

APPENDIX REPORT

Project No.	SHT2304042803EW	Radio Specification	Bluetooth BLE
Model No.	N402P		
Start test date	2023-05-23	Finish date	2023-05-23
Temperature	24.6℃	Humidity	65%
Test Engineer	Xiaoqin Li	Auditor	<i>Xiaodong Zheo</i>

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	-4.34	-4.38	≤ 30.00	Pass
	19	-4.23	-4.30		
	39	-4.40	-4.45		
2Mbps	00	-4.30	-4.51	≤ 30.00	Pass
	19	-4.22	-4.46		
	39	-4.38	-4.56		

Test rate: 1Mbps	
CH00	
CH19	
CH39	

Test rate: 2Mbps	
CH00	
CH19	
CH39	

Appendix B: Power Spectral Density

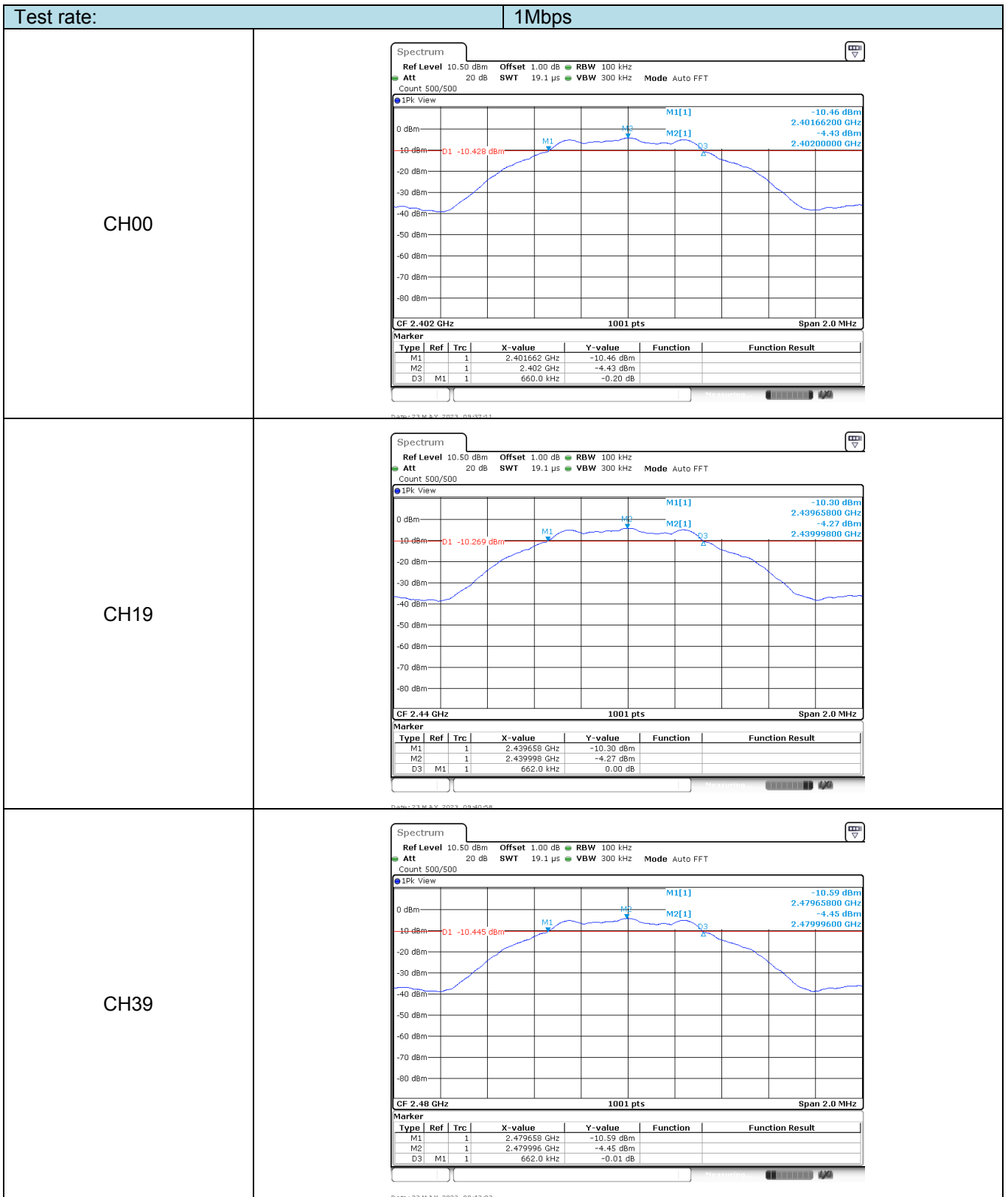
Test rate	Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
1Mbps	00	-18.26	≤8.00	Pass
	19	-18.07		
	39	-18.25		
2Mbps	00	-18.31	≤8.00	Pass
	19	-18.31		
	39	-18.42		

Test rate: 1Mbps	
CH00	<p>Spectrum plot for CH00. The plot shows a signal at 2.40199420 GHz with a peak level of -18.26 dBm. The plot includes parameters: Ref Level 10.50 dBm, Att 20 dB, Offset 1.00 dB, RBW 3 kHz, SWT 632.3 μs, VBW 10 kHz, Mode Auto FFT, Count 100/100, and Span 1.0 MHz.</p>
CH19	<p>Spectrum plot for CH19. The plot shows a signal at 2.43999420 GHz with a peak level of -18.07 dBm. The plot includes parameters: Ref Level 10.50 dBm, Att 20 dB, Offset 1.00 dB, RBW 3 kHz, SWT 632.3 μs, VBW 10 kHz, Mode Auto FFT, Count 100/100, and Span 1.0 MHz.</p>
CH39	<p>Spectrum plot for CH39. The plot shows a signal at 2.47999420 GHz with a peak level of -18.25 dBm. The plot includes parameters: Ref Level 10.50 dBm, Att 20 dB, Offset 1.00 dB, RBW 3 kHz, SWT 632.3 μs, VBW 10 kHz, Mode Auto FFT, Count 100/100, and Span 1.0 MHz.</p>

Test rate: 2Mbps	
CH00	<p>Spectrum plot for CH00. The plot shows a signal peak at 2.40199130 GHz with a power level of -18.31 dBm. The plot includes parameters: Ref Level 10.50 dBm, Att 20 dB, Offset 1.00 dB, RBW 3 kHz, SWT 632.1 μs, VBW 10 kHz, Mode Auto FFT, Count 100/100, and Span 3.0 MHz.</p>
CH19	<p>Spectrum plot for CH19. The plot shows a signal peak at 2.43999130 GHz with a power level of -18.31 dBm. The plot includes parameters: Ref Level 10.50 dBm, Att 20 dB, Offset 1.00 dB, RBW 3 kHz, SWT 632.1 μs, VBW 10 kHz, Mode Auto FFT, Count 100/100, and Span 3.0 MHz.</p>
CH39	<p>Spectrum plot for CH39. The plot shows a signal peak at 2.47999130 GHz with a power level of -18.42 dBm. The plot includes parameters: Ref Level 10.50 dBm, Att 20 dB, Offset 1.00 dB, RBW 3 kHz, SWT 632.1 μs, VBW 10 kHz, Mode Auto FFT, Count 100/100, and Span 3.0 MHz.</p>

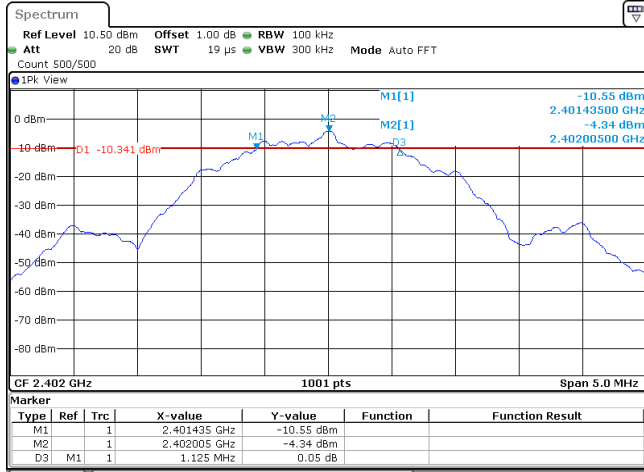
Appendix C: 6dB bandwidth

Type	Channel	6dB Bandwidth(kHz)	Limit (kHz)	Result
1Mbps	00	660.00	≥500	Pass
	19	662.00		
	39	662.00		
2Mbps	00	1125.00	≥500	Pass
	19	1120.00		
	39	1120.00		



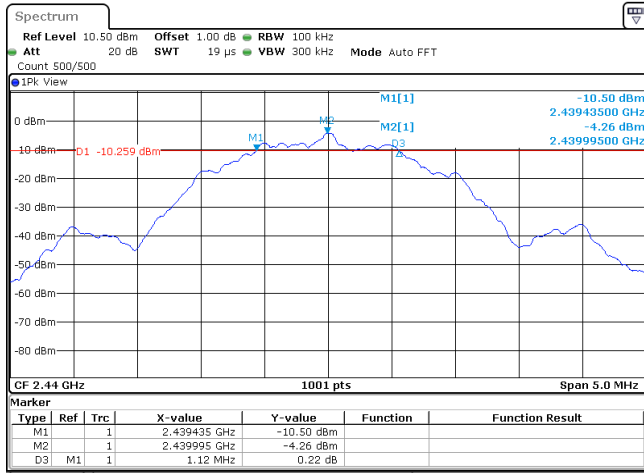
Test rate: 2Mbps

CH00



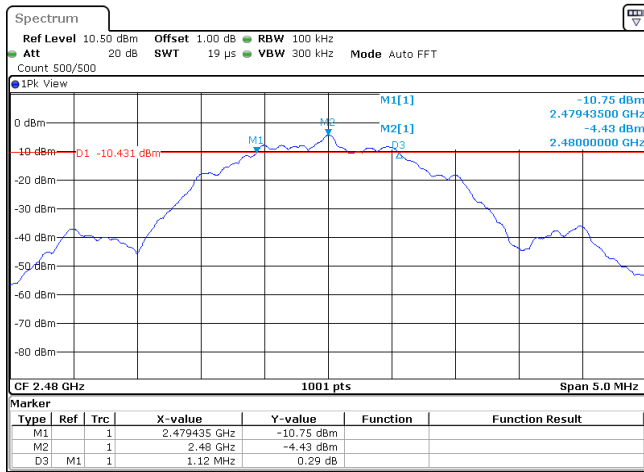
Date: 23 May 2023 09:45:06

CH19



Date: 23 May 2023 09:46:11

CH39



Date: 23 May 2023 09:50:55

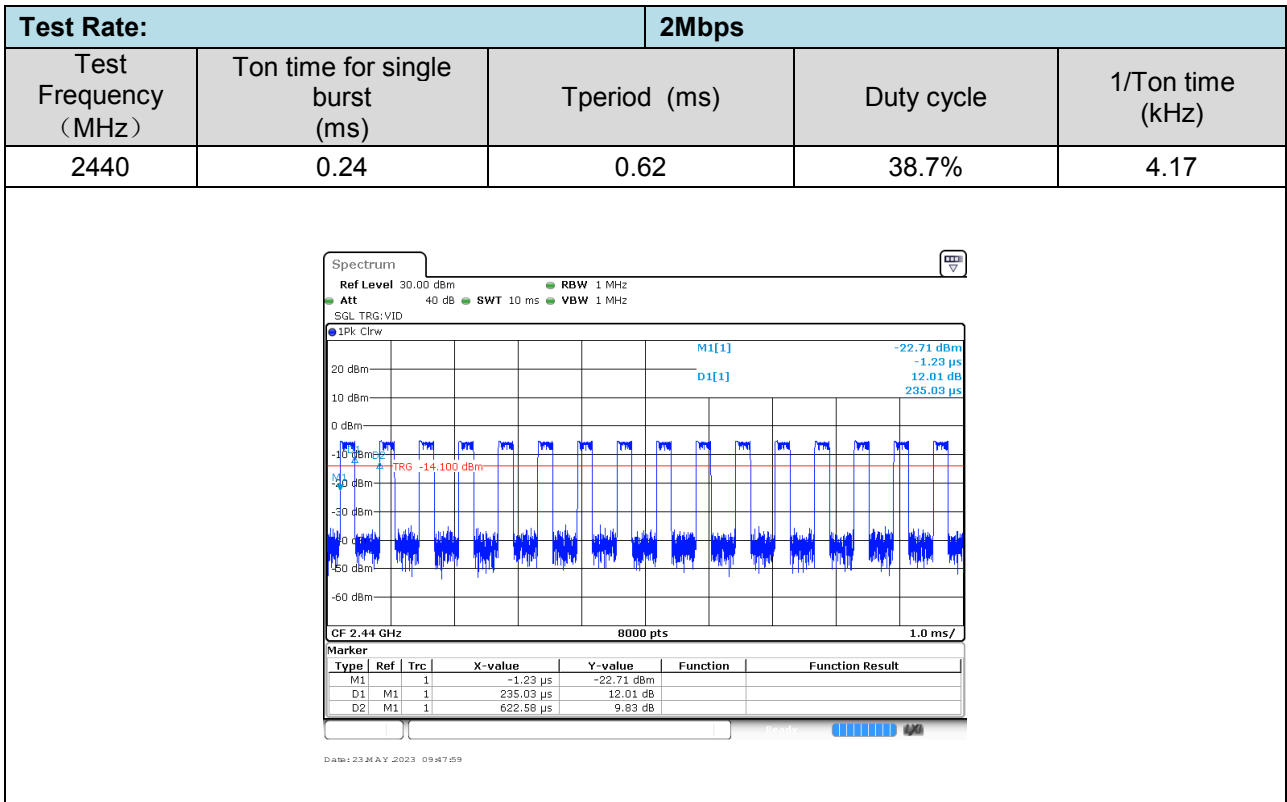
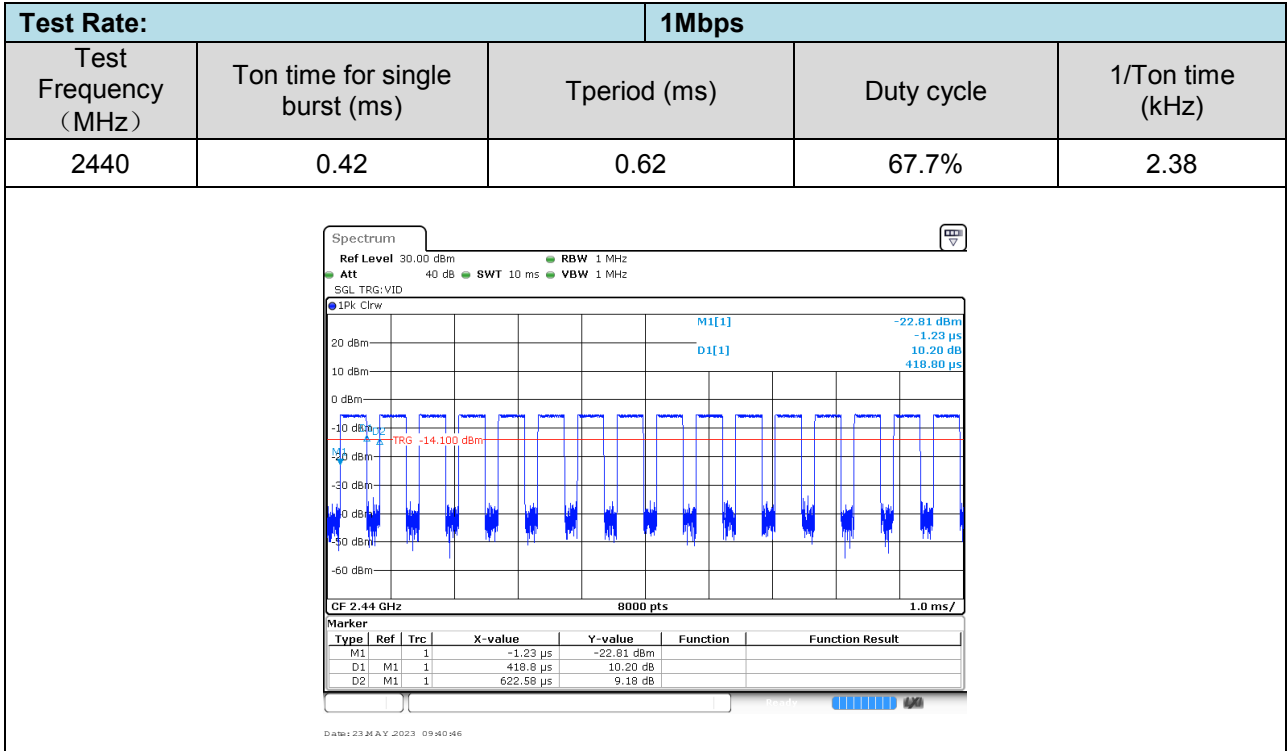
Appendix D: 99% Occupied Bandwidth

Test rate	Channel	99% Occupied Bandwidth(MHz)	Limit (kHz)	Result
1Mbps	00	1.00	-	Pass
	19	1.00		
	39	1.00		
2Mbps	00	2.01	-	Pass
	19	2.01		
	39	2.01		

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] -4.71 dBm 2.40199800 GHz 1.000999001 MHz Occ Bw T1 T2 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] -4.57 dBm 2.44000200 GHz 1.004995005 MHz Occ Bw T1 T2 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] -4.76 dBm 2.48000400 GHz 1.000999001 MHz Occ Bw T1 T2 CF 2.48 GHz 1001 pts Span 2.0 MHz</p>

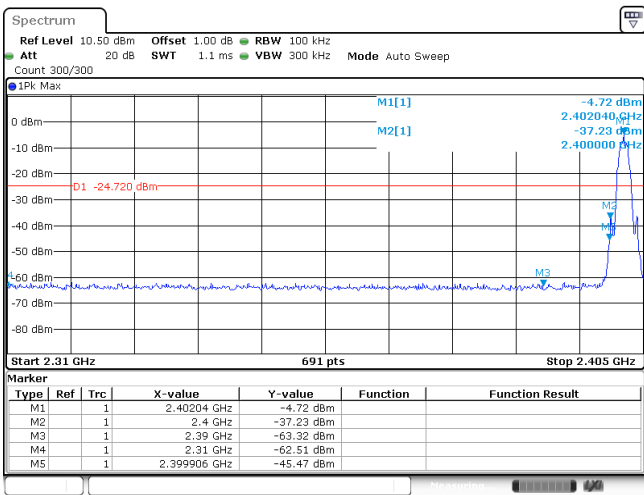
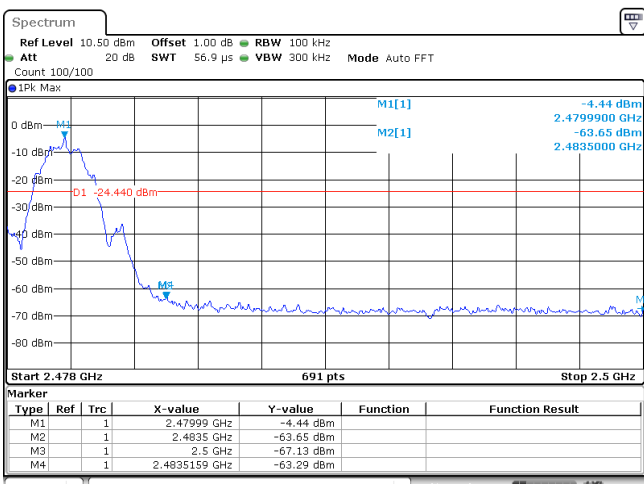
Test rate: 2Mbps	
CH00	
CH19	
CH39	

Appendix E: Duty cycle



Appendix F: Band edge and Spurious Emissions (conducted)

Test Item:	Band edge	Test Rate:	1Mbps																																										
CH00	<p> Spectrum 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 1Pk Max M1[1] -4.77 dBm 2.402040 GHz M2[1] -60.21 dBm 2.400000 GHz D1 -24.770 dBm Start 2.31 GHz 691 pts Stop 2.405 GHz Marker <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>-4.77 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-60.21 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-64.04 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.31 GHz</td> <td>-63.02 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.399906 GHz</td> <td>-60.67 dBm</td> <td></td> <td></td> </tr> </tbody> </table> </p>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40204 GHz	-4.77 dBm			M2	1		2.4 GHz	-60.21 dBm			M3	1		2.39 GHz	-64.04 dBm			M4	1		2.31 GHz	-63.02 dBm			M5	1		2.399906 GHz	-60.67 dBm		
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CH39	<p> Spectrum 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 1Pk Max M1[1] -4.46 dBm 2.479990 GHz M2[1] -66.21 dBm 2.483500 GHz D1 -24.460 dBm Start 2.478 GHz 691 pts Stop 2.5 GHz Marker <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>2.47999 GHz</td> <td>-4.46 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4835 GHz</td> <td>-66.21 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.5 GHz</td> <td>-68.20 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.4846 GHz</td> <td>-64.33 dBm</td> <td></td> <td></td> </tr> </tbody> </table> </p>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.47999 GHz	-4.46 dBm			M2	1		2.4835 GHz	-66.21 dBm			M3	1		2.5 GHz	-68.20 dBm			M4	1		2.4846 GHz	-64.33 dBm									
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Test Item:	Band edge	Test Rate:	2Mbps																																										
CH00	 <p>Spectrum 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> <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>-4.72 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-37.23 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-63.32 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.31 GHz</td> <td>-62.51 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.399906 GHz</td> <td>-45.47 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Start 2.31 GHz 691 pts Stop 2.405 GHz</p>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40204 GHz	-4.72 dBm			M2	1		2.4 GHz	-37.23 dBm			M3	1		2.39 GHz	-63.32 dBm			M4	1		2.31 GHz	-62.51 dBm			M5	1		2.399906 GHz	-45.47 dBm		
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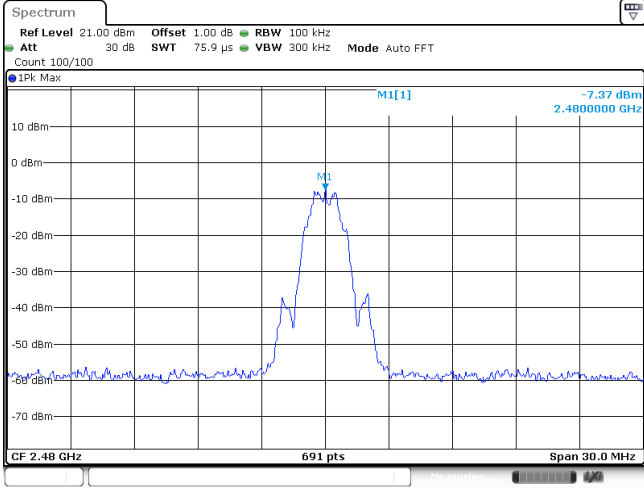
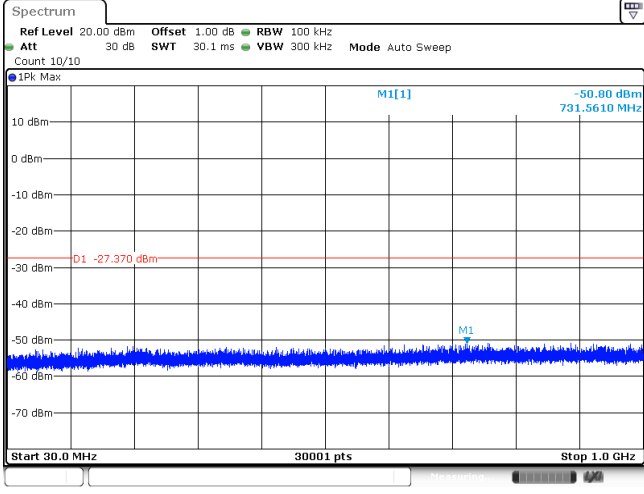
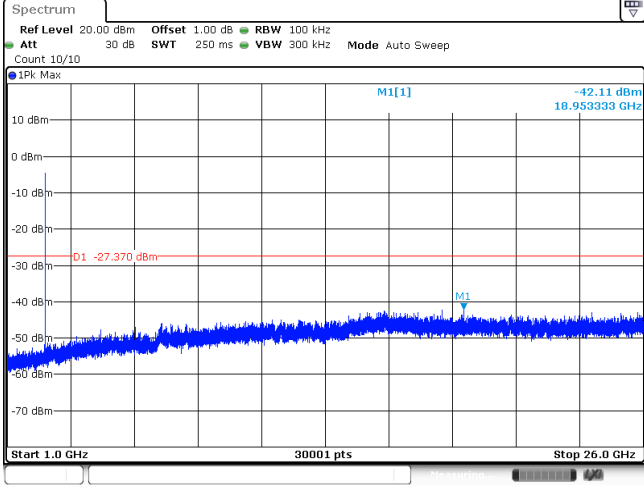
Test Item:	SE	Test Rate:	1Mbps
<p>CH00 Reference level</p>			
<p>CH00 30MHz~1000MHz</p>			
<p>CH00 1GHz~26GHz</p>			

<p>CH19 Reference level</p>	
<p>CH19 30MHz~1000MHz</p>	
<p>CH19 1GHz~26GHz</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] -5.47 dBm 2.480000 GHz CF 2.48 GHz 691 pts Span 30.0 MHz Date: 23 MAY 2023 09:43:48</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] -50.43 dBm 643.5850 MHz D1 -25.470 dBm Start 30.0 MHz 30001 pts Stop 1.0 GHz Date: 23 MAY 2023 09:44:03</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] -42.26 dBm 15.008333 GHz D1 -25.470 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 23 MAY 2023 09:44:18</p>

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

<p>CH19 Reference level</p>	
<p>CH19 30MHz~1000MHz</p>	
<p>CH19 1GHz~26GHz</p>	

<p>CH39 Reference level</p>	 <p>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] -7.37 dBm 2.480000 GHz CF 2.48 GHz 691 pts Span 30.0 MHz Date: 23 MAY 2023 09:51:40</p>
<p>CH39 30MHz~1000MHz</p>	 <p>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] -50.80 dBm 731.5610 MHz D1 -27.370 dBm Start 30.0 MHz 30001 pts Stop 1.0 GHz Date: 23 MAY 2023 09:51:54</p>
<p>CH39 1GHz~26GHz</p>	 <p>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] -42.11 dBm 18.953333 GHz D1 -27.370 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 23 MAY 2023 09:52:10</p>

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