



TEST REPORT
FCC ID: 2AHB5-STELLARXL
For
Zhejiang Hanshow Technology Co., Ltd.
Electronic shelf label

Model No. : Stellar-XL, XL3, XLN, XL3N

Prepared for : Zhejiang Hanshow Technology Co., Ltd.

Address : Shanghai JiaoTong University Jiaying Science Park, No.321,
Jiachuang Rd., Xiuzhou District, Jiaying City, Zhejiang, China

Prepared by : Shenzhen Alpha Product Testing Co., Ltd.

Address : Building B, East Area of Nanchang Second, Industrial Zone,
Gushu 2nd Road, Bao'an, Shenzhen, China

Report No. : T1852012 05

Date of Receipt : December 29, 2015

Date of Test : December 29, 2015-January 14, 2016

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TABLE OF CONTENT

| Description | Page |
|--|-----------|
| 1 General Information ----- | 4 |
| 1.1 Description of Device (EUT) ----- | 4 |
| 1.2 Description of Test Facility ----- | 5 |
| 2 EMC Equipment List ----- | 5 |
| 3 Test Procedure ----- | 7 |
| 4 Summary of Measurement ----- | 8 |
| 4.1 Summary of test result ----- | 8 |
| 4.2 Test connection ----- | 8 |
| 4.3 Assistant equipment used for test ----- | 8 |
| 4.4 Test mode ----- | 8 |
| 4.5 Test Conditions ----- | 9 |
| 4.6 Measurement Uncertainty (95% confidence levels, k=2) ----- | 9 |
| 5 Spurious Emission ----- | 10 |
| 5.1 Radiation Emission ----- | 10 |
| 5.2 Radiation Emission Limits(15.209) ----- | 10 |
| 5.3 Test Setup ----- | 11 |
| 5.4 Test Procedure ----- | 13 |
| 5.5 Test Equipment Setting For emission test Result. ----- | 13 |
| 5.6 Test Condition ----- | 14 |
| 5.7 Test Result ----- | 14 |
| 6 POWER LINE CONDUCTED EMISSION ----- | 20 |
| 6.1 Conducted Emission Limits(15.207) ----- | 20 |
| 6.2 Test Setup ----- | 20 |
| 6.3 Test Procedure ----- | 21 |
| 6.4 Test Results ----- | 21 |
| 7 Bandwidth ----- | 22 |
| 7.1 Test limit ----- | 22 |
| 7.2 Method of measurement ----- | 22 |
| 7.3 Test Setup ----- | 22 |
| 7.4 Test Results ----- | 22 |
| 8 Antenna Requirement ----- | 25 |
| 8.1 Standard Requirement ----- | 25 |
| 8.2 Antenna Connected Construction ----- | 25 |
| 8.3 Result ----- | 25 |
| 9 Photographs of Test Setup ----- | 26 |
| 9.1 Photos of Radiated emission ----- | 26 |
| 10 Photographs of EUT ----- | 27 |

DECLARATION

Applicant : Zhejiang Hanshow Technology Co., Ltd.
Manufacturer : Zhejiang Hanshow Technology Co., Ltd.
Product : Electronic shelf label
(A) Model No. : Stellar-XL, XL3, XLN, XL3N
(B) Trade Name : N/A
(C) Power supply : DC 3V from battery

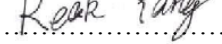
Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.249: 2015, ANSI C63.10-2013

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....: Reak Yang
Test Engineer 

Approved by (name + signature).....: Simple Guan
Project Manager 

Date of issue.....: January 15, 2016

1 General Information

1.1 Description of Device (EUT)

| | |
|---------------------|--|
| EUT | : Electronic shelf label |
| Model No. | : Stellar-XL, XL3, XLN, XL3N |
| DIFF | All model's the function, software and electric circuit are the same, only with a product model named different. The test mode is: Stellar-XL. |
| Trade mark | : N/A |
| Power supply | : DC 3V from battery |
| Radio Technology | : GFSK |
| Operation frequency | : 2402-2480MHz |
| Channel No. | 79 Channels |
| Channel Separation | : 1MHz |
| Modulation | : GFSK |
| Data Rate | : 500Kps |
| Antenna Type | : PCB Antenna, max gain 2dBi. |
| Software version | : 3470 |
| Hardware version | : V1.4.6 |
| Applicant | : Zhejiang Hanshow Technology Co., Ltd. |
| Address | : Shanghai JiaoTong University Jiaying Science Park, No.321, Jiachuang Rd., Xiuzhou District, Jiaying City, Zhejiang, China |
| Manufacturer | : Zhejiang Hanshow Technology Co., Ltd. |
| Address | : Shanghai JiaoTong University Jiaying Science Park, No.321, Jiachuang Rd., Xiuzhou District, Jiaying City, Zhejiang, China |

1.2 Description of Test Facility

Shenzhen Alpha Product Testing Co., Ltd.

Building B, East Area of Nanchang Second, Industrial Zone, Gushu 2nd Road, Bao'an, Shenzhen, China

March 25, 2015 File on Federal Communication Commission

Registration Number: 203110

July 18, 2014 Certificated by IC

Registration Number: 12135A

2 EMC Equipment List

| Equipment | Manufacture | Model No. | Serial No. | Last cal. | Cal Interval |
|---------------------|--------------|--------------|-------------------|------------|--------------|
| 3m Semi-Anechoic | ETS-LINDGREN | N/A | SEL0017 | 2015.01.19 | 1 Year |
| Spectrum analyzer | Agilent | E4407B | MY49510055 | 2015.01.19 | 1 Year |
| Receiver | R&S | ESCI | 101165 | 2015.01.19 | 1 Year |
| Bilog Antenna | SCHWARZBECK | VULB 9168 | 9168-438 | 2014.01.21 | 2 Year |
| Horn Antenna | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D(1201) | 2014.01.21 | 2 Year |
| Horn Antenna | SCHWARZBECK | BBHA 9170 | BBHA 9170 D(1432) | 2014.01.21 | 2 Year |
| Active Loop Antenna | Beijing Daze | ZN30900A | SEL0097 | 2015.01.19 | 1 Year |
| Cable | Resenberger | SUCOFLEX 104 | MY6562/4 | 2015.01.19 | 1 Year |
| Cable | Resenberger | SUCOFLEX 104 | 309972/4 | 2015.01.19 | 1 Year |
| Cable | Resenberger | SUCOFLEX 104 | 329112/4 | 2015.01.19 | 1 Year |
| Pre-amplifier | Agilent | 8449B | 3008A02664 | 2015.03.21 | 1 Year |
| Pre-amplifier | HP | HP8347A | 2834A00455 | 2015.03.21 | 1 Year |

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

| Equipment | Manufacture | Model No. | Serial No. | Test Location | Frequency Rang |
|--|--------------------|------------------|-------------------|----------------------|-----------------------|
| Cable | Resenberger | SUCOFLEX 104 | 309972/4 | Radiation | 9KHz-2GHz |
| Cable | Resenberger | SUCOFLEX 104 | 329112/4 | Radiation | 1GHz-26.5G Hz |
| Note: For the relevant Conducted Measurement, the temporary antenna connector is used during the measurement. Antenna Connector Impedance: 50Ω , Cable Loss: 1.0 dB | | | | | |

3 Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.10-2013 using a 50 μ H LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25°C with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.10-2013 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3MHz above 1 GHz. The ambient temperature of the EUT was 25°C with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF + CABLE = FS

33.20 dBuV + 10.36 dB + 0.9 dB = 44.46 dBuV/m @ 3m

ANSI STANDARD C63.10-2013 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.10-2013 10.1.7 with the EUT 40 cm from the vertical ground wall.

4 Summary of Measurement

4.1 Summary of test result

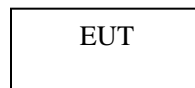
| Test Item | Test Requirement | Standard Paragraph | Result |
|-----------------------|-------------------|-----------------------|------------|
| Spurious Emission | FCC PART 15: 2015 | Section 15.249&15.209 | Compliance |
| Conduction Emission | FCC PART 15: 2015 | Section 15.207 | N/A |
| Occupied bandwidth | FCC PART 15: 2015 | Section 15.249 | Compliance |
| Band edge Requirement | FCC PART 15: 2015 | Section 15.249 | Compliance |
| Antenna Requirement | FCC PART 15: 2015 | Section 15.203 | Compliance |

Note: The EUT has been tested as an independent unit. And Continual Transmitting in maximum power.

4.2 Test connection

EUT was placed on a turn table, which is 0.8 meter high above ground for below 1GHz, 1.5 meter high above ground for above 1GHz.

TX Mode:



4.3 Assistant equipment used for test

| | | |
|--------------|---|-----|
| Description | : | N/A |
| Manufacturer | : | N/A |
| Model No. | : | N/A |

4.4 Test mode

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

channel, wireless mode. New battery is used during all test.

Channel List

| Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) |
|-------------|-----------------|-------------|-----------------|-------------|-----------------|
| 1 | 2402 | 39 | 2440 | 77 | 2478 |
| 2 | 2403 | 40 | 2441 | 78 | 2479 |
| 3 | 2404 | 41 | 2442 | 79 | 2480 |
| ... | ... | ... | ... | ... | ... |

4.5 Test Conditions

| | |
|-------------------|-----------|
| Temperature range | 21-25°C |
| Humidity range | 40-75% |
| Pressure range | 86-106kPa |

4.6 Measurement Uncertainty (95% confidence levels, k=2)

| Item | MU | Remark |
|---|--------------------|-------------|
| Uncertainty for Power point Conducted Emissions Test | 2.42dB | |
| Uncertainty for Radiation Emission test in 3m chamber (below 30MHz) | 2.13 dB | Polarize: V |
| | 2.57dB | Polarize: H |
| Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz) | 3.54dB | Polarize: V |
| | 4.1dB | Polarize: H |
| Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz) | 2.08dB | Polarize: H |
| | 2.56dB | Polarize: V |
| Uncertainty for radio frequency | 1×10^{-9} | |
| Uncertainty for DC and low frequency voltages | 0.06% | |

5 Spurious Emission

5.1 Radiation Emission

5.2 Radiation Emission Limits(15.209&249)

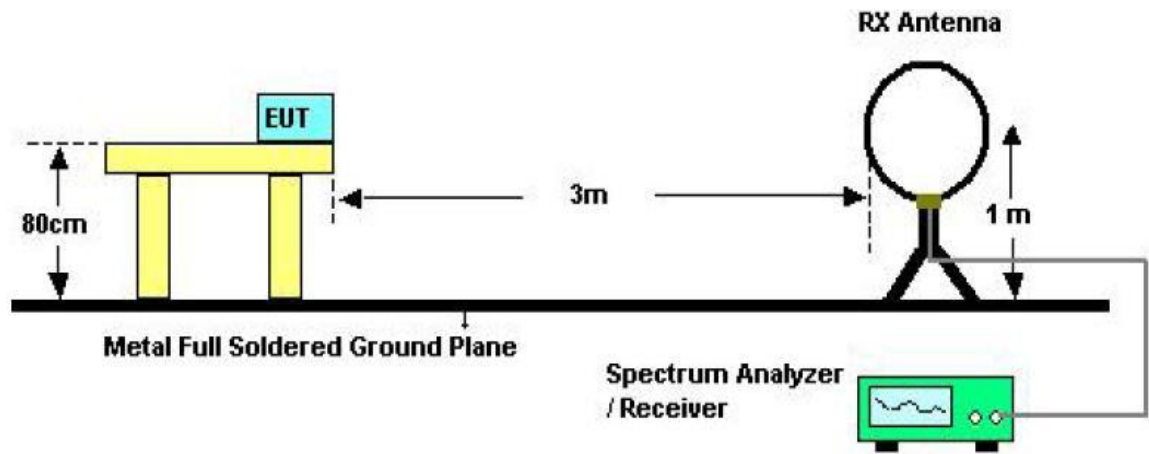
| Frequency (MHz) | Field Strength Limits at 3 metres (watts, e.i.r.p.) | | |
|----------------------|--|------------|----------------------------|
| | uV/m | dB uV/m | Measurement distance(m) |
| 0.009-0.490 | 2400/F(kHz) | XX | 300 |
| 0.490-1.705 | 24000/F(kHz) | XX | 30 |
| 1.705-30 | 30 | 29.5 | 30 |
| 30~88 | 100(3nW) | 40 | 3 |
| 88~216 | 150(6.8nW) | 43.5 | 3 |
| 216~960 | 200(12nW) | 46 | 3 |
| Above960 | 500(75nW) | 54 | 3 |
| Carrier frequency | | 93.97(AV) | 3 |
| Carrier frequency | | 113.97(PK) | 3 |

NOTE:

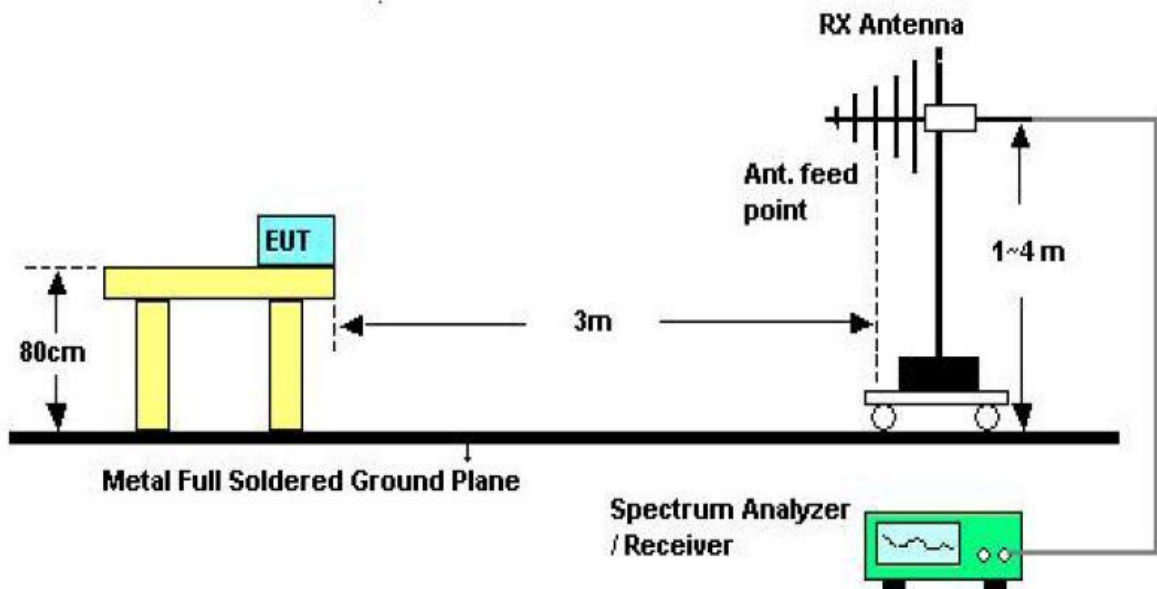
- The tighter limit applies at the band edges.
- Emission Level(dB uV/m)=20log Emission Level(uV /m)

5.3 Test Setup

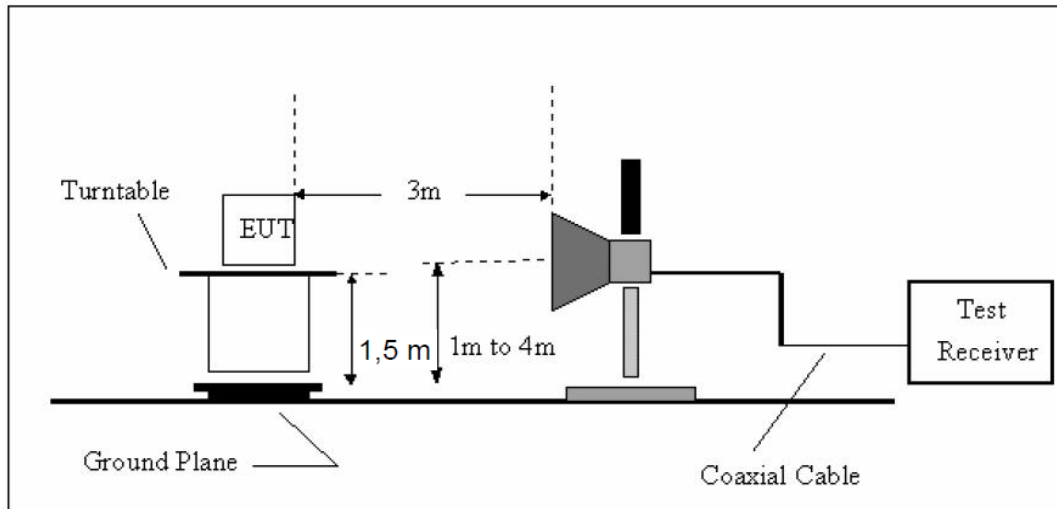
See the next page



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

5.4 Test Procedure

- a) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above 1GHz testing, The table was rotated 360 degrees to determine the position of the highest radiation
- b) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.
- c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured
- d) If Peak value comply with QP limit Below 1GHz. The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.
- e) For the actual test configuration, please see the test setup photo.
- f) Test for all x, y, z axes is performed and only the worst case of X axes was recorded in the test report.
- g) 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.

5.5 Test Equipment Setting For emission test Result.

| | | |
|--------------|------------|------------|
| 9KHz~150KHz | RBW 200Hz | VBW 1KHz |
| 150KHz~30MHz | RBW 9KHz | VBW 30KHz |
| 30MHz~1GHz | RBW 120KHz | VBW 300KHz |
| Above 1GHz | RBW 1MHz | VBW 3MHz |

5.6 Test Condition

Continual Transmitting in maximum power.

5.7 Test Result

We have scanned the 10th harmonic from 9KHz to the EUT.
Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

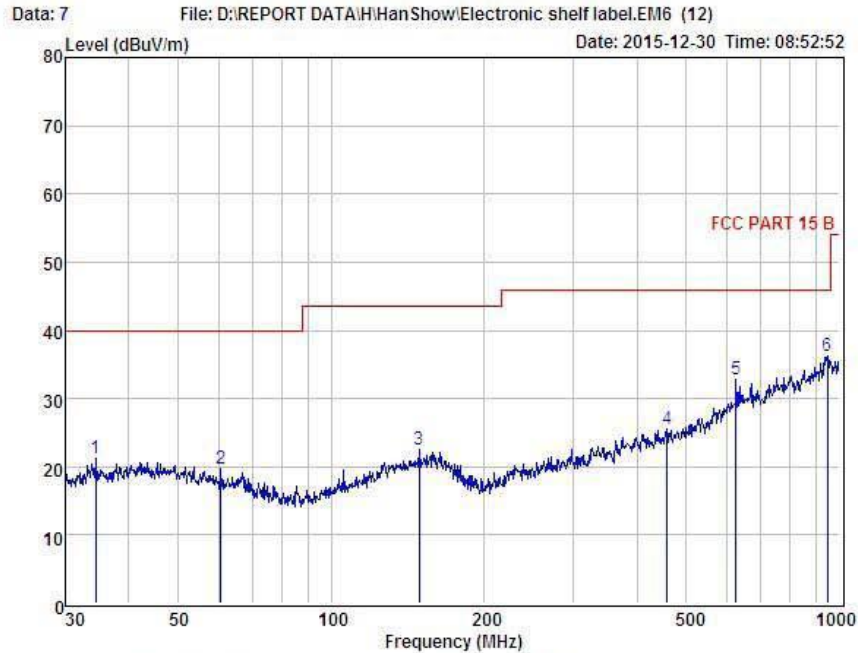
Remark: Only show the test data of the worst Channel in this report.

From 30MHz to 1000MHz: Conclusion: PASS

Below 1GHz



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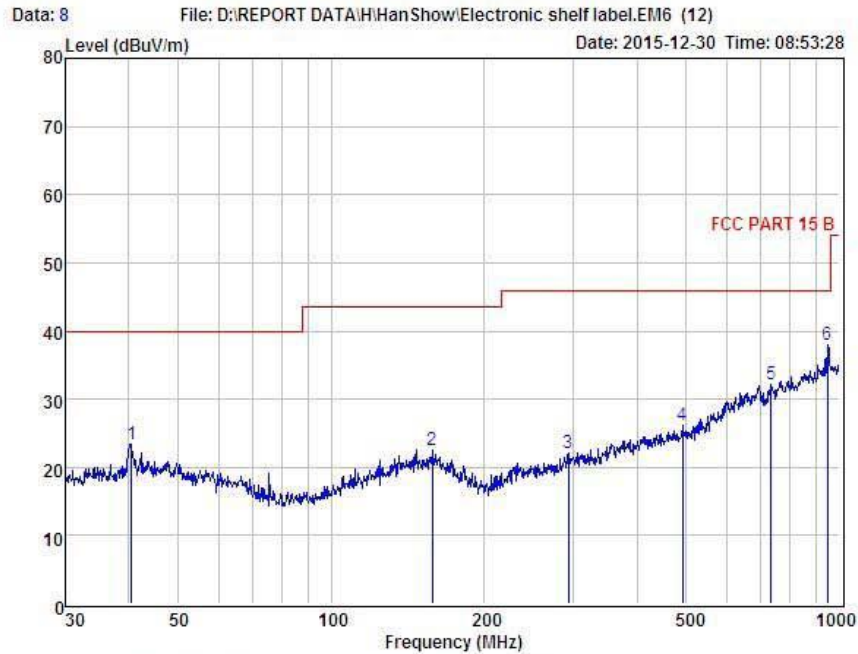
Condition : FCC PART 15 B 3m POL: HORIZONTAL
 EUT : Electronic shelf label
 Model No : Stellar-XL
 Test Mode : TX 2402MHz
 Power : DC 3V
 Test Engineer : Reak
 Remark :
 Temp : 25.2°C
 Hum : 56%

| Item | Freq MHz | Read Level dBuV | Antenna Factor dB | Preamplifier Factor dB | Cable Loss dB | Level dBuV | Limit dBuV | Margin dBuV | Remark |
|------|-------------|-----------------------|-------------------------|------------------------------|---------------------|---------------|---------------|----------------|--------|
| 1 | 34.40 | 38.57 | 13.33 | 30.82 | 0.13 | 21.21 | 40.00 | -18.79 | Peak |
| 2 | 60.70 | 38.08 | 12.36 | 30.90 | 0.17 | 19.71 | 40.00 | -20.29 | Peak |
| 3 | 148.96 | 37.54 | 14.03 | 29.45 | 0.35 | 22.47 | 43.50 | -21.03 | Peak |
| 4 | 457.51 | 35.71 | 16.04 | 27.47 | 1.16 | 25.44 | 46.00 | -20.56 | Peak |
| 5 | 625.08 | 38.68 | 18.80 | 25.81 | 1.11 | 32.78 | 46.00 | -13.22 | Peak |
| 6 | 945.44 | 37.87 | 22.10 | 24.97 | 1.29 | 36.29 | 46.00 | -9.71 | Peak |

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss



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 Tel: +86-755-29766001 FAX: +86-755-86375565
 Website: <http://www.a-lab.cn> Email: service@a-lab.cn



Condition : FCC PART 15 B 3m POL: VERTICAL
 EUT : Electronic shelf label
 Model No : Stellar-XL
 Test Mode : TX 2402MHz
 Power : DC 3V
 Test Engineer : Reak
 Remark :
 Temp : 25.2°C
 Hum : 56%

| Item | Freq MHz | Read Level dBuV | Antenna Factor dB | Preamp Factor dB | Cable Loss dB | Level dBuV | Limit dBuV | Margin dBuV | Remark |
|------|-------------|-----------------------|-------------------------|------------------------|---------------------|---------------|---------------|----------------|--------|
| 1 | 40.56 | 40.01 | 14.07 | 30.85 | 0.18 | 23.41 | 40.00 | -16.59 | Peak |
| 2 | 158.11 | 37.26 | 14.14 | 29.24 | 0.39 | 22.55 | 43.50 | -20.95 | Peak |
| 3 | 293.08 | 36.87 | 12.67 | 28.04 | 0.70 | 22.20 | 46.00 | -23.80 | Peak |
| 4 | 490.74 | 35.93 | 16.41 | 27.19 | 1.08 | 26.23 | 46.00 | -19.77 | Peak |
| 5 | 734.49 | 36.28 | 20.09 | 25.49 | 1.30 | 32.18 | 46.00 | -13.82 | Peak |
| 6 | 945.44 | 39.44 | 22.10 | 24.97 | 1.29 | 37.86 | 46.00 | -8.14 | Peak |

Remark: Level = Read Level + Antenna Factor - Preamp Factor + Cable Loss

Notes: Above is below 1GHz test data. This report only shall the worst case mode for TX 2402MHz.

| 1GHz—25GHz Radiated emission Test result | | | | | | | | | |
|---|------------|-----------------------|-----------------------|----------------|----------------------|-----------------|----------------|-------------|--------|
| EUT: Electronic shelf label | | | M/N: Stellar-XL | | | | | | |
| Power: DC 3.0V From battery | | | | | | | | | |
| Test date: 2016-01-14 | | Test site: 3m Chamber | | | Tested by: Reak Yang | | | | |
| Test mode: 2402MHz | | | | | | | | | |
| Antenna polarity: Vertical | | | | | | | | | |
| No | Freq (MHz) | Read Level (dBuV/m) | Antenna Factor (dB/m) | Cable loss(dB) | Amp Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
| 1 | 2402 | 88.64 | 27.61 | 3.94 | 34.97 | 85.22 | 114 | 28.78 | PK |
| 2 | 2402 | 80.21 | 27.61 | 3.94 | 34.97 | 76.79 | 94 | 17.21 | AV |
| 3 | 4804 | 58.37 | 31.29 | 5.70 | 34.19 | 61.17 | 74 | 12.83 | PK |
| 4 | 4804 | 40.25 | 31.29 | 5.70 | 34.19 | 43.05 | 54 | 10.95 | AV |
| 5 | 2400 | 50.99 | 27.62 | 3.94 | 34.97 | 47.58 | 74 | 26.42 | PK |
| 6 | 2400 | 36.54 | 27.62 | 3.94 | 34.97 | 33.13 | 54 | 20.87 | AV |
| | / | | | | | | | | |
| | | | | | | | | | |
| Antenna Polarity: Horizontal | | | | | | | | | |
| 1 | 2402 | 90.77 | 27.61 | 3.94 | 34.97 | 87.35 | 114 | 26.65 | PK |
| 2 | 2402 | 82.18 | 27.61 | 3.94 | 34.97 | 78.76 | 94 | 15.24 | AV |
| 3 | 4804 | 58.64 | 31.29 | 5.70 | 34.19 | 61.44 | 74 | 12.56 | PK |
| 4 | 4804 | 40.88 | 31.29 | 5.70 | 34.19 | 43.68 | 54 | 10.32 | AV |
| 5 | 2400 | 51.21 | 27.62 | 3.94 | 34.97 | 47.80 | 74 | 26.20 | PK |
| 6 | 2400 | 36.96 | 27.62 | 3.94 | 34.97 | 33.55 | 54 | 20.45 | AV |
| | / | / | | | | | | | |
| | | | | | | | | | |
| Note: | | | | | | | | | |
| 1,Measuring frequency from 1GHz to 25GHz | | | | | | | | | |
| 2,Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto | | | | | | | | | |
| Detector: PK | | | | | | | | | |
| 2,Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto | | | | | | | | | |
| Detector: RMS | | | | | | | | | |
| 3, Result = Read level + Antenna factor + cable loss-Amp factor | | | | | | | | | |
| 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit. | | | | | | | | | |

| EUT: Electronic shelf label M/N: Stellar-XL | | | | | | | | | |
|---|------------|---------------------|-----------------------|-----------------|-----------------|-----------------|----------------|-------------|--------|
| Power: DC 3.0V From battery | | | | | | | | | |
| Test date: 2016-01-14 Test site: 3m Chamber Tested by: Reak Yang | | | | | | | | | |
| Test mode: 2480MHz | | | | | | | | | |
| Antenna polarity: Vertical | | | | | | | | | |
| No | Freq (MHz) | Read Level (dBuV/m) | Antenna Factor (dB/m) | Cable loss (dB) | Amp Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
| 1 | 2480 | 87.17 | 27.59 | 4.00 | 34.97 | 83.79 | 114 | 30.21 | PK |
| 2 | 2480 | 79.39 | 27.59 | 4.00 | 34.97 | 76.01 | 94 | 17.99 | AV |
| 3 | 4960 | 58.74 | 31.43 | 5.79 | 34.12 | 61.84 | 74 | 12.16 | PK |
| 4 | 4960 | 40.75 | 31.43 | 5.79 | 34.12 | 43.85 | 54 | 10.15 | AV |
| 5 | 2483.5 | 51.61 | 27.59 | 4.00 | 34.97 | 48.23 | 74 | 25.77 | PK |
| 6 | 2483.5 | 36.49 | 27.59 | 4.00 | 34.97 | 33.11 | 54 | 20.89 | AV |
| | / | / | | | | | | | |
| | | | | | | | | | |
| Antenna Polarity: Horizontal | | | | | | | | | |
| 1 | 2480 | 89.77 | 27.59 | 4.00 | 34.97 | 86.39 | 114 | 27.61 | PK |
| 2 | 2480 | 81.09 | 27.59 | 4.00 | 34.97 | 77.71 | 94 | 16.29 | AV |
| 3 | 4960 | 58.69 | 31.43 | 5.79 | 34.12 | 61.79 | 74 | 12.21 | PK |
| 4 | 4960 | 41.22 | 31.43 | 5.79 | 34.12 | 44.32 | 54 | 9.68 | AV |
| 5 | 2483.5 | 51.98 | 27.59 | 4.00 | 34.97 | 48.60 | 74 | 25.40 | PK |
| 6 | 2483.5 | 36.85 | 27.59 | 4.00 | 34.97 | 33.47 | 54 | 20.53 | AV |
| | / | / | | | | | | | |
| | | | | | | | | | |
| Note: | | | | | | | | | |
| 1, Measuring frequency from 1GHz to 25GHz | | | | | | | | | |
| 2, Spectrum Set for PK measure: RBW=1MHz, VBW=1MHz, Sweep time=Auto, Detector: PK | | | | | | | | | |
| 2,Spectrum Set for AV measure: RBW=1MHz, VBW=3MHz, Sweep time=Auto, Detector: RMS | | | | | | | | | |
| 3, Result = Read level + Antenna factor + cable loss-Amp factor | | | | | | | | | |
| 4, All the other emissions not reported were too low to read and deemed to comply with FCC limit. | | | | | | | | | |

6 POWER LINE CONDUCTED EMISSION

6.1 Conducted Emission Limits(15.207)

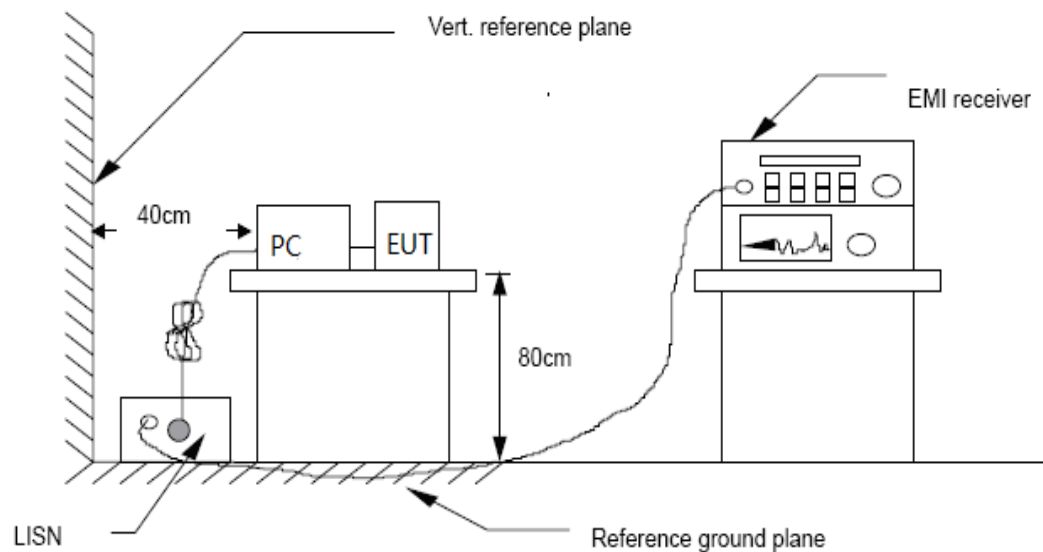
| Frequency MHz | Limits dB(μ V) | |
|------------------|---------------------|---------------|
| | Quasi-peak Level | Average Level |
| 0.15 -0.50 | 66 -56* | 56 - 46* |
| 0.50 -5.00 | 56 | 46 |
| 5.00 -30.00 | 60 | 50 |

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

6.2 Test Setup



6.3 Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines 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 Measurement. The bandwidth of test receiver (R & S ESCS30) is set at 9 kHz.

6.4 Test Results

Not apply to battery operated products.

7 Bandwidth

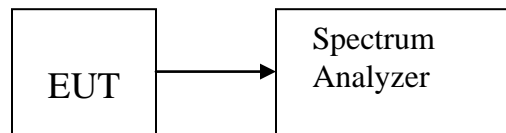
7.1 Test limit

Please refer section 15.249

7.2 Method of measurement

- a) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
- b) The test receiver RBW set 100KHz, VBW set 300KHz, Sweep time set auto.

7.3 Test Setup



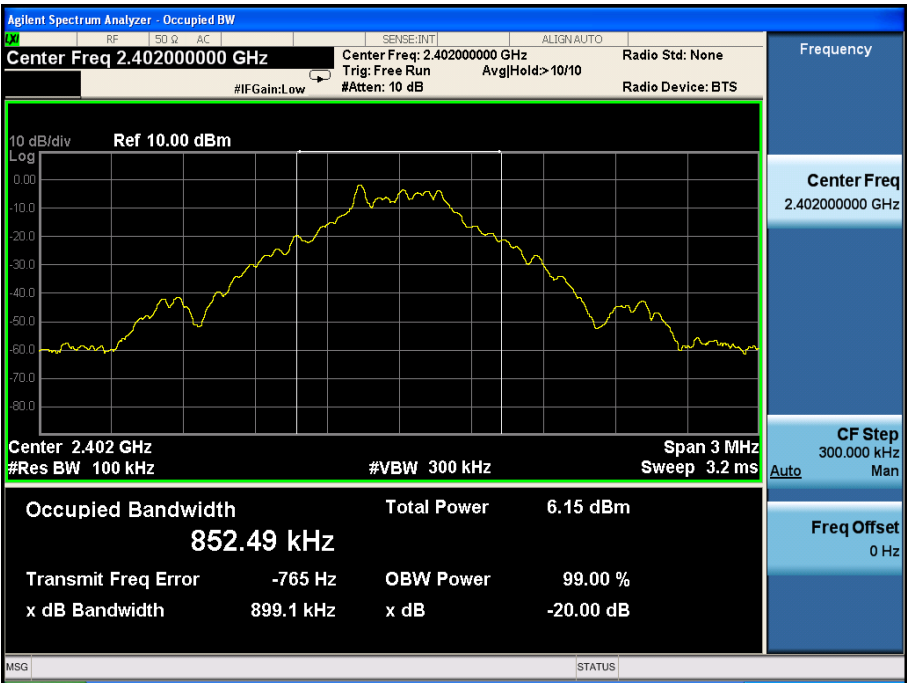
7.4 Test Results

PASS.

Detailed information please see the following page.

| Channel | Frequency (MHz) | 20dB Bandwidth (KHz) | Limit (KHz) | Result |
|---------|-----------------|----------------------|-------------|--------|
| CH1 | 2402 | 899.1 | / | PASS |
| CH40 | 2441 | 916.8 | / | PASS |
| CH79 | 2480 | 929.8 | / | PASS |

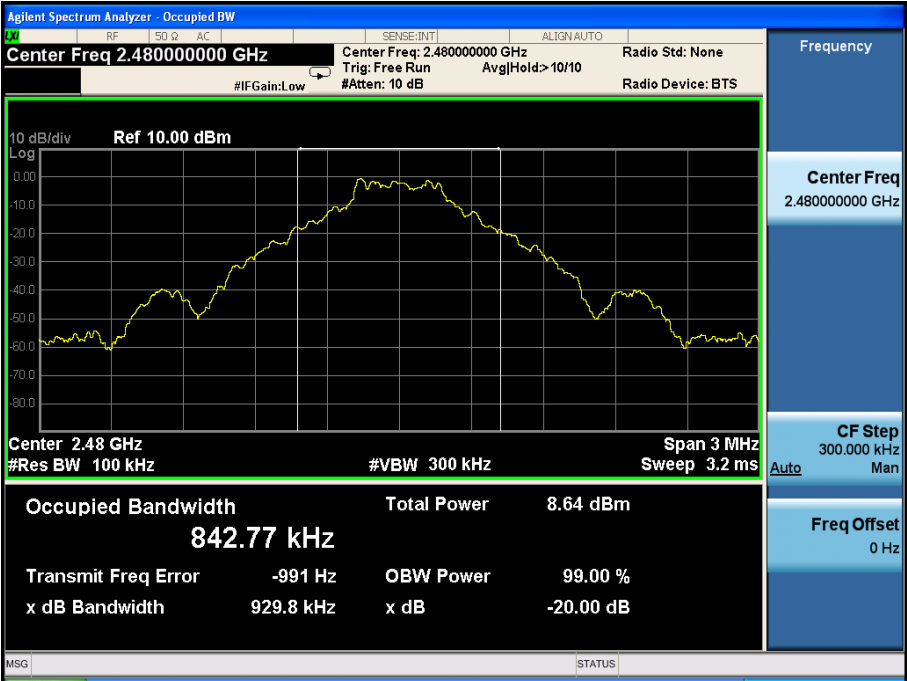
CH Low :



CH Mid :



CH High :



8 Antenna Requirement

8.1 Standard Requirement

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.

8.2 Antenna Connected Construction

The directional gains of antenna used for transmitting is 2dBi, and is a PCB Antenna and no consideration of replacement. Please see EUT photo for details.

8.3 Result

The EUT antenna is PCB Antenna. It comply with the standard requirement.

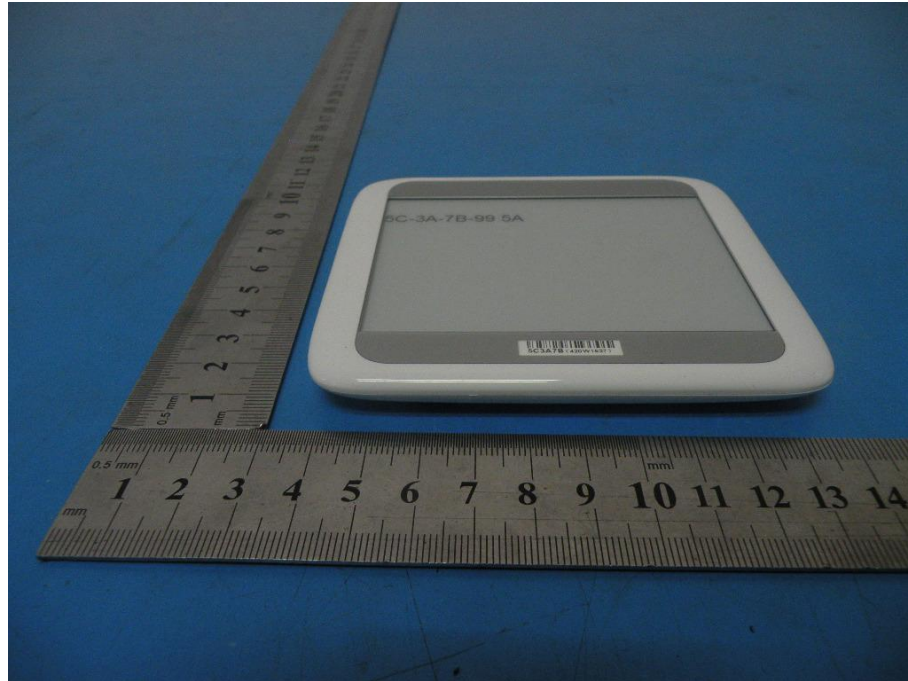
9 Photographs of Test Setup

9.1 Photos of Radiated emission

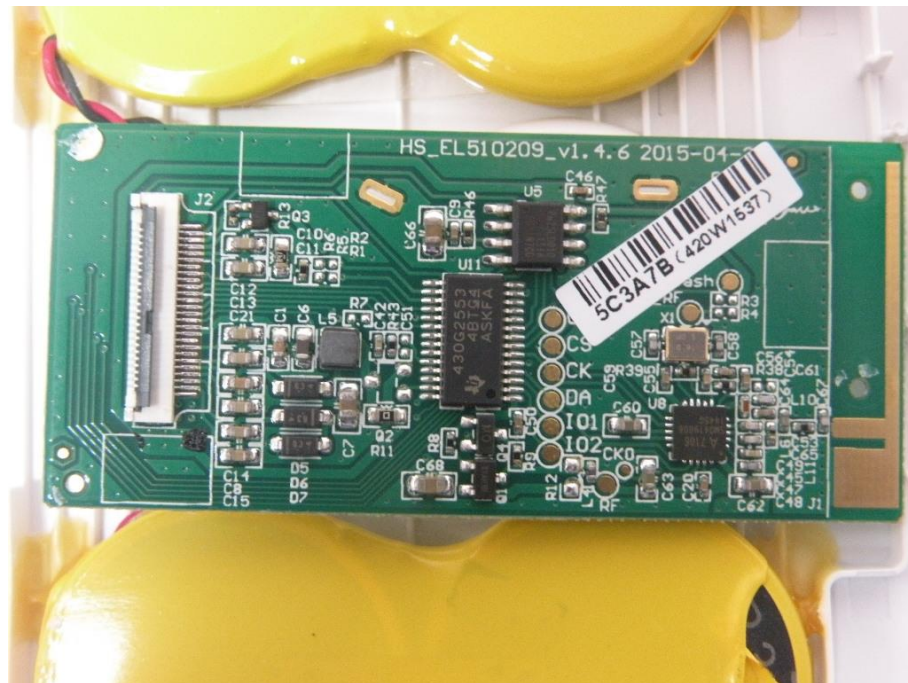


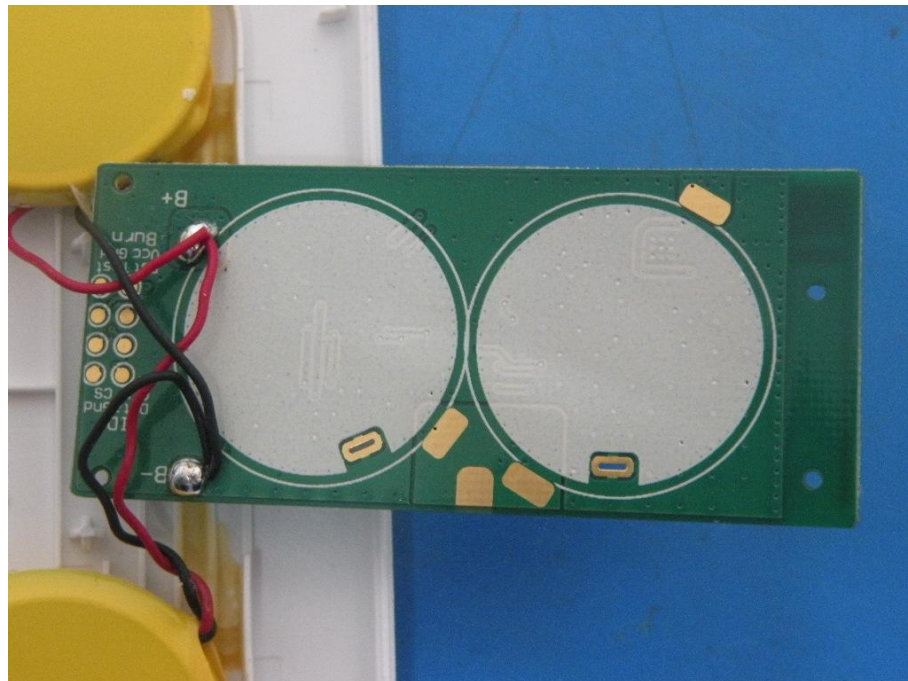
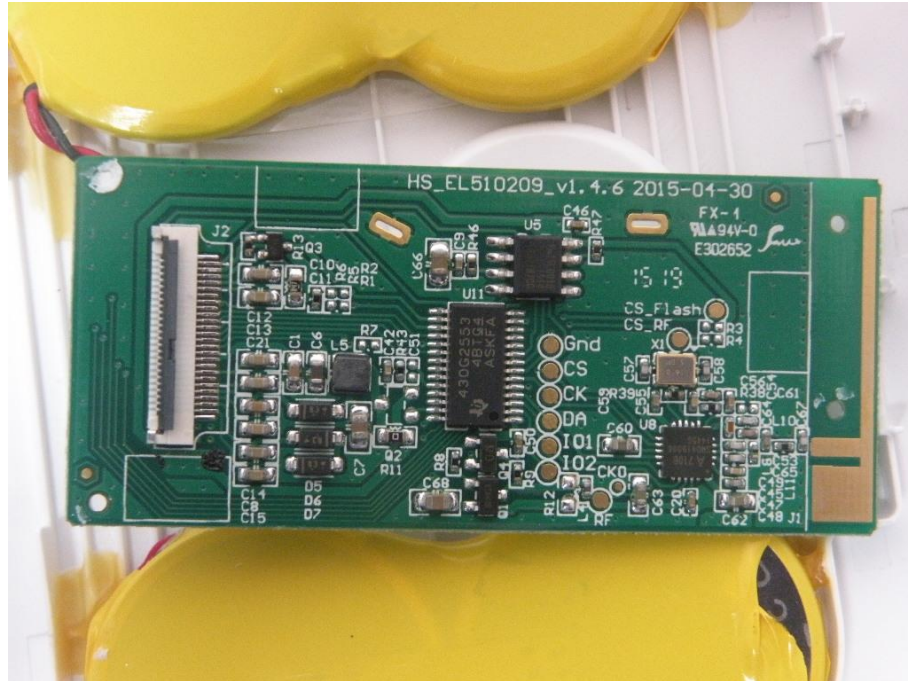
10 Photographs of EUT

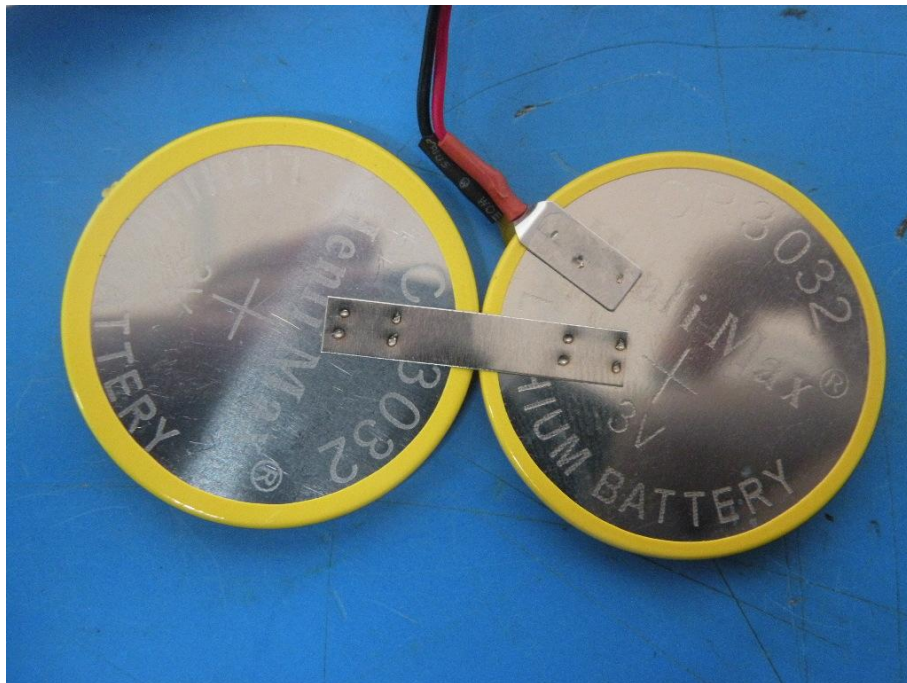












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