

Test Setup:

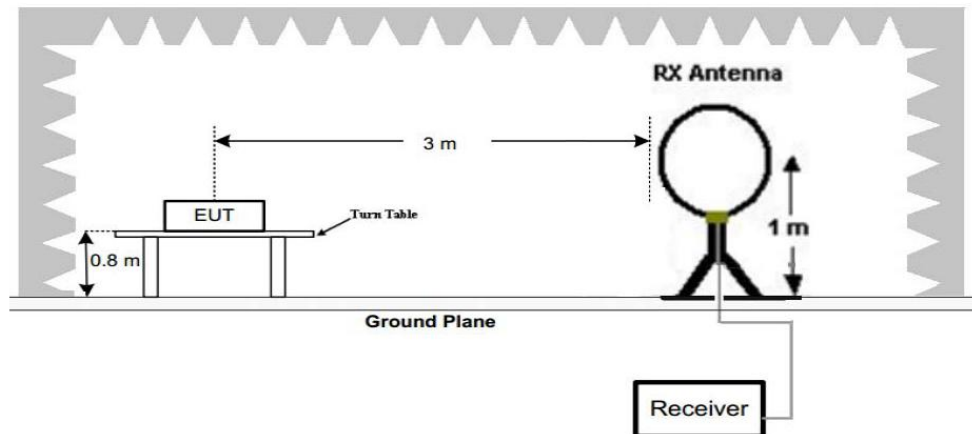


Figure 1. Below 30MHz

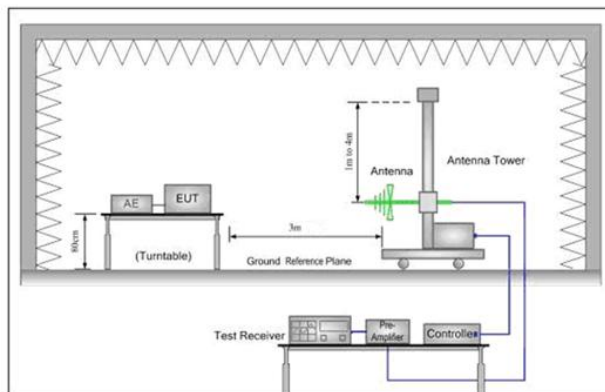


Figure 2. 30MHz to 1GHz

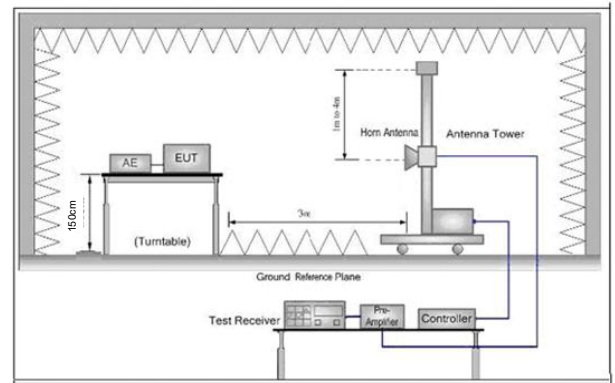


Figure 3. Above 1 GHz

Test Procedure:

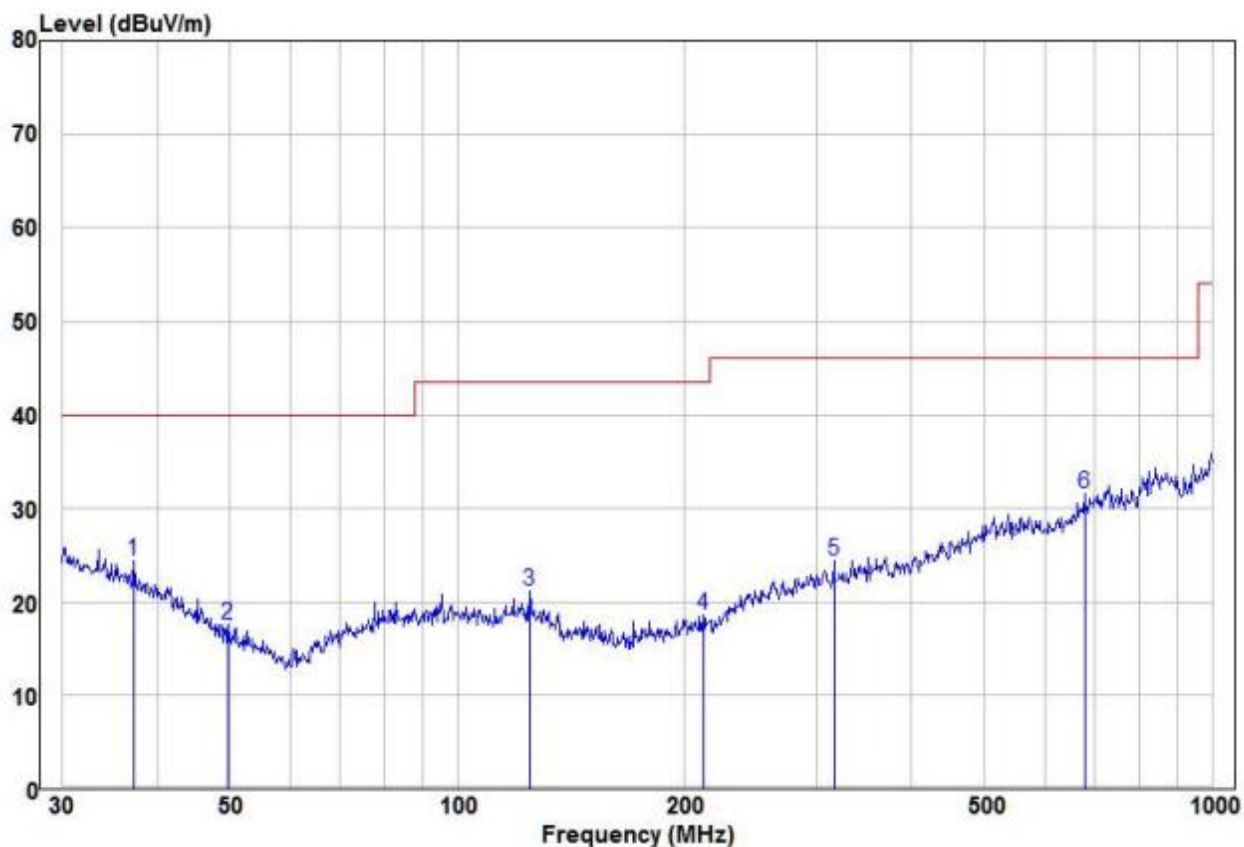
- a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
Note: For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both

	<p>horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>g. Test the EUT in the lowest channel (2402MHz),the middle channel (2440MHz),the Highest channel (2480MHz)</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p>
Exploratory Test Mode:	<p>Transmitting with GFSK modulation.</p> <p>Transmitting mode.</p>
Final Test Mode:	<p>Through Pre-scan, find the 1Mbps of data type and GFSK modulation is the worst case.</p> <p>For below 1GHz part, through pre-scan, the worst case is the highest channel.</p> <p>Only the worst case is recorded in the report.</p>
Test Results:	Pass

Radiated Emission below 1GHz

30MHz~1GHz, the worst case

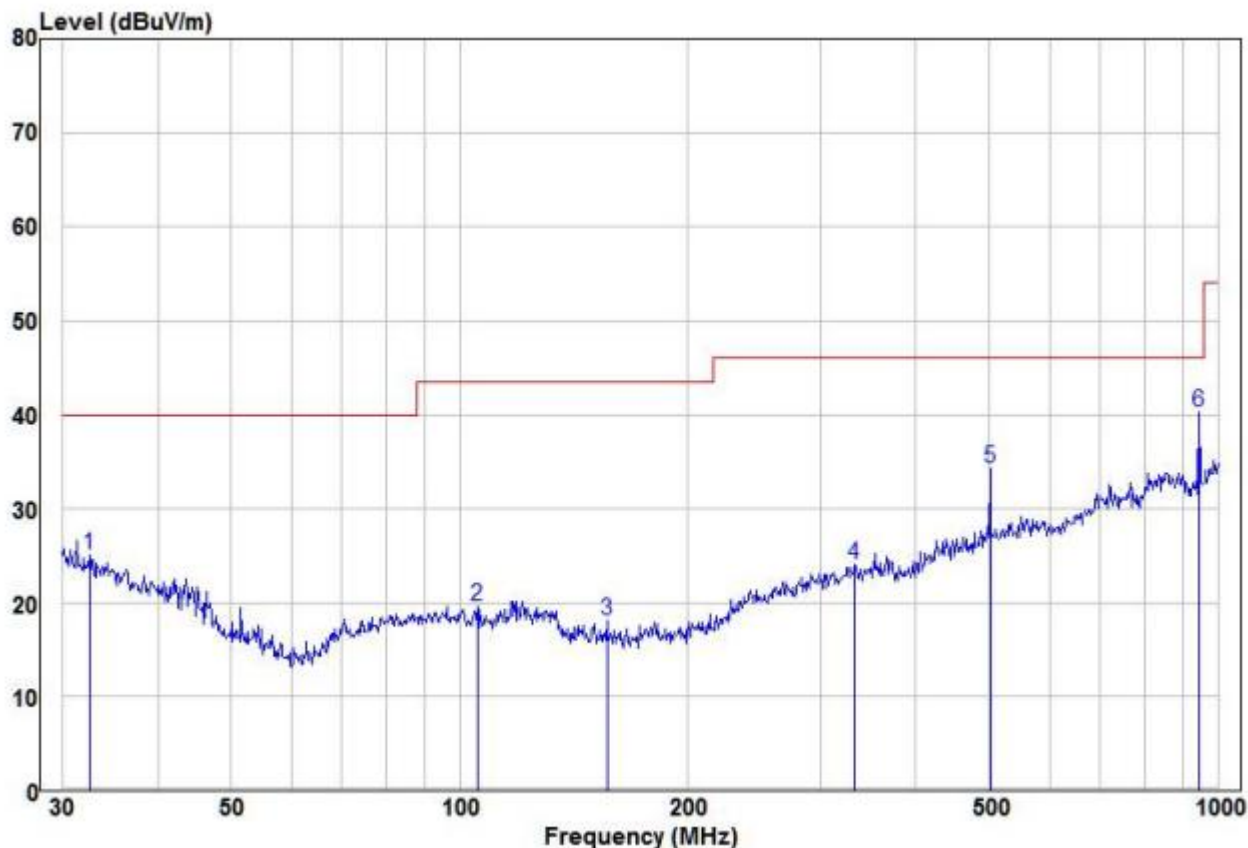
Test mode: Transmitting mode Horizontal



	Freq	Read		Limit	Over			
	MHz	Level	Factor	Line	Limit	Remark	Pol/Phase	
		dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	37.29	10.54	13.78	24.32	40.00	-15.68 Peak	HORIZONTAL	
2	49.71	9.31	8.23	17.54	40.00	-22.46 Peak	HORIZONTAL	
3	124.57	10.67	10.53	21.20	43.50	-22.30 Peak	HORIZONTAL	
4	211.53	9.66	8.86	18.52	43.50	-24.98 Peak	HORIZONTAL	
5	315.48	10.27	14.11	24.38	46.00	-21.62 Peak	HORIZONTAL	
6 pp	677.58	11.32	20.18	31.50	46.00	-14.50 Peak	HORIZONTAL	

30MHz~1GHz, the worst case

Test mode:	Transmitting mode	Vertical
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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	32.52	9.84	15.25	25.09	40.00	-14.91	Peak	VERTICAL
2	105.64	9.27	10.38	19.65	43.50	-23.85	Peak	VERTICAL
3	156.46	10.05	8.04	18.09	43.50	-25.41	Peak	VERTICAL
4	332.52	9.60	14.53	24.13	46.00	-21.87	Peak	VERTICAL
5	501.18	16.07	18.29	34.36	46.00	-11.64	Peak	VERTICAL
6 pp	945.44	16.59	23.62	40.21	46.00	-5.79	Peak	VERTICAL

Transmitter Emission above 1GHz

Worse case mode:		GFSK(1Mbps)		Test channel:		Lowest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
2390	53.30	-9.2	44.10	74	-29.90	Peak	H
2400	55.59	-9.39	46.20	74	-27.80	Peak	H
4804	52.52	-4.33	48.19	74	-25.81	Peak	H
7206	49.24	1.01	50.25	74	-23.75	Peak	H
2390	52.51	-9.2	43.31	74	-30.69	Peak	V
2400	52.57	-9.39	43.18	74	-30.82	Peak	V
4804	52.92	-4.33	48.59	74	-25.41	Peak	V
7206	50.47	1.01	51.48	74	-22.52	Peak	V

Worse case mode:		GFSK(1Mbps)		Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
4880	50.95	-4.11	46.84	74	-27.16	peak	H
7320	48.93	1.51	50.44	74	-23.56	peak	H
4880	51.56	-4.11	47.45	74	-26.55	peak	V
7320	50.79	1.51	52.30	74	-21.70	peak	V

Worse case mode:		GFSK(1Mbps)		Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
2483.5	55.63	-9.29	46.34	74	-27.66	Peak	H
4960	53.03	-4.04	48.99	74	-25.01	Peak	H
7440	48.74	1.57	50.31	74	-23.69	Peak	H
2483.5	57.21	-9.29	47.92	74	-26.08	Peak	V
4960	49.40	-4.04	45.36	74	-28.64	Peak	V
7440	49.56	1.57	51.13	74	-22.87	Peak	V

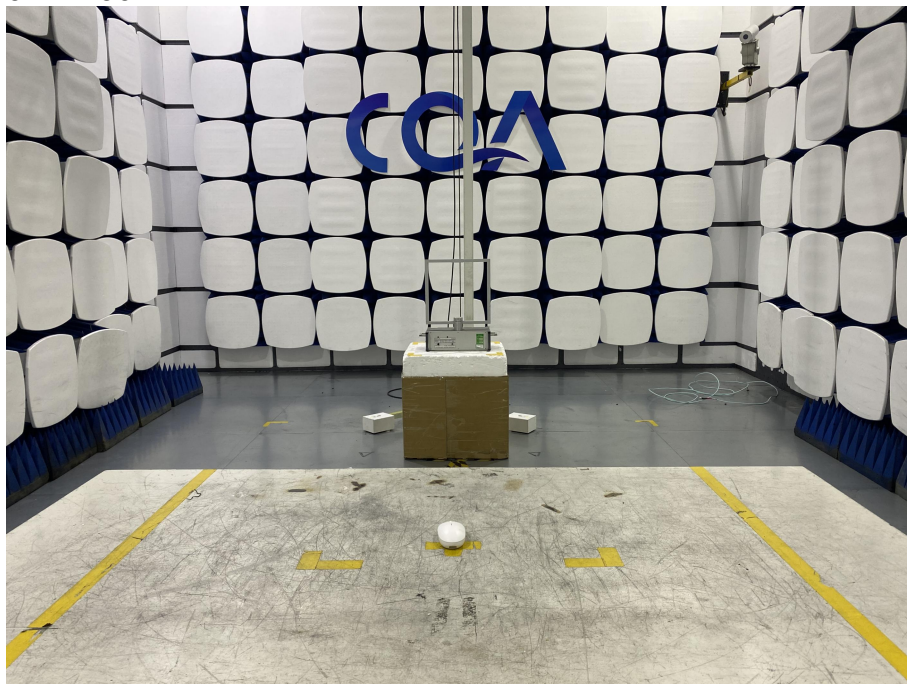
Remark:

- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- Scan from 9kHz to 25GHz, the disturbance above 10GHz and below 30MHz was very low. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

6 Photographs - EUT Test Setup

6.1 Radiated Spurious Emission

9kHz~30MHz:



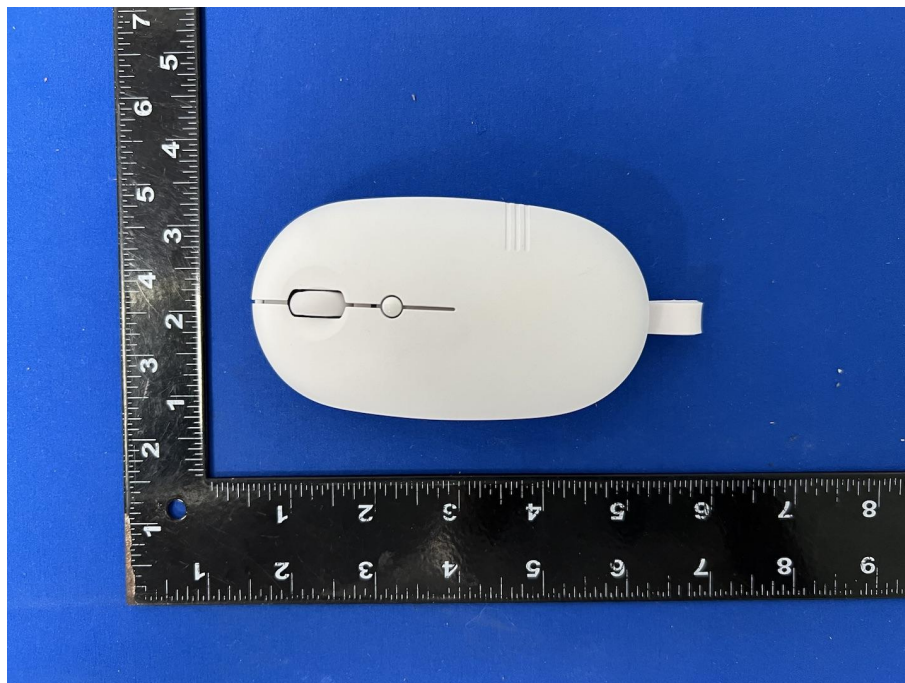
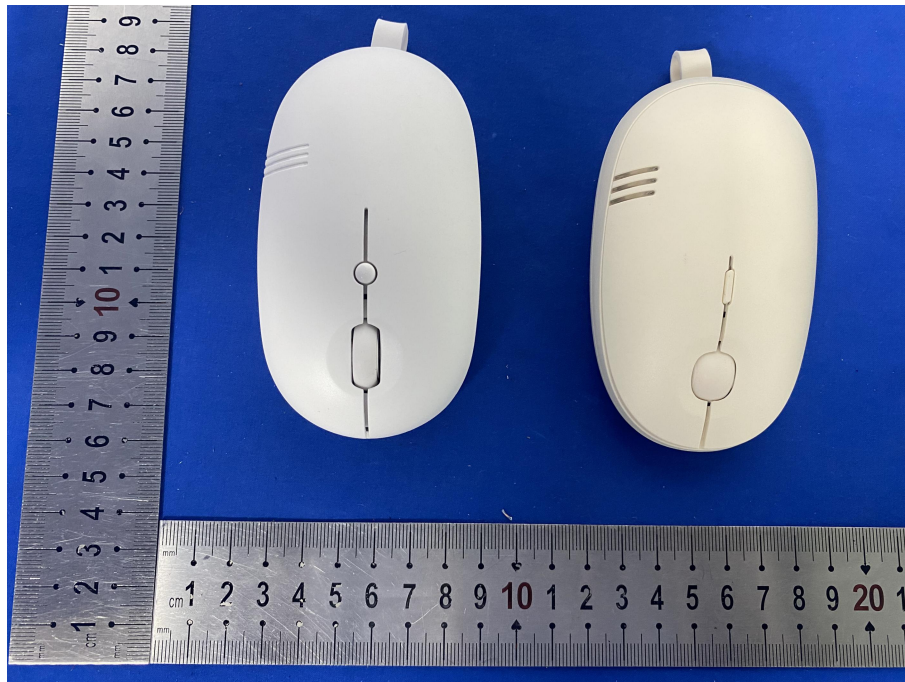
30MHz~1GHz:



Above 1GHz:

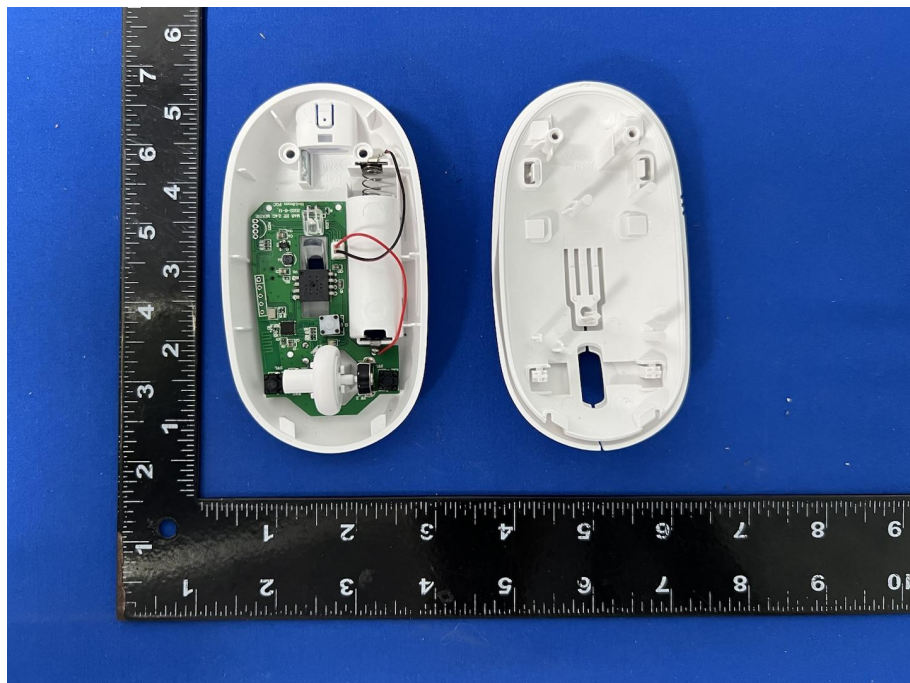


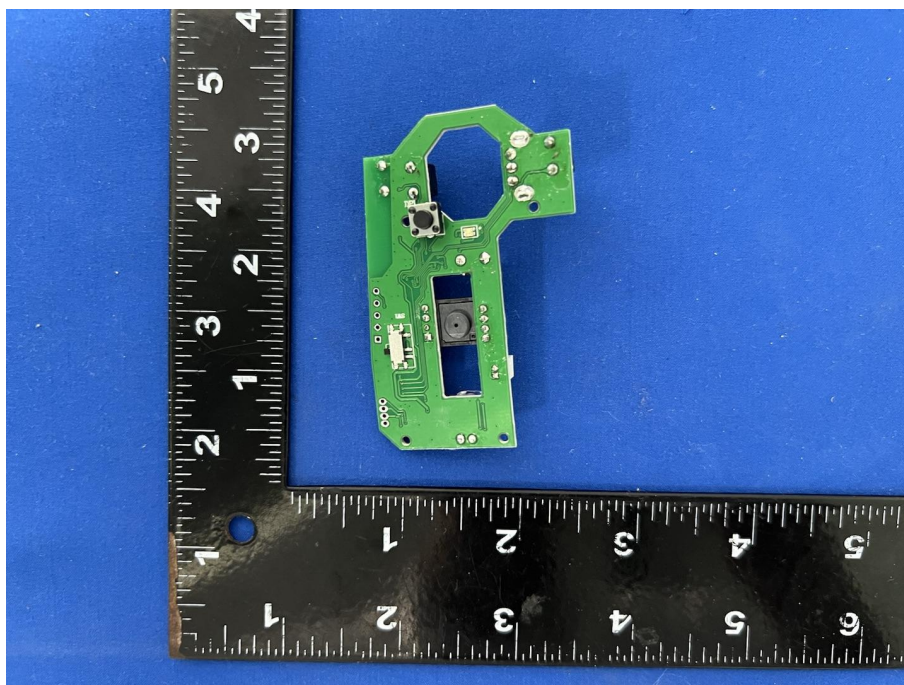
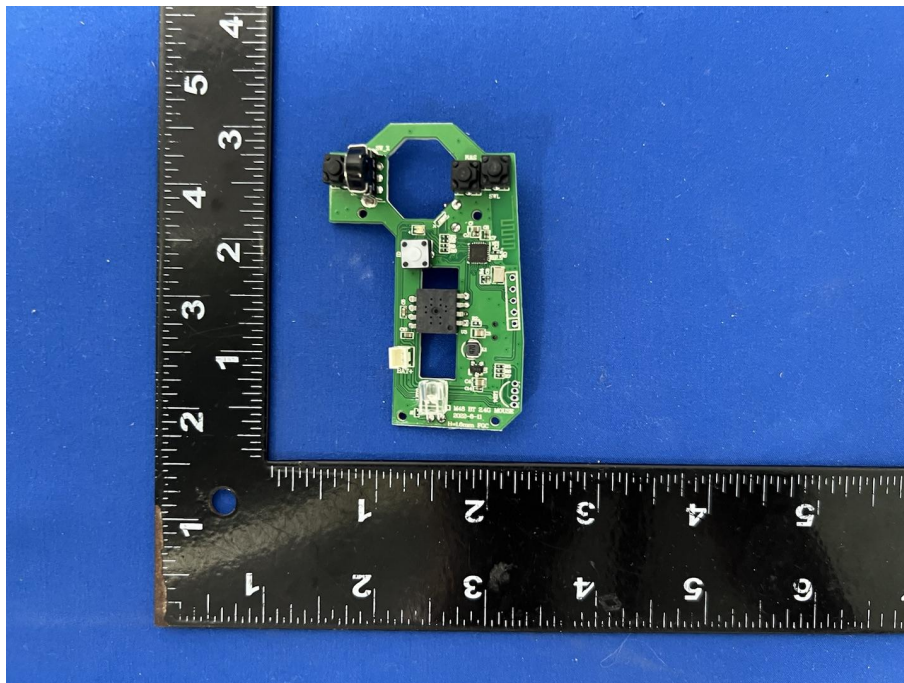
7 Photographs - EUT Constructional Details











*** END OF REPORT ***