FCC PART 15C TEST REPORT FOR CERTIFICATION On Behalf of

Mechanic Advisor, Inc

Mechanic Advisor Connection Key

Model Number: CK01

FCC ID: 2AG52CK01

Prepared for: Mechanic Advisor, Inc

11 Elkins Street, Suite 310, Boston, MA 02127, United States

Prepared By: EST Technology Co., Ltd.

Santun(guantai Road), Houjie Town, DongGuan City,

GuangDong, China.

Tel: 86-769-83081888-808

Report Number: ESTE-R1601010

Date of Test : December 24, 2015~ January 10, 2016

Date of Report: January 11, 2016



TABLE OF CONTENTS

| Descr | <u>iptior</u> | 1 | Page |
|--------|---------------|-----------------------------------|------|
| TEST R | SEPORT | r Verification | 3 |
| 1. | GEN | IERAL INFORMATION | 5 |
| | 1.1. | Description of Device (EUT) | 5 |
| 2. | SUM | IMARY OF TEST | |
| | 2.1. | Summary of test result | |
| | 2.2. | Test Facilities | |
| | 2.3. | Assistant equipment used for test | |
| | 2.4. | Block Diagram | 8 |
| | 2.5. | Test mode | 8 |
| | 2.6. | Channel List for Bluetooth | 8 |
| | 2.7. | Test Equipment | 9 |
| 4 I | RADIA' | TED EMISSION TEST | 10 |
| | 4.1 I | _imit | 10 |
| | 4.2. | Test Procedure | 11 |
| | 4.3 | Block Diagram of Test setup | 12 |
| | 4.4 | Test Result | 12 |
| | 4.5 | Test Data | 13 |
| 5 | BAN | D EDGE COMPLIANCE TEST | 31 |
| | 5.1 | Limit | 31 |
| | 5.2 | Block Diagram of Test setup | 31 |
| | 5.3 | Test Procedure | 31 |
| | 5.4 | Test Result | |
| | 5.5 | Test Data | 32 |
| 6 | 6dB | Bandwidth Test | 36 |
| | 6.1 | Limit | 36 |
| | 6.2 | Test Procedure | 36 |
| | 6.3 | Test Result | |
| | 6.4 | Test Data | 37 |
| 7 | OUT | PUT POWER TEST | 39 |
| | 7.1 | Limit | 39 |
| | 7.2 | Test Procedure | 39 |
| | 7.3 | Test Procedure | 39 |
| | 7.4 | Test Result | |
| | 7.5 | Test Data | 41 |
| 8 | Pow | /ER SPECTRAL DENSITY TEST | 43 |
| | 8.1 | Limit | 43 |
| | 8.2 | Test Procedure | 43 |
| | 8.3 | Test Result | |
| | 8.4 | Test Data | |
| 9 | ANT | ENNA REQUIREMENTS | 47 |
| | 9.1 | Limit | 47 |
| | 9.2 | Result | 47 |

FCC ID: 2AG52CK01

| 10 | TEST SETUP PHOTO | .48 |
|----|------------------|-----|
| 11 | PHOTOS OF EUT | .49 |

Test Report Verification

| | lest Report verification | | | | | | |
|--------------------------|---|--|--|--|--|--|--|
| Applicant: | Mechanic Advisor, Inc | | | | | | |
| Address: | 11 Elkins Street, Suite 310, Boston, MA 02127, United States | | | | | | |
| Manufacturer | Mechanic Advisor, Inc | | | | | | |
| Address: | 11 Elkins Street, Suite 310, Boston, MA 02127, United States | | | | | | |
| E.U.T: | Mechanic Advisor Connection Key | | | | | | |
| Model Number: | CK01 | | | | | | |
| Power Supply: | DC 12V | | | | | | |
| Test Voltage: | DC 12V | | | | | | |
| Trade Name: | Serial No.: | | | | | | |
| Date of Receipt: | December 24, 2015 Date of Test: December 24, 2015~ January 10, 2016 | | | | | | |
| Test Specification: | FCC Rules and Regulations Part 15 Subpart C:2015 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: January 11, 2016 | | | | | | |
| Prepared by: | Tested by: Approved by: Tremently | | | | | | |
| Raa | tony | | | | | | |
| Ada / Assistant | Tony.Tang/ Engineer IcemanHu / Manager | | | | | | |
| Other Aspects: None. | | | | | | | |
| Abbreviations: OK/P=pass | ed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested | | | | | | |
| | a single evaluation of one sample of above mentioned products ,It is not permitted to be out written approval of EST Technology Co., Ltd. | | | | | | |



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

| Product Name | : | Mechanic Advisor Connection Key |
|---------------------|---|---------------------------------|
| Model Number | : | CK01 |
| FCC ID | : | 2AG52CK01 |
| Operation frequency | : | 2402MHz~2480MHz |
| Number of channel | : | 40 |
| Antenna | : | Internal antenna, 0 dBi gain |
| Modulation | : | BLE (GFSK) |
| | : | (GIBR) |
| Sample Type | : | Prototype production |



2. SUMMARY OF TEST

2.1. Summary of test result

| Description of Test Item | Standard | Results |
|-------------------------------|---|---------|
| Power Line Conducted Emission | FCC Part 15: 15.207 ANSI C63.10:2013 | N/A |
| Radiated Emission | FCC Part 15: 15.209 ANSI C63.10:2013 KDB 558074 | PASS |
| Band Edge Compliance | FCC Part 15: 15.247 ANSI C63.10:2013 KDB 558074 | PASS |
| 6dB Bandwidth | FCC Part 15: 15.247 ANSI C63.10:2013 KDB 558074 | PASS |
| Peak Output Power | FCC Part 15: 15.247 ANSI C63.10:2013 KDB 558074 | PASS |
| Power Spectral Density | FCC Part 15: 15.247 ANSI C63.10:2013 KDB 558074 | PASS |
| Antenna requirement | FCC Part 15: 15.203 | PASS |

Note: 15.207 only signals conducted onto the AC power lines are required to be measured. The equipment is only DC power supply, so "Power Line Conducted Emissions" is not required.

EST

2.2. Test Facilities

EMC Lab : Certificated by CNAL, CHINA

Registration No.: L5288

Date of registration: Nov 23, 2015

Certificated by FCC, USA Registration No.: 989591

Date of registration: November 20, 2013

Certificated by Industry Canada Registration No.: 9405A-1

Date of registration: December 30, 2015

Certificated by VCCI, Japan

Registration No.: R-3663 & C-4103 Date of registration: July 25, 2011

Certificated by TUV Rheinland, Germany Registration No.: UA 50195514 0001 Date of registration: January 07, 2011

Certificated by TUV/PS, Shenzhen

Registration No.: SCN1017

Date of registration: January 27, 2011

Certificated by Intertek ETL SEMKO Registration No.: 2011-RTL-L1-18 Date of registration: April 28, 2011

Certificated by Siemic, Inc. Registration No.: SLCN021

Date of registration: November 8, 2011

Certificated by Nemko, Hong Kong

Registration No.: 175193

Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

Site Location : San Tun Management Zone, Houjie Town, Dongguan,

Guangdong, China

2.3. Assistant equipment used for test

2.3.1. PC

Manufacturer : DELL

M/N : Laititude E6420 Adapter : M/N: DA90PM111

Input: AC 100-240V~50/60Hz 1.5A

Output: DC 19.5V/4.62A

2.4. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 meter high above ground.EUT was be set into BT test mode by Bluesuite software before test.



(EUT: Mechanic Advisor Connection Key)

2.5. Test mode

A special test software was used to control EUT work in Continuous TX mode(100% duty cycle), and select test channel, wireless mode and data rate.

| Mode | Channel | Frequency |
|-----------------|---------|-----------|
| | Low | 2402MHz |
| BT 4.0-BLE GFSK | Middle | 2440MHz |
| | High | 2480MHz |

2.6. Channel List for Bluetooth

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| No. | (MHz) | No. | (MHz) |
| 1 | 2402 | 2 | 2404 |
| 3 | 2406 | 4 | 2408 |
| 5 | 2410 | 6 | 2412 |
| 7 | 2414 | 8 | 2416 |
| 9 | 2418 | 10 | 2420 |
| 11 | 2422 | 12 | 2424 |
| 13 | 2426 | 14 | 2428 |
| 15 | 2430 | 16 | 2432 |
| 17 | 2434 | 18 | 2436 |
| 19 | 2438 | 20 | 2440 |
| 21 | 2442 | 22 | 2444 |
| 23 | 2446 | 24 | 2448 |
| 25 | 2450 | 26 | 2452 |
| 27 | 2454 | 28 | 2456 |
| 29 | 2458 | 30 | 2460 |
| 31 | 2462 | 32 | 2464 |
| 33 | 2466 | 34 | 2468 |
| 35 | 2470 | 36 | 2472 |
| 37 | 2474 | 38 | 2476 |
| 39 | 2478 | 40 | 2480 |



2.7. Test Equipment

2.7.1. For conducted emission test

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|-------------------------|-----------------|-----------|------------|------------|-----------|
| EMI Test Receiver | Rohde & Schwarz | ESHS30 | 832354 | June,28,15 | 1 Year |
| Artificial Mains Networ | Rohde & Schwarz | ENV216 | 101260 | June,28,15 | 1 Year |
| Pulse Limiter | Rohde & Schwarz | ESCK01-Z2 | 101100 | June,28,15 | 1 Year |

2.7.2. For radiated emission test(30-1000MHz)

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|-------------------|-----------------|-----------|----------------|------------|-----------|
| EMI Test Receiver | Rohde & Schwarz | ESVS10 | 100004 | June,28,15 | 1 Year |
| Spectrum Analyzer | Agilent | E4411B | MY5014069 7 | June,28,15 | 1 Year |
| Bilog Antenna | Teseq | CBL 6111D | 27090 | June,28,15 | 1 Year |
| Signal Amplifier | Agilent | 310N | 187037 | June,28,15 | 1 Year |
| RF Cable | Hubersuhner | W10.02 | 534123 | June,28,15 | 1 Year |

2.7.3. For radiated emission test(above 1GHz)

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|-------------------|--------------|-------------|------------|-----------|-----------|
| Horn Antenna | SCHWARZB | BBHA 9120 D | BBHA9120D1 | June,28,1 | 1 Year |
| | ECK | | 002 | 5 | 1 Tear |
| Signal Amplifier | SCHWARZB | BBV9718 | 9718-212 | June,28,1 | 1 Year |
| | ECK | | | 5 | 1 1641 |
| Spectrum Analyzer | Agilent | E4408B | MY44211139 | June,28,1 | 1 Year |
| | | | | 5 | 1 ICai |
| RF Cable | Hubersuhner | RG 214/U | 513423 | June,28,1 | 1 Year |
| KI Cable | Trubersummer | KG 214/U | 313423 | 5 | 1 Tear |
| Spectrum Analyzer | Rohde | FSV | 103173 | June,28,1 | 1 Year |
| Spectrum Anaryzer | &Schwarz | 1.9 A | 103173 | 5 | 1 Ical |

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 9 of 53

4 RADIATED EMISSION TEST

4.1 Limit

4.1.1 15.209 limits

| FREQUENCY | DISTANCE | FIELD STRENGTHS LIMIT | | |
|------------|----------|---|---------------|--|
| MHz | Meters | μV/m | $dB(\mu V)/m$ | |
| 30 ~ 88 | 3 | 100 | 40.0 | |
| 88 ~ 216 | 3 | 150 | 43.5 | |
| 216 ~ 960 | 3 | 200 | 46.0 | |
| 960 ~ 1000 | 3 | 500 | 54.0 | |
| Above 1000 | 3 | 74.0 dB(µV)/m (Peak) | | |
| | | $54.0 \text{ dB}(\mu\text{V})/\text{m} \text{ (Average)}$ | | |

Remark : (1) Emission level $dB\mu V = 20 \log$ Emission level $\mu V/m$

- (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.

4.1.2 15.205 Restricted bands of operation

| 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) |

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.

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 10 of 53

4.2. Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. 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. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz 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,

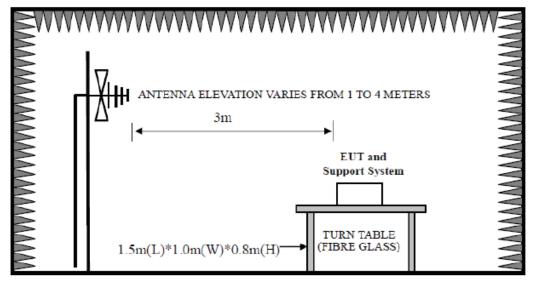
PEAK detector, 1MHz/10Hz for Average measurement

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

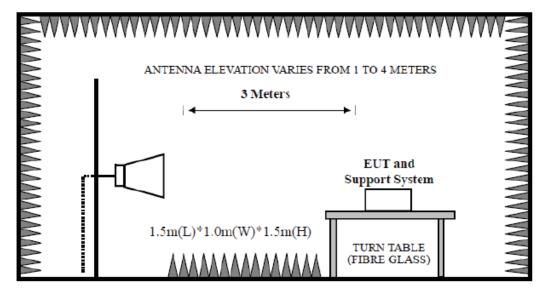
EST Technology Co., Ltd Report No. ESTE-R1601010 Page 11 of 53

4.3 Block Diagram of Test setup

30~1000MHz



Above 1GHz



4.4 Test Result

PASS.

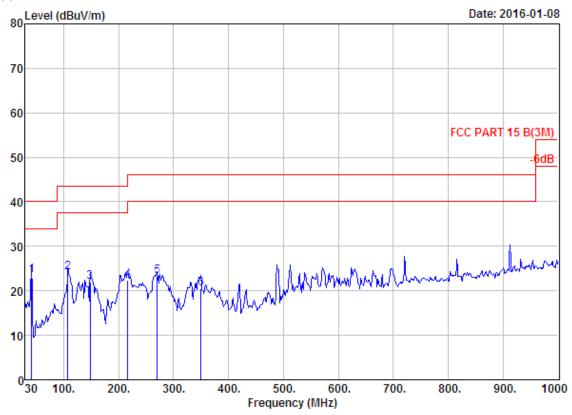
All the emissions from 30MHz to 25 GHz were comply with 15.209 limits.

- 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. 2440MHz and 2480 MHz 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.



4.5 Test Data

30-1000 MHz



Site no. : 966 1# chamber Data no. : 17
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL

Limit : FCC PART 15 B(3M)

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

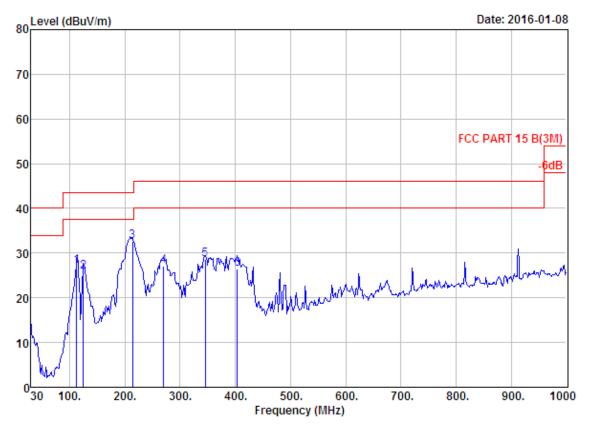
EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark | |
|-------|--------|--------------------------|-----------------------|-------------------|-------------------------------|-----------------|----------------|--------|--|
| 1 | 41.64 | 11.75 | 0.85 | 10.90 | 23.50 | 40.00 | 16.50 | QP | |
| 2 | 107.60 | 10.24 | 1.39 | 12.57 | 24.20 | 43.50 | 19.30 | QP | |
| 3 | 148.34 | 11.00 | 1.69 | 9.37 | 22.06 | 43.50 | 21.44 | QP | |
| 4 | 216.24 | 8.80 | 1.95 | 11.57 | 22.32 | 46.00 | 23.68 | QP | |
| 5 | 270.56 | 12.53 | 2.27 | 8.47 | 23.27 | 46.00 | 22.73 | QP | |
| 6 | 350.10 | 14.47 | 2.51 | 3.51 | 20.49 | 46.00 | 25.51 | QP | |
| | | | | | | | | | |





Site no. : 966 1# chamber

Data no. : 18 Ant. pol. : HORIZONTAL : 3m 27137 Dis. / Ant.

: FCC PART 15 B(3M) Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

: Tony Engineer

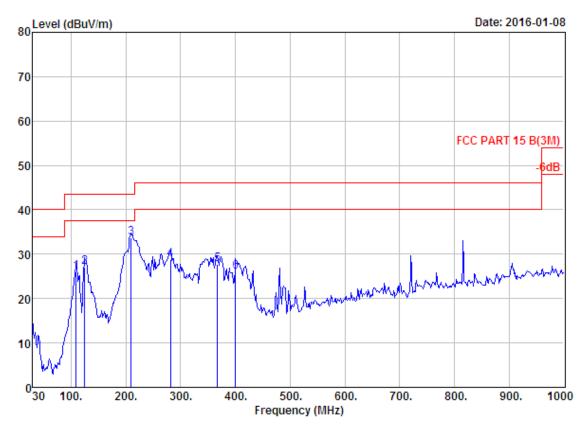
EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|-----------------|----------------|--------|
| 1 | 112.45 | 10.68 | 1.43 | 14.92 | 27.03 | 43.50 | 16.47 | QP |
| 2 | 125.06 | 11.35 | 1.52 | 12.91 | 25.78 | 43.50 | 17.72 | QP |
| 3 | 214.30 | 8.65 | 1.96 | 21.96 | 32.57 | 43.50 | 10.93 | QP |
| 4 | 270.56 | 12.53 | 2.27 | 12.20 | 27.00 | 46.00 | 19.00 | QP |
| 5 | 345.25 | 14.32 | 2.54 | 11.65 | 28.51 | 46.00 | 17.49 | QP |
| 6 | 403.45 | 16.14 | 2.69 | 7.57 | 26.40 | 46.00 | 19.60 | QP |





: 966 1# chamber Site no.

Data no. : 19 Ant. pol. : HORIZONTAL : 3m 27137 Dis. / Ant.

: FCC PART 15 B(3M) Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

Engineer : Tony

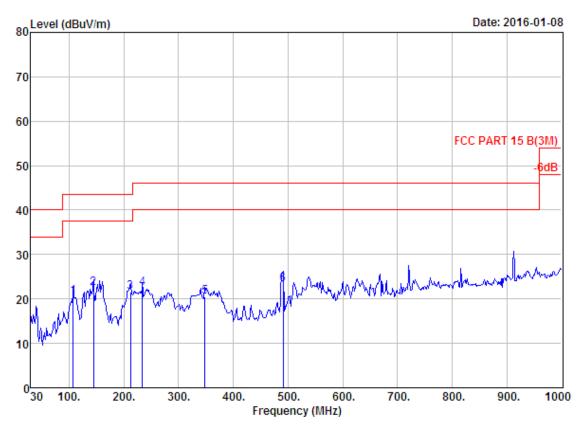
EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

: GFSK TX 2440MHz Test Mode

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|--------|--------------------------|-----------------------|-------------------|-------------------------------|-----------------|----------------|--------|
| 1 | 109.54 | 10.44 | 1.40 | 14.13 | 25.97 | 43.50 | 17.53 | QP |
| 2 | 125.06 | 11.35 | 1.52 | 14.31 | 27.18 | 43.50 | 16.32 | QP |
| 3 | 209.45 | 8.37 | 1.91 | 23.51 | 33.79 | 43.50 | 9.71 | QP |
| 4 | 281.23 | 12.41 | 2.32 | 14.11 | 28.84 | 46.00 | 17.16 | QP |
| 5 | 367.56 | 14.76 | 2.68 | 10.31 | 27.75 | 46.00 | 18.25 | QP |
| 6 | 400.54 | 16.07 | 2.66 | 7.24 | 25.97 | 46.00 | 20.03 | QP |





Site no. : 966 1# chamber Data no. : 20
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL

Limit : FCC PART 15 B(3M)

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

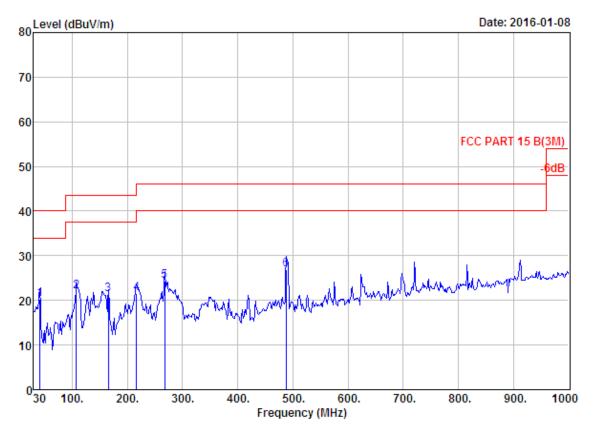
EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2440MHz

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|--------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 107.60 | 10.24 | 1.39 | 8.88 | 20.51 | 43.50 | 22.99 | QP |
| 2 | 144.46 | 11.26 | 1.54 | 9.57 | 22.37 | 43.50 | 21.13 | QP |
| 3 | 212.36 | 8.56 | 1.91 | 11.01 | 21.48 | 43.50 | 22.02 | QP |
| 4 | 233.70 | 9.64 | 2.09 | 10.65 | 22.38 | 46.00 | 23.62 | QP |
| 5 | 348.16 | 14.41 | 2.53 | 3.60 | 20.54 | 46.00 | 25.46 | QP |
| 6 | 490.75 | 17.82 | 3.09 | 2.42 | 23.33 | 46.00 | 22.67 | QP |





Site no. : 966 1# chamber Data no. : 21
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL

Limit : FCC PART 15 B(3M)

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

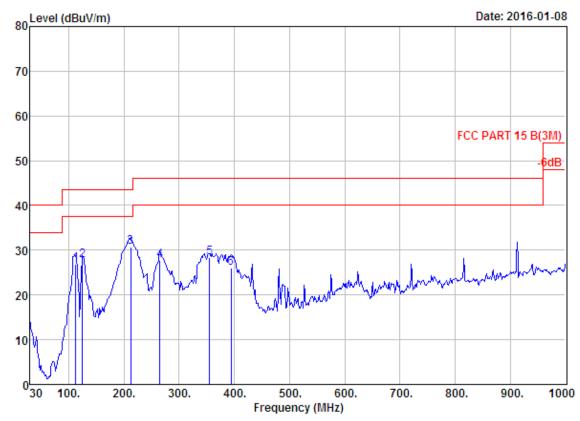
EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|--------------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 41.64 | 11.75 | 0.85 | 7.76 | 20.36 | 40.00 | 19.64 | QP |
| 2 | 107.60 | 10.24 | 1.39 | 10.44 | 22.07 | 43.50 | 21.43 | QP |
| 3 | 165.80 | 9.66 | 1.68 | 9.97 | 21.31 | 43.50 | 22.19 | QP |
| 4 | 216.24 | 8.80 | 1.95 | 10.89 | 21.64 | 46.00 | 24.36 | QP |
| 5 | 267.65 | 12.71 | 2.26 | 9.41 | 24.38 | 46.00 | 21.62 | QP |
| 6 | 487.84 | 17.74 | 3.15 | 5.89 | 26.78 | 46.00 | 19.22 | QP |





Site no. : 966 1# chamber Data no. : 22

Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL

Limit : FCC PART 15 B(3M)

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

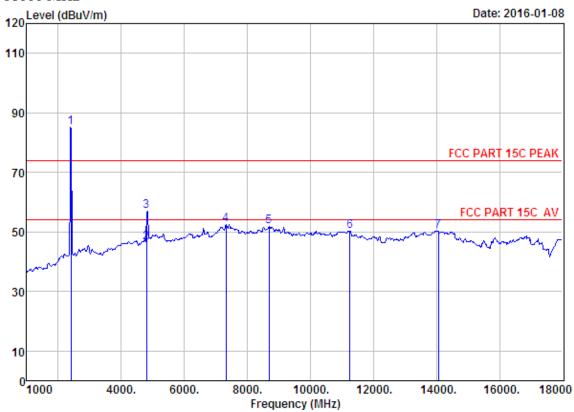
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|--------|--------------------------|-----------------------|-------------------|-------------------------------|-----------------|----------------|--------|
| 1 | 112.45 | 10.68 | 1.43 | 14.80 | 26.91 | 43.50 | 16.59 | QP |
| 2 | 125.06 | 11.35 | 1.52 | 14.92 | 27.79 | 43.50 | 15.71 | QP |
| 3 | 212.36 | 8.56 | 1.91 | 20.33 | 30.80 | 43.50 | 12.70 | QP |
| 4 | 264.74 | 12.94 | 2.28 | 12.61 | 27.83 | 46.00 | 18.17 | QP |
| 5 | 354.95 | 14.46 | 2.57 | 11.30 | 28.33 | 46.00 | 17.67 | QP |
| 6 | 393.75 | 15.78 | 2.58 | 7.72 | 26.08 | 46.00 | 19.92 | QP |



1000-18000 MHz



Site no. : 1# 966 chamber Data no. : 1

Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

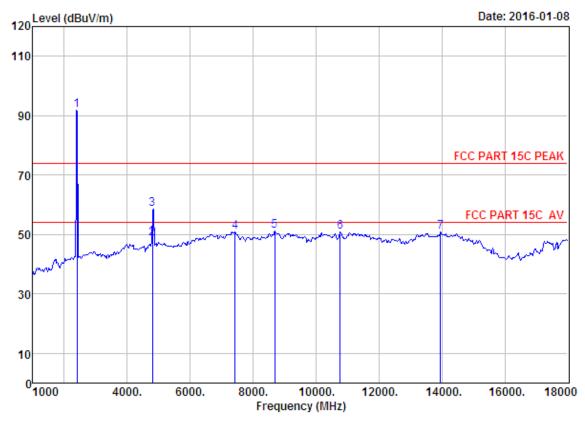
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Amp Factor (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2402.00 | 27.61 | 6.62 | 34.64 | 85.68 | 85.27 | 74.00 | -11.27 | Peak |
| 2 | 4804.00 | 31.25 | 11.77 | 35.64 | 38.94 | 46.32 | 54.00 | 7.68 | Average |
| 3 | 4804.00 | 31.25 | 11.77 | 35.64 | 49.64 | 57.02 | 74.00 | 16.98 | Peak |
| 4 | 7324.00 | 36.55 | 11.57 | 34.14 | 38.62 | 52.60 | 74.00 | 21.40 | Peak |
| 5 | 8684.00 | 37.32 | 11.45 | 33.66 | 36.76 | 51.87 | 74.00 | 22.13 | Peak |
| 6 | 11251.00 | 39.35 | 11.10 | 33.25 | 33.16 | 50.36 | 74.00 | 23.64 | Peak |
| 7 | 14056.00 | 41.51 | 10.90 | 33.06 | 30.89 | 50.24 | 74.00 | 23.76 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 2
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

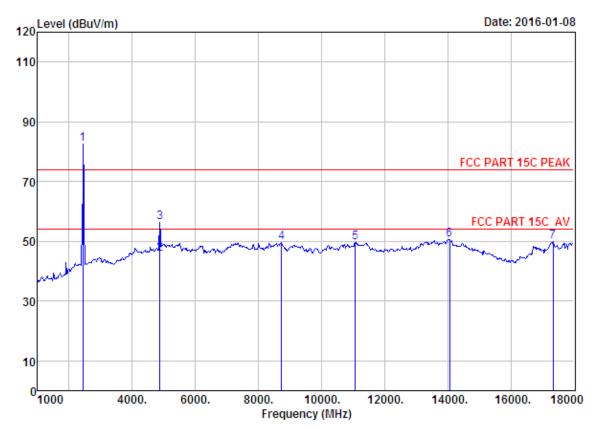
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | Amp Factor (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|-----------------|----------------|---------|
| 1 | 2402.00 | 27.61 | 6.62 | 34.64 | 92.41 | 92.00 | 74.00 | -18.00 | Peak |
| 2 | 4804.00 | 31.25 | 11.77 | 35.64 | 41.28 | 48.66 | 54.00 | 5.34 | Average |
| 3 | 4804.00 | 31.25 | 11.77 | 35.64 | 51.03 | 58.41 | 74.00 | 15.59 | Peak |
| 4 | 7426.00 | 36.56 | 11.60 | 34.22 | 36.99 | 50.93 | 74.00 | 23.07 | Peak |
| 5 | 8684.00 | 37.32 | 11.45 | 33.66 | 36.09 | 51.20 | 74.00 | 22.80 | Peak |
| 6 | 10775.00 | 39.28 | 11.30 | 34.02 | 34.37 | 50.93 | 74.00 | 23.07 | Peak |
| 7 | 13954.00 | 41.35 | 10.96 | 32.99 | 31.67 | 50.99 | 74.00 | 23.01 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





: 1# 966 chamber Site no.

Data no. : 5 Ant. pol. : HORIZONTAL : 3m ANT 1-18G : FCC PART 15C PEAK Dis. / Ant.

Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

: Tony Engineer

: Mechanic Advisor Connection Key EUT

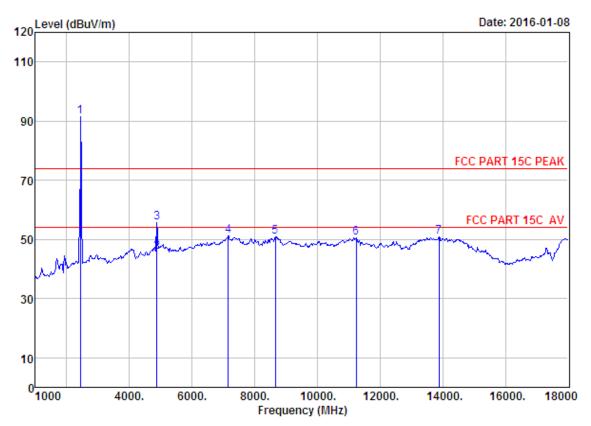
Power : DC 12V M/N : CK01

: GFSK TX 2440MHz Test Mode

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | - | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------|--------------------------|-----------------------|-------|-------------------|-------------------------------|-----------------|----------------|---------|
| 1 | 2440.00 | 27.60 | 6.67 | 34.85 | 83.23 | 82.65 | 74.00 | -8.65 | Peak |
| 2 | 4880.00 | 31.37 | 12.07 | 35.76 | 37.95 | 45.63 | 54.00 | 8.37 | Average |
| 3 | 4880.00 | 31.37 | 12.07 | 35.76 | 48.53 | 56.21 | 74.00 | 17.79 | Peak |
| 4 | 8735.00 | 37.40 | 11.45 | 33.76 | 34.41 | 49.50 | 74.00 | 24.50 | Peak |
| 5 | 11064.00 | 39.48 | 11.24 | 33.83 | 32.81 | 49.70 | 74.00 | 24.30 | Peak |
| 6 | 14056.00 | 41.51 | 10.90 | 33.06 | 31.17 | 50.52 | 74.00 | 23.48 | Peak |
| 7 | 17337.00 | 40.97 | 10.86 | 31.21 | 29.26 | 49.88 | 74.00 | 24.12 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 6
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

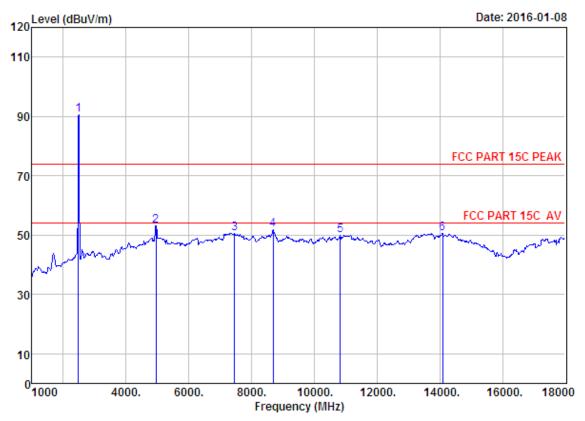
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2440MHz

| | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Amp Factor (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|---------|
| 1 | 2440.00 | 27.60 | 6.67 | 34.85 | 92.25 | 91.67 | 74.00 | -17.67 | Peak |
| 2 | 4880.00 | 31.37 | 12.07 | 35.76 | 38.10 | 45.78 | 54.00 | 8.22 | Average |
| 3 | 4880.00 | 31.37 | 12.07 | 35.76 | 48.04 | 55.72 | 74.00 | 18.28 | Peak |
| 4 | 7154.00 | 36.25 | 11.52 | 33.88 | 37.42 | 51.31 | 74.00 | 22.69 | Peak |
| 5 | 8650.00 | 37.27 | 11.45 | 33.68 | 35.93 | 50.97 | 74.00 | 23.03 | Peak |
| 6 | 11234.00 | 39.37 | 11.12 | 33.25 | 33.47 | 50.71 | 74.00 | 23.29 | Peak |
| 7 | 13886.00 | 41.16 | 11.04 | 33.03 | 31.69 | 50.86 | 74.00 | 23.14 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber

Data no. : 7 Ant. pol. : VERTICAL : 3m ANT 1-18G Dis. / Ant.

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

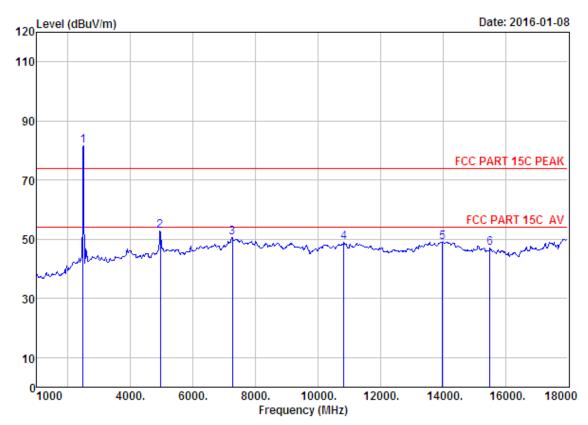
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. | Ant. Factor (dB/m) | Cable Loss (dB) | Amp Factor (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00 | 27.58 | 6.71 | 35.11 | 91.43 | 90.61 | 74.00 | -16.61 | Peak |
| 2 | 4960.00 | 31.49 | 12.44 | 36.01 | 45.28 | 53.20 | 74.00 | 20.80 | Peak |
| 3 | 7460.00 | 36.52 | 11.61 | 34.21 | 36.78 | 50.70 | 74.00 | 23.30 | Peak |
| 4 | 8684.00 | 37.32 | 11.45 | 33.66 | 36.67 | 51.78 | 74.00 | 22.22 | Peak |
| 5 | 10826.00 | 39.33 | 11.30 | 34.00 | 33.23 | 49.86 | 74.00 | 24.14 | Peak |
| 6 | 14090.00 | 41.54 | 10.91 | 33.13 | 31.19 | 50.51 | 74.00 | 23.49 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 8

: 3m ANT 1-18G : FCC PART 15C PEAK Dis. / Ant. Ant. pol. : HORIZONTAL

Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

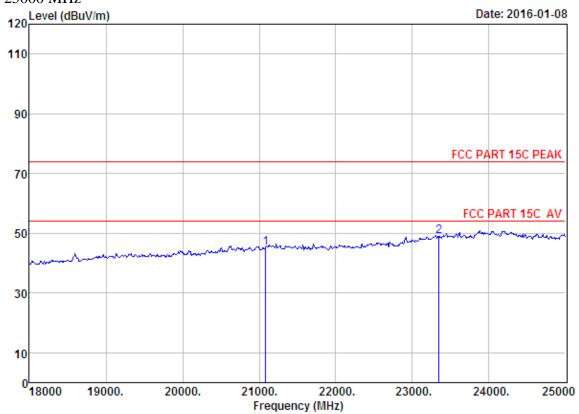
Test Mode : GFSK TX 2480MHz

| | Freq. (MHz) | Ant. Factor (dB/m) | Cable Loss (dB) | Amp Factor (dB) | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|--------------------------|-----------------------|-----------------------|-------------------|-------------------------------|-----------------|----------------|--------|
| 1 | 2480.00 | 27.58 | 6.71 | 35.11 | 82.32 | 81.50 | 74.00 | -7.50 | Peak |
| 2 | 4960.00 | 31.49 | 12.44 | 36.01 | 44.81 | 52.73 | 74.00 | 21.27 | Peak |
| 3 | 7256.00 | 36.53 | 11.55 | 34.02 | 36.54 | 50.60 | 74.00 | 23.40 | Peak |
| 4 | 10826.00 | 39.33 | 11.30 | 34.00 | 32.27 | 48.90 | 74.00 | 25.10 | Peak |
| 5 | 13988.00 | 41.45 | 10.92 | 33.00 | 29.73 | 49.10 | 74.00 | 24.90 | Peak |
| 6 | 15501.00 | 37.86 | 11.10 | 32.92 | 31.04 | 47.08 | 74.00 | 26.92 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.



18000-25000 MHz



Site no. : 1# 966 chamber Data no. : 11
Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

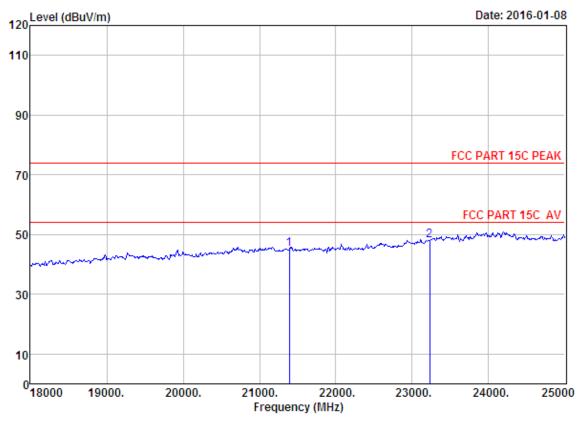
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| - | Factor | Loss | Factor | Reading | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|------------------------|--------|------|--------|---------|-------------------------------|-----------------|----------------|--------------|
| 1087.00 3348.00 | | | | | 45.26 48.89 | 74.00 74.00 | 28.74 25.11 | Peak Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 12

Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

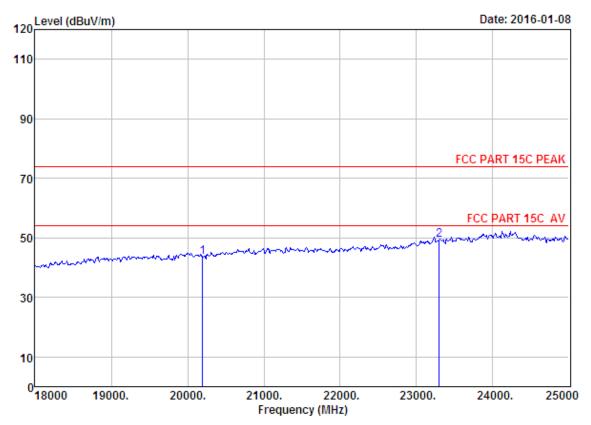
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| Freq. | Factor | Factor | Reading | Emission Level (dBuV/m) | | Margin (dB) | Remark |
|----------------------|--------|--------|---------|-------------------------------|----------------|----------------|--------------|
| 21388.00 23229.00 | | | | 45.14 48.11 | 74.00 74.00 | 28.86 25.89 | Peak Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 13

Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

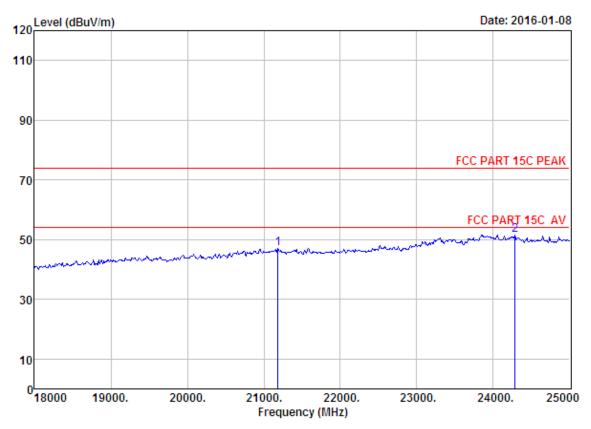
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2440MHz

| | | Freq. | | Loss | | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---|----------|-------|-------|-------|-------------------|-------------------------------|-----------------|----------------|--------|
| _ | 1 | 20198.00 | 46.06 | 19.77 | 36.52 | 14.35 | 43.66 | 74.00 | 30.34 | Peak |
| | 2 | 23299.00 | 45.66 | 21.42 | 33.53 | 15.81 | 49.36 | 74.00 | 24.64 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 14
Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

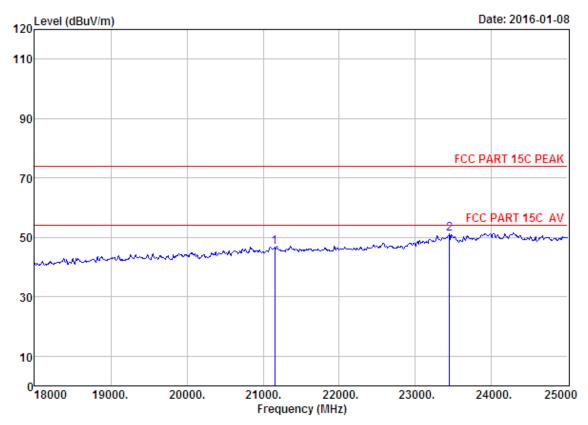
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2440MHz

| Freq. (MHz) | | - | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|----------------------|--|---|-------------------|-------------------------------|-----------------|----------------|--------------|
| 21185.00 24286.00 | | | | 47.19 51.66 | 74.00 74.00 | 26.81 22.34 | Peak Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 15
Dis. / Ant. : 3m ANT ABOVE 18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

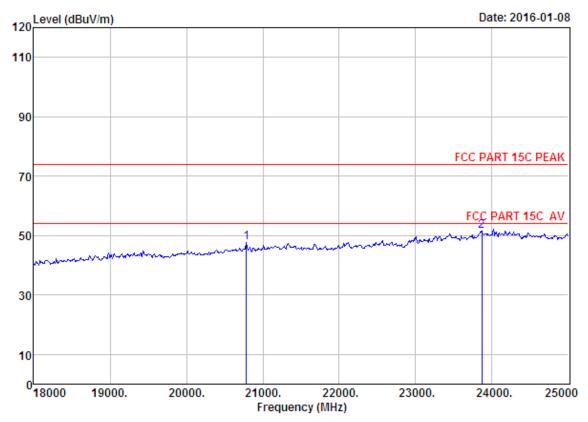
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. (MHz) | Factor | Factor | Reading | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------------|--------|--------|---------|-------------------------------|-----------------|----------------|--------------|
| _ | 21150.00 23446.00 | | | | 46.65 51.22 | 74.00 74.00 | 27.35 22.78 | Peak Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 16

Dis. / Ant. : 3m ANT ABVOE 18G Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. | | Loss | | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------|-------|-------|-------|-------------------|-------------------------------|-----------------|----------------|--------|
| 1 | 20786.00 | 46.18 | 20.04 | 36.00 | 17.38 | 47.60 | 74.00 | 26.40 | Peak |
| 2 | 23866.00 | 45.63 | 21.93 | 32.93 | 16.88 | 51.51 | 74.00 | 22.49 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

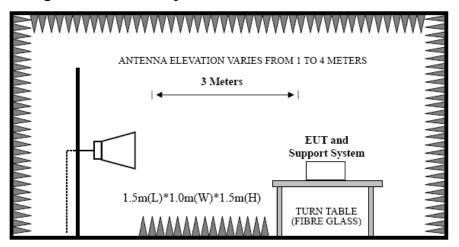


5 BAND EDGE COMPLIANCE TEST

5.1 Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits

5.2 Block Diagram of Test setup



5.3 Test Procedure

- 1. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.
- 2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

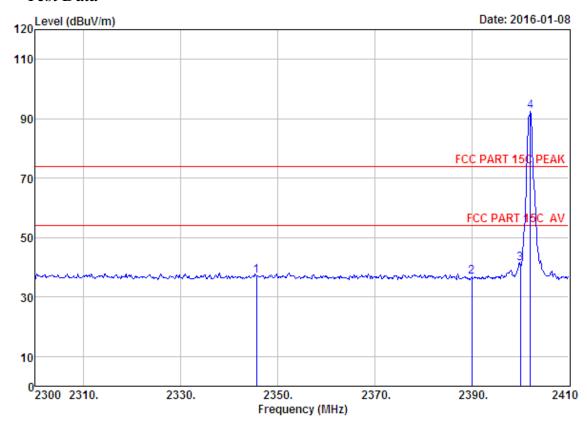
Peak: RBW = 1MHz, VBW = 1MHz, Detector=PEAK detector, Sweep time = auto. AV: RBW = 1MHz, VBW = 10Hz, Detector=PEAK detector, Sweep time = auto.

5.4 Test Result

Pass (The testing data was attached in the next pages.)

- 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 and 2480 MHz 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.

5.5 Test Data



Site no. : 1# 966 chamber Data no. : 3
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

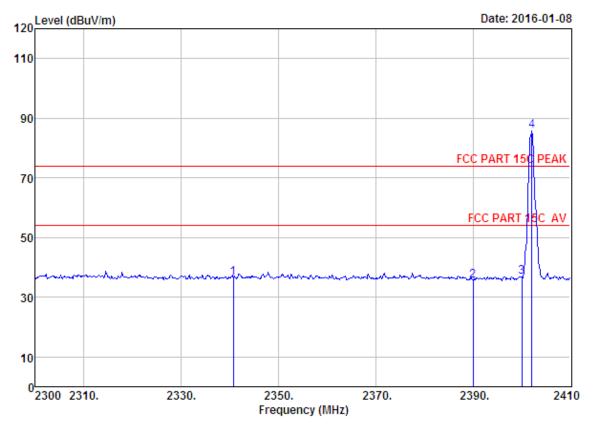
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| | Freq. (MHz) | | | - | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|-------|------|-------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2345.65 | 27.70 | 6.56 | 34.57 | 37.51 | 37.20 | 74.00 | 36.80 | Peak |
| 2 | 2390.00 | 27.64 | 6.62 | 34.62 | 37.23 | 36.87 | 74.00 | 37.13 | Peak |
| 3 | 2400.00 | 27.61 | 6.62 | 34.64 | 41.53 | 41.12 | 74.00 | 32.88 | Peak |
| 4 | 2402.08 | 27.61 | 6.62 | 34.64 | 92.96 | 92.55 | 74.00 | -18.55 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 4

Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

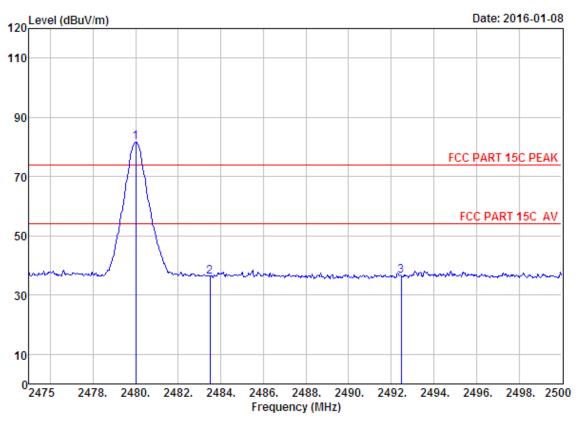
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2402MHz

| | Freq. (MHz) | | | - | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|-------|------|-------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2340.70 | 27.70 | 6.56 | 34.59 | 36.96 | 36.63 | 74.00 | 37.37 | Peak |
| 2 | 2390.00 | 27.64 | 6.62 | 34.62 | 35.86 | 35.50 | 74.00 | 38.50 | Peak |
| 3 | 2400.00 | 27.61 | 6.62 | 34.64 | 37.34 | 36.93 | 74.00 | 37.07 | Peak |
| 4 | 2402.08 | 27.61 | 6.62 | 34.64 | 86.02 | 85.61 | 74.00 | -11.61 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 9

Dis. / Ant. : 3m ANT 1-18G Ant. pol. : HORIZONTAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

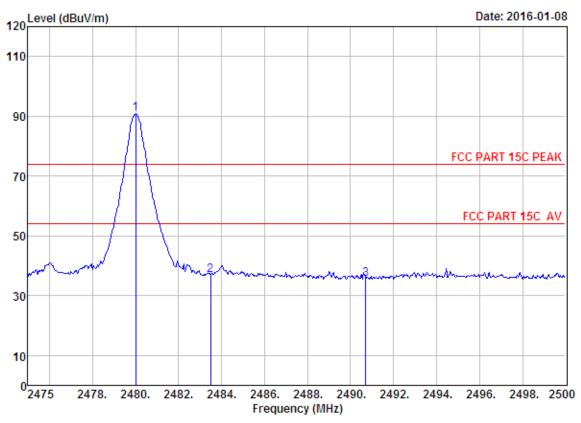
Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. | | | Factor | _ | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|---------|-------|------|--------|-------|-------------------------------|-----------------|----------------|--------|
| 1 | 2480.00 | 27.58 | 6.71 | 35.11 | 82.42 | 81.60 | 74.00 | -7.60 | Peak |
| 2 | 2483.50 | 27.58 | 6.71 | 35.11 | 37.11 | 36.29 | 74.00 | 37.71 | Peak |
| 3 | 2492.48 | 27.58 | 6.73 | 35.24 | 37.41 | 36.48 | 74.00 | 37.52 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.





Site no. : 1# 966 chamber Data no. : 10
Dis. / Ant. : 3m ANT 1-18G Ant. pol. : VERTICAL

Limit : FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Tony

EUT : Mechanic Advisor Connection Key

Power : DC 12V M/N : CK01

Test Mode : GFSK TX 2480MHz

| | Freq. (MHz) | | | Factor | Reading (dBuV) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Remark |
|---|----------------|-------|------|--------|-------------------|-------------------------------|--------------------|----------------|--------|
| 1 | 2480.00 | 27.58 | 6.71 | 35.11 | 91.59 | 90.77 | 74.00 | -16.77 | Peak |
| 2 | 2483.50 | 27.58 | 6.71 | 35.11 | 37.59 | 36.77 | 74.00 | 37.23 | Peak |
| 3 | 2490.70 | 27.58 | 6.73 | 35.24 | 36.41 | 35.48 | 74.00 | 38.52 | Peak |

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.



6 6dB Bandwidth Test

6.1 Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

6.2 Test Procedure

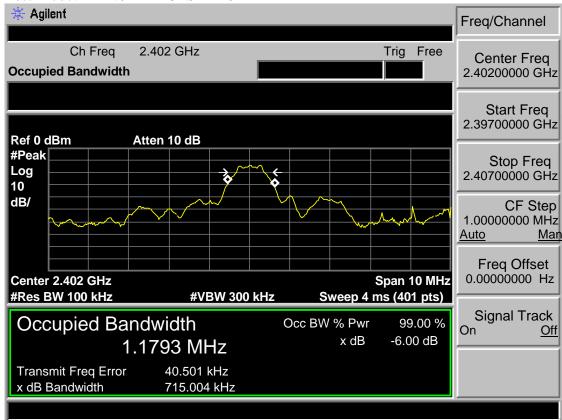
- 1, Connected the EUT's antenna port to spectrum analyzer device.
- 2, Follow the test procedure as described in KDB 558074
 - (1). Set resolution bandwidth (RBW) = 100 kHz.
 - (2). Set the video bandwidth (VBW) $\geq 3 \times RBW$.
 - (3). Detector = Peak.
 - (4). Trace mode = max hold.
 - (5). Sweep = auto couple.
 - (6). Allow the trace to stabilize.
 - (7). Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3 Test Result

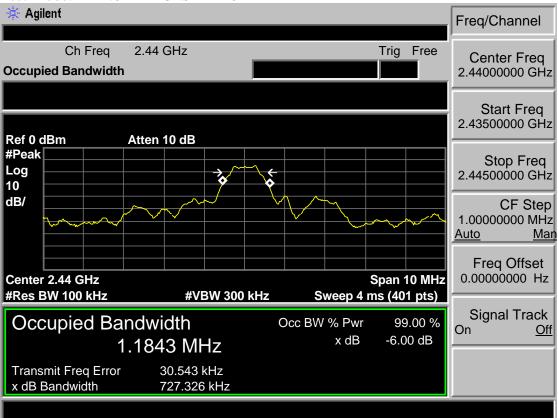
| EUT: Mechanic Advisor Connection Key | | | | | | | | |
|---|-----|-------|------|--|--|--|--|--|
| M/N: CK01 | | | | | | | | |
| Test date: 2016-01-10 Tested by: Tony.Tang Test site: RF Site | | | | | | | | |
| Test Mode CH 6dB bandwidth Limit (KHz) | | | | | | | | |
| DT 4 0 DI E | CH1 | 0.715 | >500 | | | | | |
| BT 4.0-BLE CH20 0.727 >500 | | | | | | | | |
| CH40 0.729 >500 | | | | | | | | |
| Conclusion: PASS | | | | | | | | |

6.4 Test Data

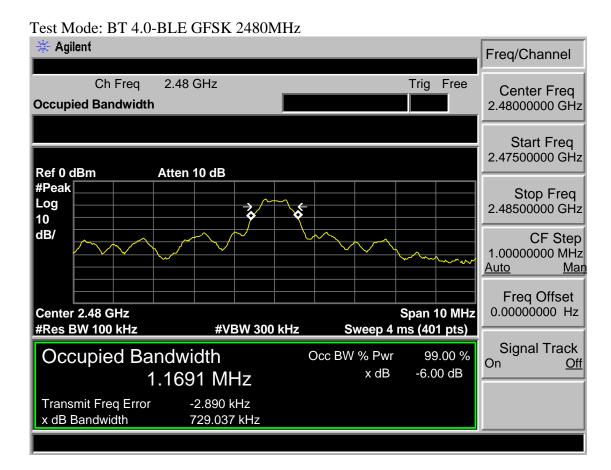
Test Mode: BT 4.0-BLE GFSK 2402MHz



Test Mode: BT 4.0-BLE GFSK 2440MHz









7 OUTPUT POWER TEST

7.1 Limit

For systems using digital modulation in the 2400—2483.5MHz, The Peak out put Power shall not exceed 1W(30dBm)

7.2 **Test Procedure**

7.3Test Procedure

- 1, Connected the EUT's antenna port to spectrum analyzer device.
- 2, Follow the test procedure as described in KDB 558074
 - (1). Set the RBW \geq DTS bandwidth.
 - (2). Set VBW \geq 3 x RBW.
 - (3). Set span \geq 3 x RBW.
 - (4). Sweep time = auto couple.
 - (5). Detector = peak.
 - (6). Trace mode = max hold.
 - (7). Allow trace to fully stabilize.
 - (8). Use peak marker function to determine the peak amplitude level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offs

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 39 of 53



7.4 Test Result

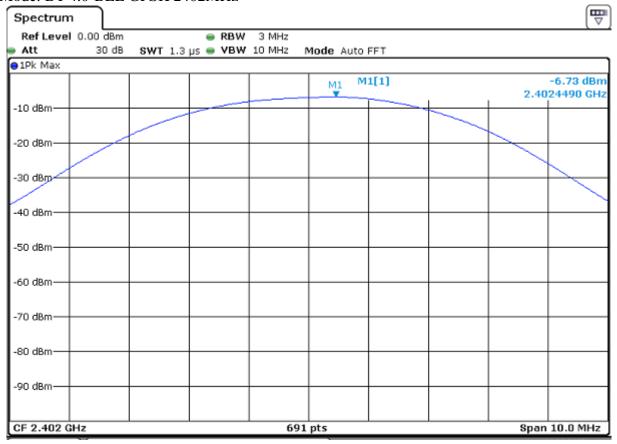
| EUT: Mechanic Advisor Connection Key | | | | | |
|--------------------------------------|------|-------------------------|----------------------|--|--|
| M/N: CK01 | | | | | |
| Test date: 2016-01-10 | | Test site: 3m Chamber | Tested by: Tony Tang | | |
| Pass | | | | | |
| Test Mode | СН | Peak output Power (dBm) | Limit (dBm) | | |
| BT 4.0-BLE GFSK | CH1 | -6.73 | 30 | | |
| | CH20 | -7.46 | 30 | | |
| | CH40 | -7.57 | 30 | | |
| Conclusion: PASS | | | | | |

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 40 of 53

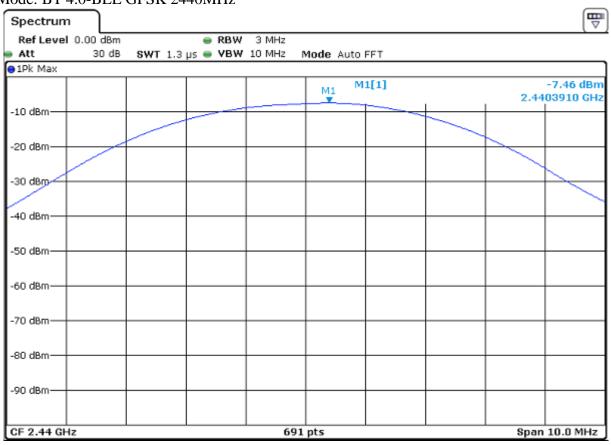


7.5 Test Data

Test Mode: BT 4.0-BLE GFSK 2402MHz

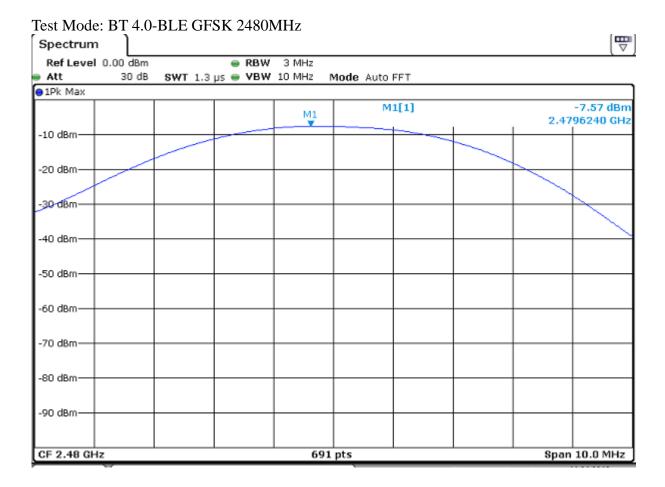


Test Mode: BT 4.0-BLE GFSK 2440MHz



EST Technology Co., Ltd Report No. ESTE-R1601010 Page 41 of 53





EST Technology Co., Ltd Report No. ESTE-R1601010 Page 42 of 53

8 POWER SPECTRAL DENSITY TEST

8.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

8.2 Test Procedure

- 1, Connected the EUT's antenna port to spectrum analyzer device.
- 2, Follow the test procedure as described in KDB 558074
- (1). Set analyzer center frequency to DTS channel center frequency.
- (2). Set the span to 1.5 times the DTS bandwidth.
- (3). Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- (4). Set the VBW \geq 3 RBW.
- (5). Detector = peak.
- (6). Sweep time = auto couple.
- (7). Trace mode = max hold.
- (8). Allow trace to fully stabilize.
- (9). Use the peak marker function to determine the maximum amplitude level.
- (10). If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 43 of 53



8.3 Test Result

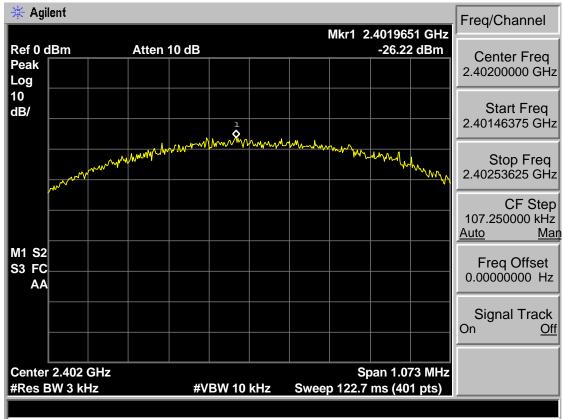
| EUT: Mechanic Advisor Connection Key | | | | | |
|--------------------------------------|------|--------------------------|----------------------|--|--|
| M/N: CK01 | | | | | |
| Test date: 2016-01-10 | | Test site: 3m Chamber | Tested by: Tony Tang | | |
| Pass | | | | | |
| Test Mode | СН | Power density (dBm/3kHz) | Limit (dBm/3kHz) | | |
| BT 4.0-BLE GFSK | CH1 | -26.22 | 8 | | |
| | CH20 | -26.29 | 8 | | |
| | CH40 | -27.63 | 8 | | |
| Conclusion: PA | ASS | | _ | | |

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 44 of 53

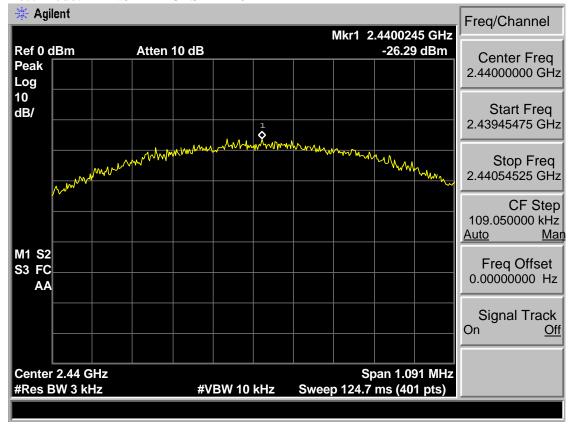


8.4 Test Data

Test Mode: BT 4.0-BLE GFSK 2402MHz



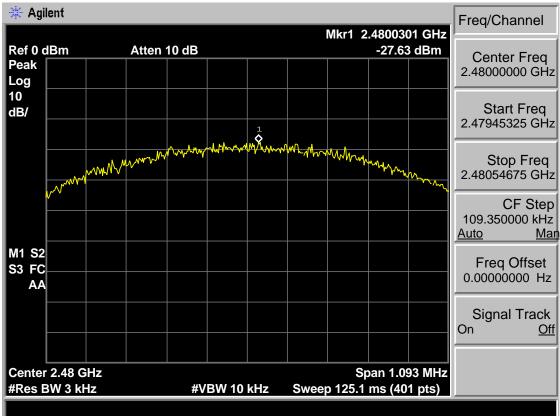
Test Mode: BT 4.0-BLE GFSK 2440MHz





EST Technology Co., Ltd

Test Mode: BT 4.0-BLE GFSK 2480MHz





EST Technology Co., Ltd Report No. ESTE-R1601010 Page 46 of 53

9 ANTENNA REQUIREMENTS

9.1 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.

9.2 Result

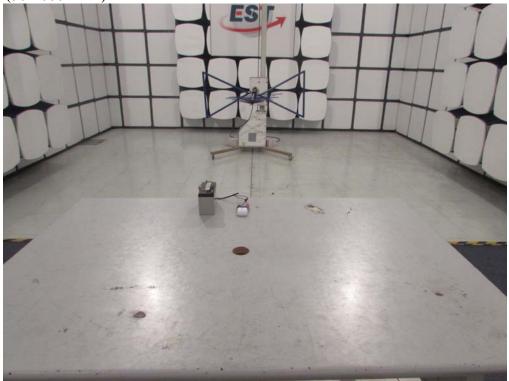
The antennas used for this product are integral Patch Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0dBi.

EST Technology Co., Ltd Report No. ESTE-R1601010 Page 47 of 53

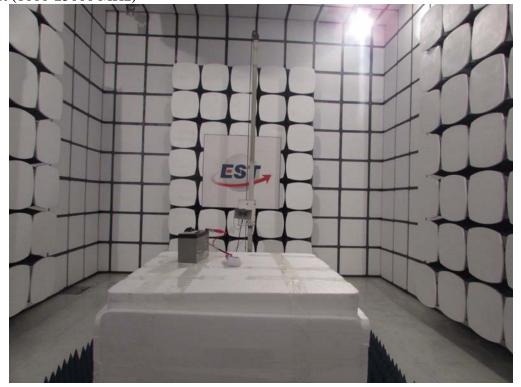


10 TEST SETUP PHOTO

Radiated Test (30-1000 MHz)



Radiated Test (1000-25000 MHz)

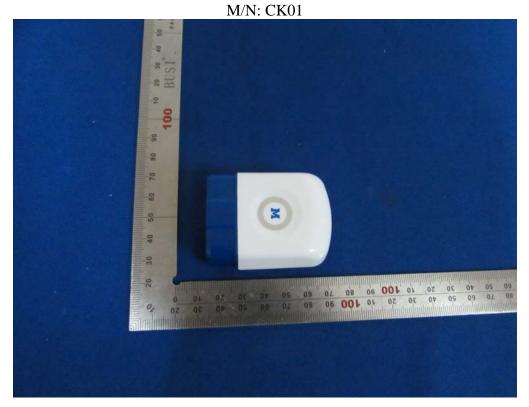




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11 PHOTOS OF EUT

External Photos







External Photos

M/N: CK01







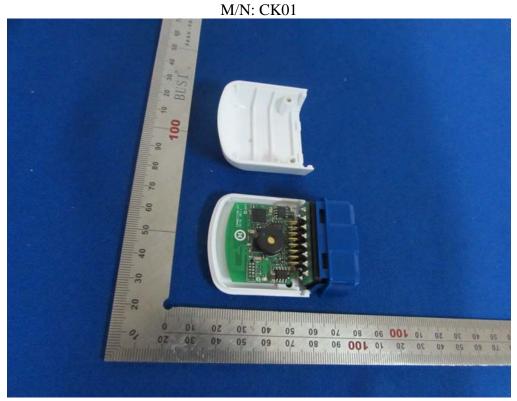
External Photos

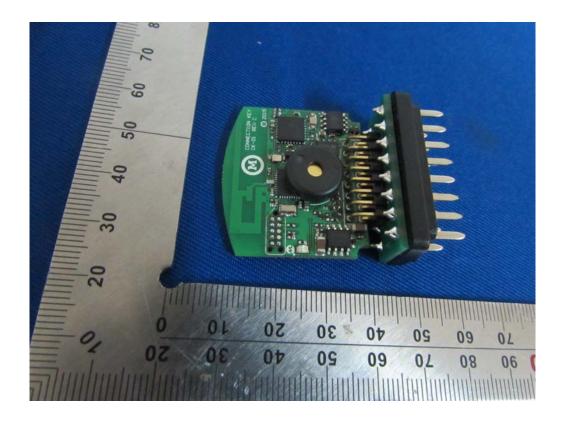






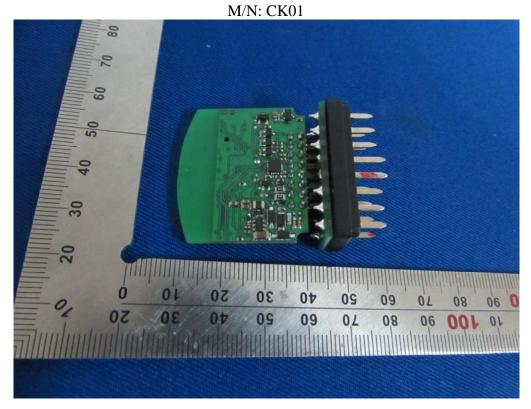
Internal Photos

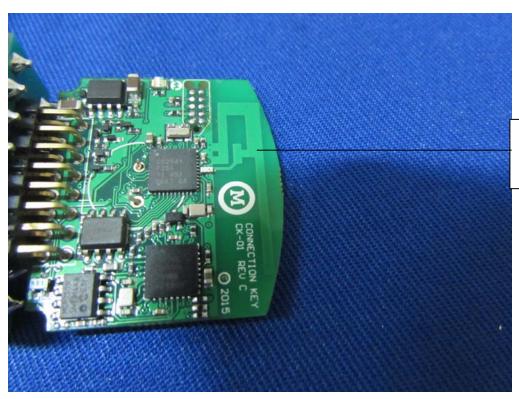






Internal Photos





Bluetooth Antenna

EST