

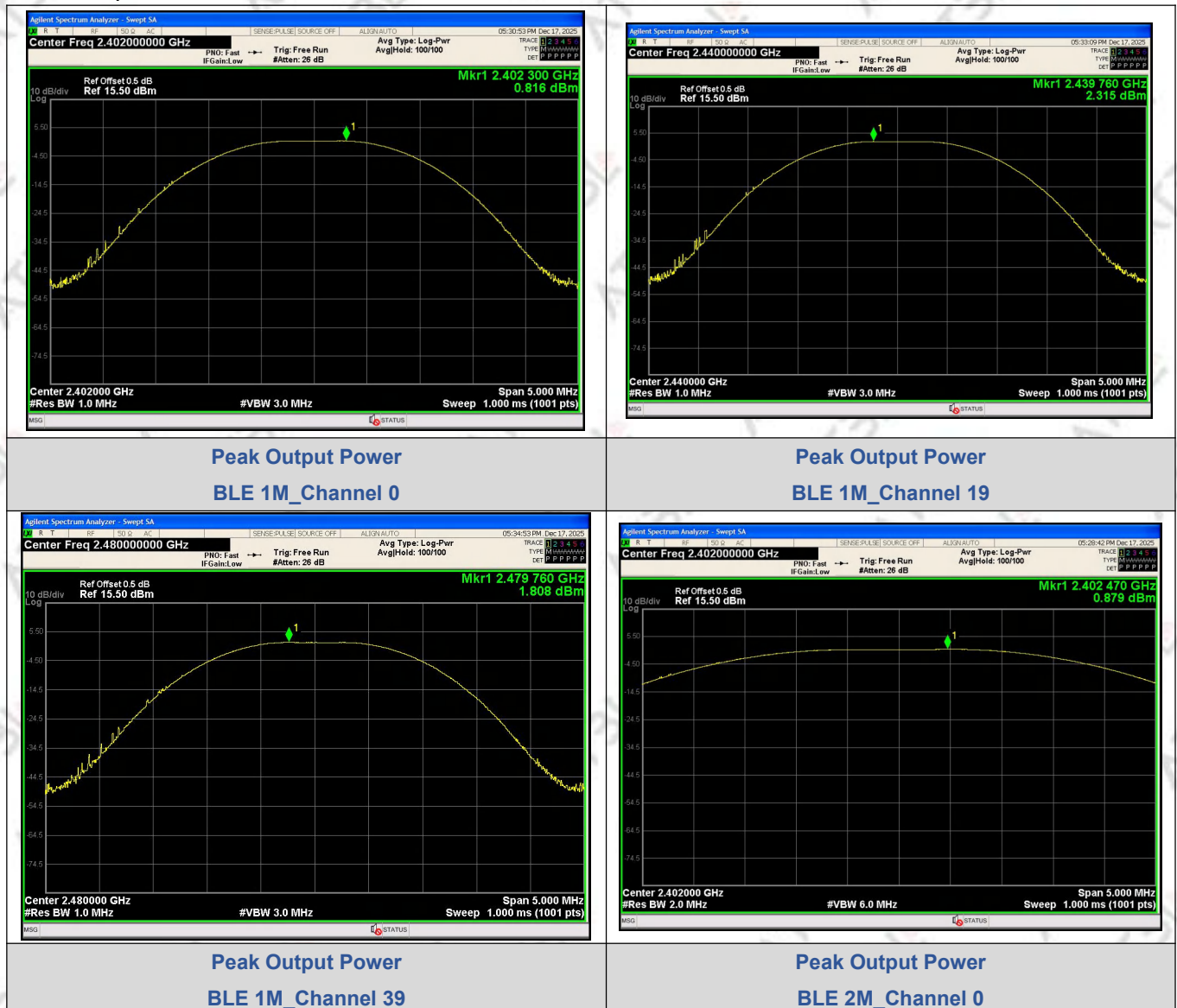
Appendix B of data

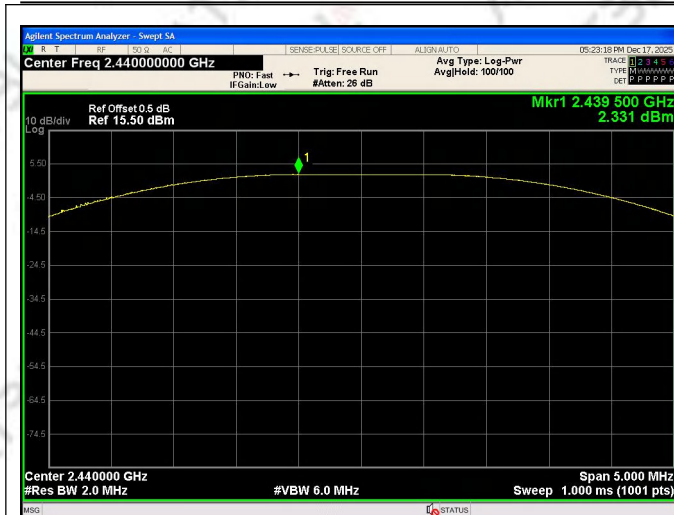
B1.Maximum Peak Conducted Output Power

Test Result

Mode	Channel	Peak Output Power (dBm)	Peak Output Power (mW)	Limit (dBm)	Result
BLE 1M	0	0.82	1.21	≤30	PASS
	19	2.31	1.7	≤30	PASS
	39	1.81	1.52	≤30	PASS
BLE 2M	0	0.88	1.22	≤30	PASS
	19	2.33	1.71	≤30	PASS
	39	1.89	1.55	≤30	PASS

Test Graphs





Peak Output Power
BLE 2M_Channel 19



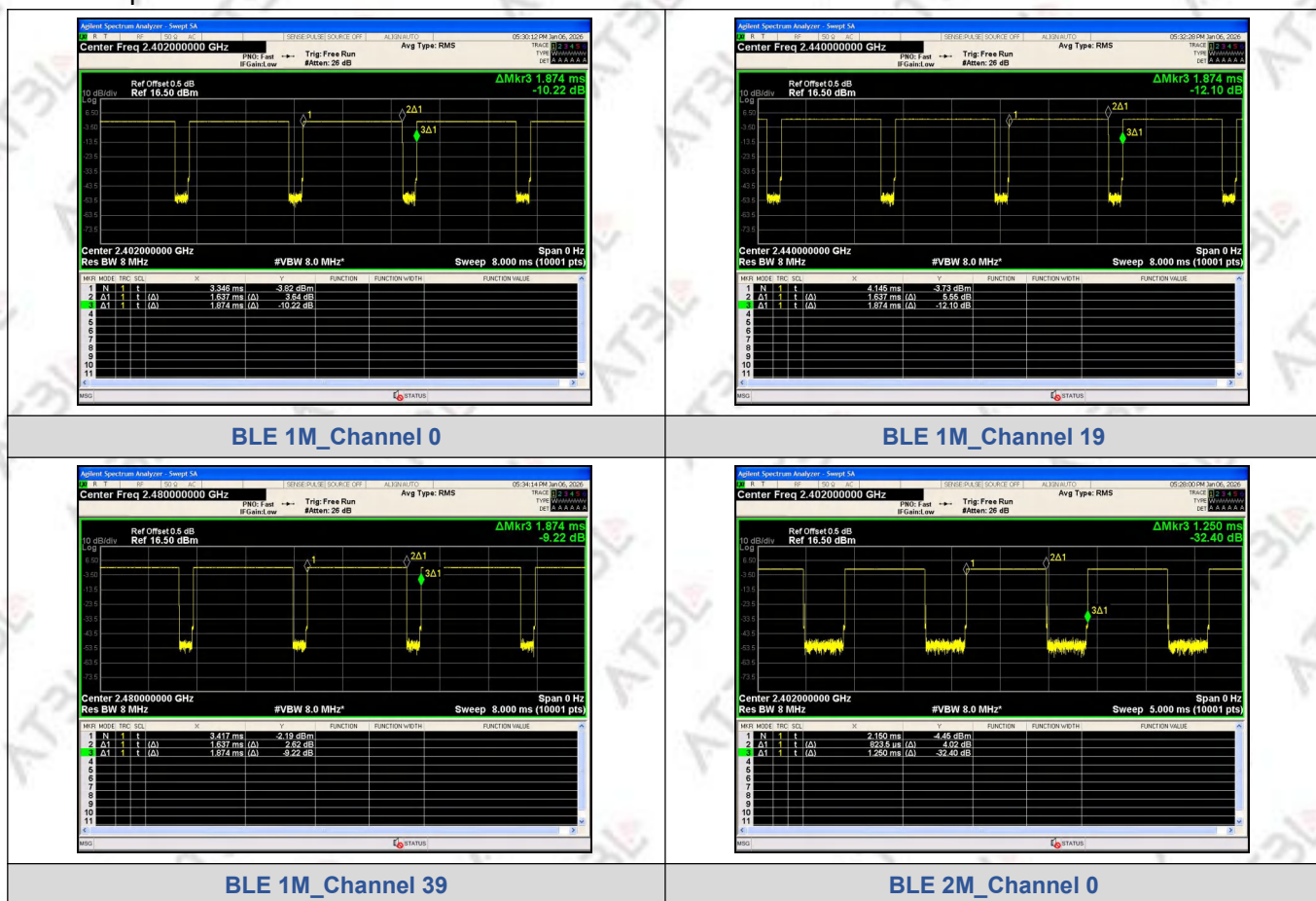
Peak Output Power
BLE 2M_Channel 39

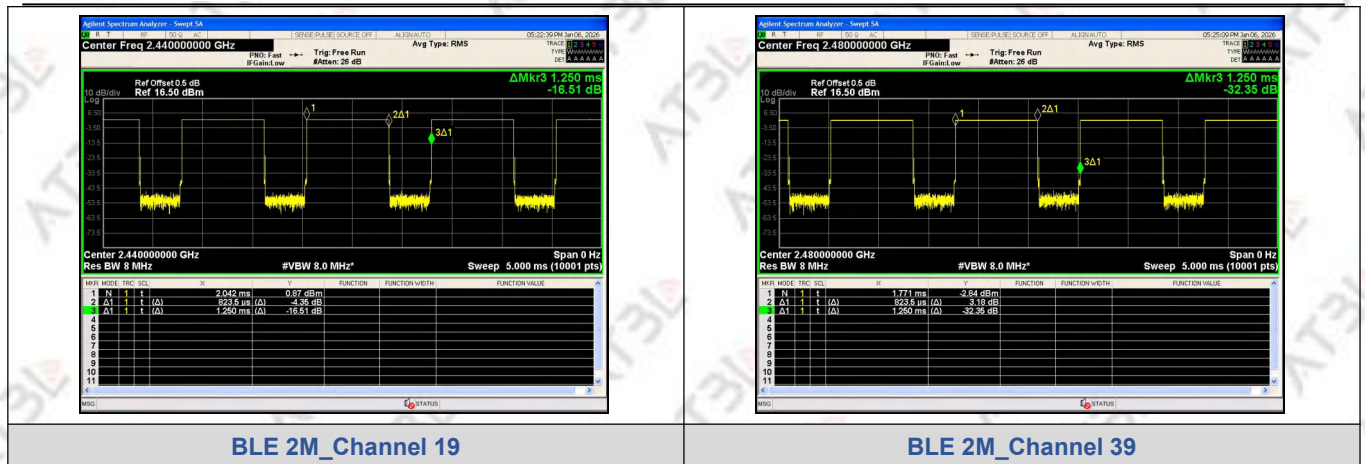
B2.Duty Cycle

Test Result

Mode	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
BLE 1M	0	1.637	1.874	87.32	0.8732	0.5889
	19	1.637	1.874	87.32	0.8732	0.5889
	39	1.637	1.874	87.32	0.8732	0.5889
BLE 2M	0	0.824	1.250	65.91	0.6591	1.8105
	19	0.823	1.250	65.91	0.6591	1.8105
	39	0.823	1.250	65.91	0.6591	1.8105

Test Graphs





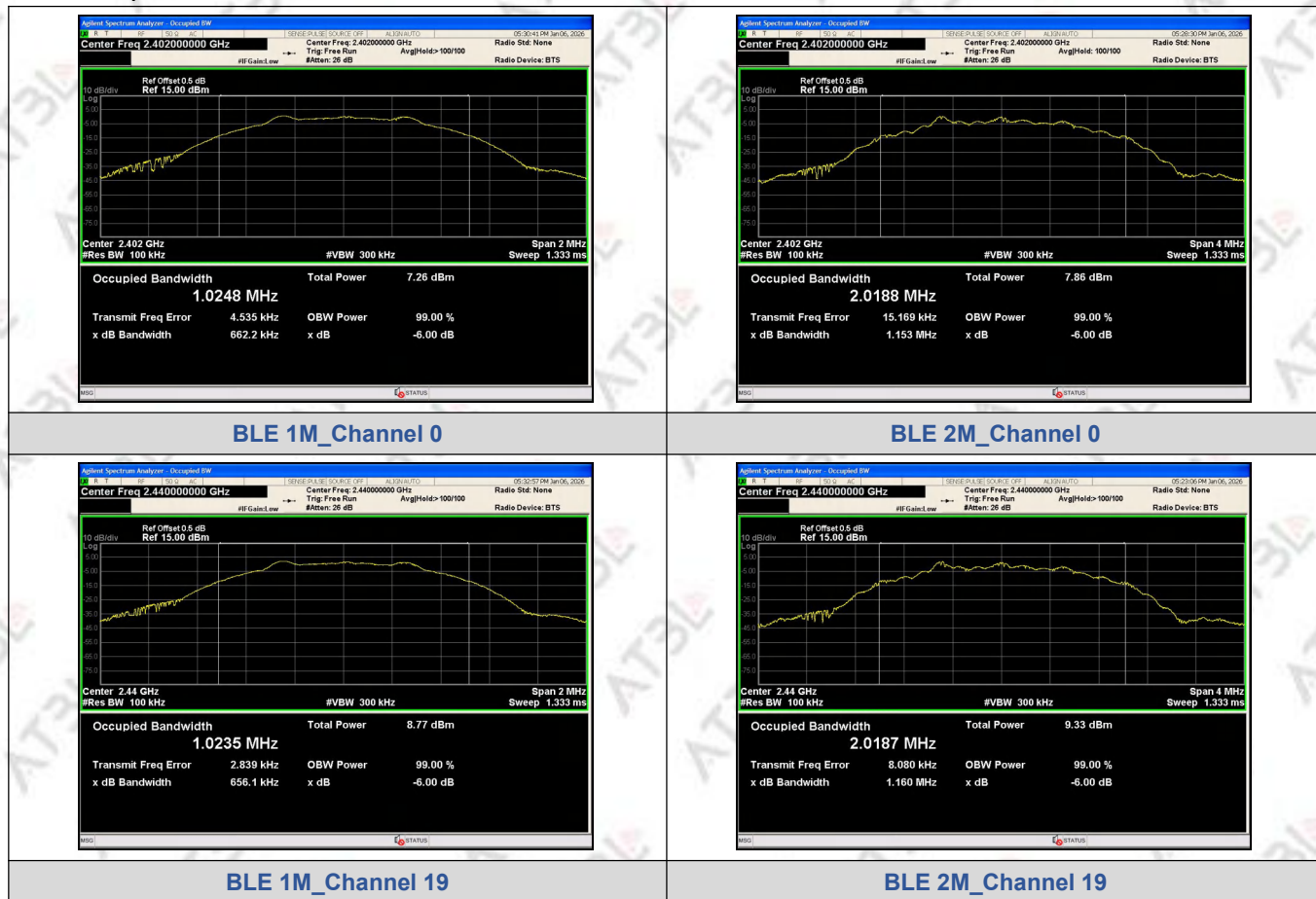
B3.6dB Bandwidth and 99% Bandwidth

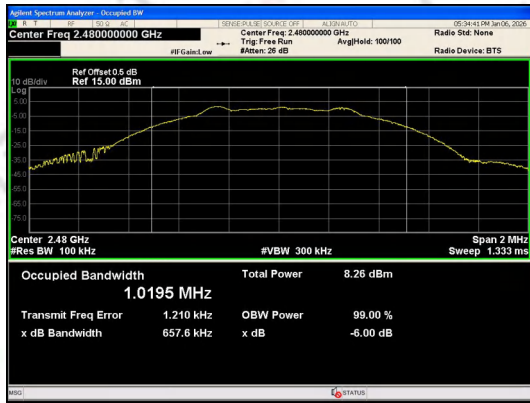
6dB Bandwidth

Test Result

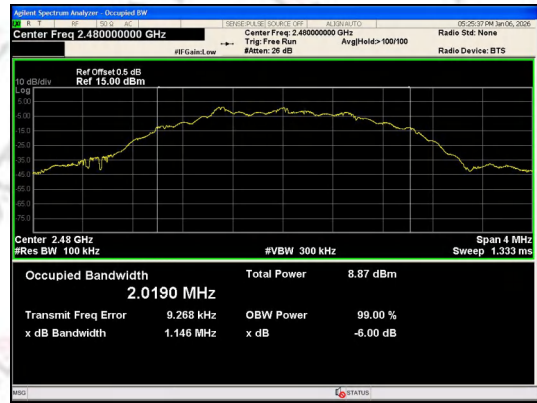
Mode	Channel	Center Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)	Result
BLE 1M	0	2402	0.6622	≥0.5	PASS
	19	2440	0.6561		PASS
	39	2480	0.6576		PASS
BLE 2M	0	2402	1.153		PASS
	19	2440	1.160		PASS
	39	2480	1.146		PASS

Test Graphs





BLE 1M_Channel 39

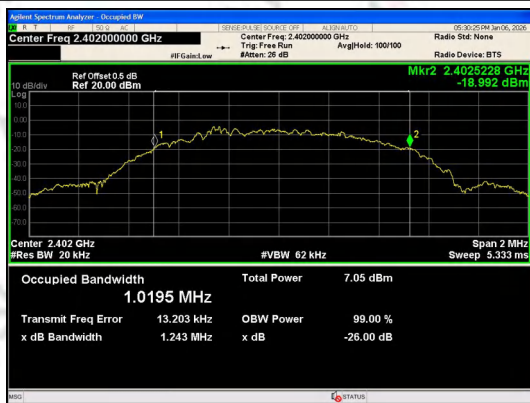


BLE 2M_Channel 39

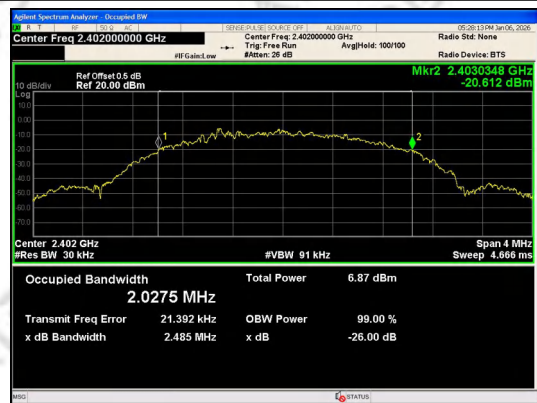
99dB Bandwidth Test Result

Mode	Channel	Center Frequency (MHz)	99% BW (MHz)
BLE 1M	0	2402	1.0195
	19	2440	1.0165
	39	2480	1.0164
BLE 2M	0	2402	2.0275
	19	2440	2.0178
	39	2480	2.0172

Test Graphs



BLE 1M_Channel 0



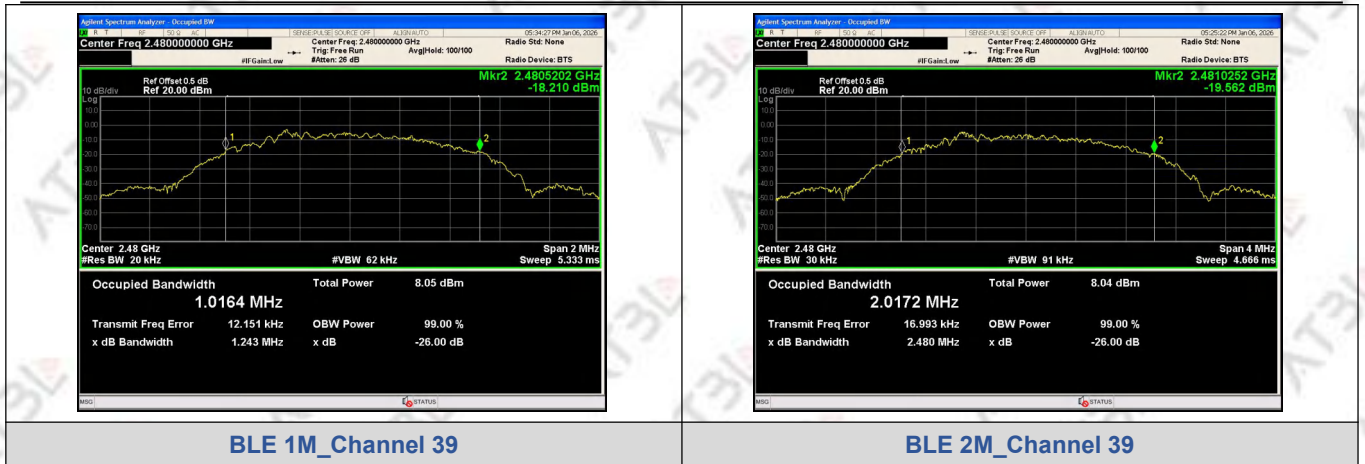
BLE 2M_Channel 0



BLE 1M_Channel 19



BLE 2M_Channel 19



B4. Power Spectral Density

Test Result

Mode	Channel	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
BLE 1M	0	-15.540	≤8	PASS
	19	-14.060	≤8	PASS
	39	-14.430	≤8	PASS
BLE 2M	0	-18.580	≤8	PASS
	19	-17.240	≤8	PASS
	39	-17.720	≤8	PASS

Test Graphs



BLE 1M_Channel 0



BLE 2M_Channel 0



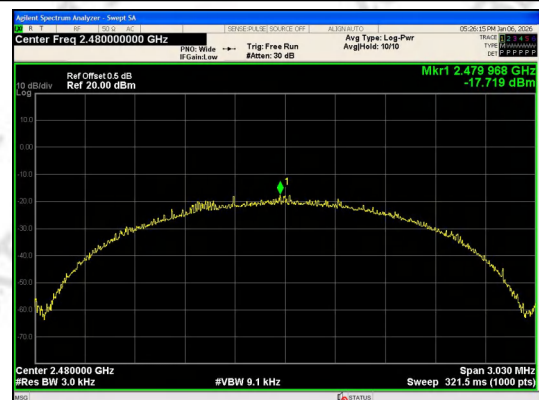
BLE 1M_Channel 19



BLE 2M_Channel 19



BLE 1M_Channel 39



BLE 2M_Channel 39

B5.Conducted Band Edge and Conducted Spurious Emission

Test Result

Mode	Channel	OOB Emission Frequency (MHz)	OOB Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result
BLE 1M	0	2400.00	-55.829	-19.46	-36.369	PASS
		23724.7	-47.890	-19.46	-28.430	PASS
	19	24096.1	-47.749	-17.95	-29.799	PASS
	39	2483.50	-57.674	-18.39	-39.284	PASS
		24034.3	-48.686	-18.39	-30.296	PASS
BLE 2M	0	2400.00	-42.187	-19.7	-22.487	PASS
		23659.1	-47.979	-19.7	-28.279	PASS
	19	24081.1	-48.319	-18.08	-30.239	PASS
	39	2483.50	-57.422	-18.53	-38.892	PASS
		24090.5	-48.427	-18.53	-29.897	PASS

Note: input compensation coefficient (dB)= Cable Loss (dB)

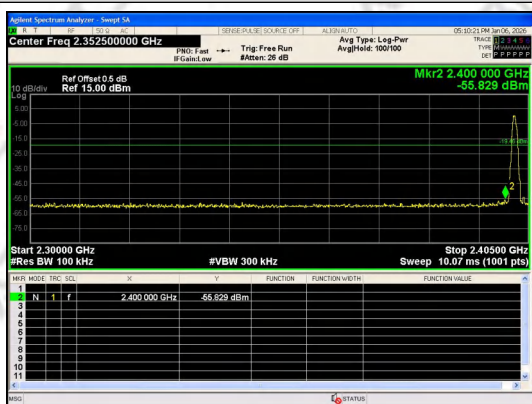
Test Graphs



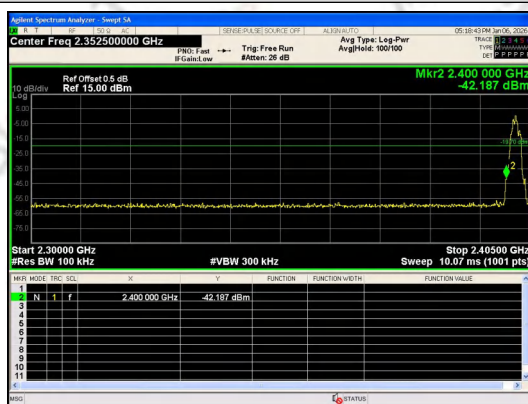
In-Band Reference Level
BLE 1M_Channel 0



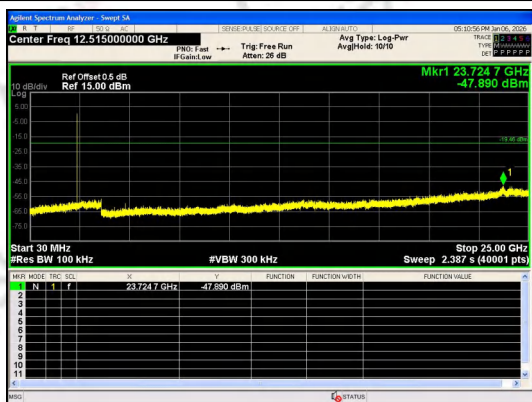
In-Band Reference Level
BLE 2M_Channel 0



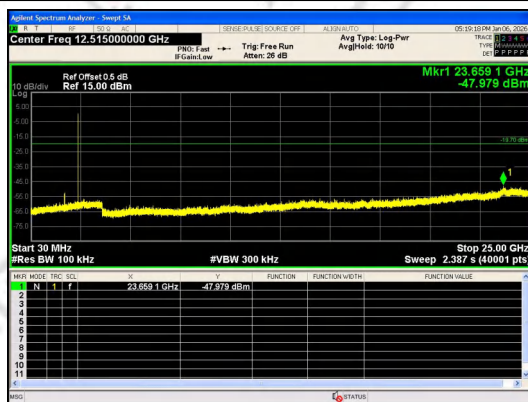
Out Of Band Emission
BLE 1M_Channel 0



Out Of Band Emission
BLE 2M_Channel 0



30.0 MHz - 25000.0 MHz
BLE 1M_Channel 0



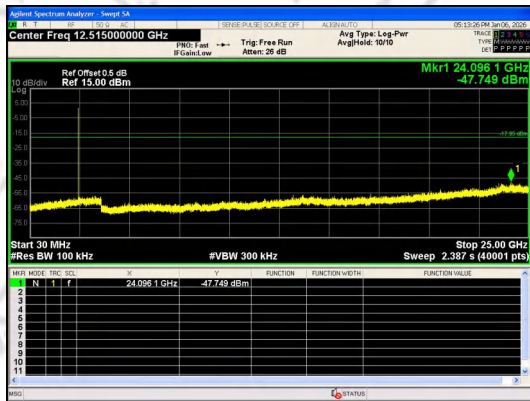
30.0 MHz - 25000.0 MHz
BLE 2M_Channel 0



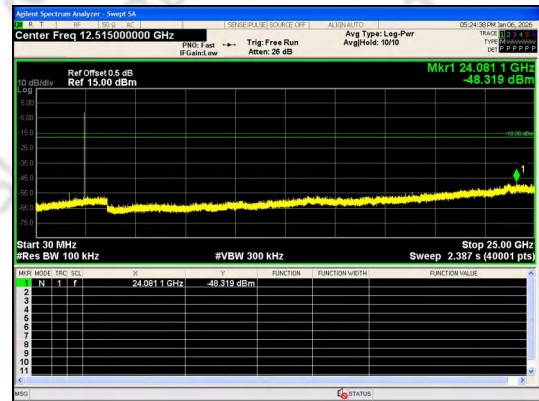
In-Band Reference Level
BLE 1M_Channel 19



In-Band Reference Level
BLE 2M_Channel 19



30.0 MHz - 25000.0 MHz
BLE 1M_Channel 19



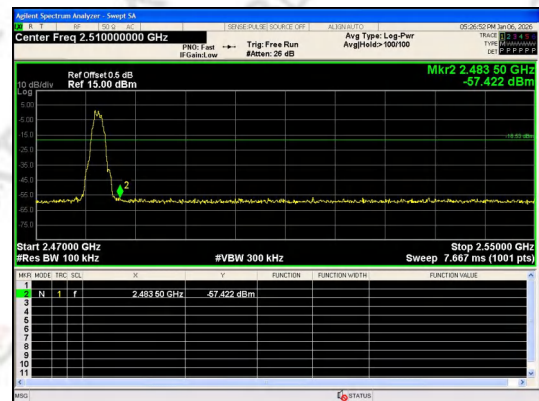
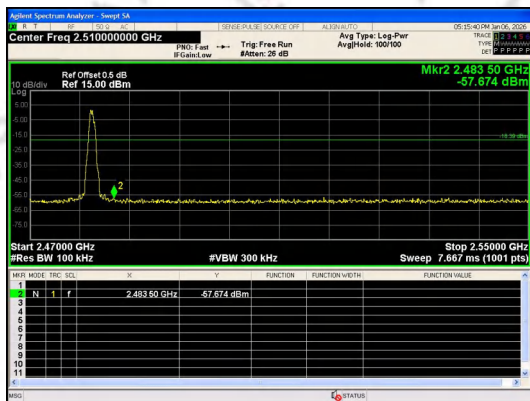
30.0 MHz - 25000.0 MHz
BLE 2M_Channel 19



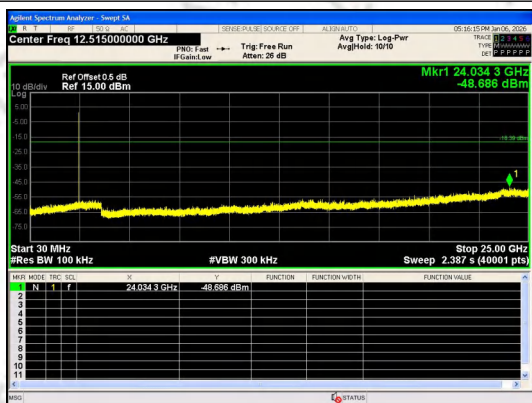
In-Band Reference Level
BLE 1M_Channel 39



In-Band Reference Level
BLE 2M_Channel 39

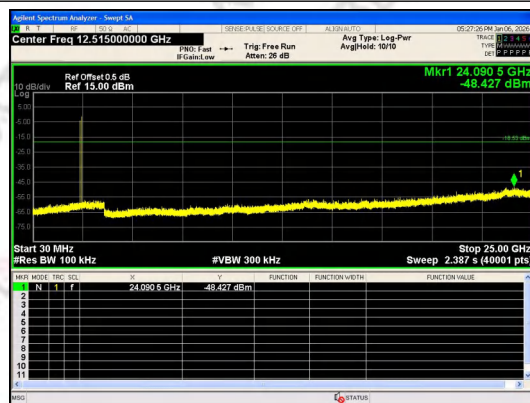


Out Of Band Emission
BLE 1M_Channel 39



30.0 MHz - 25000.0 MHz
BLE 1M_Channel 39

Out Of Band Emission
BLE 2M_Channel 39



30.0 MHz - 25000.0 MHz
BLE 2M_Channel 39

B6.Radiated Spurious Emission and Restricted Band

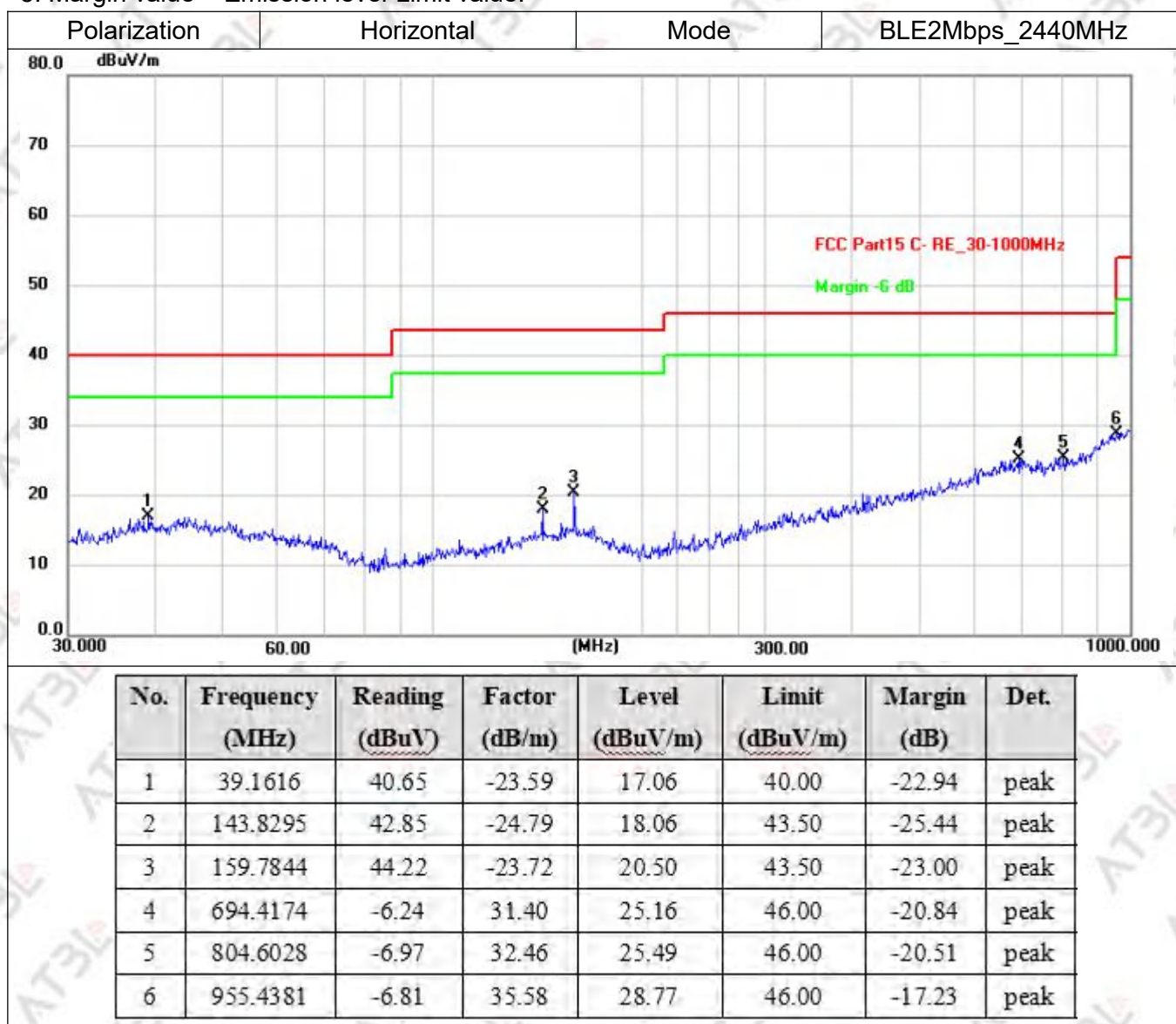
For 9 kHz ~ 30 MHz

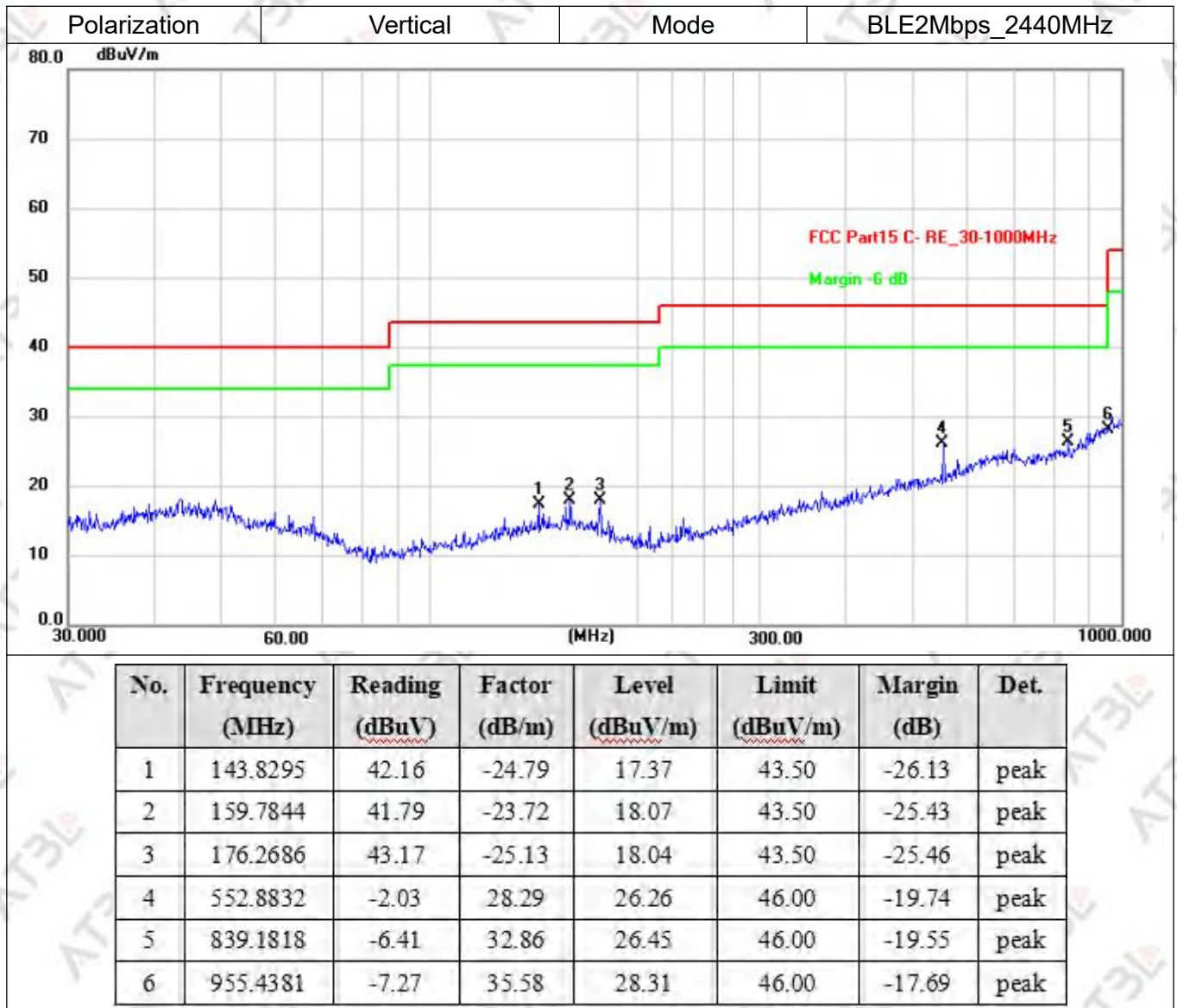
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

For 30 MHz ~ 1 GHz:

Note:

- 1.All modes have been tested, only worst (BLE2Mbps_2440MHz)mode was recorded in the test report.
- 2.Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)-Amplifier Gain.
4. The emission levels of other frequencies were less than 20dB margin against the limit.
5. Margin value = Emission level-Limit value.





For 1 GHz ~ 18GHz:

Note:

1. In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.
2. We used the filter to test and the main frequency was filtered out.
3. Emission Level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
4. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)-Amplifier Gain.
5. The emission levels of other frequencies were less than 20dB margin against the limit.
6. Margin value = Emission level-Limit value.
7. All modes have been tested, only worst mode(BLE1Mbps and BLE2Mbps) was recorded in the test report.

Test Mode: BLE1Mbps							
Test Channel:Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4804.000	49.29	-1.34	47.95	74	-26.05	peak	Pass
4804.000	38.32	-1.34	36.98	54	-17.02	AV	Pass
7206.000	47.18	5.26	52.44	74	-21.56	peak	Pass
7206.000	35.50	5.26	40.76	54	-13.24	AV	Pass
Test Channel:Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4804.000	49.62	-1.34	48.28	74	-25.72	peak	Pass
4804.000	38.99	-1.34	37.65	54	-16.35	AV	Pass
7206.000	47.25	5.26	52.51	74	-21.49	peak	Pass
7206.000	36.42	5.26	41.68	54	-12.32	AV	Pass
Test Channel:Middle channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4880.000	48.45	-1.12	47.33	74	-26.67	peak	Pass
4880.000	37.90	-1.12	36.78	54	-17.22	AV	Pass
7320.000	45.73	5.65	51.38	74	-22.62	peak	Pass
7320.000	35.97	5.65	41.62	54	-12.38	AV	Pass
Test Channel: Middle channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4880.000	48.76	-1.12	47.64	74	-26.36	peak	Pass
4880.000	38.67	-1.12	37.55	54	-16.45	AV	Pass
7320.000	46.53	5.65	52.18	74	-21.82	peak	Pass
7320.000	36.31	5.65	41.96	54	-12.04	AV	Pass
Test Channel:Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4960.000	48.81	-0.7	48.11	74	-25.89	peak	Pass

4960.000	37.93	-0.61	37.32	54	-16.68	AV	Pass
7440.000	46.41	5.97	52.38	74	-21.62	peak	Pass
7440.000	35.31	5.97	41.28	54	-12.72	AV	Pass
Test Channel:Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4960.000	49.41	-0.7	48.71	74	-25.29	peak	Pass
4960.000	38.34	-0.61	37.73	54	-16.27	AV	Pass
7440.000	47.19	5.97	53.16	74	-20.84	peak	Pass
7440.000	35.42	5.97	41.39	54	-12.61	AV	Pass

Test Mode: BLE2Mbps							
Test Channel:Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4804.000	48.19	-1.34	46.85	74	-27.15	peak	Pass
4804.000	37.08	-1.34	35.74	54	-18.26	AV	Pass
7206.000	46.14	5.26	51.40	74	-22.60	peak	Pass
7206.000	35.82	5.26	41.08	54	-12.92	AV	Pass
Test Channel:Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4804.000	48.95	-1.34	47.61	74	-26.39	peak	Pass
4804.000	37.59	-1.34	36.25	54	-17.75	AV	Pass
7206.000	46.58	5.26	51.84	74	-22.16	peak	Pass
7206.000	35.87	5.26	41.13	54	-12.87	AV	Pass
Test Channel:Middle channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4880.000	48.19	-1.12	47.07	74	-26.93	peak	Pass
4880.000	36.35	-1.12	35.23	54	-18.77	AV	Pass
7320.000	45.21	5.65	50.86	74	-23.14	peak	Pass
7320.000	34.61	5.65	40.26	54	-13.74	AV	Pass
Test Channel: Middle channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4880.000	48.77	-1.12	47.65	74	-26.35	peak	Pass
4880.000	36.85	-1.12	35.73	54	-18.27	AV	Pass
7320.000	45.71	5.65	51.36	74	-22.64	peak	Pass
7320.000	35.06	5.65	40.71	54	-13.29	AV	Pass
Test Channel:Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4960.000	47.82	-0.7	47.12	74	-26.88	peak	Pass
4960.000	36.00	-0.61	35.39	54	-18.61	AV	Pass
7440.000	44.79	5.97	50.76	74	-23.24	peak	Pass
7440.000	34.71	5.97	40.68	54	-13.32	AV	Pass
Test Channel:Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
4960.000	48.31	-0.7	47.61	74	-26.39	peak	Pass
4960.000	36.74	-0.61	36.13	54	-17.87	AV	Pass
7440.000	45.60	5.97	51.57	74	-22.43	peak	Pass
7440.000	35.51	5.97	41.48	54	-12.52	AV	Pass

Test Result of Restricted Band

Note:

All modes have been tested, only worst case(BLE1Mbps and BLE2Mbps)mode was recorded in the test report.

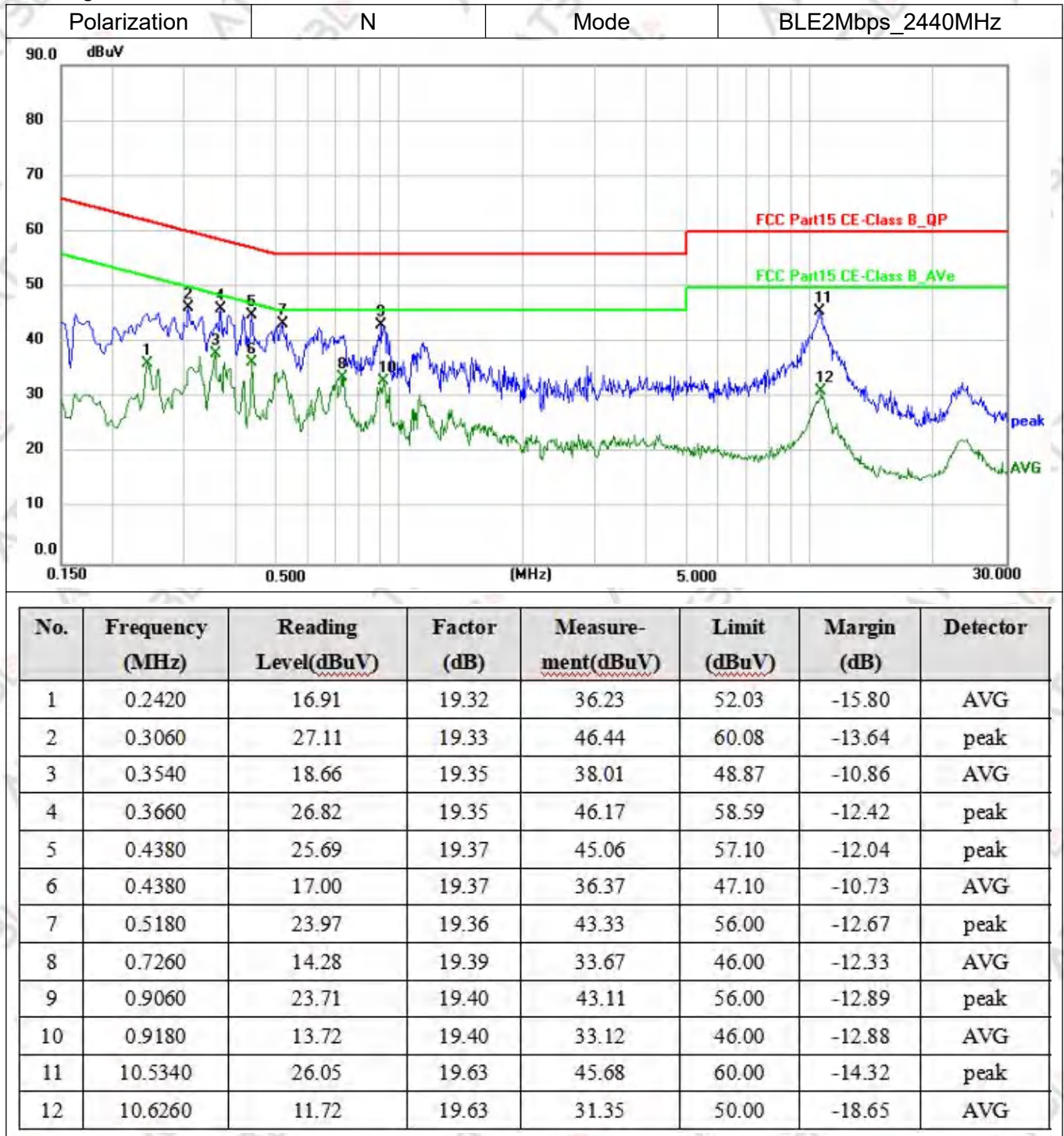
Test Mode: BLE1Mbps							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2310.000	47.66	-10.95	36.71	74	-37.29	peak	Pass
2310.000	38.43	-10.95	27.48	54	-26.52	AV	Pass
2390.000	52.35	-10.86	41.49	74	-32.51	peak	Pass
2390.000	40.53	-10.86	29.67	54	-24.33	AV	Pass
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2310.000	48.56	-10.95	37.61	74	-36.39	peak	Pass
2310.000	38.79	-10.95	27.84	54	-26.16	AV	Pass
2390.000	52.36	-10.86	41.5	74	-32.5	peak	Pass
2390.000	41.28	-10.86	30.42	54	-23.58	AV	Pass
Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2483.500	47.54	-10.34	37.20	74	-36.80	peak	Pass
2483.500	37.80	-10.34	27.46	54	-26.54	AV	Pass
2500.000	51.69	-10.24	41.45	74	-32.55	peak	Pass
2500.000	39.33	-10.24	29.09	54	-24.91	AV	Pass
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2483.500	48.44	-10.34	38.10	74	-35.90	peak	Pass
2483.500	37.84	-10.34	27.50	54	-26.50	AV	Pass
2500.000	52.02	-10.24	41.78	74	-32.22	peak	Pass
2500.000	40.29	-10.24	30.05	54	-23.95	AV	Pass

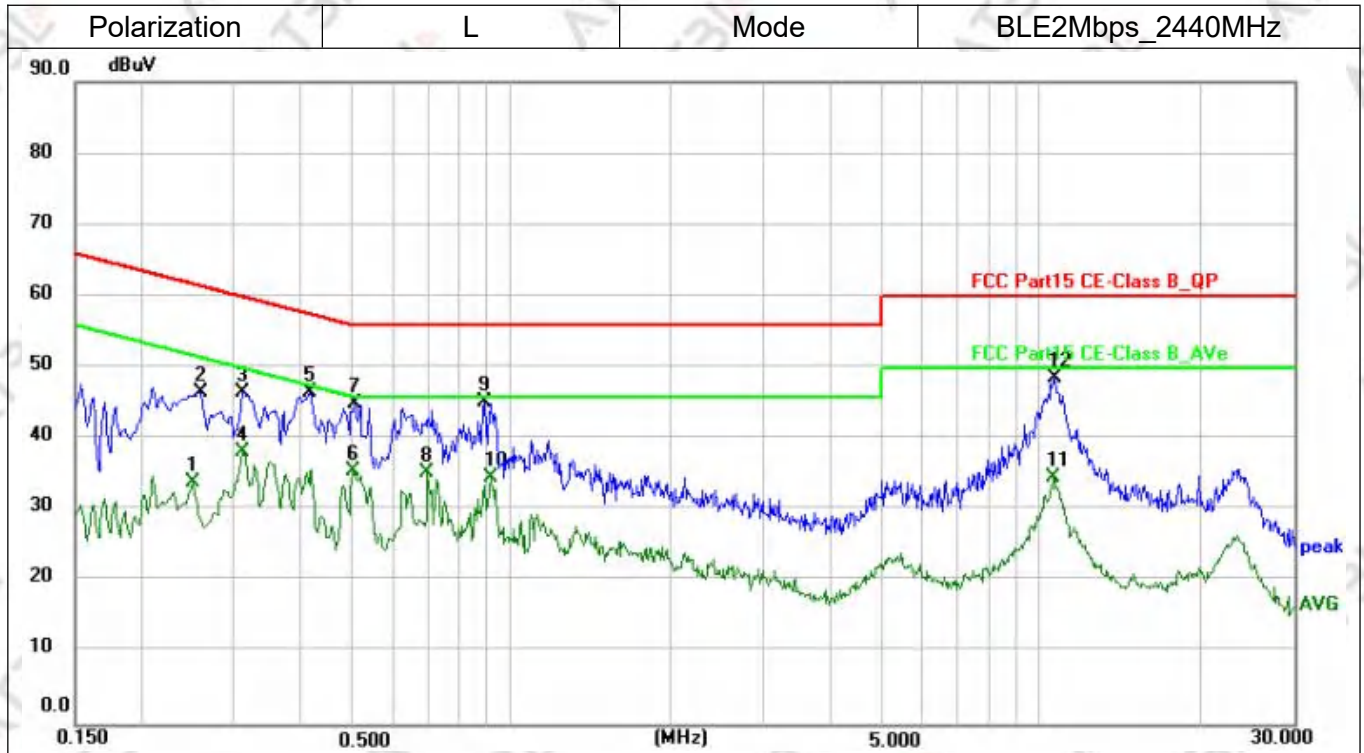
Test Mode: BLE2Mbps							
Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2310.000	47.03	-10.95	36.08	74	-37.92	peak	Pass
2310.000	36.79	-10.95	25.84	54	-28.16	AV	Pass
2390.000	51.41	-10.86	40.55	74	-33.45	peak	Pass
2390.000	39.54	-10.86	28.68	54	-25.32	AV	Pass
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2310.000	47.69	-10.95	36.74	74	-37.26	peak	Pass
2310.000	37.56	-10.95	26.61	54	-27.39	AV	Pass
2390.000	51.98	-10.86	41.12	74	-32.88	peak	Pass
2390.000	40.49	-10.86	29.63	54	-24.37	AV	Pass
Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2483.500	47.07	-10.34	36.73	74	-37.27	peak	Pass
2483.500	36.85	-10.34	26.51	54	-27.49	AV	Pass
2500.000	50.62	-10.24	40.38	74	-33.62	peak	Pass
2500.000	39.64	-10.24	29.40	54	-24.60	AV	Pass
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dBμV)	Factor (dB)	Level (dBμV/m)	Limit (dBμV/m)	Marging (dB)	Detector	Result
2483.500	47.15	-10.34	36.81	74	-37.19	peak	Pass
2483.500	37.14	-10.34	26.80	54	-27.20	AV	Pass
2500.000	51.42	-10.24	41.18	74	-32.82	peak	Pass
2500.000	40.09	-10.24	29.85	54	-24.15	AV	Pass

B7.AC Power-Line Conducted Emission

Note:

- 1.All modes have been tested, only worst mode(BLE2Mbps_2440MHz) was recorded in the test report.
- 2.Emission Level (dBUV/m) = Reading Value (dBUV) + Correction Factor (dB/m).
3. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
4. The emission levels of other frequencies were less than 20dB margin against the limit.
5. Margin value = Emission level-Limit value.





No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measure-ment(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2500	14.74	19.35	34.09	51.76	-17.67	AVG
2	0.2580	27.21	19.35	46.56	61.50	-14.94	peak
3	0.3100	27.24	19.37	46.61	59.97	-13.36	peak
4	0.3100	18.85	19.37	38.22	49.97	-11.75	AVG
5	0.4140	27.24	19.39	46.63	57.57	-10.94	peak
6	0.5020	16.29	19.36	35.65	46.00	-10.35	AVG
7	0.5060	25.73	19.36	45.09	56.00	-10.91	peak
8	0.6940	15.92	19.37	35.29	46.00	-10.71	AVG
9	0.8940	25.89	19.41	45.30	56.00	-10.70	peak
10	0.9140	15.37	19.40	34.77	46.00	-11.23	AVG
11	10.5580	15.00	19.57	34.57	50.00	-15.43	AVG
12	10.6260	29.00	19.57	48.57	60.00	-11.43	peak

*****END*****