



中国认可  
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检测  
TESTING  
CNAS L0310



# FCC RF Test Report

**Product Name: Smart Phone**

**Model Number: H1711;H1711z**

**Report No: SYBH(Z-RF)075042017-2005**

**FCC ID: QISH1711**

**Reliability Laboratory of Huawei Technologies Co., Ltd.**

**(Global Compliance and Testing Center of Huawei Technologies Co., Ltd)**

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## Notice

1. The laboratory has passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.
2. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-1.
5. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named "Global Compliance and Testing Center of Huawei Technologies Co., Ltd", the both names have coexisted since 2009.
6. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
7. The test report is invalid if there is any evidence of erasure and/or falsification.
8. The test report is only valid for the test samples.
9. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.



**Applicant:** Huawei Technologies Co., Ltd.  
**Address:** Administration Building, Headquarters of Huawei Technologies Co., Ltd.,  
Bantian, Longgang District, Shenzhen, 518129, P.R.C

**Date of Receipt Sample:** 2017-05-02  
**Start Date of Test:** 2017-05-03  
**End Date of Test:** 2017-05-25

**Test Result:** Pass

<b>Approved by Senior Engineer:</b>	2017-06-01	Roger Zhang	<i>Roger Zhang</i>
	Date	Name	Signature

<b>Prepared by:</b>	2017-06-01	Xu Chengming	<i>Xu Chengming</i>
	Date	Name	Signature



## CONTENT

1	General Information.....	5
1.1	Applied Standard.....	5
1.2	Test Location .....	5
1.3	Test Environment Condition.....	5
2	Test Summary .....	6
2.1	Measurement Technical Requirements.....	6
3	Description of the Equipment under Test (EUT) .....	8
3.1	General Description .....	8
3.2	EUT Identity .....	9
3.3	Technical Description.....	10
4	General Test Conditions / Configurations.....	11
4.1	Test Modes .....	11
4.2	EUT Configurations.....	11
4.3	Test Environments .....	12
4.4	Test Setups.....	12
4.5	Test Conditions .....	13
5	Main Test Instruments .....	14
6	Appendixes.....	15



## 1 General Information

### 1.1 Applied Standard

Applied Rules: 47 CFR FCC Part 2, Subpart J  
47 CFR FCC Part 15, Subpart C  
47 CFR FCC Part 15, Subpart E

Test Method: KDB 789033 D02 General UNII Test Procedures New Rules v01r04  
FCC KDB 558074 D01 DTS Meas Guidance v03r04  
ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices

### 1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.  
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C

### 1.3 Test Environment Condition

Temperature: 15 to 30 °C (Ambient)  
Relative Humidity: 20 to 85 % (Ambient)  
Atmospheric Pressure: Not applicable

## 2 Test Summary

### 2.1 Measurement Technical Requirements

#### 2.1.1 U-NII (5150-5250, 5250-5350, 5470-5725 MHz,5725-5850)

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
Emission Bandwidth	5150-5250	15.403(i) 15.407(a)(1)	No limit.	Appendix A	Pass
	5250-5350	15.403(i) 15.407(a)(2)			
	5470-5725	15.403(i) 15.407(a)(2)			
	5725-5850	15.403(i) 15.407(e)	≥ 500 kHz.		
Occupied Bandwidth	5150-5250	KDB 789033 § D	No limit.	Appendix B	Pass
	5250-5350				
	5470-5725				
	5725-5850				
Duty Cycle	5150-5850	--	No limit.	Appendix C	Pass
Maximum Conducted Output Power	5150-5250	15.407(a)(1) 15.407(a)(4)	< 250mW (avg during transmission)	Appendix D	Pass
	5250-5350	15.407(a)(2) 15.407(a)(4)	<MIN{250mW,11dB m+10*Ig(EBW)} (avg during transmission)		
	5470-5725	15.407(a)(2) 15.407(a)(4)	<MIN{250mW,11dB m+10*Ig(EBW)} (avg during transmission)		
	5725-5850	15.407(a)(3)	< 1W (avg during transmission)		
Peak Power Spectral Density	5150-5250	15.407(a)(1) 15.407(a)(4)	<11dBm/MHz (avg during	Appendix E	Pass

Test Item	Band	FCC Rule	Requirements	Test Result	Verdict
			transmission)		
	5250-5350	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)		
	5470-5725	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)		
	5725-5850	15.407(a)(3) 15.407(a)(4)	<30dBm/500KHz (avg during transmission)		
Frequence Stability	5150-5250 5250-5350 5470-5725 5725-5850	15.407(g)	FCC Part 15.407(g)	Appendix F	Pass

### 3 Description of the Equipment under Test (EUT)

#### 3.1 General Description

H1711/H1711z is subscriber equipment in the GSM/UMTS/LTE system. The GSM frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The UMTS frequency band is band 1/2/4/5. The LTE frequency band is band 2/4/5/12/30. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) . It also provides bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other bluetooth devices.

Note1: Only H1711 5G WIFI test data included in this report.

Note2: The difference between H1711 and H1711z is show in the below table:

--	--	H1711	H1711z
Licensed frequency	LTE/UMTS/GSM	The same	The same
Unlicensed frequency	BT/WIFI	The same	The same
hardware	RAM/PCB	The same	The same
Appearance	dimension	The same	The same
	camera	The same	The same
accessory	Adaptor/USB cable/battery	The same	The same
antenna	--	The same	The same
BT/WIFI	--	The same	The same
VOWIFI	--	support	No support






### 3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

#### 3.2.1 Board

Board		
Description	Hardware Version	Software Version
Main Board	HL3TRTM	H1711C07B032

#### 3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
Adapter	HW-050200U01	Huawei Technologies Co., Ltd.	Input Voltage: ~100-240V 50/60Hz Output Voltage: 5V/2A
Battery	HB406689ECW	Huawei Technologies Co., Ltd.	Typical capacity: 4000mAh Minimum capacity: 3900mAh Nominal Voltage:  +3.82V

### 3.3 Technical Description

Characteristics	Description			
IEEE 802.11 WLAN Mode Supported	<input checked="" type="checkbox"/> 802.11a (20 MHz channel bandwidth) , <input checked="" type="checkbox"/> 802.11n (20 MHz channel bandwidth), <input checked="" type="checkbox"/> 802.11n (40 MHz channel bandwidth),			
TX/RX Operating Range	All	$f_c = 5000 \text{ MHz} + N * 5 \text{ MHz}$ , where: - $f_c$ = "Operating Frequency" in MHz, - $N$ = "Channel Number".		
	5150-5250 MHz (U-NII)	$N = 36$ to $48$ with step of $4$ for the $20 \text{ MHz}$ channel bandwidth. $N = 38$ to $46$ with step of $4$ for the $40 \text{ MHz}$ channel bandwidth. $N = 42$ for the $80 \text{ MHz}$ channel bandwidth.		
	5250-5350 MHz (U-NII)	$N = 52$ to $64$ with step of $4$ for the $20 \text{ MHz}$ channel bandwidth. $N = 54$ to $62$ with step of $4$ for the $40 \text{ MHz}$ channel bandwidth. $N = 58$ for the $80 \text{ MHz}$ channel bandwidth.		
	5470-5650 MHz (U-NII)	$N = 100$ to $116$ with step of $4$ for the $20 \text{ MHz}$ channel bandwidth. $N = 102$ to $110$ with step of $4$ for the $40 \text{ MHz}$ channel bandwidth. $N = 106$ for the $80 \text{ MHz}$ channel bandwidth.		
	5650-5725 MHz (U-NII)	$N = 132$ to $140$ with step of $4$ for the $20 \text{ MHz}$ channel bandwidth. $N = 134$ for the $40 \text{ MHz}$ channel bandwidth.		
	5725-5850 MHz (U-NII)	$N = 149$ to $165$ with step of $4$ for the $20 \text{ MHz}$ channel bandwidth. $N = 151$ to $159$ with step of $4$ for the $40 \text{ MHz}$ channel bandwidth. $N = 155$ for the $80 \text{ MHz}$ channel bandwidth.		
Modulation Type	BPSK/QPSK/16QAM/64QAM (OFDM).			
Emission Designator	U-NII(5150-5250, 5250-5350, 5470-5725)	25M8G7D (for 802.11a mod), 23M9G7D (for 802.11n 20 MHz mode), 45M2G7D (for 802.11n 40 MHz mode),		
	U-NII(5725-5850)	16M4G7D (for 802.11a mod), 17M6G7D (for 802.11n 20 MHz mode), 35M4G7D (for 802.11n 40 MHz mode),		
TPC	<input type="checkbox"/> Supported, <input checked="" type="checkbox"/> Not Supported			
Antenna	Type	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated		
	Ports	<input checked="" type="checkbox"/> Ant 1, <input type="checkbox"/> Ant 2, <input type="checkbox"/> Ant 3, <input type="checkbox"/> Ant 4		
	Smart System	<input checked="" type="checkbox"/> SISO (for 802.11a/n), <input type="checkbox"/> MIMO (for 802.11n/ac), <input type="checkbox"/> Diversity (for 802.11a) :           Tx &           Rx		
	Gain	-2 dBi (per antenna port, max.)		
	Remark	When the EUT is put into service, the practical maximum antenna gain should NOT exceed the value as described above.		
Power Supply	Type	<input checked="" type="checkbox"/> AC/DC Adapter	<input type="checkbox"/> PoE:	<input type="checkbox"/> Other:



## 4 General Test Conditions / Configurations

### 4.1 Test Modes

NOTE: Worst cases for each IEEE 802.11 mode are selected to perform tests.

Test Mode	Test Modes Description
11A	IEEE 802.11a with data rate of 6 Mbps using SISO mode.
11N20	IEEE 802.11n with data rate of MCS0 and bandwidth of 20 MHz using SISO mode.
11N40	IEEE 802.11n with data rate of MCS0 and bandwidth of 40 MHz using SISO mode.

### 4.2 EUT Configurations

#### 4.2.1 General Configurations

Configuration	Description
Test Antenna Ports	Until otherwise specified, <ul style="list-style-type: none"><li>All TX tests are performed at all TX antenna ports of the EUT, and</li><li>All RX tests are performed at all RX antenna ports of the EUT.</li></ul>
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

#### 4.2.2 Customized Configurations

##### 4.2.2.1 U-NII

Test Mode	Antenna Port	Power Conf.,	Duty cycle [%]
11A	Ant 1	16	86.1
11N20	Ant 1	16	85.4
11N40	Ant 1	15	75.6

### 4.3 Test Environments

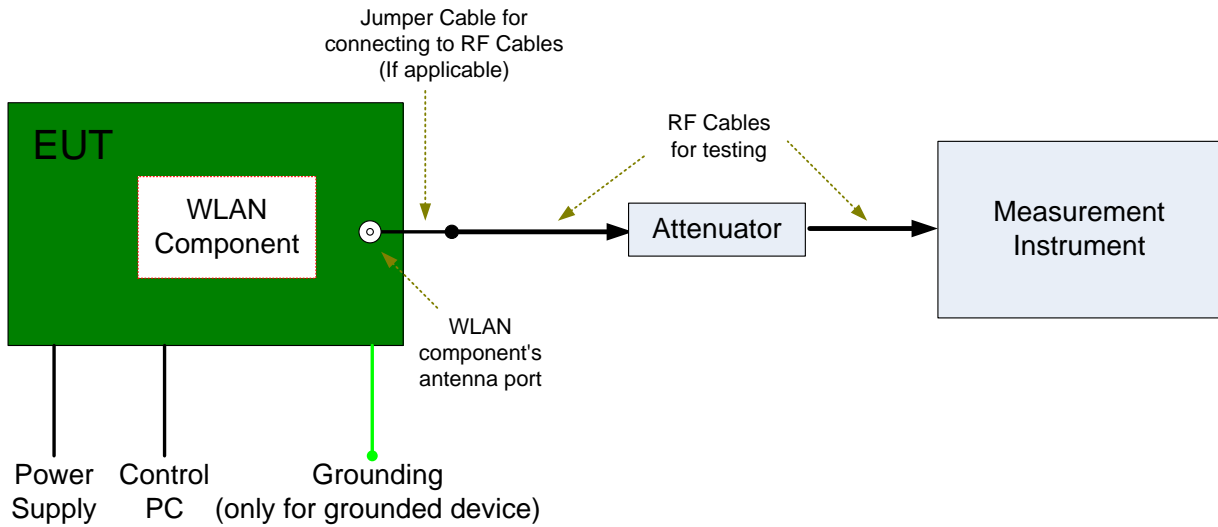
Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Temperature	TN	Ambient
Voltage	VN	3.8V

NOTE: VN= nominal voltage

### 4.4 Test Setups

#### 4.4.1 Test Setup 1

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.





## 4.5 Test Conditions

### 4.5.1 U-NII

Test Case	Test Conditions	
	Configuration	Description
Emission Bandwidth (EBW)	Meas. Method	FCC KDB 789033 §C).
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	All EUT conf. with Tx modes.
Occupied Bandwidth (OBW)	Meas. Method	FCC KDB 789033 §D).
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	All EUT conf. with Tx modes.
Maximum Conducted Output Power	Meas. Method	FCC KDB 789033 §E)d)
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	All EUT conf. with Tx modes.
Peak Power Spectral Density	Meas. Method	FCC KDB 789033 §F).
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	All EUT conf. with Tx modes.
Frequency Stability	Meas. Method	15.407(g) Frequency Stability
	Test Env.	(1)VL, VN and VH of Rated Voltage at Ambient Climate. (2) -5 °C,5°C,15°C,-25°C,35°C,45°C,50°C
	Test Setup	Test Setup 1
	EUT Conf.	Ch.36,Ch.165

## 5 Main Test Instruments

NOTE: Unless otherwise specified, the calibration intervals for test instruments were Annual (per year). The other intervals, if applicable, are marked with (##y), which denotes ## years calibration interval.

Main Test Equipments					
Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal- Due
Power supply	KEITHLEY	2303	1342889	2016/10/13	2017/10/12
Spectrum Analyzer	Agilent	N9020A	MY52090652	2016/6/29	2017/6/29
Signal Analyzer	R&S	FSQ31	200021	2016/8/5	2017/8/5
Spectrum Analyzer	Agilent	N9030A	MY49431698	2016/8/5	2017/8/5
Temperature Chamber	WEISS	WKL64	56246002940010	2016/12/21	2017/12/21
Signal generator	Agilent	E8257D	MY49281095	2016/8/5	2017/8/5
Vector Signal Generator	R&S	SMU200A	104162	2016/8/5	2017/8/5
Spectrum analyzer	R&S	FSU3	200474	2017/2/21	2018/2/20
Spectrum analyzer	R&S	FSU43	100144	2017/2/21	2018/2/20
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100262	2017/4/25	2019/4/25
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100263	2017/4/25	2019/4/25
Trilog Broadband Antenna (30M~3GHz)	SCHWARZ BECK	VULB 9163	9163-490	2017/3/29	2019/3/29
Trilog Broadband Antenna (30M~3GHz)	SCHWARZ BECK	VULB 9163	9163-520	2017/4/9	2019/4/9
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	2015/7/4	2017/7/3
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgr en	Sep-60	5140299	2015/7/15	2017/7/14
Artificial Main Network	R&S	ENV4200	100134	2016/6/2	2017/6/2
Line Impedance Stabilization Network	R&S	ENV216	100382	2016/6/2	2017/6/2
Signal Generator	Agilent	E4438C	MY49071538	2016/12/15	2017/12/15
Power Detecting & Sampling Unit	R&S	OSP-B157	100914	2016/8/5	2017/8/5
Software Information					
Test Item	Software Name		Manufacturer	Version	
RE	EMC32		R&S	V9.25.0	
CE	EMC32		R&S	V9.25.0	



## 6 Appendixes

Appendix No.	Description
SYBH(Z-RF)075042016-2005-A	Appendix for 5G WLAN

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END