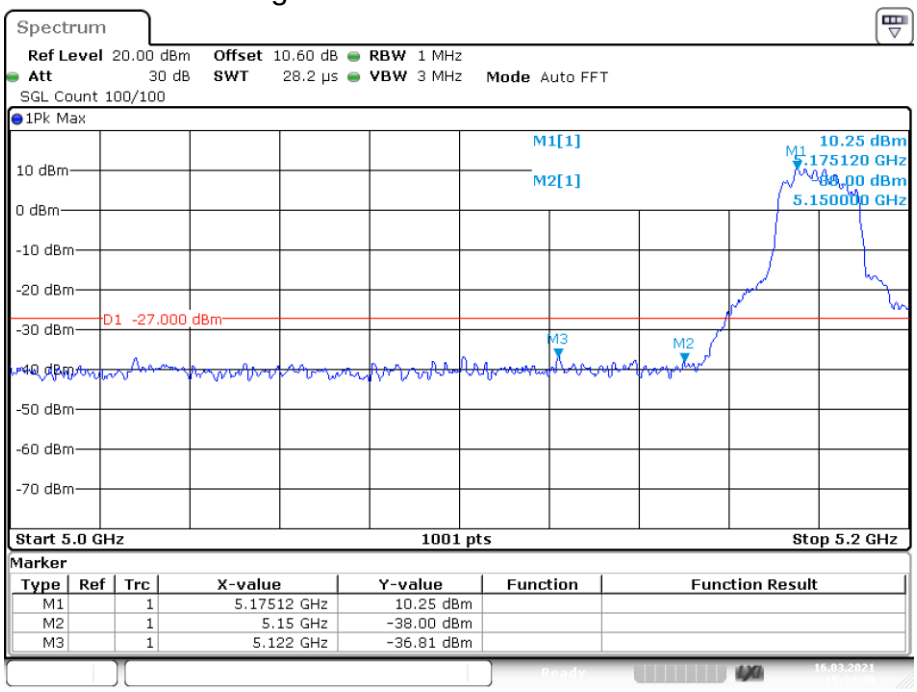
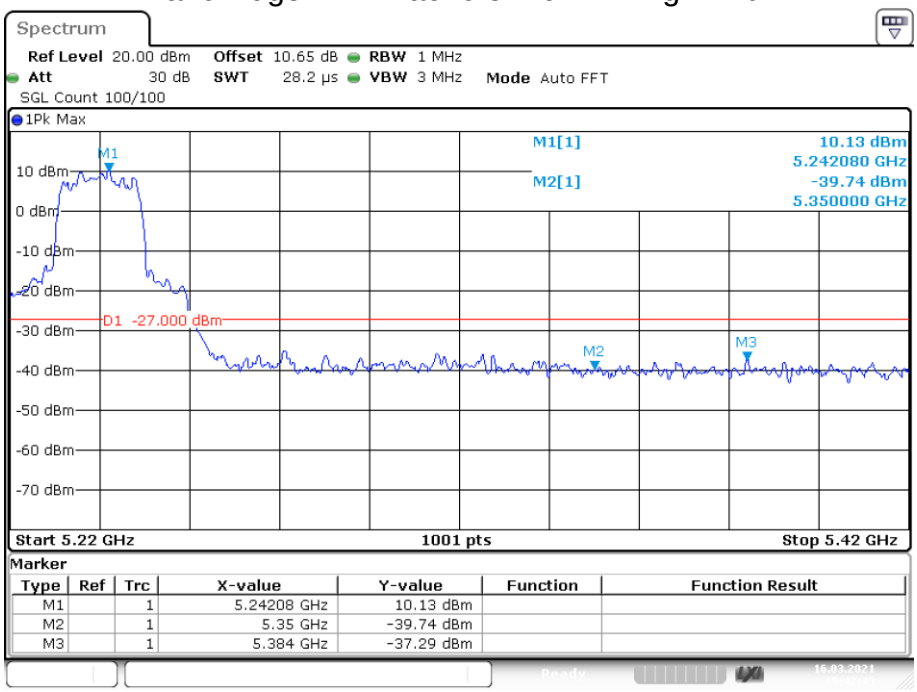
Band Edge NVNT ac20 5180MHz Low Ant1



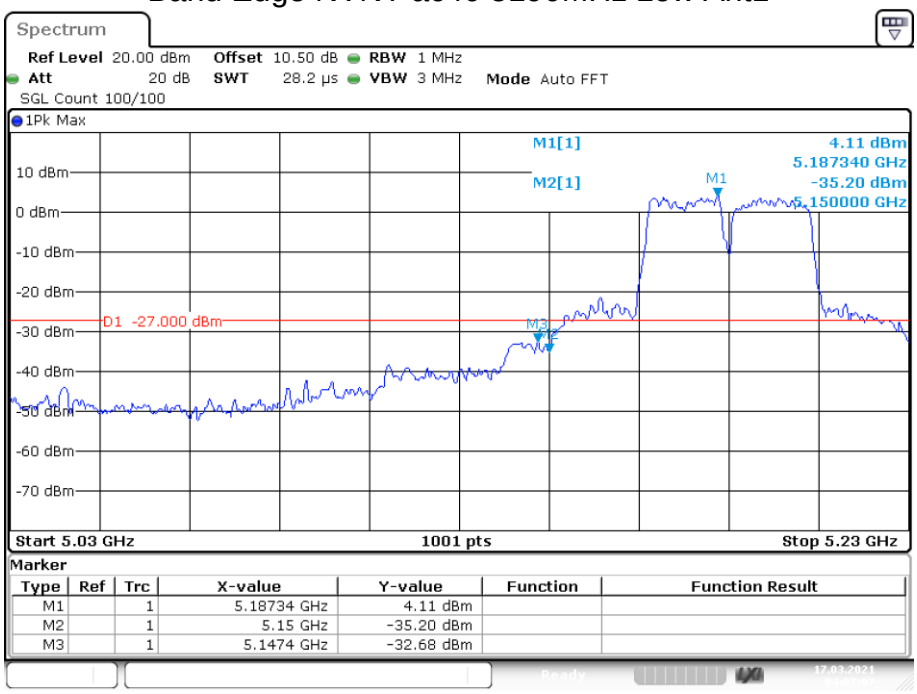
Date: 16.MAR.2021 15:34:30

Band Edge NVNT ac20 5240MHz High Ant1



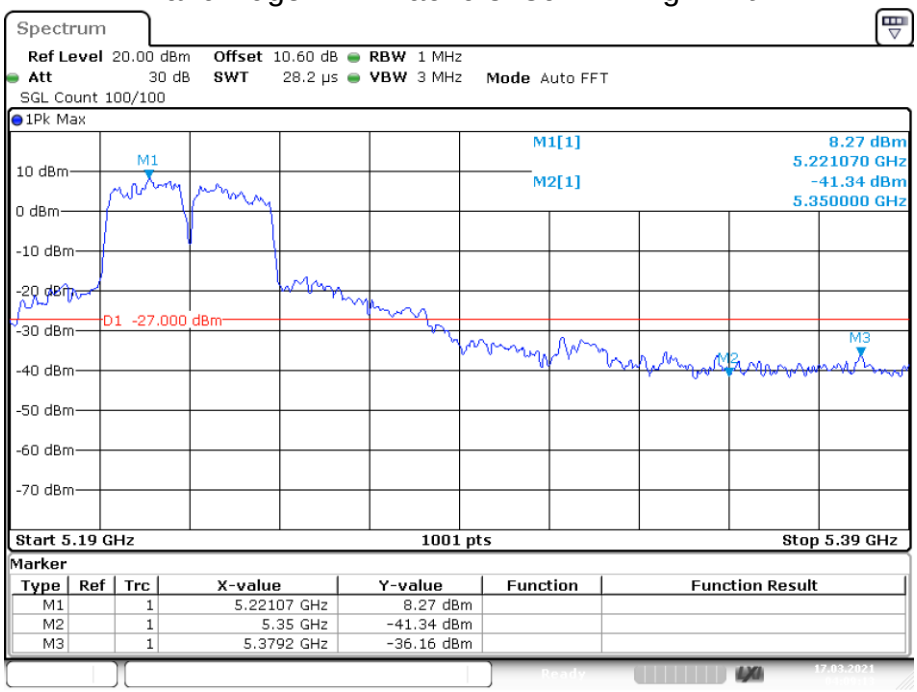
Date: 16.MAR.2021 15:42:42

Band Edge NVNT ac40 5190MHz Low Ant1



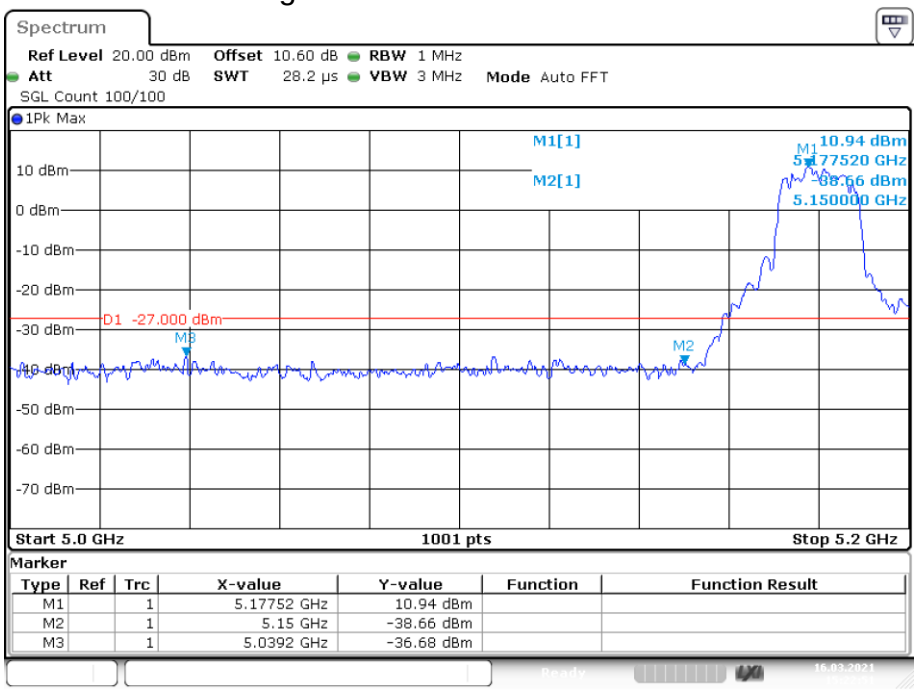
Date: 17.MAR.2021 04:07:07

Band Edge NVNT ac40 5230MHz High Ant1



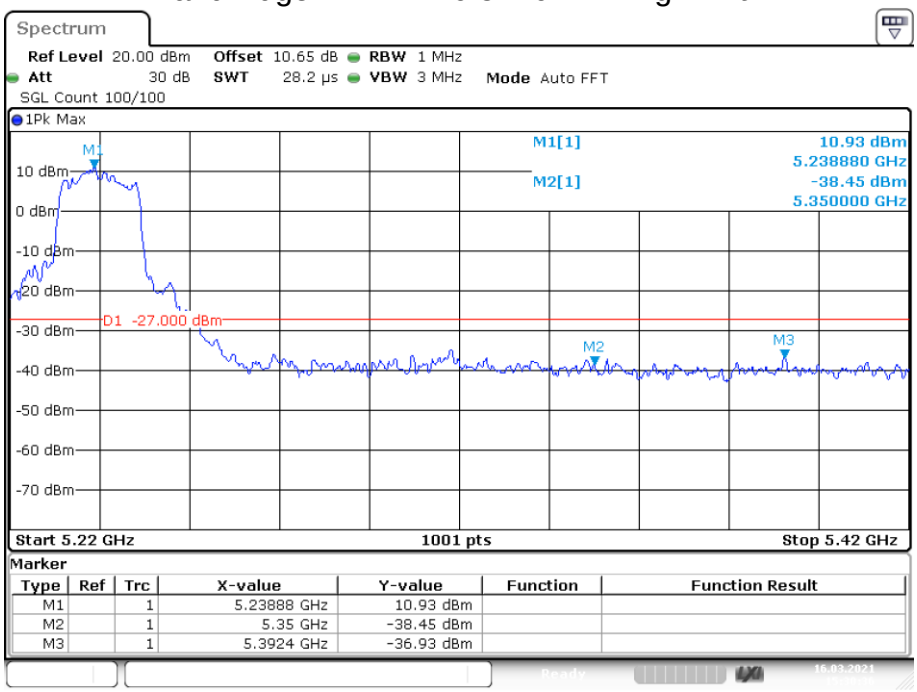
Date: 17.MAR.2021 04:09:12

Band Edge NVNT n20 5180MHz Low Ant1



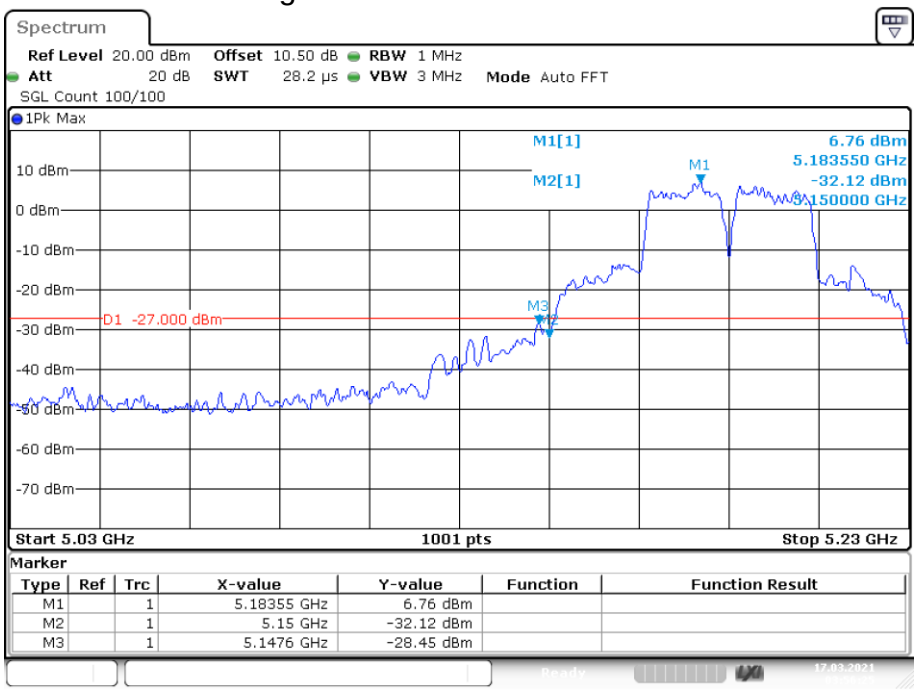
Date: 16.MAR.2021 15:22:51

Band Edge NVNT n20 5240MHz High Ant1



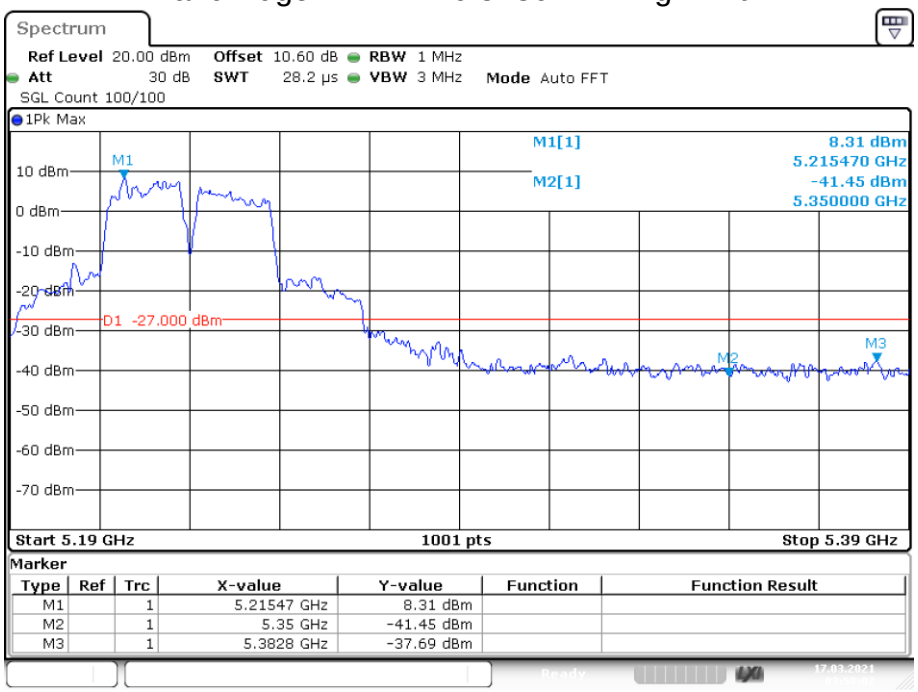
Date: 16.MAR.2021 15:30:35

Band Edge NVNT n40 5190MHz Low Ant1



Date: 17.MAR.2021 03:56:24

Band Edge NVNT n40 5230MHz High Ant1



Date: 17.MAR.2021 03:58:02

4.6 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10:2013
Test Frequency Range:	30MHz to 40GHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

Frequency	Detector	RBW	VBW	Value
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	AV	1MHz	3MHz	Average Value

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	74.0	Peak Value
	54.0	Average Value

Test Procedure:

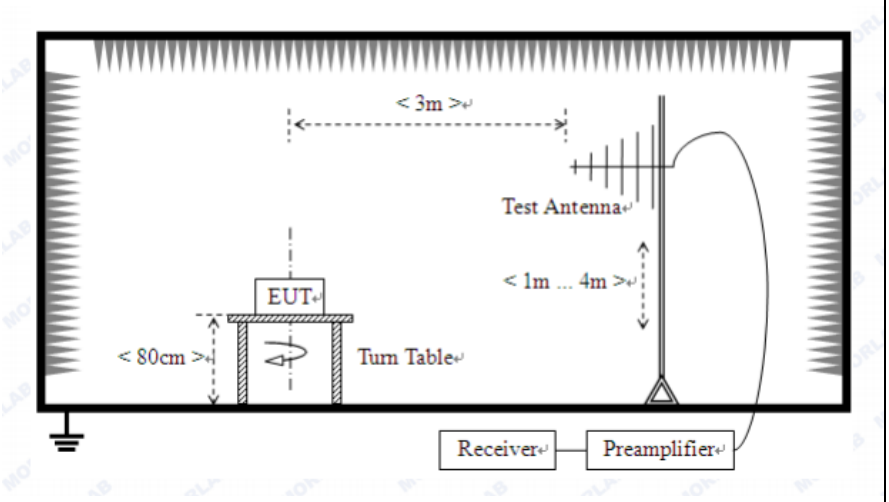
Substitution method was performed to determine the actual ERP emission levels of the EUT.
The following test procedure as below:

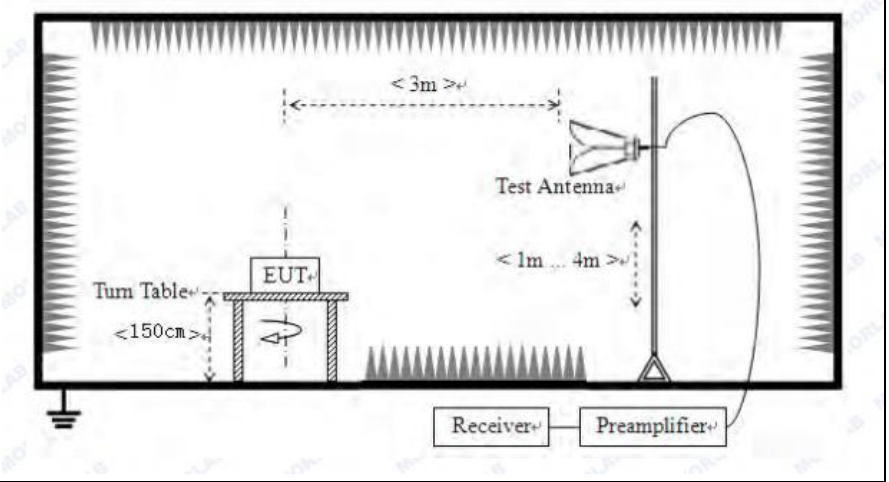
1>.Below 1GHz test procedure:

1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. 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 and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. 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.

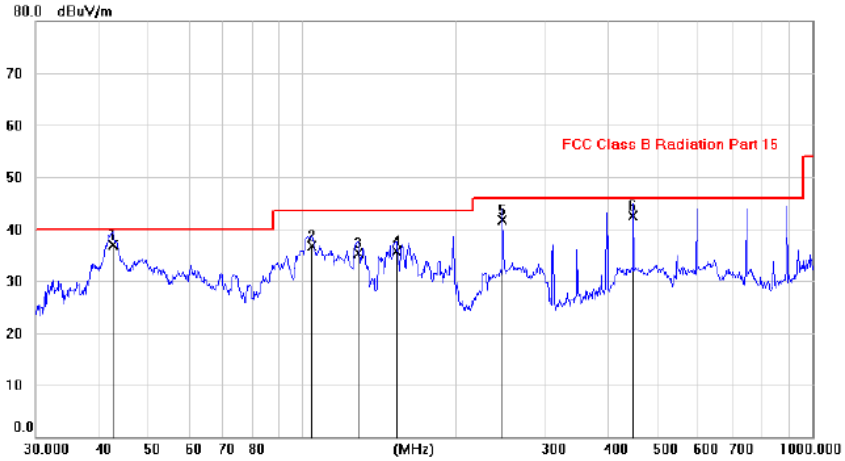
2>.Above 1GHz test procedure:

1. On the test site as test setup graph above,the EUT shall be placed at the 1.5m support on the turntable and in the position closest to normal use as declared by the provider.
2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter.The output of the test antenna shall be connected to the measuring receiver.
3. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the

	transmitter under test. 4. The test antenna shall be raised and lowered from 1m to 4m until a maximum signal level is detected by the measuring receiver. Then the turntable should be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver. 5. Repeat step 4 for test frequency with the test antenna polarized horizontally. 6. Remove the transmitter and replace it with a substitution antenna 7. Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas at both ends vertically polarized, and with the signal generator tuned to a particular test frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output. 8. Repeat step 7 with both antennas horizontally polarized for each test frequency. 9. Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps 7 and 8 by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi) where: Pg is the generator output power into the substitution antenna.
Test setup:	Below 1GHz  Above 1GHz

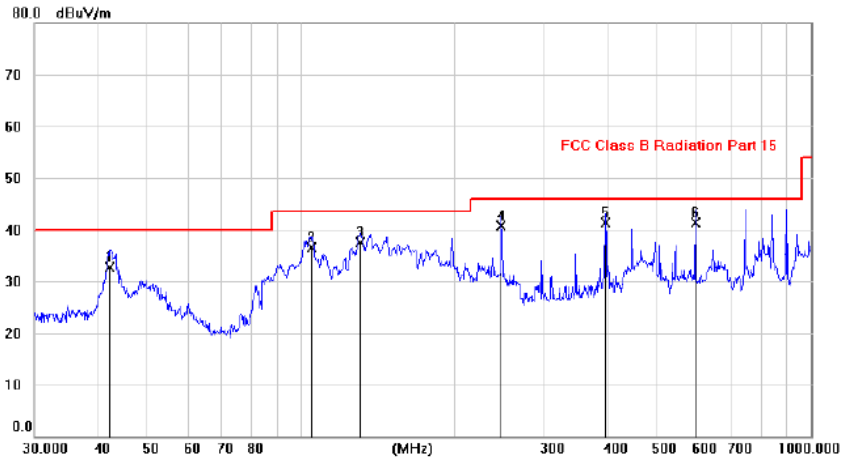
	
Test results:	Pass

From 30MHz to 1000MHz: Conclusion: PASS			
EUT Description	Projector	**Model No.**	YG431
Temperature	24℃	**Humidity**	56%
Pol	Vertical	**Test date**	2021/4/9
Test Voltage	AC 120V/60Hz	**Test mode**	802.11a (5240MHz)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure-ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	*	42.5053	22.52	14.29	36.81	40.00	-3.19	QP			
2		104.1701	25.40	11.26	36.66	43.50	-6.84	QP			
3		128.6080	21.77	13.51	35.28	43.50	-8.22	QP			
4		152.6819	20.69	15.05	35.74	43.50	-7.76	QP			
5		247.5081	28.96	12.71	41.67	46.00	-4.33	QP			
6		445.5278	25.13	17.46	42.59	46.00	-3.41	QP			

Pol	Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure-ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		42.2034	18.33	14.32	32.65	40.00	-7.35	QP			
2		104.5604	25.24	11.30	36.54	43.50	-6.96	QP			
3		130.6382	23.87	13.64	37.51	43.50	-5.99	QP			
4		247.5081	27.91	12.71	40.62	46.00	-5.38	QP			
5	*	396.0100	25.19	16.18	41.37	46.00	-4.63	QP			
6		594.0208	21.18	20.10	41.28	46.00	-4.72	QP			

*:Maximum data x:Over limit !:over margin

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Remark: All modes have been tested, and only worst data was listed in this report.

Above 1GHz:

802.11a 5180MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	26.80	39.67	14.62	32.65	48.44	74.00	-25.56	Vertical
15540	28.88	38.60	17.66	34.46	50.68	74.00	-23.32	Vertical
10360	32.15	39.67	14.62	32.65	53.79	74.00	-20.21	Horizontal
15540	29.46	38.60	17.66	34.46	51.26	74.00	-22.74	Horizontal

802.11a 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	29.02	39.67	14.62	32.65	50.66	74.00	-23.34	Vertical
15600	31.62	38.60	17.66	34.46	53.42	74.00	-20.58	Vertical
10400	33.47	39.67	14.62	32.65	55.11	74.00	-18.89	Horizontal
15600	32.38	38.60	17.66	34.46	54.18	74.00	-19.82	Horizontal

802.11a 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	29.61	39.67	14.62	32.65	51.25	74.00	-22.75	Vertical
15720	31.00	38.60	17.66	34.46	52.80	74.00	-21.20	Vertical
10480	29.80	39.67	14.62	32.65	51.44	74.00	-22.56	Horizontal
15720	30.19	38.60	17.66	34.46	51.99	74.00	-22.01	Horizontal

802.11ac20 5180MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	29.30	39.67	14.62	32.65	50.94	74.00	-23.06	Vertical
15540	29.43	38.60	17.66	34.46	51.23	74.00	-22.77	Vertical
10360	30.63	39.67	14.62	32.65	52.27	74.00	-21.73	Horizontal
15540	29.68	38.60	17.66	34.46	51.48	74.00	-22.52	Horizontal

802.11ac20 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	28.26	39.67	14.62	32.65	49.90	74.00	-24.10	Vertical
15600	29.92	38.60	17.66	34.46	51.72	74.00	-22.28	Vertical
10400	33.38	39.67	14.62	32.65	55.02	74.00	-18.98	Horizontal
15600	32.93	38.60	17.66	34.46	54.73	74.00	-19.27	Horizontal

802.11ac20 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	29.23	39.67	14.62	32.65	50.87	74.00	-23.13	Vertical
15720	29.61	38.60	17.66	34.46	51.41	74.00	-22.59	Vertical
10480	33.32	39.67	14.62	32.65	54.96	74.00	-19.04	Horizontal
15720	32.89	38.60	17.66	34.46	54.69	74.00	-19.31	Horizontal

802.11n(HT20) 5180MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10360	26.51	39.67	14.62	32.65	48.15	74.00	-25.85	Vertical
15540	28.62	38.60	17.66	34.46	50.42	74.00	-23.58	Vertical
10360	32.67	39.67	14.62	32.65	54.31	74.00	-19.69	Horizontal
15540	29.56	38.60	17.66	34.46	51.36	74.00	-22.64	Horizontal

802.11n(HT20) 5200MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10400	27.86	39.67	14.62	32.65	49.50	74.00	-24.50	Vertical
15600	29.31	38.60	17.66	34.46	51.11	74.00	-22.89	Vertical
10400	29.85	39.67	14.62	32.65	51.49	74.00	-22.51	Horizontal
15600	29.61	38.60	17.66	34.46	51.41	74.00	-22.59	Horizontal

802.11n(HT20) 5240MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10480	27.54	39.67	14.62	32.65	49.18	74.00	-24.82	Vertical
15720	31.70	38.60	17.66	34.46	53.50	74.00	-20.50	Vertical
10480	32.73	39.67	14.62	32.65	54.37	74.00	-19.63	Horizontal
15720	31.69	38.60	17.66	34.46	53.49	74.00	-20.51	Horizontal

802.11n(HT40) 5190MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380	28.48	39.67	14.62	32.65	50.12	74.00	-23.88	Vertical
15570	31.93	38.60	17.66	34.46	53.73	74.00	-20.27	Vertical
10380	33.65	39.67	14.62	32.65	55.29	74.00	-18.71	Horizontal
15570	29.10	38.60	17.66	34.46	50.90	74.00	-23.10	Horizontal

802.11n(HT40) 5230MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460	28.75	39.67	14.62	32.65	50.39	74.00	-23.61	Vertical
15690	29.35	38.60	17.66	34.46	51.15	74.00	-22.85	Vertical
10460	31.71	39.67	14.62	32.65	53.35	74.00	-20.65	Horizontal
15690	31.42	38.60	17.66	34.46	53.22	74.00	-20.78	Horizontal

802.11ac40 5190MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10380	27.97	39.67	14.62	32.65	49.61	74.00	-24.39	Vertical
15570	29.36	38.60	17.66	34.46	51.16	74.00	-22.84	Vertical
10380	33.22	39.67	14.62	32.65	54.86	74.00	-19.14	Horizontal
15570	32.14	38.60	17.66	34.46	53.94	74.00	-20.06	Horizontal

802.11ac40 5230MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10460	27.47	39.67	14.62	32.65	49.11	74.00	-24.89	Vertical
15690	32.06	38.60	17.66	34.46	53.86	74.00	-20.14	Vertical
10460	33.23	39.67	14.62	32.65	54.87	74.00	-19.13	Horizontal
15690	33.01	38.60	17.66	34.46	54.81	74.00	-19.19	Horizontal

802.11ac80 5210MHz

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
10420	29.20	39.67	14.62	32.65	50.84	74.00	-23.16	Vertical
15630	31.36	38.60	17.66	34.46	53.16	74.00	-20.84	Vertical
10420	31.15	39.67	14.62	32.65	52.79	74.00	-21.21	Horizontal
15630	30.77	38.60	17.66	34.46	52.57	74.00	-21.43	Horizontal

Note:

1. Level = Read Level + Antenna Factor+ Cable loss- Preamp Factor.

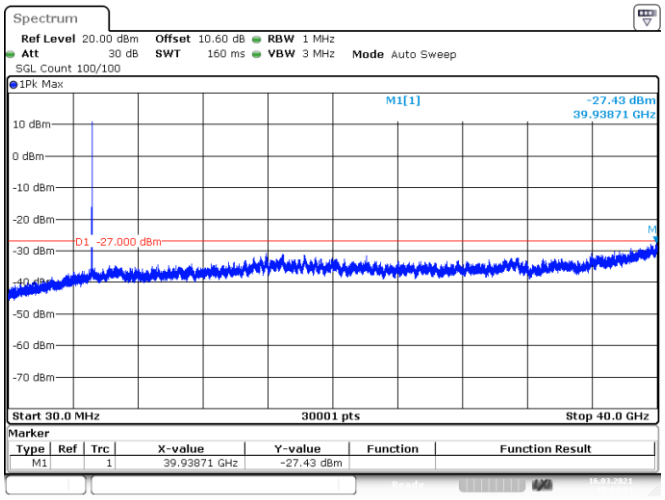
2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.

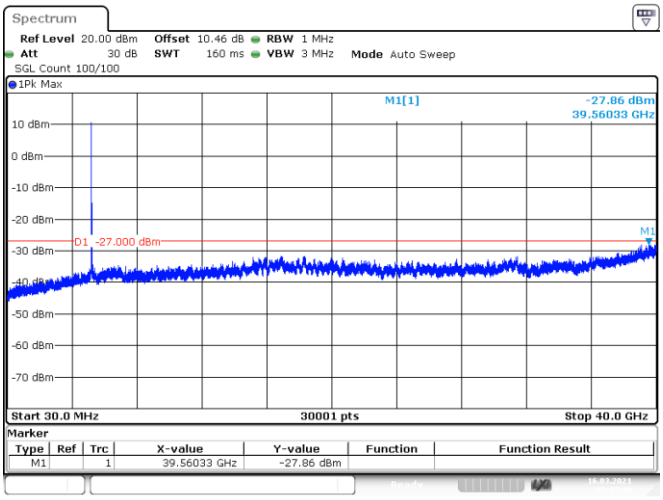
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn’t be performed.

4. This Report only show the test plots of the worst case (U-NII-1).

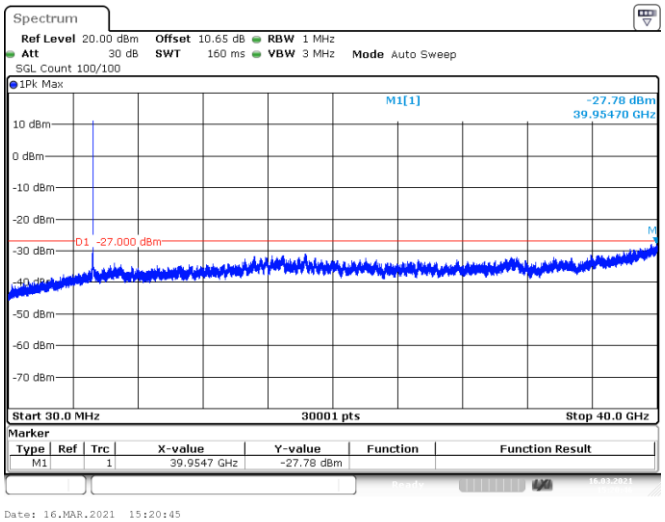
Conducted method

EUT Description	Projector	Model No.	YG431
Temperature	24℃	Humidity	56%
Test mode	802.11a (5180MHz)	Test mode	802.11a (5200MHz)

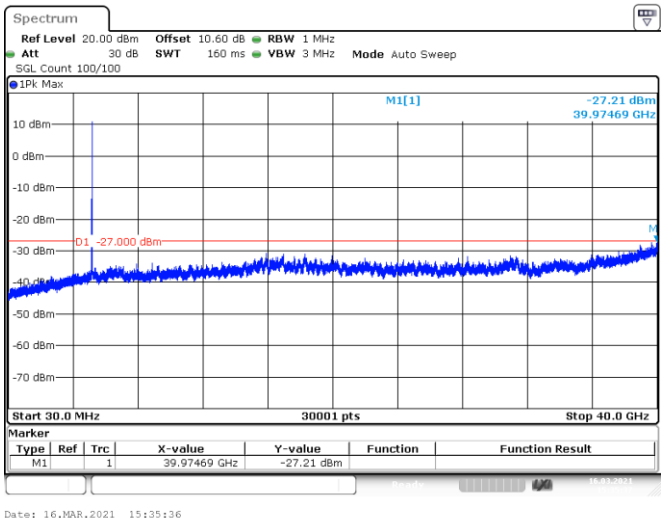


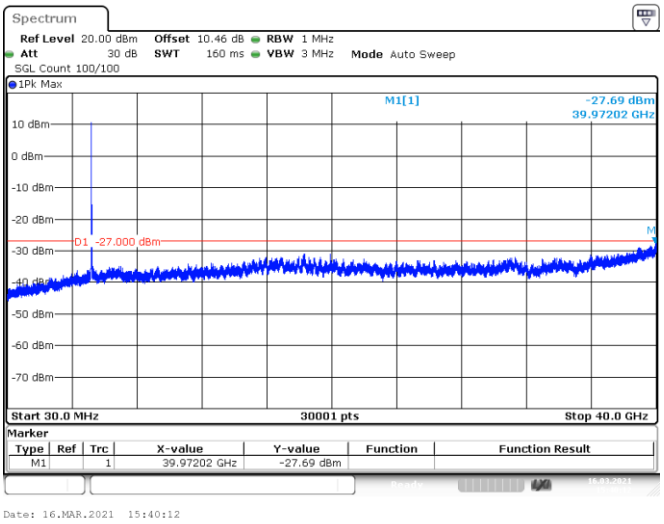


Test mode	802.11a(5240MHz)		

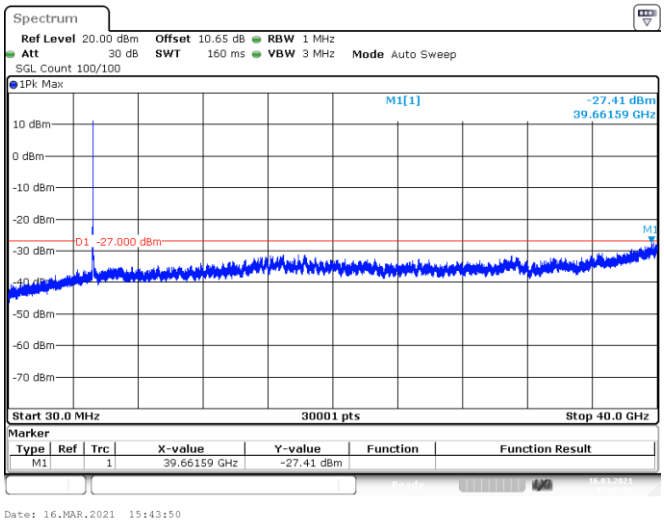


EUT Description	Projector	Model No.	YG431
Temperature	24℃	Humidity	56%
Test mode	802.11ac20 (5180MHz)	Test mode	802.11ac20 (5200MHz)

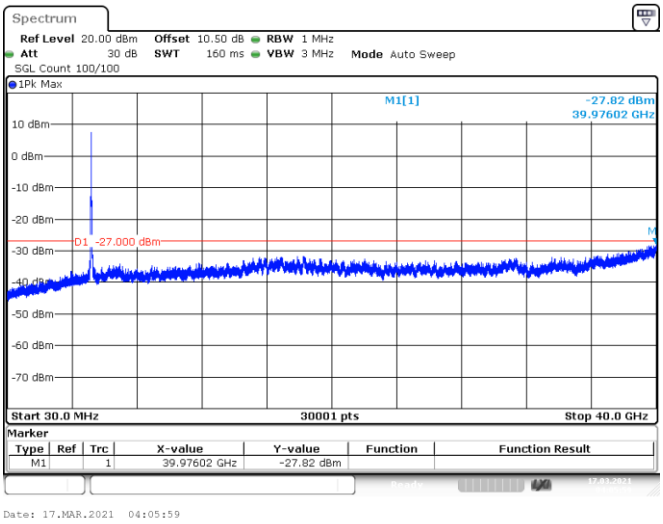


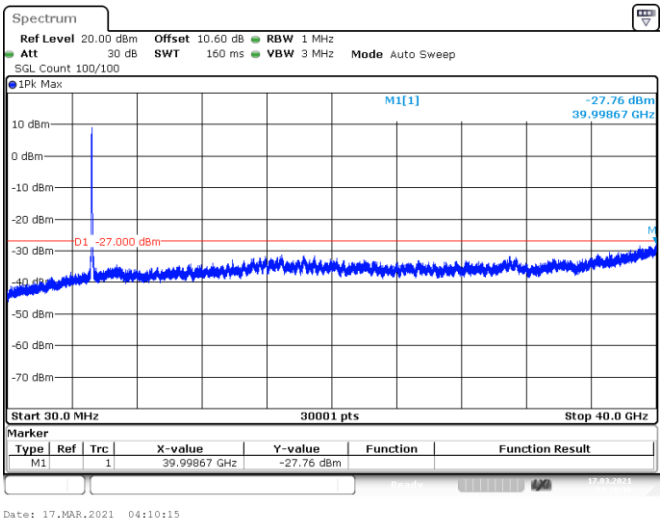


Test mode	802.11ac20 (5240MHz)		

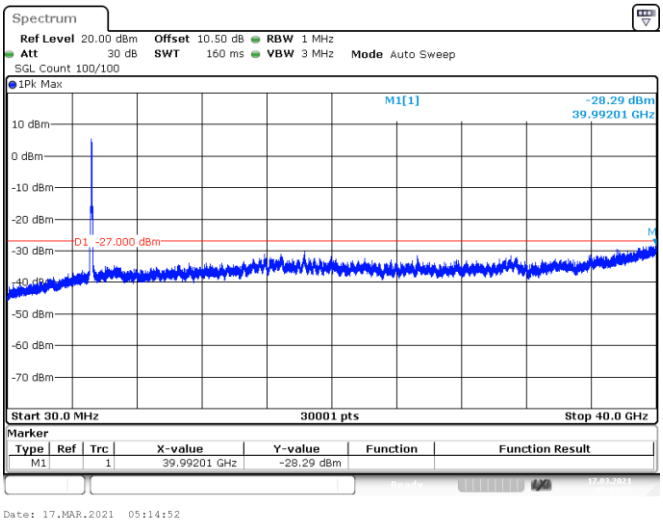


EUT Description	Projector	Model No.	YG431
Temperature	24℃	Humidity	56%
Test mode	802.11ac40 (5190MHz)	Test mode	802.11ac40 (5230MHz)

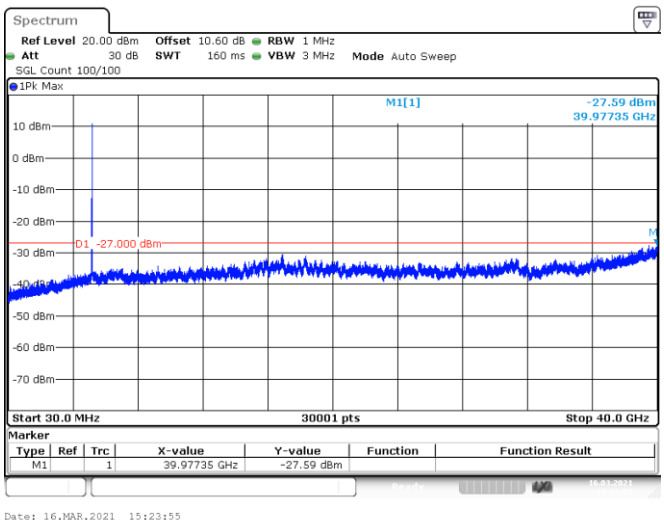


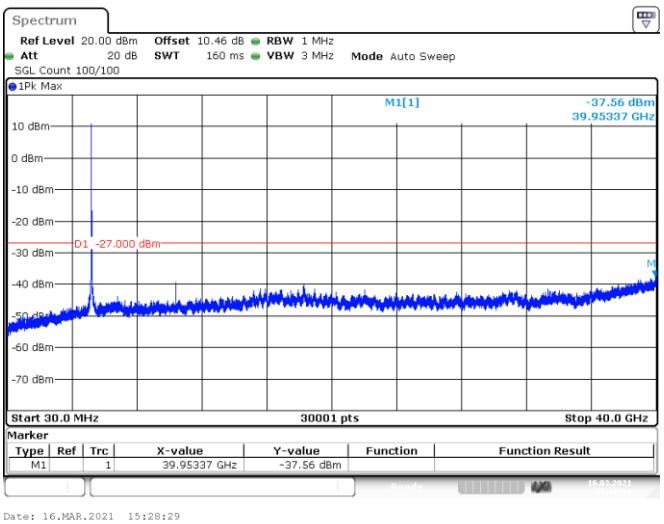


Test mode	802.11ac80 (5210MHz)		

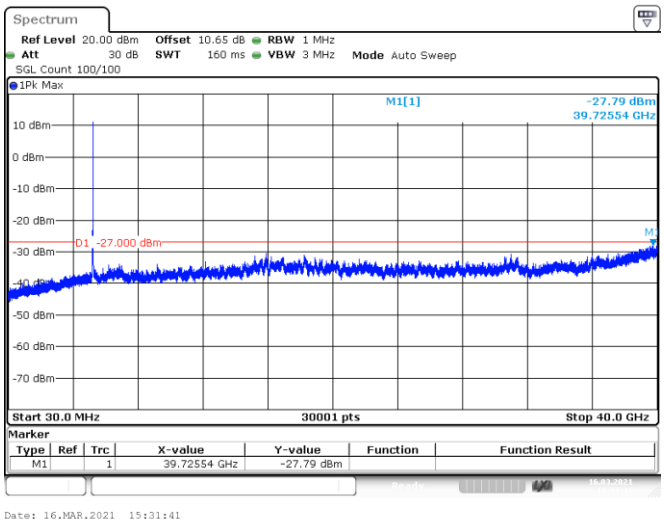


EUT Description	Projector	Model No.	YG431
Temperature	24℃	Humidity	56%
Test mode	802.11n20 (5180MHz)	Test mode	802.11n20 (5200MHz)

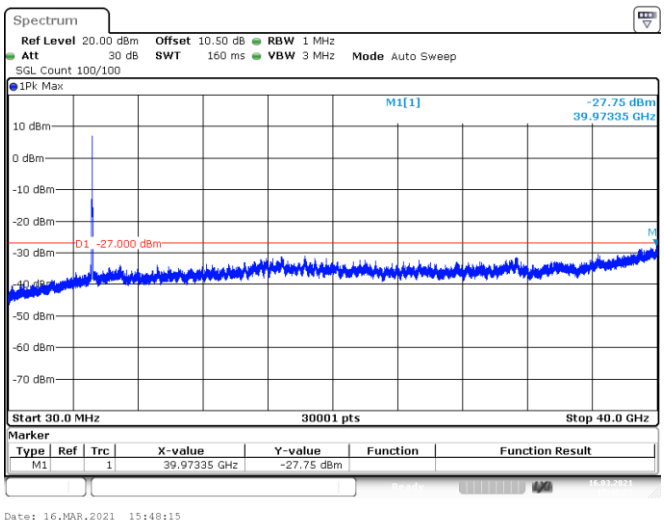


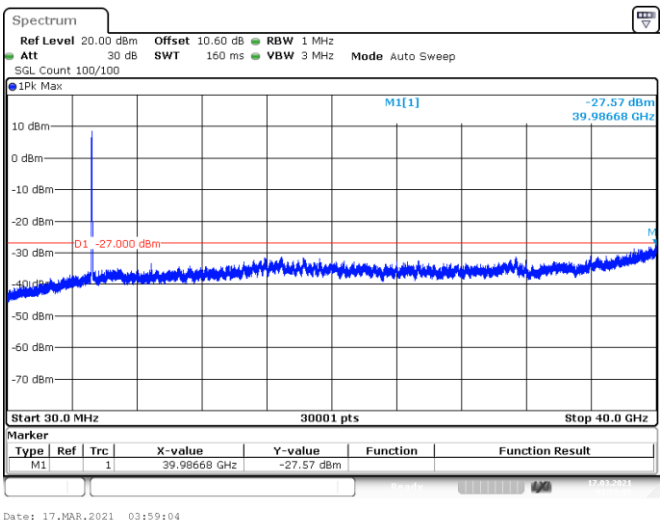


Test mode	802.11n20 (5240MHz)		

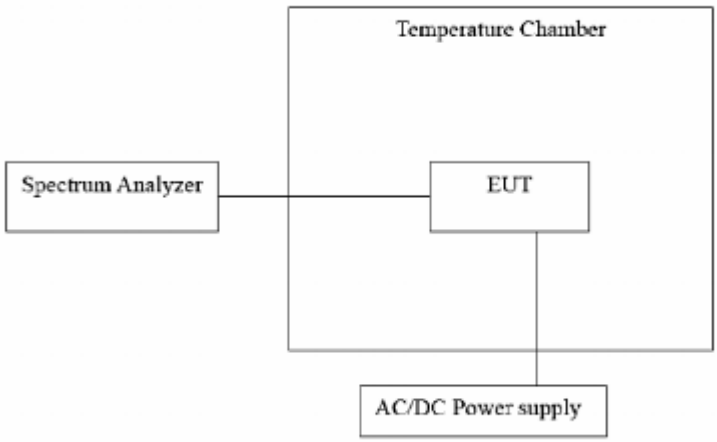


EUT Description	Projector	Model No.	YG431
Temperature	24℃	Humidity	56%
Test mode	802.11n40 (5190MHz)	Test mode	802.11n40 (5230MHz)



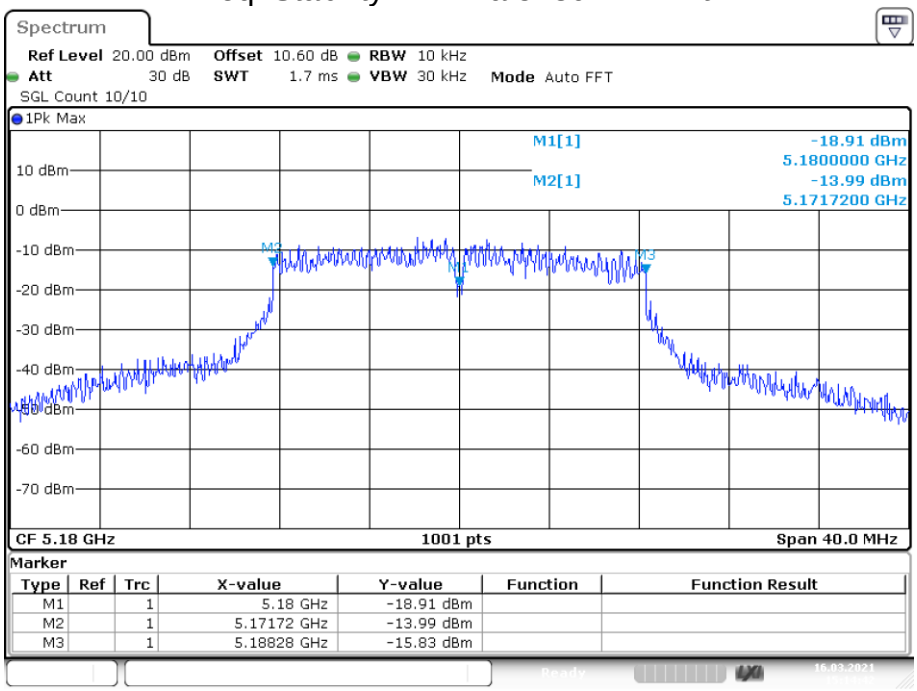


4.7 Frequency Stability Measurement

Test Requirement:	FCC Part15 Section 15.407(g) &Part2 J Section 2.1055
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	Only record the worst data.

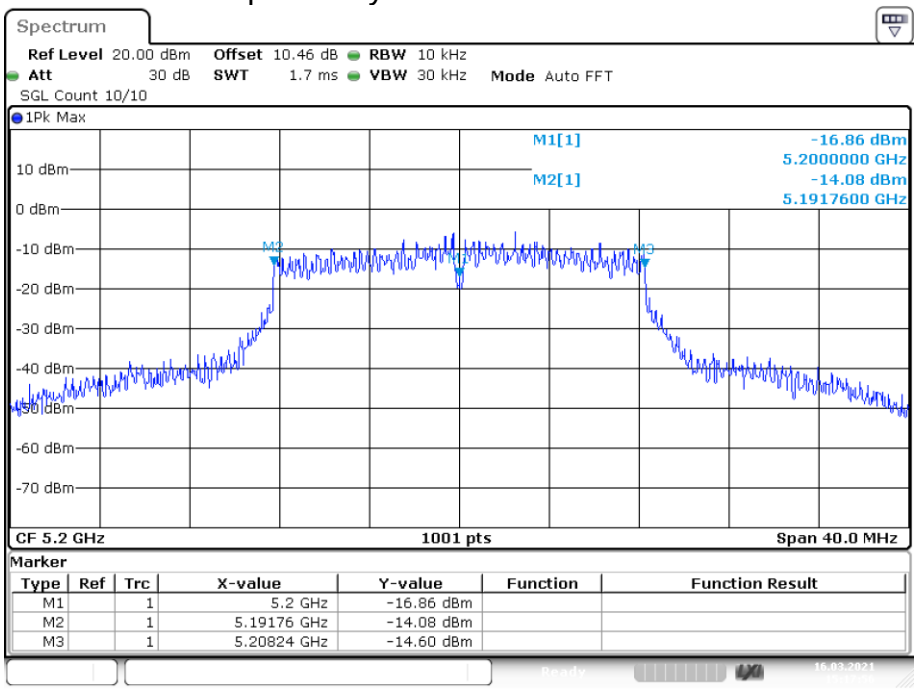
Condition	Mode	Frequency (MHz)	Antenna	Measured Frequency (MHz)	Frequency Error (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
NVNT	a	5180	Ant1	5180	0	0	25	Pass
NVNT	a	5200	Ant1	5200	0	0	25	Pass
NVNT	a	5240	Ant1	5239.98	-20000	-3.82	25	Pass

Freq. Stability NVNT a 5180MHz Ant1



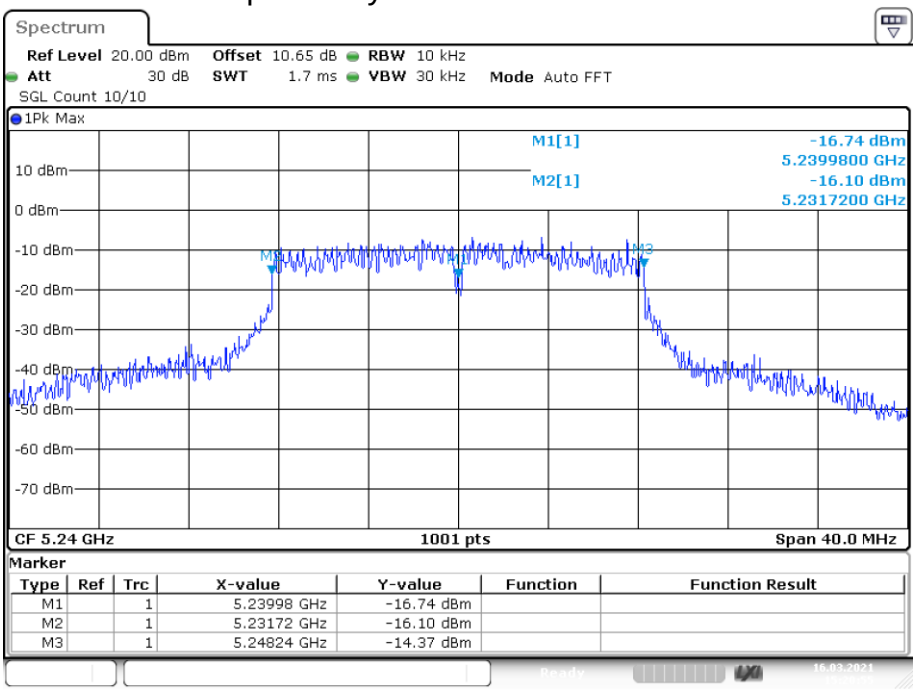
Date: 16.MAR.2021 15:14:42

Freq. Stability NVNT a 5200MHz Ant1



Date: 16.MAR.2021 15:17:56

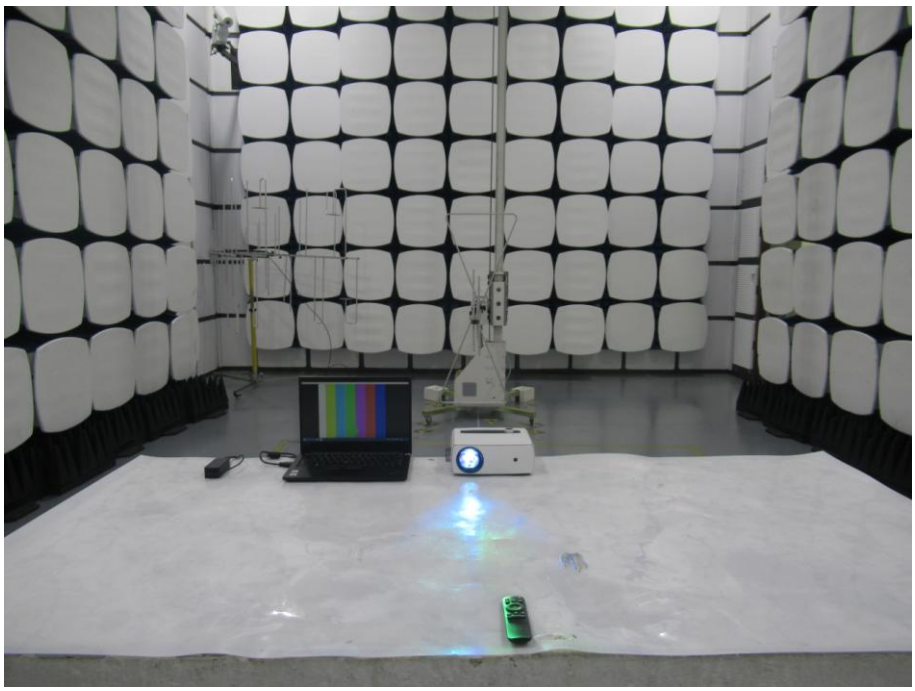
Freq. Stability NVNT a 5240MHz Ant1

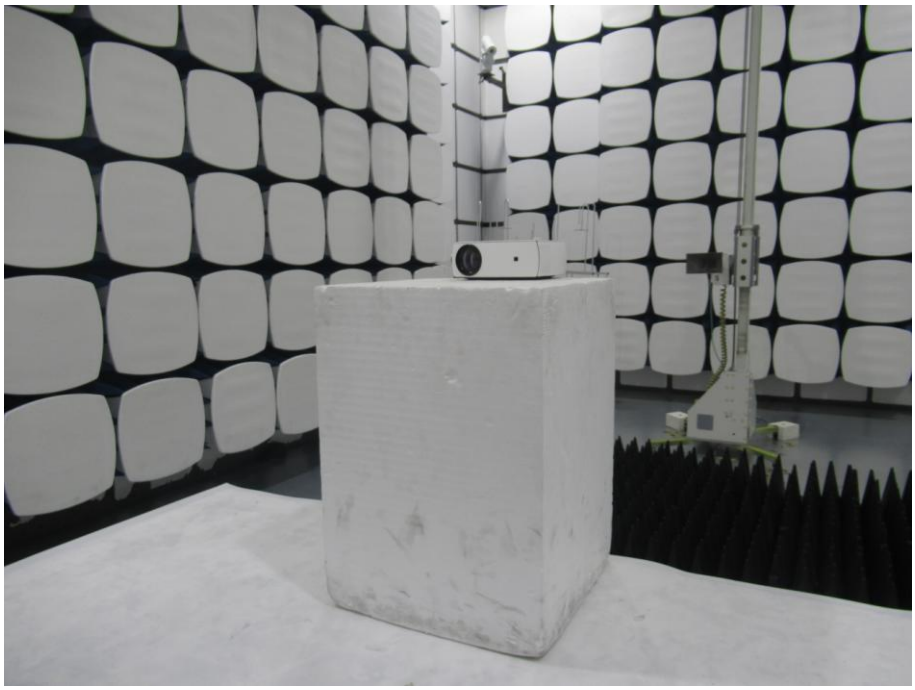


Date: 16.MAR.2021 15:20:55

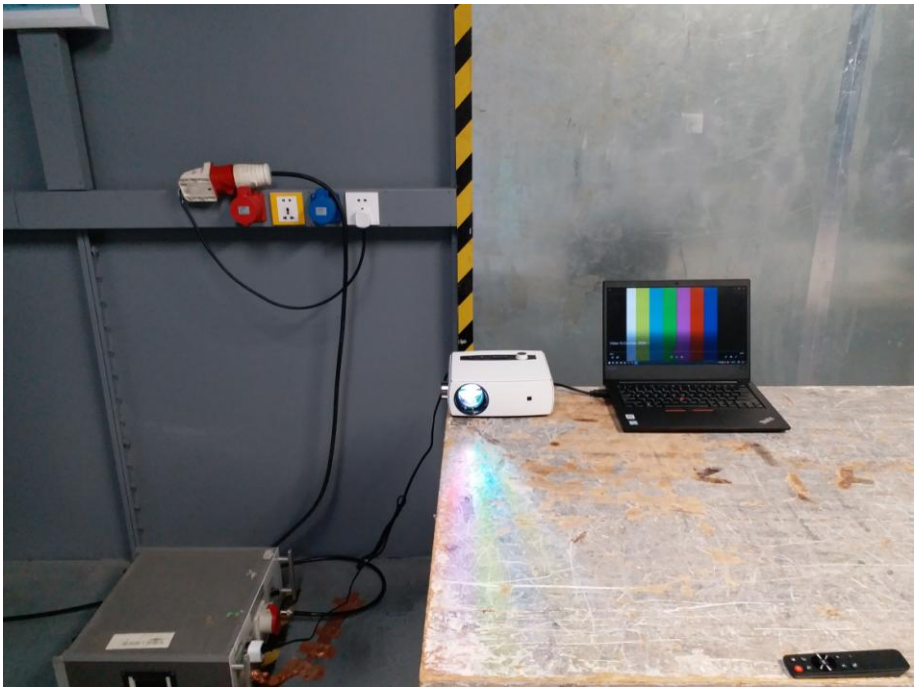
5 Test Setup Photo

5.1 Photos of Radiated emission

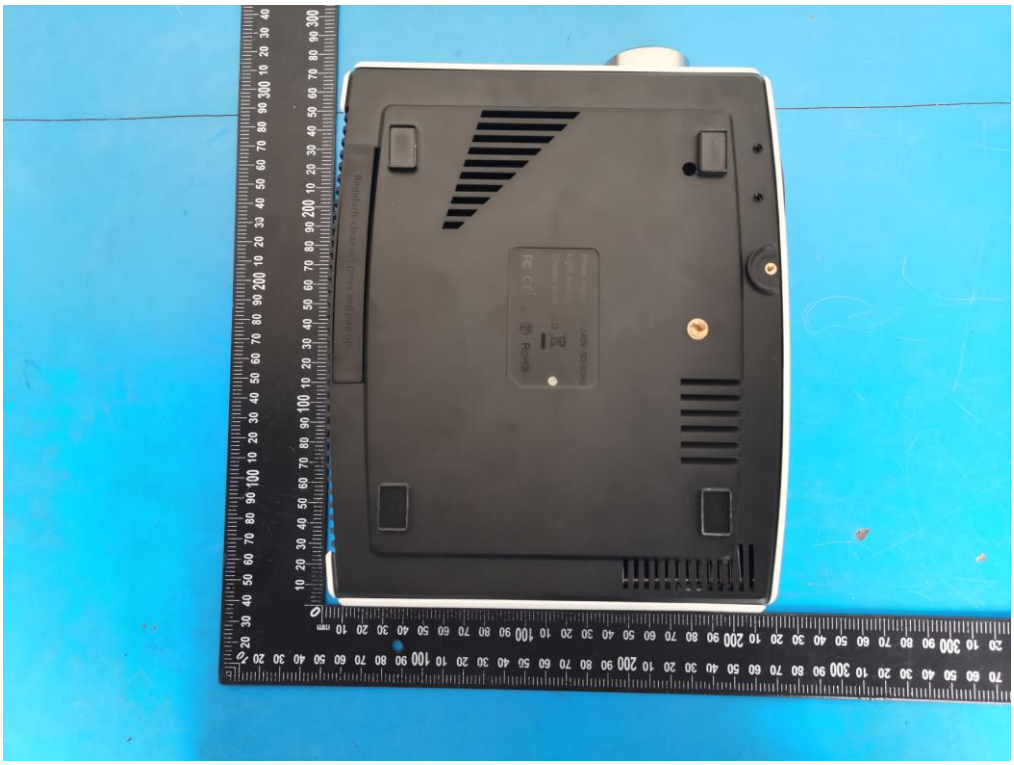




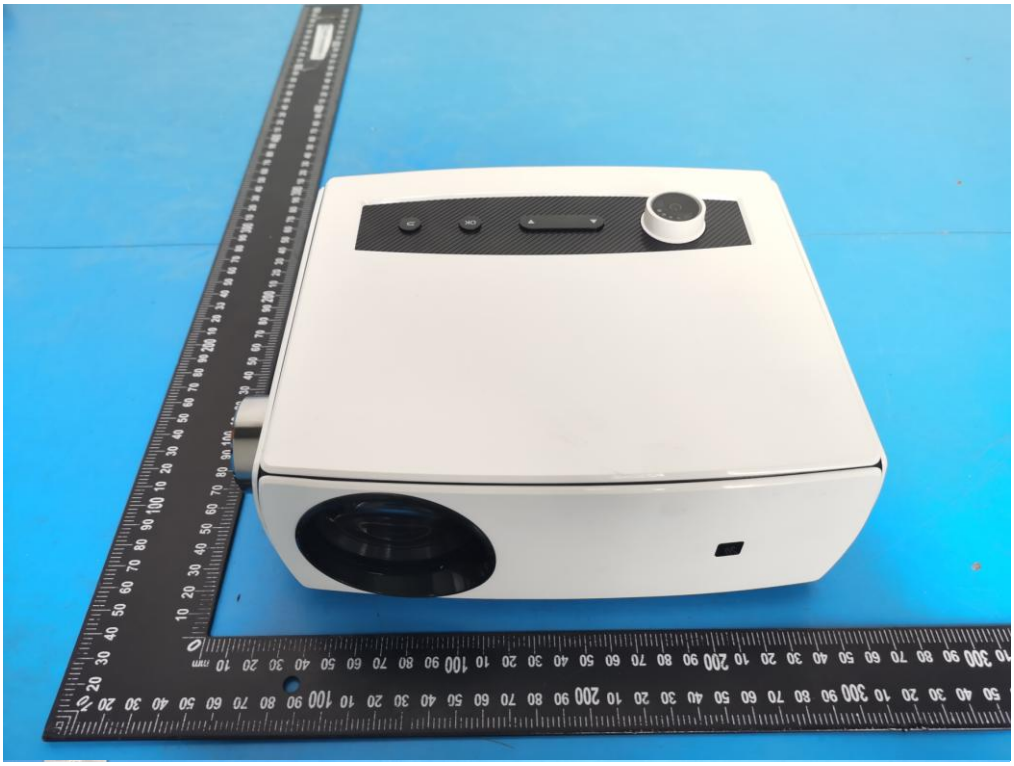
5.2 Photos of Conducted Emission test

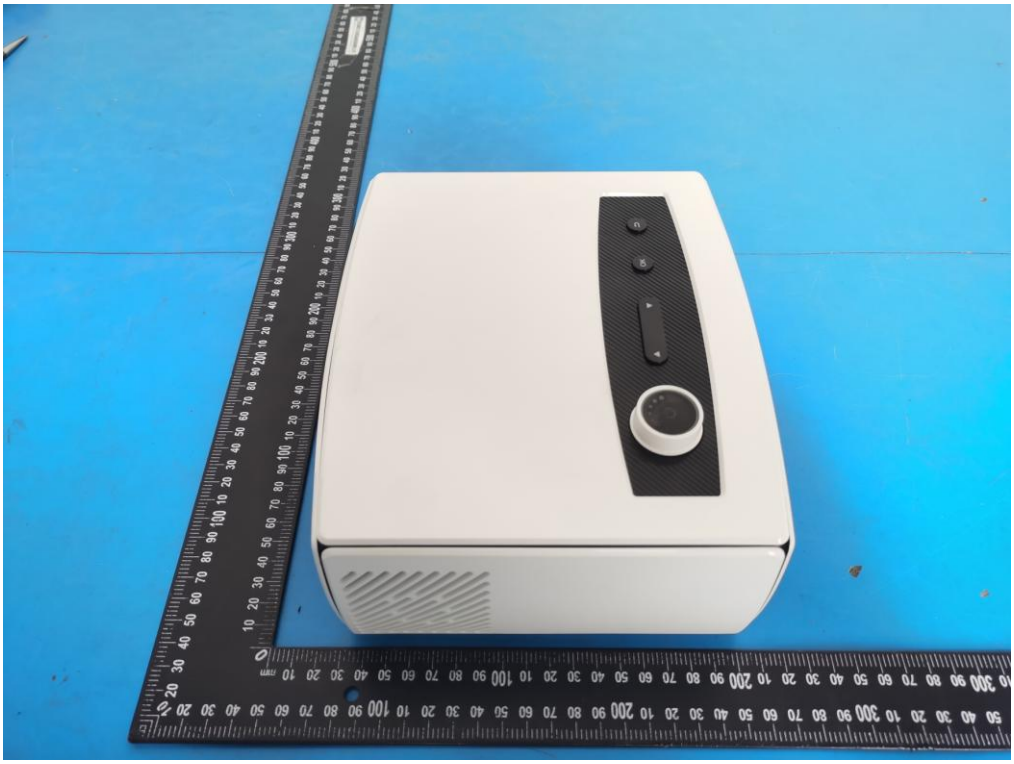


6 EUT Photo



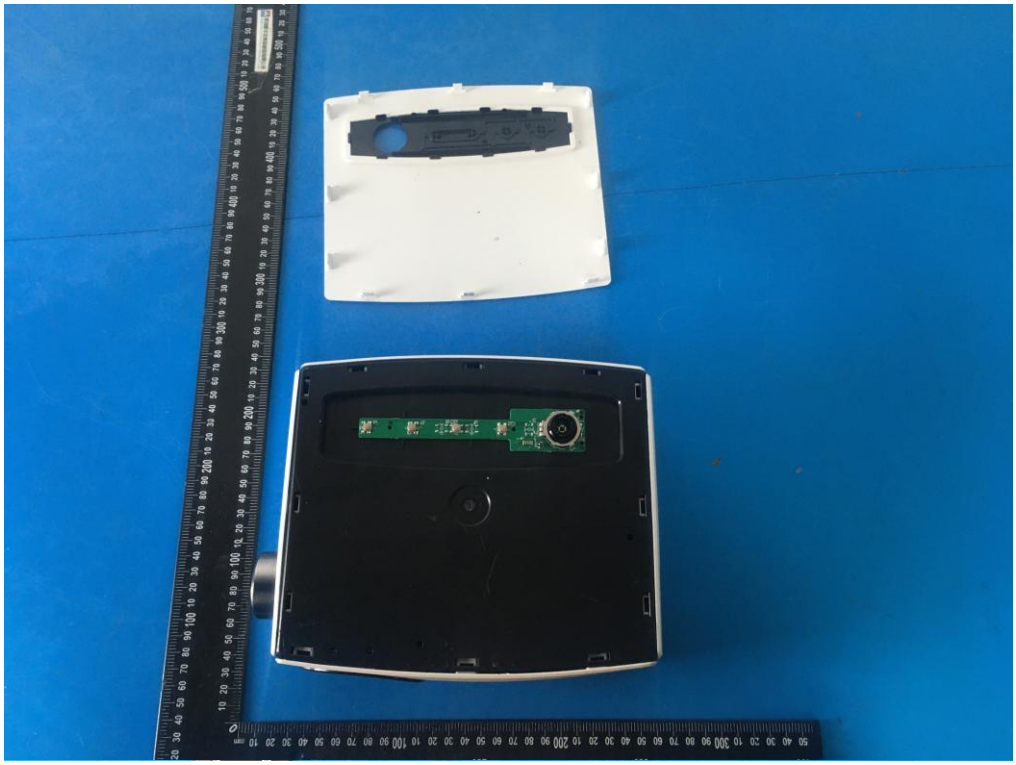
OK

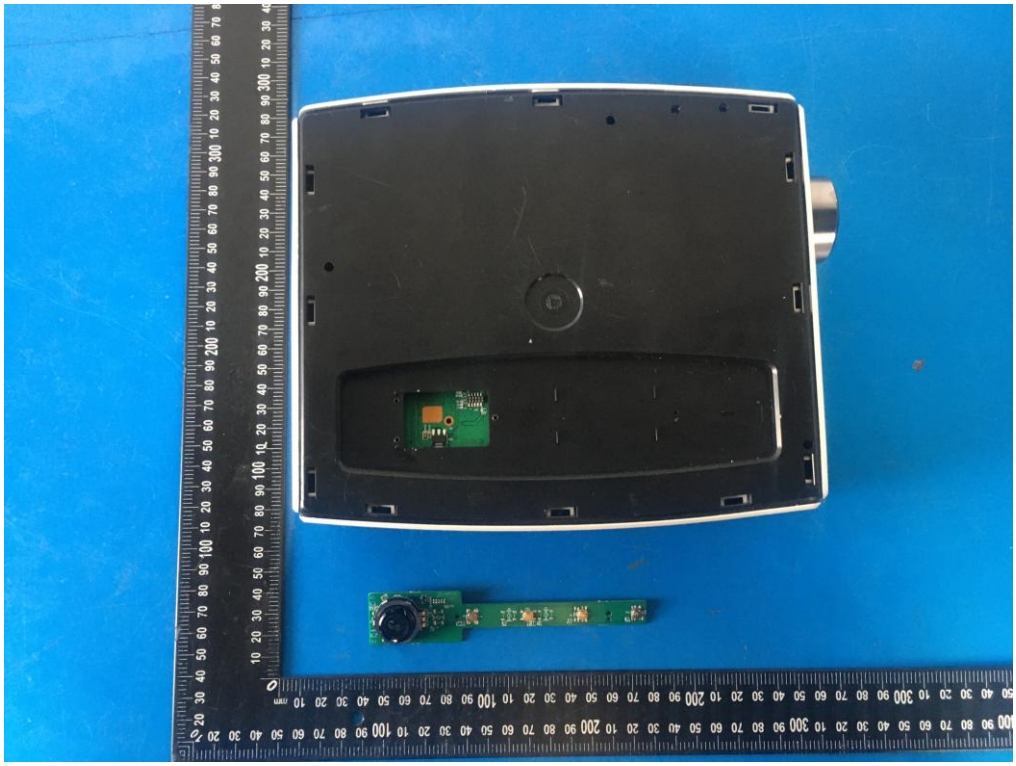


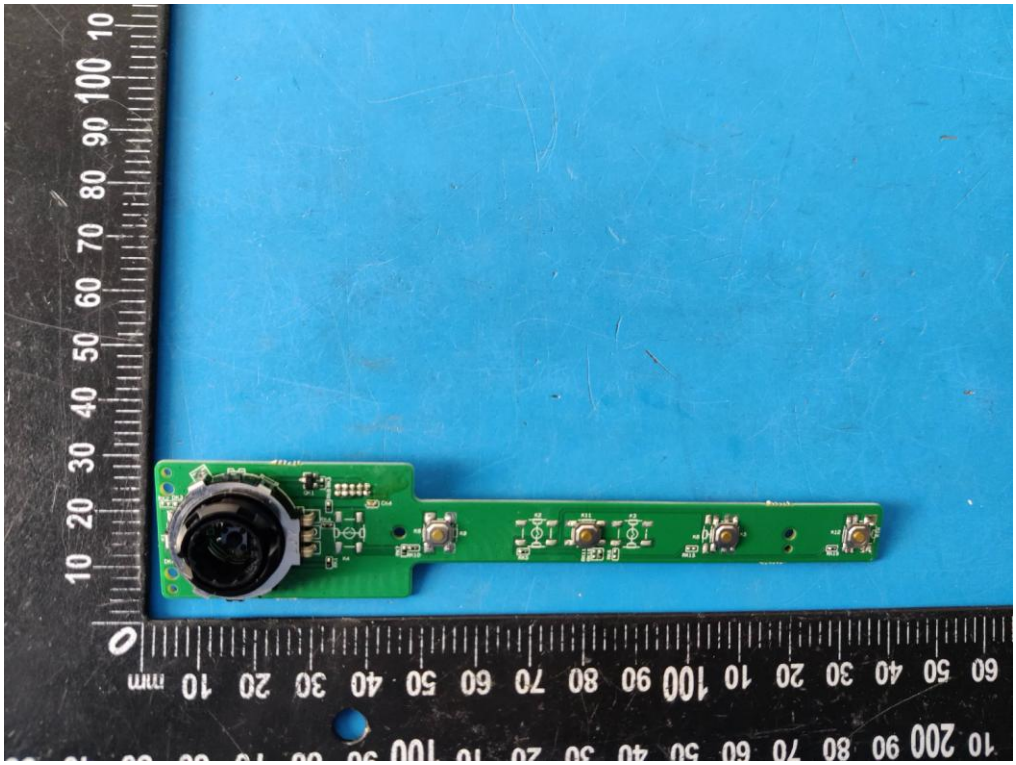


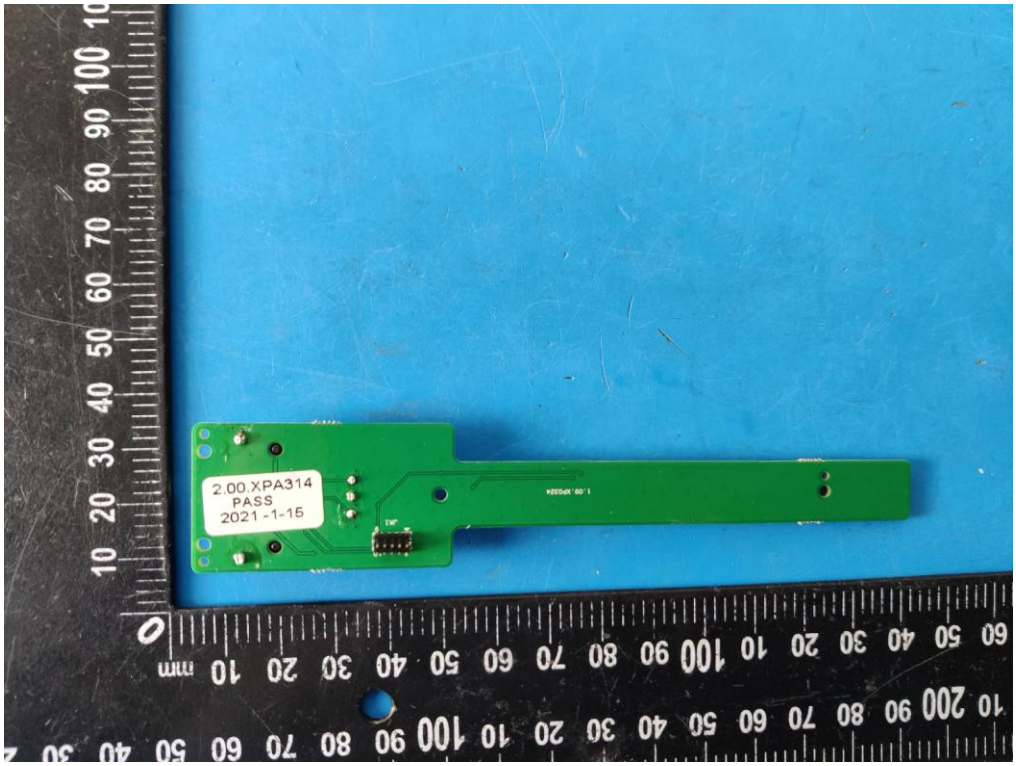
AV
HDMI
KEYSTONE
OK

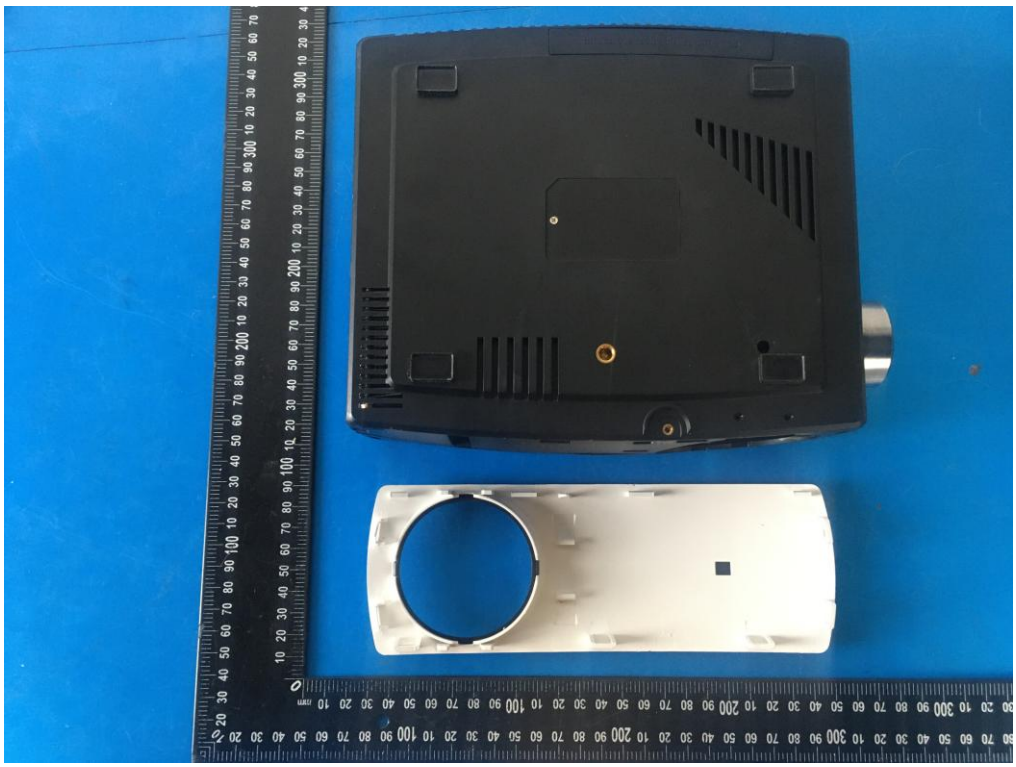
OK

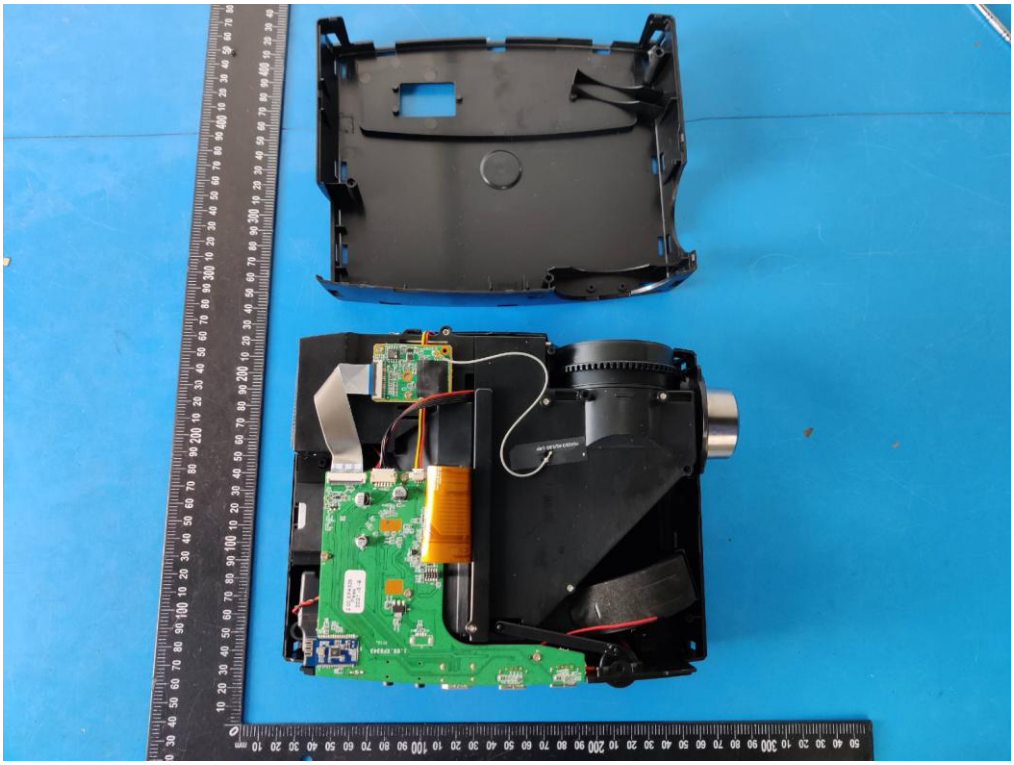


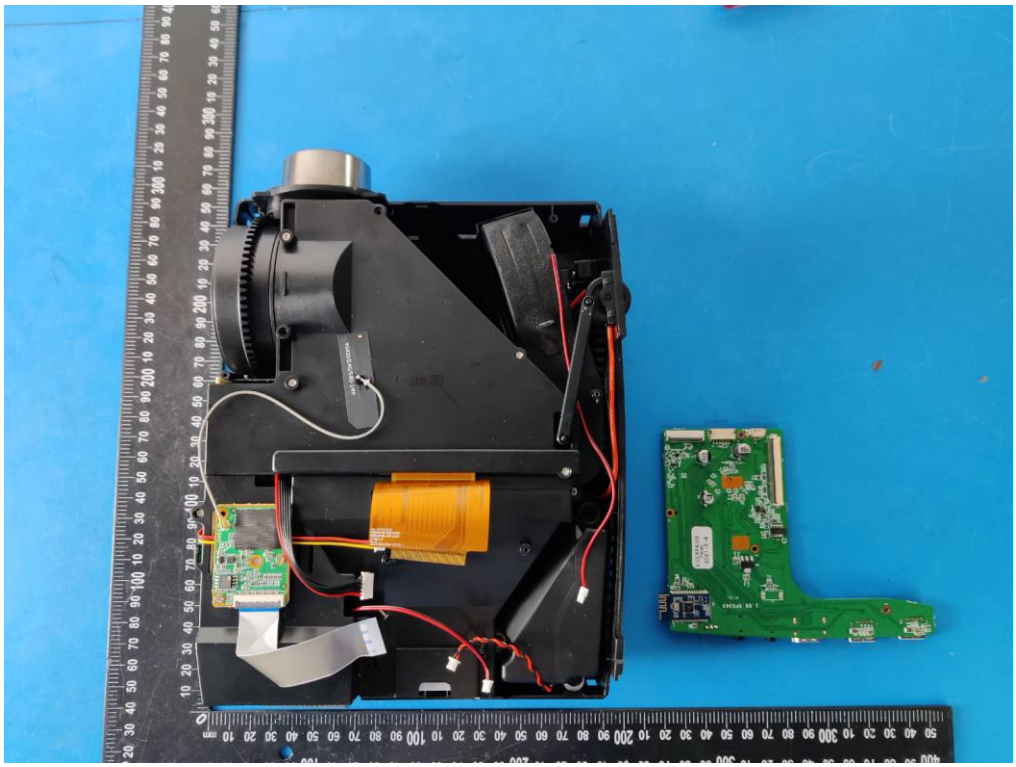


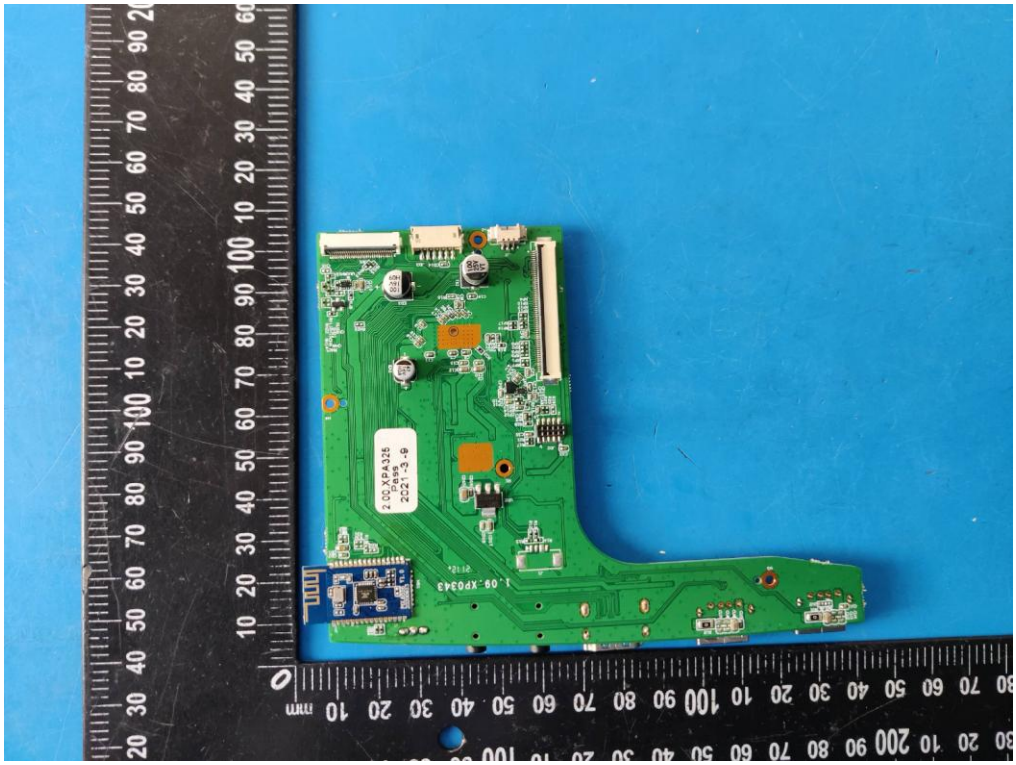


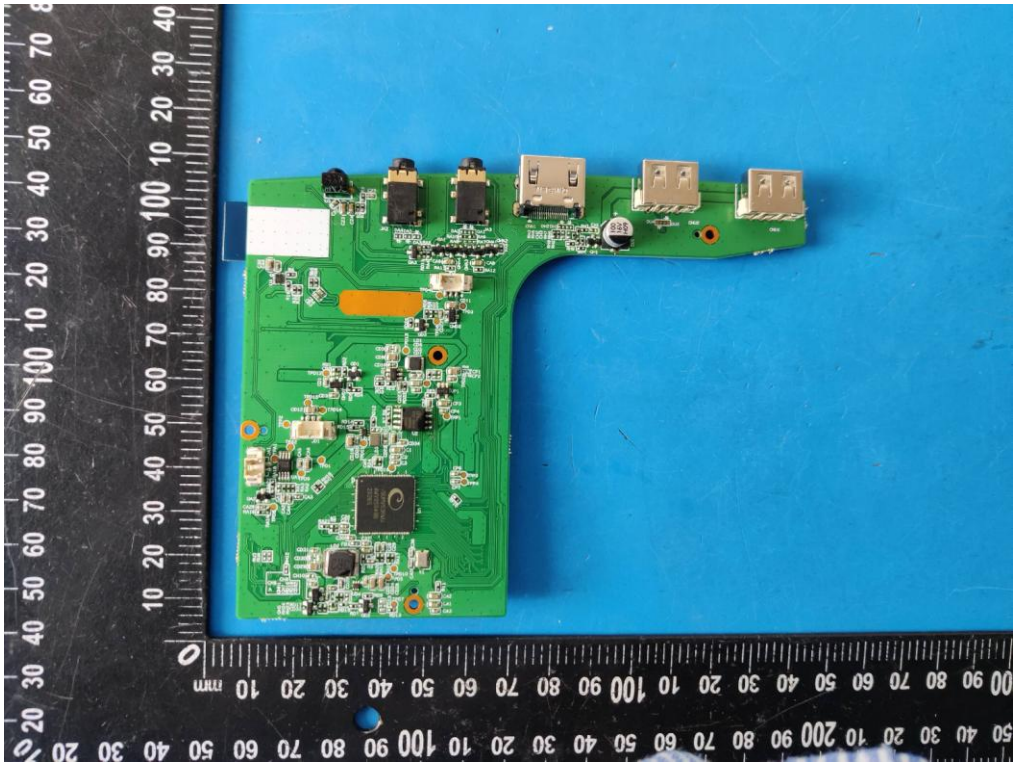

2.00.XPA314
PASS
2021-1-15

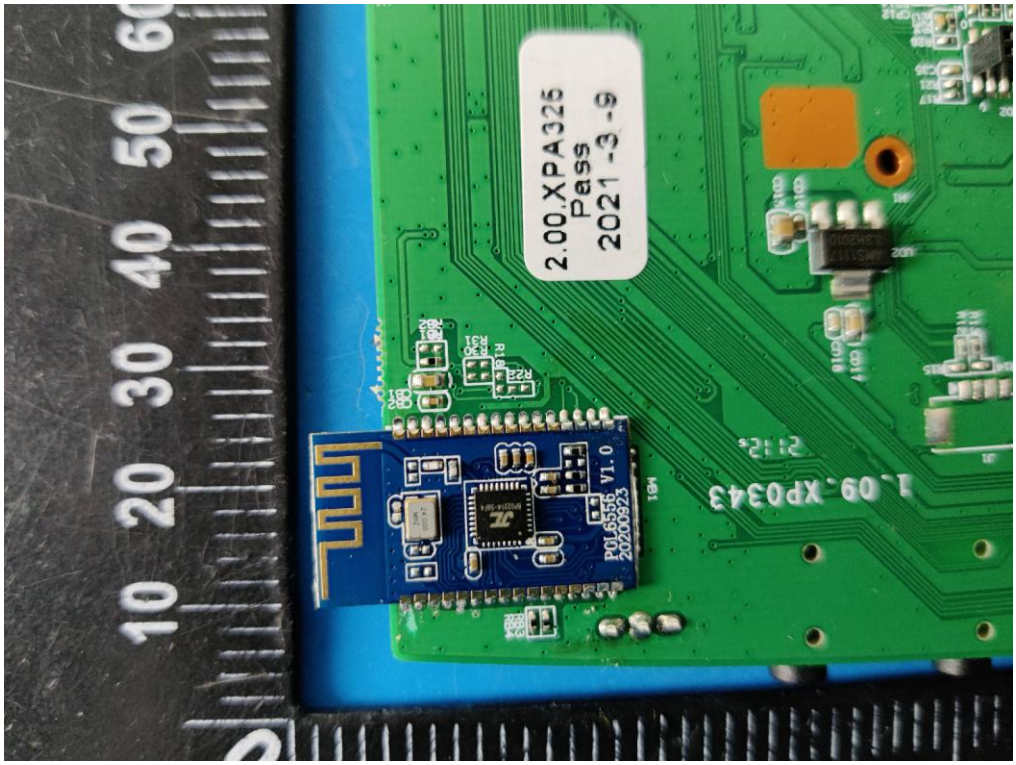


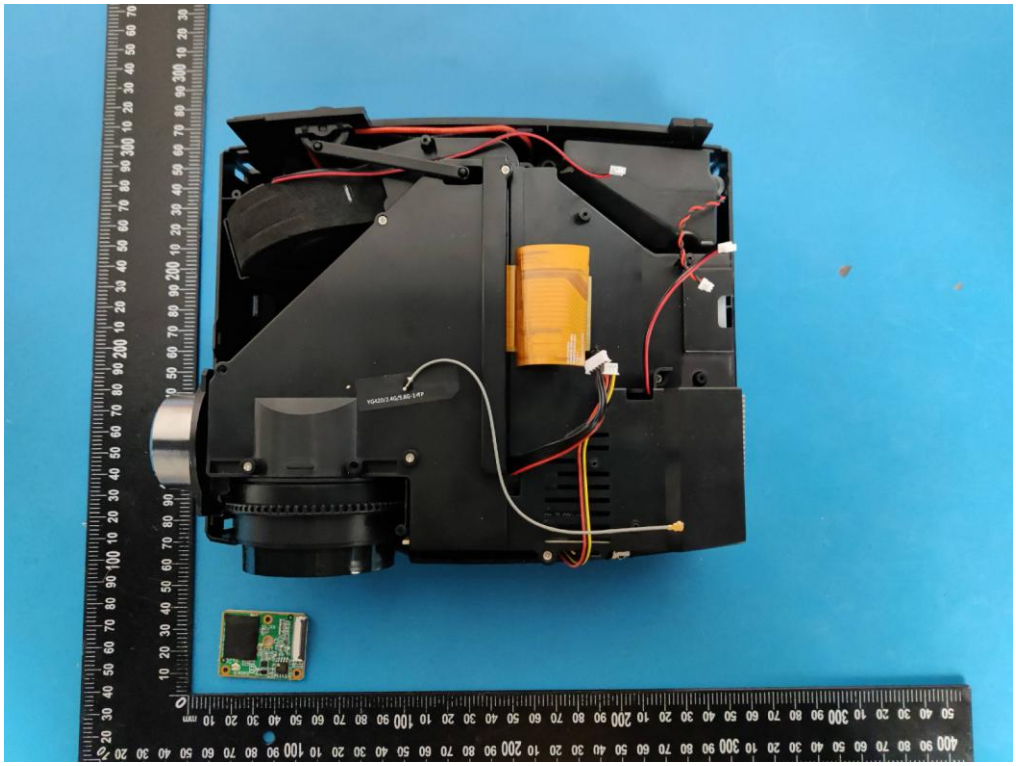


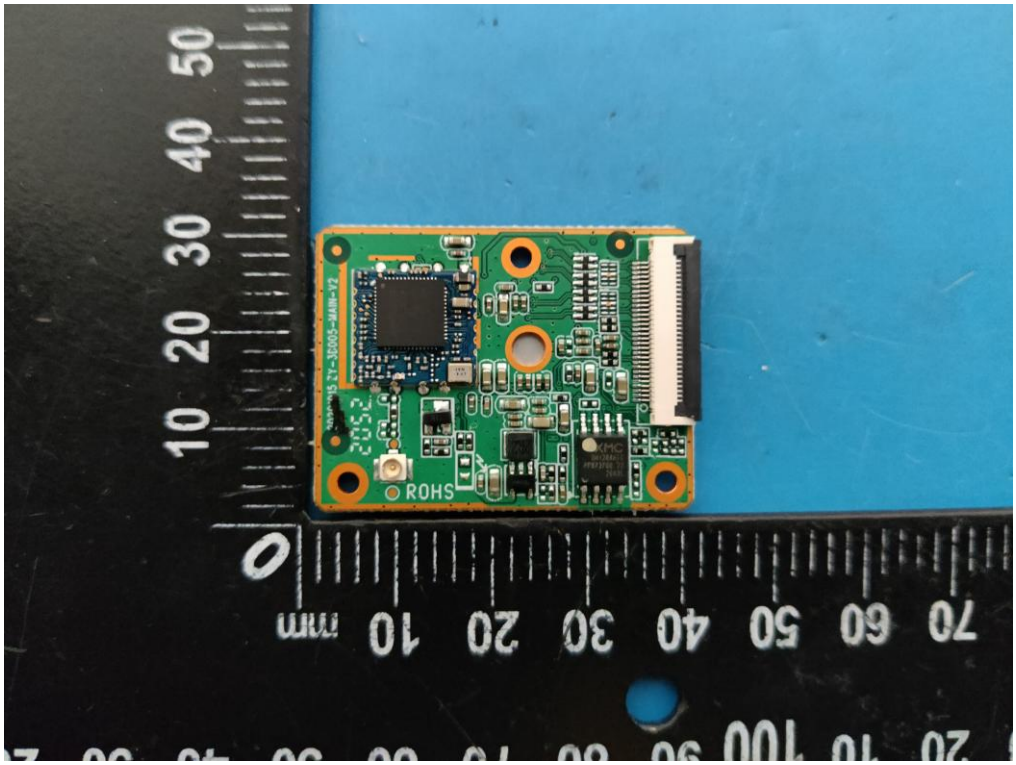


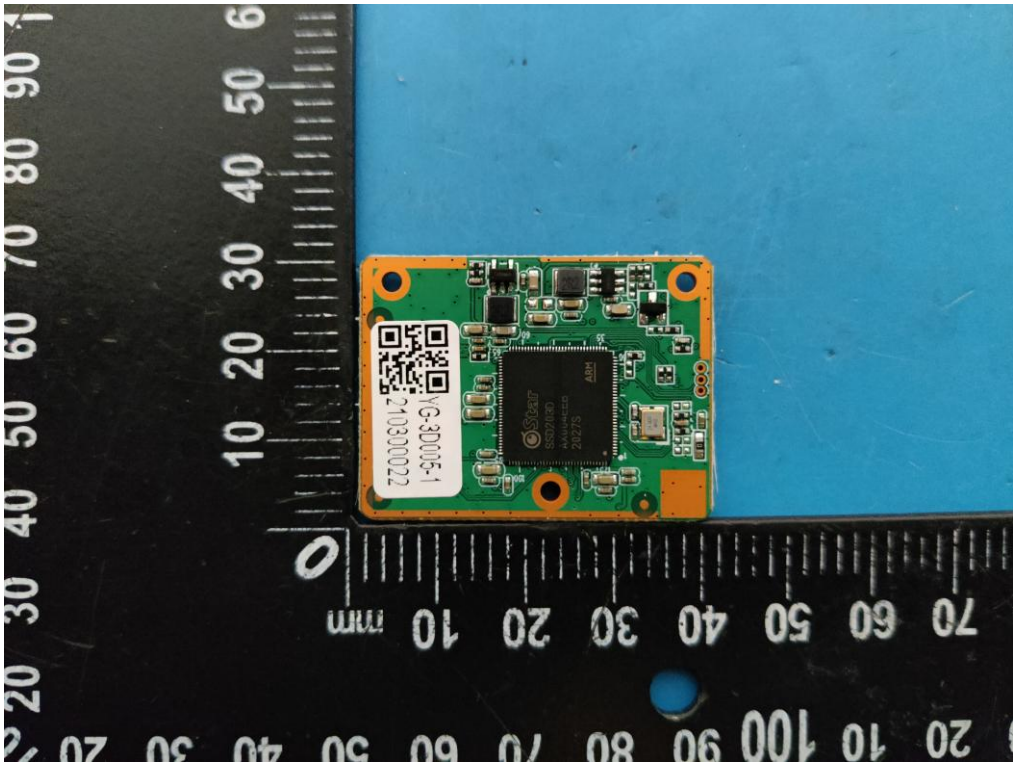


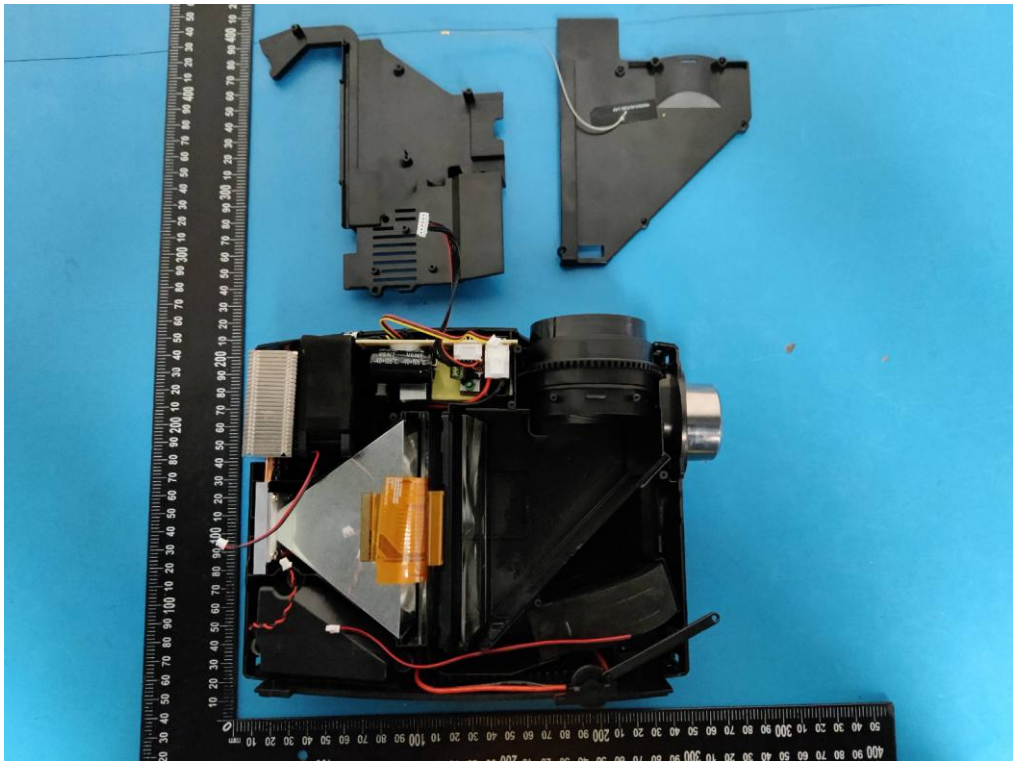


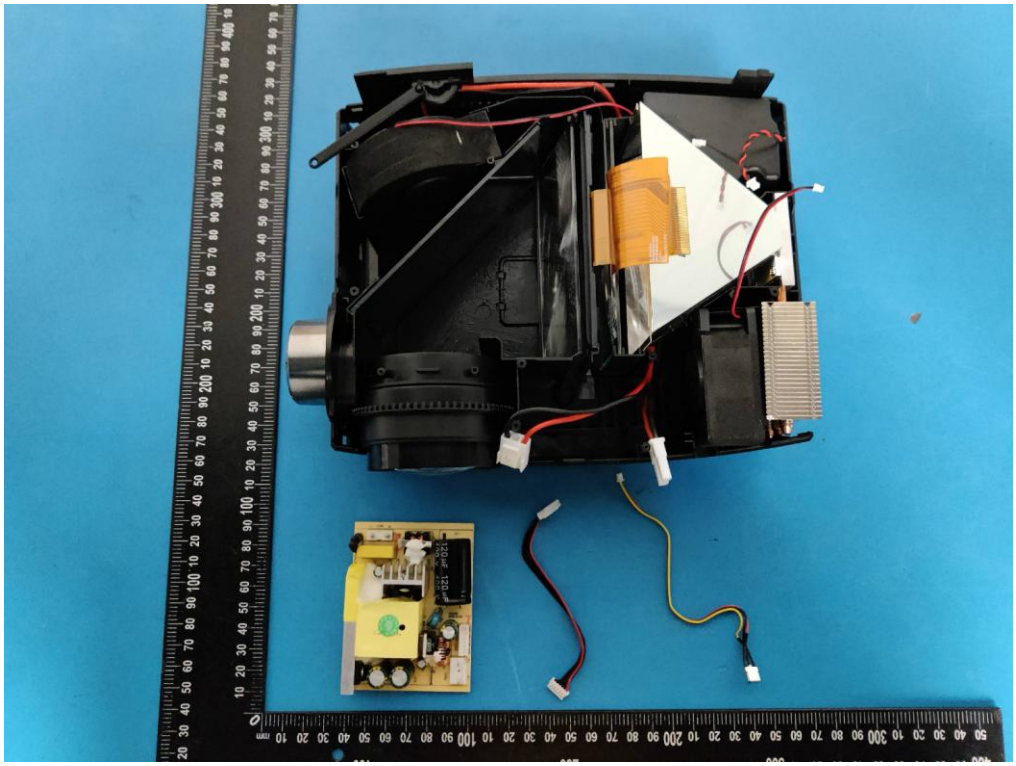

2.00.XPA325
Pass
2021-3-9
1.09.XP0343
POL6556 V1.0
20200923

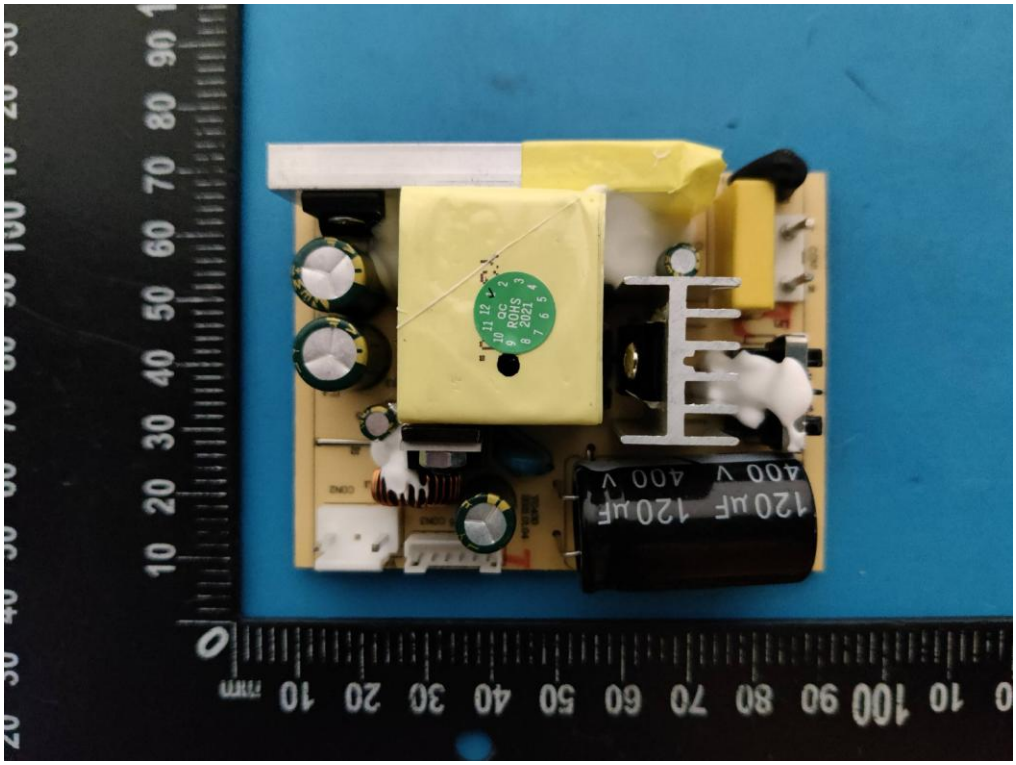


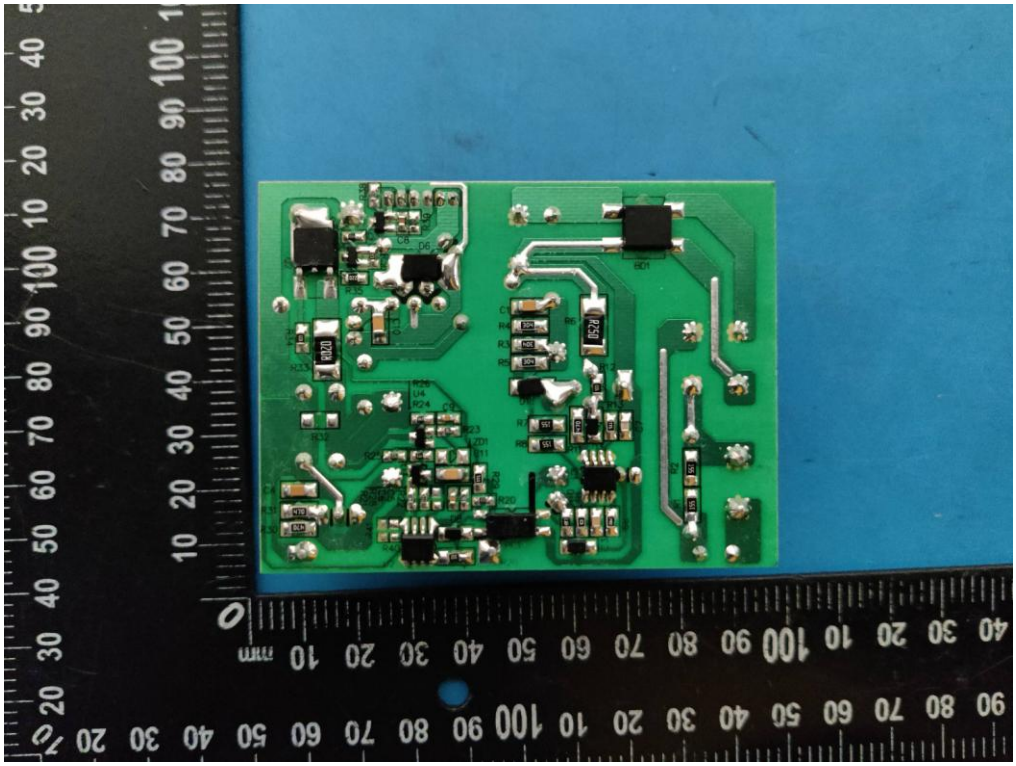

ROHS

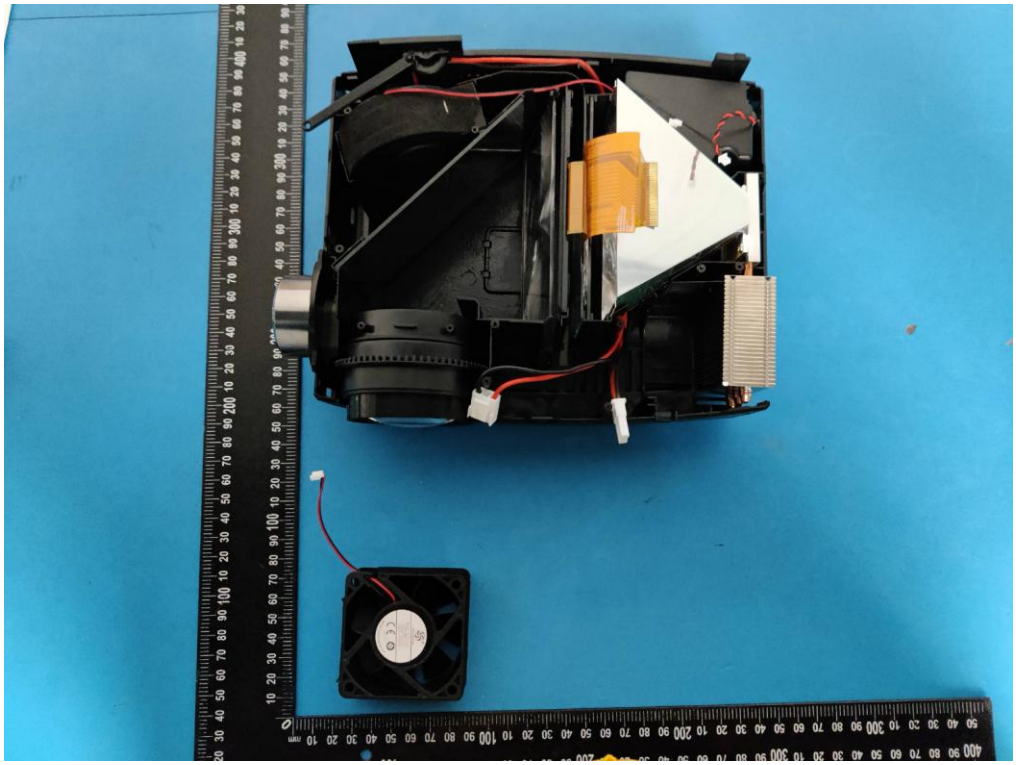

YG-3D005-1
2103000022






120µF 120µF
400 V 400 V





COOLINGFAN
MODEL DFS602512L
DC12V 0.15A
SLEEVE BEARING
TÜV
www.coolingfan.cn

---END---