

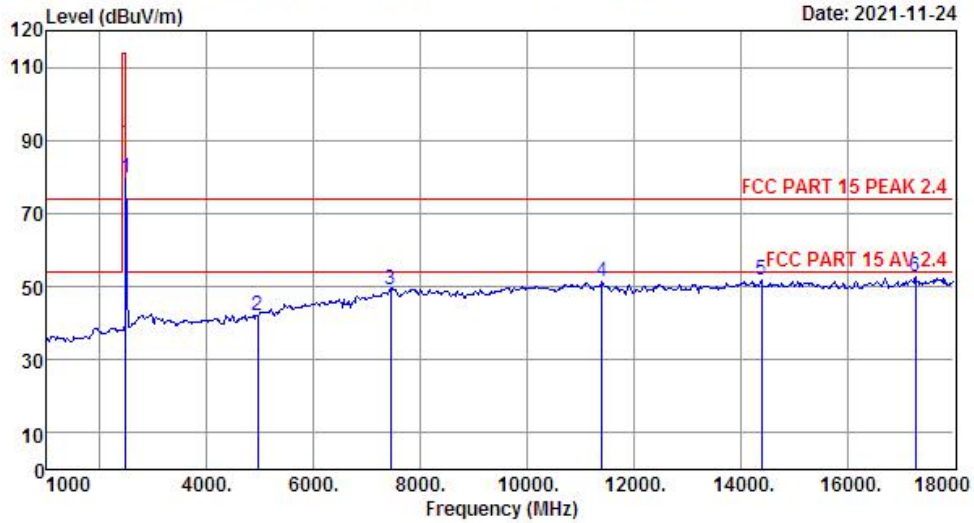
EST Technology

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Data: 18

File: \\Emc-966-1\test data\2021\RF\X\XIAOPAI.EM6 (26)

Date: 2021-11-24



Site no. : 1# 966 Chamber Data no. : 18
Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : Temp:21.3'; Humi:46%; Press:101.52kPa
Engineer : Pablo
EUT : Pimax VR Controller
Power : DC 5V From Adapter Input AC 120V/60Hz
M/N : Sword
Test Mode : TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.00	27.38	1.48	34.61	85.67	79.92	114.00	34.08	Peak
2	4960.00	31.68	3.38	34.69	41.88	42.25	74.00	31.75	Peak
3	7440.00	36.70	5.26	34.84	42.21	49.33	74.00	24.67	Peak
4	11404.00	39.90	6.14	34.62	40.08	51.50	74.00	22.50	Peak
5	14396.00	41.02	6.82	34.42	38.36	51.78	74.00	22.22	Peak
6	17286.00	43.21	7.70	34.37	35.93	52.47	74.00	21.53	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

Note:

1. The amplitude of 18GHz to 25GHz spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Radiated Band Edge

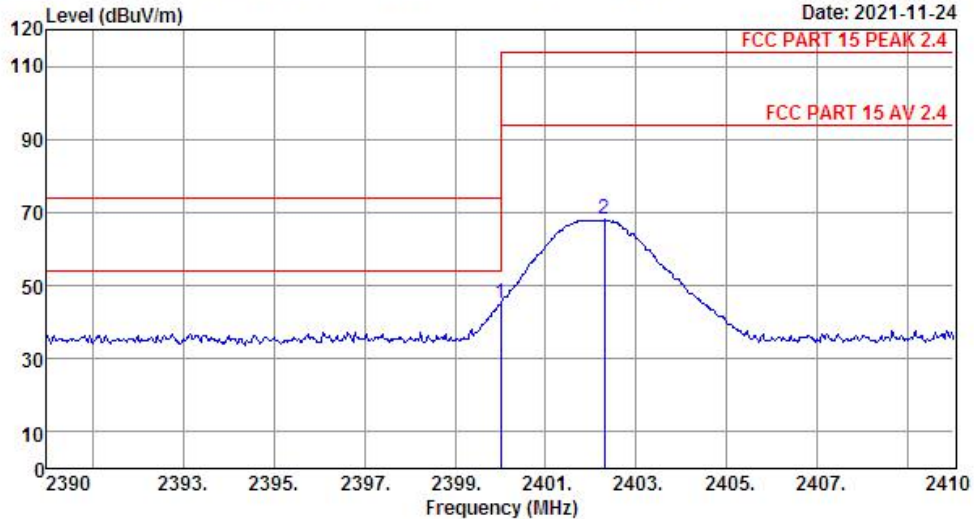
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Data: 19

File: \\Emc-966-1\test data\2021\RF\X\XIAOPA\EM6 (26)

Date: 2021-11-24



Site no. : 1# 966 Chamber Data no. : 19
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:21.3';Humi:46%;Press:101.52kPa
 Engineer : Pablo
 EUT : Pimax VR Controller
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : Sword
 Test Mode : TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2400.00	27.26	1.45	34.64	51.13	45.20	74.00	28.80	Peak
2	2402.30	27.26	1.45	34.64	73.93	68.00	114.00	46.00	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

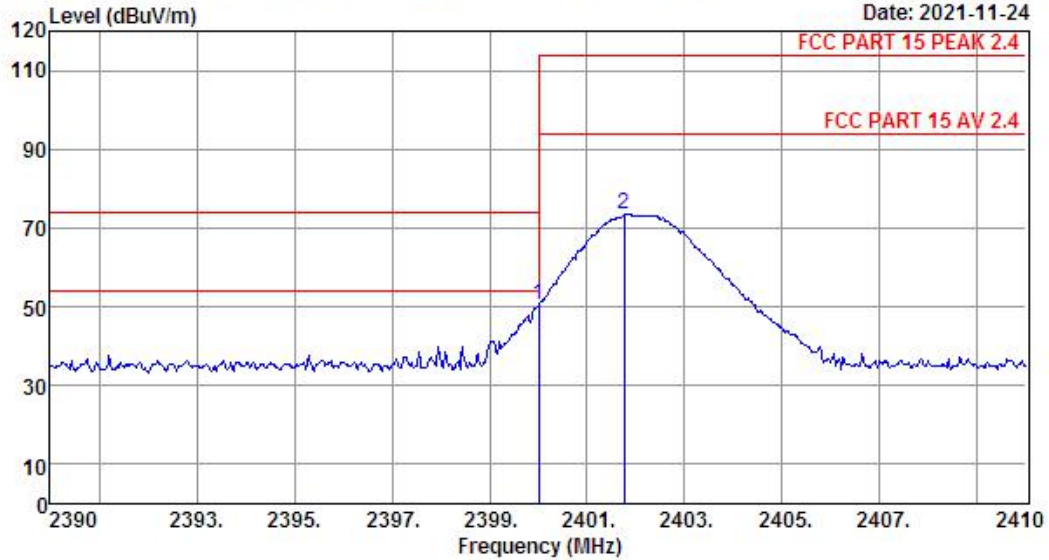
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Data: 20

File: \\Emc-966-1\test data\2021\RF\X\XIAOPA\EM6 (26)

Date: 2021-11-24



Site no. : 1# 966 Chamber Data no. : 20
Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : Temp:21.3';Humi:46%;Press:101.52kPa
Engineer : Pablo
EUT : Pimax VR Controller
Power : DC 5V From Adapter Input AC 120V/60Hz
M/N : Sword
Test Mode : TX 2402MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2400.00	27.26	1.45	34.64	56.54	50.61	74.00	23.39	Peak
2	2401.76	27.26	1.45	34.64	79.31	73.38	114.00	40.62	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

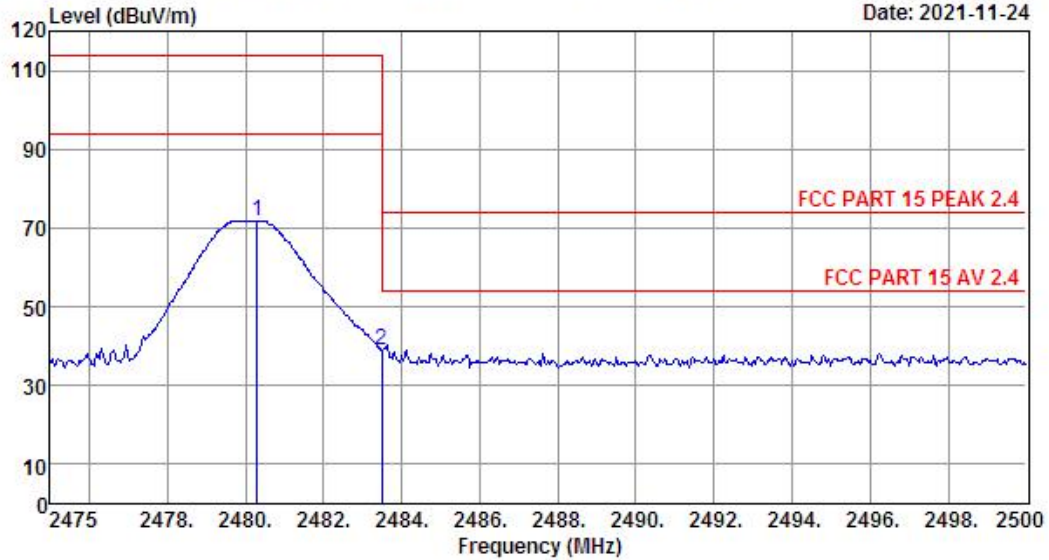
EST Technology

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Data: 21

File: \\Emc-966-1\test data\2021\RF\X\XIAOPA\EM6 (26)

Date: 2021-11-24



Site no. : 1# 966 Chamber Data no. : 21
 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : Temp:21.3';Humi:46%;Press:101.52kPa
 Engineer : Pablo
 EUT : Pimax VR Controller
 Power : DC 5V From Adapter Input AC 120V/60Hz
 M/N : Sword
 Test Mode : TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	2480.30	27.38	1.48	34.61	77.66	71.91	114.00	42.09	Peak
2	2483.50	27.38	1.48	34.61	44.75	39.00	74.00	35.00	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
 2. Margin= Limit - Emission Level.
 3. The emission levels that are 20dB below the official limit are not reported.

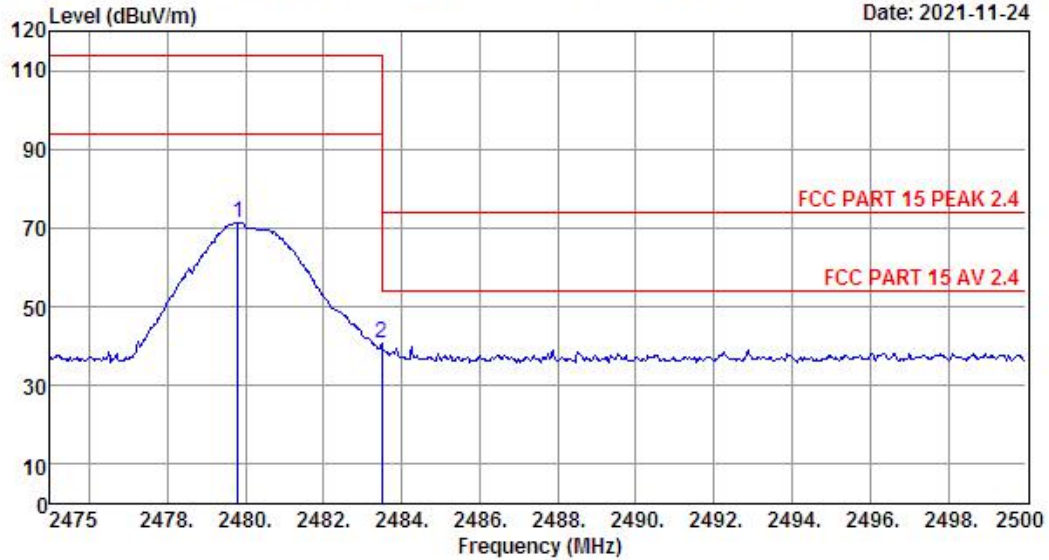
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Data: 22

File: \\Emc-966-1\test data\2021\RF\X\XIAOPA\EM6 (26)

Date: 2021-11-24



Site no. : 1# 966 Chamber Data no. : 22
Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : Temp:21.3';Humi:46%;Press:101.52kPa
Engineer : Pablo
EUT : Pimax VR Controller
Power : DC 5V From Adapter Input AC 120V/60Hz
M/N : Sword
Test Mode : TX 2480MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.80	27.38	1.48	34.61	77.07	71.32	114.00	42.68	Peak
2	2483.50	27.38	1.48	34.61	46.51	40.76	74.00	33.24	Peak

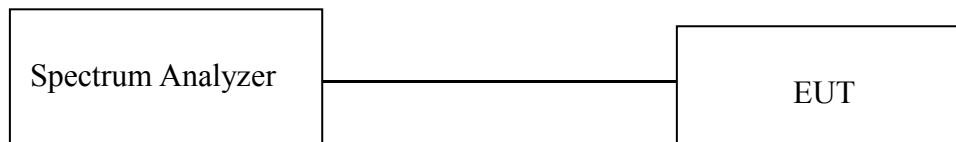
Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.
2. Margin= Limit - Emission Level.
3. The emission levels that are 20dB below the official limit are not reported.

5. 20dB BANDWIDTH

5.1. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

5.2. Test Setup



5.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	1%~5% OBW
VBW	3×RBW
Span	two times and five times the OBW
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

5.4. Test Procedure

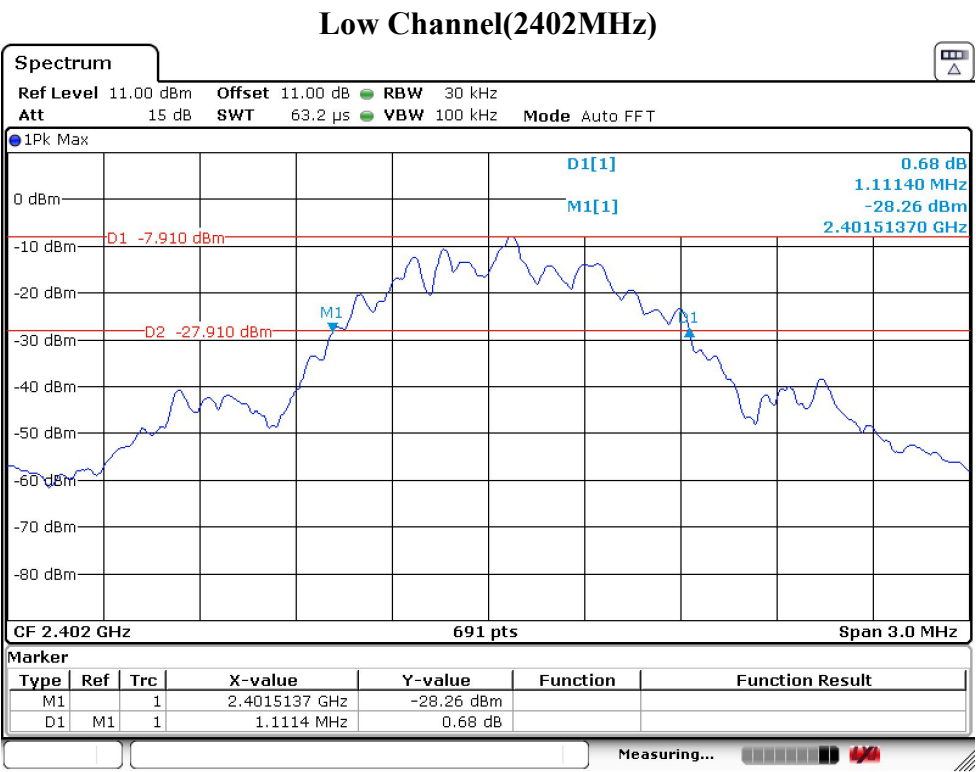
- Connect EUT antenna terminal to the spectrum analyzer with RF cable.
- Spectrum analyzer setting parameters in accordance with section 5.3.
- Set the EUT transmit continuously with maximum output power.
- Allow trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.
- Repeat above procedures until all modes and channels were measured.
- Record the results in the test report.

5.5. Test Condition

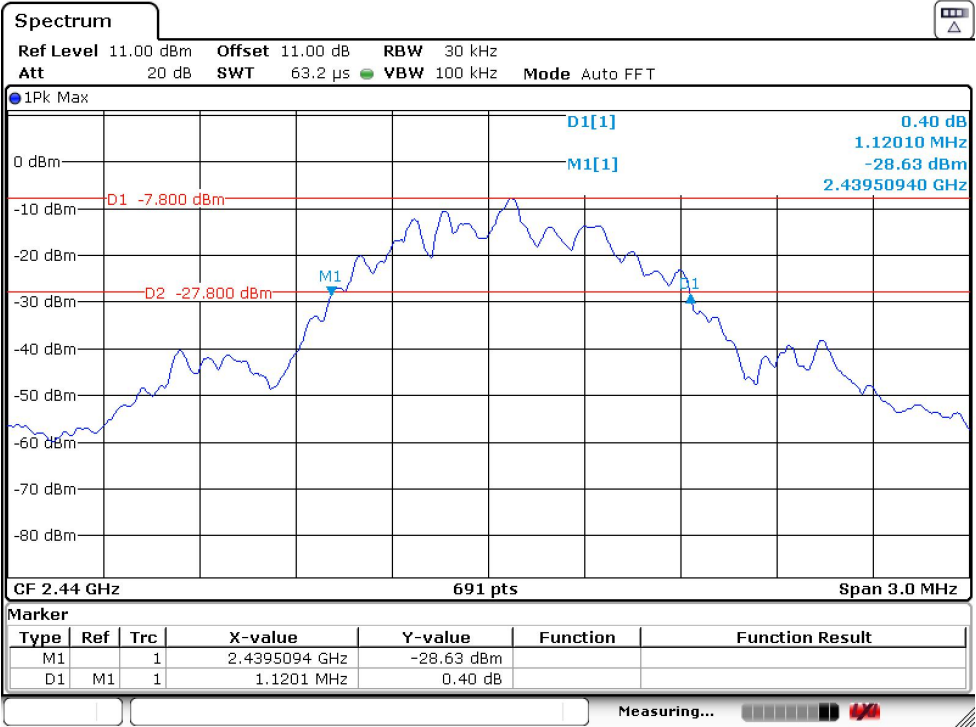
Temperature	25.2℃	Relative Humidity	55%	Test Voltage	DC 5V
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5.6. Test Result

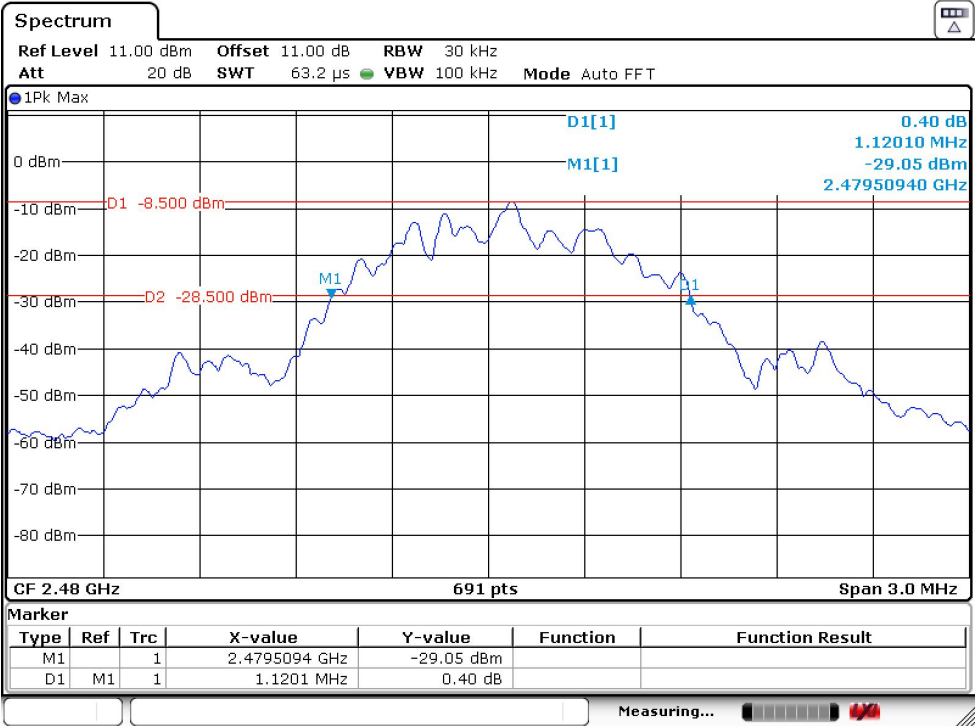
Test Frequency (MHz)	20dB Bandwidth (MHz)	Result
2405	1.1114	Pass
2440	1.1201	Pass
2475	1.1201	Pass



Middle Channel(2440MHz)



High Channel(2480MHz)



6. AC POWER LINE CONDUCTED EMISSIONS

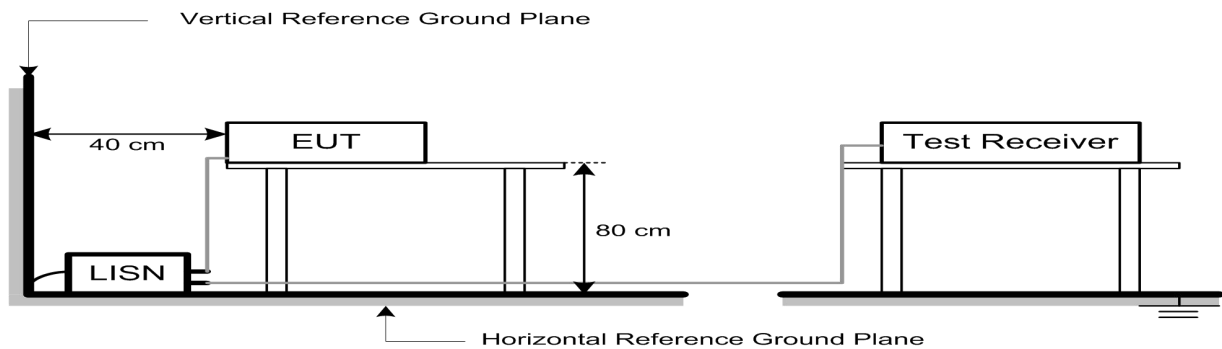
6.1. Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note:

1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.2. Test Setup



6.3. Spectrum Analyzer Setting

Spectrum Parameters	Setting
RBW	9KHz
VBW	9KHz
Start frequency	150KHz
Stop frequency	30MHz
Sweep Time	Auto
Detector	QP/AVG
Trace Mode	Max Hold

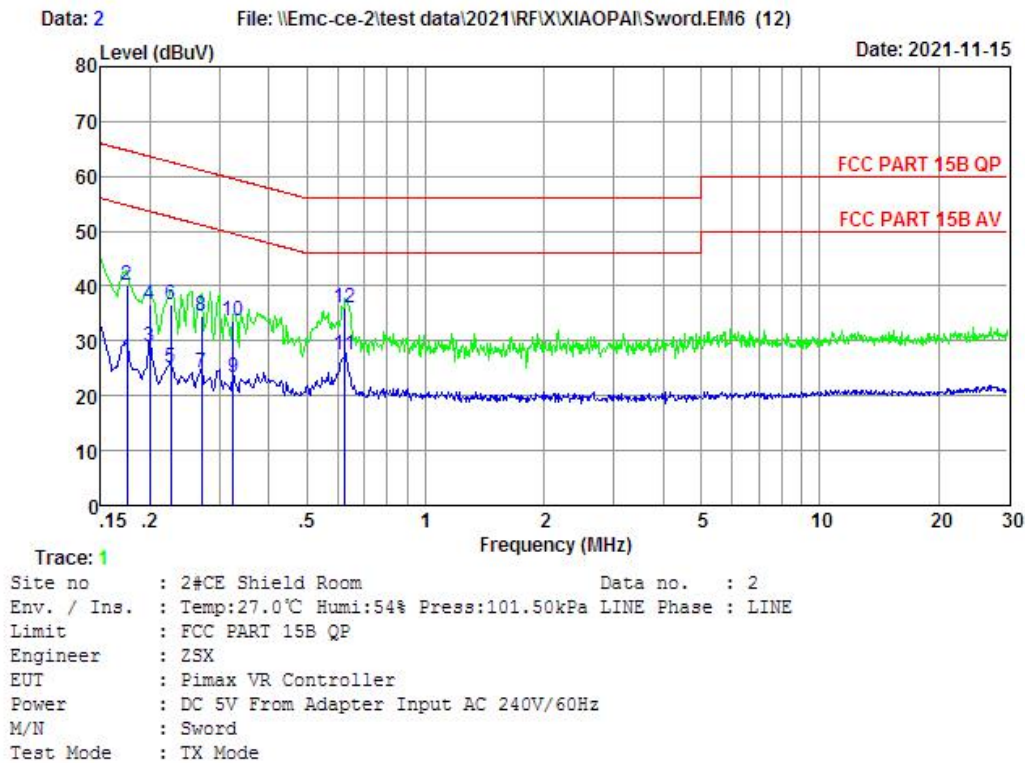
6.4. Test Procedure

- a. The EUT was placed on a non-metallic table, 80cm above the ground plane.
- b. The EUT Power connected to the power mains through a line impedance stabilization network.
- c. Provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs).
- d. Set the EUT transmit continuously with maximum output power.
- e. Spectrum analyzer setting parameters in accordance with section 6.3.
- f. The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.
- g. Record the results in the test report.

6.5. Test Result

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	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.1749	9.84	9.77	7.13	26.74	54.72	27.98	Average
2	0.1749	9.84	9.77	20.58	40.19	64.72	24.53	QP
3	0.1997	9.84	9.77	9.20	28.81	53.62	24.81	Average
4	0.1997	9.84	9.77	17.01	36.62	63.62	27.00	QP
5	0.2256	9.78	9.84	5.61	25.23	52.61	27.38	Average
6	0.2256	9.78	9.84	17.02	36.64	62.61	25.97	QP
7	0.2701	9.77	9.92	4.38	24.07	51.12	27.05	Average
8	0.2701	9.77	9.92	14.80	34.49	61.12	26.63	QP
9	0.3251	9.76	9.92	3.50	23.18	49.57	26.39	Average
10	0.3251	9.76	9.92	14.02	33.70	59.57	25.87	QP
11	0.6238	9.83	9.92	7.73	27.48	46.00	18.52	Average
12	0.6238	9.83	9.92	16.29	36.04	56.00	19.96	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin=Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

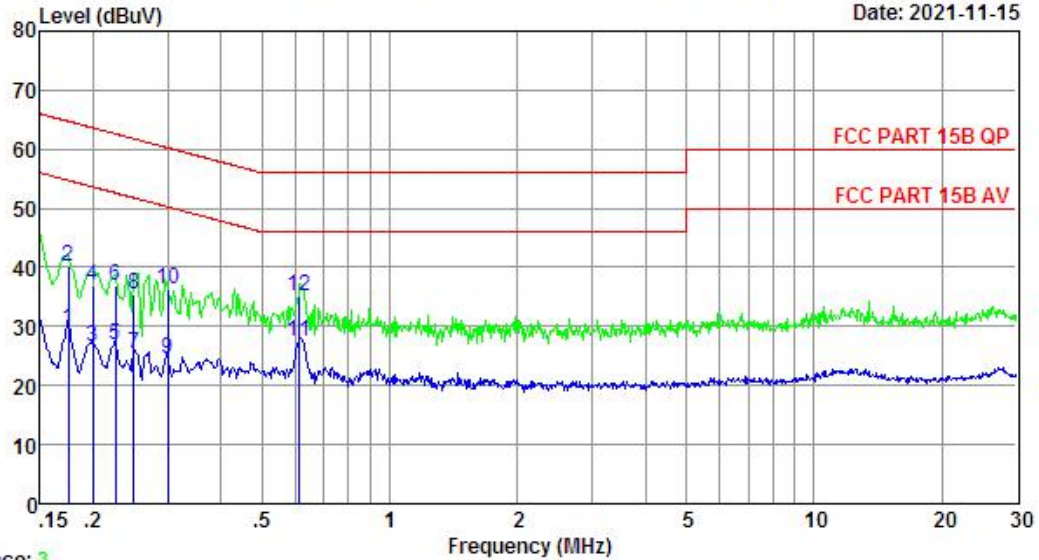
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Data: 4

File: \\Emc-ce-2\test data\2021\RF\X\XIAOPA\Sword.EM6 (12)

Date: 2021-11-15



Trace: 3

Site no : 2#CE Shield Room Data no. : 4
Env. / Ins. : Temp:27.0℃ Humi:54% Press:101.50kPa LINE Phase : NEUTRAL
Limit : FCC PART 15B QP
Engineer : ZSX
EUT : Pimax VR Controller
Power : DC 5V From Adapter Input AC 240V/60Hz
M/N : Sword
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.1749	9.72	9.77	9.95	29.44	54.72	25.28	Average
2	0.1749	9.72	9.77	20.71	40.20	64.72	24.52	QP
3	0.1997	9.72	9.77	6.93	26.42	53.62	27.20	Average
4	0.1997	9.72	9.77	17.36	36.85	63.62	26.77	QP
5	0.2256	9.78	9.84	7.23	26.85	52.61	25.76	Average
6	0.2256	9.78	9.84	17.32	36.94	62.61	25.67	QP
7	0.2495	9.84	9.92	5.64	25.40	51.78	26.38	Average
8	0.2495	9.84	9.92	15.75	35.51	61.78	26.27	QP
9	0.3003	9.83	9.92	4.86	24.61	50.24	25.63	Average
10	0.3003	9.83	9.92	16.60	36.35	60.24	23.89	QP
11	0.6140	9.75	9.92	7.66	27.33	46.00	18.67	Average
12	0.6140	9.75	9.92	15.58	35.25	56.00	20.75	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin=Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

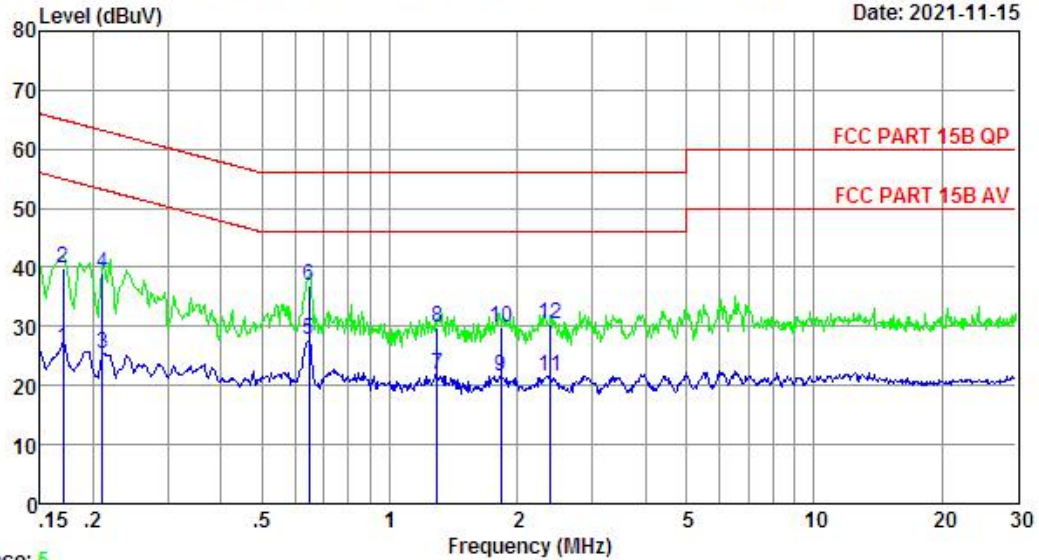
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Data: 6

File: \\Emc-ce-2\test data\2021\RF\X\XIAOPA\Sword.EM6 (12)

Date: 2021-11-15



Trace: 5

Site no : 2#CE Shield Room Data no. : 6
Env. / Ins. : Temp:27.0℃ Humi:54% Press:101.50kPa LINE Phase : LINE
Limit : FCC PART 15B QP
Engineer : ZSX
EUT : Pimax VR Controller
Power : DC 5V From Adapter Input AC 120V/60Hz
M/N : Sword
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.1703	9.82	9.69	6.81	26.32	54.94	28.62	Average
2	0.1703	9.82	9.69	20.32	39.83	64.94	25.11	QP
3	0.2106	9.78	9.84	5.87	25.49	53.18	27.69	Average
4	0.2106	9.78	9.84	19.23	38.85	63.18	24.33	QP
5	0.6440	9.83	9.92	8.11	27.86	46.00	18.14	Average
6	0.6440	9.83	9.92	17.21	36.96	56.00	19.04	QP
7	1.2960	9.90	9.94	1.94	21.78	46.00	24.22	Average
8	1.2960	9.90	9.94	9.94	29.78	56.00	26.22	QP
9	1.8288	10.02	9.95	1.58	21.55	46.00	24.45	Average
10	1.8288	10.02	9.95	9.84	29.81	56.00	26.19	QP
11	2.3962	9.98	9.96	1.72	21.66	46.00	24.34	Average
12	2.3962	9.98	9.96	10.34	30.28	56.00	25.72	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin=Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

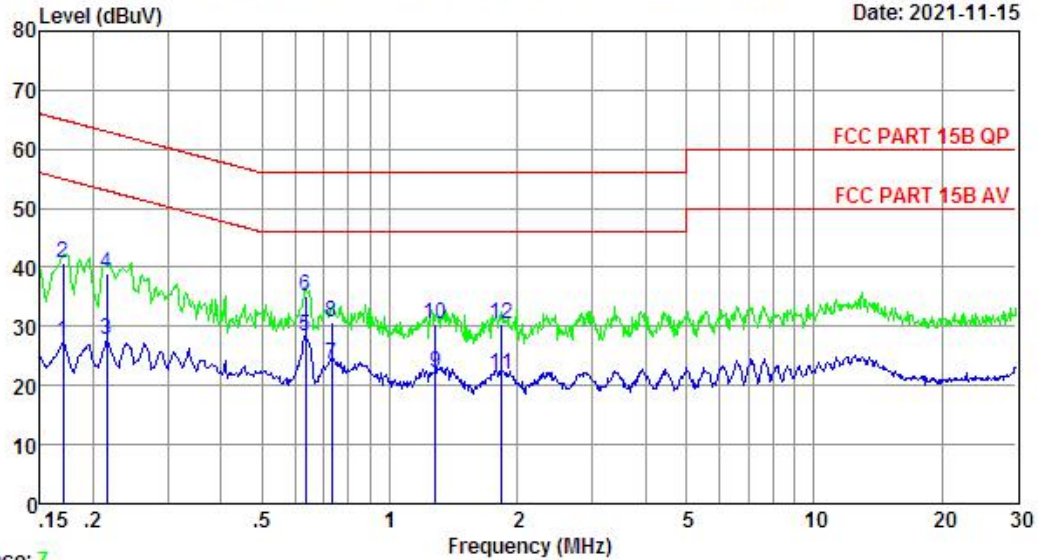
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Data: 8

File: \\Emc-ce-2\test data\2021\RF\X\XIAOPA\Sword.EM6 (12)

Date: 2021-11-15



Trace: 7

Site no : 2#CE Shield Room Data no. : 8
Env. / Ins. : Temp:27.0℃ Humi:54% Press:101.50kPa LINE Phase : NEUTRAL
Limit : FCC PART 15B QP
Engineer : ZSX
EUT : Pimax VR Controller
Power : DC 5V From Adapter Input AC 120V/60Hz
M/N : Sword
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV)	Limits (dBUV)	Margin (dB)	Remark
1	0.1703	9.78	9.69	7.85	27.32	54.94	27.62	Average
2	0.1703	9.78	9.69	21.32	40.79	64.94	24.15	QP
3	0.2151	9.78	9.84	8.07	27.69	53.01	25.32	Average
4	0.2151	9.78	9.84	19.21	38.83	63.01	24.18	QP
5	0.6338	9.75	9.92	8.61	28.28	46.00	17.72	Average
6	0.6338	9.75	9.92	15.33	35.00	56.00	21.00	QP
7	0.7313	9.79	9.93	4.02	23.74	46.00	22.26	Average
8	0.7313	9.79	9.93	10.96	30.68	56.00	25.32	QP
9	1.2824	9.83	9.94	2.46	22.23	46.00	23.77	Average
10	1.2824	9.83	9.94	10.58	30.35	56.00	25.65	QP
11	1.8288	9.93	9.95	2.00	21.88	46.00	24.12	Average
12	1.8288	9.93	9.95	10.43	30.31	56.00	25.69	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.
2. Margin=Limit - Emission Level.
3. If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

7. ANTENNA REQUIREMENTS

7.1. Limit

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

7.2. Test Result

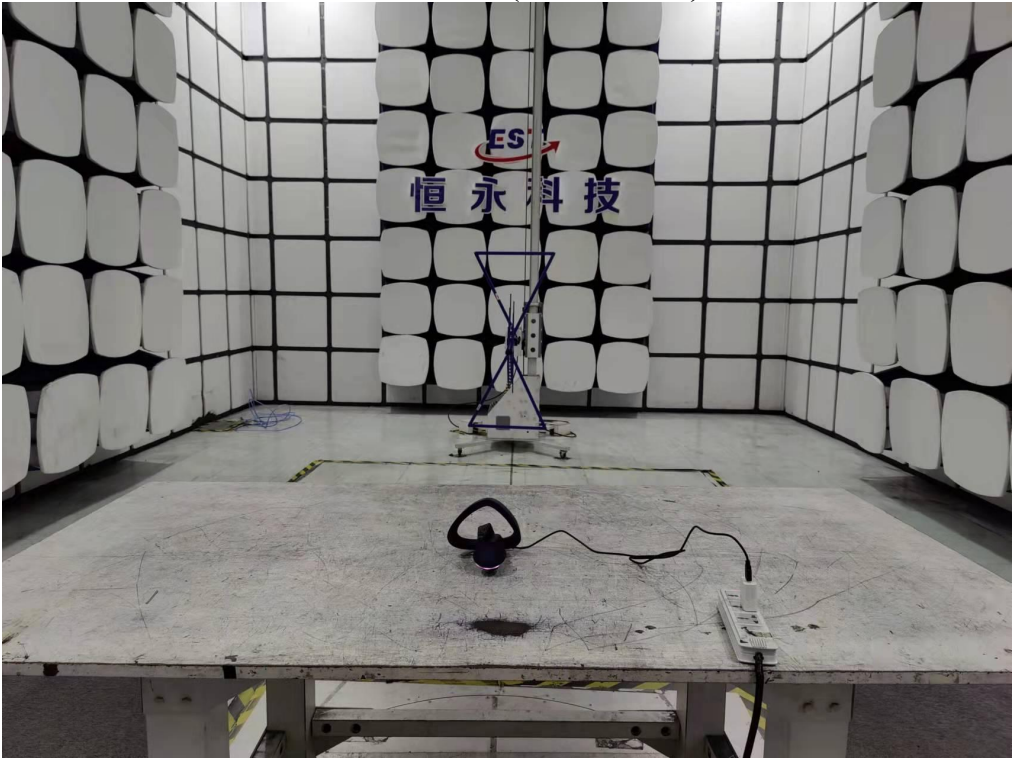
The antennas used for this product is internal antenna ,so compliance with antenna requirements.
(Please refer to the EUT photo for details)

8. TEST SETUP PHOTO

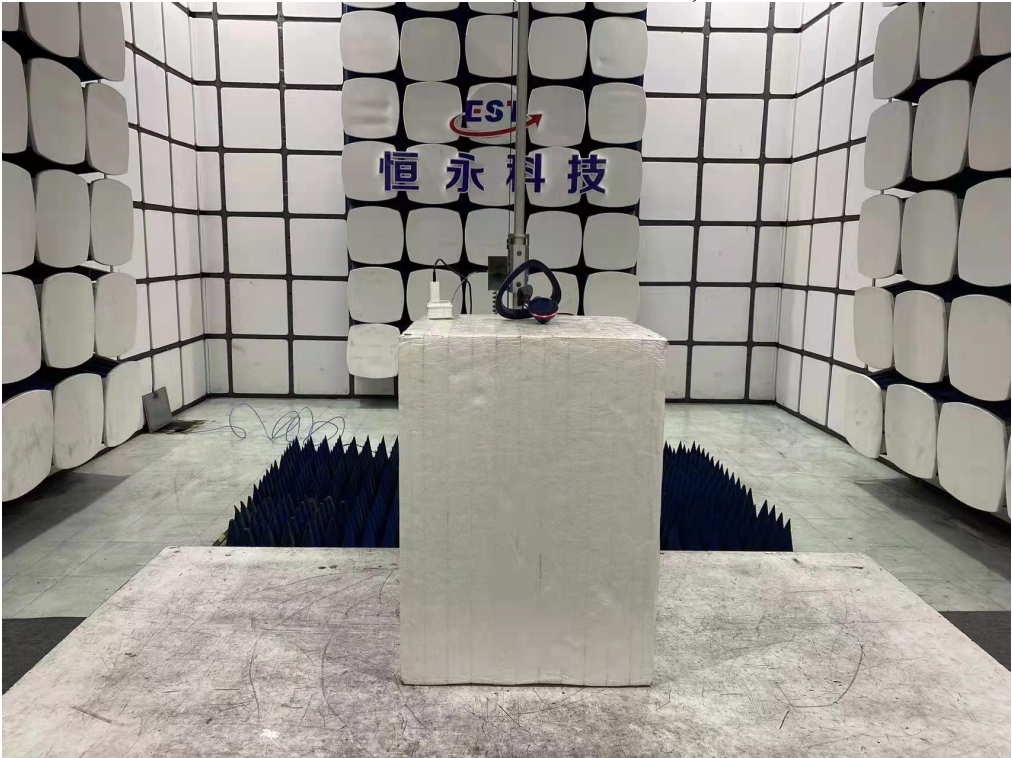
Conducted Emissions Test



Radiated Test (Below 1GHz)

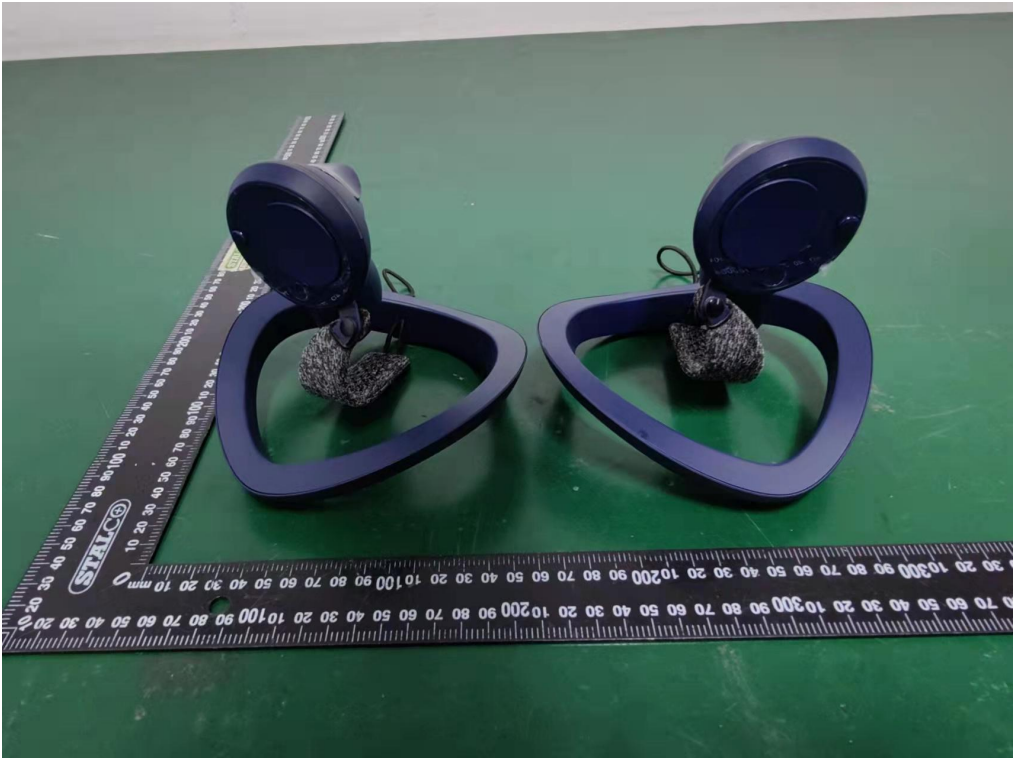
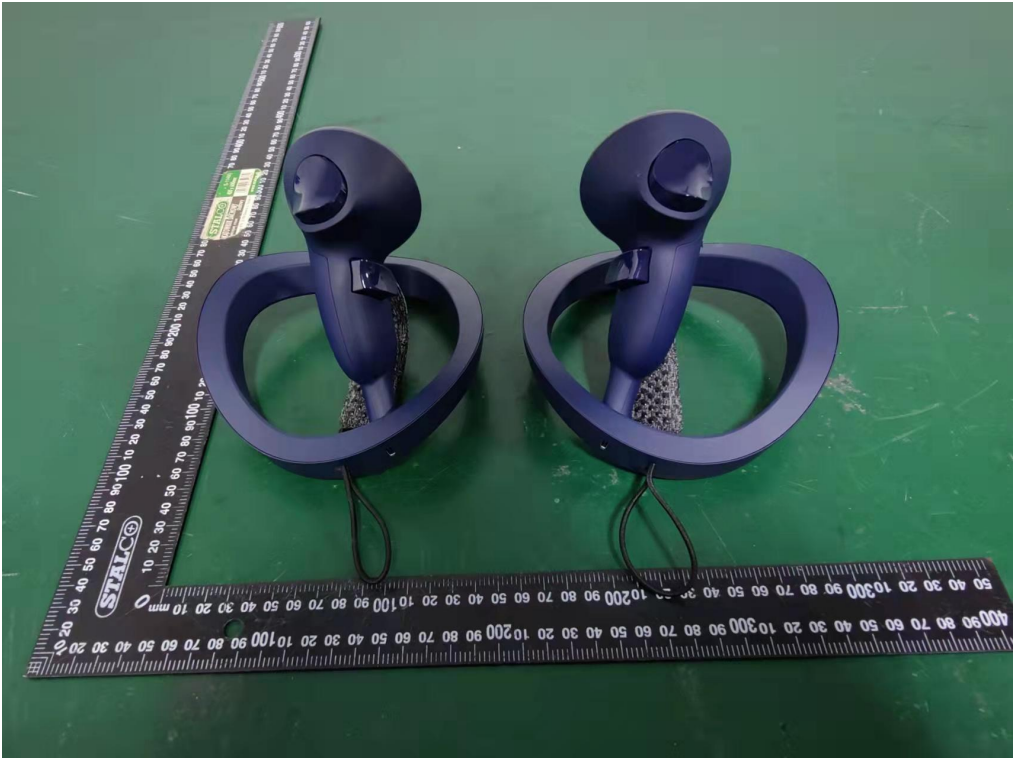


Radiated Test (Above 1GHz)

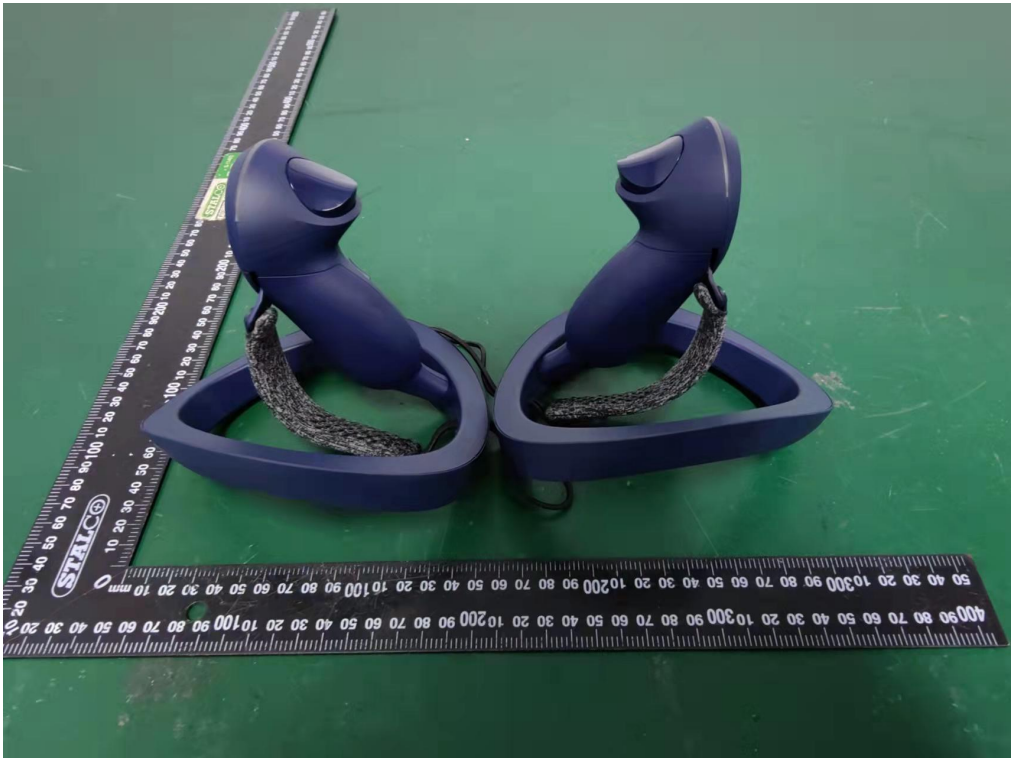
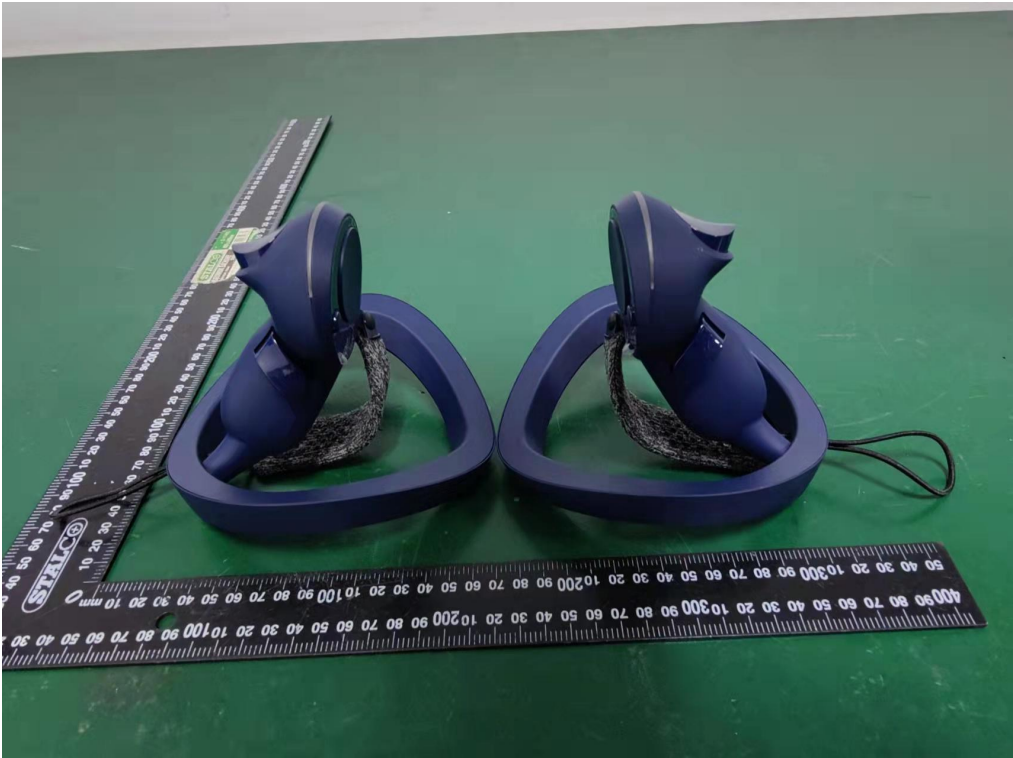


9. EUT PHOTO

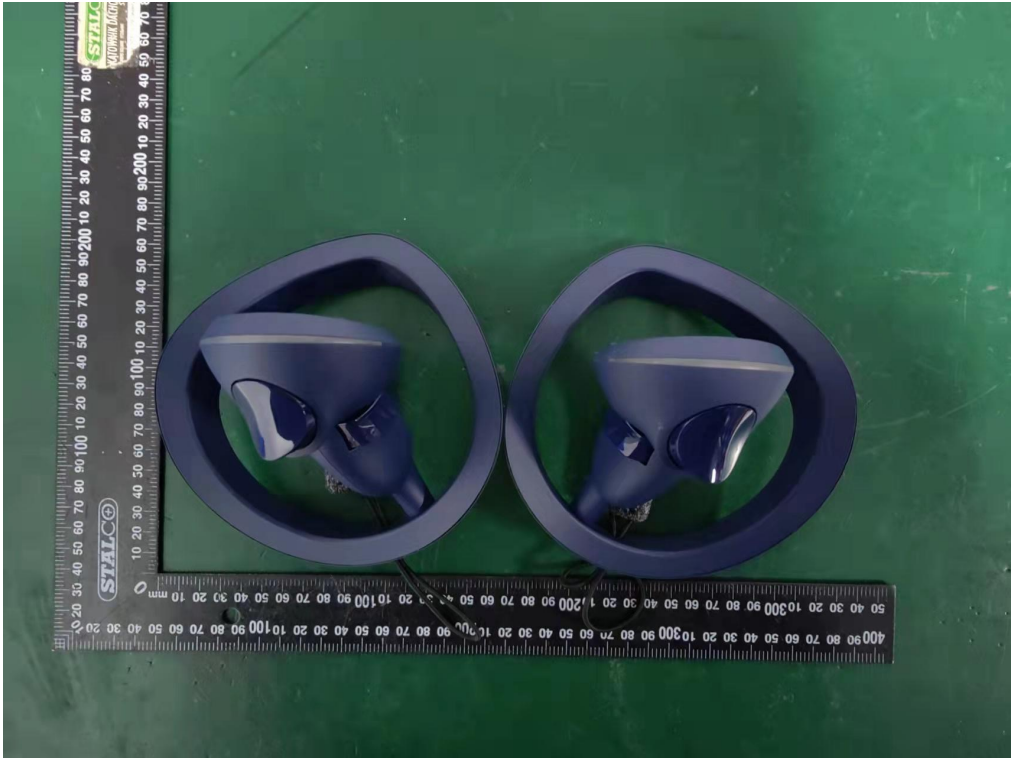
External Photos
M/N: Sword



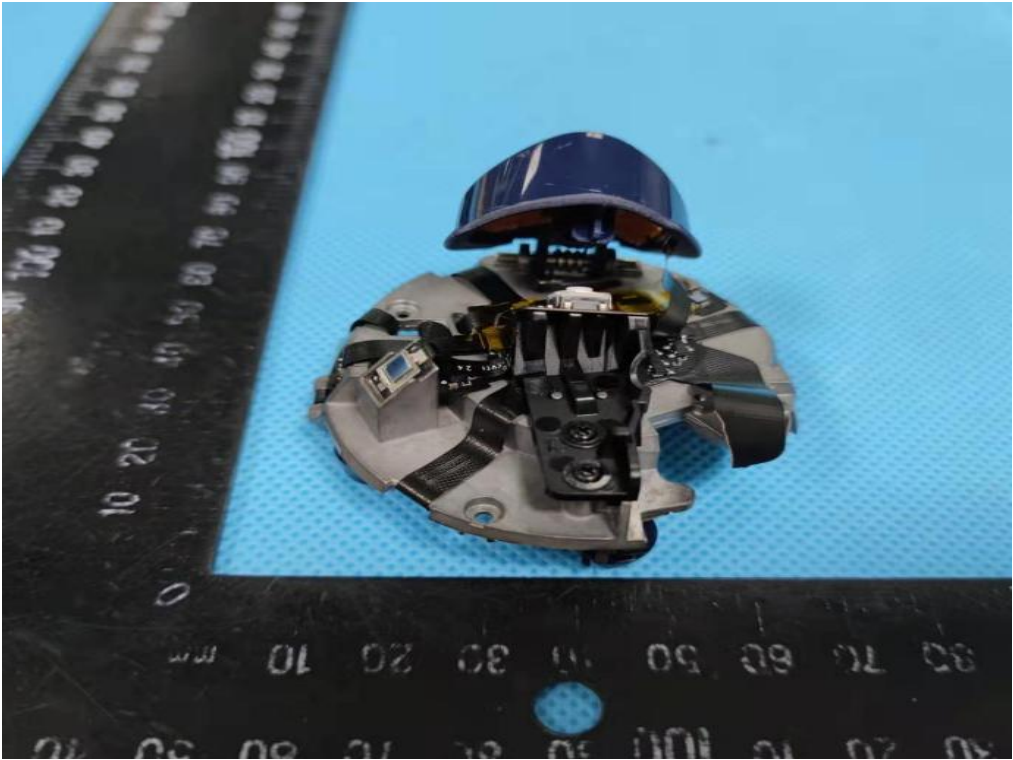
External Photos
M/N: Sword



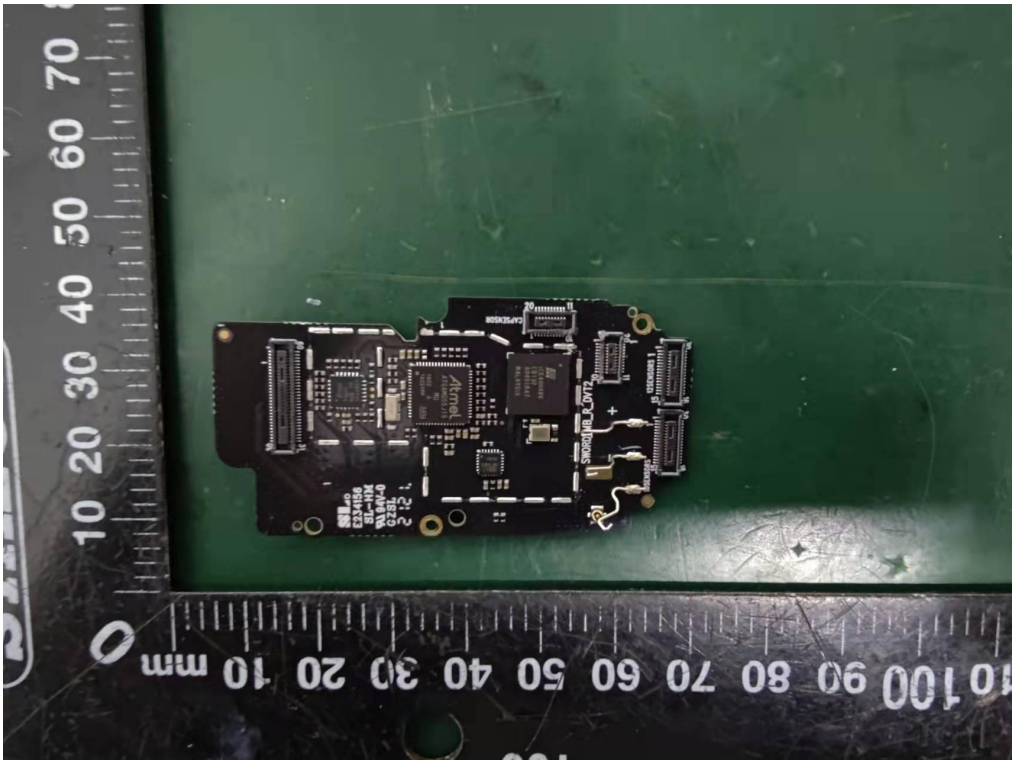
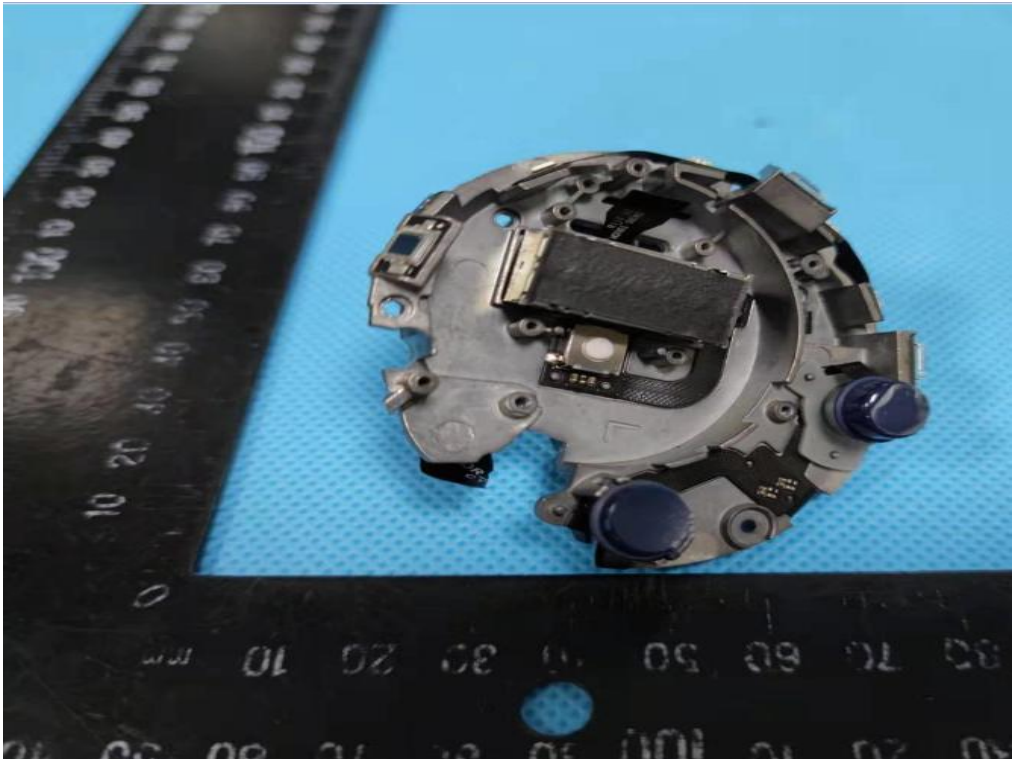
External Photos
M/N: Sword



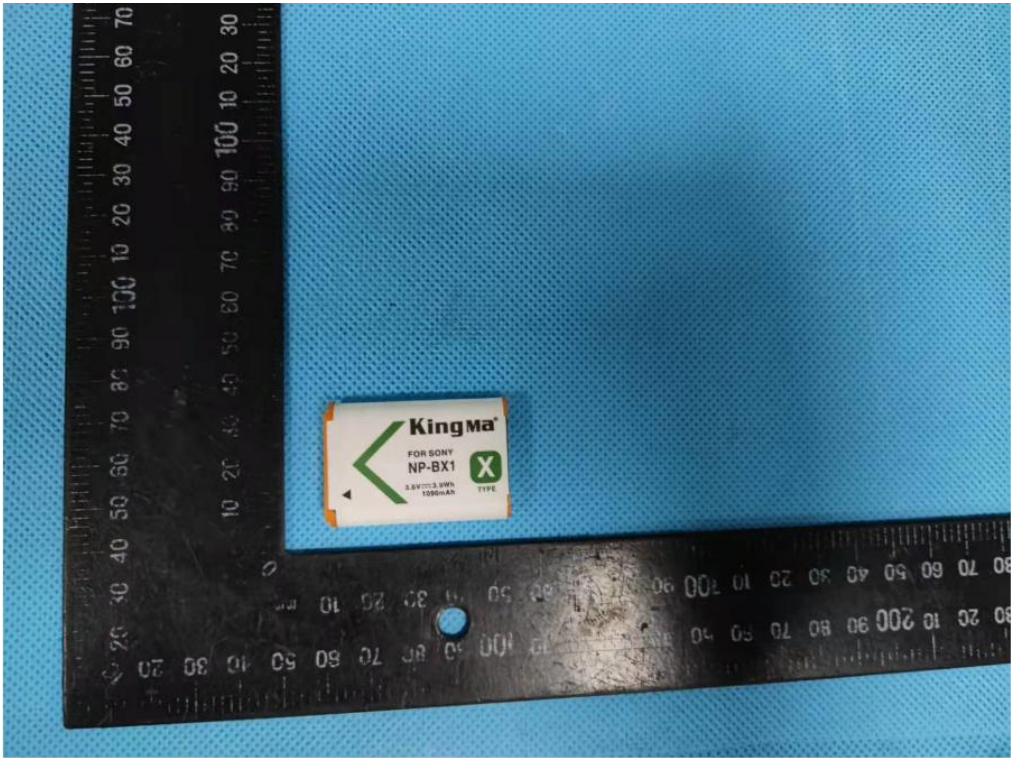
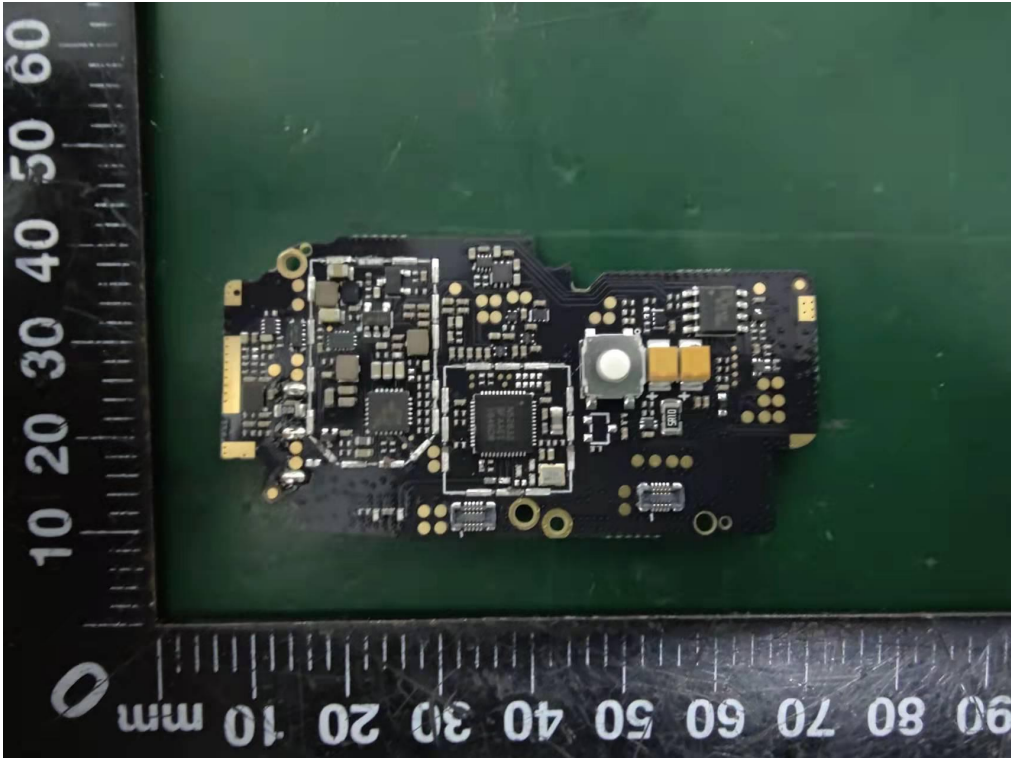
Internal Photos
M/N: Sword



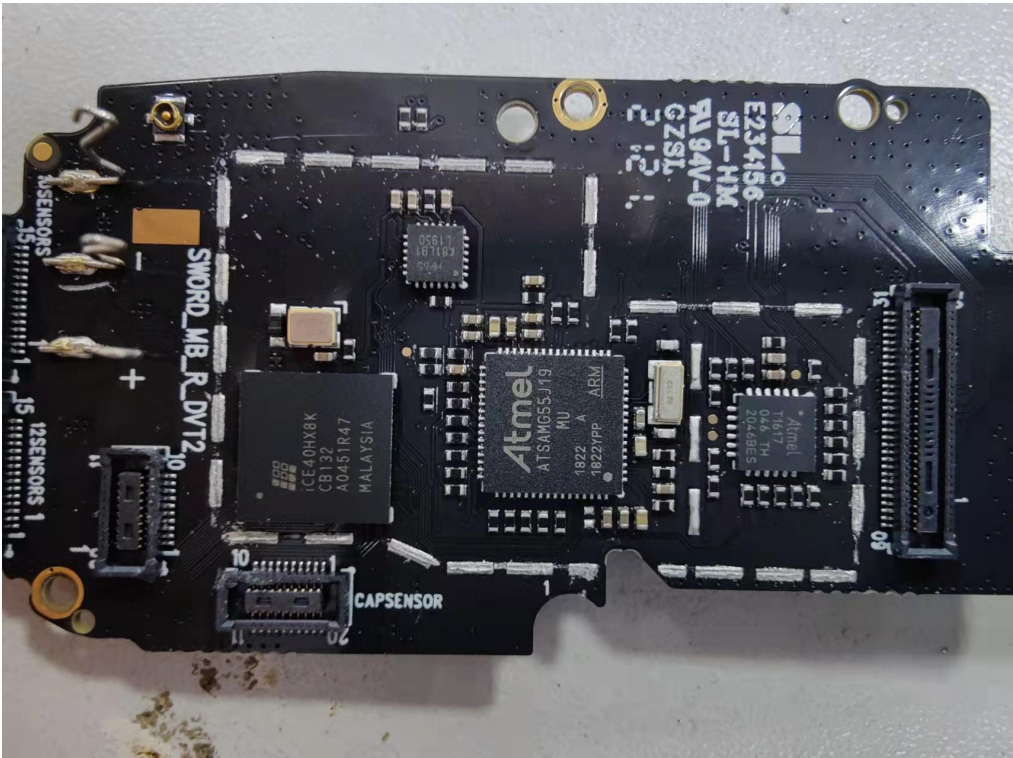
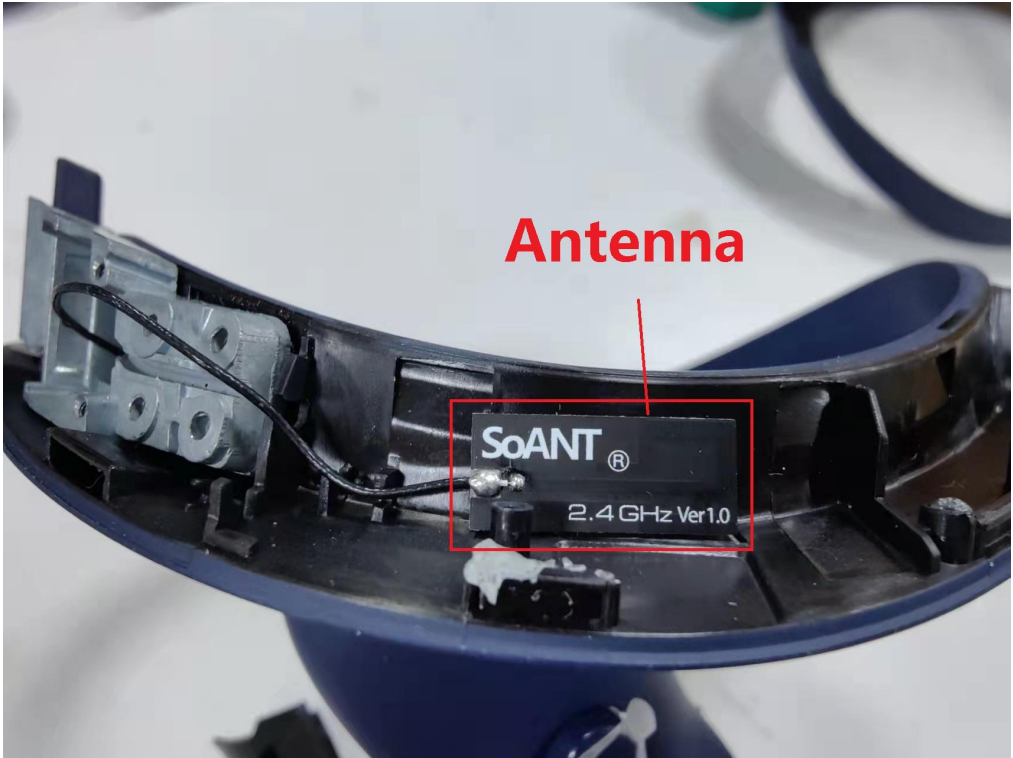
Internal Photos
M/N: Sword



Internal Photos
M/N: Sword



Internal Photos
M/N: Sword



End of Test Report