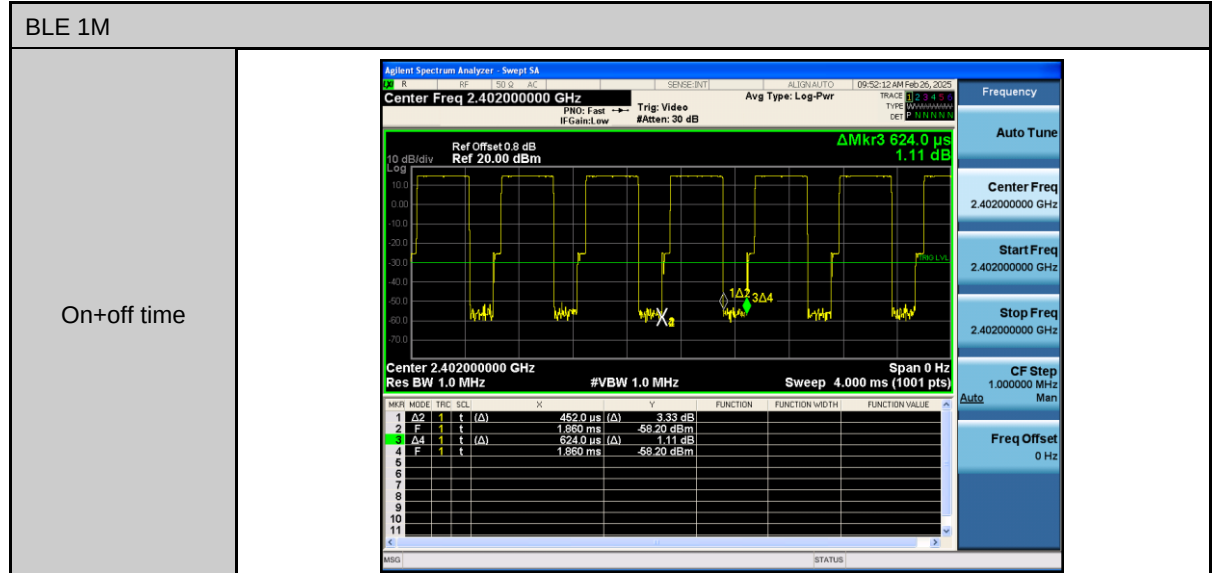


Appendix B. Test Plots

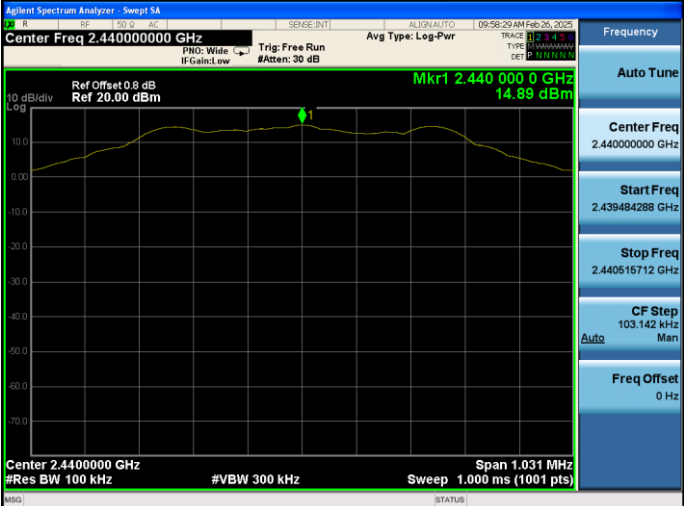
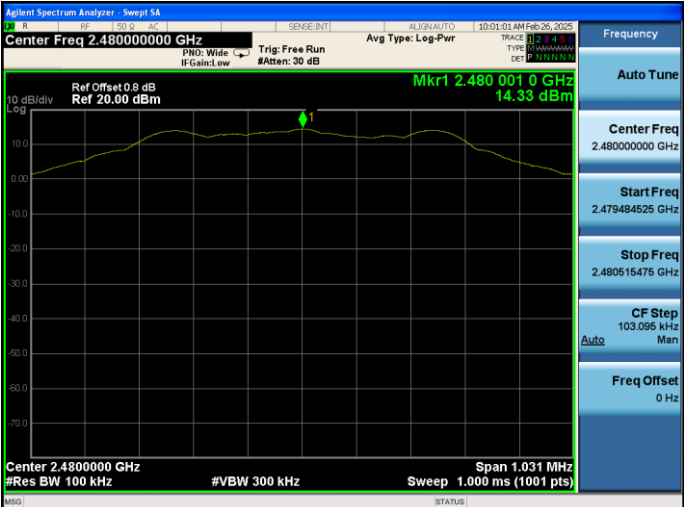
Duty cycle



Out of Band Conducted Spurious Emission

BLE 1M																																																																																																													
Low ch	Agilent Spectrum Analyzer - Swept SA Center Freq 12.515000000 GHz SENSE:INT ALIGN:Auto 09:55:35 AM Feb 26, 2025 PRNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr TYPE: E-WWWWWWW DET: P-MINMAX Ref Offset 0.8 dB Ref 20.00 dBm Mkr2 4.804 3 GHz -34.08 dBm 10 dB/div Log Y1 Y2 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.387 s (40001 pts) Stop 25.00 GHz <table><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.4015 GHz</td><td>13.67 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>4.8043 GHz</td><td>-34.08 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> MSG STATUS Frequency Auto Tune Center Freq 12.515000000 GHz Start Freq 30.0000000 MHz Stop Freq 25.000000000 GHz CF Step 2.497000000 GHz Auto Man Freq Offset 0 Hz	MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.4015 GHz	13.67 dBm				2	N	1	f	4.8043 GHz	-34.08 dBm				3									4									5									6									7									8									9									10									11								
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Mid ch	Agilent Spectrum Analyzer - Swept SA Center Freq 12.515000000 GHz SENSE:INT ALIGN:Auto 09:59:28 AM Feb 26, 2025 PRNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr TRACE 1 2 3 4 5 TYPE: E-WWWWWWW DET: P-MINMAX Ref Offset 0.8 dB Ref 20.00 dBm Mkr2 4.880 4 GHz -37.84 dBm 10 dB/div Log Y1 Y2 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.387 s (40001 pts) Stop 25.00 GHz <table><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.4396 GHz</td><td>14.21 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>4.8804 GHz</td><td>-37.84 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> MSG STATUS Frequency Auto Tune Center Freq 12.515000000 GHz Start Freq 30.0000000 MHz Stop Freq 25.000000000 GHz CF Step 2.497000000 GHz Auto Man Freq Offset 0 Hz	MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.4396 GHz	14.21 dBm				2	N	1	f	4.8804 GHz	-37.84 dBm				3									4									5									6									7									8									9									10									11								
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High ch	Agilent Spectrum Analyzer - Swept SA Center Freq 12.515000000 GHz SENSE:INT ALIGN:Auto 10:02:59 AM Feb 26, 2025 PRNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr TRACE 1 2 3 4 5 TYPE: E-WWWWWWW DET: P-MINMAX Ref Offset 0.8 dB Ref 20.00 dBm Mkr2 2.493 9 GHz -38.64 dBm 10 dB/div Log Y1 Y2 10.0 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 2.387 s (40001 pts) Stop 25.00 GHz <table><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.4802 GHz</td><td>14.31 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.4939 GHz</td><td>-38.64 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> MSG STATUS Frequency Auto Tune Center Freq 12.515000000 GHz Start Freq 30.0000000 MHz Stop Freq 25.000000000 GHz CF Step 2.497000000 GHz Auto Man Freq Offset 0 Hz	MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.4802 GHz	14.31 dBm				2	N	1	f	2.4939 GHz	-38.64 dBm				3									4									5									6									7									8									9									10									11								
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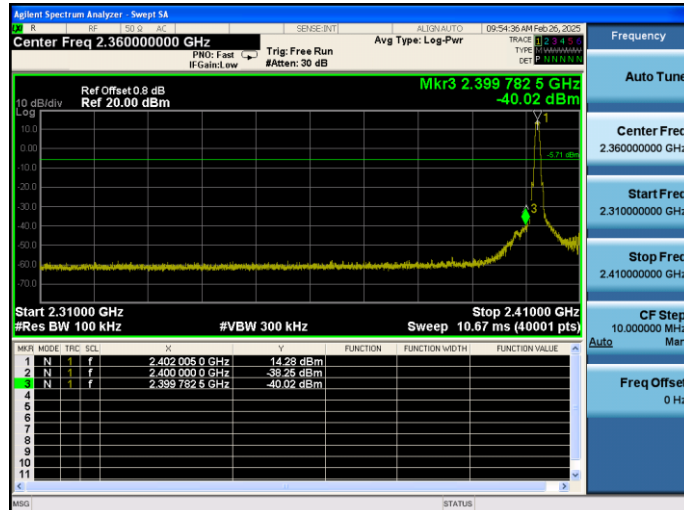
Reference level

BLE 1M Low ch	
Mid ch	
High ch	

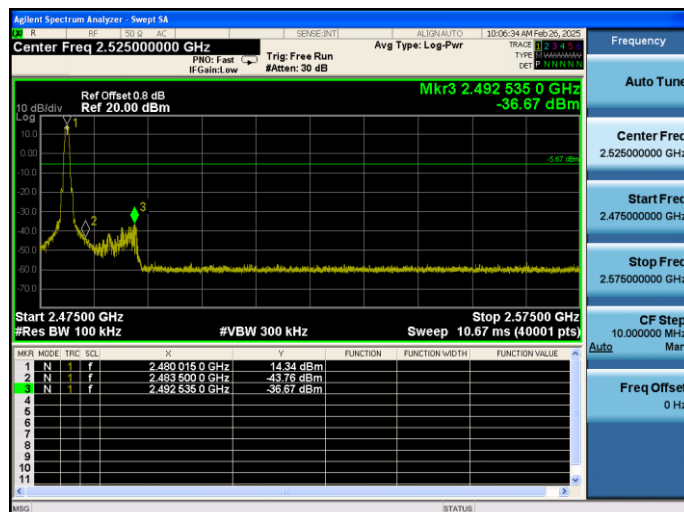
Conducted Band Edge

BLE 1M

Low ch



High ch



6 dB Bandwidth

BLE 1M	
Low ch	Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.402000000 GHz Ref Offset: 0.8 dB, Ref: 20.00 dBm Occupied Bandwidth: 1.0421 MHz Total Power: 21.4 dBm Transmit Freq Error: 6.496 kHz OBW Power: 99.00 % x dB Bandwidth: 679.6 kHz x dB: -6.00 dB
Mid ch	Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.440000000 GHz Ref Offset: 0.8 dB, Ref: 20.00 dBm Occupied Bandwidth: 1.0429 MHz Total Power: 22.0 dBm Transmit Freq Error: 6.391 kHz OBW Power: 99.00 % x dB Bandwidth: 687.6 kHz x dB: -6.00 dB
High ch	Agilent Spectrum Analyzer - Occupied BW Center Freq: 2.480000000 GHz Ref Offset: 0.8 dB, Ref: 20.00 dBm Occupied Bandwidth: 1.0464 MHz Total Power: 21.4 dBm Transmit Freq Error: 4.886 kHz OBW Power: 99.00 % x dB Bandwidth: 687.3 kHz x dB: -6.00 dB

99 % Occupied Bandwidth

BLE 1M	
Low ch	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS Ref Offset 0.8 dB Ref 20.00 dBm 10 dB/div Log Center 2.402 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms Occupied Bandwidth 1.0333 MHz Total Power 21.3 dBm Transmit Freq Error 10.985 kHz OBW Power 99.00 % x dB Bandwidth 1.265 MHz x dB -26.00 dB Frequency Center Freq 2.402000000 GHz CF Step 300.000 kHz Auto Freq Offset 0 Hz
Mid ch	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.440000000 GHz Center Freq: 2.440000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS Ref Offset 0.8 dB Ref 20.00 dBm 10 dB/div Log Center 2.44 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms Occupied Bandwidth 1.0350 MHz Total Power 22.0 dBm Transmit Freq Error 10.919 kHz OBW Power 99.00 % x dB Bandwidth 1.269 MHz x dB -26.00 dB Frequency Center Freq 2.440000000 GHz CF Step 300.000 kHz Auto Freq Offset 0 Hz
High ch	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run Avg/Hold: 1/1 Radio Std: None Radio Device: BTS Ref Offset 0.8 dB Ref 20.00 dBm 10 dB/div Log Center 2.48 GHz #Res BW 30 kHz #VBW 100 kHz Span 3 MHz Sweep 3.2 ms Occupied Bandwidth 1.0379 MHz Total Power 21.3 dBm Transmit Freq Error 9.668 kHz OBW Power 99.00 % x dB Bandwidth 1.271 MHz x dB -26.00 dB Frequency Center Freq 2.480000000 GHz CF Step 300.000 kHz Auto Freq Offset 0 Hz

Power Density

BLE 1M	
Low ch	 Agilent Spectrum Analyzer - Sweep 1A Center Freq 2.40200000 GHz Ref Offset 0.8 dB Ref 20.00 dBm Mkr1 2.4019806 GHz -0.123 dBm Center 2.4020000 GHz Res BW 3.0 kHz #VBW 10 kHz Sweep 107.5 ms (1001 pts) Span 1.019 MHz Frequency Auto Tune Center Freq 2.40200000 GHz Start Freq 2.401490267 GHz Stop Freq 2.402509733 GHz CF Step 101.947 kHz Freq Offset 0 Hz
Mid ch	 Agilent Spectrum Analyzer - Sweep 1A Center Freq 2.44000000 GHz Ref Offset 0.8 dB Ref 20.00 dBm Mkr1 2.4399804 GHz 0.336 dBm Center 2.4400000 GHz Res BW 3.0 kHz #VBW 10 kHz Sweep 108.8 ms (1001 pts) Span 1.031 MHz Frequency Auto Tune Center Freq 2.44000000 GHz Start Freq 2.439484288 GHz Stop Freq 2.440515712 GHz CF Step 103.142 kHz Freq Offset 0 Hz
High ch	 Agilent Spectrum Analyzer - Sweep 1A Center Freq 2.48000000 GHz Ref Offset 0.8 dB Ref 20.00 dBm Mkr1 2.4799794 GHz -0.084 dBm Center 2.4800000 GHz Res BW 3.0 kHz #VBW 10 kHz Sweep 108.7 ms (1001 pts) Span 1.031 MHz Frequency Auto Tune Center Freq 2.48000000 GHz Start Freq 2.479484525 GHz Stop Freq 2.480515475 GHz CF Step 103.096 kHz Freq Offset 0 Hz