

FCC Test Report

| Product Name | : | Wireless Handy Scanner |
|--------------|---|------------------------|
|--------------|---|------------------------|

Model No. : H410W

- FCC ID. : HWFH410W
- Applicant : Mustek Systems Inc.
- : No.25, R&D Road II, Science-Based Industrial Address Park, Hsin-Chu, Taiwan, R.O.C.

| Date of Report | : 2013/05/10 |
|----------------|------------------------------------|
| Report No. | :134421R-RFUSP42V0 |
| Report Version | : V1.0 |
| lac-m | Taff Testing Laboratory 1313 |

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

| | Date of Report : 2013/05/10 Report No : 1344218-REUSP42 |
|-------------------------------|--|
| | |
| | GUIEIEK |
| Product Name | : Wireless Handy Scanner |
| Applicant | : Mustek Systems Inc. |
| Address | : No.25, R&D Road II, Science-Based Industrial Park, |
| | Hsin-Chu, Taiwan, R.O.C. |
| Manufacturer | : (1) Mustek Systems Inc. |
| | (2) MUSTEK ELECTRONICS CO., LTD. |
| Model No. | : H410W |
| FCC ID. | : HWFH410W |
| EUT Test Voltage | : DC 6V (Power by Battery) |
| Trade Name | : Mustek |
| Applicable Standard | : FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2012 |
| | ANSI C63.4: 2009 |
| Test Result | : Complied |
| test results relate only to t | e samples tested. |
| test report shall not be rep | duced except in full without the written approval of QuieTek Corporation |
| | |
| Documented By | : Conol /s. |
| | (Carol Tsai / Engineering Adm. Specialist) |
| | O I Trind |
| Reviewed By | Gaale Tang |
| | (Quale Tang / Engineer) |
| | Roy Wang |
| Approved By | 8 J |
| Approved By | |

Laboratory Information

We, **QuieTek Corporation**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

| Taiwan R.O.C. | : | TAF, Accreditation Number: 1313 |
|---------------|---|----------------------------------|
| USA | : | FCC, Registration Number: 365520 |
| Canada | : | IC, Submission No: 150981 |

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site:<u>http://www.quietek.com/tw/ctg/cts/accreditations.htm</u> The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <u>http://www.quietek.com/</u>

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

HsinChu Testing Laboratory:

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C. TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : <u>service@quietek.com</u>

LinKou Testing Laboratory:

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C. TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : <u>service@quietek.com</u>

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1. General Information

1.1. EUT Description

| Product Name | Wireless Handy Scanner | | |
|----------------------------------|--|--|--|
| Product Type | WLAN (1TX, 1RX) | | |
| Trade Name | Mustek | | |
| Model No. | H410W | | |
| Frequency Range / Channel Number | 2412~2462MHz / 11 Channels | | |
| Type of Modulation | Orthogonal Frequency Division Multiplexing (OFDM) | | |
| Data Speed (IEEE 802.11g) | 6Mbps,9Mbps,12Mbps,18Mbps,24Mbps,36Mbps,48Mbps,54Mbps | | |
| Data Speed (IEEE 802.11n) | Support a subset of the combination of GI, MCS 0~MCS 7 and | | |
| | bandwidth defined in 802.11n | | |
| Antenna Gain | 3.8dBi | | |
| Antenna Type | PCB Antenna | | |

| Component | |
|-----------|----------------|
| USB Cable | Shielded, 0.4m |

ANT-TX / Rx & Bandwidth

| ANT-TX / Rx | Т | х | Rx | |
|-------------------------|--------------|-------|-------|-------|
| Mode/ Channel Bandwidth | 20MHz | 40MHz | 20MHz | 40MHz |
| IEEE802.11g | \checkmark | | | |
| IEEE802.11n | \checkmark | | ~ | |

IEEE802.11n Spec.

| | MOO | | | N _{CBPS} | N _{DBPS} | Data Rate(Mb/s) | | |
|----------------------------|------------|-----|--------------------|-------------------|-------------------|-----------------|------------------|--|
| MCS Index Modulation | Modulation | R | N _{BPSCS} | 20MHz | 20MHz | 800ns GI | 400ns GI (Note1) | |
| | | | | | | 20MHz | 20MHz | |
| 0 | BPSK | 1/2 | 1 | 52 | 26 | 6.5 | 7.2 | |
| 1 | QPSK | 1/2 | 2 | 104 | 52 | 13.0 | 14.4 | |
| 2 | QPSK | 3/4 | 2 | 104 | 78 | 19.5 | 21.7 | |
| 3 | 16-QAM | 1/2 | 4 | 208 | 104 | 26.0 | 28.9 | |
| 4 | 16-QAM | 3/4 | 4 | 208 | 156 | 39.0 | 43.3 | |
| 5 | 64-QAM | 2/3 | 6 | 312 | 208 | 52.0 | 57.8 | |
| 6 | 64-QAM | 3/4 | 6 | 312 | 234 | 58.5 | 65.0 | |
| 7 | 64-QAM | 5/6 | 6 | 312 | 260 | 65.0 | 72.2 | |

Table 1 – MCS parameters for TX Antenna number = 1

| Symbol | Explanation |
|-------------------|---|
| R | Code rate |
| N _{BPSC} | Number of coded bits per single carrier |
| N _{CBPS} | Number of coded bits per symbol |
| N _{DBPS} | Number of data bits per symbol |
| GI | guard interval |



| Working Frequency of Each Channel | | | | | | | | | |
|-----------------------------------|--|-----|----------|-----|----------|-----|----------|--|--|
| Channel | hannel Frequency Channel Frequency Channel Frequency Channel Frequency | | | | | | | | |
| 001 | 2412 MHz | 002 | 2417 MHz | 003 | 2422 MHz | 004 | 2427 MHz | | |
| 005 | 2432 MHz | 006 | 2437 MHz | 007 | 2442 MHz | 008 | 2447 MHz | | |
| 009 | 2452 MHz | 010 | 2457 MHz | 011 | 2462 MHz | | | | |

- 1. This device is a Wireless Handy Scanner including 2.4GHz g/n transmitting and receiving function
- 2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247.
- 3. Regards to the frequency band operation; the lowest
 imiddle and highest frequency of channel were selected to perform the test, and then shown on this report.
- This device is a composite device in accordance with Part 15 regulations. The receiving function receiving was tested and its test report number is 134421R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

| ТХ | Mode 1: Transmit | | |
|-----------------------------|------------------|----------|----------|
| | | | |
| Test Items | Mode | Channel | Result |
| Conducted Emission | 11n(20MHz) | 6 | Complies |
| Peak Power Output | g | 1/ 6/ 11 | Complies |
| | 11n(20MHz) | 1/ 6/ 11 | Complies |
| Radiated Emission | g | 1/ 6/ 11 | Complies |
| | 11n(20MHz) | 1/ 6/ 11 | Complies |
| RF antenna conducted test | g | 1/ 11 | Complies |
| | 11n(20MHz) | 1/ 11 | Complies |
| Radiated Emission Band Edge | g | 1/ 11 | Complies |
| | 11n(20MHz) | 1/ 11 | Complies |
| Occupied Bandwidth | g | 1/ 6/ 11 | Complies |
| | 11n(20MHz) | 1/ 6/ 11 | Complies |
| Power Density | g | 1/ 6/ 11 | Complies |
| | 11n(20MHz) | 1/ 6/ 11 | Complies |

Conducted Emission: Owing to the DC operation of EUT, this test item is not performed.

1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

| | Product | Manufacturer | Model No. | Serial No. | FCC ID | Power Cord |
|---|-------------|--------------|-----------|------------|--------|--------------------|
| 1 | Notebook PC | HP Compaq | NX6320FF | CNU7020BXT | DoC | Non-Shielded, 1.8m |

1.5. Configuration of tested System



1.6. EUT Exercise Software

| 1 | Setup the EUT as shown in Section 1.5. |
|---|---|
| 2 | Execute the test program "UnitTest V7.2.1.5" on the notebook. |
| 3 | Configure the test mode, the test channel, and the data rate. |
| 4 | Press "Start TX" to start the continuous transmitting. |
| 5 | Verify that the EUT works properly. |

1.7. Test Facility

Ambient conditions in the laboratory:

| Items | Test Item | Required (IEC 68-1) | Actual |
|----------------------------|---------------------------|---------------------|----------|
| Temperature (°C) | | 15 - 35 | 25 |
| Humidity (%RH) | PCC PART 15 C 15.247 | 25 - 75 | 45 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |
| Temperature (°C) | | 15 - 35 | 20 |
| Humidity (%RH) | FCC PART 15 C 15.247 | 25 - 75 | 50 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |
| Temperature (°C) | FCC PART 15 C 15.247 | 15 - 35 | 25 |
| Humidity (%RH) | RF antenna conducted test | 25 - 75 | 45 |
| Barometric pressure (mbar) | (ODFM) | 860 - 1060 | 950-1000 |
| Temperature (°C) | | 15 - 35 | 20 |
| Humidity (%RH) | FCC PART 15 C 15.247 | 25 - 75 | 50 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |
| Temperature (°C) | | 15 - 35 | 25 |
| Humidity (%RH) | FCC PART 15 C 15.247 | 25 - 75 | 45 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |
| Temperature (°C) | | 15 - 35 | 25 |
| Humidity (%RH) | Power Density (ODEN) | 25 - 75 | 45 |
| Barometric pressure (mbar) | | 860 - 1060 | 950-1000 |

2. Peak Power Output

2.1. Test Equipment

The following test equipments are used during the test:

| | Peak | Power | 1 | SR7 |
|--|------|-------|---|-----|
|--|------|-------|---|-----|

| Man | ulacturer into | | Serial No | Next Cal. Date |
|---------------------------|----------------|------------|------------|----------------|
| EXA Signal Analyzer Agile | ent N90 | 010A-EXA l | US47140172 | 2013/07/31 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Test procedures

The EUT was tested according to DTS test procedure of Jan. 2012 KDB558074, Section 5.2.1.2 Measurement Procedure PK2 for compliance to FCC 47CFR 15.247 requirements.

2.4. Limits

The maximum peak power shall be less 1 Watt.

2.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

2.6. Uncertainty

The measurement uncertainty is defined as \pm 1.27 dB.

2.7. Test Result

| Product | Wireless Handy Scanner | | |
|--------------|------------------------|-----------|-----|
| Test Item | Peak Power Output | | |
| Test Mode | Mode 1: Transmit | | |
| Date of Test | 2013/04/27 | Test Site | SR7 |

| IEEE 802.11g | | | | | |
|--------------|-----------|--|----|--------|--|
| Channel No. | Frequency | Frequency Measure Level Lin (MHz) (dBm) | | Result | |
| Channel No. | (MHz) | | | | |
| 1 | 2412 | 14.03 | 30 | Pass | |
| 6 | 2437 | 14.50 | 30 | Pass | |
| 11 | 2462 | 14.62 | 30 | Pass | |

The worst emission of data rate is 6Mbps.

| Peak Power Output Value(dBm) | | | | | | | | | |
|------------------------------|-----------|-------|-------|------------------|-------|-------|-------|----------------|--------|
| | Frequency | | | Data Rate (Mbps) | | | | Required Limit | |
| Channel No. | (MHz) | 6 | 12 | 18 | 24 | 36 | 48 | 54 | |
| 1 | 2412 | 14.04 | | | - | | | - | 30 dBm |
| 6 | 2437 | 14.50 | 14.49 | 14.48 | 14.46 | 14.45 | 14.44 | 14.43 | 30 dBm |
| 11 | 2462 | 14.62 | | - | - | - | - | - | 30 dBm |

Note: Measure Level =Reading value + cable loss



| | Channe | <u> 1</u> | | |
|---|---|---|--|----------------|
| D Agilent Spectrum Analyzer - Channel Power | | | | |
| 10 dB/div Ref 30 dBm | AC SENSE:INT Center Freq: 2.4120000 Trig: Free Run #Atten: 30 dB | ALIGNAUTO 000 GHz Avg Hold:>10/10 Ext Gain: -1.00 dB | 02:42:53 PM Apr 27, 2013 Radio Std: None Radio Device: BTS | Trace/Detector |
| 20 20 10 | | | | Clear Write |
| -10 -20 Histher there | | | March Marker Marker Marker | Average |
| -30 | | | | Max Hold |
| -60 Center 2.412 GHz #Res BW 1 MHz | #VBW 3 MHz | | Span 25.89 MHz Sweep 1 ms | Min Hold |
| Channel Power 14.03 dBm/ 20.: | Detector Peak▶ Auto <u>Man</u> | | | |
| MSG | | STATUS | | |



| | | | <u>Chanr</u> | <u>nel 6</u> | | | |
|---|--|------------------------|---|---|---|--|--|
| 💴 Agilent Spectru | ım Analyzer - Chann | el Power | | | | | |
| Center Fred | © Ω q 2.43700000 Input: Ri Ref 30 dBm | ADO GHz #IFGain:Low | c sense:INT Center Freq: 2.4370 Trig: Free Run #Atten: 30 dB | ALIGNAUTO 00000 GHz Avg Hold:>10/10 Ext Gain: -1.00 dB | 02:45:01 PMApr 27, 2013 Radio Std: None Radio Device: BTS | Freq / Channel | |
| 20 10 0 -10 -20 -20 -30 | All and a second | | | | Martin Martin Martin | Center Freq 2.437000000 GHz | |
| -40 -50 -60 Center 2.43 #Res BW 1 | 7 GHz MHz | | #VBW 3 MI | Hz | Span 26 MHz Sweep 1 ms | CF Step 2.600000 MHz <u>Auto</u> Man | |
| Channe | Channel Power Power Spectral Density 14.50 dBm/ 20.09 MHz -58.53 dBm/Hz | | | | | | |
| MSG | | | | STATU | S | | |



| | | | | <u>Chann</u> | <u>el 11</u> | | | | |
|----------------------------|--------------------|---------------------|------------------|---|--------------|-------------------|-----------------------|---------------------------|------------|
| 💴 Agilent Spec | trum Analyzer - Ch | annel Power | | | | | | | |
| <mark>w</mark> Span 26. | 50 Ω 000 MHz | | AC S Center I | ENSE:INT Freq: 2.4620 | 00000 GHz | | 02:48:15 Radio Std | PM Apr 27, 2013 : None | Span |
| | Inpu | t: RF #IFGain:Lo | W #Atten: | 30 dB | Ext Gain: | -1.00 dB | Radio De | vice: BTS | Span |
| 10 dB/div | Ref 30 dE | 3m | | | | | | | 26.000 MHz |
| 20 | | | | | | | | | |
| 10 | | | | ₫ <u>₩₩₽</u> ₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽₽ | -d | - tota - leasen a | Andrew . | | |
| -10 | Markenwa | | | | | | North New York | | Full Span |
| -20 million | ¹ | | | | | | | Writh hat by | , an opan |
| -30 | | | | | | | | | |
| -50 | | | | | | | 3 | | |
| -60 | | | | | | | | | |
| Center 2.4 #Res BW | l62 GHz 1 MHz | | #V | BW 3MH | łz | | Spa Swe | un 26 MHz eep 1 ms | Last Span |
| Chann | el Power | | | Powe | r Specti | ral Dens | sity | | |
| | 14.62 | dBm/ 20.4 | 43 MHz | | -58. | 48 dB | m/Hz | | |
| | | | | | | | | | |
| мsg 📣 File < | 802.11g_2462.p | ong> saved | | | | STATU | S | 1 | |

| Product | Wireless Handy Scanner | | | | |
|--------------|------------------------|-----------|-----|--|--|
| Test Item | Peak Power Output | | | | |
| Test Mode | Mode 1: Transmit | | | | |
| Date of Test | 2013/04/27 | Test Site | SR7 | | |

IEEE 802.11n 20MHz

| Channel No. | Frequency (MHz) | Measure Level (dBm) | Limit (dBm) | Result |
|-------------|--------------------|------------------------|----------------|--------|
| 1 | 2412 | 14.40 | 30 | Pass |
| 6 | 2437 | 14.05 | 30 | Pass |
| 11 | 2462 | 14.35 | 30 | Pass |

The worst emission of data rate is 6.5 Mbps.

| | Peak Power Output (dBm) | | | | | | | | | |
|---------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| MCS | S Index | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Deswined |
| Channel | Frequency | | | | Data | Rate | | | | Required |
| No | (MHz) | 6.5 | 13.0 | 19.5 | 26.0 | 39.0 | 52.0 | 58.5 | 65.0 | LIMIL |
| 1 | 2412 | 14.40 | | | - | | | - | | 30dBm |
| 6 | 2437 | 14.05 | 14.04 | 14.03 | 14.02 | 14.01 | 14.00 | 13.39 | 13.38 | 30dBm |
| 11 | 2462 | 14.35 | | | - | | | - | | 30dBm |

| | | | | <u>Chan</u> | <u>nel 1</u> | | |
|-------------|--|--------------|-------------------|--|--|---|------------|
| D Agile | ent Spectrum Analyz | er - Channel | Power | | | | |
| ⊯ Spar | 50 Ω 1 26.000 MHz | 2 | A | C SENSE:INT Center Freq: 2.4120 | ALIGN AUTO | 02:57:30 PM Apr 27, 2013 Radio Std: None | Span |
| | | Input: RF | #IFGain:Low | #Atten: 30 dB | Ext Gain: -1.00 dB | Radio Device: BTS | Span |
| 10 dB | /div Ref 3 | 0 dBm | | | | | 26.000 MHz |
| Log 20 - | | | | | | | |
| 10- | | | we and the second | wenter an genter of the other o | all strange from the market state on the | - | |
| -10 | and the second s | | | | | - When we want | |
| -20 | hay hot and a second | | | | | | Full Span |
| -30 - | | | | | | | |
| -40 - | | | | | | | |
| -60 - | | _ | | | | | |
| L Cent | er 2.412 GHz | | | | | Span 26 MHz | Last Span |
| #Res | BW 1 MHz | | | #VBW 3 M | Hz | Sweep 1 ms | |
| Cł | nannel Pow | er | | Powe | er Spectral Den | sity | |
| | 14. | 40 de | 3m/ 20 82 M | 1H7 | -58.79 di | Sm/Hz | |
| | | u. | | | | 2 | |
| | | | | | | | |
| MSG 🤳 | File <802.11n20 | _2412.png | j> saved | | STAT | us | |



| | | | | | | <u>Channe</u> | el 6 | | | | |
|----------|-----------------------------|--|-------------|-------------|--|---|-----------|----------|-----------------------|------------------------|------------|
| | gilent Spect | rum Analyze | r - Channel | Power | | | | | | | |
| ⊯ Sp | an 26.0 | 50 Ω)00 MHz | | AC | Center Fre | e:INT q: 2.437000 | 000 GHz | | 02:54:36 Radio Std | M Apr 27, 2013 None | Span |
| | | | Input: RF | #IFGain:Low | #Atten: 30 d | dB | Ext Gain: | -1.00 dB | Radio Dev | vice: BTS | Span |
| 10 | dB/div | Ref 3 | 0 dBm | | | | | | | | 26.000 MHz |
| Log 2 | | | | | | | | | | | |
| 1 | 0 | - Marina - San Araba - San Ara | | | and a source of the second | No. and the state of the state | | -# | | | |
| | 0 | | | | | | | | - WWW MAN | | |
| -1 -2 | | A Company and the second secon | | | | | | | | Munu Attan | Full Span |
| -3 | יייזיאייז ו ארע ס | .2 | | | | | | | | . 1040 14 Mar A | · |
| -4 | | - <u></u> | | | | | | | | | |
| -5 |] | | | | | | | | | | |
| -0 | | 07 011- | | | | | | | | | Last Span |
| Ce #R | nter 2.4 es BW 1 | 37 GHZ I MHZ | | | #VBV | V 3 MHz | | | Spa Swe | ep 1 ms | |
| | Channe | el Pow | er | | a i | Power | Spectr | al Dens | sity | | |
| | | 14.0 | 05 dE | 3m/ 20.74 N | 1Hz | | -59. | 12 dв | m/Hz | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| MSG | | | | | | | | STATUS | 5 | | |

| Dellent Spectrum Analyzer Channel Power Span 26.000 MHz Input: RF Center Freq: 2.46200000 GHz Radio Std: None MifGaint.ow #Affective Od B/div Ref 30 Action of the second | | | onann | | | |
|--|----------------------------|---|--------------------------------------|--|---|---------------------------|
| Social AC Sensent ALC NUMD Disclosed Product Span Span 26.000 MHz Imput: RF Trig: Free Run Avg Hold>/0/10 Radio Device: BTS Span 10 dB/div Ref 30 dBm #Atten: 30 dB Ext Gain: -1.00 dB Radio Device: BTS Span 20 Imput: RF #IFGain:Low #Atten: 30 dB Ext Gain: -1.00 dB Radio Device: BTS Span 10 dB/div Ref 30 dBm Imput: RF Full Span Full Span 20 Imput: RF With an intervent set of the set | 🎩 Agilent Spectrum Analyze | r - Channel Power | | | | |
| Input: RP Ing. Tree Null Arright Production Radio Device: BTS Spar 10 dB/div Ref 30 dBm Image: Tree Null Image: Tree Null Radio Device: BTS Spar 20 Image: Tree Null Spar 20 Image: Tree Null 20 Image: Tree Null | Span 26.000 MHz | | AC SENSE:INT Center Freq: 2.46200 | ALIGNAUTO | 02:52:03 PM Apr 27, 2013 Radio Std: None | Span |
| 10 dB/div Ref 30 dBm | | Input: RF 4 #IFGain:Low | #Atten: 30 dB | Ext Gain: -1.00 dB | Radio Device: BTS | Span 26.000 MHz |
| 20 10 < | 10 dB/div Ref 30 Log |) dBm | | | , , , , , , , , , , , , , , , , , , , | 20.000 11112 |
| Image: state of the state o | 20 | المعدمة معالم المعالية معالية م | In press Margaria laster and | altomer water - man have used in a | | |
| Full Spar Full Spar Center 2.462 GHz #Res BW 1 MHz Span 26 MHz Sweep 1 ms Channel Power 14.35 dBm/ 21.88 MHz Full Spar Full | 0 | | | 1973 - 2074 Elimente 1924 - 2027 - 20 | - Marken | |
| 30 40 < | -20 Anta AWATA | | | | www.www.hat | Full Span |
| -50 | -30 | | | | | |
| -60 Span 26 MHz Center 2.462 GHz Span 26 MHz #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms Channel Power Power Spectral Density 14.35 dBm/ 21.88 MHz -59.05 dBm/Hz | -50 | | | | | |
| #Res BW 1 MHz #VBW 3 MHz Sweep 1 ms Channel Power Power Spectral Density 14.35 dBm/ 21.88 MHz -59.05 dBm/Hz | -60 Center 2462 GHz | | | | Spap 26 MHz | Last Spar |
| Channel Power Power Spectral Density 14.35 dBm/ 21.88 MHz -59.05 dBm/Hz | #Res BW 1 MHz | | #VBW 3 MH | z | Sweep 1 ms | |
| 14.35 dBm/ 21.88 MHz -59.05 dBm/Hz | Channel Powe | er | Power | r Spectral Den | sity | |
| | 14.3 | 35 dBm/ 21.88 | MHz | - 59.05 dB | m/Hz | |
| | | | | | | |
| SIAIUS | MSG | | | STATU | s | |

3. Radiated Emission

3.1. Test Equipment

The following test equipments are used during the test:

Radiated Emission / CB3

| Instrument | Manufacturer | Model No. | Serial No | Next Cal. Date |
|--------------------|--------------|----------------------|-------------|----------------|
| Bilog Antenna | SCHAFFNER | CBL6112B | 2895 | 2013/08/14 |
| Double Ridged | | | | |
| Guide Horn Antenna | Schwarzback | BBHA 9120 | D743 | 2014/02/17 |
| Pre-Amplifier | MITEQ | AMF-4D-005180-24-10P | 888003 | 2013/12/02 |
| Pre-Amplifier | QuieTek | AP-025C | CHM-0706049 | 2014/02/19 |
| Spectrum Analyzer | Agilent | E4440A | MY46187335 | 2014/01/27 |
| k Type Cable | Huber Suhner | Sucoflex 102 | 25623/2 | 2014/02/21 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

3.2. Test Setup

Under 1GHz Test Setup:







QuieTer

3.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

| FCC Part 15 Subpart C Paragraph 15.209 Limits | | | | | | |
|---|-------------------|---------|--|--|--|--|
| Frequency | dDu <i>l Un</i> a | dDu\//m | | | | |
| MHz | aBuv/m | ubuv/m | | | | |
| 30-88 | 100 | 40 | | | | |
| 88-216 | 150 | 43.5 | | | | |
| 216-960 | 200 | 46 | | | | |
| Above 960 | 500 | 54 | | | | |

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

3.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

3.6. Uncertainty

The measurement uncertainty $30MHz \sim 1GHz$ as $\pm 3.43dB$ $1GHz \sim 26.5Ghz$ as $\pm 3.65dB$

3.7. Test Result

30MHz-1GHz Spurious

| Site : CB3 | Time : 2013/04/30 - 08:55 |
|---|----------------------------------|
| Limit : FCC_CLASS_B_03M_QP | Margin : 6 |
| Probe : CB3_FCC_EFS_30-1G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2437MHz |



| 1 | | 159.980 | -13.560 | 42.025 | 29.065 | -14.435 | 43.500 | QUASIPEAK |
|---|---|---------|---------|--------|--------|---------|--------|-----------|
| 2 | | 240.490 | -11.569 | 40.935 | 29.365 | -16.635 | 46.000 | QUASIPEAK |
| 3 | | 334.580 | -9.099 | 42.129 | 33.031 | -12.969 | 46.000 | QUASIPEAK |
| 4 | * | 465.530 | -5.927 | 39.336 | 33.408 | -12.592 | 46.000 | QUASIPEAK |
| 5 | | 531.490 | -4.848 | 36.800 | 31.952 | -14.048 | 46.000 | QUASIPEAK |
| 6 | | 600.360 | -4.122 | 33.358 | 29.236 | -16.764 | 46.000 | QUASIPEAK |

- 1. All Reading Levels are Quasi-Peak value.
- 2. "*", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

| Site : CB3 | Time : 2013/04/30 - 08:54 |
|---|----------------------------------|
| Limit : FCC_CLASS_B_03M_QP | Margin : 6 |
| Probe : CB3_FCC_EFS_30-1G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2437MHz |



- 1. All Reading Levels are Quasi-Peak value.
- 2. "*", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

| Site : CB3 | Time : 2013/04/30 - 08:58 |
|---|----------------------------------|
| Limit : FCC_CLASS_B_03M_QP | Margin : 6 |
| Probe : CB3_FCC_EFS_30-1G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2437MHz |



- 1. All Reading Levels are Quasi-Peak value.
- 2. "*", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

| Site : CB3 | Time : 2013/04/30 - 09:01 |
|---|----------------------------------|
| Limit : FCC_CLASS_B_03M_QP | Margin : 6 |
| Probe : CB3_FCC_EFS_30-1G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2437MHz |



- 1. All Reading Levels are Quasi-Peak value.
- 2. "*", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor.

Above 1GHz Spurious

| Site : CB3 | Time : 2013/04/28 - 10:16 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2412MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4817.250 | -0.821 | 42.400 | 41.579 | -32.421 | 54.000 | 74.000 | PEAK |
| 2 | | 7257.250 | 5.549 | 40.100 | 45.648 | -28.352 | 54.000 | 74.000 | PEAK |
| 3 | | 9644.500 | 9.206 | 39.220 | 48.425 | -25.575 | 54.000 | 74.000 | PEAK |
| 4 | * | 12038.920 | 11.533 | 38.630 | 50.163 | -23.837 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 10:26 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2412MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4819.080 | -0.816 | 46.410 | 45.594 | -28.406 | 54.000 | 74.000 | PEAK |
| 2 | | 7212.000 | 5.439 | 39.670 | 45.109 | -28.891 | 54.000 | 74.000 | PEAK |
| 3 | | 9634.420 | 9.133 | 38.810 | 47.942 | -26.058 | 54.000 | 74.000 | PEAK |
| 4 | * | 12054.000 | 11.527 | 38.520 | 50.047 | -23.953 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 10:34 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2437MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4862.830 | -0.701 | 39.840 | 39.139 | -34.861 | 54.000 | 74.000 | PEAK |
| 2 | | 7294.330 | 5.637 | 39.380 | 45.017 | -28.983 | 54.000 | 74.000 | PEAK |
| 3 | | 9724.080 | 9.782 | 38.910 | 48.692 | -25.308 | 54.000 | 74.000 | PEAK |
| 4 | * | 12170.830 | 11.487 | 38.900 | 50.386 | -23.614 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 10:40 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2437MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4875.170 | -0.669 | 45.230 | 44.561 | -29.439 | 54.000 | 74.000 | PEAK |
| 2 | | 7311.750 | 5.679 | 40.820 | 46.499 | -27.501 | 54.000 | 74.000 | PEAK |
| 3 | | 9757.000 | 10.021 | 39.540 | 49.561 | -24.439 | 54.000 | 74.000 | PEAK |
| 4 | * | 12206.720 | 11.474 | 38.590 | 50.063 | -23.937 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 10:49 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2462MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4919.580 | -0.552 | 39.760 | 39.208 | -34.792 | 54.000 | 74.000 | PEAK |
| 2 | | 7366.750 | 5.813 | 39.130 | 44.942 | -29.058 | 54.000 | 74.000 | PEAK |
| 3 | | 9824.330 | 10.509 | 38.850 | 49.359 | -24.641 | 54.000 | 74.000 | PEAK |
| 4 | * | 12314.920 | 11.435 | 38.520 | 49.955 | -24.045 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 10:54 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2462MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4929.000 | -0.528 | 45.800 | 45.272 | -28.728 | 54.000 | 74.000 | PEAK |
| 2 | | 7372.250 | 5.826 | 39.450 | 45.275 | -28.725 | 54.000 | 74.000 | PEAK |
| 3 | | 9823.500 | 10.502 | 39.530 | 50.033 | -23.967 | 54.000 | 74.000 | PEAK |
| 4 | * | 12306.830 | 11.437 | 38.720 | 50.158 | -23.842 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 11:04 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2412MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4821.330 | -0.811 | 42.190 | 41.380 | -32.620 | 54.000 | 74.000 | PEAK |
| 2 | | 7222.920 | 5.465 | 39.390 | 44.855 | -29.145 | 54.000 | 74.000 | PEAK |
| 3 | | 9664.830 | 9.353 | 39.020 | 48.373 | -25.627 | 54.000 | 74.000 | PEAK |
| 4 | * | 12058.000 | 11.526 | 38.300 | 49.826 | -24.174 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 11:10 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2412MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4819.920 | -0.814 | 47.890 | 47.076 | -26.924 | 54.000 | 74.000 | PEAK |
| 2 | | 7224.500 | 5.469 | 39.160 | 44.629 | -29.371 | 54.000 | 74.000 | PEAK |
| 3 | | 9646.830 | 9.222 | 38.870 | 48.092 | -25.908 | 54.000 | 74.000 | PEAK |
| 4 | * | 12061.670 | 11.525 | 38.940 | 50.465 | -23.535 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 11:19 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2437MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4868.830 | -0.685 | 40.600 | 39.914 | -34.086 | 54.000 | 74.000 | PEAK |
| 2 | | 7329.250 | 5.721 | 39.690 | 45.411 | -28.589 | 54.000 | 74.000 | PEAK |
| 3 | | 9728.080 | 9.810 | 39.520 | 49.331 | -24.669 | 54.000 | 74.000 | PEAK |
| 4 | * | 12180.080 | 11.483 | 38.800 | 50.283 | -23.717 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.
| Site : CB3 | Time : 2013/04/28 - 11:25 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2437MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4863.500 | -0.699 | 44.970 | 44.271 | -29.729 | 54.000 | 74.000 | PEAK |
| 2 | | 7300.580 | 5.652 | 39.930 | 45.582 | -28.418 | 54.000 | 74.000 | PEAK |
| 3 | | 9737.080 | 9.876 | 39.140 | 49.016 | -24.984 | 54.000 | 74.000 | PEAK |
| 4 | * | 12182.920 | 11.482 | 39.420 | 50.902 | -23.098 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 11:31 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2462MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4933.750 | -0.515 | 39.730 | 39.215 | -34.785 | 54.000 | 74.000 | PEAK |
| 2 | | 7386.920 | 5.861 | 39.320 | 45.181 | -28.819 | 54.000 | 74.000 | PEAK |
| 3 | | 9835.170 | 10.587 | 39.330 | 49.917 | -24.083 | 54.000 | 74.000 | PEAK |
| 4 | * | 12295.750 | 11.443 | 38.590 | 50.032 | -23.968 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

| Site : CB3 | Time : 2013/04/28 - 11:37 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.247_H_03M_PK | Margin : 6 |
| Probe : CB3_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2462MHz |



| | | Frequency | Correct | Reading | Measure | Margin | Average | Peak | Detector |
|---|---|-----------|-------------|---------|----------|---------|----------|----------|----------|
| | | (MHz) | Factor (dB) | Level | Level | (dB) | Limit | Limit | Туре |
| | | | | (dBuV) | (dBuV/m) | | (dBuV/m) | (dBuV/m) | |
| 1 | | 4925.080 | -0.538 | 45.370 | 44.832 | -29.168 | 54.000 | 74.000 | PEAK |
| 2 | | 7366.580 | 5.812 | 39.960 | 45.771 | -28.229 | 54.000 | 74.000 | PEAK |
| 3 | | 9838.580 | 10.611 | 39.050 | 49.662 | -24.338 | 54.000 | 74.000 | PEAK |
| 4 | * | 12301.080 | 11.440 | 39.070 | 50.510 | -23.490 | 54.000 | 74.000 | PEAK |

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.
- 7. The Emission above 18GHz were not included is because their levels are too low.

4. RF antenna conducted test

4.1. Test Equipment

The following test equipments are used during the test:

RF antenna conducted test / SR7

| Instrument | Manufacturer | Model No. | Serial No | Next Cal. Date |
|---------------------|--------------|------------|------------|----------------|
| EXA Signal Analyzer | Agilent | N9010A-EXA | US47140172 | 2013/07/31 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

RF Antenna Conducted Measurement:



4.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

4.6. Uncertainty

Conducted is defined as ± 1.27dB

4.7. Test Result

| Product | Wireless Handy Scanner | | | | | | | | |
|--------------|---------------------------|-----------|-----|--|--|--|--|--|--|
| Test Item | RF antenna conducted test | | | | | | | | |
| Test Mode | Mode 1: Transmit | | | | | | | | |
| Date of Test | 2013/04/27 | Test Site | SR7 | | | | | | |

| IEEE 802.11g, Antenna Gain: 3.8dBi Duty Cycle: 1 | | | | | | | | | | | | |
|--|-----------|--------|--------|--------|--|--|--|--|--|--|--|--|
| Channel No | Frequency | Limit | Pecult | | | | | | | | | |
| Channel No. | (MHz) | (dBc) | (dBc) | result | | | | | | | | |
| 1 | 2412 | 37.324 | ≥20 | Pass | | | | | | | | |
| 11 | 2462 | 46.978 | ≥20 | Pass | | | | | | | | |

Channel 01 (2412MHz)

| | gilent S | Spect | rum | Analyzer - | Swept S | A | | | | | | | | | | | |
|--------------------------|-------------------------------|------------|------------------|-------------------------|-----------------------|-----------|-----------------------------|--------|------------------------|-------|------------|----------------|---------------|------------|---------------------|-----------------------------------|----------------|
| ыл Ма | rker | 14 | 50 s 1 | 2 3.2300 | 00000 | 0 MI | Hz | , | | | 1T | Avg T AvgIH | ALI ype: L | IGN AUTO | 03:04:26 TRA | PM Apr 27, 2013 CE 1 2 3 4 5 6 | Peak Search |
| 10 (| B/div | | Rei | f 20.00 | dBm | PN IFG | lO: Fast ain:Lov | v v | #Atten: 3 | 0 dB | | Ext Ga | in: -1.0 | | r1 13.2 37 | 230 MHz 2324 dB | Next Peak |
| Log 10. 0.0 | | | | | | | | 1 | Junitari | nobro | างให้งารให | w June 1 | 1∆2 · | - Invelive | monta | | Next Right |
| -20.1 -30.1 -40.1 | | ፈብሎቲ | -11/1 | каку «Іла Пі | <u>הורייאייריא</u> ון | url))(); | יייייטאר אין איזאיק 2 | کر کم | | | | | | | \ | North Contraction | Next Left |
| -50.) -60.) -70.) | | | | | | | | | | | | | | | | | Marker Delta |
| Sta #R MKF | rt 2.: es Bl MODE A2 | 390 W 1 | 00 00 | GHz kHz | × | 13.230 | #V | 'BW | 300 kHz Y 37.324 | dB | FUNC | CTION | S' Funct | weep (| Stop 2.4 3.40 ms | 2500 GHz (1001 pts) | Mkr→CF |
| 234567 | F | 1 | f | | 2.40 | 00 010 |) GHz | | -36.540 d | Bm | | | | | | | Mkr→RefLvl |
| 8 9 10 11 12 | | | | | | | | | | | | | | | | | More 1 of 2 |
| MSG | | | | | | | | | | | | | | STATUS | | | |



Channel 11 (2462MHz)

| D Ag | ilent S | Spect | trum | Analyzei | r - Sw | ept SA | | | | | | | | | | | | | | | | | |
|----------------------------|-------------------------------|------------|--------------------|--|---------|-----------------------------------|-----------|--------------------|--------------|-----------|---------------|--------|--|---------|------|---------|----------------|----------------|--------------|----------------------|-----------------|---|----------------|
| ыл Mai | rker | 14 | 50 s 1 - | 2 20.24 | 000 | 000 | 0 1 | IHz | 1 | | SEN | ISE:IN | IT | Avg | Type | ALIGN A | AUTO Pwr | 03:0 | 19 F TRAC | MApri E 1 2 | 27,2013 3456 | - | Peak Search |
| 10 d | B/div | , | Rei | f 20.01 | Input | sm | PN IFG | IO: Fas iain:Lo | kt⊊ w | #Atte | n: 30 | dB | | Ext G | ain: | -1.00 d | в Mk | r1 -2 | 0.2 46 | 40 978 | MHz B dB | | Next Peak |
| 10.0 0.00 | | | | المم | المرالم | ┣ _┅ ┲ [╋] ┺┉┙ | herten | 1 עריין אייני | ∆2 - ∿∽∿~ | m. harlen | | | | | | | | | | | | | Next Right |
| -20.0 -30.0 -40.0 |)) Josephan | hun win | nilala | North Contraction of the second secon | | | | - - | | | | nuunq | lprogrammed and the second | Marthur | mul | // | | | | | | | Next Left |
| -50.0 -60.0 -70.0 | | | | | | | | | | | | | | | // | 1 ame | multe | ubreal Offe | 1 | | h-nn-shi | | Marker Delta |
| Sta #Re MKR | rt 2.4 es Bl MODE A2 | 445 W 1 | 00 00 | GHz kHz (Δ) | | × -20 | 0.240 | #\ D MHz | /BW | 300 k | (Hz .978 (| dB | FUN | CTION | | Swe | ер : ///DTH | Stop 5.27 r | 2.5(ms (| 0000 100 <i>1</i> | I GHz I pts) | | Mkr→CF |
| 2 3 4 5 6 7 | F | 1 | f | | | 2.48 | 3 500 |) GHz | | -46.64 | <u>I3 dB</u> | §m | | | | | | | | | | | Mkr→RefLvl |
| 8 9 10 11 12 | | | | | | | | | | | | | | | | | | | | | | | More 1 of 2 |
| MSG | | | | | | | | | | | | | | | | s | TATUS | | | | | | |

| Product | Wireless Handy Scanner | | | | | | | | | |
|--------------|---------------------------|---------------------------|-----|--|--|--|--|--|--|--|
| Test Item | RF antenna conducted test | RF antenna conducted test | | | | | | | | |
| Test Mode | Mode 1: Transmit | Mode 1: Transmit | | | | | | | | |
| Date of Test | 2013/04/27 | Test Site | SR7 | | | | | | | |

| IEEE 802.11n (20MHz), Antenna Gain: 2dBi Duty Cycle: 1 | | | | | | |
|--|-----------|---------------|-------|--------|--|--|
| Channel No. | Frequency | Measure Level | Limit | Result | | |
| | (MHz) | (dBc) | (dBc) | | | |
| 1 | 2412 | 34.136 | ≥20 | Pass | | |
| 11 | 2462 | 44.206 | ≥20 | Pass | | |

Channel 1 (2412MHz)

| 鱦 Agilent Spectrum Analyzer - Swept SA | | | | |
|--|---|--|--|----------------|
| λα 50 Ω Marker 1 Δ 13.230000000 MHz | | ALIGNAUTO 03:02: Avg Type: Log-Pwr T Avg Hold:>100/100 | 15 PM Apr 27, 2013 RACE 1 2 3 4 5 6 | Peak Search |
| Input: RF PNO: F IFGain: 10 dB/div Ref 20.00 dBm | ow #Atten: 30 dB | Ext Gain: -1.00 dB ΔMkr1 13 | .230 MHz 4.136 dB | Next Peak |
| 10.0 0.00 -10.0 | multimetinenterent | 122 | 7 | Next Right |
| -20.0 -30.0 -40.0 | луудин на | | When the the | Next Left |
| -50.0 | | | | Marker Delta |
| Start 2.39000 GHz #Res BW 100 kHz :: !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! | ¢VBW 300 kHz | Stop 2 Sweep 3.40 ms | .42500 GHz s (1001 pts) | Mkr→CF |
| Δ2 1 f (Δ) 13.230 MF 2 F 1 f 2.400 010 GF 3 - - - 4 - - - 5 - - - 6 - - - 7 - - - | z (Δ) 34.136 dB z -33.122 dBm | | | Mkr→RefLvl |
| 8 9 9 10 11 11 12 12 | | | | More 1 of 2 |
| MSG | | STATUS | | |



Channel 11 (2462MHz)

| DAgilent Spectrum Analyz | zer - Swept SA | | | | |
|--|---------------------------------|--------------------------------------|----------------------------|--|----------------|
| Marker 1 Δ -20.2 | 240000000 MHz | AC SENSE: | INT ALIGN Avg Type: Log | AUTO 03:09:28 PM Apr 27, 2013 -Pwr TRACE 1 2 3 4 5 6 | Peak Search |
| | Input: RF PNO: Fas IFGain:Lo | t 😱 Trig: Free Ru w #Atten: 30 dE | Ext Gain: -1.00 | Mkr1 -20.240 MHz | Next Peak |
| 10 dB/div Ref 20. | 00 dBm | A2 | | 44.206 UB | Next Right |
| -20.0 -30.0 -40.0 | | - h | nhumuu menerhinan ang | Mender and a line line line line line line line line | Next Left |
| -60.0 | | | | | Marker Delta |
| Start 2.44500 GHz #Res BW 100 kHz ΜKR MODE TRO SCL 1 Δ2 1 f (Δ) | #\ × -20.240 MHz | /BW 300 kHz (Δ) 44.206 dB | SW6 | Stop 2.50000 GHz eep 5.27 ms (1001 pts) width FUNCTION VALUE | Mkr→CF |
| 2 F 1 f 3 | 2.483 500 GHz | -43.434 dBm | | | Mkr→RefLvl |
| is is 9 | | | | | More 1 of 2 |
| MSG | | | | STATUS | |

| Product | Dual Band 3x3 802.11ac PCI-E Adapter | | | | |
|--------------|--------------------------------------|--|--|--|--|
| Test Item | RF antenna conducted test | | | | |
| Test Mode | Mode 1: Transmit | | | | |
| Date of Test | 2013/04/27 Test Site SR7 | | | | |

2412MHz (30MHz-25GHz)-802.11g

| D Agilent | t Spectrum | n Analyzer - | Swept SA | | | | | | | | |
|---------------|-----------------|----------------|-------------------|------------------------|---------------------|----------------|----------------|-------------------------|--------------------|------------------------|----------------|
| w Marke | r 1 Δ | Ω 724.130 | 000000 | MHz | AC SE | | Avg Typ | ALIGNAUTO e: Log-Pwr | 03:19:10 F | M Apr 27, 2013 | Marker |
| | | In | put: RF PI IF(| NO: Fast Ģ Gain:Low | #Atten: 3 | 0 dB | Ext Gain: | -1.00 dB | DE | | Select Marker |
| 10 dB/d | liv Re | ef 20.00 (| dBm | | | | | Δ | -49. | 24 MHZ 641 dB | 1 |
| 10.0 | | | | | | | | | | | Normal |
| 0.00 | | 2 | | | | | | | | | Normai |
| -20.0 — | | | | | | 1 | | | | 6 | |
| -30.0 | | 140 | | | | | | | | <u></u> | Delta |
| -50.0 | . Landard | τ. 1Δ2 - | www.wateralitya | Malan an In | - and a second from | Ang And States | por manufactor | n vin hefysteret fra t | and the second and | Altra Paderson Nierson | |
| -60.0 | | ` 1.464 | | | | | | | | | Fixed⊳ |
| Ctort 2 | | | | | 26 | 20 | | a= | Oton 0 | 5 00 CH- | |
| #Res E | 3W 100 | kHz | | #VBV | V 300 kHz | | | Sweep | 2.39 s (| 1001 pts) | Off |
| | e tro so 1 f | L (Δ) | × 72 | 4 MHz (Δ) | Y -49.641 | dB | NCTION FL | INCTION WIDTH | FUNCTIO | ON VALUE | 200 |
| 2 F 3 | 1 f | | 2.40 | 2 GHz | 0.308 d | Bm | | | | | |
| 4 5 6 | | | | | | | | | | | Properties► |
| 7 | | | | | | | | | | | - |
| 9 10 11 | | | | | | | | | | | More 1 of 2 |
| 12 | | | | | | | | CTATUS | | | |
| MSG | | | | | | | | STATUS | | | |



2462MHz (30MHz-25GHz) -802.11g

| D Agi | ilent S | ipect | rum | Analyzer - | Swept SA | | | | | | | | | | | | | |
|------------------------------|----------------------------|-------------|-----------|----------------|---------------------------|-----------|--------------------|-----------------------|-----------------------------|--------------|------|------------------------------|-----------|-----------------|--|----------------|-------------|----------------|
| ₩ Mar | ker | 14 | 50 s 1 | 9.4016 | 690000 | 0000 |) GH | م Z | | ENSE:IN | IT | Avg T | ¢ ype: | LIGNAUTO | 03:17:46 TR/ | PM Apr 2 | 7,2013 | Marker |
| 10 dE | B/div | , | Ref | In 20.00 | d Bm | PN IFG | O: Fast ain:Lov | v V | #Atten: 3 | io dB | | Ext Ga | in: - | 1.00 dΒ ΔΜΙ | ر 19. در 44 | 402 C | Hz dB | Select Marker |
| Log 10.0 0.00 -10.0 | | | * | 2 | | | | | | | | | | | | | | Normal |
| -20.0 -30.0 -40.0 | | | | | | | | | | | | | | | • | 1Δ2 | Jung and | Delta |
| -50.0 -60.0 -70.0 | n ^{ylenge} ngeb | hanak Maria | | and a contract | an provine and set of you | Uner y | امدر مار الدر | نې ^{يار} نړو | then a grant of the history | ~ * * | ~~~~ | tereret.nime ^{rt r} | ₩ | *************** | and the second | | | Fixed⊳ |
| Star #Res MKB | t 30 s B\ MODE A2 | MI N 1 | Hz^ 00 | kHz (Δ) | × | 9.402 | #V | BW (Δ) | 300 kHz | z dB | FUNC | CTION | FUN | Sweep | Stop 2.39 s | 25.00 (1001 | GHz pts) | Off |
| 2 3 4 5 6 | F | 1 | f | | : | 2.477 | ' GHz | | -0.967 c | IBm | | | | | | | | Properties► |
| 8 9 10 11 12 | | | | | | | | | | | | | | | | | | More 1 of 2 |
| MSG | | | | | | | | | | | | | | STATUS | | | | |



| D Agile | ent Spe | ectrum | Analyzer | - Swept S | 5A | | | | | | | | | | | | |
|---------------|----------|----------------|----------------------|---------------------|-----------|--------------------|---|------------------------|-----------------------|------------------------------|-----------------|----------------|---------------------|-----------------|------------------------------------|-------------|------|
| ₩ Mark | er 1 | 50 Δ | Ω 19.176 | 96000 | 00000 |) GH | AC Z | S | ENSE:IN | IT | Avg T | ype: | Log-Pwr | 03:20:31 TR/ | PM Apr 27, 2013 ACE 1 2 3 4 5 6 | Marker | |
| | | | | Input: RF | PN IFG | 0: Fast ain:Lov | v v | Trig: Fre #Atten: 3 | e Rur 30 dB | Ĩ | Avg H Ext Ga | old: ain: - | 15/100 1.00 dB | T | | Select Mark | (er |
| 10 dB. | /div | Re | f 20.00 |) dBm | | | | | | | | | ΔMł | (r1 19. -46 | 177 GHz 5.421 dB | | 1 |
| 10.0 | | | | | | | | | | | | | | | | | 2 |
| 0.00 - | | | 2 | | | | | | | | | | | | - | Nor | mal |
| -10.0 - | | | | | | | | | | | | | | | | | _ |
| -20.0 - | | | | | | | | | | | | | | | | D | elta |
| -40.0 | | | | | | | | | | | - | | | ● 1 | ∆ ['] 2 | | |
| -50.0 | j | mont | Kurrel Ander | and the second line | netro and | | and | www.gride.agerstally. | and the second second | નુ <i>ન્દ્રમ</i> ીઓસ્ક્રુટ અ | and Instant | *** | bbs to give plan of | mandm | | | |
| -60.0 - | | | 980 - 0.5 | | | | 8 | | | | | | | | | Fixe | ed⊳ |
| | <u> </u> | | | | | - | 20. | | | | | | | 04 | 25.00.011- | | |
| start #Res | BW | | kHz | | | #V | 'BW 3 | 300 kH: | z | | | | Sweep | 2.39 s | (1001 pts) | | Off |
| | ODE T | RC SC | | X | 40 477 | CHE | (0) | Y 46.42/ | | FUN | CTION | FUN | CTION WIDTH | FUNCT | ION VALUE | | 011 |
| 2 1 | F / | 1 f | | | 2.402 | 2 GHz | | -0.095 c | IBm | | | - | | | | | |
| 4 | - | - | | | | | | | - | | | | | | | Properti | es► |
| 6 7 | | | 8 | | | | | | | | | _ | | | | | |
| 8 9 | | | | | | | | | | | | | | | | м | lore |
| 10 | | | | | | | - | | | | | | | | | 1 | of 2 |
| MSG | | di . | | | | | <u></u> | | | | | | STATUS | | | | |

2412MHz (30MHz-25GHz)-802.11n(20MHz)



| SENSE:INT ALIGN AUTO 03:16:02 PM Apr 27, 2013 Avg Type: Log-Pwr TRACE 1 2 3 4 5 6 AuglHald: 100/100 Type Mutatatata | Marker |
|--|---------------|
| ten: 30 dB Ext Gain: -1.00 dB DET P NNNN N | Select Marker |
| Δ١٧١K٢1 14.632 GHz -47.462 dB | 1 |
| | Norma |
| | Norma |
| | |
| 142 | Delta |
| 142 | |
| | Fixed |
| | |
| Stop 25.00 GHz kHz Sweep 2.39 s (1001 pts) | Of |
| 462 dB | 0 |
| 28 dBm | |
| | Properties |
| | |
| | More |
| | 1 012 |
| STATUS | |

2462MHz (30MHz-25GHz) -802.11n(20MHz)

5. Radiated Emission Band Edge

5.1. Test Equipment

The following test equipments are used during the test:

Radiated Emission Band Edge / CB1

| Instrument | Manufacturer | Model No. | Serial No | Next Cal. Date |
|---------------------|--------------|--------------|------------|----------------|
| Double Ridged Guide | Schwarzback | BBHA 9120 | D743 | 2014/02/17 |
| Horn Antenna | | | | |
| Spectrum Analyzer | Agilent | E4440A | MY46187335 | 2014/01/27 |
| k Type Cable | Huber Suhner | Sucoflex 102 | 25623/2 | 2014/02/21 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup





5.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

5.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2009 and tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4: 2009 on radiated measurement.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

5.6. Uncertainty

The measurement uncertainty ± 3.9 dB above 1GHz

5.7. Test Result

Radiated is defined as

| Site : CB1 | Time : 2013/04/27 - 10:10 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2412MHz |



Note:

3

2390.000

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.

27.429

58.007

-15.993

74.000

PEAK

- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.

30.578

6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:14 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:18 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:20 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:28 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:29 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:25 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:26 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11g_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:42 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:44 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:39 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:41 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2412MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:32 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:33 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:35 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_PK | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

| Site : CB1 | Time : 2013/04/27 - 10:36 |
|---|----------------------------------|
| Limit : FCC_SpartC_15.209_03M_AV | Margin : 6 |
| Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL | Power : DC 6V (Power by Battery) |
| EUT : Wireless Handy Scanner | Note : 802.11n20MHz_2462MHz |



- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
- 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
- 4. "*", means this data is the worst emission level.
- 5. Measurement Level = Reading Level + Correct Factor.
- 6. The average measurement was not performed when the peak measured data under the limit of average detection.

6. Occupied Bandwidth

6.1. Test Equipment

The following test equipments are used during the test:

Occupied Bandwidth / SR7

| Instrument | Manufacturer | Model No. | Serial No | Next Cal. Date |
|---------------------|--------------|------------|------------|----------------|
| EXA Signal Analyzer | Agilent | N9010A-EXA | US47140172 | 2013/07/31 |
| | | | | |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup



6.3. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. Set RBW = 1% of EBW, Span greater than RBW.

6.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

6.6. Uncertainty

The measurement uncertainty is defined as ±150Hz

6.7. Test Result

| Product | Wireless Handy Scanner | | |
|--------------|------------------------|-----------|-----|
| Test Item | Occupied Bandwidth | | |
| Test Mode | Mode 1: Transmit | | |
| Date of Test | 2013/04/27 | Test Site | SR7 |

| IEEE 802.11g | | | | | | | | | | |
|--------------|--------------------|----------------------------|-------------------------|--------|--|--|--|--|--|--|
| Channel No. | Frequency (MHz) | Measurement Level (MHz) | Required Limit (MHz) | Result | | | | | | |
| 1 | 2412 | 20.28 | <u>≥</u> 0.5 | Pass | | | | | | |
| 6 | 2437 | 20.09 | ≧0.5 | Pass | | | | | | |
| 11 | 2462 | 20.43 | ≧0.5 | Pass | | | | | | |

<u>Channel 1</u>

| 💴 Agilent S | Spectrum Analyzer - | Occupied BW | | | | | | | | | |
|------------------|--|-------------|---------------------|--|--|------------------------------------|-----------------------------------|------------------------------------|--|------|---------------------------------|
| Center | 50 Ω Freq 2.4120 | 000000 G | A Hz Gain:Low | Center Fr Center Fr Trig: Free #Atten: 30 | NSE:INT req: 2.41200 ≱ Run) dB | 0000 GHz Avg Hold: Ext Gain: | ALIGN AUTO > 10/10 -1.00 dB | 02:42:16 Radio Std Radio Dev | PM Apr 27, 2013 : None /ice: BTS | Trac | e/Detector |
| | | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | | | | | Clear Write |
| -10 | | | prover - | | | - h | han ale | | | | Average |
| -40 Junit | and the second | | | | | | ั้งสามาง "ไฟป้าไป | ^Ա սվարտում չ՝ լույլինը | สารุท _{ี่} สารประเทศ | | Max Hold |
| Center #Res B | 2.412 GHz W 300 kHz | | | #VE | SW 910 k | Hz | | Spa Swe | n 50 MHz eep 1 ms | | Min Hold |
| Occi | Occupied Bandwidth 16.747 MHz | | | | Total P | ower | 18.66 | ð dBm | | Auto | Detector Peak► <u>Man</u> |
| Tran x dB | Transmit Freq Error -3719 H x dB Bandwidth 20.28 MH | | | Hz 1Hz | OBW P x dB | ower | 99 -26. | 9.00 % 00 dB | | | |
| MSG | | | | | | | STATUS | | | | |

Channel 6

| 💴 Agilent S | Spectrum Analy | zer - Occupied BW | / | | 1.2 | | | | | |
|--|------------------------|--------------------------------|-----------------|--|---|-----------------------------------|-------------------------------------|------------------------------------|---|--|
| Center | 50 Ω Freq 2.43 | 37000000 G Input: RF #IF | iHz Gain:Low | AC Senter Center Trig: Fr #Atten: | ENSE:INT Freq: 2.4370 ee Run 30 dB | 00000 GHz Avg Hold Ext Gain | ALIGN AUTO :>10/10 : -1.00 dB | 02:44:03 Radio Std Radio Dev | PM Apr 27, 2013 I: None vice: BTS | Freq / Channel |
| 10 dB/div Log 20 10 -10 -20 -30 -40 | Ref | 30 dBm | | | | | | And the work of the line | United and | Center Freq 2.437000000 GHz |
| -50 -60 Center #Res B\ | 2.437 GHz W 300 kHz | | | #V | /BW 910 | kHz | | Spa Swe | an 50 MHz eep 1 ms | CF Step 5.000000 MHz <u>Auto</u> Man |
| Occi | upied Ba | ndwidth 16.7 | lHz | Total I | Power | 18.77 | 7 dBm | | | |
| Trans x dB | smit Freq Bandwidt | Error h | -660 20.09 | 0 Hz MHz | OBW x dB | Power | 99 -26. | 9.00 % .00 dB | | |

Channel 11

| D Agilent S | pectrum Analy | zer - Occupied BW | / | | | | | | | | |
|--|-----------------------|--------------------------------|-----------------|-------------------------------------|---|------------------------------------|------------------------------------|------------------------------------|--|-----------------|-----------------------------|
| XI Center | 50 Ω Freq 2.4 | 62000000 G Input: RF #IF | iHz Gain:Low | AC Center Trig: Fr #Atten: | SENSE:INT Freq: 2.4620 ree Run 30 dB | 00000 GHz Avg Hold Ext Gain: | ALIGN AUTO :>10/10 :-1.00 dB | 02:46:46 Radio Std Radio Dev | PM Apr 27, 2013 : None vice: BTS | Freq / C | hannel |
| 10 dB/div 20 10 -10 -20 -30 | Ref | 30 dBm | / | pur and a second | | | L. L. Martin Contraction | Alson a | | Cen 2.462000 | ter Freq 0000 GHz |
| -40 -50 | 2.462 GHz | | | | | | | Spa | in 50 MHz | 5.000 Auto | CF Step 0000 MHz Man |
| #Res BV Occi | v 300 kHz | ndwidth 16.7 | #\ IHz | /BW 910 Total I | kHz Power | 19.10 | Swe D dBm | eep 1 ms | | | |
| Trans x dB | smit Freq Bandwidt | Error th | -3097 20.43 | 2 Hz MHz | OBW x dB | Power | 99 -26. | 9.00 % 00 dB | | | |

| Product | Wireless Handy Scanner | | | | | | |
|--------------|------------------------|-----------|-----|--|--|--|--|
| Test Item | Occupied Bandwidth | | | | | | |
| Test Mode | Mode 1: Transmit | | | | | | |
| Date of Test | 2013/04/27 | Test Site | SR7 | | | | |

| IEEE 802.11n (20MHz) | | | | | | | | | | |
|----------------------|-----------|-------------------|----------------|--------|--|--|--|--|--|--|
| Channel No. | Frequency | Measurement Level | Required Limit | Result | | | | | | |
| | (MHz) | (MHz) | (MHz) | Result | | | | | | |
| 1 | 2412 | 20.82 | ≧0.5 | Pass | | | | | | |
| 6 | 2437 | 20.74 | ≧0.5 | Pass | | | | | | |
| 11 | 2462 | 21.88 | ≧0.5 | Pass | | | | | | |

Channel 1

| 💴 Agilent Spectrum | n Analyzer - (| Occupied BW | | | | | | | | |
|---|--|---------------------|------------|-------------------------|-------------------------|------------|-----------------|--------------------------|------------------------|--------------------|
| 50 Center Freq | Ω 2.4120 | 00000 G | Hz | C SE | NSE:INT req: 2.41200 | 0000 GHz | | 02:56:25 F Radio Std: | M Apr 27, 2013 None | Measurements |
| 10 dB/div | Ref 30 d | i Bm | Gain:Low | #Atten: 30 |) dB | Ext Gain: | -1.00 dB | Radio Dev | ice: BTS | Swept SA |
| 20 20 10 | | | | a - martin a more | MADMADA | | | | | Channel Power |
| -10 | | ha Dover | | | | - | Pluss a | | | Occupied BW |
| -30 -40 -50 | Normalm | -logon and the form | | | | | | unrillautym. | Martin Contraction | ACP |
| -60 Center 2.412 #Res BW 300 | GHz 0 kHz | | | #VE | 3W 910 k | Hz | | Spa Swe | n 50 MHz ep 1 ms | Power Stat CCDF |
| Occupied Bandwidth 17.728 MHz | | | | | Total P | ower | 19.1 | ō dBm | | BurstPower |
| Transmit Freq Error2.134 kHzx dB Bandwidth20.82 MHz | | | (Hz 1Hz | OBW Power 9 x dB -26 | | 99 -26. | 9.00 % 00 dB | | More 1 of 2 | |
| MSG 🔱 File <802 | sc i) File <802.11n20_2412.png> saved status | | | | | | | | | |
QuieTek

| 🗊 Agilent S | Spectrum | Analyzer - | Occupied BW | | ne - | 10 | | | Mari | | |
|----------------------------|----------------|-------------------|-----------------------------|----------------|-----------------------------------|---|-----------------------------------|--------------------------------------|------------------------------------|--|------------------------------|
| Center | 50 s | 2 2.4370 In | 100000 G Iput: RF #IF | HZ Gain:Low | AC Center Trig: F #Atten | SENSE:INT Freq: 2.4370 ree Run : 30 dB | 00000 GHz Avg Hold Ext Gain | ALIGN AUTO 1:>10/10 : -1.00 dB | 02:53:56 Radio Std Radio Dev | PM Apr 27, 2013 : None /ice: BTS | Freq / Channel |
| 10 dB/div | / F | Ref 30 (| dBm | - | 12 | | 1 | 1 | 1 | | |
| 20 <u> </u> | | | x | | | | | | | | Center Fre 2.437000000 G⊦ |
| -10 | | | | / man | | | | V | | | |
| -20 -30 -40 קאינאייל | p. J | hunn | hand the purport | | | | | Walnumah, Phone | mulannigh | Aurahan Martine | |
| -50 —— -60 —— | | | | | | | | | | | CF Ste |
| Center #Res B | 2.437 N 300 | GHz kHz | | | # | /BW 910 | kHz | | Spa Swe | in 50 MHz eep 1 ms | 5.000000 MH Auto Ma |
| Occi | upied | l Banc | lwidth 17.7 | '36 N | IHz | Total F | ower | 18.8 | 9 dBm | | |
| Tran | smit F | req Er | ror | -226 | 9 Hz | OBW | Power | 99 | 9.00 % | | |
| x dB | Band | width | | 20.74 | MHz | x dB | | -26. | .00 dB | | |
| мsg 🧼 Fil | e <802. | 11n20_24 | 437.png> sa | ved | | | | STATUS | 5 | | |



| 🗊 Agilent S | pectrum Analyzer | - Occupied BW | | | | | | | |
|-------------------|---------------------------|----------------------------------|---------------------------------------|--|------------------------------------|----------------------------------|--------------------------------------|--------------------------------------|--|
| Center | 50 Ω Freq 2.4620 | 000000 GH2 nput: RF #IFGai | AC Z Cent Trig: in:Low #Atte | SENSE:INT er Freq: 2.462000 Free Run n: 30 dB | 0000 GHz Avg Hold: Ext Gain: | ALIGNAUTO > 10/10 -1.00 dB | 02:50:35 F Radio Std Radio Dev | MApr 27, 2013 : None rice: BTS | Freq / Channel |
| 20 | | | | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | ~~~~ | | | | Center Freq 2.462000000 GHz |
| -10 -20 | - Mt | the for a limit of former | | | | h hulkhoware | Actual at | | |
| -40 -50 | holonal the to an inspire | | | | | | * ~~~U\~~~U\~ | horn for the second | |
| Center #Res B\ | 2.462 GHz N 300 kHz | | l | #VBW 910 ki | Hz | | Spa Swe | n 50 MHz ep 1 ms | CF Step 5.000000 MHz <u>Auto</u> Man |
| Occi | upied Band | dwidth 17.75 | 67 MHz | Total Po | ower | 19.24 | l dBm | | |
| Tran: x dB | smit Freq Er Bandwidth | ror 2 | -16545 Hz 21.88 MHz | OBW P x dB | ower | 99 -26. | 9.00 % 00 dB | | |
| мsg 🗼 Fil | e <802.11n20_2 | 462.png> save | d | | | STATUS | | | |

7. Power Density

7.1. Test Equipment

The following test equipment is used during the test:

Power Density / SR7

| Instrument | Manufacturer | Model No. | Serial No | Next Cal. Date |
|---------------------|--------------|------------|------------|----------------|
| EXA Signal Analyzer | Agilent | N9010A-EXA | US47140172 | 2013/07/31 |

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup

IEEE 802.11 b / g / a / n (20M / 40M) MODE



7.3. Limits

The peak power spectral density conducted from the intentional radiated to the antenna shall not be greater than +8dBm in any 3kHz band during any time interval of continuous transmission.

7.4. Test Procedures

The EUT was setup according to ANSI C63.4: 2009; tested according to DTS test procedure of Jan. 2012 KDB558074 for compliance to FCC 47CFR 15.247 requirements. Set RBW= 100 kHz, Set VBW= 300 kHz, Sweep time=Auto, Set detector=Peak detector

7.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2012

7.6. Uncertainty

The measurement uncertainty is defined as ±1.27dB.

7.7. Test Result

| Product | Wireless Handy Scanner | | |
|--------------|------------------------|-----------|-----|
| Test Item | Power Density | | |
| Test Mode | Mode 1: Transmit | | |
| Date of Test | 2013/04/27 | Test Site | SR7 |

| IEEE 802.11g | | | | | | | | | | |
|--------------|-----------|---------------|-------------|-------|--------|--|--|--|--|--|
| Channel No | Frequency | Reading Level | Measurement | Limit | Decult | | | | | |
| Channel No. | (MHz) | (dBm) | (dBm) | (dBm) | Result | | | | | |
| 1 | 2412 | 0.296 | -14.904 | ≦8 | Pass | | | | | |
| 6 | 2437 | 0.729 | -14.471 | ≦8 | Pass | | | | | |
| 11 | 2462 | 0.777 | -14.423 | ≦8 | Pass | | | | | |

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB

Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

| 💭 Agilent Spectrum Analy | zer - Swept SA | | | | |
|---|-------------------------------|------------------|--|---|----------------|
| ເ <u>₩</u> 50 Ω Marker 1 2.4132 | 48000000 GHz | | ALIGN AUTO Avg Type: Log-Pwr AvgiHold:>100/100 | 02:40:57 PM Apr 27, 2013 TRACE 1 2 3 4 5 6 TYPE M MAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | Peak Search |
| 10 dB/div Ref 20 | Input: RF PNU: Fa IFGain:L | ow #Atten: 30 dB | Ext Gain: -1.00 dB | 2.413 248 GHz 0.296 dBm | Next Peak |
| 10.0 | | A1 | | | Next Right |
| -10.0 | pollondandan | work and and a | mmmhunhund | m | Next Left |
| -20.0 | / | | | | Marker Delta |
| -40.0 4 4 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 | | | | Junior | Mkr→CF |
| -60.0 | | | | | Mkr→RefLvl |
| Center 2.41200 G #Res BW 100 kHz | Hz # | VBW 300 kHz | Sweep | Span 26.00 MHz 2.53 ms (1001 pts) | More 1 of 2 |



<u>Channel 6</u>

| D Agi | ent Spec | ctrum Analyzer - | Swept SA | | | | | | | | |
|----------------|-----------------------|------------------------------|----------|------------------------|------------|----------|-----------|------------------|--|------------------------|----------------|
| w Marl | ker 1 | ^{50 Ω} 2.4382480 | 000000 G | Hz | AC SE | | Avg Type | ALIGNAUTO | 02:45:41 | PM Apr 27, 2013 | Peak Search |
| 10 dE | 3/div | Ref 20.00 | dBm | NO: Fast 🖵 Sain:Low | #Atten: 30 |) dB | Ext Gain: | -1.00 dB Mkr1 | 2.438 2 0.7 | 248 GHz 29 dBm | Next Peak |
| Log 10.0 | | | 8 | | | ▲1 | | | 0 | | Next Right |
| 0.00 -10.0 | | ſ | hundre | Angen Angen | handrean | produced | hundhurd | - morphoned | 1 | | Next Left |
| -20.0 -30.0 | 14 | | | | | | | | Un U | | Marker Delta |
| -40.0 -50.0 | Jul ^{aya} ya | 4V ^{**} | | | | | | | | mhh.a.Alman | Mkr→CF |
| -60.0 | | | | | | | | | | | Mkr→RefLvl |
| Cent #Res | ter 2.4 s BW | 13700 GHz 100 kHz | | #VBW | 300 kHz | | | Sweep | Span 2 2.53 ms (| 26.00 MHz 1001 pts) | More 1 of 2 |
| MSG | | | | | | | | STATU | s | | |



| D Agi | lent Spe | ctrum Analyzer - | Swept SA | | | | | | | | |
|----------------------|-----------------|---------------------------------|--------------|------------------------|------------|---------|-----------|------------------|---------------------|-----------------------|----------------|
| ⊯ Mar | ker 1 | ^{50 Ω} 2.4632480 | 000000 G | iHz | | | Avg Type | ALIGNAUTO | 02:48:43 TRA | M Apr 27, 2013 | Peak Search |
| 10 di | 3/div | Ref 20.00 | d B m | NO: Fast 🖵 Gain:Low | #Atten: 30 |) dB | Ext Gain: | -1.00 dB Mkr1 | 2.463 2 0.7 | 48 GHz 77 dBm | NextPeak |
| Log 10.0 | | | 8 | | | ▲1 | | | | | Next Right |
| 0.00 -10.0 | | | Murlup | Mum hun | himpor | molinal | Monthural | www.lwwwl | | | Next Left |
| -20.0 -30.0 | | have water | | | | | | | VI VI | | Marker Delta |
| -40.0 | <i>የመካ</i> ለት በ | _{יינ} י/µ [,] | | | | | | | | | Mkr→CF |
| -60.0 | | | | | | | | | | | Mkr→RefLvl |
| -70.0 Cen #Re: | ter 2.4 s BW | l6200 GHz 100 kHz | | #VBW | 300 kHz | | | Sweep | Span 2 2.53 ms (| 6.00 MHz 1001 pts) | More 1 of 2 |
| MSG | | | | | | | | STATU | 5 | | |

QuieTek

| Product | Wireless Handy Scanner | | |
|--------------|------------------------|-----------|-----|
| Test Item | Power Density | | |
| Test Mode | Mode 1: Transmit | | |
| Date of Test | 2013/04/27 | Test Site | SR7 |

| IEEE802.11n_20MHz | | | | | | | | | | |
|-------------------|--------------------|------------------------|------------------------|----------------|--------|--|--|--|--|--|
| Channel No. | Frequency (MHz) | Reading Level (dBm) | Measure Level (dBm) | Limit (dBm) | Result | | | | | |
| 1 | 2412 | 0.756 | -14.444 | ≦8 | Pass | | | | | |
| 6 | 2437 | -0.275 | -15.475 | ≦8 | Pass | | | | | |
| 11 | 2462 | 0.518 | -14.682 | ≦8 | Pass | | | | | |

Note: Measure Level = Reading level + BWCF = Reading level -15.2 dB

Bandwidth correction factor (BWCF) = 10log (3 kHz/100kHz)

| 🗊 Agi | lent Spec | trum Analyzer | - Swept SA | | | | | | | | |
|-----------------------|-------------------|--------------------------|--------------------|----------------|------------|-----------------------|-----------|------------------|---------------------|-----------------------|----------------|
| <mark>⊯</mark> Mar | ker 1 | ^{50 Ω} 2.413248 | 3000000 | GHz | | NSE:INT | Avg Type | ALIGNAUTO | 02:57:54 F | M Apr 27, 2013 | Peak Search |
| 10 dE | 3/div | Ref 20.00 | Input: RF) dBm | PNO: Fast G | #Atten: 30 |) dB | Ext Gain: | -1.00 dB Mkr1 | 2.413 2 0.7 | 48 GHz 56 dBm | NextPeak |
| 10.0 | | | | | | ▲ ¹ | | | | | Next Right |
| 0.00 -10.0 | | pro- | manh | when have been | lung han | punhan | haventon | manlingen | hung | | Next Left |
| -20.0 -30.0 | | , r | | | | | | | M N | | Marker Delta |
| -40.0 -50.0 | 4₩₩ | | | | | | | | | MURUAN AND | Mkr→CF |
| -60.0 | | | | | | | | | | | Mkr→RefLvl |
| Cen #Re: | ter 2.4 s BW 1 | 1200 GHz 100 kHz | | #VBW | 300 kHz | | | Sweep | Span 2 2.53 ms (| 6.00 MHz 1001 pts) | More 1 of 2 |
| MSG 🤇 | Storin | ng Hardware | Statistics | | | | | STATU | s | | |



<u>Channel 6</u>

| 🗊 Agi | ilent Spec | trum Analyze: | r - Swept SA | | | | | | | | |
|----------------|-----------------|----------------------------|--------------|------------------------|------------|-----------|---------------------|------------------|---------------------|---|----------------|
| ₩ Mar | ker 1 | ^{50 Ω} 2.43572 | 6000000 G | Hz | AC SE | | Avg Type AvgHold | ALIGNAUTO | 02:55:03 F | PM Apr 27, 2013 | Peak Search |
| 10 dl | B/div | Ref 20.0 | 0 dBm | NO: Fast 🖵 Sain:Low | #Atten: 30 |) dB | Ext Gain: | -1.00 dB Mkr1 | 2.435 7 -0.2 | 26 GHz 75 dBm | Next Peak |
| 10.0 | | | | | ▲1 | | | | · | | Next Right |
| 0.00 -10.0 | | <i>س</i> ر | workantum | Amahan | hunder | parabasal | horn trank | handburd | | | Next Left |
| -20.0 -30.0 | | A Alexandre | | | | | | | | | Marker Delta |
| -40.0 -50.0 | wpw4nCVP | | | | | | | | | "Induction of the second se | Mkr→CF |
| -60.0 | | | | | | | | | | | Mkr→RefLvl |
| Cen #Re | ter 2.4 s BW | .3700 GHz 100 kHz | 2 | #VBW | 300 kHz | | | Sweep | Span 2 2.53 ms (| 6.00 MHz 1001 pts) | More 1 of 2 |
| MSG | | | | | | | | STATU | S | | |



| | | | | | | | | wept SA | nalyzer - S | ectrum An | ilent Spe | D Agi |
|----------------|---|------------|------------------------|-----------------------|--|-----------|------|----------------|-------------|---------------------|-----------|-----------------|
| Peak Search | M Apr 27, 2013 | 02:52:29 F | ALIGNAUTO : Log-Pwr | Avg Type | NSE:INT | AC SE | Hz | 00000 G | 32220 | 50 Ω 2.46 | ker 1 | <i>⊯</i> Mar |
| NextPeak | | TYF | >100/100 -1.00 dB | Avg Hold Ext Gain: | PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB | | | Input: RF PNC | | | | |
| | Mkr1 2.463 222 GHz 10 dB/div Ref 20.00 dBm 0.518 dBm | | | | | | | | | | | |
| | | | | | | | | | | | | Log |
| Next Right | ~ | | | | . 1 | | 0 | | | | · | 10.0 |
| | | | Δ | n n | ∳ ' | n n | A A | <u> </u> | | | i | 0.00 |
| Next Left | | mon | | wyn lawn | mantman | burn hurn | | ปลางสารให้เวลา | Mar | | | |
| | | | | | | | | |] | | | -10.0 |
| Marker Delta | | | | | | | 1. | | الر | | | -20.0 |
| | n | - My | | | | <i>6</i> | | | <u>.</u> | | | -30.0 |
| Mkr→CF | mality | | | | | | | | | New Marker | , AMAN M | 40.0 |
| | | | | - | | | | | | | | -40.0 |
| | | | | | | | | | | | | -50.0 |
| Mkr→RefLvl | | | | | | | | | | | | -60.0 |
| | | | | | - | | | | | | | 70.0 |
| More 1 of 2 | | | | | | | | | | | | -70.0 |
| | enter 2.46200 GHz Span 26.00 MHz | | | | | | | | | | | Cen |
| | 1001 pts) | 2.53 ms (| Sweep | | | 300 kHz | #VBW | | Hz | 100 kł | s BW | #Re |
| | | 3 | STATU | | | | | | | | | MSG |

Channal 11