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Intertek Testing Services Hong Kong Limited

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## TEST REPORT

Report Number: 14061521HKG-001

Application  
for

Original Grant of 47 CFR Part 15 Certification  
New Family of RSS-210 Issue 8 Equipment Certification

Learning App Tablet

FCC ID: G2R-1668

IC: 1135D-1668

Prepared and Checked by:

A handwritten signature in black ink, appearing to read 'James Yeung', written over a horizontal line.

James Yeung  
Engineer

Approved by:

A handwritten signature in black ink, appearing to read 'Chan Chi Hung', written over a horizontal line.

Chan Chi Hung, Terry  
Supervisor  
August 13, 2014

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## GENERAL INFORMATION

|                                    |                                                                                              |
|------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Applicant Name:</b>             | VTech Electronics Limited                                                                    |
| <b>Applicant Address:</b>          | 23/F., Tai Ping Industrial Center, Block 1,<br>57 Ting Kok Road, Tai Po,<br>N.T., Hong Kong. |
| <b>FCC Specification Standard:</b> | FCC Part 15, October 1, 2012 Edition                                                         |
| <b>FCC ID:</b>                     | G2R-1668                                                                                     |
| <b>FCC Model(s):</b>               | 1668                                                                                         |
| <b>IC Specification Standard:</b>  | RSS-210 Issue 8, December 2010<br>RSS-Gen Issue 3, December 2010                             |
| <b>IC:</b>                         | 1135D-1668                                                                                   |
| <b>IC Model(s):</b>                | 1668                                                                                         |
| <b>Type of EUT:</b>                | Digital Transmission System                                                                  |
| <b>Description of EUT:</b>         | Learning App Tablet                                                                          |
| <b>Serial Number:</b>              | N/A                                                                                          |
| <b>Sample Receipt Date:</b>        | June 30, 2014                                                                                |
| <b>Date of Test:</b>               | June 30, 2014 to July 17, 2014                                                               |
| <b>Report Date:</b>                | August 13, 2014                                                                              |
| <b>Environmental Conditions:</b>   | Temperature: +10 to 40°C<br>Humidity: 10 to 90%                                              |

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## **EXHIBIT 1**

### **SUMMARY OF TEST RESULTS & STATEMENT OF COMPLIANCE**

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## 1.0 Summary of Test Results

| Test Items                                                   | FCC Part 15 Section        | RSS-210/<br>RSS-Gen#<br>Section | Results | Details<br>see<br>section |
|--------------------------------------------------------------|----------------------------|---------------------------------|---------|---------------------------|
| Antenna Requirement                                          | 15.203                     | 7.1.2#                          | Pass    | 2.1                       |
| Max. Conducted Output Power (average)                        | 15.247(b)(3)&(4)           | A8.4(4)                         | Pass    | 4.1                       |
| Min. 6dB RF Bandwidth                                        | 15.247(a)(2)               | A8.2(a)                         | Pass    | 4.2                       |
| Max. Power Density (average)                                 | 15.247(e)                  | A8.2(b)                         | Pass    | 4.3                       |
| Out of Band Antenna Conducted Emission                       | 15.247(d)                  | A8.5                            | Pass    | 4.4                       |
| Radiated Emission in Restricted Bands and Spurious Emissions | 15.247(d), 15.209 & 15.109 | A8.5                            | Pass    | 4.6                       |
| AC Power Line Conducted Emission                             | 15.207 & 15.107            | 7.2.4#                          | Pass    | 4.7                       |

Note: Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

### 1.1 Statement of Compliance

The equipment under test is found to be complying with the following standards:

FCC Part 15, October 1, 2012 Edition  
RSS-210 Issue 8, December 2010  
RSS-Gen Issue 3, December 2010

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## EXHIBIT 2 GENERAL DESCRIPTION

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## **2.0 General Description**

### **2.1 Product Description**

The 1668 is a Learning App Tablet.

For 802.11b mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via direct-sequence spread spectrum (DSSS) modulation. Maximum bit rate can be up to 11Mbps. For 802.11g mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can be up to 54Mbps. For 802.11n (with 20MHz bandwidth) mode, it operates at frequency range of 2412.000MHz to 2462.000MHz with 11 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can support up to 65Mbps. For 802.11n (with 40MHz bandwidth) mode, it operates at frequency range of 2422.000MHz to 2452.000MHz with 11 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can support up to 65Mbps.

The EUT is power by a "Li-ion" type rechargeable battery pack (3.7V 3800mAh).

The antenna(s) used in the EUT is Integral.

The circuit description is saved with filename: descri.pdf.

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## 2.2 Test Methodology

Both AC power line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Preliminary radiated scans and all radiated measurements were performed in Open Area Test Sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application. Antenna port conducted measurements were performed according to ANSI C63.10 (2009) and KDB Publication No. 558074 D01 v03r02 (05-June-2014). All other measurements were made in accordance with the procedures in RSS-Gen Issue 3 (2010).

## 2.3 Test Facility

The open area test site, AC Power Line conducted measurement facility, and antenna port conducted measurement facility used to collect the radiated data, AC Power Line conducted data, and conductive data are at Intertek Testing Services Hong Kong Ltd., which is located at World-Wide Industrial Centre 43-47 Shan Mei Street, Fo Tan ShaTin, New Territories, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC and the Industry Canada.



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## **EXHIBIT 3 SYSTEM TEST CONFIGURATION**

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### **3.0 System Test Configuration**

#### **3.1 Justification**

For radiated emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions.

The EUT is power by a "Li-ion" type rechargeable battery pack (3.7V 3800mAh).

For the measurements, the EUT was attached to a plastic stand if necessary and placed on the wooden turntable. If the EUT attached to peripherals, they were connected and operational (as typical as possible).

The signal was maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization were varied during the search for maximum signal level. The antenna height was varied from 1 to 4 meters. Radiated emissions were taken at three meters unless the signal level was too low for measurement at that distance. If necessary, a pre-amplifier was used and/or the test was conducted at a closer distance.

For any intentional radiator powered by AC power line, measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Radiated emission measurement for transmitter were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

Emission that are directly caused by digital circuits in the transmit path and transmitter portion were measured, and the limit are according to FCC Part 15 Section 15.209. Digital circuitries used to control additional functions other than the operation of the transmitter are subject to FCC Part 15 Section 15.109 Limits.

### 3.1 Justification – Cont'd

Detector function for radiated emissions was in peak mode. Average readings, when required, were taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in section 4.2.3.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF*. The effective period (Teff) was referred to Exhibit 4.6.3. With the resolution bandwidth 1MHz and spectrum analyzer IF bandwidth 3dB, the pulse desensitization factor was 0dB.

The EUT along with its peripherals were placed on a 1.0m(W)x1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT power cord connected to one LISN (Line impedance stabilization network), which provided 50ohm coupling impedance for measuring instrument. Meanwhile, the peripheral or support equipment power cords connected to a separate LISN. The ac powers for all LISNs were obtained from the same power source. The LISN housing, measuring instrument case, reference ground plane, and vertical ground plane were bounded together. The excess power cable between the EUT and the LISN was bundled. Power cords of non-EUT equipment (peripherals) were not bundled. AC power cords of peripheral equipments draped over the rear edge of the table, and routed them down onto the floor of the ac power line conducted emission test site to the second LISN.

All connecting cables of EUT and peripherals were manipulated to find the maximum emission.

Different data rates have been tested. Worst case is reported only.

All relevant operation modes have been tested, and the worst case data is included in this report.

All data rates were tested under normal mode of WiFi. Only the worst-case data is shown in the report for DSSS and OFDM

### 3.2 EUT Exercising Software

The EUT exercise program (if any) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

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### 3.3 Details of EUT and Description of Accessories

Details of EUT:

A battery (provided with the unit) was used to power the device. Their description are listed below.

- (1) A "Li-ion" type rechargeable battery (3.7V 3800mAh) (Supplied by Client)

Description of Accessories:

- (1) An AC adaptor (120VAC to 5V 2000mA, Model: SED0502000TU, Brand: Vtech) (Supplied by Client)
- (2) HP Notebook, Model: CPQNC2400, S/N: CNF638276D (Supplied by Intertek)
- (3) Smart-Drive External Hard Disk, Model: HD3-SU2FW, S/N: 0800261, DoC Product (Supplied by Intertek)
- (4) 1 x USB cable with 1 meter long with ferrite (Supplied by Client)
- (5) 1 x HDMI cable with 1 meter long (Supplied by Client)
- (6) 1x Headset (Supplied by Client)

### 3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

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## EXHIBIT 4 TEST RESULTS

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## 4.0 Test Results

### 4.1 Occupied bandwidth

When maximum conducted (average) output power is exercised, the measured power is to be referenced to the OBW rather than the DTS bandwidth (see ANSI C63.10-2009 section 6.9.1)

| IEEE 802.11b (DSSS, 1 Mbps) Antenna Gain = 0 dBi |           |
|--------------------------------------------------|-----------|
| Frequency (MHz)                                  | OBW (MHz) |
| Low Channel: 2412                                | 17.43     |
| Middle Channel: 2437                             | 17.32     |
| High Channel: 2462                               | 17.44     |

| IEEE 802.11g (OFDM, 6 Mbps) Antenna Gain = 0 dBi |           |
|--------------------------------------------------|-----------|
| Frequency (MHz)                                  | OBW (MHz) |
| Low Channel: 2412                                | 20.68     |
| Middle Channel: 2437                             | 20.72     |
| High Channel: 2462                               | 20.70     |

| IEEE 802.11n (20MHz) (OFDM, MCS0) Antenna Gain = 0 dBi |           |
|--------------------------------------------------------|-----------|
| Frequency (MHz)                                        | OBW (MHz) |
| Low Channel: 2412                                      | 21.22     |
| Middle Channel: 2437                                   | 20.97     |
| High Channel: 2462                                     | 20.88     |

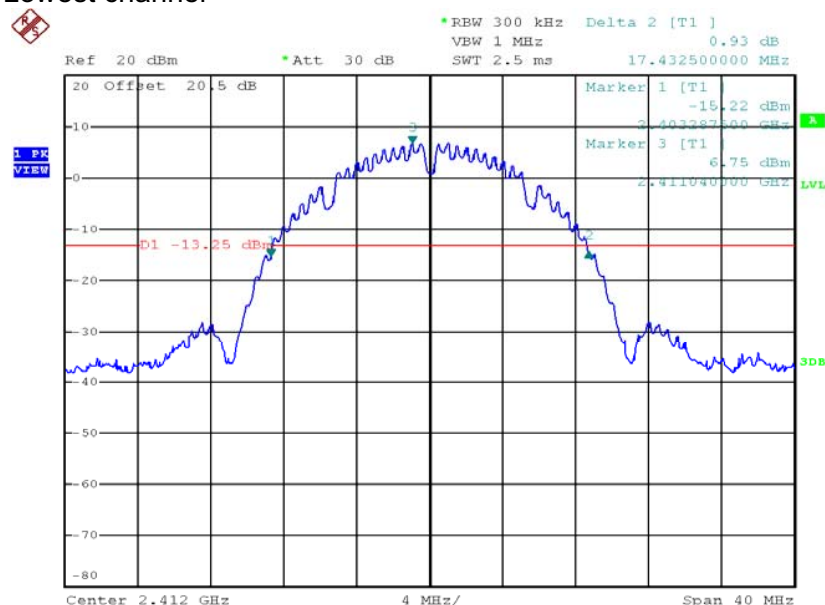
| IEEE 802.11n (40MHz) (OFDM, MCS0) Antenna Gain = 0 dBi |           |
|--------------------------------------------------------|-----------|
| Frequency (MHz)                                        | OBW (MHz) |
| Low Channel: 2422                                      | 41.1825   |
| Middle Channel: 2437                                   | 40.9725   |
| High Channel: 2452                                     | 41.140    |

The plots of OBW are saved as below.

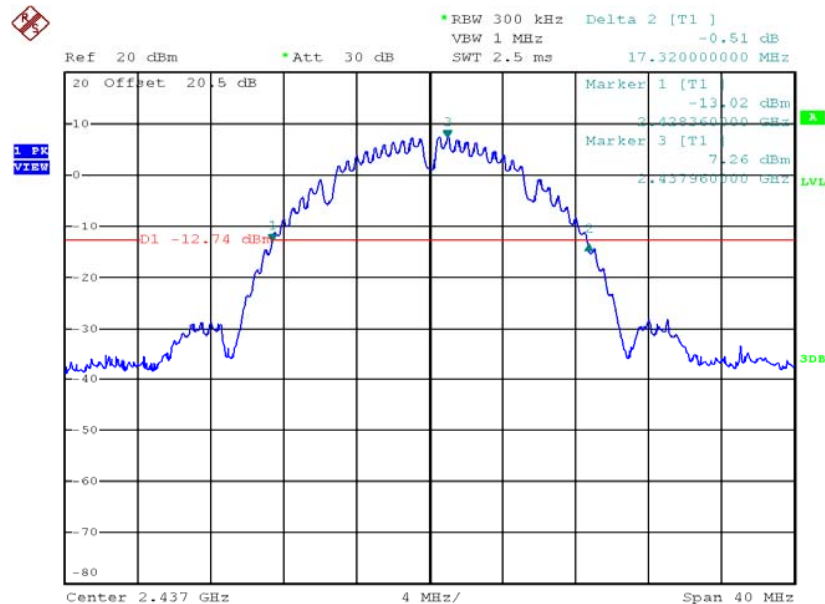
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802.11b, Lowest channel



802.11b, Middle channel



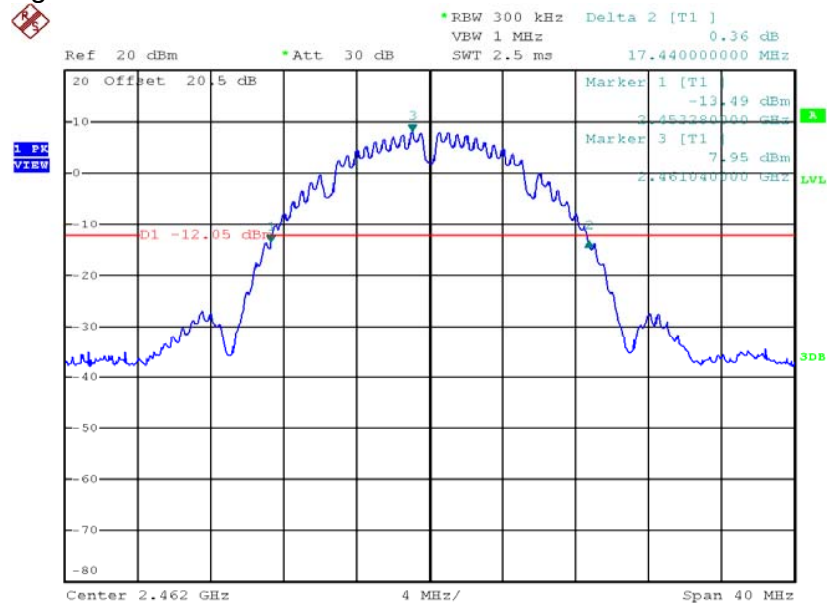
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## Plots of Occupied Bandwidth

802.11b, Highest channel





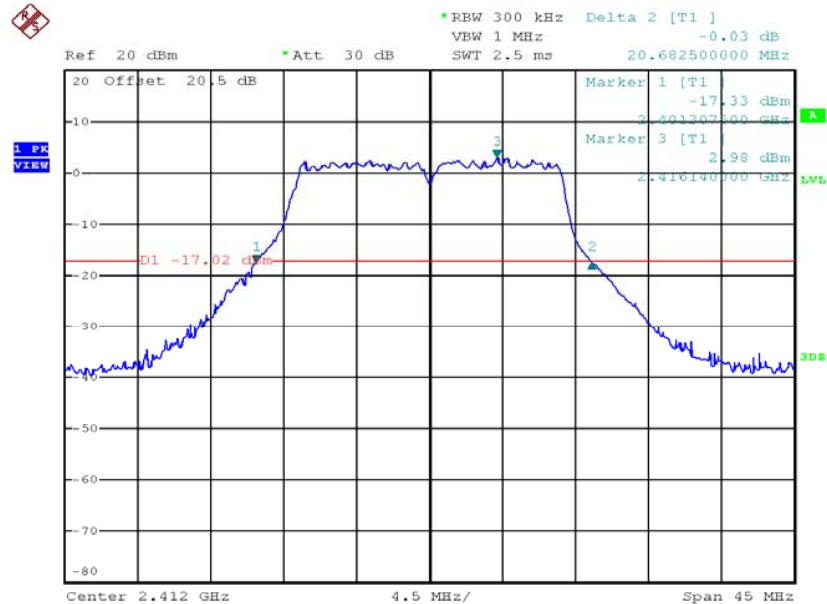
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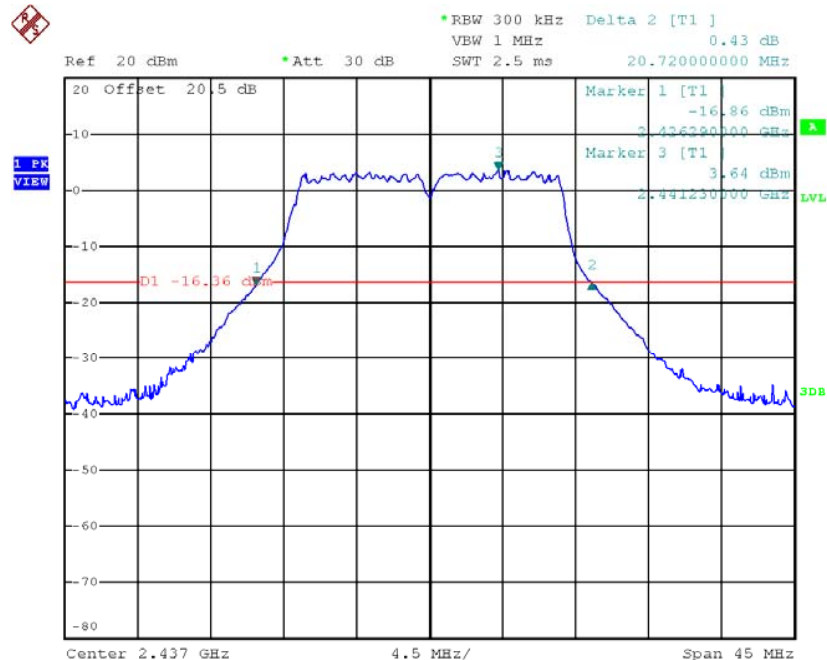


## Plots of Occupied Bandwidth

802.11g, Lowest channel



802.11g, Middle channel



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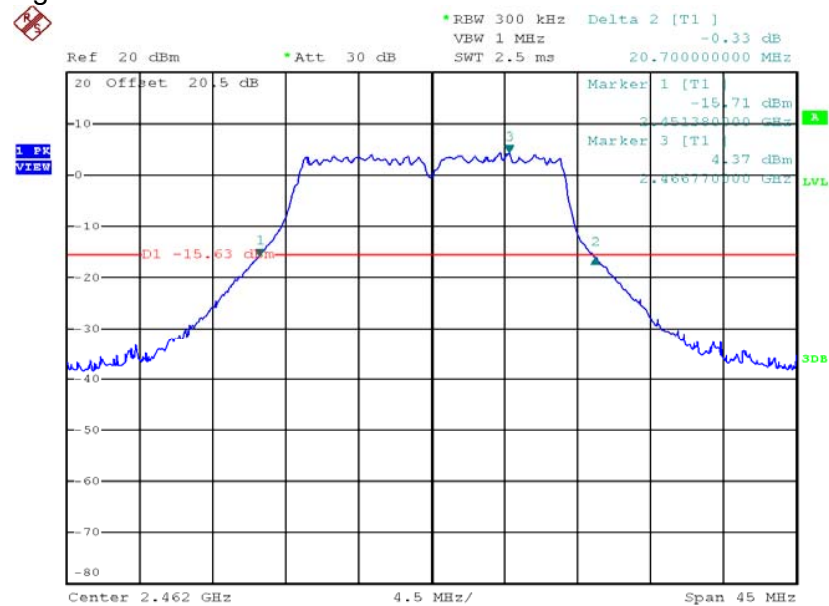
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

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## Plots of Occupied Bandwidth

802.11g, Highest channel



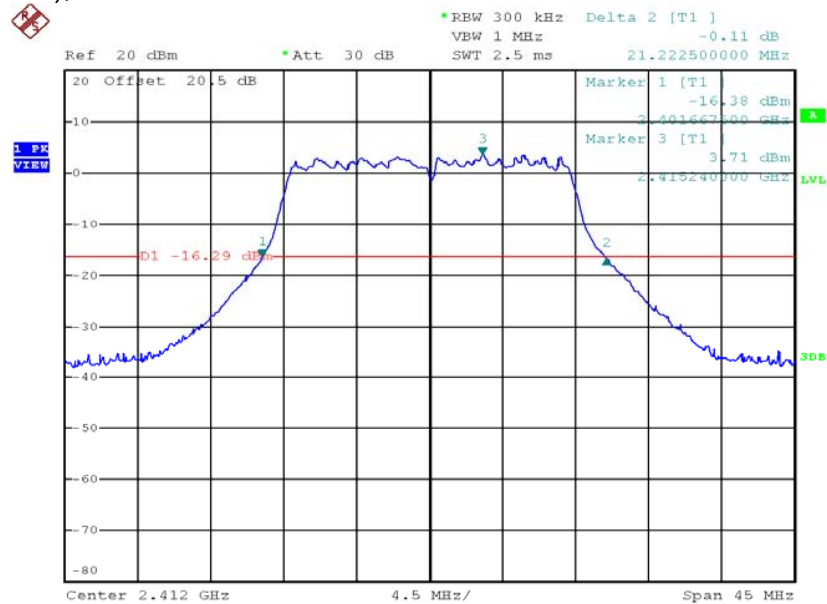
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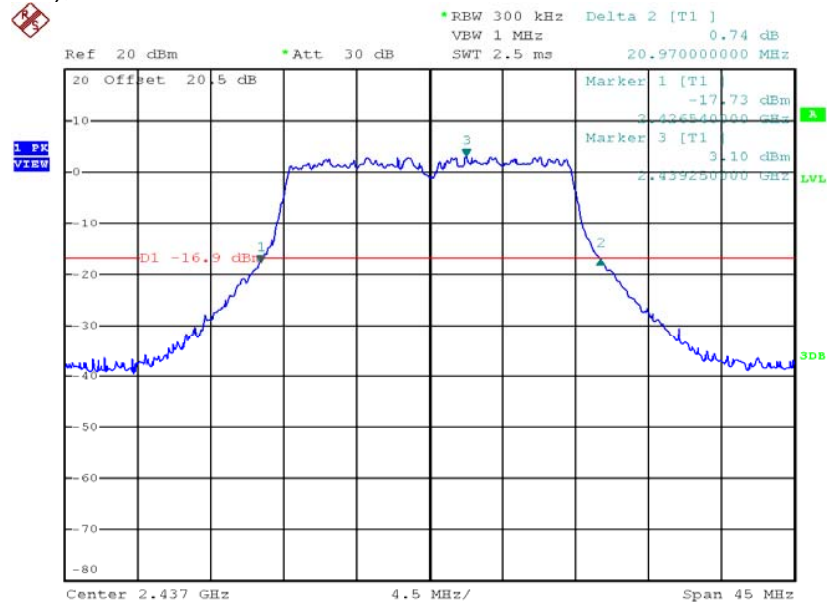


## Plots of Occupied Bandwidth

802.11n(20M), Lowest channel



802.11n(20M), Middle channel



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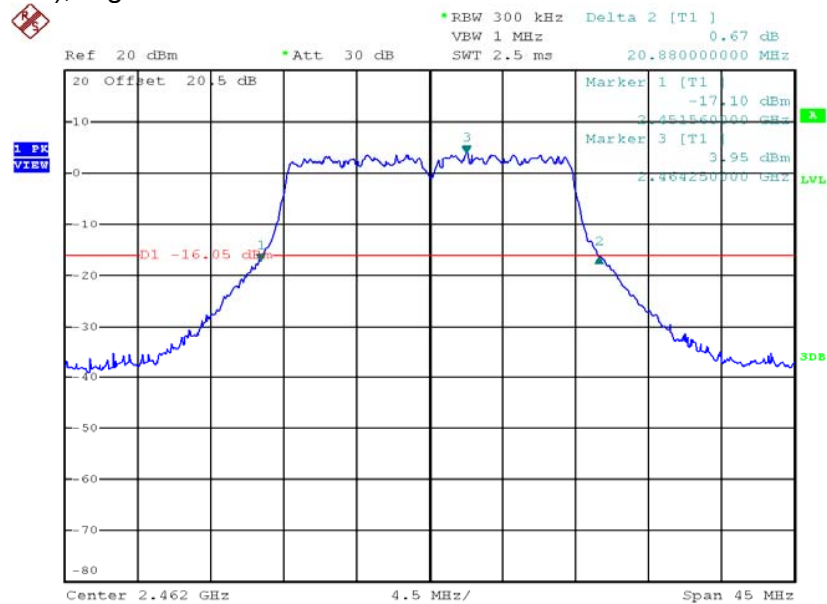
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## Plots of Occupied Bandwidth

802.11n(20M), Highest channel



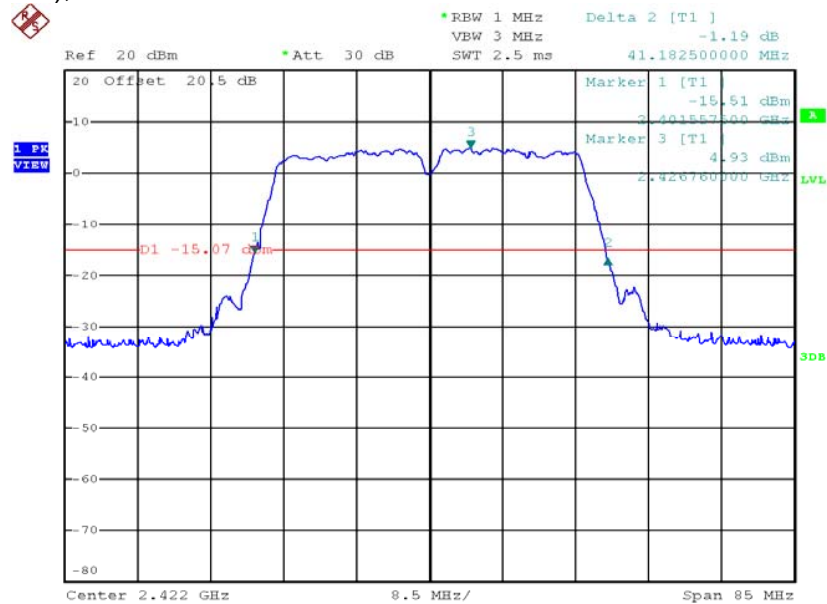
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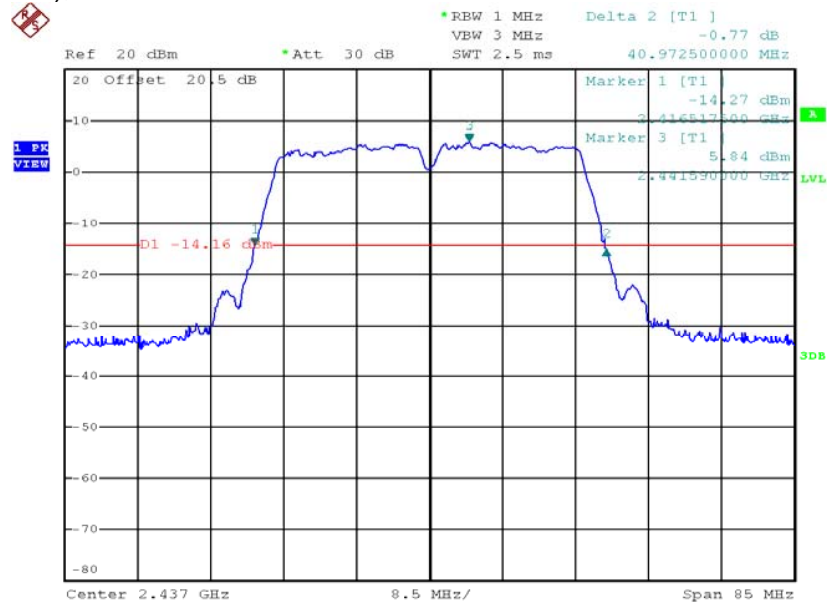


## Plots of Occupied Bandwidth

802.11n(40M), Lowest channel



802.11n(40M), Middle channel



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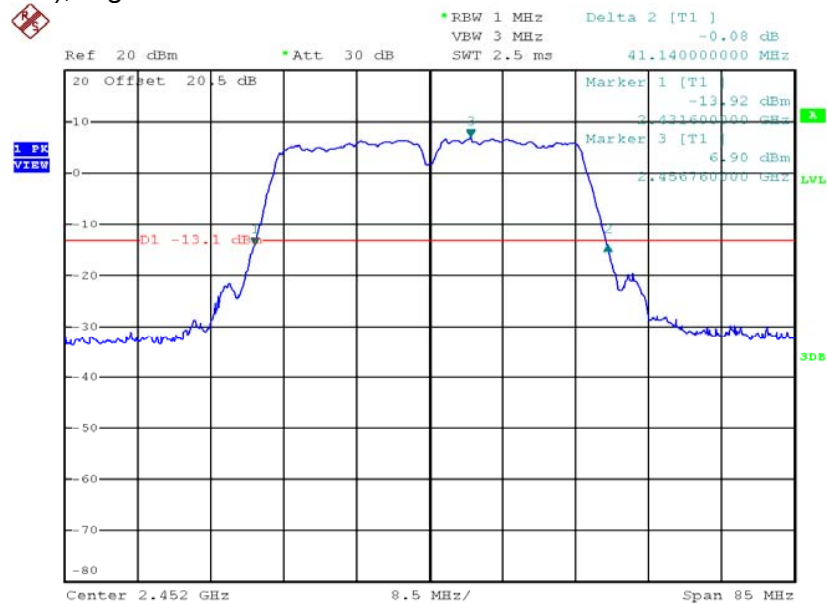
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## Plots of Occupied Bandwidth

802.11n(40M), Highest channel



#### 4.2 Maximum Conducted (average) Output Power at Antenna Terminals

The antenna port of the EUT was connected to the input of a spectrum analyzer.

- ☒ External attenuation and cable loss were compensated for using the OFFSET function of the analyser. The measurement procedure 9.2.2 was used.
- ☐ The EUT should be configured to transmit continuously (at a minimum duty cycle of 98%) at full power over the measurement duration. The measurement procedure AVG1 was used.

| IEEE 802.11b (DSSS, 1 Mbps) Antenna Gain = 0 dBi |               |                 |
|--------------------------------------------------|---------------|-----------------|
| Frequency (MHz)                                  | Output in dBm | Output in mWatt |
| Low Channel: 2412                                | 14.47         | 28.0            |
| Middle Channel: 2437                             | 14.95         | 31.3            |
| High Channel: 2462                               | 15.62         | 36.5            |

| IEEE 802.11g (OFDM, 6 Mbps) Antenna Gain = 0 dBi |               |                 |
|--------------------------------------------------|---------------|-----------------|
| Frequency (MHz)                                  | Output in dBm | Output in mWatt |
| Low Channel: 2412                                | 10.72         | 11.8            |
| Middle Channel: 2437                             | 12.07         | 16.1            |
| High Channel: 2462                               | 12.38         | 17.3            |

| IEEE 802.11n (20MHz) (OFDM, MCS0) Antenna Gain = 0 dBi |               |                 |
|--------------------------------------------------------|---------------|-----------------|
| Frequency (MHz)                                        | Output in dBm | Output in mWatt |
| Low Channel: 2412                                      | 10.92         | 12.4            |
| Middle Channel: 2437                                   | 11.43         | 13.9            |
| High Channel: 2462                                     | 12.25         | 16.8            |

#### 4.2 Maximum Conducted Output Power at Antenna Terminals – Cont'd

| IEEE 802.11n (40MHz) (OFDM, MCS0) Antenna Gain = 0 dBi |               |                 |
|--------------------------------------------------------|---------------|-----------------|
| Frequency (MHz)                                        | Output in dBm | Output in mWatt |
| Low Channel: 2422                                      | 10.24         | 10.6            |
| Middle Channel: 2437                                   | 10.74         | 11.9            |
| High Channel: 2452                                     | 11.40         | 13.8            |

Cable loss : 0.5 dB External Attenuation : 20 dB

Cable loss, external attenuation: ☒ included in OFFSET function  
☐ added to SA raw reading

IEEE 802.11b (DSSS, 1 Mbps)  
 max. conducted (average) output level = 15.62 dBm

IEEE 802.11g (OFDM, 9 Mbps)  
 max. conducted (average) output level = 12.38 dBm

IEEE 802.11n (20MHz) (OFDM, MCS0)  
 max. conducted (average) output level = 12.25 dBm

IEEE 802.11n (40MHz) (OFDM, MCS0)  
 max. conducted (average) output level = 11.40 dBm

Limits:

☒ 1W (30dBm) for antennas with gains of 6dBi or less

☐ \_\_\_W (\_\_\_dBm) for antennas with gains more than 6dBi

The plots of conducted output power are saved as below.

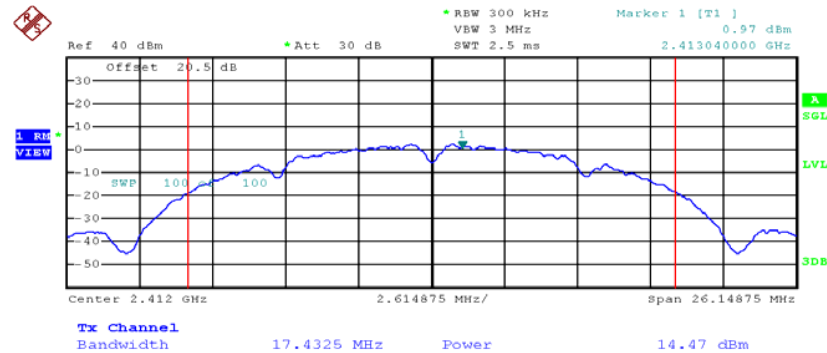


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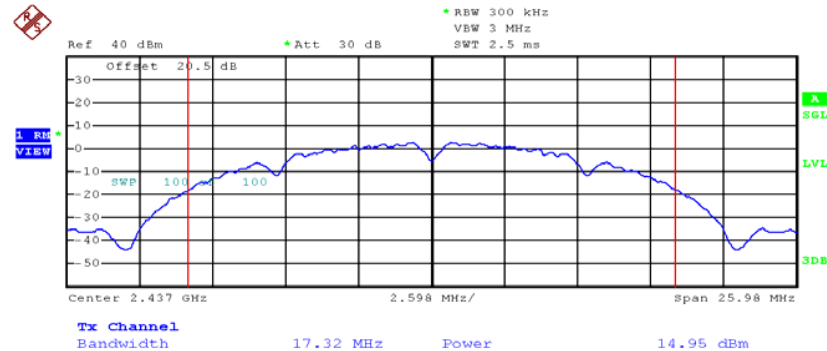


### Plots of maximum output power

802.11b, Lowest channel



### 802.11b, Middle channel



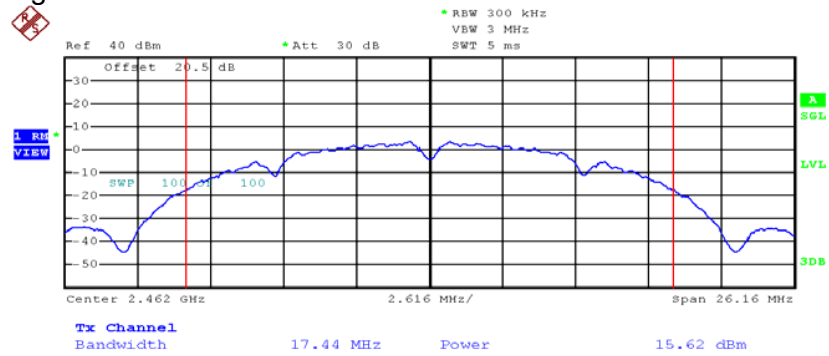
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## Plots of maximum output power

802.11b, Highest channel

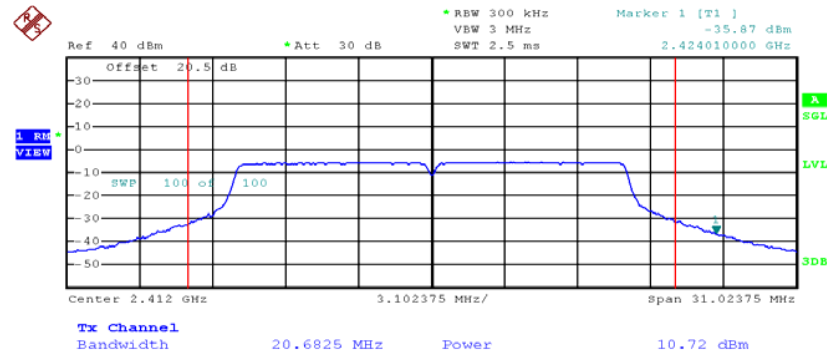


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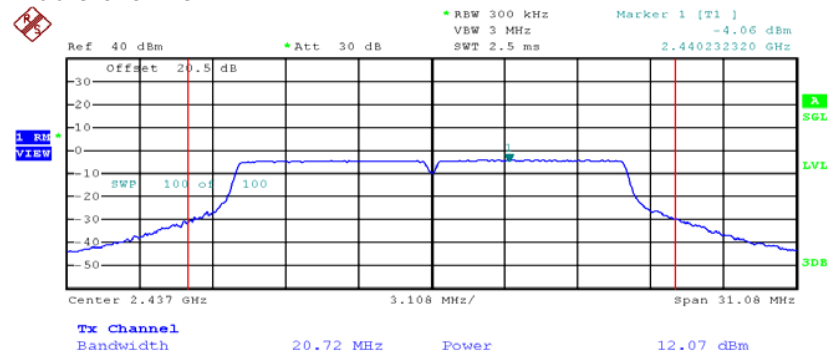


### Plots of maximum output power

802.11g, Lowest channel



802.11g, Middle channel



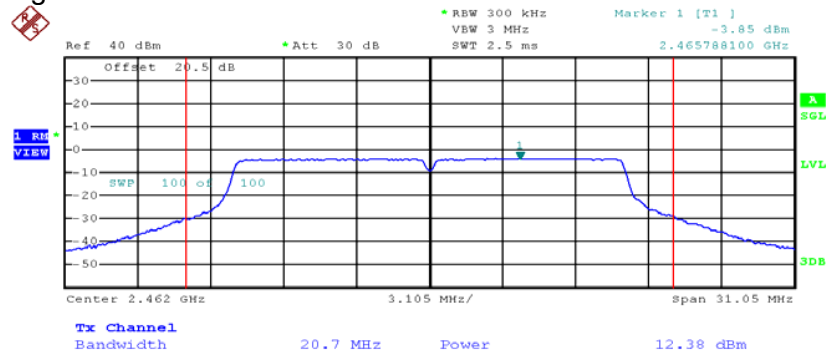
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



## Plots of maximum output power

802.11g, Highest channel



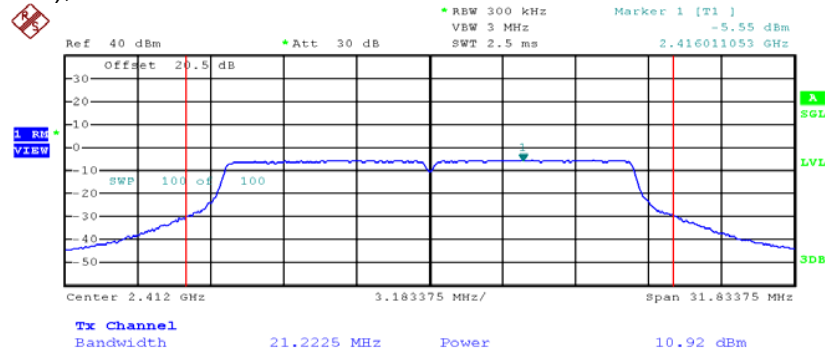
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

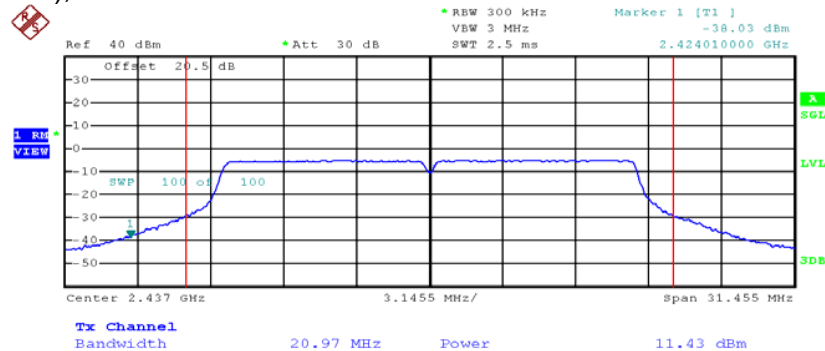


## Plots of maximum output power

802.11n(20M), Lowest channel



802.11n(20M), Middle channel

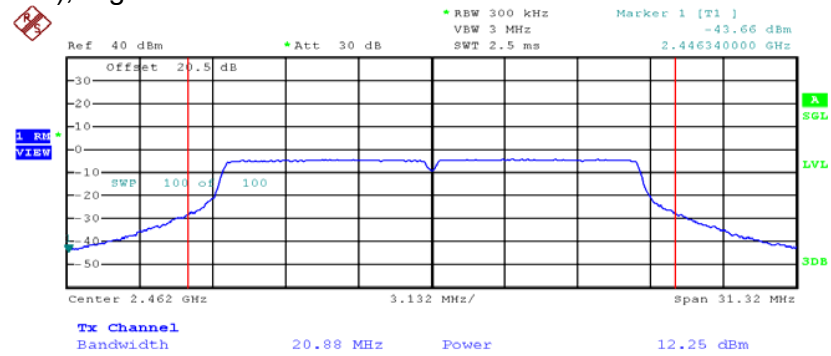


HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



### Plots of maximum output power

802.11n(20M), Highest channel



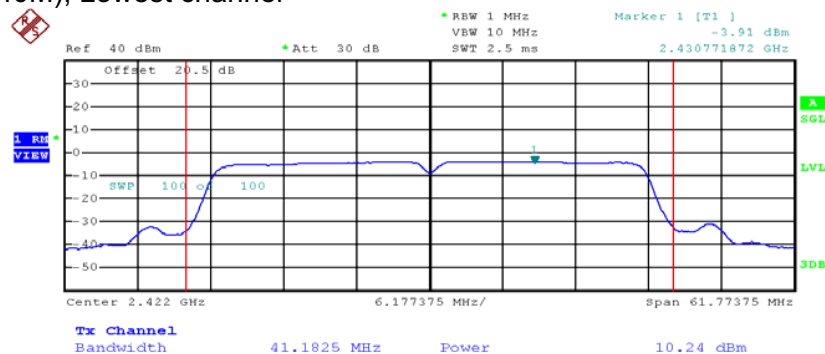
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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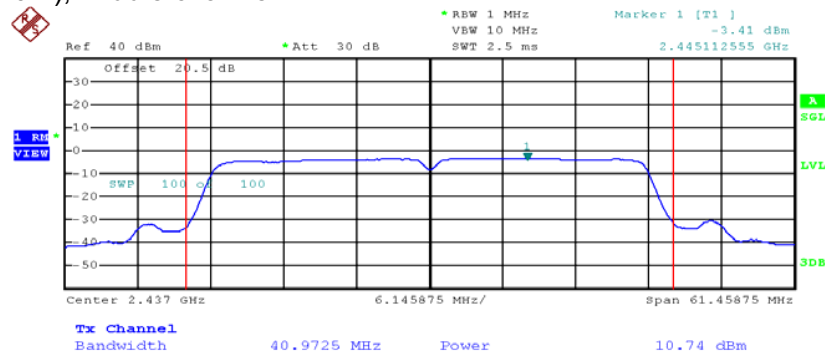


## Plots of maximum output power

802.11n(40M), Lowest channel



802.11n(40M), Middle channel

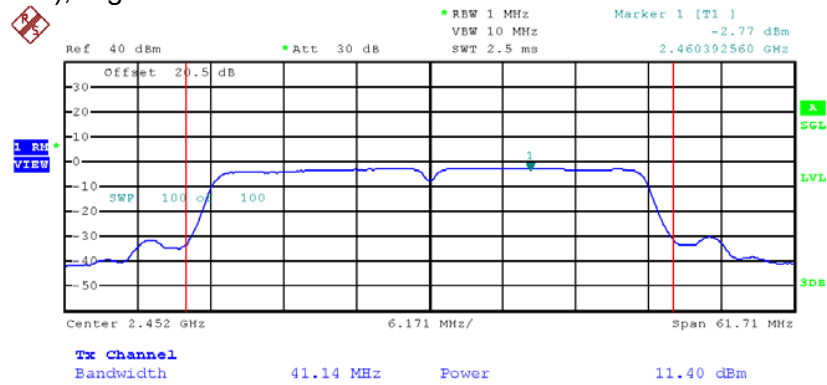


Issuing Laboratory:  
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**Plots of maximum output power**  
802.11n(40M), Highest channel





#### 4.3 Minimum 6dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. The EBW measurement procedure was used. A PEAK output reading was taken, a DISPLAY line was drawn 6dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

For Industry Canada, the 99% occupied bandwidth was measured, and the procedure under the section 4.6.1 of RSS-GEN was used.

| IEEE 802.11b (DSSS, 1 Mbps) |                     |
|-----------------------------|---------------------|
| Frequency (MHz)             | 6dB Bandwidth (kHz) |
| Low Channel: 2412           | 10220               |
| Middle Channel: 2437        | 10268               |
| High Channel: 2462          | 10240               |

| IEEE 802.11g (OFDM, 6 Mbps) |                     |
|-----------------------------|---------------------|
| Frequency (MHz)             | 6dB Bandwidth (kHz) |
| Low Channel: 2412           | 16700               |
| Middle Channel: 2437        | 16738               |
| High Channel: 2462          | 16740               |

| IEEE 802.11n (20MHz) (OFDM, MCS0) |                     |
|-----------------------------------|---------------------|
| Frequency (MHz)                   | 6dB Bandwidth (kHz) |
| Low Channel: 2412                 | 17960               |
| Middle Channel: 2437              | 17998               |
| High Channel: 2462                | 18000               |

Issuing Laboratory:  
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#### 4.2 Minimum 6dB RF Bandwidth – Cont'd

| IEEE 802.11n (40MHz) (OFDM, MCS0) |                     |
|-----------------------------------|---------------------|
| Frequency (MHz)                   | 6dB Bandwidth (kHz) |
| Low Channel: 2422                 | 36700               |
| Middle Channel: 2437              | 36860               |
| High Channel: 2452                | 36828               |

#### Limits

6 dB bandwidth shall be at least 500kHz

The plots of 6dB RF bandwidth and occupied bandwidth are saved as below.

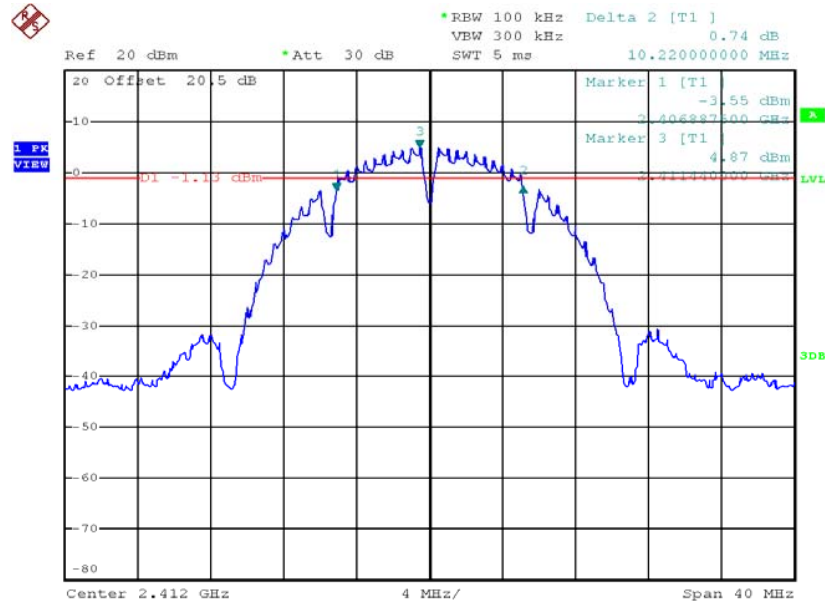
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

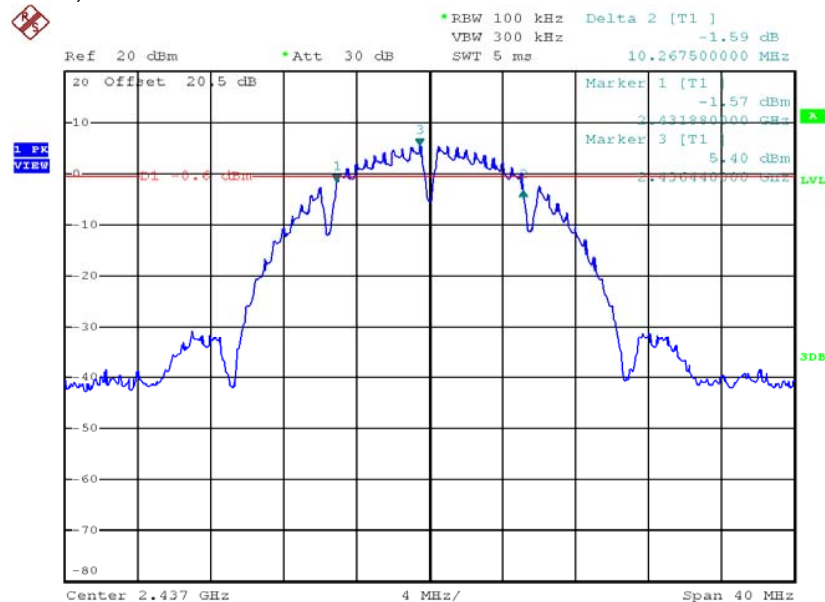


## Plots of 6dB RF bandwidth

### 802.11b, Lowest Channel



### 802.11b, Middle Channel



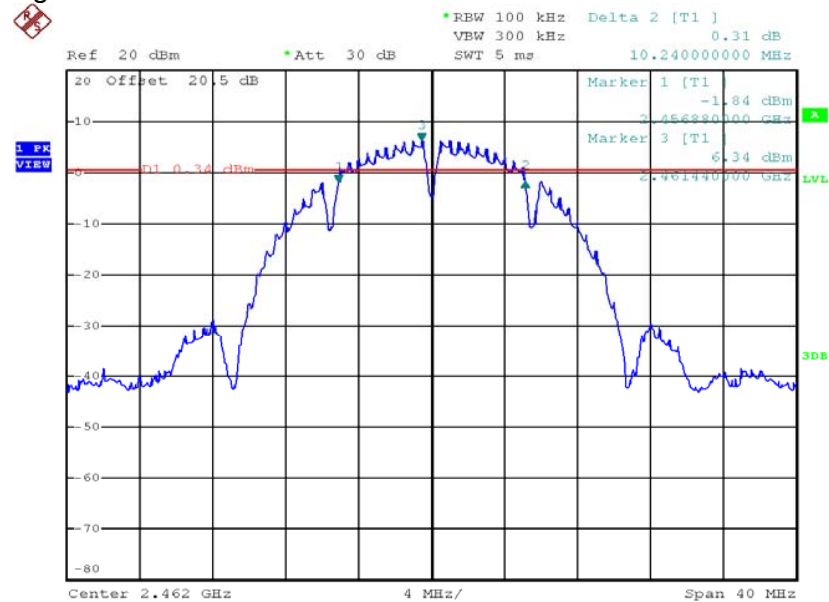
Issuing Laboratory:  
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## Plots of 6dB RF bandwidth

802.11b, Highest Channel



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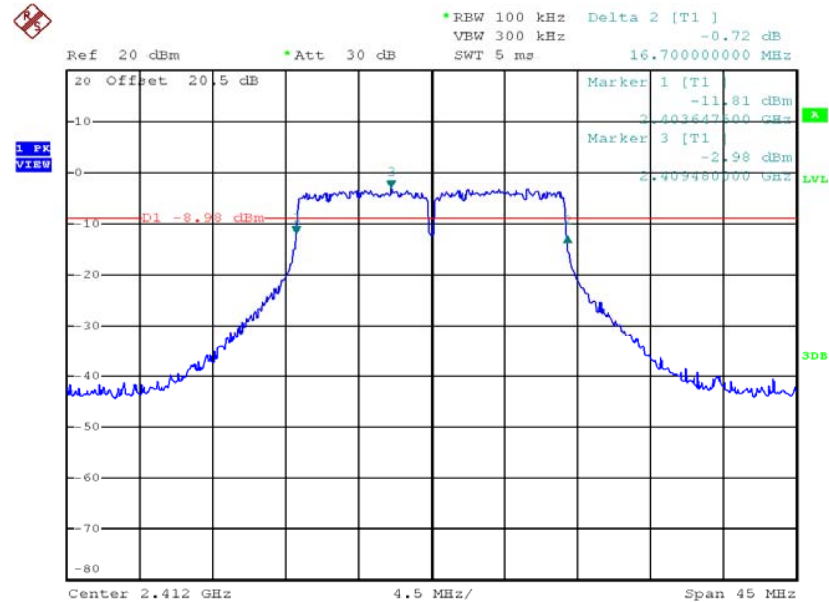
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: [www.hk.intertek-etlsemko.com](http://www.hk.intertek-etlsemko.com)

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

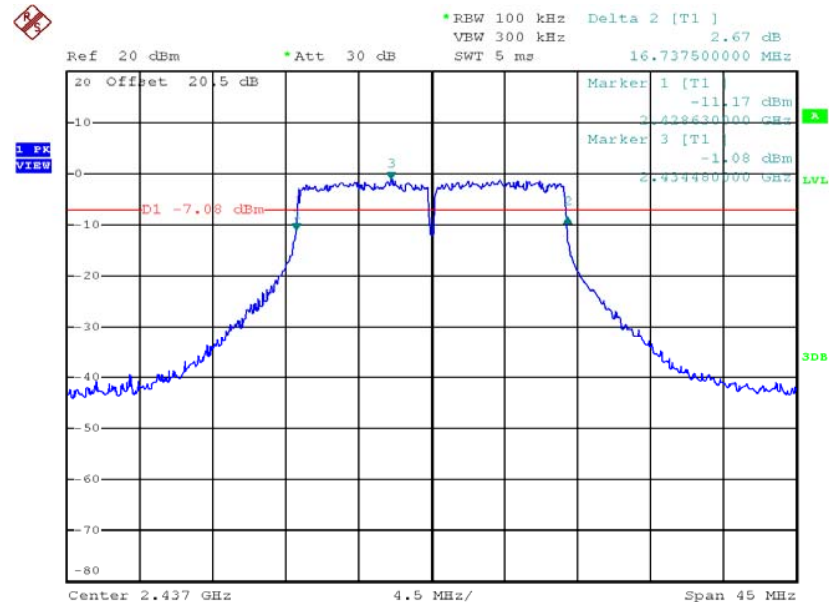


### Plots of 6dB RF bandwidth

802.11g, Lowest Channel



## 802.11g, Middle Channel



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Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: [www.hk.intertek-etlsemko.com](http://www.hk.intertek-etlsemko.com)

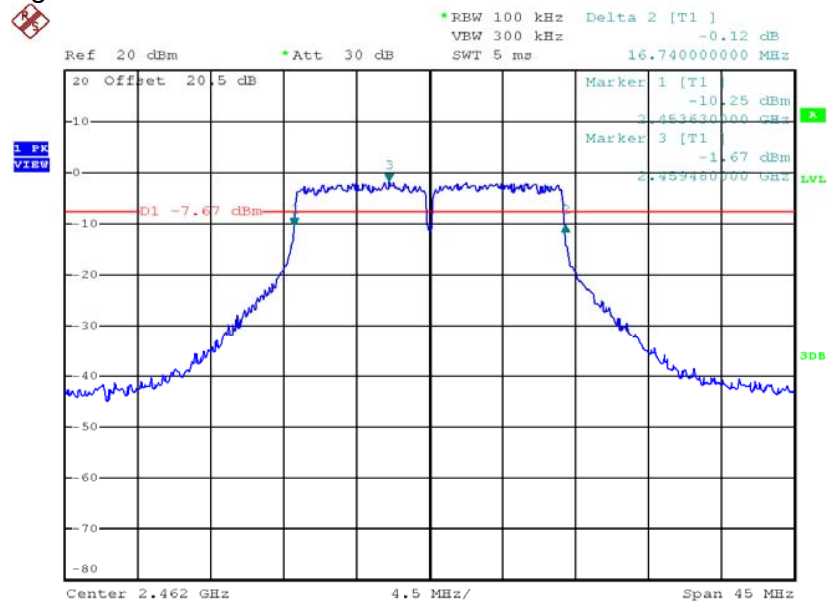
Issuing Laboratory:  
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## Plots of 6dB RF bandwidth

802.11g, Highest Channel



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Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: [www.hk.intertek-etlsemko.com](http://www.hk.intertek-etlsemko.com)

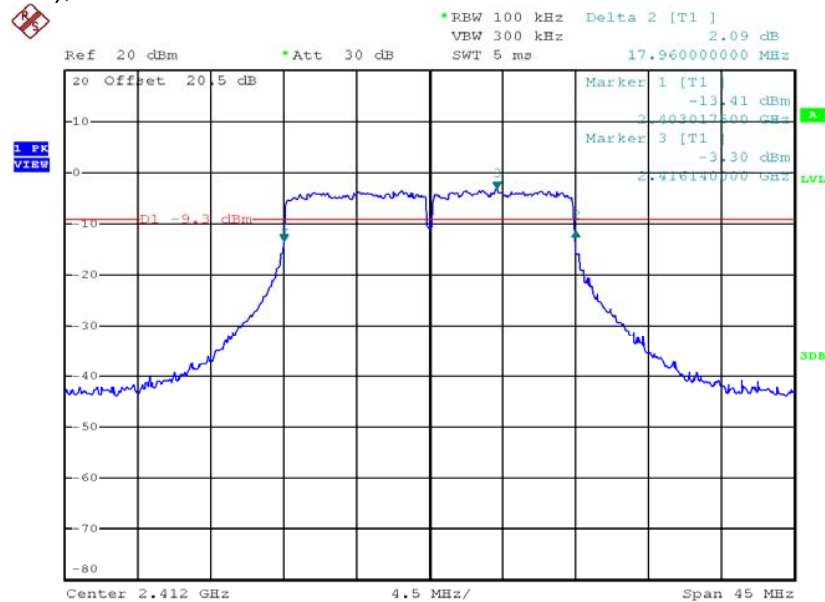
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

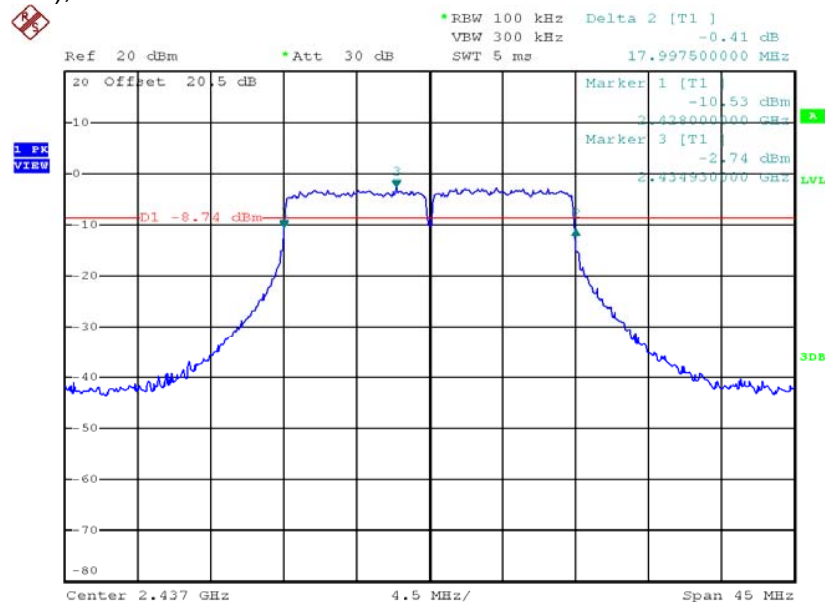


## Plots of 6dB RF bandwidth

802.11n(20M), Lowest Channel



## 802.11n(20M), Middle Channel

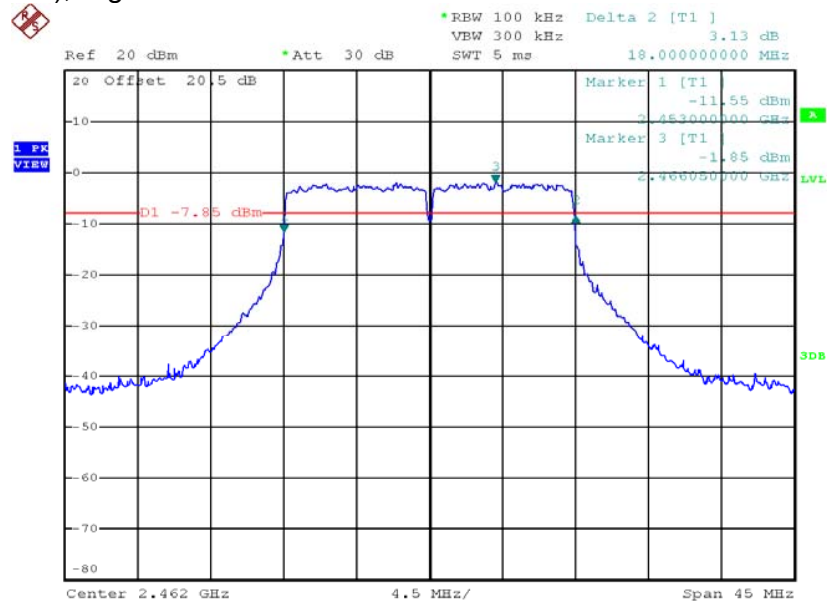


Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



**Plots of 6dB RF bandwidth**  
802.11n(20M), Highest Channel



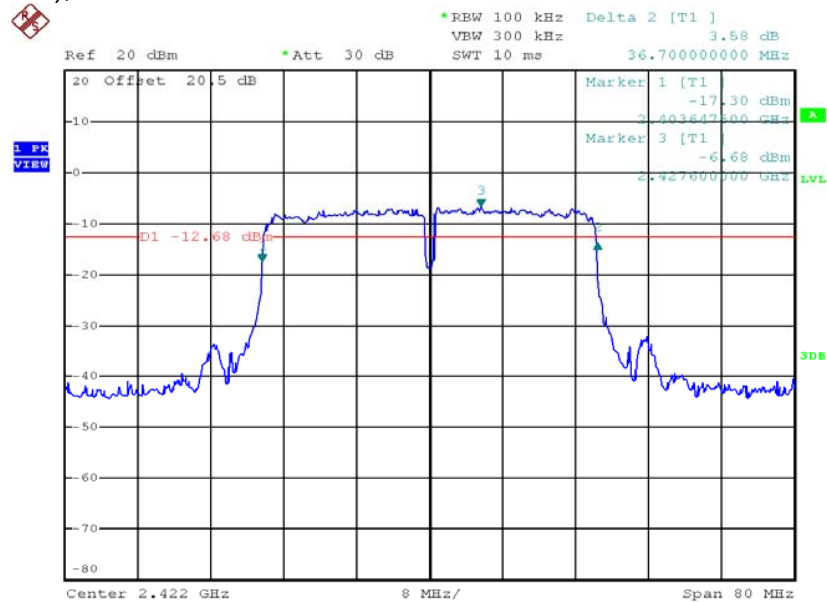


Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

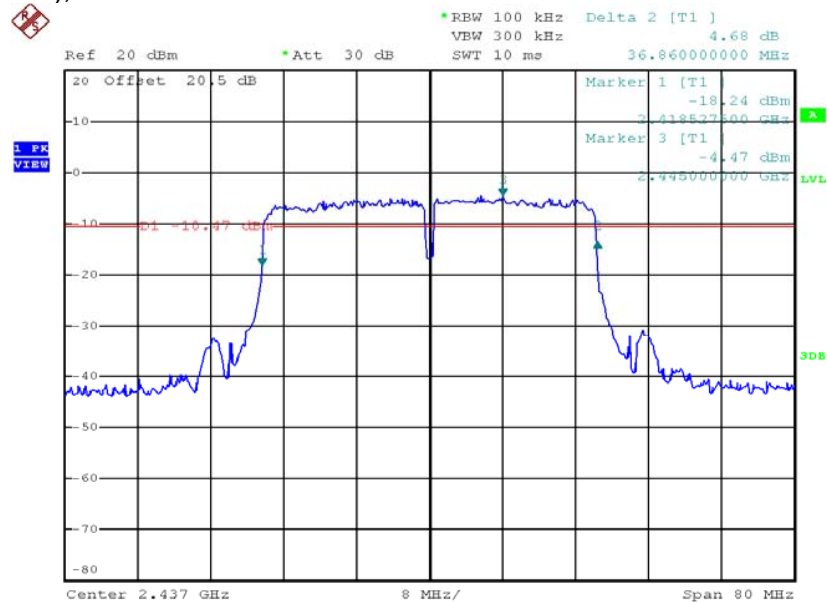
HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



**Plots of 6dB RF bandwidth**  
802.11n(40M), Lowest Channel



802.11n(40M), Middle Channel

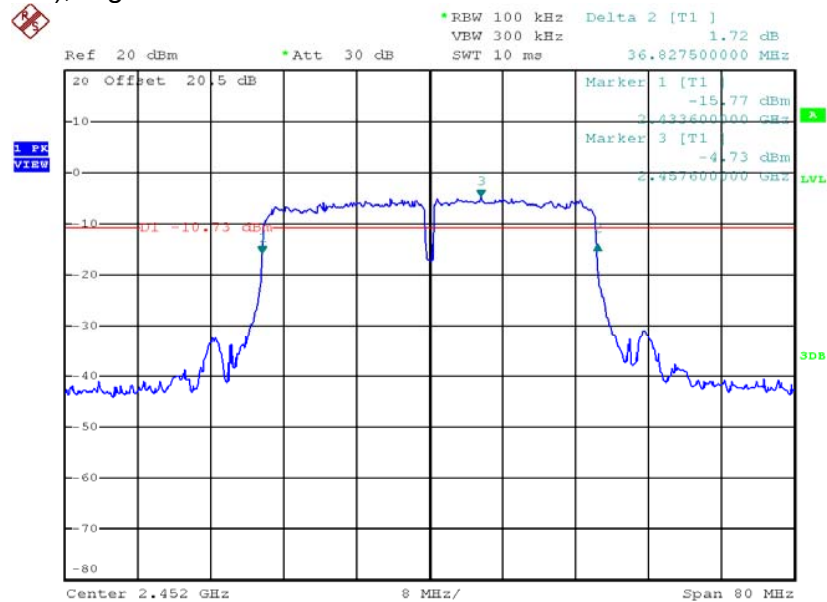


Issuing Laboratory:  
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**Plots of 6dB RF bandwidth**  
802.11n(40M), Highest Channel



#### 4.4 Maximum Power Spectral Density

Antenna output of the EUT was coupled directly to spectrum analyzer. The measurement procedure 10.3 AVGPS-1 was used. If an external attenuator and/or cable was used, these losses are compensated for using the OFFSET function of the analyser.

| IEEE 802.11b (DSSS, 1 Mbps) |                     |
|-----------------------------|---------------------|
| Frequency (MHz)             | PSD in 100kHz (dBm) |
| Low Channel: 2412           | -3.15               |
| Middle Channel: 2437        | -2.51               |
| High Channel: 2462          | -1.79               |

| IEEE 802.11g (OFDM, 6 Mbps) |                     |
|-----------------------------|---------------------|
| Frequency (MHz)             | PSD in 100kHz (dBm) |
| Low Channel: 2412           | -9.51               |
| Middle Channel: 2437        | -8.53               |
| High Channel: 2462          | -8.09               |

| IEEE 802.11n (20MHz) (OFDM, MCS0) |                     |
|-----------------------------------|---------------------|
| Frequency (MHz)                   | PSD in 100kHz (dBm) |
| Low Channel: 2412                 | -10.52              |
| Middle Channel: 2437              | -9.82               |
| High Channel: 2462                | -8.92               |

| IEEE 802.11n (40MHz) (OFDM, MCS0) |                     |
|-----------------------------------|---------------------|
| Frequency (MHz)                   | PSD in 100kHz (dBm) |
| Low Channel: 2422                 | -13.60              |
| Middle Channel: 2437              | -13.25              |
| High Channel: 2452                | -12.47              |

Cable Loss: 0.5 dB

Limit:  
8dBm

The plots of n power spectral density are as below.

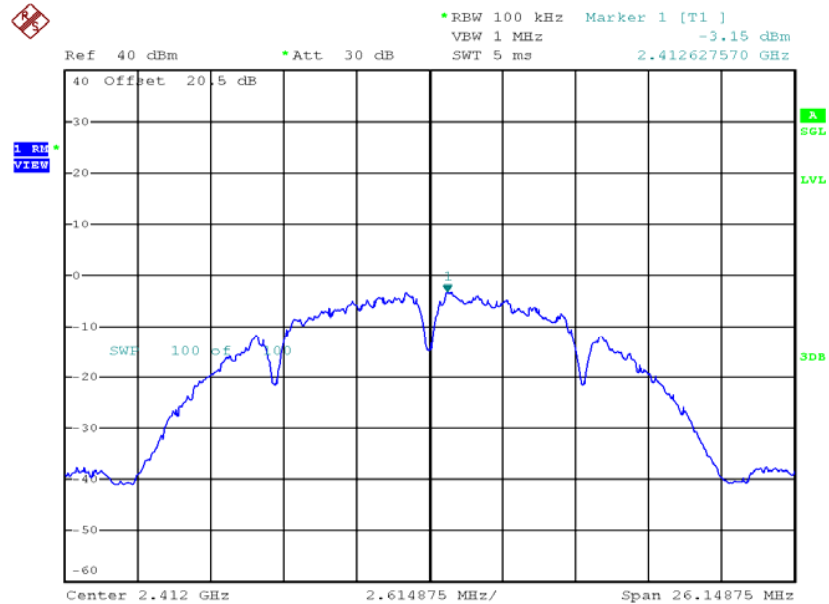
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

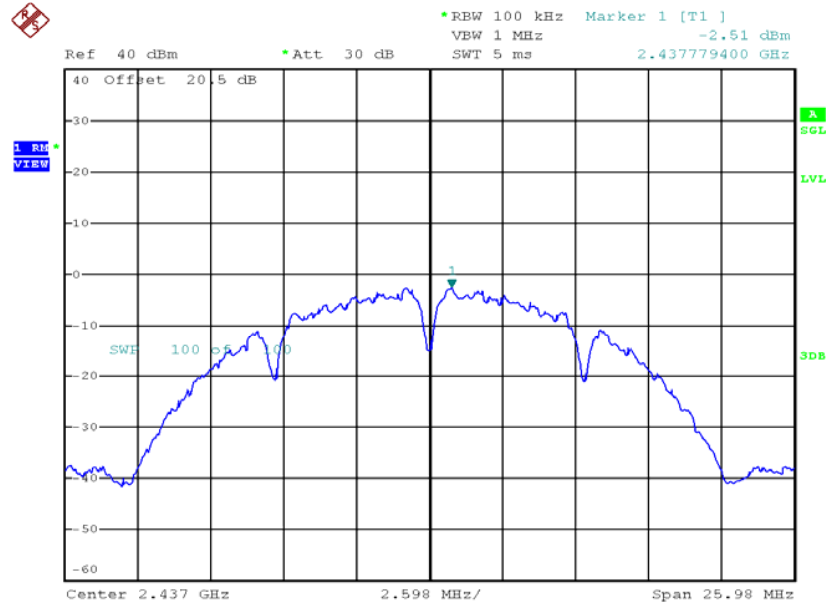


## Plots of power spectral density

802.11b, Lowest channel



802.11b, Middle channel



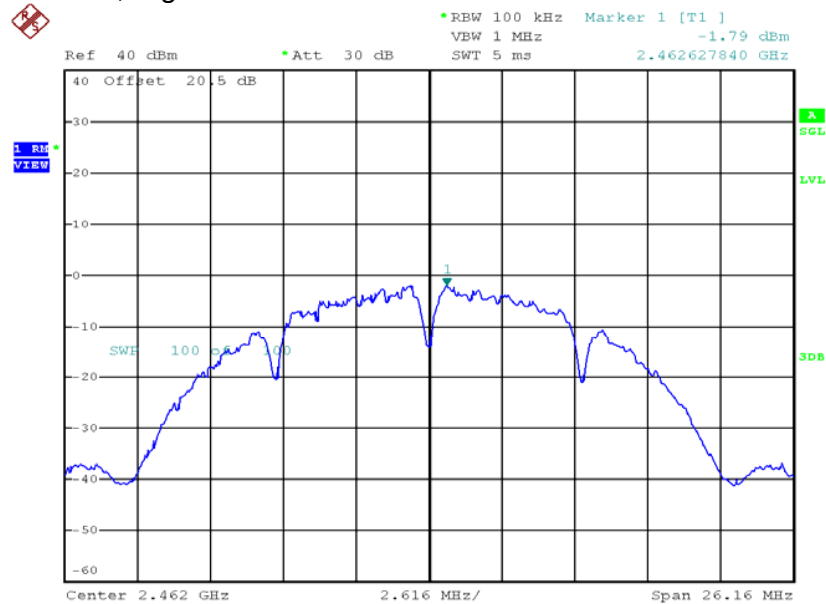
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



## Plots of power spectral density

802.11b, Highest channel



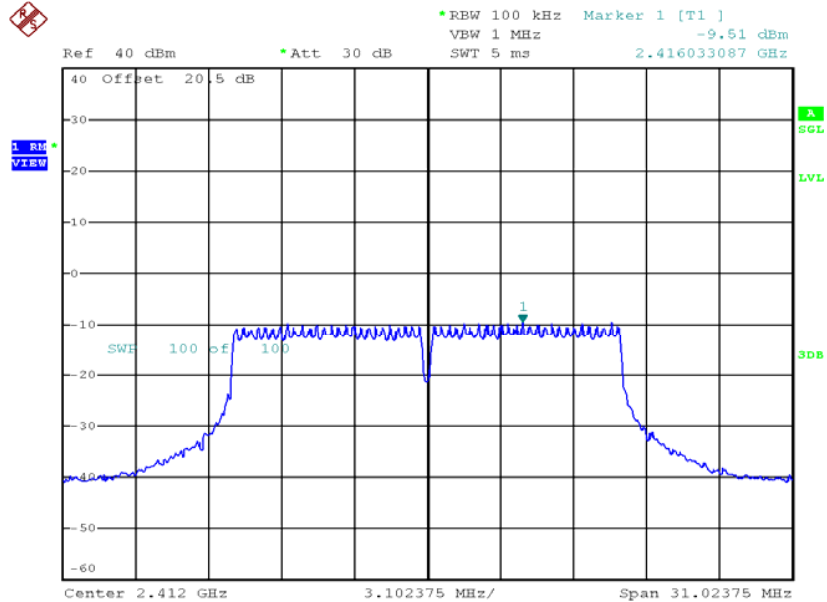
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

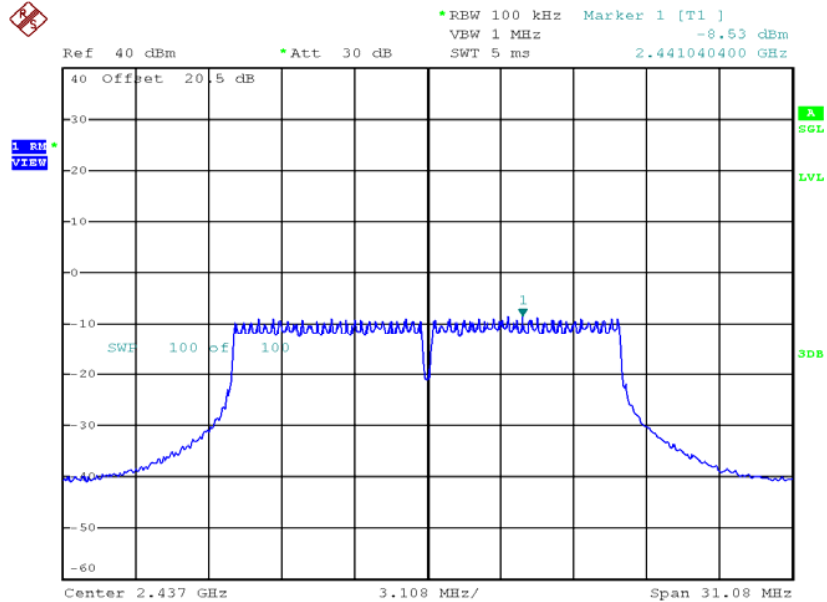


## Plots of power spectral density

802.11g, Lowest channel



802.11g, Middle channel



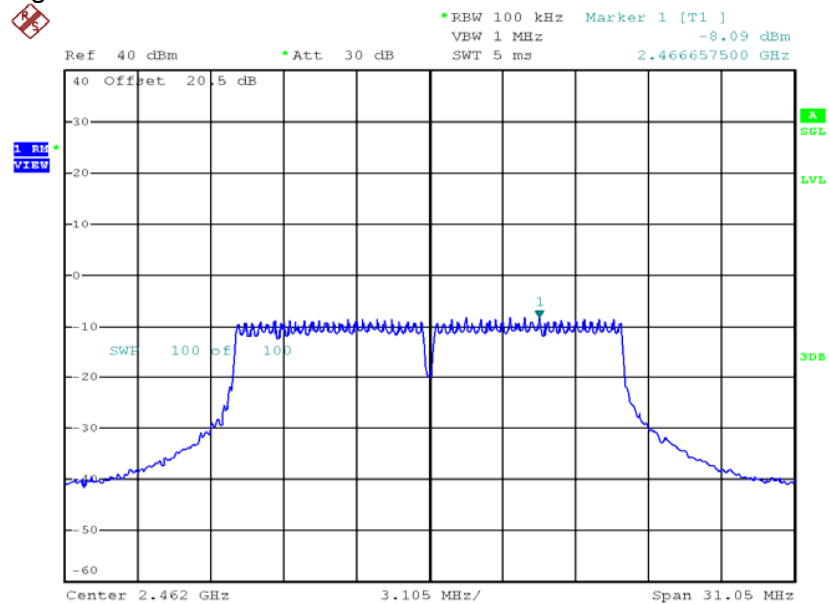
Issuing Laboratory:  
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## Plots of power spectral density

802.11g, Highest channel



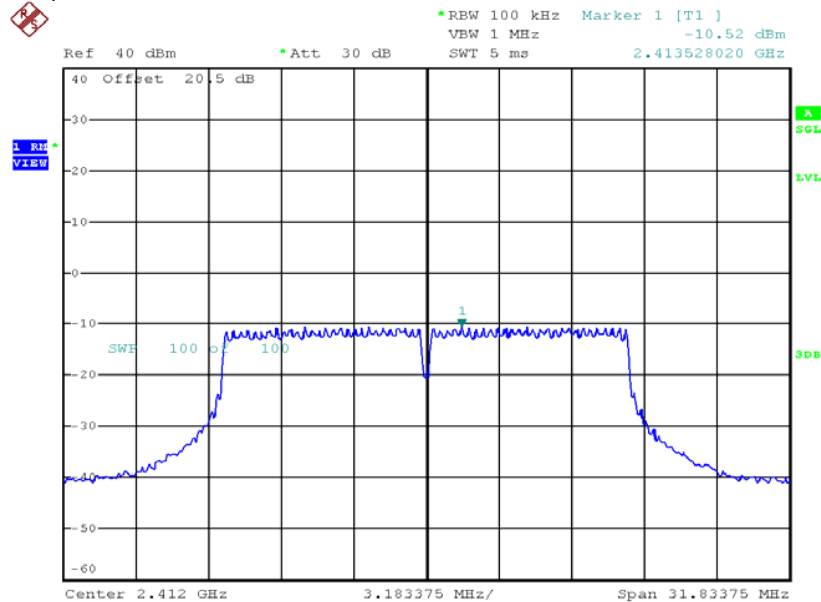
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

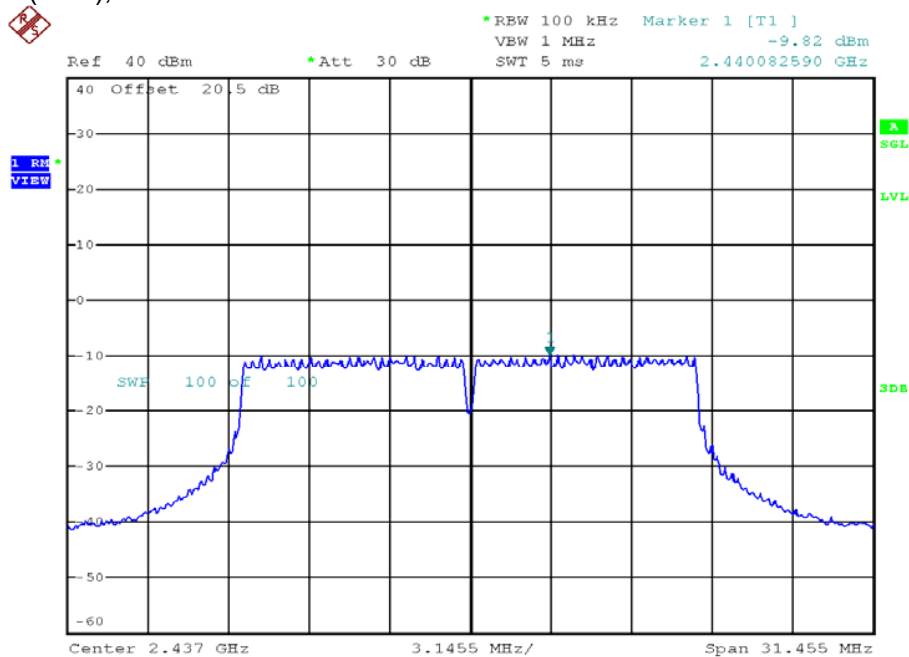


## Plots of power spectral density

802.11n(20M), Lowest channel



802.11n(20M), Middle channel



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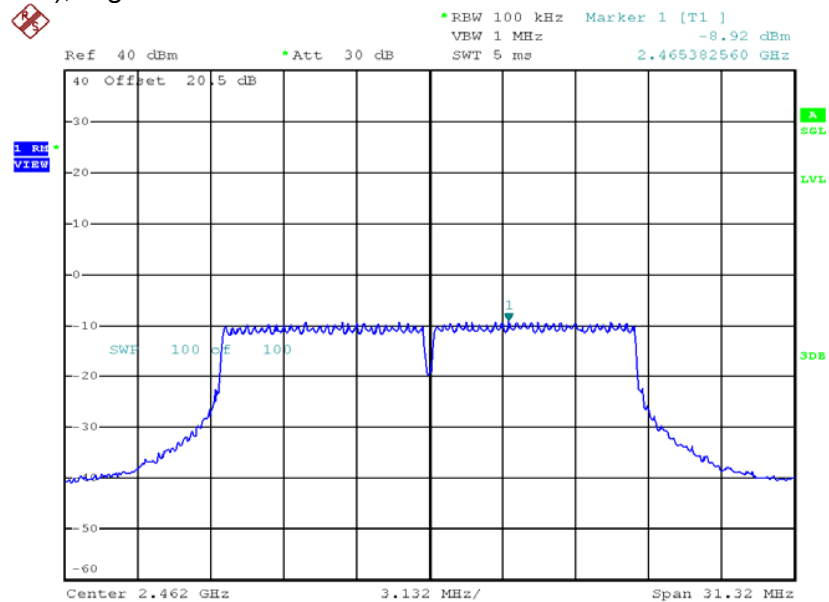
Issuing Laboratory:  
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## Plots of power spectral density

802.11n(20M), Highest channel



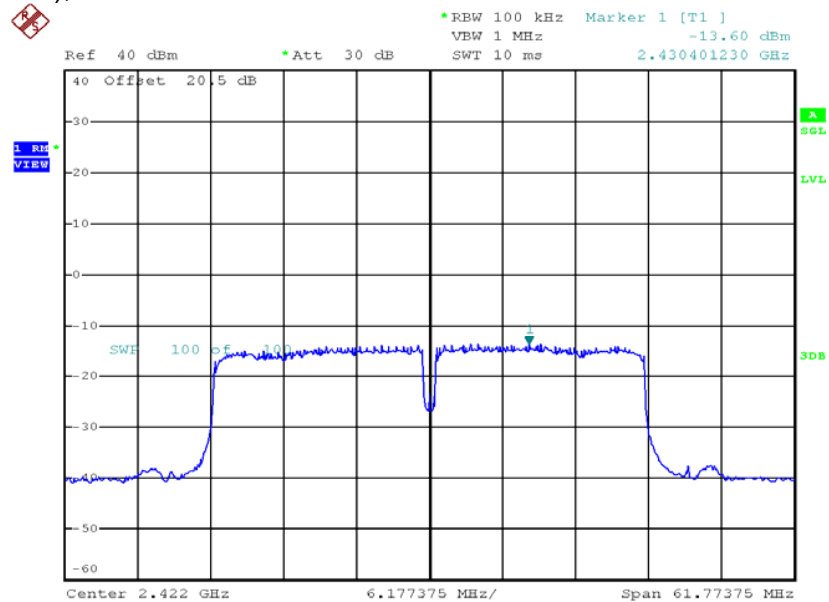
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

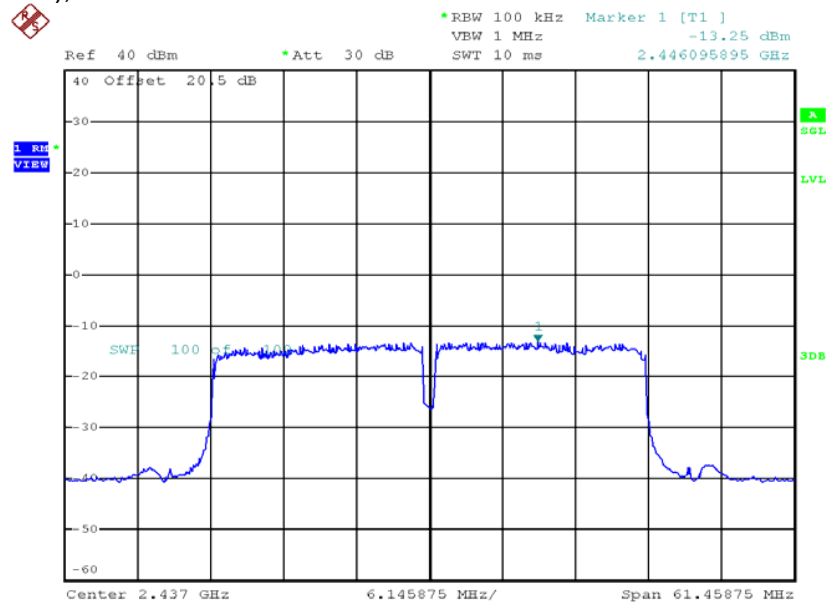


## Plots of power spectral density

802.11n(40M), Lowest channel



802.11n(40M), Middle channel



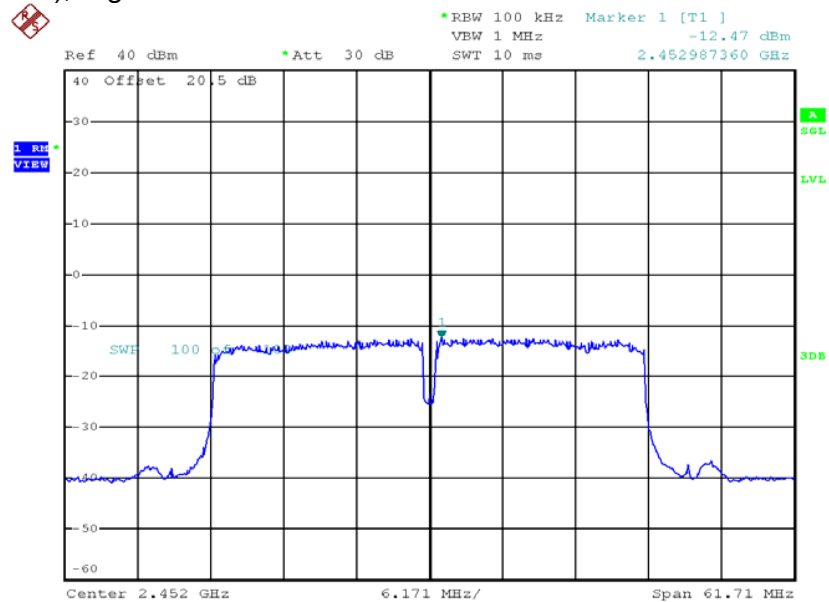
Issuing Laboratory:  
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## Plots of power spectral density

802.11n(40M), Highest channel



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#### 4.5 Out of Band Conducted Emissions

The maximum conducted (average) output power was used to demonstrate compliance as described in 9.2. Then the display line (in red) shown in the following plots denotes the limit at 30dB below maximum measured in-band peak PSD level in 100 KHz bandwidth.

The measurement procedures under sections 11 of KDB558074 D01 v03r02 (05-June-2014) were used.

Furthermore, delta measurement technique for measuring bandedge emissions was incorporated in the test of the edge at 2483.5MHz.

**Limits:**

All spurious emission and up to the tenth harmonic was measured and they were found to be at least 30 dB below the maximum measured in-band peak PSD level.

The plots of reference level measurement and out of band conducted emissions are as below.

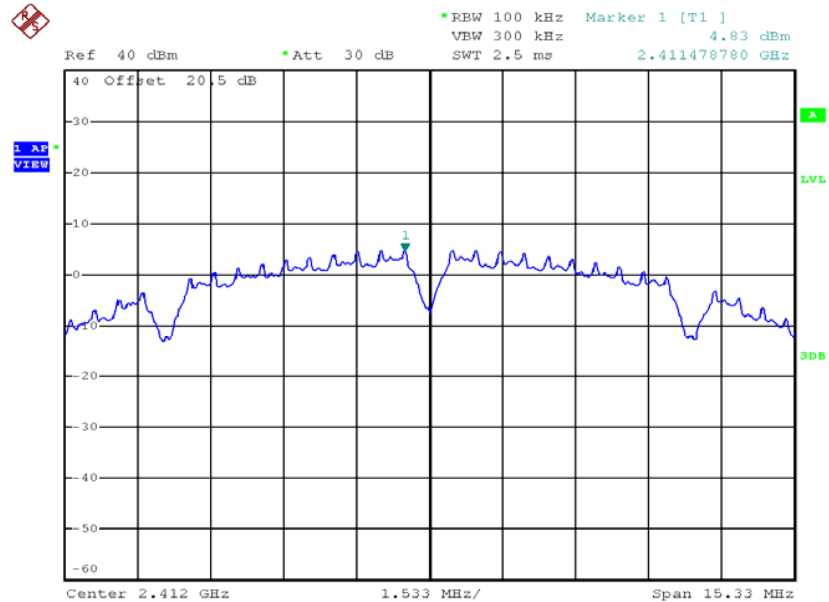
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

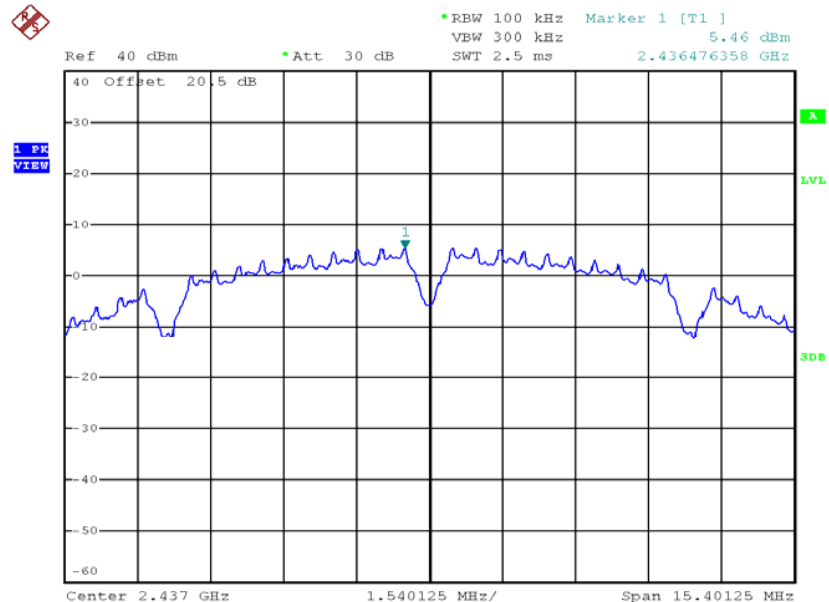


## Plots of reference level measurement

### 802.11b, Lowest channel



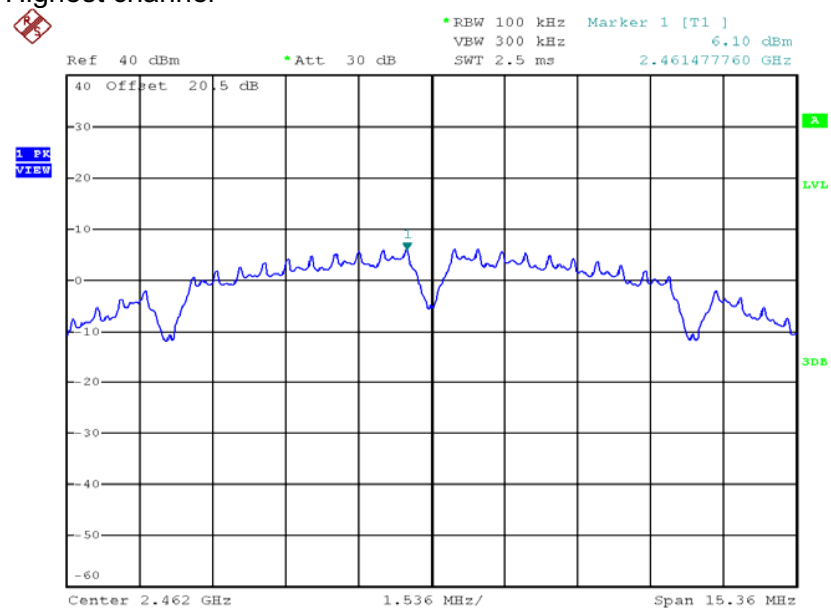
### 802.11b, Middle channel



HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

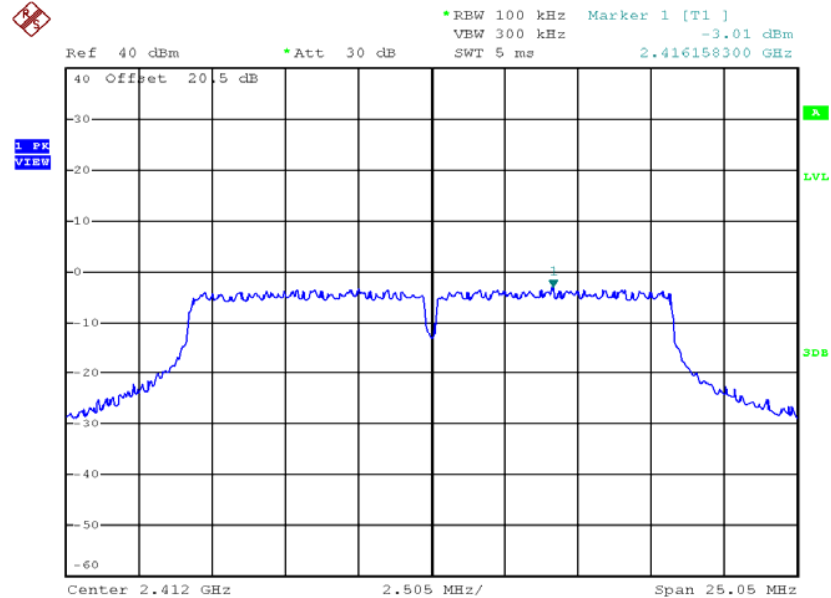


802.11b, Highest channel

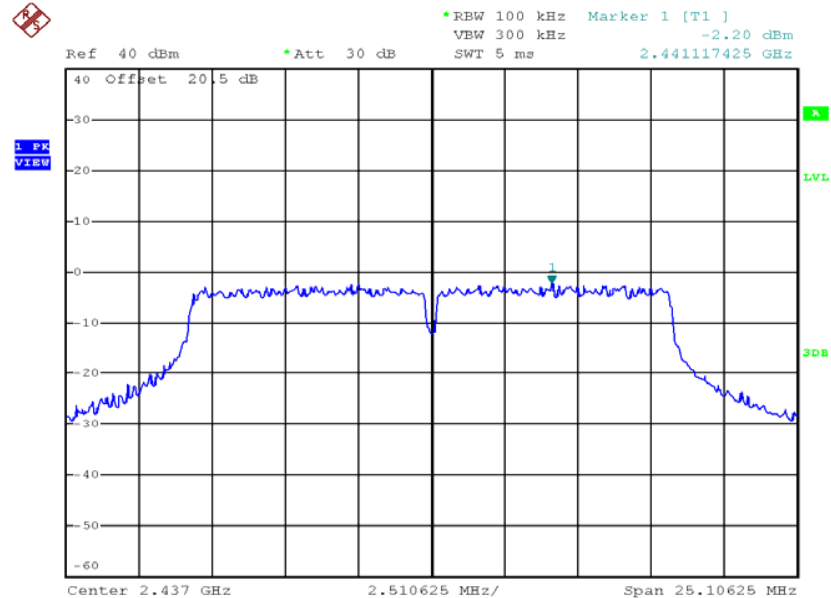


## Plots of reference level measurement

802.11g, Lowest channel



802.11g, Middle channel



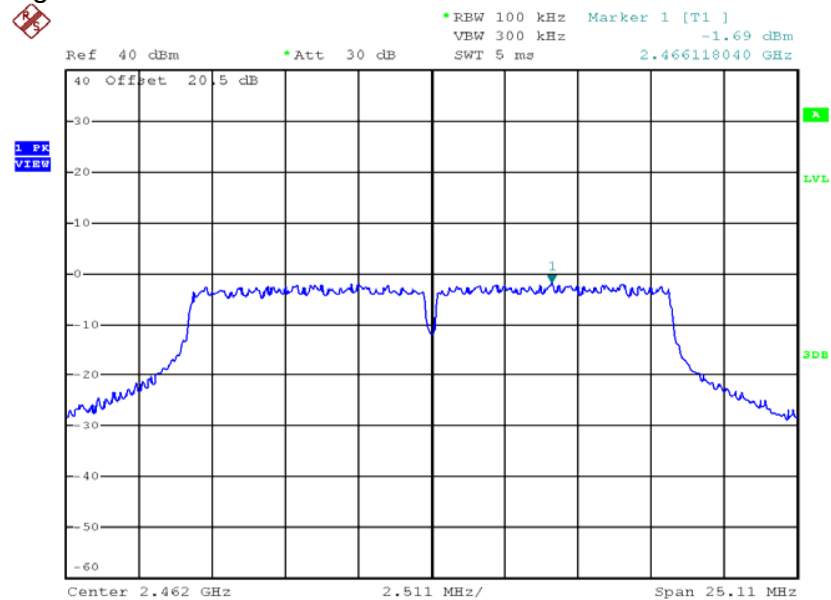
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.



## Plots of reference level measurement

802.11g, Highest channel





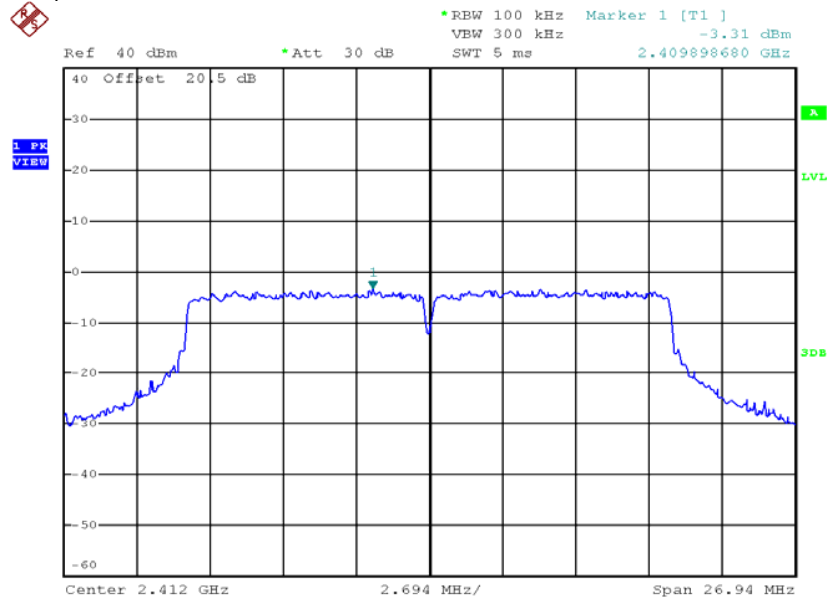
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

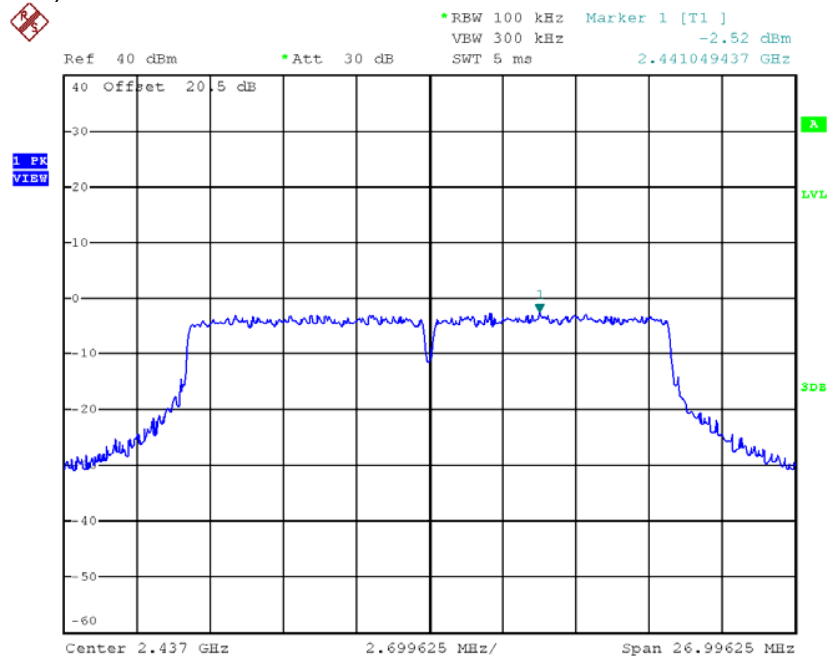


## Plots of reference level measurement

802.11n(20M), Lowest channel



802.11n(20M), Middle channel



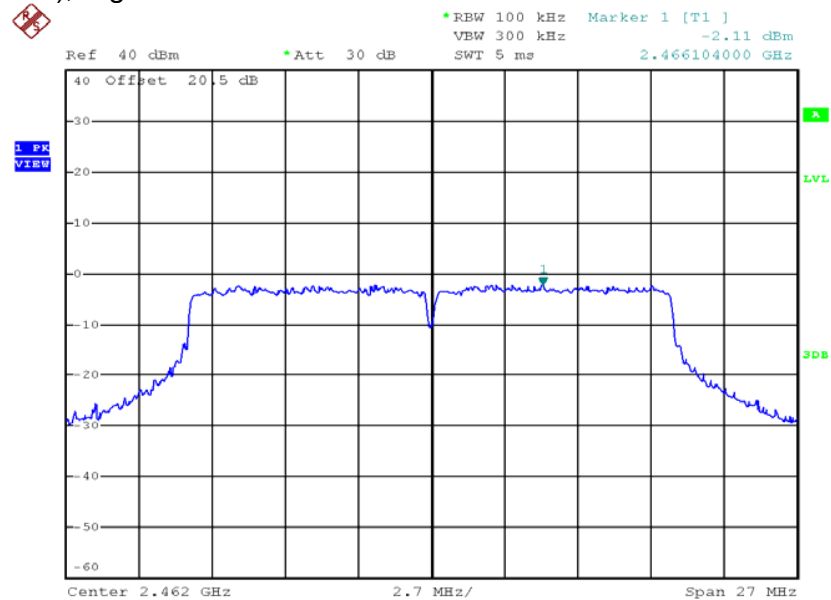
Issuing Laboratory:  
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## Plots of reference level measurement

802.11n(20M), Highest channel



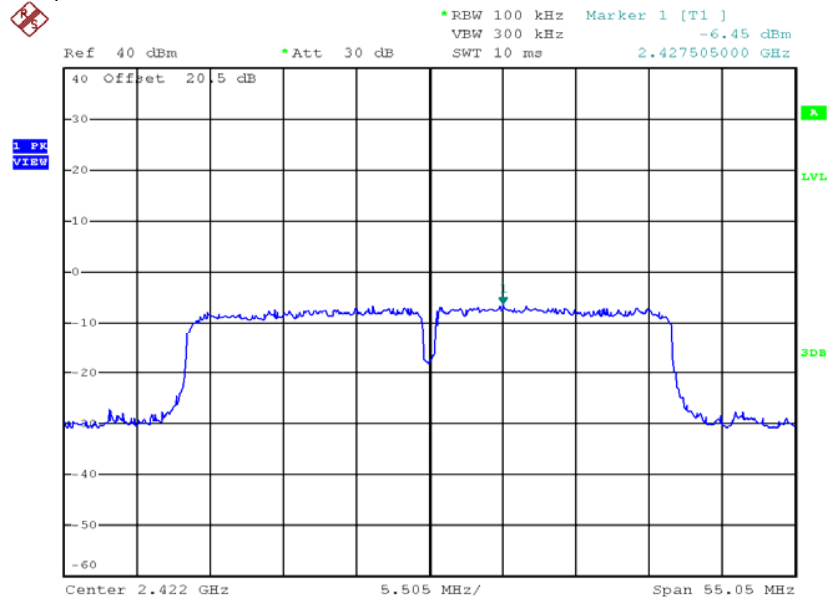
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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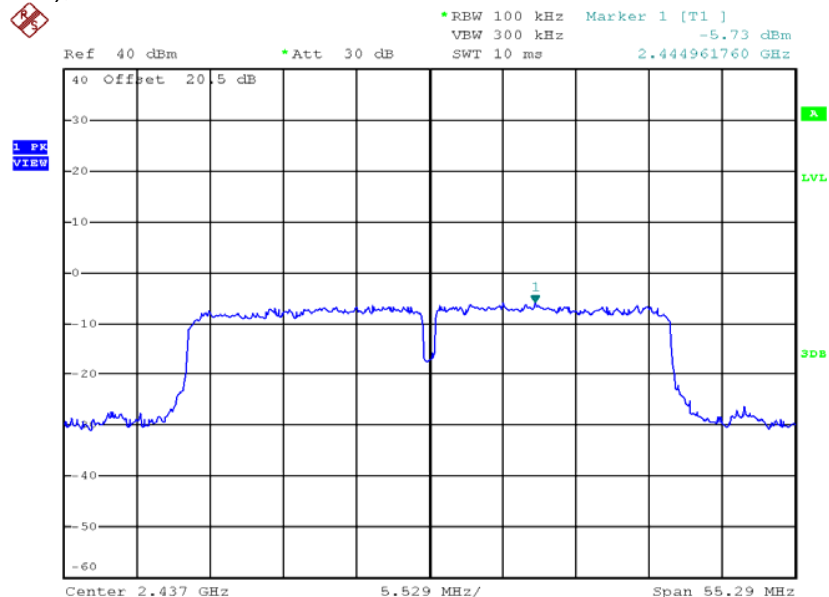


## Plots of reference level measurement

802.11n(40M), Lowest channel



802.11n(40M), Middle channel



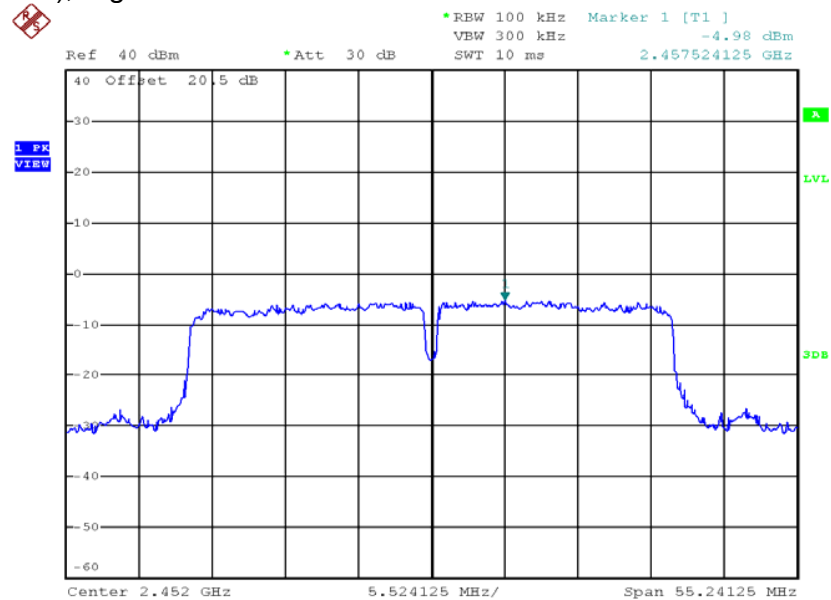
Issuing Laboratory:  
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## Plots of reference level measurement

802.11n(40M), Highest channel



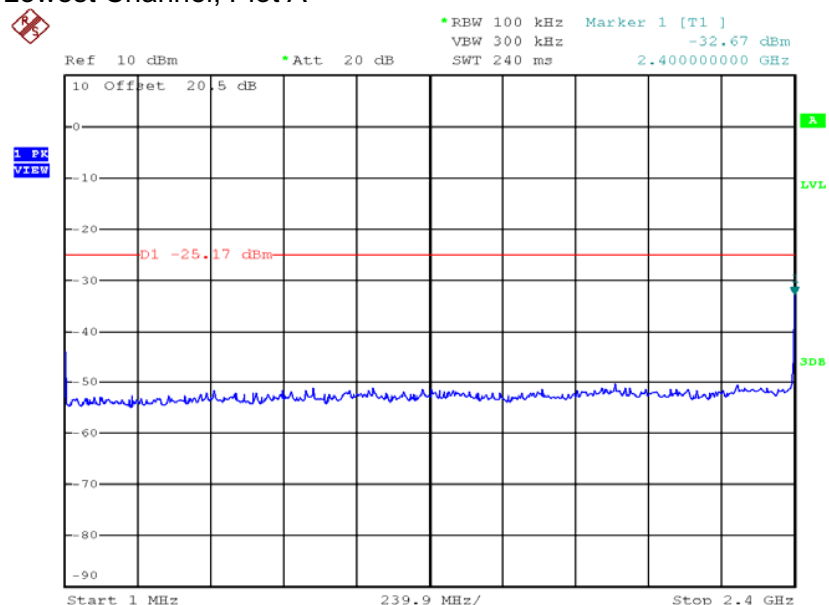
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

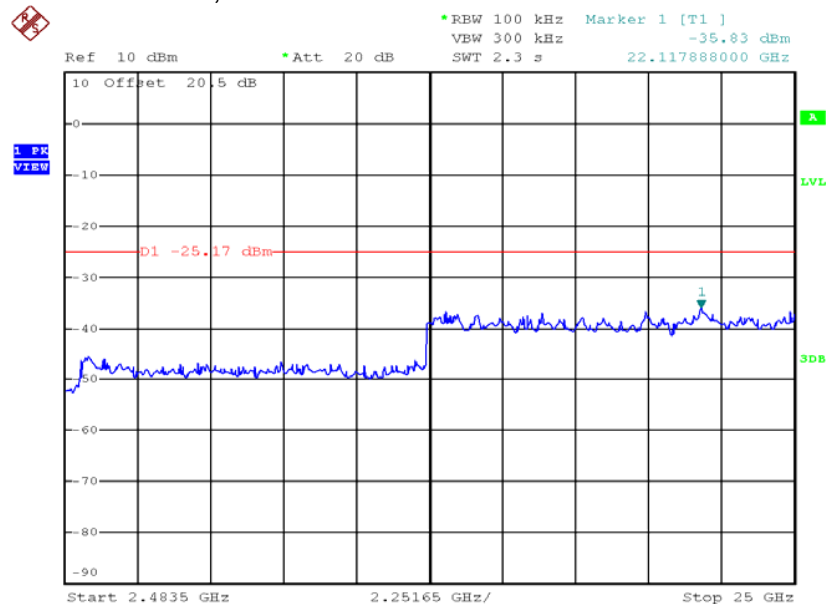


## Plots of out of band conducted emissions

### 802.11b, Lowest Channel, Plot A



### 802.11b, Lowest Channel, Plot B



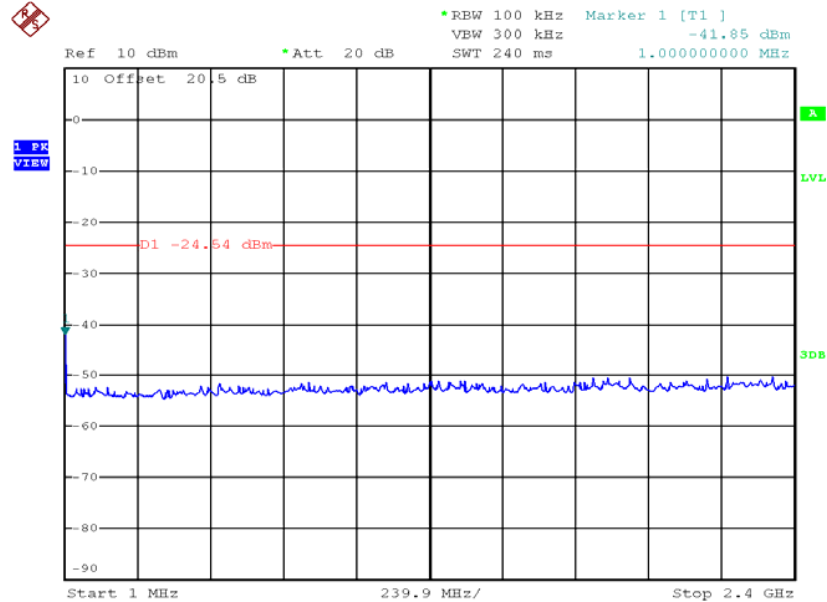
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

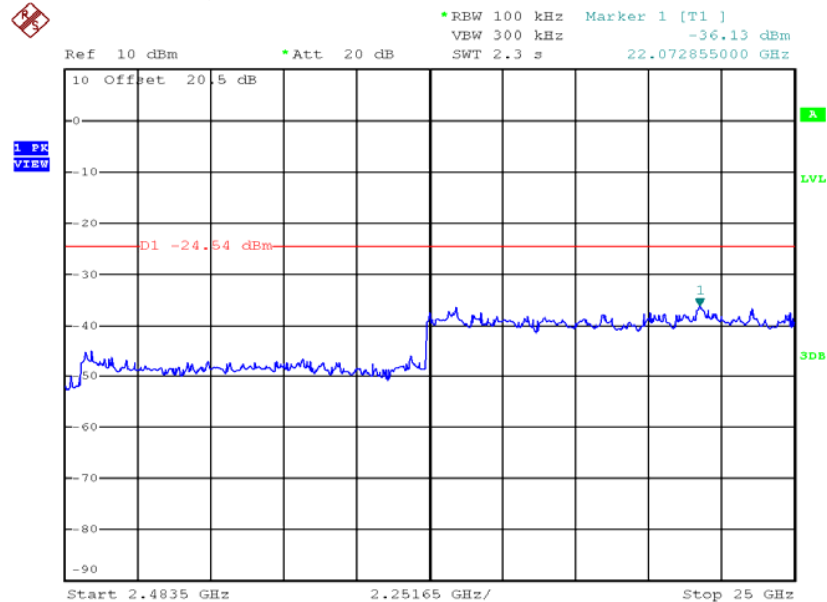


## Plots of out of band conducted emissions

### 802.11b, Middle Channel, Plot A



### 802.11b, Middle Channel, Plot B



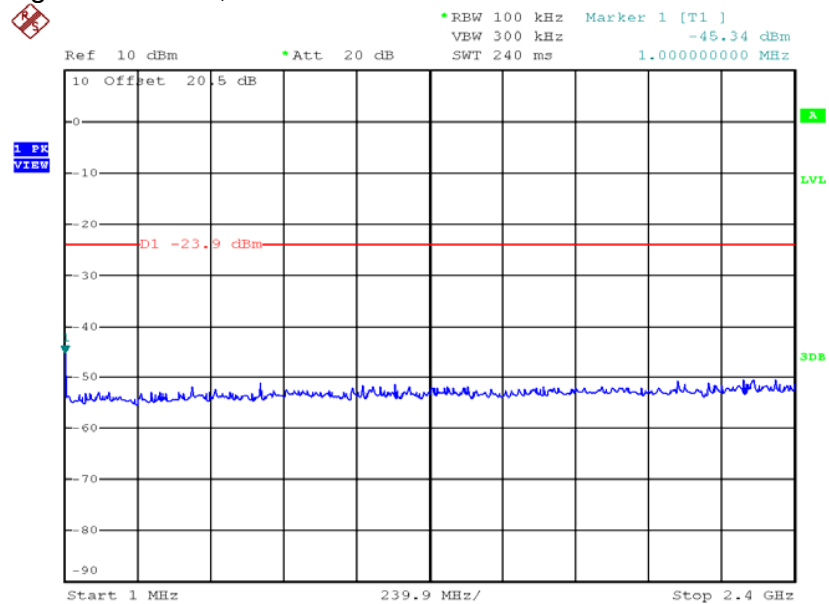
Issuing Laboratory:  
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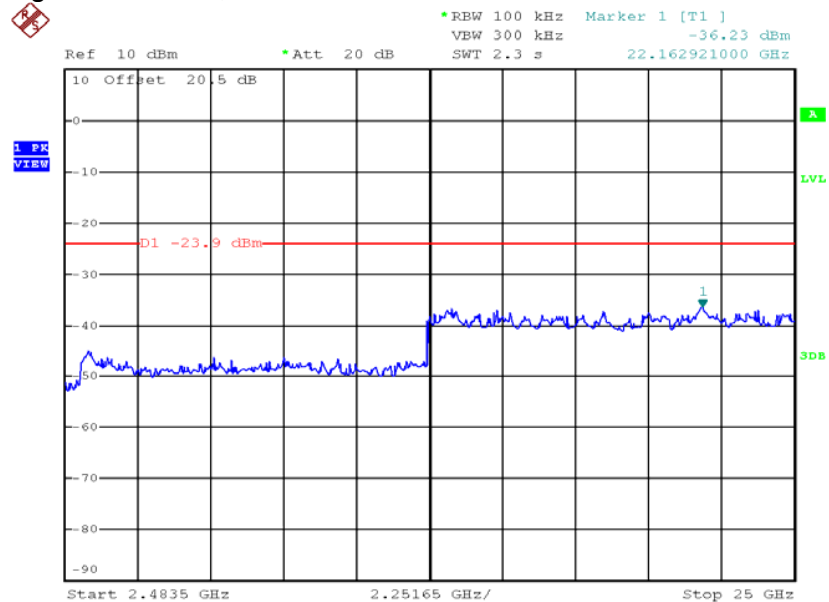


## Plots of out of band conducted emissions

### 802.11b, Highest Channel, Plot A



### 802.11b, Highest Channel, Plot B



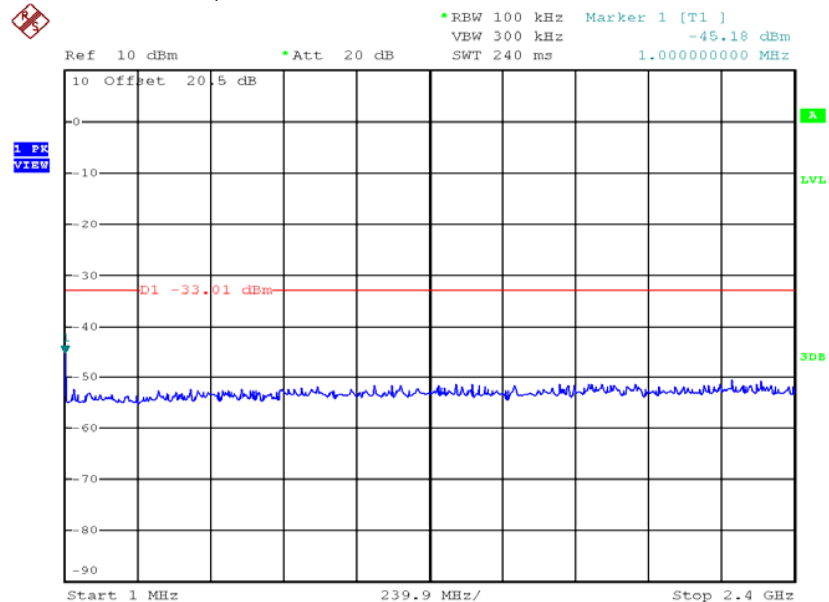
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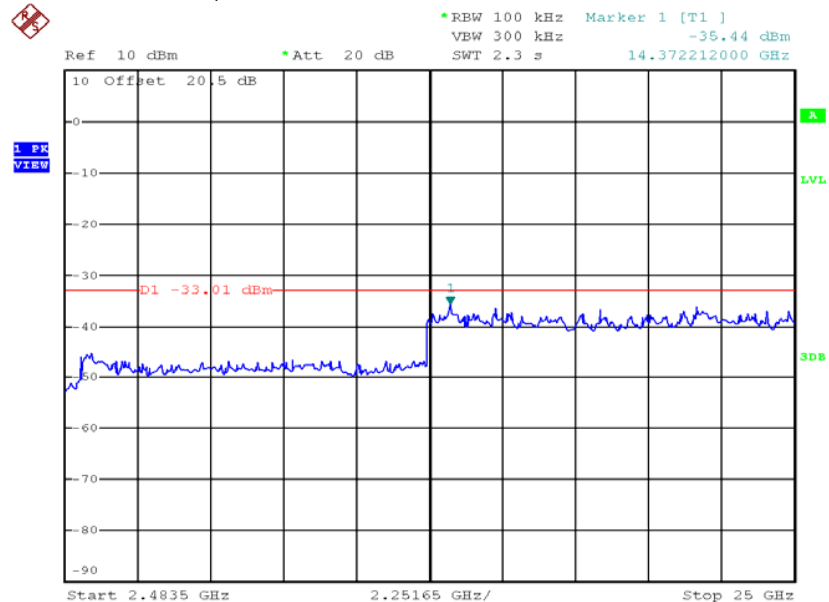


## Plots of out of band conducted emissions

### 802.11g, Lowest Channel, Plot A



### 802.11g, Lowest Channel, Plot B





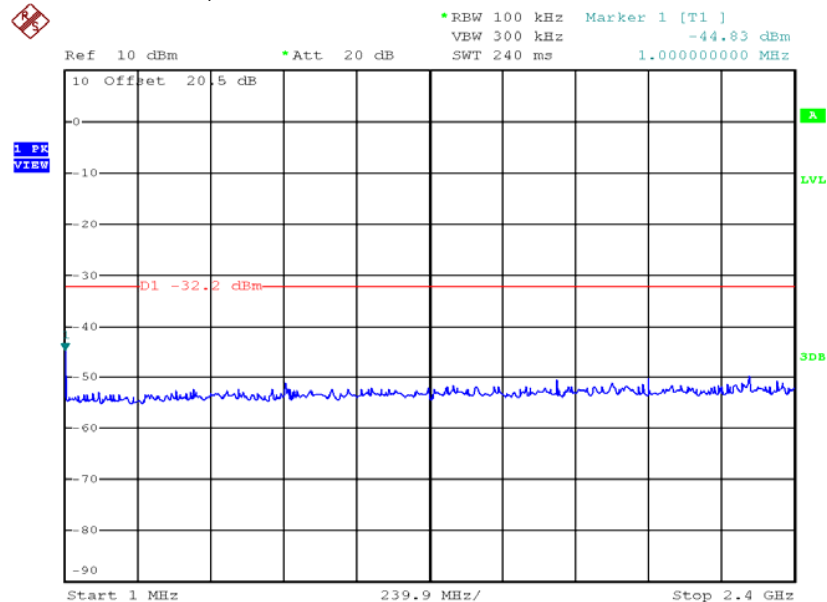
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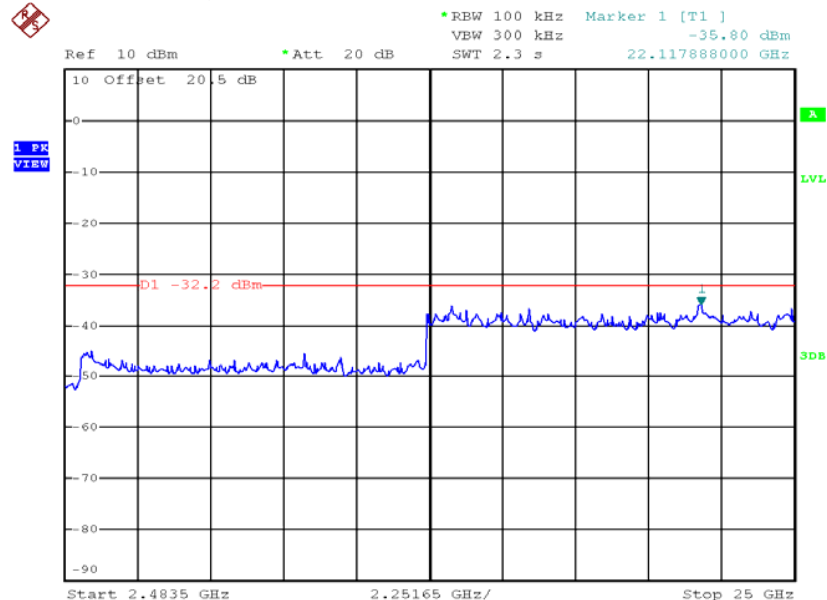


## Plots of out of band conducted emissions

802.11g, Middle Channel, Plot A



802.11g, Middle Channel, Plot B



Test Report Number: 14061521HKG-001

FCC ID: G2R-1668

IC: 1135D-1668

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Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

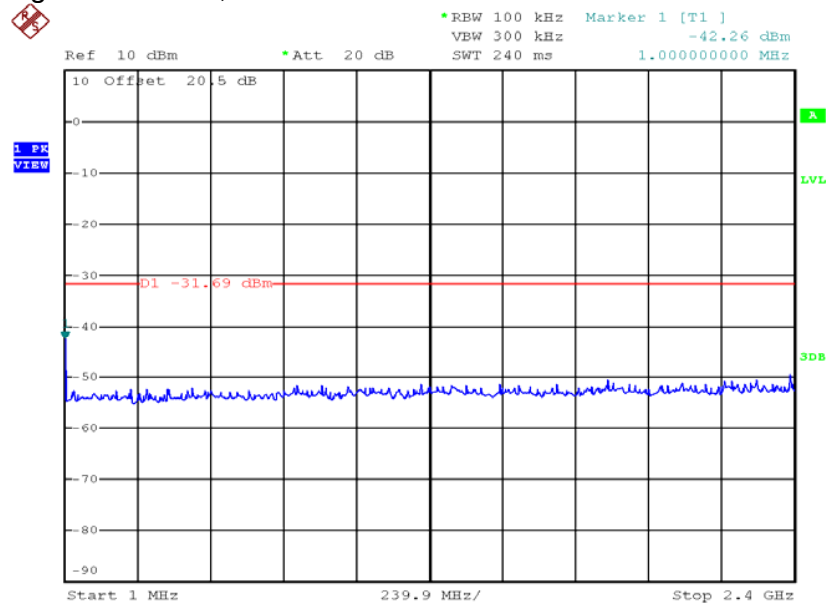
Issuing Laboratory:  
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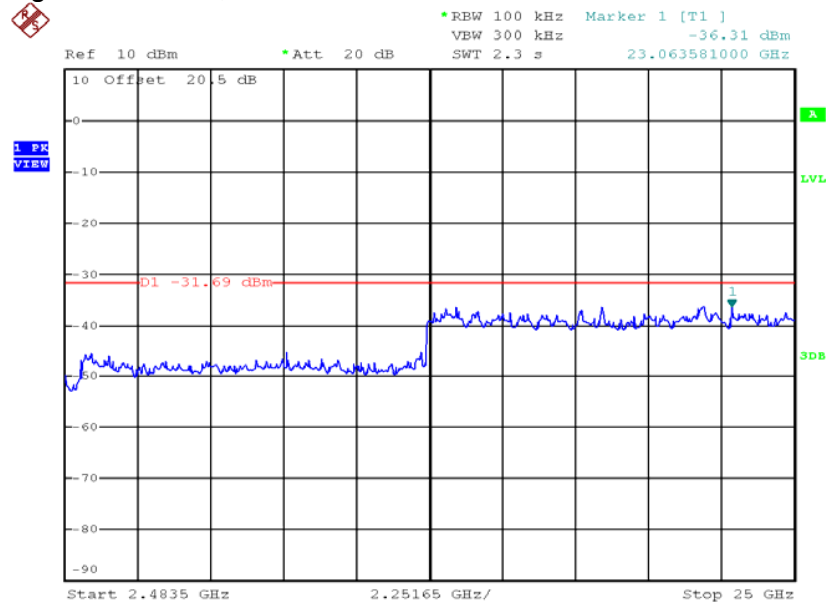


## Plots of out of band conducted emissions

802.11g, Highest Channel, Plot A



802.11g, Highest Channel, Plot B



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IC: 1135D-1668

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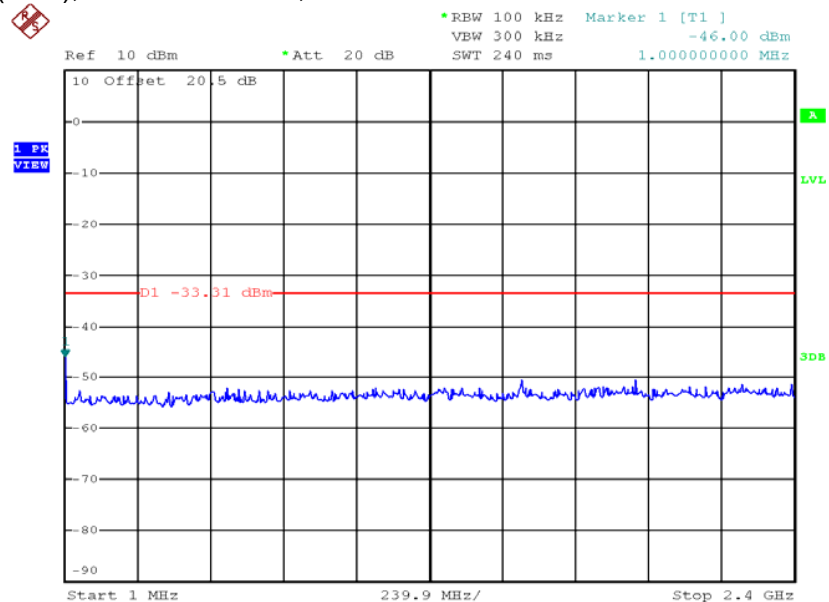
Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

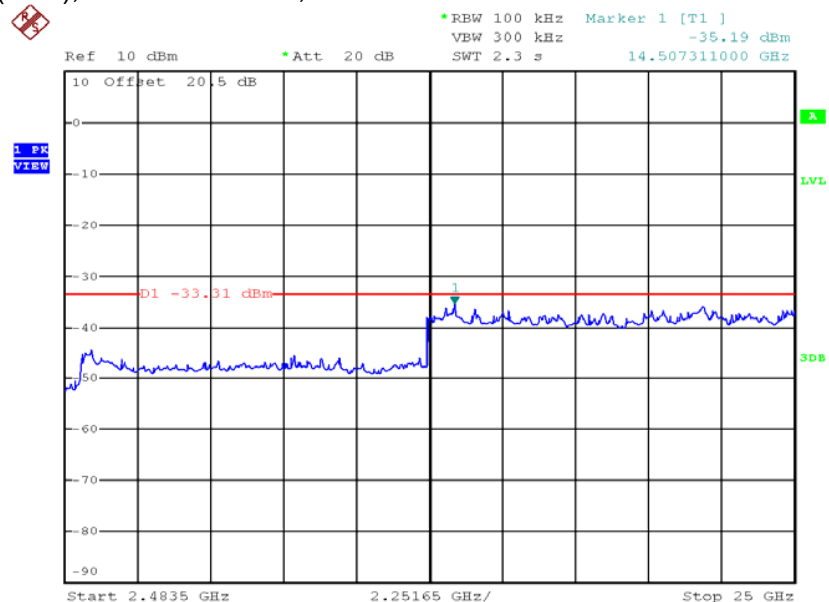
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## Plots of out of band conducted emissions

802.11n (20m), Lowest Channel, Plot A



802.11n (20m), Lowest Channel, Plot B



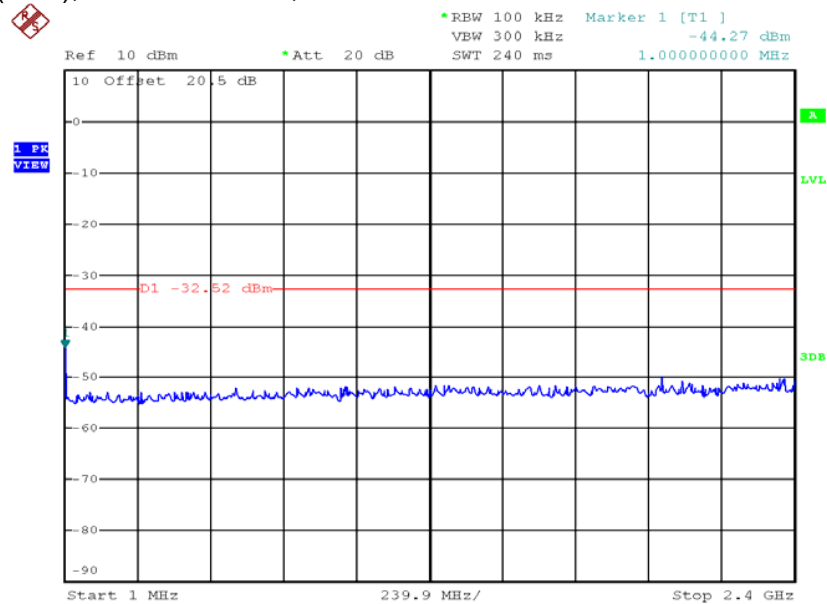
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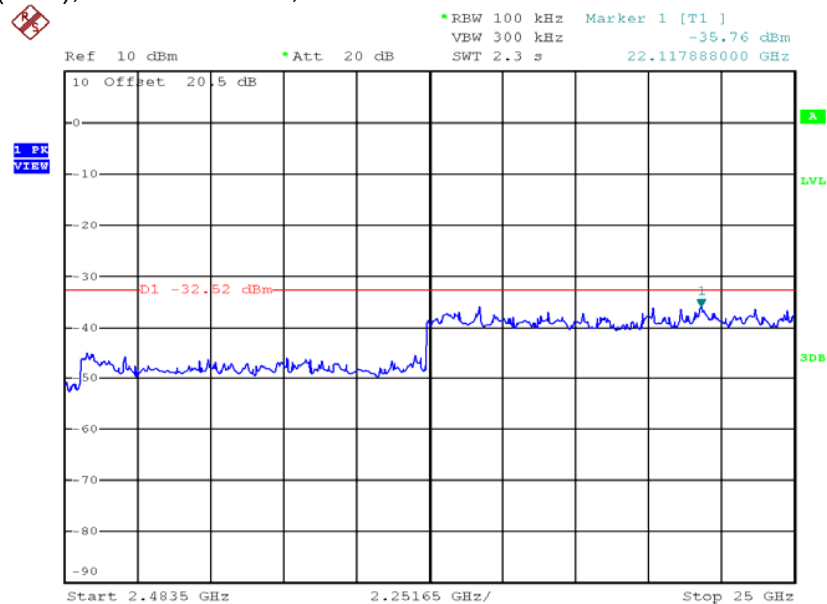


## Plots of out of band conducted emissions

802.11n (20m), Middle Channel, Plot A



802.11n (20m), Middle Channel, Plot B



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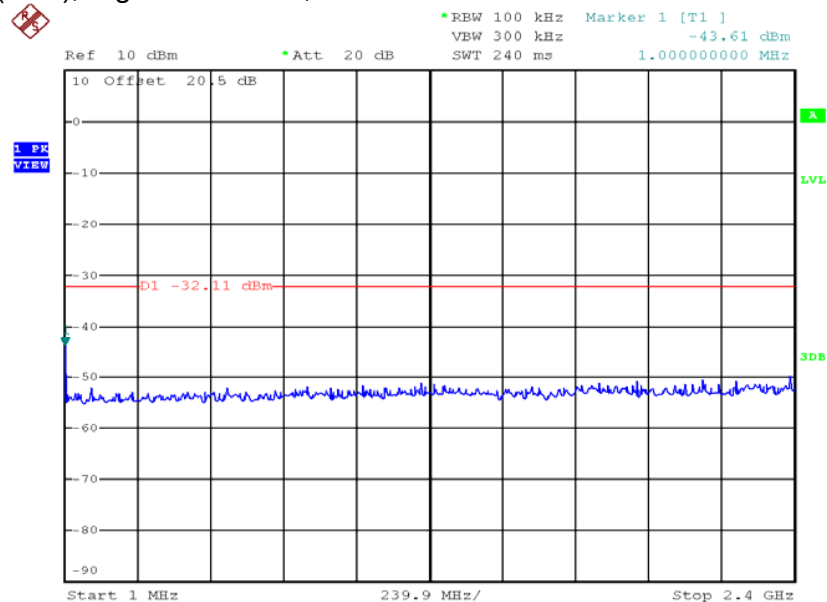
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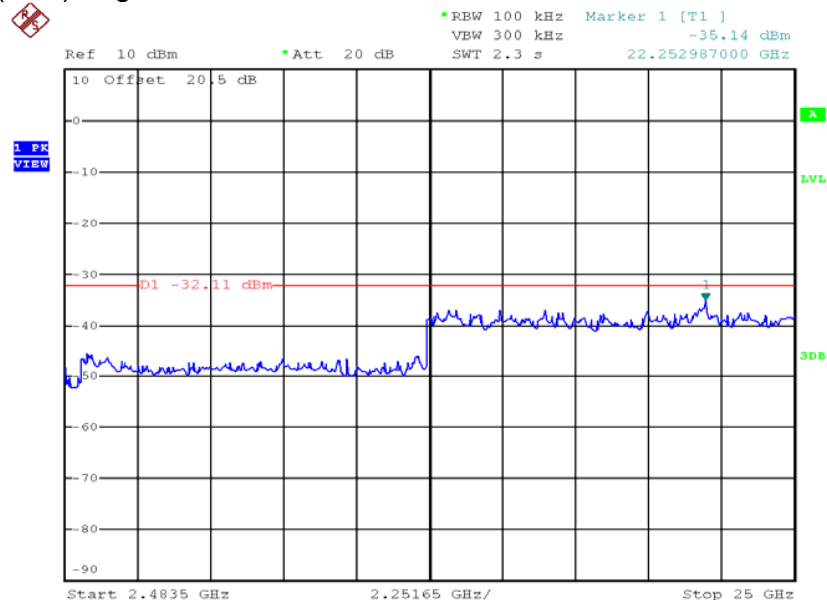


## Plots of out of band conducted emissions

802.11n (20m), Highest Channel, Plot A



802.11n (20m), Highest Channel, Plot B



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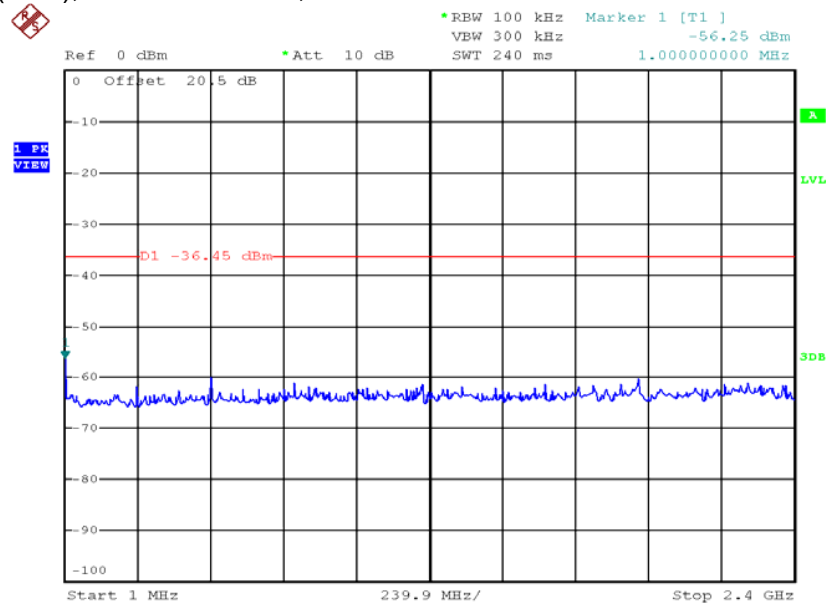
Issuing Laboratory:  
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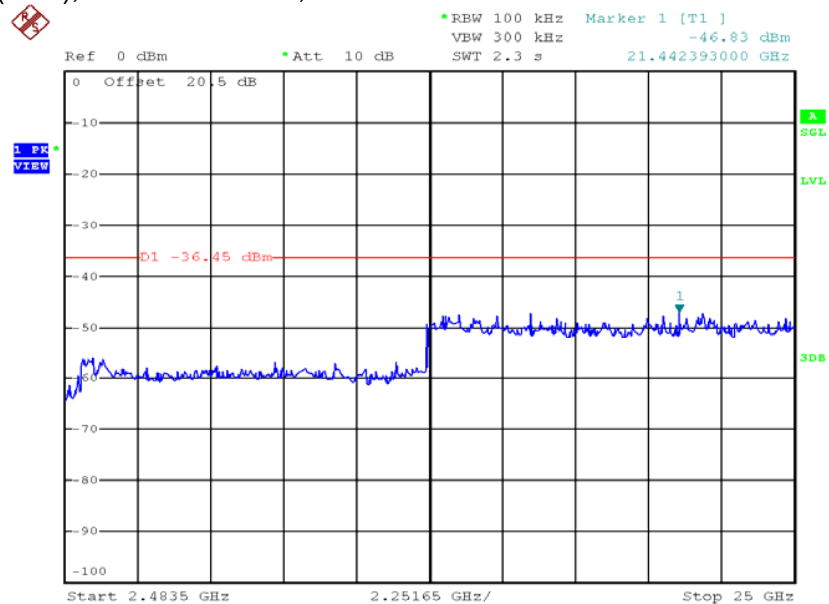


## Plots of out of band conducted emissions

802.11n (40m), Lowest Channel, Plot A



802.11n (40m), Lowest Channel, Plot B



Test Report Number: 14061521HKG-001

FCC ID: G2R-1668

IC: 1135D-1668

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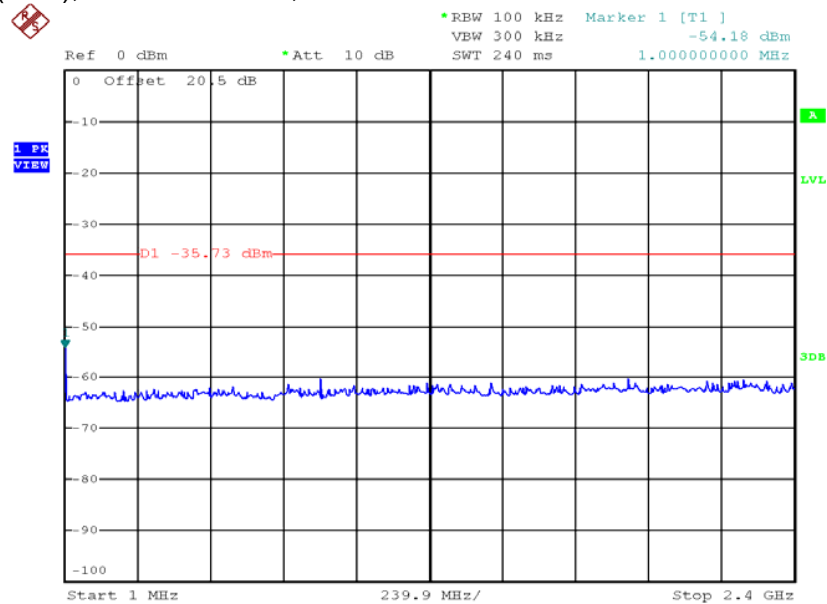
Issuing Laboratory:  
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HKAS has accredited this laboratory (HOKLAS 005 – TEST) under HOKLAS for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories.

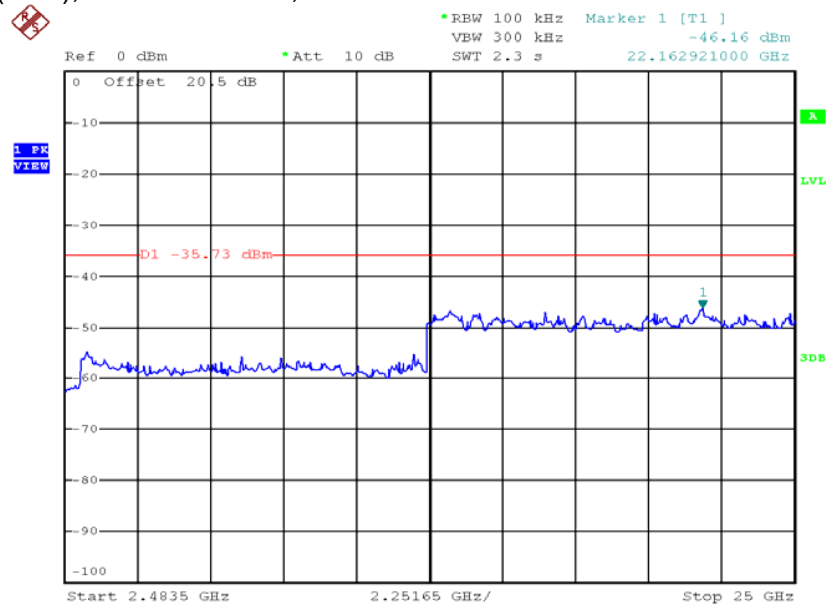


## Plots of out of band conducted emissions

802.11n (40m), Middle Channel, Plot A



802.11n (40m), Middle Channel, Plot B



Test Report Number: 14061521HKG-001

FCC ID: G2R-1668

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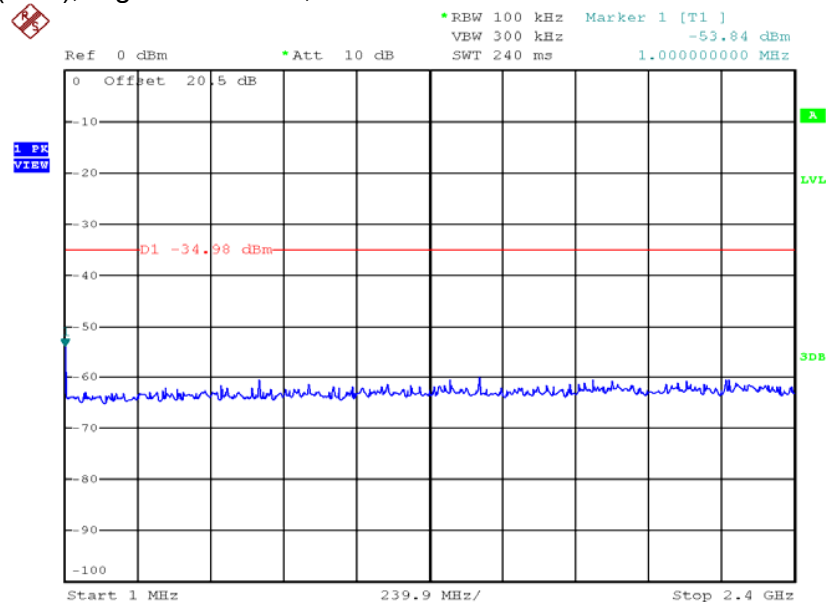
Issuing Laboratory:  
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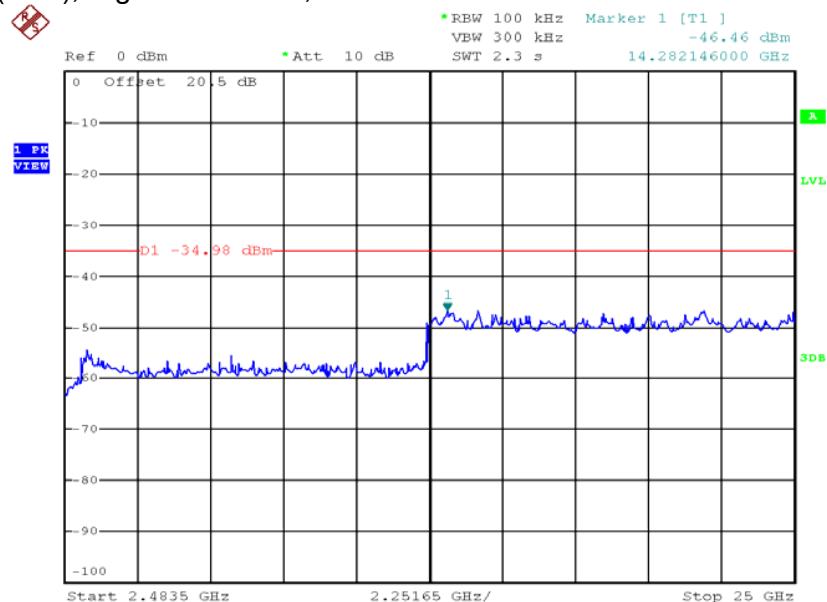


## Plots of out of band conducted emissions

802.11n (40m), Highest Channel, Plot A



802.11n (40m), Highest Channel, Plot B





#### 4.6 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

Where      FS = Field Strength in dB $\mu$ V/m  
              RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V  
              CF = Cable Attenuation Factor in dB  
              AF = Antenna Factor in dB  
              AG = Amplifier Gain in dB  
              PD = Pulse Desensitization in dB  
              AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

##### Example

Assume a receiver reading of 62.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29.0 dB is subtracted. The pulse desensitization factor of the spectrum analyzer is 0.0 dB, and the resultant average factor is -10.0 dB. The net field strength for comparison to the appropriate emission limit is 32.0 dB $\mu$ V/m. This value in dB $\mu$ V/m is converted to its corresponding level in  $\mu$ V/m.

RA = 62.0 dB $\mu$ V  
AF = 7.4 dB  
CF = 1.6 dB  
AG = 29.0 dB  
PD = 0.0 dB  
AV = -10 dB

$$FS = 62.0 + 7.4 + 1.6 - 29.0 + 0.0 + (-10.0) = 32.0 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32.0 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

#### 4.7 Transmitter Radiated Emissions in Restricted Bands and Spurious Emissions

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

##### 4.7.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission  
at

2390.000 MHz

The worst case radiated emission configuration photographs are saved with filename:  
config photos.pdf

##### 4.7.2 Radiated Emission Data

The data in tables 1-10 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 0.5 dB margin compare with average limit

Mode: TX-Channel 01

Table 1  
IEEE 802.11b (DSSS, 1 Mbps)

**Radiated Emission Data**

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|------------------------------|------------------------------|--------------|
| <b>V</b>     | <b>2390.000</b>  | <b>51.6</b>    | <b>33</b>         | <b>29.4</b>         | <b>48.0</b>                  | <b>54.0</b>                  | <b>-6.0</b>  |
| <b>V</b>     | <b>4824.000</b>  | <b>41.5</b>    | <b>33</b>         | <b>34.9</b>         | <b>43.4</b>                  | <b>54.0</b>                  | <b>-10.6</b> |
| <b>V</b>     | <b>12060.000</b> | <b>35.8</b>    | <b>33</b>         | <b>40.5</b>         | <b>43.3</b>                  | <b>54.0</b>                  | <b>-10.7</b> |
| <b>V</b>     | <b>14472.000</b> | <b>37.1</b>    | <b>33</b>         | <b>40.0</b>         | <b>44.1</b>                  | <b>54.0</b>                  | <b>-9.9</b>  |

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|---------------------------|---------------------------|--------------|
| <b>V</b>     | <b>2390.000</b>  | <b>63.6</b>    | <b>33</b>         | <b>29.4</b>         | <b>60.0</b>               | <b>74.0</b>               | <b>-14.0</b> |
| <b>V</b>     | <b>4824.000</b>  | <b>56.4</b>    | <b>33</b>         | <b>34.9</b>         | <b>58.3</b>               | <b>74.0</b>               | <b>-15.7</b> |
| <b>V</b>     | <b>12060.000</b> | <b>45.3</b>    | <b>33</b>         | <b>40.5</b>         | <b>52.8</b>               | <b>74.0</b>               | <b>-21.2</b> |
| <b>V</b>     | <b>14472.000</b> | <b>46.4</b>    | <b>33</b>         | <b>40.0</b>         | <b>53.4</b>               | <b>74.0</b>               | <b>-20.6</b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 2  
IEEE 802.11b (DSSS, 1 Mbps)

**Radiated Emission Data**

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|------------------------------|------------------------------|--------------|
| <b>V</b>     | <b>4874.000</b>  | <b>41.2</b>    | <b>33</b>         | <b>34.9</b>         | <b>43.1</b>                  | <b>54.0</b>                  | <b>-10.9</b> |
| <b>V</b>     | <b>7311.000</b>  | <b>42.1</b>    | <b>33</b>         | <b>37.9</b>         | <b>47.0</b>                  | <b>54.0</b>                  | <b>-7.0</b>  |
| <b>V</b>     | <b>12185.000</b> | <b>35.7</b>    | <b>33</b>         | <b>40.5</b>         | <b>43.2</b>                  | <b>54.0</b>                  | <b>-10.8</b> |

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|---------------------------|---------------------------|--------------|
| <b>V</b>     | <b>4874.000</b>  | <b>56.2</b>    | <b>33</b>         | <b>34.9</b>         | <b>58.1</b>               | <b>74.0</b>               | <b>-15.9</b> |
| <b>V</b>     | <b>7311.000</b>  | <b>53.5</b>    | <b>33</b>         | <b>37.9</b>         | <b>58.4</b>               | <b>74.0</b>               | <b>-15.6</b> |
| <b>V</b>     | <b>12185.000</b> | <b>45.0</b>    | <b>33</b>         | <b>40.5</b>         | <b>52.5</b>               | <b>74.0</b>               | <b>-21.5</b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 11

Table 3  
IEEE 802.11b (DSSS, 1 Mbps)

**Radiated Emission Data**

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|------------------------------|------------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2483.500</i></b>  | <b><i>52.1</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>48.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-5.5</i></b>  |
| <b><i>V</i></b> | <b><i>4924.000</i></b>  | <b><i>41.6</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>43.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-10.5</i></b> |
| <b><i>V</i></b> | <b><i>7386.000</i></b>  | <b><i>42.7</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>47.6</i></b>           | <b><i>54.0</i></b>           | <b><i>-6.4</i></b>  |
| <b><i>V</i></b> | <b><i>12310.000</i></b> | <b><i>36.1</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>43.6</i></b>           | <b><i>54.0</i></b>           | <b><i>-10.4</i></b> |

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|---------------------------|---------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2483.500</i></b>  | <b><i>63.6</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>60.0</i></b>        | <b><i>74.0</i></b>        | <b><i>-14.0</i></b> |
| <b><i>V</i></b> | <b><i>4924.000</i></b>  | <b><i>56.6</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>58.5</i></b>        | <b><i>74.0</i></b>        | <b><i>-15.5</i></b> |
| <b><i>V</i></b> | <b><i>7386.000</i></b>  | <b><i>53.7</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>58.6</i></b>        | <b><i>74.0</i></b>        | <b><i>-15.4</i></b> |
| <b><i>V</i></b> | <b><i>12310.000</i></b> | <b><i>45.4</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>52.9</i></b>        | <b><i>74.0</i></b>        | <b><i>-21.1</i></b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 01

Table 4  
IEEE 802.11g (OFDM, 6 Mbps)

**Radiated Emission Data**

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|------------------------------|------------------------------|--------------|
| <b>V</b>     | <b>2390.000</b>  | <b>54.7</b>    | <b>33</b>         | <b>29.4</b>         | <b>51.1</b>                  | <b>54.0</b>                  | <b>-2.9</b>  |
| <b>V</b>     | <b>4824.000</b>  | <b>38.6</b>    | <b>33</b>         | <b>34.9</b>         | <b>40.5</b>                  | <b>54.0</b>                  | <b>-13.5</b> |
| <b>V</b>     | <b>12060.000</b> | <b>34.6</b>    | <b>33</b>         | <b>40.5</b>         | <b>42.1</b>                  | <b>54.0</b>                  | <b>-11.9</b> |
| <b>V</b>     | <b>14472.000</b> | <b>34.5</b>    | <b>33</b>         | <b>40.0</b>         | <b>41.5</b>                  | <b>54.0</b>                  | <b>-12.5</b> |

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|---------------------------|---------------------------|--------------|
| <b>V</b>     | <b>2390.000</b>  | <b>74.1</b>    | <b>33</b>         | <b>29.4</b>         | <b>70.5</b>               | <b>74.0</b>               | <b>-3.5</b>  |
| <b>V</b>     | <b>4824.000</b>  | <b>50.3</b>    | <b>33</b>         | <b>34.9</b>         | <b>52.2</b>               | <b>74.0</b>               | <b>-21.8</b> |
| <b>V</b>     | <b>12060.000</b> | <b>44.3</b>    | <b>33</b>         | <b>40.5</b>         | <b>51.8</b>               | <b>74.0</b>               | <b>-22.2</b> |
| <b>V</b>     | <b>14472.000</b> | <b>45.6</b>    | <b>33</b>         | <b>40.0</b>         | <b>52.6</b>               | <b>74.0</b>               | <b>-21.4</b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 5  
IEEE 802.11g (OFDM, 6 Mbps)

**Radiated Emission Data**

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|------------------------------|------------------------------|---------------------|
| <b><i>H</i></b> | <b><i>4874.000</i></b>  | <b><i>38.3</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>40.2</i></b>           | <b><i>54.0</i></b>           | <b><i>-13.8</i></b> |
| <b><i>V</i></b> | <b><i>7311.000</i></b>  | <b><i>36.4</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>41.3</i></b>           | <b><i>54.0</i></b>           | <b><i>-12.7</i></b> |
| <b><i>V</i></b> | <b><i>12185.000</i></b> | <b><i>34.2</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>41.7</i></b>           | <b><i>54.0</i></b>           | <b><i>-12.3</i></b> |

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|---------------------------|---------------------------|---------------------|
| <b><i>H</i></b> | <b><i>4874.000</i></b>  | <b><i>49.9</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>51.8</i></b>        | <b><i>74.0</i></b>        | <b><i>-22.2</i></b> |
| <b><i>V</i></b> | <b><i>7311.000</i></b>  | <b><i>48.1</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>53.0</i></b>        | <b><i>74.0</i></b>        | <b><i>-21.0</i></b> |
| <b><i>V</i></b> | <b><i>12185.000</i></b> | <b><i>43.9</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>51.4</i></b>        | <b><i>74.0</i></b>        | <b><i>-22.6</i></b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 11

Table 6  
IEEE 802.11g (OFDM, 6 Mbps)

**Radiated Emission Data**

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|------------------------------|------------------------------|--------------|
| <b>H</b>     | <b>2483.500</b>  | <b>56.4</b>    | <b>33</b>         | <b>29.4</b>         | <b>52.8</b>                  | <b>54.0</b>                  | <b>-1.2</b>  |
| <b>V</b>     | <b>4924.000</b>  | <b>39.8</b>    | <b>33</b>         | <b>34.9</b>         | <b>41.7</b>                  | <b>54.0</b>                  | <b>-12.3</b> |
| <b>V</b>     | <b>7386.000</b>  | <b>38.6</b>    | <b>33</b>         | <b>37.9</b>         | <b>43.5</b>                  | <b>54.0</b>                  | <b>-10.5</b> |
| <b>V</b>     | <b>12310.000</b> | <b>34.6</b>    | <b>33</b>         | <b>40.5</b>         | <b>42.1</b>                  | <b>54.0</b>                  | <b>-11.9</b> |

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|---------------------------|---------------------------|--------------|
| <b>H</b>     | <b>2483.500</b>  | <b>72.2</b>    | <b>33</b>         | <b>29.4</b>         | <b>68.6</b>               | <b>74.0</b>               | <b>-5.4</b>  |
| <b>V</b>     | <b>4924.000</b>  | <b>51.9</b>    | <b>33</b>         | <b>34.9</b>         | <b>53.8</b>               | <b>74.0</b>               | <b>-20.2</b> |
| <b>V</b>     | <b>7386.000</b>  | <b>50.0</b>    | <b>33</b>         | <b>37.9</b>         | <b>54.9</b>               | <b>74.0</b>               | <b>-19.1</b> |
| <b>V</b>     | <b>12310.000</b> | <b>44.2</b>    | <b>33</b>         | <b>40.5</b>         | <b>51.7</b>               | <b>74.0</b>               | <b>-22.3</b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.



Mode: TX-Channel 01

Table 7  
IEEE 802.11n (20MHz) (OFDM, MCS0)

**Radiated Emission Data**

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|------------------------------|------------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2390.000</i></b>  | <b><i>55.8</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>52.2</i></b>           | <b><i>54.0</i></b>           | <b><i>-1.8</i></b>  |
| <b><i>V</i></b> | <b><i>4824.000</i></b>  | <b><i>39.3</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>41.2</i></b>           | <b><i>54.0</i></b>           | <b><i>-12.8</i></b> |
| <b><i>V</i></b> | <b><i>12060.000</i></b> | <b><i>34.8</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>42.3</i></b>           | <b><i>54.0</i></b>           | <b><i>-11.7</i></b> |
| <b><i>V</i></b> | <b><i>14472.000</i></b> | <b><i>35.1</i></b> | <b><i>33</i></b>  | <b><i>40.0</i></b>  | <b><i>42.1</i></b>           | <b><i>54.0</i></b>           | <b><i>-11.9</i></b> |

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|---------------------------|---------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2390.000</i></b>  | <b><i>77.1</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>73.5</i></b>        | <b><i>74.0</i></b>        | <b><i>-0.5</i></b>  |
| <b><i>V</i></b> | <b><i>4824.000</i></b>  | <b><i>51.3</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>53.2</i></b>        | <b><i>74.0</i></b>        | <b><i>-20.8</i></b> |
| <b><i>V</i></b> | <b><i>12060.000</i></b> | <b><i>43.9</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>51.4</i></b>        | <b><i>74.0</i></b>        | <b><i>-22.6</i></b> |
| <b><i>V</i></b> | <b><i>14472.000</i></b> | <b><i>45.2</i></b> | <b><i>33</i></b>  | <b><i>40.0</i></b>  | <b><i>52.2</i></b>        | <b><i>74.0</i></b>        | <b><i>-21.8</i></b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 8  
IEEE 802.11n (20MHz) (OFDM, MCS0)

**Radiated Emission Data**

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|------------------------------|------------------------------|--------------|
| <b>V</b>     | <b>4874.000</b>  | <b>39.6</b>    | <b>33</b>         | <b>34.9</b>         | <b>41.5</b>                  | <b>54.0</b>                  | <b>-12.5</b> |
| <b>V</b>     | <b>7311.000</b>  | <b>38.5</b>    | <b>33</b>         | <b>37.9</b>         | <b>43.4</b>                  | <b>54.0</b>                  | <b>-10.6</b> |
| <b>V</b>     | <b>12185.000</b> | <b>34.7</b>    | <b>33</b>         | <b>40.5</b>         | <b>42.2</b>                  | <b>54.0</b>                  | <b>-11.8</b> |

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|---------------------------|---------------------------|--------------|
| <b>V</b>     | <b>4874.000</b>  | <b>50.8</b>    | <b>33</b>         | <b>34.9</b>         | <b>52.7</b>               | <b>74.0</b>               | <b>-21.3</b> |
| <b>V</b>     | <b>7311.000</b>  | <b>49.0</b>    | <b>33</b>         | <b>37.9</b>         | <b>53.9</b>               | <b>74.0</b>               | <b>-20.1</b> |
| <b>V</b>     | <b>12185.000</b> | <b>43.6</b>    | <b>33</b>         | <b>40.5</b>         | <b>51.1</b>               | <b>74.0</b>               | <b>-22.9</b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 11

Table 9  
IEEE 802.11n (20MHz) (OFDM, MCS0)

**Radiated Emission Data**

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|------------------------------|------------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2483.500</i></b>  | <b><i>56.9</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>53.3</i></b>           | <b><i>54.0</i></b>           | <b><i>-0.7</i></b>  |
| <b><i>H</i></b> | <b><i>4924.000</i></b>  | <b><i>39.6</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>41.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-12.5</i></b> |
| <b><i>H</i></b> | <b><i>7386.000</i></b>  | <b><i>38.3</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>43.2</i></b>           | <b><i>54.0</i></b>           | <b><i>-10.8</i></b> |
| <b><i>H</i></b> | <b><i>12310.000</i></b> | <b><i>34.9</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>42.4</i></b>           | <b><i>54.0</i></b>           | <b><i>-11.6</i></b> |

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|---------------------------|---------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2483.500</i></b>  | <b><i>76.6</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>73.0</i></b>        | <b><i>74.0</i></b>        | <b><i>-1.0</i></b>  |
| <b><i>H</i></b> | <b><i>4924.000</i></b>  | <b><i>51.5</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>53.4</i></b>        | <b><i>74.0</i></b>        | <b><i>-20.6</i></b> |
| <b><i>H</i></b> | <b><i>7386.000</i></b>  | <b><i>49.4</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>54.3</i></b>        | <b><i>74.0</i></b>        | <b><i>-19.7</i></b> |
| <b><i>H</i></b> | <b><i>12310.000</i></b> | <b><i>44.3</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>51.8</i></b>        | <b><i>74.0</i></b>        | <b><i>-22.2</i></b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 03

Table 10  
IEEE 802.11n (40MHz) (OFDM, MCS0)

**Radiated Emission Data**

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|------------------------------|------------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2390.000</i></b>  | <b><i>56.1</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>52.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-1.5</i></b>  |
| <b><i>V</i></b> | <b><i>4844.000</i></b>  | <b><i>38.6</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>40.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-13.5</i></b> |
| <b><i>V</i></b> | <b><i>12110.000</i></b> | <b><i>34.6</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>42.1</i></b>           | <b><i>54.0</i></b>           | <b><i>-11.9</i></b> |
| <b><i>V</i></b> | <b><i>14532.000</i></b> | <b><i>36.1</i></b> | <b><i>33</i></b>  | <b><i>38.4</i></b>  | <b><i>41.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-12.5</i></b> |

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|---------------------------|---------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2390.000</i></b>  | <b><i>71.6</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>68.0</i></b>        | <b><i>74.0</i></b>        | <b><i>-6.0</i></b>  |
| <b><i>V</i></b> | <b><i>4844.000</i></b>  | <b><i>50.3</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>52.2</i></b>        | <b><i>74.0</i></b>        | <b><i>-21.8</i></b> |
| <b><i>V</i></b> | <b><i>12110.000</i></b> | <b><i>44.3</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>51.8</i></b>        | <b><i>74.0</i></b>        | <b><i>-22.2</i></b> |
| <b><i>V</i></b> | <b><i>14532.000</i></b> | <b><i>47.2</i></b> | <b><i>33</i></b>  | <b><i>38.4</i></b>  | <b><i>52.6</i></b>        | <b><i>74.0</i></b>        | <b><i>-21.4</i></b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 06

Table 11  
IEEE 802.11n (40MHz) (OFDM, MCS0)

**Radiated Emission Data**

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|------------------------------|------------------------------|--------------|
| <b>V</b>     | <b>4874.000</b>  | <b>38.3</b>    | <b>33</b>         | <b>34.9</b>         | <b>40.2</b>                  | <b>54.0</b>                  | <b>-13.8</b> |
| <b>V</b>     | <b>7311.000</b>  | <b>36.4</b>    | <b>33</b>         | <b>37.9</b>         | <b>41.3</b>                  | <b>54.0</b>                  | <b>-12.7</b> |
| <b>V</b>     | <b>12185.000</b> | <b>34.2</b>    | <b>33</b>         | <b>40.5</b>         | <b>41.7</b>                  | <b>54.0</b>                  | <b>-12.3</b> |

| Polarization | Frequency        | Reading (dBuV) | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)  |
|--------------|------------------|----------------|-------------------|---------------------|---------------------------|---------------------------|--------------|
| <b>V</b>     | <b>4874.000</b>  | <b>49.9</b>    | <b>33</b>         | <b>34.9</b>         | <b>51.8</b>               | <b>74.0</b>               | <b>-22.2</b> |
| <b>V</b>     | <b>7311.000</b>  | <b>48.1</b>    | <b>33</b>         | <b>37.9</b>         | <b>53.0</b>               | <b>74.0</b>               | <b>-21.0</b> |
| <b>V</b>     | <b>12185.000</b> | <b>43.9</b>    | <b>33</b>         | <b>40.5</b>         | <b>51.4</b>               | <b>74.0</b>               | <b>-22.6</b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: TX-Channel 09

Table 12  
IEEE 802.11n (40MHz) (OFDM, MCS0)

**Radiated Emission Data**

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - average (dBuV/m) | Average Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|------------------------------|------------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2483.500</i></b>  | <b><i>56.6</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>53.0</i></b>           | <b><i>54.0</i></b>           | <b><i>-1.0</i></b>  |
| <b><i>H</i></b> | <b><i>4904.000</i></b>  | <b><i>38.8</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>40.7</i></b>           | <b><i>54.0</i></b>           | <b><i>-13.3</i></b> |
| <b><i>H</i></b> | <b><i>7356.000</i></b>  | <b><i>37.0</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>41.9</i></b>           | <b><i>54.0</i></b>           | <b><i>-12.1</i></b> |
| <b><i>H</i></b> | <b><i>12260.000</i></b> | <b><i>35.0</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>42.5</i></b>           | <b><i>54.0</i></b>           | <b><i>-11.5</i></b> |

| Polarization    | Frequency               | Reading (dBuV)     | Pre-Amp Gain (dB) | Antenna Factor (dB) | Net at 3m - Peak (dBuV/m) | Peak Limit at 3m (dBuV/m) | Margin (dB)         |
|-----------------|-------------------------|--------------------|-------------------|---------------------|---------------------------|---------------------------|---------------------|
| <b><i>H</i></b> | <b><i>2483.500</i></b>  | <b><i>72.7</i></b> | <b><i>33</i></b>  | <b><i>29.4</i></b>  | <b><i>69.1</i></b>        | <b><i>74.0</i></b>        | <b><i>-4.9</i></b>  |
| <b><i>H</i></b> | <b><i>4904.000</i></b>  | <b><i>50.7</i></b> | <b><i>33</i></b>  | <b><i>34.9</i></b>  | <b><i>52.6</i></b>        | <b><i>74.0</i></b>        | <b><i>-21.4</i></b> |
| <b><i>H</i></b> | <b><i>7356.000</i></b>  | <b><i>48.4</i></b> | <b><i>33</i></b>  | <b><i>37.9</i></b>  | <b><i>53.3</i></b>        | <b><i>74.0</i></b>        | <b><i>-20.7</i></b> |
| <b><i>H</i></b> | <b><i>12260.000</i></b> | <b><i>44.4</i></b> | <b><i>33</i></b>  | <b><i>40.5</i></b>  | <b><i>51.9</i></b>        | <b><i>74.0</i></b>        | <b><i>-22.1</i></b> |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna is used for the emission over 1000MHz.
5. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: HDMI Video Playing + Charging + Wifi on with adaptor

Table 13

**Radiated Emission Data**

| Polarization    | Frequency (MHz)       | Reading (dB $\mu$ V) | Pre-amp (dB)     | Antenna Factor (dB) | Net at 3m (dB $\mu$ V/m) | Limit at 3m (dB $\mu$ V/m) | Margin (dB)         |
|-----------------|-----------------------|----------------------|------------------|---------------------|--------------------------|----------------------------|---------------------|
| <b><i>V</i></b> | <b><i>132.543</i></b> | <b><i>34.4</i></b>   | <b><i>16</i></b> | <b><i>14.0</i></b>  | <b><i>32.4</i></b>       | <b><i>43.5</i></b>         | <b><i>-11.1</i></b> |
| V               | 156.012               | 34.2                 | 16               | 16.0                | <b><i>34.2</i></b>       | 43.5                       | -9.3                |
| <b><i>H</i></b> | <b><i>168.024</i></b> | <b><i>28.8</i></b>   | <b><i>16</i></b> | <b><i>18.0</i></b>  | <b><i>30.8</i></b>       | <b><i>43.5</i></b>         | <b><i>-12.7</i></b> |
| H               | 180.023               | 31.5                 | 16               | 20.0                | 35.5                     | 43.5                       | -8.0                |
| H               | 216.034               | 31.4                 | 16               | 17.0                | 32.4                     | 46.0                       | -13.6               |
| <b><i>H</i></b> | <b><i>240.012</i></b> | <b><i>30.2</i></b>   | <b><i>16</i></b> | <b><i>19.0</i></b>  | <b><i>33.2</i></b>       | <b><i>46.0</i></b>         | <b><i>-12.8</i></b> |
| H               | 300.023               | 29.2                 | 16               | 22.0                | 35.2                     | 46.0                       | -10.8               |
| H               | 336.034               | 27.1                 | 16               | 24.0                | 35.1                     | 46.0                       | -10.9               |
| H               | 480.032               | 30.2                 | 16               | 26.0                | 40.2                     | 46.0                       | -5.8                |
| H               | 720.045               | 23.5                 | 16               | 30.0                | 37.5                     | 46.0                       | -8.5                |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Emission (the row indicated by ***bold italic***) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.

Mode: HDMI Video Playing + Charging with data transfer

Table 14

**Radiated Emission Data**

| Polarization | Frequency (MHz) | Reading (dBμV) | Pre-amp (dB) | Antenna Factor (dB) | Net at 3m (dBμV/m) | Limit at 3m (dBμV/m) | Margin (dB)  |
|--------------|-----------------|----------------|--------------|---------------------|--------------------|----------------------|--------------|
| H            | 82.352          | 36.6           | 16           | 7.0                 | 27.6               | 40.0                 | -12.4        |
| V            | 148.025         | 37.4           | 16           | 14.0                | <b>35.4</b>        | 43.5                 | -8.1         |
| H            | 222.345         | 32.4           | 16           | 18.0                | 34.4               | 46.0                 | -11.6        |
| <b>H</b>     | <b>245.647</b>  | <b>29.6</b>    | <b>16</b>    | <b>20.0</b>         | <b>33.6</b>        | <b>46.0</b>          | <b>-12.4</b> |
| H            | 300.345         | 34.0           | 16           | 22.0                | 40.0               | 46.0                 | -6.0         |
| H            | 346.036         | 28.8           | 16           | 24.0                | 36.8               | 46.0                 | -9.2         |
| H            | 371.046         | 34.2           | 16           | 24.0                | 42.2               | 46.0                 | -3.8         |
| H            | 432.306         | 30.6           | 16           | 25.0                | 39.6               | 46.0                 | -6.4         |
| H            | 480.002         | 29.8           | 16           | 26.0                | 39.8               | 46.0                 | -6.2         |
| H            | 528.025         | 26.8           | 16           | 27.0                | 37.8               | 46.0                 | -8.2         |
| H            | 901.023         | 25.1           | 16           | 32.0                | 41.1               | 46.0                 | -4.9         |

- NOTES: 1. Peak detector is used for the emission measurement.
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
4. Negative value in the margin column shows emission below limit.
5. Emission (the row indicated by **bold italic**) within the restricted band meets the requirement of FCC Part 15 Section 15.205 / RSS-210 Section 2.2.



#### 4.7.3 Transmitter Duty Cycle Calculation

Not applicable – No average factor is required.

#### 4.8 AC Power Line Conducted Emission

- ☐ Not applicable – EUT is only powered by battery for operation.
- ☒ EUT connects to AC power line. Emission Data is listed in following pages.
- ☐ Base Unit connects to AC power line and has transmission. Handset connects to AC power line but has no transmission. Emission Data of Base Unit is listed in following pages.

##### 4.8.1 AC Power Line Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration  
at

0.596 MHz

The worst case line conducted configuration photographs are attached in the Appendix and saved with filename: config photos.pdf

##### 4.8.2 AC Power Line Conducted Emission Data

The plot(s) and data in the following pages list the significant emission frequencies, the limit and the margin of compliance

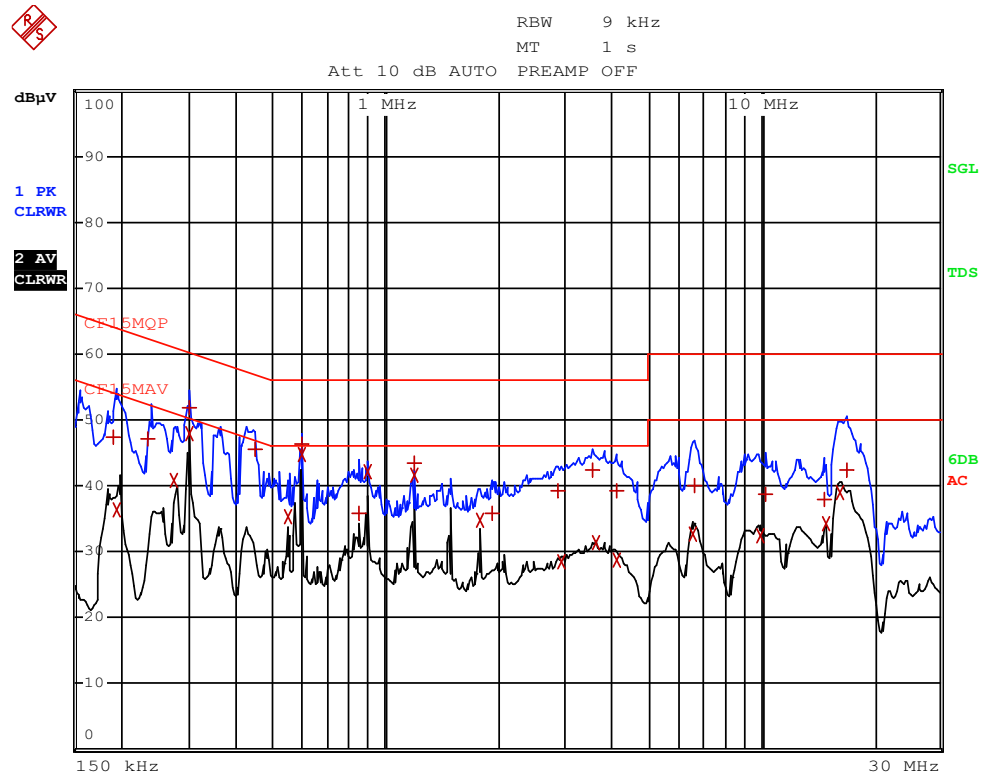
Passed by 1.31 dB margin compare with average limit

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Worst Case: HDMI Video Playing + Charging + Wifi transmission with adaptor



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Worst Case: HDMI Video Playing + Charging + Wifi transmission with adaptor

| EDIT PEAK LIST (Final Measurement Results) |            |       |      |                |
|--------------------------------------------|------------|-------|------|----------------|
| Trace1:                                    | CF15MQP    |       |      |                |
| Trace2:                                    | CF15MAV    |       |      |                |
| Trace3:                                    | ---        |       |      |                |
| TRACE                                      | FREQUENCY  | LEVEL | dBμV | DELTA LIMIT dB |
| 1 Quasi Peak                               | 190.5 kHz  | 47.32 | N    | -16.69         |
| 2 CISPR Average                            | 195 kHz    | 36.24 | L1   | -17.57         |
| 1 Quasi Peak                               | 235.5 kHz  | 47.12 | N    | -15.13         |
| 2 CISPR Average                            | 276 kHz    | 40.74 | N    | -10.18         |
| 1 Quasi Peak                               | 298.5 kHz  | 51.82 | L1   | -8.46          |
| 2 CISPR Average                            | 298.5 kHz  | 47.92 | L1   | -2.36          |
| 1 Quasi Peak                               | 447 kHz    | 45.64 | N    | -11.28         |
| 2 CISPR Average                            | 550.5 kHz  | 35.31 | N    | -10.68         |
| 1 Quasi Peak                               | 595.5 kHz  | 46.27 | L1   | -9.72          |
| 2 CISPR Average                            | 595.5 kHz  | 44.69 | L1   | -1.31          |
| 1 Quasi Peak                               | 852 kHz    | 35.79 | L1   | -20.20         |
| 2 CISPR Average                            | 892.5 kHz  | 42.18 | L1   | -3.81          |
| 1 Quasi Peak                               | 1.1895 MHz | 43.35 | N    | -12.65         |
| 2 CISPR Average                            | 1.1895 MHz | 41.56 | N    | -4.43          |
| 2 CISPR Average                            | 1.7835 MHz | 34.79 | N    | -11.20         |
| 1 Quasi Peak                               | 1.9185 MHz | 35.86 | N    | -20.13         |
| 1 Quasi Peak                               | 2.886 MHz  | 39.27 | N    | -16.72         |
| 2 CISPR Average                            | 2.949 MHz  | 28.51 | L1   | -17.48         |
| 1 Quasi Peak                               | 3.552 MHz  | 42.38 | L1   | -13.61         |
| 2 CISPR Average                            | 3.6195 MHz | 31.36 | N    | -14.63         |

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Worst Case: HDMI Video Playing + Charging + Wifi transmission with adaptor

| EDIT PEAK LIST (Final Measurement Results) |             |         |            |        |          |
|--------------------------------------------|-------------|---------|------------|--------|----------|
| Trace1:                                    |             | CF15MQP |            |        |          |
| Trace2:                                    |             | CF15MAV |            |        |          |
| Trace3:                                    |             | ---     |            |        |          |
| TRACE                                      | FREQUENCY   | LEVEL   | dB $\mu$ V | DELTA  | LIMIT dB |
| 1 Quasi Peak                               | 4.119 MHz   | 39.15   | N          | -16.85 |          |
| 2 CISPR Average                            | 4.119 MHz   | 28.78   | L1         | -17.21 |          |
| 2 CISPR Average                            | 6.603 MHz   | 32.71   | N          | -17.28 |          |
| 1 Quasi Peak                               | 6.675 MHz   | 40.07   | N          | -19.92 |          |
| 2 CISPR Average                            | 9.9195 MHz  | 32.37   | N          | -17.62 |          |
| 1 Quasi Peak                               | 10.3065 MHz | 38.72   | N          | -21.27 |          |
| 1 Quasi Peak                               | 14.775 MHz  | 37.83   | N          | -22.16 |          |
| 2 CISPR Average                            | 14.9145 MHz | 34.28   | L1         | -15.71 |          |
| 2 CISPR Average                            | 16.251 MHz  | 39.09   | N          | -10.90 |          |
| 1 Quasi Peak                               | 16.8495 MHz | 42.36   | L1         | -17.63 |          |

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## **EXHIBIT 5 EQUIPMENT LIST**

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## 5.0 Equipment List

### 1) Radiated Emissions Test

| Equipment            | EMI Test Receiver | Spectrum Analyzer | Biconical Antenna |
|----------------------|-------------------|-------------------|-------------------|
| Registration No.     | EW-2666           | EW-2188           | EW-0571           |
| Manufacturer         | R&S               | AGILENTTECH       | EMCO              |
| Model No.            | ESCI7             | E4407B            | 3104C             |
| Calibration Date     | Jun. 20, 2013     | Apr. 16, 2014     | Nov. 01, 2013     |
| Calibration Due Date | Sep. 20, 2014     | Apr. 16, 2015     | May 01, 2015      |

| Equipment            | Log Periodic Antenna | Double Ridged Guide Antenna (1GHz - 18GHz) |
|----------------------|----------------------|--------------------------------------------|
| Registration No.     | EW-0446              | EW-1133                                    |
| Manufacturer         | EMCO                 | EMCO                                       |
| Model No.            | 3146                 | 3115                                       |
| Calibration Date     | Apr. 30, 2013        | Apr. 30, 2014                              |
| Calibration Due Date | Oct. 30, 2014        | Oct. 30, 2015                              |

### 2) Conducted Emissions Test

| Equipment            | EMI Test Receiver | Artificial Mains Network |
|----------------------|-------------------|--------------------------|
| Registration No.     | EW-2251           | EW-2501                  |
| Manufacturer         | R&S               | R&S                      |
| Model No.            | ESCI              | ENV-216                  |
| Calibration Date     | Nov. 20, 2013     | Dec. 25, 2013            |
| Calibration Due Date | Nov. 20, 2014     | Nov. 30, 2014            |

### 3) Conductive Measurement Test

| Equipment            | Spectrum Analyzer |
|----------------------|-------------------|
| Registration No.     | EW-2249           |
| Manufacturer         | R&S               |
| Model No.            | FSP30             |
| Calibration Date     | Oct. 28, 2013     |
| Calibration Due Date | Oct. 28, 2014     |

**END OF TEST REPORT**