

# **FCC&IC RF Test Report**

**Product Name: Smart Phone**

**Model Number: HUAWEI P7-L10, P7-L10**

**Report No: SYBH(Z-RF)028052014-2001**

**FCC ID: QISP7-L10  
IC: 6369A-P7L10**

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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 and 6369A-3.
5. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
6. The test report is invalid if there is any evidence of erasure and/or falsification.
7. The test report is only valid for the test samples.
8. 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:** 2014-04-17  
**Start Date of Test:** 2014-04-17  
**End Date of Test:** 2014-04-22

**Test Result:** Pass

|                                     |            |             |                                                                                     |
|-------------------------------------|------------|-------------|-------------------------------------------------------------------------------------|
| <b>Approved by Senior Engineer:</b> | 2014-05-16 | Liu Chunlin |  |
|                                     | Date       | Name        | Signature                                                                           |

|                     |            |              |                                                                                       |
|---------------------|------------|--------------|---------------------------------------------------------------------------------------|
| <b>Prepared by:</b> | 2014-05-16 | Feng Nianwei |  |
|                     | Date       | Name         | Signature                                                                             |



### Modification Record

| No. | Last Report No. | Modification Description |
|-----|-----------------|--------------------------|
|     |                 | First Report             |
|     |                 |                          |
|     |                 |                          |
|     |                 |                          |

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## 1 General Information

### 1.1 Applied Standard

|                |                                                                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applied Rules: | 47 CFR FCC Part 2, Subpart J 2013<br>47 CFR FCC Part 15, Subpart C 2013<br><br>IC RSS-Gen (Issue 3, December 2010)<br>IC RSS-210 (Issue 8, December 2010) |
| Test Method:   | FCC KDB 558074 D01 DTS Meas Guidance v03r01<br>ANSI C63.10-2009, 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.,<br>Bantian, Longgang District, Shenzhen, 518129, P.R.C |

### 1.3 Test Environment Condition

|                            |                |
|----------------------------|----------------|
| Ambient Temperature:       | 19.5to 25 °C   |
| Ambient Relative Humidity: | 40 to 55 %     |
| Atmospheric Pressure:      | Not applicable |

## 2 Test Summary

| Test Item                                                                                                                                                                                                                                                                                                                                                                              | FCC Part No.                    | IC Standard No.                                                               | Requirements                                                                                       | Test Result | Verdict |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------|---------|
| DTS (6 dB) Bandwidth                                                                                                                                                                                                                                                                                                                                                                   | 15.247(a)(2)                    | RSS-210, A8.2(a)                                                              | $\geq 500$ kHz.                                                                                    | Appendix A  | Pass    |
| Occupied Bandwidth<br>(Only for IC requirement)                                                                                                                                                                                                                                                                                                                                        | ---                             | RSS-210, 2.1<br>RSS-Gen, 4.6.1                                                | No limit.                                                                                          |             | --      |
| Maximum Peak<br>Conducted Output Power                                                                                                                                                                                                                                                                                                                                                 | 15.247(b)(3)                    | RSS-210, A8.4(4)                                                              | For directional gain: $< 30$ dBm – (G[dBi] – 6 [dB]), peak; Otherwise: $< 30$ dBm, peak.           | Appendix B  | Pass    |
| Maximum Power Spectral<br>Density Level                                                                                                                                                                                                                                                                                                                                                | 15.247(e)                       | RSS-210, A8.2(b)                                                              | For directional gain: $< 8$ dBm/3 kHz – (G[dBi] – 6 [dB]), peak. Otherwise: $< 8$ dBm/3 kHz, peak. | Appendix C  | Pass    |
| Band Edges Compliance                                                                                                                                                                                                                                                                                                                                                                  | 15.247(d)                       | RSS-210, A8.5                                                                 | $< -20$ dBm/100 kHz if total peak power $\leq$ power limit.                                        | Appendix D  | Pass    |
| Unwanted Emissions into<br>Non-Restricted<br>Frequency Bands                                                                                                                                                                                                                                                                                                                           |                                 |                                                                               |                                                                                                    | Appendix E  | Pass    |
| Unwanted Emissions into<br>Restricted Frequency<br>Bands (Radiated)                                                                                                                                                                                                                                                                                                                    | 15.247(d)<br>15.209<br>(NOTE 1) | RSS-210, A8.5<br>RSS-210, 2.2<br>RSS-Gen, 7.2.2<br>RSS-Gen, 7.2.5<br>(NOTE 1) | FCC Part 15.209 field strength limit;<br>RSS-Gen 7.2.5 field strength limit.                       | Appendix F  | Pass    |
| AC Power Line<br>Conducted Emissions                                                                                                                                                                                                                                                                                                                                                   | 15.207                          | RSS-Gen, 7.2.4                                                                | FCC Part 15.207 conducted limit;<br>RSS-Gen, 7.2.4 conducted limit.                                | Appendix G  | Pass    |
| NOTE 1: According to KDB 558074, antenna-port conducted measurements are acceptable as an alternative to radiated measurements for demonstrating compliance to the limits in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case emissions will also be required. |                                 |                                                                               |                                                                                                    |             |         |

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

#### **3.1 General Description**

HUAWEI P7-L10, P7-L10 is subscriber equipment in the LTE/UMTS/GSM system. The LTE frequency band is Band I, Band III, Band VII, Band VIII and Band XX. The HSUPA/HSDPA/UMTS frequency band is Band I, Band II, Band V and Band VIII. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The Mobile Phone implements such functions as RF signal receiving/transmitting, LTE/UMTS/GSM protocol processing, voice, video, MMS service, GPS, AGPS WIFI and NFC etc. Externally it provides earphone port (to provide voice service) and USIM card interface. 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.

The WIFI 11b of old P7-L10 transmit power is 17 dBm, but new P7-L10 reduce to 15 dBm. So we only test 11b mode, the 11g & 11n test data refer to SYBH(Z-RF)005032014-2002 RF report of P7-L10.

The GSM test data refer to SYBH(Z-RF)005032014-2001 RF report of P7-L10.

The WCDMA test data refer to SYBH(Z-RF)005032014-2001 RF report of P7-L10.

The LTE test data refer to SYBH(Z-RF)005032014-2001 RF report of P7-L10.

The Bluetooth test data refer to SYBH(Z-RF)005032014-2005 RF report of P7-L10.

The Bluetooth BLE test data refer to SYBH(Z-RF)005032014-2003 RF report of P7-L10.

The NFC test data refer to SYBH(Z-RF)005032014-2005 RF report of P7-L10.

## 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                     |                  |             |
|---------------------------|------------------|-------------|
| Software Version          | Hardware Version | Description |
| Sophia-L10V100R001C00B106 | HL1US0PHIAM      | Main Board  |

### 3.2.2 Adapter and battery

| Name                | Manufacture                   | Description                                                                                                                                                                                                                                                                           |
|---------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC/DCAdapter        | Huawei Technologies Co., Ltd. | AC/DCAdapter Model: HW-050100U2W<br>Input Voltage: ~100-240V 50/60Hz 0.2A<br>Output Voltage: 5V  1A<br>Rated Power: 5W                                                                              |
| Rechargeable Li-ion | Huawei Technologies Co., Ltd. | Battery Model: HB3543B4EBW<br>Rated capacity: 2460mAh<br>Nominal Voltage:  +3.8V<br>Charging Voltage:  +4.35V |

### 3.3 Technical Description

| Characteristics                 | Description                                                                                                                                                                                                                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IEEE 802.11 WLAN Mode Supported | <input checked="" type="checkbox"/> 802.11b (20 MHz channel bandwidth)                                                                                                                                                                                                                                                    |
| TX/RX Operating Range           | <div>2412-2462 MHz band</div> <div> <math>f_c = 2407 \text{ MHz} + N * 5 \text{ MHz}</math>, where: <ul style="list-style-type: none"> <li>- <math>f_c</math> = "Operating Frequency" in MHz,</li> <li>- <math>N</math> = "Channel Number" with the range from 1 to 11 for the 20 MHz channel bandwidth</li> </ul> </div> |
| Data Rate                       | 802.11b 1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps                                                                                                                                                                                                                                                                                 |
| Modulation Type                 | DBPSK/DQPSK/CCK (DSSS), BPSK/QPSK/16QAM/64QAM (OFDM).                                                                                                                                                                                                                                                                     |
| Emission Designator             | 8M36G1D (for 802.11b mode),                                                                                                                                                                                                                                                                                               |
| TX Power Control                | <input checked="" type="checkbox"/> Supported, <input type="checkbox"/> Not Supported                                                                                                                                                                                                                                     |
| Standby Mode                    | <input type="checkbox"/> Supported, <input checked="" type="checkbox"/> Not Supported                                                                                                                                                                                                                                     |
| Equipment Type                  | <input type="checkbox"/> Stand-alone equipment, <input type="checkbox"/> Plug-in radio device, <input checked="" type="checkbox"/> Combined equipment                                                                                                                                                                     |
| Antenna                         | Description Isotropic 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                                                                                                                                                                                                           |
|                                 | Smart System <input checked="" type="checkbox"/> SISO (for 802.11b/g/n),<br><input type="checkbox"/> MIMO (for 802.11n): 2 Tx & 2 Rx,<br><input type="checkbox"/> Diversity (for 802.11b/g) :           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 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                                 |
|-----------|--------------------------------------------------------|
| 11B       | IEEE 802.11b with data rate of 1 Mbps 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

| Test Mode | RF Ch. | Antenna Port | TX Freq. [MHz]       | RX Freq. [MHz] | Ch. BW [MHz] | Power Conf., per Port |
|-----------|--------|--------------|----------------------|----------------|--------------|-----------------------|
| 11B       | L      | Ant 1        | Ch No. 1 / 2412 MHz  | ---            | 20           | 15                    |
| 11B       | M      | Ant 1        | Ch No. 6 / 2437 MHz  | ---            | 20           | 15                    |
| 11B       | H      | Ant 1        | Ch No. 11 / 2462 MHz | ---            | 20           | 15                    |

### 4.3 Test Environments

NOTE: The values used in the test report may be stringent than the declared.

| Environment Parameter | Selected Values During Tests |         |                   |
|-----------------------|------------------------------|---------|-------------------|
|                       | Temperature                  | Voltage | Relative Humidity |
| NTNV                  | Ambient                      | 3.8VDC  | Ambient           |

### 4.4 Antenna requirements

#### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

The antennas of the **Smart Phone** are **permanently attached**.

There are no provisions for connection to an external antenna.

#### Conclusion:

The **Huawei Mobile Phone FCC ID: QISP7-L10, IC: 6369A-P7L10** unit complies with the requirement of §15.203.

#### Ch. Frequency (MHz)

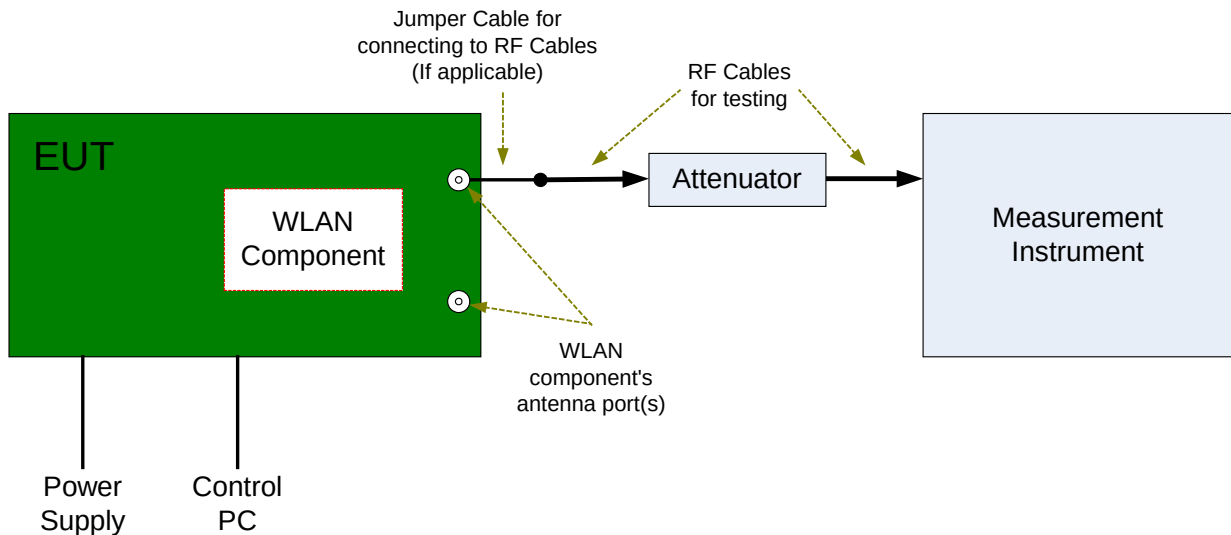
| Ch. | Frequency (MHz) |
|-----|-----------------|
| 01  | 2412            |
| .   | .               |
| .   | .               |
| 06  | 2437            |
| .   | .               |
| .   | .               |
| 11  | 2462            |

#### Frequency/ Channel Operations

## 4.5 Test Setups

### 4.5.1 Test Setup 1

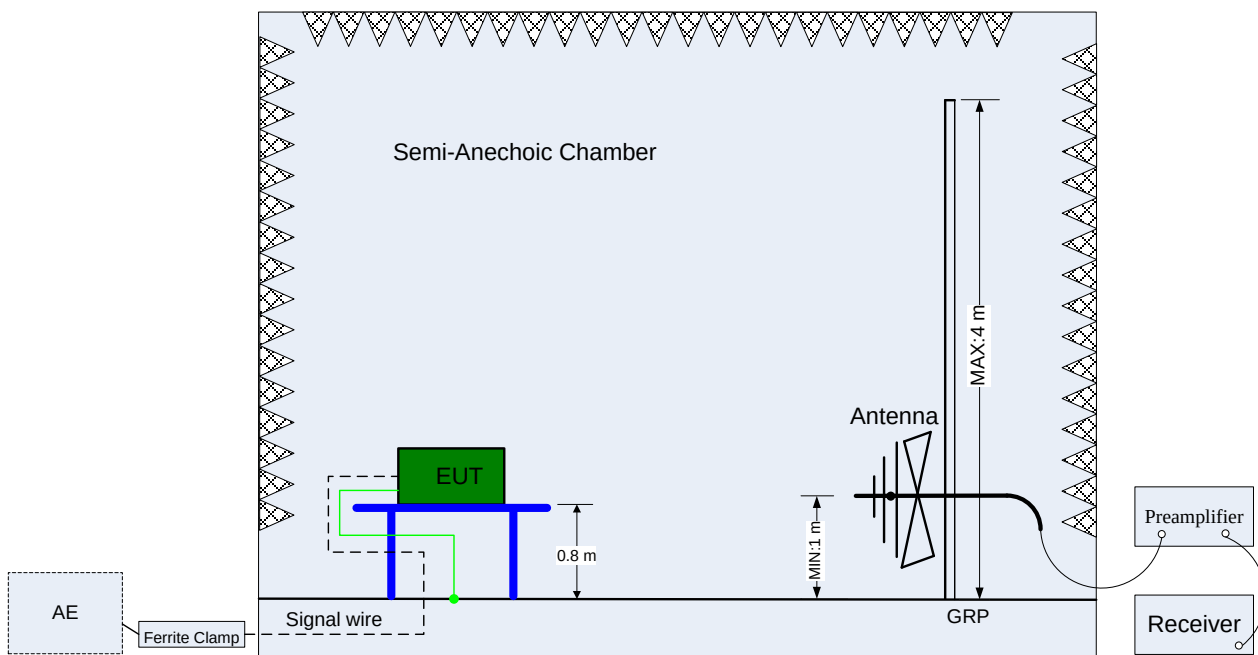
The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



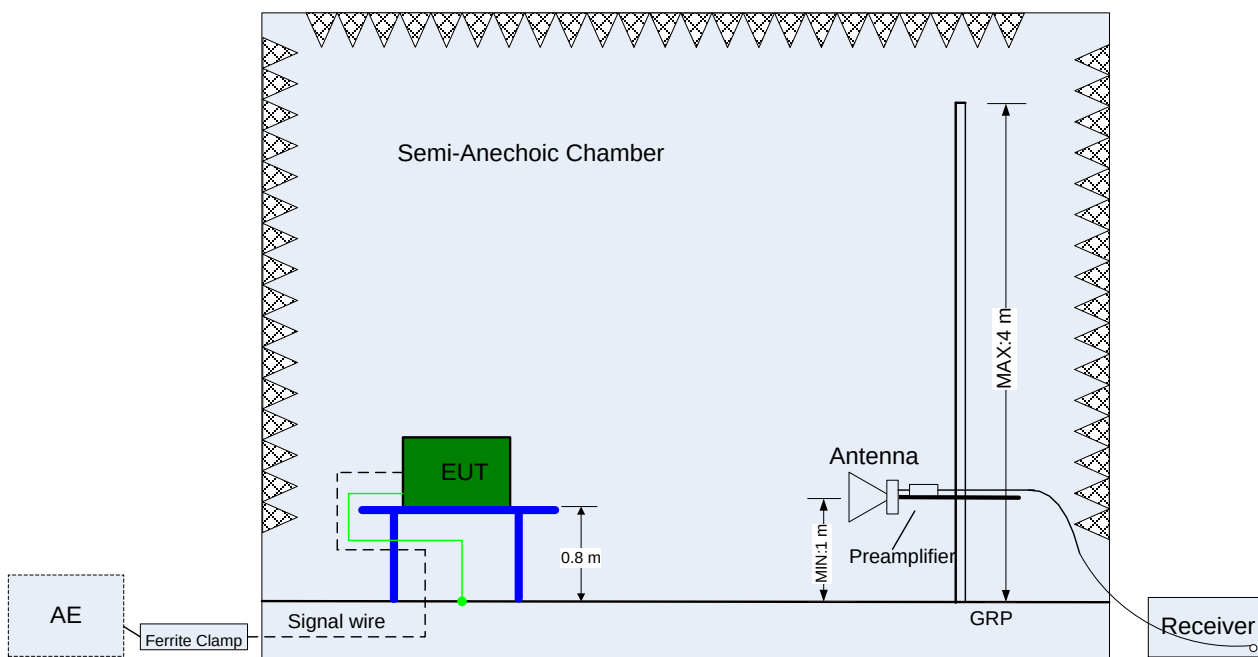
### 4.5.2 Test Setup 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4 and CAN/CSA-CEI/IEC CISPR 22.

The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).



(Below 1 GHz)

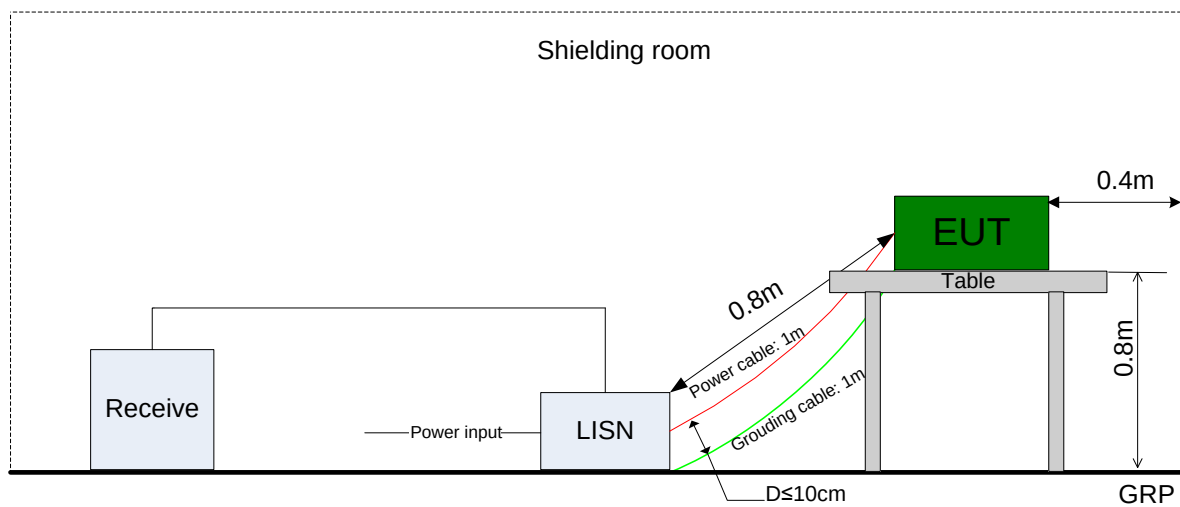


(Above 1 GHz)

### 4.5.3 Test Setup 3

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



#### 4.6 Test Conditions

| Test Case                                                                 | Test Conditions    |                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                           | Configuration      | Description                                                                                                                                                                                                                      |
| DTS (6 dB)<br>Bandwidth                                                   | Measurement Method | FCC KDB 558074 §8.2 Option 2.                                                                                                                                                                                                    |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 1                                                                                                                                                                                                                     |
|                                                                           | EUT Configuration  | 11B_L, 11B_M, 11B_H                                                                                                                                                                                                              |
| Occupied<br>Bandwidth (Only<br>for IC<br>requirement)                     | Measurement Method | RSS-Gen, 4.6.1.                                                                                                                                                                                                                  |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 1                                                                                                                                                                                                                     |
|                                                                           | EUT Configuration  | 11B_L, 11B_M, 11B_H                                                                                                                                                                                                              |
| Maximum Peak<br>Conducted<br>Output Power                                 | Measurement Method | FCC KDB 558074 §9.1 .2 (integrated band power method).                                                                                                                                                                           |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 1                                                                                                                                                                                                                     |
|                                                                           | EUT Configuration  | 11B_L, 11B_M, 11B_H                                                                                                                                                                                                              |
| Maximum Power<br>Spectral Density<br>Level                                | Measurement Method | FCC KDB 558074 §10.2 (peak PSD).                                                                                                                                                                                                 |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 1                                                                                                                                                                                                                     |
|                                                                           | EUT Configuration  | 11B_L, 11B_M, 11B_H                                                                                                                                                                                                              |
| Band Edges<br>Compliance                                                  | Measurement Method | FCC KDB 558074 §13.0.                                                                                                                                                                                                            |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 1                                                                                                                                                                                                                     |
|                                                                           | EUT Configuration  | 11B_L, 11B_H                                                                                                                                                                                                                     |
| Unwanted<br>Emissions into<br>Non-Restricted<br>Frequency Bands           | Measurement Method | FCC KDB 558074 §11.0                                                                                                                                                                                                             |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 1                                                                                                                                                                                                                     |
|                                                                           | EUT Configuration  | 11B_L, 11B_M, 11B_H                                                                                                                                                                                                              |
| Unwanted<br>Emissions into<br>Restricted<br>Frequency Bands<br>(Radiated) | Measurement Method | ANSI C63.10; FCC KDB 558074 §12.1, Radiated                                                                                                                                                                                      |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |
|                                                                           | Test Setup         | Test Setup 2                                                                                                                                                                                                                     |
|                                                                           | EUT Placement      | <input type="checkbox"/> Flatwise, <input type="checkbox"/> Upright, <input type="checkbox"/> Hung                                                                                                                               |
|                                                                           | EUT Configuration  | (1) 30 MHz to 1 GHz:<br>11B_L (Worst Conf.).<br>(2) 1 GHz to 3 GHz:<br>11B_L, 11B_H<br>(3) 3 GHz to 18 GHz:<br>11B_L (Worse Conf.), 11B_H (Worse Conf.).<br>(4) 18 GHz to 26.5 GHz:<br>11B_L (Worse Conf.), 11B_H (Worse Conf.). |
| AC Power Line<br>Conducted                                                | Measurement Method | AC mains conducted.                                                                                                                                                                                                              |
|                                                                           | Test Environment   | NTNV                                                                                                                                                                                                                             |



| Test Case | Test Conditions   |                     |
|-----------|-------------------|---------------------|
|           | Configuration     | Description         |
| Emissions | Test Setup        | Test Setup 3        |
|           | EUT Configuration | 11B_L(Worst Conf.). |



## 5 Main Test Instruments

| Equipment Name                                  | Manufacturer  | Model     | Serial Number  | Cal Date   | Cal- Due   |
|-------------------------------------------------|---------------|-----------|----------------|------------|------------|
| Power supply                                    | KEITHLEY      | 2303      | 1288003        | 2012-11-19 | 2014-11-18 |
| Wireless Communication Test set                 | Agilent       | N4010A    | MY49081592     | 2013-10-29 | 2014-10-28 |
| Universal Radio Communication Tester            | R&S           | CMU200    | 113164         | 2013-07-18 | 2014-07-17 |
| Universal Radio Communication Tester            | R & S         | CMW500    | 126855         | 2013-08-08 | 2015-08-09 |
| Spectrum Analyzer                               | Agilent       | E4440A    | MY48250119     | 2013-08-09 | 2014-08-08 |
| Signal Analyzer                                 | R&S           | FSQ31     | 200021         | 2013-10-29 | 2014-10-28 |
| Spectrum Analyzer                               | Agilent       | N9030A    | MY49431698     | 2013-10-29 | 2014-10-28 |
| Temperature Chamber                             | WEISS         | WKL64     | 56246002940010 | 2014-02-25 | 2015-02-24 |
| Temperature Chamber                             | ESPEC         | MW3030    | 06114003       | 2014-05-09 | 2015-05-08 |
| Signal generator                                | Agilent       | E8257D    | MY51500314     | 2014-05-09 | 2015-05-08 |
| Vector Signal Generator                         | R&S           | SMU200A   | 104162         | 2013-10-29 | 2014-10-28 |
| Test receiver                                   | R&S           | ESU26     | 100150         | 2013-05-15 | 2014-05-14 |
| Spectrum analyzer                               | R&S           | FSU3      | 200474         | 2013-12-24 | 2014-12-23 |
| Spectrum analyzer                               | R&S           | FSU43     | 100144         | 2013-12-24 | 2014-12-23 |
| Double-Ridged Waveguide Horn Antenna (1G~18GHz) | R&S           | HF907     | 100304         | 2013-02-02 | 2015-02-01 |
| Trilog Broadband Antenna (30M~3GHz)             | SCHWARZB ECK  | VULB 9163 | 9163-490       | 2013-02-02 | 2015-02-01 |
| LOOP Antennas(9kHz-30MHz)                       | R&S           | HFH2-Z2   | 100262         | 2013-03-23 | 2015-03-22 |
| Pyramidal Horn Antenna(18GHz-26-5GHz)           | ETS-LINDG REN | 3160-09   | 5140299        | 2013-03-05 | 2015-03-04 |
| Artificial Mains Network                        | R&S           | ENV4200   | 100134         | 2013-12-24 | 2014-12-23 |
| Artificial Mains Network                        | R&S           | ENV216    | 100382         | 2013-12-24 | 2014-12-23 |

END