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# FCC Test Report

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Report No.: AGC00607170501FE04

**FCC ID** : Q5EW60W65  
**APPLICATION PURPOSE** : Original Equipment  
**PRODUCT DESIGNATION** : POC Trunked Two-way Radio  
**BRAND NAME** : KIRISUN  
**MODEL NAME** : W60, iTALK-220, W65, iTALK-200  
**CLIENT** : Kirisun Communications Co., Ltd  
**DATE OF ISSUE** : May. 24, 2017  
**STANDARD(S)** : FCC Part 15.247  
**TEST PROCEDURE(S)** : KDB 558074 D01 DTS Meas Guidance v04  
**REPORT VERSION** : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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### Report Revise Record

| Report Version | Revise Time | Issued Date   | Valid Version | Notes           |
|----------------|-------------|---------------|---------------|-----------------|
| V1.0           | /           | May. 24, 2017 | Valid         | Original Report |

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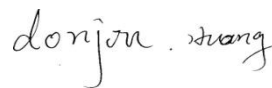
## 1. VERIFICATION OF CONFORMITY

|                                 |                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant</b>                | Kirisun Communications Co., Ltd.                                                                                                                |
| <b>Address</b>                  | 3-6Flrs, ROBETA Building, No.1, QiMin Road, Song Ping Shan Area, Science & Industry Park, Nanshan District, Shenzhen518057 P.R.China            |
| <b>Manufacturer</b>             | Kirisun Communications Co., Ltd.                                                                                                                |
| <b>Address</b>                  | 3-6Flrs, ROBETA Building, No.1, QiMin Road, Song Ping Shan Area, Science & Industry Park, Nanshan District, Shenzhen518057 P.R.China            |
| <b>Product Designation</b>      | POC Trunked Two-way Radio                                                                                                                       |
| <b>Brand Name</b>               | KIRISUN                                                                                                                                         |
| <b>Test Model</b>               | W60                                                                                                                                             |
| <b>Series Model</b>             | iTALK-220, W65, iTALK-200                                                                                                                       |
| <b>Difference Description</b>   | All the same, except for the model name and appearance.W60 and iTALK-220 with screen and buttons, W65 and iTALK-200 without screen and buttons. |
| <b>Date of test</b>             | May. 10, 2017~May. 22, 2017                                                                                                                     |
| <b>Deviation</b>                | None                                                                                                                                            |
| <b>Condition of Test Sample</b> | Normal                                                                                                                                          |
| <b>Report Template</b>          | AGCRT-US-BGN/RF                                                                                                                                 |

We hereby certify that:

The above equipment was tested by Dongguan Precise Testing Service Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with requirement of FCC Part 15 Rules requirement.

Tested By



Donjon Huang(Huang  
Dongyang)

May. 22, 2017

Reviewed By



Bart Xie(Xie Xiaobin)

May. 24, 2017

Approved By



Solger Zhang(Zhang Hongyi)  
Authorized Officer

May. 24, 2017

## 2. GENERAL INFORMATION

### 2.1. PRODUCT DESCRIPTION

The EUT is designed as “POC Trunked Two-way Radio”. It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

A major technical description of EUT is described as following

|                            |                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operation Frequency</b> | 2.412 GHz~2.462GHz                                                                                                                         |
| <b>Output Power</b>        | IEEE 802.11b: <b>15.88</b> dBm, IEEE 802.11g: <b>13.10</b> dBm;<br>IEEE 802.11n(20): <b>12.87</b> dBm, IEEE 802.11n(40): <b>11.39</b> dBm; |
| <b>Modulation</b>          | DSSS(DBPSK/DQPSK/CCK);OFDM(BPSK/QPSK/16-QAM/64-QAM)                                                                                        |
| <b>Number of channels</b>  | 11                                                                                                                                         |
| <b>Hardware Version</b>    | V1.0                                                                                                                                       |
| <b>Software Version</b>    | V1.0                                                                                                                                       |
| <b>IMEI Number</b>         | 353435056170386                                                                                                                            |
| <b>Antenna Designation</b> | Integrated Antenna                                                                                                                         |
| <b>Antenna Gain</b>        | 0.6dBi                                                                                                                                     |
| <b>Power Supply</b>        | DC3.7V by Built-in Li-ion Battery                                                                                                          |

### 2.2. TABLE OF CARRIER FREQUENCIES

| Frequency Band | Channel Number | Frequency |
|----------------|----------------|-----------|
| 2400~2483.5MHZ | 1              | 2412 MHZ  |
|                | 2              | 2417 MHZ  |
|                | 3              | 2422 MHZ  |
|                | 4              | 2427 MHZ  |
|                | 5              | 2432 MHZ  |
|                | 6              | 2437 MHZ  |
|                | 7              | 2442 MHZ  |
|                | 8              | 2447 MHZ  |
|                | 9              | 2452 MHZ  |
|                | 10             | 2457 MHZ  |
|                | 11             | 2462 MHZ  |

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11  
For 40MHZ bandwidth system use Channel 3 to Channel 9

### 2.3. IEEE 802.11N MODULATION SCHEME

| MCS Index | Nss | Modulation | R   | NBPSC | NCBPS |       | NDBPS |       | Data rate(Mbps) |       |
|-----------|-----|------------|-----|-------|-------|-------|-------|-------|-----------------|-------|
|           |     |            |     |       |       |       |       |       | 800nsGI         |       |
|           |     |            |     |       | 20MHz | 40MHz | 20MHz | 40MHz | 20MHz           | 40MHz |
| 0         | 1   | BPSK       | 1/2 | 1     | 52    | 108   | 26    | 54    | 6.5             | 13.5  |
| 1         | 1   | QPSK       | 1/2 | 2     | 104   | 216   | 52    | 108   | 13.0            | 27.0  |
| 2         | 1   | QPSK       | 3/4 | 2     | 104   | 216   | 78    | 162   | 19.5            | 40.5  |
| 3         | 1   | 16-QAM     | 1/2 | 4     | 208   | 432   | 104   | 216   | 26.0            | 54.0  |
| 4         | 1   | 16-QAM     | 3/4 | 4     | 208   | 432   | 156   | 324   | 39.0            | 81.0  |
| 5         | 1   | 64-QAM     | 2/3 | 6     | 312   | 648   | 208   | 432   | 52.0            | 108.0 |
| 6         | 1   | 64-QAM     | 3/4 | 6     | 312   | 648   | 234   | 489   | 58.5            | 121.5 |
| 7         | 1   | 64-QAM     | 5/6 | 6     | 312   | 648   | 260   | 540   | 65.0            | 135.0 |

| Symbol | Explanation                             |
|--------|-----------------------------------------|
| NSS    | Number of spatial streams               |
| R      | Code rate                               |
| NBPSC  | Number of coded bits per single carrier |
| NCBPS  | Number of coded bits per symbol         |
| NDBPS  | Number of data bits per symbol          |
| GI     | Guard interval                          |

### 2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: Q5EW60W65** filing to comply with the FCC Part 15 requirements.

### 2.5. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2013).

Radiated testing was performed at an antenna to EUT distance 3 meters.

Others testing (listed at item 5.3) was performed according to the procedures in FCC Part 15.247 rules KDB 558074 D01 DTS Meas Guidance v03r05.

### 2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

## **2.7. EQUIPMENT MODIFICATIONS**

Not available for this EUT intended for grant.

### 3. MEASUREMENT UNCERTAINTY

Conducted measurement: +/- 2.75dB

Radiated measurement: +/- 3.2dB

### 4. DESCRIPTION OF TEST MODES

| NO. | TEST MODE DESCRIPTION |
|-----|-----------------------|
| 1   | Low channel TX        |
| 2   | Middle channel TX     |
| 3   | High channel TX       |
| 4   | Normal operating      |

Note:

Transmit by 802.11b with Data rate (1/2/5.5/11)

Transmit by 802.11g with Data rate (6/9/12/18/24/36/48/54)

Transmit by 802.11n (20MHz) with Data rate (6.5/13/19.5/26/39/52/58.5/65)

Transmit by 802.11n (40MHz) with Data rate

(13.5/27/40.5/54/81/108/121.5/135)

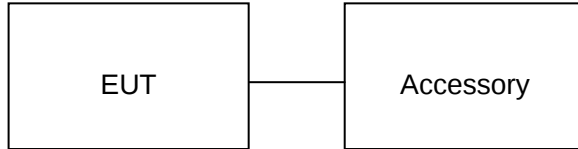
**Note:**

1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the eut is operating at its maximum duty cycle>or equal 98%
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.

## 5. SYSTEM TEST CONFIGURATION

### 5.1. CONFIGURATION OF EUT SYSTEM

Configure:



### 5.2. EQUIPMENT USED IN EUT SYSTEM

| Item | Equipment                 | Model No.                     | ID or Specification | Remark    |
|------|---------------------------|-------------------------------|---------------------|-----------|
| 1    | POC Trunked Two-way Radio | W60                           | FCC ID: Q5EW60W65   | EUT       |
| 2    | Adapter                   | GPE-053B-V051000-Z<br>KBC-W65 | DC 5.0V/1A<br>700mA | Accessory |
| 3    | Battery                   | KB-W65                        | DC3.7V/ 3600mAh     | Accessory |
| 4    | USB Cable                 | N/A                           | N/A                 | Accessory |
| 5    | Earphone                  | N/A                           | N/A                 | Accessory |

Note: All the accessories have been used during the test in conduction emission test.

### 5.3. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST                             | RESULT    |
|-----------|-------------------------------------------------|-----------|
| §15.247   | Output Power                                    | Compliant |
| §15.247   | 6 dB Bandwidth                                  | Compliant |
| §15.247   | Conducted Spurious Emission                     | Compliant |
| §15.247   | Maximum Conducted Output Power SPECTRAL Density | Compliant |
| §15.209   | Radiated Emission                               | Compliant |
| §15.247   | Band Edges                                      | Compliant |
| §15.207   | Line Conduction Emission                        | Compliant |

**Note:** The EUT received power from DC3.8V lithium battery.

## 6. TEST FACILITY

|                             |                                                                                                         |
|-----------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Site</b>                 | Dongguan Precise Testing Service Co., Ltd.                                                              |
| <b>Location</b>             | Building D,Baoding Technology Park,Guangming Road2,Dongcheng District,<br>Dongguan, Guangdong, China,   |
| <b>FCC Registration No.</b> | 371540                                                                                                  |
| <b>Description</b>          | The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.10:2013. |

## ALL TEST EQUIPMENT LIST

FOR RADIATED EMISSION TEST (BELOW 1GHZ)

| Radiated Emission Test Site         |                 |              |               |                  |                 |
|-------------------------------------|-----------------|--------------|---------------|------------------|-----------------|
| Name of Equipment                   | Manufacturer    | Model Number | Serial Number | Last Calibration | Due Calibration |
| EMI Test Receiver                   | Rohde & Schwarz | ESCI         | 101417        | July 3, 2016     | July 2, 2017    |
| Trilog Broadband Antenna (25M-1GHz) | SCHWARZBECK     | VULB9160     | 9160-3355     | July 3, 2016     | July 2, 2017    |
| Signal Amplifier                    | SCHWARZBECK     | BBV 9475     | 9745-0013     | July 3, 2016     | July 2, 2017    |
| RF Cable                            | SCHWARZBECK     | AK9515E      | 96221         | July 3, 2016     | July 2, 2017    |
| 3m Anechoic Chamber                 | CHENGYU         | 966          | PTS-001       | June 5, 2016     | June 4, 2017    |
| MULTI-DEVICE Positioning Controller | Max-Full        | MF-7802      | MF780208339   | N/A              | N/A             |
| Active loop antenna (9K-30MHz)      | Schwarzbeck     | FMZB1519     | 1519-038      | June 5, 2016     | June 4, 2017    |
| Spectrum analyzer                   | Agilent         | E4407B       | MY46185649    | June 5, 2016     | June 4, 2017    |
| Power Probe                         | R&S             | NRP-Z23      | 100323        | July 24,2016     | July 23,2017    |
| RF attenuator                       | N/A             | RFA20db      | 68            | N/A              | N/A             |

FOR RADIATED EMISSION TEST (1GHZ ABOVE)

| Radiated Emission Test Site         |                 |              |               |                  |                 |
|-------------------------------------|-----------------|--------------|---------------|------------------|-----------------|
| Name of Equipment                   | Manufacturer    | Model Number | Serial Number | Last Calibration | Due Calibration |
| EMI Test Receiver                   | Rohde & Schwarz | ESCI         | 101417        | July 3, 2016     | July 2, 2017    |
| Horn Antenna (1G-18GHz)             | SCHWARZBECK     | BBHA9120D    | 9120D-1246    | July 10, 2016    | July 9, 2017    |
| Spectrum Analyzer                   | Agilent         | E4411B       | MY4511453     | July 3, 2016     | July 2, 2017    |
| Signal Amplifier                    | SCHWARZBECK     | BBV 9718     | 9718-269      | July 6, 2016     | July 5, 2017    |
| RF Cable                            | SCHWARZBECK     | AK9515H      | 96220         | July 7, 2016     | July 6, 2017    |
| 3m Anechoic Chamber                 | CHENGYU         | 966          | PTS-001       | June 5, 2016     | June 4, 2017    |
| MULTI-DEVICE Positioning Controller | Max-Full        | MF-7802      | MF780208339   | N/A              | N/A             |

|                      |             |           |          |              |              |
|----------------------|-------------|-----------|----------|--------------|--------------|
| Horn Ant (18G-40GHz) | Schwarzbeck | BBHA 9170 | 9170-181 | June 5, 2016 | June 4, 2017 |
| Power Probe          | R&S         | NRP-Z23   | 100323   | July 24,2016 | July 23,2017 |
| RF attenuator        | N/A         | RFA20db   | 68       | N/A          | N/A          |

| Conducted Emission Test Site   |                 |              |               |                  |                 |
|--------------------------------|-----------------|--------------|---------------|------------------|-----------------|
| Name of Equipment              | Manufacturer    | Model Number | Serial Number | Last Calibration | Due Calibration |
| EMI Test Receiver              | Rohde & Schwarz | ESCI         | 101417        | July 3, 2016     | July 2, 2017    |
| Artificial Mains Network       | Narda           | L2-16B       | 000WX31025    | July 7, 2016     | July 6, 2017    |
| Artificial Mains Network (AUX) | Narda           | L2-16B       | 000WX31026    | July 7, 2016     | July 6, 2017    |
| RF Cable                       | SCHWARZBECK     | AK9515E      | 96222         | July 3, 2016     | July 2, 2017    |
| Shielded Room                  | CHENGYU         | 843          | PTS-002       | June 5,2016      | June 4,2017     |

## **7. OUTPUT POWER**

### **7.1. MEASUREMENT PROCEDURE**

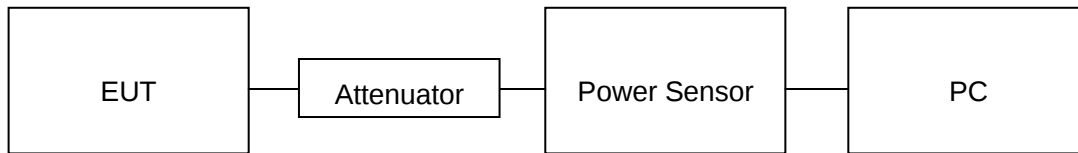
For max average conducted output power test:

1. Connect EUT RF output port to power probe through an RF attenuator.
2. Connect the power probe to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

**Note :** The EUT was tested according to KDB 558074v03r05 for compliance to FCC 47CFR 15.247 requirements.

## 7.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

### AVERAGE POWER SETUP



### 7.3. LIMITS AND MEASUREMENT RESULT

|                  |                          |
|------------------|--------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER             |
| <b>TEST MODE</b> | 802.11b with data rate 1 |

| Frequency (GHz) | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|---------------------|-------------------------|--------------|
| 2.412           | 15.88               | 30                      | Pass         |
| 2.437           | 15.28               | 30                      | Pass         |
| 2.462           | 15.06               | 30                      | Pass         |

|                  |                          |
|------------------|--------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER             |
| <b>TEST MODE</b> | 802.11g with data rate 6 |

| Frequency (GHz) | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|---------------------|-------------------------|--------------|
| 2.412           | 11.78               | 30                      | Pass         |
| 2.437           | 13.10               | 30                      | Pass         |
| 2.462           | 12.44               | 30                      | Pass         |

|                  |                               |
|------------------|-------------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER                  |
| <b>TEST MODE</b> | 802.11n 20 with data rate 6.5 |

| Frequency (GHz) | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|---------------------|-------------------------|--------------|
| 2.412           | 11.66               | 30                      | Pass         |
| 2.437           | 12.87               | 30                      | Pass         |
| 2.462           | 11.96               | 30                      | Pass         |

|                  |                                |
|------------------|--------------------------------|
| <b>TEST ITEM</b> | OUTPUT POWER                   |
| <b>TEST MODE</b> | 802.11n 40 with data rate 13.5 |

| Frequency (GHz) | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
|-----------------|---------------------|-------------------------|--------------|
| 2.422           | 9.19                | 30                      | Pass         |
| 2.437           | 11.39               | 30                      | Pass         |
| 2.452           | 9.33                | 30                      | Pass         |

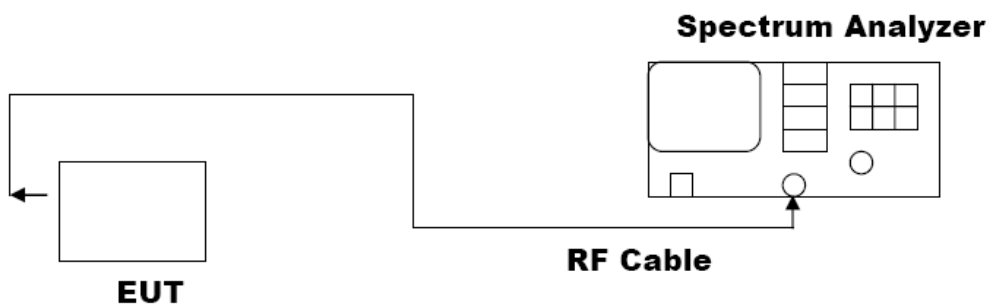
## 8. 6DB BANDWIDTH

### 8.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Centre Frequency = Operation Frequency, RBW= 100 KHz, VBW $\geq 3 \times$  RBW.
4. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

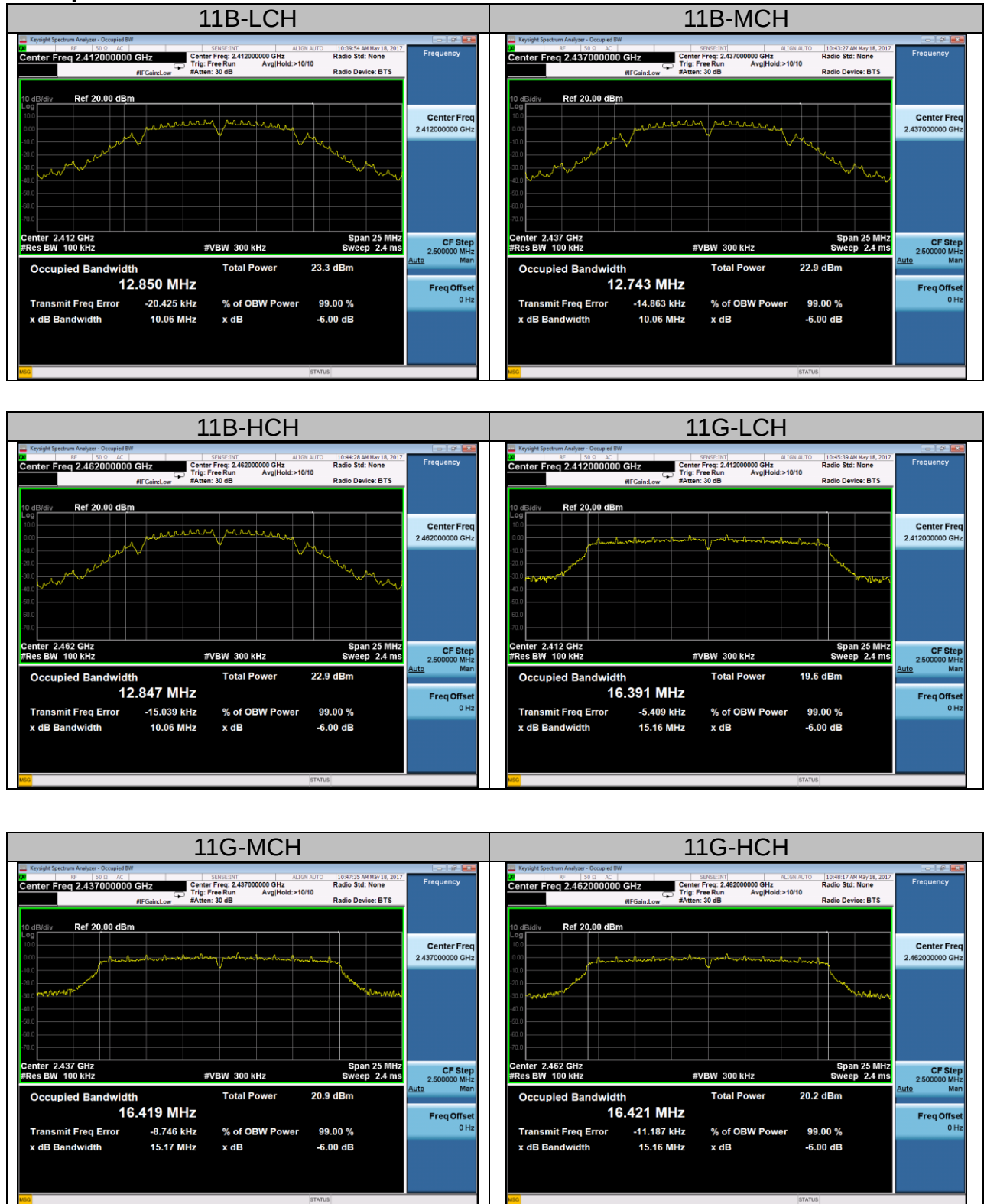
### 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

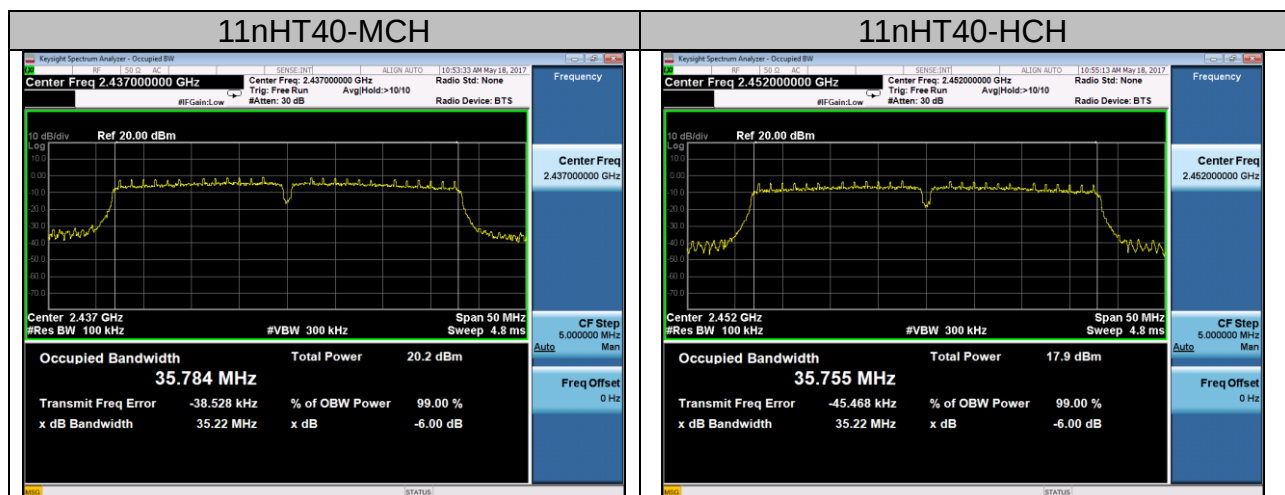
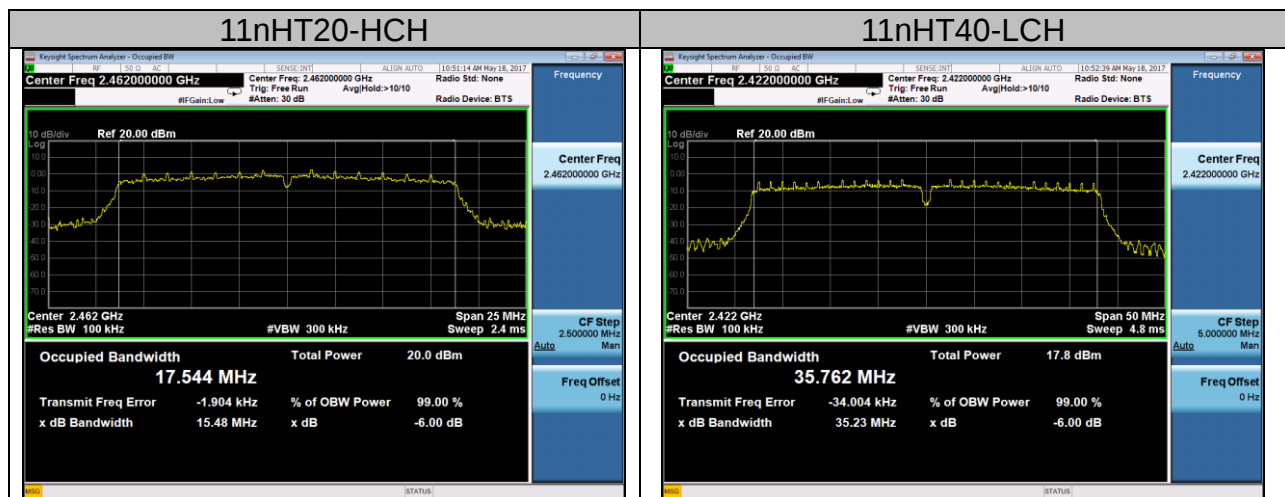
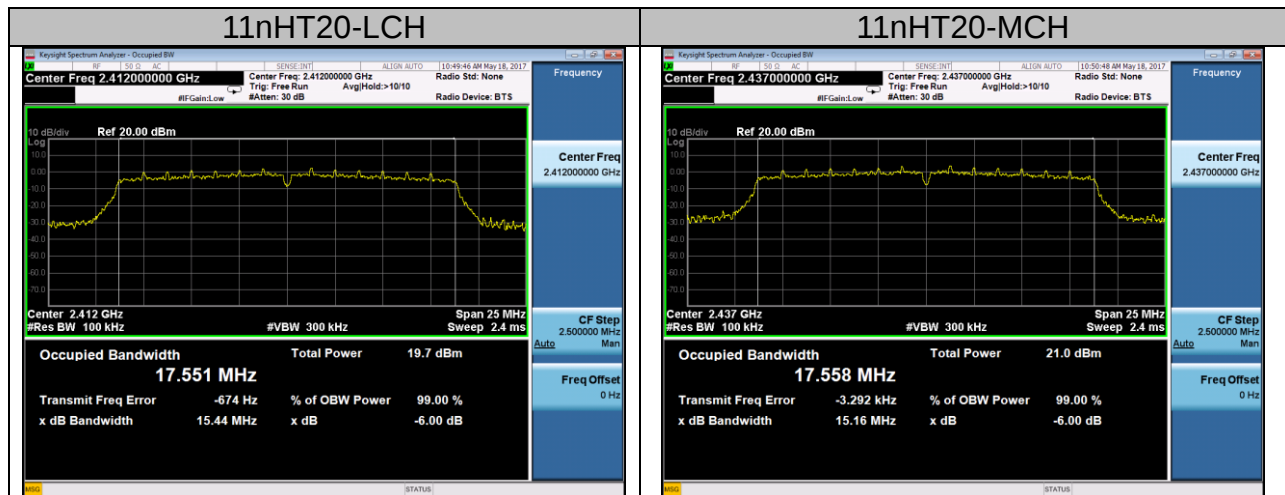


### 8.3. LIMITS AND MEASUREMENT RESULTS

| Mode    | Channel | 6dB Bandwidth [MHz] | Verdict |
|---------|---------|---------------------|---------|
| 11B     | LCH     | 10.06               | PASS    |
|         | MCH     | 10.06               | PASS    |
|         | HCH     | 10.06               | PASS    |
| 11G     | LCH     | 15.16               | PASS    |
|         | MCH     | 15.17               | PASS    |
|         | HCH     | 15.16               | PASS    |
| 11nHT20 | LCH     | 15.44               | PASS    |
|         | MCH     | 15.16               | PASS    |
|         | HCH     | 15.48               | PASS    |
| 11nHT40 | LCH     | 35.23               | PASS    |
|         | MCH     | 35.22               | PASS    |
|         | HCH     | 35.22               | PASS    |

## Test Graph





## 9. CONDUCTED SPURIOUS EMISSION

### 9.1. MEASUREMENT PROCEDURE

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
3. Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

Owing to satisfy the requirements of the number of measurement points, we set the RBW=1MHz, VBW > RBW, scan up through 10th harmonic, and consider the tested results as the worst case, if the tested results conform to the requirement, we can deem that the real tested results(set the RBW=100KHz, VBW > RBW) are conform to the requirement.

### 9.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

The same as described in section 8.2.

### 9.3. MEASUREMENT EQUIPMENT USED

The same as described in section 6.

### 9.4. LIMITS AND MEASUREMENT RESULT

| LIMITS AND MEASUREMENT RESULT                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------|
| Applicable Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Measurement Result                                             |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Test Data                                                      | Criteria |
| In any 100 KHz Bandwidth Outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produce by the intentional radiator shall be at least 20 dB below that in 100KHz bandwidth within the band that contains the highest level of the desired power.<br>In addition, radiation emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in§15.209(a)) | At least -20dBc than the limit Specified on the BOTTOM Channel | PASS     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | At least -20dBc than the limit Specified on the TOP Channel    | PASS     |

## Test Graph

