



# **FCC Test Report**

FCC ID : UJ9DG009

Equipment : Dongle
Brand Name : i-rocks
Model Name : DG009

Applicant : i-Rocks Technology Co., Ltd.

12F,No.190,Chung-hsin Rd., Sec. 2, Hsin-tien City.,

Taipei ,Taiwan R.O.C.

Manufacturer : G. TECH TECHNOLOGY LTD.

No.8, Jinyuan 1st Road, High-tech Zone, Zhuhai City,

Guangdong, China 519085

Standard : 47 CFR FCC Part 15.247

The product was received on May 31, 2018, and testing was started from Jun. 04, 2018 and completed on Jun. 13, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-3273456 Page Number. : 1 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0

FCC ID: UJ9DG009

Report Version : 02



# **Table of Contents**

| HIST | ORY OF THIS TEST REPORT  | 3     |
|------|--|-------|
| SUMI | MARY OF TEST RESULT  | 4     |
| 1    | GENERAL DESCRIPTION  | 5     |
| 1.1  | Information  | 5     |
| 1.2  | Testing Applied Standards  | 6     |
| 1.3  | Testing Location Information   | 6     |
| 1.4  | Measurement Uncertainty  | 6     |
| 2    | TEST CONFIGURATION OF EUT  | 7     |
| 2.1  | Test Condition   | 7     |
| 2.2  | Test Channel Mode  |       |
| 2.3  | The Worst Case Measurement Configuration                               |       |
| 2.4  | Support Equipment  |       |
| 2.5  | Test Setup Diagram   | 10    |
| 3    | TRANSMITTER TEST RESULT  | 11    |
| 3.1  | AC Power-line Conducted Emissions                                      | 11    |
| 3.2  | 20dB Bandwidth and Carrier Frequency Separation                        | 12    |
| 3.3  | Maximum Conducted Output Power   | 13    |
| 3.4  | Number of Hopping Frequencies and Hopping Bandedge                     |       |
| 3.5  | Time of Occupancy (Dwell Time)   |       |
| 3.6  | Emissions in Non-restricted Frequency Bands                            |       |
| 3.7  | Emissions in Restricted Frequency Bands                                | 17    |
| 4    | TEST EQUIPMENT AND CALIBRATION DATA                                    | 20    |
| APPE | ENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS             |       |
| APPE | ENDIX B. TEST RESULTS OF 20DB BANDWIDTH AND CARRIER FREQUENCY SEPARATI | ON    |
| APPE | ENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER                |       |
| APPE | ENDIX D. TEST RESULTS OF NUMBER OF HOPPING FREQUENCIES AND HOPPING BAN | DEDGE |
| APPE | ENDIX E. TEST RESULTS OF TIME OF OCCUPANCY (DWELL TIME)                |       |
| APPE | ENDIX F. TEST RESULTS OF EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS   |       |
| APPE | ENDIX G. TEST RESULTS OF EMISSIONS IN RESTRICTED FREQUENCY BANDS       |       |
| APPE | ENDIX H. TEST PHOTOS   |       |
| PHO1 | TOGRAPHS OF EUT V01  |       |

TEL: 886-3-3273456 FAX: 886-3-3270973

Report Template No.: HE1-C9 Ver2.0

FCC ID: UJ9DG009

Page Number. : 2 of 21

Issued Date : Jul. 19, 2018

Report Version : 02



History of this test report

Report No.: FR853104-02AD

| Report No.    | Version | Description  | Issued Date   |
|---------------|---------|--|---------------|
| FR853104-02AD | 01      | Initial issue of report  | Jul. 13, 2018 |
| FR853104-02AD | 02      | Revised typo This report is the latest version replacing for the report issued on Jul. 13, 2018. | Jul. 19, 2018 |
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TEL: 886-3-3273456 Page Number. : 3 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



**Summary of Test Result** 

Report No.: FR853104-02AD

| Report<br>Clause | Ref. Std.<br>Clause                                       | Test Items   | Result<br>(PASS/FAIL) | Remark                          |
|------------------|---|--|-----------------------|---------------------------------|
| 1.1.2            | 15.203  | Antenna Requirement                                | PASS                  | FCC 15.203                      |
| 3.1              | 15.207  | AC Power-line Conducted Emissions                  | PASS                  | FCC 15.207                      |
| 3.2              | 15.247(a)   | 20dB Bandwidth                                     | PASS                  | 15.247(a)                       |
| 3.2              | 15.247(a)   | Carrier Frequency Separation                       | PASS                  | 15.247(a)                       |
| 3.3              | 15.247(b)   | Maximum Conducted Output Power                     | PASS                  | 15.247(b)                       |
| 3.4              | 15.247(a)   | Number of Hopping Frequencies and Hopping Bandedge | PASS                  | 15.247(a)                       |
| 3.5              | 15.247(a)   | Time of Occupancy (Dwell Time)                     | PASS                  | 15.247(a)                       |
| 3.6              | 3.6 15.247(d) Emissions in Non-restricted Frequency Bands |  | PASS                  | 15.247(d)                       |
| 3.7              | 15.247(d)   | Emissions in Restricted Frequency Bands            | PASS                  | Restricted Bands:<br>FCC 15.209 |

Reviewed by: Sam Tsai

Report Producer: Amber Chiu

TEL: 886-3-3273456 Page Number. : 4 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



1 General Description

### 1.1 Information

### 1.1.1 RF General Information

| Frequency Range (MHz) | Mode             | Ch. Frequency (MHz) | Channel Number |
|-----------------------|------------------|---------------------|----------------|
| 2400-2483.5           | Wireless devices | 2408-2474           | 0-33 [34]      |

Report No.: FR853104-02AD

: 02

| Band          | Mode | BWch (MHz) | Nant |
|---------------|------|------------|------|
| 2.4-2.4835GHz | FHSS | 1.9        | 1TX  |

### Note:

- System using FHSS modulation.
- BWch is the nominal channel bandwidth.

### 1.1.2 Antenna Information

| Ant. | Port | Brand | Model Name | Antenna Type | Connector      | Gain (dBi) |
|------|------|-------|------------|--------------|----------------|------------|
| 1    | 1    | -     | -          | PCB          | fixed on board | 2.15       |

For Wireless devices mode (1TX/1RX)

Only Ant. 1 (port 1) can be used as transmitting/receiving antenna.

### 1.1.3 EUT Information

|             | Operational Condition   |                |                        |          |        |  |
|-------------|---|----------------|------------------------|----------|--------|--|
| EU1         | Γ Power T   | уре            | From Host system       |          |        |  |
|             | Type of EUT   |                |                        |          |        |  |
| $\boxtimes$ | Stand-alone Stand-alone   |                |                        |          |        |  |
|             | Combined (EUT where the radio part is fully integrated within another device) |                |                        |          |        |  |
|             | Combine   | d Equipment    | - Brand Name / Mode    | el No.:  |        |  |
|             | Plug-in ra  | idio (EUT inte | ended for a variety of | host sys | stems) |  |
|             | Host System - Brand Name / Model No.:   |                |                        |          |        |  |
|             | Other:  |                |                        |          |        |  |

### 1.1.4 Mode Test Duty Cycle

| Mode | DC    | DCF(dB) | T(s)   | VBW(Hz) ≥<br>1/T |
|------|-------|---------|--------|------------------|
| FHSS | 0.058 | 12.366  | 3.797m | 300              |

TEL: 886-3-3273456 Page Number. : 5 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version



1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Report No.: FR853104-02AD

: 02

- 47 CFR FCC Part 15
- Public Notice DA 00-705
- ANSI C63.10-2013

### 1.3 Testing Location Information

|             | Testing Location                           |     |   |                         |        |      |                                       |
|-------------|--|-----|---|-------------------------|--------|------|---------------------------------------|
| $\boxtimes$ | HWA YA                                     | ADD | : | No. 52, Huaya 1st Rd.,  | Guish  | an   | Dist., Taoyuan City, Taiwan (R.O.C.)  |
|             |  | TEL | : | 886-3-327-3456          | FAX    | :    | 886-3-327-0973                        |
|             |  |     |   | Test site Designation   | on No. | TV   | /1190 with FCC.                       |
|             | JHUBEI                                     | ADD | : | No.8, Ln. 724, Bo'ai St | , Zhub | ei ( | City, Hsinchu County, Taiwan (R.O.C.) |
|             | TEL: 886-3-656-9065 FAX: 886-3-656-9085    |     |   |                         |        |      |                                       |
|             | Test site Designation No. TW0006 with FCC. |     |   |                         |        |      |                                       |

| Test Condition | Test Site No. | Test Engineer | Test Environment | Test Date   |
|----------------|---------------|---------------|------------------|-------------|
| AC Conduction  | CO04-HY       | Daniel        | 24.5°C / 51%     | 05/Jun/2018 |
| RF Conducted   | TH01-HY       | Barry         | 24.3°C / 53%     | 13/Jun/2018 |
| Radiated       | 03CH09-HY     | Jerry         | 25.5°C / 54%     | 04/Jun/2018 |

# 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

| Test Items                           | Uncertainty | Remark                   |
|--------------------------------------|-------------|--------------------------|
| Conducted Emission (150kHz ~ 30MHz)  | 3.6 dB      | Confidence levels of 95% |
| Radiated Emission (9kHz ~ 30MHz)     | 3.0 dB      | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 4.3 dB      | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz)     | 3.9 dB      | Confidence levels of 95% |
| Radiated Emission (18GHz ~ 40GHz)    | 3.5 dB      | Confidence levels of 95% |
| Conducted Emission                   | 1.3 dB      | Confidence levels of 95% |
| Temperature                          | 0.7 °C      | Confidence levels of 95% |
| Humidity                             | 4 %         | Confidence levels of 95% |

TEL: 886-3-3273456 Page Number. : 6 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version



### **Test Configuration of EUT** 2

#### 2.1 **Test Condition**

| RF Conducted    | Abbreviation | Remark |
|-----------------|--------------|--------|
| RF Conducted-FS | Abbreviation | Remark |
| TnomVnom        | Tnom         | 20°C   |
| -               | Vnom         | 5V     |

#### **Test Channel Mode** 2.2

| Test Software | RF TEST & EMI MODE_AP |
|---------------|-----------------------|

| Mode          | PowerSetting |
|---------------|--------------|
| FHSS_Nss1_1TX | -            |
| 2408MHz       | Default      |
| 2440MHz       | Default      |
| 2474MHz       | Default      |

TEL: 886-3-3273456 Page Number. : 7 of 21 FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



### **The Worst Case Measurement Configuration** 2.3

| The Worst Case Mode for Following Conformance Tests                |                                   |  |
|--|-----------------------------------|--|
| Tests Item   | AC power-line conducted emissions |  |
| Condition AC power-line conducted measurement for line and neutral |                                   |  |
| Operating Mode   | СТХ                               |  |
| 1  | USB mode ; 2.4G TX                |  |

| Th             | The Worst Case Mode for Following Conformance Tests  |  |  |
|----------------|--|--|--|
| Tests Item     | 20dB Bandwidth Carrier Frequency Separation Maximum Conducted Output Power Number of Hopping Frequencies Hopping Bandedge Time of Occupancy (Dwell Time) Emissions in Non-restricted Frequency Bands |  |  |
| Test Condition | Conducted measurement at transmit chains   |  |  |

| Th                          | The Worst Case Mode for Following Conformance Tests  |   |         |  |  |
|-----------------------------|--|---|---------|--|--|
| Tests Item                  | Emissions in Restricted Fr   | Emissions in Restricted Frequency Bands |         |  |  |
| Test Condition              | Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type. |   |         |  |  |
| Operating Mode < 1GHz       | СТХ  |   |         |  |  |
| 1                           | USB mode   |   |         |  |  |
| Operating Mode > 1GHz       | СТХ  |   |         |  |  |
|                             | X Plane  | Y Plane                                 | Z Plane |  |  |
| Orthogonal Planes of<br>EUT |  |   |         |  |  |
| Worst Planes of EUT         |  |   | V       |  |  |

TEL: 886-3-3273456 Page Number. : 8 of 21 FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0

FCC ID: UJ9DG009

Report Version : 02



2

2.4 Support Equipment

Adapter for NB

|     |           | Support Equipment – | AC Conduction |        |
|-----|-----------|---------------------|---------------|--------|
| No. | Equipment | Brand Name          | Model Name    | FCC ID |
| 1   | Notebook  | HP                  | 5220m         | DOC    |

HA65NM130

**DELL** 

Report No.: FR853104-02AD

DOC

|     |                | Support Equipment - | RF Conducted |        |
|-----|----------------|---------------------|--------------|--------|
| No. | Equipment      | Brand Name          | Model Name   | FCC ID |
| 1   | Notebook       | DELL                | E5410        | DOC    |
| 2   | Adapter for NB | DELL                | HA65NM130    | DOC    |

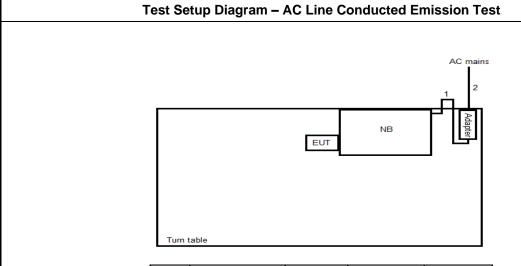
|     | Support Equipment – Radiated Emission |            |            |        |  |
|-----|---------------------------------------|------------|------------|--------|--|
| No. | Equipment                             | Brand Name | Model Name | FCC ID |  |
| 1   | Notebook                              | DELL       | E5410      | DOC    |  |
| 2   | Adapter for NB                        | DELL       | HA65NM130  | DOC    |  |

TEL: 886-3-3273456 Page Number. : 9 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02

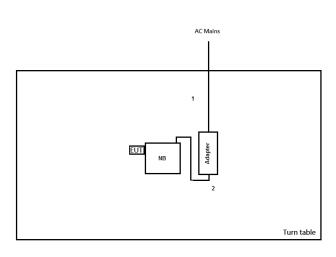


### **Test Setup Diagram** 2.5



| Item | Connection    | Shielded | Length(m) | Remark |
|------|---------------|----------|-----------|--------|
| 1    | DC Power line | No       | 1.8       | -      |
| 2    | AC power line | No       | 1.8       | -      |

### **Test Setup Diagram - Radiated Test**



| Item | Connection    | Shielded | Length(m) | Remark |
|------|---------------|----------|-----------|--------|
| 1    | AC Power line | No       | 1.8       | -      |
| 2    | DC power line | No       | 1.8       | -      |

TEL: 886-3-3273456 Page Number. : 10 of 21 FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Version

: 02

Report Template No.: HE1-C9 Ver2.0



#### **Transmitter Test Result** 3

#### **AC Power-line Conducted Emissions** 3.1

### 3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit |            |           |
|---|------------|-----------|
| Frequency Emission (MHz)                | Quasi-Peak | Average   |
| 0.15-0.5                                | 66 - 56 *  | 56 - 46 * |
| 0.5-5                                   | 56         | 46        |
| 5-30                                    | 60         | 50        |

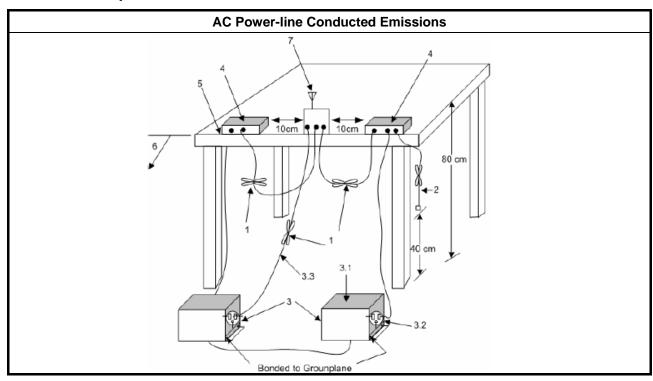
### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.1.3 **Test Procedures**

|   | Test Method   |
|---|---|
| • | Refer as ANSI C63.10-2013, clause 6.2 foray power-line conducted emissions. |

#### 3.1.4 **Test Setup**



### **Test Result of AC Power-line Conducted Emissions**

Refer as Appendix A

TEL: 886-3-3273456 Page Number. : 11 of 21 FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0

FCC ID: UJ9DG009

Report Version : 02



3.2 20dB Bandwidth and Carrier Frequency Separation

### 3.2.1 20dB Bandwidth and Carrier Frequency Separation Limit

|  | 20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|
| •  | ■ 2400-2483.5 MHz Band:   |  |  |  |  |  |  |
|  | <ul> <li>N ≥75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).</li> </ul>                  |  |  |  |  |  |  |
|  | 75>N ≥ 15 and ChS ≥ MAX (20 dB bandwidth 2/3,25 kHz).                               |  |  |  |  |  |  |
| N:Number of Hopping Frequencies; ChS: Hopping Channel Separation |   |  |  |  |  |  |  |

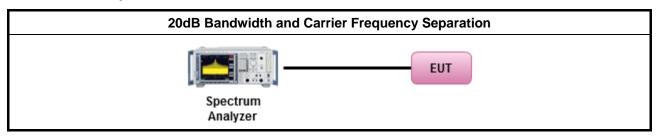
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

# Test Method ■ Refer as ANSI C63.10-2013, clause 6.9.2 for 20 dB bandwidth measurement. ■ Refer as ANSI C63.10-2013, clause 7.8.2 for carrier frequency separation measurement.

### 3.2.4 Test Setup



### 3.2.5 Test Result of 20dB Bandwidth

Refer as Appendix B

### 3.2.6 Test Result of Carrier Frequency Separation

Refer as Appendix B

TEL: 886-3-3273456 Page Number. : 12 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 FCC ID: UJ9DG009

Report Version : 02

Report No.: FR853104-02AD



# 3.3 Maximum Conducted Output Power

### 3.3.1 Maximum Conducted Output Power Limit

|                                 | Maximum Conducted Output Power Limit  |  |  |  |  |  |
|---------------------------------|---------------------------------------|--|--|--|--|--|
| •                               | ■ 2400-2483.5 MHz Band:               |  |  |  |  |  |
|                                 | ■ N ≥ 75; Power 30dBm; EIRP 36dBm     |  |  |  |  |  |
|                                 | ■ 75 >N ≥ 15; Power 21dBm; EIRP 27dBm |  |  |  |  |  |
| N:Number of Hopping Frequencies |                                       |  |  |  |  |  |

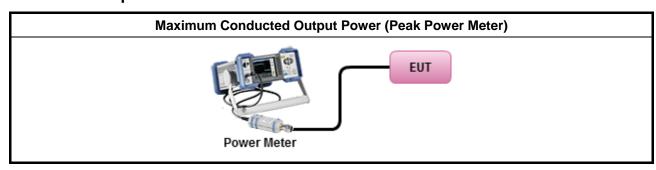
### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

# Test Method ■ Refer as ANSI C63.10-2013, clause 7.8.5 for output power measurement.

### 3.3.4 Test Setup



### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

TEL: 886-3-3273456 Page Number. : 13 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



3.4 Number of Hopping Frequencies and Hopping Bandedge

### 3.4.1 Number of Hopping Frequencies Limit

|     | Number of Hopping Frequencies Limit                               |  |  |  |  |  |
|-----|---|--|--|--|--|--|
| •   | ■ 2400-2483.5 MHz Band:   |  |  |  |  |  |
|     | N ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).                   |  |  |  |  |  |
|     | 75 >N ≥ 15 and ChS ≥ MAX (20 dB bandwidth 2/3,25 kHz).            |  |  |  |  |  |
| N:N | N:Number of Hopping Frequencies; ChS : Hopping Channel Separation |  |  |  |  |  |

Report No.: FR853104-02AD

### 3.4.2 Hopping Bandedge Limit

Refer clause 3.6.1 and clause 3.7.1

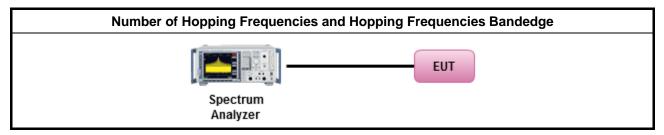
### 3.4.3 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.4.4 Test Procedures

| I | Test Method  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
|   | <ul> <li>Refer as ANSI C63.10-2013, clause 7.8.3 for number of hopping frequencies measurement.</li> </ul> |  |  |  |  |  |  |
| ĺ | <ul> <li>Refer as ANSI C63.10-2013, clause 7.8.6 for hopping frequencies Bandedge measurement.</li> </ul>  |  |  |  |  |  |  |

### 3.4.5 Test Setup



### 3.4.6 Test Result of Number of Hopping Frequencies

Refer as Appendix D

### 3.4.7 Test Result of Number of Hopping Frequencies Bandedge

Refer as Appendix D

TEL: 886-3-3273456 Page Number. : 14 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



#### **Time of Occupancy (Dwell Time)** 3.5

#### 3.5.1 Time of Occupancy (Dwell Time) Limit

|     | Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems |  |  |  |  |  |  |
|-----|--|--|--|--|--|--|--|
| •   | ■ 2400-2483.5 MHz Band:  |  |  |  |  |  |  |
|     | ■ N ≥ 75; 0.4s in N x 0.4 period                                   |  |  |  |  |  |  |
|     | ■ 75 >N ≥ 15; 0.4s in N x 0.4 period                               |  |  |  |  |  |  |
| N:N | N:Number of Hopping Frequencies                                    |  |  |  |  |  |  |

#### 3.5.2 **Measuring Instruments**

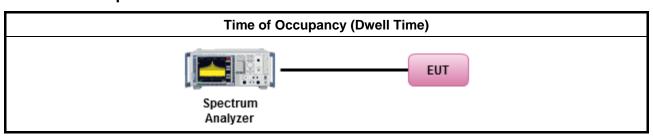
Refer a test equipment and calibration data table in this test report.

#### **Test Procedures** 3.5.3

### **Test Method**

- Refer as ANSI C63.10-2013, clause 7.8.4 for dwell time measurement.
- Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.
  - The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.DH5 Packet permit maximum 1600/79/6 = 3.37 hops per second in each channel.

#### 3.5.4 **Test Setup**



#### 3.5.5 Test Result of Time of Occupancy (Dwell Time)

Refer as Appendix E

TEL: 886-3-3273456 : 15 of 21 Page Number. FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

: 02

Report Template No.: HE1-C9 Ver2.0 Report Version



3.6 Emissions in Non-restricted Frequency Bands

### 3.6.1 Emissions in Non-restricted Frequency Bands Limit

| Un-restricted Band Emissions Limit   |    |  |  |  |
|--------------------------------------|----|--|--|--|
| RF output power procedure Limit (dB) |    |  |  |  |
| Peak output power procedure          | 20 |  |  |  |

Report No.: FR853104-02AD

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

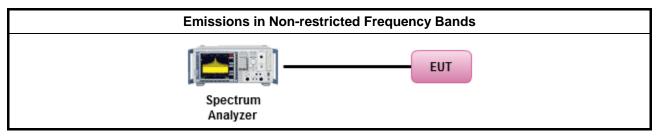
### 3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.6.3 Test Procedures

| Test Method   |          |
|---|----------|
| <ul> <li>Refer as ANSI C63.10-2013, clause 7.8.8 for unwanted emissions into non-restricte</li> </ul> | d bands. |

### 3.6.4 Test Setup



### 3.6.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix F

TEL: 886-3-3273456 Page Number. : 16 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



#### 3.7 **Emissions in Restricted Frequency Bands**

#### 3.7.1 **Emissions in Restricted Frequency Bands Limit**

| Restricted Band Emissions Limit |                       |                         |                      |  |  |  |  |
|---------------------------------|-----------------------|-------------------------|----------------------|--|--|--|--|
| Frequency Range (MHz)           | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |  |  |  |  |
| 0.009~0.490                     | 2400/F(kHz)           | 48.5 - 13.8             | 300                  |  |  |  |  |
| 0.490~1.705                     | 24000/F(kHz)          | 33.8 - 23               | 30                   |  |  |  |  |
| 1.705~30.0                      | 30                    | 29                      | 30                   |  |  |  |  |
| 30~88                           | 100                   | 40                      | 3                    |  |  |  |  |
| 88~216                          | 150                   | 43.5                    | 3                    |  |  |  |  |
| 216~960                         | 200                   | 46                      | 3                    |  |  |  |  |
| Above 960                       | 500                   | 54                      | 3                    |  |  |  |  |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/ decade). The test report shall specify the extrapolation method used to determine compliance of the

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

#### 3.7.2 **Measuring Instruments**

Refer a test equipment and calibration data table in this test report.

#### 3.7.3 Test Procedures

### **Test Method**

- The average emission levels shall be measured in [hopping duty factor].
- Refer as ANSI C63.10; clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
- For the transmitter unwanted emissions shall be measured using following options below:
  - Refer as ANSI C63.10, clause 4.1.4.2.1 QP value.
  - Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak.
  - Refer as ANSI C63.10, clause 4.1.4.2.4 average value of hopping pulsed emissions.

TEL: 886-3-3273456 Page Number. : 17 of 21 FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

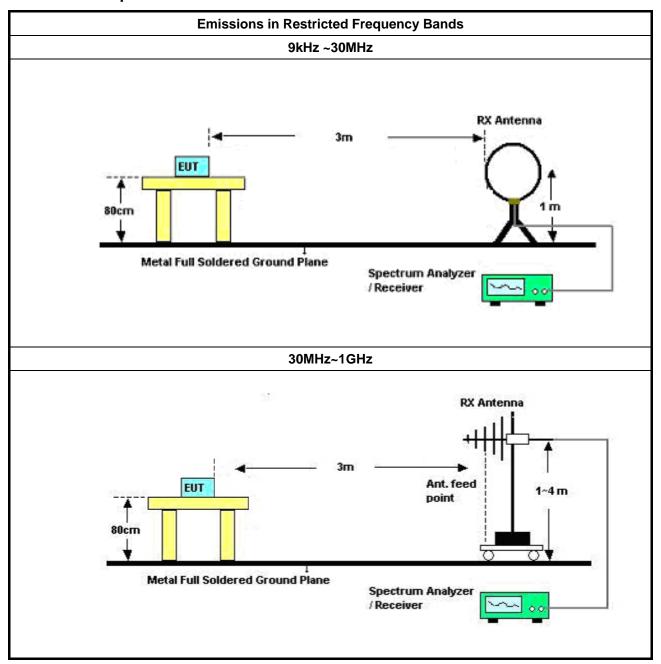
Report Template No.: HE1-C9 Ver2.0

FCC ID: UJ9DG009

Report Version : 02



# 3.7.4 Test Setup



TEL: 886-3-3273456 Page Number. : 18 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Version

: 02

Report Template No.: HE1-C9 Ver2.0

Above 1GHz

BUT

3M & 1M

4M

Amax 30cm

Spectrum Analyzer

Report No.: FR853104-02AD

## 3.7.5 Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

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

### 3.7.6 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix G

TEL: 886-3-3273456 Page Number. : 19 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Version

: 02

Report Template No.: HE1-C9 Ver2.0



# 4 Test Equipment and Calibration Data

### **Instrument for AC Conduction**

| Instrument                            | Manufacturer | Model No.   | Serial No.     | Spec.               | Calibration<br>Date | Calibration Due<br>Date |
|---------------------------------------|--------------|-------------|----------------|---------------------|---------------------|-------------------------|
| EMC Receiver                          | R&S          | ESCS30      | 838251/003     | 9KHz ~ 2.75GHz      | 13/Jun/2017         | 12/Jun/2018             |
| LISN                                  | R&S          | ENV216      | 101295         | 9kHz ~ 30MHz        | 17/Nov/2017         | 16/Nov/2018             |
| RF Cable-CON                          | HUBER+SUHNER | RG213/U     | 07611832020001 | 9kHz ~ 30MHz        | 06/Oct/2017         | 05/Oct/2018             |
| AC POWER                              | APC          | AFC-11005G  | F310050055     | 47Hz~63Hz<br>5~300V | NCR                 | NCR                     |
| Impuls<br>Begrenzer Puls<br>e Limiter | SCHWARZBECK  | VTSD 9561-F | 9561-F041      | 9 kHz ~ 30 MHz      | 12/Oct/2017         | 11/Oct/2018             |

**NCR**: Non-Calibration Require

### **Instrument for Conducted Test**

| Instrument           | Manufacturer | Model No.    | Serial No. | Spec.           | Calibration<br>Date | Calibration Due<br>Date |
|----------------------|--------------|--------------|------------|-----------------|---------------------|-------------------------|
| Spectrum<br>Analyzer | R&S          | FSV 40       | 101013     | 9kHz~40GHz      | 29/Dec/2017         | 28/Dec/2018             |
| Signal<br>Generator  | R&S          | SMR40        | 100116     | 10MHz ~ 40GHz   | 27/Jul/2017         | 26/Jul/2018             |
| Power Sensor         | Anritsu      | MA2411B      | 0917017    | 300MHz ~ 40GHz  | 05/Feb/2018         | 04/Feb/2019             |
| Power Meter          | Anritsu      | ML2495A      | 0949003    | 300MHz ~ 40GHz  | 05/Feb/2018         | 04/Feb/2019             |
| RF Cable-0.2m        | HUBER+SUHNER | SUCOFLEX_104 | MY10710/4  | 30MHz ~ 26.5GHz | 25/Aug/2017         | 24/Aug/2018             |
| RF Cable-0.2m        | HUBER+SUHNER | SUCOFLEX_104 | MY10709/4  | 30MHz ~ 26.5GHz | 25/Aug/2017         | 24/Aug/2018             |
| RF Cable-0.5m        | HUBER+SUHNER | SUCOFLEX_104 | MY10713/4  | 30MHz ~ 26.5GHz | 25/Aug/2017         | 24/Aug/2018             |

TEL: 886-3-3273456 Page Number. : 20 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0

FCC ID: UJ9DG009

Report Version : 02

### **Instrument for Radiated Test**

| Instrument                             | Manufacturer | Model No.                | Serial No.        | Spec.          | Calibration<br>Date | Calibration Due<br>Date |
|--|--------------|--------------------------|-------------------|----------------|---------------------|-------------------------|
| N.S.A.<br>Measurement                  | TDK          | SAC-3M                   | 03CH09-HY         | 30MHz ~ 1GHz   | 23/Apr/2018         | 22/Apr/2019             |
| 3m Semi<br>Anechoic<br>Chamber         | TDK          | SAC-3M                   | 03CH09-HY         | 1GHz ~ 18GHz   | 20/Jun/2017         | 19/Jun/2018             |
| Amplifier                              | Agilent      | 8449B                    | 3008A02326        | 1GHz ~ 26.5GHz | 17/Jul/2017         | 16/Jul/2018             |
| Amplifier                              | EMC          | EMC9135                  | 980232            | 9KHz~1GHz      | 27/Apr/2018         | 26/Apr/2019             |
| EXA Signal<br>Analyzer                 | KEYSIGHT     | N9010A                   | MY54200885        | 10Hz ~ 44GHz   | 20/Jul/2017         | 19/Jul/2018             |
| Bilog Antenna & 5dB Attenuator         | TESEQ & MTJ  | CBL6111D &<br>MTJ6102-05 | 35418             | 30MHz~1GHz     | 09/Sep/2017         | 08/Sep/2018             |
| Double Ridged<br>Guide Horn<br>Antenna | SCHWARZBECK  | BBHA 9120D               | BBHA9120D<br>1534 | 1GHz~18GHz     | 30/Apr/2018         | 29/Apr/2019             |
| Broadband Horn<br>Antenna              | SCHWARZBECK  | BBHA 9170                | BBHA9170614       | 18GHz~40GHz    | 09/Feb/2018         | 08/Feb/2019             |
| Loop Antenna                           | TESEQ        | HLA 6120                 | 31244             | 9k-30MHz       | 29/Mar/2018         | 28/Mar/2019             |
| RF Cable-R03m                          | Jye Bao      | RG142                    | CB021             | 9kHz ~ 1GHz    | 02/Feb/2018         | 01/Feb/2019             |
| RF Cable-high                          | SUHNER       | SUCOFLEX104              | MY34918/4         | 1GHz ~ 40GHz   | 02/Feb/2018         | 01/Feb/2019             |

Report No.: FR853104-02AD

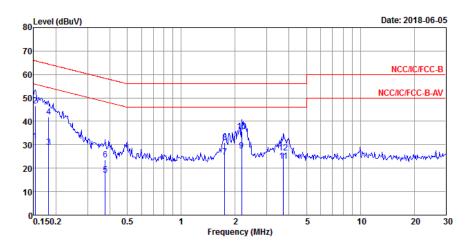
TEL: 886-3-3273456 Page Number. : 21 of 21
FAX: 886-3-3270973 Issued Date : Jul. 19, 2018

Report Template No.: HE1-C9 Ver2.0 Report Version : 02



### **AC Power-line Conducted Emissions**

| AC Power-line Conducted Emissions Result |                    |             |         |  |  |
|--|--------------------|-------------|---------|--|--|
| Operating Mode                           | 1                  | Power Phase | Neutral |  |  |
| Operating Function                       | USB mode ; 2.4G TX |             |         |  |  |



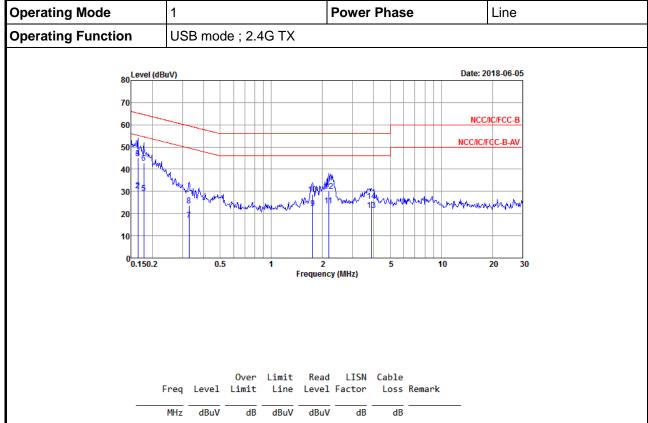
|       | Freq | Level | Over<br>Limit | Limit<br>Line | Read<br>Level | LISN<br>Factor | Cable<br>Loss | Remark  |
|-------|------|-------|---------------|---------------|---------------|----------------|---------------|---------|
|       | MHz  | dBuV  | dB            | dBuV          | dBuV          | dB             | dB            |         |
| 1     | 0.15 | 31.60 | -24.22        | 55.82         | 21.93         | 9.63           | 0.04          | Average |
| 2     | 0.15 | 46.71 | -19.11        | 65.82         | 37.04         | 9.63           | 0.04          | QP      |
| 3     | 0.18 | 28.86 | -25.56        | 54.42         | 19.23         | 9.62           | 0.01          | Average |
| 4     | 0.18 | 41.92 | -22.50        | 64.42         | 32.29         | 9.62           | 0.01          | QP      |
| 5     | 0.38 | 17.03 | -31.31        | 48.34         | 7.33          | 9.61           | 0.09          | Average |
| 6     | 0.38 | 23.53 | -34.81        | 58.34         | 13.83         | 9.61           | 0.09          | QP      |
| 7     | 1.75 | 24.85 | -21.15        | 46.00         | 15.22         | 9.63           | 0.00          | Average |
| 8     | 1.75 | 31.12 | -24.88        | 56.00         | 21.49         | 9.63           | 0.00          | OP _    |
| 9 MAX | 2.18 | 27.32 | -18.68        | 46.00         | 17.68         | 9.63           | 0.01          | Average |
| 10    | 2.18 | 35.69 | -20.31        | 56.00         | 26.05         | 9.63           | 0.01          | QP      |
| 11    | 3.72 | 23.03 | -22.97        | 46.00         | 13.31         | 9.64           | 0.08          | Average |
| 12    | 3.72 | 26.69 | -29.31        | 56.00         | 16.97         | 9.64           | 0.08          | QP      |

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

TEL: 886-3-327-3456 FAX: 886-3-327-0973





**AC Power-line Conducted Emissions Result** 

|       | MHz  | dBuV dB      | dBuV  | dBuV  | dB   | dB           |  |
|-------|------|--------------|-------|-------|------|--------------|--|
| 1     | 0.16 | 30.51 -24.74 | 55.25 | 20.86 | 9.62 | 0.03 Average |  |
| 2     | 0.16 | 30.29 -24.96 | 55.25 | 20.64 | 9.62 | 0.03 Average |  |
| 3     | 0.16 | 44.94 -20.31 | 65.25 | 35.29 | 9.62 | 0.03 QP      |  |
| 4 MAX | 0.16 | 45.18 -20.07 | 65.25 | 35.53 | 9.62 | 0.03 QP      |  |
| 5     | 0.18 | 29.28 -25.31 | 54.59 | 19.64 | 9.62 | 0.02 Average |  |
| 6     | 0.18 | 42.93 -21.66 | 64.59 | 33.29 | 9.62 | 0.02 QP      |  |
| 7     | 0.33 | 17.26 -32.23 | 49.49 | 7.58  | 9.61 | 0.07 Average |  |
| 8     | 0.33 | 23.56 -35.93 | 59.49 | 13.88 | 9.61 | 0.07 QP      |  |
| 9     | 1.75 | 22.57 -23.43 | 46.00 | 12.95 | 9.62 | 0.00 Average |  |
| 10    | 1.75 | 28.73 -27.27 | 56.00 | 19.11 | 9.62 | 0.00 QP      |  |
| 11    | 2.18 | 23.70 -22.30 | 46.00 | 14.07 | 9.62 | 0.01 Average |  |
| 12    | 2.18 | 30.25 -25.75 | 56.00 | 20.62 | 9.62 | 0.01 QP      |  |
| 13    | 3.88 | 21.68 -24.32 | 46.00 | 11.97 | 9.63 | 0.08 Average |  |
| 14    | 3.88 | 25.58 -30.42 | 56.00 | 15.87 | 9.63 | 0.08 QP      |  |
|       |      |              |       |       |      |              |  |

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

TEL: 886-3-327-3456 FAX: 886-3-327-0973



# EBW-FS Result Appendix B.1

**Summary** 

| Mode          | Max-N dB | Max-OBW | ITU-Code | Min-N dB | Min-OBW |
|---------------|----------|---------|----------|----------|---------|
|               | (Hz)     | (Hz)    |          | (Hz)     | (Hz)    |
| 2.4-2.4835GHz | -        | -       | -        | -        | -       |
| FHSS_Nss1_1TX | 2.059M   | 2.056M  | 2M06D1D  | 2.052M   | 2.049M  |

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth; Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth;

### Result

TEL: 886-3-327-3456

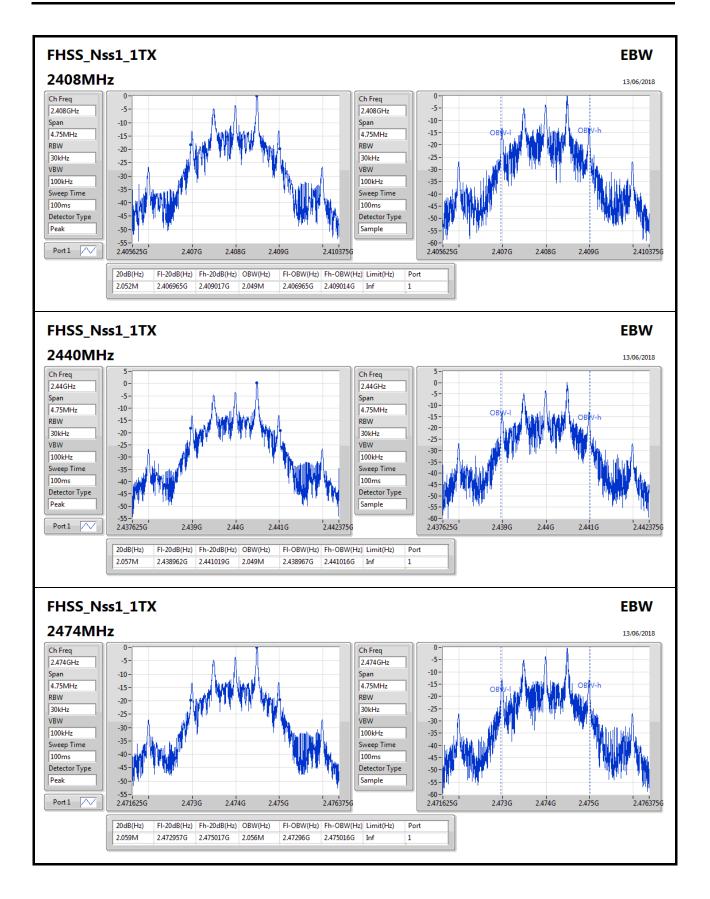
| Mode             | Result | Limit | Port 1-N dB | Port 1-OBW |
|------------------|--------|-------|-------------|------------|
|                  |        | (Hz)  | (Hz)        | (Hz)       |
| FHSS_Nss1_1TX    | -      | -     | -           | -          |
| 2408MHz_TnomVnom | Pass   | Inf   | 2.052M      | 2.049M     |
| 2440MHz_TnomVnom | Pass   | Inf   | 2.057M      | 2.049M     |
| 2474MHz_TnomVnom | Pass   | Inf   | 2.059M      | 2.056M     |

Port X-N dB = Port X 20dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

SPORTON INTERNATIONAL INC. Page No. : B1 of B2

FAX: 886-3-327-0973 853014-02





SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-327-0973



# Channel Separation-FS Result

Appendix B.2

**Summary** 

| Mode          | Max-Space | Min-Space |
|---------------|-----------|-----------|
|               | (Hz)      | (Hz)      |
| 2.4-2.4835GHz | -         | -         |
| FHSS_Nss1_1TX | 2.002125M | 1.99975M  |

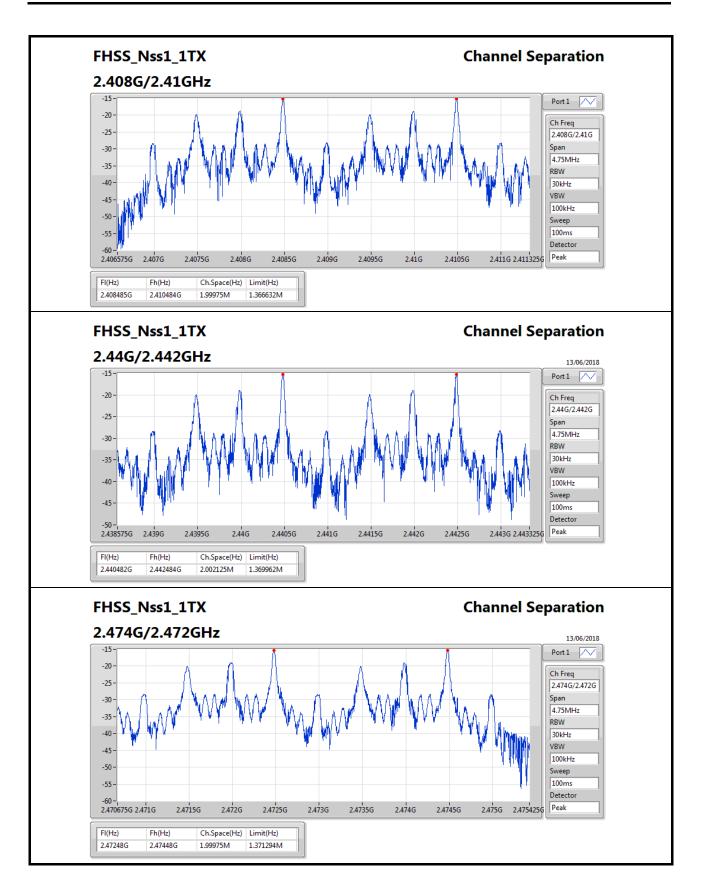
### Result

| Mode             | Result | FI        | Fh        | Ch.Space  | Limit     |
|------------------|--------|-----------|-----------|-----------|-----------|
|                  |        | (Hz)      | (Hz)      | (Hz)      | (Hz)      |
| FHSS_Nss1_1TX    | -      | -         | -         | -         | -         |
| 2408MHz_TnomVnom | Pass   | 2.408485G | 2.410484G | 1.99975M  | 1.366632M |
| 2440MHz_TnomVnom | Pass   | 2.440482G | 2.442484G | 2.002125M | 1.369962M |
| 2474MHz_TnomVnom | Pass   | 2.47248G  | 2.47448G  | 1.99975M  | 1.371294M |

SPORTON INTERNATIONAL INC. Page No. : B1 of B2

TEL: 886-3-327-3456 FAX: 886-3-327-0973 853014-02





SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-327-0973 Page No. : B2 of B2

853014-02



PK Power Result Appendix C.1

**Summary** 

| Mode          | Power | Power   |
|---------------|-------|---------|
|               | (dBm) | (W)     |
| 2.4-2.4835GHz | -     | -       |
| FHSS_Nss1_1TX | 0.90  | 0.00123 |

### Result

| Mode             | Result | Gain  | Power | Power Limit |
|------------------|--------|-------|-------|-------------|
|                  |        | (dBi) | (dBm) | (dBm)       |
| FHSS_Nss1_1TX    | -      | -     | -     | -           |
| 2408MHz_TnomVnom | Pass   | 2.15  | 0.79  | 21.00       |
| 2440MHz_TnomVnom | Pass   | 2.15  | 0.90  | 21.00       |
| 2474MHz_TnomVnom | Pass   | 2.15  | 0.87  | 21.00       |

SPORTON INTERNATIONAL INC. Page No. : C1 of C1

TEL: 886-3-327-3456 FAX: 886-3-327-0973 853014-02



### Appendix C.2 **AV Power Result**

Summary

| Mode          | Total Power | Total Power |
|---------------|-------------|-------------|
|               | (dBm)       | (W)         |
| 2.4-2.4835GHz | -           | -           |
| FHSS          | -0.23       | 0.00095     |

### Result

TEL: 886-3-327-3456

| Mode    | Result | DG    | Port 1 | Total Power | Power Limit |
|---------|--------|-------|--------|-------------|-------------|
|         |        | (dBi) | (dBm)  | (dBm)       | (dBm)       |
| FHSS    | =      | -     | -      | -           | -           |
| 2408MHz | Pass   | 2.15  | -0.44  | -0.44       | 30.00       |
| 2440MHz | Pass   | 2.15  | -0.23  | -0.23       | 30.00       |
| 2474MHz | Pass   | 2.15  | -0.69  | -0.69       | 30.00       |

DG = Directional Gain; Port X = Port X output power
Note : Conducted average output power is for reference only

SPORTON INTERNATIONAL INC. Page No. : C1 of C1

FAX: 886-3-327-0973 853014



# Hopping Channel and Bandedge-FS Result

Appendix D

Summary

| Mode          | Max-Hop No |
|---------------|------------|
| 2.4-2.4835GHz | -          |
| FHSS_Nss1_1TX | 34         |

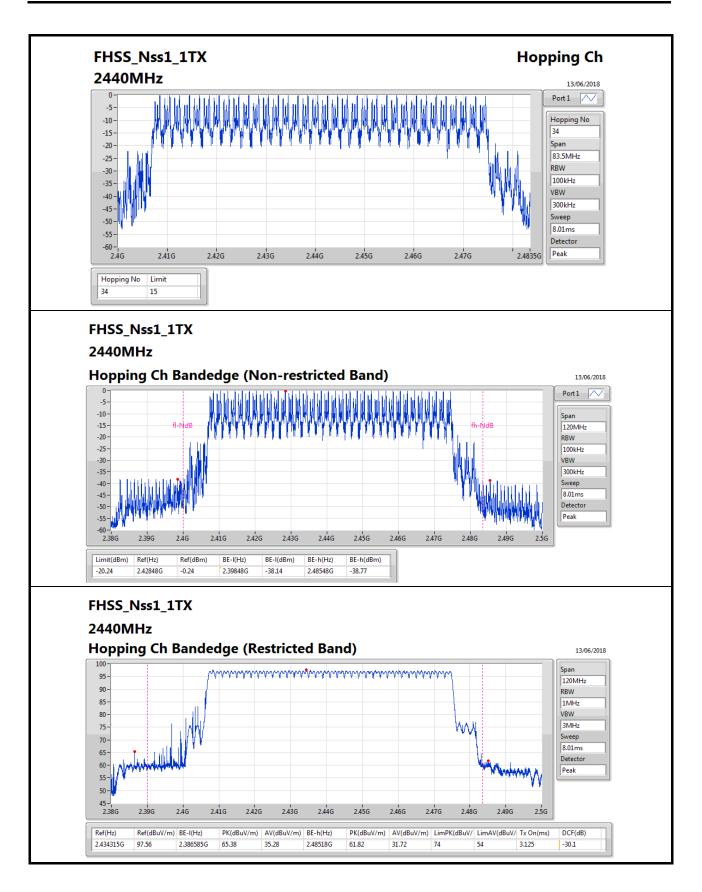
### Result

| Mode             | Result | Hopping No | Limit |
|------------------|--------|------------|-------|
| FHSS_Nss1_1TX    | -      | -          | -     |
| 2440MHz_TnomVnom | Pass   | 34         | 15    |

SPORTON INTERNATIONAL INC. Page No. : D1 of D2

TEL: 886-3-327-3456 FAX: 886-3-327-0973 853014-02





SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-327-0973 Page No. : D2 of D2

853014-02



# **Dwell Time-FS Result**

Appendix E

**Summary** 

| Mode          | Max-Dwell |
|---------------|-----------|
|               | (s)       |
| 2.4-2.4835GHz | -         |
| FHSS_Nss1_1TX | 12.5664m  |

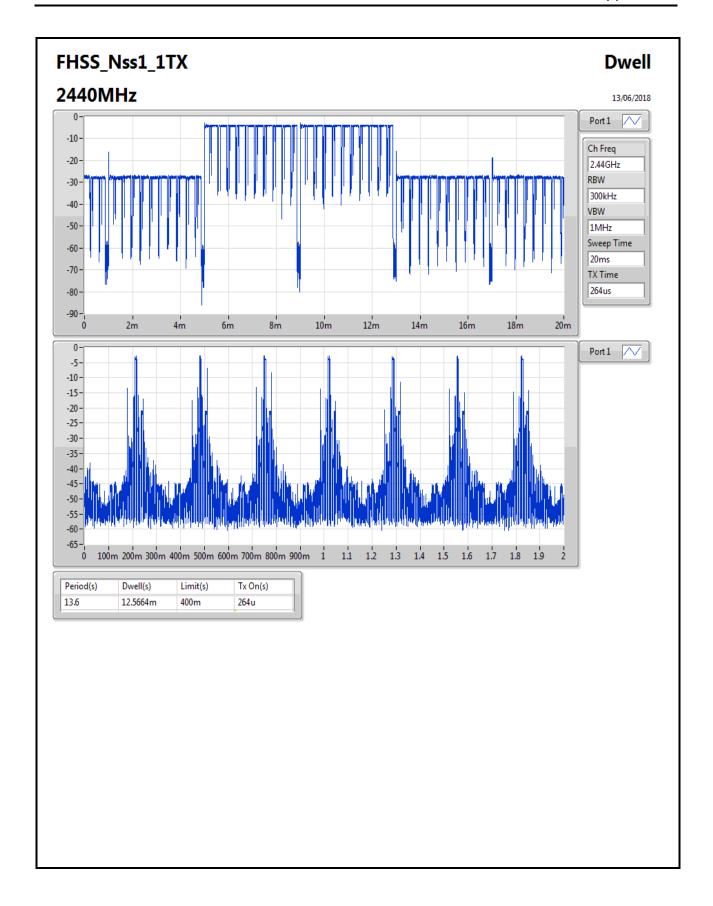
### Result

|  | Mode             | Result | Period | Dwell    | Limit | Tx On |  |  |  |  |
|--|------------------|--------|--------|----------|-------|-------|--|--|--|--|
|  |                  |        | (s)    | (s)      | (s)   | (s)   |  |  |  |  |
|  | FHSS_Nss1_1TX    | -      | -      | -        | -     | -     |  |  |  |  |
|  | 2440MHz_TnomVnom | Pass   | 13.6   | 12.5664m | 400m  | 264u  |  |  |  |  |

SPORTON INTERNATIONAL INC. Page No. : E1 of E2

TEL: 886-3-327-3456 FAX: 886-3-327-0973 853014-02





SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-327-0973 Page No. : E2 of E2

853014-02



# **CSE Non-restricted Band-FS Result**

Appendix F

**Summary** 

| Mode          | Result | Ref       | Ref   | Limit  | Freq      | Level  | Freq      | Level  | Freq      | Level  | Freq      | Level  | Port |
|---------------|--------|-----------|-------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|------|
|               |        | (Hz)      | (dBm) | (dBm)  | (Hz)      | (dBm)  | (Hz)      | (dBm)  | (Hz)      | (dBm)  | (Hz)      | (dBm)  |      |
| 2.4-2.4835GHz | -      | -         | -     | -      | -         | -      | -         | -      | -         | -      | -         | -      | -    |
| FHSS_Nss1_1TX | Pass   | 2.408016G | -3.65 | -23.65 | 147.1269M | -38.89 | 2.399947G | -43.80 | 2.484572G | -57.06 | 7.220595G | -46.83 | 1    |

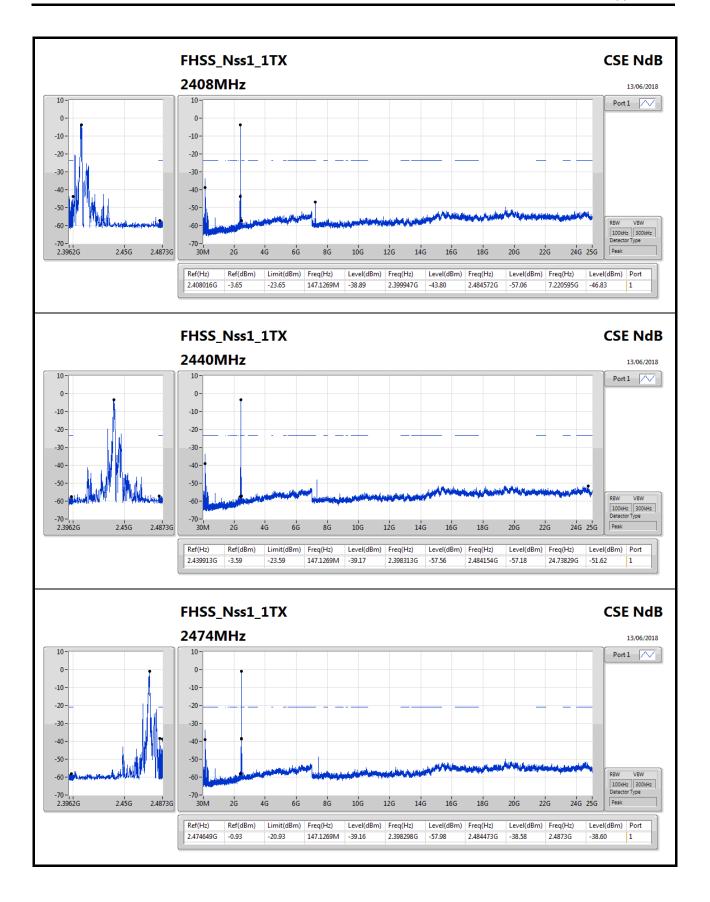
### Result

| . Todaic         |        |           |       |        |           |        |           |        |           |        |           |        |      |
|------------------|--------|-----------|-------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|------|
| Mode             | Result | Ref       | Ref   | Limit  | Freq      | Level  | Freq      | Level  | Freq      | Level  | Freq      | Level  | Port |
|                  |        | (Hz)      | (dBm) | (dBm)  | (Hz)      | (dBm)  | (Hz)      | (dBm)  | (Hz)      | (dBm)  | (Hz)      | (dBm)  |      |
| FHSS_Nss1_1TX    | -      | -         | -     | -      | -         | -      | -         | -      | -         | -      | -         | -      | -    |
| 2408MHz_TnomVnom | Pass   | 2.408016G | -3.65 | -23.65 | 147.1269M | -38.89 | 2.399947G | -43.80 | 2.484572G | -57.06 | 7.220595G | -46.83 | 1    |
| 2440MHz_TnomVnom | Pass   | 2.439913G | -3.59 | -23.59 | 147.1269M | -39.17 | 2.398313G | -57.56 | 2.484154G | -57.18 | 24.73829G | -51.62 | 1    |
| 2474MHz_TnomVnom | Pass   | 2.474649G | -0.93 | -20.93 | 147.1269M | -39.16 | 2.398298G | -57.98 | 2.484473G | -38.58 | 2.4873G   | -38.60 | 1    |

SPORTON INTERNATIONAL INC. Page No. : F1 of F2

TEL: 886-3-327-3456 FAX: 886-3-327-0973 853014-02





SPORTON INTERNATIONAL INC.

TEL: 886-3-327-3456 FAX: 886-3-327-0973 Page No. : F2 of F2

853014-02



# RSE TX below 1GHz Result

Appendix G.1

853014-02

Summary

| Mode          | Result | Туре | Freq   | Level    | Limit    | Margin | Factor | Dist | Condition | Azimuth | Height | Comments |
|---------------|--------|------|--------|----------|----------|--------|--------|------|-----------|---------|--------|----------|
|               |        |      | (Hz)   | (dBuV/m) | (dBuV/m) | (dB)   | (dB)   | (m)  |           | (°)     | (m)    |          |
| 2.4-2.4835GHz | -      | -    | -      | -        | -        | -      | -      | -    | -         | -       | -      | -        |
| FHSS_Nss1_1TX | Pass   | QP   | 64.92M | 36.58    | 40.00    | -3.42  | -25.54 | 3    | Vertical  | 150     | 1.10   | -        |

SPORTON INTERNATIONAL INC. Page No. : G1 of G4

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## RSE TX below 1GHz Result

# Appendix G.1

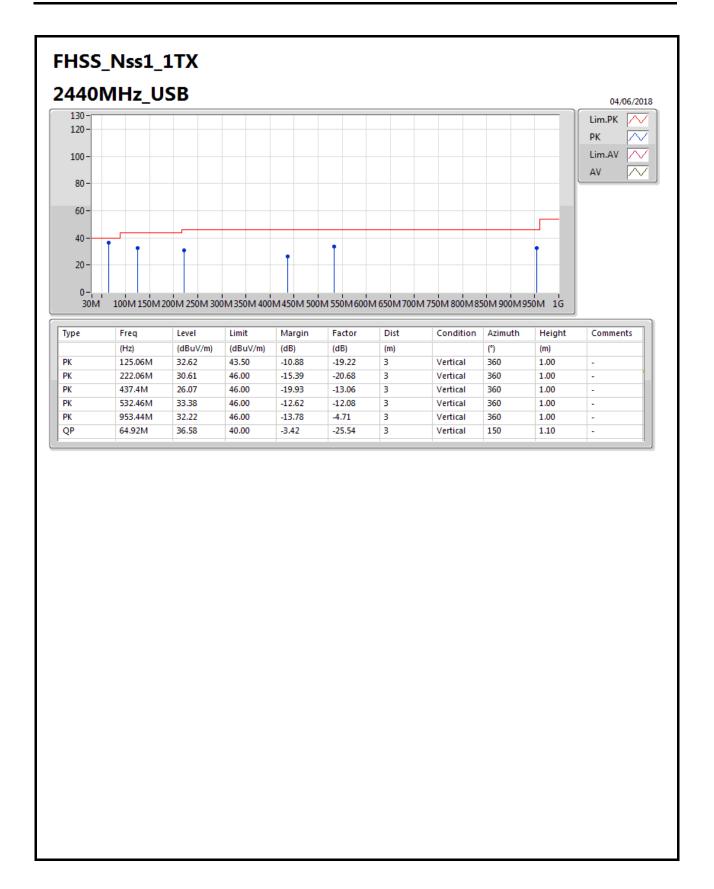
#### Result

| Mode          | Result | Туре | Freq    | Level    | Limit    | Margin | Factor | Dist | Condition  | Azimuth | Height | Comments |
|---------------|--------|------|---------|----------|----------|--------|--------|------|------------|---------|--------|----------|
|               |        |      | (Hz)    | (dBuV/m) | (dBuV/m) | (dB)   | (dB)   | (m)  |            | (°)     | (m)    |          |
| FHSS_Nss1_1TX | -      | -    | -       | -        | -        | -      | -      | -    | -          | -       | -      | -        |
| 2440MHz       | Pass   | PK   | 125.06M | 32.62    | 43.50    | -10.88 | -19.22 | 3    | Vertical   | 360     | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 222.06M | 30.61    | 46.00    | -15.39 | -20.68 | 3    | Vertical   | 360     | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 437.4M  | 26.07    | 46.00    | -19.93 | -13.06 | 3    | Vertical   | 360     | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 532.46M | 33.38    | 46.00    | -12.62 | -12.08 | 3    | Vertical   | 360     | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 953.44M | 32.22    | 46.00    | -13.78 | -4.71  | 3    | Vertical   | 360     | 1.00   | -        |
| 2440MHz       | Pass   | QP   | 64.92M  | 36.58    | 40.00    | -3.42  | -25.54 | 3    | Vertical   | 150     | 1.10   | -        |
| 2440MHz       | Pass   | PK   | 64.92M  | 36.30    | 40.00    | -3.70  | -25.54 | 3    | Horizontal | 0       | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 177.44M | 33.63    | 43.50    | -9.87  | -21.16 | 3    | Horizontal | 0       | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 251.16M | 39.56    | 46.00    | -6.44  | -16.97 | 3    | Horizontal | 0       | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 431.58M | 31.39    | 46.00    | -14.61 | -13.11 | 3    | Horizontal | 0       | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 530.52M | 31.01    | 46.00    | -14.99 | -12.09 | 3    | Horizontal | 0       | 1.00   | -        |
| 2440MHz       | Pass   | PK   | 953.44M | 34.35    | 46.00    | -11.65 | -4.71  | 3    | Horizontal | 0       | 1.00   | -        |

SPORTON INTERNATIONAL INC. Page No. : G2 of G4

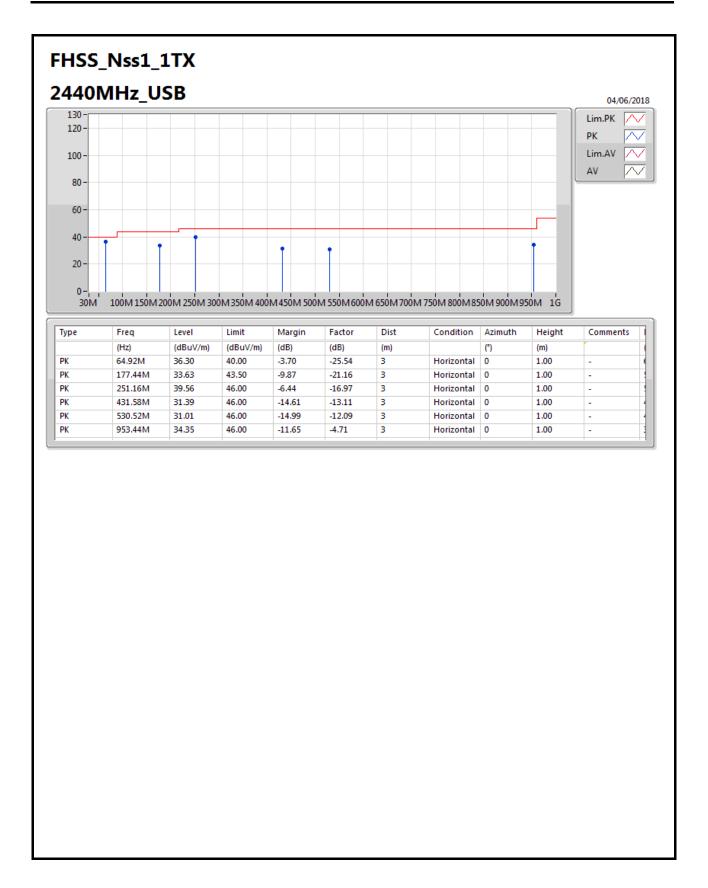
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## RSE TX above 1GHz Result

Appendix G.2

853014-02

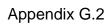
Summary

| Mode          | Result | Туре | Freq      | Level    | Limit    | Margin | Factor | Dist | Condition  | Azimuth | Height | Comments |
|---------------|--------|------|-----------|----------|----------|--------|--------|------|------------|---------|--------|----------|
|               |        |      | (Hz)      | (dBuV/m) | (dBuV/m) | (dB)   | (dB)   | (m)  |            | (°)     | (m)    |          |
| 2.4-2.4835GHz | -      | -    | -         | -        | -        | -      | -      | -    | -          | -       | -      | -        |
| FHSS_Nss1_1TX | Pass   | AV   | 7.423517G | 53.72    | 54.00    | -0.28  | 11.44  | 3    | Horizontal | 317     | 1.02   | -        |

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## RSE TX above 1GHz Result

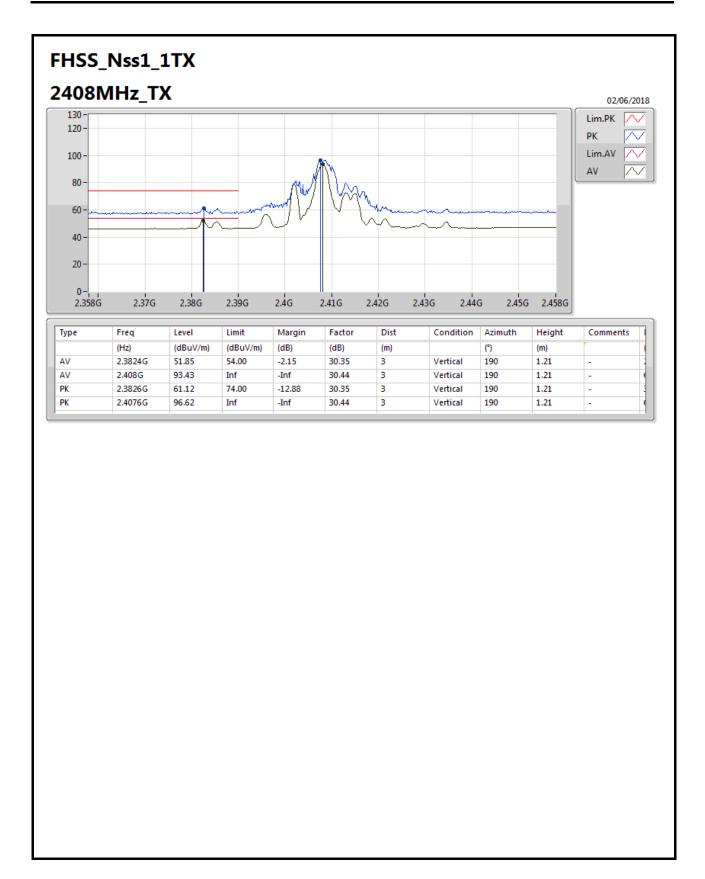
#### Result

| Mode          | Result | Туре | Freq<br>(Hz) | Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Factor<br>(dB) | Dist<br>(m) | Condition  | Azimuth<br>(°) | Height<br>(m) | Comment |
|---------------|--------|------|--------------|-------------------|-------------------|----------------|----------------|-------------|------------|----------------|---------------|---------|
|               |        |      |              |                   |                   |                |                |             |            |                |               |         |
| FHSS_Nss1_1TX | -      | -    | -            | -                 | -                 | -              | -              | -           | -          | -              | -             | -       |
| 2408MHz       | Pass   | AV   | 2.3824G      | 51.85             | 54.00             | -2.15          | 30.35          | 3           | Vertical   | 190            | 1.21          | -       |
| 2408MHz       | Pass   | AV   | 2.408G       | 93.43             | Inf               | -Inf           | 30.44          | 3           | Vertical   | 190            | 1.21          | -       |
| 2408MHz       | Pass   | PK   | 2.3826G      | 61.12             | 74.00             | -12.88         | 30.35          | 3           | Vertical   | 190            | 1.21          | -       |
| 2408MHz       | Pass   | PK   | 2.4076G      | 96.62             | Inf               | -Inf           | 30.44          | 3           | Vertical   | 190            | 1.21          | -       |
| 2408MHz       | Pass   | AV   | 2.3824G      | 53.42             | 54.00             | -0.58          | 30.35          | 3           | Horizontal | 219            | 1.39          | -       |
| 2408MHz       | Pass   | AV   | 2.408G       | 96.50             | Inf               | -Inf           | 30.44          | 3           | Horizontal | 219            | 1.39          | -       |
| 2408MHz       | Pass   | PK   | 2.3824G      | 63.59             | 74.00             | -10.41         | 30.35          | 3           | Horizontal | 219            | 1.39          | -       |
| 2408MHz       | Pass   | PK   | 2.4086G      | 100.17            | Inf               | -Inf           | 30.44          | 3           | Horizontal | 219            | 1.39          | -       |
| 2408MHz       | Pass   | AV   | 4.817058G    | 35.95             | 54.00             | -18.05         | 5.82           | 3           | Vertical   | 174            | 1.41          | -       |
| 2408MHz       | Pass   | PK   | 4.816918G    | 46.63             | 74.00             | -27.37         | 5.82           | 3           | Vertical   | 174            | 1.41          | -       |
| 2408MHz       | Pass   | AV   | 4.816978G    | 38.69             | 54.00             | -15.31         | 5.82           | 3           | Horizontal | 238            | 1.02          | -       |
| 2408MHz       | Pass   | PK   | 4.817078G    | 48.28             | 74.00             | -25.72         | 5.82           | 3           | Horizontal | 238            | 1.02          | -       |
| 2440MHz       | Pass   | AV   | 2.3784G      | 44.72             | 54.00             | -9.28          | 30.34          | 3           | Vertical   | 238            | 2.66          | -       |
| 2440MHz       | Pass   | AV   | 2.44G        | 93.80             | Inf               | -Inf           | 30.55          | 3           | Vertical   | 238            | 2.66          | -       |
| 2440MHz       | Pass   | AV   | 2.486G       | 45.79             | 54.00             | -8.21          | 30.71          | 3           | Vertical   | 238            | 2.66          | -       |
| 2440MHz       | Pass   | PK   | 2.3868G      | 58.29             | 74.00             | -15.71         | 30.37          | 3           | Vertical   | 238            | 2.66          | -       |
| 2440MHz       | Pass   | PK   | 2.4396G      | 97.33             | Inf               | -Inf           | 30.54          | 3           | Vertical   | 238            | 2.66          | -       |
| 2440MHz       | Pass   | PK   | 2.4876G      | 59.93             | 74.00             | -14.07         | 30.71          | 3           | Vertical   | 238            | 2.66          | -       |
| 2440MHz       | Pass   | AV   | 2.368G       | 44.53             | 54.00             | -9.47          | 30.30          | 3           | Horizontal | 219            | 1.36          | -       |
| 2440MHz       | Pass   | AV   | 2.44G        | 96.54             | Inf               | -Inf           | 30.55          | 3           | Horizontal | 219            | 1.36          | -       |
| 2440MHz       | Pass   | AV   | 2.4964G      | 45.26             | 54.00             | -8.74          | 30.74          | 3           | Horizontal | 219            | 1.36          | -       |
| 2440MHz       | Pass   | PK   | 2.3764G      | 58.36             | 74.00             | -15.64         | 30.33          | 3           | Horizontal | 219            | 1.36          | -       |
| 2440MHz       | Pass   | PK   | 2.4396G      | 100.39            | Inf               | -Inf           | 30.54          | 3           | Horizontal | 219            | 1.36          | -       |
| 2440MHz       | Pass   | PK   | 2.4884G      | 59.03             | 74.00             | -14.97         | 30.71          | 3           | Horizontal | 219            | 1.36          | -       |
| 2440MHz       | Pass   | AV   | 7.321417G    | 44.28             | 54.00             | -9.72          | 11.15          | 3           | Vertical   | 198            | 1.50          | -       |
| 2440MHz       | Pass   | PK   | 7.321457G    | 55.04             | 74.00             | -18.96         | 11.15          | 3           | Vertical   | 198            | 1.50          | -       |
| 2440MHz       | Pass   | AV   | 7.321477G    | 52.12             | 54.00             | -1.88          | 11.15          | 3           | Horizontal | 317            | 1.03          | -       |
| 2440MHz       | Pass   | PK   | 7.321557G    | 60.88             | 74.00             | -13.12         | 11.15          | 3           | Horizontal | 317            | 1.03          | -       |
| 2474MHz       | Pass   | AV   | 2.474G       | 93.36             | Inf               | -Inf           | 30.66          | 3           | Vertical   | 238            | 2.57          | -       |
| 2474MHz       | Pass   | AV   | 2.4844G      | 51.25             | 54.00             | -2.75          | 30.69          | 3           | Vertical   | 238            | 2.57          | -       |
| 2474MHz       | Pass   | PK   | 2.4736G      | 97.20             | Inf               | -Inf           | 30.66          | 3           | Vertical   | 238            | 2.57          | -       |
| 2474MHz       | Pass   | PK   | 2.4838G      | 67.52             | 74.00             | -6.48          | 30.69          | 3           | Vertical   | 238            | 2.57          | -       |
| 2474MHz       | Pass   | AV   | 2.474G       | 95.50             | Inf               | -Inf           | 30.66          | 3           | Horizontal | 218            | 1.88          | -       |
| 2474MHz       | Pass   | AV   | 2.4844G      | 53.06             | 54.00             | -0.94          | 30.69          | 3           | Horizontal | 218            | 1.88          | -       |
| 2474MHz       | Pass   | PK   | 2.4736G      | 99.38             | Inf               | -Inf           | 30.66          | 3           | Horizontal | 218            | 1.88          | -       |
| 2474MHz       | Pass   | PK   | 2.483502G    | 72.19             | 74.00             | -1.81          | 30.69          | 3           | Horizontal | 218            | 1.88          | -       |
| 2474MHz       | Pass   | AV   | 7.423497G    | 46.85             | 54.00             | -7.15          | 11.44          | 3           | Vertical   | 205            | 1.94          | -       |
| 2474MHz       | Pass   | PK   | 7.420244G    | 56.36             | 74.00             | -17.64         | 11.43          | 3           | Vertical   | 205            | 1.94          | -       |
| 2474MHz       | Pass   | AV   | 7.423517G    | 53.72             | 54.00             | -0.28          | 11.44          | 3           | Horizontal | 317            | 1.02          | -       |
| 2474MHz       | Pass   | PK   | 7.423477G    | 62.55             | 74.00             | -11.45         | 11.44          | 3           | Horizontal | 317            | 1.02          | _       |

SPORTON INTERNATIONAL INC. Page No. : G2 of G14

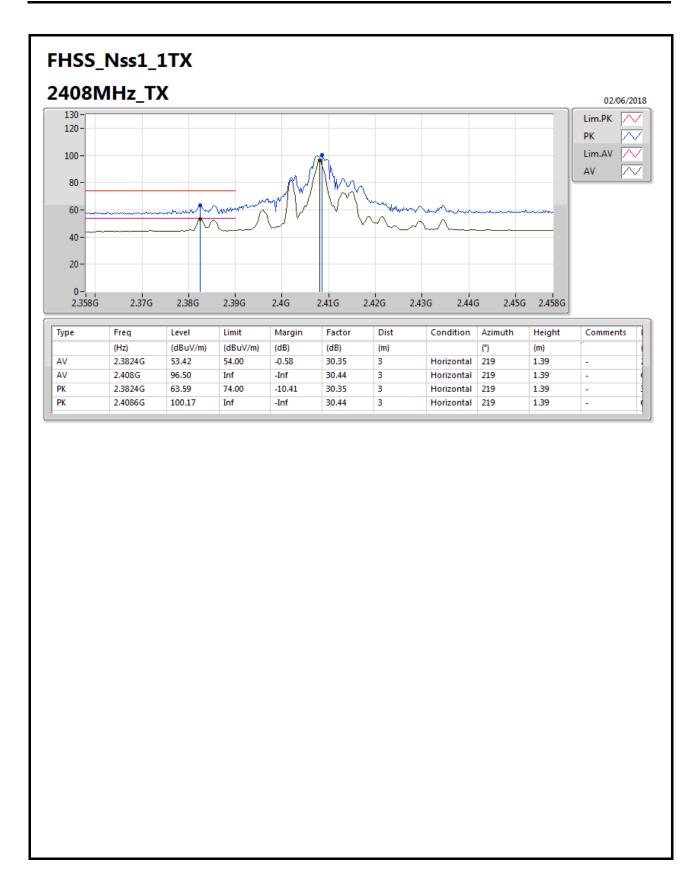
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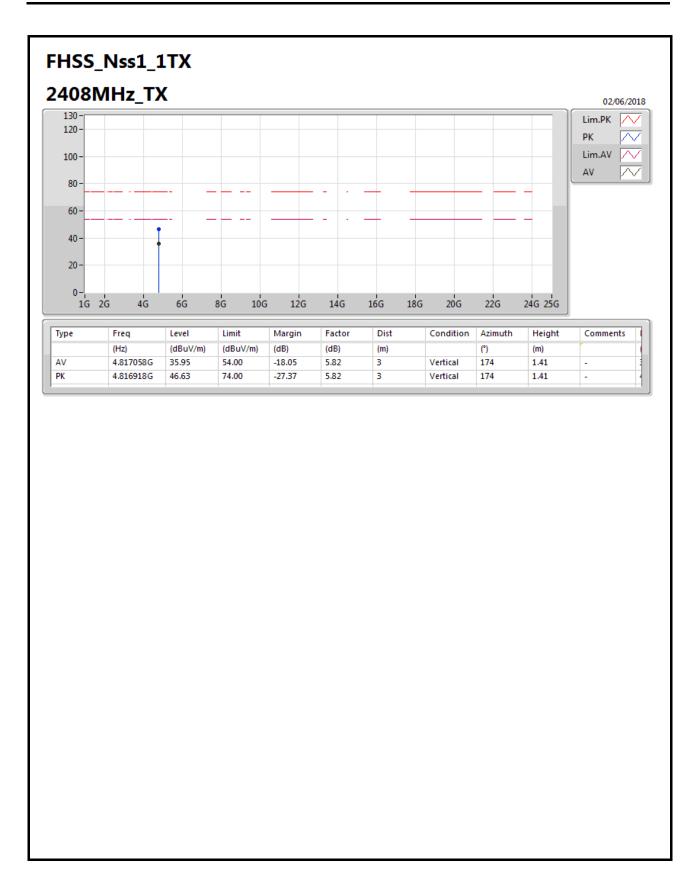
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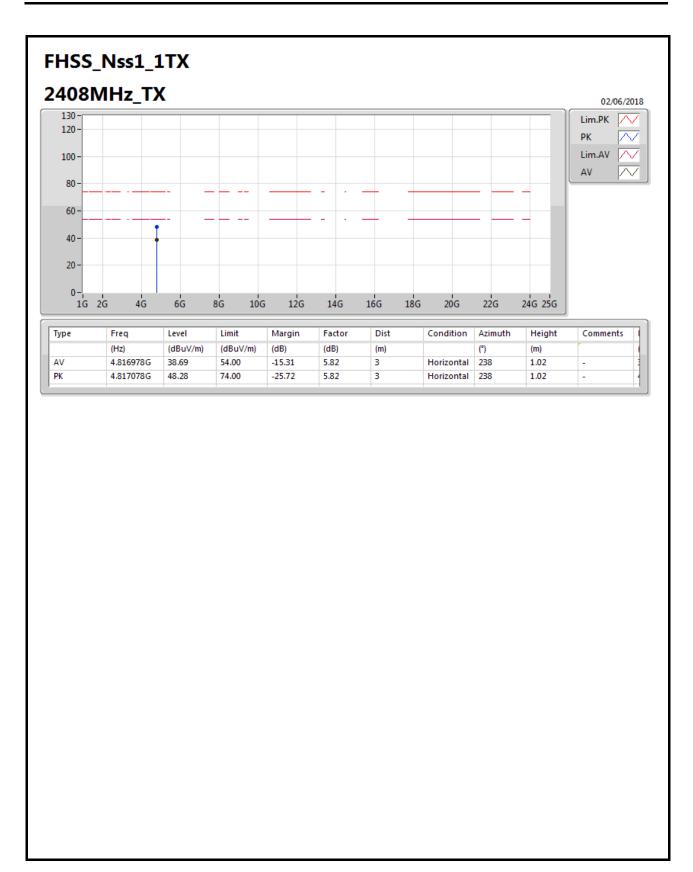
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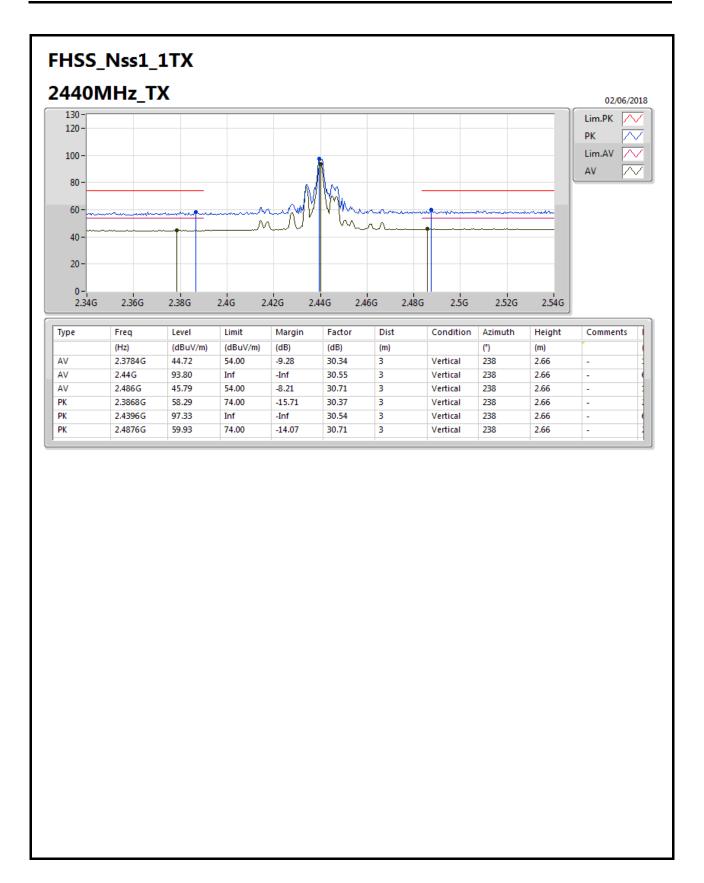
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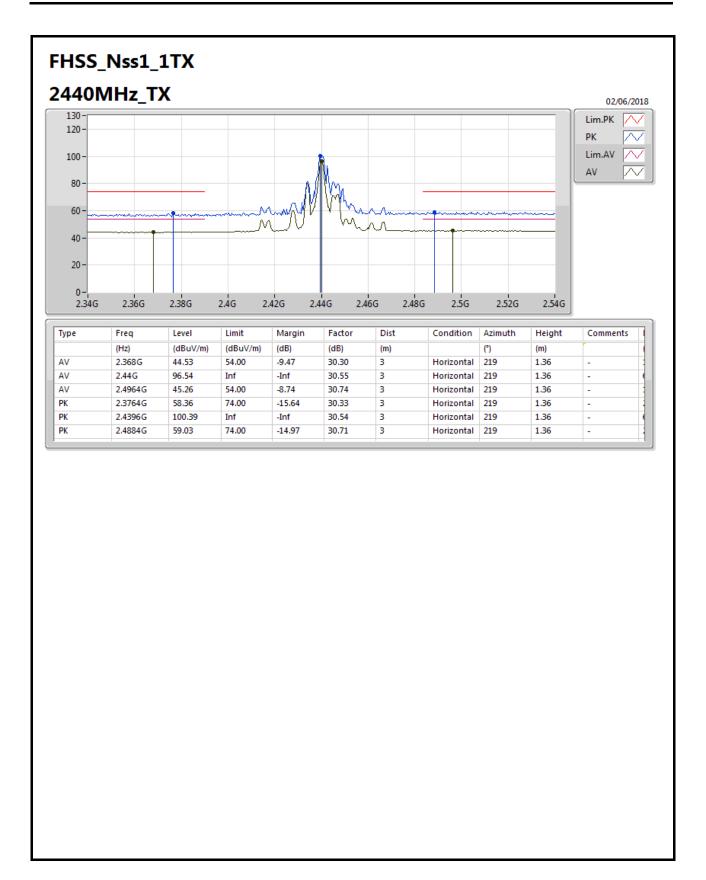
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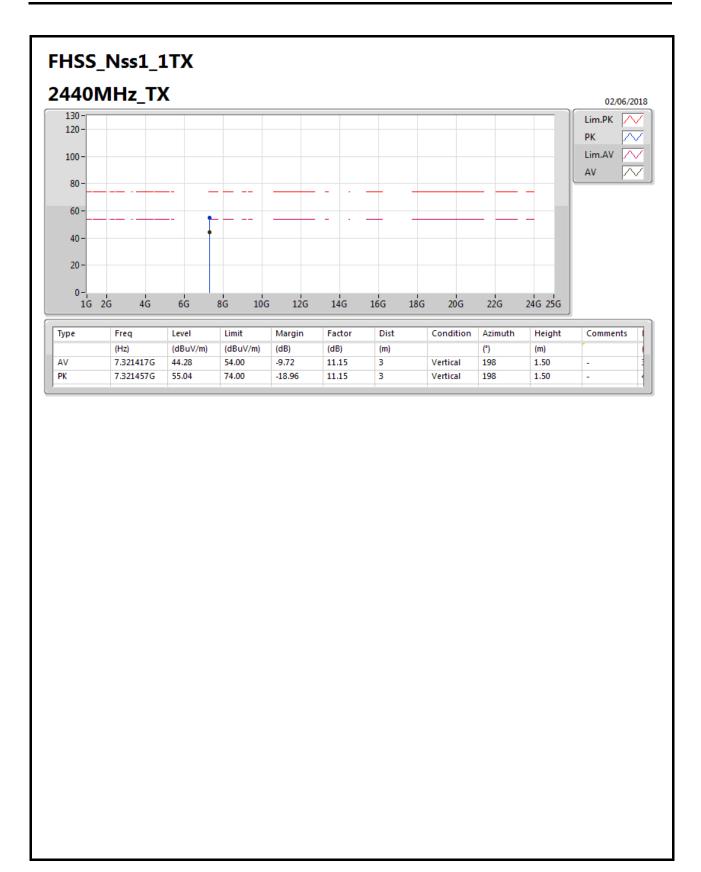
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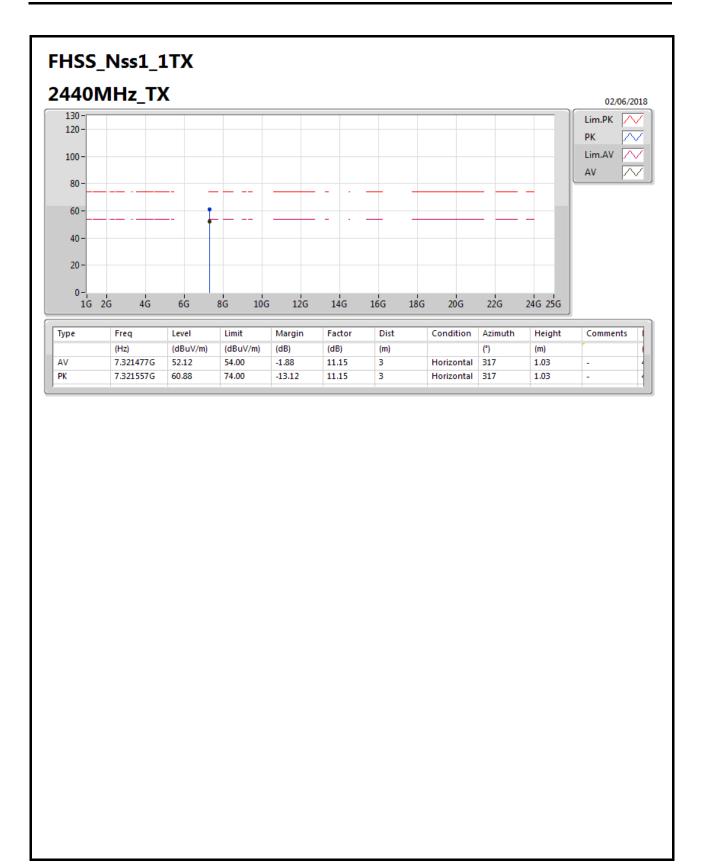
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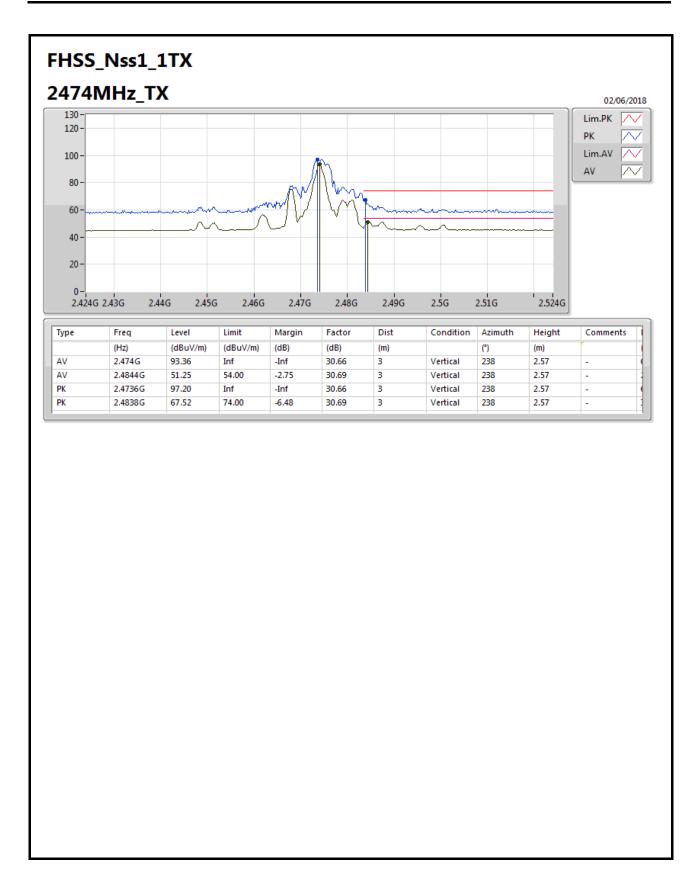
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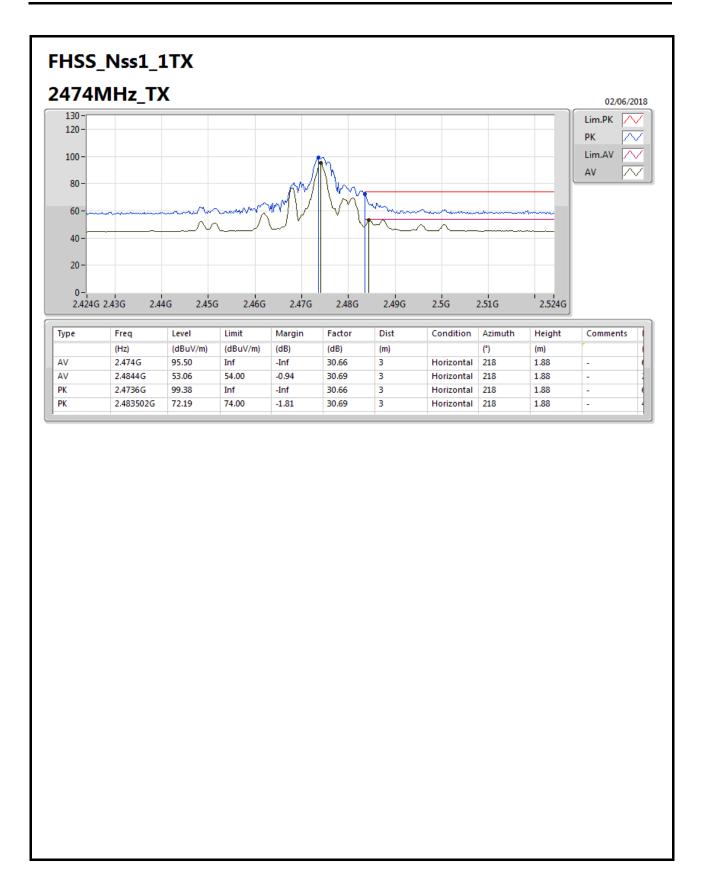
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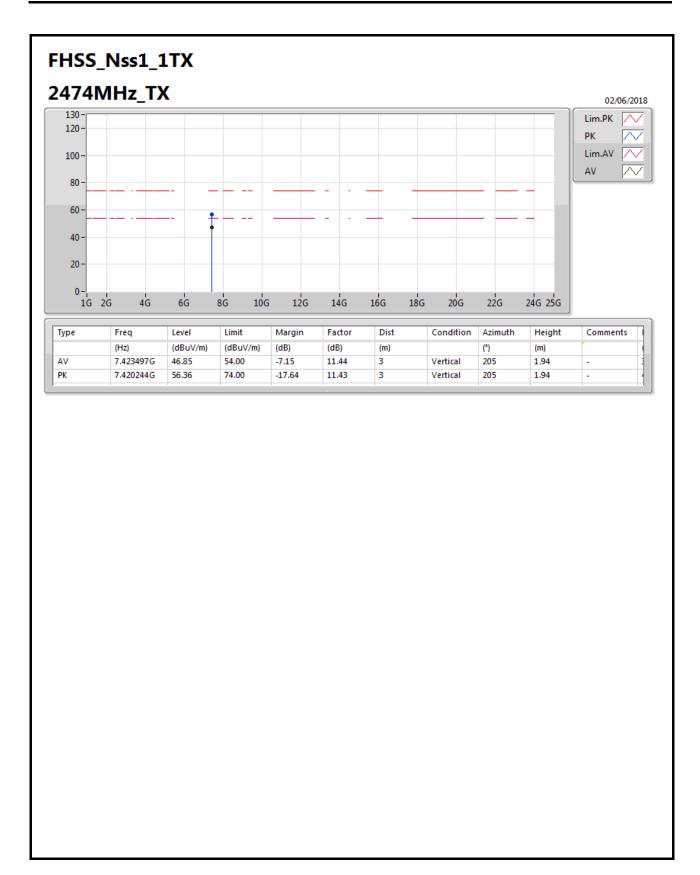
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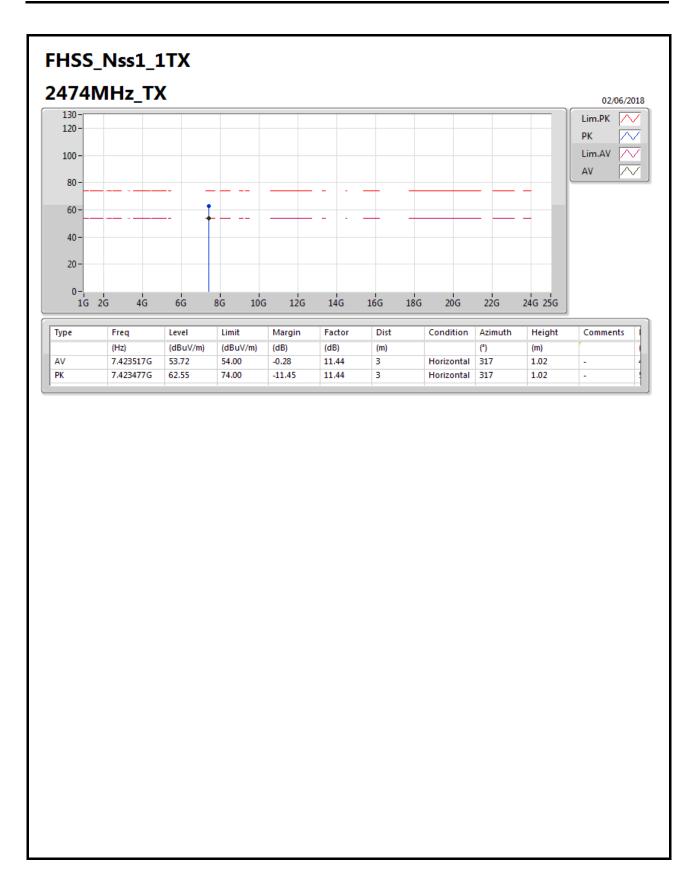
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