FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

TCL Technoly Electronics (Huizhou) Co., Ltd.

Sound Bar System

Model Number: SB3621n-G8

FCC ID: ZVASB000017

Prepared for:	TCL Technoly Electronics (Huizhou) Co., Ltd.
	Section 37, Zhongkai High-tech Development Zone,
	Huizhou City, Guang Dong Province, China, 516006
Prepared By:	EST Technology Co., Ltd.
	Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China
Tel: 86-769-83081888-808	

Report Number:	ESTE-R1703008-2
Date of Test:	Apr. 02~08, 2019
Date of Report:	Apr. 10, 2019

TABLE OF CONTENTS

Description Page

EST Technology Co., Ltd.

Applicant: **Address:**	TCL Technoly Electronics (Huizhou) Co., Ltd. Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guang Dong Province, China, 516006		
Manufacturer: **Address:**	TCL Technoly Electronics (Huizhou) Co., Ltd. Section 37, Zhongkai High-tech Development Zone, Huizhou City, Guang Dong Province, China, 516006		
E.U.T:	Sound Bar System		
Model Number:	SB3621n-G8		
Power Supply:	AC 120V/60Hz		
Test Voltage:	AC 120V/60Hz		
Trade Name:	VIZIO	Serial No.:	------
Date of Receipt:	Apr. 02, 2019	Date of Test:	Apr. 02~08, 2019
Test Specification:	FCC Rules and Regulations Part 15 Subpart C:2018 ANSI C63.10:2013		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd. **Date:** Apr. 10, 2019		

Prepared by:	Reviewed by:	Approved by:
Ring / Assistant	Tony / Engineer	Iceman Hu / Manager

Other Aspects:

The transmitter module itself has not changed, only circuits and electronic components and product model number have changed,so just re-tested Conducted Emissions and Radiated Emissions (30-1000Mhz),other test item needn't re-tested,test data refer to test report " ESTE-R1703008-1".

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	Sound Bar System	
FCC ID	:	ZVASB000017	
Model Number	:	SB3621n-G8	
Operation frequency	:	2402MHz~2480MHz	
Number of channel	:	79	40
Antenna	:	Integral antenna, 2.00 dBi gain	
Modulation	:	Dual-mode Bluetooth 4.0 BT BDR: GFSK BT EDR: π/4-DQPSK BT EDR: 8-DPSK	Dual-mode Bluetooth 4.0 BLE: GFSK
Sample Type	:	Prototype production	

2. SUMMARY OF TEST

2.1. Summary of test result

Description of Test Item	Standard	Results
Maximum Peak Output Power	FCC Part 15: 15.247(b)(1) KDB 558074	N/A
20dB Bandwidth	FCC Part 15: 15.247a1 KDB 558074	N/A
Carrier Frequency Separation	FCC Part 15: 15.247(a)(1) KDB 558074	N/A
Number Of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii) KDB 558074	N/A
Dwell Time	FCC Part 15: 15.247(a)(1)(iii) KDB 558074	N/A
Radiated Emissions	FCC Part 15: 15.209 FCC Part 15: 15.247(d) ANSI C63.10:2013 KDB 558074	PASS
Band Edge Compliance	FCC Part 15: 15.247(d) KDB 558074	N/A
Power Line Conducted Emissions	FCC Part 15: 15.207 ANSI C63.10:2013 KDB 558074	PASS
Antenna requirement	FCC Part 15: 15.203	N/A
Note: KDB 558074 D01 15.247 Meas Guidance v05		

2.2. Test Facilities

EMC Lab : Certificated by CNAS, CHINA
Registration No.: L5288
Date of registration: November 13, 2017

Certificated by FCC, USA
Designation Number: CN1215
Test Firm Registration Number: 722932
Date of registration: November 21, 2017

Certificated by A2LA, USA
Registration No.: 4366.01
Date of registration: November 07, 2017

Certificated by Industry Canada
CAB identifier No.: CN0035
Date of registration: January 04, 2019

Certificated by VCCI, Japan
Registration No.: R-13663; C-14103
Date of registration: July 25, 2017
This Certificate is valid until: July 24, 2020

Certificated by TUV Rheinland, Germany
Registration No.: UA 50413872 0001
Date of registration: July 31, 2018

Certificated by TUV/PS, Shenzhen
Registration No.: SCN1017
Date of registration: January 27, 2011

Certificated by Intertek ETL SEMKO
Registration No.: 2011-RTL-L2-64
Date of registration: April 28, 2011

Certificated by Nemko, Hong Kong
Registration No.: 175193
Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

2.3. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	±3.48dB
Uncertainty for spurious emissions test (30MHz-1GHz)	±4.60 dB(Polarize: H)
	±4.68 dB(Polarize: V)
Uncertainty for spurious emissions test (1GHz to 18GHz)	±4.96dB
Uncertainty for radio frequency	7×10^{-8}
Uncertainty for conducted RF Power	0.20dB
Uncertainty for Power density test	0.26dB

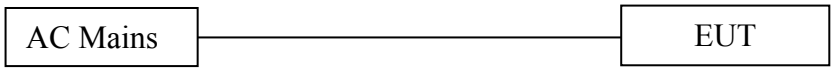
Note：This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.4. Assistant equipment used for test

2.4.1. N/A

2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was beset into Bluetooth test mode by software before test.



(EUT: Sound Bar System)

2.6. Test mode

The test software was used to control EUT work in Continuous TX mode, and select test channel, wireless mode

Mode	Channel	Frequency
GFSK	Low	2402MHz
	Middle	2441MHz
	High	2480MHz
8-DPSK	Low	2402MHz
	Middle	2441MHz
	High	2480MHz

2.7. Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2402	2	2403	3	2404	4	2405
5	2406	6	2407	7	2408	8	2409
9	2410	10	2411	11	2412	12	2413
13	2414	14	2415	15	2416	16	2417
17	2418	18	2419	19	2420	20	2421
21	2422	22	2423	23	2424	24	2425
25	2426	26	2427	27	2428	28	2429
29	2430	30	2431	31	2432	32	2433
33	2434	34	2435	35	2436	36	2437
37	2438	38	2439	39	2440	40	2441
41	2442	42	2443	43	2444	44	2445
45	2446	46	2447	47	2448	48	2449
49	2450	50	2451	51	2452	52	2453
53	2454	54	2455	55	2456	56	2457
57	2458	58	2459	59	2460	60	2461
61	2462	62	2463	63	2464	64	2465
65	2466	66	2467	67	2468	68	2469
69	2470	70	2471	71	2472	72	2473
73	2474	74	2475	75	2476	76	2477
77	2478	78	2479	79	2480	-	-

2.8. Test Equipment

2.8.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	CEPREI	June 15,18	1 Year
Artificial Mains Network	Rohde & Schwarz	ENV216	101260	CEPREI	June 15,18	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	101100	CEPREI	June 15,18	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.8.2. For radiated emission test(9 kHz-30MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	CEPREI	June 15,18	1 Year
Active Loop Antenna	SCHWAREBECK	FMZB 1519B	1519B-088	N/A	Aug. 01,18	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.8.3. For radiated emissions test (30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR7	101780	CEPREI	June 15,18	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	CEPREI	June 15,18	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

3. RADIATED EMISSIONS

3.1. Limit

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

15.209 Limit

Frequency (MHz)	Field Strength(μV/m)	Distance(m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

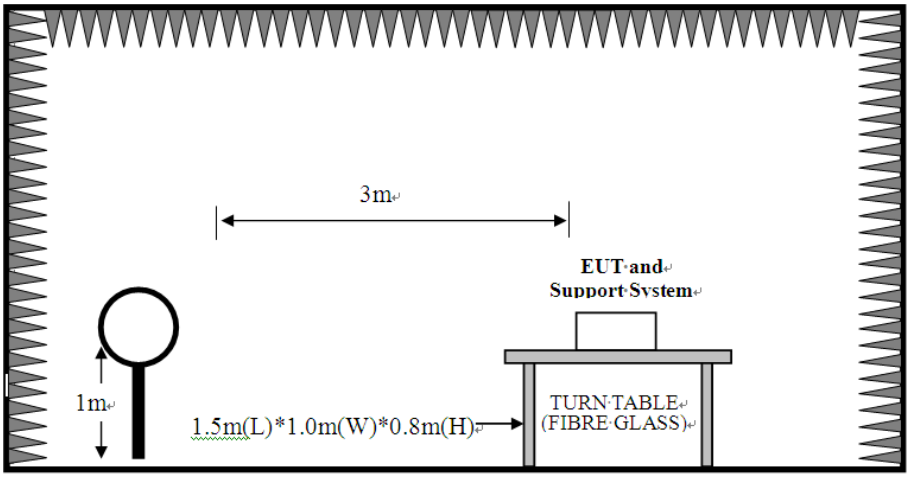
Remark：(1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

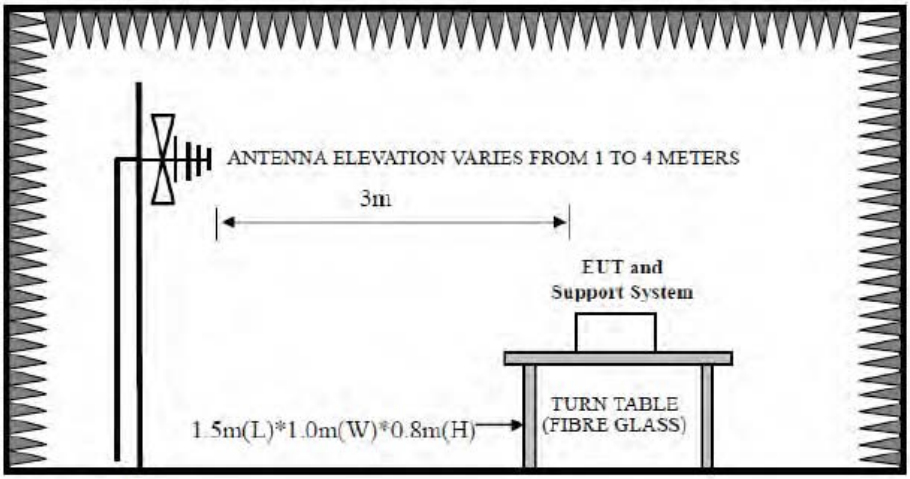
(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.2. Block Diagram of Test setup

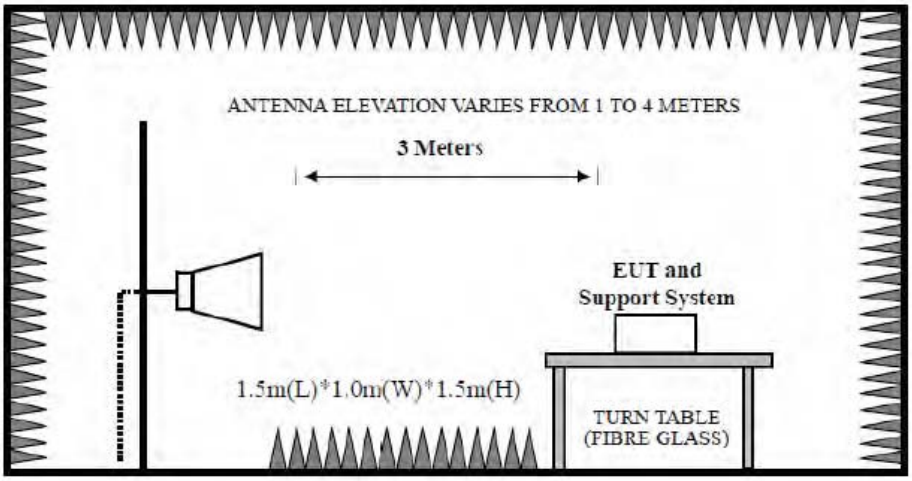
9kHz~30MHz



30~1000MHz



Above 1GHz



3.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter high above ground for 9kHz~1000MHz test, and which is 1.5 meter high above ground for above 1GHz test. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

The test frequency analyzer system was set to Peak Detect (300Hz RBW in 9kHz to 150kHz and 10kHz RBW in 150kHz to 30MHz) Function and Specified Bandwidth with Maximum Hold Mode.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

PEAK detector, 1MHz/1MHz for PAEK measurement,

PEAK detector, 1MHz/10Hz for Average measurement

The frequency range from 30MHz to 10th harmonic (25GHz) are checked.

3.4. Test Result

Pass

Note: 1、For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

2、The frequency 2402MHz 、2441MHz and 2480MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

3.5. Test Data

9 kHz – 30 MHz

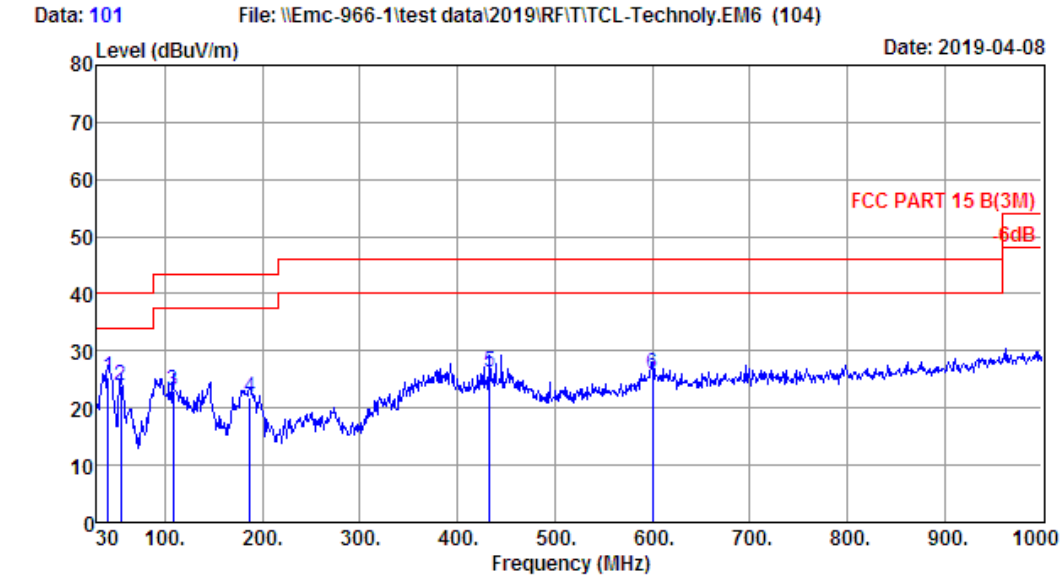
Pass

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

30 MHz – 1000 MHz

EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878



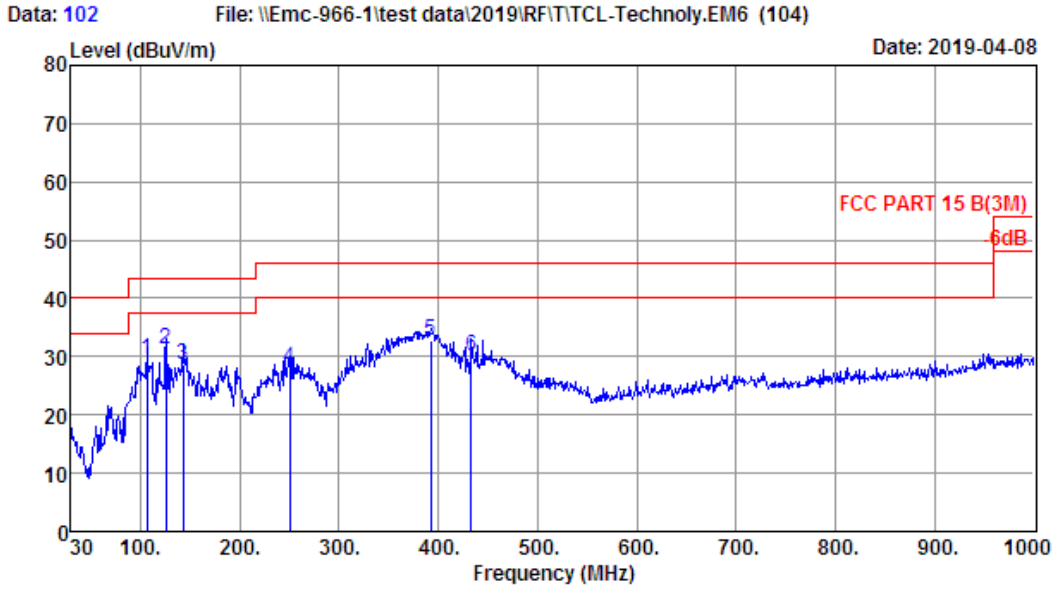

```
Site no.      : 1# 966 Chamber              Data no.  : 101
Dis. / Ant.   : 3m   37062                  Ant. pol. : VERTICAL
Limit         : FCC PART 15 B(3M)
Env. / Ins.   : Temp:24.0';Humi:52%;Press:101.2kPa
Engineer      : Viking
EUT           : Sound Bar System
Power         : AC 120V/60Hz
M/N           : SB3621n-G8
Test Mode     : TX Mode
```

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	41.64	11.70	0.44	13.30	25.44	40.00	14.56	QP
2	54.25	6.50	0.52	16.87	23.89	40.00	16.11	QP
3	108.57	10.80	1.12	11.01	22.93	43.50	20.57	QP
4	187.14	8.84	1.43	11.48	21.75	43.50	21.75	QP
5	433.52	16.74	2.55	6.92	26.21	46.00	19.79	QP
6	600.36	20.20	3.19	2.56	25.95	46.00	20.05	QP

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

EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878



Site no. : 1# 966 Chamber Data no. : 102
Dis. / Ant. : 3m 37062 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B(3M)
Env. / Ins. : Temp:24.0';Humi:52%;Press:101.2kPa
Engineer : Viking
EUT : Sound Bar System
Power : AC 120V/60Hz
M/N : SB3621n-G8
Test Mode : TX Mode

	Freq. (MHz)	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	106.63	10.60	1.11	17.94	29.65	43.50	13.85	QP
2	126.03	11.82	1.16	18.21	31.19	43.50	12.31	QP
3	142.52	11.95	1.26	15.56	28.77	43.50	14.73	QP
4	250.19	12.30	1.83	13.95	28.08	46.00	17.92	QP
5	392.78	15.86	2.34	14.49	32.69	46.00	13.31	QP
6	433.52	16.74	2.55	10.84	30.13	46.00	15.87	QP

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

4. POWER LINE CONDUCTED EMISSIONS

4.1. Limit

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

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

4.2. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). 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.

The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

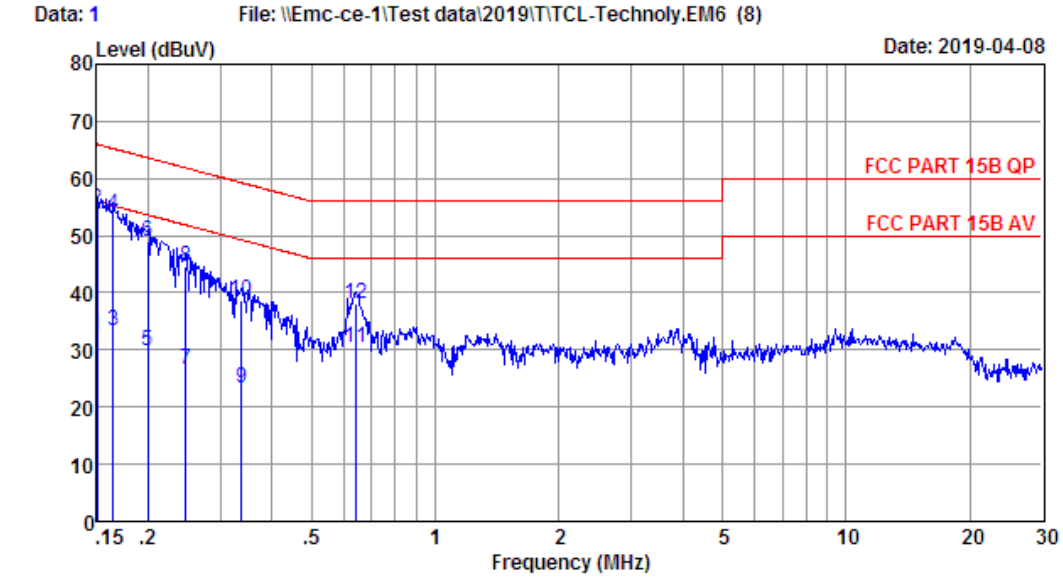
4.3. Test Result

PASS. **(**All emissions not reported below are too low against the prescribed limits.)

4.4. Test data

EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878



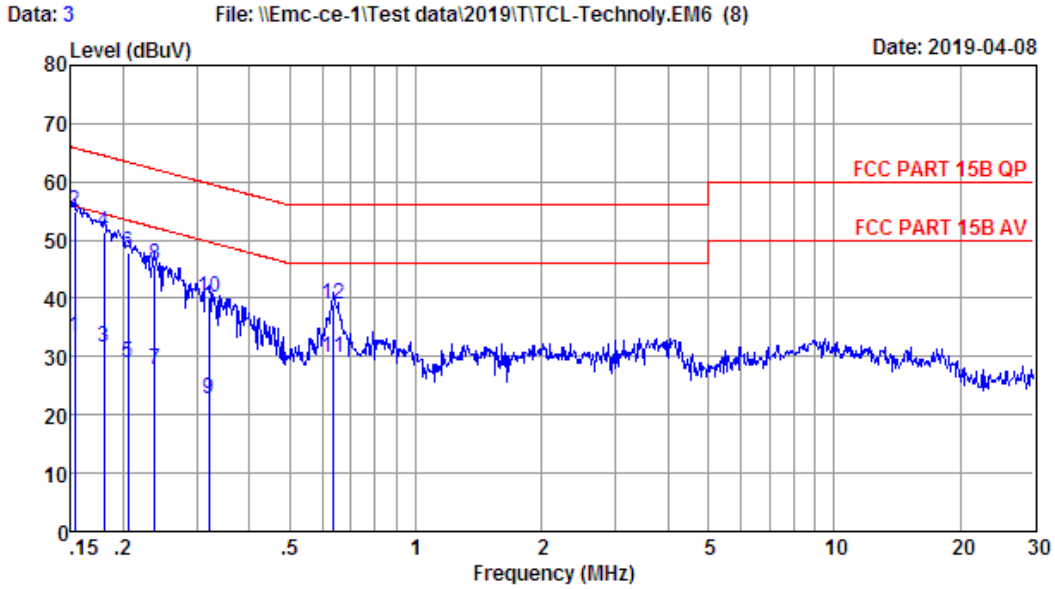
Site no : 844 Shield Room Data no. : 1
Env. / Ins. : Temp:24.3'C Humi:53% Press:101.50kPa LINE Phase : LINE
Limit : FCC PART 15B QP
Engineer : Viking
EUT : Sound Bar System
Power : AC 120V/60Hz
M/N : SB3621n-G8
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.150	9.59	9.69	13.20	32.48	56.00	23.52	Average
2	0.150	9.59	9.69	35.33	54.61	66.00	11.39	QP
3	0.164	9.59	9.69	14.20	33.48	55.25	21.77	Average
4	0.164	9.59	9.69	34.37	53.65	65.25	11.60	QP
5	0.200	9.60	9.77	10.43	29.80	53.62	23.82	Average
6	0.200	9.60	9.77	29.64	49.01	63.62	14.61	QP
7	0.247	9.61	9.92	6.90	26.43	51.86	25.43	Average
8	0.247	9.61	9.92	25.16	44.69	61.86	17.17	QP
9	0.337	9.62	9.92	3.87	23.41	49.27	25.86	Average
10	0.337	9.62	9.92	19.24	38.78	59.27	20.49	QP
11	0.641	9.63	9.92	10.95	30.50	46.00	15.50	Average
12	0.641	9.63	9.92	18.50	38.05	56.00	17.95	QP

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

EST Technology

Chilingxiang, Qishantou, Santun,
Houjie, Dongguan,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878



Site no : 844 Shield Room Data no. : 3
Env. / Ins. : Temp:24.3'C Humi:53% Press:101.50kPa LINE Phase : NEUTRAL
Limit : FCC PART 15B QP
Engineer : Viking
EUT : Sound Bar System
Power : AC 120V/60Hz
M/N : SB3621n-G8
Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.153	9.50	9.69	14.20	33.39	55.82	22.43	Average
2	0.153	9.50	9.69	35.76	54.95	65.82	10.87	QP
3	0.180	9.53	9.77	12.43	31.73	54.50	22.77	Average
4	0.180	9.53	9.77	32.11	51.41	64.50	13.09	QP
5	0.205	9.53	9.84	9.42	28.79	53.40	24.61	Average
6	0.205	9.53	9.84	28.56	47.93	63.40	15.47	QP
7	0.238	9.53	9.92	8.41	27.86	52.17	24.31	Average
8	0.238	9.53	9.92	26.26	45.71	62.17	16.46	QP
9	0.320	9.54	9.92	3.30	22.76	49.71	26.95	Average
10	0.320	9.54	9.92	20.83	40.29	59.71	19.42	QP
11	0.637	9.56	9.92	10.23	29.71	46.00	16.29	Average
12	0.637	9.56	9.92	19.55	39.03	56.00	16.97	QP

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

5. ANTENNA REQUIREMENTS

5.1. Limit

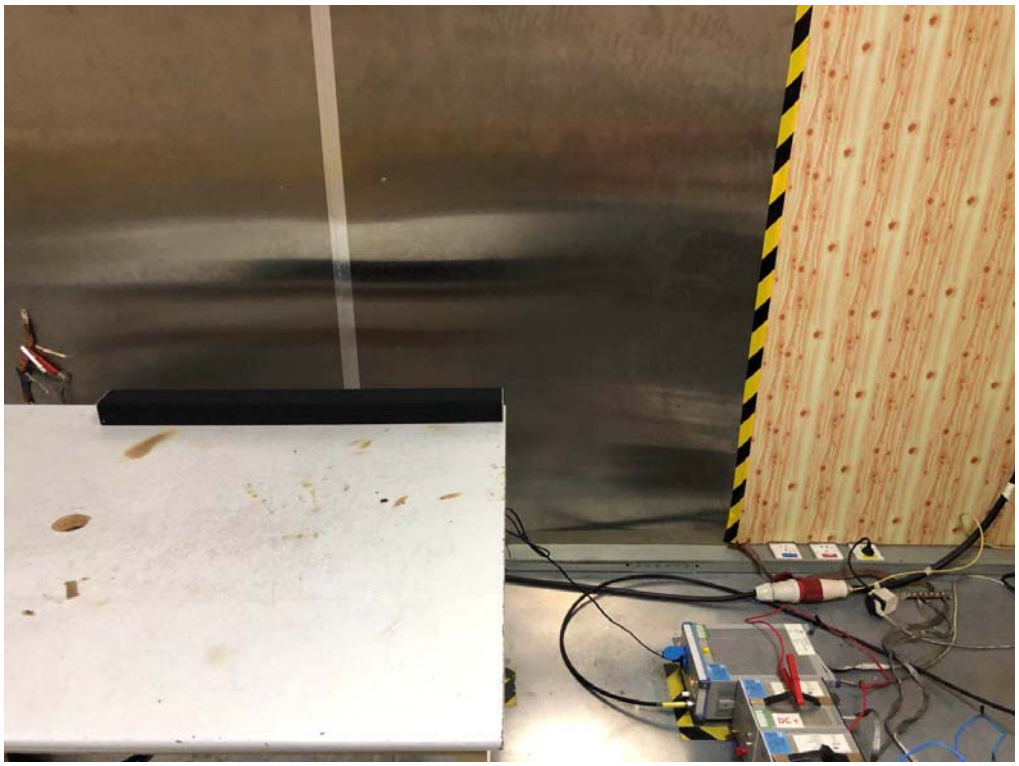
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

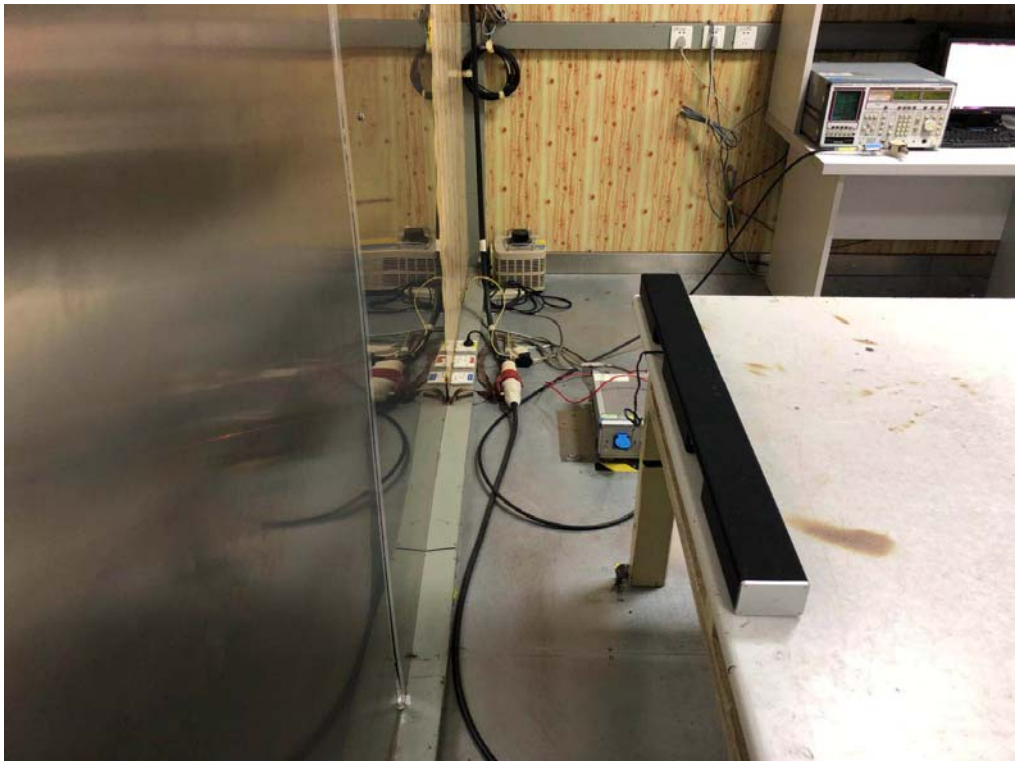
5.2. Result

The antennas used for this product are integral antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 2.00 dBi.

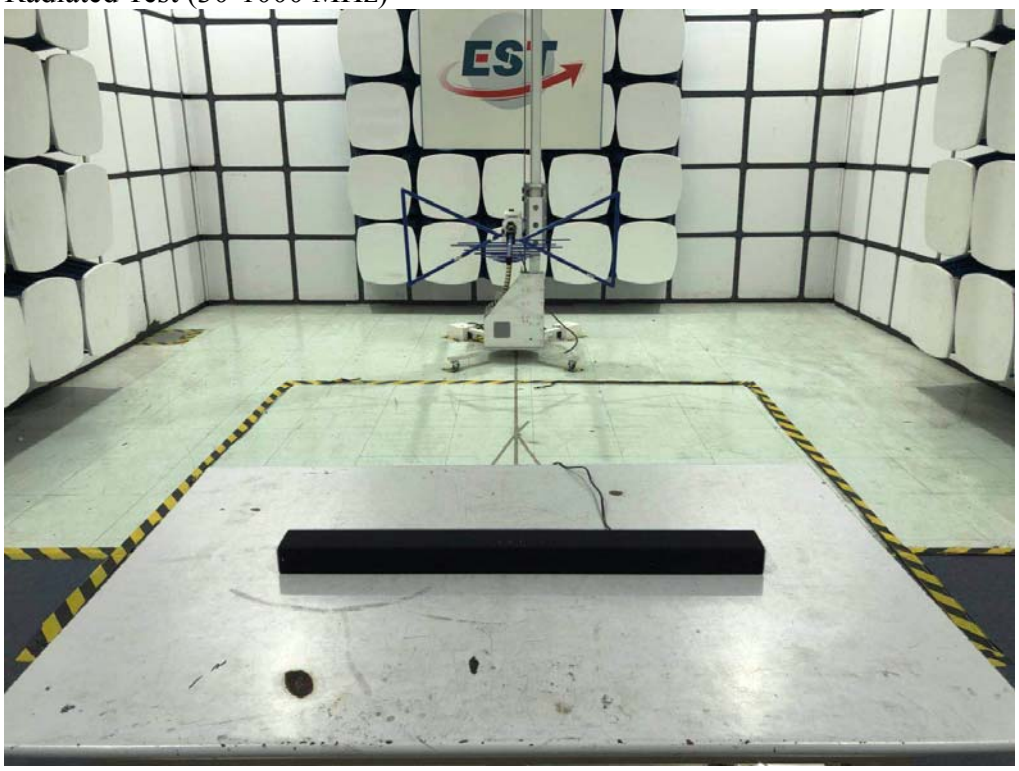
6. TEST SETUP PHOTO

Conducted Test





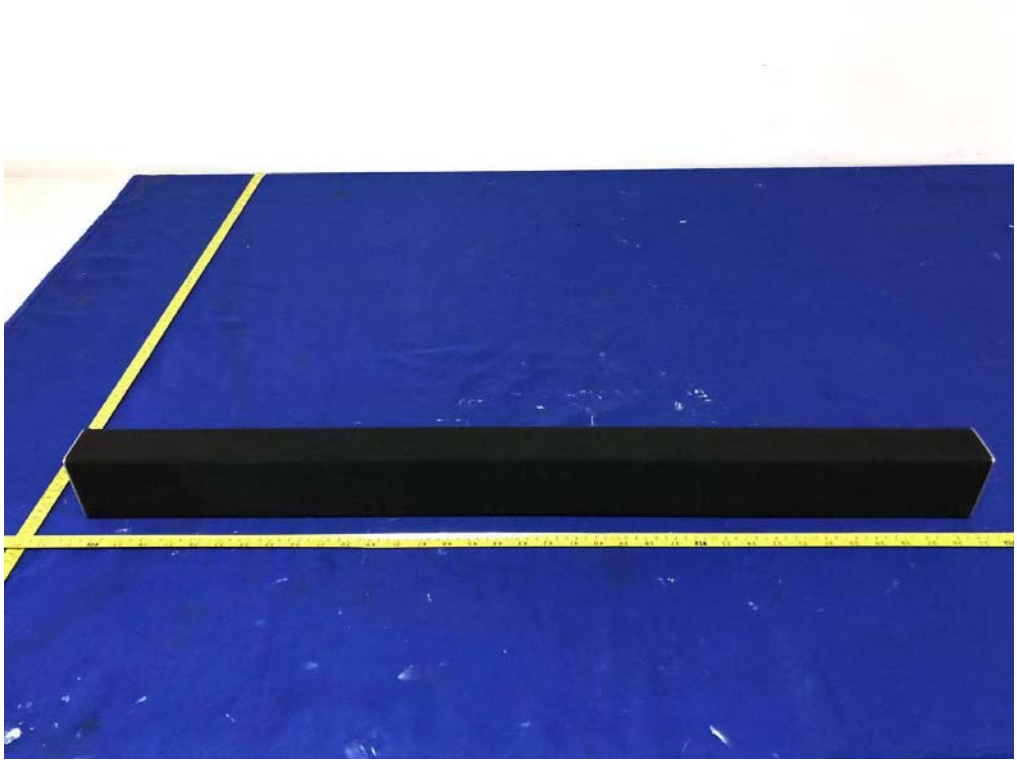
Radiated Test (30-1000 MHz)



7. PHOTO EUT

External Photos
M/N: SB3621n-G8

External Photos
M/N: SB3621n-G8



External Photos

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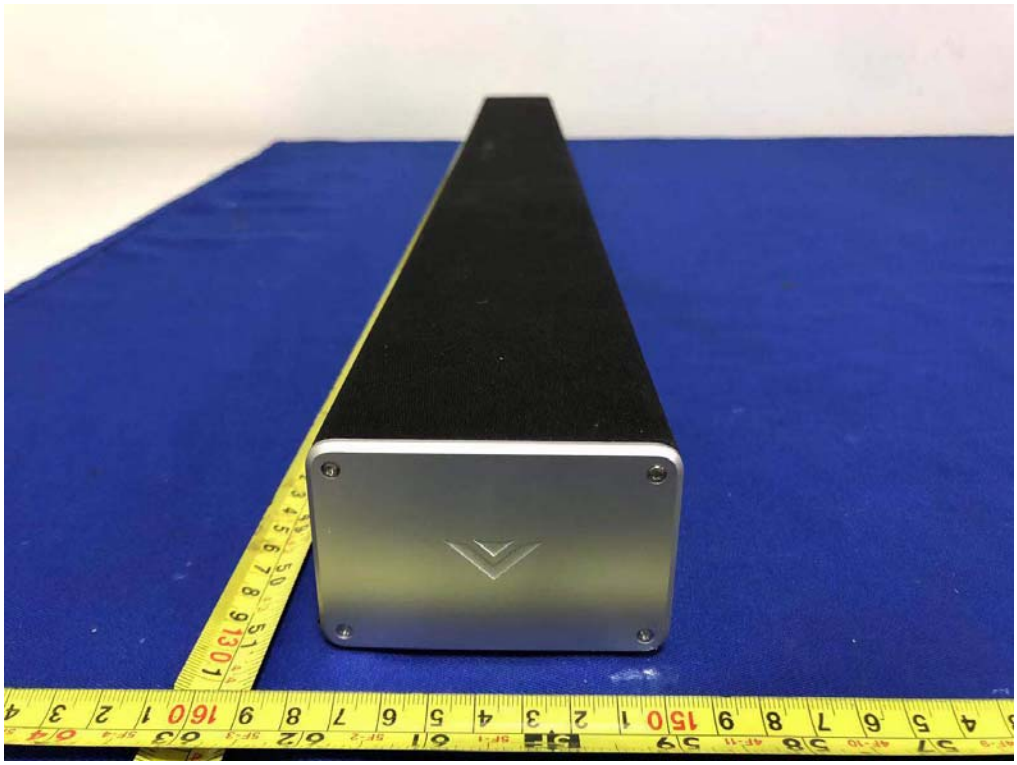

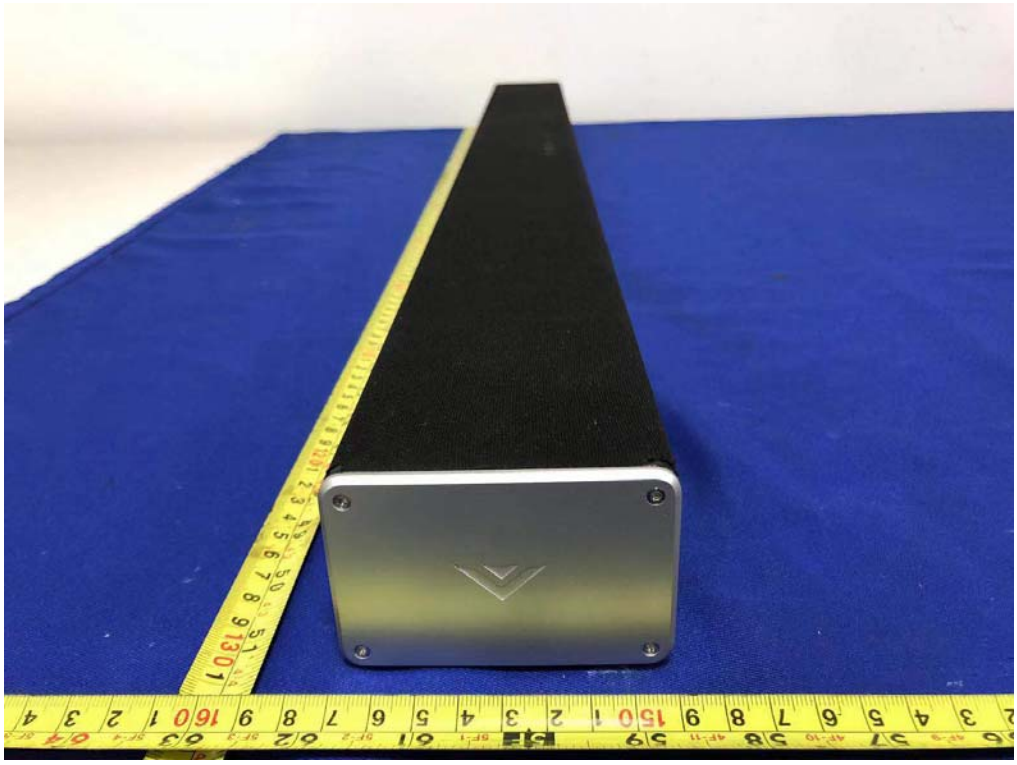

External Photos

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External Photos

M/N: SB3621n-G8

External Photos

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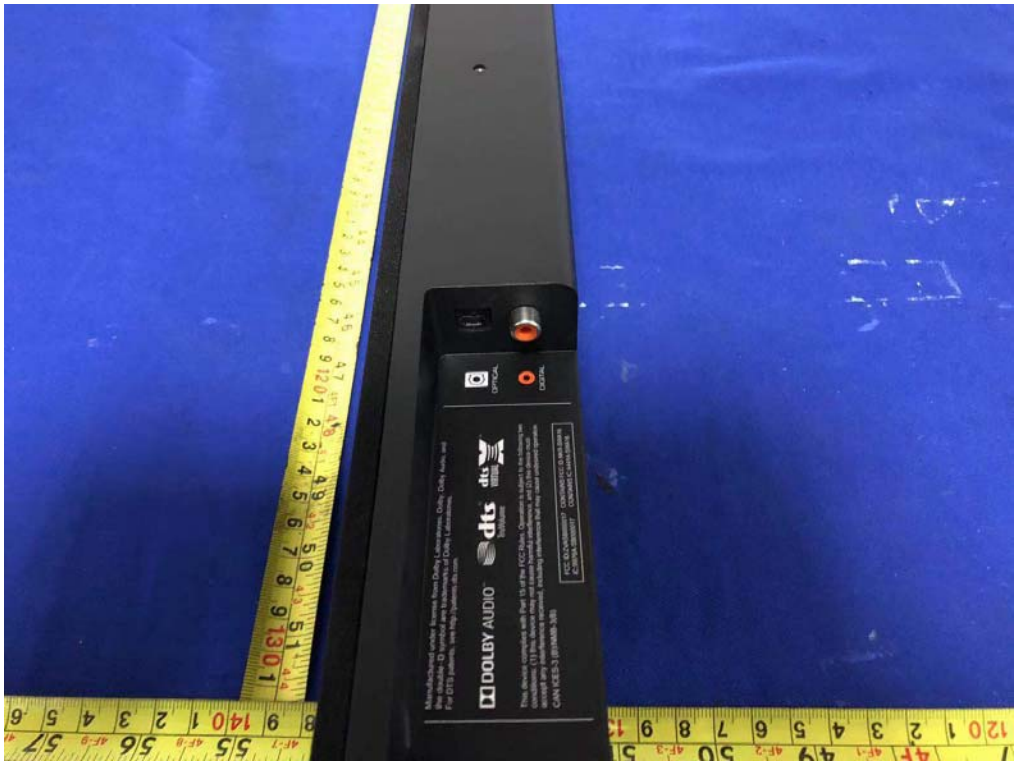
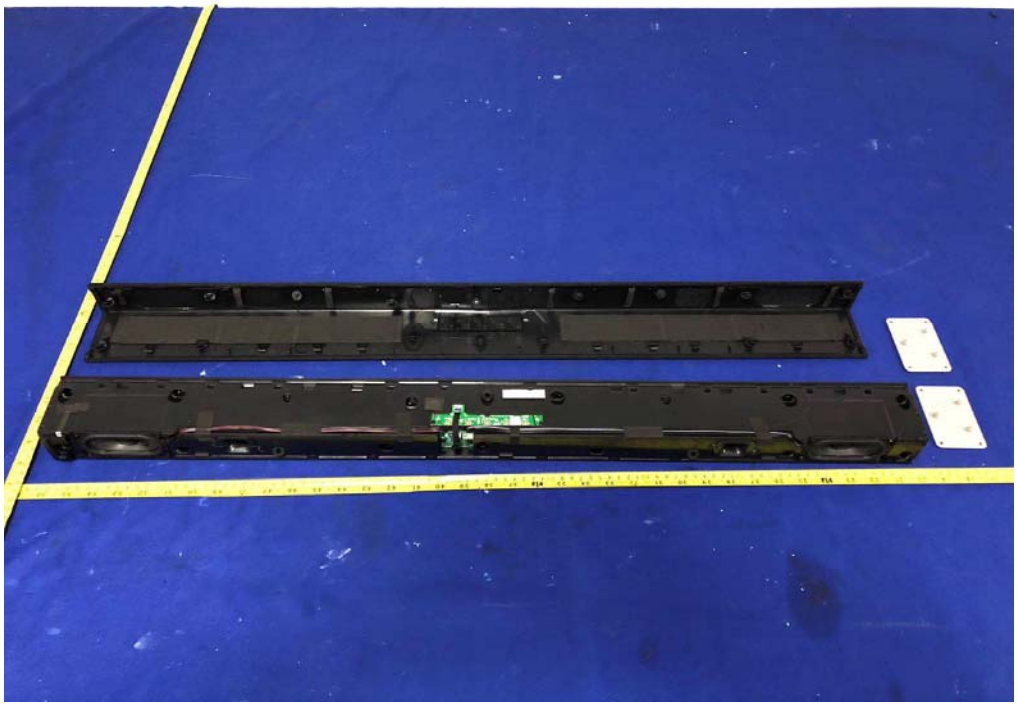
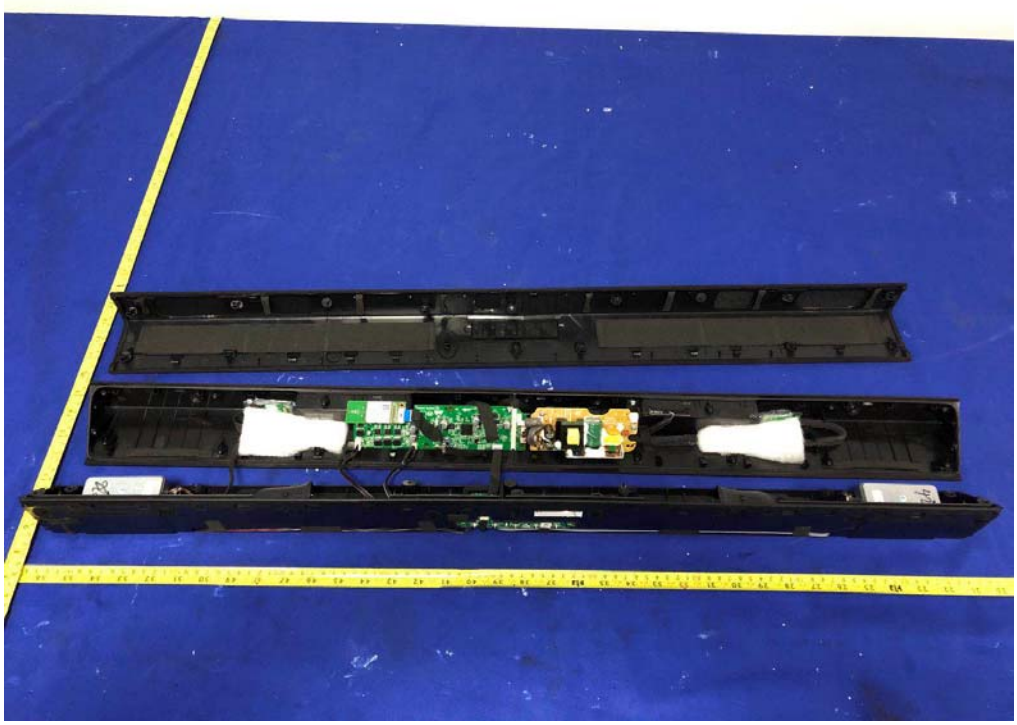


Internal Photos

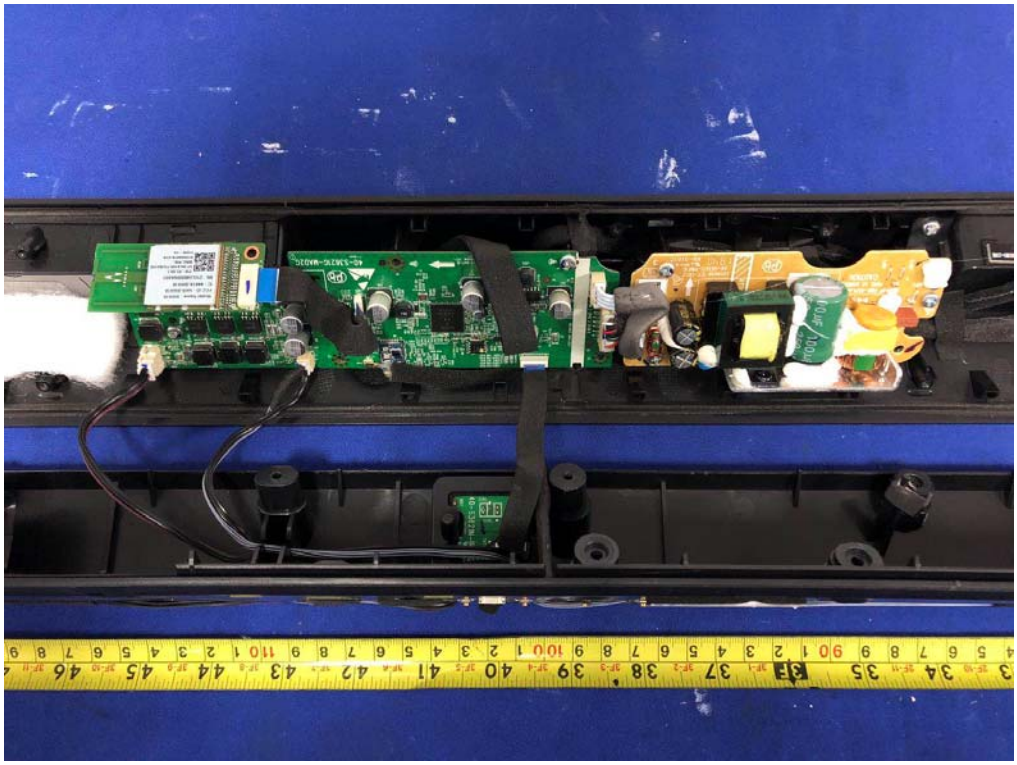
M/N: SB3621n-G8

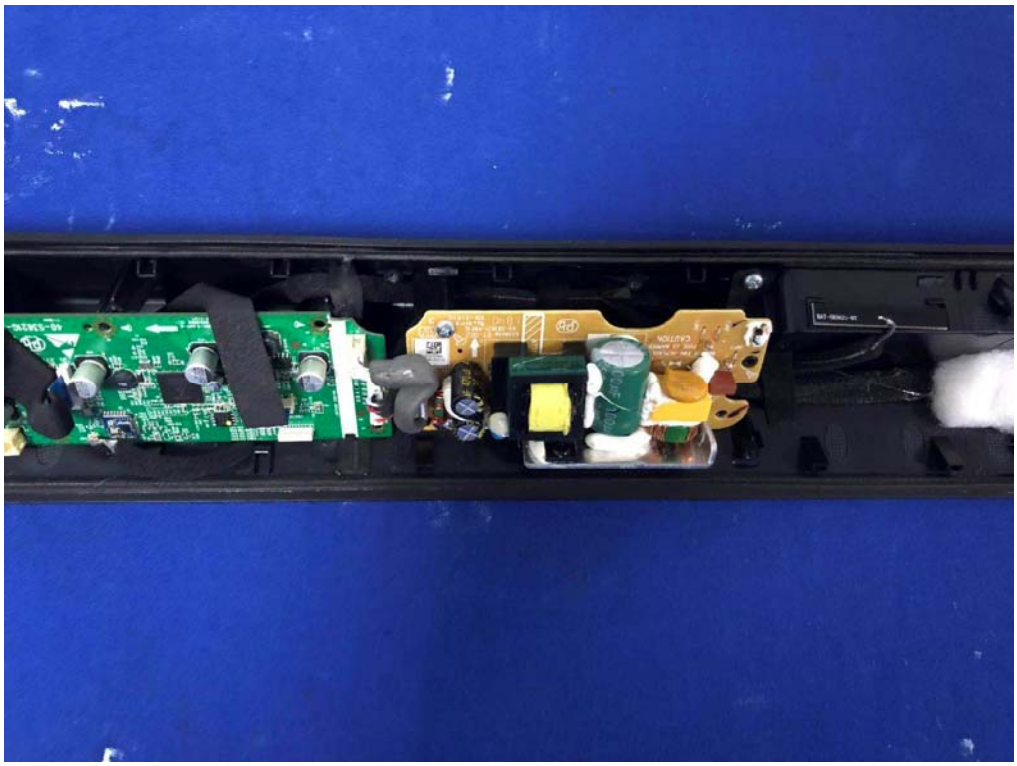




Internal Photos

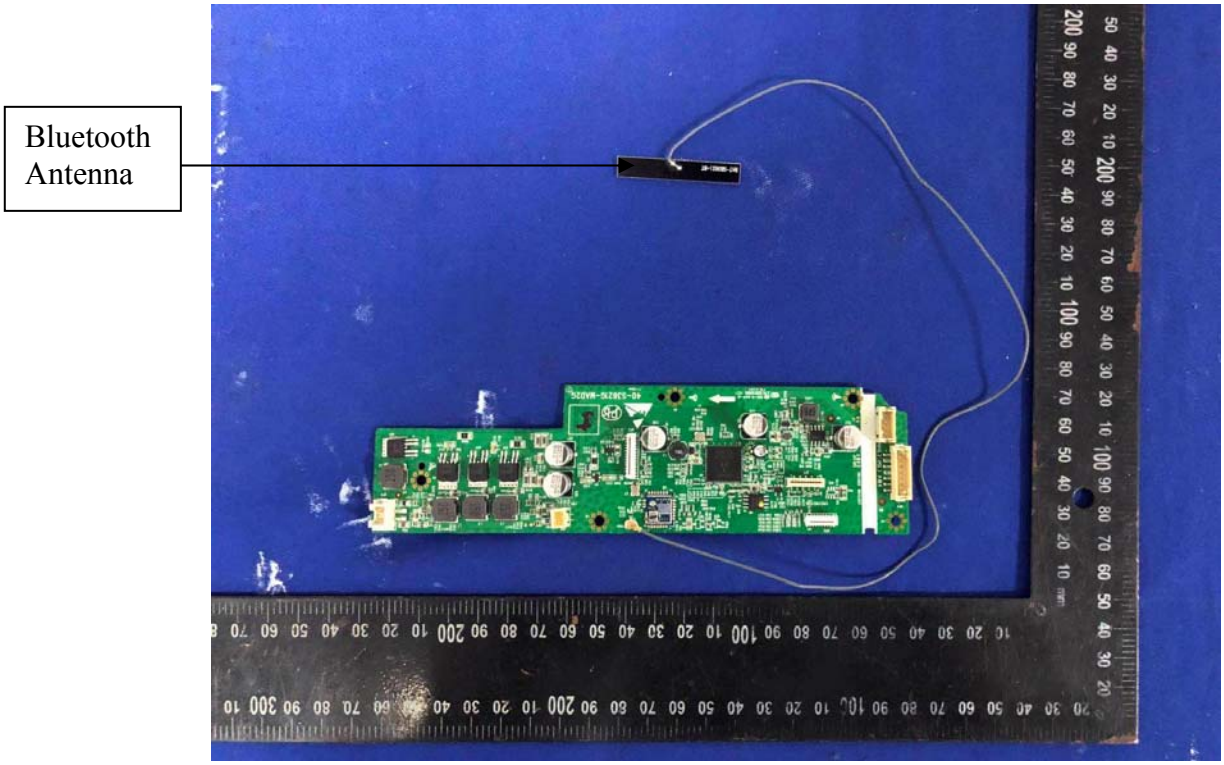
M/N: SB3621n-G8

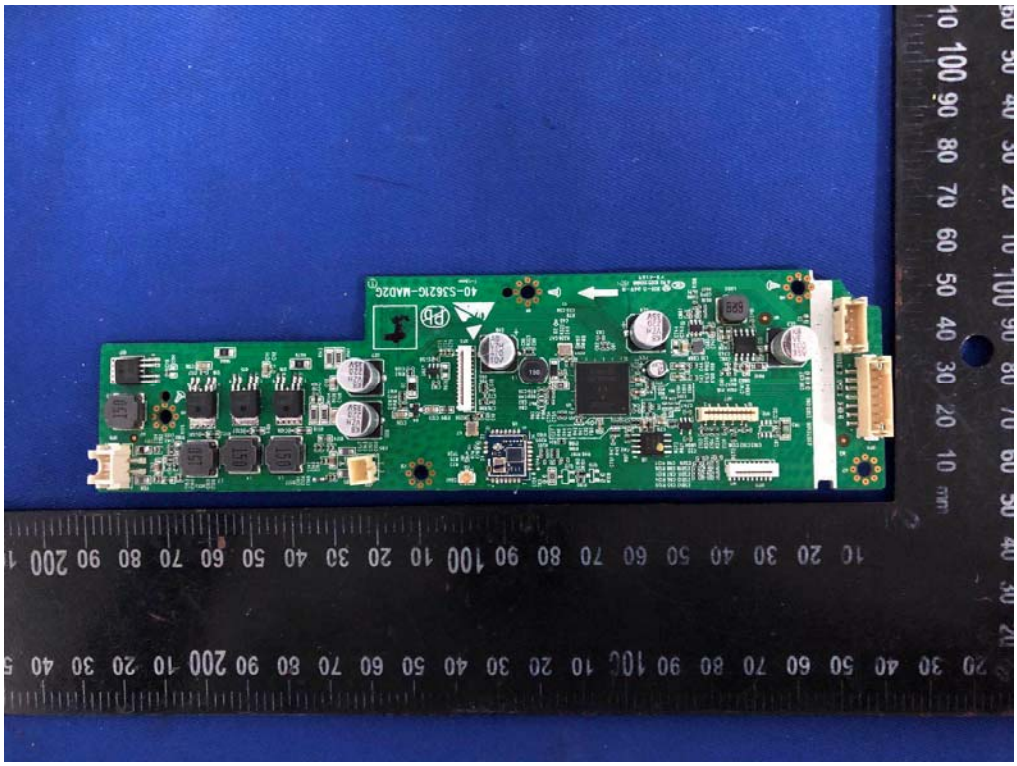




Internal Photos

M/N: SB3621n-G8





Internal Photos

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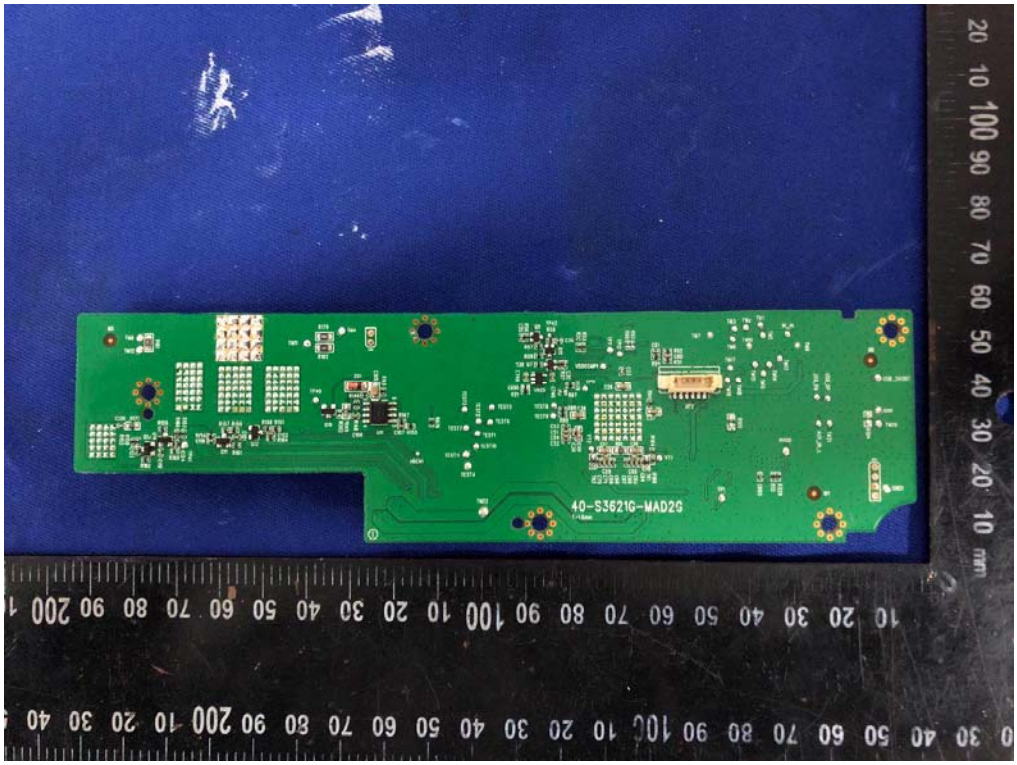
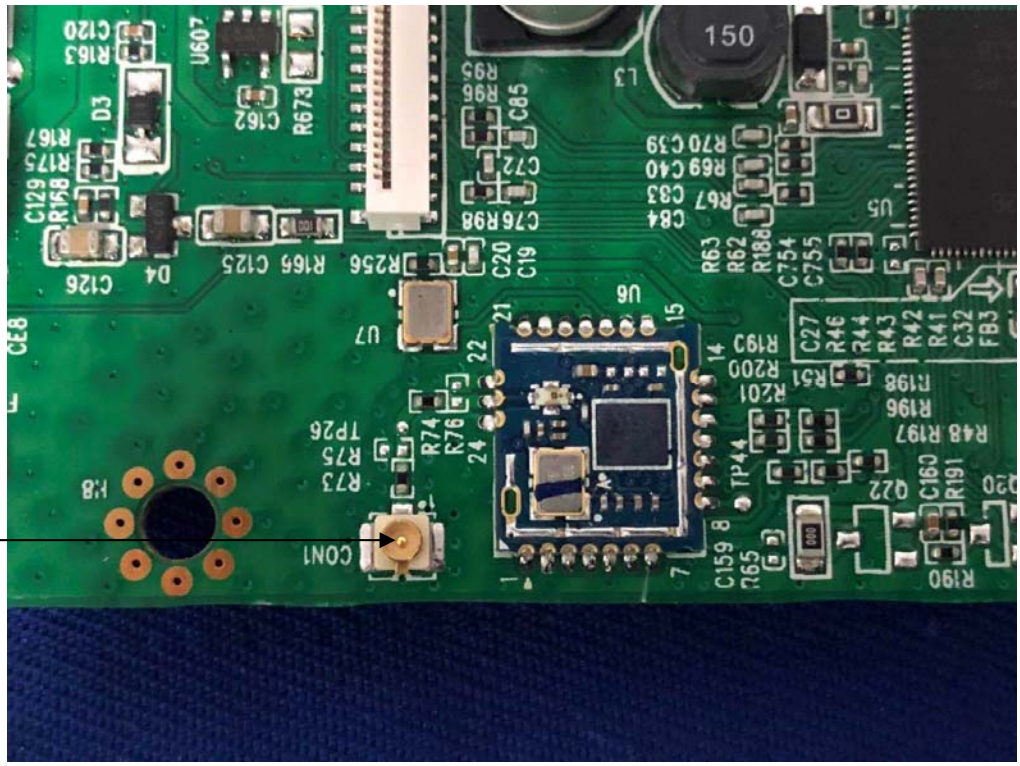
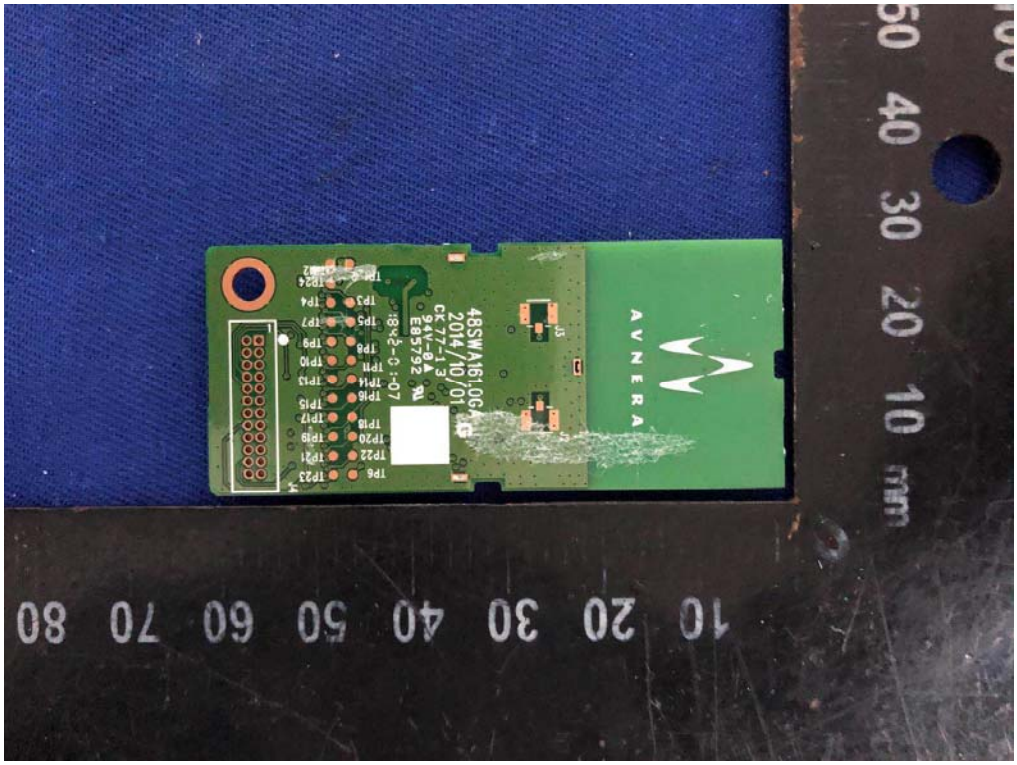


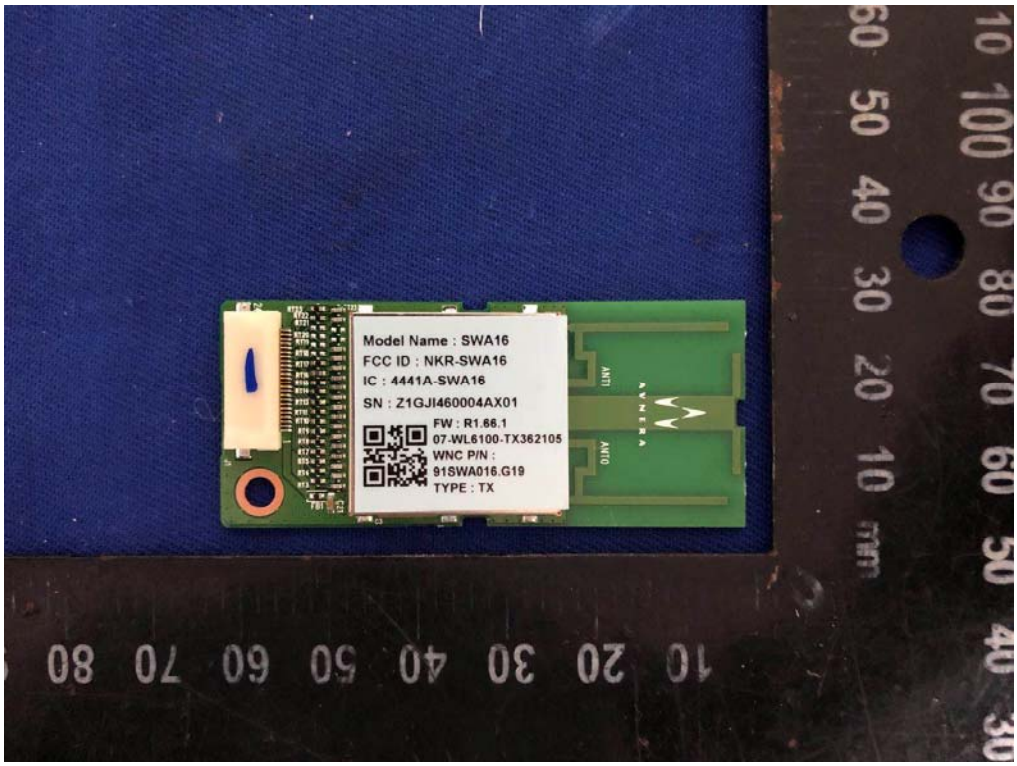


Bluetooth Antenna Port

Internal Photos

M/N: SB3621n-G8





Internal Photos

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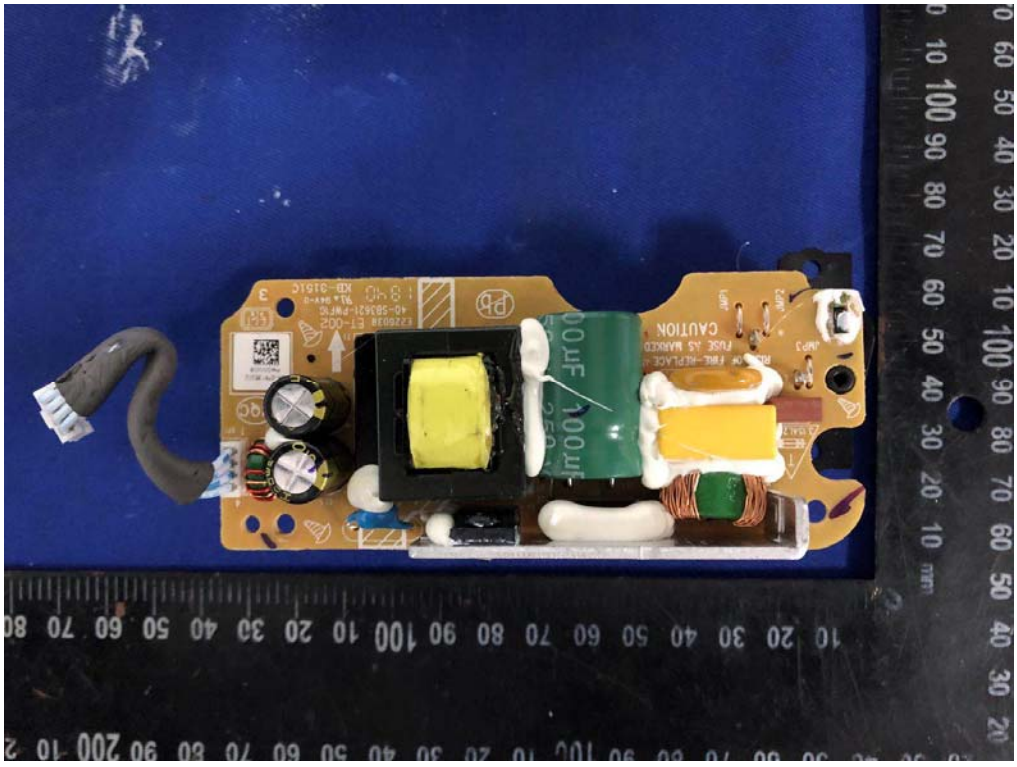

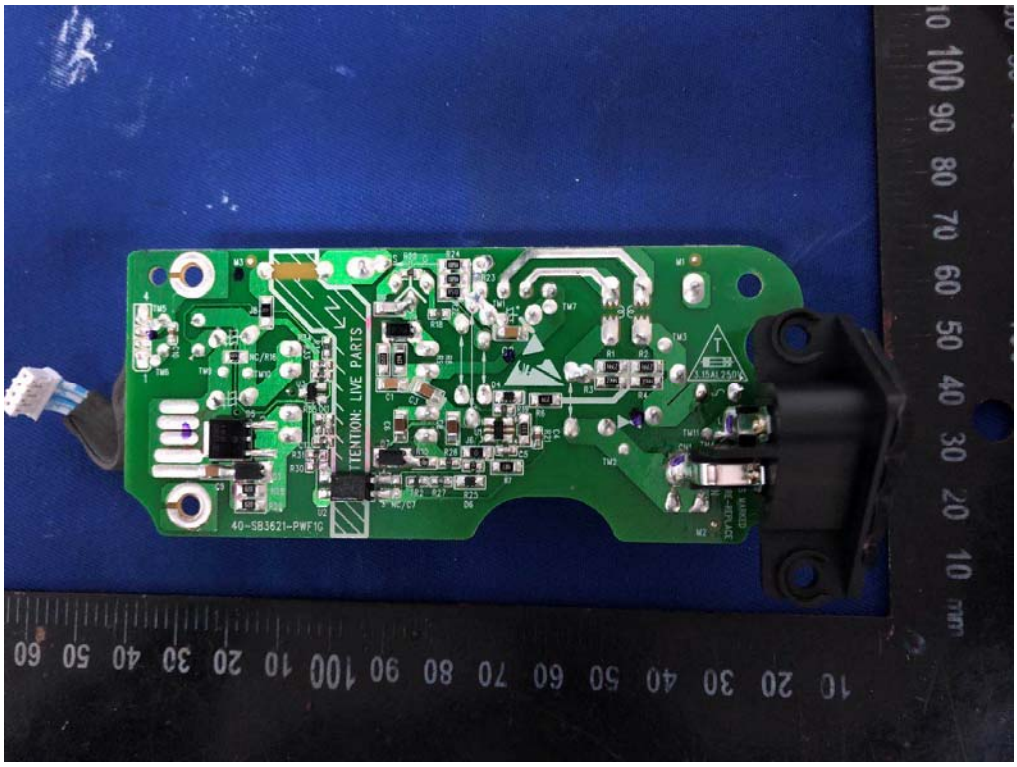

Internal Photos

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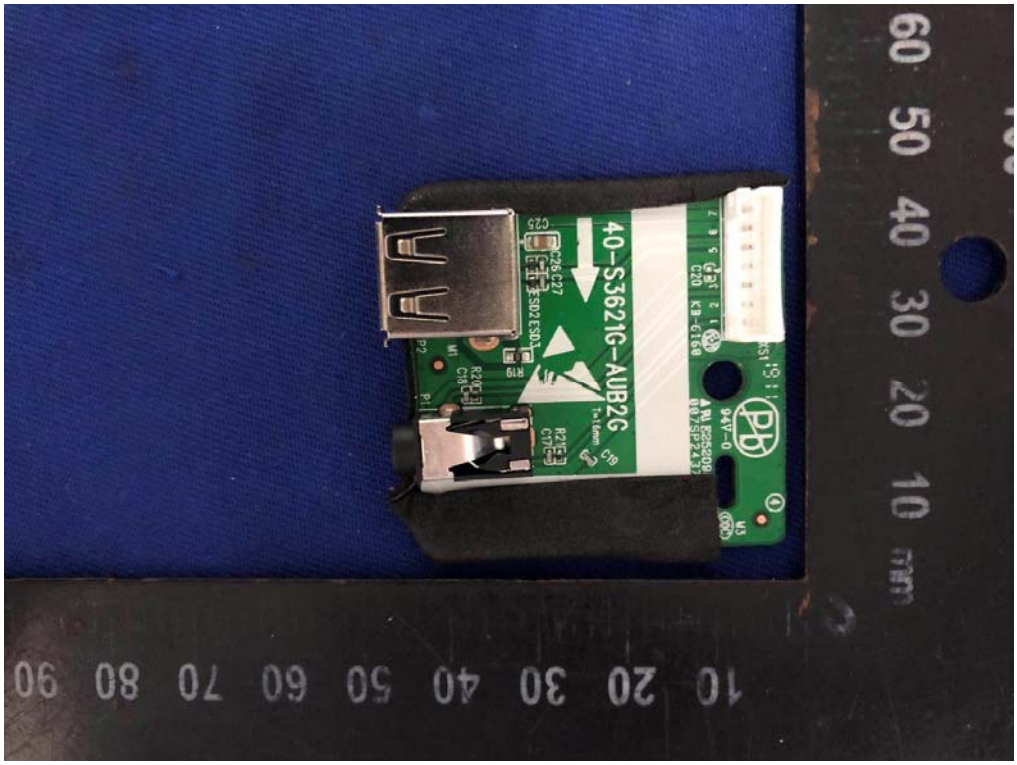

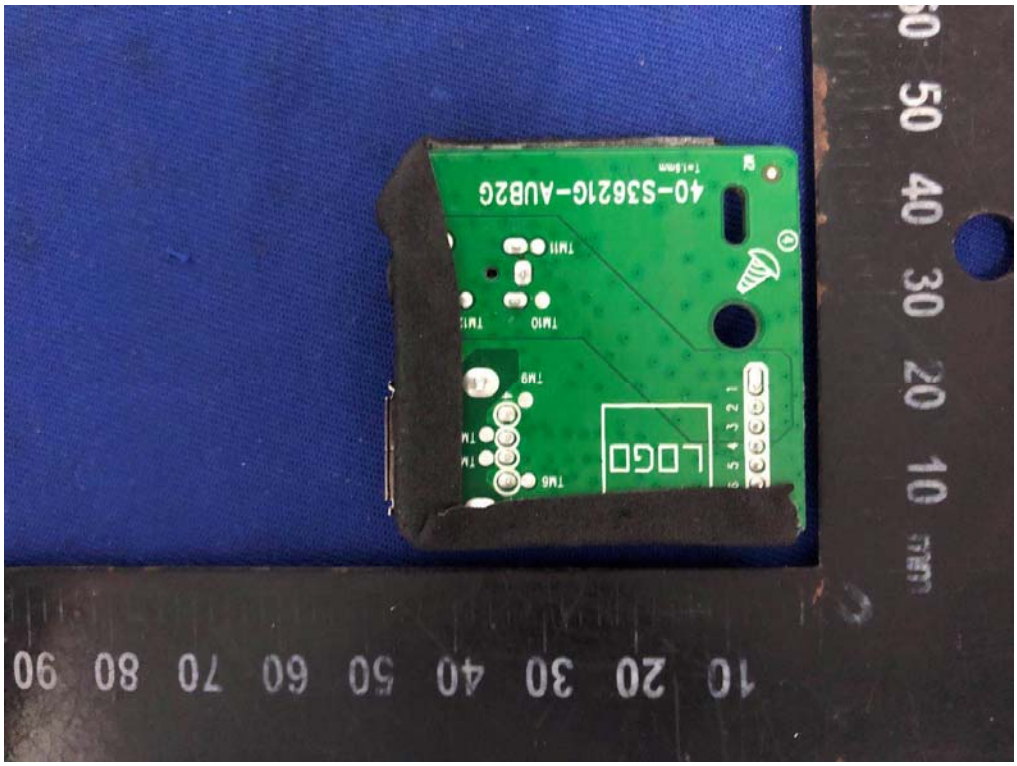

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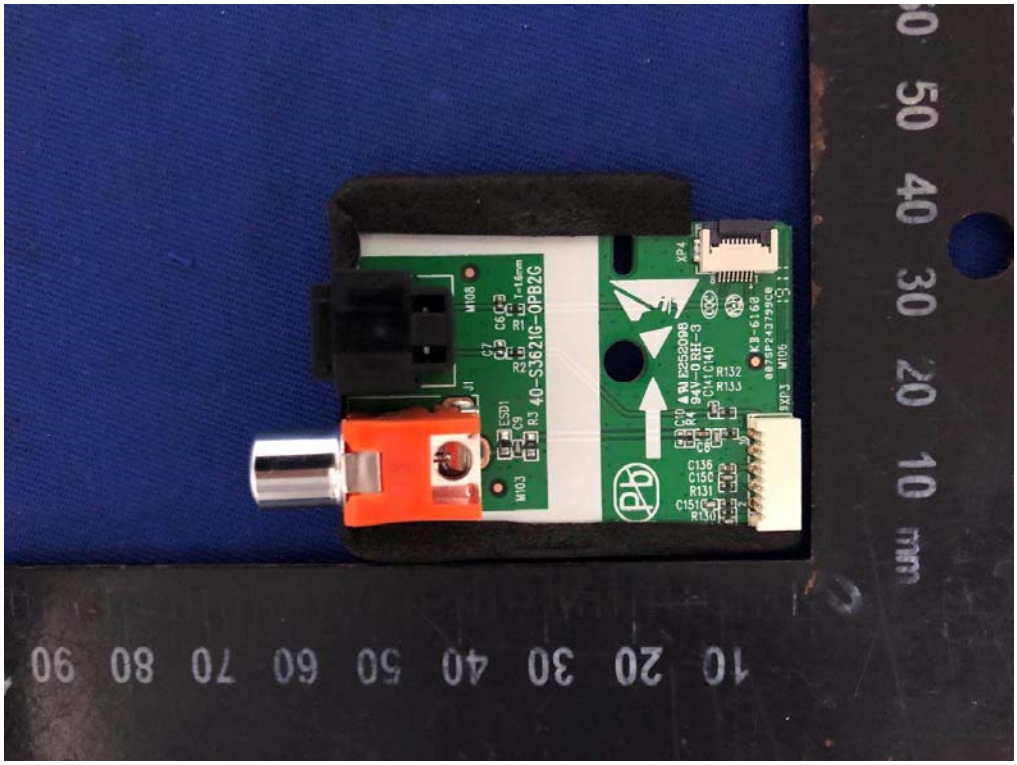

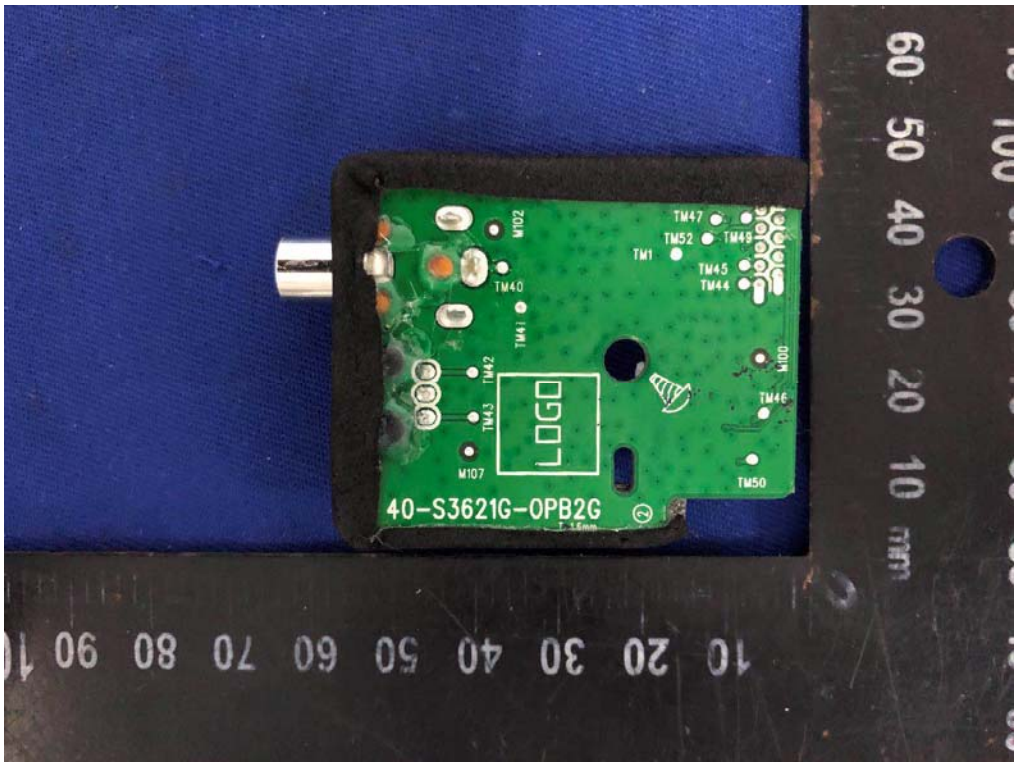

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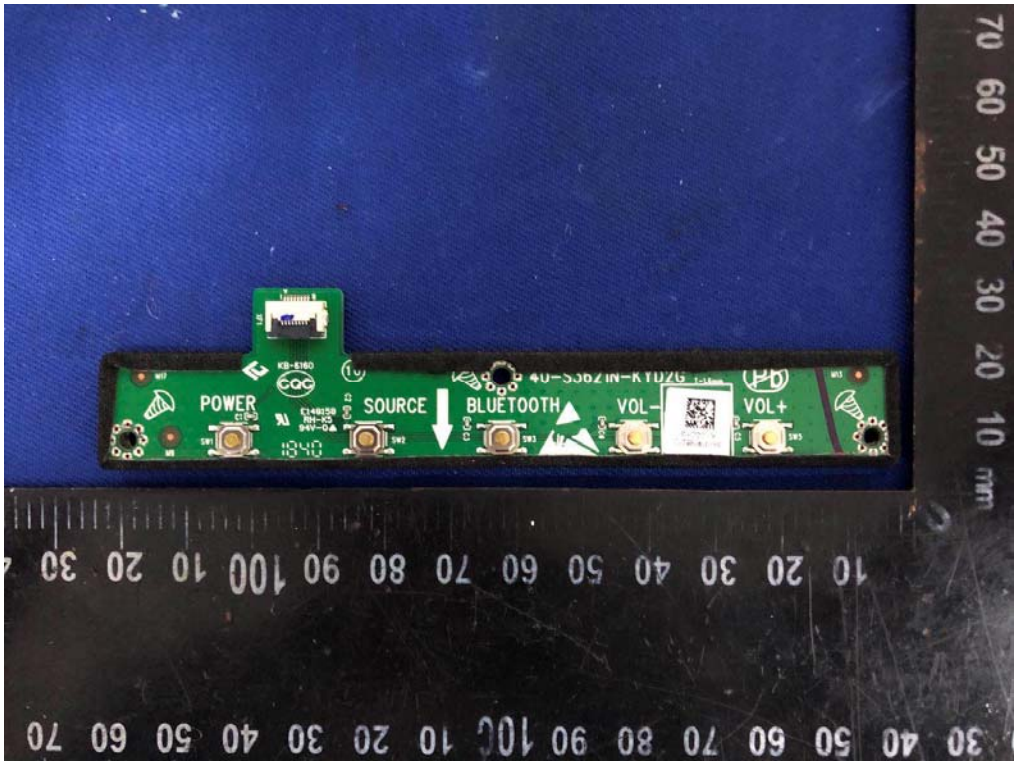

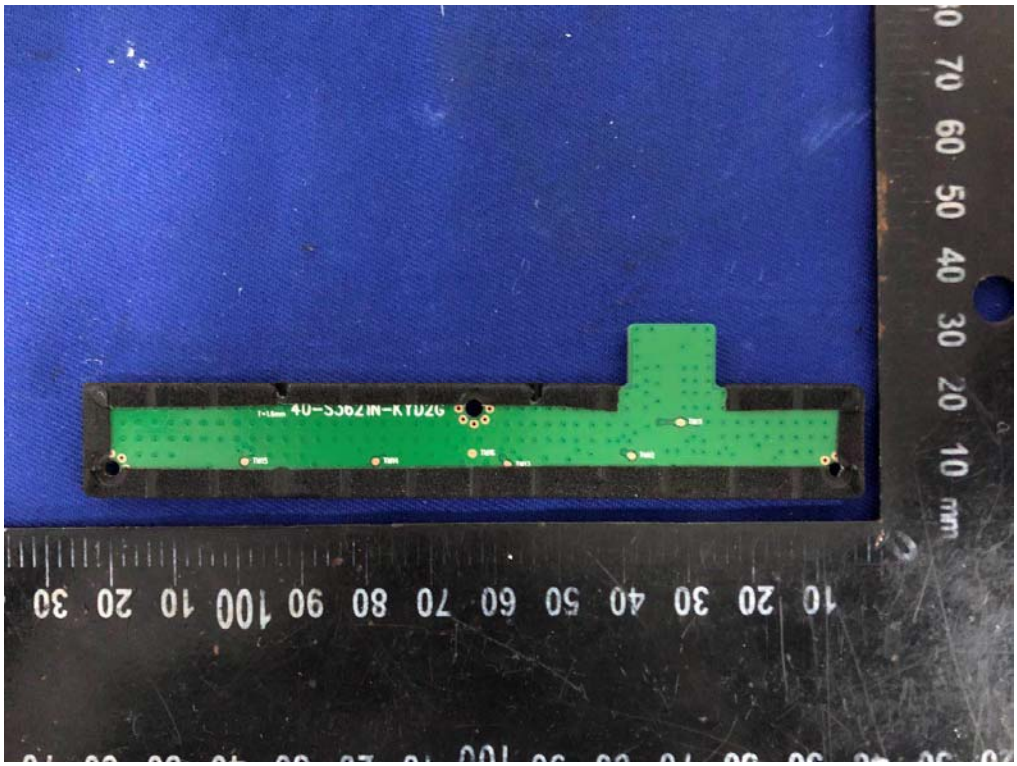

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