

RF Test Data for BLE (Conducted Measurements)

General Description of EUT	
EUT Name:	Hub
Model:	VHHB1
Sample ID:	HC-C-202511-0121-01-01-2#
Test Standard:	FCC Part 15.247
Environmental Conditions	
Ambient Temperature:	25°C
Ambient Humidity:	45%RH
Test Power Supply:	DC 5V
Test Engineer:	Lily. zhang
Note: For a more detailed features description, please refer to the report TBR-C-202511-0121-5	

Contents

1: DTS Bandwidth	3
1.1 Test Result	3
1.2 Test Graphs	4
2: Occupied Channel Bandwidth	5
2.1 Test Result	5
2.2 Test Graphs	6
3: Maximum conducted output power	7
3.1 Test Result Peak	7
3.2 Test Graphs Peak	8
4: Maximum power spectral density	9
4.1 Test Result	9
4.2 Test Graphs	10
5: Band edge measurements	11
5.1 Test Result	11
5.2 Test Graphs	12
6: Conducted Spurious Emission	13
6.1 Test Result	13
6.2 Test Graphs	14
7: Duty Cycle	16
7.1 Test Result	16
7.2 Test Graphs	17
8: Emissions in Restricted Bands	18
8.1 Test Result	18
8.2 Test Graphs	19

1: DTS Bandwidth

1.1 Test Result

Test Mode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.644	2401.676	2402.320	0.5	PASS
BLE_1M	Ant1	2440	0.644	2439.676	2440.320	0.5	PASS
BLE_1M	Ant1	2480	0.644	2479.680	2480.324	0.5	PASS

1.2 Test Graphs



2: Occupied Channel Bandwidth

2.1 Test Result

Test Mode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.0140	2401.4958	2402.5098	---	---
BLE_1M	Ant1	2440	1.0091	2439.4976	2440.5067	---	---
BLE_1M	Ant1	2480	1.0300	2479.4871	2480.5171	---	---

2.2 Test Graphs



3: Maximum conducted output power

3.1 Test Result Peak

Test Mode	Antenna	Frequency[MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	1.74	≤30	PASS
BLE_1M	Ant1	2440	2.19	≤30	PASS
BLE_1M	Ant1	2480	3.21	≤30	PASS

3.2 Test Graphs Peak



4: Maximum power spectral density

4.1 Test Result

Test Mode	Antenna	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-13.89	≤8.00	PASS
BLE_1M	Ant1	2440	-13.51	≤8.00	PASS
BLE_1M	Ant1	2480	-12.47	≤8.00	PASS

4.2 Test Graphs

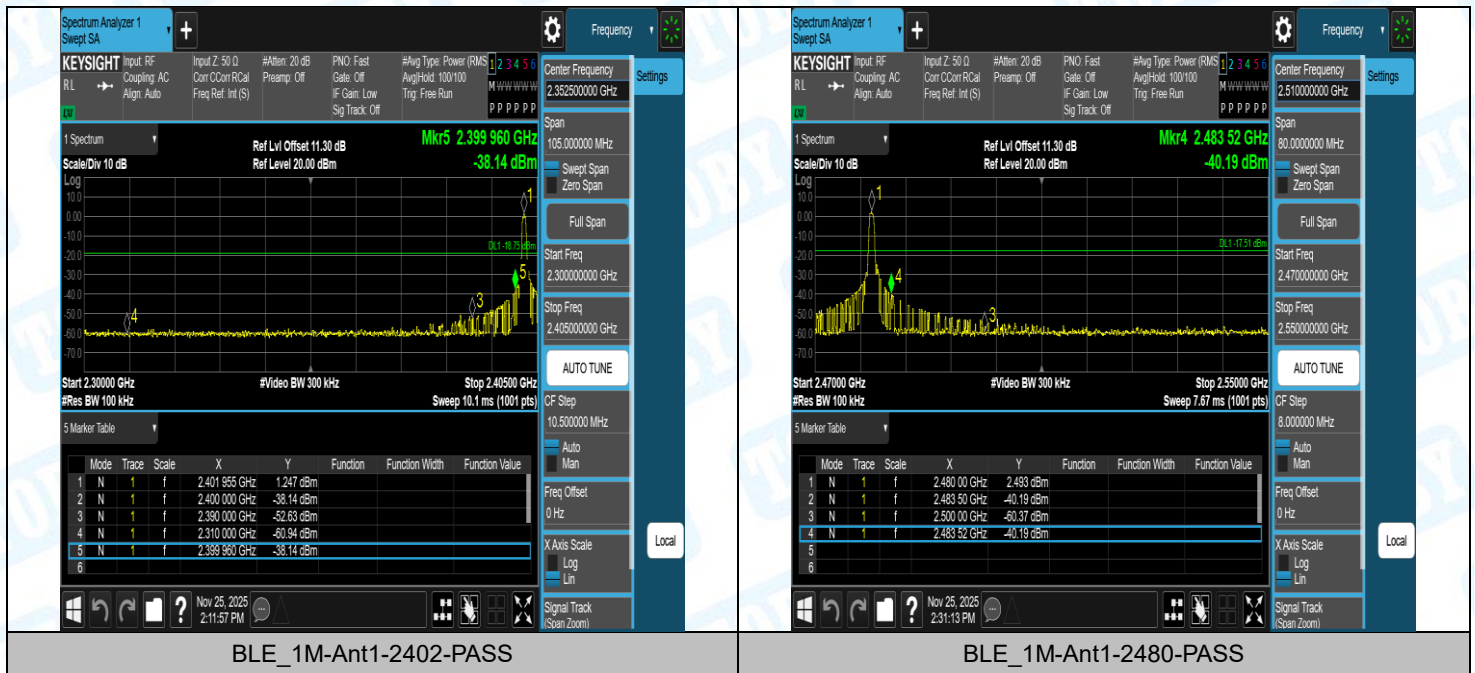


5: Band edge measurements

5.1 Test Result

Test Mode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	1.25	-38.14	≤-18.75	PASS
BLE_1M	Ant1	High	2480	2.49	-40.19	≤-17.51	PASS

5.2 Test Graphs

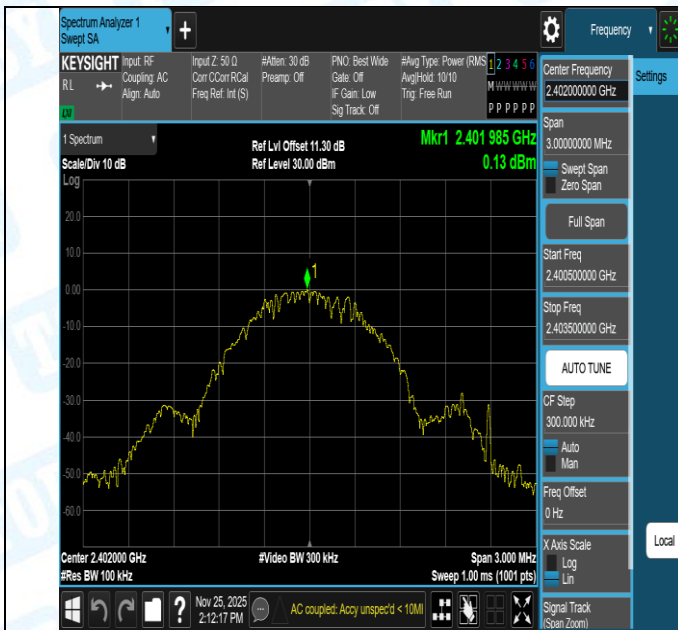


6: Conducted Spurious Emission

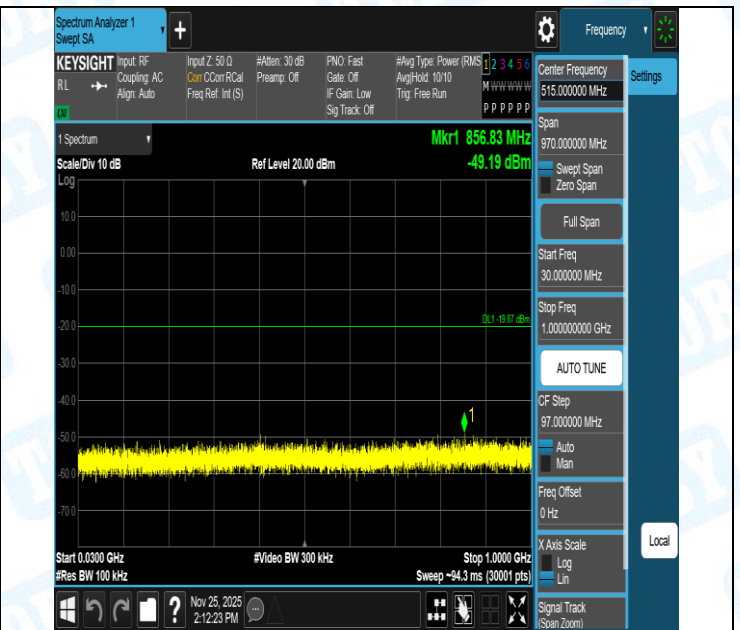
6.1 Test Result

Test Mode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	0~Reference	0.13	0.13	---	PASS
BLE_1M	Ant1	2402	30~1000	0.13	-49.19	≤-19.87	PASS
BLE_1M	Ant1	2402	1000~26500	0.13	-33.91	≤-19.87	PASS
BLE_1M	Ant1	2440	0~Reference	0.36	0.36	---	PASS
BLE_1M	Ant1	2440	30~1000	0.36	-48.98	≤-19.64	PASS
BLE_1M	Ant1	2440	1000~26500	0.36	-33.04	≤-19.64	PASS
BLE_1M	Ant1	2480	0~Reference	1.00	1.00	---	PASS
BLE_1M	Ant1	2480	30~1000	1.00	-49.27	≤-19	PASS
BLE_1M	Ant1	2480	1000~26500	1.00	-32.92	≤-19	PASS

6.2 Test Graphs



BLE_1M-Ant1-2402-0~Reference-PASS



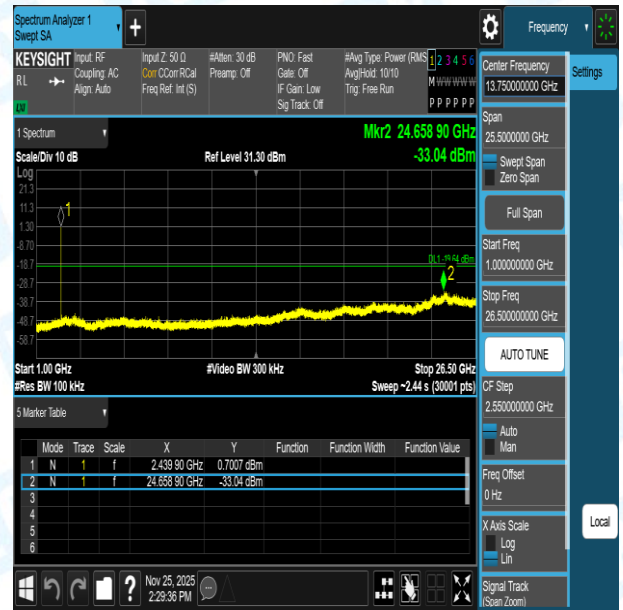
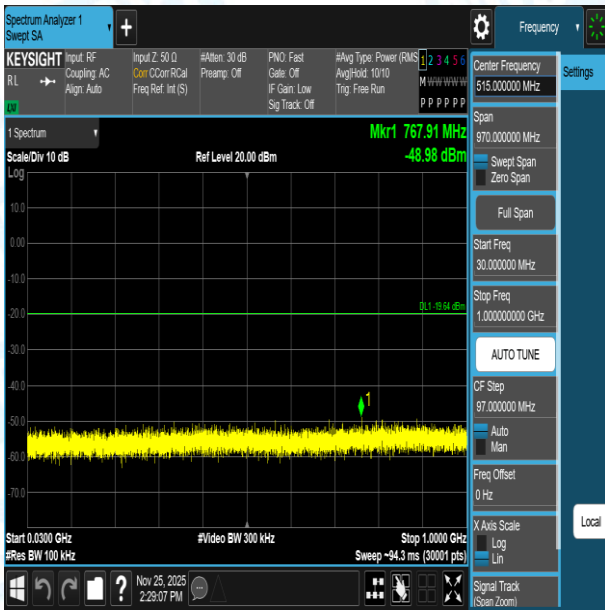
BLE_1M-Ant1-2402-30~1000-PASS



BLE_1M-Ant1-2402-1000~26500-PASS

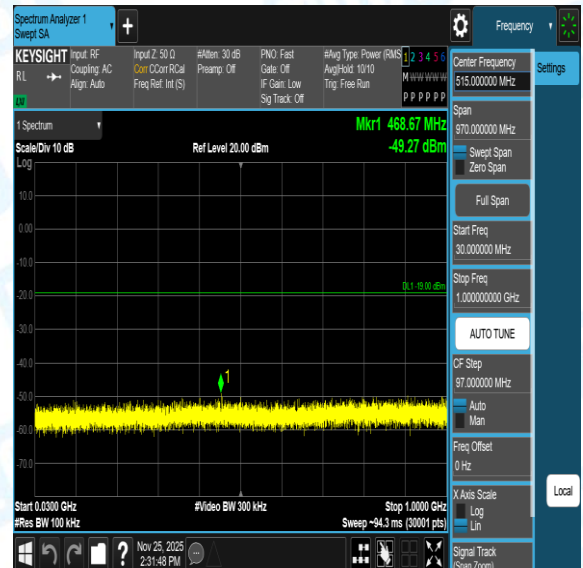


BLE_1M-Ant1-2440-0~Reference-PASS



BLE_1M-Ant1-2440-30~1000-PASS

BLE_1M-Ant1-2440-1000~26500-PASS



BLE_1M-Ant1-2480-0~Reference-PASS

BLE_1M-Ant1-2480-30~1000-PASS



BLE_1M-Ant1-2480-1000~26500-PASS

7: Duty Cycle

7.1 Test Result

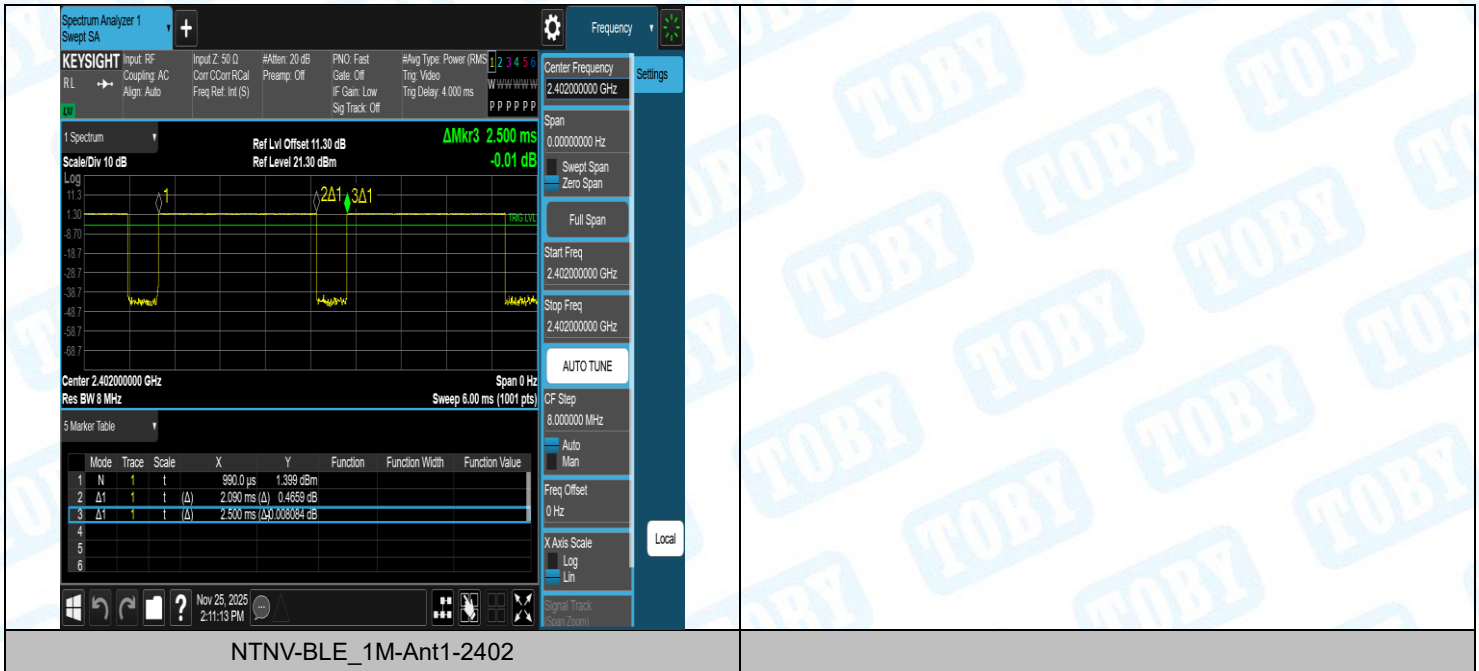
TestMode	Antenna	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	DC Factor	1/T [kHz]
BLE_1M	Ant1	2402	2.09	2.50	83.60	0.78	0.48

Note: 1, Duty Cycle= Transmission Duration/ Transmission Period

2, DC Factor= $10 \cdot \log_{10}(1/\text{Duty Cycle})$

3, $1/T = 1/\text{Transmission Duration}$

7.2 Test Graphs



8: Emissions in Restricted Bands

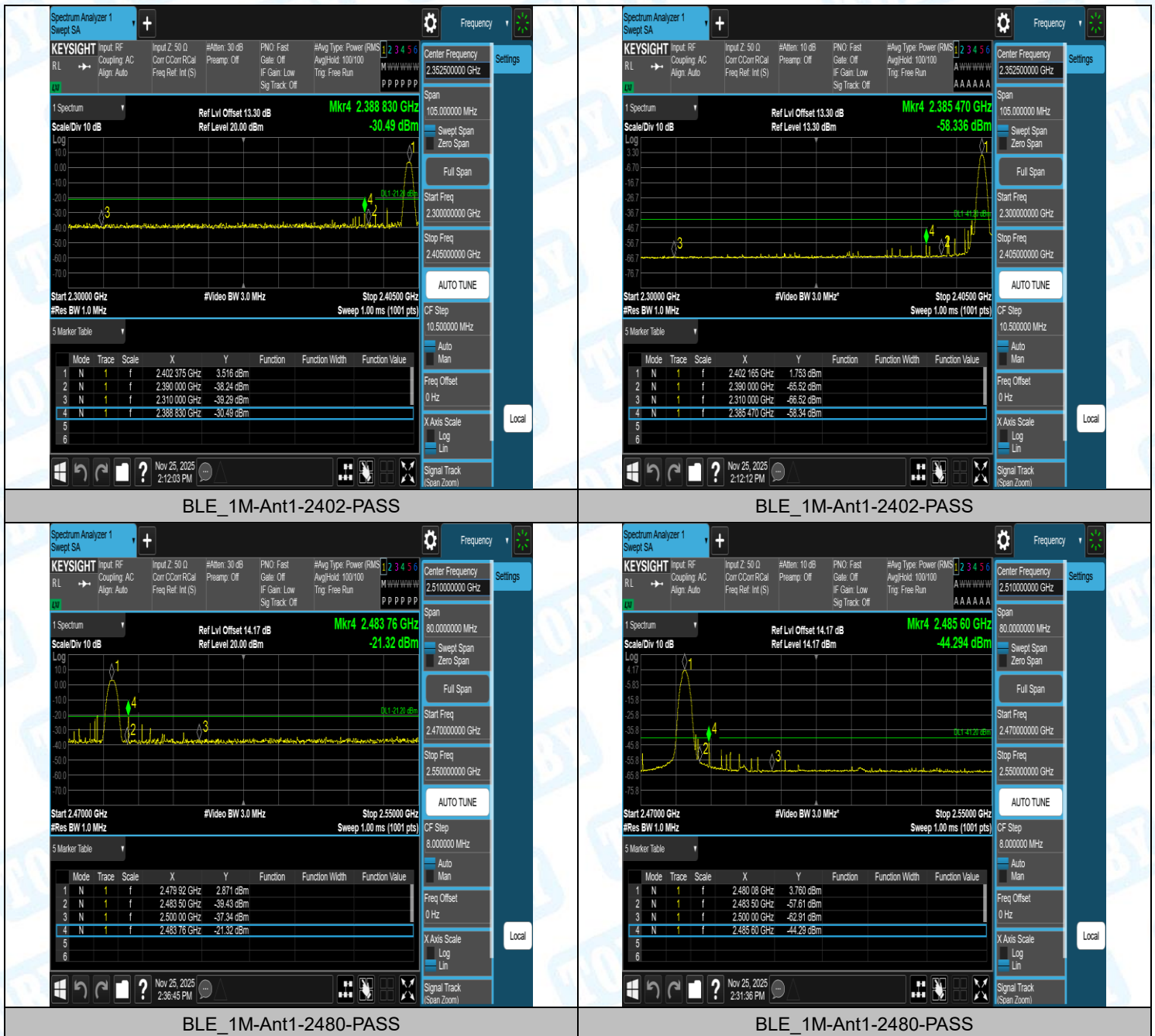
8.1 Test Result

Test Mode	Antenna	ChName	Frequency [MHz]	Detector	Freq [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
BLE_1M	Ant1	Low	2402	Peak	2390.000	-38.24	≤-21.20	56.96	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2310.000	-39.29	≤-21.20	55.91	≤74	PASS
BLE_1M	Ant1	Low	2402	Peak	2388.830	-30.49	≤-21.20	64.71	≤74	PASS
BLE_1M	Ant1	Low	2402	AV	2390.000	-65.52	≤-41.20	29.68	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2310.000	-66.52	≤-41.20	28.68	≤54	PASS
BLE_1M	Ant1	Low	2402	AV	2385.470	-58.34	≤-41.20	36.86	≤54	PASS
BLE_1M	Ant1	High	2480	Peak	2483.500	-39.43	≤-21.20	55.77	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2500.000	-37.34	≤-21.20	57.86	≤74	PASS
BLE_1M	Ant1	High	2480	Peak	2483.760	-21.32	≤-21.20	73.88	≤74	PASS
BLE_1M	Ant1	High	2480	AV	2483.500	-57.61	≤-41.20	37.59	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2500.000	-62.91	≤-41.20	32.29	≤54	PASS
BLE_1M	Ant1	High	2480	AV	2485.600	-44.29	≤-41.20	50.91	≤54	PASS

Note:

1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

8.2 Test Graphs



-----END OF THE REPORT-----