

Huawei Technologies Co.,Ltd

Application
For
Certification

FCC ID: QISWS880

802.11ac Wireless Router

Model: WS880

WiFi Transceiver

Report No.: 150108020SZN-002

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-13]

Prepared and Checked by:

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Date: 2 February 2015

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TRF no.: FCC 15C_Tx_b

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MEASUREMENT/TECHNICAL REPORT

Huawei Technologies Co.,Ltd - MODEL: WS880

FCC ID: QISWS880

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 [10-01-13 Edition] provision.

Report prepared by:

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List of attached file

Exhibit Type	File Description	Filename
Cover Letter	Letter of Agency	agency.pdf
Test Report	Test Report	report.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
Bill of Material	Bill of Material	partlist.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
Cover Letter	Confidentiality Letter	request.pdf
RF Exposure report	RF exposure	RF exposure.pdf
User Manual	User Manual	manual.pdf

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EXHIBIT 1

SUMMARY OF TEST RESULTS

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1.0 Summary of Test

Huawei Technologies Co.,Ltd - MODEL: WS880

FCC ID: QISWS880

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 Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

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EXHIBIT 2

GENERAL DESCRIPTION

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2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a 802.11ac Wireless Router, Model: WS880 with internal WiFi function operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing, and operating at 2422-2452MHz for 802.11n-HT40, 7 channels with 5MHz channel spacing. It is powered by AC/DC Adapter (with input of 100 - 240Vac, 50/60Hz and output of DC12V, 3A). For more detailed features description, please refer to the user's manual.

Type of Modulation: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM.

Antenna Type: Integral Antenna.

Antenna No.: 6, 2.4G band have 3 Antennas for 802.11b/g/n-HT20/40, 5.2/5.8G band have 3 Antennas for 802.11a/n-HT20/n-HT40/ac.

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

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2.2 Related Submittal(s) Grants

This is an application for certification of:
DTS- Part 15 Digital Transmission Systems

Remaining portions are subject to the following procedures:

1. WiFi Transceiver (JBP): 150108020SZN-001.
2. WiFi Transceiver (NII): 150108020SZN-003.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009) 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 **Intertek 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 (Registration Number: 242492).

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EXHIBIT 3

SYSTEM TEST CONFIGURATION

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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 AC/DC Adapter through 120V/60Hz during the test. Only the worst case data was reported.

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 single antenna of MIMO and SISO Mode (2.4G band: 2400-2483.5MHz)

Test software setting of IEEE 802.11b/g/n			
Channel No.	Power Setting	Data rate	Modulation type
1,6,11	15	802.11b: 1-11Mbps	802.11b: DBPSK, DQPSK
	15	802.11g: 6-54Mbps	802.11g: BPSK, QPSK, 16QAM, 64QAM
1,6,11	15	802.11n-HT20: 6.5-130Mbps	802.11n: BPSK, QPSK, 16QAM, 64QAM
3,6,9	15	802.11n-HT40: 13.5-135Mbps	802.11n: BPSK, QPSK, 16QAM, 64QAM

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

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- Note: 1. Antenna No.: 6, 2.4G band have 3 Antennas for 802.11b/g/n-HT20/40, 5.2/5.8G band have 3 Antennas for 802.11a/n-HT20/HT40/ac.
2. When product operates on SISO mode 802.11b/g/n-HT20/HT40 (2.4G band), only one Ant0 (2.4G band Ant0) is used for transmission. When product operates on MIMO mode (2Tx) can form 3 MIMO mode (2.4G band, Ant0+Ant1 or Ant1+Ant2 or Ant0+Ant2) under the 802.11n-HT20/HT40, If the receiver sensitivity has meet internal limit valve, the antenna of EUT will auto transfer to the another antenna. When product operates on MIMO mode (3Tx) can form 1 MIMO mode (2.4G band, Ant0+Ant1+Ant2).

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.

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3.6 Support Equipment List and Description

Description	Manufacturer	Model No.
Laptop	Lenovo	T420
Hard Disk	Smart.drive	HD-003
USB Cable	Smart.drive	Unshielded, Length 155cm
1394 Cable	Smart.drive	Unshielded, Length 180cm
LAN Cable*5	N/A	Unshielded, Length: 200cm
AC Adapter	Huawei	HW-120300U6W Input:100-240V 50/60Hz Output: 12Vdc, 3A
USB Disk	Sandisk	USB 3.0 / 16GB
Router*4	TP-LINK	TL-MR11U

Note: The Model: WS880 has two different AC/DC Adapters as its alternative power supply device. Relevant tests with each adapter have already arranged and the worst case data is recorded in this report.

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EXHIBIT 4

MEASUREMENT RESULTS

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Applicant: Huawei Technologies Co.,Ltd
 Model: WS880

Date of Test: 20 January 2015

4.0 Measurement Results

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

- [x] The antenna power of the EUT was connected to the input of a broadband peak RF power meter. The power meter have a video bandwidth that is greater than DTS bandwidth and utilize a fast-responding diode detector. Power was read directly at the EUT antenna terminals with cable loss added.

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

IEEE 802.11b (Antenna Gain =2dBi) (DBPSK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
	Ant0	
Low Channel: 2412	18.3	67.6
Middle Channel: 2437	18.4	69.2
High Channel: 2462	18.4	69.2

IEEE 802.11g (Antenna Gain =2dBi) (BPSK, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
	Ant0	
Low Channel: 2412	23.1	204.2
Middle Channel: 2437	23.0	199.5
High Channel: 2462	23.0	199.5

IEEE 802.11n-HT20 (SISO) (Antenna Gain=2dBi) (BPSK, 6.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
	Ant0	
Low Channel: 2412	22.8	190.6
Middle Channel: 2437	23.0	199.5
High Channel: 2462	22.8	190.6

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IEEE 802.11n-HT20 (MIMO, 2Tx) (Antenna Gain=5.01dBi, Note3) (BPSK 13Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 0	Ant 1	
Low Channel: 2412	22.5	22.6	359.8
Middle Channel: 2437	22.6	22.8	372.5
High Channel: 2462	22.4	22.6	355.8

IEEE 802.11n-HT20 (MIMO, 2Tx) (Antenna Gain=5.01dBi, Note3) (BPSK 13Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 0	Ant 2	
Low Channel: 2412	22.5	22.2	343.8
Middle Channel: 2437	22.6	22.1	344.2
High Channel: 2462	22.4	21.9	328.7

IEEE 802.11n-HT20 (MIMO, 2Tx) (Antenna Gain=5.01dBi, Note3) (BPSK 13Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 1	Ant 2	
Low Channel: 2412	22.6	22.2	347.9
Middle Channel: 2437	22.8	22.1	352.7
High Channel: 2462	22.6	21.9	336.9

IEEE 802.11n-HT20 (MIMO, 3Tx) (Antenna Gain=6.77dBi, Note4) (BPSK 19.5Mbps)				
Frequency (MHz)	Output in dBm			Output in mWatt Total power
	Ant 0	Ant 1	Ant 2	
Low Channel: 2412	22.0	21.5	22.0	458.2
Middle Channel: 2437	22.0	21.6	21.5	444.3
High Channel: 2462	22.0	21.3	21.8	444.7

IEEE 802.11n-HT40 (SISO) (Antenna Gain=2dBi) (BPSK, 13.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
	Ant0	
Low Channel: 2422	19.0	79.4
Middle Channel: 2437	19.3	85.1
High Channel: 2452	19.2	83.2

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IEEE 802.11n-HT40 (MIMO, 2Tx) (Antenna Gain=5.01dBi, Note3) (BPSK 27Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 0	Ant 1	
Low Channel: 2422	21.0	22.0	284.4
Middle Channel: 2437	21.0	22.0	284.4
High Channel: 2452	21.0	21.8	277.2

IEEE 802.11n-HT40 (MIMO, 2Tx) (Antenna Gain=5.01dBi, Note3) (BPSK 27Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 0	Ant 2	
Low Channel: 2422	21.0	22.4	299.7
Middle Channel: 2437	21.0	22.4	299.7
High Channel: 2452	21.0	22.3	295.7

IEEE 802.11n-HT40 (MIMO, 2Tx) (Antenna Gain=5.01dBi, Note3) (BPSK 27Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 1	Ant 2	
Low Channel: 2422	22.0	22.4	332.3
Middle Channel: 2437	22.0	22.4	332.3
High Channel: 2452	21.8	22.3	321.2

IEEE 802.11n-HT40 (MIMO, 3Tx) (Antenna Gain=6.77dBi, Note4) (BPSK 40.5Mbps)				
Frequency (MHz)	Output in dBm			Output in mWatt Total power
	Ant 0	Ant 1	Ant 2	
Low Channel: 2422	17.0	18.0	19.0	192.6
Middle Channel: 2437	17.0	18.0	19.5	202.3
High Channel: 2452	17.0	18.0	19.5	202.3

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

Note 2: Antenna No.: 6, Antenna Gain: 2.4G band Ant0/1/2: 2dBi, 5.8G band Ant0/1/2: 2dBi

Note 3: In MIMO (2Tx), Ant0+Ant1 Directional gain = $G_{ANT} + 10 \log(N)$ dBi = $2 + 10 \log(2) = 5.01$ dBi, so the limit of output power is 30dBm that antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm) , and the Ant1+Ant2, Ant0+Ant2 same as Ant0+Ant1.

Note 4: In MIMO (3Tx), Ant0+Ant1+Ant2 Directional gain = $G_{ANT} + 10 \log(N)$ dBi = $2 + 10 \log(3) = 6.77$ dBi, so the Power limit will reduce to 29.2dBm (831.8mW) which according to KDB662911.

Cable loss: 0.5 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

EUT dBm max. output level = 458.2mW (Limit: 831.8mW) (802.11n-HT20 MIMO 3Tx, 2412MHz)

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

The test plots are attached as below.

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Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

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 1-5 % of the emission bandwidth and not to exceed 100 KHz according to FCC KDB 558074. 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.

Limit: The 6 dB Bandwidth is at least 500 kHz.

Note:1. The worst case of 6dB Bandwidth is 802.11b 8.032MHz.

2. The Min 6dB bandwidth is 8.032MHz for 802.11b, and the Max 6dB Bandwidth is 36.375MHz for 802.11n-HT40.

3. Please refer "6dB Bandwidth.pdf" for more detail of 6dB Bandwidth graph.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

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

The Measurement Procedure PKPSD was set according to the FCC KDB 558074.

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.

For MIMO system, both the antenna ports is checked, the worst case power density is calculated from the method of Measure by adding $10\text{Log}(2)/10\text{Log}(3)$ according KDB662911.

Limit: The Power Density does not exceed 8dBm/ 3 kHz.

Unit: dBm

IEEE 802.11b (DBPSK, 1Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
Low Channel: 2412	7.09
Middle Channel: 2437	7.35
High Channel: 2462	7.47

IEEE 802.11g (BPSK, 6Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
Low Channel: 2412	2.04
Middle Channel: 2437	2.08
High Channel: 2462	2.00

IEEE 802.11n-HT20 (SISO) (BPSK, 6.5Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
Low Channel: 2412	1.76
Middle Channel: 2437	1.77
High Channel: 2462	1.62

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IEEE 802.11n-HT20 (MIMO, 2Tx) (BPSK 13Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant0	Ant1	Total
Low Channel: 2412	1.44	2.72	5.73
Middle Channel: 2437	2.14	2.51	5.52
High Channel: 2462	1.96	1.71	4.97

IEEE 802.11n-HT20 (MIMO, 2Tx) (BPSK 13Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant0	Ant2	Total
Low Channel: 2412	1.44	1.59	4.60
Middle Channel: 2437	2.14	1.12	5.15
High Channel: 2462	1.96	1.31	4.97

IEEE 802.11n-HT20 (MIMO, 2Tx) (BPSK 13Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant 1	Ant 2	Total
Low Channel: 2412	2.72	1.59	5.73
Middle Channel: 2437	2.51	1.12	5.52
High Channel: 2462	1.71	1.31	4.72

IEEE 802.11n-HT20 (MIMO, 3Tx) (BPSK 19.5Mbps)				
Frequency (MHz)	Power Density with RBW 100KHz			
	Ant 0	Ant 1	Ant 2	Total
Low Channel: 2412	1.43	1.21	1.34	6.20
Middle Channel: 2437	0.96	1.00	1.34	6.11
High Channel: 2462	1.35	0.74	0.88	6.12

IEEE 802.11n-HT40 (SISO) (BPSK, 13.5Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
Low Channel: 2422	-3.78
Middle Channel: 2437	-3.76
High Channel: 2452	-3.72

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IEEE 802.11n-HT40 (MIMO, 2Tx) (BPSK 27Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant 0	Ant 1	Total
Low Channel: 2422	-4.90	-3.96	-0.95
Middle Channel: 2437	-4.86	-4.44	-1.43
High Channel: 2452	-4.78	-4.28	-1.27

IEEE 802.11n-HT40 (MIMO, 2Tx) (BPSK 27Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant 0	Ant 2	Total
Low Channel: 2422	-4.90	-2.54	0.47
Middle Channel: 2437	-4.86	-2.68	0.33
High Channel: 2452	-4.78	-2.40	0.61

IEEE 802.11n-HT40 (MIMO, 2Tx) (BPSK 27Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant 1	Ant 2	Total
Low Channel: 2422	-3.96	-2.54	0.47
Middle Channel: 2437	-4.44	-2.68	0.33
High Channel: 2452	-4.28	-2.40	0.61

IEEE 802.11n-HT40 (MIMO, 3Tx) (BPSK 40.5Mbps)				
Frequency (MHz)	Power Density with RBW 100KHz			
	Ant 0	Ant 1	Ant 2	Total
Low Channel: 2422	-4.87	-4.11	-2.64	2.13
Middle Channel: 2437	-4.89	-4.53	-2.54	2.23
High Channel: 2452	-4.65	-3.86	-2.38	2.39

Please refer the graph of "PSD.pdf".

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

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. The Measurement Procedure was set according to the FCC KDB 558074.

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

Refer to the attached test plot for out of band conducted emissions data with rate of 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n HT20 SISO, 13Mbps for 802.11n HT20 MIMO (2Tx), 19.5Mbps for 802.11n HT20 MIMO (3Tx), 13.5Mbps for 802.11n HT40 SISO, 27Mbps for 802.11n HT40 MIMO (2Tx), 40.5Mbps for 802.11n HT40 MIMO (3Tx), The worst case Out of Band Conducted Emissions is derived from the method of Measure according KDB662911.

The test 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.

Please refer the graph of "CSE.pdf".

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

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
Model: WS880

Date of Test: 20 January 2015

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
Model: WS880

Date of Test: 20 January 2015

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.

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

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB
- PD = Pulse Desensitization 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:

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

Example

Assume a receiver reading of 62.0 dB μ 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. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB} \\ CF &= 1.6 \text{ dB} \\ AG &= 29.0 \text{ dB} \\ PD &= 0 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m} \end{aligned}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission 802.11n-HT20 MIMO 2Tx Ant0+Ant1 at 7311MHz is passed by 5.7dB margin.

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: 20 January 2015

Model: WS880

Worst Case Operating Mode: 802.11n-HT20 MIMO (3TX, Ant0+Ant1+Ant2, Channel 6)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	45.284	35.2	20.0	8.3	23.5	40.0	-16.5
Horizontal	79.294	38.3	20.0	8.4	26.7	40.0	-13.3
Horizontal	155.295	44.8	20.0	9.1	33.9	43.5	-9.6
Vertical	599.200	35.4	20.0	18.3	33.7	46.0	-12.3
Vertical	725.299	37.6	20.0	19.2	36.8	46.0	-9.2
Vertical	894.200	36.6	20.0	22.6	39.2	46.0	-6.8

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: WS880
 Mode: 802.11b (SISO, Ant0, TX-Channel 01)

Date of Test: 20 January 2015

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	49.8	36.1	35.5	49.2	74.0	-24.8
Horizontal	*2389.093	56.2	36.7	28.1	47.6	74.0	-26.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	39.1	36.1	35.5	38.5	54.0	-15.5
Horizontal	*2389.093	51.8	36.7	28.1	43.2	54.0	-10.8

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: WS880
 Mode: 802.11b (SISO, Ant0, TX-Channel 06)

Date of Test: 20 January 2015

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	53.1	36.1	35.5	52.5	74.0	-21.5
Horizontal	*7311.000	56.6	36.2	36.5	56.9	74.0	-17.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	38.9	36.1	35.5	38.3	54.0	-15.7
Horizontal	*7311.000	43.8	36.2	36.5	44.1	54.0	-9.9

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: WS880
 Mode: 802.11b (SISO, Ant0, TX-Channel 11)

Date of Test: 20 January 2015

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	49.6	36.1	35.5	49.0	74.0	-25.0
Horizontal	*2484.382	62.4	36.7	28.1	53.8	74.0	-20.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	40.9	36.1	35.5	40.3	54.0	-13.7
Horizontal	*2484.382	52.8	36.7	28.1	44.2	54.0	-9.8

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11g (SISO, Ant0, TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	47.9	36.1	35.5	47.3	74.0	-26.7
Horizontal	*2389.299	57.1	36.7	28.1	48.5	74.0	-25.5

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	41.8	36.1	35.5	41.2	54.0	-12.8
Horizontal	*2389.299	53.2	36.7	28.1	44.6	54.0	-9.4

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: WS880
 Mode: 802.11g (SISO, Ant0, TX-Channel 06)

Date of Test: 20 January 2015

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	51.9	36.1	35.5	51.3	74.0	-22.7
Horizontal	*7311.000	54.6	36.2	36.5	54.9	74.0	-19.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	43.1	36.1	35.5	42.5	54.0	-11.5
Horizontal	*7311.000	43.4	36.2	36.5	43.7	54.0	-10.3

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: WS880
 Mode: 802.11g (SISO, Ant0, TX-Channel 11)

Date of Test: 20 January 2015

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	53.8	36.1	35.5	53.2	74.0	-20.8
Horizontal	*2484.090	64.4	36.7	28.1	55.8	74.0	-18.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	46.9	36.1	35.5	46.3	54.0	-7.7
Horizontal	*2484.090	55.2	36.7	28.1	46.6	54.0	-7.4

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (SISO, Ant0, TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	56.0	36.1	35.5	55.4	74.0	-18.6
Horizontal	*2389.395	66.9	36.7	28.1	58.3	74.0	-15.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	44.2	36.1	34.1	42.2	54.0	-11.8
Horizontal	*2389.395	54.5	36.7	27.2	45.0	54.0	-9.0

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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (SISO, Ant0, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	58.6	36.1	34.5	57.0	74.0	-17.0
Horizontal	*7311.000	57.7	35.6	37.1	59.2	74.0	-14.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	46.9	36.1	34.5	45.3	54.0	-8.7
Horizontal	*7311.000	45.4	35.6	37.1	46.9	54.0	-7.1

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (SISO, Ant0, TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	56.6	36.1	35.5	56.0	74.0	-18.0
Horizontal	*2483.929	67.8	36.7	28.1	59.2	74.0	-14.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	46.4	36.1	35.5	45.8	54.0	-8.2
Horizontal	*2483.929	55.6	36.7	28.1	47.0	54.0	-7.0

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant0+Ant1, TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	56.8	36.1	35.5	56.2	74.0	-17.8
Horizontal	*2388.007	68.2	36.7	28.1	59.6	74.0	-14.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	45.2	36.1	35.5	44.6	54.0	-9.4
Horizontal	*2388.007	55.9	36.7	28.1	47.3	54.0	-6.7

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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant0+Ant1, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	56.9	36.1	35.5	56.3	74.0	-17.7
Horizontal	*7311.000	58.6	36.2	36.5	58.9	74.0	-15.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	45.6	36.1	35.5	45.0	54.0	-9.0
Horizontal	*7311.000	48.0	36.2	36.5	48.3	54.0	-5.7

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant0+Ant1, TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	55.8	36.1	35.5	55.2	74.0	-18.8
Horizontal	*2484.920	68.0	36.7	28.1	59.4	74.0	-14.6

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	45.1	36.1	35.5	44.5	54.0	-9.5
Horizontal	*2484.920	54.7	36.7	28.1	46.1	54.0	-7.9

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant0+Ant2, TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	56.5	36.1	35.5	55.9	74.0	-18.1
Horizontal	*2388.785	67.2	36.7	28.1	58.6	74.0	-15.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	43.8	36.1	35.5	43.2	54.0	-10.8
Horizontal	*2388.785	54.4	36.7	28.1	45.8	54.0	-8.2

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant0+Ant2, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	56.8	36.1	35.5	56.2	74.0	-17.8
Horizontal	*7311.000	57.6	36.2	36.5	57.9	74.0	-16.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	45.2	36.1	35.5	44.6	54.0	-9.4
Horizontal	*7311.000	45.5	36.2	36.5	45.8	54.0	-8.2

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant0+Ant2, TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	56.7	36.1	35.5	56.1	74.0	-17.9
Horizontal	*2484.029	66.6	36.7	28.1	58.0	74.0	-16.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	44.0	36.1	35.5	43.4	54.0	-10.6
Horizontal	*2484.029	54.3	36.7	28.1	45.7	54.0	-8.3

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant1+Ant2, TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	57.4	36.1	35.5	56.8	74.0	-17.2
Horizontal	*2388.958	67.6	36.7	28.1	59.0	74.0	-15.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	43.3	36.1	35.5	42.7	54.0	-11.3
Horizontal	*2388.958	53.9	36.7	28.1	45.3	54.0	-8.7

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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant1+Ant2, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	58.4	36.1	35.5	57.8	74.0	-16.2
Horizontal	*7311.000	60.2	36.2	36.5	60.5	74.0	-13.5

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	45.1	36.1	35.5	44.5	54.0	-9.5
Horizontal	*7311.000	47.4	36.2	36.5	47.7	54.0	-6.3

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 2Tx, Ant1+Ant2, TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	58.5	36.1	35.5	57.9	74.0	-16.1
Horizontal	*2484.528	68.9	36.7	28.1	60.3	74.0	-13.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	44.2	36.1	35.5	43.6	54.0	-10.4
Horizontal	*2484.528	54.6	36.7	28.1	46.0	54.0	-8.0

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 3Tx, Ant0+Ant1+Ant2, TX-Channel 01)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	58.5	36.1	35.5	57.9	74.0	-16.1
Horizontal	*2389.650	69.8	36.7	28.1	61.2	74.0	-12.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	44.2	36.1	35.5	43.6	54.0	-10.4
Horizontal	*2389.650	53.6	36.7	28.1	45.0	54.0	-9.0

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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 3Tx, Ant0+Ant1+Ant2, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	58.8	36.1	35.5	58.2	74.0	-15.8
Horizontal	*7311.000	61.0	36.2	36.5	61.3	74.0	-12.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	43.1	36.1	35.5	42.5	54.0	-11.5
Horizontal	*7311.000	45.3	36.2	36.5	45.6	54.0	-8.4

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT20 (MIMO, 3Tx, Ant0+Ant1+Ant2, TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	58.6	36.1	35.5	58.0	74.0	-16.0
Horizontal	*2484.395	69.7	36.7	28.1	61.1	74.0	-12.9

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	44.8	36.1	35.5	44.2	54.0	-9.8
Horizontal	*2484.395	55.3	36.7	28.1	46.7	54.0	-7.3

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (SISO, Ant0, TX-Channel 03)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	51.8	36.1	34.6	50.3	74.0	-23.7
Horizontal	*2388.839	65.3	36.7	27.2	55.8	74.0	-18.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	39.3	36.1	34.6	37.8	54.0	-16.2
Horizontal	*2388.839	53.6	36.7	27.2	44.1	54.0	-9.9

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (SISO, Ant0, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	51.5	36.1	35.5	50.9	74.0	-23.1
Horizontal	*7311.000	56.0	36.2	36.5	56.3	74.0	-17.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	39.1	36.1	35.5	38.5	54.0	-15.5
Horizontal	*7311.000	44.4	36.2	36.5	44.7	54.0	-9.3

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (SISO, Ant0, TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	50.7	36.1	34.8	49.4	74.0	-24.6
Horizontal	*2484.283	64.9	36.7	27.7	55.9	74.0	-18.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	39.8	36.1	34.8	38.5	54.0	-15.5
Horizontal	*2484.283	53.6	36.7	27.7	44.6	54.0	-9.4

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant0+Ant1, TX-Channel 03)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	51.0	36.1	34.6	49.5	74.0	-24.5
Horizontal	*2389.002	66.7	36.7	27.2	57.2	74.0	-16.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	39.2	36.1	34.6	37.7	54.0	-16.3
Horizontal	*2389.002	54.1	36.7	27.2	44.6	54.0	-9.4

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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant0+Ant1, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	50.1	36.1	35.5	49.5	74.0	-24.5
Horizontal	*7311.000	55.6	36.2	36.5	55.9	74.0	-18.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	38.9	36.1	35.5	38.3	54.0	-15.7
Horizontal	*7311.000	44.4	36.2	36.5	44.7	54.0	-9.3

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant0+Ant1, TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	50.9	36.1	34.8	49.6	74.0	-24.4
Horizontal	*2484.588	65.0	36.7	27.7	56.0	74.0	-18.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	40.0	36.1	34.8	38.7	54.0	-15.3
Horizontal	*2484.588	53.4	36.7	27.7	44.4	54.0	-9.6

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant0+Ant2, TX-Channel 03)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	50.1	36.1	34.6	48.6	74.0	-25.4
Horizontal	*2389.868	67.5	36.7	27.2	58.0	74.0	-16.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	39.5	36.1	34.6	38.0	54.0	-16.0
Horizontal	*2389.868	54.6	36.7	27.2	45.1	54.0	-8.9

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant0+Ant2, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	49.6	36.1	35.5	49.0	74.0	-25.0
Horizontal	*7311.000	55.9	36.2	36.5	56.2	74.0	-17.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	39.7	36.1	35.5	39.1	54.0	-14.9
Horizontal	*7311.000	44.7	36.2	36.5	45.0	54.0	-9.0

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant0+Ant2, TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	49.8	36.1	34.8	48.5	74.0	-25.5
Horizontal	*2484.690	64.9	36.7	27.7	55.9	74.0	-18.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	40.3	36.1	34.8	39.0	54.0	-15.0
Horizontal	*2484.690	53.3	36.7	27.7	44.3	54.0	-9.7

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant1+Ant2, TX-Channel 03)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	50.6	36.1	34.6	49.1	74.0	-24.9
Horizontal	*2389.935	68.0	36.7	27.2	58.5	74.0	-15.5

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	39.7	36.1	34.6	38.2	54.0	-15.8
Horizontal	*2389.868	54.0	36.7	27.2	44.5	54.0	-9.5

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant1+Ant2, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	49.3	36.1	35.5	48.7	74.0	-25.3
Horizontal	*7311.000	56.7	36.2	36.5	57.0	74.0	-17.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	39.8	36.1	35.5	39.2	54.0	-14.8
Horizontal	*7311.000	44.0	36.2	36.5	44.3	54.0	-9.7

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 2Tx, Ant1+Ant2, TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	50.5	36.1	34.8	49.2	74.0	-24.8
Horizontal	*2484.465	65.0	36.7	27.7	56.0	74.0	-18.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	40.5	36.1	34.8	39.2	54.0	-14.8
Horizontal	*2484.465	53.7	36.7	27.7	44.7	54.0	-9.3

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 3Tx, Ant0+Ant1+Ant2, TX-Channel 03)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	47.3	36.1	34.6	45.8	74.0	-28.2
Horizontal	*2389.880	66.2	36.7	27.2	56.7	74.0	-17.3

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	39.1	36.1	34.6	37.6	54.0	-16.4
Horizontal	*2389.880	53.0	36.7	27.2	43.5	54.0	-10.5

- 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.

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 3Tx, Ant0+Ant1+Ant2, TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	47.1	36.1	35.5	46.5	74.0	-27.5
Horizontal	*7311.000	56.6	36.2	36.5	56.9	74.0	-17.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	37.8	36.1	35.5	37.2	54.0	-16.8
Horizontal	*7311.000	44.7	36.2	36.5	45.0	54.0	-9.0

- 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.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: 20 January 2015

Model: WS880

Mode: 802.11n-HT40 (MIMO, 3Tx, Ant0+Ant1+Ant2, TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	49.8	36.1	34.8	48.5	74.0	-25.5
Horizontal	*2484.005	65.2	36.7	27.7	56.2	74.0	-17.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	40.0	36.1	34.8	38.7	54.0	-15.3
Horizontal	*2484.005	52.6	36.7	27.7	43.6	54.0	-10.4

- 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.

INTERTEK TESTING SERVICES

4.9 Conducted Emission

Worst Case Neutral-Conducted emission at 0.378MHz is Passed by 11.5 dB margin

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

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

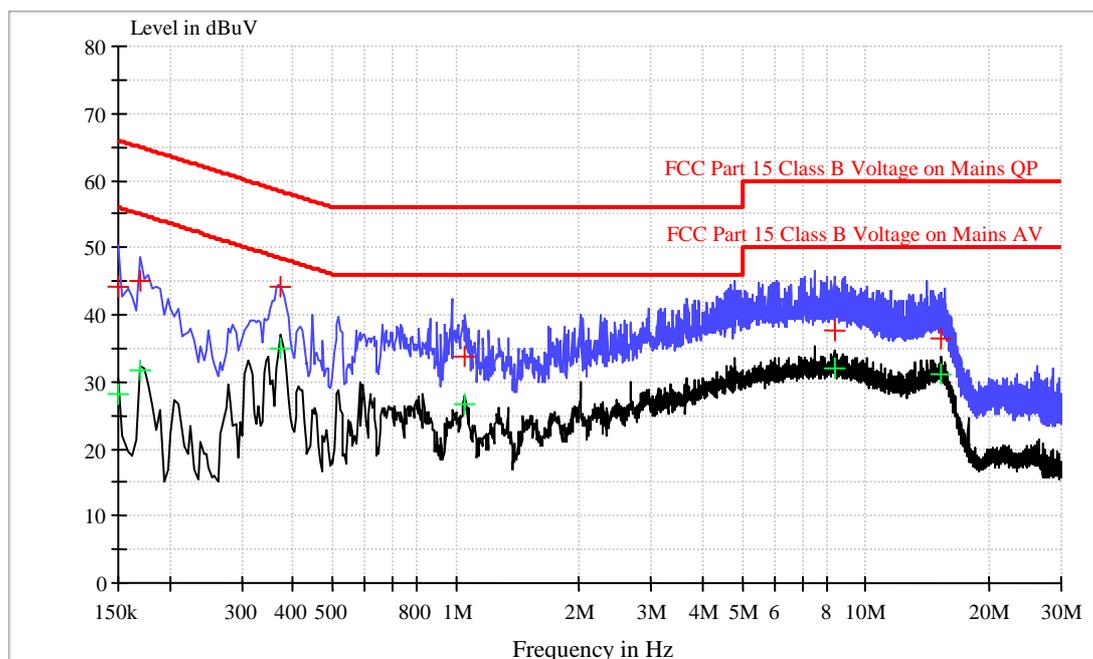
Date of Test: 20 January 2015

Model: WS880

Worst Case Operating Mode: Transmit (802.11n-HT20, MIMO, 3Tx, Ant0+1+2)

AC/DC Adapter: UE

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150	44.3	L1	9.8	21.7	66.0
0.170	44.9	L1	9.8	20.1	65.0
0.374	44.2	L1	9.8	14.2	58.4
1.046	33.8	L1	9.9	22.2	56.0
8.414	37.8	L1	10.1	22.2	60.0
15.270	36.6	L1	10.2	23.4	60.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.150	28.3	L1	9.8	27.7	56.0
0.170	31.6	L1	9.8	23.4	55.0
0.374	35.0	L1	9.8	13.4	48.4
1.046	26.7	L1	9.9	19.3	46.0
8.414	31.9	L1	10.1	18.1	50.0
15.270	31.1	L1	10.2	18.9	50.0

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INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

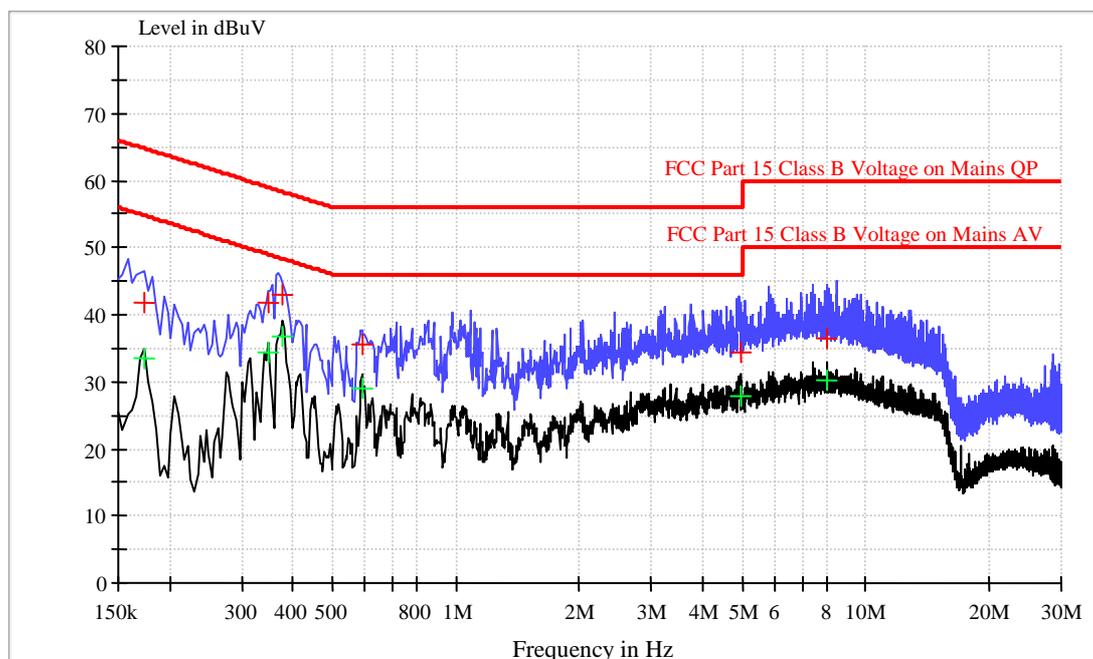
Date of Test: 20 January 2015

Model: WS880

Worst Case Operating Mode: Transmit (802.11n-HT20, MIMO, 3Tx, Ant0+1+2)

AC/DC Adapter: UE

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.174	41.8	N	10.0	23.0	64.8
0.350	41.7	N	10.1	17.3	59.0
0.378	43.1	N	10.1	15.2	58.3
0.590	35.7	N	10.2	20.3	56.0
4.946	34.2	N	10.3	21.8	56.0
8.086	36.5	N	10.4	23.5	60.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.174	33.6	N	10.0	21.2	54.8
0.350	34.4	N	10.1	14.6	49.0
0.378	36.8	N	10.1	11.5	48.3
0.590	29.2	N	10.2	16.8	46.0
4.946	27.9	N	10.3	18.1	46.0
8.086	30.1	N	10.4	19.9	50.0

TRF no.: FCC 15C_TX_b

FCC ID: QISWS880

Report No.: 150108020SZN-002

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

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

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

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: WS880

Date of Test: 20 January 2015

4.11 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&partlist.pdf and circuit.pdf respectively.

INTERTEK TESTING SERVICES

EXHIBIT 8

INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

8.0 Instruction Manual

For electronic filing, preliminary copies of the Instruction Manual and Safety Information are saved with filename: manual.pdf and safety info.pdf.

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

INTERTEK TESTING SERVICES

EXHIBIT 9

CONFIDENTIALITY REQUEST

INTERTEK TESTING SERVICES

9.0 **Confidentiality Request**

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

INTERTEK TESTING SERVICES

EXHIBIT 10

MISCELLANEOUS INFORMATION

INTERTEK TESTING SERVICES

10.0 **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 11

TEST EQUIPMENT LIST

INTERTEK TESTING SERVICES

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	14-Jul-14	21-May-2014	21-May-2015
SZ182-02-01	Pulse Power Sensor	Anritsu	MA2411B	14-Jul-14	21-May-2014	21-May-2015
SZ070-24	Open Switch and Control Unit with TS8997 option for power measurement test	R&S	OSP120+B 157	1-Nov-14	1-Nov-2014	1-May-2015
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	28-Jun-2014	28-Jun-2015
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	29-Apr-2014	29-Apr-2015
SZ061-09	Horn Antenna	ETS	3115	00092346	1-Nov-2014	1-Nov-2015
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	3-Sep-2014	3-Sep-2015
SZ185-01	EMI Receiver	R&S	ESCI	100547	10-Mar-2014	10-Mar-2015
EM031-03	EXA Spectrum Analyzer	R&S	FSV40	09-Jun-14	09-Jun-2014	09-Jun-2015
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	10-Mar-2014	10-Mar-2015
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	19-Apr-2014	19-Apr-2015
SZ062-02-01	RF Cable	RADIALL	RG 213U	--	9-Oct-2014	9-Apr-2015
SZ062-05-02	RF Cable	RADIALL	0.04-26.5GHz	--	9-Oct-2014	9-Apr-2015
SZ062-12-02	RF Cable	RADIALL	0.04-26.5GHz	--	9-Oct-2014	9-Apr-2015
SZ067-21	Notch Filter	Micro-Tronics	High-pass filter	--	10-Mar-2014	10-Mar-2015
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	--	21-May-2014	21-May-2015
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	1-Nov-2014	1-Nov-2015
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	1-Nov-2014	1-Nov-2015
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	16-Jun-2014	16-Jun-2015
SZ188-03	Shielding Room	ETS	RFD-100	4100	23-Aug-2014	23-Aug-2015