



Appendix for Test report



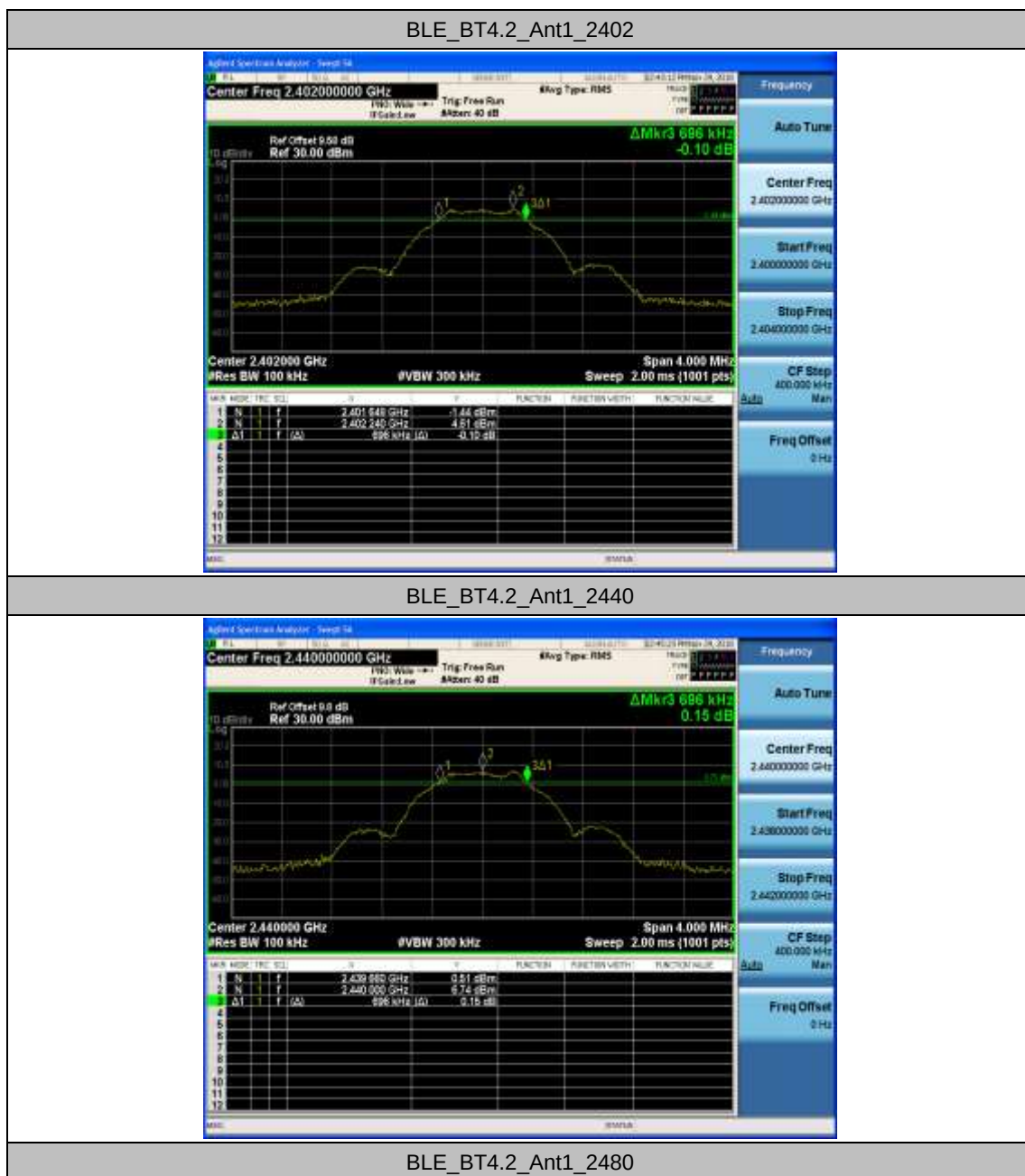
Appendix A: DTS Bandwidth

Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_BT4.2	Ant1	2402	0.696	2401.648	2402.344	---	PASS
		2440	0.696	2439.660	2440.356	---	PASS
		2480	0.692	2479.644	2480.336	---	PASS
BLE_BT5.0	Ant1	2402	1.164	2401.428	2402.592	---	PASS
		2440	1.360	2439.332	2440.692	---	PASS
		2480	1.232	2479.348	2480.580	---	PASS



Test Graphs





BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



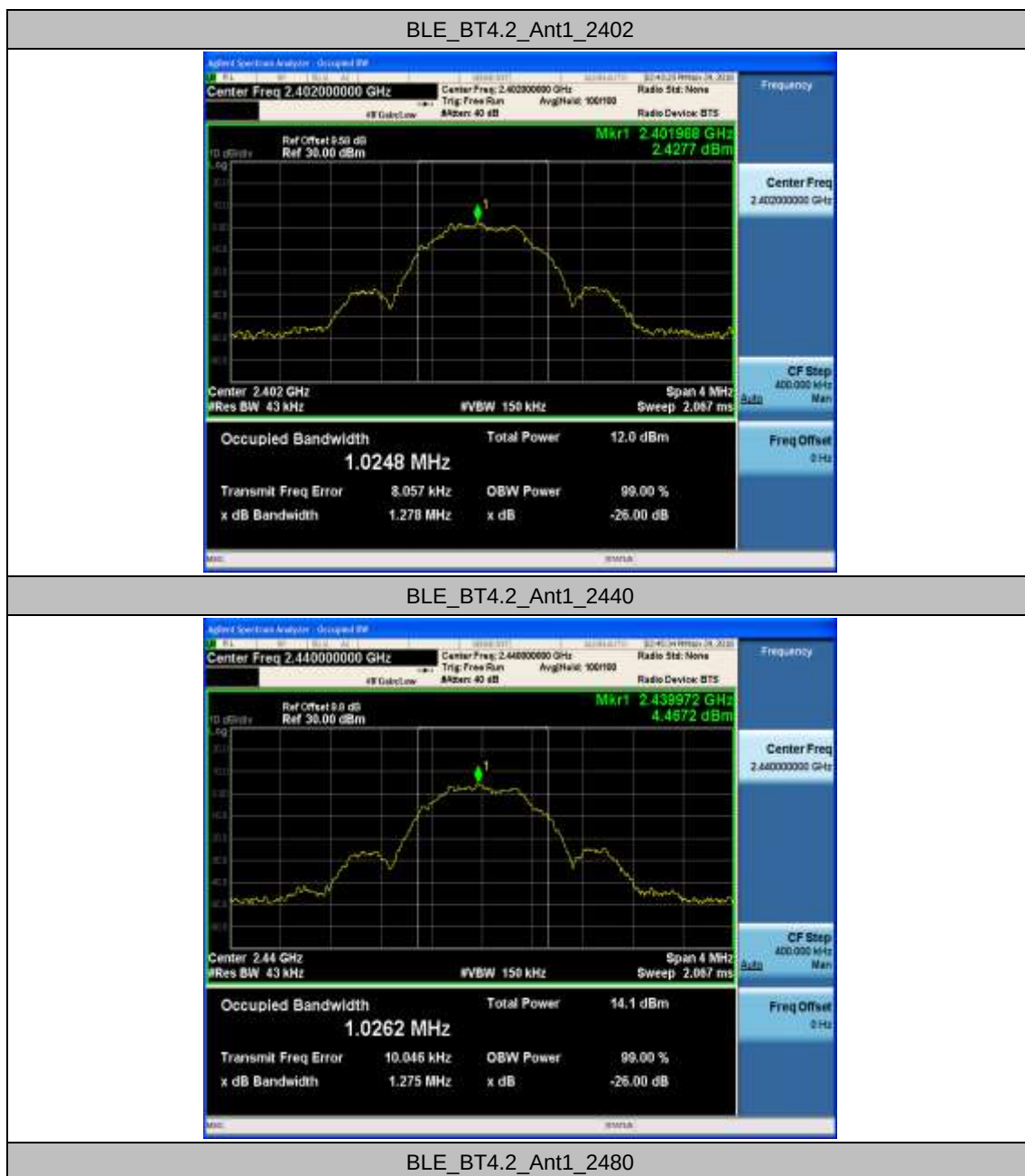
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_BT4.2	Ant1	2402	1.0248	2401.496	2402.520	---	PASS
		2440	1.0262	2439.497	2440.523	---	PASS
		2480	1.0216	2479.492	2480.514	---	PASS
BLE_BT5.0	Ant1	2402	2.0573	2400.995	2403.053	---	PASS
		2440	2.0614	2438.996	2441.057	---	PASS
		2480	2.0698	2478.978	2481.047	---	PASS



Test Graphs





BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





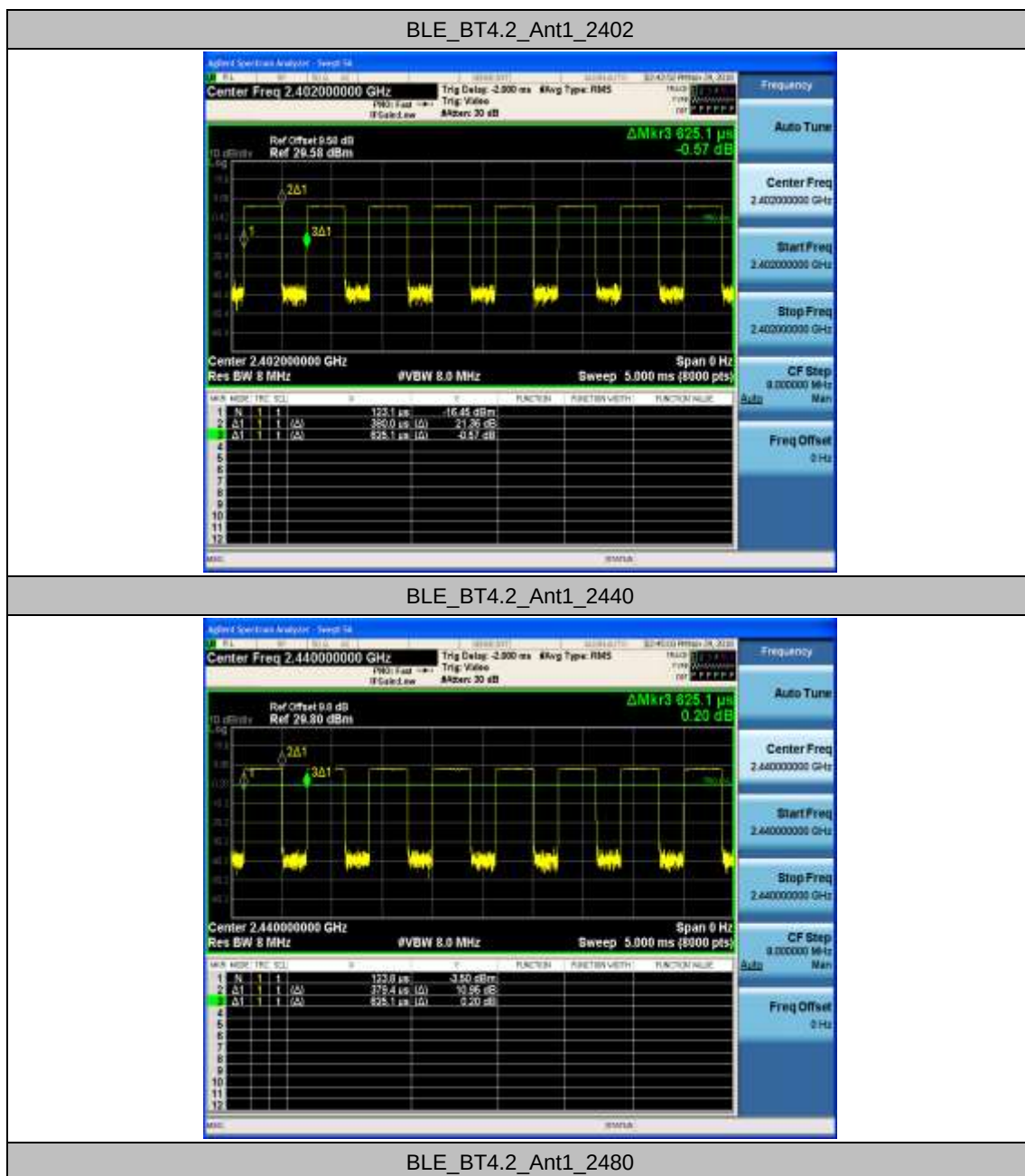
Appendix C: Duty Cycle

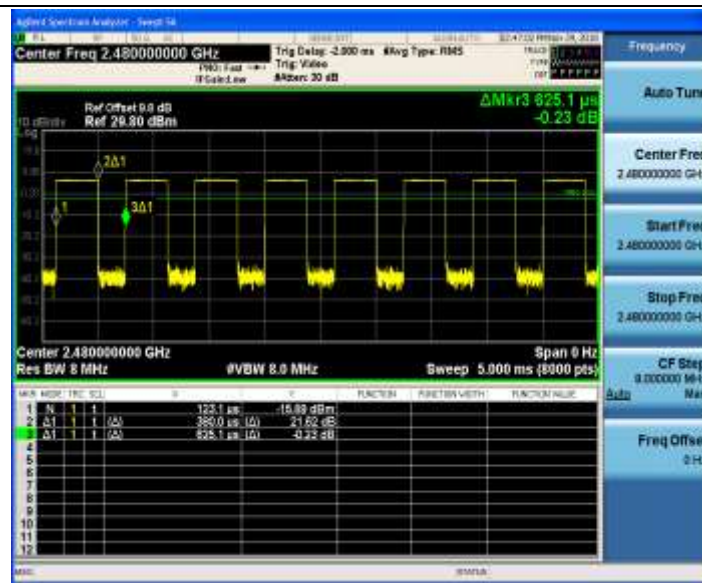
Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
BLE_BT4.2	Ant1	2402	0.38	0.63	60.80
		2440	0.38	0.63	60.70
		2480	0.38	0.63	60.80
BLE_BT5.0	Ant1	2402	1.07	1.88	56.90
		2440	1.07	1.88	56.90
		2480	1.07	1.88	56.93



Test Graphs

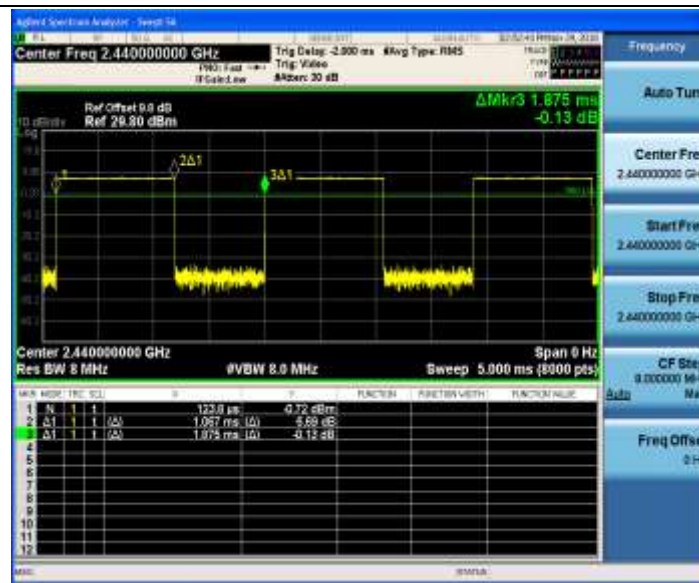




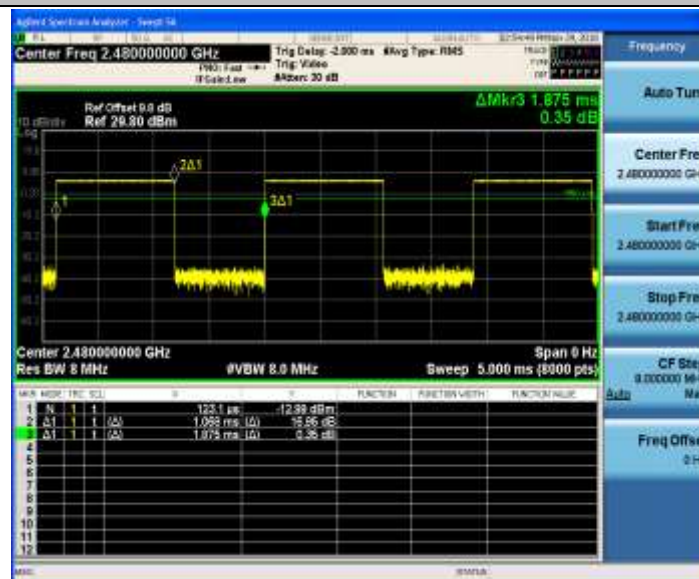
BLE_BT5.0_Ant1_2402



BLE_BT5.0_Ant1_2440



BLE_BT5.0_Ant1_2480





Appendix D: Maximum conducted peak output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_BT4.2	Ant1	2402	5.75	30	PASS
		2440	7.84	30	PASS
		2480	6.36	30	PASS
BLE_BT5.0	Ant1	2402	5.25	30	PASS
		2440	6.34	30	PASS
		2480	5.58	30	PASS



Test Graphs

BLE_BT4.2_Ant1_2402



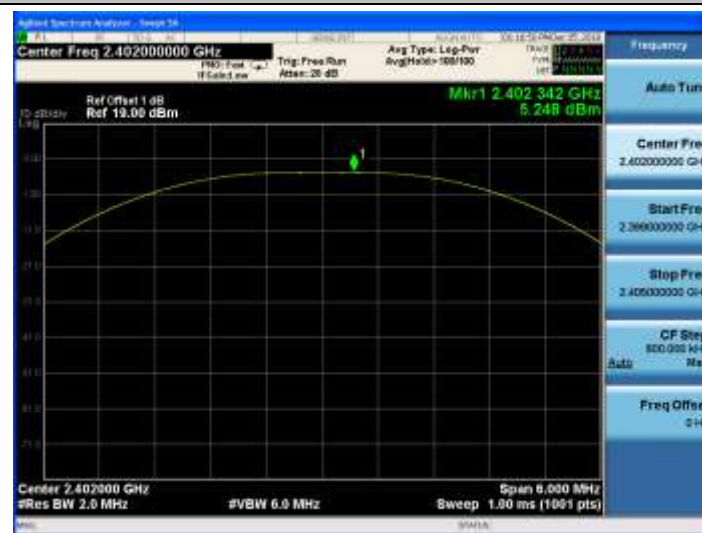
BLE_BT4.2_Ant1_2440



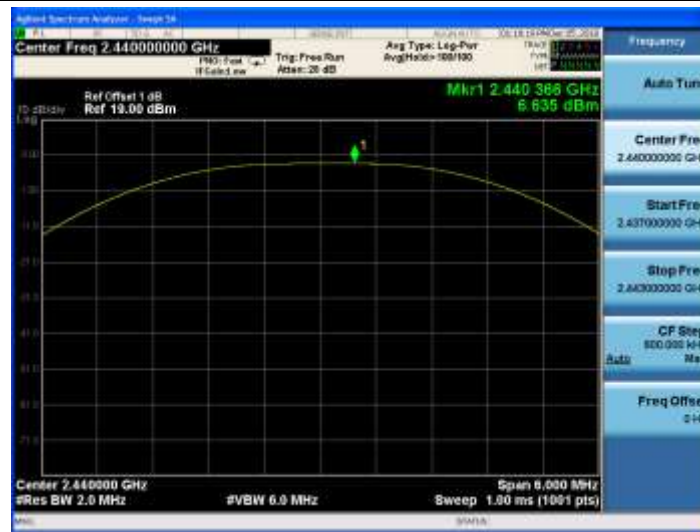
BLE_BT4.2_Ant1_2480



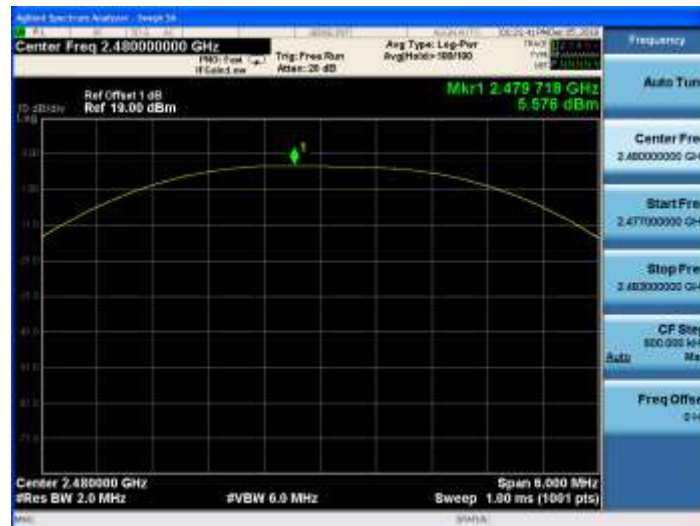
BLE_BT5.0_Ant1_2402



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	-4.45	8	PASS
		2440	-2.53	8	PASS
		2480	-3.99	8	PASS
BLE_BT5.0	Ant1	2402	-6.82	8	PASS
		2440	-5.84	8	PASS
		2480	-7.27	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





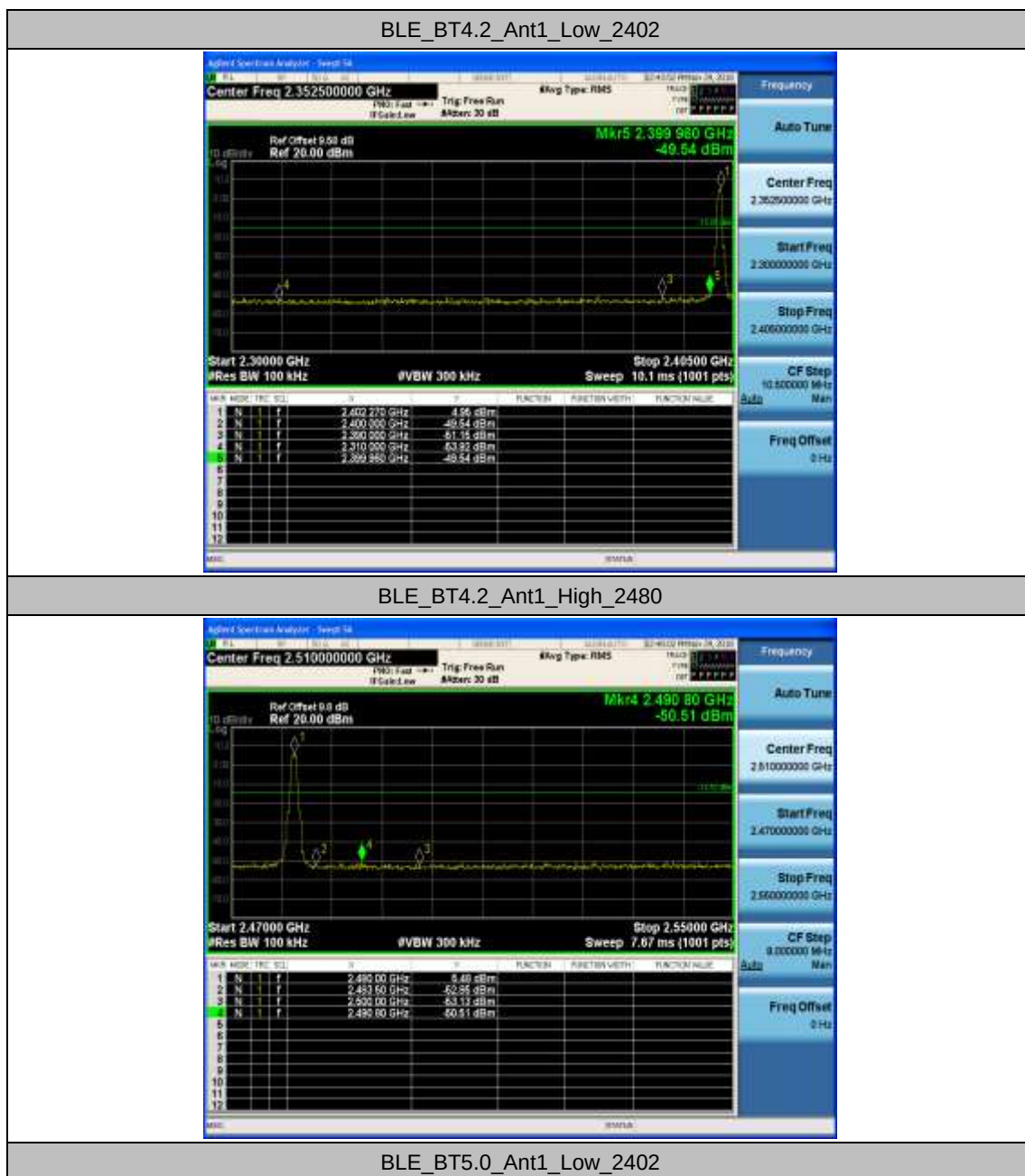
Appendix F: Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_BT4.2	Ant1	Low	2402	4.95	-49.54	-15.05	PASS
		High	2480	5.48	-50.51	-14.52	PASS
BLE_BT5.0	Ant1	Low	2402	3.69	-26.95	-16.31	PASS
		High	2480	3.08	-49.56	-16.92	PASS

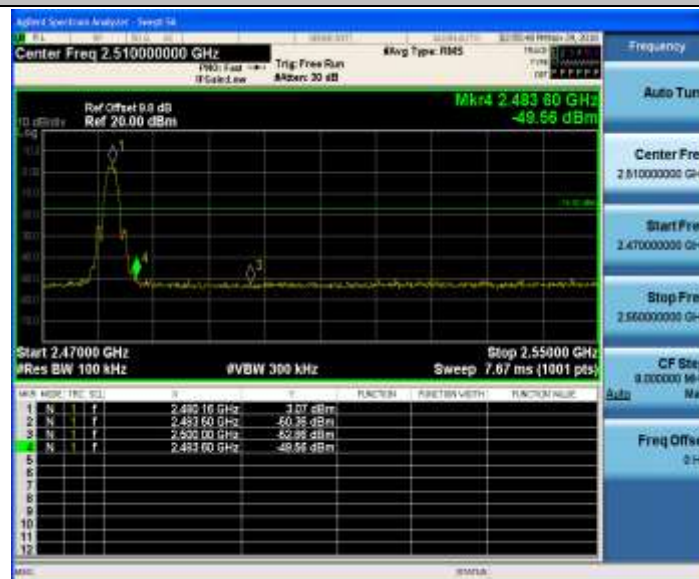


Test Graphs





BLE_BT5.0_Ant1_High_2480





Appendix G: Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange	RefLevel	Result	Limit	Verdict
BLE_BT4.2	Ant1	2402	Reference	4.66	4.66	---	PASS
			0.009~30	0.009~30	-71.73	-35.34	PASS
			30~1000	30~1000	-62.58	-25.34	PASS
			1000~26500	1000~26500	-36.56	-25.34	PASS
		2440	Reference	6.62	6.62	---	PASS
			0.009~30	0.009~30	-74.42	-33.38	PASS
			30~1000	30~1000	-62.3	-23.38	PASS
			1000~26500	1000~26500	-36	-23.38	PASS
		2480	Reference	5.05	5.05	---	PASS
			0.009~30	0.009~30	-74.64	-34.95	PASS
			30~1000	30~1000	-62.28	-24.95	PASS
			1000~26500	1000~26500	-36.99	-24.95	PASS
BLE_BT5.0	Ant1	2402	Reference	4.76	4.76	---	PASS
			0.009~30	0.009~30	-74.11	-35.24	PASS
			30~1000	30~1000	-62.52	-25.24	PASS
			1000~26500	1000~26500	-36.75	-25.24	PASS
		2440	Reference	5.92	5.92	---	PASS
			0.009~30	0.009~30	-73.99	-34.08	PASS
			30~1000	30~1000	-62.64	-24.08	PASS
			1000~26500	1000~26500	-36.3	-24.08	PASS
		2480	Reference	4.36	4.36	---	PASS
			0.009~30	0.009~30	-74.38	-35.64	PASS
			30~1000	30~1000	-62.9	-25.64	PASS
			1000~26500	1000~26500	-35.02	-25.64	PASS

Test Graphs





BLE_BT4.2_Ant1_2402_1000~26500



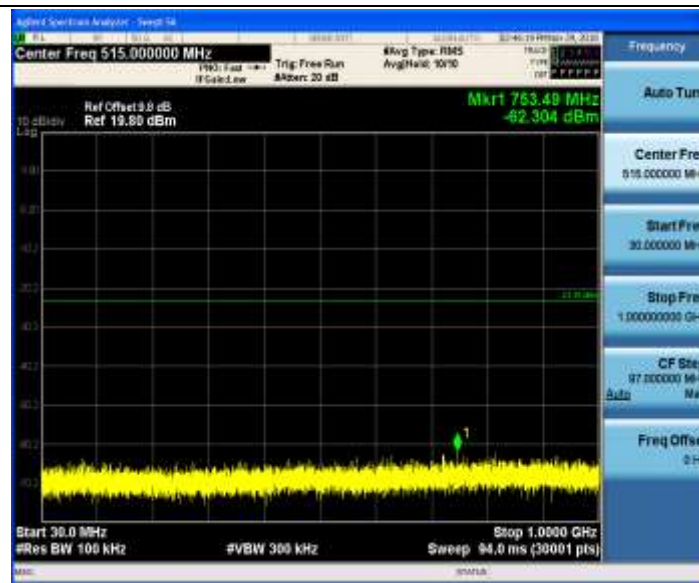
BLE_BT4.2_Ant1_2440_0~Reference



BLE_BT4.2_Ant1_2440_0.009~30



BLE_BT4.2_Ant1_2440_30~1000



BLE_BT4.2_Ant1_2440_1000~26500



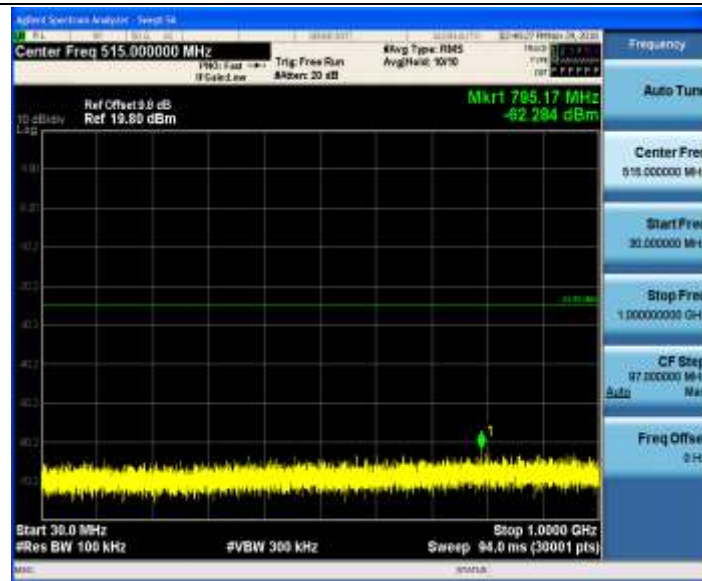
BLE_BT4.2_Ant1_2480_0~Reference



BLE_BT4.2_Ant1_2480_0.009~30



BLE_BT4.2_Ant1_2480_30~1000



BLE_BT4.2_Ant1_2480_1000-26500



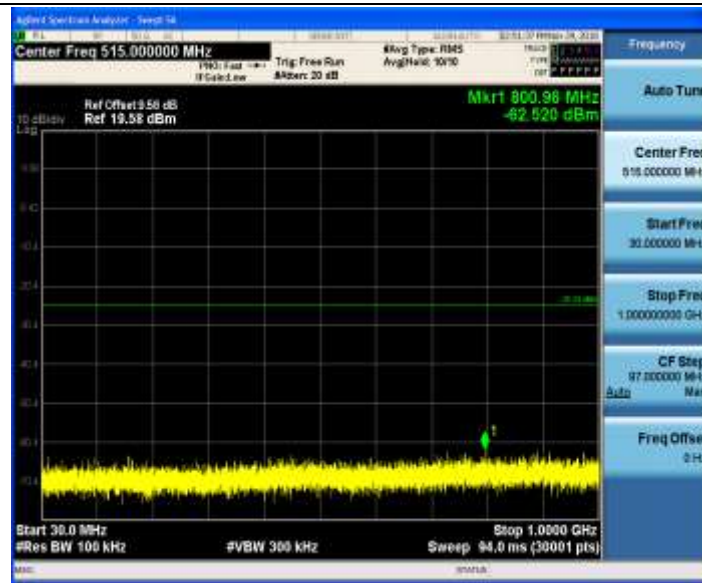
BLE_BT5.0_Ant1_2402_0-Reference



BLE_BT5.0_Ant1_2402_0.009~30



BLE_BT5.0_Ant1_2402_30~1000



BLE_BT5.0_Ant1_2402_1000~26500



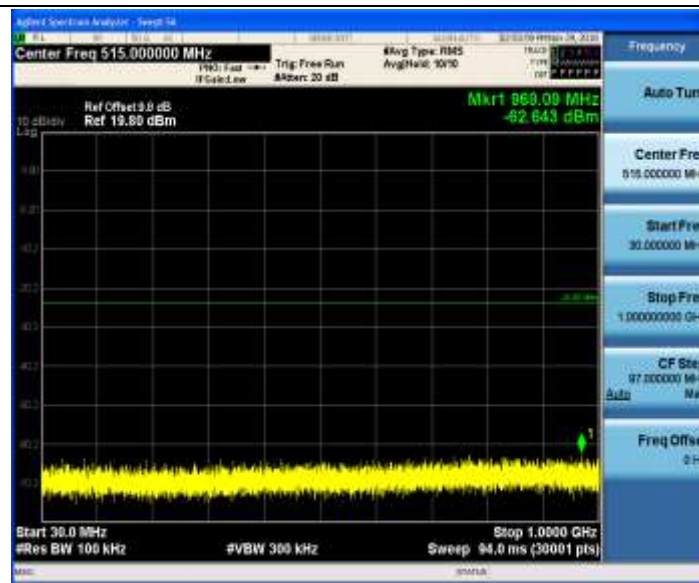
BLE_BT5.0_Ant1_2440_0~Reference



BLE_BT5.0_Ant1_2440_0.009~30



BLE_BT5.0_Ant1_2440_30~1000



BLE_BT5.0_Ant1_2440_1000~26500



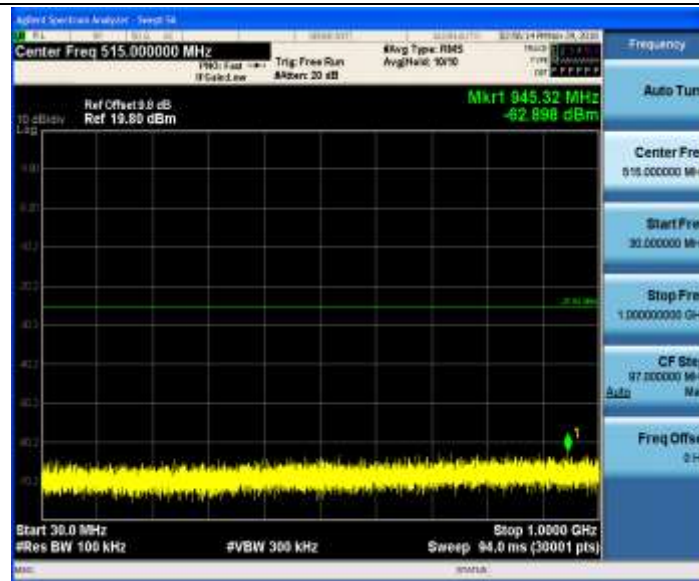
BLE_BT5.0_Ant1_2480_0~Reference



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.

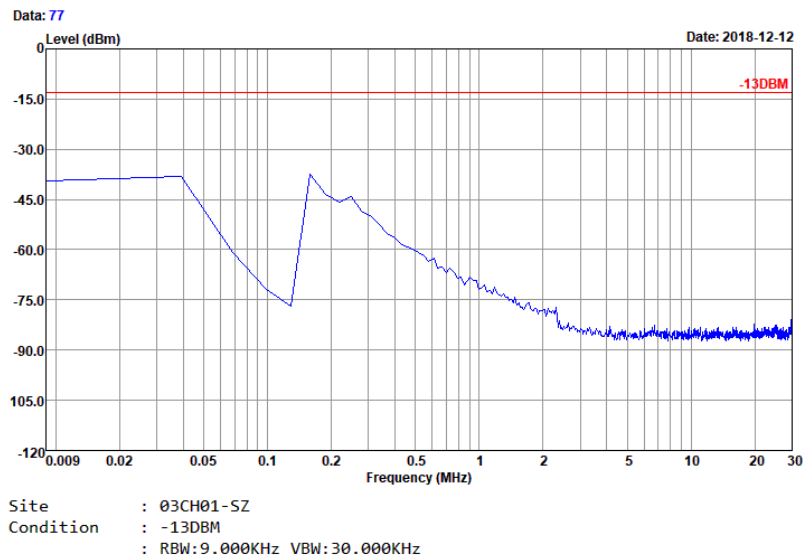
Above 1GHz, RBW = 1 MHz, VBW = 3 MHz.

The simultaneous transmission has been considered

1 BLE_BT4.2

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

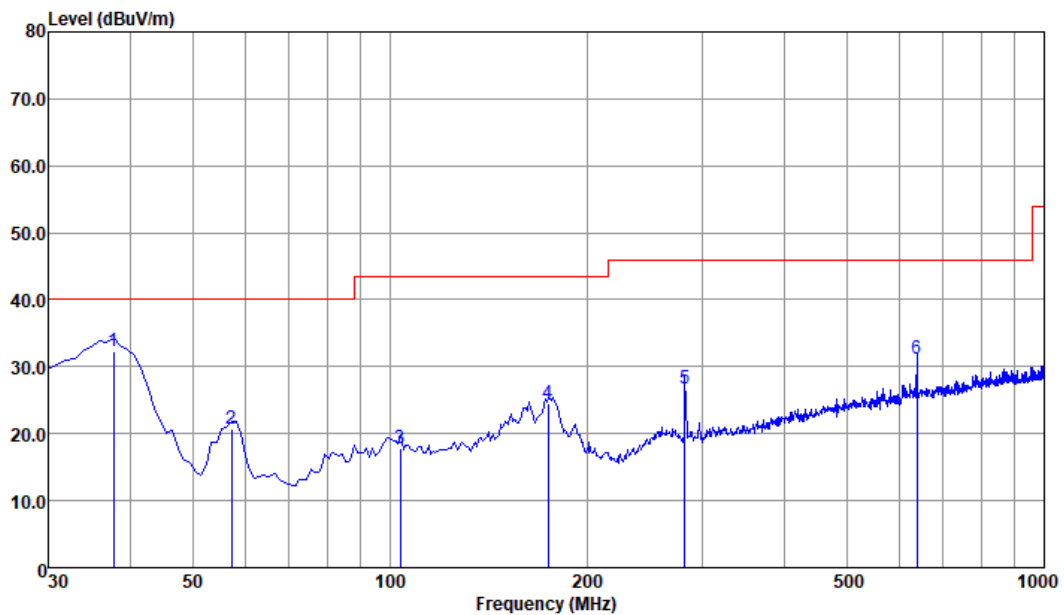
Note 1: The test results and plot for testing range of “9 kHz to 30 MHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.



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).



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1 pp	37.76	32.42	-7.58	40.00	44.00	19.76	0.36	31.70 QP
2	57.16	20.78	-19.22	40.00	38.97	12.91	0.50	31.60 QP
3	103.72	17.76	-25.74	43.50	31.41	16.95	0.89	31.49 QP
4	174.53	24.42	-19.08	43.50	38.83	15.43	1.45	31.29 QP
5	282.20	26.63	-19.37	46.00	36.78	18.93	1.98	31.06 QP
6	638.19	31.16	-14.84	46.00	34.59	24.65	3.12	31.20 QP

Note:

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

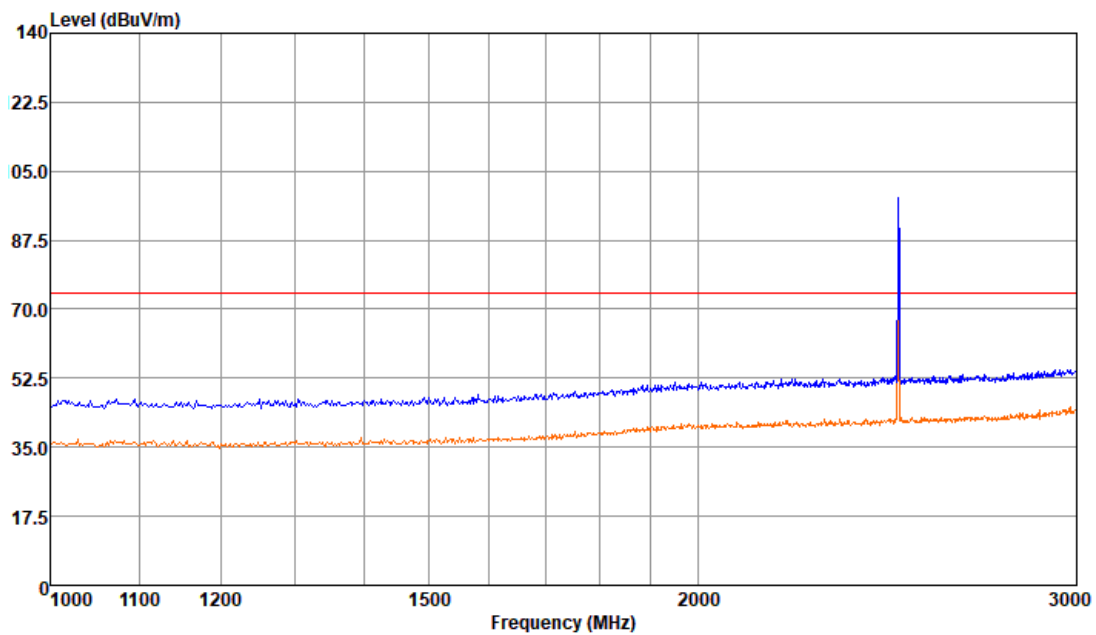
The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

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

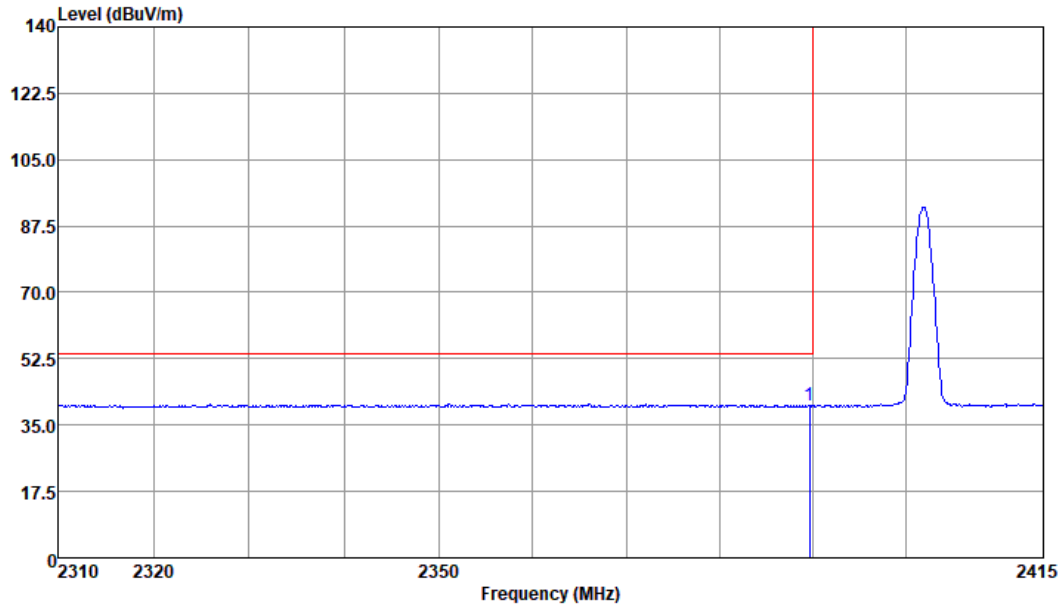
- Note 1: The testing range of “1GHz to 3 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).
- Note 3: The peak spike exceeds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

1.3.1 Test Mode: BT4.2

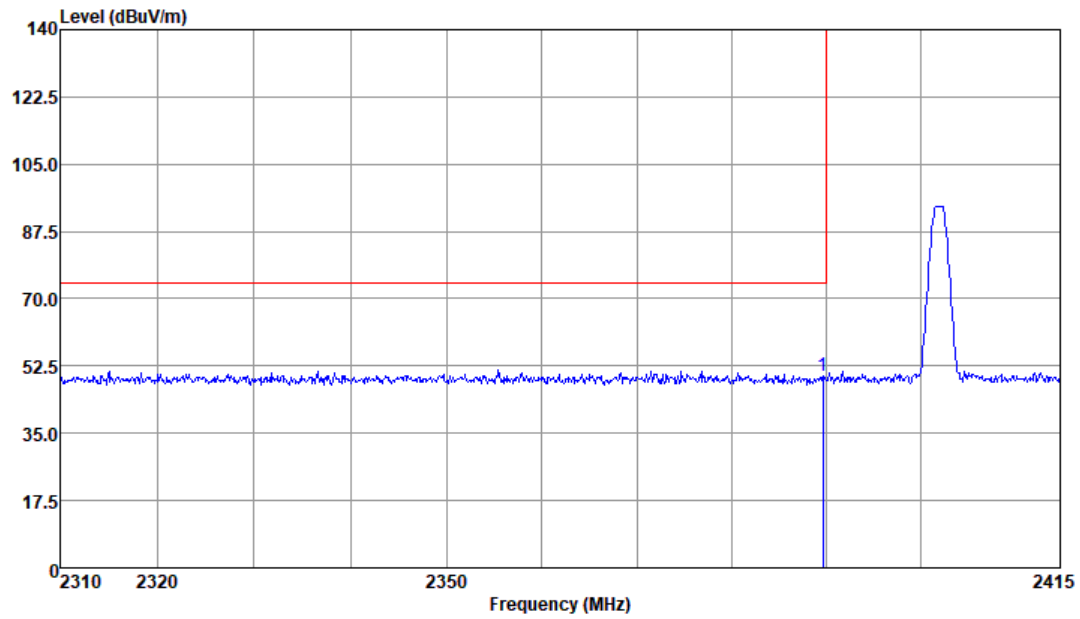




1.3.1.1 Channel 0



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB
1 pp	2389.70	40.03	-13.97	54.00	34.72	31.50	6.81	33.00 Average



Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Remark	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB		
1 pp 2389.70	50.08	-23.92	74.00	44.77	31.50	6.81	33.00	Peak

Note:

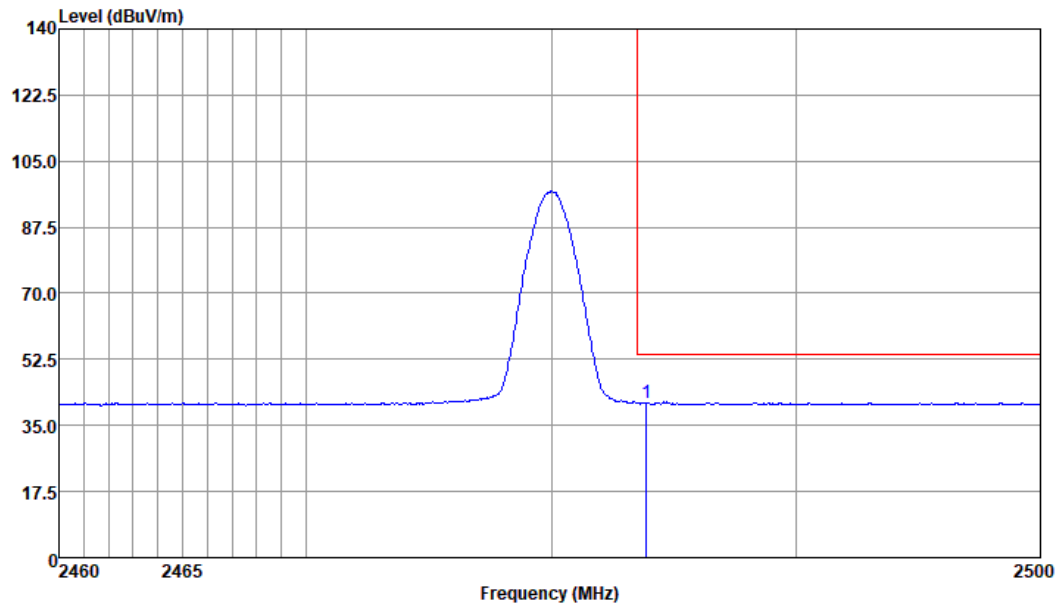
1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

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

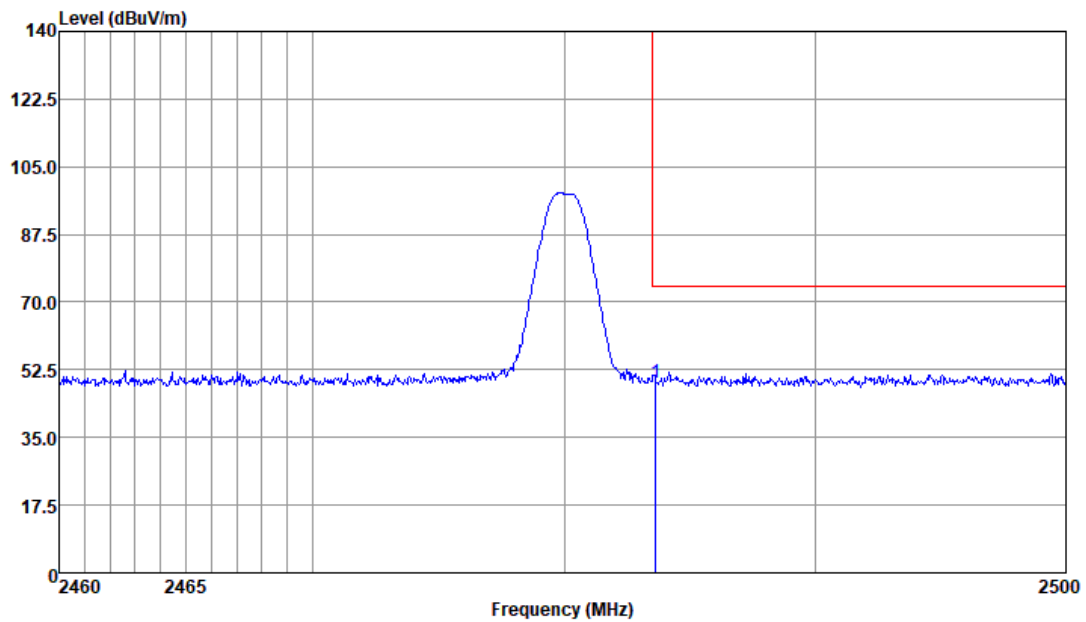
2, Margin=Limit - Level



1.3.1.2 Channel 39



Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 pp 2483.88	40.97	-13.03	54.00	35.20	31.86	6.91	33.00	Average



Freq	Level	Over	Limit	ReadAntenna		Cable	Preamp	Remark
		Limit	Line	Level	Factor	Loss	Factor	
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 pp 2483.64	49.20	-24.80	74.00	43.43	31.86	6.91	33.00	Peak

Note:

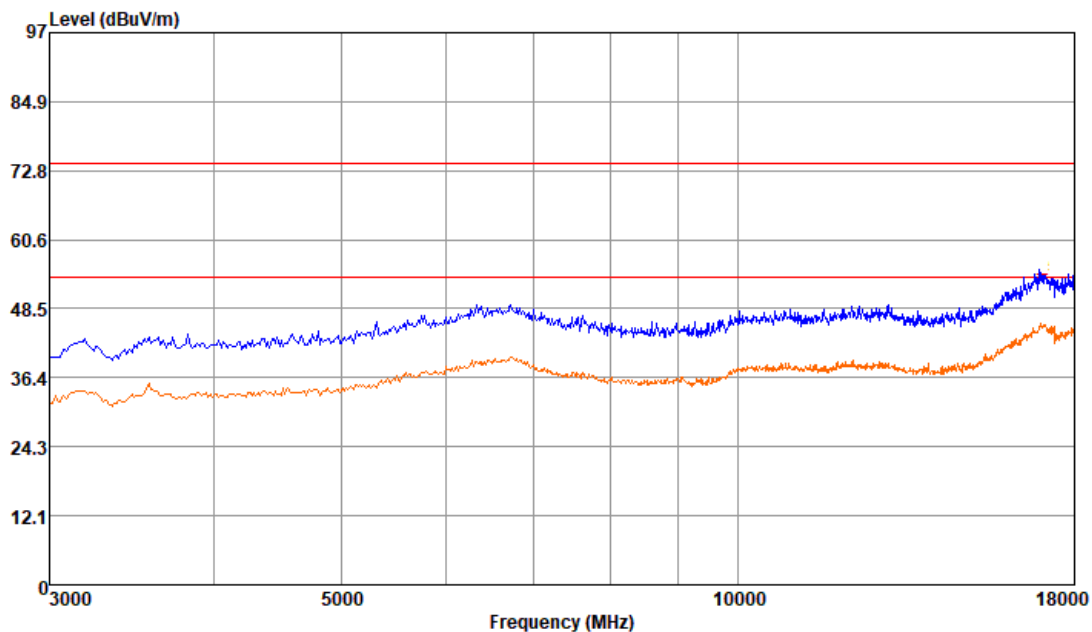
1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

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

2, Margin=Limit - Level

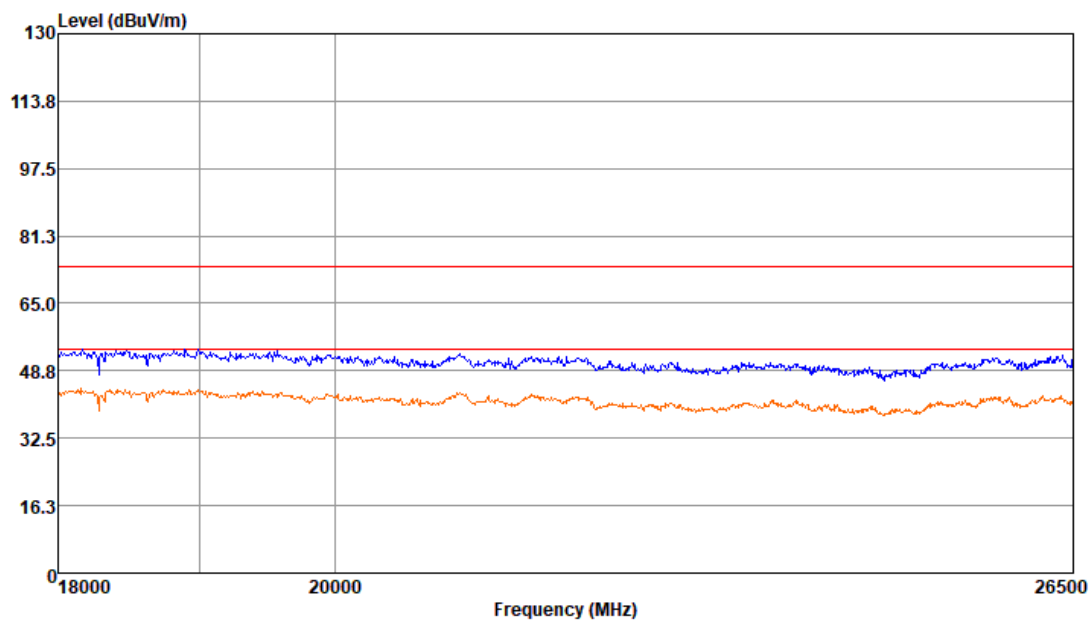
1.4 Part 4: Testing Range of “3 GHz to 18 GHz”

- 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”

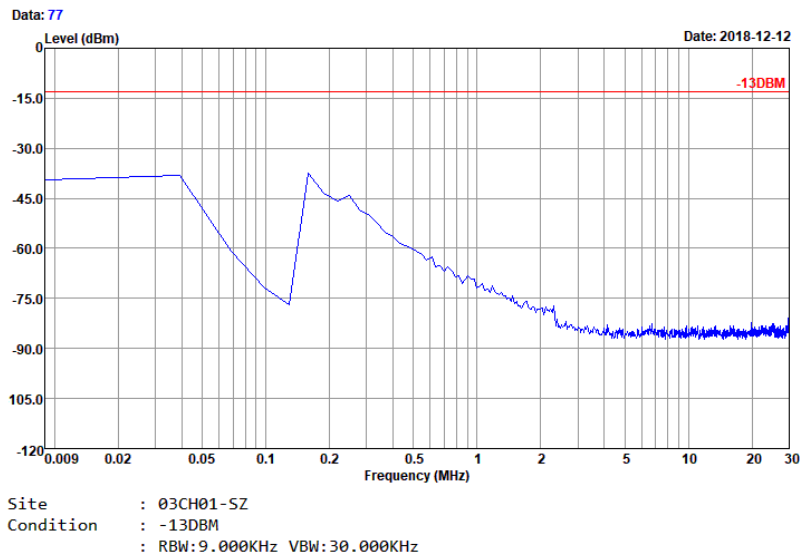
- Note 1: The test results and plot for testing range of “18 GHz to 26.5 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “18 GHz to 26.5 GHz” is for checking radiated emissions 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”

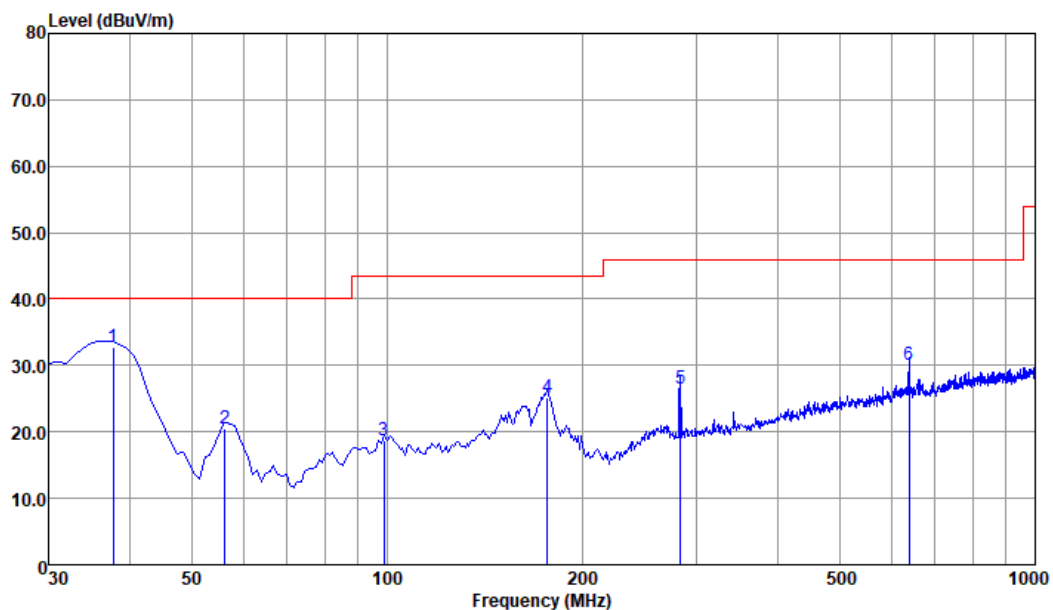
Note 1: The test results and plot for testing range of “9 kHz to 30 MHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.



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).



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss Factor	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1 pp	37.76	32.75	-7.25	40.00	44.33	19.76	0.36	31.70 QP
2	56.19	20.46	-19.54	40.00	38.48	13.08	0.50	31.60 QP
3	98.87	18.61	-24.89	43.50	32.77	16.50	0.84	31.50 QP
4	176.47	25.23	-18.27	43.50	39.71	15.35	1.46	31.29 QP
5	283.17	26.46	-19.54	46.00	36.60	18.94	1.98	31.06 QP
6	638.19	30.10	-15.90	46.00	33.53	24.65	3.12	31.20 QP

Note:

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

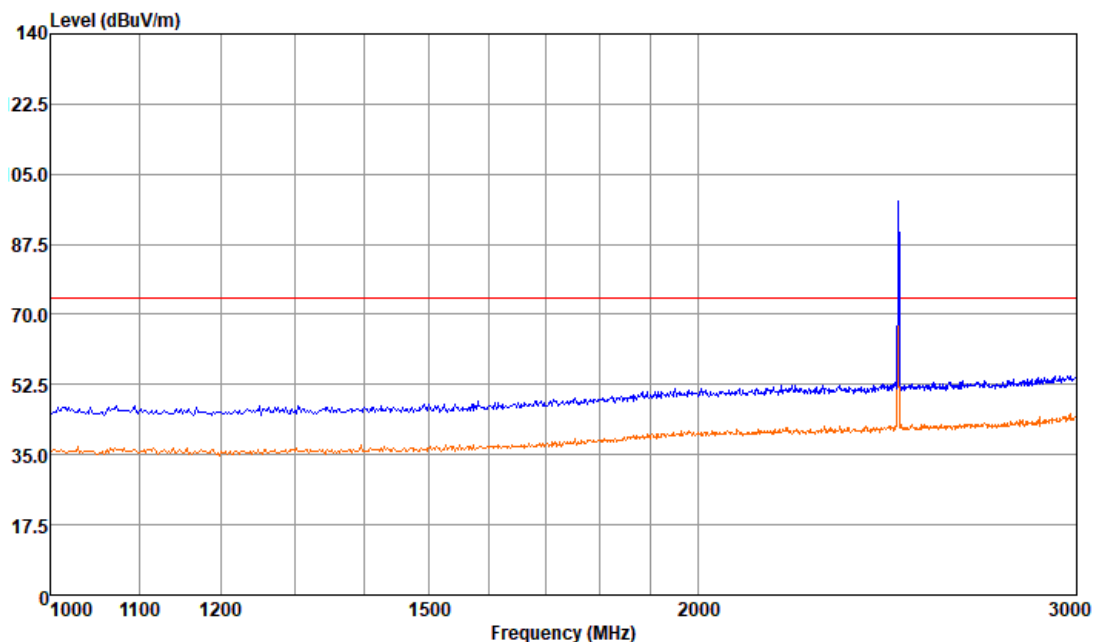
The reading level is calculated by software which is not shown in the sheet.

2, Margin=Limit - Level

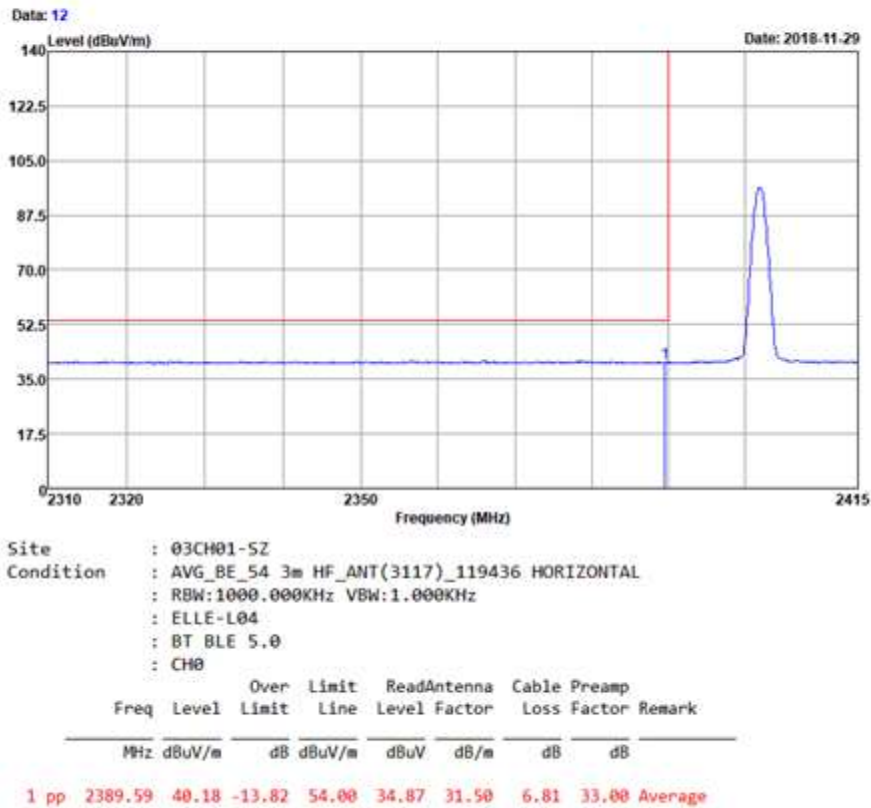
2.3 Part 3: Testing Range of “1GHz to 3GHz”

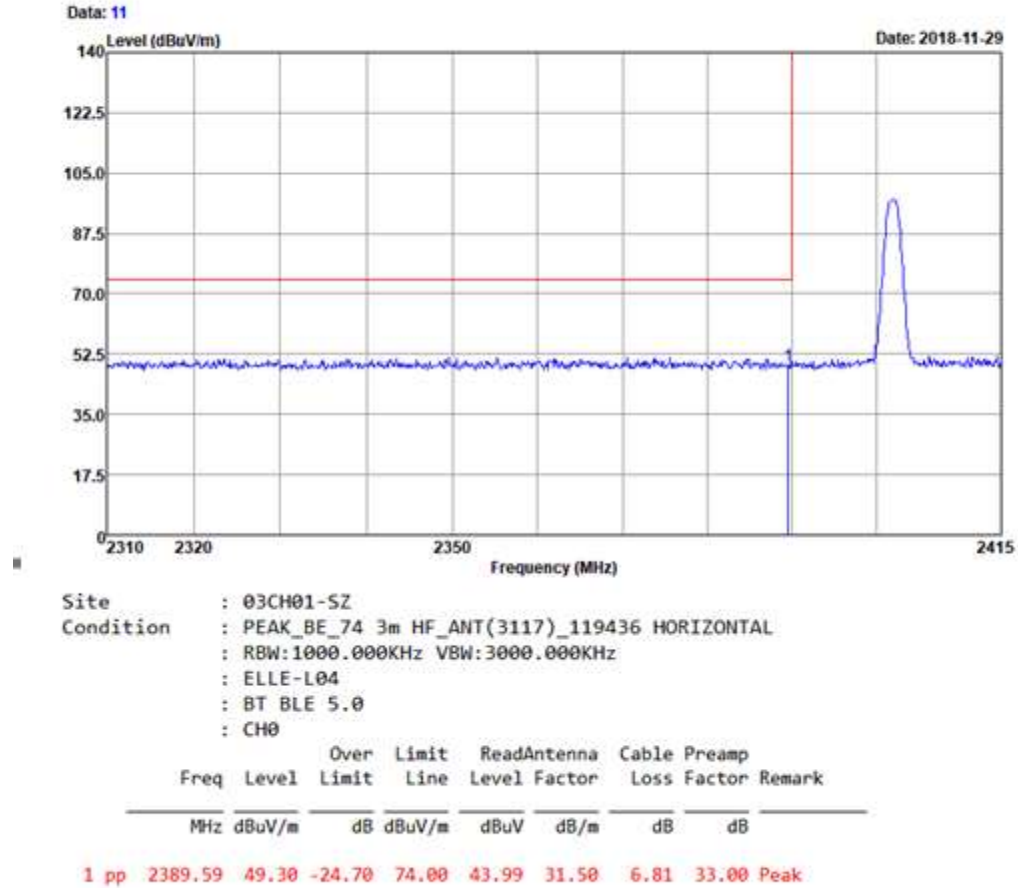
- Note 1: The testing range of “1GHz to 3 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.
- Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).
- Note 3: The peak spike exceeds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

2.3.1 Test Mode: BT5.0



2.3.1.1 Channel 0





Note:

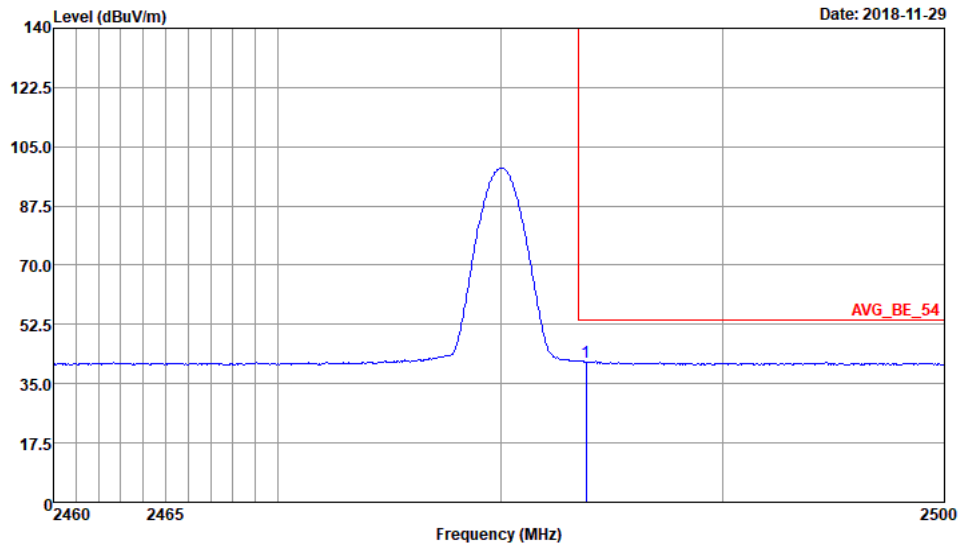
- 1, Level =Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)
The reading level is calculated by software which is not shown in the sheet.
- 2, Margin=Limit - Level



2.3.1.2 Channel 39

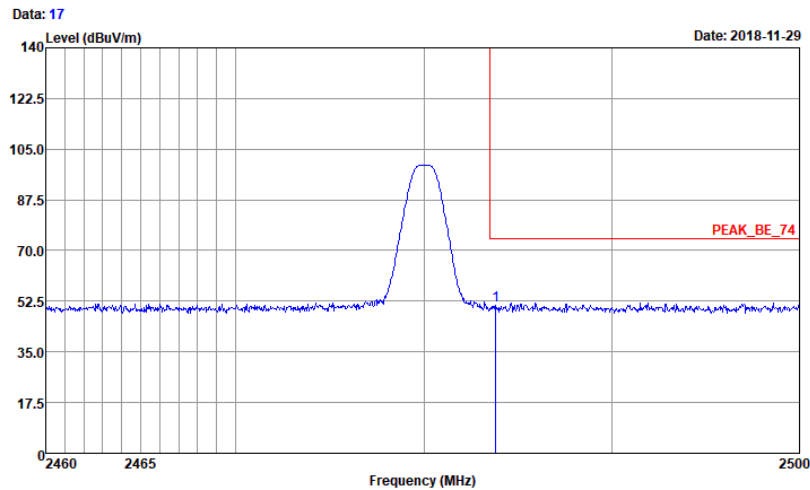


Data: 18



Site : 03CH01-SZ
Condition : AVG_BE_54 3m HF_ANT(3117)_119436 HORIZONTAL
: RBW:1000.000KHz VBW:1.000KHz
: ELLE-L04
: BT BLE 5.0
: CH39

Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Remark
		Limit	Line				
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1 pp 2483.84	41.49	-12.51	54.00	35.72	31.86	6.91	33.00 Average



Site : 03CH01-SZ
Condition : PEAK_BE_74 3m HF_ANT(3117)_119436 HORIZONTAL
: RBW:1000.000KHz VBW:3000.000KHz
: ELLE-L04
: BT BLE 5.0
: CH39

Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Remark
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	
1 pp 2483.80	51.23	-22.77	74.00	45.46	31.86	6.91 33.00	Peak

Note:

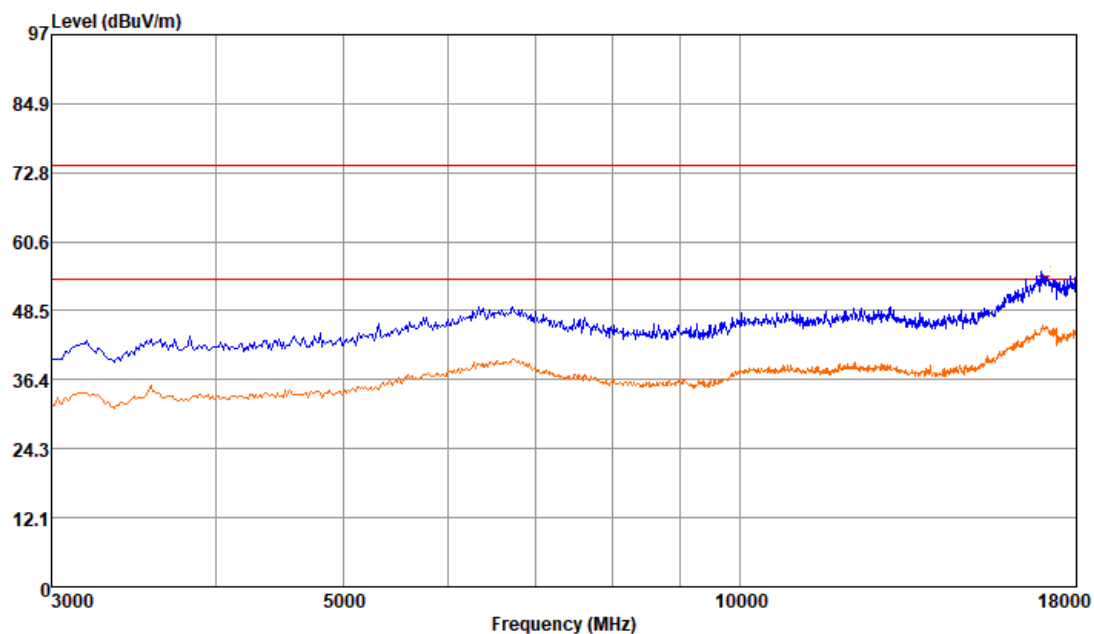
1, Level = Reading level by receiver + Transd (Antenna factor + cable loss – preamplifier gain)

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

2, Margin = Limit - Level

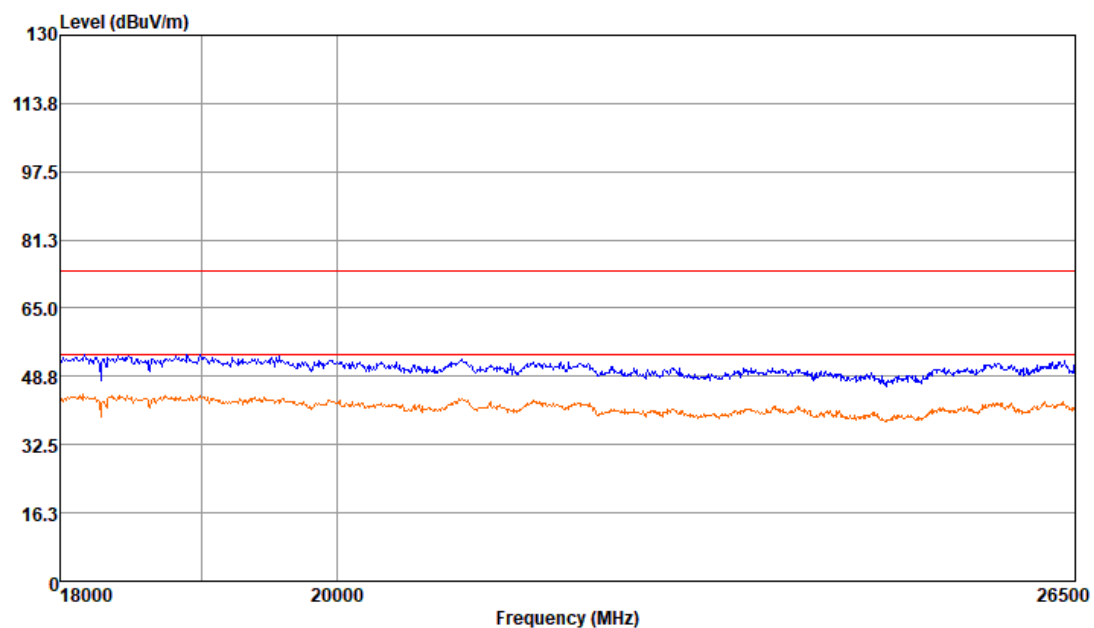
2.4 Part 4: Testing Range of “3 GHz to 18 GHz”

- 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).



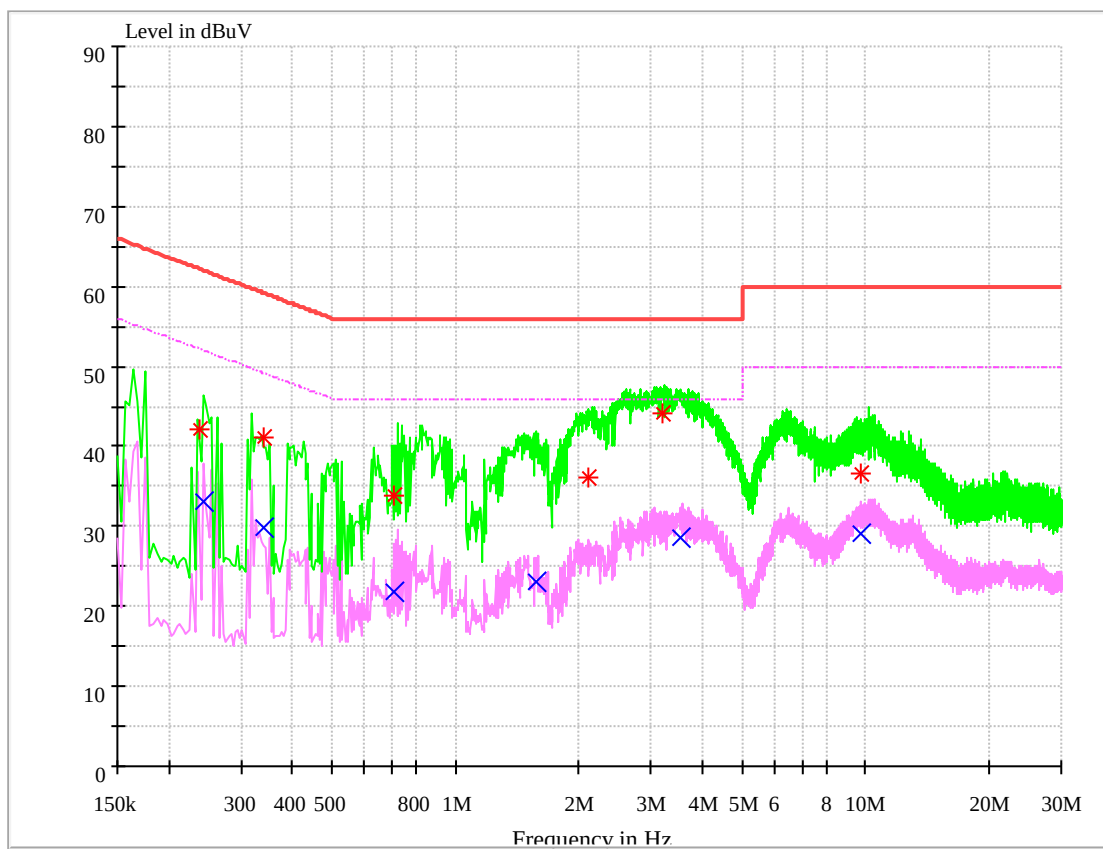


Appendix I: Conducted Emission at Power Port

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
0.237611	42.05	62.18	9.7	20.13	L1	FLO
0.341389	41.22	59.17	9.7	17.95	L1	FLO
0.708304	33.77	56.00	9.7	22.23	N	FLO
2.105949	36.17	56.00	9.7	19.83	L1	FLO
3.202752	44.17	56.00	9.7	11.83	L1	FLO
9.792146	36.70	60.00	10.4	23.30	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Transd. (dB)	Margin (dB)	Line	PE
0.242329	33.15	52.02	9.7	18.87	N	FLO
0.339432	29.74	49.22	9.7	19.48	L1	FLO
0.706472	21.85	46.00	9.7	24.15	L1	FLO
1.578470	22.98	46.00	9.7	23.02	N	FLO
3.554352	28.50	46.00	9.7	17.50	L1	FLO
9.767752	29.06	50.00	10.4	20.94	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.

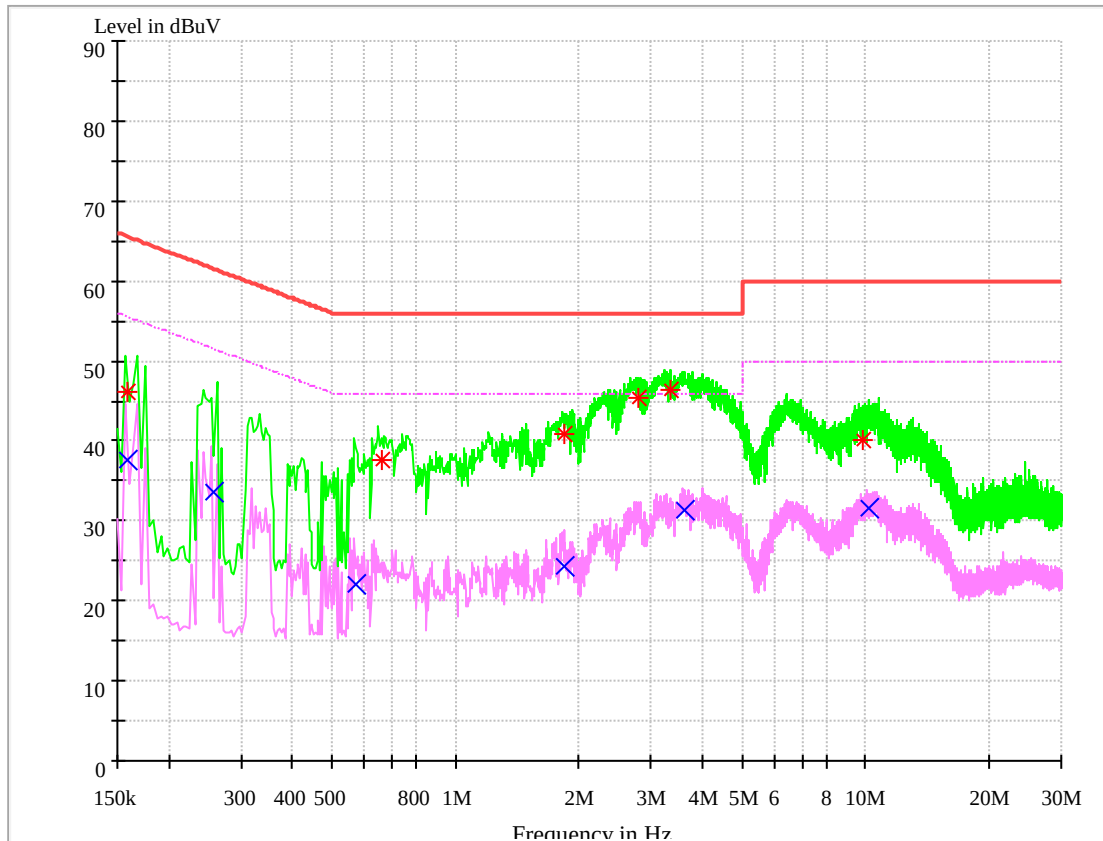
2, Margin=Limit - Level



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
0.159482	46.21	65.49	9.7	19.28	N	FLO
0.662104	37.61	56.00	9.7	18.39	N	FLO
1.849942	40.92	56.00	9.7	15.08	N	FLO
2.790661	45.28	56.00	9.7	10.72	L1	FLO
3.350096	46.31	56.00	9.7	9.69	N	FLO
9.870762	40.19	60.00	10.4	19.81	L1	FLO

**MEASUREMENT RESULT: AV Detector**

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Transd. (dB)	Margin (dB)	Line	PE
0.158989	37.70	55.52	9.7	17.82	N	FLO
0.257900	33.51	51.50	9.7	17.98	N	FLO
0.571794	22.00	46.00	9.7	24.00	L1	FLO
1.850522	24.43	46.00	9.7	21.57	N	FLO
3.613706	31.31	46.00	9.7	14.69	N	FLO
10.136474	31.60	50.00	10.5	18.40	N	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