

# APPENDIX REPORT

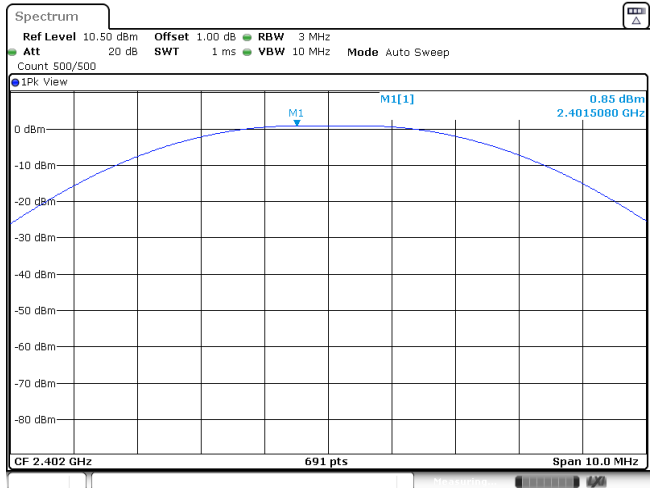
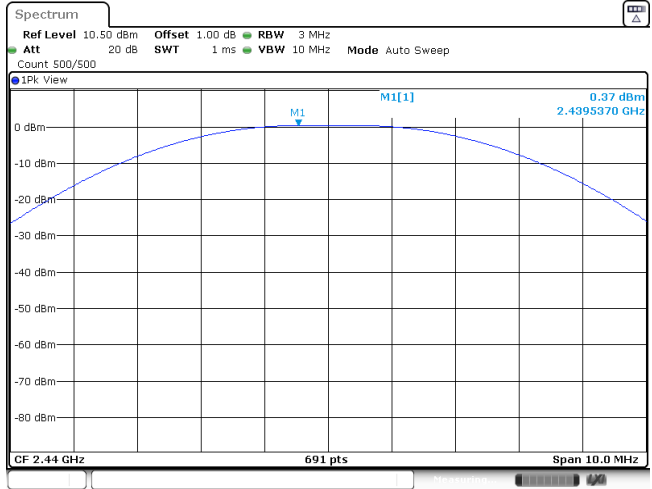
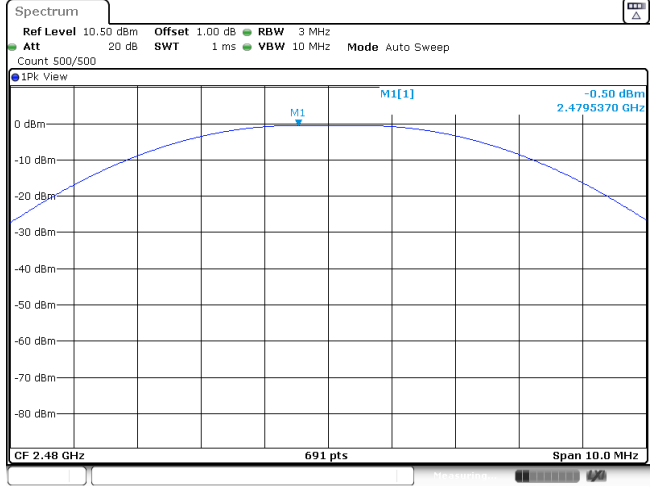
Project No.	SHT2305054501EW	Radio Specification	Bluetooth BLE
Test sample No.	YPHT23050545002	Model No.	Boom Bike Basic
Start test date	2023-06-12	Finish date	2023-06-12
Temperature	24.6°C	Humidity	72%
Test Engineer	Xiaoqin Li	Auditor	Xiaodong Zheo

Appendix clause	Test item	Result
A	Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty cycle	PASS
F	Band edge and Spurious Emissions (conducted)	PASS

**Appendix A: Peak Output Power**

Test rate	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
1Mbps	00	0.80	0.76	≤ 30.00	Pass
	19	0.33	0.30		
	39	-0.52	-0.58		
2Mbps	00	0.85	0.72	≤ 30.00	Pass
	19	0.37	0.16		
	39	-0.50	-0.84		

Test rate: 1Mbps	
CH00	<p>Ref Level 10.50 dBm   Offset 1.00 dB   RBW 2 MHz Att 20 dB   SWT 1 ms   VBW 5 MHz   Mode Auto Sweep Count 500/500 CF 2.402 GHz   691 pts   Span 5.0 MHz</p>
CH19	<p>Ref Level 10.50 dBm   Offset 1.00 dB   RBW 2 MHz Att 20 dB   SWT 1 ms   VBW 5 MHz   Mode Auto Sweep Count 500/500 CF 2.44 GHz   691 pts   Span 5.0 MHz</p>
CH39	<p>Ref Level 10.50 dBm   Offset 1.00 dB   RBW 2 MHz Att 20 dB   SWT 1 ms   VBW 5 MHz   Mode Auto Sweep Count 500/500 CF 2.48 GHz   691 pts   Span 5.0 MHz</p>

Test rate: 2Mbps	
CH00	 <p>0.85 dBm 2.4015080 GHz</p>
CH19	 <p>0.37 dBm 2.495370 GHz</p>
CH39	 <p>-0.50 dBm 2.4795370 GHz</p>

**Appendix B: Power Spectral Density**

Test rate	Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
1Mbps	00	-7.24	≤8.00	Pass
	19	-7.66		
	39	-8.36		
2Mbps	00	-10.97	≤8.00	Pass
	19	-11.33		
	39	-12.47		

Test rate: 1Mbps	
CH00	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 632.3 μs VBW 10 kHz Mode Auto FFT Count 100/100 IPk Max M1[1] -7.24 dBm 2.40180460 GHz CF 2.402 GHz 691 pts Span 1.0 MHz</p>
CH19	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 632.3 μs VBW 10 kHz Mode Auto FFT Count 100/100 IPk Max M1[1] -7.66 dBm 2.43980460 GHz CF 2.44 GHz 691 pts Span 1.0 MHz</p>
CH39	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 632.3 μs VBW 10 kHz Mode Auto FFT Count 100/100 IPk Max M1[1] -8.36 dBm 2.47980460 GHz CF 2.48 GHz 691 pts Span 1.0 MHz</p>

Test rate: 2Mbps	
CH00	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 632.1 μs VBW 10 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -10.97 dBm 2.40207810 GHz CF 2.402 GHz 691 pts Span 3.0 MHz</p>
CH19	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 632.1 μs VBW 10 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -11.33 dBm 2.43991750 GHz CF 2.44 GHz 691 pts Span 3.0 MHz</p>
CH39	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 632.1 μs VBW 10 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -12.47 dBm 2.48007810 GHz CF 2.48 GHz 691 pts Span 3.0 MHz</p>

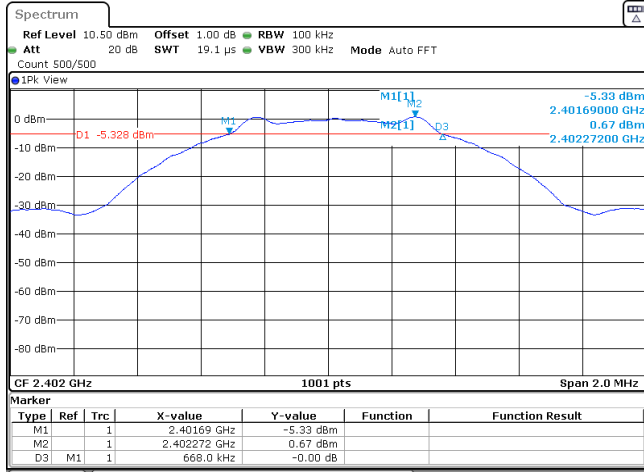
**Appendix C: 6dB bandwidth**

Type	Channel	6dB Bandwidth(kHz)	Limit (kHz)	Result
1Mbps	00	668.00	≥500	Pass
	19	676.00		
	39	676.00		
2Mbps	00	1350.00	≥500	Pass
	19	1350.00		
	39	1365.00		



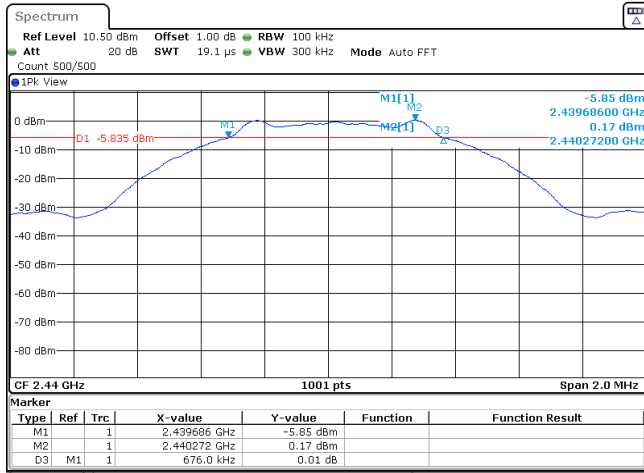
Test rate: 1Mbps

CH00



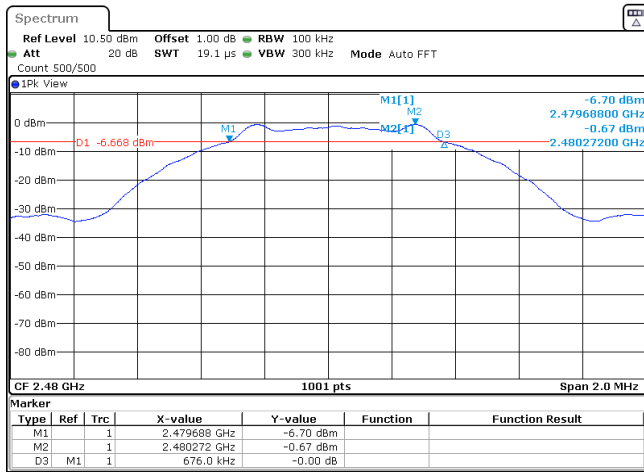
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CH19



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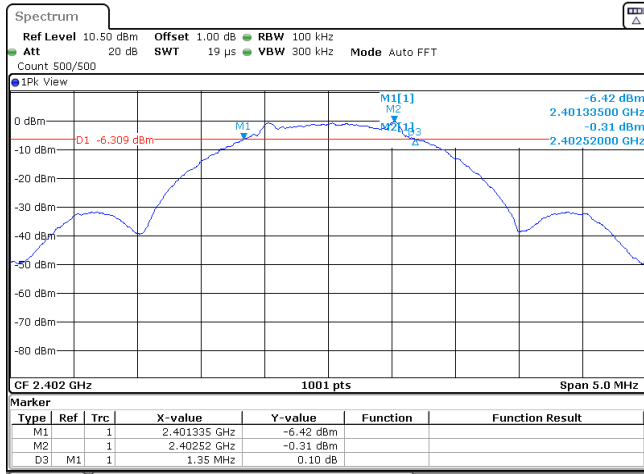
CH39



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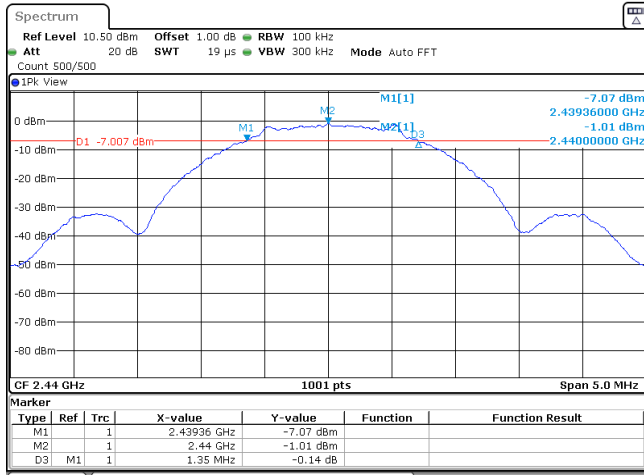
Test rate: 2Mbps

CH00



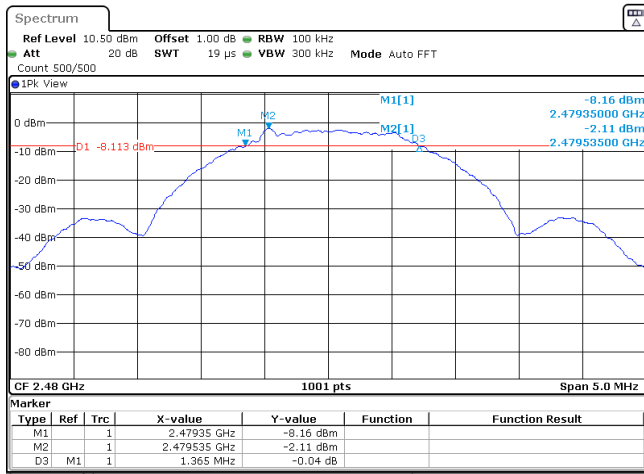
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CH19



Date: 12 JUN 2023 09:44:33

CH39



Date: 12 JUN 2023 09:46:41

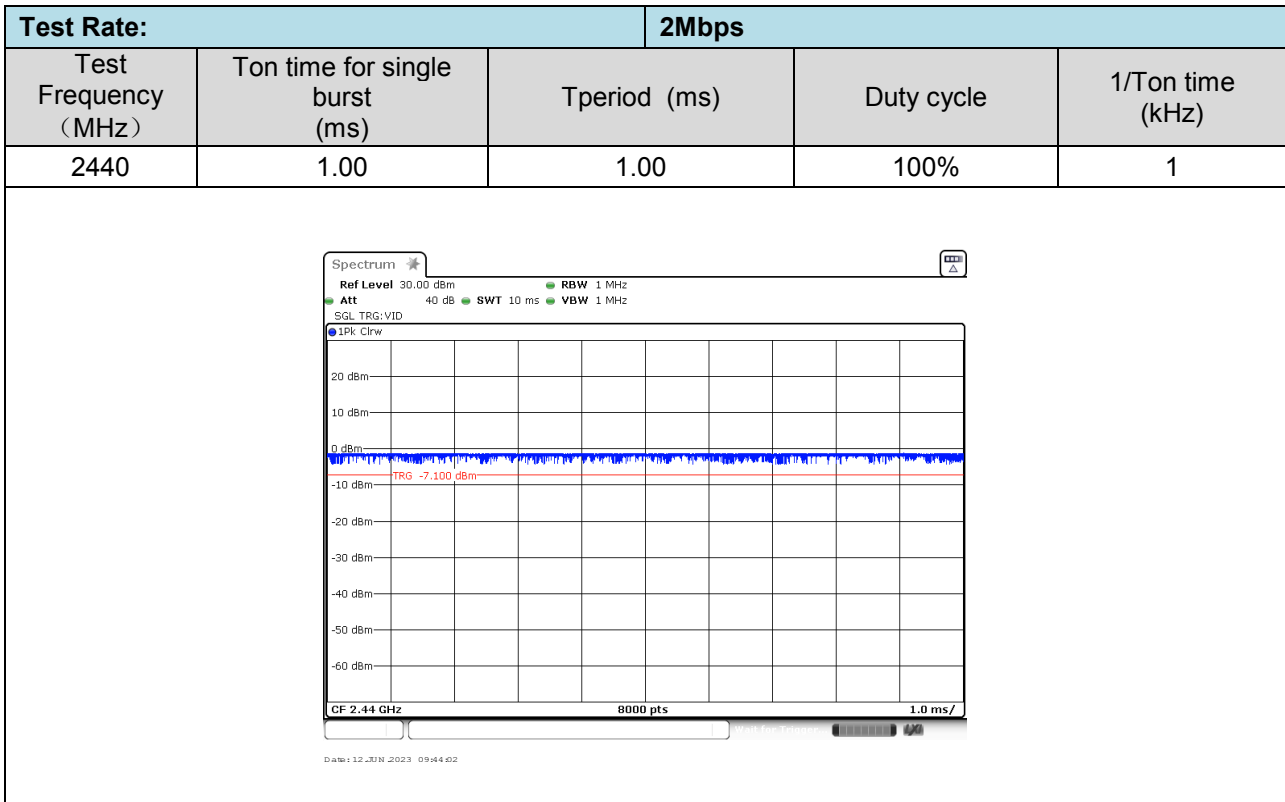
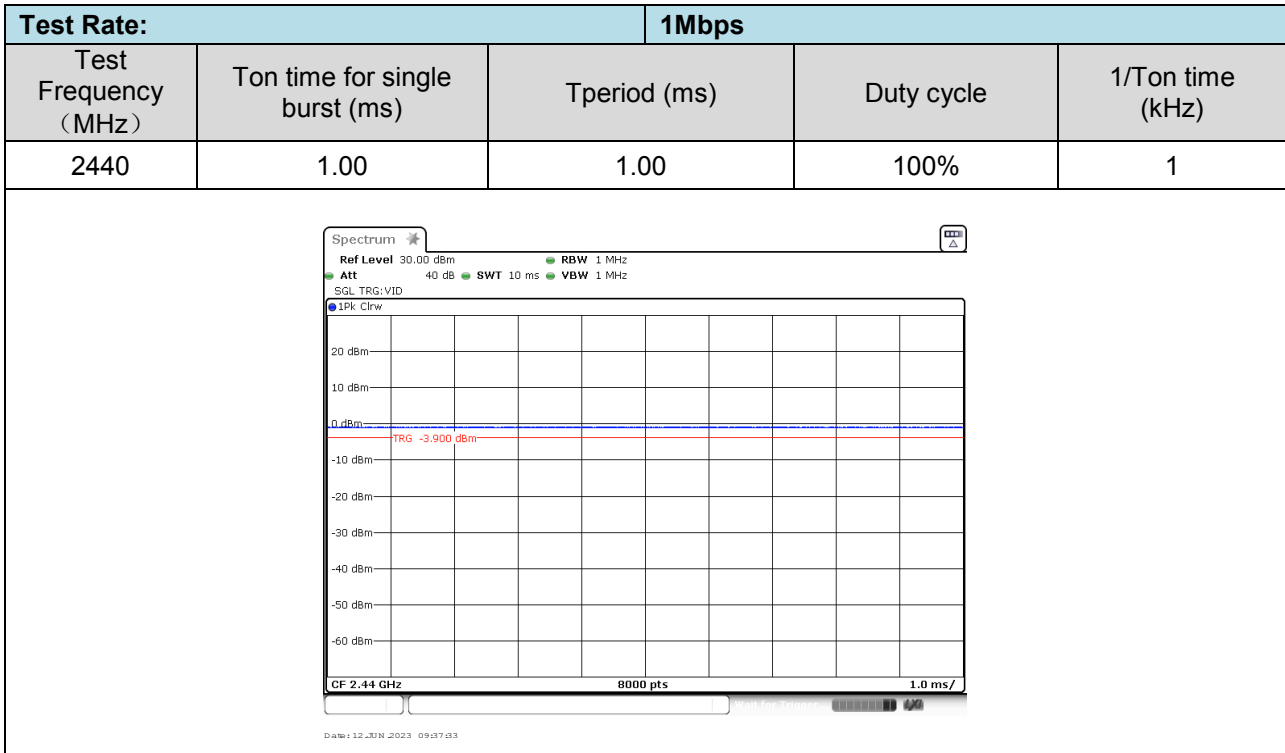
**Appendix D: 99% Occupied Bandwidth**

Test rate	Channel	99% Occupied Bandwidth(MHz)	Limit (kHz)	Result
1Mbps	00	1.02	-	Pass
	19	1.02		
	39	1.02		
2Mbps	00	2.05	-	Pass
	19	2.04		
	39	2.05		

Test rate: 1Mbps	
CH00	<p>                     Spectrum                      Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz                      Att 20 dB SWT 63.3 μs VBW 100 kHz Mode Auto FFT                      Count 500/500                      IPk View                      M1[1] -1.70 dBm                      2.40210790 GHz                      1.020979021 MHz                      CF 2.402 GHz 1001 pts Span 2.0 MHz                 </p>
CH19	<p>                     Spectrum                      Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz                      Att 20 dB SWT 63.3 μs VBW 100 kHz Mode Auto FFT                      Count 500/500                      IPk View                      M1[1] -1.89 dBm                      2.44010590 GHz                      1.022977023 MHz                      CF 2.44 GHz 1001 pts Span 2.0 MHz                 </p>
CH39	<p>                     Spectrum                      Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz                      Att 20 dB SWT 63.3 μs VBW 100 kHz Mode Auto FFT                      Count 500/500                      IPk View                      M1[1] -3.11 dBm                      2.47997400 GHz                      1.024975025 MHz                      CF 2.48 GHz 1001 pts Span 2.0 MHz                 </p>

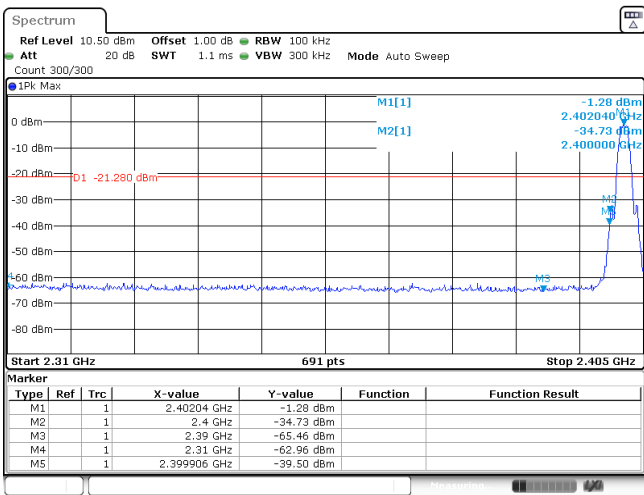
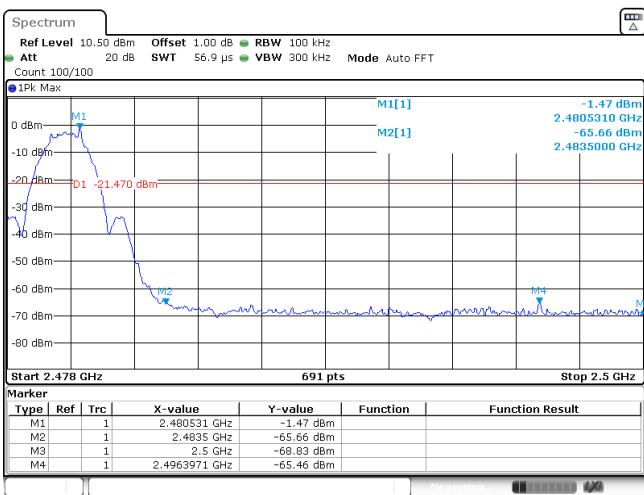
Test rate: 2Mbps	
CH00	<p><b>Spectrum</b>            Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz            Att 20 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT            Count 500/500            IPk View            M1[1] -3.06 dBm            2.40188510 GHz            2.047952048 MHz            Occ Bw            T1 T2            CF 2.402 GHz 1001 pts Span 5.0 MHz</p>
CH19	<p><b>Spectrum</b>            Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz            Att 20 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT            Count 500/500            IPk View            M1[1] -3.55 dBm            2.43992010 GHz            2.037962038 MHz            Occ Bw            T1 T2            CF 2.44 GHz 1001 pts Span 5.0 MHz</p>
CH39	<p><b>Spectrum</b>            Ref Level 10.50 dBm Offset 1.00 dB RBW 30 kHz            Att 20 dB SWT 63.2 μs VBW 100 kHz Mode Auto FFT            Count 500/500            IPk View            M1[1] -4.51 dBm            2.47983020 GHz            2.052947053 MHz            Occ Bw            T1 T2            CF 2.48 GHz 1001 pts Span 5.0 MHz</p>

### Appendix E: Duty cycle



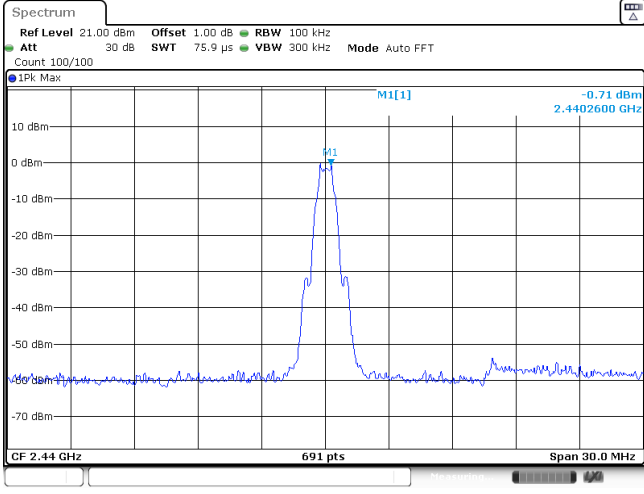
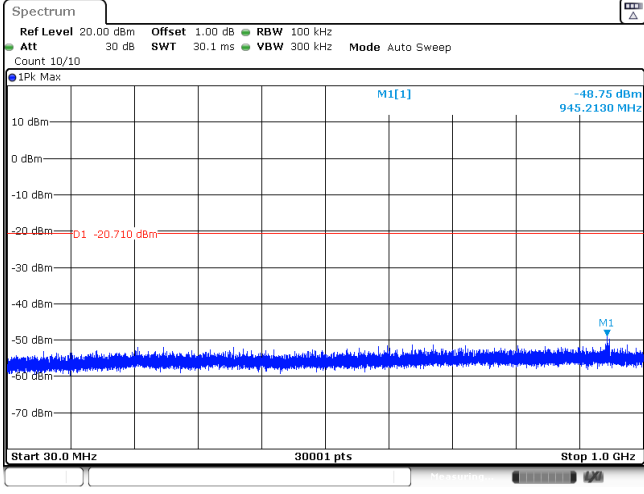
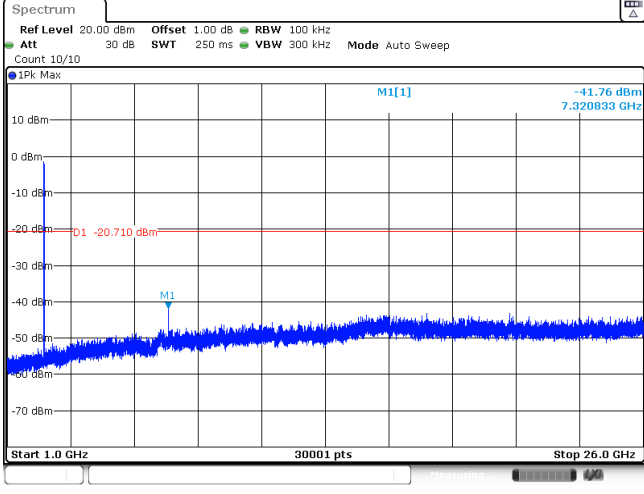
**Appendix F: Band edge and Spurious Emissions (conducted)**

Test Item:	Band edge	Test Rate:	1Mbps																																										
CH00	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWT 1.1 ms VBW 300 kHz Mode Auto Sweep Count 300/300</p> <p>1Pk Max</p> <p>0 dBm M1[1] 0.13 dBm 2.402320 GHz -10 dBm M2[1] -62.30 dBm 2.400000 GHz -20 dBm D1 -19.870 dBm</p> <p>Start 2.31 GHz 691 pts Stop 2.405 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.40232 GHz</td> <td>0.13 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-62.30 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-64.50 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.31 GHz</td> <td>-64.37 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.337949 GHz</td> <td>-61.48 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40232 GHz	0.13 dBm			M2	1		2.4 GHz	-62.30 dBm			M3	1		2.39 GHz	-64.50 dBm			M4	1		2.31 GHz	-64.37 dBm			M5	1		2.337949 GHz	-61.48 dBm		
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CH39	<p>Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWT 56.9 μs VBW 300 kHz Mode Auto FFT Count 100/100</p> <p>1Pk Max</p> <p>0 dBm M1[1] -1.00 dBm 2.4797670 GHz -10 dBm M2[1] -67.32 dBm 2.4835000 GHz -20 dBm D1 -21.000 dBm</p> <p>Start 2.478 GHz 691 pts Stop 2.5 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.479767 GHz</td> <td>-1.00 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4835 GHz</td> <td>-67.32 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.5 GHz</td> <td>-69.53 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.4836754 GHz</td> <td>-65.00 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.479767 GHz	-1.00 dBm			M2	1		2.4835 GHz	-67.32 dBm			M3	1		2.5 GHz	-69.53 dBm			M4	1		2.4836754 GHz	-65.00 dBm									
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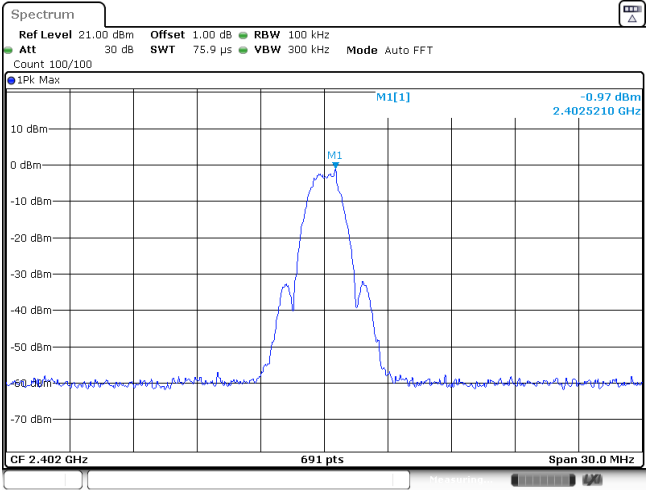
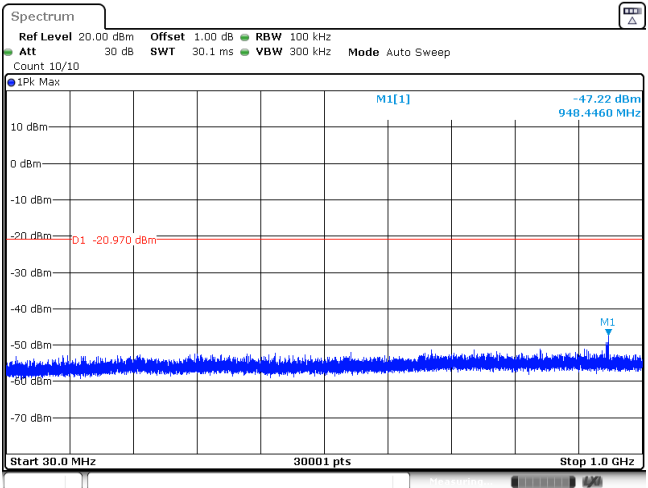
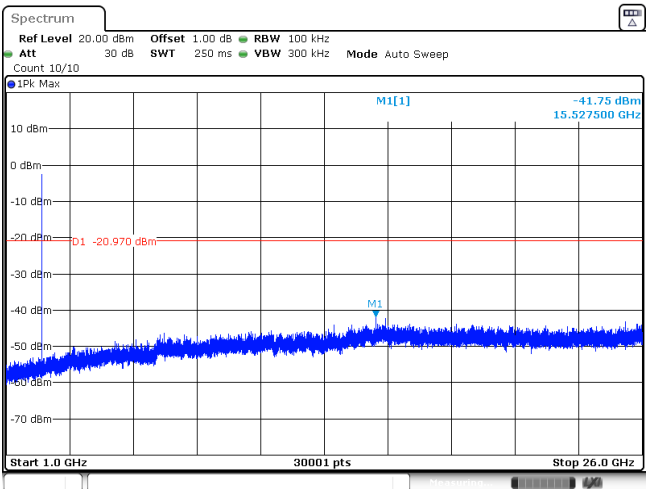
Test Item:	Band edge	Test Rate:	2Mbps																																										
CH00	 <p><b>Spectrum</b>            Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz            Att 20 dB SWT 1.1 ms VBW 300 kHz Mode Auto Sweep            Count 300/300</p> <p>Start 2.31 GHz 691 pts Stop 2.405 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.40204 GHz</td> <td>-1.28 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-34.73 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-65.46 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.31 GHz</td> <td>-62.96 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.399906 GHz</td> <td>-39.50 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40204 GHz	-1.28 dBm			M2	1		2.4 GHz	-34.73 dBm			M3	1		2.39 GHz	-65.46 dBm			M4	1		2.31 GHz	-62.96 dBm			M5	1		2.399906 GHz	-39.50 dBm		
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M5	1		2.399906 GHz	-39.50 dBm																																									
CH39	 <p><b>Spectrum</b>            Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz            Att 20 dB SWT 56.9 μs VBW 300 kHz Mode Auto FFT            Count 100/100</p> <p>Start 2.478 GHz 691 pts Stop 2.5 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.480531 GHz</td> <td>-1.47 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4835 GHz</td> <td>-65.66 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.5 GHz</td> <td>-68.83 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.4963971 GHz</td> <td>-65.46 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.480531 GHz	-1.47 dBm			M2	1		2.4835 GHz	-65.66 dBm			M3	1		2.5 GHz	-68.83 dBm			M4	1		2.4963971 GHz	-65.46 dBm									
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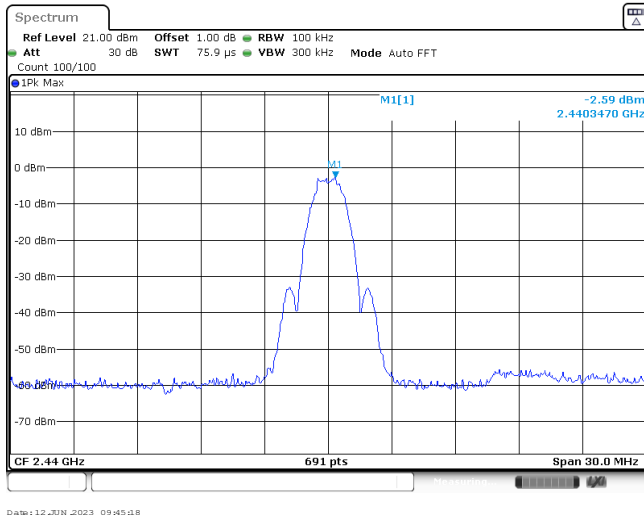
Test Item:	SE	Test Rate:	1Mbps
<p>CH00 Reference level</p>			
<p>CH00 30MHz~1000MHz</p>			
<p>CH00 1GHz~26GHz</p>			

<p>CH19 Reference level</p>	 <p>Spectrum Ref Level 21.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -0.71 dBm 2.4402600 GHz CF 2.44 GHz 691 pts Span 30.0 MHz Date: 12 JUN 2023 09:38:55</p>
<p>CH19 30MHz~1000MHz</p>	 <p>Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IPK Max M1[1] -49.75 dBm 945.2130 MHz D1 -20.710 dBm Start 30.0 MHz 30001 pts Stop 1.0 GHz Date: 12 JUN 2023 09:39:00</p>
<p>CH19 1GHz~26GHz</p>	 <p>Spectrum Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IPK Max M1[1] -41.76 dBm 7.320833 GHz D1 -20.710 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 12 JUN 2023 09:39:26</p>

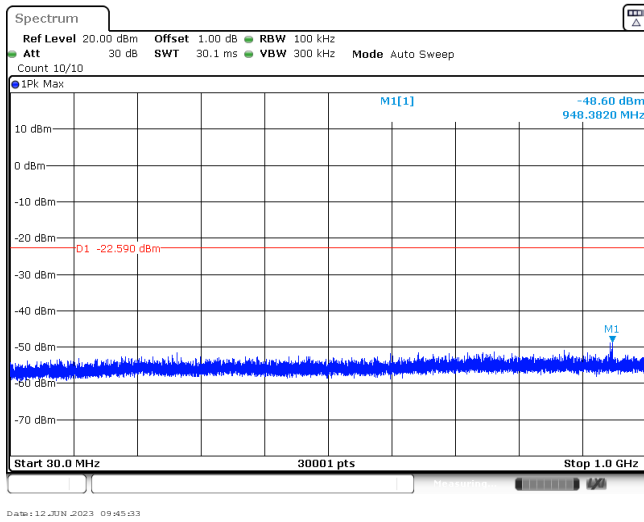
<p>CH39 Reference level</p>	<p>Spectrum          Ref Level 21.00 dBm Offset 1.00 dB RBW 100 kHz          Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT          Count 100/100          IPK Max          M1[1] -1.36 dBm 2.4797830 GHz          CF 2.48 GHz 691 pts Span 30.0 MHz          Date: 12 JUN 2023 09:41:07</p>
<p>CH39 30MHz~1000MHz</p>	<p>Spectrum          Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz          Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep          Count 10/10          IPK Max          M1[1] -47.78 dBm 948.4140 MHz          D1 -21.360 dBm          Start 30.0 MHz 30001 pts Stop 1.0 GHz          Date: 12 JUN 2023 09:41:02</p>
<p>CH39 1GHz~26GHz</p>	<p>Spectrum          Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz          Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep          Count 10/10          IPK Max          M1[1] -42.45 dBm 7.439167 GHz          D1 -21.360 dBm          Start 1.0 GHz 30001 pts Stop 26.0 GHz          Date: 12 JUN 2023 09:41:07</p>

Test Item:	SE	Test Rate:	2Mbps
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<p>CH00 30MHz~1000MHz</p>			
<p>CH00 1GHz~26GHz</p>			

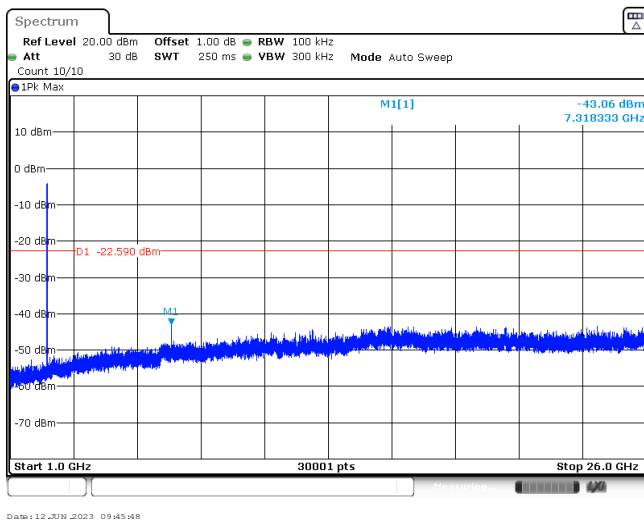
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Reference level

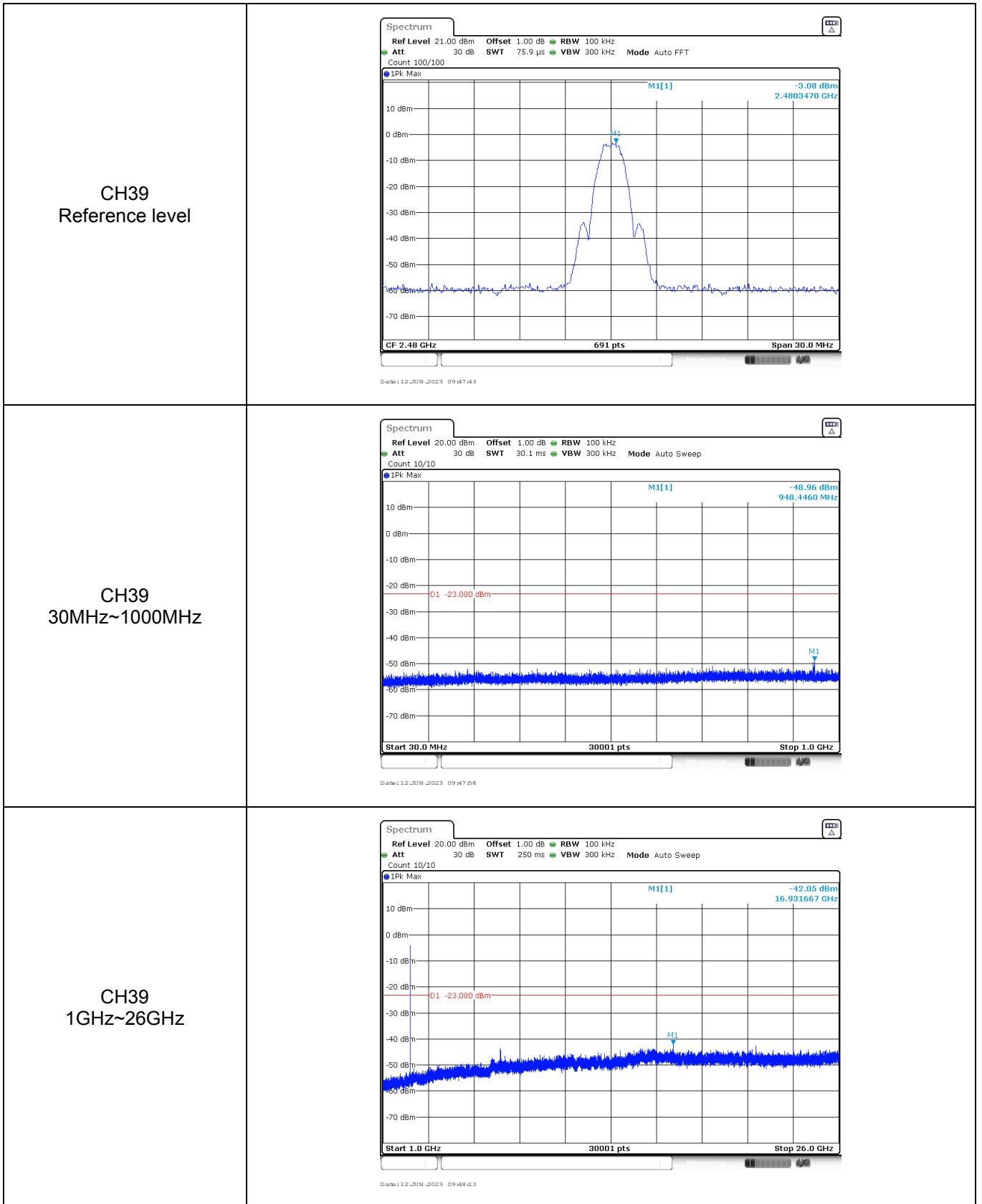


CH19  
30MHz~1000MHz



CH19  
1GHz~26GHz





-----End of Report-----