

# APPENDIX REPORT

Project No.	SHT2212046503EW	Radio Specification	2.4GHz Device
Test sample No.	YPHT22120465001	Model No.	ZL600
Start test date	2022-12-23	Finish date	2022-12-23
Temperature	20.2°C	Humidity	31%
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

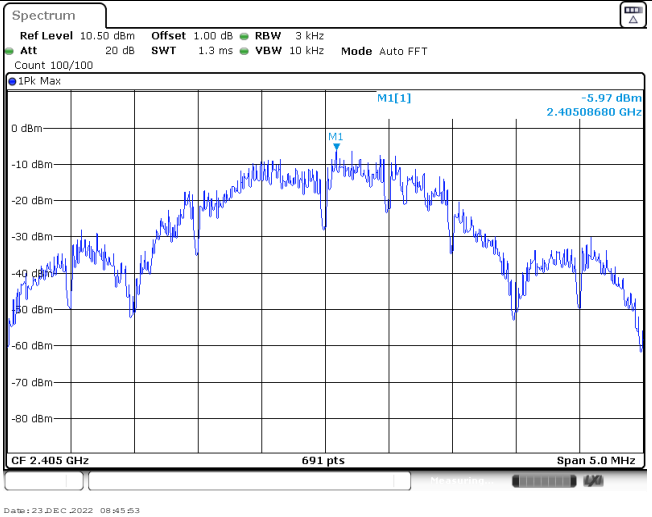
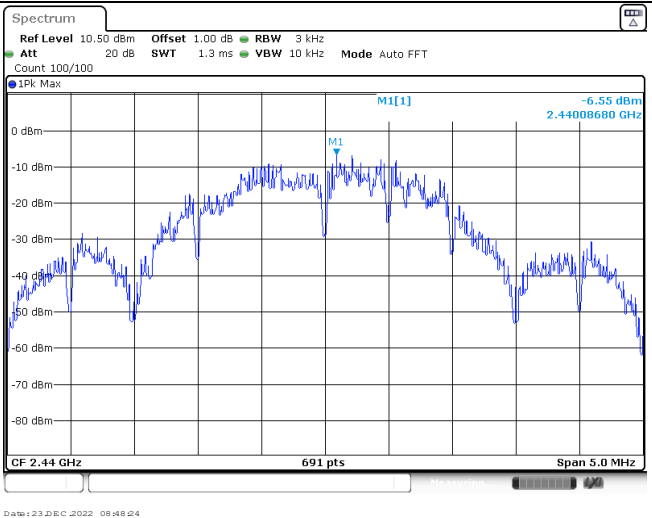
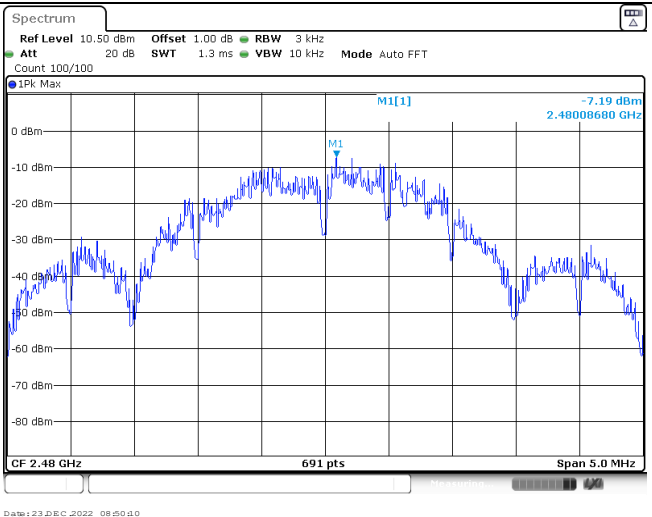
**Appendix A: Peak Output Power**

Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
CH <sub>L</sub>	6.82	6.74	≤ 30.00	Pass
CH <sub>M</sub>	6.44	6.21		
CH <sub>H</sub>	5.60	5.42		

<p>CH<sub>L</sub></p>	<p>Spectrum          Ref Level 10.50 dBm Offset 1.00 dB RBW 3 MHz          Att 20 dB SWT 1 ms VBW 10 MHz Mode Auto Sweep          Count 500/500          IPK View          6.82 dBm          2.4045510 GHz          CF 2.405 GHz 691 pts Span 10.0 MHz          Date: 23 DEC 2022 08:45:28</p>
<p>CH<sub>M</sub></p>	<p>Spectrum          Ref Level 10.50 dBm Offset 1.00 dB RBW 3 MHz          Att 20 dB SWT 1 ms VBW 10 MHz Mode Auto Sweep          Count 500/500          IPK View          6.44 dBm          2.4394790 GHz          CF 2.44 GHz 691 pts Span 10.0 MHz          Date: 23 DEC 2022 08:48:10</p>
<p>CH<sub>H</sub></p>	<p>Spectrum          Ref Level 10.50 dBm Offset 1.00 dB RBW 3 MHz          Att 20 dB SWT 1 ms VBW 10 MHz Mode Auto Sweep          Count 500/500          IPK View          5.60 dBm          2.4794650 GHz          CF 2.48 GHz 691 pts Span 10.0 MHz          Date: 23 DEC 2022 08:49:56</p>

**Appendix B: Power Spectral Density**

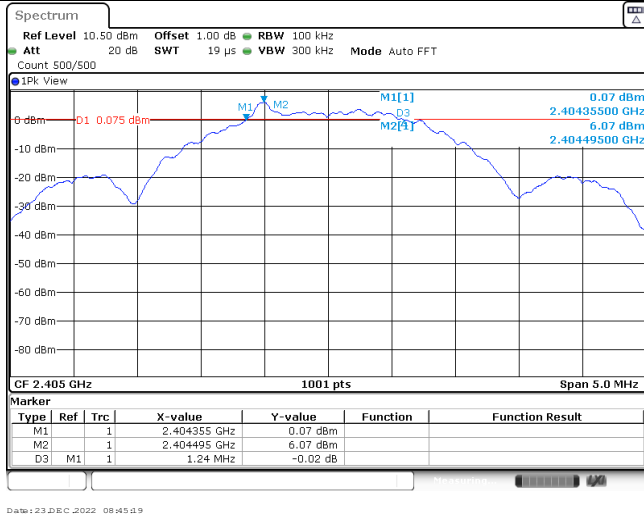
Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
CH <sub>L</sub>	-5.97	≤8.00	Pass
CH <sub>M</sub>	-6.55		
CH <sub>H</sub>	-7.11		

CH <sub>L</sub>	 <p>Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 1.3 ms VBW 10 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -5.97 dBm 2.40508680 GHz CF 2.405 GHz 691 pts Span 5.0 MHz Date: 23 DEC 2022 08:45:53</p>
CH <sub>M</sub>	 <p>Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 1.3 ms VBW 10 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -6.55 dBm 2.44008680 GHz CF 2.44 GHz 691 pts Span 5.0 MHz Date: 23 DEC 2022 08:48:24</p>
CH <sub>H</sub>	 <p>Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 3 kHz Att 20 dB SWT 1.3 ms VBW 10 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -7.19 dBm 2.48008680 GHz CF 2.48 GHz 691 pts Span 5.0 MHz Date: 23 DEC 2022 08:50:10</p>

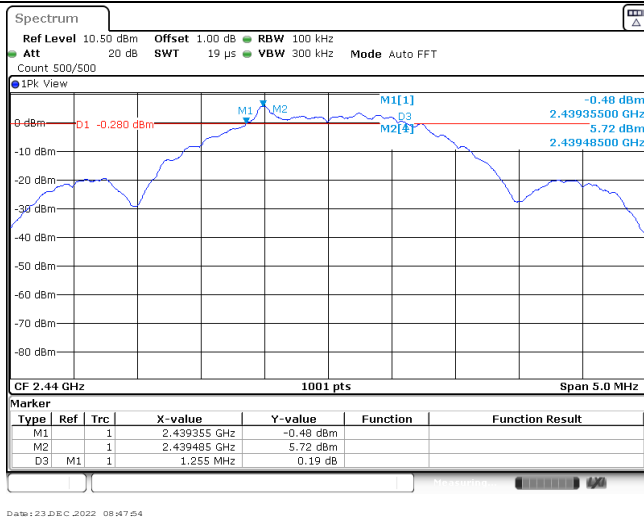
**Appendix C: 6dB bandwidth**

Channel	6dB Bandwidth(kHz)	Limit (kHz)	Result
CH <sub>L</sub>	1240.00	≥500	Pass
CH <sub>M</sub>	1255.00		
CH <sub>H</sub>	1240.00		

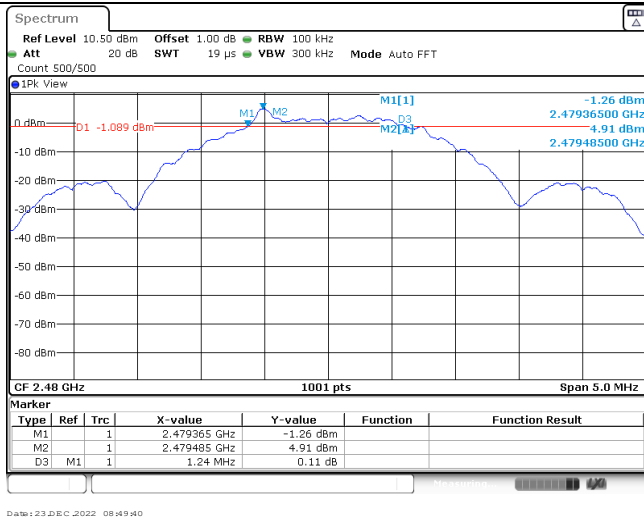
CH<sub>L</sub>



CH<sub>M</sub>



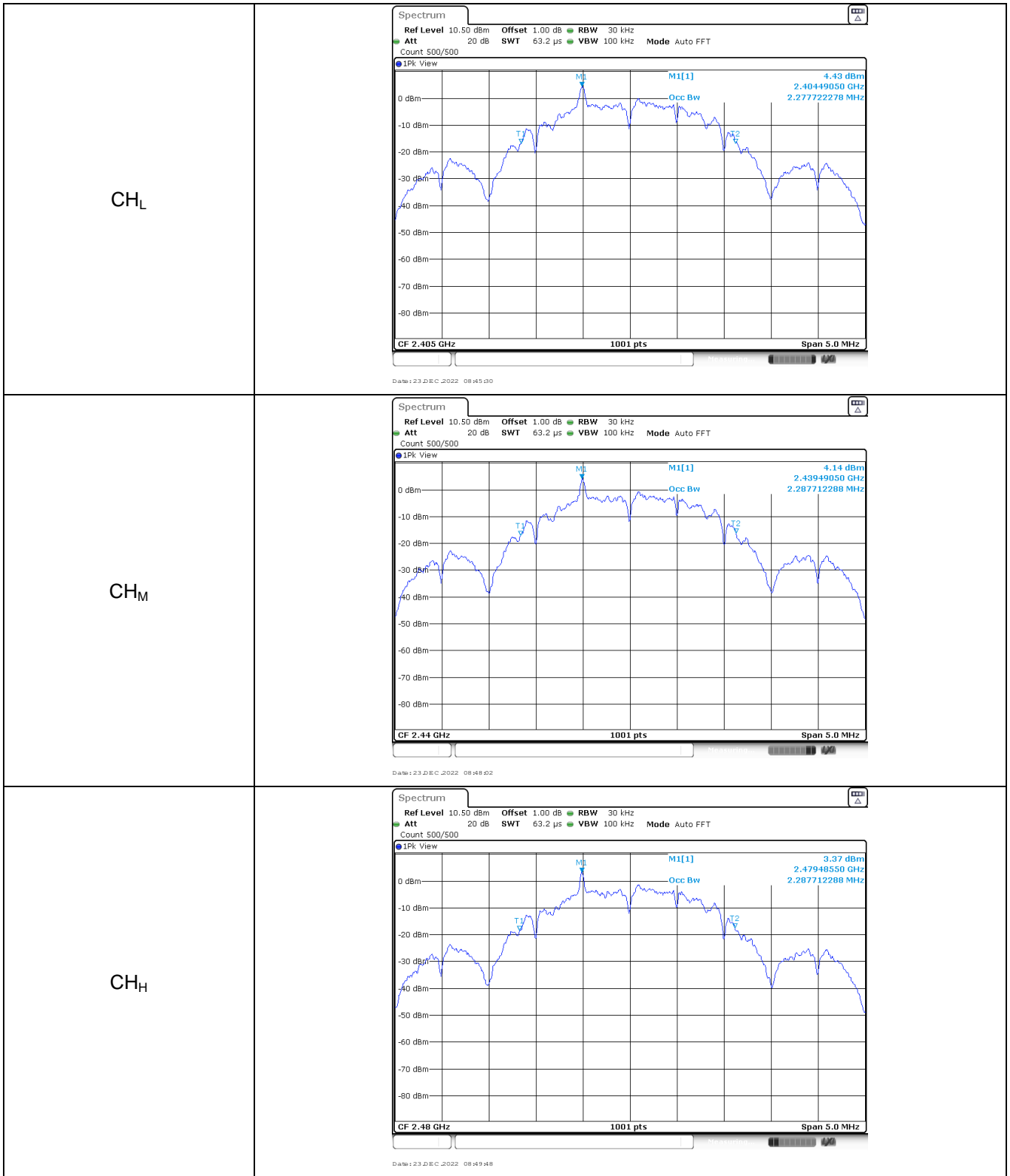
CH<sub>H</sub>



**Appendix D: 99% Occupied Bandwidth**

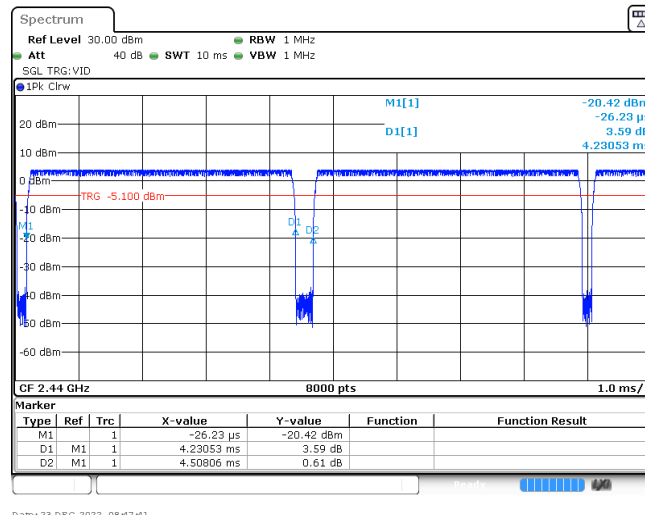
Channel	99% Occupied Bandwidth(MHz)	Limit (kHz)	Result
CH <sub>L</sub>	2.28	-	Pass
CH <sub>M</sub>	2.29		
CH <sub>H</sub>	2.29		



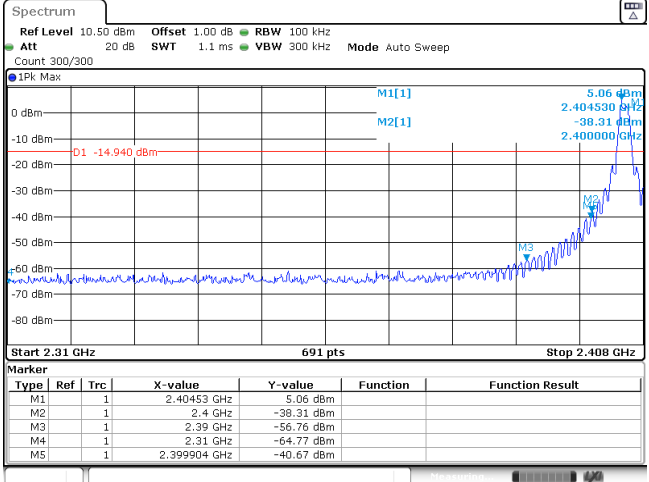
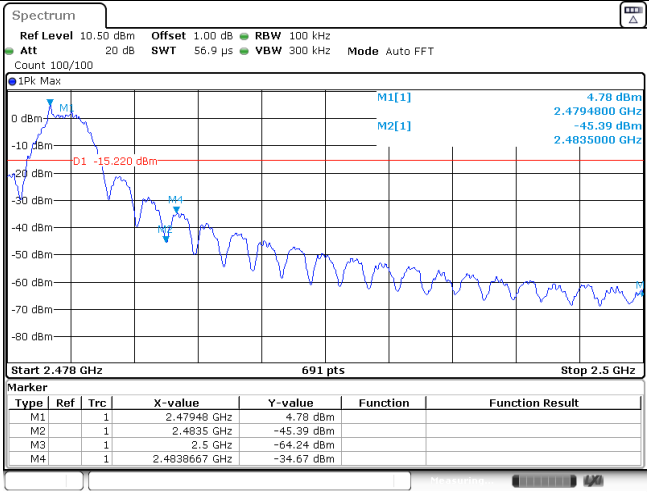


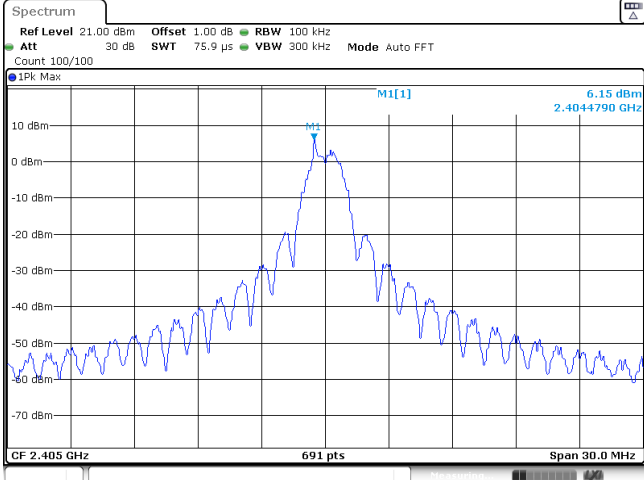
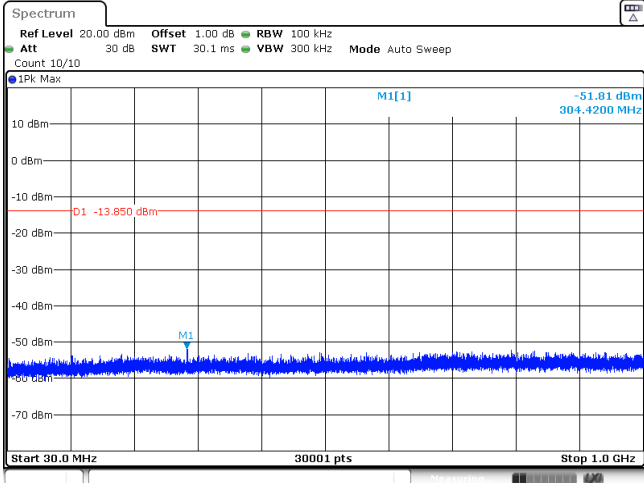
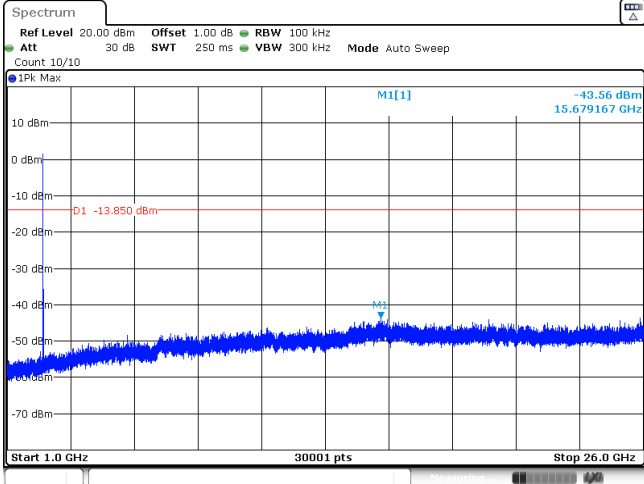
### Appendix E: Duty cycle

Test Frequency (MHz)	T <sub>on</sub> time for single burst (ms)	T <sub>period</sub> (ms)	Duty cycle	1/T <sub>on</sub> time (kHz)
2440	4.23	4.51	93.8%	0.24

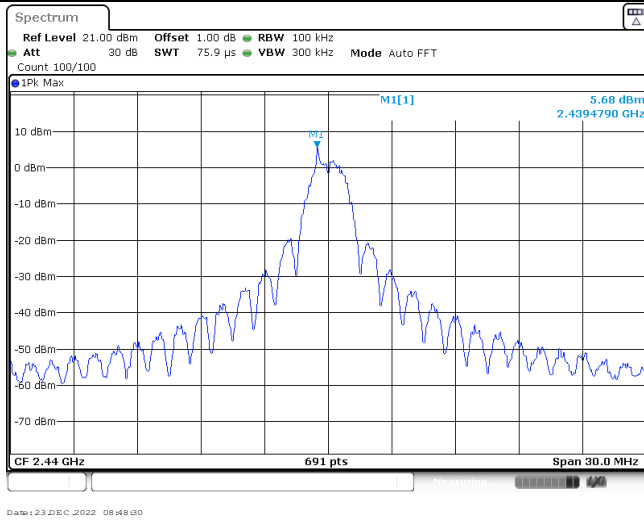


### Appendix F: Band edge and Spurious Emissions (conducted)

Test Item:	Band edge																																																
<p>CH<sub>L</sub></p>	 <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>1Pk Max</p> <table border="1"> <thead> <tr> <th>Marker</th> <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></td> <td>2.40453 GHz</td> <td>5.06 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td></td> <td>2.4 GHz</td> <td>-38.31 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td></td> <td>2.39 GHz</td> <td>-56.76 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td></td> <td>2.31 GHz</td> <td>-64.77 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td></td> <td>2.399904 GHz</td> <td>-40.67 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Start 2.31 GHz 691 pts Stop 2.408 GHz</p> <p>Date: 23 DEC 2022 08:46:02</p>	Marker	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1			2.40453 GHz	5.06 dBm			M2	1			2.4 GHz	-38.31 dBm			M3	1			2.39 GHz	-56.76 dBm			M4	1			2.31 GHz	-64.77 dBm			M5	1			2.399904 GHz	-40.67 dBm		
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<p>CH<sub>H</sub></p>	 <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>1Pk Max</p> <table border="1"> <thead> <tr> <th>Marker</th> <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></td> <td>2.47948 GHz</td> <td>4.78 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td></td> <td>2.4835 GHz</td> <td>-45.39 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td></td> <td>2.5 GHz</td> <td>-64.24 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td></td> <td>2.4838667 GHz</td> <td>-34.67 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Start 2.478 GHz 691 pts Stop 2.5 GHz</p> <p>Date: 23 DEC 2022 08:50:19</p>	Marker	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1			2.47948 GHz	4.78 dBm			M2	1			2.4835 GHz	-45.39 dBm			M3	1			2.5 GHz	-64.24 dBm			M4	1			2.4838667 GHz	-34.67 dBm										
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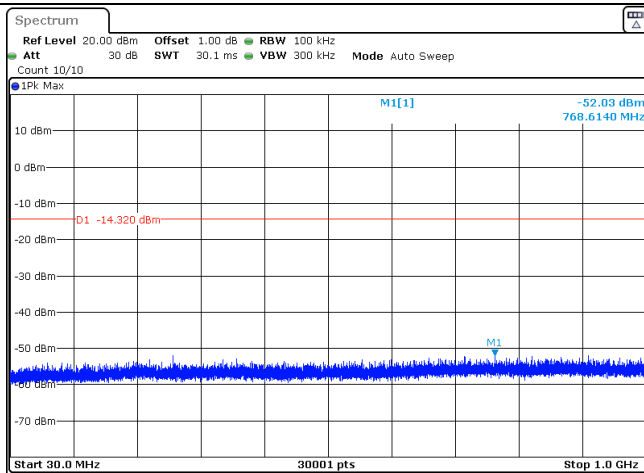
Test Item:	SE
<p>CH<sub>L</sub> Reference level</p>	 <p>Spectrum</p> <p>Ref Level 21.00 dBm Offset 1.00 dB RBW 100 kHz          Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT          Count 100/100</p> <p>1Pk Max</p> <p>M1[1] 6.15 dBm 2.4044790 GHz</p> <p>CF 2.405 GHz 691 pts Span 30.0 MHz</p> <p>Date: 23 DEC 2022 08:46:09</p>
<p>CH<sub>L</sub> 30MHz~1000MHz</p>	 <p>Spectrum</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</p> <p>1Pk Max</p> <p>M1[1] -51.81 dBm 304.4200 MHz</p> <p>D1 -13.850 dBm</p> <p>Start 30.0 MHz 30001 pts Stop 1.0 GHz</p> <p>Date: 23 DEC 2022 08:46:24</p>
<p>CH<sub>L</sub> 1GHz~26GHz</p>	 <p>Spectrum</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</p> <p>1Pk Max</p> <p>M1[1] -43.56 dBm 15.679167 GHz</p> <p>D1 -13.850 dBm</p> <p>Start 1.0 GHz 30001 pts Stop 26.0 GHz</p> <p>Date: 23 DEC 2022 08:46:39</p>

CH<sub>M</sub>  
Reference level



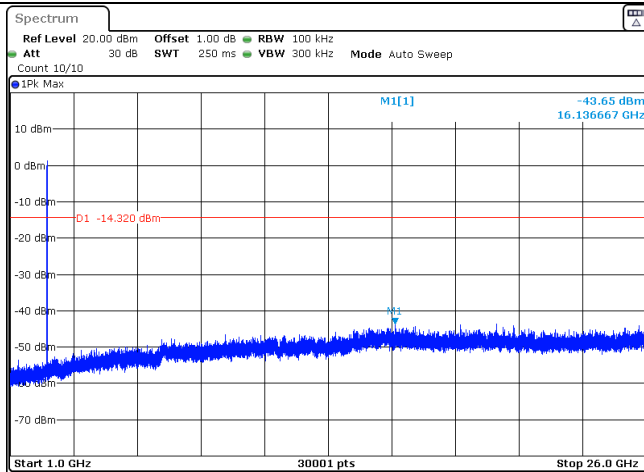
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CH<sub>M</sub>  
30MHz~1000MHz



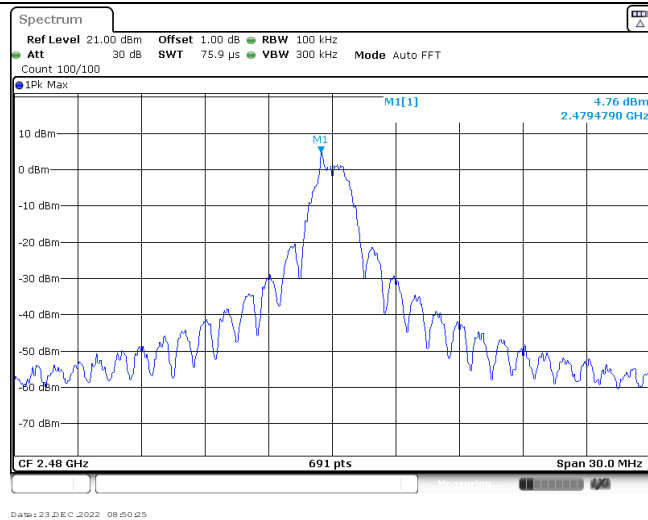
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CH<sub>M</sub>  
1GHz~26GHz



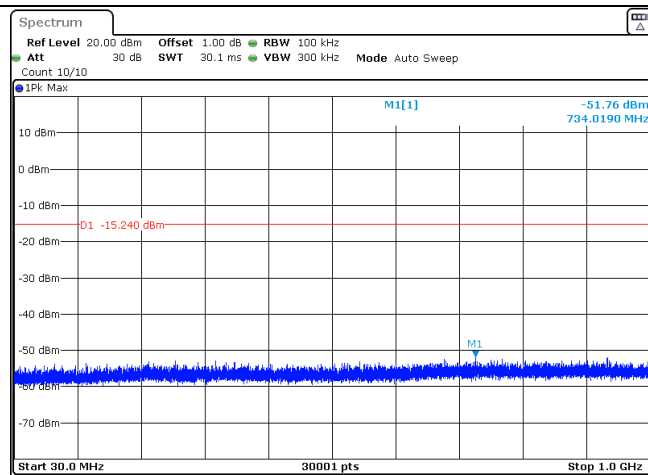
Date: 23 DEC 2022 08:49:00

CH<sub>H</sub>  
Reference level



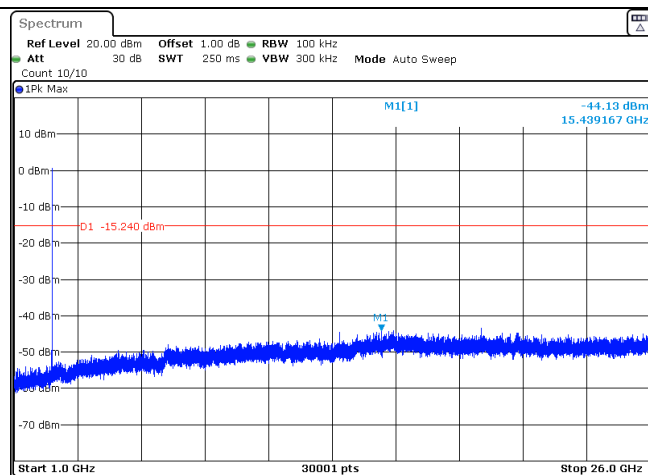
Date: 23 DEC 2022 08:50:25

CH<sub>H</sub>  
30MHz~1000MHz



Date: 23 DEC 2022 08:50:40

CH<sub>H</sub>  
1GHz~26GHz



Date: 23 DEC 2022 08:50:55

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