# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** ..... | : | WTF19F04024494W |
| **FCC ID**..... | : | 2ASZJ-VP010005 |
| **Applicant** ..... | : | JSP GROUP INTL BVBA |
| **Address** ..... | : | GEELSEWEG 80 - 2250 OLEN - BELGIUM |
| **Product**..... | : | VARIOPROP S2R |
| **Model(s)**..... | : | VP-010-005 |
| **Standards**..... | : | FCC CFR47 Part 15 Section 15.249:2017 |
| **Date of Receipt sample**.... | : | 2019-04-22 |
| **Date of Test**..... | : | 2019-05-17 |
| **Date of Issue** ..... | : | 2019-05-17 |
| **Test Result** ..... | : | Pass |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.


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Compiled by:

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Approved by:

Yellow Huang / Manager

# 1 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Conducted Emissions | 15.207 | N/A |
| Radiated Emission | 15.249(a)<br>15.209<br>15.205(a) | Pass |
| Periodic Operation | 15.35(c) | Pass |
| Outside of Band Emission | 15.249<br>15.205<br>15.209 | Pass |
| 20dB Bandwidth | 15:215(c) | Pass |
| Antenna Requirement | 15.203 | Pass |

Remark:

| | |
|---|---|
| Pass | Test item meets the requirement |
| Fail | Test item does not meet the requirement |
| N/A | Test case does not apply to the test object |

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# 3 Revision History

| Test report No. | Date of Receipt sample | Date of Test | Date of Issue | Purpose | Comment | Approved |
|---|---|---|---|---|---|---|
| WTF19F04024494W | 2019-04-22 | 2019-05-17 | 2019-05-17 | Original | - | Valid |

# 4 General Information

## 4.1 General Description of E.U.T.

**Product** ..... : VARIOPROP S2R

**Model(s)** ..... : VP-010-005

**Model Differences**..... : N/A

**Type of Modulation**..... : GFSK

**Frequency Range**..... : 2410MHz, 2445MHz, 2480MHz

**Antenna installation** ..... : Internal Integrated Antenna

**Antenna Gain** ..... : 0dBi

## 4.2 Details of E.U.T.

**Ratings**..... : Battery 4*1.5V AA

## 4.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Table 1 Tests carried out under FCC part 15.249

| Test mode | Low channel | Middle channel | High channel |
|---|---|---|---|
| Transmitting | 2410MHz | 2445MHz | 2480MHz |

## 4.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 21895-1**

Waltek Services (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC number:21895-1, Nov. 14, 2016.

- **FCC – Registration No.: 820106**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **FCC – Designation No.: CN5034**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation No. CN5034.

- **NVLAP – Lab Code: 600191-0**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

# 5 Equipment Used during Test

## 5.1 Equipment List

| 3m Semi-anechoic Chamber for Spurious Emission | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Calibration Date** | **Calibration Due Date** |
| 1 | EMI TEST RECEIVER | RS | ESR7 | 101566 | 2019-01-18 | 2020-01-17 |
| 2 | Spectrum Analyzer | Agilent | N9020A | MY48011796 | 2019-01-26 | 2020-01-25 |
| 3 | Trilog Broadband Antenna | SCHWARZBECK | VULB9162 | 9162-117 | 2019-02-22 | 2020-02-21 |
| 4 | Coaxial Cable (below 1GHz) | H+S | CBL3-NN-12+3 m | 214NN320 | 2019-01-10 | 2020-01-09 |
| 5 | Broad-band Horn Antenna | SCHWARZBECK | BBHA 9120 D | 01561 | 2019-04-28 | 2020-04-27 |
| 6 | Broadband Preamplifier (Above 1GHz) | Lunar E M | LNA1G18-40 | 20160501002 | 2019-04-03 | 2020-04-02 |
| 7 | Coaxial Cable (above 1GHz) | Times-Micorwave | CBL5-NN | - | 2019-01-10 | 2020-01-09 |
| **RF Conducted test** | | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Calibration Date** | **Calibration Due Date** |
| 1 | Environmental Chamber | KSON | THS-D4C-100 | 5244K | 2019-01-10 | 2020-01-09 |
| 2 | Spectrum Analyzer | Agilent | N9020A | MY48011796 | 2019-01-26 | 2020-01-25 |
| 3 | ESG VECTOR SIGNAL GENERATOR | Agilent | N5182A | MY50141533 | 2019-03-03 | 2020-03-02 |
| 4 | EXG Analog Signal Generator | Agilent | N5181A | MY48080720 | 2019-01-26 | 2020-01-25 |
| 5 | RF Control Unit | CHANGCHUANG | JS0806-2 | - | 2019-04-10 | 2020-04-09 |

## 5.2 Measurement Uncertainty

| **Parameter** | **Uncertainty** |
|---|---|
| Radio Frequency | ± 1 x $10^{-6}$ |
| RF Power | ± 1.0 dB |
| RF Power Density | ± 2.2 dB |
| Radiated Spurious Emissions test | ± 4.56 dB(Bilog antenna 30M~1000MHz) |
| | ± 4.96 dB(Horn antenna 1000M~6000MHz) |
| | ± 5.02 dB(Horn antenna 6000M~25000MHz) |

## 6 Radiation Emission Test

**Test Requirement**.....: FCC Part15 Paragraph 15.249&15.209&15.205

**Test Method**.....: ANSI 63.10:2010

**Measurement Distance**.....: 3m

**Test Result**.....: PASS

**Limit:**

15.249(a)

| Fundamental frequency | Field strength of fundamental | | Field strength of harmonics | |
|---|---|---|---|---|
| | mV/m | dBuV/m | uV/m | dBuV/m |
| 902-928 MHz | 50 | 94 | 500 | 54 |
| 2400-2483.5 MHz | 50 | 94 | 500 | 54 |
| 5725-5875 MHz | 50 | 94 | 500 | 54 |
| 24.0-24.25 GHz | 250 | 108 | 2500 | 68 |

15.209

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))} + 80$ |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

**Note**: RF Voltage(dBuV)=20 $\log_{10}$ RF Voltage(uV)

## 6.1 EUT Operation

**Operating Environment:**

**Temperature** .....: 24.2 °C

**Humidity**.....: 60.8 % RH

**Atmospheric Pressure**.....: 101.2kPa

**Test Voltage**.....: DC 6V by Batteries

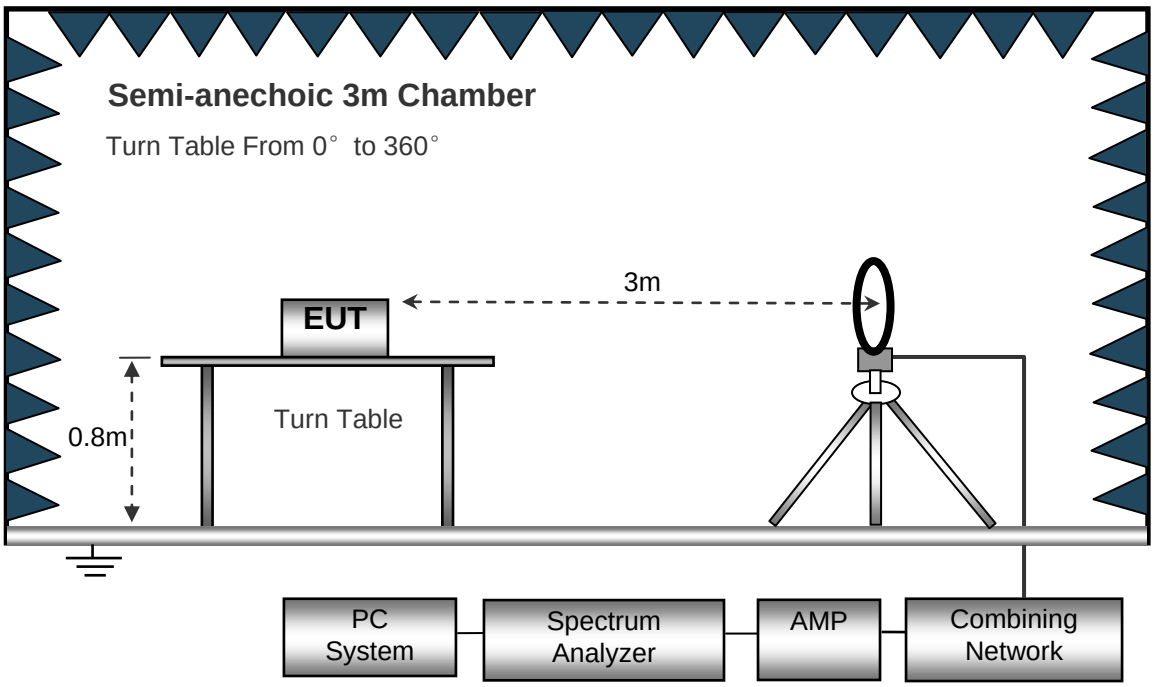
**EUT Operation:**

The test was performed in Transmitting mode.

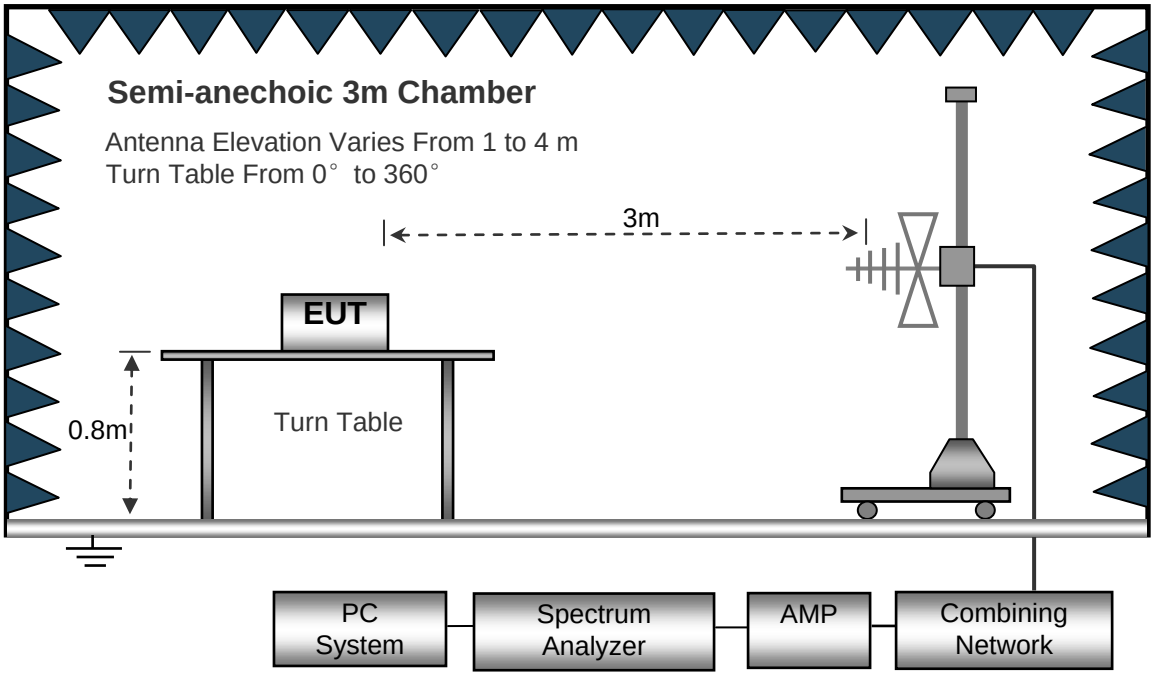
## 6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI 63.10:2010.

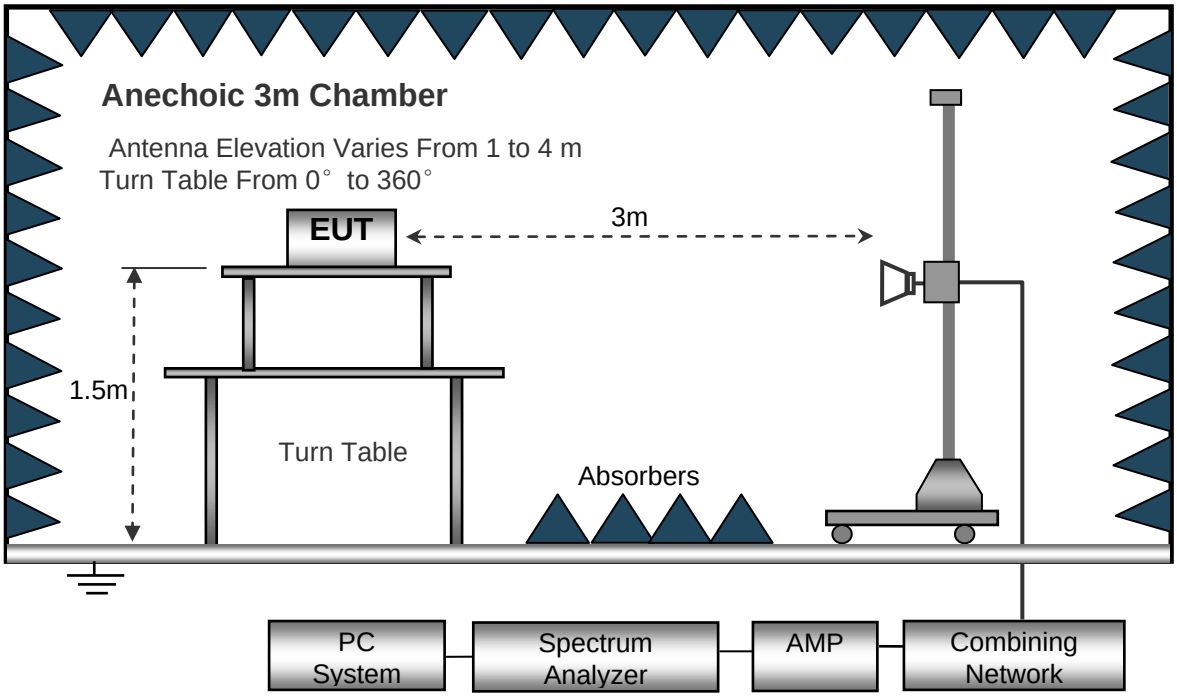
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30MHz to 1GHz.




The test setup for emission measurement above 1 GHz.



## 6.3 Spectrum Analyzer Setup

**Below 30MHz**

| | | |
|---|---|---|
| Sweep Speed | : | Auto |
| IF Bandwidth | : | 10kHz |
| Video Bandwidth | : | 10kHz |
| Resolution Bandwidth | : | 10kHz |

**30MHz ~ 1GHz**

| | | |
|---|---|---|
| Sweep Speed | : | Auto |
| Detector | : | PK |
| Resolution Bandwidth | : | 100kHz |
| Video Bandwidth | : | 300kHz |

**Above 1GHz**

| | | |
|---|---|---|
| Sweep Speed | : | Auto |
| Detector | : | PK |
| Resolution Bandwidth | : | 1MHz |
| Video Bandwidth | : | 3MHz |
| Detector | : | Ave. |
| Resolution Bandwidth | : | 1MHz |
| Video Bandwidth | : | 10Hz |

## 6.4 Test Procedure

1) The EUT is placed on a turntable. For below 1GHz, the EUT is 0.8m above ground plane;For above1GHz, the EUT is 1.5m above ground plane.
2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3) EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4) Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5) And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6) Repeat above procedures until the measurements for all frequencies are complete.
7) The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

## 6.5 Test Result

**Test Frequency: 9 KHz ~ 30 MHz**

The measurements were more than 20 dB below the limit and not reported.

**Test Frequency: 30MHz ~ 18GHz**

| Frequency (MHz) | Receiver Reading (dBμV/m) | Detector (PK/QP/AVG) | Turn table Angle (°) | RX Antenna | | Corrected Factor (dB) | Corrected Amplitude (dBμV/m) | FCC Part 15.249 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height (m) | Polar (H/V) | | | Limit (dBμV/m) | Margin (dB) |
| **GFSK_Low Channel** | | | | | | | | | |
| 115.73 | 29.34 | QP | 118 | 1.2 | H | 10.53 | 18.81 | 46 | -27.19 |
| 115.73 | 28.00 | QP | 164 | 1.8 | V | 10.53 | 17.47 | 46 | -28.53 |
| 2410.00 | 68.61 | PK | 137 | 1.6 | H | -12.33 | 80.94 | 114 | -33.06 |
| 2410.00 | 70.68 | PK | 172 | 1.6 | V | -12.33 | 83.01 | 114 | -30.99 |
| 3849.38 | 31.57 | PK | 185 | 1.9 | H | -8.92 | 40.49 | 74 | -33.51 |
| 3849.38 | 34.82 | PK | 129 | 1.6 | V | -8.92 | 43.74 | 74 | -30.26 |
| 4818.75 | 36.14 | PK | 221 | 1.6 | H | -6.68 | 42.82 | 74 | -31.18 |
| 4818.75 | 42.32 | PK | 262 | 1.1 | V | -6.68 | 49.00 | 74 | -25.00 |
| 6023.13 | 38.31 | PK | 259 | 1.7 | H | -3.95 | 42.26 | 74 | -31.74 |
| 6023.13 | 43.47 | PK | 169 | 1.9 | V | -3.95 | 47.42 | 74 | -26.58 |
| 6933.75 | 43.07 | PK | 202 | 1.7 | H | -2.20 | 45.27 | 74 | -28.73 |
| 6933.75 | 50.19 | PK | 110 | 1.5 | V | -2.20 | 52.39 | 74 | -21.61 |

AV=Peak+20Log10(duty cycle)=Peak+(-16.72)[refer to section 7 for more detail]

| Frequency (MHz) | Peak (dBμV/m) | Turn table Angle (°) | RX Antenna | | Duty Cycle Factor (dB) | AV (dBμV/m) | FCC Part 15.249 | |
|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | | | Limit (dBμV/m) | Margin (dB) |
| 2410.00 | 80.94 | 137 | 1.6 | H | -16.72 | 64.22 | 94 | -29.78 |
| 2410.00 | 83.01 | 172 | 1.6 | V | -16.72 | 66.29 | 94 | -27.71 |
| 3849.38 | 40.49 | 185 | 1.9 | H | -16.72 | 23.77 | 54 | -30.23 |
| 3849.38 | 43.74 | 129 | 1.6 | V | -16.72 | 27.02 | 54 | -26.98 |
| 4818.75 | 42.82 | 221 | 1.6 | H | -16.72 | 26.10 | 54 | -27.90 |
| 4818.75 | 49.00 | 262 | 1.1 | V | -16.72 | 32.28 | 54 | -21.72 |
| 6023.13 | 42.26 | 259 | 1.7 | H | -16.72 | 25.54 | 54 | -28.46 |
| 6023.13 | 47.42 | 169 | 1.9 | V | -16.72 | 30.70 | 54 | -23.30 |
| 6933.75 | 45.27 | 202 | 1.7 | H | -16.72 | 28.55 | 54 | -25.45 |
| 6933.75 | 52.39 | 110 | 1.5 | V | -16.72 | 35.67 | 54 | -18.33 |

| Frequency (MHz) | Receiver Reading (dBμV/m) | Detector (PK/QP/AVG) | Turn table Angle (°) | RX Antenna | | Corrected Factor (dB) | Corrected Amplitude (dBμV/m) | FCC Part 15.249 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height (m) | Polar (H/V) | | | Limit (dBμV/m) | Margin (dB) |
| **GFSK_Middle Channel** | | | | | | | | | |
| 153.20 | 27.73 | QP | 207 | 1.5 | H | 10.50 | 17.23 | 46 | -28.77 |
| 153.20 | 30.49 | QP | 239 | 1.1 | V | 10.50 | 19.99 | 46 | -26.01 |
| 2444.38 | 68.61 | PK | 97 | 1.7 | H | -12.27 | 80.88 | 114 | -33.12 |
| 2444.38 | 70.68 | PK | 216 | 1.2 | V | -12.27 | 82.95 | 114 | -31.05 |
| 3261.88 | 29.81 | PK | 265 | 1.5 | H | -10.01 | 39.82 | 74 | -34.18 |
| 3261.88 | 33.13 | PK | 86 | 1.6 | V | -10.01 | 43.14 | 74 | -30.86 |
| 3878.75 | 32.21 | PK | 105 | 1.8 | H | -8.86 | 41.07 | 74 | -32.93 |
| 3878.75 | 53.48 | PK | 210 | 1.7 | V | -8.86 | 62.34 | 74 | -11.66 |
| 4877.50 | 42.99 | PK | 145 | 1.2 | H | -6.51 | 49.50 | 74 | -24.50 |
| 4877.50 | 40.38 | PK | 200 | 1.5 | V | -6.51 | 46.89 | 74 | -27.11 |
| 5905.63 | 38.87 | PK | 153 | 1.1 | H | -4.35 | 43.22 | 74 | -30.78 |
| 5905.63 | 45.37 | PK | 227 | 1.8 | V | -4.35 | 49.72 | 74 | -24.28 |

AV=Peak+20Log10(duty cycle)=Peak+(-16.71)[refer to section 7 for more detail]

| Frequency (MHz) | Peak (dBμV/m) | Turn table Angle (°) | RX Antenna | | Duty Cycle Factor (dB) | AV (dBμV/m) | FCC Part 15.249 | |
|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | | | Limit (dBμV/m) | Margin (dB) |
| 2444.38 | 80.88 | 97 | 1.7 | H | -16.71 | 64.17 | 94 | -29.83 |
| 2444.38 | 82.95 | 216 | 1.2 | V | -16.71 | 66.24 | 94 | -27.76 |
| 3261.88 | 39.82 | 265 | 1.5 | H | -16.71 | 23.11 | 54 | -30.89 |
| 3261.88 | 43.14 | 86 | 1.6 | V | -16.71 | 26.43 | 54 | -27.57 |
| 3878.75 | 41.07 | 105 | 1.8 | H | -16.71 | 24.36 | 54 | -29.64 |
| 3878.75 | 62.34 | 210 | 1.7 | V | -16.71 | 45.63 | 54 | -8.37 |
| 4877.5 | 49.5 | 145 | 1.2 | H | -16.71 | 32.79 | 54 | -21.21 |
| 4877.5 | 46.89 | 200 | 1.5 | V | -16.71 | 30.18 | 54 | -23.82 |
| 5905.63 | 43.22 | 153 | 1.1 | H | -16.71 | 26.51 | 54 | -27.49 |
| 5905.63 | 49.72 | 227 | 1.8 | V | -16.71 | 33.01 | 54 | -20.99 |

| Frequency (MHz) | Receiver Reading (dBμV/m) | Detector (PK/QP/AVG) | Turn table Angle (°) | RX Antenna | | Corrected Factor (dB) | Corrected Amplitude (dBμV/m) | FCC Part 15.249 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height (m) | Polar (H/V) | | | Limit (dBμV/m) | Margin (dB) |
| **GFSK_High Channel** | | | | | | | | | |
| 275.16 | 35.20 | QP | 126 | 1.8 | H | 15.51 | 19.69 | 46 | -26.31 |
| 275.16 | 34.65 | QP | 207 | 1.5 | V | 15.51 | 19.14 | 46 | -26.86 |
| 2479.75 | 69.01 | PK | 289 | 1.9 | H | -12.22 | 81.23 | 114 | -32.77 |
| 2479.75 | 70.96 | PK | 148 | 1.8 | V | -12.22 | 83.18 | 114 | -30.82 |
| 3555.63 | 30.80 | PK | 279 | 1.5 | H | -9.43 | 40.23 | 74 | -33.77 |
| 3555.63 | 32.16 | PK | 205 | 1.3 | V | -9.43 | 41.59 | 74 | -32.41 |
| 4378.13 | 32.44 | PK | 127 | 1.7 | H | -7.83 | 40.27 | 74 | -33.73 |
| 4378.13 | 35.84 | PK | 148 | 1.1 | V | -7.83 | 43.67 | 74 | -30.33 |
| 4965.63 | 41.73 | PK | 254 | 1.7 | H | -6.27 | 48.00 | 74 | -26.00 |
| 4965.63 | 57.54 | PK | 144 | 1.2 | V | -6.27 | 63.81 | 74 | -10.19 |
| 6669.38 | 42.30 | PK | 223 | 1.1 | H | -2.83 | 45.13 | 74 | -28.87 |
| 6669.38 | 45.00 | PK | 163 | 1.2 | V | -2.83 | 47.83 | 74 | -26.17 |

AV=Peak+20Log10(duty cycle)=Peak+(-16.69)[refer to section 7 for more detail]

| Frequency (MHz) | Peak (dBμV/m) | Turn table Angle (°) | RX Antenna | | Duty Cycle Factor (dB) | AV (dBμV/m) | FCC Part 15.249 | |
|---|---|---|---|---|---|---|---|---|
| | | | Height (m) | Polar (H/V) | | | Limit (dBμV/m) | Margin (dB) |
| 2479.75 | 81.23 | 289 | 1.9 | H | -16.69 | 64.54 | 94 | -29.46 |
| 2479.75 | 83.18 | 148 | 1.8 | V | -16.69 | 66.49 | 94 | -27.51 |
| 3555.63 | 40.23 | 279 | 1.5 | H | -16.69 | 23.54 | 54 | -30.46 |
| 3555.63 | 41.59 | 205 | 1.3 | V | -16.69 | 24.90 | 54 | -29.10 |
| 4378.13 | 40.27 | 127 | 1.7 | H | -16.69 | 23.58 | 54 | -30.42 |
| 4378.13 | 43.67 | 148 | 1.1 | V | -16.69 | 26.98 | 54 | -27.02 |
| 4965.63 | 48 | 254 | 1.7 | H | -16.69 | 31.31 | 54 | -22.69 |
| 4965.63 | 63.81 | 144 | 1.2 | V | -16.69 | 47.12 | 54 | -6.88 |
| 6669.38 | 45.13 | 223 | 1.1 | H | -16.69 | 28.44 | 54 | -25.56 |
| 6669.38 | 47.83 | 163 | 1.2 | V | -16.69 | 31.14 | 54 | -22.86 |

**Test Frequency: From 18GHz to 25GHz**

The measurements were more than 20 dB below the limit and not reported.

## 7 Periodic Operation

The duty cycle was determined by the following equation:

To calculate the actual field intensity, The duty cycle correction factor in decibel is needed for later use and can be obtained from following conversion

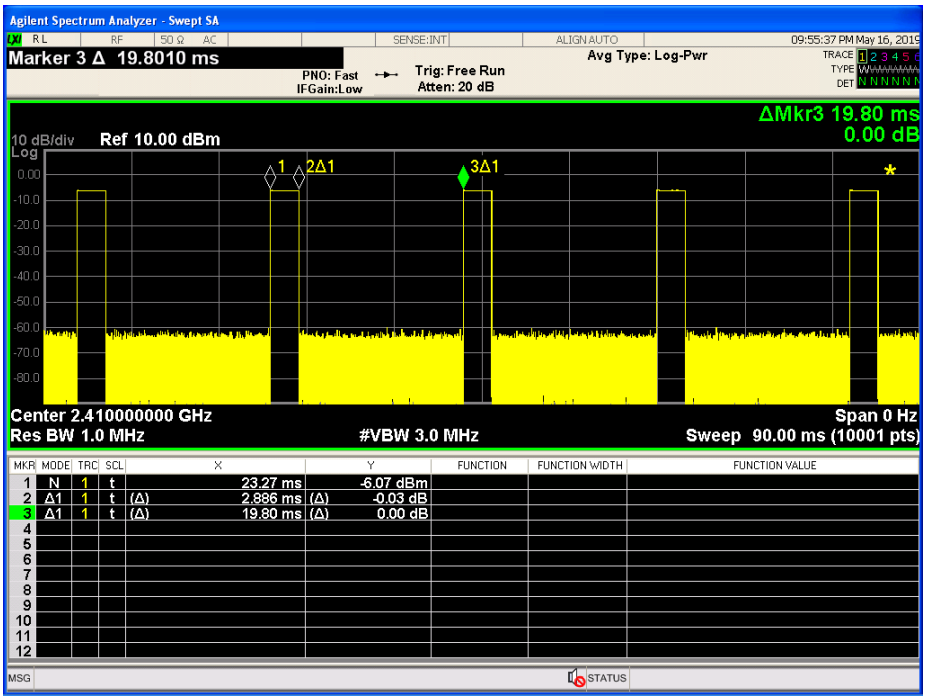
Duty Cycle(%)=Total On interval in a complete pulse train/ Length of a complete pulse train * %

Duty Cycle Correction Factor(dB)=20 * $Log_{10}$(Duty Cycle(%))

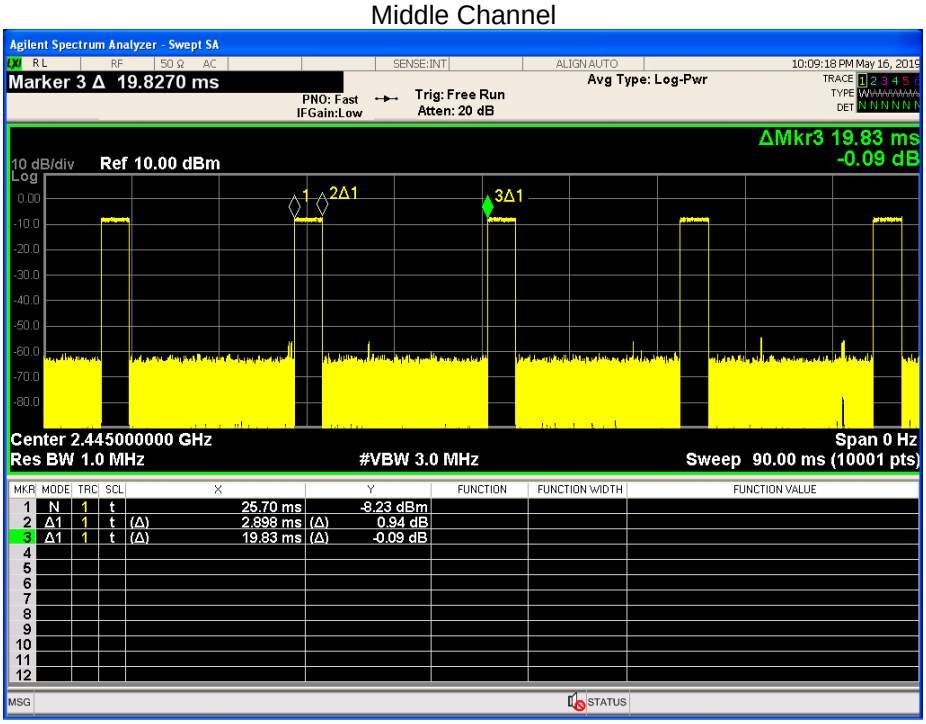
| Test Channel | Low Channel | Middle Channel | High Channel |
|---|---|---|---|
| Total transmission time(ms) | 19.80 | 19.83 | 19.80 |
| Length of a complete transmission period(ms) | 2.89 | 2.90 | 2.90 |
| Duty Cycle(%) | 14.58 | 14.61 | 14.64 |
| Duty Cycle Correction Factor(dB) | -16.72 | -16.71 | -16.69 |

Refer to the duty cycle plot (as below),

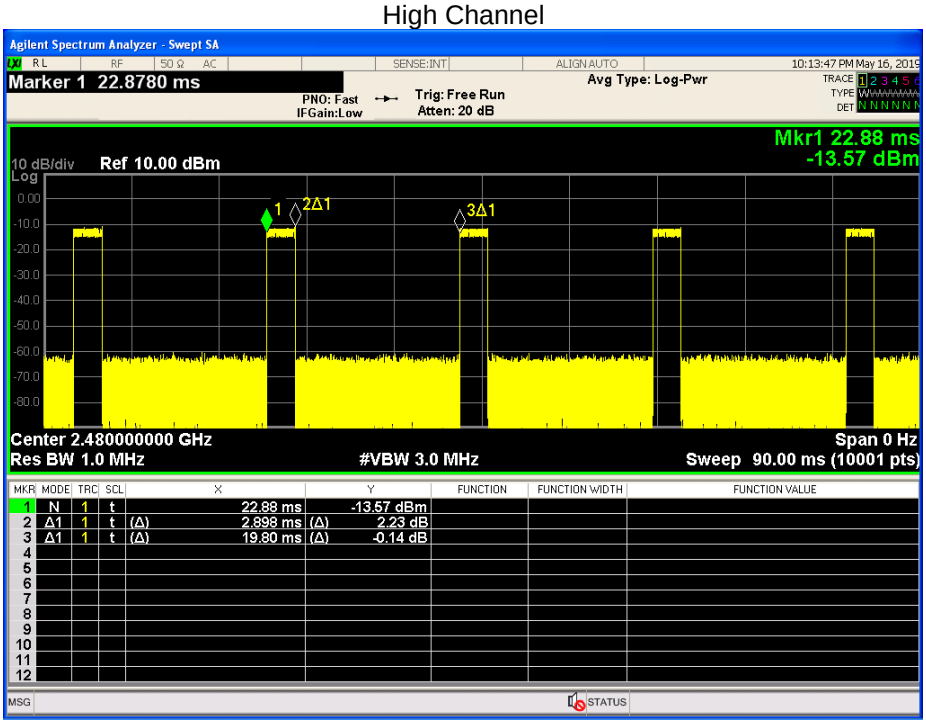
Low Channel



Middle Channel




High Channel



# 8 Outside of Band Emission

**Test Requirement**.....: 15.249(d):Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

**Test Method**.....: ANSI 63.10:2010

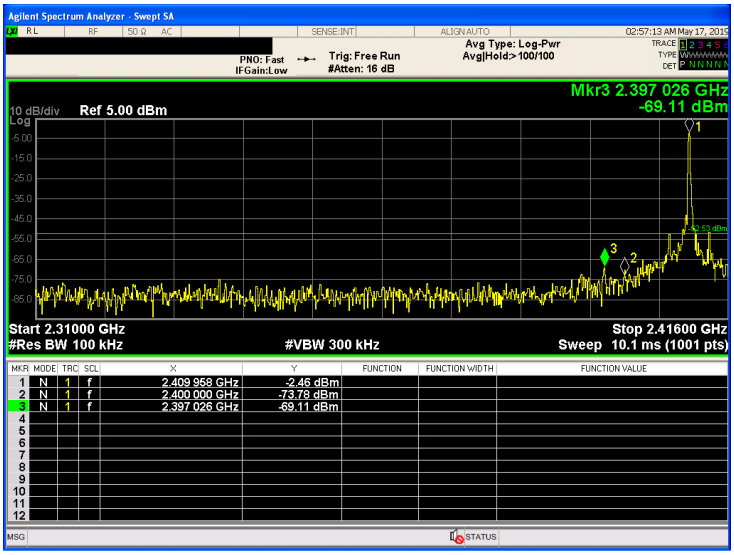
**Test Mode** .....: Transmitting

## 8.1 Test Procedure

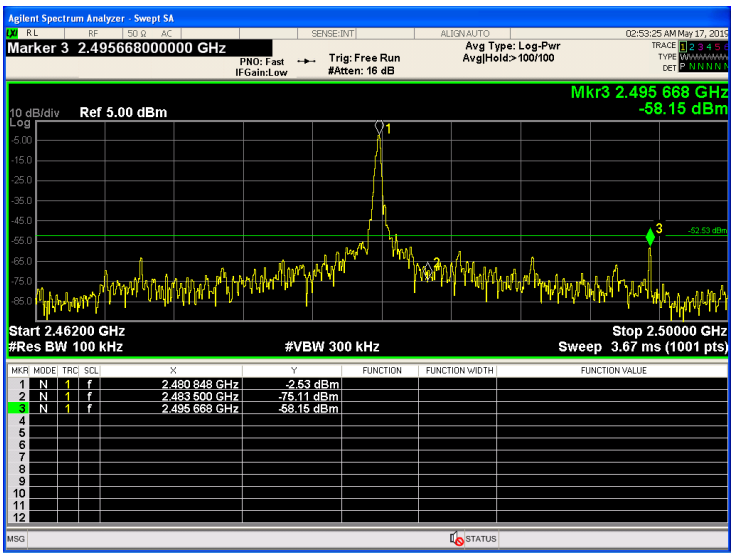
Refer to section 7.4 of this test report.

## 8.2 Test Result

**Band edge-left side**




**Band edge-right side**



# 9 20dB Bandwidth Measurement

**Test Requirement**.....: FCC CFR47 Part 15 Section 15.215(c)

**Test Method**.....: ANSI 63.10:2010

**Test Mode** .....: Transmitting

## 9.1 Test Procedure

1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

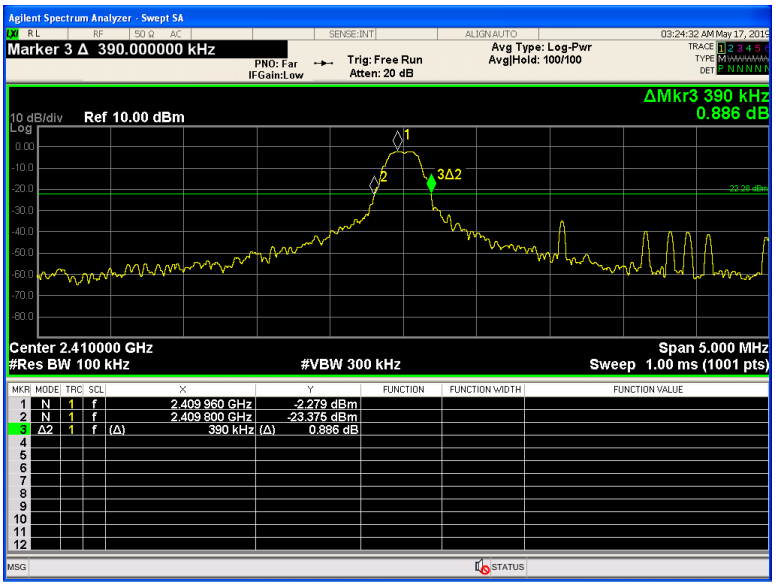
2) Set the spectrum analyzer: RBW = 100 kHz, VBW = 300 kHz

## 9.2 Test Result

| Operation mode | 20dB Bandwidth (KHz) | 99% Bandwidth (KHz) |
|---|---|---|
| Low channel | 390 | / |
| Middle channel | 430 | / |
| High channel | 385 | / |

**Test result plot as follows:**

**Mode: Low channel**



**Mode: Middle channel**

**Mode: High channel**

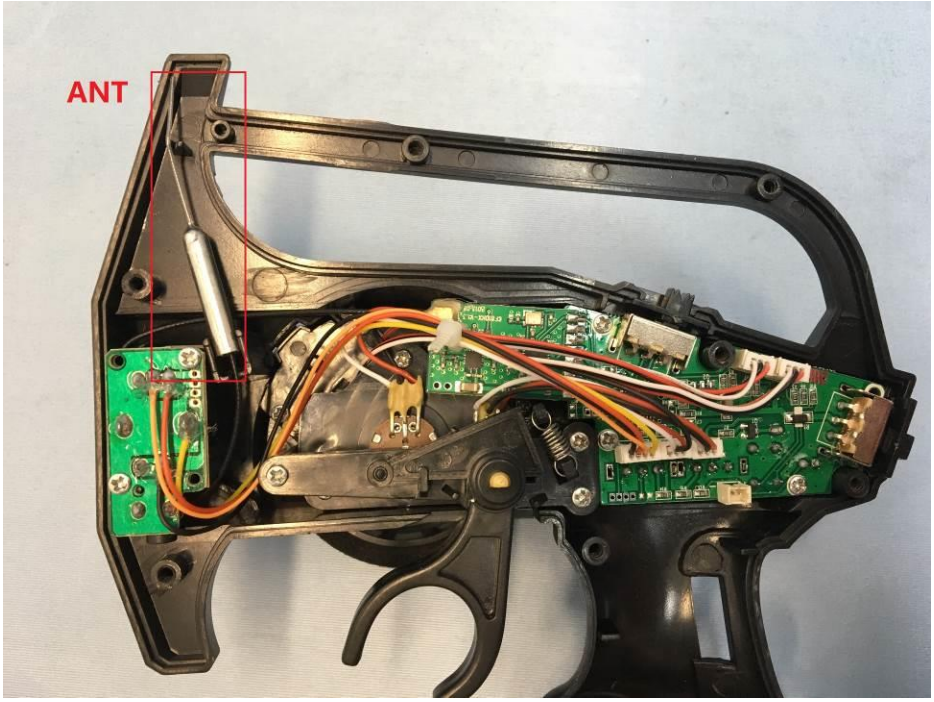
## 10 Antenna Requirement

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

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.

Result:

The EUT has one Internal Integrated Antenna, the gain is 0dBi. meets the requirements of FCC 15.203.

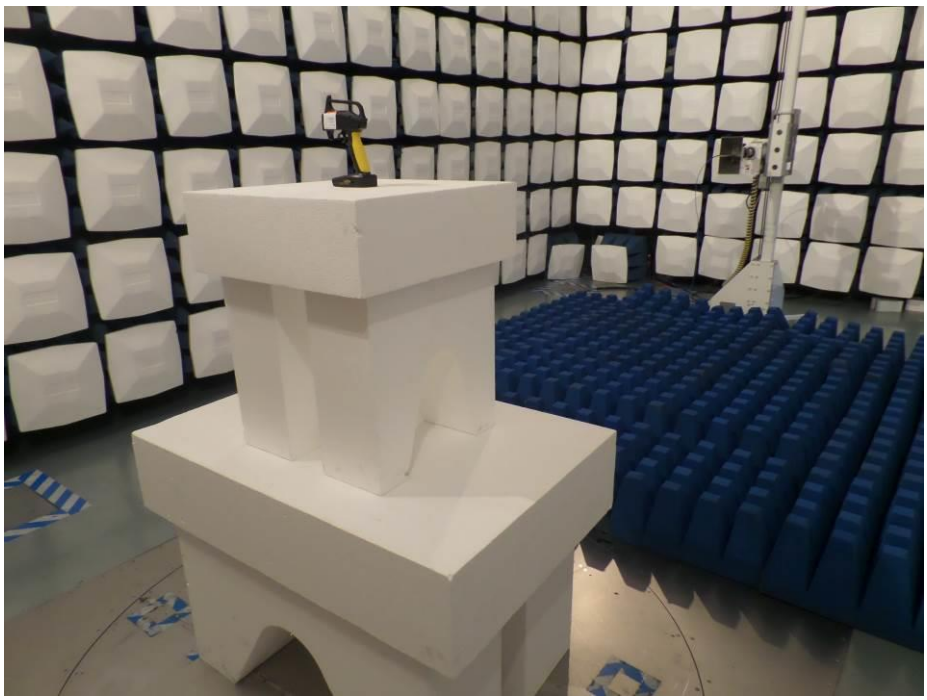


# 11 Photographs- Test Setup Photos

## 11.1 Photographs- Radiated Emission Test Setup

**30MHz-1GHz**

**Above 1GHz**



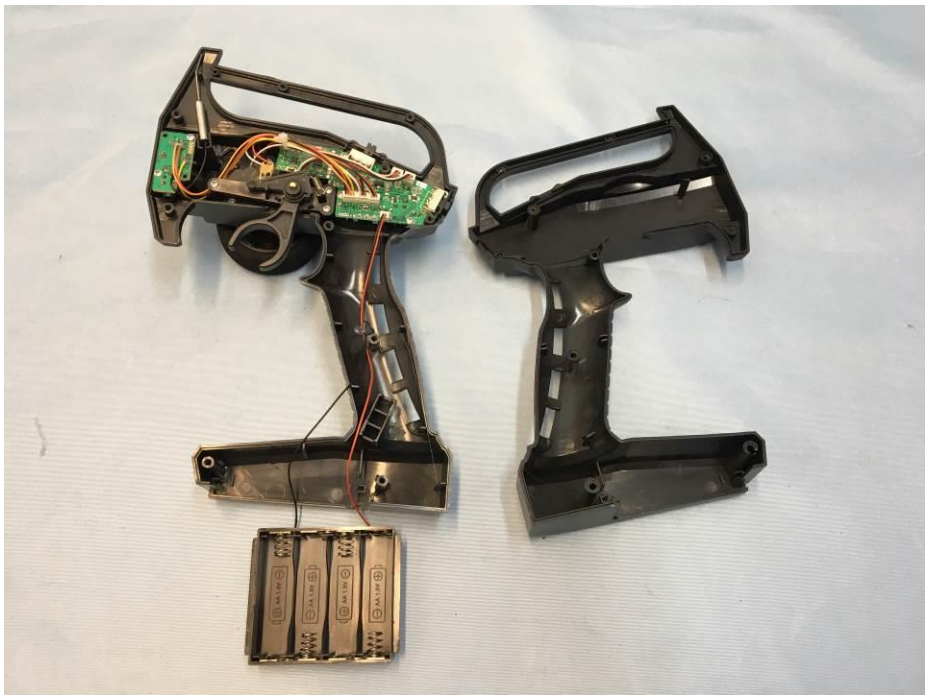
# 12 Photographs - Constructional Details

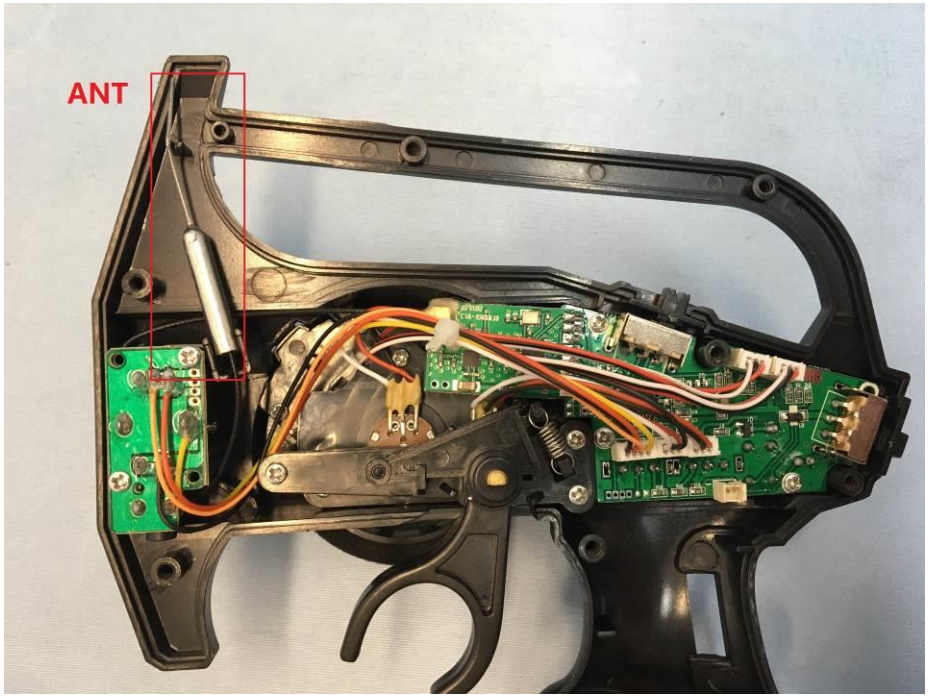
## 12.1 EUT - External View

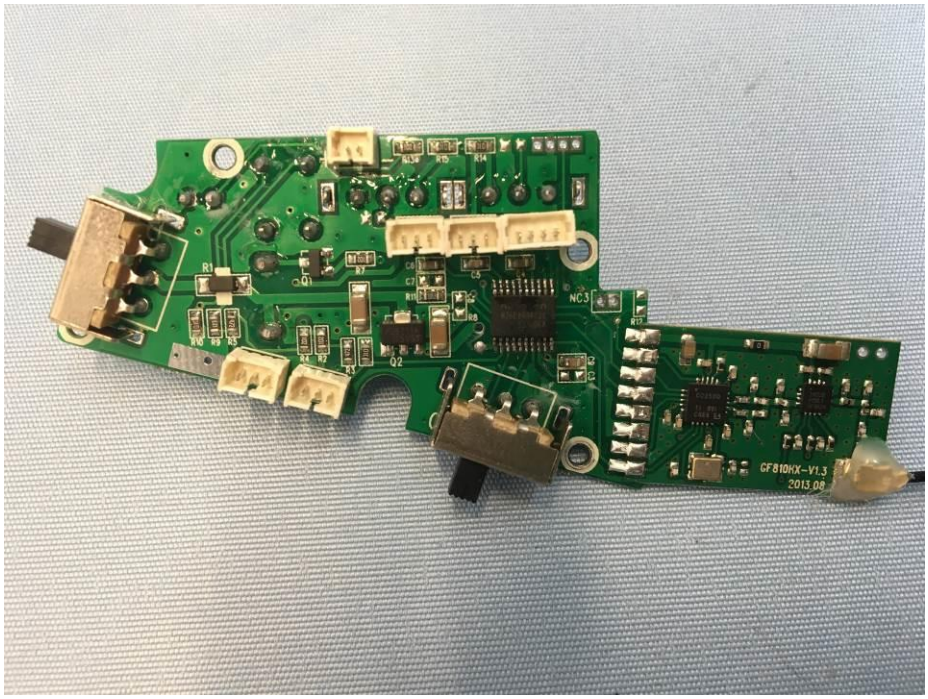
S2R
2.4GHz LIGHTER
Read Cutting System

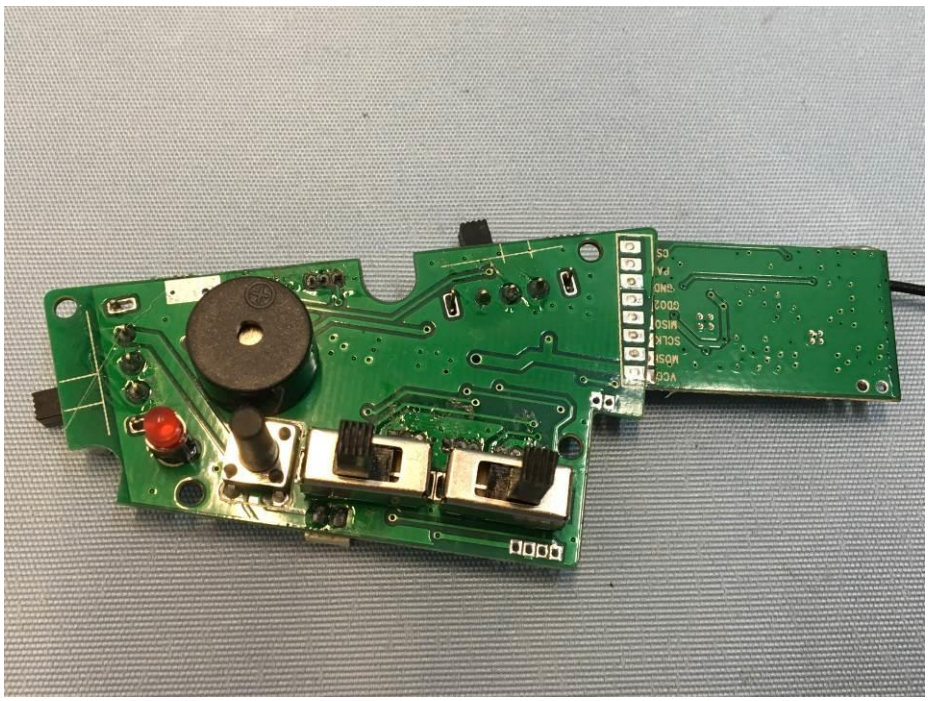
S2R

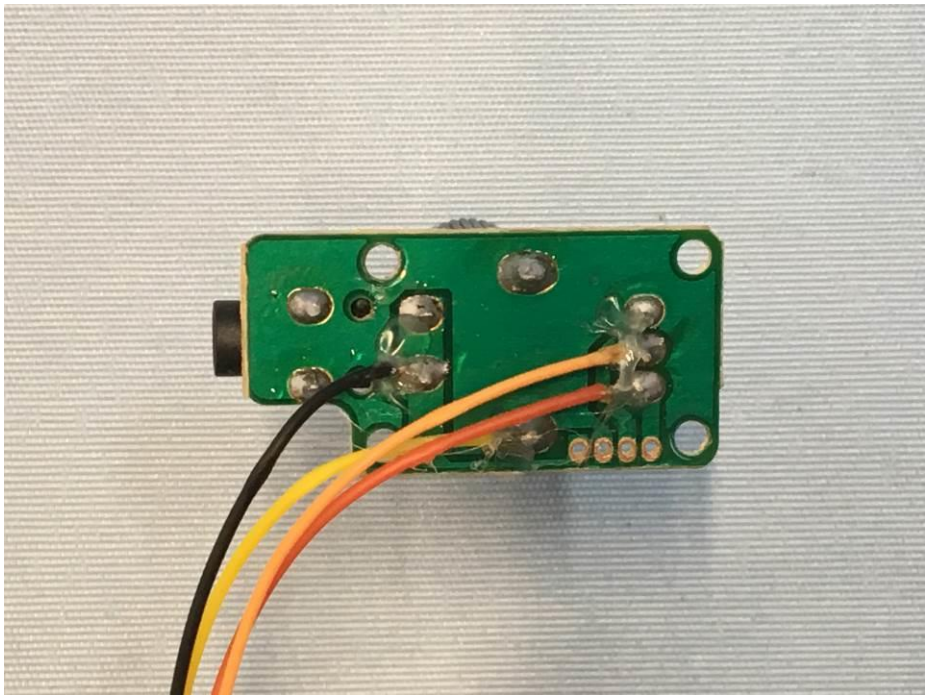
## 12.2 EUT- Internal View

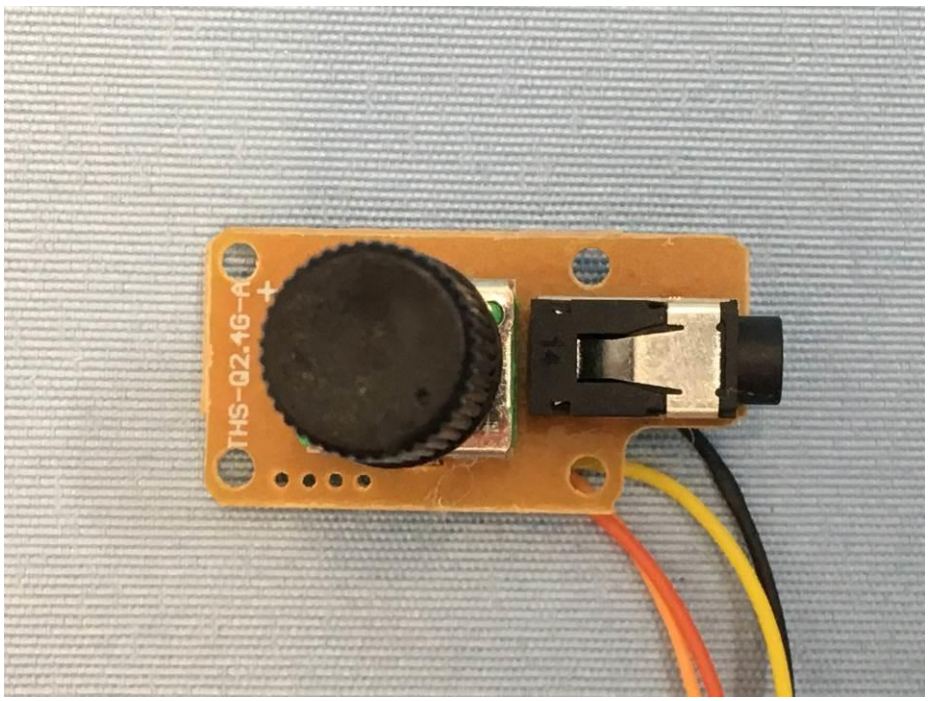


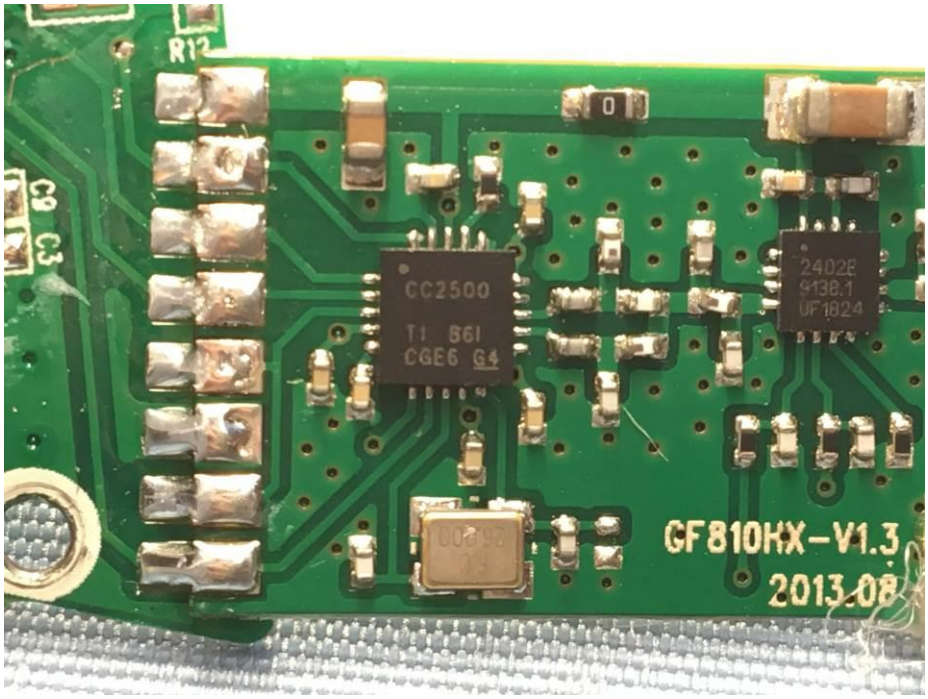



GF810HX-V1.3
2013.08






THS-Q2.1G-A




======End of Report======