

# APPENDIX REPORT

Project No.	SHT2011030001EW	Radio Specification	Bluetooth BLE
Test sample No.	YPHT20110300005	Model No.	50 PRO
Start test date	2020/11/11	Finish date	2020/11/11
Temperature	25°C	Humidity	50%
Test Engineer	Qizhi Zhang	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**

Type	Channel	Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
BT-BLE	00	1.76	1.75	≤ 30.00	Pass
	19	1.41	1.40		
	39	0.55	0.53		

**Appendix B: Power Spectral Density**

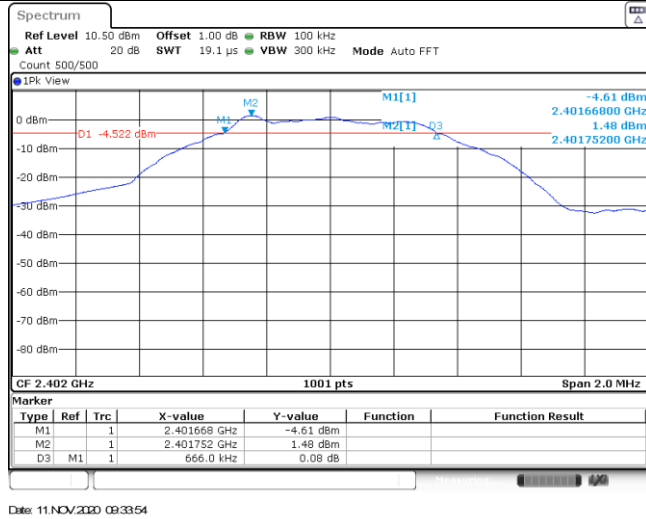
Type	Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
BT-BLE	00	-14.13	≤8.00	Pass
	19	-14.48		
	39	-15.36		

<p>CH00</p>	<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</p> <p>IPK Max M1[1] -14.13 dBm 2.40175110 GHz</p> <p>CF 2.402 GHz 691 pts Span 1.0 MHz</p> <p>Date: 11.NOV.2020 09:34:44</p>
<p>CH19</p>	<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</p> <p>IPK Max M1[1] -14.48 dBm 2.43975110 GHz</p> <p>CF 2.44 GHz 691 pts Span 1.0 MHz</p> <p>Date: 11.NOV.2020 09:41:28</p>
<p>CH39</p>	<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</p> <p>IPK Max M1[1] -15.36 dBm 2.47975110 GHz</p> <p>CF 2.48 GHz 691 pts Span 1.0 MHz</p> <p>Date: 11.NOV.2020 09:44:38</p>

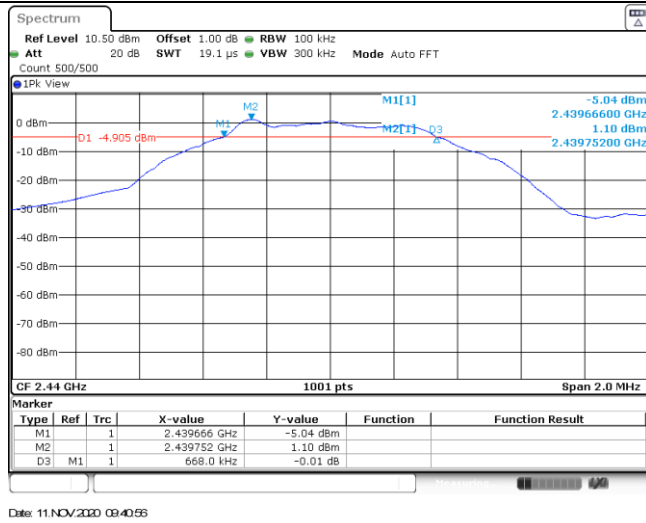
**Appendix C: 6dB bandwidth**

Type	Channel	6dB Bandwidth(kHz)	Limit (kHz)	Result
BT-BLE	00	666.00	≥500	Pass
	19	668.00		
	39	666.00		

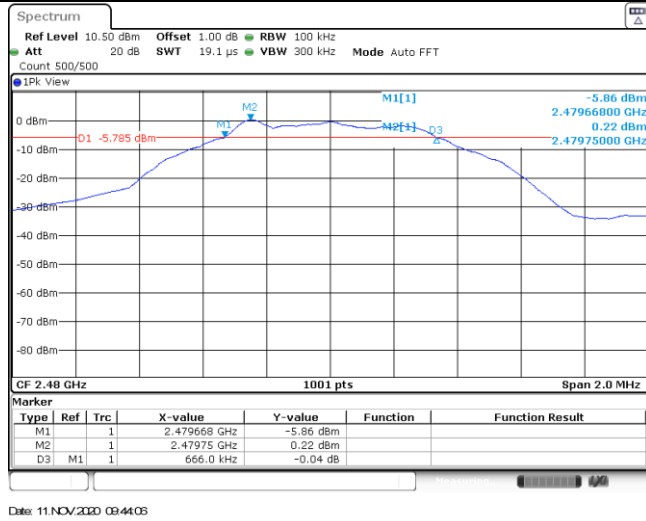
CH00



CH19



CH39



**Appendix D: 99% Occupied Bandwidth**

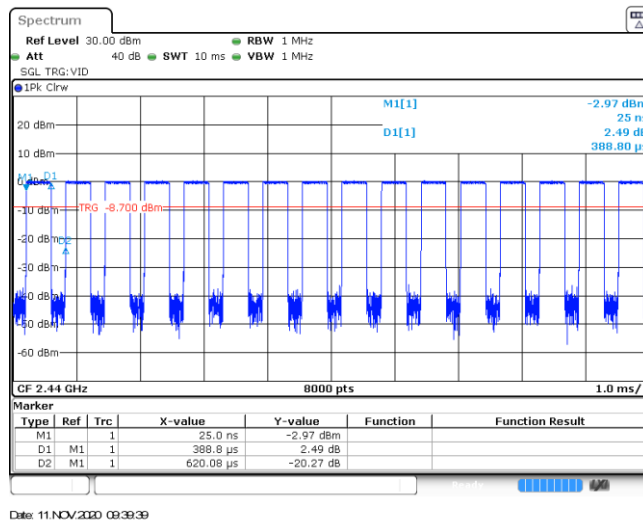
Type	Channel	99% Occupied Bandwidth(MHz)	Limit (kHz)	Result
BT-BLE	00	1.02	-	Pass
	19	1.02		
	39	1.02		

<p>CH00</p>	<p>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</p> <p>IPK View</p> <p>M1[1] -1.49 dBm          2.40175220 GHz          1.016983017 MHz</p> <p>CF 2.402 GHz 1001 pts Span 2.0 MHz</p> <p>Date: 11.NOV.2020 09:34:05</p>
<p>CH19</p>	<p>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</p> <p>IPK View</p> <p>M1[1] -1.88 dBm          2.43975420 GHz          1.020979021 MHz</p> <p>CF 2.44 GHz 1001 pts Span 2.0 MHz</p> <p>Date: 11.NOV.2020 09:41:04</p>
<p>CH39</p>	<p>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</p> <p>IPK View</p> <p>M1[1] -2.75 dBm          2.47975220 GHz          1.020979021 MHz</p> <p>CF 2.48 GHz 1001 pts Span 2.0 MHz</p> <p>Date: 11.NOV.2020 09:44:14</p>



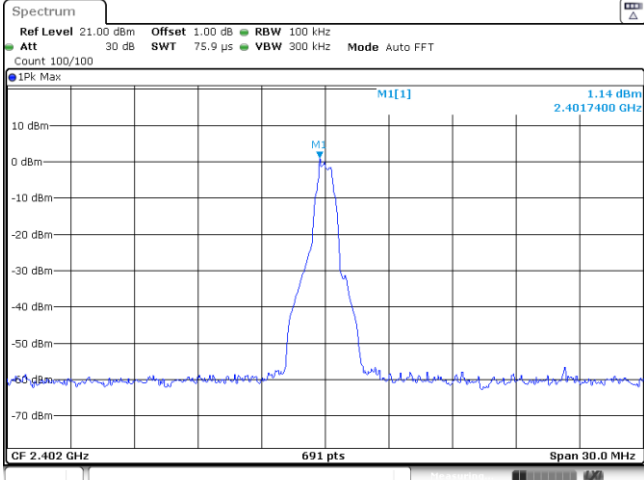
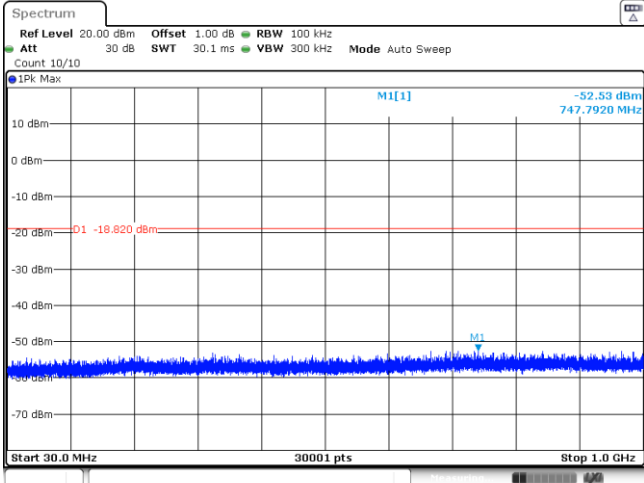
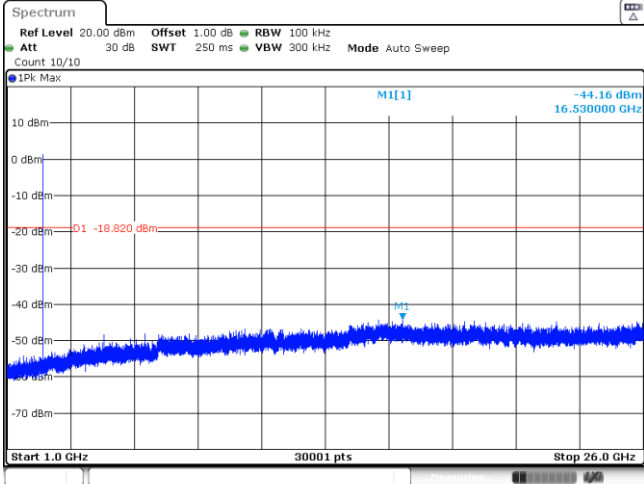
### Appendix E: Duty cycle

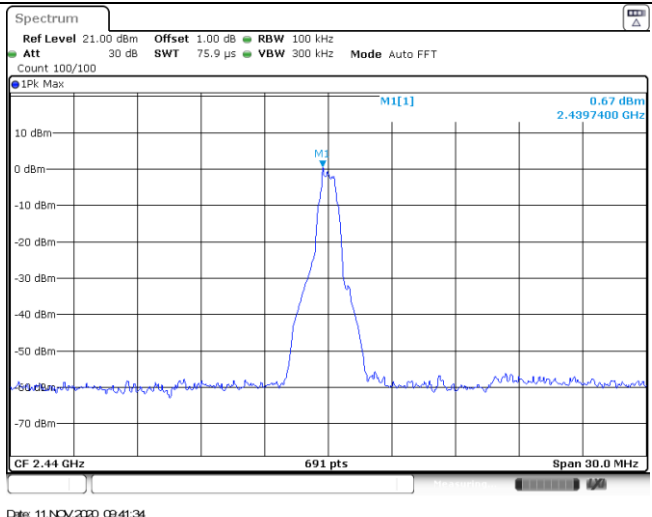
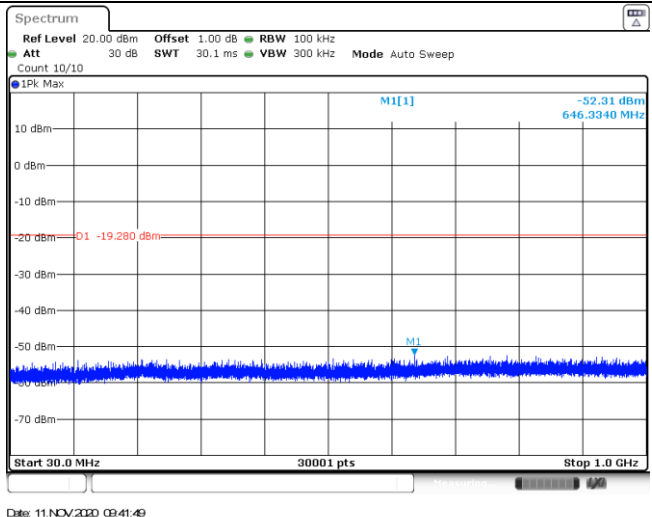
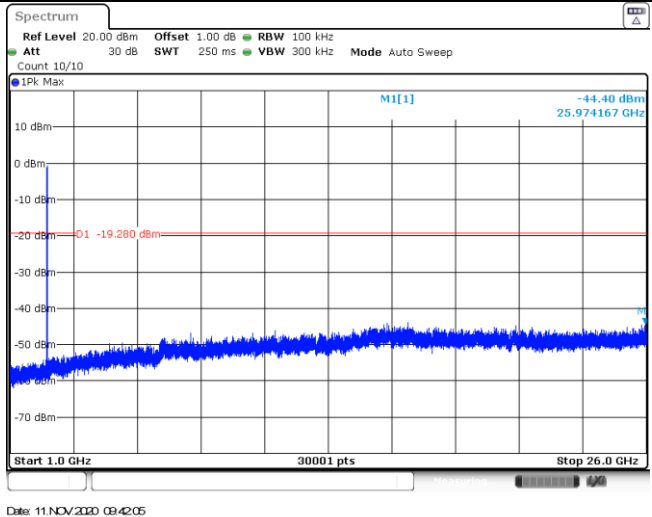
Test Frequency (MHz)	T <sub>on</sub> time for single burst (ms)	T <sub>period</sub> (ms)	Duty cycle	1/T <sub>on</sub> time (kHz)
2440	0.39	0.62	62.9%	2.6



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

Test Item:	Band edge																																																
<p style="text-align: center;">CH00</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> <p>0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm</p> <p>Start 2.31 GHz 691 pts Stop 2.405 GHz</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>2.40177 GHz</td> <td>-1.19 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td></td> <td>2.4 GHz</td> <td>-55.88 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td></td> <td>2.39 GHz</td> <td>-63.81 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td></td> <td>2.31 GHz</td> <td>-65.11 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td></td> <td>2.35008 GHz</td> <td>-61.64 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 11.NOV.2020 09:35:42</p>	Marker	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1			2.40177 GHz	-1.19 dBm			M2	1			2.4 GHz	-55.88 dBm			M3	1			2.39 GHz	-63.81 dBm			M4	1			2.31 GHz	-65.11 dBm			M5	1			2.35008 GHz	-61.64 dBm		
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<p style="text-align: center;">CH39</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> <p>0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm</p> <p>Start 2.478 GHz 691 pts Stop 2.5 GHz</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>2.479767 GHz</td> <td>0.18 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td></td> <td>2.4835 GHz</td> <td>-62.78 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td></td> <td>2.5 GHz</td> <td>-69.47 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td></td> <td>2.4835159 GHz</td> <td>-64.06 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 11.NOV.2020 09:44:48</p>	Marker	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1			2.479767 GHz	0.18 dBm			M2	1			2.4835 GHz	-62.78 dBm			M3	1			2.5 GHz	-69.47 dBm			M4	1			2.4835159 GHz	-64.06 dBm										
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Test Item:	SE
<p>CH00 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 <math>\mu</math>s VBW 300 kHz Mode Auto FFT Count 100/100</p> <p>1Pk Max</p> <p>M1[1] 1.14 dBm 2.4017400 GHz</p> <p>CF 2.402 GHz 691 pts Span 30.0 MHz</p> <p>Date: 11.NOV.2020 09:35:50</p>
<p>CH00 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] -52.53 dBm 747.7920 MHz</p> <p>D1 -18.820 dBm</p> <p>Start 30.0 MHz 30001 pts Stop 1.0 GHz</p> <p>Date: 11.NOV.2020 09:36:05</p>
<p>CH00 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] -44.16 dBm 16.530000 GHz</p> <p>D1 -18.820 dBm</p> <p>Start 1.0 GHz 30001 pts Stop 26.0 GHz</p> <p>Date: 11.NOV.2020 09:36:21</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              0.67 dBm              2.4397400 GHz              CF 2.44 GHz 691 pts Span 30.0 MHz              Date: 11.NOV.2020 09:41:34</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              -52.31 dBm              646.3340 MHz              -19.280 dBm              Start 30.0 MHz 30001 pts Stop 1.0 GHz              Date: 11.NOV.2020 09:41:49</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              -44.40 dBm              25.974167 GHz              -19.280 dBm              Start 1.0 GHz 30001 pts Stop 26.0 GHz              Date: 11.NOV.2020 09:42:05</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 <math>\mu</math>s VBW 300 kHz Mode Auto FFT          Count 100/100          IPK Max          0.12 dBm          2.4797400 GHz          CF 2.48 GHz 691 pts Span 30.0 MHz          Date: 11.NOV.2020 09:44:54</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          -52.54 dBm          718.5320 MHz          -20 dBm -19.880 dBm          Start 30.0 MHz 30001 pts Stop 1.0 GHz          Date: 11.NOV.2020 09:45:10</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          -44.46 dBm          15.555000 GHz          -20 dBm -19.880 dBm          Start 1.0 GHz 30001 pts Stop 26.0 GHz          Date: 11.NOV.2020 09:45:26</p>

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