RF TEST REPORT



Report No.: 17071233-FCC-R2
Supersede Report No.: N/A

| Applicant | HONG KONG IPRO TECHNOLOGY CO.,LIMITED | | | |
|---|---|-------------|--------------------|---------|
| Product Name | Mobile Phone | | | |
| Model No. | Kylin 5.0S | | | |
| Serial No. | N/A | | | |
| Test Standard | FCC Part 15 | .247: 2016, | ANSI C63.10 |): 2013 |
| Test Date | November 0 | 9 to Novem | ber 27, 2017 | |
| Issue Date | November 28, 2017 | | | |
| Test Result | Pass Fail | | | |
| Equipment complied with the specification | | | | |
| Equipment did no | Equipment did not comply with the specification | | | |
| form Li | and | David | Huang | |
| Aaron Liang Test Engineer | | | d Huang cked By | |

This test report may be reproduced in full only

Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park
South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 2 of 68 |

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

| Country/Region | Scope |
|----------------|------------------------------------|
| USA | EMC, RF/Wireless, SAR, Telecom |
| Canada | EMC, RF/Wireless, SAR, Telecom |
| Taiwan | EMC, RF, Telecom, SAR, Safety |
| Hong Kong | RF/Wireless, SAR, Telecom |
| Australia | EMC, RF, Telecom, SAR, Safety |
| Korea | EMI, EMS, RF, SAR, Telecom, Safety |
| Japan | EMI, RF/Wireless, SAR, Telecom |
| Singapore | EMC, RF, SAR, Telecom |
| Europe | EMC, RF, SAR, Telecom, Safety |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 3 of 68 |

This page has been left blank intentionally.



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 4 of 68 |

CONTENTS

| 1. | REPORT REVISION HISTORY | 5 |
|-----|--|----|
| 2. | CUSTOMER INFORMATION | 5 |
| 3. | TEST SITE INFORMATION | 5 |
| 4. | EQUIPMENT UNDER TEST (EUT) INFORMATION | 7 |
| 5. | TEST SUMMARY | 9 |
| 6. | MEASUREMENTS, EXAMINATION AND DERIVED RESULTS | 10 |
| 6.1 | ANTENNA REQUIREMENT | 10 |
| 6.2 | CHANNEL SEPARATION | 11 |
| 6.3 | 20DB BANDWIDTH | 15 |
| 6.4 | PEAK OUTPUT POWER | 19 |
| 6.5 | NUMBER OF HOPPING CHANNEL | 23 |
| 6.6 | TIME OF OCCUPANCY (DWELL TIME) | 25 |
| 6.7 | BAND EDGE & RESTRICTED BAND | 29 |
| 6.8 | AC POWER LINE CONDUCTED EMISSIONS | 37 |
| 6.9 | RADIATED EMISSIONS & RESTRICTED BAND | 43 |
| ANI | NEX A. TEST INSTRUMENT | 50 |
| ANI | NEX B. EUT AND TEST SETUP PHOTOGRAPHS | 51 |
| ANI | NEX C. TEST SETUP AND SUPPORTING EQUIPMENT | 63 |
| ANI | NEX D. USER MANUAL / BLOCK DIAGRAM / SCHEMATICS / PARTLIST | 67 |
| ANI | NEX E. DECLARATION OF SIMILARITY | 68 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 5 of 68 |

1. Report Revision History

| Report No. | Report Version | Description | Issue Date |
|-----------------|----------------|-------------|-------------------|
| 17071233-FCC-R2 | NONE | Original | November 28, 2017 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

2. Customer information

| Applicant Name | HONG KONG IPRO TECHNOLOGY CO.,LIMITED | |
|------------------|---|--|
| Applicant Add | FLAT/RM A3, 9/F SILVERCORP INT TOWER 707-713 NATHAN RD MONGKOK, | |
| | HONGKONG | |
| Manufacturer | HONG KONG IPRO TECHNOLOGY CO.,LIMITED | |
| Manufacturer Add | FLAT/RM A3, 9/F SILVERCORP INT TOWER 707-713 NATHAN RD MONGKOK, | |
| | HONGKONG | |

3. Test site information

Test Lab A:

| Lab performing tests | SIEMIC (Shenzhen-China) LABORATORIES | |
|----------------------|---|--|
| | Zone A, Floor 1, Building 2 Wan Ye Long Technology Park | |
| Lab Address | South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China | |
| | 518108 | |
| FCC Test Site No. | 535293 | |
| IC Test Site No. | 4842E-1 | |
| Test Software | Radiated Emission Program-To Shenzhen v2.0 | |

Test Lab B:

| Lab performing tests | SIEMIC (Nanjing-China) Laboratories | |
|----------------------|---|--|
| Lab Address | 2-1 Longcang Avenue Yuhua Economic and | |
| | Technology Development Park, Nanjing, China | |
| FCC Test Site No. | 694825 | |
| IC Test Site No. | 4842B-1 | |
| Test Software | EZ_EMC(ver.lcp-03A1) | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 6 of 68 |

Note: We just perform Radiated Spurious Emission above 18GHz in the test Lab. B.



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 7 of 68 |

4. Equipment under Test (EUT) Information

Description of EUT: Mobile Phone

Main Model: Kylin 5.0S

Serial Model: N/A

Date EUT received: November 08, 2017

Test Date(s): November 09 to November 27, 2017

Equipment Category: DSS

GSM850: 2.1dBi PCS1900: 2.5dBi

UMTS-FDD Band V: 2.1dBi Antenna Gain:

UMTS-FDD Band II: 2.3dBi

Bluetooth/BLE/WIFI: 1.6dBi

GPS: 2.4dBi

Antenna Type: PIFA antenna

GSM / GPRS: GMSK

EGPRS: GMSK

UMTS-FDD: QPSK

Type of Modulation: 802.11b/g/n: DSSS, OFDM

Bluetooth: GFSK, π /4DQPSK, 8DPSK

BLE: GFSK GPS:BPSK

GSM850 TX: 824.2 ~ 848.8 MHz; RX: 869.2 ~ 893.8 MHz

PCS1900 TX: 1850.2 ~ 1909.8 MHz; RX: 1930.2 ~ 1989.8 MHz

UMTS-FDD Band V TX: 826.4 ~ 846.6 MHz; RX: 871.4 ~ 891.6 MHz

UMTS-FDD Band II TX:1852.4 \sim 1907.6 MHz;

RF Operating Frequency (ies):

RX: 1932.4 ~ 1987.6 MHz

WIFI: 802.11b/g/n(20M): 2412-2462 MHz

WIFI: 802.11n(40M): 2422-2452 MHz

Bluetooth& BLE: 2402-2480 MHz



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 8 of 68 |

GPS: 1575.42 MHz

Max. Output Power: 3.447dBm

GSM 850: 124CH PCS1900: 299CH

UMTS-FDD Band V: 102CH UMTS-FDD Band II: 277CH

Number of Channels: WIFI:802.11b/g/n(20M): 11CH

WIFI:802.11n(40M): 7CH

Bluetooth: 79CH

BLE: 40CH GPS:1CH

Port: USB Port, Earphone Port

Adapter:

Model: NTR-S01

Input: AC100-240V~50/60Hz, 150mA

Input Power: Output: DC 5.0V,1000mA

Battery:

Spec: 3.8V, 2000mAh, 7.6Wh

Voltage: 4.35V

Trade Name : IPRO

GPRS/ EGPRS Multi-slot class 8/10/11/12

FCC ID: PQ4IPROKYLIN50S



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 9 of 68 |

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

| FCC Rules | Description of Test | Result |
|------------------------------|-------------------------------------|------------|
| §15.203 | Antenna Requirement | Compliance |
| §15.247(a)(1) | Channel Separation | Compliance |
| §15.247(a)(1) | 20 dB Bandwidth | Compliance |
| §15.247(b)(1) | Peak Output Power | Compliance |
| §15.247(a)(1)(iii) | Number of Hopping Channel | Compliance |
| §15.247(a)(1)(iii) | Time of Occupancy (Dwell Time) | Compliance |
| §15.247(d) | Band Edge& Restricted Band | Compliance |
| §15.207(a) | AC Line Conducted Emissions | Compliance |
| §15.205, §15.209, §15.247(d) | Radiated Emissions& Restricted Band | Compliance |

Measurement Uncertainty

| Emissions | | | | |
|---|---|---------------|--|--|
| Test Item | Description | Uncertainty | | |
| Band Edge& Restricted Band and Radiated Emissions& Restricted Band | Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m) | +5.6dB/-4.5dB | | |
| - | - | - | | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 10 of 68 |

6. Measurements, Examination And Derived Results

6.1 Antenna Requirement

Applicable Standard

According to § 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. 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 user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the 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 6 dBi.

Antenna Connector Construction

The EUT has 2 antennas:

A permanently attached PIFA antenna for GSM/PCS/ UMTS-FDD Band V/II, the gain is 2.1dBi for GSM850/UMTS-FDD Band V, the gain is 2.5dBi for PCS1900, the gain is 2.3dBi for UMTS-FDD Band II. A permanently attached PIFA antenna for Bluetooth/BLE/WIFI/GPS, the gain is 1.6dBi for Bluetooth/BLE/WIFI, the gain is 2.4dBi for GPS.

The antenna meets up with the ANTENNA REQUIREMENT.

Result: Compliance.



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 11 of 68 |

6.2 Channel Separation

| Temperature | 26 °C | | |
|----------------------|-------------------|--|--|
| Relative Humidity | 57% | | |
| Atmospheric Pressure | 1018mbar | | |
| Test date : | November 21, 2017 | | |
| Tested By : | Aaron Liang | | |

Requirement(s):

| Requirement(s): | 1 | | , | | |
|-----------------|--|--|-------------|--|--|
| Spec | Item | Applicable | | | |
| S 45 047/-\/4\ | | Channel Separation < 20dB BW and 20dB BW < | | | |
| | ۵) | 25KHz ; Channel Separation Limit=25KHz | | | |
| § 15.247(a)(1) | a) | Chanel Separation < 20dB BW and 20dB BW > | | | |
| | | 25kHz; Channel Separation Limit=2/3 20dB BW | | | |
| Test Setup | Spectrum Analyzer EUT | | | | |
| | The to | est follows FCC Public Notice DA 00-705 Measurement | Guidelines. | | |
| | Use the following spectrum analyzer settings: | | | | |
| | The EUT must have its hopping function enabled | | | | |
| | - Span = wide enough to capture the peaks of two adjacent | | | | |
| | channels | | | | |
| | - Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span | | | | |
| Test Procedure | - Video (or Average) Bandwidth (VBW) ≥ RBW | | | | |
| Tool Toolaaro | - Sweep = auto | | | | |
| | - Detector function = peak | | | | |
| | - Trace = max hold | | | | |
| | - Allow the trace to stabilize. Use the marker-delta function to | | | | |
| | determine the separation between the peaks of the adjacent | | | | |
| | | channels. The limit is specified in one of the subparagraphs of this | | | |
| | | Section. Submit this plot. | | | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 12 of 68 |

| Rema | rk | | | | |
|---------------------------|-----|------------------|------------------|--|--|
| Resu | lt | Pass | Fail | | |
| Test Data | Yes | . | □ _{N/A} | | |
| Test Plot Yes (See below) | | □ _{N/A} | | | |

Channel Separation measurement result

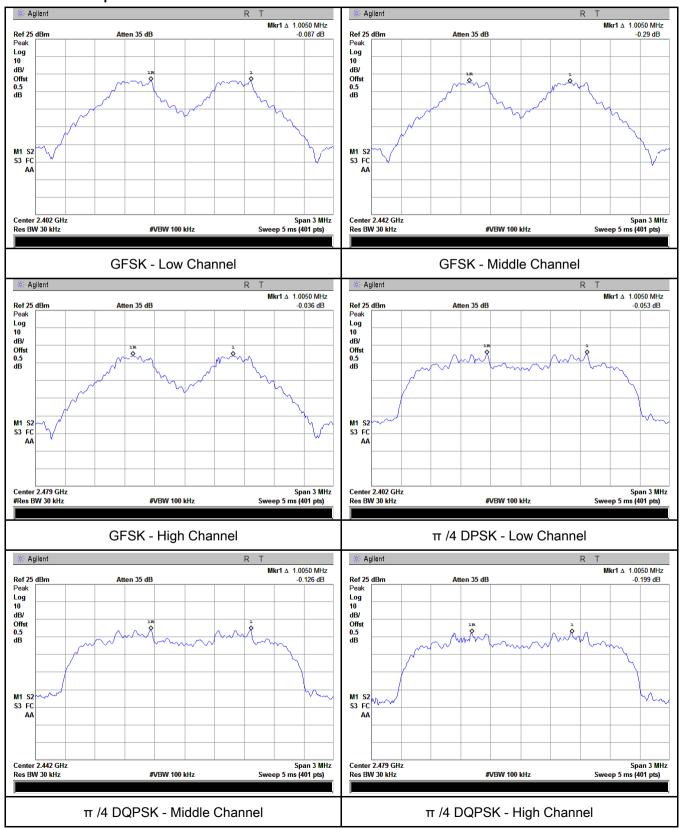
| Type/ Modulation | СН | CH Frequency (MHz) | CH Separation (MHz) | Limit (MHz) | Result |
|---------------------|-------------------|--------------------------|------------------------|----------------|---------|
| | Low Channel | 2402 | 1.005 | 0.681 | Pass |
| | Adjacency Channel | 2403 | 1.003 | 0.061 | F a 5 5 |
| CH Separation | Mid Channel | 2440 | 1.005 | 0.979 | Pass |
| GFSK | Adjacency Channel | 2441 | 1.005 | 0.979 | Fa55 |
| | High Channel | 2480 | 1 005 | 0 060 | Door |
| | Adjacency Channel | 2479 | 1.005 | 0.962 | Pass |
| | Low Channel | 2402 | 1.005 | 0.861 | Pass |
| | Adjacency Channel | 2403 | 1.005 | 0.001 | Pass |
| CH Separation | Mid Channel | 2440 | 1.005 | 0.860 | Pass |
| π /4 DQPSK | Adjacency Channel | 2441 | 1.005 | | |
| | High Channel | 2480 | 1.005 | 0.005 | Door |
| | Adjacency Channel | 2479 | 1.005 | 0.865 | Pass |
| | Low Channel | 2402 | 4.005 | 0.000 | Dese |
| | Adjacency Channel | 2403 | 1.005 | 0.862 | Pass |
| CH Separation | Mid Channel | 2440 | 4.005 | 0.000 | Dese |
| 8DPSK | Adjacency Channel | 2441 | 1.005 | 0.863 | Pass |
| | High Channel | 2480 | 4.005 | 0.000 | - |
| | Adjacency Channel | 2479 | 1.005 | 0.866 | Pass |



| Test Report | 17071233-FCC-R2 | |
|-------------|-----------------|--|
| Page | 13 of 68 | |

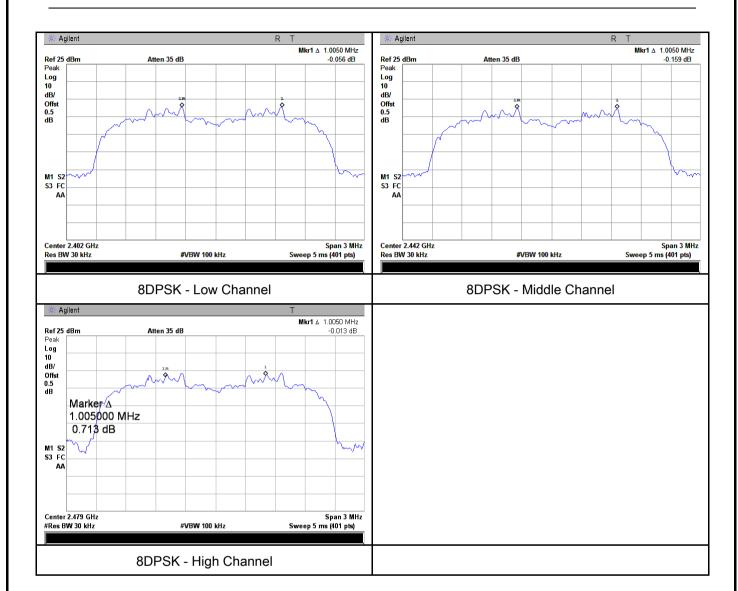
Test Plots

Channel Separation measurement result





| Test Report | 17071233-FCC-R2 | |
|-------------|-----------------|--|
| Page | 14 of 68 | |





| Test Report | 17071233-FCC-R2 | |
|-------------|-----------------|--|
| Page | 15 of 68 | |

6.3 20dB Bandwidth

| Temperature | 26 °C | |
|----------------------|-------------------|--|
| Relative Humidity | 57% | |
| Atmospheric Pressure | 1018mbar | |
| Test date : | November 21, 2017 | |
| Tested By : | Aaron Liang | |

| Requirement(s): | | | | | |
|--|---|--|----------|--|--|
| Spec | Item | Requirement Applicable | | | |
| | | Frequency hopping systems shall have hopping | | | |
| §15.247(a) | a) | channel carrier frequencies separated by a minimum | V | | |
| (1) | (a) | of 25 kHz or the 20 dB bandwidth of the hopping | | | |
| | | channel, whichever is greater. | | | |
| Test Setup | | | | | |
| | | Spectrum Analyzer EUT | | | |
| | The test follows FCC Public Notice DA 00-705 Measurement Guidelines. | | | | |
| | Use th | e following spectrum analyzer settings: | | | |
| | - Span = approximately 2 to 3 times the 20 dB bandwidth, centered on | | | | |
| | a hopping channel | | | | |
| | - RBW ≥ 1% of the 20 dB bandwidth | | | | |
| | - VBW≥ RBW | | | | |
| Test | - | Sweep = auto | | | |
| Procedure | - | Detector function = peak | | | |
| 1 Tocedure | - | Trace = max hold. | | | |
| - | | The EUT should be transmitting at its maximum data rate. Allow the | | | |
| | trace to stabilize. Use the marker-to-peak function to set the marker | | | | |
| | to the peak of the emission. Use the marker-delta function to | | | | |
| | measure 20 dB down one side of the emission. Reset the marker- | | | | |
| | | delta function, and move the marker to the other side of the | ne | | |
| emission, until it is (as close as possible to) even with the refe | | | | | |



| Test Report | 17071233-FCC-R2 | |
|-------------|-----------------|--|
| Page | 16 of 68 | |

| | | marker | level. The marker-delta reading at this point is the 20 dB | | |
|-----------|---|---|---|--|--|
| | | bandwidth of the emission. If this value varies with different modes of | | | |
| | | operatio | on (e.g., data rate, modulation format, etc.), repeat this test for | | |
| | | each va | riation. The limit is specified in one of the subparagraphs of | | |
| | | this Sec | ction. Submit this plot(s). | | |
| Remark | | | | | |
| Result | | Pass | ☐ Fail | | |
| | | | | | |
| Test Data | Y | es | □ _{N/A} | | |
| Test Plot | V | es (See below) | N/A | | |

Measurement result

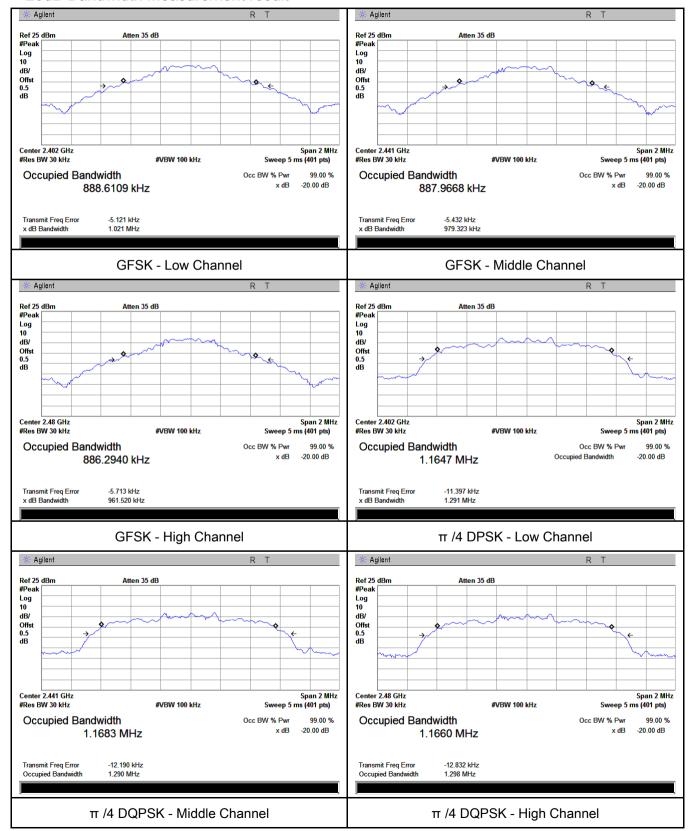
| Modulation | СН | CH Frequency | 20dB Bandwidth | 99% Occupied |
|------------|------|--------------|----------------|-----------------|
| Modulation | СН | (MHz) | (MHz) | Bandwidth (MHz) |
| | Low | 2402 | 1.021 | 0.8886 |
| GFSK | Mid | 2441 | 0.9793 | 0.8879 |
| | High | 2480 | 0.9615 | 0.8863 |
| π /4 DQPSK | Low | 2402 | 1.291 | 1.1647 |
| | Mid | 2441 | 1.290 | 1.1683 |
| | High | 2480 | 1.298 | 1.1660 |
| 8-DPSK | Low | 2402 | 1.293 | 1.1709 |
| | Mid | 2441 | 1.295 | 1.1766 |
| | High | 2480 | 1.299 | 1.1836 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 17 of 68 |

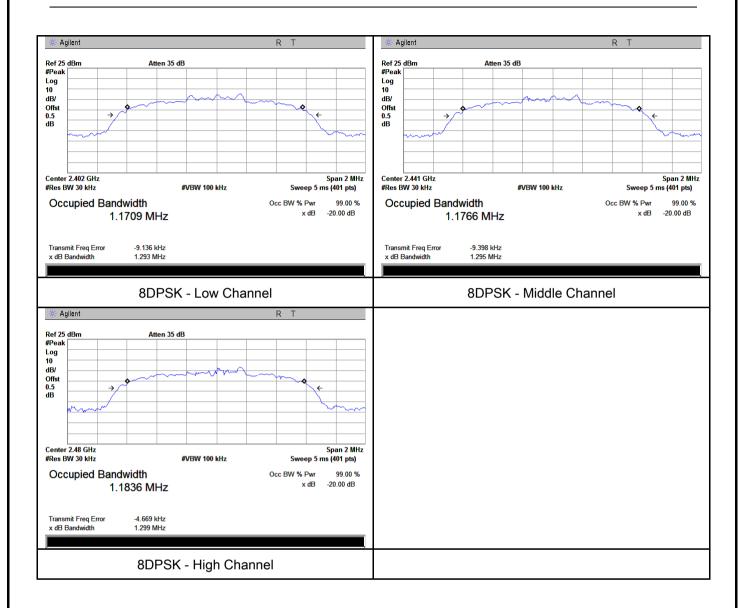
Test Plots

20dB Bandwidth measurement result





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 18 of 68 |





| Test Report | 17071233-FCC-R2 | |
|-------------|-----------------|--|
| Page | 19 of 68 | |

6.4 Peak Output Power

| Temperature | 25 °C |
|----------------------|-------------------|
| Relative Humidity | 57% |
| Atmospheric Pressure | 1014mbar |
| Test date : | November 20, 2017 |
| Tested By : | Aaron Liang |

Requirement(s):

| Spec | Item | Requirement Applicable | | | |
|-------------|---|---|---|--|--|
| | 2) | FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤ 1 | | | |
| | a) | Watt | Y | | |
| | b) | FHSS in 5725-5850MHz: ≤ 1 Watt | | | |
| \$45 047/b) | 6) | For all other FHSS in the 2400-2483.5MHz band: | 1 | | |
| §15.247(b) | c) | ≤ 0.125 Watt. | | | |
| (3) | d) | FHSS in 902-928MHz with ≥ 50 channels: ≤ 1 Watt | | | |
| | ٥) | FHSS in 902-928MHz with ≥ 25 & <50 channels: | 1 | | |
| | e) | ≤ 0.25 Watt | | | |
| | f) | DTS in 902-928MHz, 2400-2483.5MHz: ≤ 1 Watt | | | |
| Test Setup | | | | | |
| | | Spectrum Analyzer EUT | | | |
| | The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Use the following spectrum analyzer settings: | | | | |
| | | | | | |
| | - Span = approximately 5 times the 20 dB bandwidth, centered on a | | | | |
| | | hopping channel | | | |
| Test | - RBW > the 20 dB bandwidth of the emission being measured | | | | |
| Procedure | - VBW ≥ RBW | | | | |
| | - Sweep = auto | | | | |
| | - Detector function = peak | | | | |
| | - | - Trace = max hold | | | |
| | - Allow the trace to stabilize. | | | | |
| | - | Allow the trace to stabilize. | | | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 20 of 68 |

| | | - Use the | e marker-to-peak function to set the marker to the peak of the |
|-----------|---|-----------|--|
| | | emissi | on. The indicated level is the peak output power (see the note |
| | | above | regarding external attenuation and cable loss). The limit is |
| | | specific | ed in one of the subparagraphs of this Section. Submit this |
| | | plot. A | peak responding power meter may be used instead of a |
| | | spectru | ım analyzer. |
| Remark | | | |
| Result | | Pass | Fail |
| | | | |
| Test Data | Y | es | N/A |

Peak Output Power measurement result

Test Plot Yes (See below)

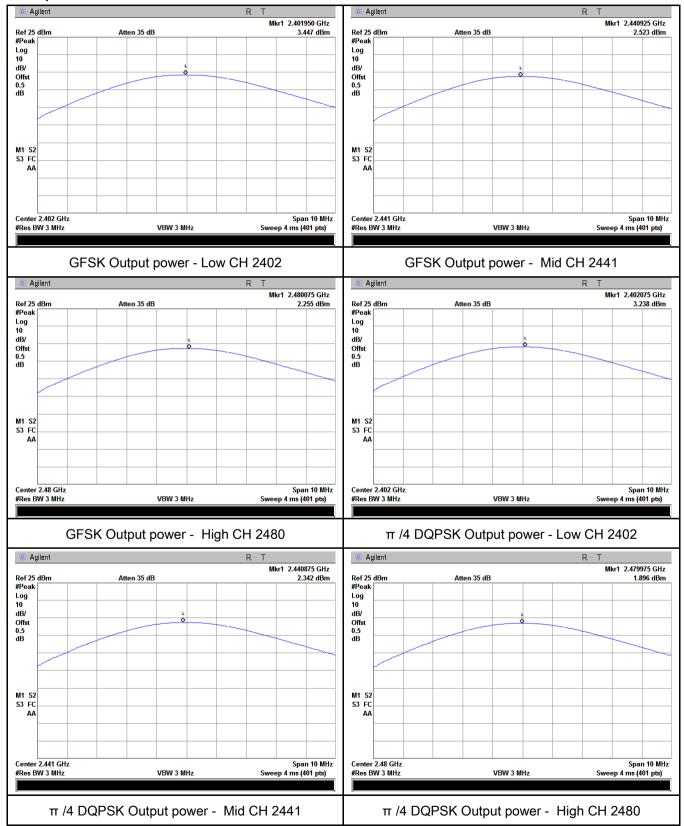
| Туре | Modulation | СН | Frequenc y (MHz) | Conducted Power (dBm) | Limit (mW) | Result |
|---------|----------------------|------|---------------------|-----------------------|---------------|--------|
| | | Low | 2402 | 3.447 | 125 | Pass |
| | GFSK | Mid | 2441 | 2.523 | 1000 | Pass |
| | | High | 2480 | 2.255 | 1000 | Pass |
| Outtout | | Low | 2402 | 3.238 | 125 | Pass |
| Output | π /4 DQPSK 8-DPSK | Mid | 2441 | 2.342 | 125 | Pass |
| power | | High | 2480 | 1.896 | 125 | Pass |
| | | Low | 2402 | 3.353 | 125 | Pass |
| | | Mid | 2441 | 2.435 | 125 | Pass |
| | | High | 2480 | 1.992 | 125 | Pass |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 21 of 68 |

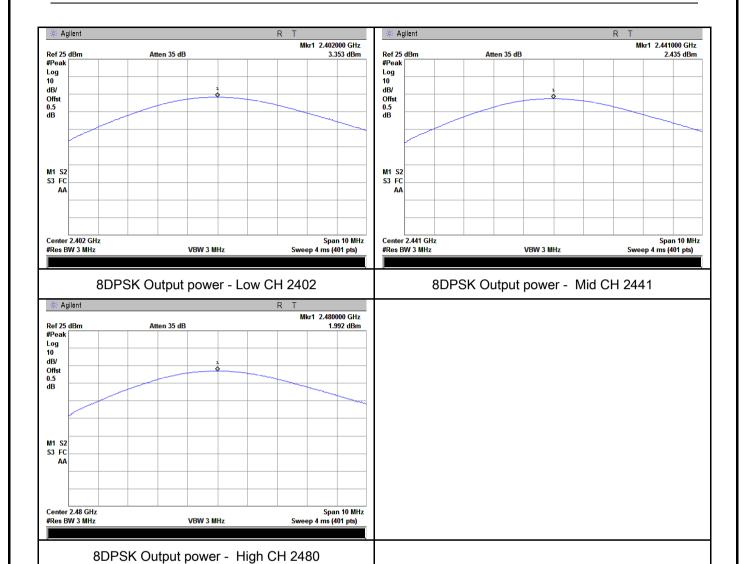
Test Plots

Output Power measurement result





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 22 of 68 |





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 23 of 68 |

6.5 Number of Hopping Channel

| Temperature | 25 °C |
|----------------------|-------------------|
| Relative Humidity | 57% |
| Atmospheric Pressure | 1014mbar |
| Test date : | November 20, 2017 |
| Tested By : | Aaron Liang |

| Requirement(s): | | | | | | |
|---------------------|--|---|------------|--|--|--|
| Spec | Item Requirement Applic | | Applicable | | | |
| §15.247(a) (1)(iii) | a) | FHSS in 2400-2483.5MHz ≥ 15 channels | V | | | |
| Test Setup | Spectrum Analyzer EUT | | | | | |
| | The tes | st follows FCC Public Notice DA 00-705 Measurement Gu | idelines. | | | |
| | Use the | e following spectrum analyzer settings: | | | | |
| | The El | JT must have its hopping function enabled. | | | | |
| | - | Span = the frequency band of operation | | | | |
| | - RBW ≥ 1% of the span | | | | | |
| Tant | - VBW ≥ RBW | | | | | |
| Test Procedure | - Sweep = auto | | | | | |
| Procedure | - | - Detector function = peak | | | | |
| | - Trace = max hold | | | | | |
| | - | Allow trace to fully stabilize. | | | | |
| | - It may prove necessary to break the span up to sections, in order to | | | | | |
| | clearly show all of the hopping frequencies. The limit is specified in | | | | | |
| | one of the subparagraphs of this Section. Submit this plot(s). | | | | | |
| Remark | | | | | | |
| Result | Pas | s Fail | | | | |
| Test Data | Yes | N/A | | | | |
| Test Plot | Yes (See | below) N/A | | | | |



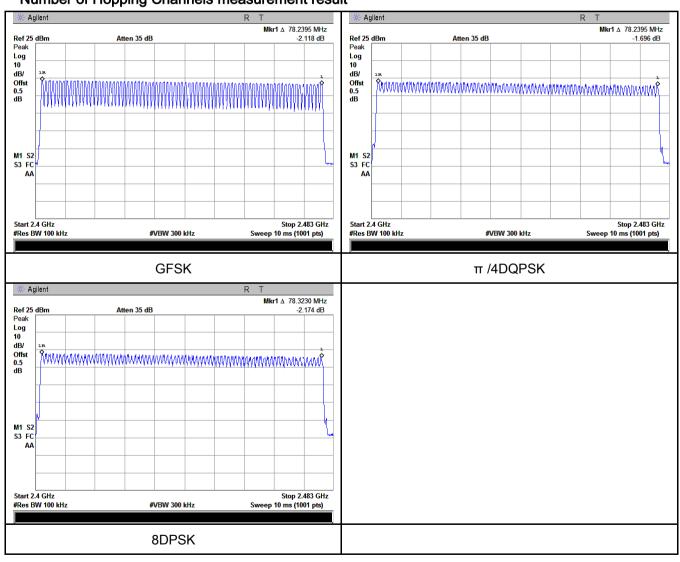
| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 24 of 68 |

Number of Hopping Channel measurement result

| Туре | Modulation | Frequency Range | Number of Hopping Channel | Limit |
|---------------------------|------------|-----------------|------------------------------|-------|
| Number of Hopping Channel | GFSK | 2400-2483.5 | 79 | 15 |
| | π /4 DQPSK | 2400-2483.5 | 79 | 15 |
| | 8-DPSK | 2400-2483.5 | 79 | 15 |

Test Plots

Number of Hopping Channels measurement result





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 25 of 68 |

6.6 Time of Occupancy (Dwell Time)

| Temperature | 25 °C |
|----------------------|-------------------|
| Relative Humidity | 55% |
| Atmospheric Pressure | 1017mbar |
| Test date : | November 23, 2017 |
| Tested By : | Aaron Liang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|---------------------|---------|--|------------|
| §15.247(a) (1)(iii) | a) | Dwell Time < 0.4s | V |
| Test Setup | | Spectrum Analyzer EUT | |
| Test Procedure | Use the | st follows FCC Public Notice DA 00-705 Measurement G e following spectrum analyzer Span = zero span, centered on a hopping channel RBW = 1 MHz VBW ≥ RBW Sweep = as necessary to capture the entire dwell time p channel Detector function = peak Trace = max hold use the marker-delta function to determine the dwell time | er hopping |
| Remark | | | |
| Result | Pas | s Fail | |

| Test Data | Yes | □ _{N/A} |
|-----------|-----------------|------------------|
| Test Plot | Yes (See below) | □ _{N/A} |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 26 of 68 |

Dwell Time measurement result

| Туре | Modulation | СН | Pulse Width (ms) | Dwell Time (ms) | Limit (ms) | Result |
|------------|----------------------|------|------------------|--------------------|---------------|--------|
| | | Low | 2.91 | 310.400 | 400 | Pass |
| | GFSK | Mid | 2.90 | 309.333 | 400 | Pass |
| | | High | 2.91 | 310.400 | 400 | Pass |
| | π /4 DQPSK 8-DPSK | Low | 2.92 | 311.467 | 400 | Pass |
| Dwell Time | | Mid | 2.89 | 308.267 | 400 | Pass |
| | | High | 2.91 | 310.400 | 400 | Pass |
| | | Low | 2.93 | 312.533 | 400 | Pass |
| | | Mid | 2.90 | 309.333 | 400 | Pass |
| | | High | 2.91 | 310.400 | 400 | Pass |

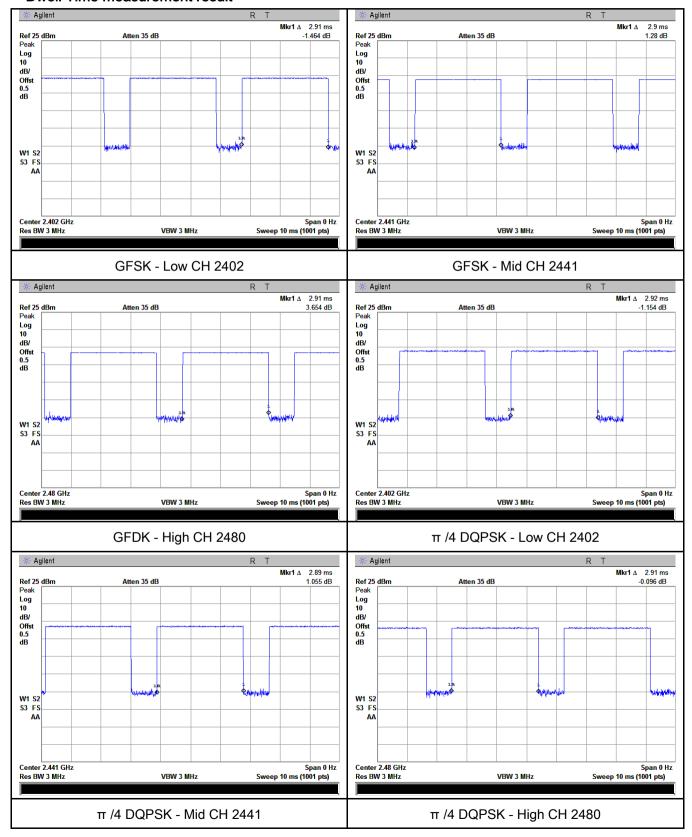
Note: Dwell time=Pulse Time (ms) × (1600 \div 6 \div 79) ×31.6



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 27 of 68 |

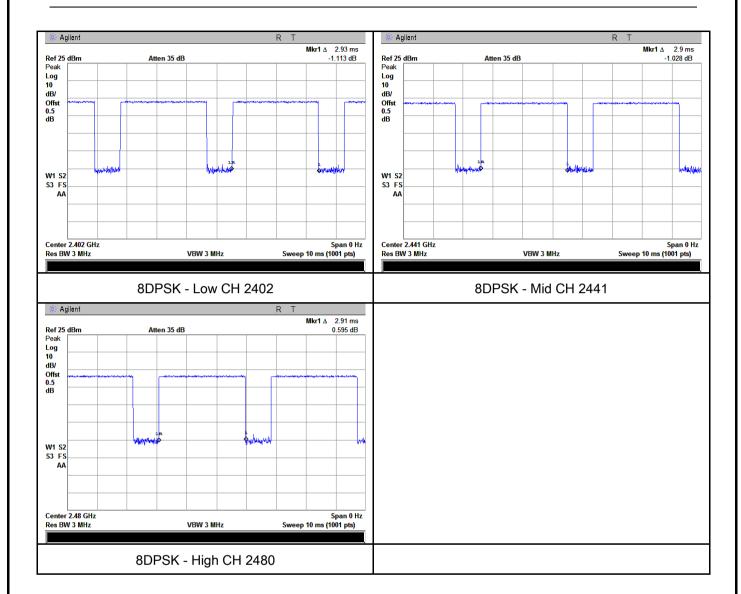
Test Plots

Dwell Time measurement result





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 28 of 68 |





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 29 of 68 |

6.7 Band Edge & Restricted Band

| Temperature | 25 °C |
|----------------------|-------------------|
| Relative Humidity | 57% |
| Atmospheric Pressure | 1016mbar |
| Test date : | November 17, 2017 |
| Tested By: | Aaron Liang |

Requirement(s):

| Spec | Item | Requirement | Applicable |
|------------------------|---|---|-------------|
| §15.247(a) (1)(iii) | a) | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. | > |
| Test Setup | Ant. Tower Support Units Turn Table Ground Plane Test Receiver | | |
| Test Procedure | The test follows FCC Public Notice DA 00-705 Measurement Guidelines. Radiated Method Only - 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator. - 2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, | | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 30 of 68 |

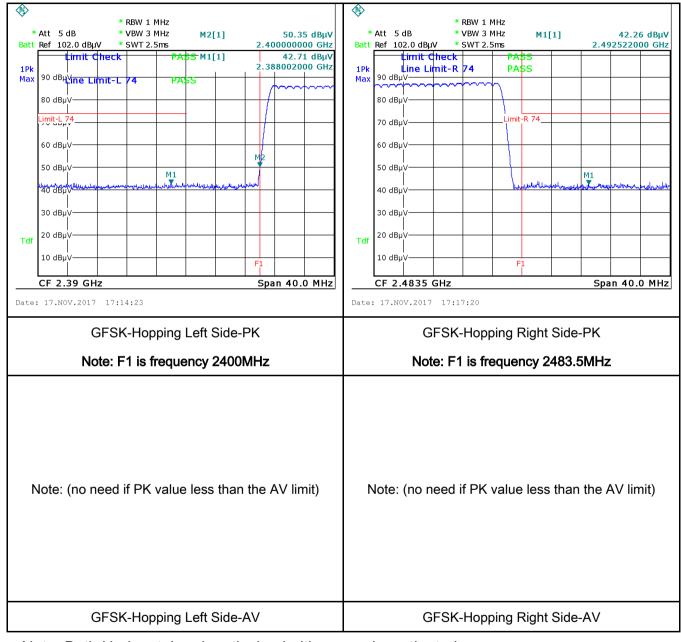
| | and make sure the instrument is operated in its linear range. |
|-----------|--|
| | - 3. First, set both RBW and VBW of spectrum analyzer to 100 kHz with a |
| | convenient frequency span including 100kHz bandwidth from band edge, check |
| | the emission of EUT, if pass then set Spectrum Analyzer as below: |
| | a. The resolution bandwidth and video bandwidth of test receiver/spectrum |
| | analyzer is 120 kHz for Quasiy Peak detection at frequency below 1GHz. |
| | b. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and |
| | video bandwidth is 3MHz with Peak detection for Peak measurement at |
| | frequency above 1GHz. |
| | c. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the |
| | video bandwidth is 10Hz with Peak detection for Average Measurement as |
| | below at frequency above 1GHz. |
| | - 4. Measure the highest amplitude appearing on spectral display and set it as a |
| | reference level. Plot the graph with marking the highest point and edge |
| | frequency. |
| | - 5. Repeat above procedures until all measured frequencies were complete. |
| Remark | |
| Result | Pass Fail |
| | |
| Test Data | Yes ▼ _{N/A} |
| Test Plot | Yes (See below) |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 31 of 68 |

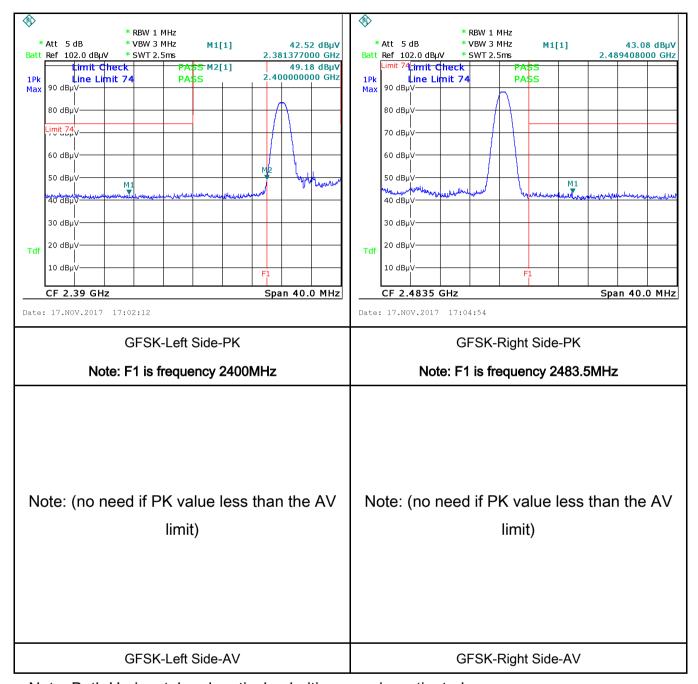
Test Plots

GFSK Mode:





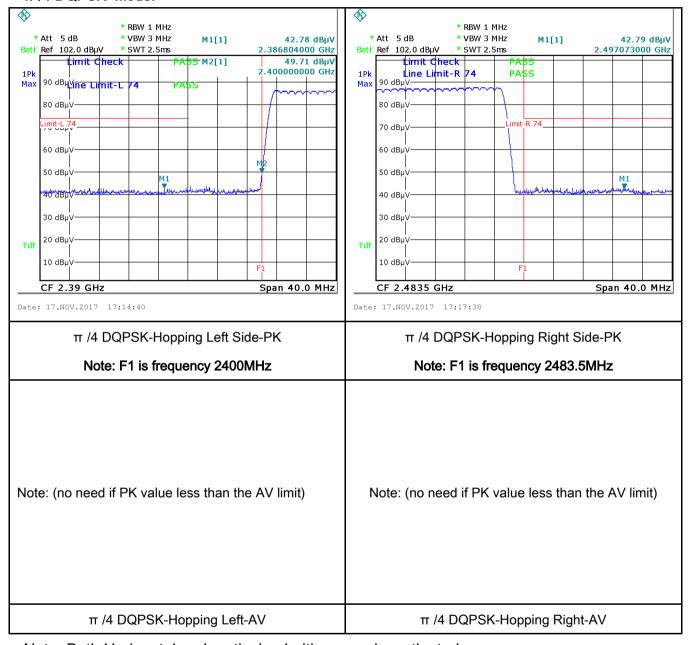
| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 32 of 68 |





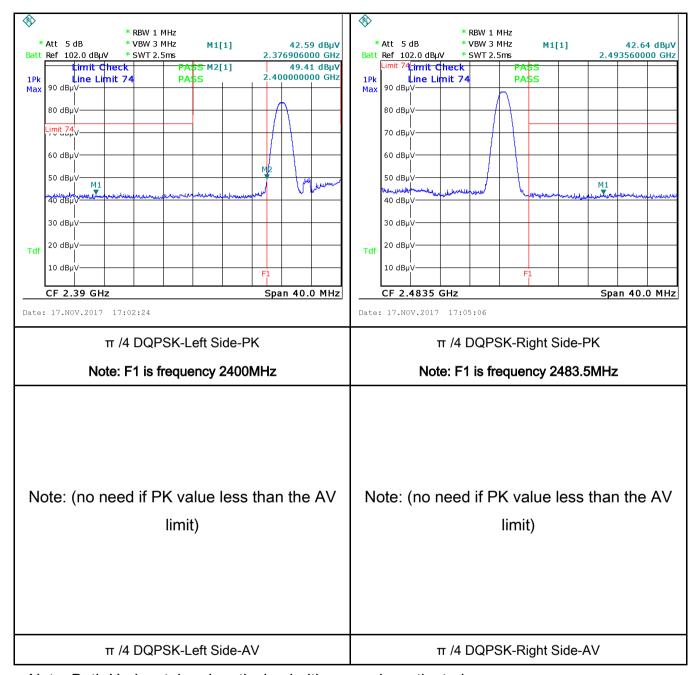
| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 33 of 68 |

π /4 DQPSK Mode:





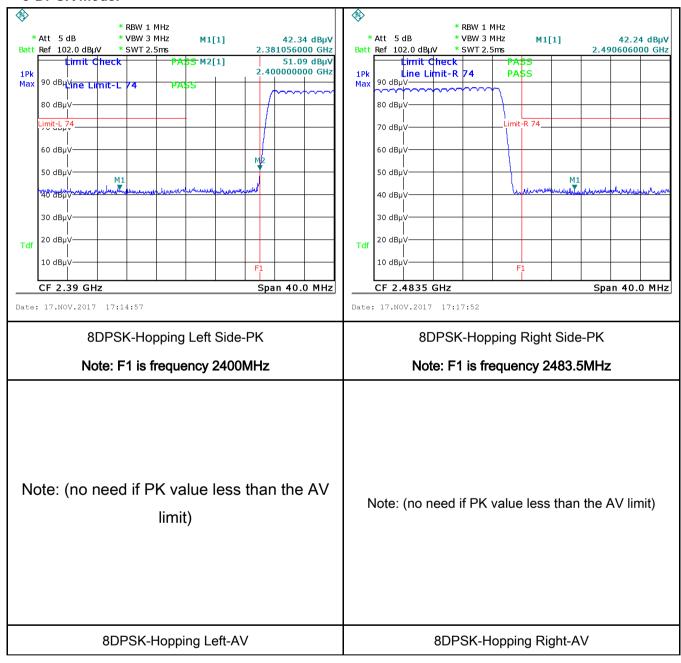
| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 34 of 68 |





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 35 of 68 |

8-DPSK Mode:





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 36 of 68 |





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 37 of 68 |

6.8 AC Power Line Conducted Emissions

| Temperature | 24 °C |
|----------------------|-------------------|
| Relative Humidity | 53% |
| Atmospheric Pressure | 1010mbar |
| Test date : | November 15, 2017 |
| Tested By : | Aaron Liang |

Requirement(s):

| Spec | Item | Requirement Applicable | | | | |
|---------------------------------------|---|---|---------------|---------------|--|--|
| 47CFR§15. 207, RSS210 (A8.1) | a) | For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequencies ranges. Frequency ranges Limit (dBµV) | | | | |
| | | (MHz) | QP | Average | | |
| | | 0.15 ~ 0.5 0.5 ~ 5 | 66 – 56 56 | 56 – 46 46 | | |
| | | 5 ~ 30 60 50 | | | | |
| Test Setup | | Vertical Ground Reference Plane Horizontal Ground Reference Plane Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm | | | | |
| Procedure | The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table. The power supply for the EUT was fed through a 50W/50mH EUT LISN, connected to filtered mains. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss | | | | | |



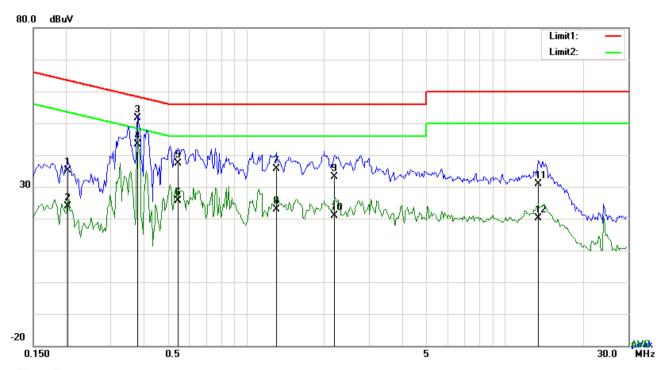
| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 38 of 68 |

| _ | | | | | | | |
|-----------|---|--|--|--|--|--|--|
| | coaxial cable. | | | | | | |
| | 4. All other supporting equipment were powered separately from another main supply. | | | | | | |
| | he EUT was switched on and allowed to warm up to its normal operating condition. | | | | | | |
| | 6. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) | | | | | | |
| | over the required frequency range using an EMI test receiver. | | | | | | |
| | 7. High peaks, relative to the limit line, The EMI test receiver was then tuned to the | | | | | | |
| | selected frequencies and the necessary measurements made with a receiver bandwidth | | | | | | |
| | setting of 10 kHz. | | | | | | |
| | 8. Step 7 was then repeated for the LIVE line (for AC mains) or DC line (for DC power). | | | | | | |
| Remark | | | | | | | |
| Result | Pass Fail | | | | | | |
| | | | | | | | |
| Test Data | Yes N/A | | | | | | |
| Test Plot | Yes (See below) | | | | | | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 39 of 68 |

| Test Mode: | Bluetooth Mode |
|------------|----------------|
| | |



Test Data

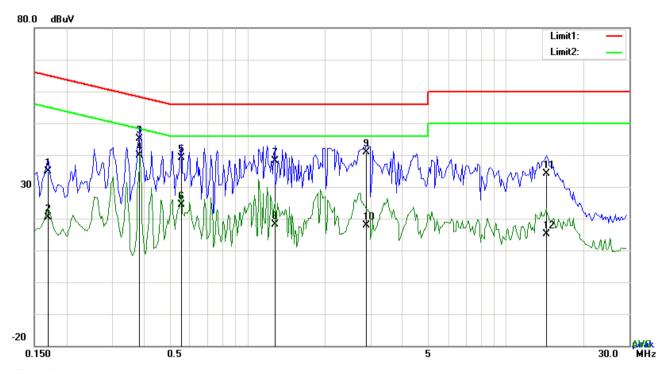
Phase Line Plot at 120Vac, 60Hz

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
| | | (MHz) | (dBuV) | | (dB} | (dBuV) | (dBuV) | (dB) |
| 1 | L1 | 0.2046 | 25.18 | QP | 10.03 | 35.21 | 63.42 | -28.21 |
| 2 | L1 | 0.2046 | 13.78 | AVG | 10.03 | 23.81 | 53.42 | -29.61 |
| 3 | L1 | 0.3801 | 41.54 | QP | 10.03 | 51.57 | 58.28 | -6.71 |
| 4 | L1 | 0.3801 | 33.44 | AVG | 10.03 | 43.47 | 48.28 | -4.81 |
| 5 | L1 | 0.5439 | 27.28 | QP | 10.03 | 37.31 | 56.00 | -18.69 |
| 6 | L1 | 0.5439 | 15.53 | AVG | 10.03 | 25.56 | 46.00 | -20.44 |
| 7 | L1 | 1.3083 | 25.50 | QP | 10.03 | 35.53 | 56.00 | -20.47 |
| 8 | L1 | 1.3083 | 12.74 | AVG | 10.03 | 22.77 | 46.00 | -23.23 |
| 9 | L1 | 2.2014 | 23.00 | QP | 10.05 | 33.05 | 56.00 | -22.95 |
| 10 | L1 | 2.2014 | 10.71 | AVG | 10.05 | 20.76 | 46.00 | -25.24 |
| 11 | L1 | 13.4442 | 20.63 | QP | 10.20 | 30.83 | 60.00 | -29.17 |
| 12 | L1 | 13.4442 | 9.95 | AVG | 10.20 | 20.15 | 50.00 | -29.85 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 40 of 68 |

| Test Mode: | Bluetooth Mode |
|------------|----------------|
| | |



Test Data

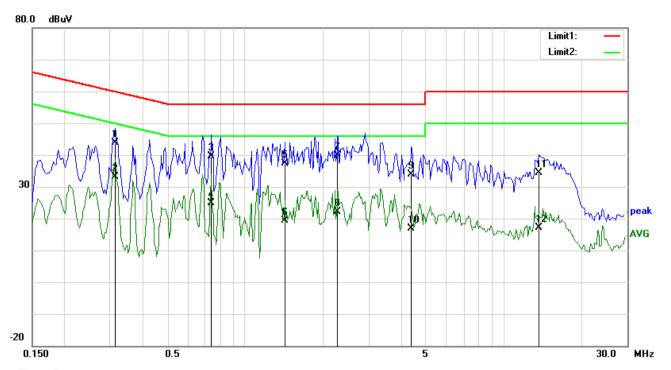
Phase Neutral Plot at 120Vac, 60Hz

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
| | | (MHz) | (dBuV) | | (dB} | (dBuV) | (dBuV) | (dB) |
| 1 | N | 0.1695 | 24.78 | QP | 10.02 | 34.80 | 64.98 | -30.18 |
| 2 | N | 0.1695 | 10.26 | AVG | 10.02 | 20.28 | 54.98 | -34.70 |
| 3 | N | 0.3840 | 35.10 | QP | 10.02 | 45.12 | 58.19 | -13.07 |
| 4 | N | 0.3840 | 29.83 | AVG | 10.02 | 39.85 | 48.19 | -8.34 |
| 5 | N | 0.5556 | 29.13 | QP | 10.02 | 39.15 | 56.00 | -16.85 |
| 6 | N | 0.5556 | 14.29 | AVG | 10.02 | 24.31 | 46.00 | -21.69 |
| 7 | N | 1.2810 | 28.15 | QP | 10.03 | 38.18 | 56.00 | -17.82 |
| 8 | N | 1.2810 | 8.15 | AVG | 10.03 | 18.18 | 46.00 | -27.82 |
| 9 | N | 2.8995 | 30.72 | QP | 10.05 | 40.77 | 56.00 | -15.23 |
| 10 | N | 2.8995 | 7.87 | AVG | 10.05 | 17.92 | 46.00 | -28.08 |
| 11 | N | 14.3568 | 23.94 | QP | 10.19 | 34.13 | 60.00 | -25.87 |
| 12 | N | 14.3568 | 5.05 | AVG | 10.19 | 15.24 | 50.00 | -34.76 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 41 of 68 |

| Test Mode: |
|------------|
|------------|



Test Data

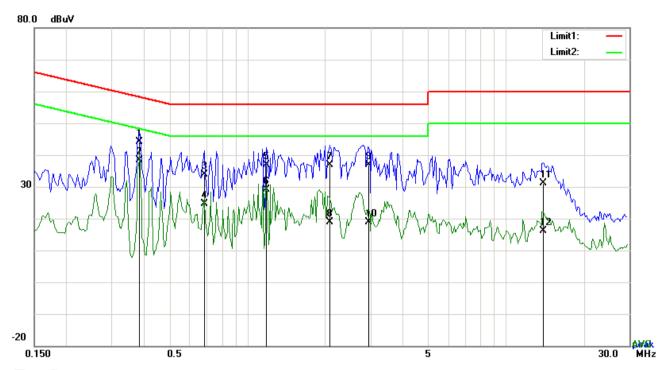
Phase Line Plot at 240Vac, 60Hz

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
| | | (MHz) | (dBuV) | | (dB} | (dBuV) | (dBuV) | (dB) |
| 1 | L1 | 0.3138 | 33.84 | QP | 10.03 | 43.87 | 59.87 | -16.00 |
| 2 | L1 | 0.3138 | 23.19 | AVG | 10.03 | 33.22 | 49.87 | -16.65 |
| 3 | L1 | 0.7428 | 29.56 | QP | 10.03 | 39.59 | 56.00 | -16.41 |
| 4 | L1 | 0.7428 | 14.76 | AVG | 10.03 | 24.79 | 46.00 | -21.21 |
| 5 | L1 | 1.4253 | 27.28 | QP | 10.04 | 37.32 | 56.00 | -18.68 |
| 6 | L1 | 1.4253 | 9.41 | AVG | 10.04 | 19.45 | 46.00 | -26.55 |
| 7 | L1 | 2.2833 | 29.89 | QP | 10.05 | 39.94 | 56.00 | -16.06 |
| 8 | L1 | 2.2833 | 12.19 | AVG | 10.05 | 22.24 | 46.00 | -23.76 |
| 9 | L1 | 4.4001 | 23.75 | QP | 10.07 | 33.82 | 56.00 | -22.18 |
| 10 | L1 | 4.4001 | 6.76 | AVG | 10.07 | 16.83 | 46.00 | -29.17 |
| 11 | L1 | 13.6782 | 24.08 | QP | 10.21 | 34.29 | 60.00 | -25.71 |
| 12 | L1 | 13.6782 | 6.90 | AVG | 10.21 | 17.11 | 50.00 | -32.89 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 42 of 68 |

| Test Mode: | Bluetooth Mode |
|------------|----------------|
| | |



Test Data

Phase Neutral Plot at 240Vac, 60Hz

| No. | P/L | Frequency | Reading | Detector | Corrected | Result | Limit | Margin |
|-----|-----|-----------|---------|----------|-----------|--------|--------|--------|
| | | (MHz) | (dBuV) | | (dB) | (dBuV) | (dBuV) | (dB) |
| 1 | N | 0.3840 | 34.06 | QP | 10.02 | 44.08 | 58.19 | -14.11 |
| 2 | N | 0.3840 | 28.35 | AVG | 10.02 | 38.37 | 48.19 | -9.82 |
| 3 | N | 0.6843 | 23.81 | QP | 10.02 | 33.83 | 56.00 | -22.17 |
| 4 | N | 0.6843 | 14.56 | AVG | 10.02 | 24.58 | 46.00 | -21.42 |
| 5 | N | 1.1874 | 26.78 | QP | 10.03 | 36.81 | 56.00 | -19.19 |
| 6 | N | 1.1874 | 19.20 | AVG | 10.03 | 29.23 | 46.00 | -16.77 |
| 7 | N | 2.0805 | 26.94 | QP | 10.04 | 36.98 | 56.00 | -19.02 |
| 8 | N | 2.0805 | 8.96 | AVG | 10.04 | 19.00 | 46.00 | -27.00 |
| 9 | N | 2.9463 | 26.81 | QP | 10.05 | 36.86 | 56.00 | -19.14 |
| 10 | N | 2.9463 | 8.87 | AVG | 10.05 | 18.92 | 46.00 | -27.08 |
| 11 | N | 13.9200 | 20.98 | QP | 10.19 | 31.17 | 60.00 | -28.83 |
| 12 | N | 13.9200 | 5.93 | AVG | 10.19 | 16.12 | 50.00 | -33.88 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 43 of 68 |

6.9 Radiated Emissions & Restricted Band

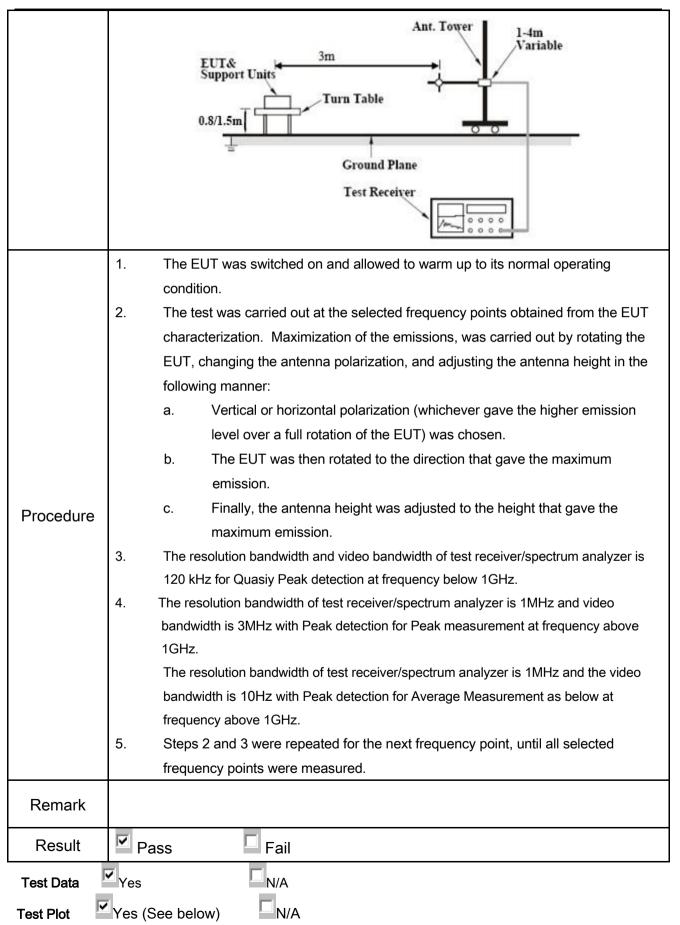
| Temperature | 25 °C |
|----------------------|-------------------|
| Relative Humidity | 58% |
| Atmospheric Pressure | 1016mbar |
| Test date : | November 16, 2017 |
| Tested By : | Aaron Liang |

Requirement(s):

| Spec | Item | Requirement Applicable | | | |
|------------|------|---|-----------------------------------|--|--|
| 47CFR§15. | | Except higher limit as specified else emissions from the low-power radio exceed the field strength levels specified the level of any unwanted emissions the fundamental emission. The tight edges | | | |
| 205, | a) | Frequency range (MHz) 0.009~0.490 | Field Strength (μV/m) 2400/F(KHz) | V | |
| §15.209, | | 0.490~1.705 | 24000/F(KHz) | | |
| §15.247(d) | | 1.705~30.0 | 30 | | |
| | | 30 - 88 | 100 | | |
| | | 88 – 216 | 150 | | |
| | | 216 960 | 200 | | |
| | | Above 960 | 500 | | |
| Test Setup | | EUT 6 | 3 meter RF Test Receive | \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ | |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 44 of 68 |





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 45 of 68 |

Test Result:

Test Mode: Transmitting Mode

Frequency range: 9KHz - 30MHz

| Freq. | Detection | Factor | Reading | Result | Limit@3m | Margin |
|-------|-----------|--------|----------|----------|----------|--------|
| (MHz) | value | (dB/m) | (dBuV/m) | (dBuV/m) | (dBuV/m) | (dB) |
| | | | | | | >20 |
| | | | | | | >20 |

Note:

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

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

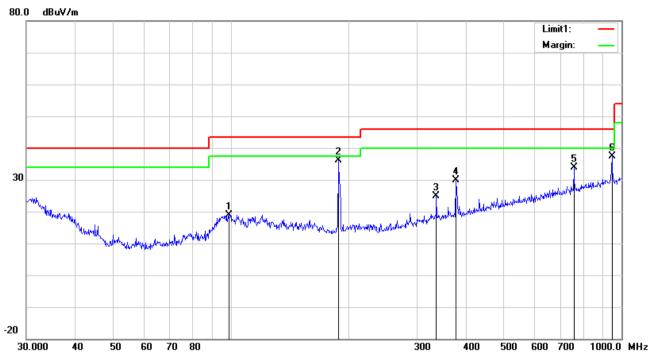
Limit line = specific limits(dBuv) + distance extrapolation factor.



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 46 of 68 |

Test Mode: Bluetooth Mode

30MHz -1GHz



Test Data

Horizontal Polarity Plot @3m

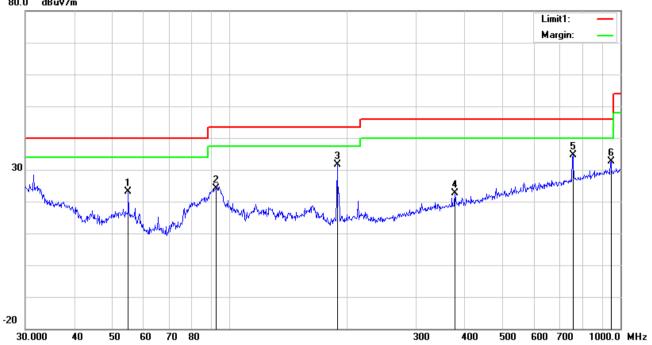
| No. | P/L | Frequency | Reading | Detect | Ant_F | PA_G | Cab_L | Result | Limit | Margin | Height | Degr |
|-----|-----|-----------|----------|--------|--------|-------|-------|----------|----------|--------|--------|------|
| | | | | or | | | | | | | | ee |
| | | (MHz) | (dBuV/m) | | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | () |
| 1 | Н | 98.8326 | 30.11 | peak | 10.12 | 22.32 | 1.09 | 19.00 | 43.50 | -24.50 | 100 | 87 |
| 2 | Н | 188.4125 | 45.51 | peak | 11.46 | 22.30 | 1.51 | 36.18 | 43.50 | -7.32 | 100 | 73 |
| 3 | Н | 336.0352 | 30.71 | peak | 14.36 | 22.19 | 1.97 | 24.85 | 46.00 | -21.15 | 100 | 71 |
| 4 | Н | 377.2591 | 34.74 | peak | 15.22 | 22.07 | 2.02 | 29.91 | 46.00 | -16.09 | 100 | 239 |
| 5 | Н | 755.3873 | 31.38 | peak | 20.86 | 21.24 | 2.88 | 33.88 | 46.00 | -12.12 | 100 | 356 |
| 6 | Н | 945.4399 | 32.40 | peak | 22.73 | 20.79 | 3.16 | 37.50 | 46.00 | -8.50 | 100 | 12 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 47 of 68 |

30MHz -1GHz





Test Data

Vertical Polarity Plot @3m

| No. | P/L | Frequency | Reading | Detect | Ant_F | PA_G | Cab_L | Result | Limit | Margin | Height | Degr |
|-----|-----|-----------|----------|--------|--------|-------|-------|----------|----------|--------|--------|------|
| | | (MHz) | (dBuV/m) | or | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | () |
| 1 | ٧ | 55.0274 | 36.96 | peak | 7.85 | 22.40 | 0.78 | 23.19 | 40.00 | -16.81 | 100 | 71 |
| 2 | ٧ | 92.4624 | 36.77 | peak | 8.59 | 22.32 | 0.97 | 24.01 | 43.50 | -19.49 | 200 | 275 |
| 3 | V | 188.4125 | 40.92 | peak | 11.46 | 22.30 | 1.51 | 31.59 | 43.50 | -11.91 | 100 | 12 |
| 4 | ٧ | 377.2591 | 27.44 | peak | 15.22 | 22.07 | 2.02 | 22.61 | 46.00 | -23.39 | 100 | 341 |
| 5 | V | 755.3873 | 32.09 | peak | 20.86 | 21.24 | 2.88 | 34.59 | 46.00 | -11.41 | 100 | 286 |
| 6 | V | 945.4399 | 27.48 | peak | 22.73 | 20.79 | 3.16 | 32.58 | 46.00 | -13.42 | 100 | 274 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 48 of 68 |

Above 1GHz

| Test Mode: Transmitting Mode |
|------------------------------|
|------------------------------|

Low Channel: GFSK Mode (Worst Case) (2402 MHz)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre- Amp. Gain (dB) | Cord. Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|--------------------|---------------------------|---------------------|-------------------|--------------------------|-----------------------|------------------------------|---------------------------|-------------------|----------------|
| 4804 | 39.31 | AV | V | 33.39 | 7.22 | 48.46 | 31.46 | 54 | -22.54 |
| 4804 | 39.7 | AV | Н | 33.39 | 7.22 | 48.46 | 31.85 | 54 | -22.15 |
| 4804 | 48.34 | PK | V | 33.39 | 7.22 | 48.46 | 40.49 | 74 | -33.51 |
| 4804 | 45.88 | PK | Н | 33.39 | 7.22 | 48.46 | 38.03 | 74 | -35.97 |
| 17807 | 24.37 | AV | V | 42.12 | 16.99 | 45.88 | 37.6 | 54 | -16.4 |
| 17807 | 24.94 | AV | Н | 42.12 | 16.99 | 45.88 | 38.17 | 54 | -15.83 |
| 17807 | 40.32 | PK | V | 42.12 | 16.99 | 45.88 | 53.55 | 74 | -20.45 |
| 17807 | 42.1 | PK | Н | 42.12 | 16.99 | 45.88 | 55.33 | 74 | -18.67 |

Middle Channel: 8-DPSK Mode (Worst Case) (2441 MHz)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre- Amp. Gain (dB) | Cord. Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|--------------------|---------------------------|---------------------|-------------------|--------------------------|-----------------------|------------------------------|---------------------------|-------------------|----------------|
| 4882 | 47.43 | AV | V | 33.62 | 7.53 | 48.36 | 40.22 | 54 | -13.78 |
| 4882 | 47.54 | AV | Η | 33.62 | 7.53 | 48.36 | 40.33 | 54 | -13.67 |
| 4882 | 65.27 | PK | V | 33.62 | 7.53 | 48.36 | 58.06 | 74 | -15.94 |
| 4882 | 66.18 | PK | Ι | 33.62 | 7.53 | 48.36 | 58.97 | 74 | -15.03 |
| 13973 | 19.98 | AV | V | 40.48 | 12.83 | 46.39 | 26.9 | 54 | -27.1 |
| 13973 | 18.23 | AV | Н | 40.48 | 12.83 | 46.39 | 25.15 | 54 | -28.85 |
| 13973 | 40.44 | PK | V | 40.48 | 12.83 | 46.39 | 47.36 | 74 | -26.64 |
| 13973 | 41.14 | PK | Η | 40.48 | 12.83 | 46.39 | 48.06 | 74 | -25.94 |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 49 of 68 |

High Channel: 8-DPSK Mode (Worst Case) (2480 MHz)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre- Amp. Gain (dB) | Cord. Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|--------------------|---------------------------|---------------------|-------------------|--------------------------|-----------------------|------------------------------|---------------------------|-------------------|----------------|
| 4960 | 45.42 | AV | V | 33.89 | 7.86 | 48.31 | 38.86 | 54 | -15.14 |
| 4960 | 47.9 | AV | Н | 33.89 | 7.86 | 48.31 | 41.34 | 54 | -12.66 |
| 4960 | 70.57 | PK | V | 33.89 | 7.86 | 48.31 | 64.01 | 74 | -9.99 |
| 4960 | 62.17 | PK | Н | 33.89 | 7.86 | 48.31 | 55.61 | 74 | -18.39 |
| 13335 | 20.04 | AV | V | 45.22 | 40.79 | 13.79 | 46.97 | 54 | -7.03 |
| 13335 | 20.64 | AV | Н | 45.22 | 40.79 | 13.79 | 46.97 | 54 | -7.03 |
| 13335 | 38.69 | PK | V | 45.22 | 40.79 | 13.79 | 46.97 | 74 | -27.03 |
| 13335 | 36.7 | PK | Н | 45.22 | 40.79 | 13.79 | 46.97 | 74 | -27.03 |

Note:

- 1, The testing has been conformed to 10*2480MHz=24,800MHz
- 2, All other emissions more than 30 dB below the limit
- 3, X-Axis, Y-Axis and Z-Axis were investigated. The results above show only the worst case.
- 4, The radiated spurious test above 18GHz is subcontracted to SIEMIC (Nanjing-China) Laboratories. and found 30dB below the limit at least.



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 50 of 68 |

Annex A. TEST INSTRUMENT

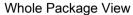
| Instrument | Model | Serial # | Cal Date | Cal Due | In use |
|---|----------|-------------|------------|------------|-------------|
| AC Line Conducted | | | | | |
| EMI test receiver | ESCS30 | 8471241027 | 09/15/2017 | 09/14/2018 | <u><</u> |
| Line Impedance | LI-125A | 191106 | 09/23/2017 | 09/22/2018 | • |
| Line Impedance | LI-125A | 191107 | 09/23/2017 | 09/22/2018 | > |
| ISN | ISN T800 | 34373 | 09/23/2017 | 09/22/2018 | |
| Transient Limiter | LIT-153 | 531118 | 08/30/2017 | 08/29/2018 | ✓ |
| RF conducted test | | | | | |
| Agilent ESA-E SERIES | E4407B | MY45108319 | 09/15/2017 | 09/14/2018 | > |
| Power Splitter | 1# | 1# | 08/30/2017 | 08/29/2018 | > |
| DC Power Supply | E3640A | MY40004013 | 09/15/2017 | 09/14/2018 | > |
| Radiated Emissions | | | | | |
| EMI test receiver | ESL6 | 100262 | 09/15/2017 | 09/14/2018 | > |
| Positioning Controller | UC3000 | MF780208282 | 11/17/2017 | 11/16/2018 | > |
| OPT 010 AMPLIFIER | 04475 | 0707400400 | 00/00/0047 | 00/00/0040 | |
| (0.1-1300MHz) | 8447E | 2727A02430 | 08/30/2017 | 08/29/2018 | > |
| Horn Antenna | BBHA9170 | 3145226D1 | 09/27/2017 | 09/26/2018 | <u><</u> |
| Microwave Preamplifier (1 ~ 26.5GHz) | 8449B | 3008A02402 | 03/23/2017 | 03/22/2018 | <u><</u> |
| Active Antenna (9kHz-30MHz) | AL-130 | 121031 | 10/12/2017 | 10/11/2018 | <u>\</u> |
| Bilog Antenna (30MHz~6GHz) | JB6 | A110712 | 09/19/2017 | 09/18/2018 | <u>\</u> |
| Double Ridge Horn Antenna (1 ~18GHz) | AH-118 | 71283 | 09/22/2017 | 09/21/2018 | Z. |
| Universal Radio Communication Tester | CMU200 | 121393 | 09/23/2017 | 09/22/2018 | > |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 51 of 68 |

Annex B. EUT And Test Setup Photographs

Annex B.i. Photograph: EUT External Photo





Adapter - Lable View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 52 of 68 |

EUT - Front View



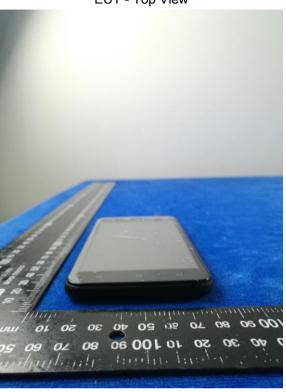
EUT - Rear View



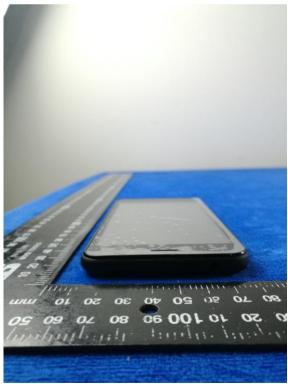


| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 53 of 68 |

EUT - Top View



EUT - Bottom View



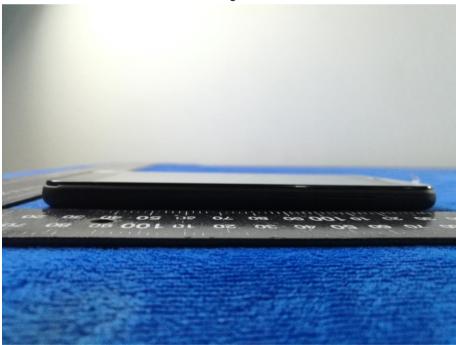


| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 54 of 68 |

EUT - Left View



EUT - Right View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 55 of 68 |

Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1



Cover Off - Top View 2





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 56 of 68 |

Battery - Front View



Battery - Rear View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 57 of 68 |

Mainboard with Shielding - Front View



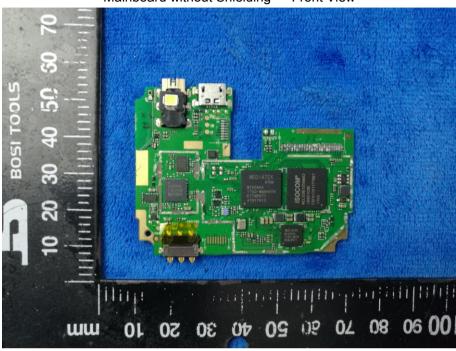
Mainboard with Shielding - Rear View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 58 of 68 |

Mainboard without Shielding - Front View



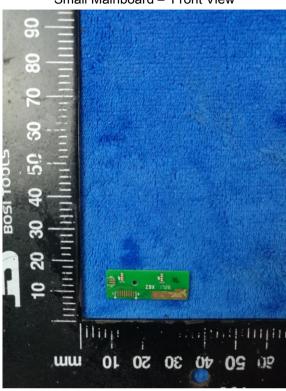
Mainboard without Shielding - Rear View



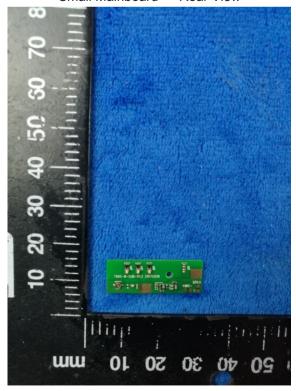


| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 59 of 68 |

Small Mainboard - Front View



Small Mainboard - Rear View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 60 of 68 |

LCD - Front View



LCD - Rear View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 61 of 68 |

GSM/PCS/UMTS-FDD - Antenna View



WIFI/BT/BLE/GPS - Antenna View





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 62 of 68 |

Annex B.iii. Photograph: Test Setup Photo



Conducted Emissions Test Setup Front View



Conducted Emissions Test Setup Side View



Radiated Spurious Emissions Test Setup Below 1GHz



Radiated Spurious Emissions Test Setup Above 1GHz

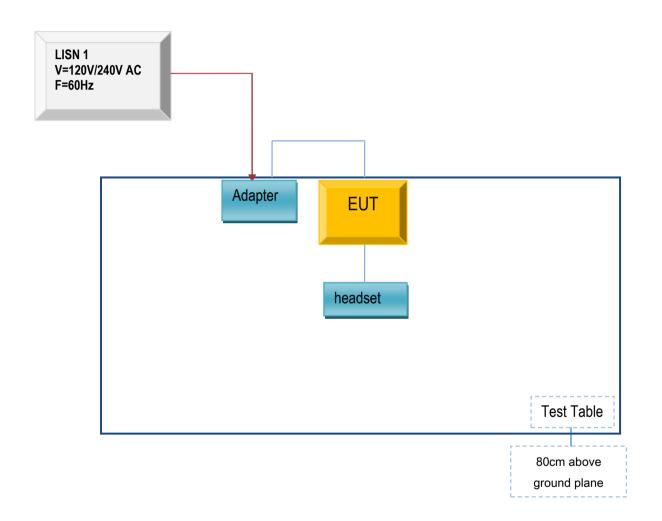


| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 63 of 68 |

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

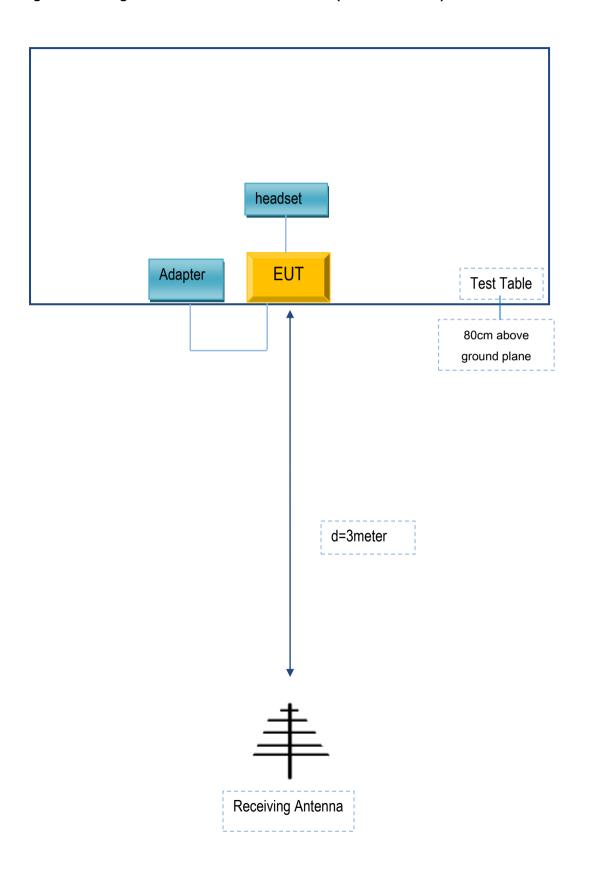
Block Configuration Diagram for AC Line Conducted Emissions





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 64 of 68 |

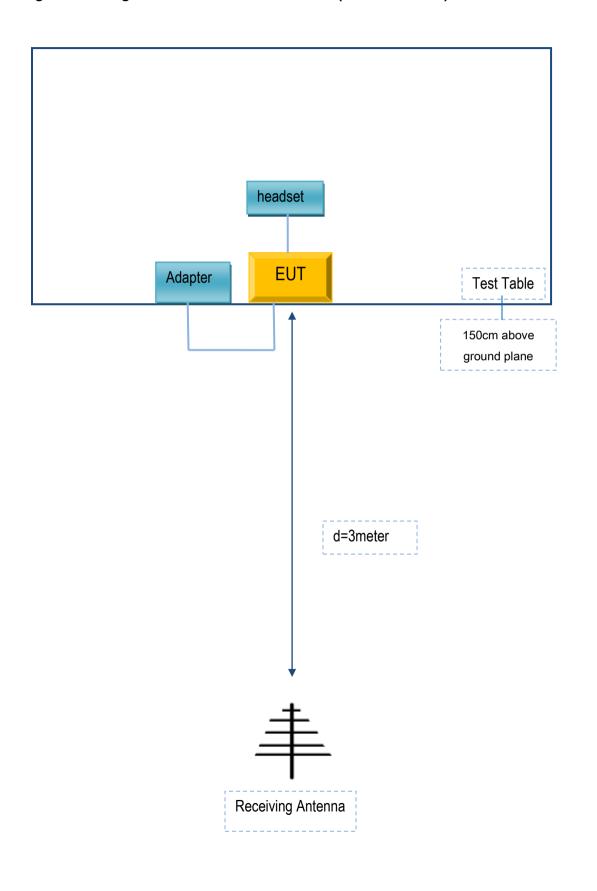
Block Configuration Diagram for Radiated Emissions (Below 1GHz).





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 65 of 68 |

Block Configuration Diagram for Radiated Emissions (Above 1GHz) .





| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 66 of 68 |

Annex C. il. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Supporting Equipment:

| Manufacturer | Equipment Description | Model | Serial No | |
|------------------------|--------------------------|------------|-----------|--|
| HONG KONG IPRO | Adapter | NTR-S01 | N/A | |
| TECHNOLOGY CO.,LIMITED | Adapter | 14114-301 | IN/A | |
| HONG KONG IPRO | headset | Kylin 5.0S | N/A | |
| TECHNOLOGY CO.,LIMITED | neauset | | | |

Supporting Cable:

| Cable type | Shield Type | Ferrite Core | Length | Serial No |
|------------|--------------|-----------------|--------|-----------|
| USB Cable | Un-shielding | No | 0.8m | N/A |



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 67 of 68 |

Annex D. User Manual / Block Diagram / Schematics / Partlist

Please see the attachment



| Test Report | 17071233-FCC-R2 |
|-------------|-----------------|
| Page | 68 of 68 |

Annex E. DECLARATION OF SIMILARITY

N/A