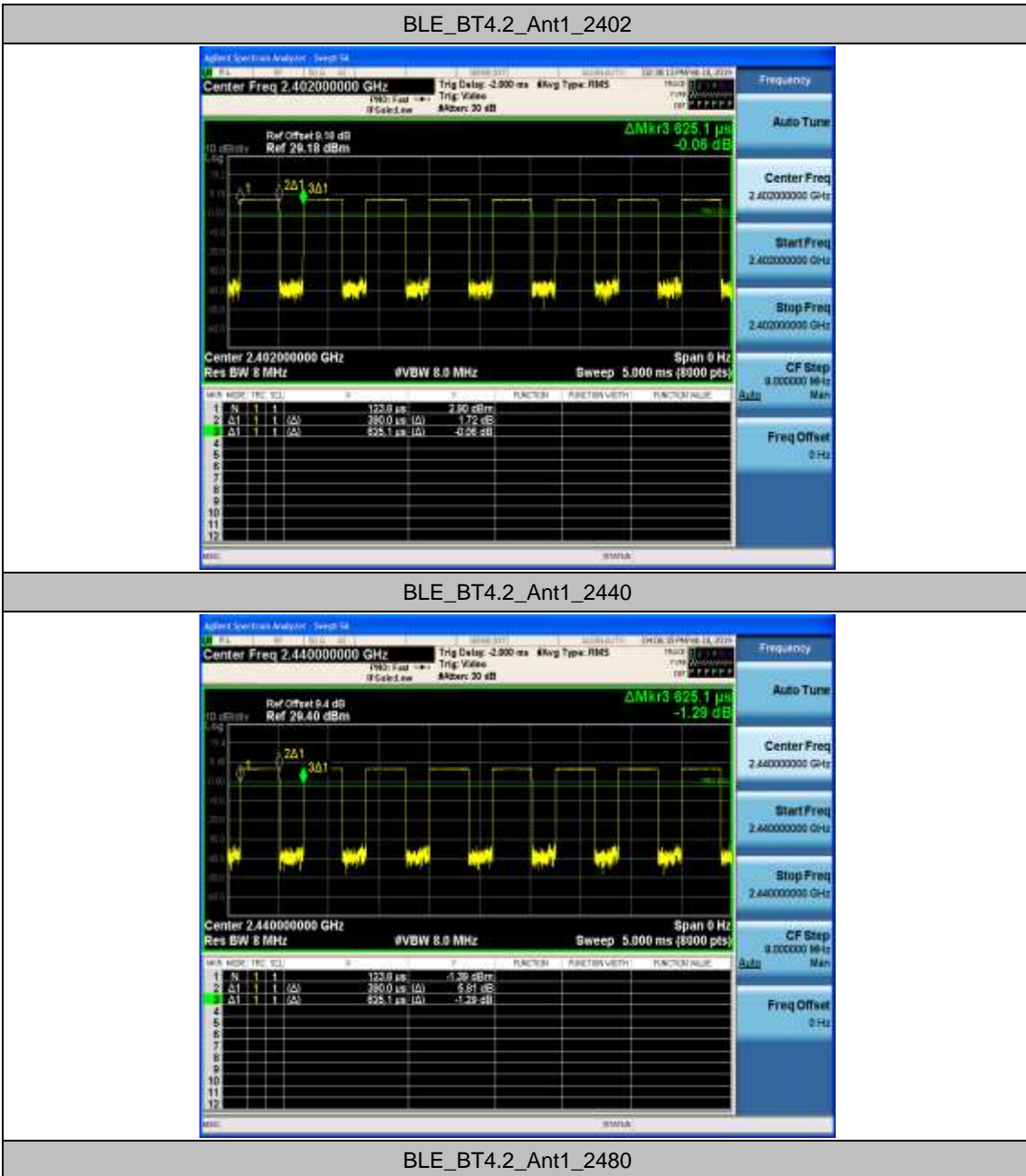
Appendix C: Duty Cycle

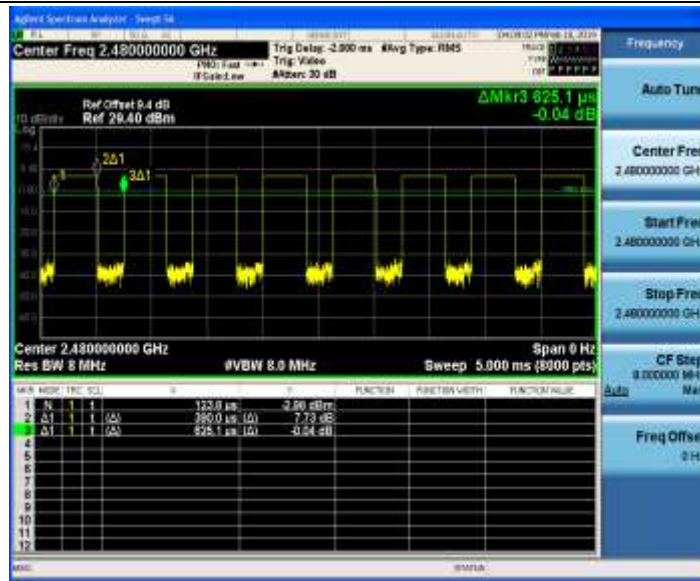
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
BLE_BT4.2	Ant1	2402	0.39	0.63	62.40
		2440	0.39	0.63	62.40
		2480	0.39	0.63	62.40
BLE_BT5.0	Ant1	2402	0.21	0.63	33.10
		2440	0.21	0.63	33.10
		2480	0.21	0.63	33.10

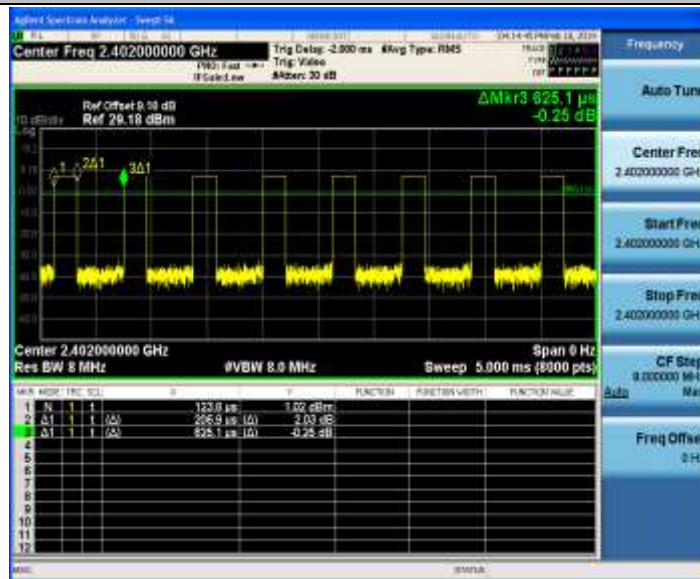


Test Graphs

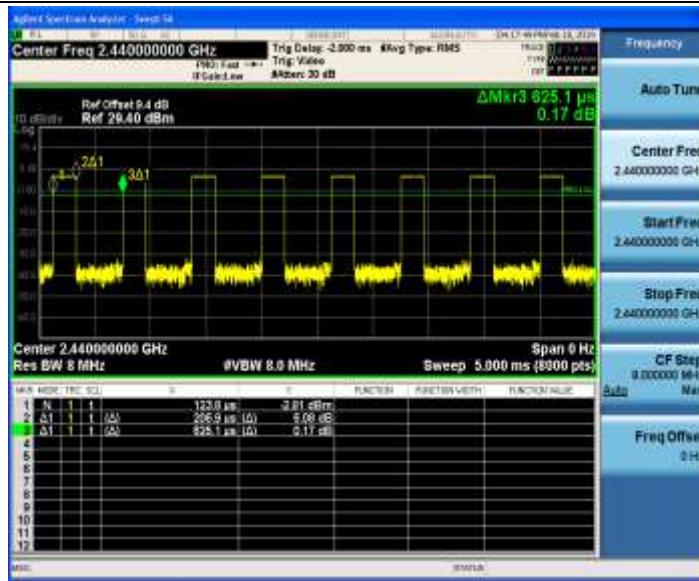




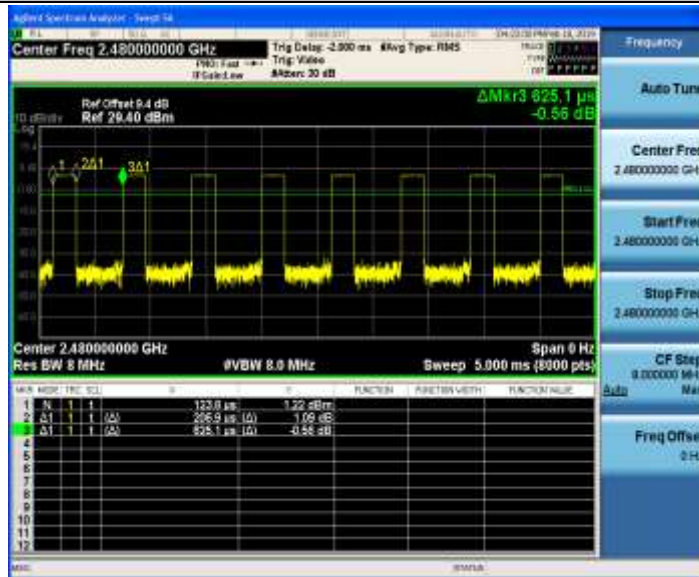
BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





Appendix D: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_BT4.2	Ant1	2402	6.51	30	PASS
		2440	6.07	30	PASS
		2480	6.06	30	PASS
BLE_BT5.0	Ant1	2402	6.54	30	PASS
		2440	6.04	30	PASS
		2480	6.02	30	PASS

Test Graphs

BLE_BT4.2_Ant1_2402



BLE_BT4.2_Ant1_2440



BLE_BT4.2_Ant1_2480



BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





Appendix E: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/10kHz]	Limit[dBm/3kHz]	Verdict
BLE_BT4.2	Ant1	2402	-3.34	8	PASS
		2440	-3.7	8	PASS
		2480	-3.83	8	PASS
BLE_BT5.0	Ant1	2402	-3.76	8	PASS
		2440	-4.33	8	PASS
		2480	-4.52	8	PASS

Test Graphs

BLE_BT4.2_Ant1_2402



BLE_BT4.2_Ant1_2440



BLE_BT4.2_Ant1_2480



BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





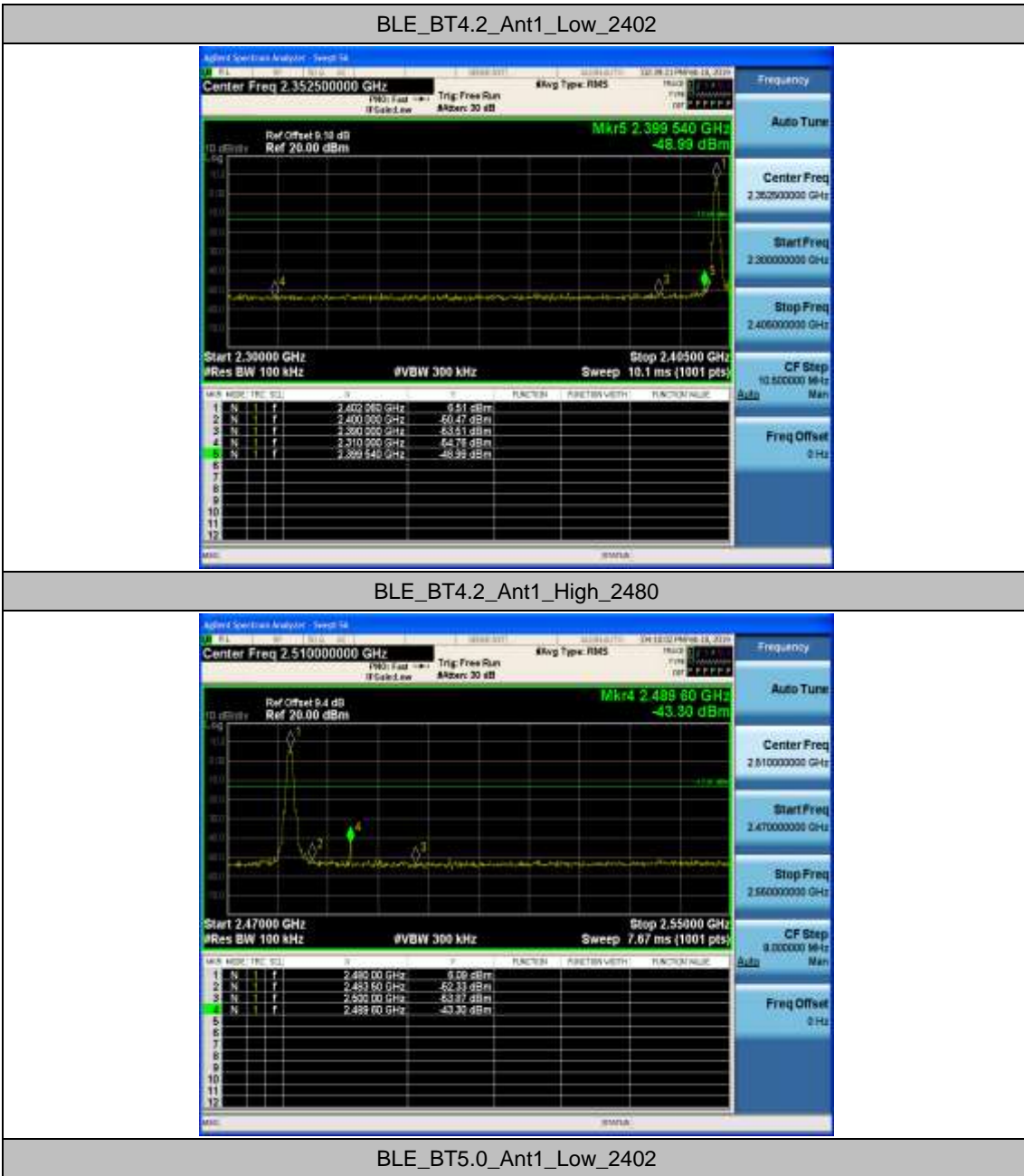
Appendix F: Band edge measurements

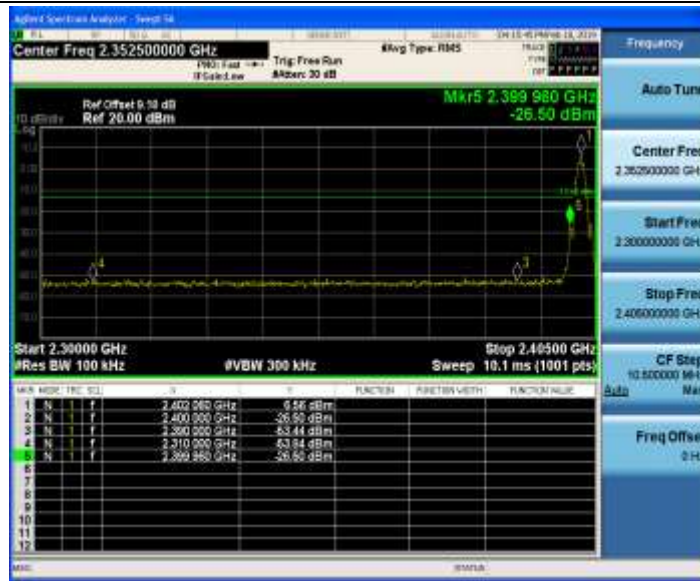
Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_BT4.2	Ant1	Low	2402	6.51	-48.99	-13.49	PASS
		High	2480	6.09	-43.3	-13.91	PASS
BLE_BT5.0	Ant1	Low	2402	6.57	-26.5	-13.43	PASS
		High	2480	5.80	-43.69	-14.2	PASS



Test Graphs





BLE_BT5.0_Ant1_High_2480



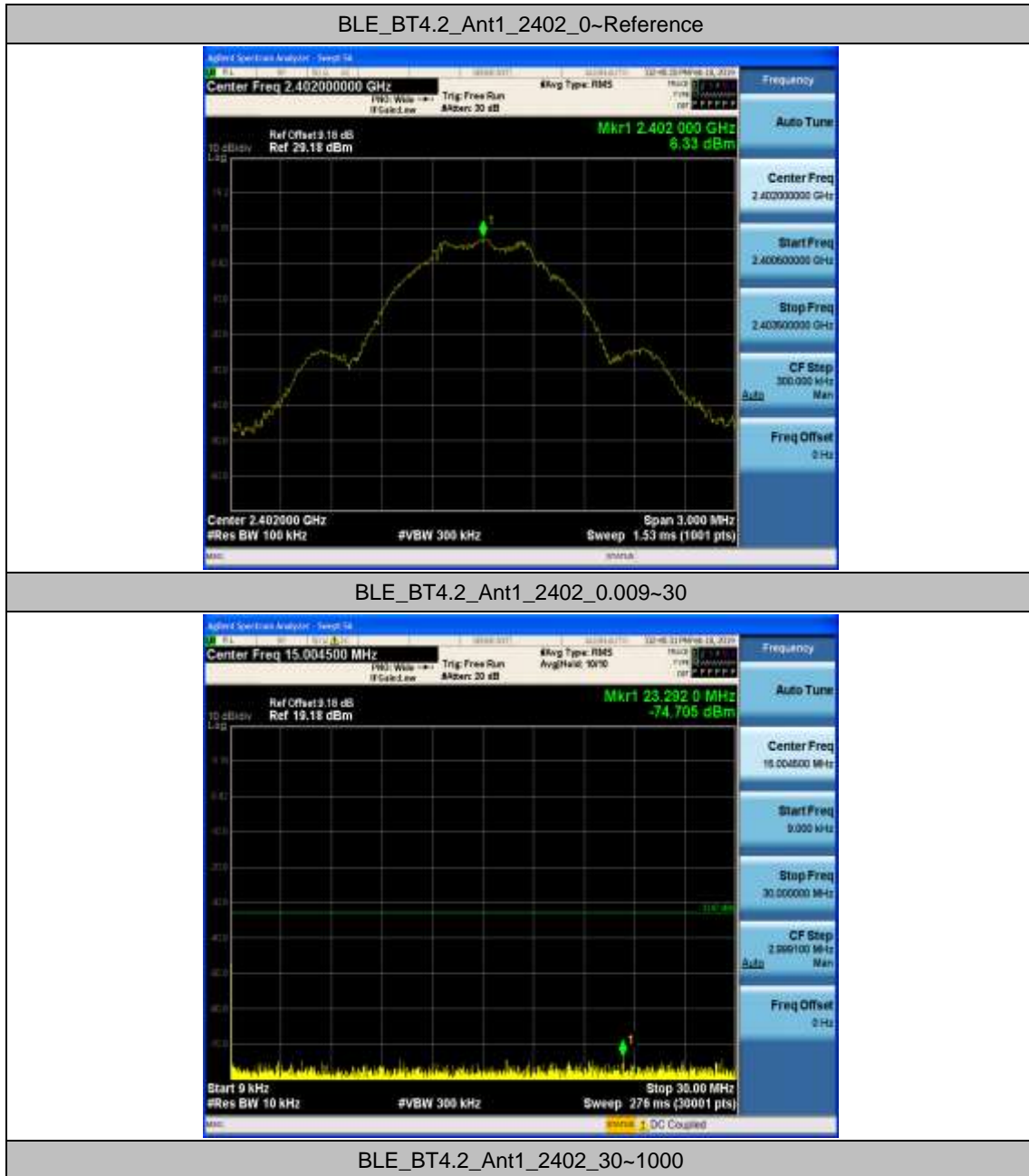


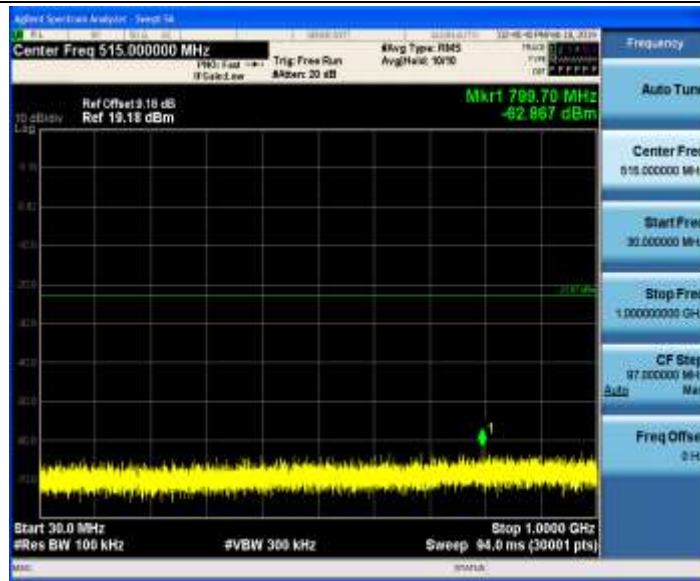
Appendix G: Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange	RefLevel	Result[dBm]	Limit[dBm]	Verdict
BLE_BT4.2	Ant1	2402	Reference	6.33	6.33	---	PASS
			0.009~30	0.009~30	-74.71	-33.67	PASS
			30~1000	30~1000	-62.87	-23.67	PASS
			1000~26500	1000~26500	-37.86	-23.67	PASS
		2440	Reference	5.79	5.79	---	PASS
			0.009~30	0.009~30	-74.67	-34.21	PASS
			30~1000	30~1000	-62.24	-24.21	PASS
			1000~26500	1000~26500	-37.5	-24.21	PASS
		2480	Reference	5.75	5.75	---	PASS
			0.009~30	0.009~30	-73.71	-34.25	PASS
			30~1000	30~1000	-62.45	-24.25	PASS
			1000~26500	1000~26500	-37.07	-24.25	PASS
BLE_BT5.0	Ant1	2402	Reference	6.35	6.35	---	PASS
			0.009~30	0.009~30	-74.2	-33.65	PASS
			30~1000	30~1000	-62.97	-23.65	PASS
			1000~26500	1000~26500	-37.33	-23.65	PASS
		2440	Reference	5.81	5.81	---	PASS
			0.009~30	0.009~30	-74.97	-34.19	PASS
			30~1000	30~1000	-62.99	-24.19	PASS
			1000~26500	1000~26500	-37.36	-24.19	PASS
		2480	Reference	5.53	5.53	---	PASS
			0.009~30	0.009~30	-74.58	-34.47	PASS
			30~1000	30~1000	-62.9	-24.47	PASS
			1000~26500	1000~26500	-37.66	-24.47	PASS

Test Graphs





BLE_BT4.2_Ant1_2402_1000~26500



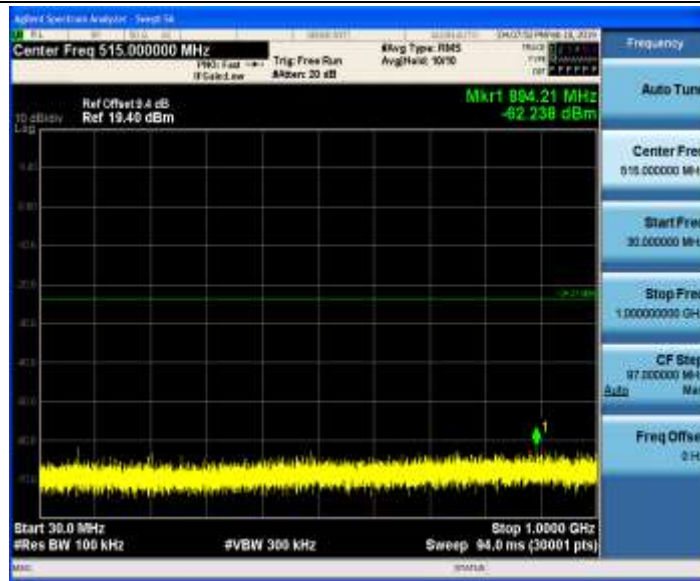
BLE_BT4.2_Ant1_2440_0~Reference



BLE_BT4.2_Ant1_2440_0.009~30



BLE_BT4.2_Ant1_2440_30~1000



BLE_BT4.2_Ant1_2440_1000~26500



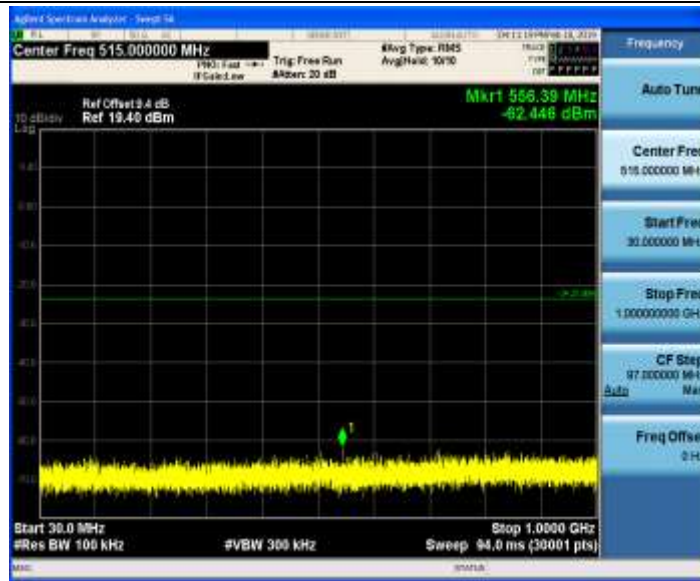
BLE_BT4.2_Ant1_2480_0~Reference



BLE_BT4.2_Ant1_2480_0.009~30



BLE_BT4.2_Ant1_2480_30~1000



BLE_BT4.2_Ant1_2480_1000~26500



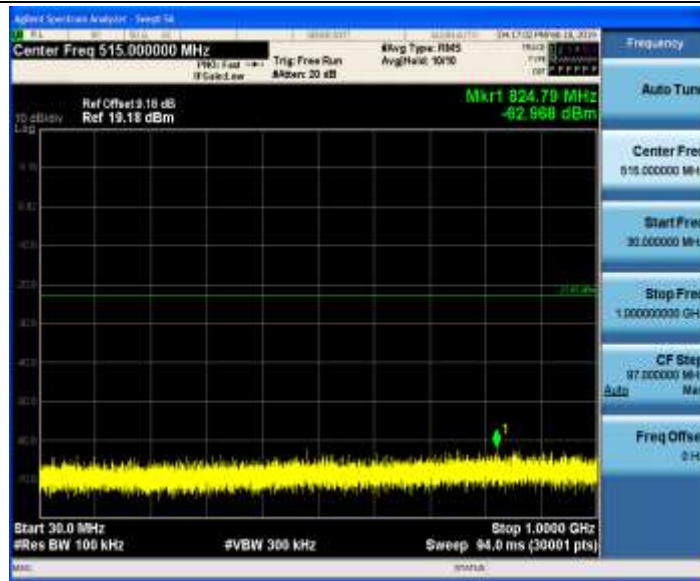
BLE_BT5.0_Ant1_2402_0~Reference



BLE_BT5.0_Ant1_2402_0.009~30



BLE_BT5.0_Ant1_2402_30~1000



BLE_BT5.0_Ant1_2402_1000~26500



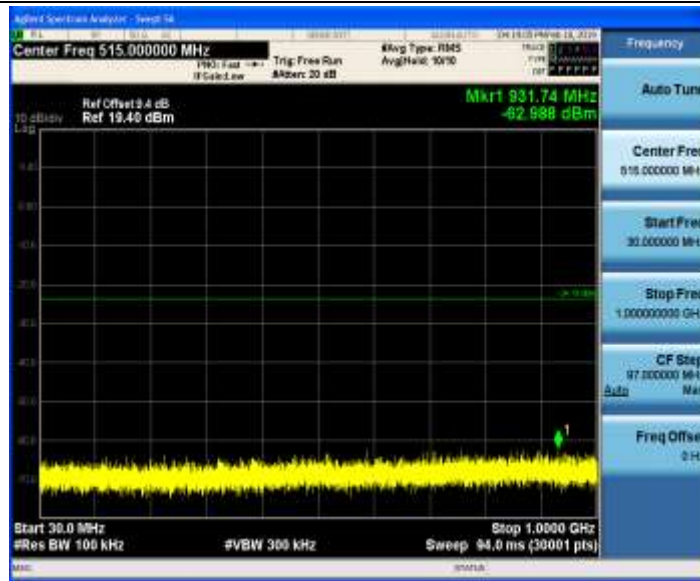
BLE_BT5.0_Ant1_2440_0~Reference



BLE_BT5.0_Ant1_2440_0.009~30



BLE_BT5.0_Ant1_2440_30~1000



BLE_BT5.0_Ant1_2440_1000~26500



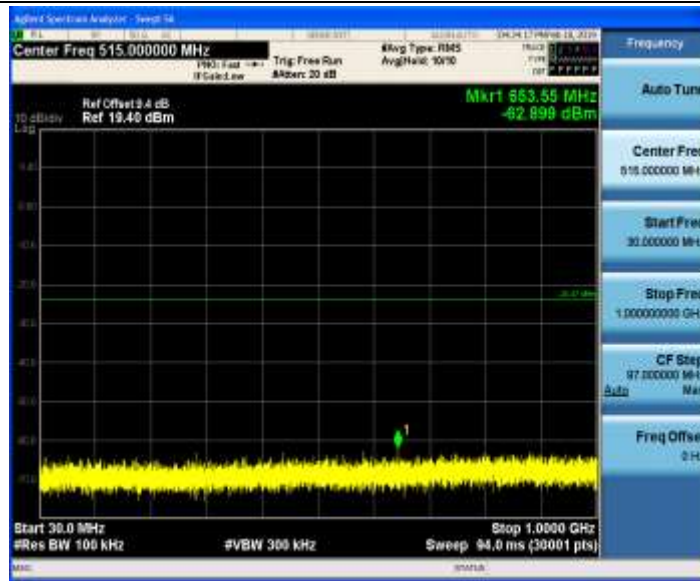
BLE_BT5.0_Ant1_2480_0~Reference



BLE_BT5.0_Ant1_2480_0.009~30



BLE_BT5.0_Ant1_2480_30~1000



BLE_BT5.0_Ant1_2480_1000~26500





Appendix H: Radiated Spurious Emission & Spurious in Restricted Band

Note: We tested all modes, but the data presented below is the worst case.

Below 1GHz, RBW = 100 kHz, VBW = 300 kHz.

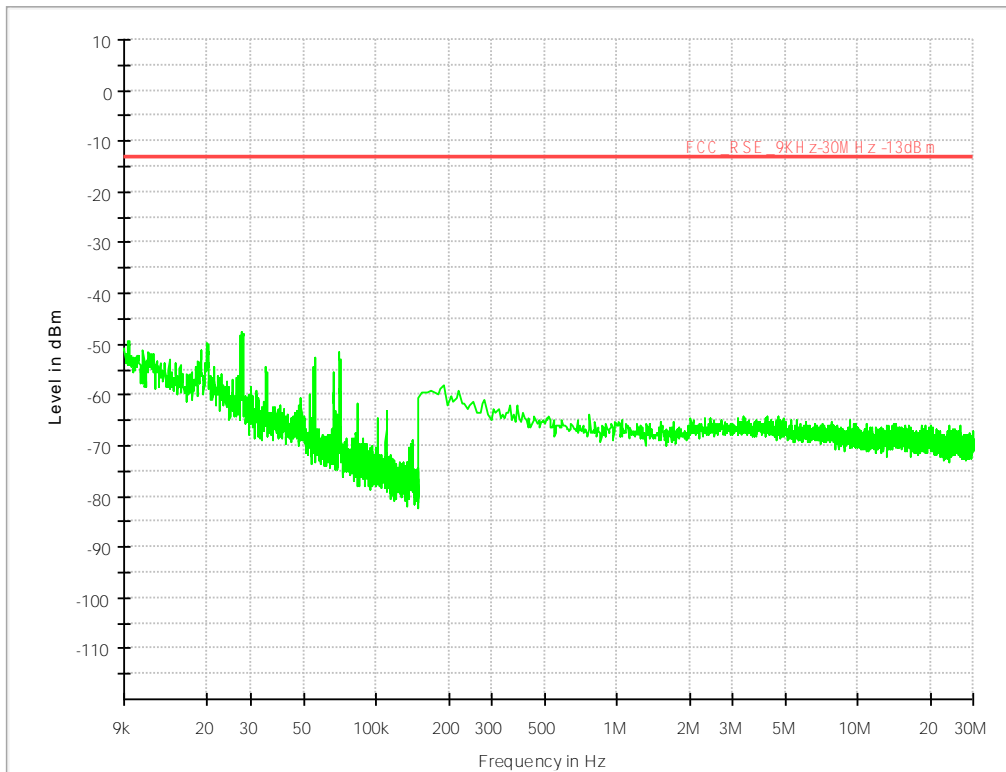
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz.

The simultaneous transmission has been considered

1 BLE_BT4.2

1.1 Part 1: Testing Range of “9 kHz to 30MHz”

Note 1: The test results and plot for testing range of “9 kHz to 30 MHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.

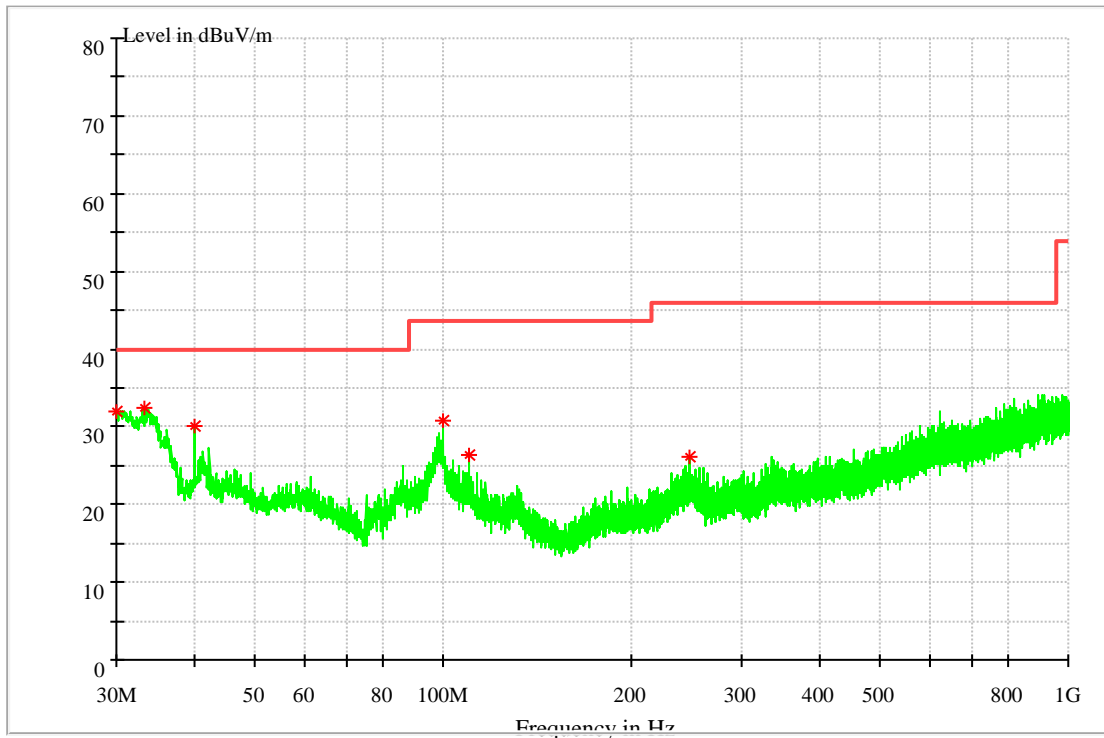


1.2 Part 2: Testing Range of “30 MHz to 1 GHz”

Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.

Note 2: The emissions in this range are mainly from the Platform Device (Notepad PC and its ancillary components).

Full Spectrum



Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd. (dB)
30.097000	32.06	40.00	7.94	100.0	V	301.0	12.6
33.249500	32.49	40.00	7.51	100.0	V	135.0	12.9
39.991000	30.20	40.00	9.80	100.0	V	74.0	14.4
99.985500	30.69	43.50	12.81	100.0	V	316.0	14.0

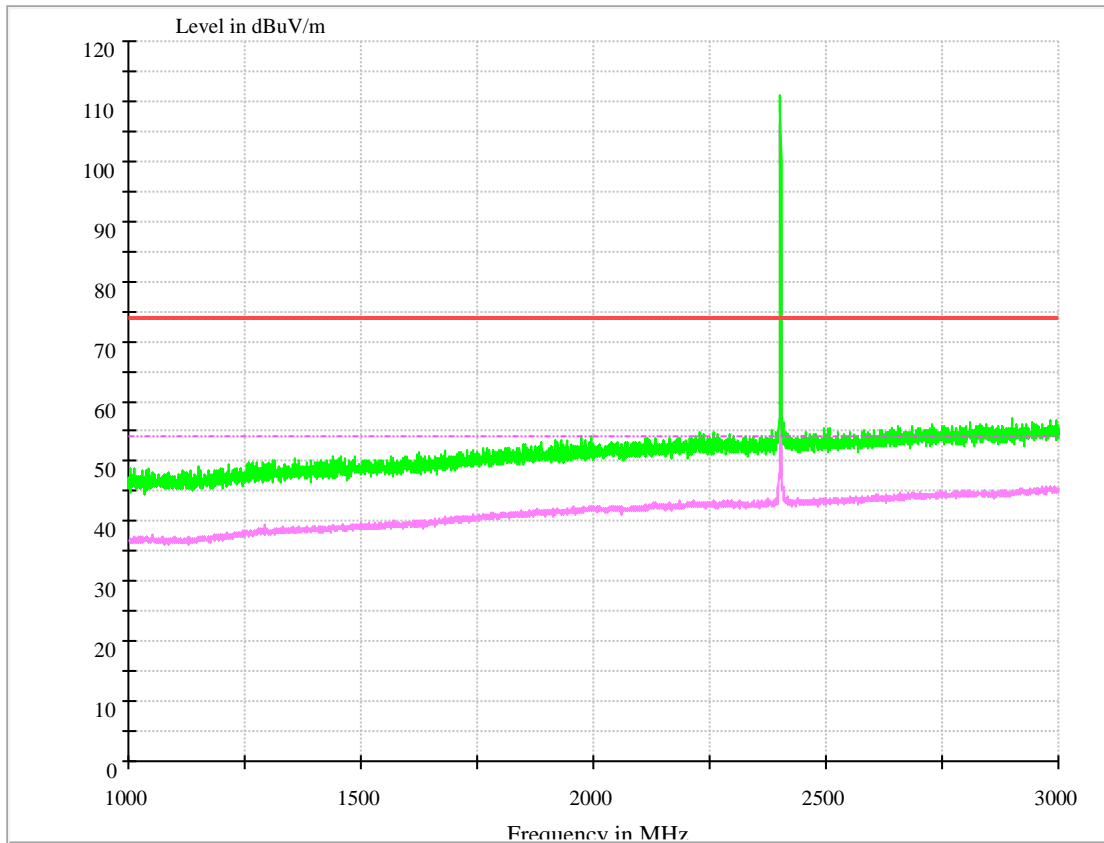


109.976500	26.34	43.50	17.16	100.0	V	104.0	13.0
248.395500	26.14	46.00	19.86	100.0	V	0.0	13.3

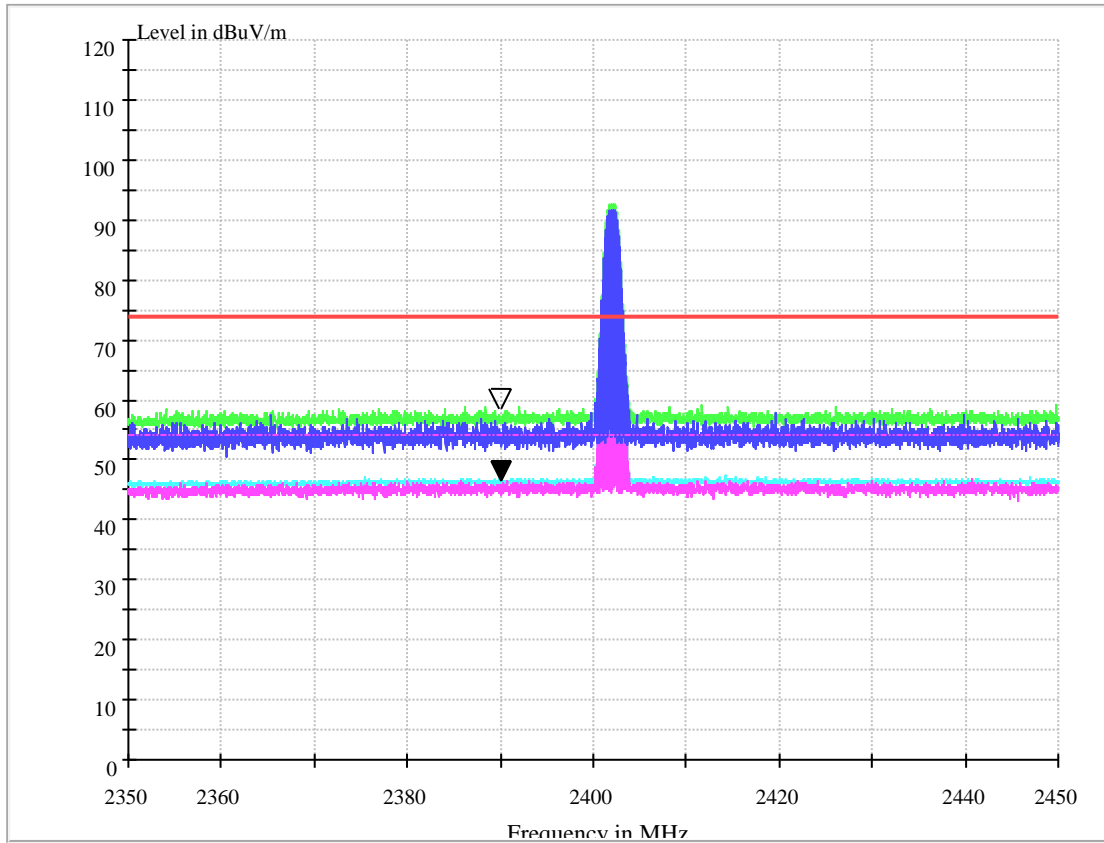
1.3 Part 3: Testing Range of “1GHz to 3GHz”

- Note 1: The testing range of “1GHz to 3 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).
- Note 3: The peak spike exceeds the limit line is EUT’s operating frequency.

1.3.1 Test Mode: BT4.2



1.3.1.1 Channel 0



MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth h	Transd. (dB)
2390	46.64	54.00	7.36	150.0	H	57.0	-6.8

MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth h (deg)	Transd. (dB)
2390	58.70	74.00	15.30	150.0	H	8.0	-6.8

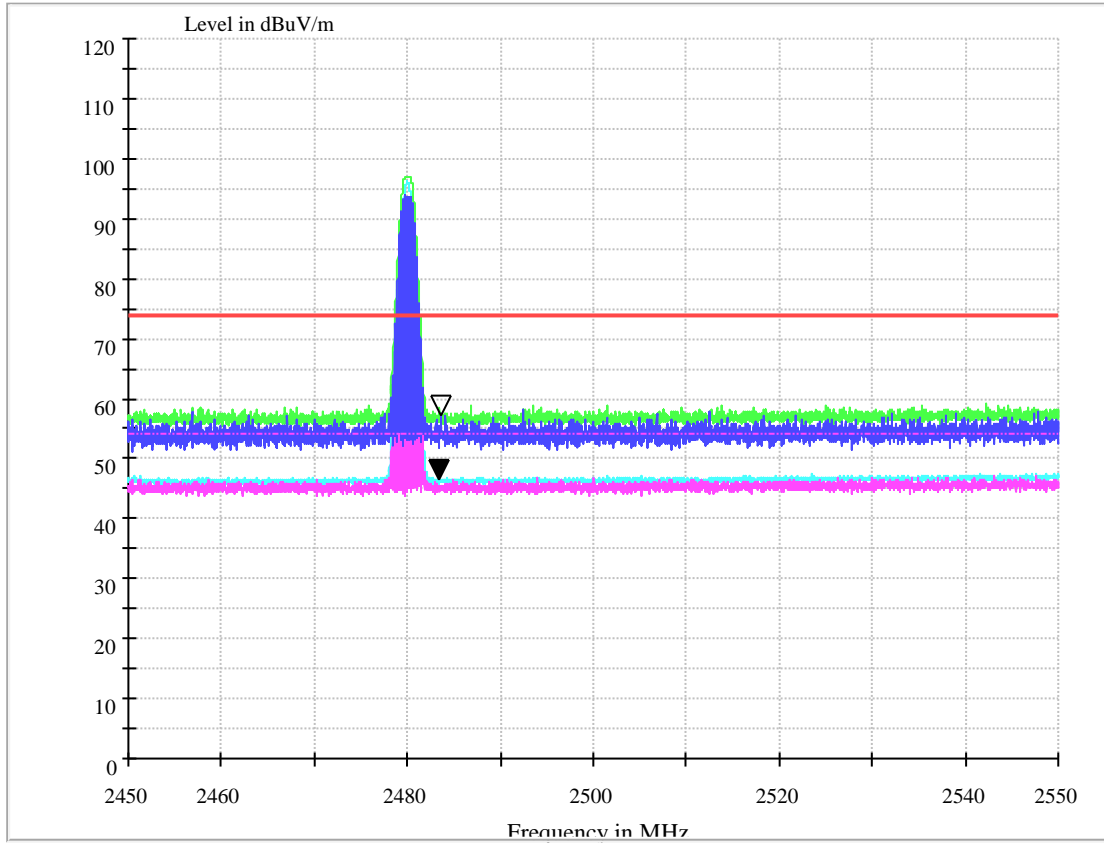
Note:

1, Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit – Level

1.3.1.2 Channel 39



MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimut h	Transd. (dB)
2483.5	46.63	54.00	7.37	150.0	H	59.0	-10.2

MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimut h (deg)	Transd. (dB)
2483.5	58.69	74.00	15.31	150.0	H	13.0	-10.2

Note:

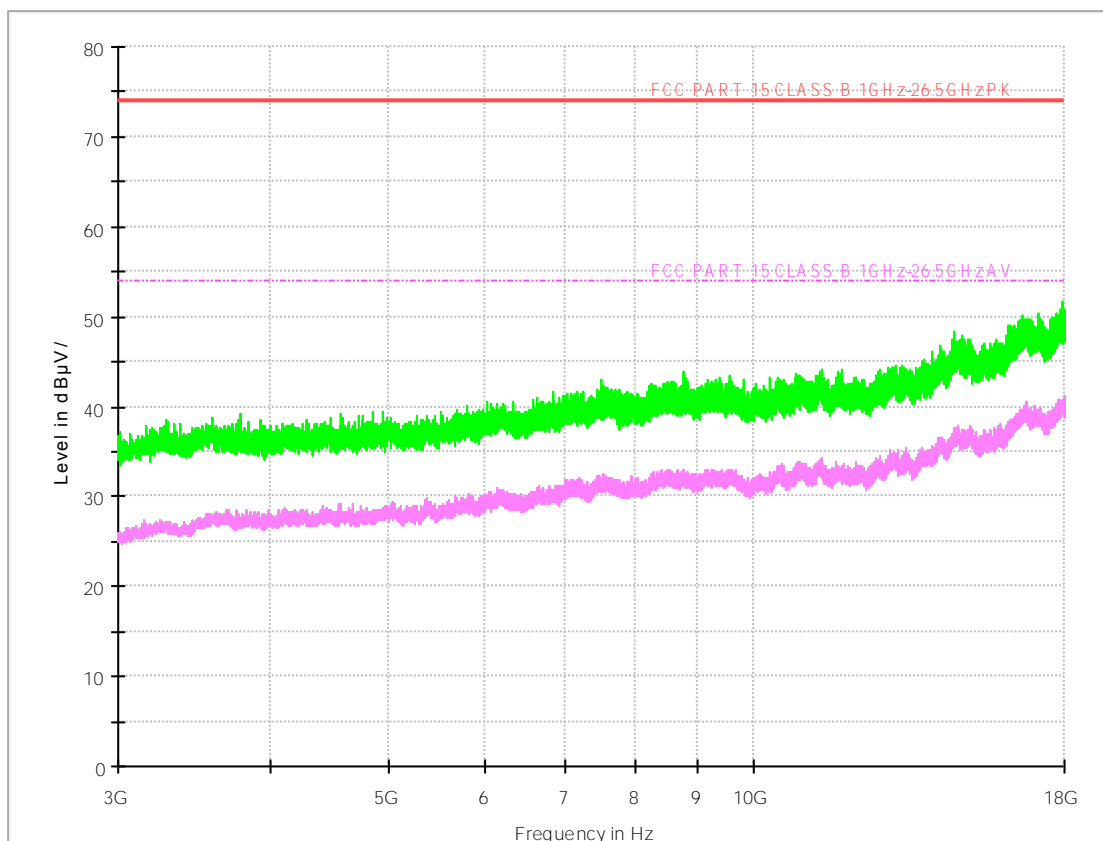
1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit – Leve

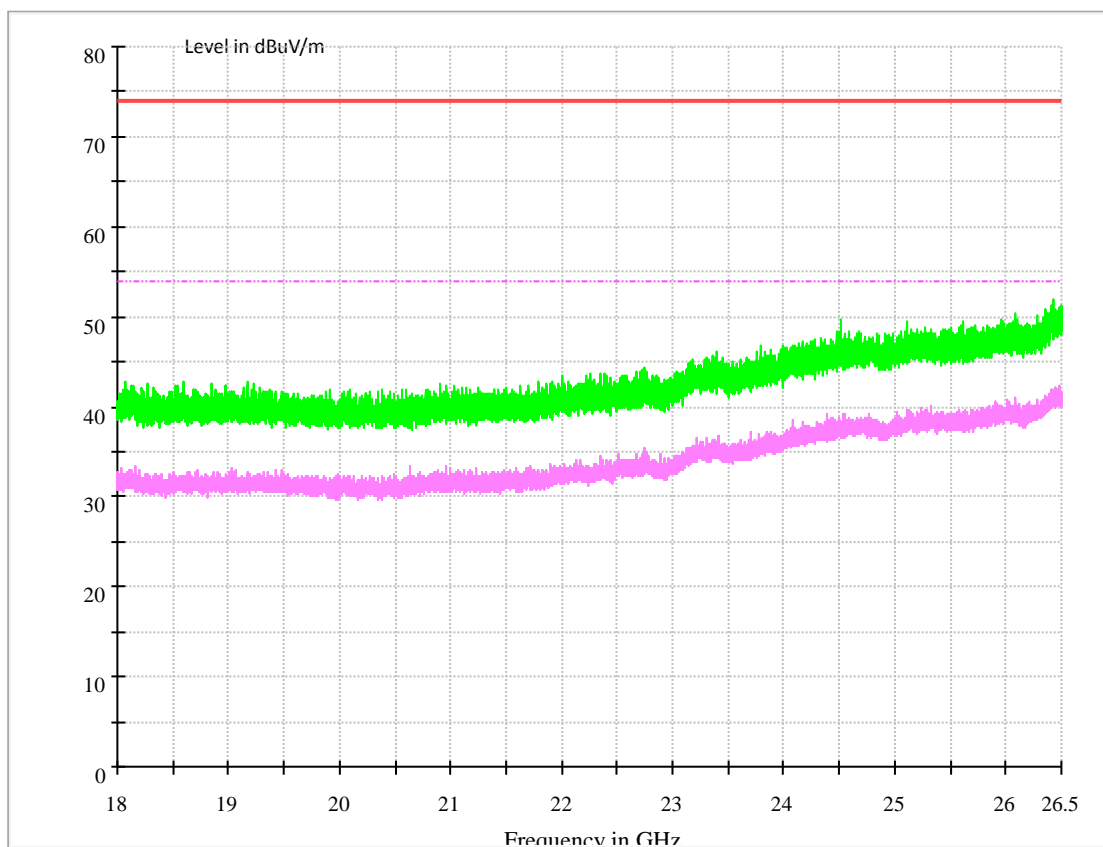
1.4 Part 4: Testing Range of “3 GHz to 18 GHz”

- Note 1: The test results and plot for testing range of “3 GHz to 18 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “3 GHz to 18 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).



1.5 Part 5: Testing Range of “18 GHz to 26.5 GHz”

- Note 1: The test results and plot for testing range of “18 GHz to 26.5 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “18 GHz to 26.5 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).

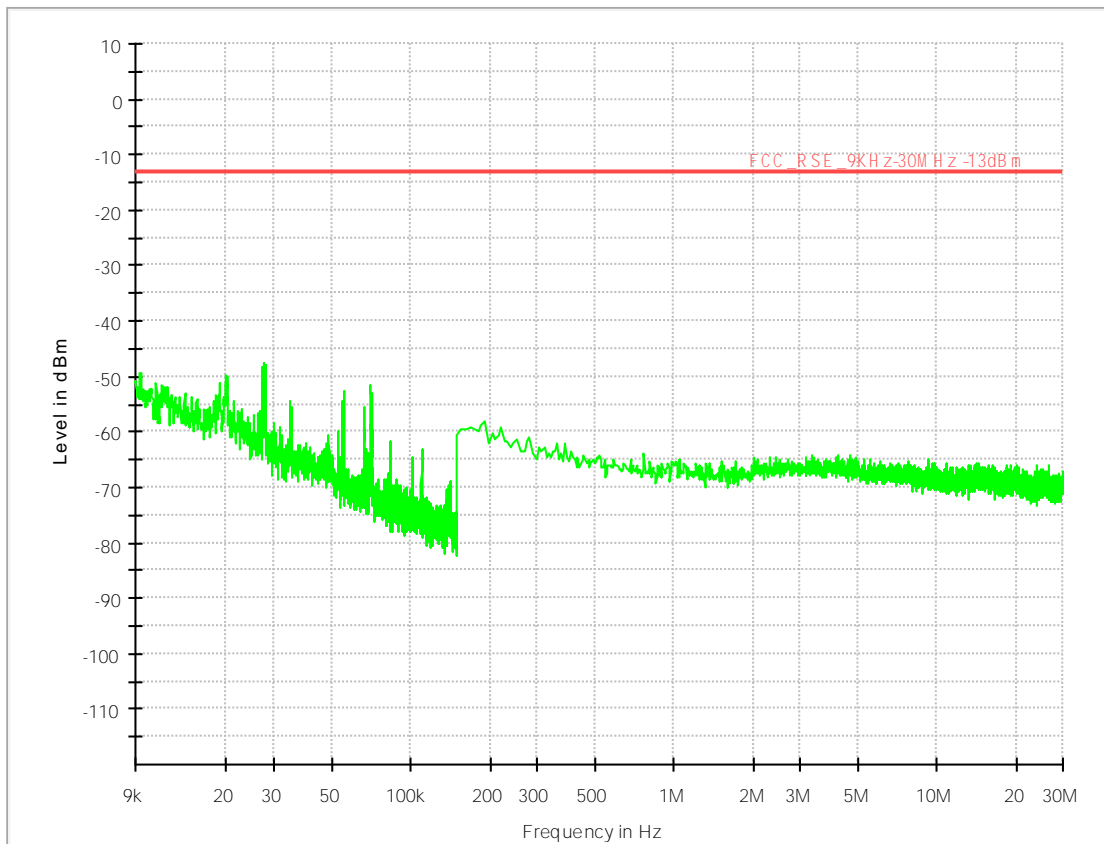




2 BLE_BT5.0

2.1 Part 1: Testing Range of “9 kHz to 30MHz”

Note 1: The test results and plot for testing range of “9 kHz to 30 MHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.



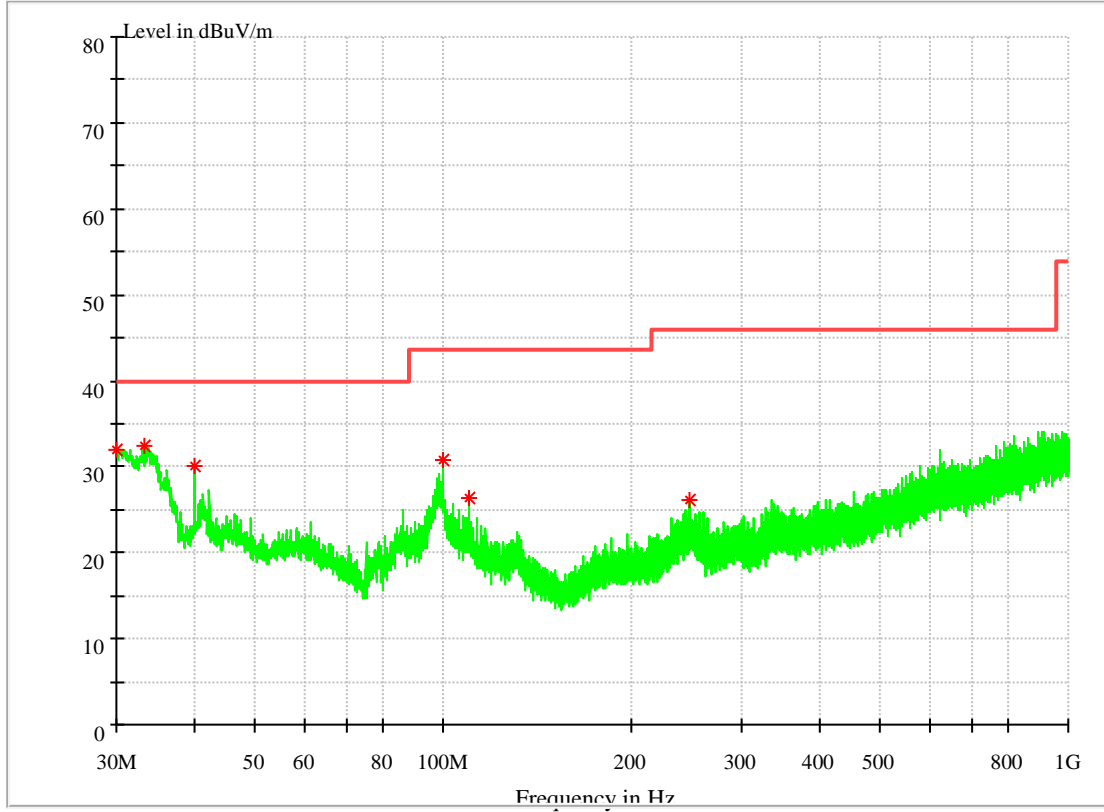


2.2 Part 2: Testing Range of “30 MHz to 1 GHz”

Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.

Note 2: The emissions in this range are mainly from the Platform Device (Notepad PC and its ancillary components).

Full Spectrum



Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Transd. (dB)
30.097000	32.06	40.00	7.94	100.0	V	301.0	12.6
33.249500	32.49	40.00	7.51	100.0	V	135.0	12.9
39.991000	30.20	40.00	9.80	100.0	V	74.0	14.4
99.985500	30.69	43.50	12.81	100.0	V	316.0	14.0
109.976500	26.34	43.50	17.16	100.0	V	104.0	13.0
248.395500	26.14	46.00	19.86	100.0	V	0.0	13.3

Note:

1, Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

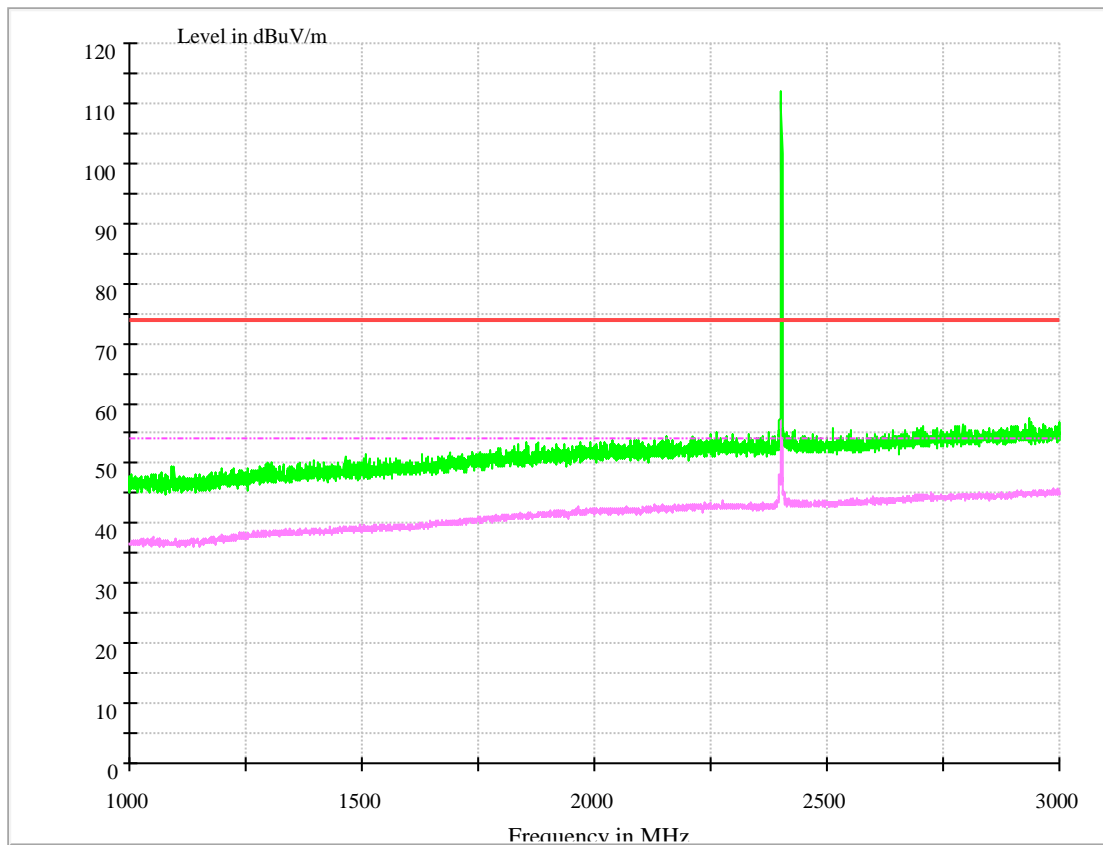
The reading level is calculated by software which is not shown in the sheet.

2, Margin = Limit - Level

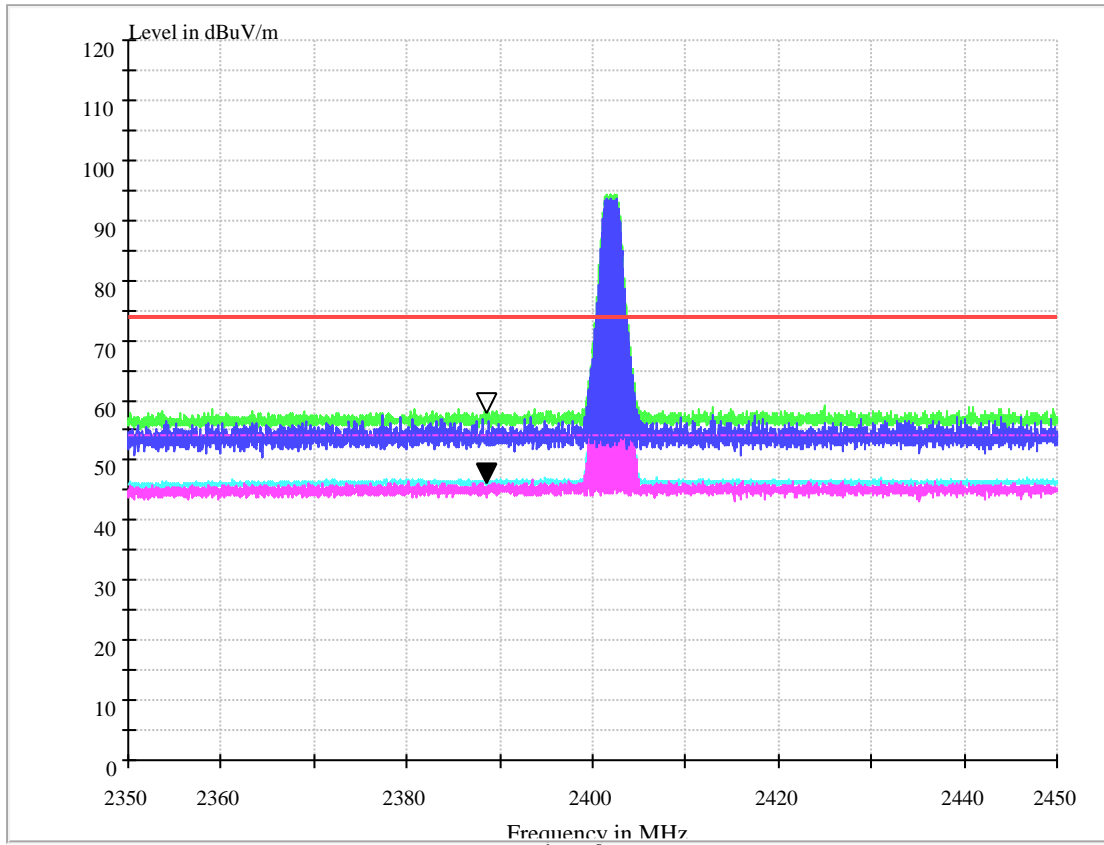
2.3 Part 3: Testing Range of “1GHz to 3GHz”

- Note 1: The testing range of “1GHz to 3 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).
- Note 3: The peak spike exceeds the limit line is EUT's operating frequency.

2.3.1 Test Mode: BT5.0



2.3.1.1 Channel 0





MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth h	Transd. (dB)
2390	46.62	54.00	7.38	150.0	H	311.0	-6.8

MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth h (deg)	Transd. (dB)
2390	58.29	74.00	15.71	150.0	H	2.0	-6.8

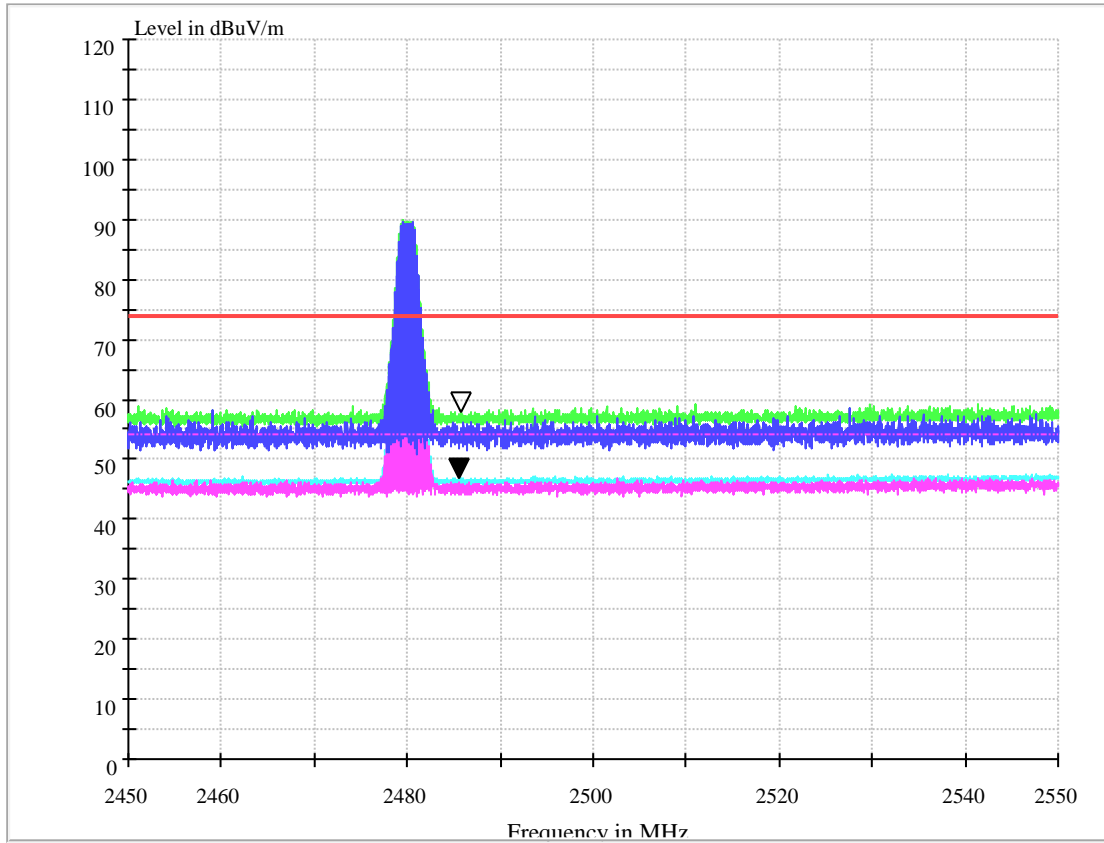
Note:

1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit – Level

2.3.1.2 Channel 39



MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth h	Transd. (dB)
2483.5	47.03	54.00	6.97	150.0	H	324.0	-10.2

MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth h (deg)	Transd. (dB)
2483.5	58.25	74.00	15.75	150.0	H	4.0	-10.2

Note:

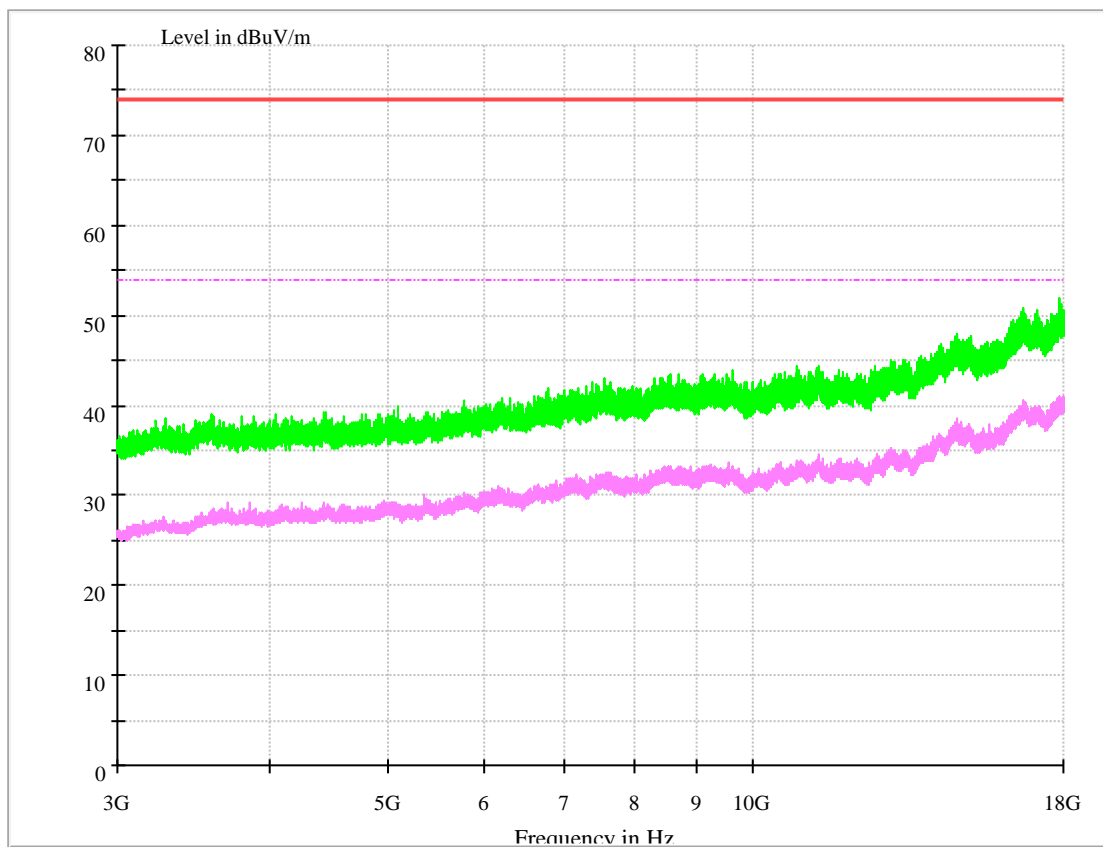
1, Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin = Limit – Level

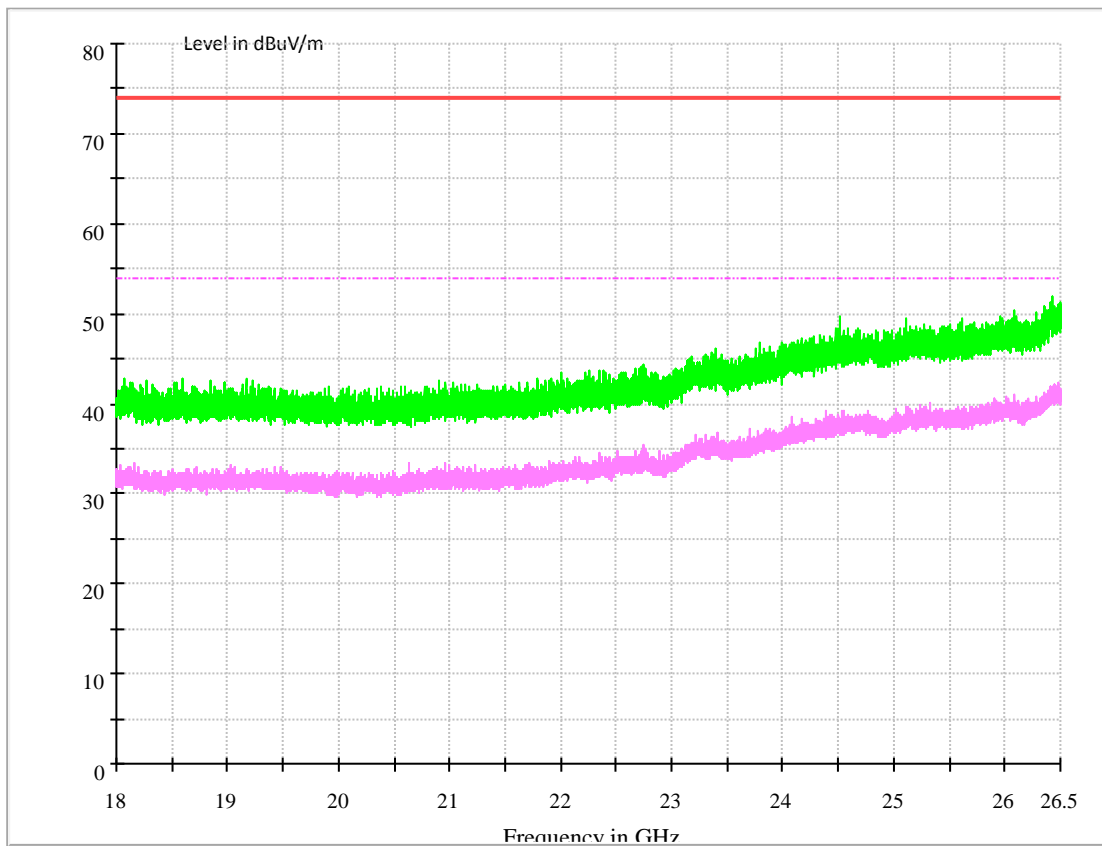
2.4 Part 4: Testing Range of “3 GHz to 18 GHz”

- Note 1: The test results and plot for testing range of “3 GHz to 18 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “3 GHz to 18 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).



2.5 Part 5: Testing Range of “18 GHz to 26.5 GHz”

- Note 1: The test results and plot for testing range of “18 GHz to 26.5 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “18 GHz to 26.5 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).

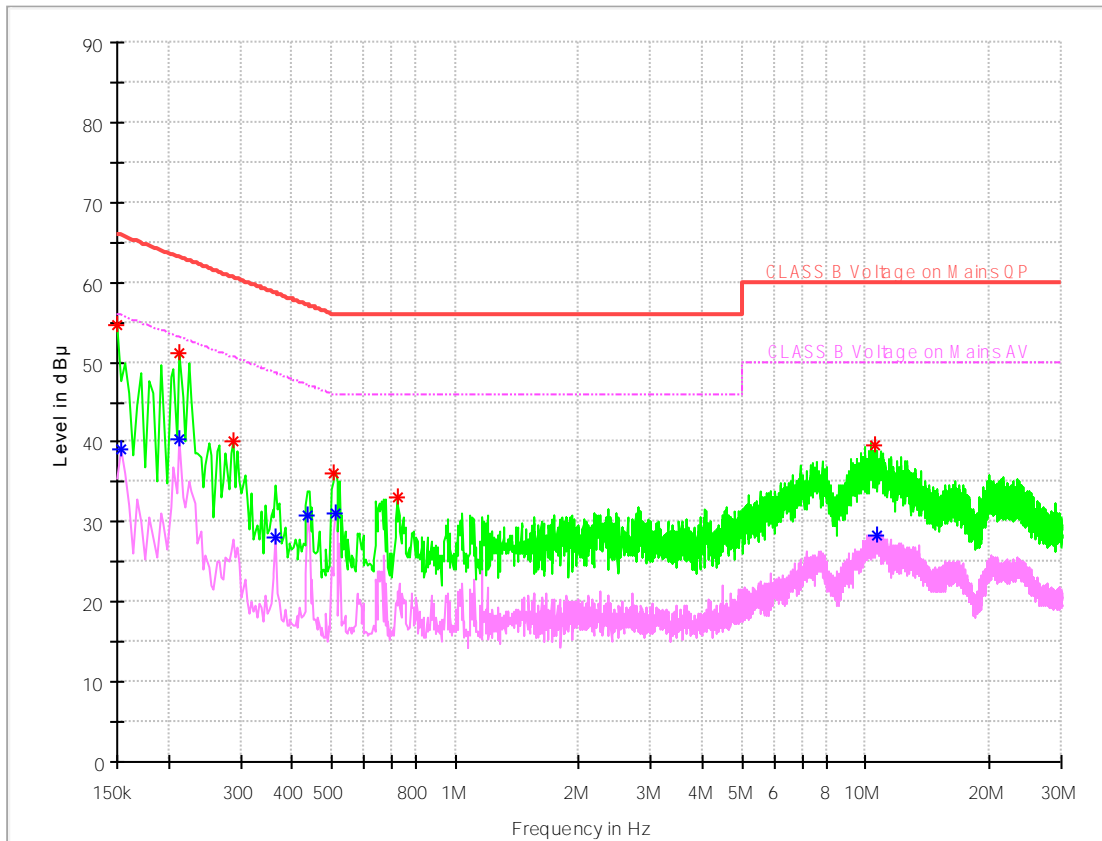


Appendix I: Conducted Emission at Power Port

1 BLE_BT4.2

Note: RBW =9 kHz, VBW = 30 kHz

Channel 39





MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Transd. (dB)	Margin (dB)	Line	PE
0.150000	54.56	66.00	9.7	11.44	L1	FLO
0.213431	51.19	63.07	9.7	11.88	N	FLO
0.288056	40.01	60.58	9.7	20.57	L1	FLO
0.50820	36.14	56.00	9.7	19.86	N	FLO
0.720881	33.21	56.00	9.7	22.79	L1	FLO
10.560188	39.71	60.00	10.0	20.29	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Transd. (dB)	Margin (dB)	Line	PE
0.153731	39.01	55.80	9.7	16.79	L1	FLO
0.213431	40.45	53.07	9.7	12.62	N	FLO
0.366412	28.08	48.58	9.7	20.50	L1	FLO
0.437306	30.90	47.11	9.8	16.21	N	FLO
0.511931	31.16	46.00	9.9	14.84	L1	FLO
10.664662	28.32	50.00	10.0	21.68	L1	FLO

Note:

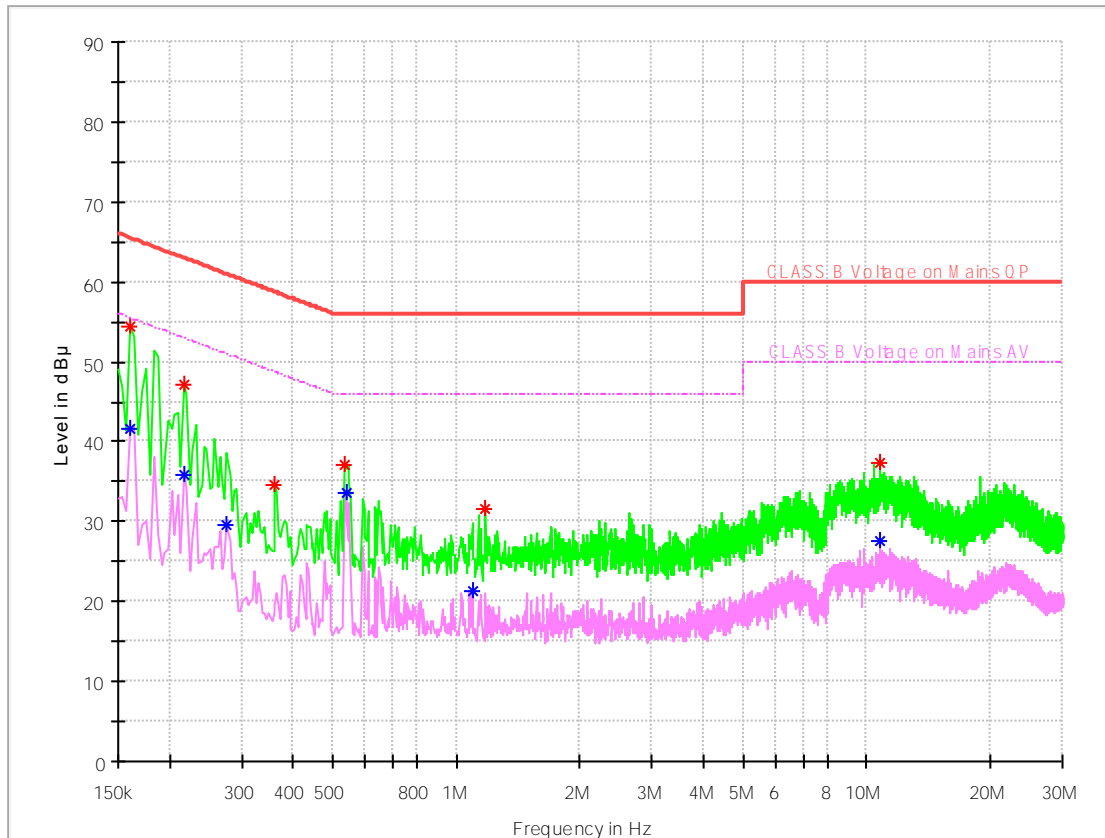
- 1, Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
The reading level is calculated by software which is not shown in the sheet.
- 2, Margin = Limit - Level



2 BLE_BT5.0

Note: RBW =9 kHz, VBW = 30 kHz

Channel 39



MEASUREMENT RESULT: PK Detector

Frequency (MHz)	Level (dB µ V)	Limit (dB µ V)	Transd. (dB)	Margin (dB)	Line	PE
0.161194	54.41	65.40	9.7	10.99	N	FLO
0.217162	47.19	62.93	9.7	15.74	N	FLO
0.362681	34.61	58.67	9.7	24.06	L1	FLO
0.534319	37.12	56.00	9.8	18.88	N	FLO
1.179825	31.56	56.00	9.8	24.44	L1	FLO
10.802719	37.41	60.00	10.0	22.59	L1	FLO



MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Transd. (dB)	Margin (dB)	Line	PE
0.161194	41.70	55.40	9.7	13.70	N	FLO
0.217162	35.96	52.93	9.7	16.97	N	FLO
0.276862	29.67	50.91	9.7	21.24	N	FLO
0.53805	33.56	46.00	9.8	12.44	N	FLO
1.094006	21.37	46.00	9.8	24.63	L1	FLO
10.802719	27.63	50.00	10.0	22.37	L1	FLO

Note:

1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

END