



October 15, 2011

Huawei Technologies Co.,Ltd  
Bantian,Longgang District, Shenzhen, 518129 China

Dear Xinghai Zhang:

Enclosed you will find your file copy of a Part 15 report (FCC ID: QISHG8245).

For your reference, TCB will normally take another 5 days for reviewing the report. Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

A handwritten signature in black ink, appearing to read "Shawn Xing".

Shawn Xing  
Manager

Enclosure

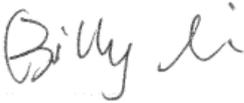
## Huawei Technologies Co.,Ltd

Application  
For  
Certification

GPON Terminal  
(WiFi Transceiver)

**(FCC ID: QISHG8245)**

Model: HG8245



SZ11080403-1  
Billy Li  
October 15, 2011

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

TRF no.: FCC 15C\_Txa  
FCC ID: QISHG8245

**Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch**

6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China  
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: [www.china.intertek-etlsemko.com](http://www.china.intertek-etlsemko.com)

**LIST OF EXHIBITS**

*INTRODUCTION*

<i>EXHIBIT 1:</i>	Summary of Tests
<i>EXHIBIT 2:</i>	General Description
<i>EXHIBIT 3:</i>	System Test Configuration
<i>EXHIBIT 4:</i>	Measurement Results
<i>EXHIBIT 5:</i>	Equipment Photographs
<i>EXHIBIT 6:</i>	Product Labeling
<i>EXHIBIT 7:</i>	Technical Specifications
<i>EXHIBIT 8:</i>	Instruction Manual
<i>EXHIBIT 9:</i>	Miscellaneous Information
<i>EXHIBIT 10:</i>	Request
<i>EXHIBIT 11:</i>	Test Equipment List

INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

Huawei Technologies Co.,Ltd - MODEL: HG8245

FCC ID: QISHG8245

This report concerns (check one) Original Grant  Class II Change

Equipment Type: DTS - Part 15 Digital Transmission Systems (WiFi transmitter portion)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes  No

If yes, defer until : \_\_\_\_\_  
date

Company Name agrees to notify the Commission by: \_\_\_\_\_  
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes  No

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-10 Edition] provision.

Report prepared by:



Shawn Xing  
Intertek Testing Services Shenzhen Ltd.  
Kejiyuan Branch  
6F, Block D, Huahan Building, Langshan Road,  
Nanshan District, Shenzhen, P. R. China  
Phone: (86 755) 8601 6288  
Fax: (86 755) 8601 6751

---

---

# INTERTEK TESTING SERVICES

---

---

## Table of Contents

1.0 <b><u>Summary of test results</u></b> .....	2
2.0 <b><u>General Description</u></b> .....	4
2.1 Product Description .....	4
2.2 Related Submittal(s) Grants .....	5
2.3 Test Methodology .....	5
2.4 Test Facility .....	5
3.0 <b><u>System Test Configuration</u></b> .....	7
3.1 Justification .....	7
3.2 EUT Exercising Software .....	7
3.3 Details of EUT and Description of Peripherals .....	8
3.4 Measurement Uncertainty .....	8
3.5 Equipment Modification .....	8
3.6 Support Equipment List and Description .....	9
4.0 <b><u>Measurement Results</u></b> .....	11
4.1 Maximum Conducted Output Power at Antenna Terminals .....	11
4.2 Minimum 6dB RF Bandwidth .....	13
4.3 Maximum Power Density .....	15
4.4 Out of Band Conducted Emissions .....	19
4.5 Out of Band Radiated Emissions .....	20
4.6 Transmitter Radiated Emissions in Restricted Bands .....	21
4.7 Field Strength Calculation .....	22
4.8 Radiated Emission Configuration Photograph .....	23
4.9 Radiated Emission Data .....	24
4.10 Conducted Emission Configuration Photograph .....	38
4.11 Conducted Emission Data .....	39
4.12 Radiated Emission from Digital Section of Transceiver .....	42
4.13 Transmitter Duty Cycle Calculation and Measurements .....	43
5.0 <b><u>Equipment Photographs</u></b> .....	45
6.0 <b><u>Product Labelling</u></b> .....	47
7.0 <b><u>Technical Specifications</u></b> .....	49
8.0 <b><u>Instruction Manual</u></b> .....	51
9.0 <b><u>Miscellaneous Information</u></b> .....	53
10.0 <b><u>Request</u></b> .....	55
11.0 <b><u>Test Equipment List</u></b> .....	57

## INTERTEK TESTING SERVICES

---

### List of attached file

<b>Exhibit Type</b>	<b>File Description</b>	<b>Filename</b>
Cover Letter	Letter of Agency	agency.pdf
Test Report	Test Report	report.pdf
Test Report	6 dB Bandwidth Plot	6dB.pdf
Test Report	Maximum Power Density Plot	maxpd.pdf
Test Report	Out Band Antenna Conducted Emission Plot	obantcon.pdf
Test Report	Bandedge Plot	bandedge.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Request	request.pdf
RF Exposure info	RF Safety	RF exposure info.pdf

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 1**

### **SUMMARY OF TEST RESULTS**

## INTERTEK TESTING SERVICES

---

### 1.0 Summary of Test

**Huawei Technologies Co.,Ltd - MODEL: HG8245**

**FCC ID: QISHG8245**

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses an Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 2**

### **GENERAL DESCRIPTION**

# INTERTEK TESTING SERVICES

---

## 2.0 General Description

### 2.1 Product Description

The Equipment Under Test (EUT) is a GPON Terminal with WiFi module operating at 802.11b/g and n(20MHz) which the sample supplied operated on 11 channels, nominally at 2.412 - 2.462 GHz for Transceiver. The channel is separated by 5 MHz channel spacing. The tests were carried out on channel 1, 6 and 11 channels of the frequency of the alignment range. For 802.11 n(40MHz) the sample supplied operated on 7 channels, nominally at 2.422 - 2.452 GHz for Transceiver. The channel is separated by 5 MHz channel spacing. The tests were carried out on channel 3, 6 and 9 channels of the frequency of the alignment range.

The device is powered by ac/dc adapter (Input: 100-240Vac, 50/60Hz; Output: 12Vdc, 2A) or battery backup unit via the BBU port. For more detailed features description, please refer to the user's manual.

Type of Modulation: CCK for 802.11b, OFDM for 802.11g, OFDM for 802.11n.  
Antenna Type: Integral Antenna.

For electronic filing, the brief circuit description is saved with filename: descri.pdf

## INTERTEK TESTING SERVICES

---

### 2.2 Related Submittal(s) Grants

This is an application for certification of:

DTS- Part 15 Digital Transmission Systems (WiFi transmitter portion)

Remaining portions are subject to the following procedures:

1. Receiver portion of WiFi: exempt from technical requirement of this Part.
2. Other function: 15B (FCC ID report no.: SZ11080403-2 for data transfer with PC mode, report no.: SZ11080403-3 for verification).

### 2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003) and KDB 558074. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the “**Justification Section**” of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

### 2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Interterk Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 3**

### **SYSTEM TEST CONFIGURATION**

## INTERTEK TESTING SERVICES

---

### 3.0 System Test Configuration

#### 3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. It was powered by an AC/DC Adapter (INPUT: AC100-240, 50/60Hz; OUTPUT: DC 12V, 2A).

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

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed 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.

#### 3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

#### Power Parameters of IEEE 802.11b/g/n

Test software setting of IEEE 802.11b/g			
Channel No.	Output Power	Data rate	Modulation type
1,6,11	15.0	802.11b: 1-11Mbps	802.11b: CCK
	15.0	802.11g: 6-54Mbps	802.11g: OFDM
1,6,11	15.0	802.11n-20M: 6.5-130Mbps	802.11n: OFDM
3,6,9	15.0	802.11n-40M: 6.5-270Mbps	802.11n: OFDM

## INTERTEK TESTING SERVICES

---

On 802.11b/g mode, only one antenna is used for transmission; on 802.11n (20MHz & 40MHz) mode, both antennas can be used for transmission.

### 3.3 Special Accessories

N/A.

### 3.4 Measurement Uncertainty

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

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

### 3.5 Equipment Modification

Any modifications installed previous to testing by Huawei Technologies Co.,Ltd will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

## INTERTEK TESTING SERVICES

### 3.6 Support Equipment List and Description

This product was tested in the following configuration:

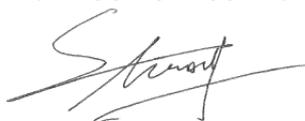
Refer List:

Description	Manufacturer	Model No.
Laptop	HP	2510P
Laptop	Lenovo	T61
Hard Disk	Smart.drive	HD-003
USB Cable	Smart.drive	Unshielded, Length 155cm
1394 Cable	Smart.drive	Unshielded, Length 180cm
Adapter	huawei	HW-120200U1W (INPUT: 100-240, 50/60Hz; OUTPUT: DC 12, 2A)
Optical fiber adapter	D-Link	DFE-885
Optical fiber	D-Link	Length: 1.5m
Router	D-Link	DES-1008D
BBU Terminal	N/A	BBU-T-001
Telephone	GCE	GCE6097
Telephone	TCL	HCD868(78)TD
USB Disk	Sandisk	USB/2GB
2 x RJ11 PSTN cable	N/A	RJ11 PSTN Cable-001~002 (Length: 120cm)
4 x Cat.5 RJ45 net cable	N/A	Cat.5 RJ 45Net Cable-003~007 (Length: 100cm)
1 x Cat.5 RJ45 net cable 10m	N/A	Cat.5 RJ 45 Net Cable-008 (Length: 10m)

All the items listed under section 3.0 of this report are

Confirmed by:

*Shawn Xing*  
**Manager**  
*Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch*  
*Agent for Huawei Technologies Co.,Ltd*



\_\_\_\_\_  
Signature

\_\_\_\_\_  
October 15, 2011 Date

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 4**

**MEASUREMENT RESULTS**

## INTERTEK TESTING SERVICES

---

Applicant: HUAWEI TECHNOLOGIES CO.,LTD

Date of Test: October 15, 2011

Model: HG8245

### 4.0 Measurement Results

#### 4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

- The antenna power of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.
  
- The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set for RBW > 6dB bandwidth and power was read directly in dBm. External attenuation and cable loss were compensated from the measured value.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

IEEE 802.11b (Maximum Antenna Gain =2dBi) (CCK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	18.1	64.6
Middle Channel: 2437	18.0	63.1
High Channel: 2462	17.9	61.7

IEEE 802.11g (Maximum Antenna Gain =2dBi) (OFDM, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	14.3	26.9
Middle Channel: 2437	14.1	25.7
High Channel: 2462	14.0	25.1

IEEE 802.11n 20M (*Maximum Directional Gain =5dBi) (OFDM, 6.5Mbps) Antenna (J33+J34)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	14.5	28.2
Middle Channel: 2437	14.6	28.8
High Channel: 2462	14.4	27.5

## INTERTEK TESTING SERVICES

---

IEEE 802.11n 40M (*Maximum Directional Gain =5dBi) (OFDM, 6.5Mbps) Antenna (J33+J34)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2422	17.1	51.3
Middle Channel: 2437	17.2	52.5
High Channel: 2452	17.0	50.1

Note 1: For MIMO system of 802.11n 20MHz and 40MHz, total power is calculated by combining the output power of each antenna according to KDB662911.

\*Note 2: In MIMO, two WiFi Antenna are correlated, Directional gain =  $G_{ANT} + 10 \log(N)$   
 $\text{dBi} = 2 + 10 \log(2) = 5 \text{ dBi}$  according to KDB662911.

Cable loss: 0.5 dB    External Attenuation: 0 dB

Cable loss, external attenuation: [ ] included in OFFSET function  
 [x] added to power meter raw reading

EUT dBm max. output level = 18.1dBm

For RF Safety, the information is saved with filename: RF exposure info.pdf.

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 100kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2462	10.32

IEEE 802.11g (OFDM, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2437, 2462	16.50

IEEE 802.11n 20M (OFDM, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2437	17.76

IEEE 802.11n 40M (OFDM, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	36.30

Limit: at least 500 kHz

Refer to the following plots for 6 dB bandwidth sharp:

IEEE 802.11b (title: 802.11b)

Low Channel 6 dB RF Bandwidth

Middle Channel 6 dB RF Bandwidth

High Channel 6 dB RF Bandwidth

TRF No.: FCC 15C\_TXa

FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

---

### IEEE 802.11g (title: 802.11g)

Low Channel 6 dB RF Bandwidth  
Middle Channel 6 dB RF Bandwidth  
High Channel 6 dB RF Bandwidth

### IEEE 802.11n 20M (title: 802.11n (20MHz))

Low Channel 6 dB RF Bandwidth  
Middle Channel 6 dB RF Bandwidth  
High Channel 6 dB RF Bandwidth

### IEEE 802.11n 40M (title: 802.11n (40MHz))

Low Channel 6 dB RF Bandwidth  
Middle Channel 6 dB RF Bandwidth  
High Channel 6 dB RF Bandwidth

For electronic filing, the above plots are saved with filename: 6dB.pdf

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.3 Maximum Power Density Reading, FCC Rule 15.247(e) :

The spectrum analyzer RES BW was set to 3kHz. In order to look for a peak, the START and STOP frequencies were set to the band edges of the maximum output passband. If there is no clear maximum amplitude in any given portion of the band, it may be necessary to make measurements at a number of bands defined by several START and STOP frequency pairs.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

IEEE 802.11b (CCK, 1Mbps)	
Frequency (MHz)	Power Density (dBm/3kHz)
2411.436	-12.69

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz  
= 500 seconds

Cable Loss: 0.5dB

Peak Power Density (at 2411.436MHz) = -12.19 dBm/3kHz

Limit: 8dBm/ 3 kHz

Refer to the following plots for power density data:

Title: 802.11b

Low Channel power density

Middle Channel power density

High Channel power density

For electronic filing, the above plots are saved with filename: maxpd.pdf

TRF No.: FCC 15C\_TXa

FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.3 Maximum Power Density Reading, FCC Rule 15.247(e)-Continued:

IEEE 802.11g (OFDM, 6Mbps)	
Frequency (MHz)	Power Density (dBm/3kHz)
2461.328	-23.87

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz  
= 500 seconds

Cable Loss: 0.5dB

Peak Power Density (at 2461.328MHz) = -23.37 dBm/3kHz

Limit: 8dBm/ 3 kHz

Refer to the following plots for power density data :

Title: 802.11g

Low Channel power density

Middle Channel power density

High Channel power density

For electronic filing, the above plots are saved with filename: maxpd.pdf

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.3 Maximum Power Density Reading, FCC Rule 15.247(e)-Continued:

For MIMO system, the worst case power density is derived from the method of Measure and add  $10\log(N)$  according KDB662911.

IEEE 802.11n 20M (OFDM, 6.5Mbps) Antenna (J33+J34)	
Frequency (MHz)	Power Density (dBm/3kHz)
2412	-20.84

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz  
= 500 seconds

Cable Loss: 0.5dB

Peak Power Density (at 2412MHz) = -20.34 dBm/3kHz

Limit: 8dBm/ 3 kHz

Refer to the following plots for power density data :

Title: 802.11n (20MHz)

Low Channel power density

Middle Channel power density

High Channel power density

For electronic filing, the above plots are saved with filename: maxpd.pdf

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.3 Maximum Power Density Reading, FCC Rule 15.247(e)-Continued:

For MIMO system, the worst case power density is derived from the method of Measure and add  $10\log(N)$  according KDB662911.

IEEE 802.11n 40M (OFDM, 6.5Mbps) Antenna (J33+J34)	
Frequency (MHz)	Power Density (dBm/3kHz)
2437	-25.23

Frequency Span = 1.5MHz

Sweep Time = Frequency Span/3kHz  
= 500 seconds

Cable Loss: 0.5dB

Peak Power Density (at 2437MHz) = -24.73 dBm/3kHz

Limit: 8dBm/ 3 kHz

Refer to the following plots for power density data :

Title: 802.11n (40MHz)

Low Channel power density

Middle Channel power density

High Channel power density

For electronic filing, the above plots are saved with filename: maxpd.pdf

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd  
Date of Test: October 15, 2011  
Model: HG8245

#### 4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

The plots showed all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

For the electronic filing, the above Channel Emissions plots are saved with filename: obantcon.pdf

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

Not required, since all emissions are more than 20dB below fundamental

See attached data sheet

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

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. All measurements were performed with peak detection unless otherwise specified.

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

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.7 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 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 62.0 \text{ dB}\mu\text{V}$$

$$AF = 7.4 \text{ dB}$$

$$CF = 1.6 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

$$PD = 0 \text{ dB}$$

$$AV = -10 \text{ dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32 \text{ dB}\mu\text{V/m}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd  
Date of Test: October 15, 2011  
Model: HG8245

### 4.8 Radiated Emission Configuration Photograph

Worst Case Radiated Emission (802.11n (40MHz) 2437MHz)  
at  
374.988MHz

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

## INTERTEK TESTING SERVICES

---

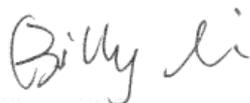
Applicant: Huawei Technologies Co.,Ltd  
Date of Test: October 15, 2011  
Model: HG8245

### 4.9 Radiated Emission Data

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

Judgement : Passed by 6.2 dB margin

### **TEST PERSONNEL:**



---

*Tester Signature*

Billy Li, Team Leader  
*Typed/Printed Name*

October 15, 2011  
*Date*

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

Worst Case Operating Mode: Link with wireless Router (802.11n (40MHz) 2437MHz)

Table 1

### Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	374.988	43.4	20.0	16.4	39.8	46.0	-6.2
Horizontal	474.745	36.0	20.0	19.0	35.0	46.0	-11.0
Horizontal	574.984	37.8	20.0	21.0	38.8	46.0	-7.2
Vertical	524.960	35.9	20.0	19.4	35.3	46.0	-10.7
Vertical	749.960	32.7	20.0	24.3	37.0	46.0	-9.0
Vertical	999.985	37.5	20.0	27.1	44.6	54.0	-9.4

- NOTES:
1. Quasi-Peak detector is used except for others stated.
  2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances 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 harmonic 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. All emissions are below the QP limit.

Test Engineer: Billy Li

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11b (TX-Channel 01)

Table 2  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2412.000	105.3	36.7	27.2	95.8	--	--
Horizontal	*4824.000	51.2	36.1	34.1	49.2	74.0	-24.8
Horizontal	*2389.253	53.6	36.7	27.2	44.1	74.0	-29.9

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2412.000	99.9	36.7	27.2	90.4	--	--
Horizontal	*4824.000	37.4	36.1	34.1	35.4	54.0	-18.6

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- \*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li  
 TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11b (TX-Channel 06)

Table 3  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	50.8	36.1	34.5	49.2	74.0	-24.8
Horizontal	*7311.000	52.5	35.6	37.1	54.0	74.0	-20.0

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	37.6	36.1	34.5	36.0	54.0	-18.0
Horizontal	*7311.000	38.7	35.6	37.1	40.2	54.0	-13.8

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Billy Li

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11b (TX-Channel 11)

Table 4  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2462.000	106.2	36.7	27.7	97.2	--	--
Horizontal	*4924.000	49.6	36.1	34.7	48.2	74.0	-25.8
Horizontal	*7386.000	53.4	35.6	37.2	55.0	74.0	-19.0
Horizontal	*2483.562	54.7	36.7	27.7	45.7	74.0	-28.3

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2462.000	100.5	36.7	27.7	91.5	--	--
Horizontal	*4924.000	36.9	36.1	34.7	35.5	54.0	-18.5
Horizontal	*7386.000	39.6	35.6	37.2	41.2	54.0	-12.8

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- \*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11g (TX-Channel 01)

Table 5  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	**2412.000	97.6	36.7	27.2	88.1	--	--
Horizontal	*4824.000	51.0	36.1	34.1	49.0	74.0	-25.0
Horizontal	*2386.257	53.1	36.7	27.2	43.6	74.0	-30.4

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	**2412.000	96.7	36.7	27.2	87.2	--	--
Horizontal	*4824.000	36.0	36.1	34.1	34.0	54.0	-20.0

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- \*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11g (TX-Channel 06)

Table 6  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	50.2	36.1	34.5	48.6	74.0	-25.4
Horizontal	*7311.000	52.8	35.6	37.1	54.3	74.0	-19.7

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	37.3	36.1	34.5	35.7	54.0	-18.3
Horizontal	*7311.000	38.5	35.6	37.1	40.0	54.0	-14.0

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Billy Li

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11g (TX-Channel 11)

Table 7  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2462.000	96.6	36.7	27.7	87.6	--	--
Horizontal	*4924.000	49.9	36.1	34.7	48.5	74.0	-25.5
Horizontal	*7386.000	53.6	35.6	37.2	55.2	74.0	-18.8
Horizontal	*2483.572	384.2	367.0	27.7	44.9	74.0	-29.1

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2462.000	95.5	36.7	27.7	86.5	--	--
Horizontal	*4924.000	37.0	36.1	34.7	35.6	54.0	-18.4
Horizontal	*7386.000	39.4	35.6	37.2	41.0	54.0	-13.0

NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).

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 used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

\*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li  
 TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11n-20M (TX-Channel 01)

Table 8  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	**2412.000	99.4	36.7	27.2	89.9	--	--
Horizontal	*4824.000	50.9	36.1	34.1	48.9	74.0	-25.1
Horizontal	*2387.232	52.4	36.7	27.2	42.9	74.0	-31.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	**2412.000	96.3	36.7	27.2	86.8	--	--
Horizontal	*4824.000	37.2	36.1	34.1	35.2	54.0	-18.8

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- \*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11n-20M (TX-Channel 06)

Table 9  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	50.6	36.1	34.5	49.0	74.0	-25.0
Horizontal	*7311.000	52.2	35.6	37.1	53.7	74.0	-20.3

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	37.5	36.1	34.5	35.9	54.0	-18.1
Horizontal	*7311.000	39.0	35.6	37.1	40.5	54.0	-13.5

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Billy Li

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11n-20M (TX-Channel 11)

Table 10  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2462.000	98.0	36.7	27.7	89.0	--	--
Horizontal	*4924.000	50.2	36.1	34.7	48.8	74.0	-25.2
Horizontal	*7386.000	53.2	35.6	37.2	54.8	74.0	-19.2
Horizontal	*2483.525	54.3	36.7	27.7	45.3	74.0	-28.7

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2462.000	96.5	36.7	27.7	87.5	--	--
Horizontal	*4924.000	36.8	36.1	34.7	35.4	54.0	-18.6
Horizontal	*7386.000	38.9	35.6	37.2	40.5	54.0	-13.5

NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).

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 used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

\*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li  
 TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11n-40M (TX-Channel 03)

Table 11  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	**2422.000	104.9	36.7	27.2	95.4	--	--
Horizontal	*4844.000	50.8	36.1	34.2	48.9	74.0	-25.1
Horizontal	*2378.252	53.4	36.7	27.2	43.9	74.0	-30.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	**2422.000	103.8	36.7	27.2	94.3	--	--
Horizontal	*4844.000	37.6	36.1	34.2	35.7	54.0	-18.3

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
- \*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11 n-40M (TX-Channel 06)

Table 12  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	50.1	36.1	34.5	48.5	74.0	-25.5
Horizontal	*7311.000	52.5	35.6	37.1	54.0	74.0	-20.0

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	*4874.000	37.1	36.1	34.5	35.5	54.0	-18.5
Horizontal	*7311.000	39.2	35.6	37.1	40.7	54.0	-13.3

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).
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 used for the emission over 1000MHz.
- \* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

Test Engineer: Billy Li

## INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd  
 Date of Test: October 15, 2011  
 Model: HG8245  
 Mode: 802.11n-40M (TX-Channel 09)

Table 13  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Peak Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2452.000	105.4	36.7	27.7	96.4	--	--
Horizontal	*4904.000	50.0	36.1	34.7	48.6	74.0	-25.4
Horizontal	*7356.000	53.2	35.6	37.2	54.8	74.0	-19.2
Horizontal	*2483.627	54.2	36.7	27.7	45.2	74.0	-28.8

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Average Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	**2452.000	101.7	36.7	27.7	92.7	--	--
Horizontal	*4904.000	37.3	36.1	34.7	35.9	54.0	-18.1
Horizontal	*7356.000	39.3	35.6	37.2	40.9	54.0	-13.1

NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data ).

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 used for the emission over 1000MHz.

\* Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

\*\* Fundamental emissions were measured for determining band-edge compliance of using delta measurements technique.

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
 FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

---

### 4.10 Conducted Emission Configuration Photograph

Worst Case Neutral-Conducted Configuration  
at  
17.070 MHz

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

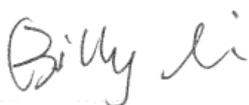
## INTERTEK TESTING SERVICES

---

### 4.11 Conducted Emission Data

Judgement: Passed by 14.2 dB margin

#### **TEST PERSONNEL:**



\_\_\_\_\_  
Signature

Billy Li, Team Leader  
Typed/Printed Name

October 15, 2011  
Date

## INTERTEK TESTING SERVICES

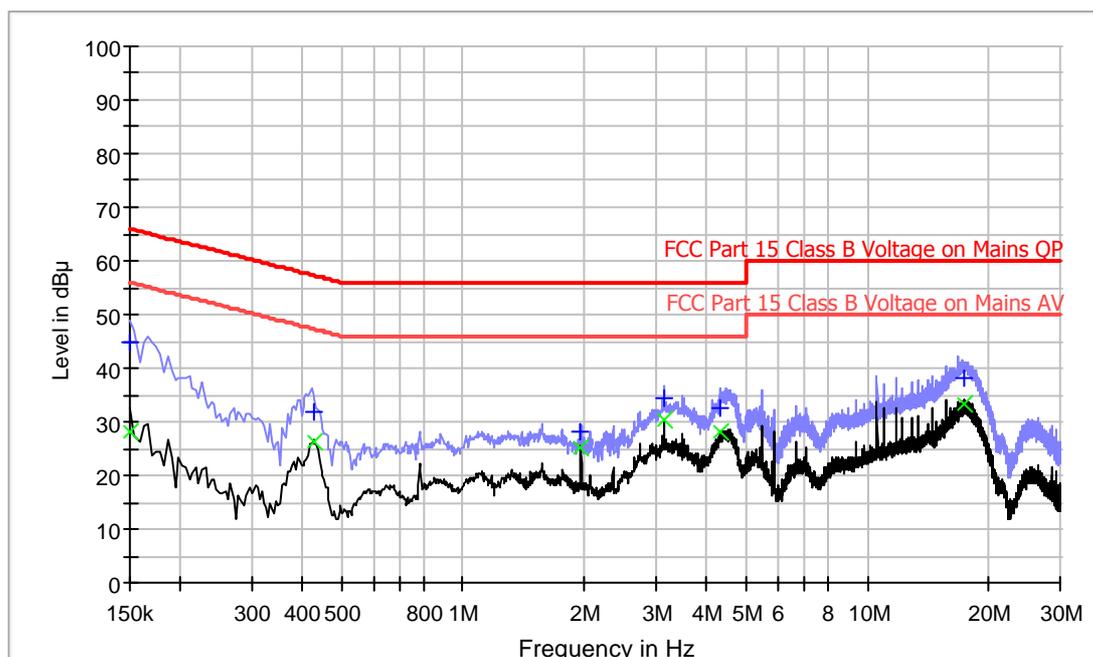
Company: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

Worst Case Operating Mode: Transmit with 802.11n(40MHz) 2437MHz

### Conducted Emission Test - FCC



#### Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150	44.7	L1	9.6	21.3	66.0
0.426	31.7	L1	9.6	25.6	57.3
1.958	28.1	L1	9.8	27.9	56.0
3.130	34.5	L1	9.8	21.5	56.0
4.310	32.6	L1	9.8	23.4	56.0
17.438	38.3	L1	10.0	21.7	60.0

#### Result Table AV

Frequency (MHz)	CAverage (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150	28.1	L1	9.6	27.9	56.0
0.426	26.2	L1	9.6	21.1	47.3
1.958	25.1	L1	9.8	20.9	46.0
3.130	30.3	L1	9.8	15.7	46.0
4.310	28.0	L1	9.8	18.0	46.0
17.438	33.2	L1	10.0	16.8	50.0

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

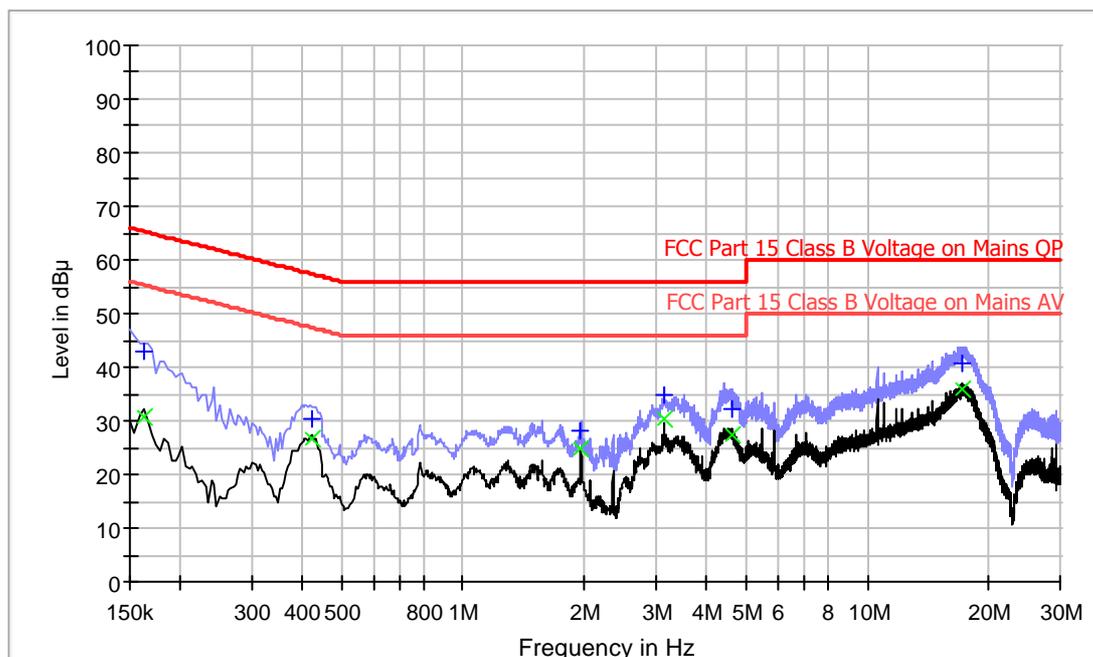
Company: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

Worst Case Operating Mode: Transmit with 802.11n (40MHz) 2437MHz

### Conducted Emission Test - FCC



#### Result Table QP

Frequency (MHz)	QuasiPeak (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.162	42.9	N	9.6	22.5	65.4
0.422	30.4	N	9.6	27.0	57.4
1.958	28.1	N	9.8	27.9	56.0
3.134	34.6	N	9.8	21.4	56.0
4.614	32.1	N	9.9	23.9	56.0
17.070	40.7	N	10.1	19.3	60.0

#### Result Table AV

Frequency (MHz)	CAverage (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.162	30.9	N	9.6	24.5	55.4
0.422	26.6	N	9.6	20.8	47.4
1.958	24.9	N	9.8	21.1	46.0
3.134	30.2	N	9.8	15.8	46.0
4.614	27.3	N	9.9	18.7	46.0
17.070	35.8	N	10.1	14.2	50.0

Test Engineer: Billy Li

TRF No.: FCC 15C\_TXa  
FCC ID: QISHG8245

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd  
Date of Test: October 15, 2011  
Model: HG8245

4.12 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109

- Not required - No digital part
- Test results are attached
- Included in the separated Verification report.

## INTERTEK TESTING SERVICES

---

Applicant: Huawei Technologies Co.,Ltd

Date of Test: October 15, 2011

Model: HG8245

### 4.13 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
x	Not applicable, duty cycle was not used.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 5**

### **EQUIPMENT PHOTOGRAPHS**

## INTERTEK TESTING SERVICES

---

### 5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.pdf.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 6**

### **PRODUCT LABELLING**

## INTERTEK TESTING SERVICES

---

### 6.0 Product Labelling

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 7**

### **TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

---

### 7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram are saved with filename: block.pdf and circuit.pdf respectively.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 8**

### **INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

---

### 8.0 Instruction Manual

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold/leased in the United States.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 9**

### **MISCELLANEOUS INFORMATION**

### 9.0 **Discussion of Pulse Desensitization**

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

**INTERTEK TESTING SERVICES**

---

**EXHIBIT 10**  
**CONFIDENTIALITY REQUEST**

## INTERTEK TESTING SERVICES

---

### 10.0 Confidentiality Request

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

# **INTERTEK TESTING SERVICES**

---

## **EXHIBIT 11**

### **TEST EQUIPMENT LIST**

## INTERTEK TESTING SERVICES

### 11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	02-Jul-2011	02-Jan-2013
SZ185-01	EMI Receiver	R&S	ESCI	100547	08-Mar-2011	08-Mar-2012
SZ061-08	Horn Antenna	ETS	3115	00092346	15-Mar-2010	15-Mar-2012
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	08-Mar-2011	08-Mar-2012
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	08-Mar-2011	08-Mar-2012
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	06-Mar-2011	06-Mar-2012
SZ062-02	RF Cable	RADIALL	RG 213U	--	24-Sep-2011	24-Mar-2012
SZ062-06	RF Cable	RADIALL	0.04-26.5GHz	--	03-Sep-2011	03-Mar-2012
SZ062-12	RF Cable	RADIALL	0.04-26.5GHz	--	03-Sep-2011	03-Mar-2012
SZ067-04	Notch Filter	Micro-Tronics	BRM5070 2-02	--	15-Jul-2011	15-Jul-2012
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	12-Nov-2010	12-Nov-2011
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	12-Nov-2010	12-Nov-2011
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	12-Nov-2010	12-Nov-2011
SZ188-03	Shielding Room	ETS	RFD-100	4100	10-Sep-2011	10-Sep-2012
SZ182-01	RF Power Meter	BOONTON	4232A	11002	08-Mar-2011	08-Mar-2012
SZ182-01-01	Power Sensor	BOONTON	51011-EMC	34400	08-Mar-2011	08-Mar-2012