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**TEST REPORT**

**Report Number: 13030703HKG-001**

Application  
for  
Original Grant of 47 CFR Part 15 Certification  
Single New of RSS-210 Issue 8 Equipment Certification

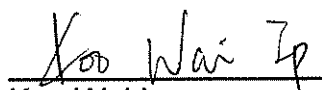
WiFi Camera

**FCC ID: YM780-9255-00**

**IC: 9637A-80925500**

Prepared and Checked by:

Approved by:

  
Koo Wai Ip  
Senior Lead Engineer

  
Nip Ming Fung, Melvin  
Assistant Manager  
May 28, 2013

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2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.  
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: [www.hk.intertek-etlsemko.com](http://www.hk.intertek-etlsemko.com)

## GENERAL INFORMATION

<b>Applicant Name:</b>	Stem Innovation, LLC.
<b>Applicant Address:</b>	551 E South Temple, Salt Lake City, Utah 84102, USA
<b>FCC Specification Standard:</b>	FCC Part 15, October 1, 2011 Edition
<b>FCC ID:</b>	YM780-9255-00
<b>FCC Model(s):</b>	IZON VIEW
<b>IC Specification Standard:</b>	RSS-210 Issue 8, December 2010 RSS-Gen Issue 3, December 2010
<b>IC:</b>	9637A-80925500
<b>IC Model(s):</b>	IZON VIEW
<b>Type of EUT:</b>	Digital Transmission System
<b>Description of EUT:</b>	WiFi Camera
<b>Serial Number:</b>	N/A
<b>Sample Receipt Date:</b>	March 15, 2013
<b>Date of Test:</b>	April 18 – May 14, 2013
<b>Report Date:</b>	May 28, 2013
<b>Environmental Conditions:</b>	Temperature: +10 to 40°C 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/ RSS-Gen# Section	Results	Details see section
Antenna Requirement	15.203	7.1.2#	Pass	2.1
Max. Conducted Output Power	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	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
Radio Frequency Radiation Exposure	15.247(i)	---	Pass	4.8

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, 2011 Edition  
RSS-210 Issue 8, December 2010  
RSS-Gen Issue 3, December 2010

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**EXHIBIT 2**  
**GENERAL DESCRIPTION**

## **2.0 General Description**

### **2.1 Product Description**

The Equipment Under Test (EUT) is a WiFi Camera.

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 7 channels. It transmits via Orthogonal Frequency Division Multiplexing (OFDM) modulation. Maximum bit rate can be up to 150Mbps.

EUT is powered by a 100-240VAC to 5VDC 1A switching AC adaptor or powered by PC through USB cable.

The antenna used in the EUT is integral, and the test sample is a prototype.

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 v03r01(09-April-2013). 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 Roof Top, 2<sup>nd</sup> Floor, and 5<sup>th</sup> Floor respectively of Intertek Testing Services Hong Kong Ltd., which is located at Garment Centre, 576 Castle Peak Road, Kowloon, 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**

### **3 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 was powered by a 100-240VAC to 5VDC 1A adaptor or powered by PC through USB cable.

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 circuitry used to control additional functions other than the operation of the transmitter is 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.

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 modulation types.

### 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:

An AC adaptor (provided with the unit) was used to power the device. Their description are listed below.

- (1) An AC adaptor (100-240VAC to 5VDC 1A, Model: SSA-0510US) (Supplied by Client)

#### Description of Accessories:

- (1) Magnetic Base (Stand) (Supplied by Client)
- (2) HP Notebook, Model: CPQNC2400, S/N: CNF638276D (Supplied by Intertek)
- (3) Smartdrive External Hard Disk, Model: HD3-SU2FW, S/N: 0800261, DoC Product (Supplied by Intertek)
- (4) 1 x USB cable with 2.4 meter long (Supplied by Client)
- (5) 1 x USB cable with 0.7 meter long (Supplied by Intertek)
- (6) 1 x 1394 cable with 0.8 meter long (Supplied by Intertek)

### 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**

#### 4 Test Results

##### 4.1 Maximum Conducted 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 9.1.2 Pk2 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 = 2 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel:	20.53	113.0
Middle Channel:	20.53	113.0
High Channel:	20.62	115.3

dBm max. output level = 20.62 dBm

IEEE 802.11g (OFDM, 6 Mbps) Antenna Gain = 2 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel:	20.01	100.2
Middle Channel:	19.86	96.8
High Channel:	20.13	103.0

dBm max. output level = 20.13 dBm

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IEEE 802.11n ( 20MHz, OFDM, 6.5 Mbps) Antenna Gain = 2 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel:	20.17	104.0
Middle Channel:	20.16	103.8
High Channel:	20.22	105.2

dBm max. output level = 20.22 dBm

IEEE 802.11 n ( 40MHz, OFDM, 15 Mbps) Antenna Gain = 2 dBi		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	19.18	82.8
Middle Channel: 2437	19.39	86.9
High Channel: 2462	19.44	87.9

dBm max. output level = 19.44 dBm

Cable loss : 0.5 dB External Attenuation : 0 dB

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

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.

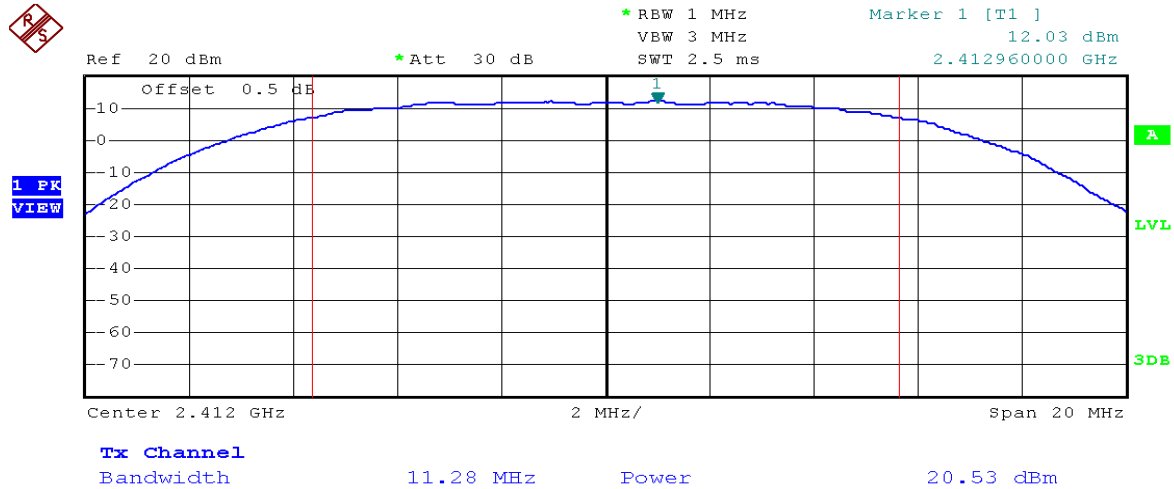
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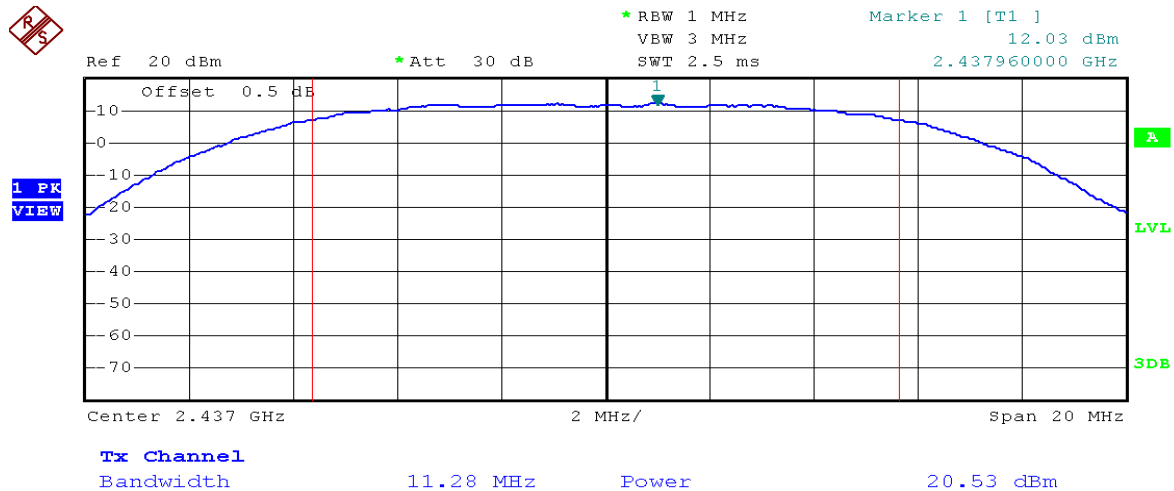


## Plots of maximum output power (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Lowest channel



### 802.11b, Middle channel





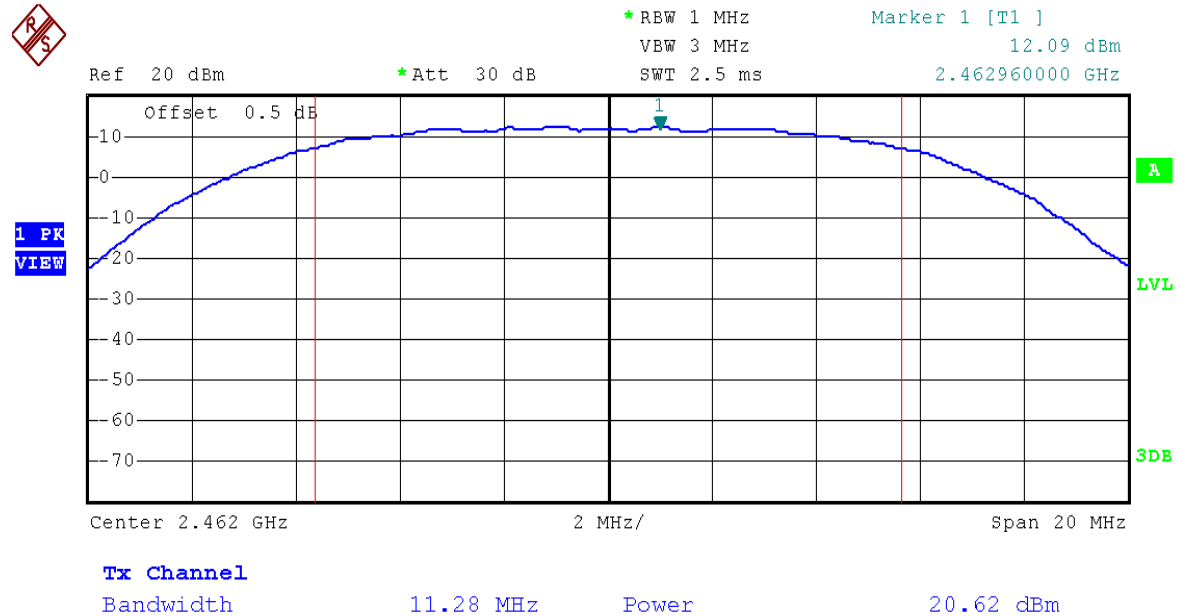
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## Plots of maximum output power (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Highest channel



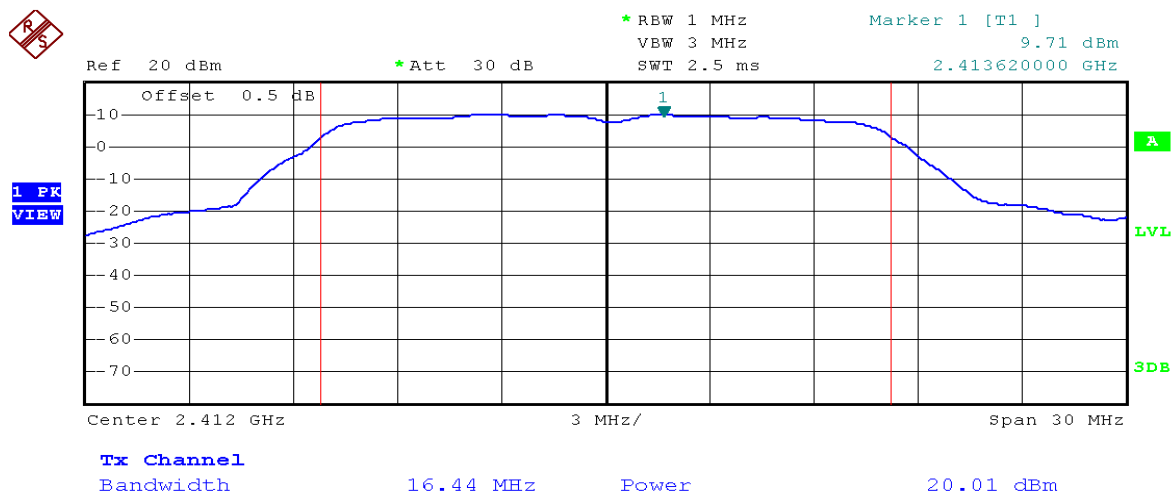
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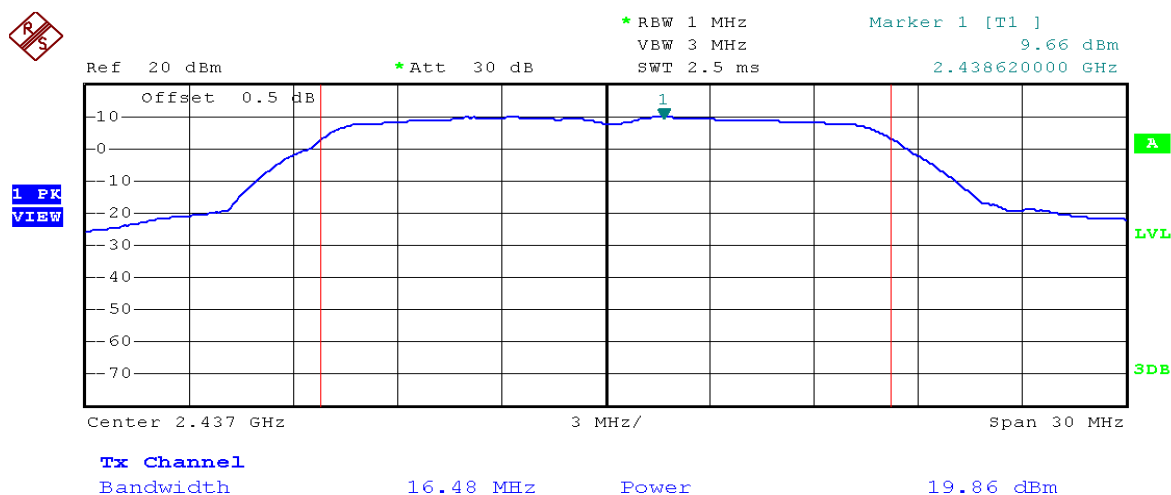


## Plots of maximum output power (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Lowest channel



### 802.11g, Middle channel



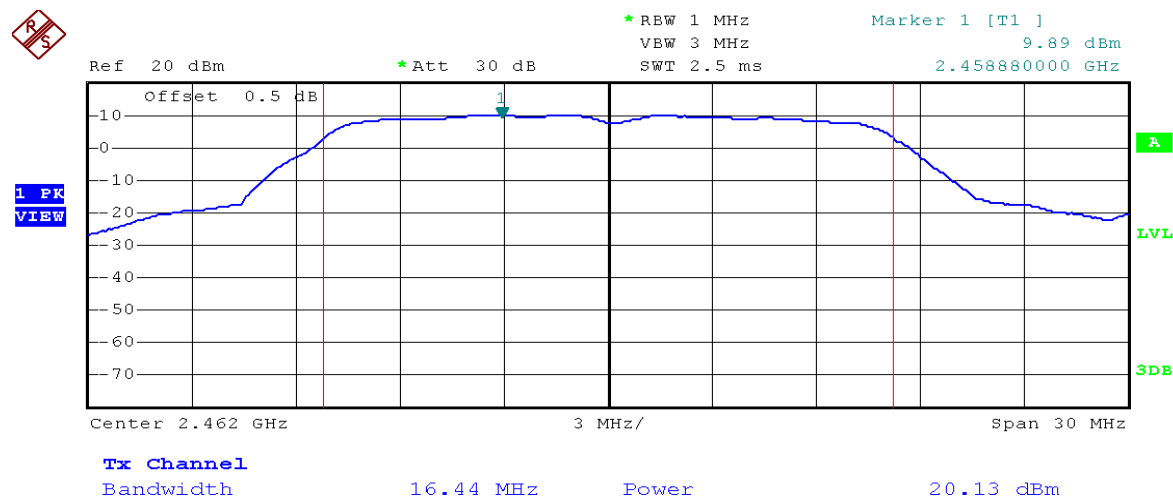
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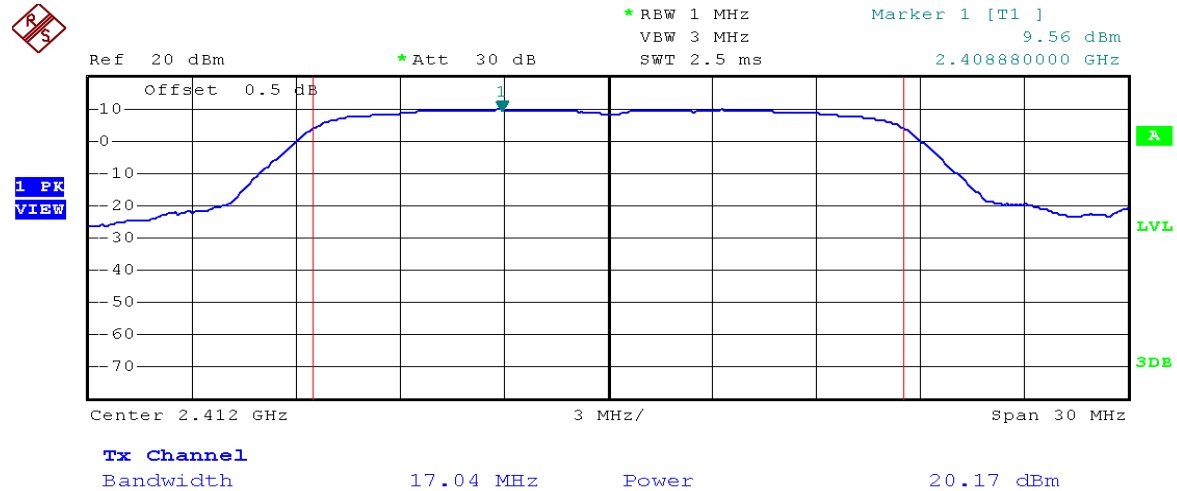
## Plots of maximum output power (IEEE 802.11g ,OFDM, 6 Mbps)

### 802.11g, Highest channel

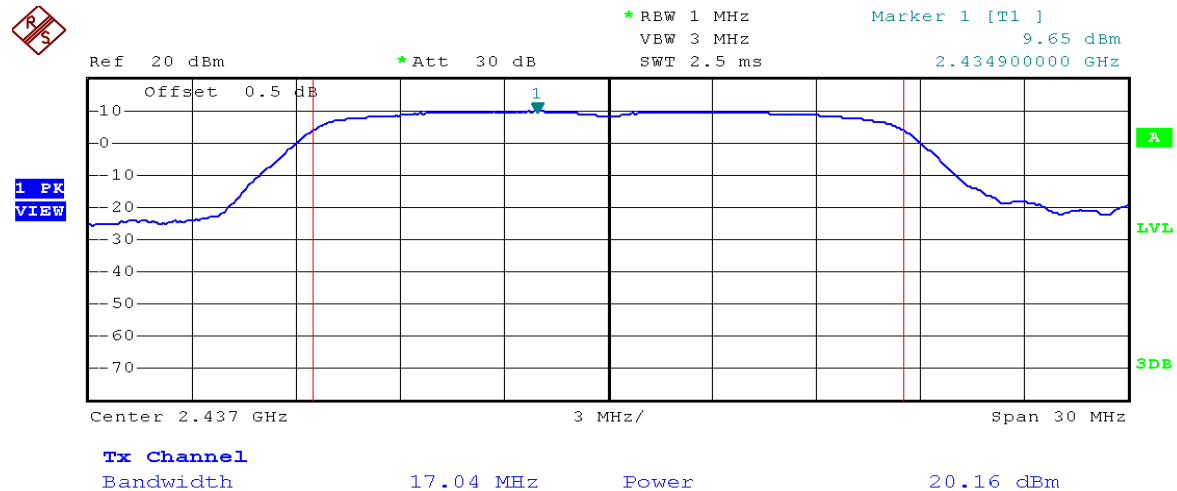


## Plots of maximum output power (IEEE 802.11n,20MHz,OFDM,6.5Mbps)

### 802.11n(20M), Lowest channel



### 802.11n(20M), Middle channel



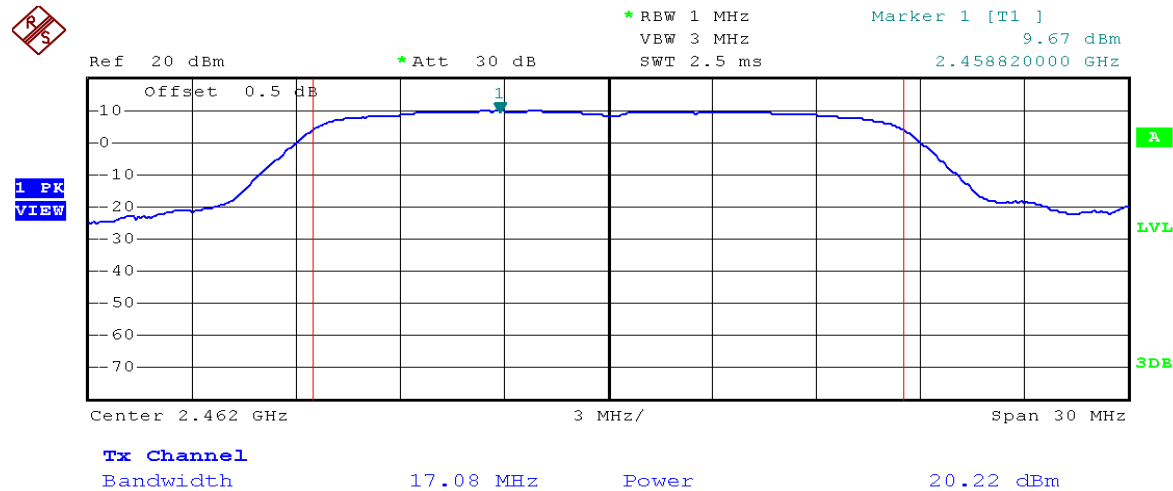
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## Plots of maximum output power (IEEE 802.11n,20MHz,OFDM,6.5Mbps)

### 802.11n(20M), Highest channel



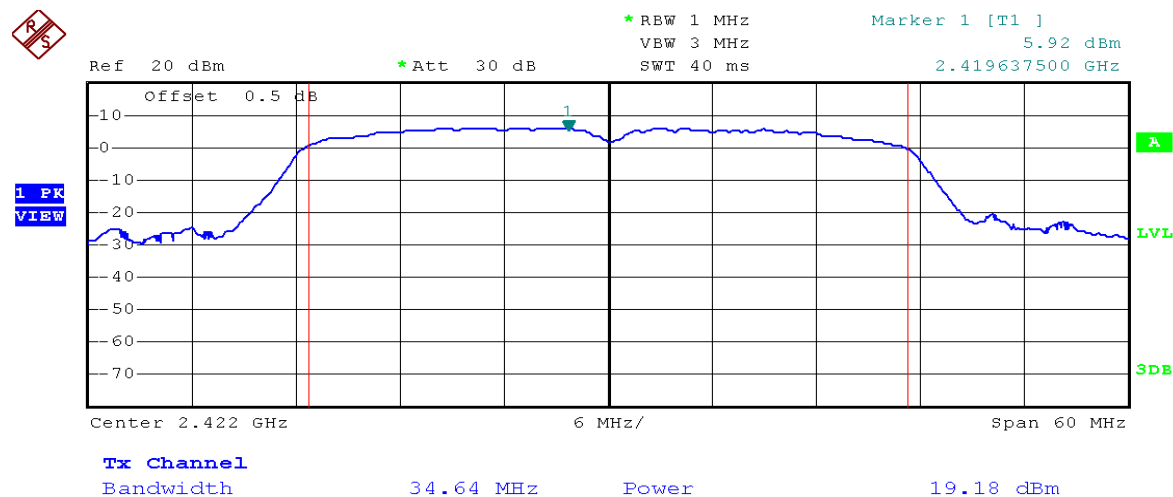
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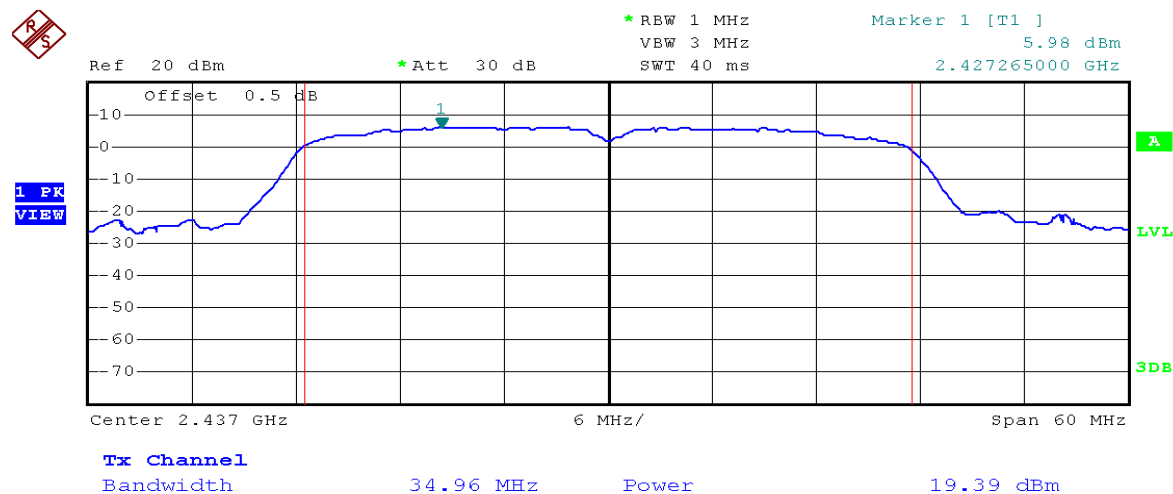


## Plots of maximum output power ( IEEE 802.11n, 40MHz, OFDM, 15Mbps)

### Lowest channel



### 802.11n(40M), Middle channel



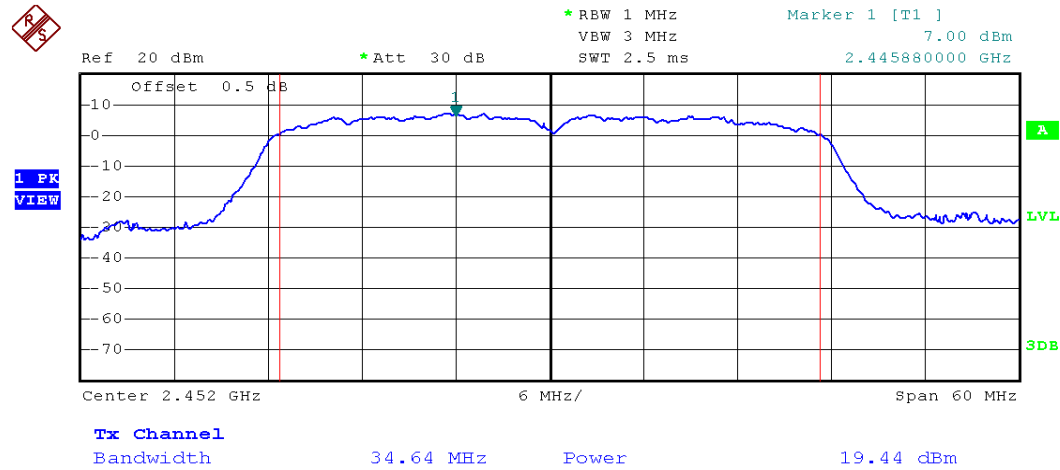
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## Plots of maximum output power ( IEEE 802.11n, 40MHz, OFDM, 15Mbps)

### 802.11n(40M), Highest channel



## 4.2 Minimum 6dB RF Bandwidth

The antenna port of the EUT was connected to the input of a spectrum analyzer. The 8.1 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.

IEEE 802.11b (DSSS, 11 Mbps)	
Frequency (MHz)	6dB Bandwidth (kHz)
Low Channel: 2412	11280
Middle Channel: 2437	11280
High Channel: 2462	11280

IEEE 802.11g (OFDM, 54 Mbps)	
Frequency (MHz)	6dB Bandwidth (kHz)
Low Channel: 2412	16440
Middle Channel: 2437	16480
High Channel: 2462	16440

IEEE 802.11n (20MHz, OFDM, 65 Mbps)	
Frequency (MHz)	6dB Bandwidth (kHz)
Low Channel: 2412	17040
Middle Channel: 2437	17040
High Channel: 2462	17080



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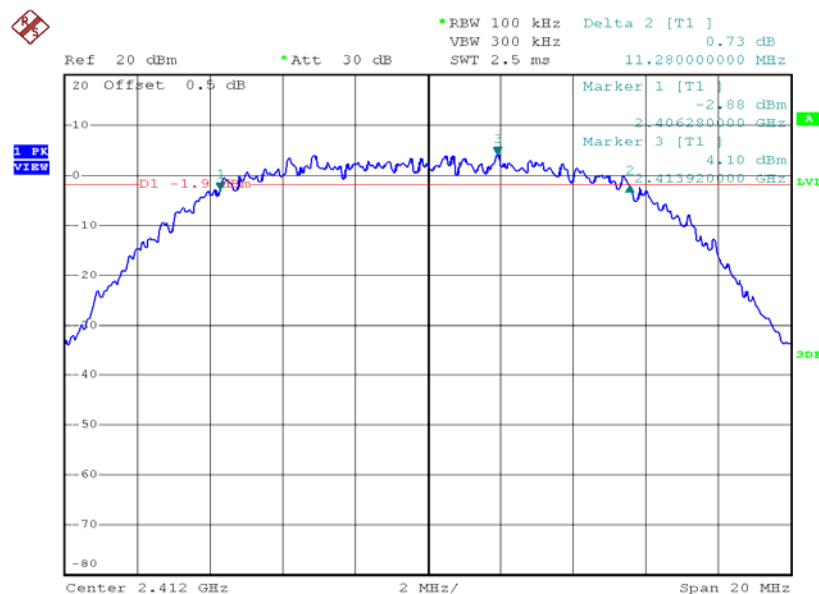
IEEE 802.11 n (40MHz, OFDM, 150 Mbps) Antenna Gain = 2 dBi	
Frequency (MHz)	6dB Bandwidth (kHz)
Low Channel: 2412	34640
Middle Channel: 2437	34960
High Channel: 2462	34640

Limits :

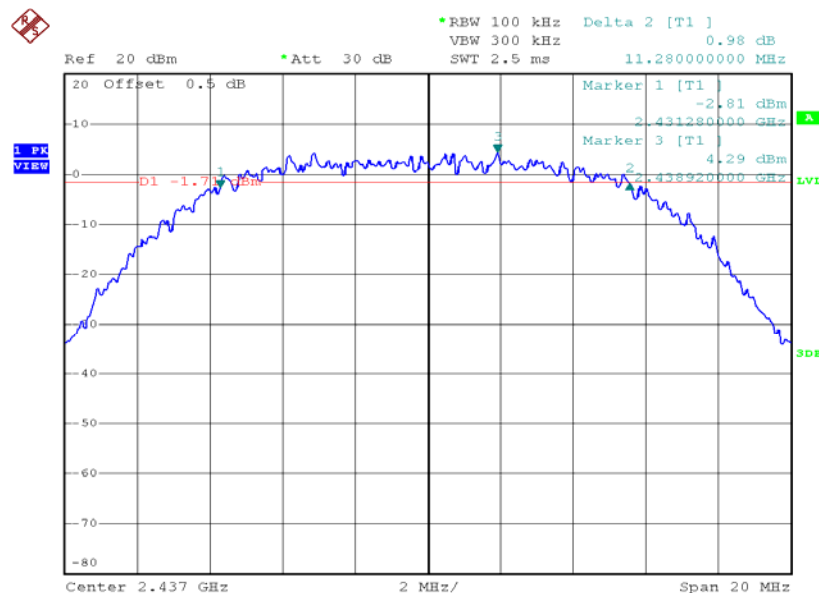
6 dB bandwidth shall be at least 500kHz

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

## 802.11b, Lowest Channel



## 802.11b, Middle Channel



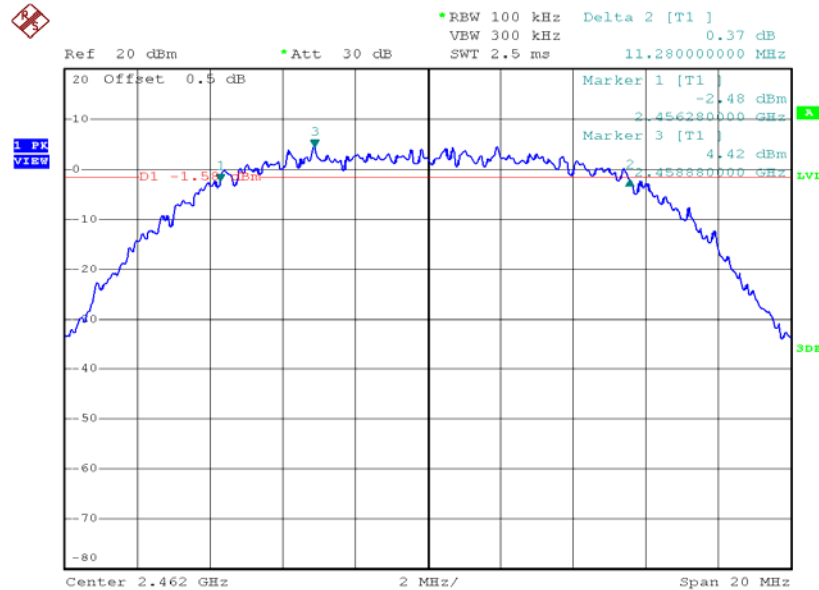
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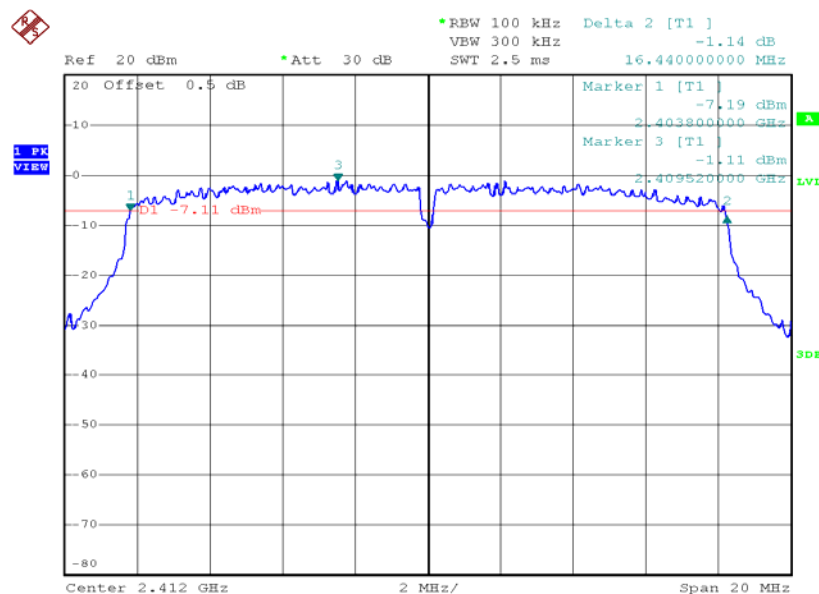


## Plots of 6dB RF bandwidth( IEEE 802.11b, DSSS, 11Mbps)

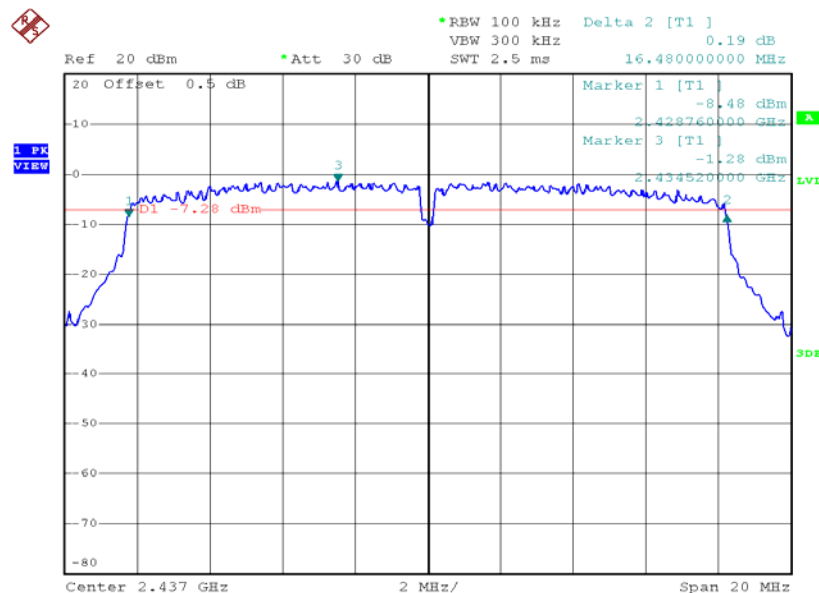
### 802.11b, Highest Channel



## 802.11g, Lowest Channel



## 802.11g, Middle Channel



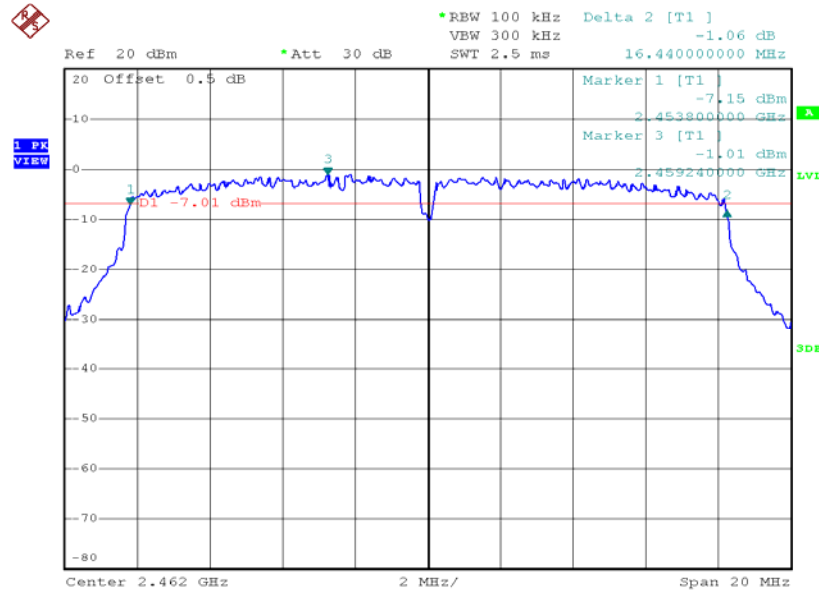
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## Plots of 6dB RF bandwidth(IEEE 802.11g , OFDM, 54 Mbps)

### 802.11g, Highest Channel



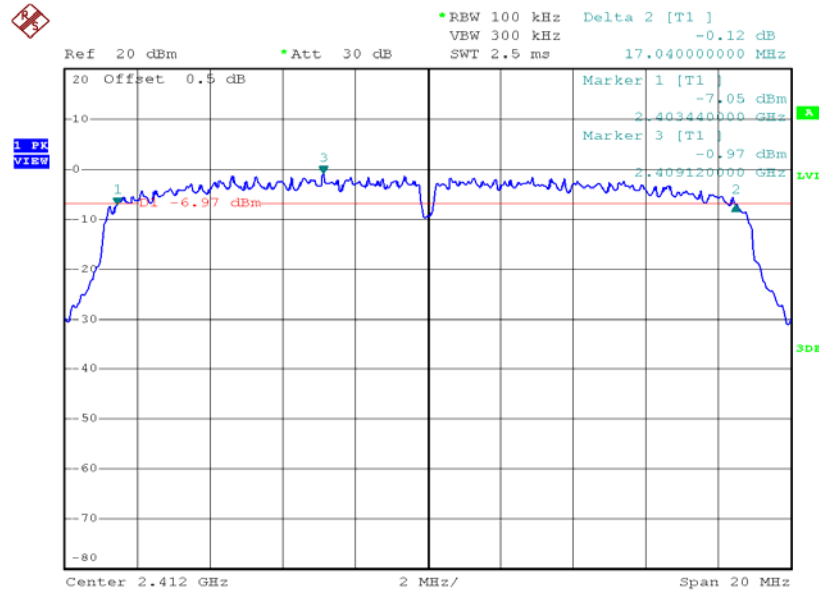
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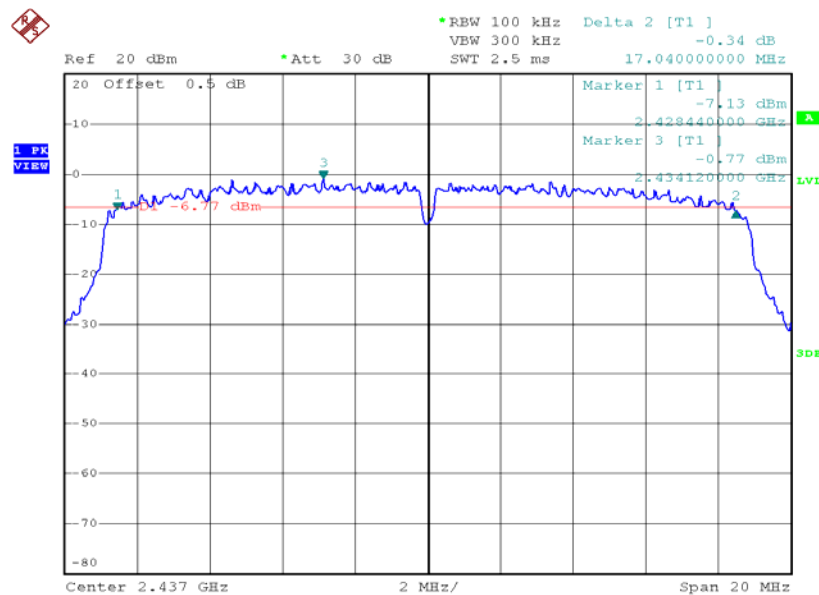


## Plots of 6dB RF bandwidth ( IEEE 802.11n,20MHz,OFDM,65Mbps)

### 802.11n(20M), Lowest Channel



### 802.11n(20M), Middle Channel



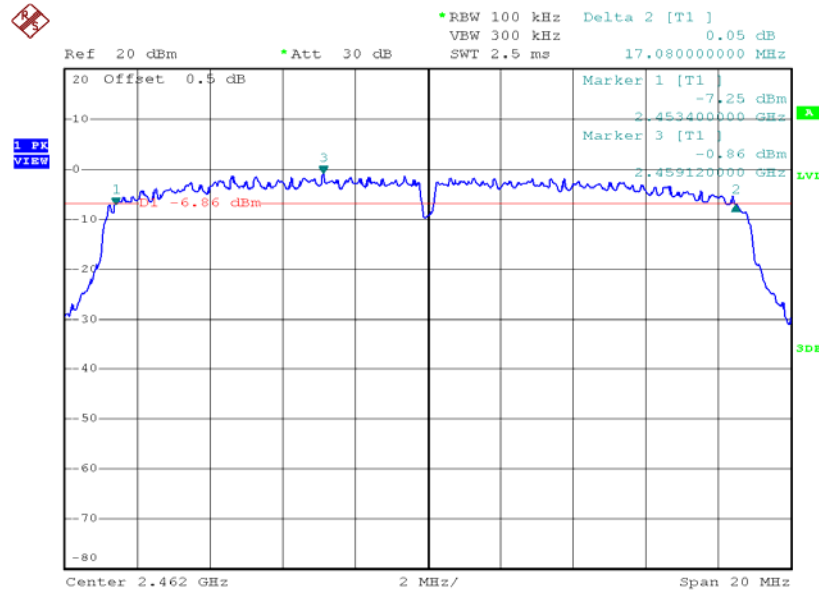
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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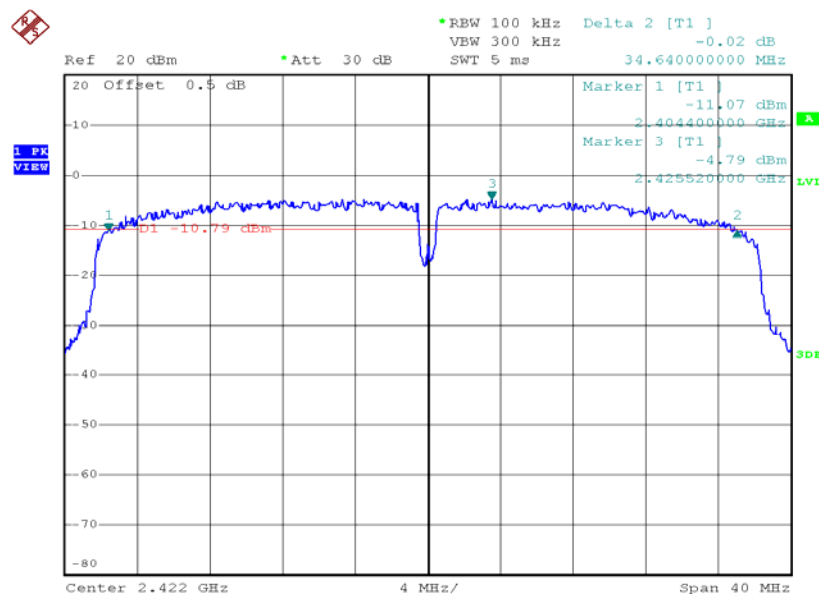


## Plots of 6dB RF bandwidth ( IEEE 802.11n,20MHz,OFDM,65Mbps)

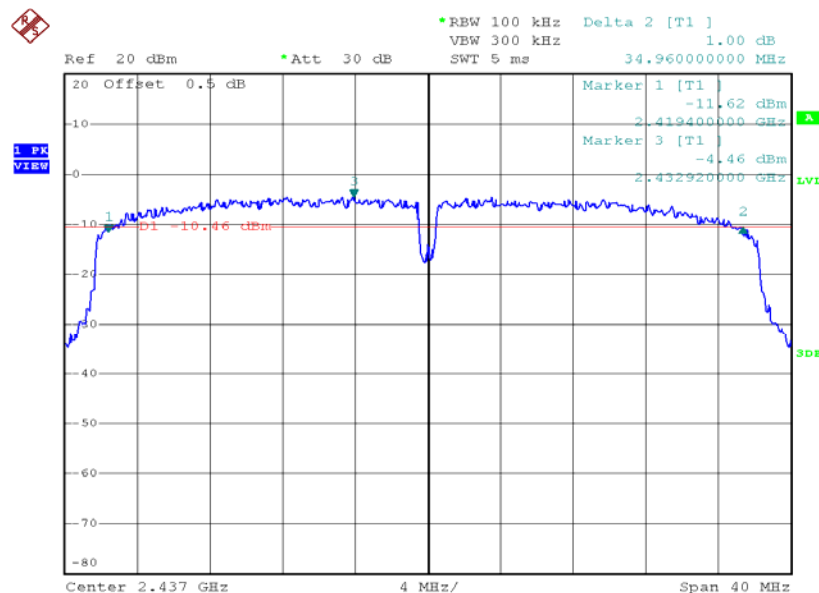
### 802.11n(20M), Highest Channel



## 802.11n(40M), Lowest Channel

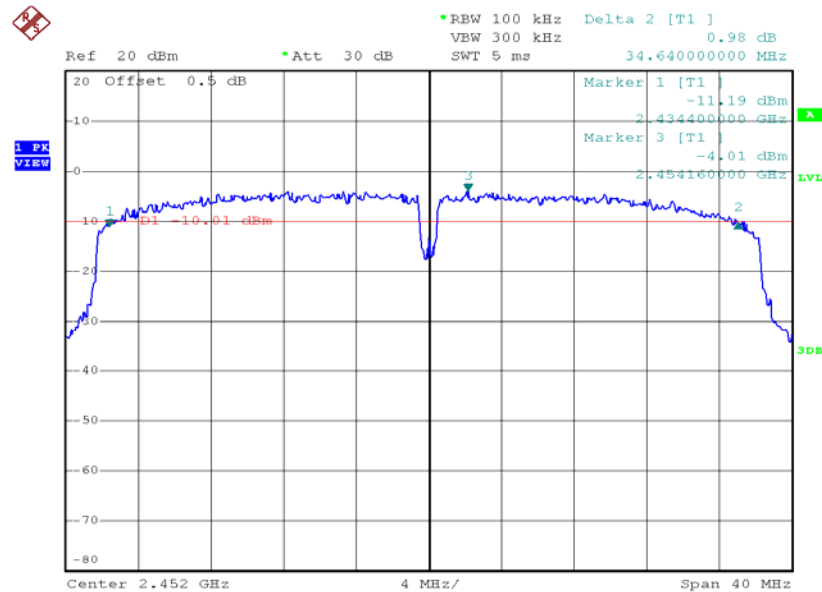


## 802.11n(40M), Middle Channel





## 802.11n(40M), Highest Channel



### 4.3 Maximum Power Spectral Density

Antenna output of the EUT was coupled directly to spectrum analyzer. The measurement procedure 10.2 PKPSD 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)	PSD in 3kHz (dBm)
Low Channel: 2412	4.71	-10.49
Middle Channel: 2437	4.78	-10.42
High Channel: 2462	5.02	-10.18

IEEE 802.11g (OFDM, 6Mbps)		
Frequency (MHz)	PSD in 100kHz (dBm)	PSD in 3kHz (dBm)
Low Channel: 2412	-1.53	-16.73
Middle Channel: 2437	-1.33	-16.53
High Channel: 2462	-1.27	-16.47

IEEE 802.11n (20MHz, OFDM, 6.5 Mbps)		
Frequency (MHz)	PSD in 100kHz (dBm)	PSD in 3kHz (dBm)
Low Channel: 2412	-0.89	-16.09
Middle Channel: 2437	-1.36	-16.56
High Channel: 2462	-1.09	-16.29

Cable Loss: 0.5 dB

Bandwidth correction factor (BWCF) =  $10 \log (3\text{kHz}/100\text{kHz}) = -15.2 \text{ dB}$

PSD in 3kHz = PSD in 100kHz + BWCF

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IEEE 802.11n (40MHz, OFDM, 15Mbps)		
Frequency (MHz)	PSD in 100kHz (dBm)	PSD in 3kHz (dBm)
Low Channel: 2412	-4.84	-20.04
Middle Channel: 2437	-4.65	-19.85
High Channel: 2462	-3.50	-18.70

Cable Loss: 0.5 dB

Bandwidth correction factor (BWCF) =  $10 \log (3\text{kHz}/100\text{kHz}) = -15.2 \text{ dB}$

PSD in 3kHz = PSD in 100kHz + BWCF

Limit:

8dBm in 3kHz

The plots of n power spectral density are as below.

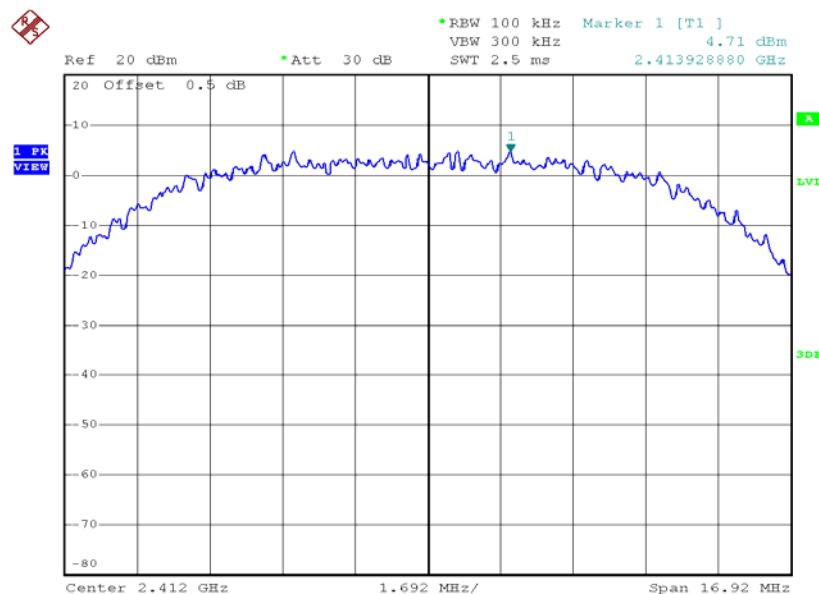
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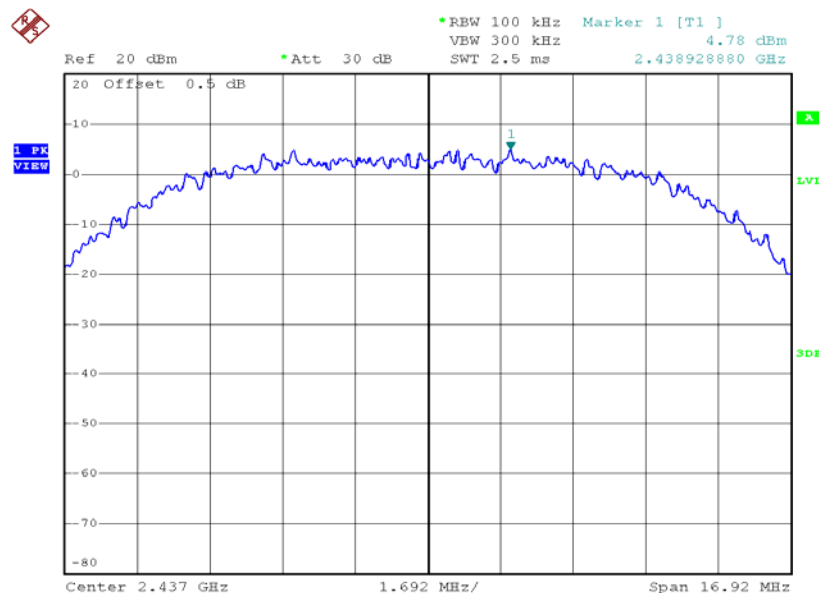


## Plots of power spectral density (IEEE 802.11b,DSSS, 1 Mbps)

### 802.11b, Lowest channel



### 802.11b, Middle channel



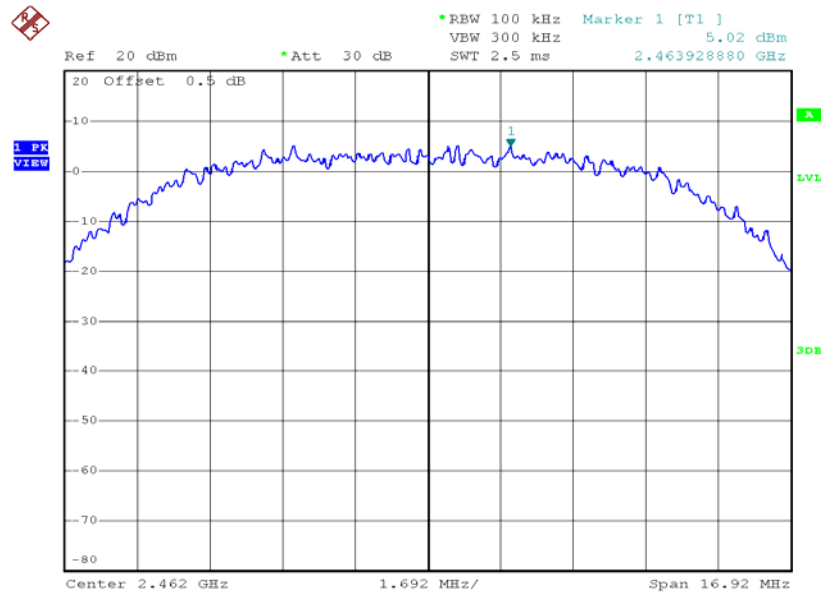
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## Plots of power spectral density (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Highest channel



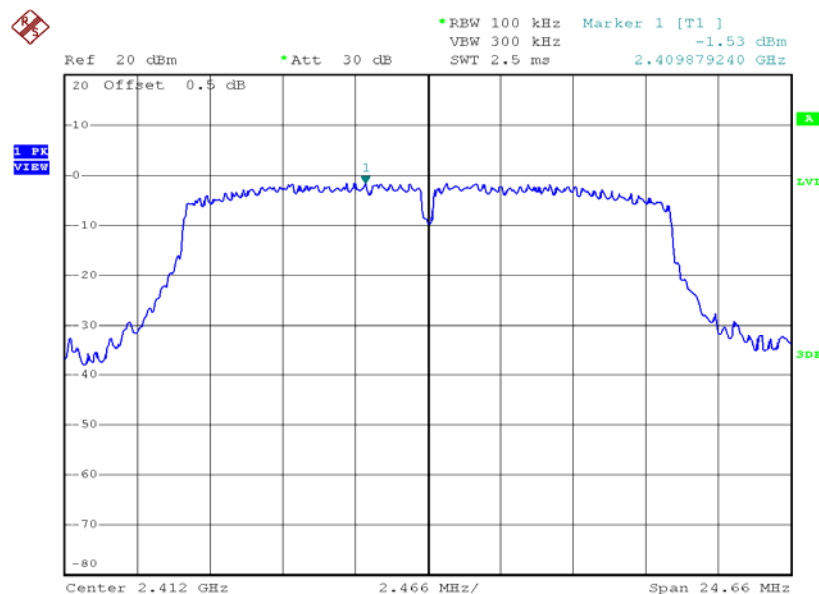
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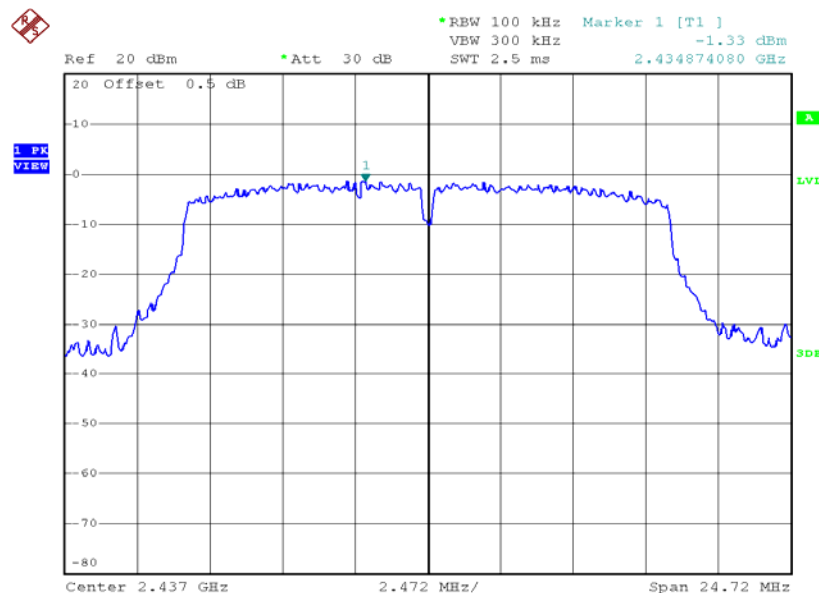


## Plots of power spectral density (IEEE 802.11g ,OFDM, 6 Mbps)

### 802.11g, Lowest channel



### 802.11g, Middle channel



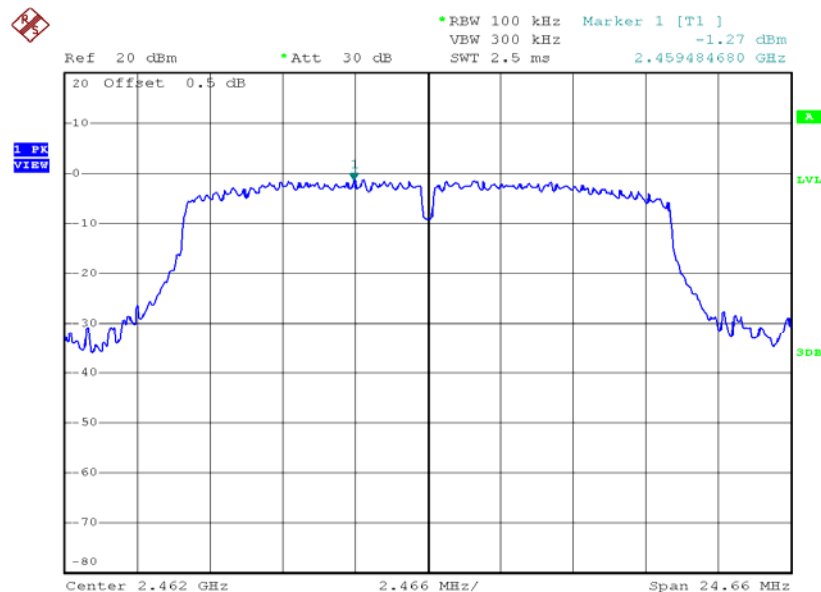
Issuing Laboratory:  
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## Plots of power spectral density (IEEE 802.11g , OFDM, 6 Mbps)

### 802.11g, Highest channel



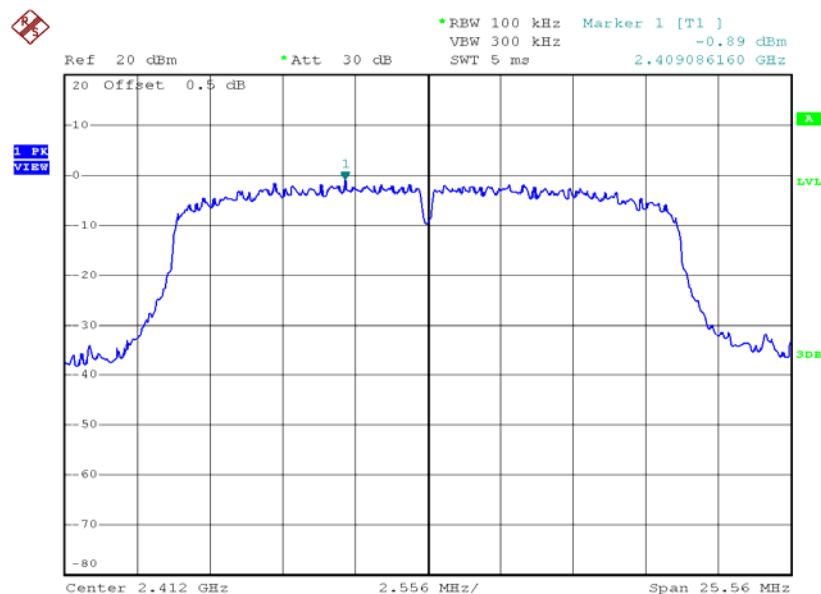
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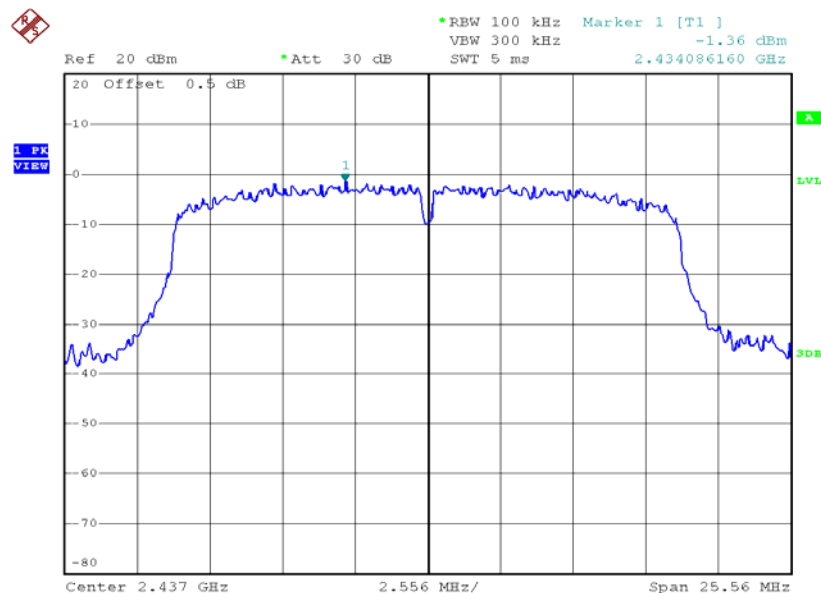


## Plots of power spectral density ( IEEE 802.11n,20MHz,OFDM,6.5Mbps)

### 802.11n(20M), Lowest channel



### 802.11n(20M), Middle channel





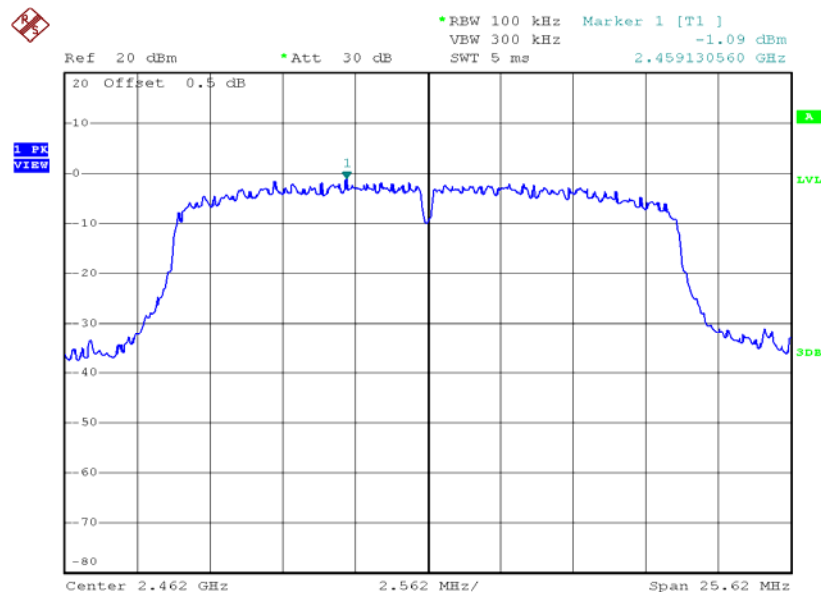
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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## Plots of power spectral density ( IEEE 802.11n,20MHz,OFDM,6.5Mbps)

### 802.11n(20M), Highest channel



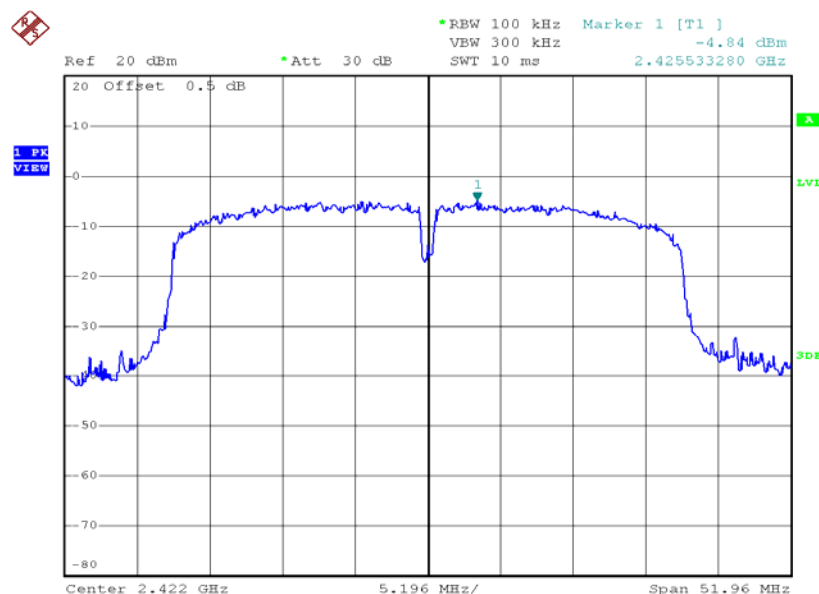
Issuing Laboratory:  
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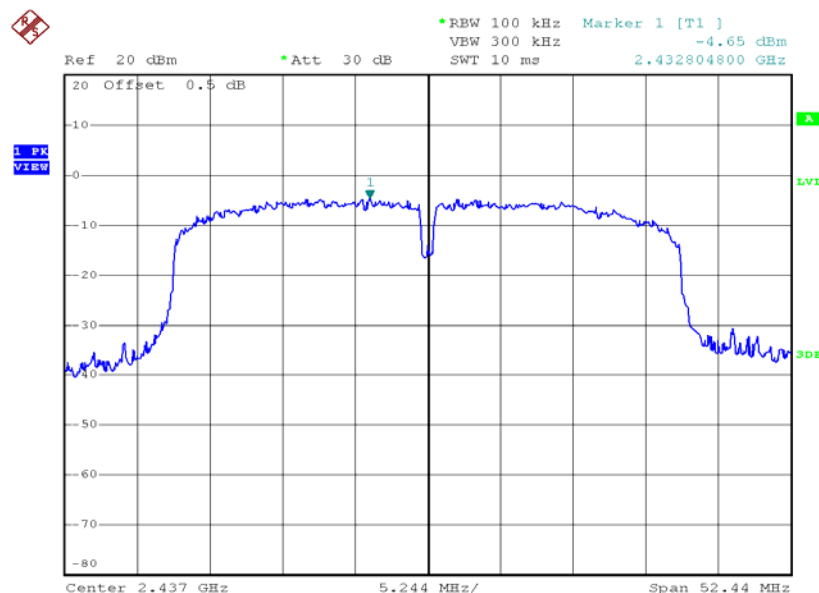


## Plots of power spectral density ( IEEE 802.11n , 40MHz,OFDM, 15Mbps)

### 802.11n(40M),Lowest channel



### 802.11n(40M),Highest channel



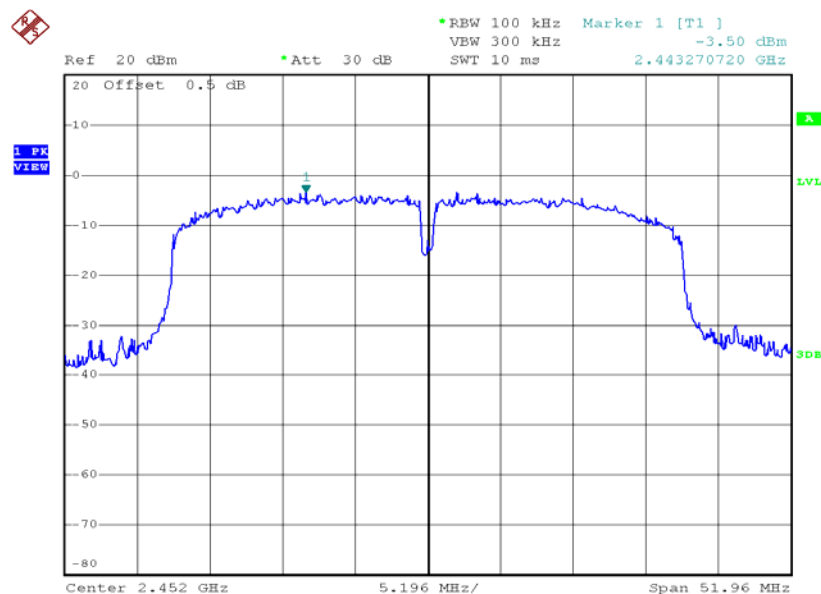
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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## Plots of power spectral density ( IEEE 802.11n, 40MHz,OFDM, 15Mbps)

### 802.11n(40M),Highest channel



Issuing Laboratory:  
**Intertek Testing Services Hong Kong Limited**

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#### 4.4 Out of Band Conducted Emissions

RBW was set to 1MHz rather than 100KHz in order to increase the measurement speed.

The display line ( in red ) shown in the following plots denotes the limit at 20dB below maximum measured in-band peak PSD level in 100KHz bandwidth. However, since the traces in the following plots are measured with 1MHz RBW but not 100KHz, the display line may not necessarily appear to be the 20dB below the level of the fundamental in 1MHz bandwidth.

For the plots show the radiated spurious emission above the limit, the frequencies were investigated with 100KHz RBW to ensure that no emission was present.

The measurement procedures under sections 11 of KDB558074 were used.

**Limits:**

All spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the maximum measured in-band peak PSD level .

The plots of out of band conducted emissions and bandedge are as below.

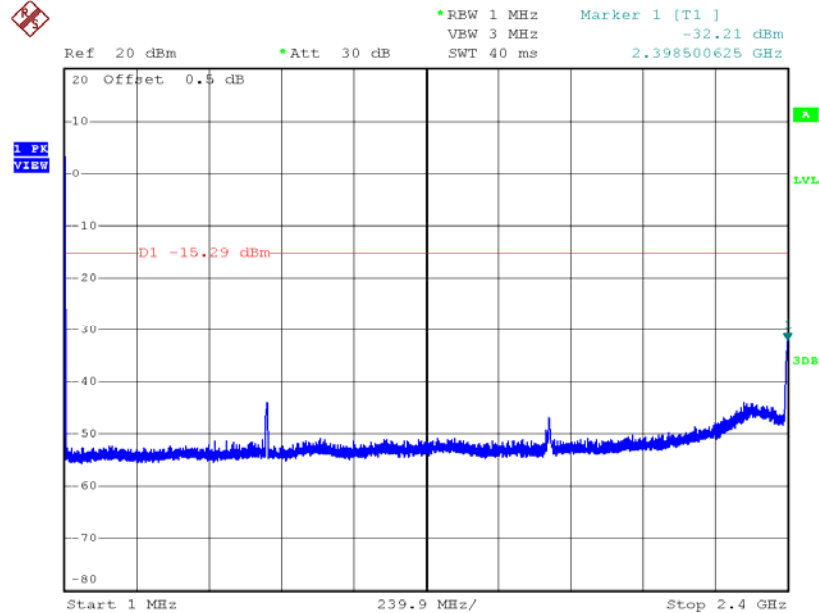
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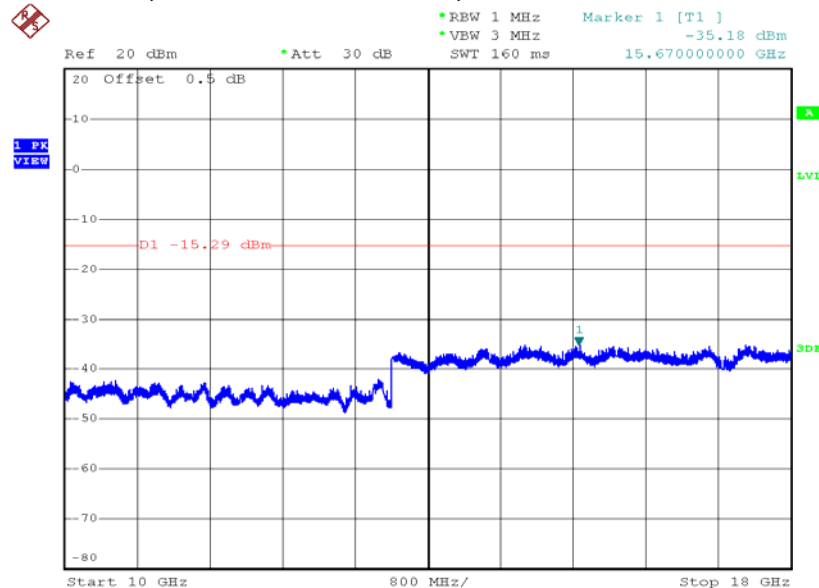


## Plots of out of band conducted emissions (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Lowest Channel, Plot A



### 802.11b, Lowest Channel, Plot B



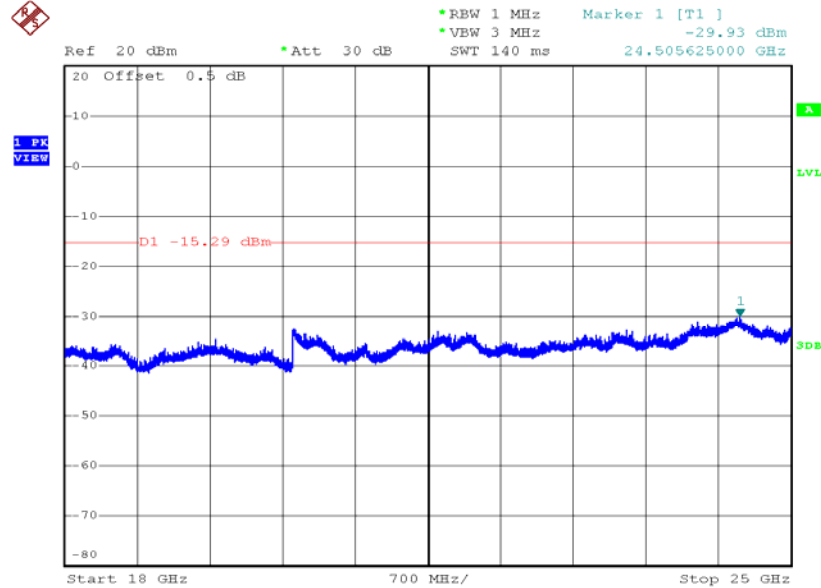
Issuing Laboratory:  
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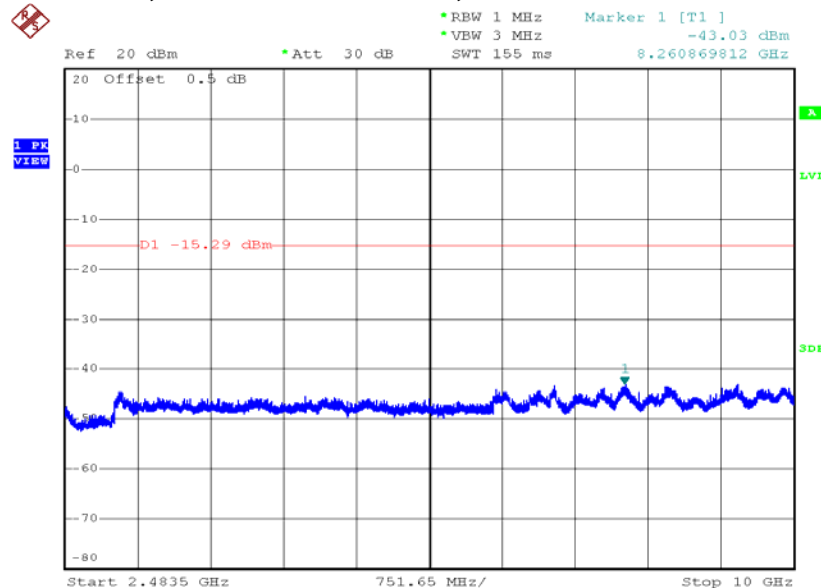


## Plots of out of band conducted emissions (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Lowest Channel, Plot C



### 802.11b, Lowest Channel, Plot D



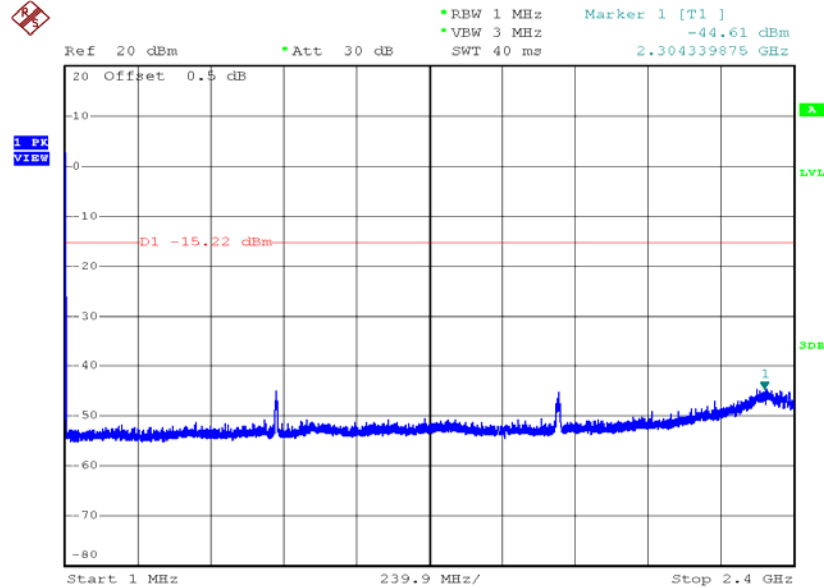
Issuing Laboratory:  
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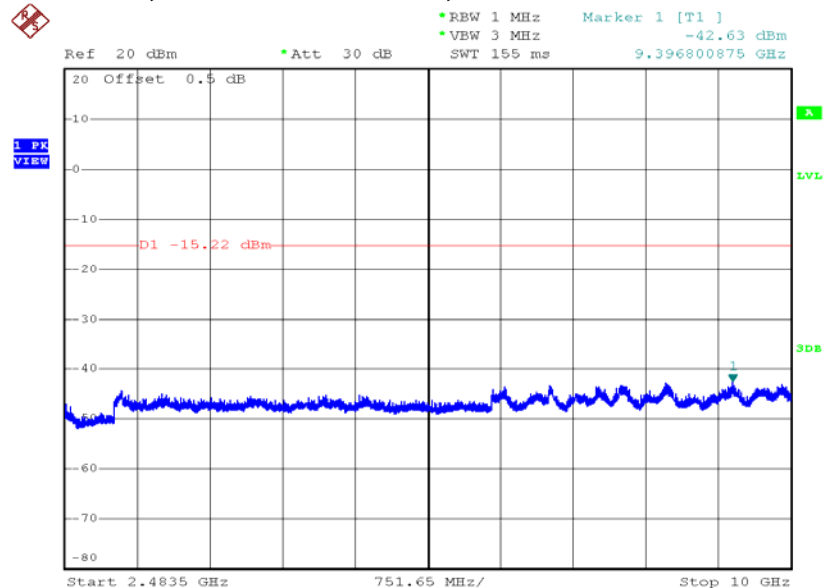


## Plots of out of band conducted emissions (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Middle Channel, Plot A



### 802.11b, Middle Channel, Plot B



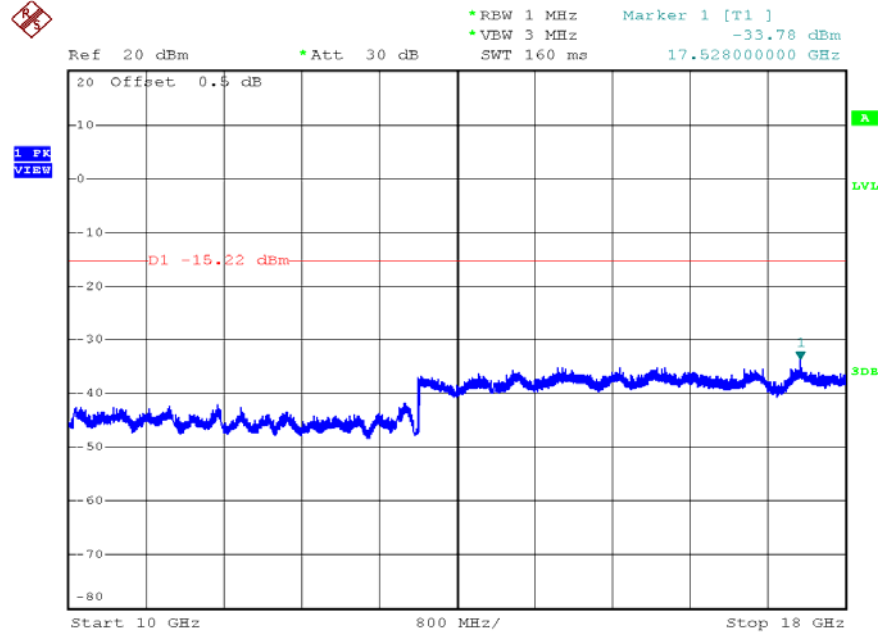
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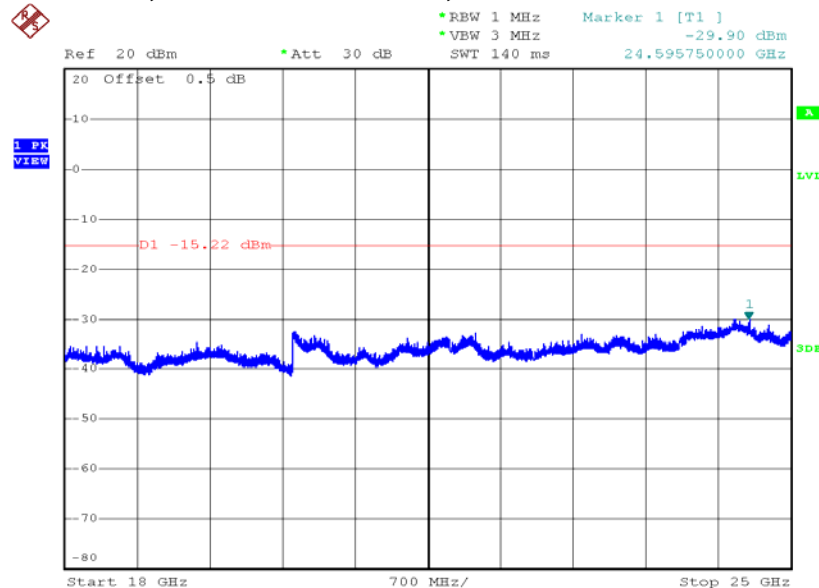


## Plots of out of band conducted emissions (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Middle Channel, Plot C



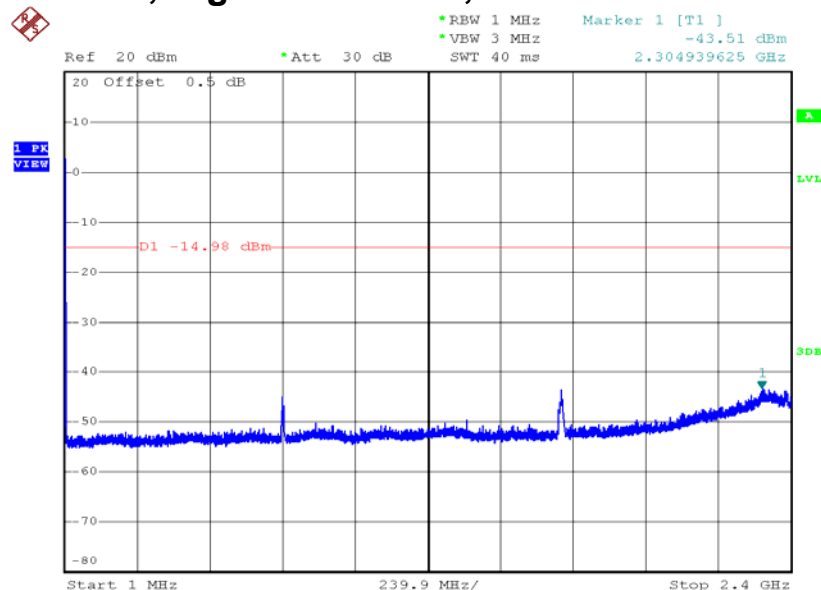
### 802.11b, Middle Channel, Plot D



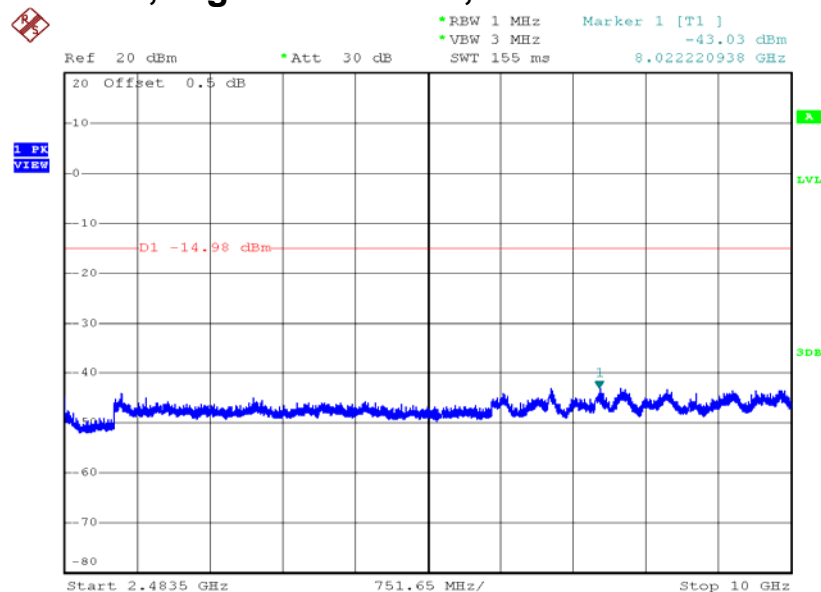


## Plots of out of band conducted emissions (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Highest Channel, Plot A



### 802.11b, Highest Channel, Plot B



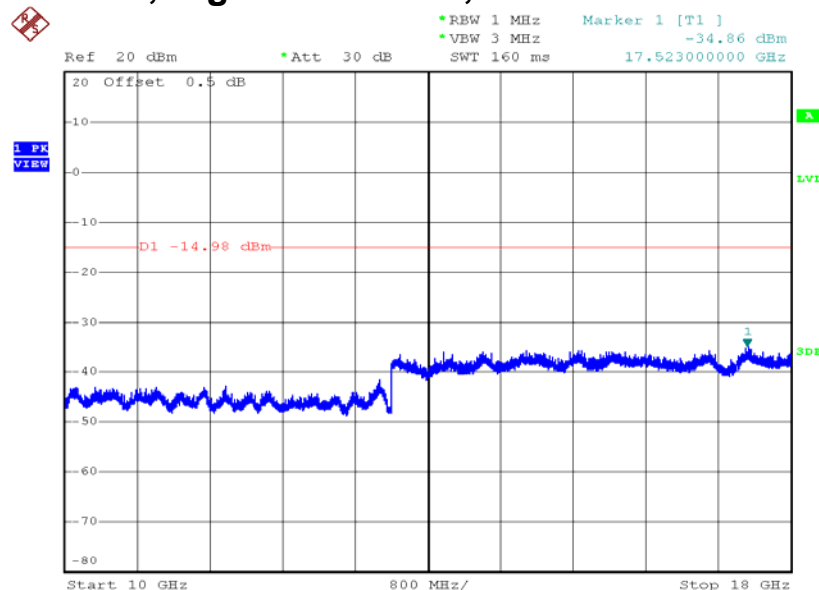
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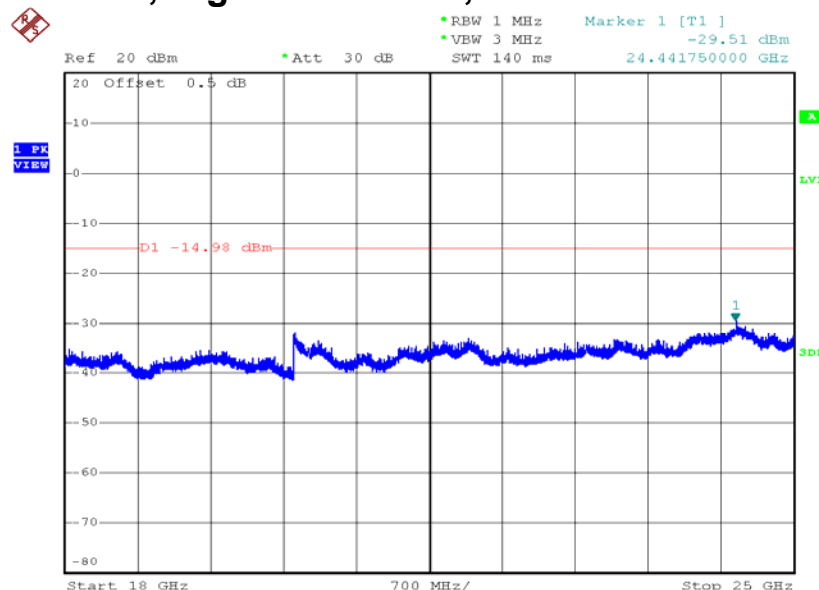


## Plots of out of band conducted emissions (IEEE 802.11b, DSSS, 1 Mbps)

### 802.11b, Highest Channel, Plot C

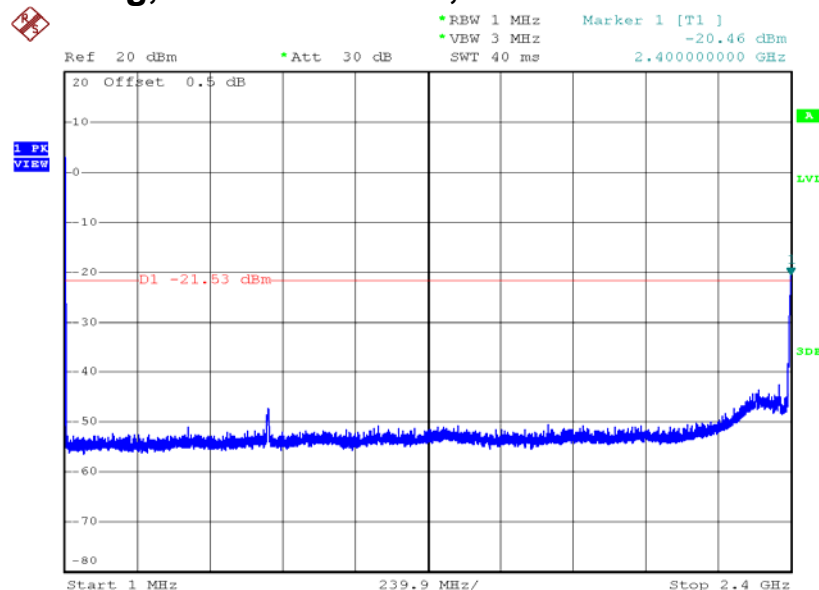


### 802.11b, Highest Channel, Plot D

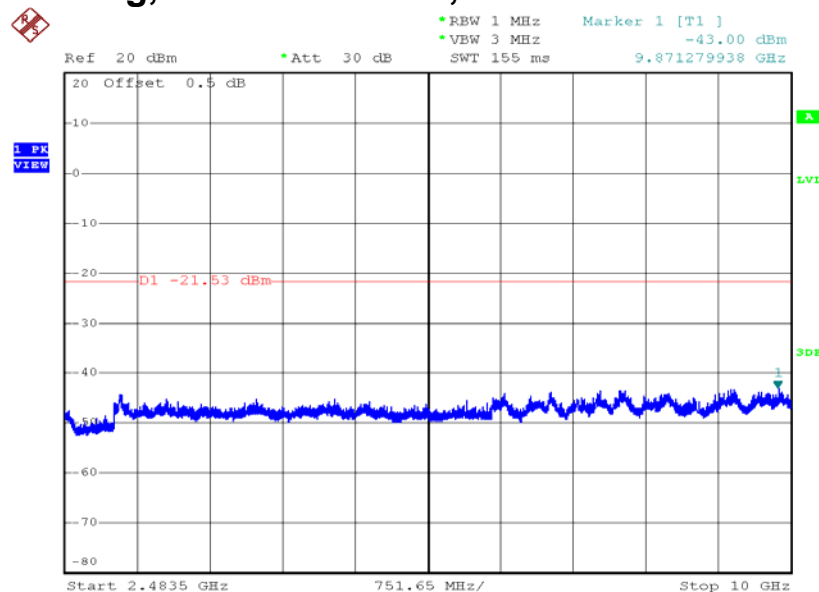


## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Lowest channel, Plot A



### 802.11g, Lowest channel, Plot B



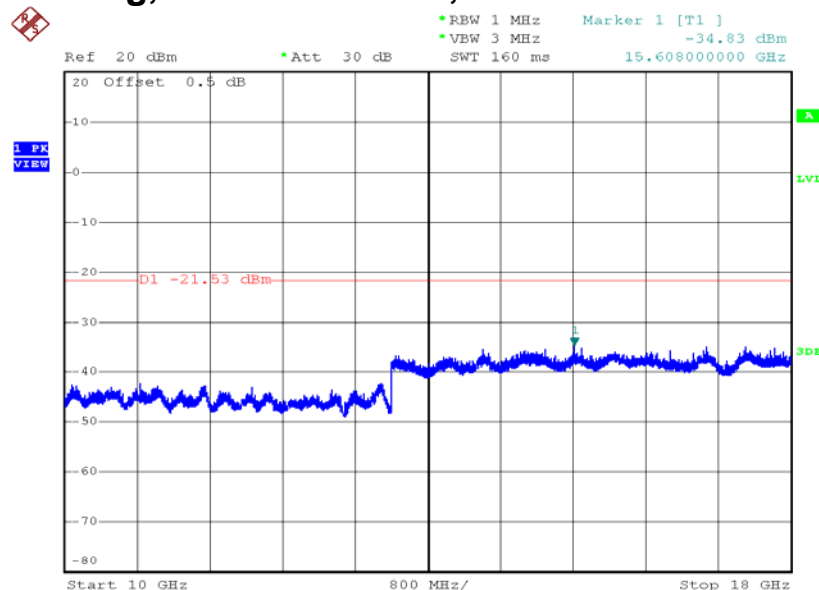
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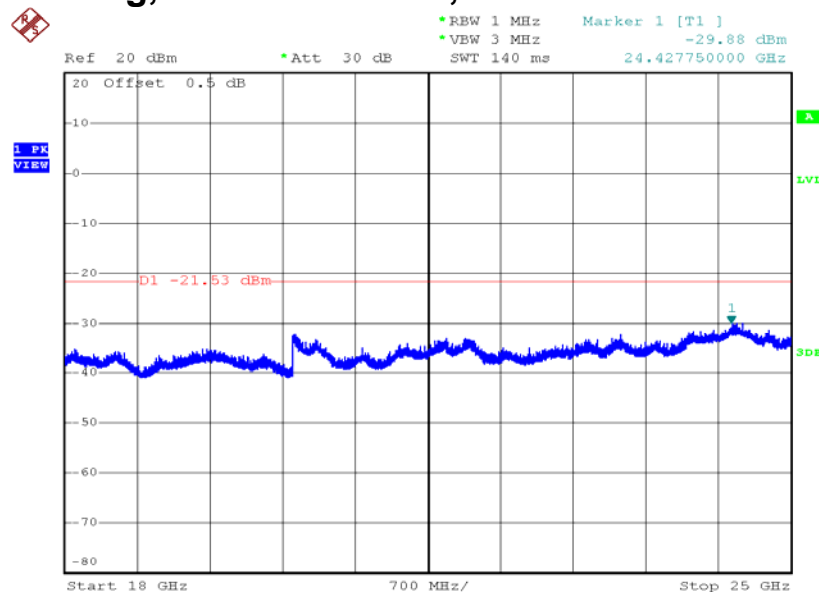


## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Lowest channel, Plot C



### 802.11g, Lowest channel, Plot D



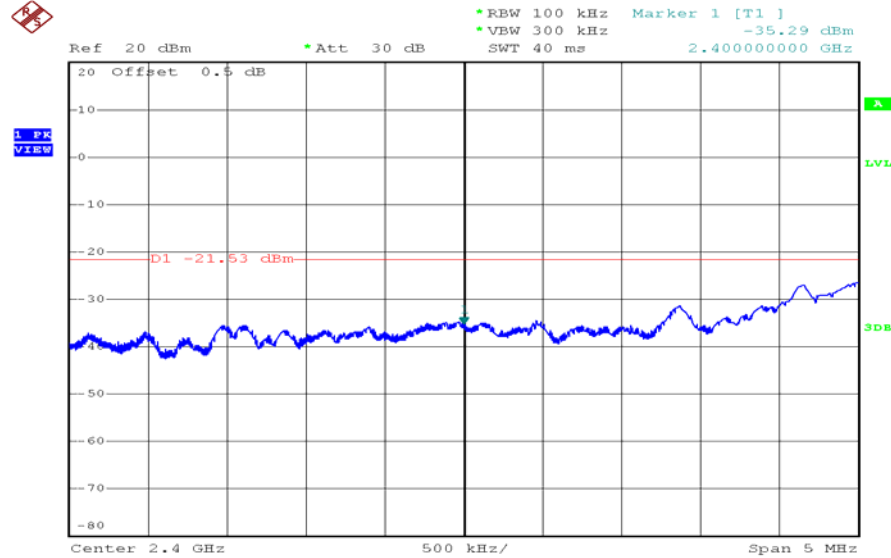
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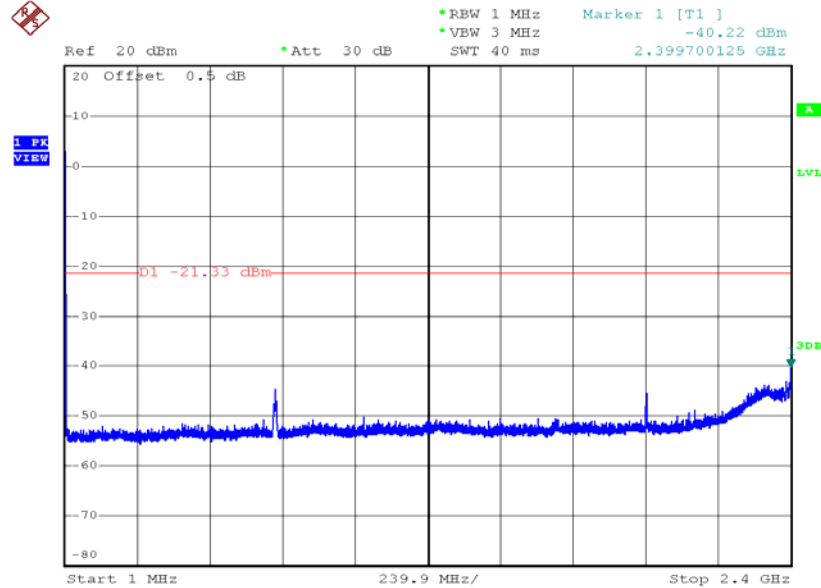
## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Lowest channel, Plot E

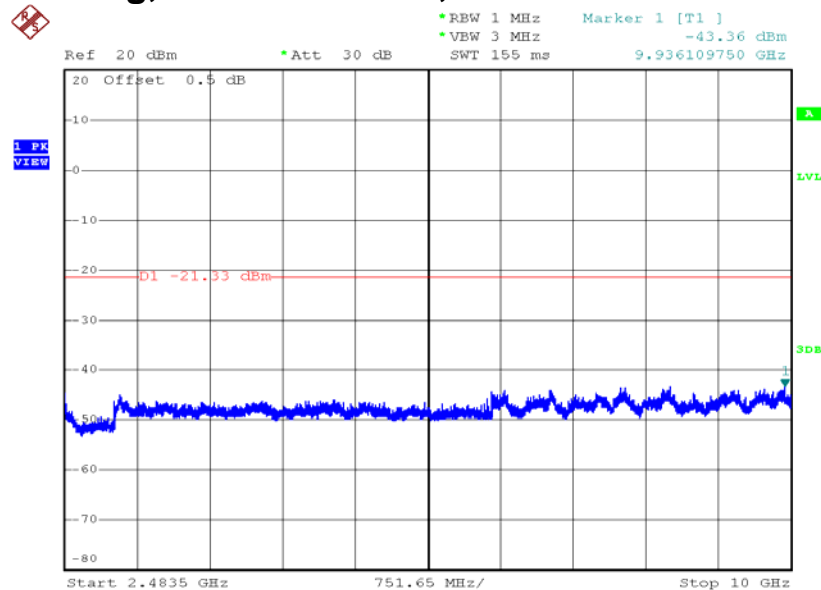


## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Middle channel, Plot A



### 802.11g, Middle channel, Plot B



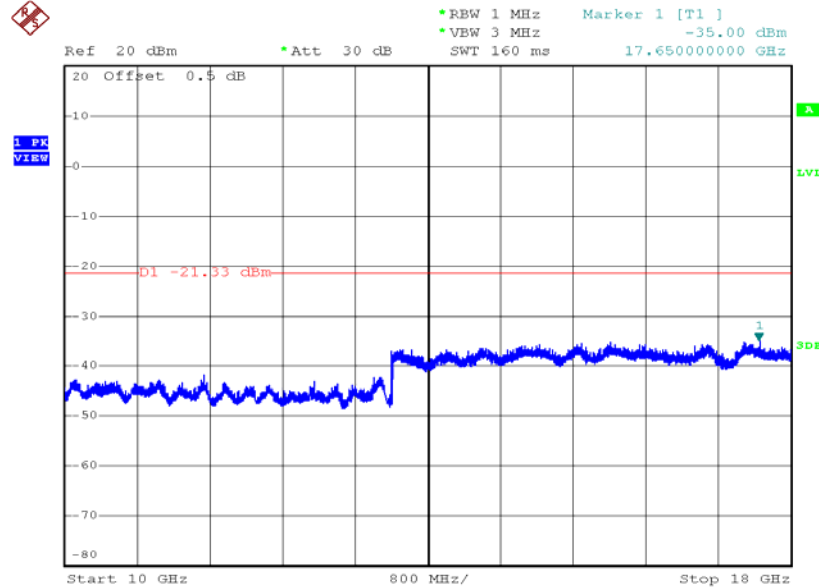
Issuing Laboratory:  
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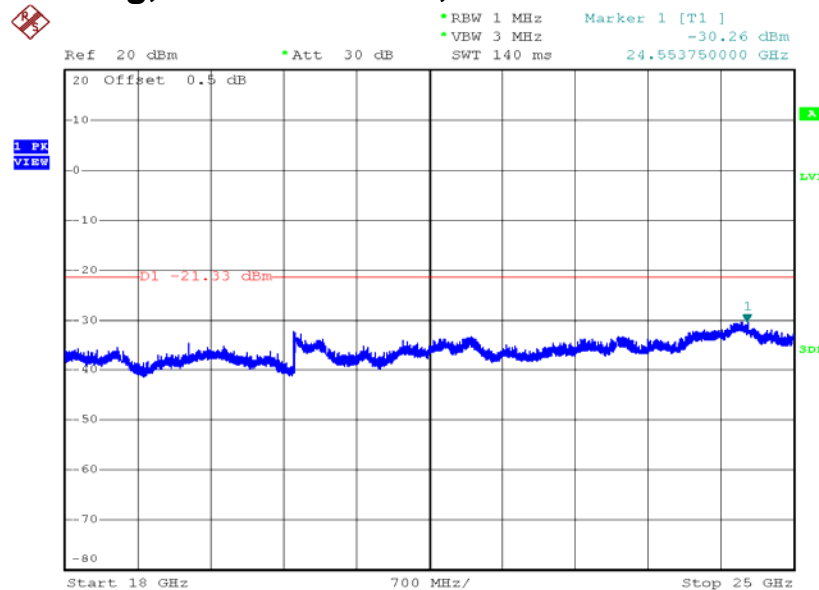


## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Middle channel, Plot C

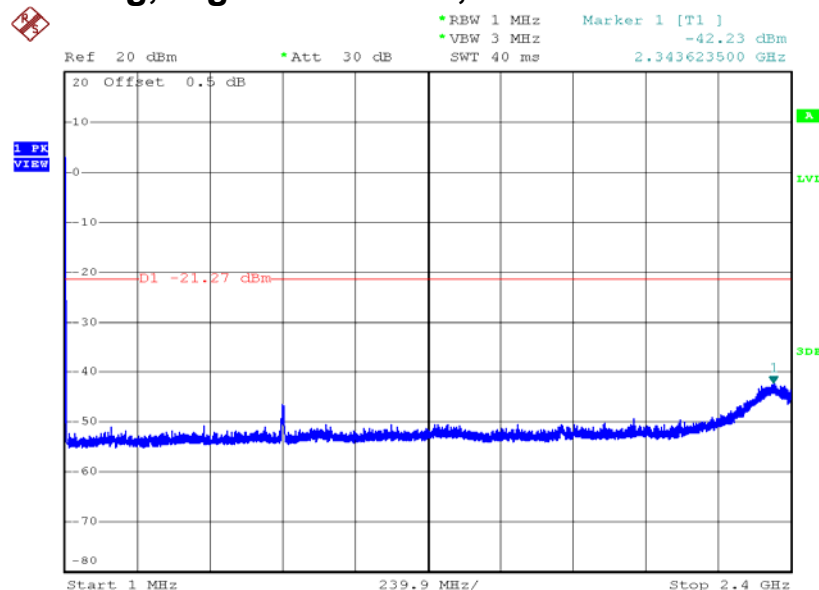


### 802.11g, Middle channel, Plot D

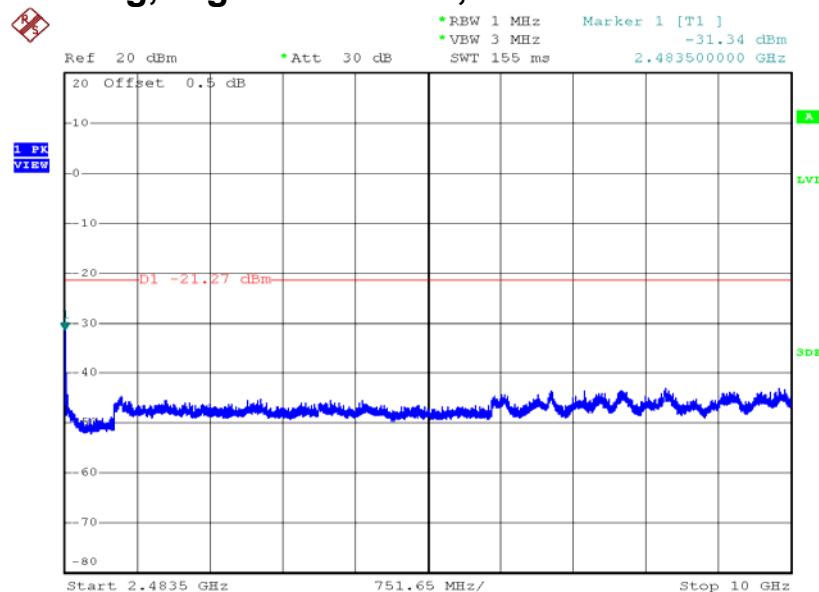


## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Highest channel, Plot A



### 802.11g, Highest channel, Plot B





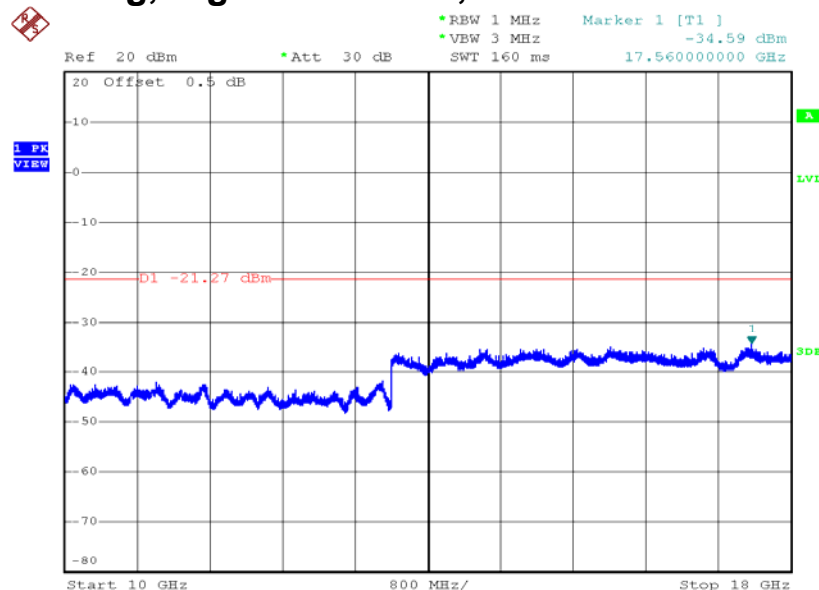
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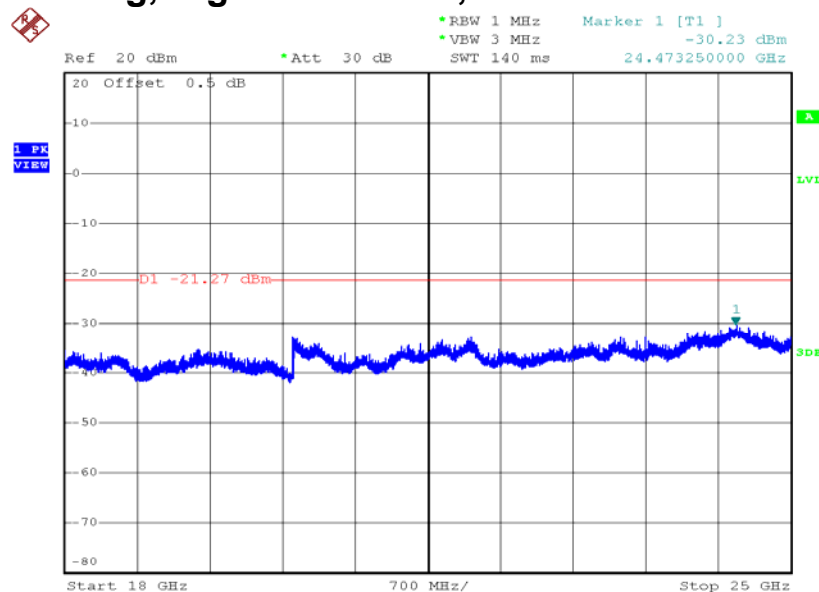


## Plots of out of band conducted emissions (IEEE 802.11g, OFDM, 6 Mbps)

### 802.11g, Highest channel, Plot C



### 802.11g, Highest channel, Plot D



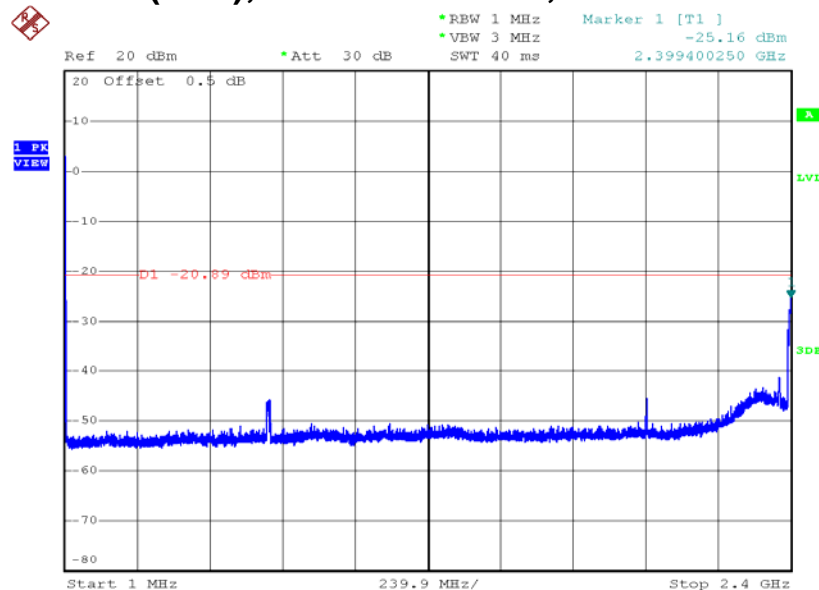
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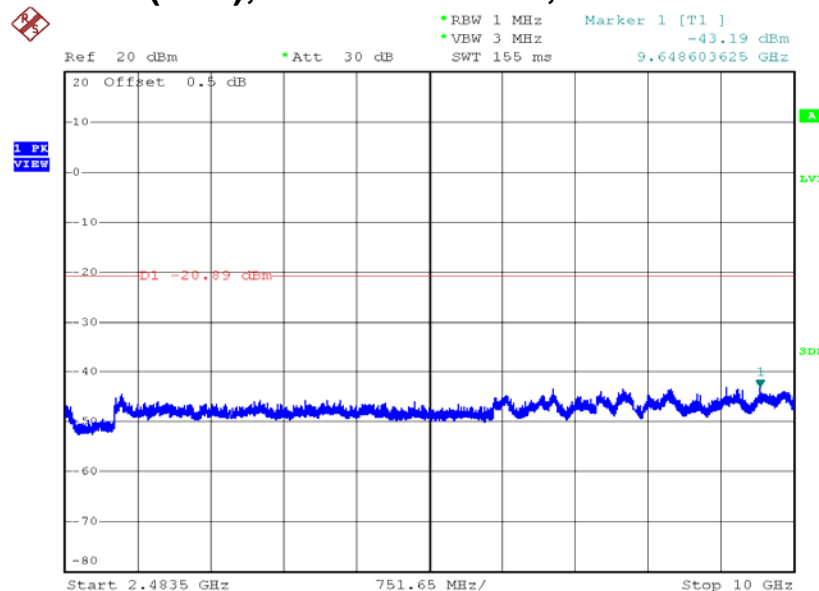


## Plots of out of band conducted emissions ( IEEE 802.11n,20MHz,OFDM,6.5Mbps )

### 802.11n(20M), Lowest channel, Plot A



### 802.11n(20M), Lowest channel, Plot B



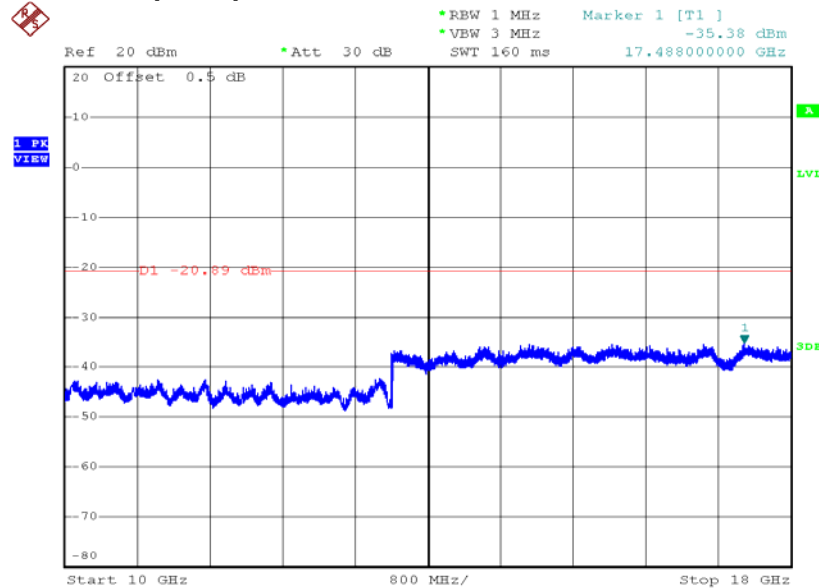
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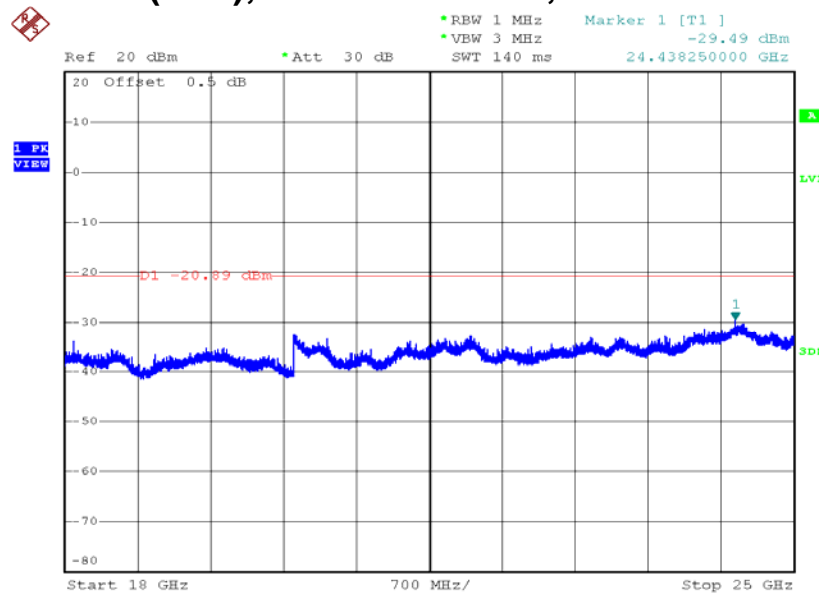


## Plots of out of band conducted emissions ( IEEE 802.11n,20MHz,OFDM,6.5Mbps )

### 802.11n(20M), Lowest channel, Plot C



### 802.11n(20M), Lowest channel, Plot D



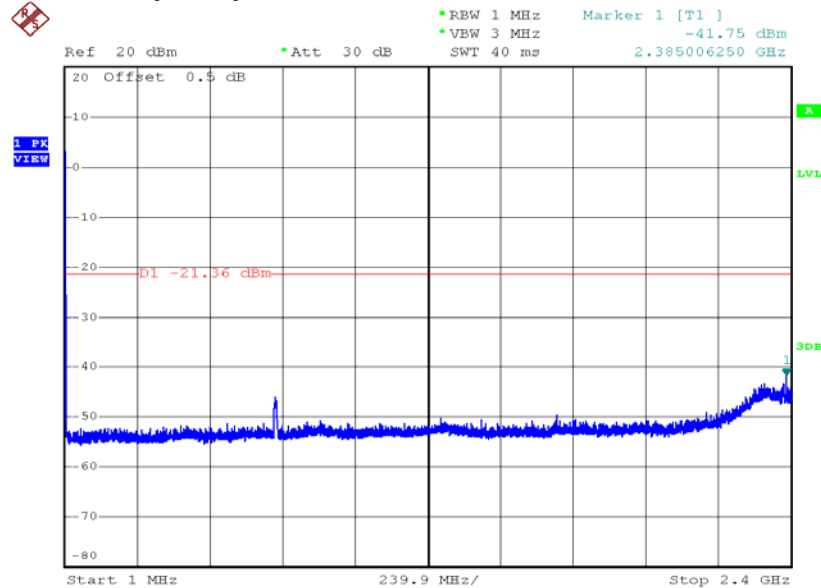
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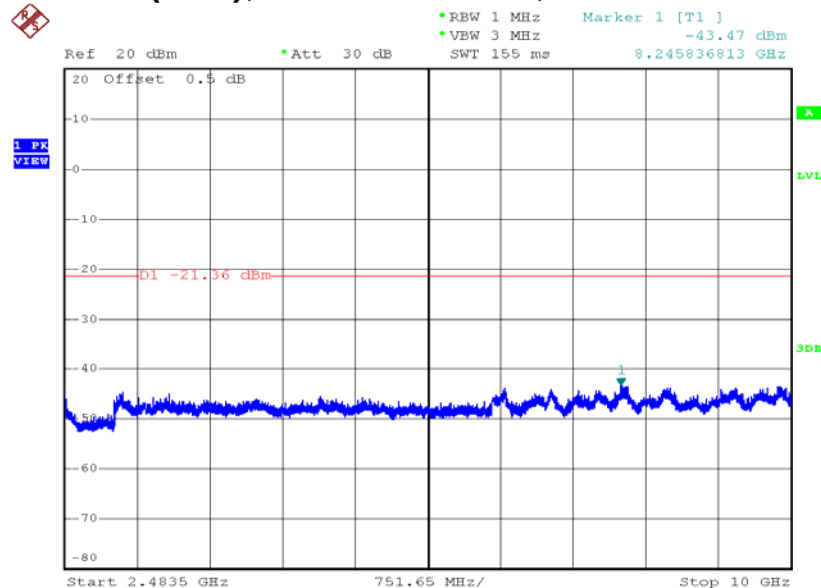


## Plots of out of band conducted emissions ( IEEE 802.11n,20MHz,OFDM,6.5Mbps )

### 802.11n(20M), Middle channel, Plot A



### 802.11n(20M), Middle channel, Plot B



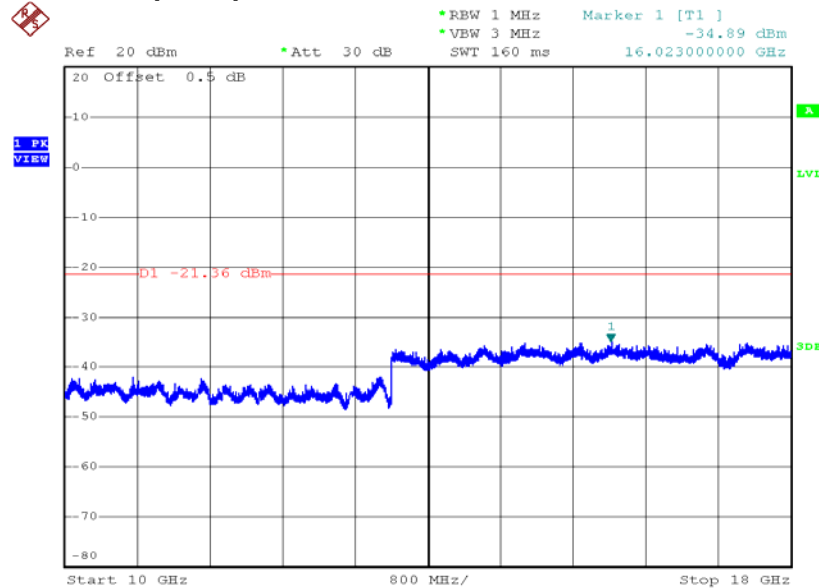
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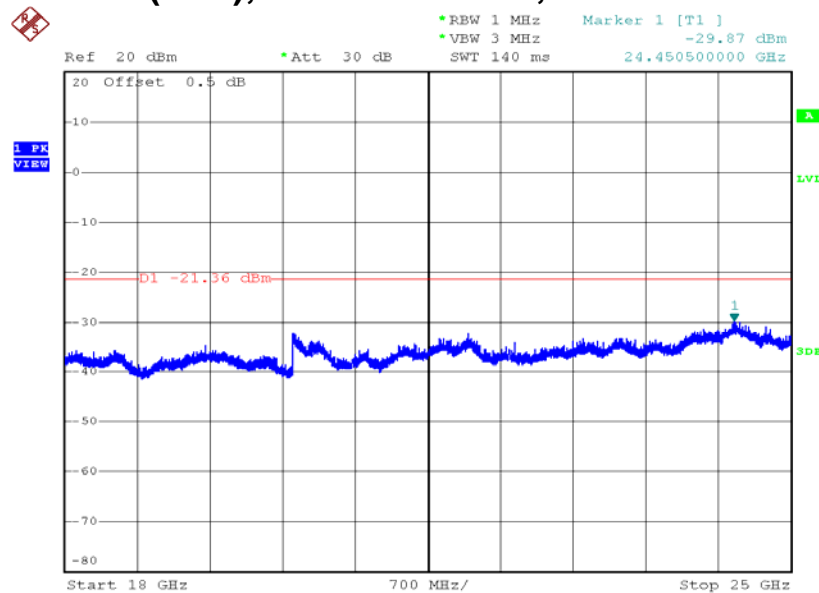


## Plots of out of band conducted emissions ( IEEE 802.11n,20MHz,OFDM,6.5Mbps )

### 802.11n(20M), Middle channel, Plot C



### 802.11n(20M), Middle channel, Plot D



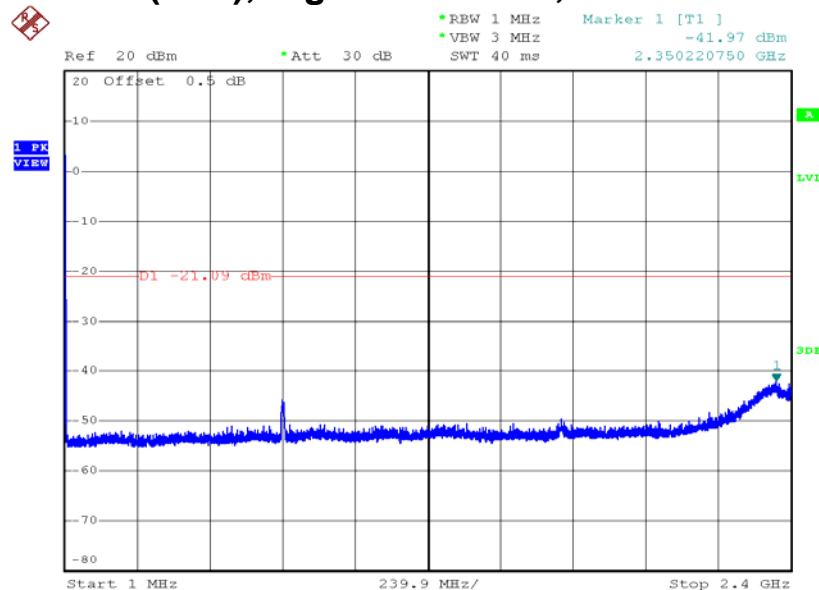
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.

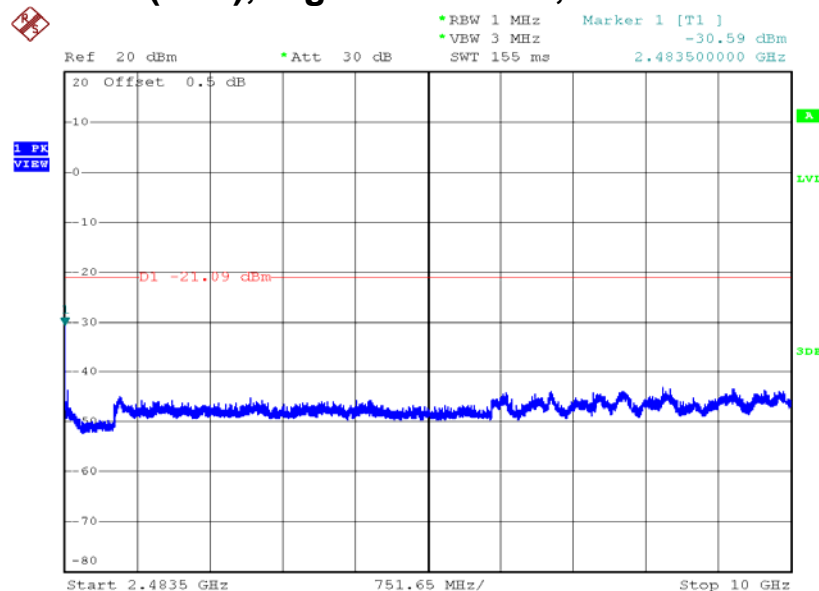


## Plots of out of band conducted emissions ( IEEE 802.11n,20MHz,OFDM,6.5Mbps )

### 802.11n(20M), Highest channel, Plot A



### 802.11n(20M), Highest channel, Plot B



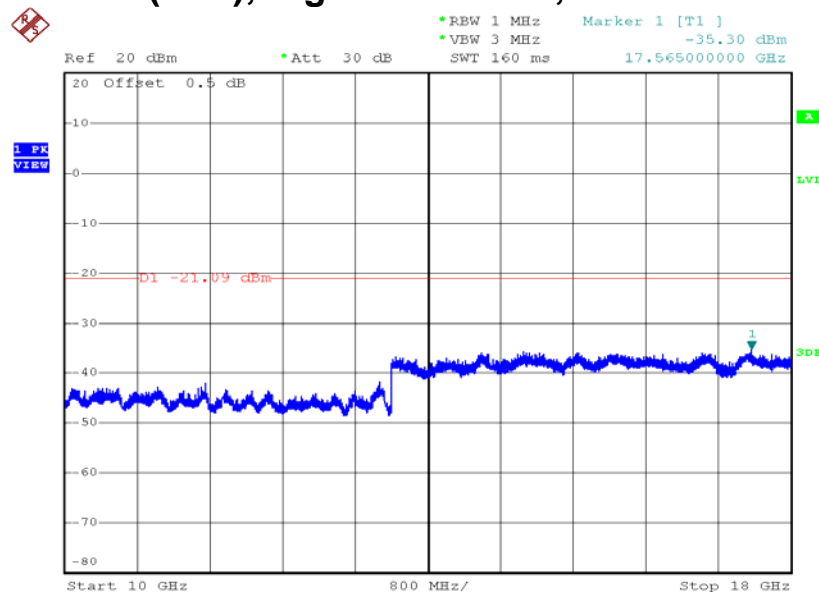
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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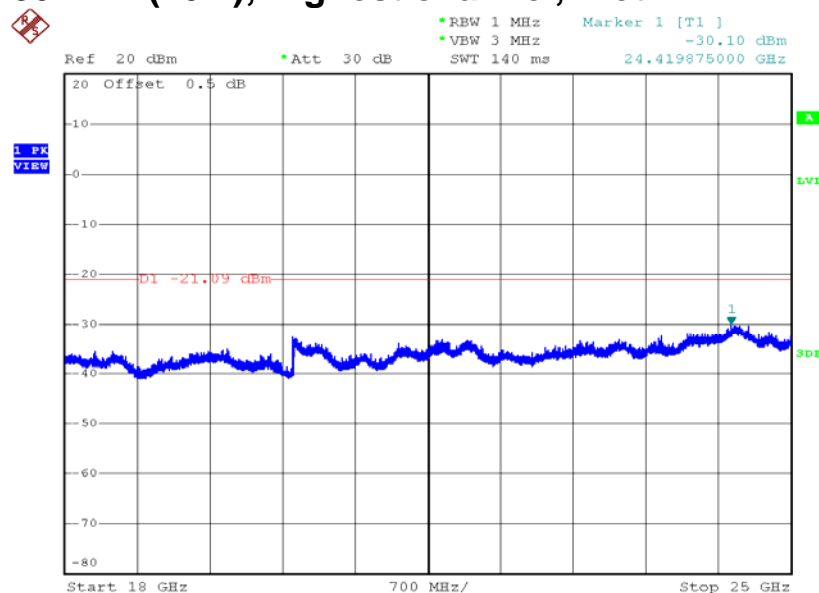


## Plots of out of band conducted emissions ( IEEE 802.11n,20MHz,OFDM,6.5Mbps )

### 802.11n(20M), Highest channel, Plot C



### 802.11n(20M), Highest channel, Plot D



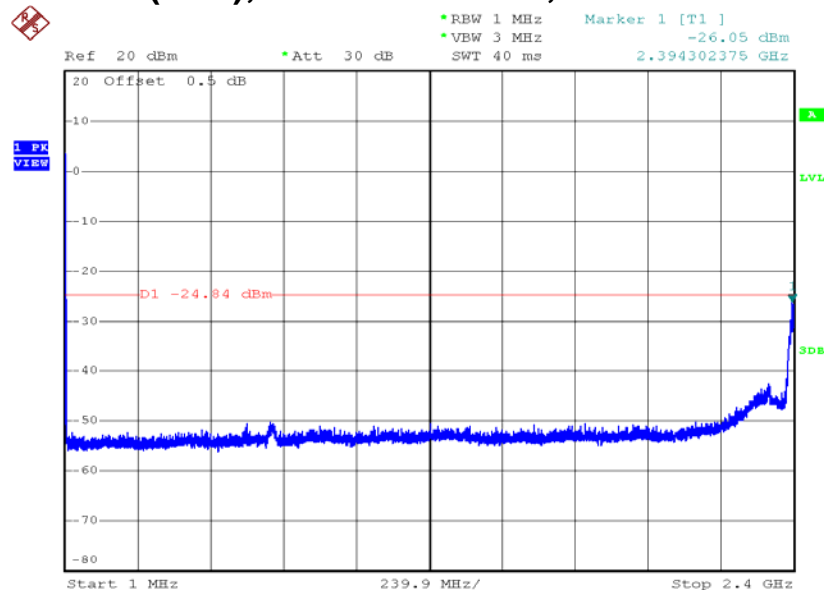
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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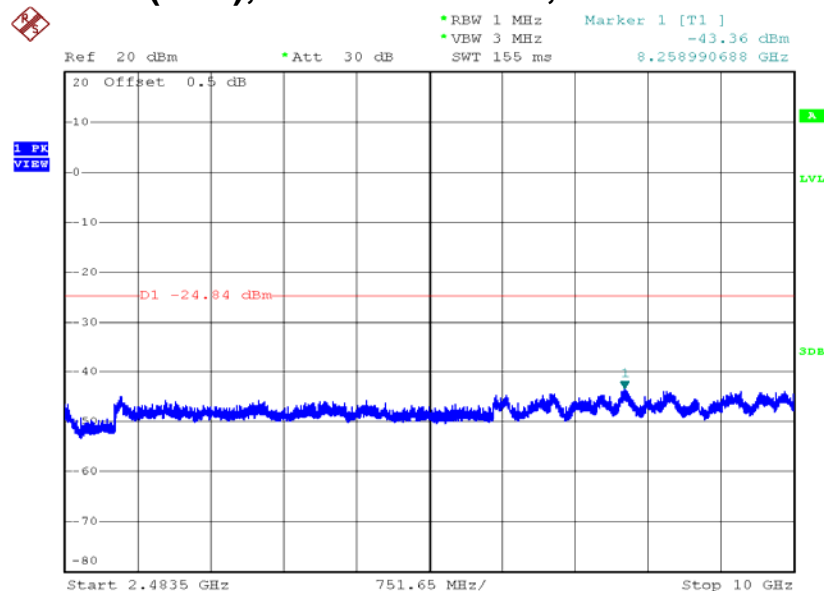


## Plots of out of band conducted emissions ( IEEE 802.11n, 40MHz, OFDM, 15Mbps )

### 802.11n(40M), Lowest channel, Plot A



### 802.11n(40M), Lowest channel, Plot B





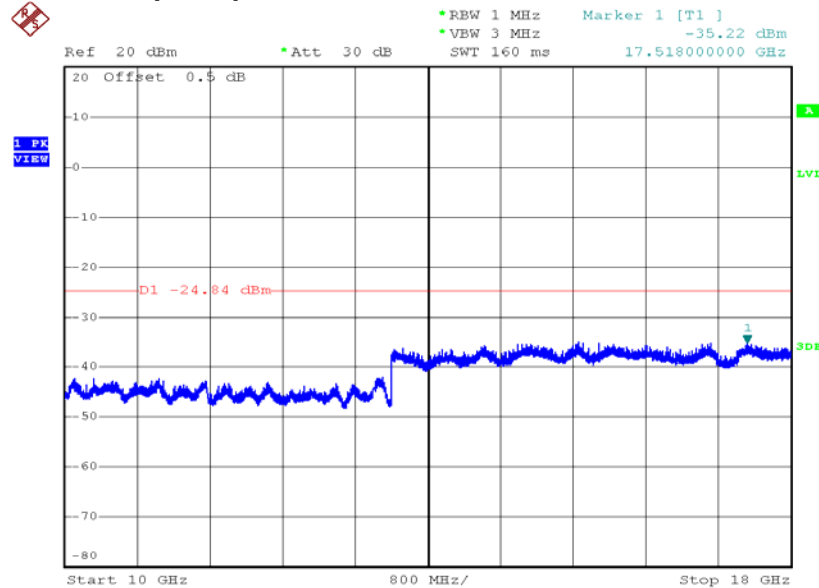
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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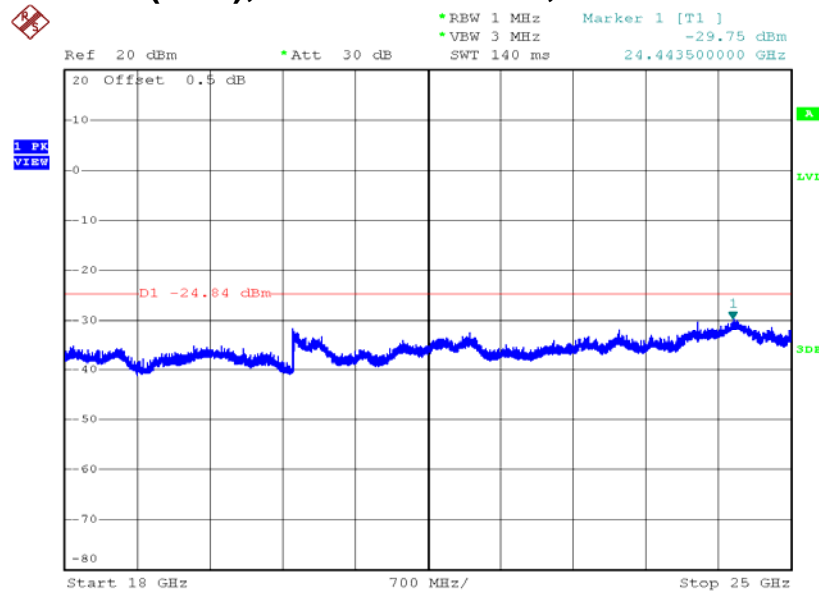


## Plots of out of band conducted emissions ( IEEE 802.11n, 40MHz, OFDM, 15Mbps )

### 802.11n(40M), Lowest channel, Plot C



### 802.11n(40M), Lowest channel, Plot D



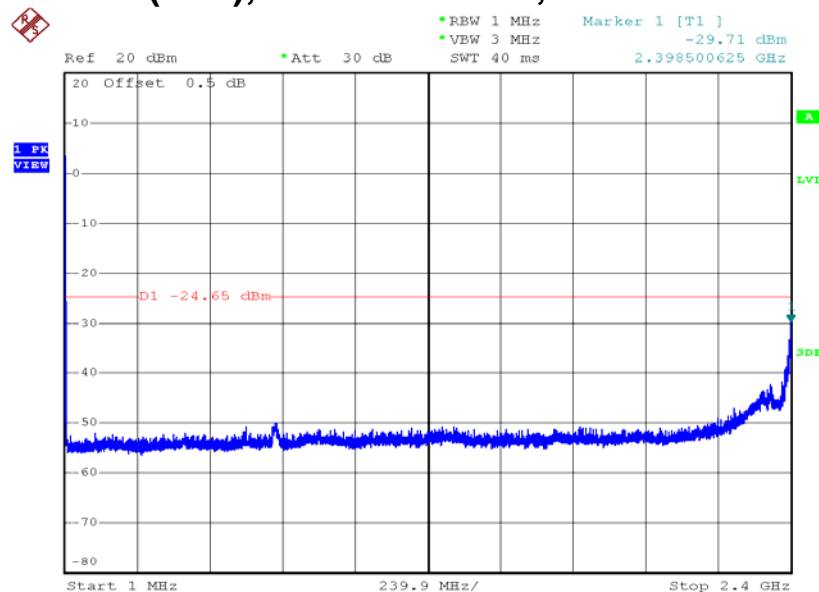
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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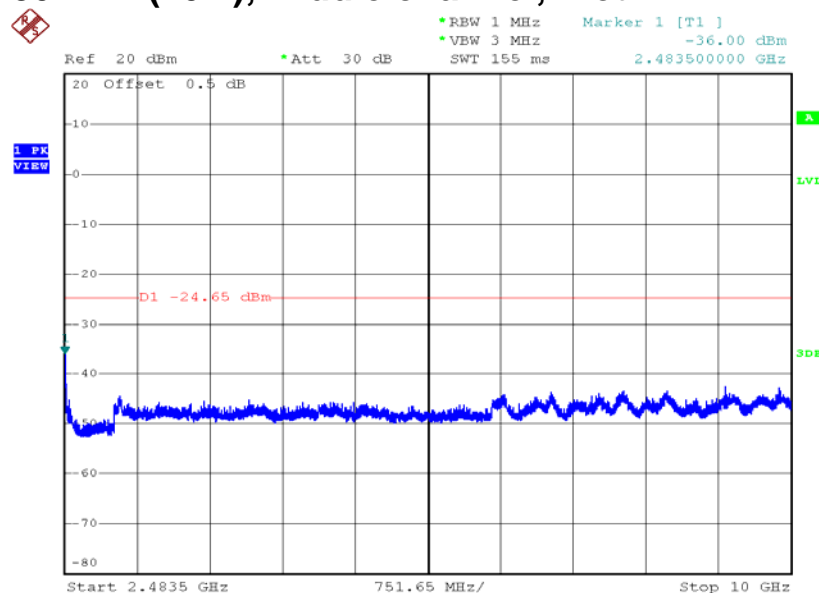


## Plots of out of band conducted emissions ( IEEE 802.11n, 40MHz, OFDM, 15Mbps )

### 802.11n(40M), Middle channel, Plot A



### 802.11n(40M), Middle channel, Plot B



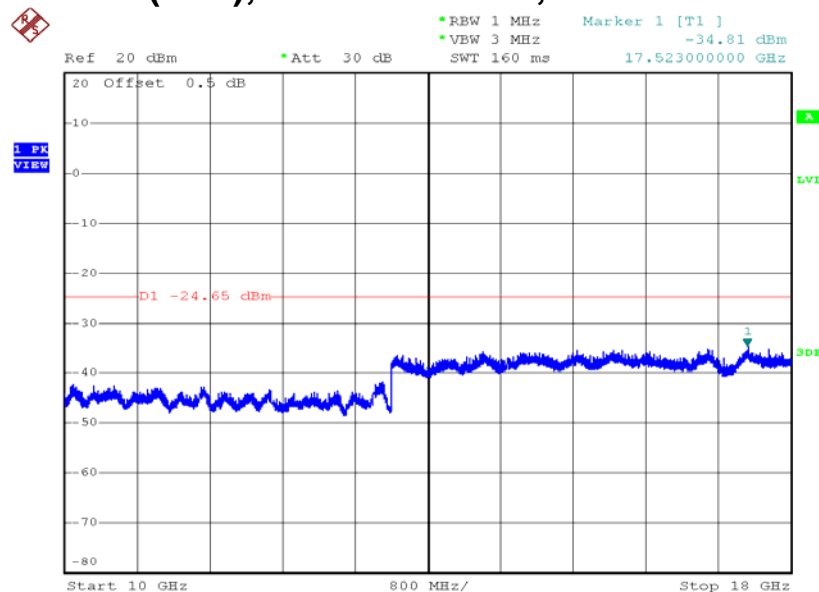
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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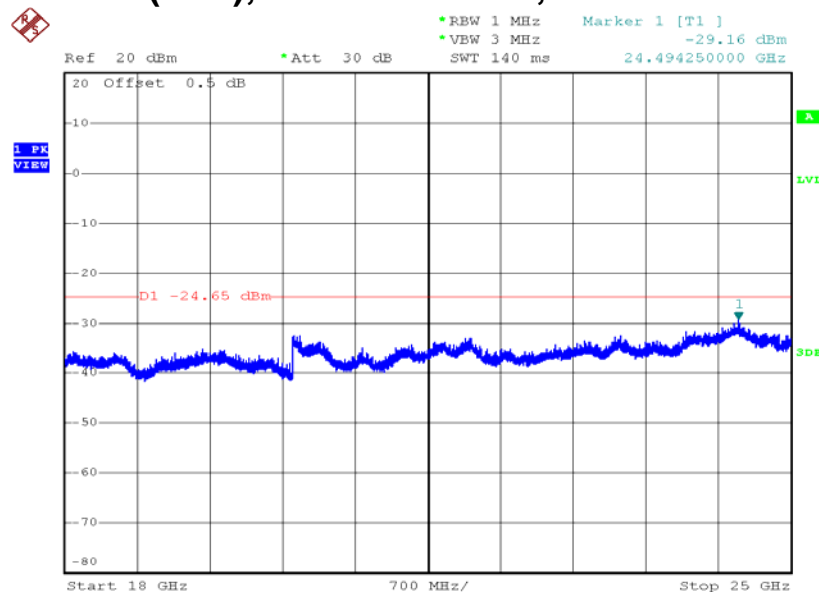


## Plots of out of band conducted emissions ( IEEE 802.11n, 40MHz, OFDM, 15Mbps )

### 802.11n(40M), Middle channel, Plot C



### 802.11n(40M), Middle channel, Plot D



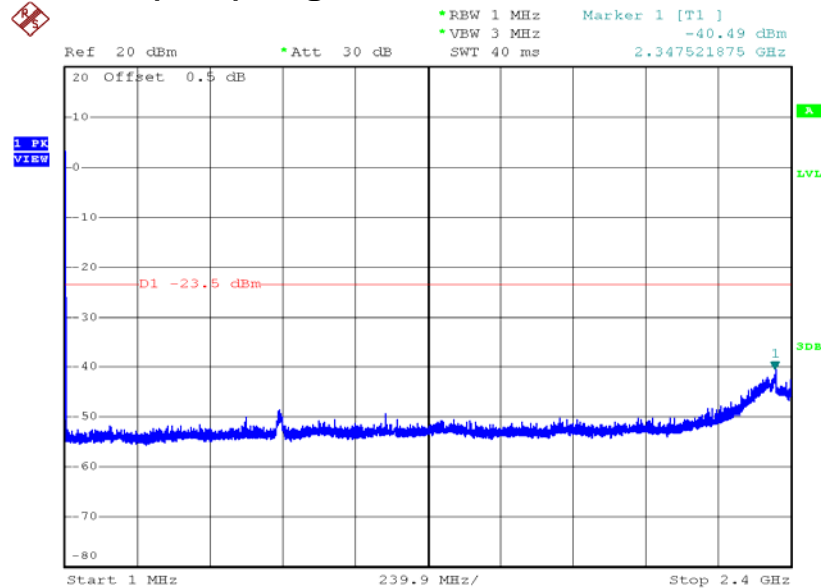
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.

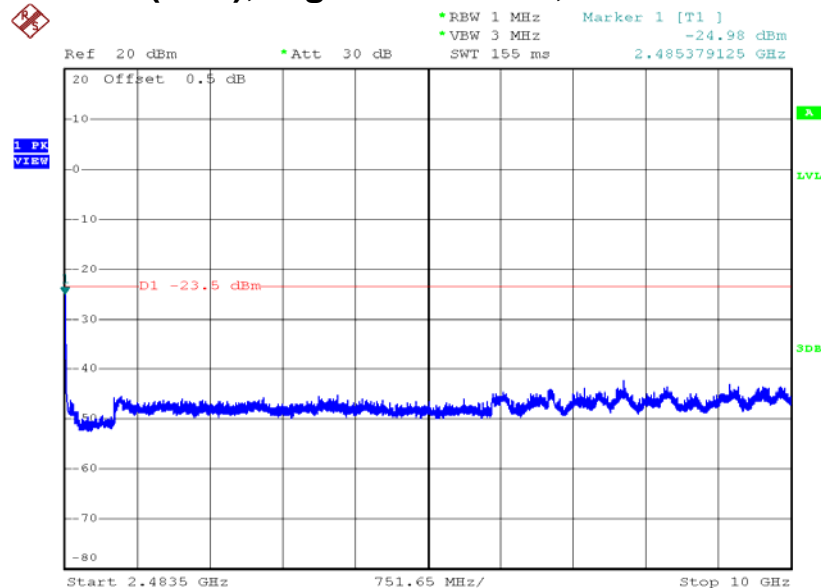


## Plots of out of band conducted emissions ( IEEE 802.11n, 40MHz, OFDM, 15Mbps )

### 802.11n(40M), Highest channel, Plot A



### 802.11n(40M), Highest channel, Plot B



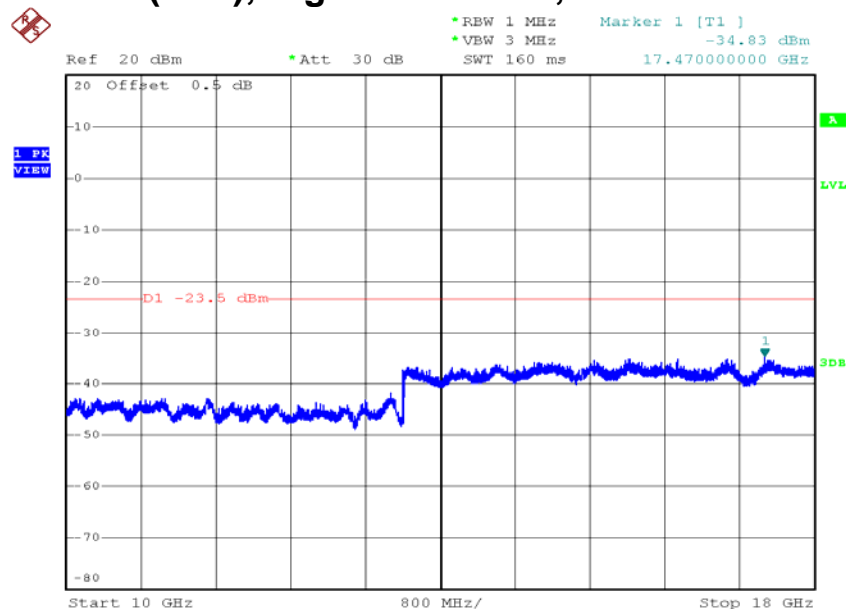
Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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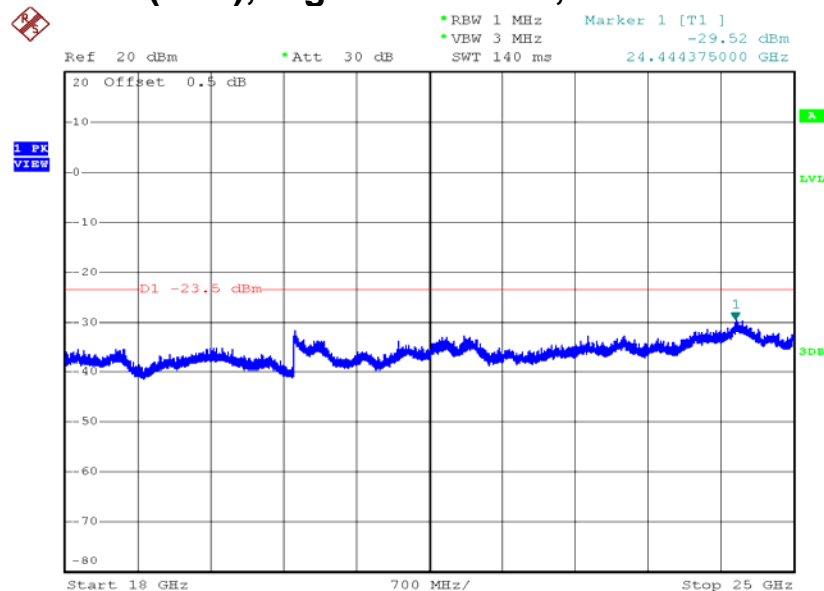


## Plots of out of band conducted emissions ( IEEE 802.11n, 40MHz, OFDM, 15Mbps )

### 802.11n(40M), Highest channel, Plot C



### 802.11n(40M), Highest channel, Plot D



## 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

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

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

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#### 4.2 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.

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#### 4.2.1 Radiated Emission Configuration Photograph

Worst Case Restricted Band Radiated Emission  
at

2483.5MHz

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

#### 4.2.2 Radiated Emission Data

The data in tables 1-13 list the significant emission frequencies, the limit and the margin of compliance.

Judgement -

Passed by 6.0 dB margin compare with average limit



Mode: TX-Channel 01

Table 1  
IEEE 802.11 b (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>4824.000</i></b>	<b><i>45.1</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>47.0</i></b>	<b><i>54.0</i></b>	<b><i>-7.0</i></b>
<b><i>H</i></b>	<b><i>12060.000</i></b>	<b><i>37.8</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.3</i></b>	<b><i>54.0</i></b>	<b><i>-8.7</i></b>
<b><i>H</i></b>	<b><i>14472.000</i></b>	<b><i>38.2</i></b>	<b><i>33</i></b>	<b><i>40.0</i></b>	<b><i>45.2</i></b>	<b><i>54.0</i></b>	<b><i>-8.8</i></b>

Remark: Video-average Method is used for the emission measurement

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>4824.000</i></b>	<b><i>56.1</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>58.0</i></b>	<b><i>74.0</i></b>	<b><i>-16.0</i></b>
<b><i>H</i></b>	<b><i>12060.000</i></b>	<b><i>49.7</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>57.2</i></b>	<b><i>74.0</i></b>	<b><i>-16.8</i></b>
<b><i>H</i></b>	<b><i>14472.000</i></b>	<b><i>48.0</i></b>	<b><i>33</i></b>	<b><i>40.0</i></b>	<b><i>55.0</i></b>	<b><i>74.0</i></b>	<b><i>-19.0</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 06

Table 2  
IEEE 802.11 b (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>4874.000</i></b>	<b><i>44.8</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>46.7</i></b>	<b><i>54.0</i></b>	<b><i>-7.3</i></b>
<b><i>H</i></b>	<b><i>7311.000</i></b>	<b><i>41.6</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>46.5</i></b>	<b><i>54.0</i></b>	<b><i>-7.5</i></b>
<b><i>H</i></b>	<b><i>12185.000</i></b>	<b><i>38.1</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.6</i></b>	<b><i>54.0</i></b>	<b><i>-8.4</i></b>

Remark: Video-average Method is used for the emission measurement.

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>56.7</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>58.6</i></b>	<b><i>74.0</i></b>	<b><i>-15.4</i></b>
<b><i>H</i></b>	<b><i>7311.000</i></b>	<b><i>53.4</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>58.3</i></b>	<b><i>74.0</i></b>	<b><i>-15.7</i></b>
<b><i>H</i></b>	<b><i>12185.000</i></b>	<b><i>49.5</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>57.0</i></b>	<b><i>74.0</i></b>	<b><i>-17.0</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 11

Table 3  
IEEE 802.11 b (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>H</b>	<b>2483.500</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>H</b>	<b>4924.000</b>	<b>44.7</b>	<b>33</b>	<b>34.9</b>	<b>46.6</b>	<b>54.0</b>	<b>-7.4</b>
<b>H</b>	<b>7386.000</b>	<b>41.1</b>	<b>33</b>	<b>37.9</b>	<b>46.0</b>	<b>54.0</b>	<b>-8.0</b>
<b>H</b>	<b>12310.000</b>	<b>37.9</b>	<b>33</b>	<b>40.5</b>	<b>45.4</b>	<b>54.0</b>	<b>-8.6</b>

Remark: Video-average Method is used for the emission measurement

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>67.1</b>	<b>33</b>	<b>29.4</b>	<b>63.5</b>	<b>74.0</b>	<b>-10.5</b>
<b>H</b>	<b>4924.000</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>H</b>	<b>7386.000</b>	<b>53.2</b>	<b>33</b>	<b>37.9</b>	<b>58.1</b>	<b>74.0</b>	<b>-15.9</b>
<b>H</b>	<b>12310.000</b>	<b>49.3</b>	<b>33</b>	<b>40.5</b>	<b>56.8</b>	<b>74.0</b>	<b>-17.2</b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: 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><i>H</i></b>	<b><i>4824.000</i></b>	<b><i>44.6</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>46.5</i></b>	<b><i>54.0</i></b>	<b><i>-7.5</i></b>
<b><i>H</i></b>	<b><i>12060.000</i></b>	<b><i>37.6</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.1</i></b>	<b><i>54.0</i></b>	<b><i>-8.9</i></b>
<b><i>H</i></b>	<b><i>14472.000</i></b>	<b><i>38.0</i></b>	<b><i>33</i></b>	<b><i>40.0</i></b>	<b><i>45.0</i></b>	<b><i>54.0</i></b>	<b><i>-9.0</i></b>

Remark: Video-average Method is used for the emission measurement.

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>4824.000</i></b>	<b><i>55.6</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>57.5</i></b>	<b><i>74.0</i></b>	<b><i>-16.5</i></b>
<b><i>H</i></b>	<b><i>12060.000</i></b>	<b><i>49.5</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>57.0</i></b>	<b><i>74.0</i></b>	<b><i>-17.0</i></b>
<b><i>H</i></b>	<b><i>14472.000</i></b>	<b><i>48.0</i></b>	<b><i>33</i></b>	<b><i>40.0</i></b>	<b><i>55.0</i></b>	<b><i>74.0</i></b>	<b><i>-19.0</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: 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>44.5</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>46.4</i></b>	<b><i>54.0</i></b>	<b><i>-7.6</i></b>
<b><i>H</i></b>	<b><i>7311.000</i></b>	<b><i>41.3</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>46.2</i></b>	<b><i>54.0</i></b>	<b><i>-7.8</i></b>
<b><i>H</i></b>	<b><i>12185.000</i></b>	<b><i>37.8</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.3</i></b>	<b><i>54.0</i></b>	<b><i>-8.7</i></b>

Remark: Video-average Method is used for the emission measurement.

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>56.2</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>58.1</i></b>	<b><i>74.0</i></b>	<b><i>-15.9</i></b>
<b><i>H</i></b>	<b><i>7311.000</i></b>	<b><i>53.3</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>58.2</i></b>	<b><i>74.0</i></b>	<b><i>-15.8</i></b>
<b><i>H</i></b>	<b><i>12185.000</i></b>	<b><i>49.6</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>57.1</i></b>	<b><i>74.0</i></b>	<b><i>-16.9</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: 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>51.5</b>	<b>33</b>	<b>29.4</b>	<b>47.9</b>	<b>54.0</b>	<b>-6.1</b>
<b>H</b>	<b>4924.000</b>	<b>44.5</b>	<b>33</b>	<b>34.9</b>	<b>46.4</b>	<b>54.0</b>	<b>-7.6</b>
<b>H</b>	<b>7386.000</b>	<b>40.8</b>	<b>33</b>	<b>37.9</b>	<b>45.7</b>	<b>54.0</b>	<b>-8.3</b>
<b>H</b>	<b>12310.000</b>	<b>37.7</b>	<b>33</b>	<b>40.5</b>	<b>45.2</b>	<b>54.0</b>	<b>-8.8</b>

Remark: Video-average Method is used for the emission measurement.

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>66.6</b>	<b>33</b>	<b>29.4</b>	<b>63.0</b>	<b>74.0</b>	<b>-11.0</b>
<b>H</b>	<b>4924.000</b>	<b>56.3</b>	<b>33</b>	<b>34.9</b>	<b>58.2</b>	<b>74.0</b>	<b>-15.8</b>
<b>H</b>	<b>7386.000</b>	<b>53.1</b>	<b>33</b>	<b>37.9</b>	<b>58.0</b>	<b>74.0</b>	<b>-16.0</b>
<b>H</b>	<b>12310.000</b>	<b>49.3</b>	<b>33</b>	<b>40.5</b>	<b>56.8</b>	<b>74.0</b>	<b>-17.2</b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 01

Table 7  
IEEE 802.11n (20MHz, OFDM, 6.5Mbps)

**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>4824.000</b>	<b>44.9</b>	<b>33</b>	<b>34.9</b>	<b>46.8</b>	<b>54.0</b>	<b>-7.2</b>
<b>H</b>	<b>12060.000</b>	<b>38.0</b>	<b>33</b>	<b>40.5</b>	<b>45.5</b>	<b>54.0</b>	<b>-8.5</b>
<b>H</b>	<b>14472.000</b>	<b>38.3</b>	<b>33</b>	<b>40.0</b>	<b>45.3</b>	<b>54.0</b>	<b>-8.7</b>

Remark: Video-average Method is used for the emission measurement.

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>4824.000</b>	<b>56.1</b>	<b>33</b>	<b>34.9</b>	<b>58.0</b>	<b>74.0</b>	<b>-16.0</b>
<b>H</b>	<b>12060.000</b>	<b>49.6</b>	<b>33</b>	<b>40.5</b>	<b>57.1</b>	<b>74.0</b>	<b>-16.9</b>
<b>H</b>	<b>14472.000</b>	<b>48.1</b>	<b>33</b>	<b>40.0</b>	<b>55.1</b>	<b>74.0</b>	<b>-18.9</b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 06

Table 8  
IEEE 802.11n (20MHz, OFDM, 6.5Mbps)

**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>4874.000</b>	<b>44.6</b>	<b>33</b>	<b>34.9</b>	<b>46.5</b>	<b>54.0</b>	<b>-7.5</b>
<b>H</b>	<b>7311.000</b>	<b>41.6</b>	<b>33</b>	<b>37.9</b>	<b>46.5</b>	<b>54.0</b>	<b>-7.5</b>
<b>H</b>	<b>12185.000</b>	<b>38.1</b>	<b>33</b>	<b>40.5</b>	<b>45.6</b>	<b>54.0</b>	<b>-8.4</b>

Remark: Video-average Method is used for the emission measurement.

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>4874.000</b>	<b>56.6</b>	<b>33</b>	<b>34.9</b>	<b>58.5</b>	<b>74.0</b>	<b>-15.5</b>
<b>H</b>	<b>7311.000</b>	<b>53.4</b>	<b>33</b>	<b>37.9</b>	<b>58.3</b>	<b>74.0</b>	<b>-15.7</b>
<b>H</b>	<b>12185.000</b>	<b>49.3</b>	<b>33</b>	<b>40.5</b>	<b>56.8</b>	<b>74.0</b>	<b>-17.2</b>

Remark: Peak detector is used for the emission measurement.

**NOTES:**

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 11

Table 9  
IEEE 802.11n (20MHz, OFDM, 6.5Mbps)

**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>51.5</i></b>	<b><i>33</i></b>	<b><i>29.4</i></b>	<b><i>47.9</i></b>	<b><i>54.0</i></b>	<b><i>-6.1</i></b>
<b><i>H</i></b>	<b><i>4924.000</i></b>	<b><i>44.7</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>46.6</i></b>	<b><i>54.0</i></b>	<b><i>-7.4</i></b>
<b><i>H</i></b>	<b><i>7386.000</i></b>	<b><i>41.1</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>46.0</i></b>	<b><i>54.0</i></b>	<b><i>-8.0</i></b>
<b><i>H</i></b>	<b><i>12310.000</i></b>	<b><i>38.3</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.8</i></b>	<b><i>54.0</i></b>	<b><i>-8.2</i></b>

Remark: Video-average Method is used for the emission measurement.

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>66.9</i></b>	<b><i>33</i></b>	<b><i>29.4</i></b>	<b><i>63.3</i></b>	<b><i>74.0</i></b>	<b><i>-10.7</i></b>
<b><i>H</i></b>	<b><i>4924.000</i></b>	<b><i>56.3</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>58.2</i></b>	<b><i>74.0</i></b>	<b><i>-15.8</i></b>
<b><i>H</i></b>	<b><i>7386.000</i></b>	<b><i>53.2</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>58.1</i></b>	<b><i>74.0</i></b>	<b><i>-15.9</i></b>
<b><i>H</i></b>	<b><i>12310.000</i></b>	<b><i>48.9</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>56.4</i></b>	<b><i>74.0</i></b>	<b><i>-17.6</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 03

Table 10  
IEEE 802.11n (40MHz, OFDM, 15Mbps)

**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>4824.000</i></b>	<b><i>44.8</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>46.7</i></b>	<b><i>54.0</i></b>	<b><i>-7.3</i></b>
<b><i>H</i></b>	<b><i>12060.000</i></b>	<b><i>37.8</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.3</i></b>	<b><i>54.0</i></b>	<b><i>-8.7</i></b>
<b><i>H</i></b>	<b><i>14472.000</i></b>	<b><i>38.2</i></b>	<b><i>33</i></b>	<b><i>40.0</i></b>	<b><i>45.2</i></b>	<b><i>54.0</i></b>	<b><i>-8.8</i></b>

Remark: Video-average Method is used for the emission measurement.

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>4824.000</i></b>	<b><i>56.4</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>58.3</i></b>	<b><i>74.0</i></b>	<b><i>-15.7</i></b>
<b><i>H</i></b>	<b><i>12060.000</i></b>	<b><i>49.8</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>57.3</i></b>	<b><i>74.0</i></b>	<b><i>-16.7</i></b>
<b><i>H</i></b>	<b><i>14472.000</i></b>	<b><i>48.4</i></b>	<b><i>33</i></b>	<b><i>40.0</i></b>	<b><i>55.4</i></b>	<b><i>74.0</i></b>	<b><i>-18.6</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 06

Table 11  
IEEE 802.11n (40MHz, OFDM, 15Mbps)

**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>44.8</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>46.7</i></b>	<b><i>54.0</i></b>	<b><i>-7.3</i></b>
<b><i>H</i></b>	<b><i>7311.000</i></b>	<b><i>41.5</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>46.4</i></b>	<b><i>54.0</i></b>	<b><i>-7.6</i></b>
<b><i>H</i></b>	<b><i>12185.000</i></b>	<b><i>37.7</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>45.2</i></b>	<b><i>54.0</i></b>	<b><i>-8.8</i></b>

Remark: Video-average Method is used for the emission measurement.

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>56.3</i></b>	<b><i>33</i></b>	<b><i>34.9</i></b>	<b><i>58.2</i></b>	<b><i>74.0</i></b>	<b><i>-15.8</i></b>
<b><i>H</i></b>	<b><i>7311.000</i></b>	<b><i>53.2</i></b>	<b><i>33</i></b>	<b><i>37.9</i></b>	<b><i>58.1</i></b>	<b><i>74.0</i></b>	<b><i>-15.9</i></b>
<b><i>H</i></b>	<b><i>12185.000</i></b>	<b><i>49.8</i></b>	<b><i>33</i></b>	<b><i>40.5</i></b>	<b><i>57.3</i></b>	<b><i>74.0</i></b>	<b><i>-16.7</i></b>

Remark: Peak detector is used for the emission measurement.

NOTES:

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: TX-Channel 09

Table 12  
IEEE 802.11n (40MHz, OFDM, 15Mbps)

**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>51.5</b>	<b>33</b>	<b>29.4</b>	<b>47.9</b>	<b>54.0</b>	<b>-6.1</b>
<b>H</b>	<b>4924.000</b>	<b>44.7</b>	<b>33</b>	<b>34.9</b>	<b>46.6</b>	<b>54.0</b>	<b>-7.4</b>
<b>H</b>	<b>7386.000</b>	<b>41.2</b>	<b>33</b>	<b>37.9</b>	<b>46.1</b>	<b>54.0</b>	<b>-7.9</b>
<b>H</b>	<b>12310.000</b>	<b>38.1</b>	<b>33</b>	<b>40.5</b>	<b>45.6</b>	<b>54.0</b>	<b>-8.4</b>

Remark: Video-average Method is used for the emission measurement.

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>67.1</b>	<b>33</b>	<b>29.4</b>	<b>63.5</b>	<b>74.0</b>	<b>-10.5</b>
<b>H</b>	<b>4924.000</b>	<b>56.6</b>	<b>33</b>	<b>34.9</b>	<b>58.5</b>	<b>74.0</b>	<b>-15.5</b>
<b>H</b>	<b>7386.000</b>	<b>53.2</b>	<b>33</b>	<b>37.9</b>	<b>58.1</b>	<b>74.0</b>	<b>-15.9</b>
<b>H</b>	<b>12310.000</b>	<b>49.4</b>	<b>33</b>	<b>40.5</b>	<b>56.9</b>	<b>74.0</b>	<b>-17.1</b>

Remark: Peak detector is used for the emission measurement.

**NOTES:**

1. 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.
2. Negative value in the margin column shows emission below limit.
3. Horn antenna is used for the emission over 1000MHz.
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: WiFi Transmission with Nightlight On

Table 13  
IEEE 802.11n

**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)
V	48.000	38.9	16	11.0	33.9	40.0	-6.1
V	60.000	39.5	16	10.0	33.5	40.0	-6.5
<b>H</b>	<b>120.000</b>	<b>36.6</b>	<b>16</b>	<b>14.0</b>	<b>34.6</b>	<b>43.5</b>	<b>-8.9</b>
<b>H</b>	<b>240.000</b>	<b>31.3</b>	<b>16</b>	<b>19.0</b>	<b>34.3</b>	<b>46.0</b>	<b>-11.7</b>
<b>H</b>	<b>300.000</b>	<b>27.8</b>	<b>16</b>	<b>22.0</b>	<b>33.8</b>	<b>46.0</b>	<b>-12.2</b>
H	456.000	23.6	16	26.0	33.6	46.0	-12.4
H	480.000	25.6	16	26.0	35.6	46.0	-10.4
H	684.000	23.0	16	29.0	36.0	46.0	-10.0

- 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.

#### 4.6.3 Transmitter Duty Cycle Calculation

Not applicable – No average factor is required.

#### 4.7 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.

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

Worst Case Line-Conducted Configuration  
at

0.150 MHz

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

##### 4.7.2 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

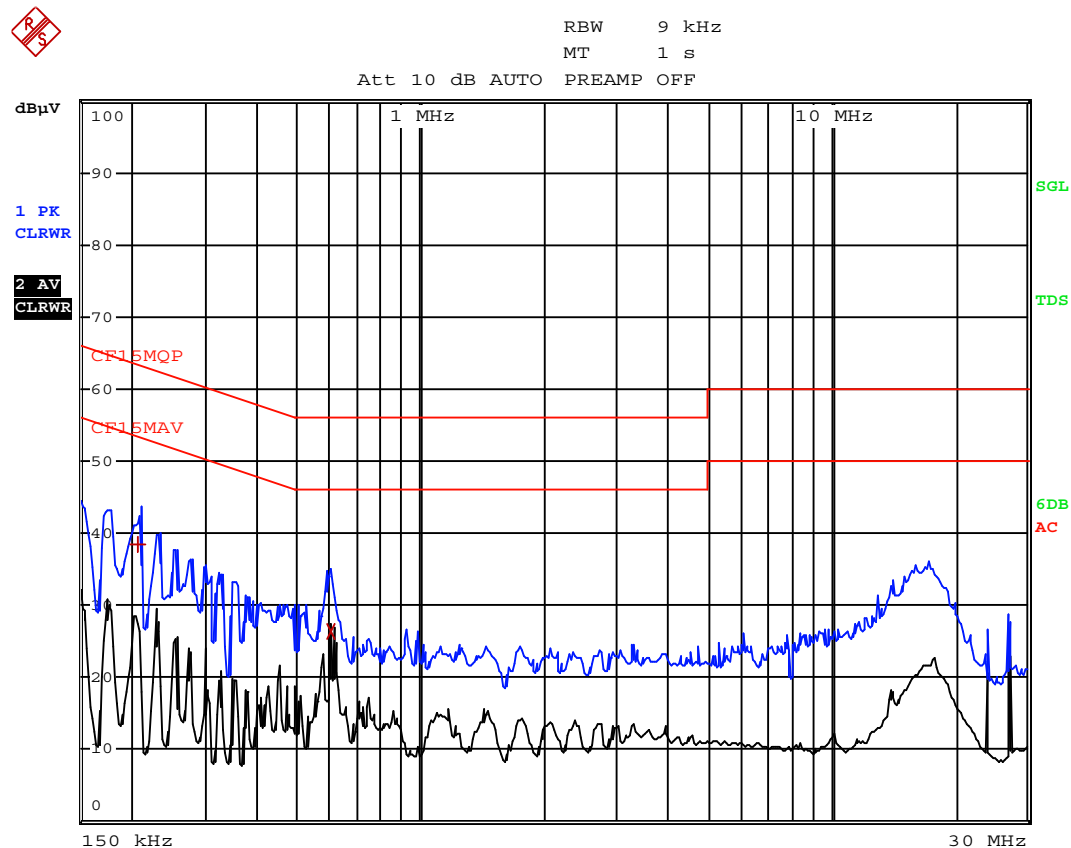
Passed by 12.87 dB margin compare with quasi-peak limit

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



Worst Case: WiFi Transmission with Nightlight (Powered by adaptor)-EUT's AC Mains



Date: 14.MAY.2013 16:54:53

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



Worst Case: WiFi Transmission with Nightlight (Powered by adaptor)-EUT's AC Mains

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	CF15MQP			
Trace2:	CF15MAV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB	
1 Quasi Peak	208.5 kHz	38.42 L1	-24.84	
2 CISPR Average 600 kHz		26.29 L1	-19.71	

Date: 14.MAY.2013 16:54:37

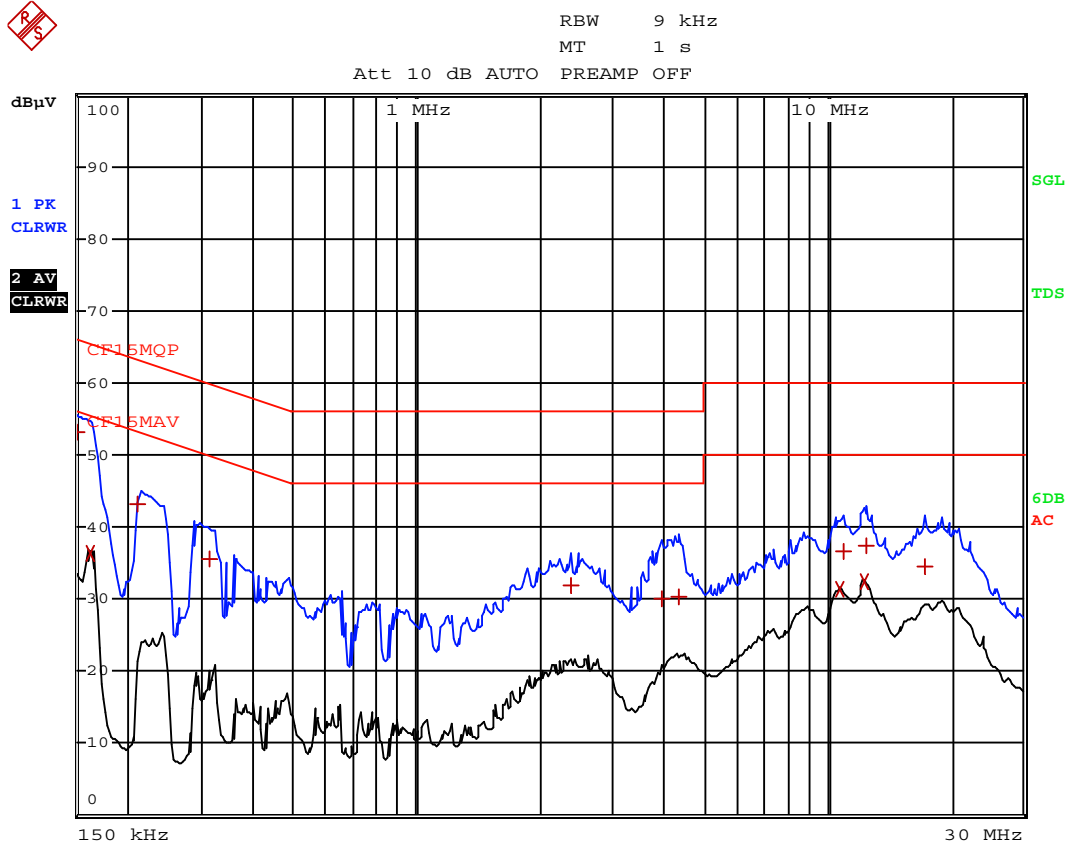


Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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Worst Case: WiFi Transmission with Nightlight (Powered by PC through USB Port) -PC's AC Mains



Date: 18.APR.2013 17:01:29

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



Worst Case: WiFi Transmission with Nightlight (Powered by PC through USB Port)-PC's  
AC Mains

EDIT PEAK LIST (Final Measurement Results)					
Trace1:	CF15MQP				
Trace2:	CF15MAV				
Trace3:	---				
TRACE	FREQUENCY	LEVEL	dBμV	DELTA	LIMIT dB
1 Quasi Peak	150 kHz	53.13	N	-12.87	
2 CISPR Average	163.5 kHz	36.47	L1	-18.81	
1 Quasi Peak	213 kHz	43.29	L1	-19.79	
1 Quasi Peak	312 kHz	35.54	L1	-24.37	
1 Quasi Peak	2.3775 MHz	31.91	L1	-24.08	
1 Quasi Peak	3.975 MHz	30.18	L1	-25.82	
1 Quasi Peak	4.335 MHz	30.33	L1	-25.66	
2 CISPR Average	10.7205 MHz	31.37	L1	-18.62	
1 Quasi Peak	10.905 MHz	36.66	L1	-23.33	
2 CISPR Average	12.3225 MHz	32.43	L1	-17.56	
1 Quasi Peak	12.417 MHz	37.48	L1	-22.51	
1 Quasi Peak	17.223 MHz	34.48	N	-25.51	

Date: 18.APR.2013 17:01:18

Issuing Laboratory:  
Intertek Testing Services Hong Kong Limited

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#### 4.8 Radio Frequency Radiation Exposure

EUT is subject to the radio frequency exposure requirements specified in FCC Rule §§ 1.1307. It shall be considered to operate in a “general population / uncontrolled” environment.

- ☐ Output power is less than the applicable low threshold from SAR evaluation.  
The evaluation calculation results are saved with filename: RF exposure info.pdf
- ☒ EUT was evaluated for Maximum Permissible Exposure (MPE) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). The evaluation calculation results are saved with filename: RF exposure info.pdf
- ☐ EUT was evaluated for Specific Absorption Rate (SAR) evaluation compliance according to OET Bulletin 65, Supplement C (Edition 01-01). It is in compliance with the SAR evaluation requirements. A SAR test report was submitted at same time and saved as SAR Report.pdf

Issuing Laboratory:  
**Intertek Testing Services Hong Kong Limited**

Hong Kong Accreditation Service (HKAS) has accredited this laboratory under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific laboratory activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this report were determined by this laboratory in accordance with its terms of accreditation.



**EXHIBIT 5**  
**EQUIPMENT LIST**

Issuing Laboratory:  
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## 5.0 Equipment List

### 1) Radiated Emissions Test

Equipment	EMI Test Receiver (9kHz to 7GHz)	Spectrum Analyzer	Log Periodic Antenna (200 - 1000)MHz
Registration No.	EW-2666	EW-2188	EW-0572
Manufacturer	ROHDESCHWARZ	AGILENTTECH	EMCO
Model No.	ESCI7	E4407B	3146
Calibration Date	May. 21, 2012	Nov. 05, 2012	Nov. 15, 2011
Calibration Due Date	May. 21, 2013	Nov. 05, 2013	May. 15, 2013

Equipment	Biconical Antenna (20MHz to 200MHz)	Double Ridged Guide Antenna (1GHz - 18GHz)	Broad-Band Horn Antenna with frequency range 14G - 40GHz
Registration No.	EW-0954	EW-1133	EW-1679
Manufacturer	EMCO	EMCO	SCHWARZBECK
Model No.	3104C	3115	BBHA9170
Calibration Date	Apr. 30, 2013	Oct. 05, 2012	Apr. 01, 2013
Calibration Due Date	Oct. 30, 2014	Apr. 05, 2014	Apr. 01, 2014

### 2) Conducted Emissions Test

Equipment	EMI Test Receiver (9kHz to 7GHz)	Artificial Mains Network	Artificial Mains Network
Registration No.	EW-2666	EW-2501	EW-2874
Manufacturer	ROHDESCHWARZ	ROHDESCHWARZ	ROHDESCHWARZ
Model No.	ESCI7	ENV-216	ENV216
Calibration Date	May. 21, 2012	Nov. 30, 2012	Aug. 15, 2012
Calibration Due Date	May. 21, 2013	Nov. 30, 2013	Aug. 15, 2013

### 3) Conductive Measurement Test

Equipment	Spectrum Analyzer
Registration No.	EW-2466
Manufacturer	ROHDESCHWARZ
Model No.	FSP30
Calibration Date	Jul. 06, 2012
Calibration Due Date	Jul. 06, 2013

## END OF TEST REPORT

Test Report Number: 13030703HKG-001  
FCC ID: YM780-9255-00  
IC: 9637A-80925500

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Intertek Testing Services Hong Kong Ltd.

2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.  
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com