**Shenzhen EBO Technology Co., Ltd.**

1-4F, Huafeng Science Park, Xin'an Sixth Road, 82th District,
Bao'an, Shenzhen, China.
Telephone: +86-755-29451282,
Fax: +86-755-22639141



# TEST REPORT

**Applicant:** EKEN GROUP LIMITED

**Address of Applicant:** Room 2511-2512, Meilan Business Center, Qianjin Two Road, Xixiang, Baoan District, Shenzhen, China

**Equipment Under Test (EUT)**

Product Name: ACTION CAMERA

Model No.: H3, A7, A8, A9, W9, G1, G2, G3, G4, G5, G6, G7, G8, G9, H1, H2, H4, H5, H6, H7, H8, H9, I1, I2, I3, I4, I5, I6, I7, I8, I9, N1, N2, N3, N4, N5, N6, N7, N8, N9, M1, M2, M3, M4, M5, M6, M7, M8, M9, K1, K2, K3, K4, K5, K6, K7, K8, K9, R1, R2, R3, R4, R5, R6, R7, R8, R9

**FCC ID:** 2ADDG-H3

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart B:2014

**Date of sample receipt:** November 23, 2015

**Date of Test:** November 23, 2015 To December 8, 2015

**Date of report issue:** December 8, 2015

**Test Result :** PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Kevin Yu
Laboratory Manager

## 2 Version

| Version No. | Date | Description |
|---|---|---|
| *00* | *December 8, 2015* | *Original* |
| | | |
| | | |
| | | |
| | | |

***Prepared By:***  ***Date:*** *December 8, 2015*

***Project Engineer***

***Check By:***  ***Date:*** *December 8, 2015*

***Reviewer***

# 3 Contents

# 4 Test Summary

| Test Item | Section in CFR 47 | Result |
|---|---|---|
| Conducted Emission | Part15.107 | PASS |
| Radiated Emissions | Part15.109 | PASS |

*PASS: The EUT complies with the essential requirements in the standard.*

# 5 General Information

## 5.1 Client Information

| | |
|---|---|
| Applicant: | EKEN GROUP LIMITED |
| Address of Applicant: | Room 2511-2512, Meilan Business Center, Qianjin Two Road, Xixiang, Baoan District, Shenzhen, China |
| Manufacturer: | EKEN GROUP LIMITED |
| Address of Manufacturer: | Room 2511-2512, Meilan Business Center, Qianjin Two Road, Xixiang, Baoan District, Shenzhen, China |

## 5.2 General Description of EUT

| | |
|---|---|
| Product Name: | ACTION CAMERA |
| Model No.: | H3, A7, A8, A9, W9, G1, G2, G3, G4, G5, G6, G7, G8, G9, H1, H2, H3, H4, H5, H6, H7, H8, H9, I1, I2, I3, I4, I5, I6, I7, I8, I9, N1, N2, N3, N4, N5, N6, N7, N8, N9, M1, M2, M3, M4, M5, M6, M7, M8, M9, K1, K2, K3, K4, K5, K6, K7, K8, K9, R1, R2, R3, R4, R5, R6, R7, R8, R9 |
| Test Model No.: | H3 |
| Power supply: | DC 5V ⎓ 1A<br>Or<br>DC 3.7V, 1050mAh Li-ion Battery<br>Adapter:<br>Model:ZXT-051000E<br>Input:100-240V~, 50/60Hz, 0.4A<br>Output:5V ⎓ 1A |

## 5.3 Test mode

| | |
|---|---|
| Test mode: | |
| REC mode | Keep the EUT in REC mode |
| PC mode | Keep the EUT in data exchanging with PC mode |
| HDMI mode | Keep the EUT in HDMI mode |
| **Test voltage:** | |
| AC 120V/60Hz | |

Remark: The Highest frequency generated or used in the EUT is less than 1GHz .

## 5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, July 20, 2010.

● **Industry Canada (IC)**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. Has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

## 5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

## 5.6 Description of Support Units

| Manufacturer | Description | Model | Serial Number | FCC Approval |
|---|---|---|---|---|
| HP | Printer | CB495A | 05257893 | DoC |
| Apple | PC | A1278 | C1MN99ERDTY3 | DoC |
| DELL | KEYBOARD | SK-8115 | N/A | DoC |
| DELL | MOUSE | MOC5UO | N/A | DoC |

## 5.7 Deviation from Standards

Biconical, log.per. antenna and horn antenna were used instead of dipole antenna.
Semi-anechoic Chamber was used as alternation of open air test sites, and all test suites were performed with radiated method in it.

## 5.8 Abnormalities from Standard Conditions

None.

## 5.9 Other Information Requested by the Customer

None.

# 6 Test Instruments list

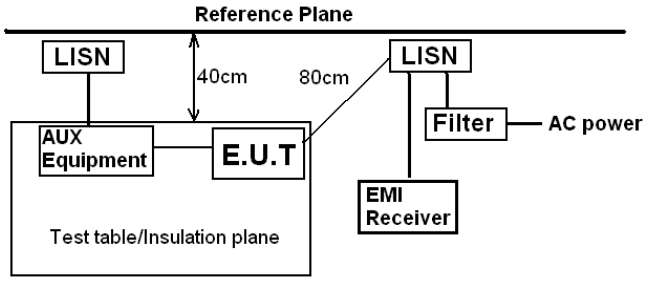
| Radiated Emission: | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal.Date (mm-dd-yy)** | **Cal.Due date (mm-dd-yy)** |
| 1 | 3m Semi- Anechoic Chamber | ZhongYu Electron | 9.2(L)*6.2(W)* 6.4(H) | GTS250 | Mar. 29 2014 | Mar. 28 2016 |
| 2 | Control Room | ZhongYu Electron | 6.2(L)*2.5(W)* 2.4(H) | GTS251 | N/A | N/A |
| 3 | Spectrum Analyzer | Agilent | E4440A | GTS533 | July 08 2015 | July 07 2016 |
| 4 | EMI Test Receiver | Rohde & Schwarz | ESU26 | GTS203 | July 08 2015 | July 07 2016 |
| 5 | BiConiLog Antenna | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | GTS214 | July 08 2015 | July 07 2016 |
| 6 | Double -ridged waveguide horn | SCHWARZBECK MESS-ELEKTRONIK | 9120D-829 | GTS208 | July 08 2015 | July 07 2016 |
| 7 | Horn Antenna | ETS-LINDGREN | 3160 | GTS217 | Mar. 27 2015 | Mar. 26 2016 |
| 8 | EMI Test Software | AUDIX | E3 | N/A | N/A | N/A |
| 9 | Coaxial Cable | GTS | N/A | GTS213 | Mar. 27 2015 | Mar. 26 2016 |
| 10 | Coaxial Cable | GTS | N/A | GTS211 | Mar. 27 2015 | Mar. 26 2016 |
| 11 | Coaxial Cable | GTS | N/A | GTS210 | Mar. 27 2015 | Mar. 26 2016 |
| 12 | Coaxial Cable | GTS | N/A | GTS212 | Mar. 27 2015 | Mar. 26 2016 |
| 13 | Amplifier(100kHz-3GHz) | HP | 8347A | GTS204 | July 08 2015 | July 07 2016 |
| 14 | Amplifier(2GHz-20GHz) | HP | 8349B | GTS206 | July 08 2015 | July 07 2016 |
| 15 | Amplifier (18-26GHz) | Rohde & Schwarz | AFS33-18002 650-30-8P-44 | GTS218 | July 08 2015 | July 07 2016 |
| 16 | Band filter | Amindeon | 82346 | GTS219 | Mar. 27 2015 | Mar. 26 2016 |
| 17 | Power Meter | Anritsu | ML2495A | GTS540 | July 08 2015 | July 07 2016 |
| 18 | Power Sensor | Anritsu | MA2411B | GTS541 | July 08 2015 | July 07 2016 |

| Conducted Emission: | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal.Date (mm-dd-yy)** | **Cal.Due date (mm-dd-yy)** |
| 1 | Shielding Room | ZhongYu Electron | 7.0(L)x3.0(W)x3.0(H) | GTS264 | July 08 2015 | July 07 2016 |
| 2 | EMI Test Receiver | Rohde & Schwarz | ESCS30 | GTS223 | July 08 2015 | July 07 2016 |
| 3 | 10dB Pulse Limita | Rohde & Schwarz | N/A | GTS224 | July 08 2015 | July 07 2016 |
| 4 | Coaxial Switch | ANRITSU CORP | MP59B | GTS225 | July 08 2015 | July 07 2016 |
| 5 | LISN | SCHWARZBECK MESS-ELEKTRONIK | NSLK 8127 | GTS226 | July 08 2015 | July 07 2016 |
| 6 | Coaxial Cable | GTS | N/A | GTS227 | July 08 2015 | July 07 2016 |
| 7 | EMI Test Software | AUDIX | E3 | N/A | N/A | N/A |

| General used equipment: | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal.Date (mm-dd-yy)** | **Cal.Due date (mm-dd-yy)** |
| 1 | Barometer | ChangChun | DYM3 | GTS257 | July 08 2015 | July 07 2016 |

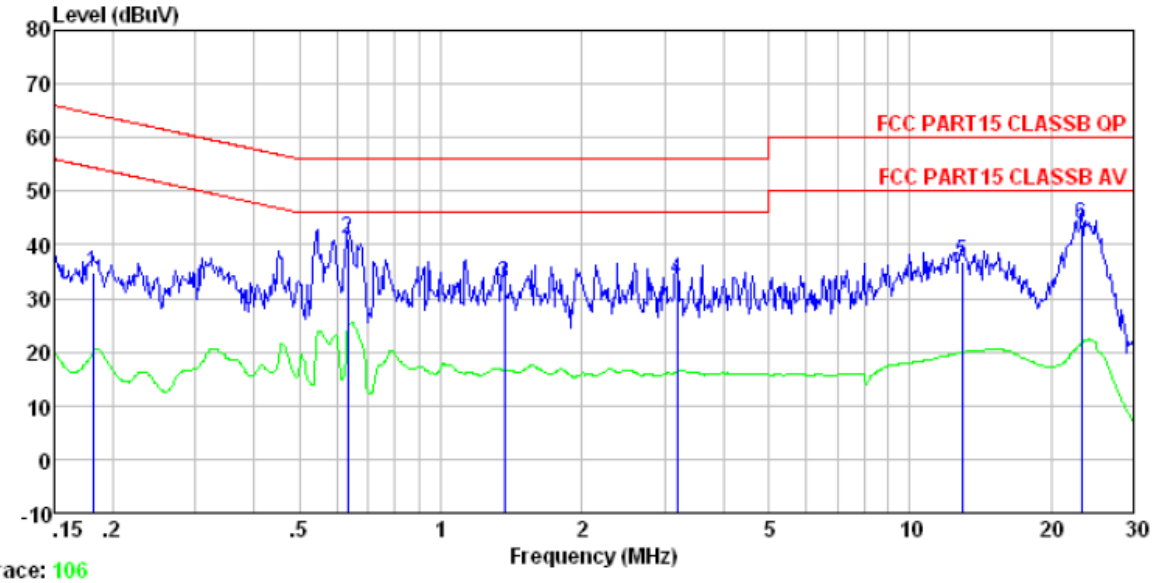
# 7 Test Results and Measurement Data

## 7.1 Conducted Emissions

| | |
|---|---|
| Test Requirement: | FCC Part15 B Section 15.107 |
| Test Method: | ANSI C63.4:2014 |
| Test Frequency Range: | 150KHz to 30MHz |
| Class / Severity: | Class B |
| Receiver setup: | RBW=9KHz, VBW=30KHz, Sweep time=auto |
| Limit: | Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average<br>0.15-0.5: 66 to 56* / 56 to 46*<br>0.5-5: 56 / 46<br>5-30: 60 / 50<br>* Decreases with the logarithm of the frequency. |
| Test setup: |  <br>*Remark:*<br>*E.U.T: Equipment Under Test*<br>*LISN: Line Impedence Stabilization Network*<br>*Test table height=0.8m* |
| Test procedure: | 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment.<br>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).<br>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement. |
| Test Instruments: | Refer to section 6 for details |
| Test mode: | Refer to section 5.3 for details. All of the mode were tested and found the “PC mode” is the worst case. Only the data of worst case was reported. |
| Test results: | Pass |

**Measurement Data**

| Test mode: | PC mode | | LINE |
|---|---|---|---|

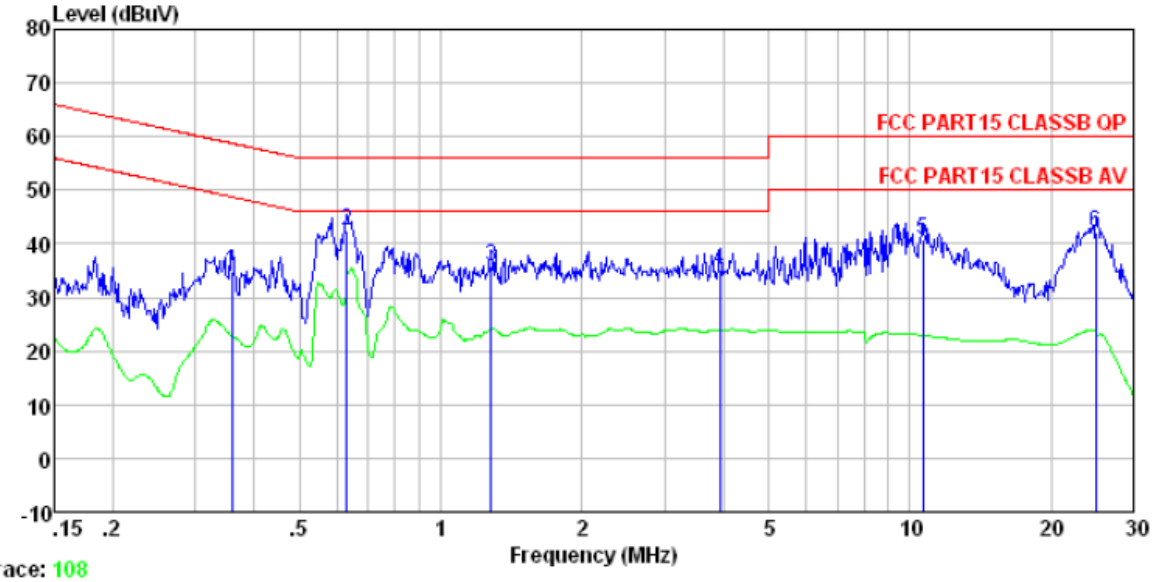



Trace: 106

Condition : FCC PART15 CLASSB QP LISN-2013 LINE

| | Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.182 | 34.56 | 0.14 | 0.13 | 34.83 | 64.42 | -29.59 | QP |
| 2 | 0.634 | 40.99 | 0.13 | 0.13 | 41.25 | 56.00 | -14.75 | QP |
| 3 | 1.367 | 32.73 | 0.12 | 0.13 | 32.98 | 56.00 | -23.02 | QP |
| 4 | 3.190 | 33.27 | 0.17 | 0.15 | 33.59 | 56.00 | -22.41 | QP |
| 5 | 12.920 | 36.16 | 0.34 | 0.21 | 36.71 | 60.00 | -23.29 | QP |
| 6 | 23.263 | 42.47 | 1.00 | 0.23 | 43.70 | 60.00 | -16.30 | QP |

| Test mode: | PC mode | | NEUTRAL |
|---|---|---|---|




Trace: 108

Condition : FCC PART15 CLASSB QP LISN-2013 NEUTRAL

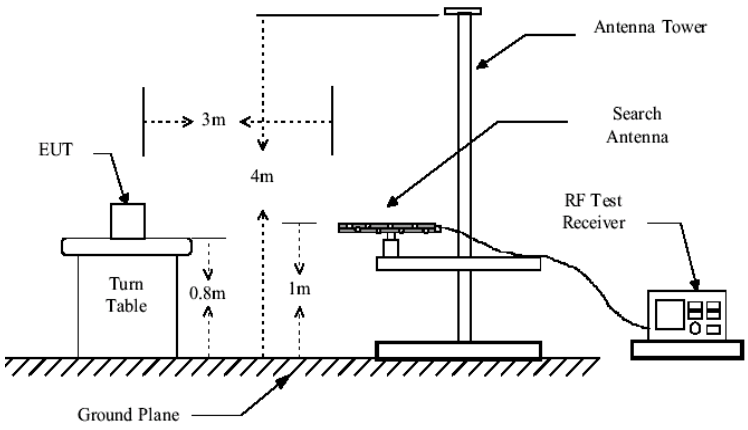
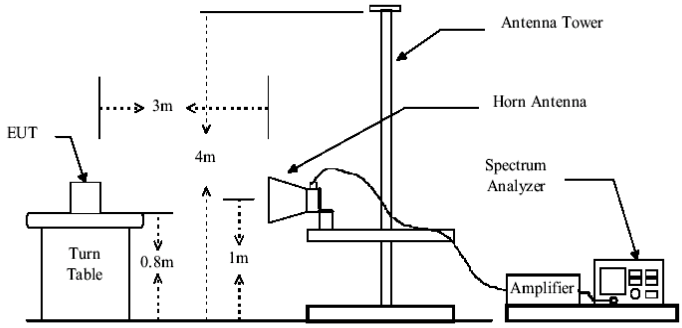
| | Freq | Read Level | LISN Factor | Cable Loss | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.360 | 34.65 | 0.06 | 0.10 | 34.81 | 58.74 | -23.93 | QP |
| 2 | 0.630 | 42.40 | 0.07 | 0.13 | 42.60 | 56.00 | -13.40 | QP |
| 3 | 1.282 | 35.76 | 0.09 | 0.13 | 35.98 | 56.00 | -20.02 | QP |
| 4 | 3.943 | 35.00 | 0.14 | 0.15 | 35.29 | 56.00 | -20.71 | QP |
| 5 | 10.676 | 40.35 | 0.27 | 0.19 | 40.81 | 60.00 | -19.19 | QP |
| 6 | 24.922 | 40.93 | 1.04 | 0.23 | 42.20 | 60.00 | -17.80 | QP |

*Notes:*

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

## 7.2 Radiated Emission

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 B Section 15.109</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.4:2014</td></tr>
<tr><td>Test Frequency Range:</td><td>30MHz to 6GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m (Semi-Anechoic Chamber)</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak Value</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average Value</td></tr>
</table>
</td></tr>
<tr><td>Limit:</td><td>
<table>
<tr><th>Frequency</th><th>Limit (dBuV/m @3m)</th><th>Remark</th></tr>
<tr><td>30MHz-88MHz</td><td>40.00</td><td>Quasi-peak Value</td></tr>
<tr><td>88MHz-216MHz</td><td>43.50</td><td>Quasi-peak Value</td></tr>
<tr><td>216MHz-960MHz</td><td>46.00</td><td>Quasi-peak Value</td></tr>
<tr><td>960MHz-1GHz</td><td>54.00</td><td>Quasi-peak Value</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>54.00</td><td>Average Value</td></tr>
<tr><td>74.00</td><td>Peak Value</td></tr>
</table>
</td></tr>
<tr><td>Test Procedure:</td><td>
1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>
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.<br>
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.<br>
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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>
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.
</td></tr>
</table>

| | |
|---|---|
| Test setup: | Below 1GHz<br>  <br><br>Above 1GHz<br>  <br> |
| Test environment: | Temp.: 25 °C Humid.: 52% Press.: 1 012mbar |
| Measurement Record: | Uncertainty: ± 4.5dB |
| Test Instruments: | Refer to section 6 for details |
| Test mode: | Refer to section 5.3 for details. All of the mode were tested and found the "PC mode" is the worst case. Only the data of worst case was reported. |
| Test results: | Pass |

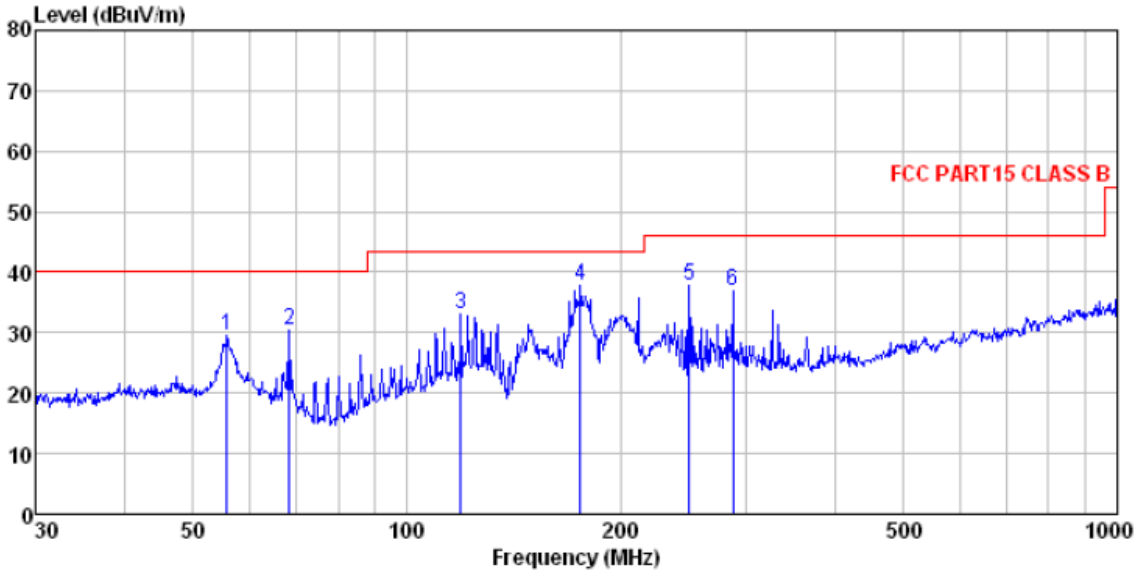
*Note:*
*The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:*

*Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor*

**Measurement Data**

Below 1GHz

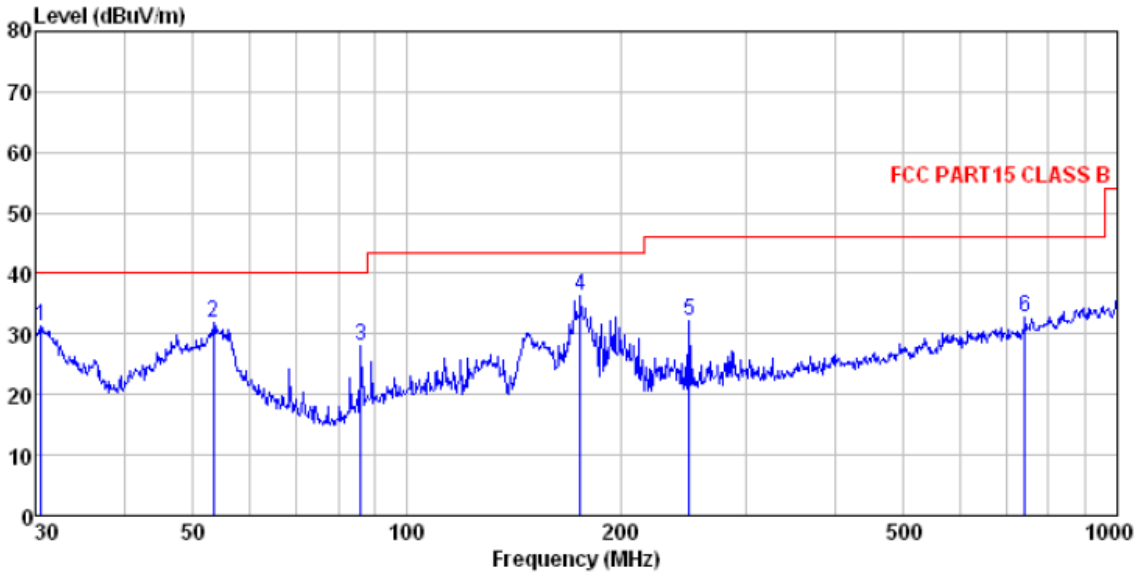
| Test mode: | PC mode | Ant Pol. | Horizontal |
|---|---|---|---|




Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-2013M HORIZONTAL

| | Freq | ReadAntenna Level | Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 55.805 | 45.54 | 14.97 | 0.82 | 31.95 | 29.38 | 40.00 | -10.62 | QP |
| 2 | 68.391 | 49.91 | 11.34 | 0.93 | 31.89 | 30.29 | 40.00 | -9.71 | QP |
| 3 | 119.018 | 50.80 | 12.69 | 1.35 | 31.85 | 32.99 | 43.50 | -10.51 | QP |
| 4 | 175.652 | 56.69 | 11.36 | 1.72 | 32.07 | 37.70 | 43.50 | -5.80 | QP |
| 5 | 249.425 | 53.84 | 14.07 | 2.12 | 32.16 | 37.87 | 46.00 | -8.13 | QP |
| 6 | 287.990 | 51.95 | 14.84 | 2.31 | 32.18 | 36.92 | 46.00 | -9.08 | QP |

| Test mode: | PC mode | Ant Pol. | Vertical |
|---|---|---|---|

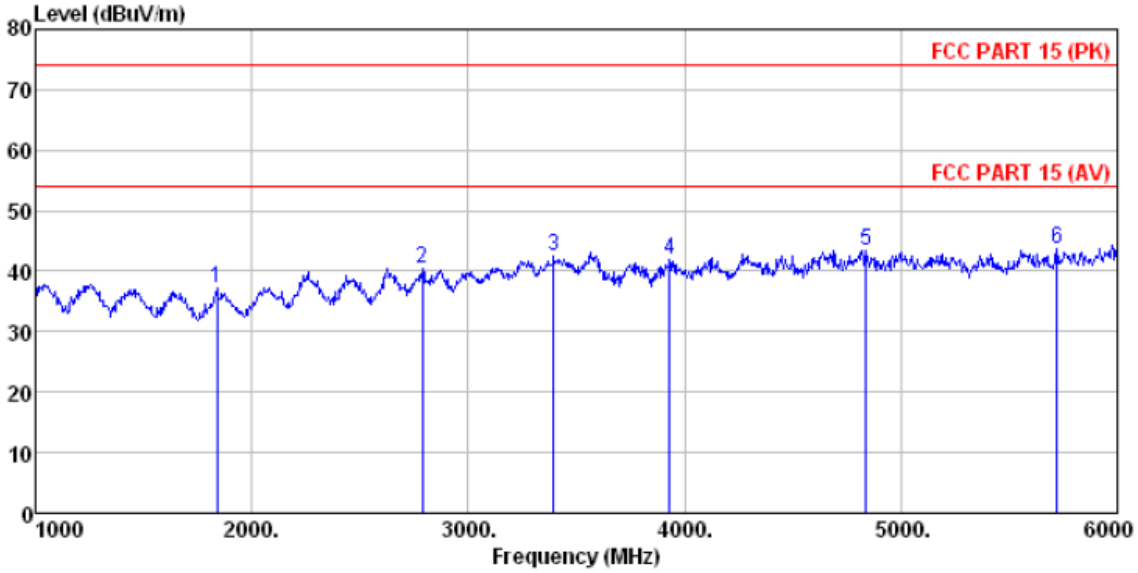



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-2013M VERTICAL

| | Freq | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 30.531 | 48.35 | 14.33 | 0.56 | 32.06 | 31.18 | 40.00 | -8.82 | QP |
| 2 | 53.505 | 47.99 | 15.08 | 0.80 | 31.95 | 31.92 | 40.00 | -8.08 | QP |
| 3 | 86.200 | 46.09 | 12.74 | 1.08 | 31.73 | 28.18 | 40.00 | -11.82 | QP |
| 4 | 175.652 | 55.18 | 11.36 | 1.72 | 32.07 | 36.19 | 43.50 | -7.31 | QP |
| 5 | 249.425 | 48.17 | 14.07 | 2.12 | 32.16 | 32.20 | 46.00 | -13.80 | QP |
| 6 | 742.259 | 38.39 | 21.34 | 4.24 | 31.25 | 32.72 | 46.00 | -13.28 | QP |

Above 1GHz

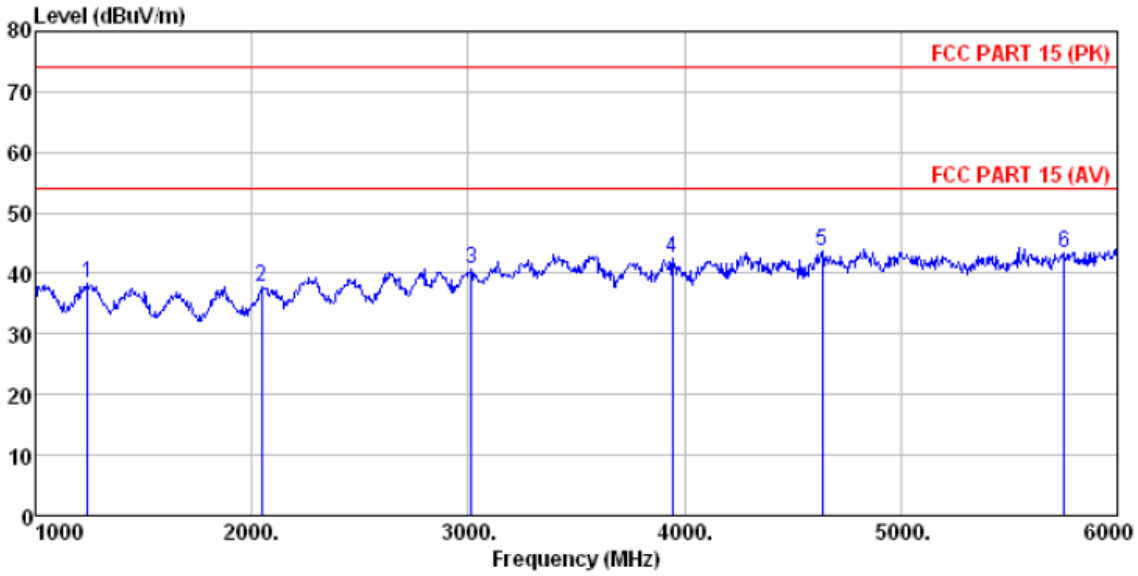
| Test mode: | PC mode | Ant Pol. | Horizontal |
|---|---|---|---|




Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) HORIZONTAL

| | Freq | ReadAntenna Level | Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 1840.000 | 41.10 | 25.48 | 4.88 | 34.17 | 37.29 | 74.00 | -36.71 | Peak |
| 2 | 2790.000 | 39.73 | 28.40 | 5.75 | 33.57 | 40.31 | 74.00 | -33.69 | Peak |
| 3 | 3395.000 | 39.91 | 28.60 | 6.76 | 32.87 | 42.40 | 74.00 | -31.60 | Peak |
| 4 | 3930.000 | 37.02 | 29.56 | 7.75 | 32.27 | 42.06 | 74.00 | -31.94 | Peak |
| 5 | 4840.000 | 35.20 | 31.81 | 8.63 | 32.11 | 43.53 | 74.00 | -30.47 | Peak |
| 6 | 5720.000 | 33.69 | 32.53 | 9.81 | 32.29 | 43.74 | 74.00 | -30.26 | Peak |

| Test mode: | PC mode | Ant Pol. | Vertical |
|---|---|---|---|

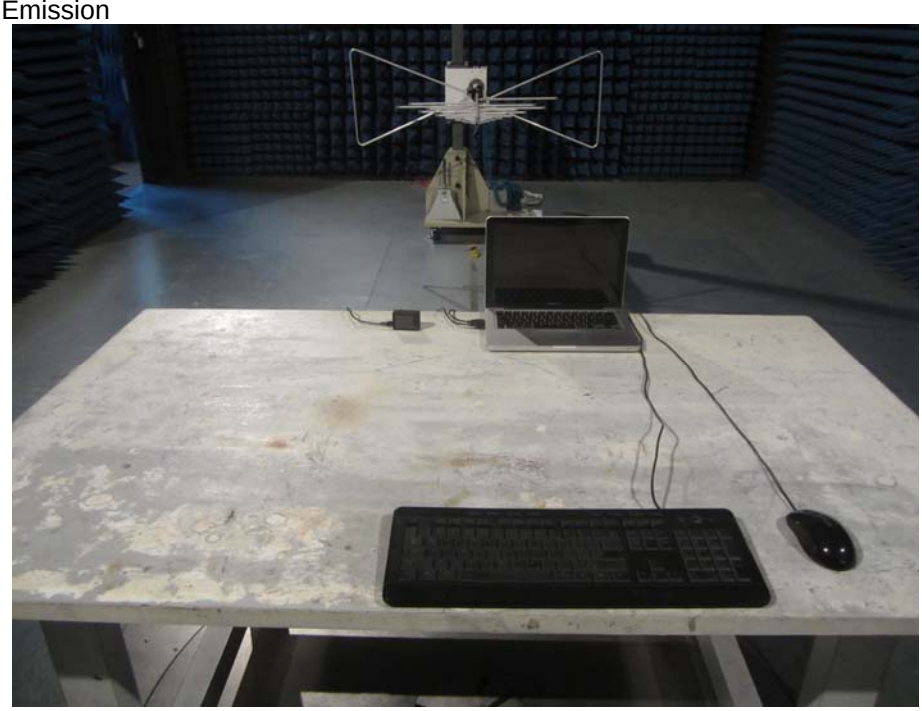


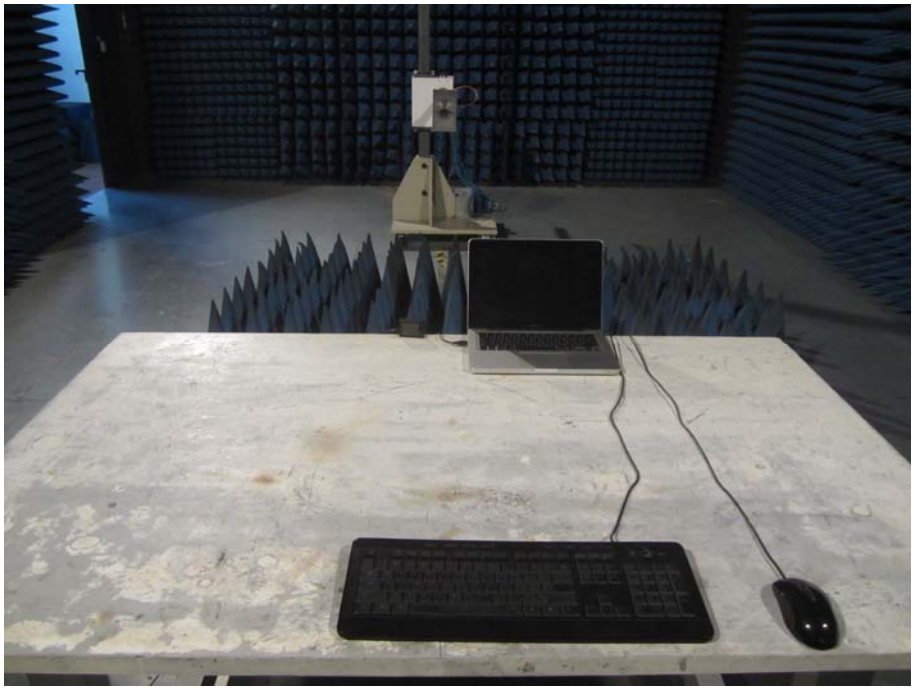

Site : 3m chamber
Condition : FCC PART 15 (PK) 3m BBHA9120D ANT(>1GHZ) VERTICAL

| | Freq | ReadAntenna Level | Antenna Factor | Cable Loss | Preamp Factor | Level | Limit Line | Over Limit | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dB | dB | dBuV/m | dBuV/m | dB | |
| 1 | 1240.000 | 41.68 | 25.50 | 4.50 | 33.16 | 38.52 | 74.00 | -35.48 | Peak |
| 2 | 2045.000 | 40.77 | 26.41 | 5.01 | 34.42 | 37.77 | 74.00 | -36.23 | Peak |
| 3 | 3015.000 | 39.46 | 28.50 | 5.96 | 33.30 | 40.62 | 74.00 | -33.38 | Peak |
| 4 | 3945.000 | 37.49 | 29.58 | 7.77 | 32.25 | 42.59 | 74.00 | -31.41 | Peak |
| 5 | 4635.000 | 35.71 | 31.57 | 8.46 | 32.01 | 43.73 | 74.00 | -30.27 | Peak |
| 6 | 5755.000 | 33.25 | 32.59 | 9.86 | 32.27 | 43.43 | 74.00 | -30.57 | Peak |

# 8 Test Setup Photo

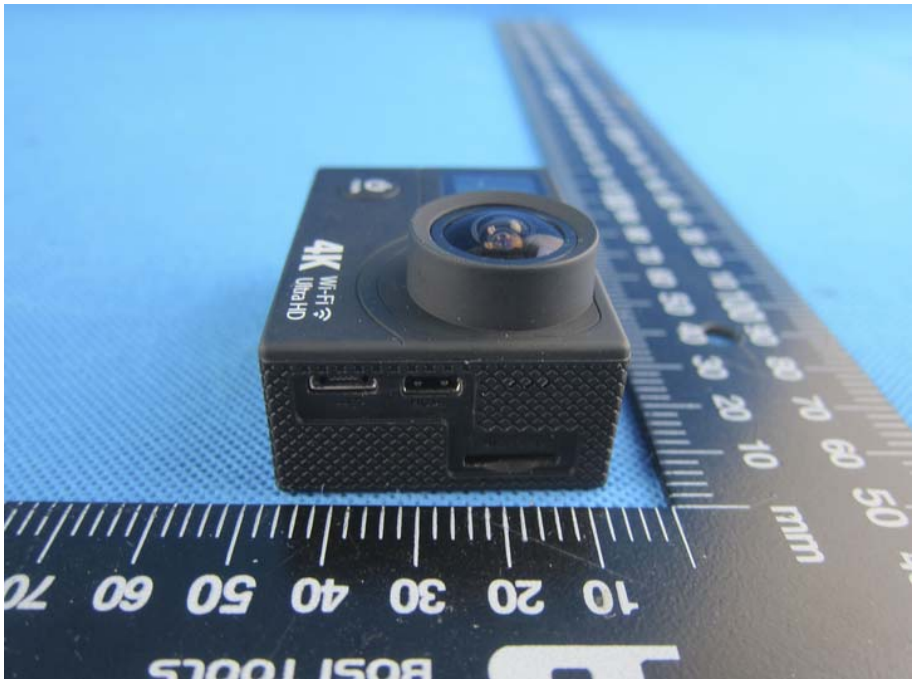
Radiated Emission

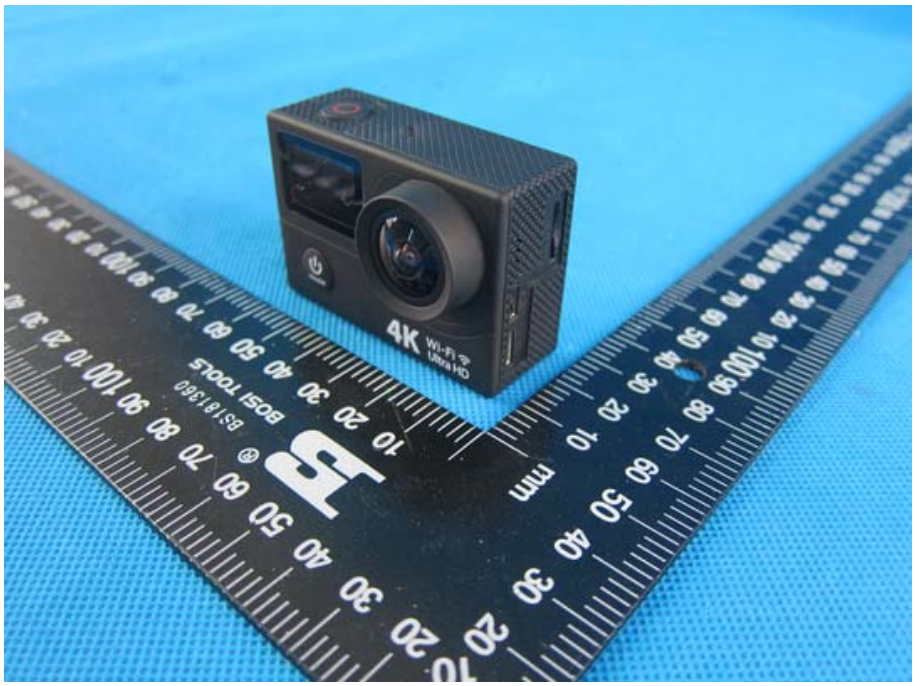


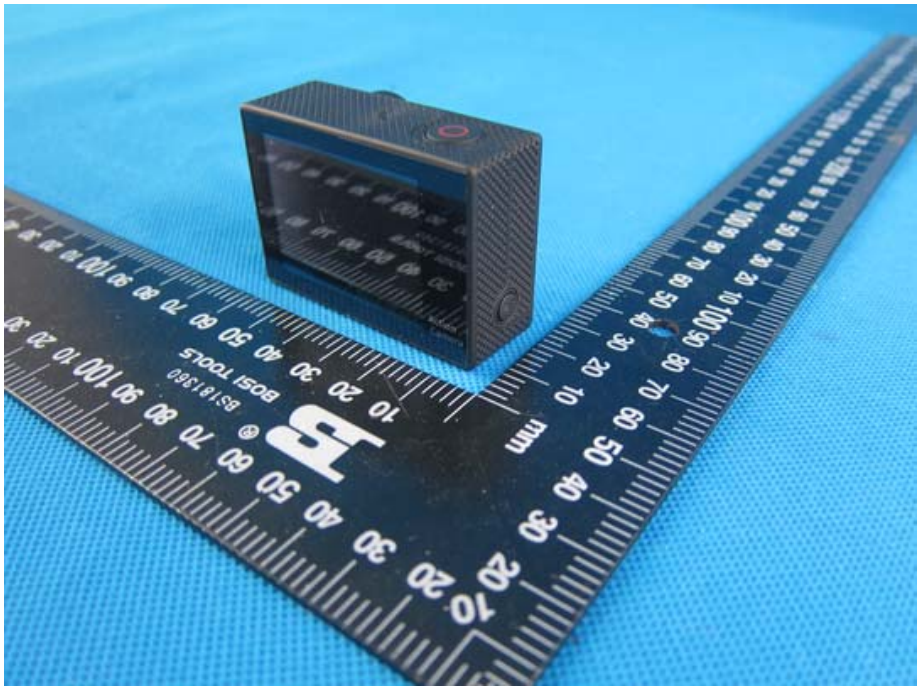


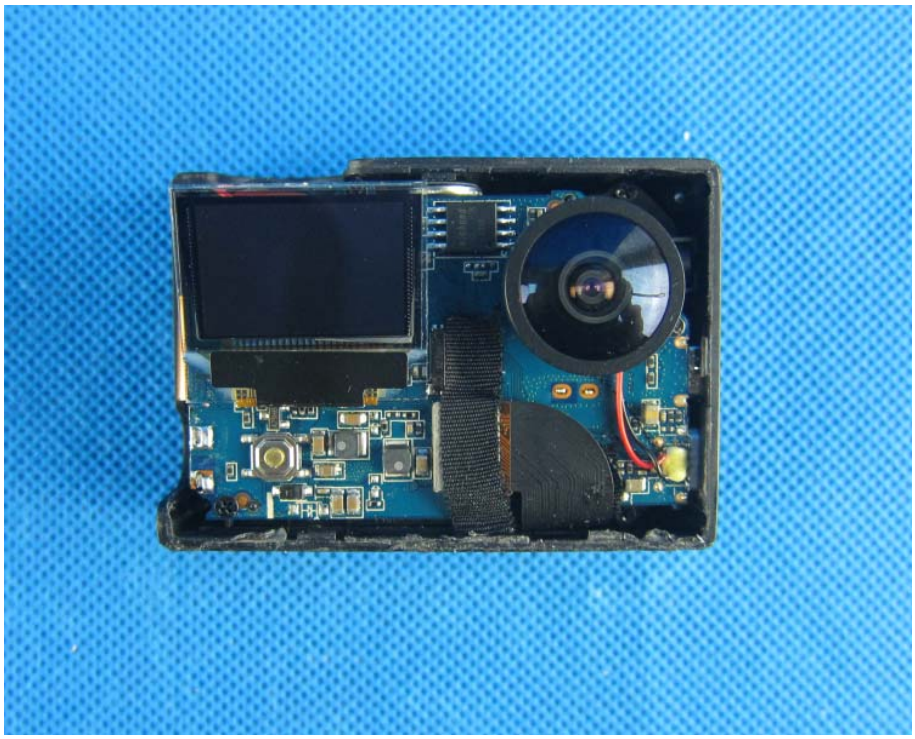
Conducted Emission

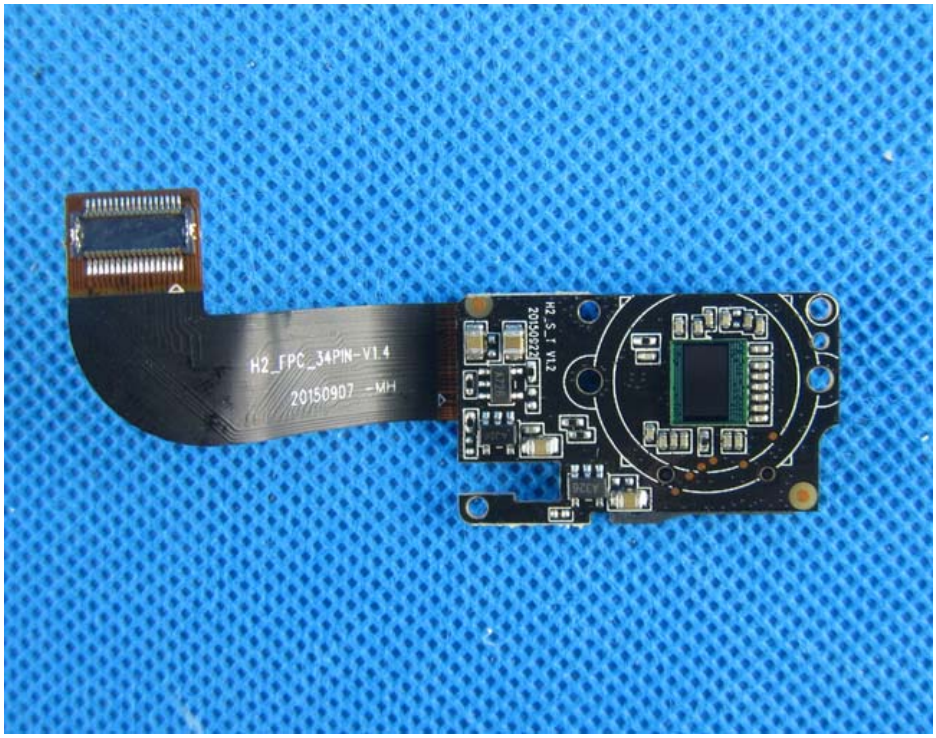
# 9 EUT Constructional Details

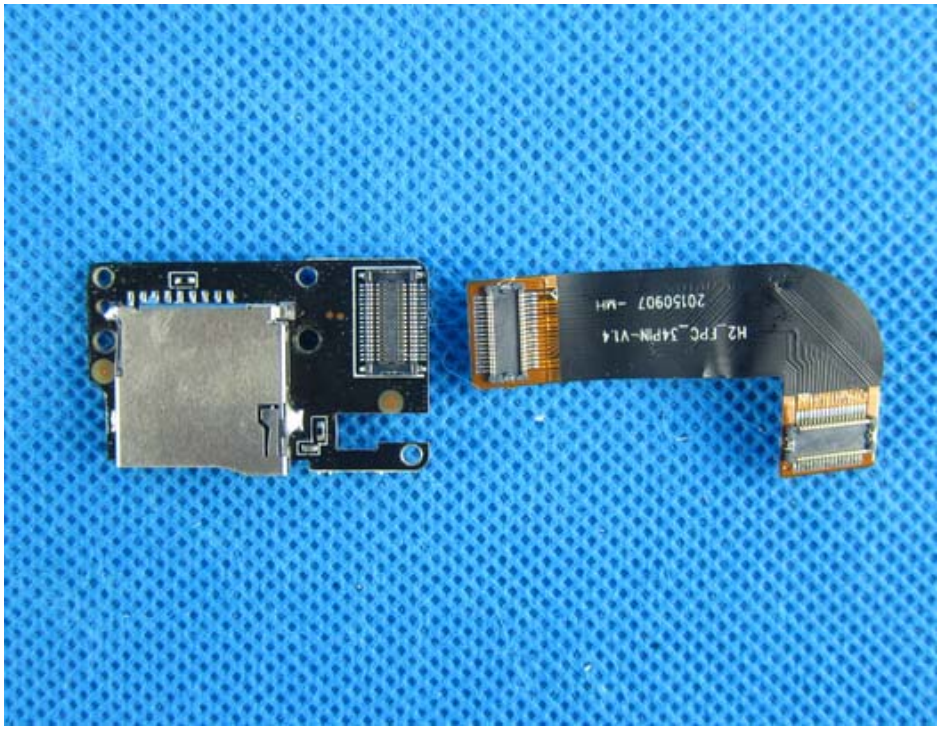



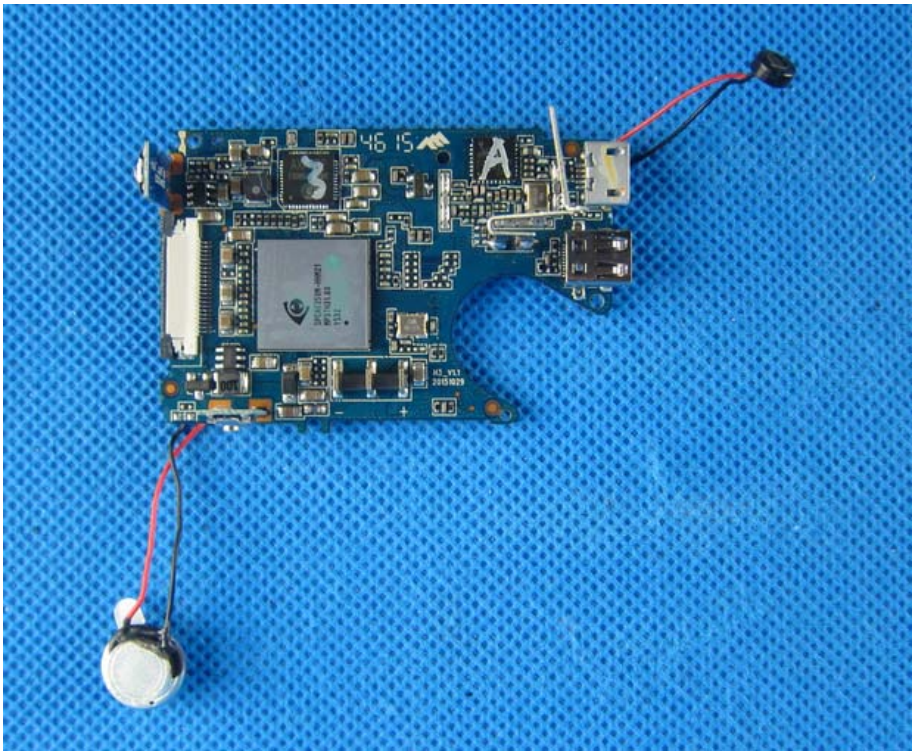



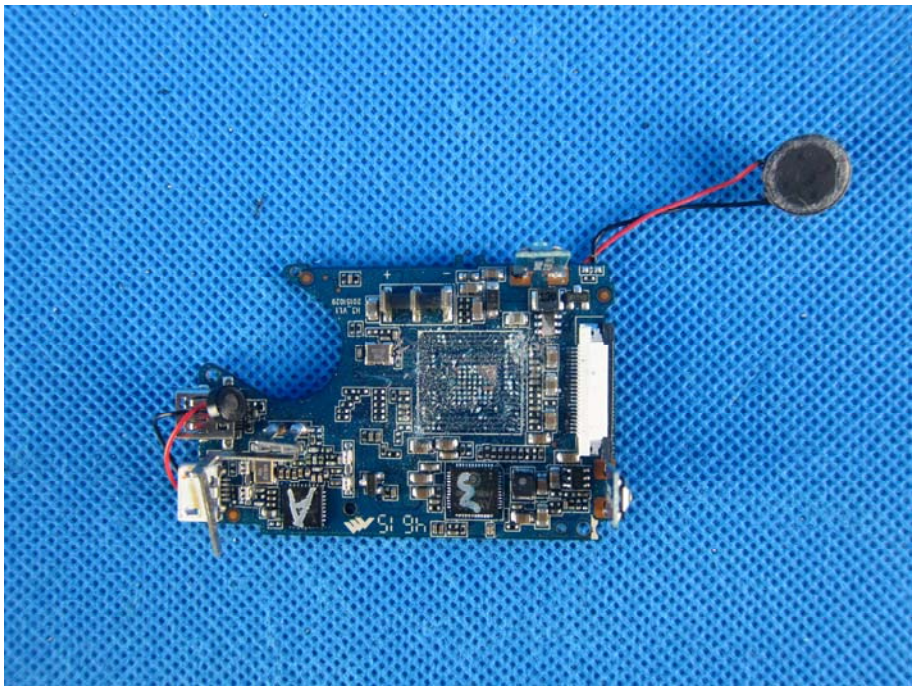


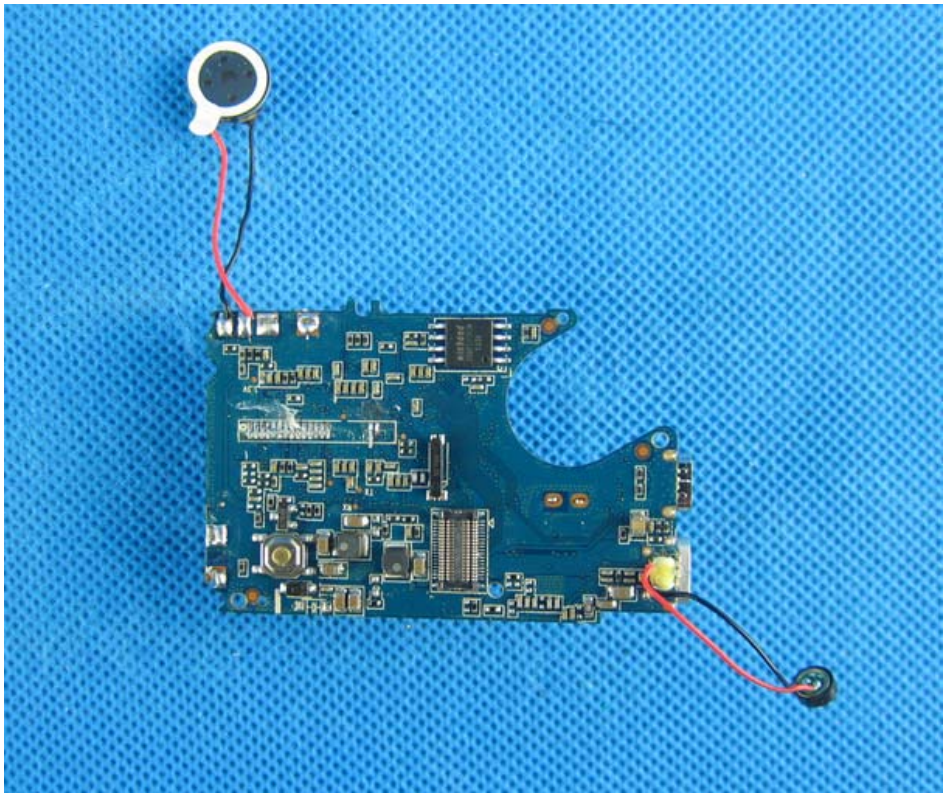








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