

# Huawei Technologies Co., Ltd.

## C2PC TEST REPORT

**Report Type:**

FCC Part 15.407 & ISSED RSS-247 RF report

**Model:**

HUAWEI Board-65, HUAWEI Board-65A

**REPORT NUMBER:**

190902548SHA-002

**ISSUE DATE:**

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**DOCUMENT CONTROL NUMBER:**

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## TEST REPORT

**Applicant:** Huawei Technologies Co., Ltd.  
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**Manufacturer:** Huawei Technologies Co., Ltd.  
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**Manufacturing site:** Huawei Technologies Co., Ltd.  
Administration Building, Huawei Base, Bantian, Longgang District,  
Shenzhen 518129 China

**Product Name:** Videoconferencing Endpoint

**Type/Model:** HUAWEI Board-65, HUAWEI Board-65A

**FCC ID:** QIS-BOARD

**IC:** 6369A-BOARD

## SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

**47CFR Part 15 (2018):** Radio Frequency Devices (Subpart C)

**ANSI C63.10 (2013):** American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

**RSS-247 Issue 2 (February 2017):** Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

**RSS-Gen Issue 5 (April 2018):** General Requirements for Compliance of Radio Apparatus

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## TEST REPORT

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## Revision History

| Report No.       | Version | Description             | Issued Date      |
|------------------|---------|-------------------------|------------------|
| 190902548SHA-002 | Rev. 01 | Initial issue of report | November 8, 2019 |
|                  |         |                         |                  |
|                  |         |                         |                  |

## Measurement result summary

| TEST ITEM                      | FCC REFERENCE                 | IC REFERENCE                                                      | RESULT |
|--------------------------------|-------------------------------|-------------------------------------------------------------------|--------|
| Maximum Conducted Output Power | 15.407(a)                     | RSS-247 Issue 2<br>Clause 6                                       | Pass   |
| Radiated emission              | 15.407(b)<br>15.205<br>15.209 | RSS-247 Issue 2<br>Clause 6<br>RSS-Gen Issue 5<br>Clause 8.9&8.10 | Pass   |
| Power line conducted emission  | 15.407(b)<br>15.207           | RSS-Gen Issue 5<br>Clause 8.8                                     | Pass   |

Notes: 1: NA =Not Applicable

2. Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name:         | Videoconferencing Endpoint                                                                                                                               |
| Type/Model:           | HUAWEI Board-65, HUAWEI Board-65A                                                                                                                        |
| Description of EUT:   | The EUT is a Videoconferencing Endpoint which was install a WIFI module, there have two models, and they are electrically identical except touch screen. |
| Rating:               | AC 100~240V, 50~60Hz                                                                                                                                     |
| EUT type:             | <input type="checkbox"/> Table top <input checked="" type="checkbox"/> Floor standing                                                                    |
| Software Version:     | /                                                                                                                                                        |
| Hardware Version:     | /                                                                                                                                                        |
| Sample received date: | Oct 11, 2019                                                                                                                                             |
| Date of test:         | Oct 11, 2019 - Oct 22, 2019                                                                                                                              |

### 1.2 Technical Specification

|                     |                                                                                                                                                               |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Range:    | 5150 ~ 5250MHz, 5250 ~ 5350MHz                                                                                                                                |
| Support Standards:  | 802.11a, 802.11n/ac(HT20), 802.11n/ac(HT40), 802.11ac(VHT80)                                                                                                  |
| Type of Modulation: | OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)                                                                                                                       |
| Channel Number:     | For 5150 ~ 5250MHz band: Channel 36 - 48<br>For 5250 ~ 5350MHz Band: Channel 52 - 64                                                                          |
| Operating Mode:     | <input type="checkbox"/> Master<br><input checked="" type="checkbox"/> Client without Radar Detection<br><input type="checkbox"/> Client with Radar Detection |

| Antenna No. | Model | Antenna type | Antenna Gain | Note |
|-------------|-------|--------------|--------------|------|
| 1           | /     | PIFA         | 3.9dBi Max   |      |

| Mode              | Tx/Rx Function | Beamforming function | CDD function |
|-------------------|----------------|----------------------|--------------|
| 802.11a           | 1Tx/1Rx        | NO                   | NO           |
| 802.11n/ac (HT20) | 2Tx/2Rx        | NO                   | NO           |
| 802.11n/ac (HT20) | 2Tx/2Rx        | NO                   | NO           |
| 802.11ac (HT80)   | 2Tx/2Rx        | NO                   | NO           |

### 1.3 Description of Test Facility

|            |                                                                        |
|------------|------------------------------------------------------------------------|
| Name:      | Intertek Testing Services Shanghai                                     |
| Address:   | Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China |
| Telephone: | 86 21 61278200                                                         |
| Telefax:   | 86 21 54262353                                                         |

|                                                                                   |                                                                          |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| The test facility is recognized, certified, or accredited by these organizations: | CNAS Accreditation Lab<br>Registration No. CNAS L0139                    |
|                                                                                   | FCC Accredited Lab<br>Designation Number: CN1175                         |
|                                                                                   | IC Registration Lab<br>Registration code No.: 2042B-1                    |
|                                                                                   | VCCI Registration Lab<br>Registration No.: R-4243, G-845, C-4723, T-2252 |
|                                                                                   | NVLAP Accreditation Lab<br>NVLAP LAB CODE: 200849-0                      |
|                                                                                   | A2LA Accreditation Lab<br>Certificate Number: 3309.02                    |

## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2018)

ANSI C63.10 (2013)

RSS-247 Issue 2 (February 2017)

RSS-Gen Issue 5 (April 2018)

KDB 789033 D02 v02r01

### 2.2 Mode of operation during the test

While testing transmitting mode of EUT, the continuously transmission was applied by following software.

| Software name | Manufacturer | Version | Supplied by |
|---------------|--------------|---------|-------------|
| CMD Command   | -            | -       | Client      |

The lowest, middle and highest channel were tested as representatives.

| Frequency Band (MHz) | Mode         | Lowest (MHz) | Middle (MHz) | Highest (MHz) |
|----------------------|--------------|--------------|--------------|---------------|
| 5150~5250MHz         | 802.11a      | 5180         | 5200         | 5240          |
|                      | 802.11n/ac20 | 5180         | 5200         | 5240          |
|                      | 802.11n/ac40 | 5190         | /            | 5230          |
|                      | 802.11ac80   | 5210         | /            | /             |
| 5250~5350MHz         | 802.11a      | 5260         | 5300         | 5320          |
|                      | 802.11n/ac20 | 5260         | 5300         | 5320          |
|                      | 802.11n/ac40 | 5270         | /            | 5310          |
|                      | 802.11ac80   | 5290         | /            | /             |

After this pre-scan with the RF power, the following data rate was chosen to do the test as the worst case.

| Frequency Band<br>(MHz) | Mode         | Worst case data rate |
|-------------------------|--------------|----------------------|
| 5150~5250               | 802.11a      | 6Mbps                |
|                         | 802.11n/ac20 | MCS0                 |
|                         | 802.11n/ac40 | MCS0                 |
|                         | 802.11ac80   | MCS0                 |
| 5250~5350               | 802.11a      | 6Mbps                |
|                         | 802.11n/ac20 | MCS0                 |
|                         | 802.11n/ac40 | MCS0                 |
|                         | 802.11ac80   | MCS0                 |

The HUAWEI Board-65 was chosen as a representative, and there are the following test modes:

Radiated test mode:

Mode 1: EUT transmitted signal with internal antenna;

Conducted test mode:

Mode 2: EUT transmitted signal from PCBA RF port connected to SPA directly;

We have verified all test modes and choose the worst mode 1 for radiated test and mode 2 for conducted test as representatively to list the results in this report.

## TEST REPORT

### 2.3 Test software list

| Test Items         | Software | Manufacturer | Version |
|--------------------|----------|--------------|---------|
| Conducted emission | ESxS-K1  | R&S          | V2.1.0  |
| Radiated emission  | ES-K1    | R&S          | V1.71   |

### 2.4 Test peripherals list

| Item No. | Name            | Band and Model | Description  |
|----------|-----------------|----------------|--------------|
| 1        | Laptop computer | HP, 6470b      | AC 230V 50Hz |
|          |                 |                |              |

### 2.5 Test environment condition:

| Test items                                       | Temperature | Humidity |
|--------------------------------------------------|-------------|----------|
| Radiated Emissions in restricted frequency bands | 27°C        | 57% RH   |
| Power line conducted emission                    | 26°C        | 55% RH   |

## 2.6 Instrument list

| Conducted Emission/Disturbance Power/Tri-loop Test/CDN method |                       |                   |                        |              |            |
|---------------------------------------------------------------|-----------------------|-------------------|------------------------|--------------|------------|
| Used                                                          | Equipment             | Manufacturer      | Type                   | Internal no. | Due date   |
| <input checked="" type="checkbox"/>                           | Test Receiver         | R&S               | ESCS 30                | EC 2107      | 2020-07-14 |
| <input checked="" type="checkbox"/>                           | A.M.N.                | R&S               | ESH2-Z5                | EC 3119      | 2019-11-29 |
| Radiated Emission                                             |                       |                   |                        |              |            |
| Used                                                          | Equipment             | Manufacturer      | Type                   | Internal no. | Due date   |
| <input checked="" type="checkbox"/>                           | Test Receiver         | R&S               | ESIB 26                | EC 3045      | 2020-09-16 |
| <input checked="" type="checkbox"/>                           | Bilog Antenna         | TESEQ             | CBL 6112D              | EC 4206      | 2019-12-10 |
| <input checked="" type="checkbox"/>                           | Pre-amplifier         | R&S               | AFS42-00101800-25-S-42 | EC5262       | 2020-06-11 |
| Tet Site                                                      |                       |                   |                        |              |            |
| Used                                                          | Equipment             | Manufacturer      | Type                   | Internal no. | Due date   |
| <input checked="" type="checkbox"/>                           | Shielded room         | Zhongyu           | -                      | EC 2838      | 2020-01-13 |
| <input type="checkbox"/>                                      | Shielded room         | Zhongyu           | -                      | EC 2839      | 2020-01-13 |
| <input checked="" type="checkbox"/>                           | Semi-anechoic chamber | Albatross project | -                      | EC 3048      | 2020-06-31 |
| Additional instrument                                         |                       |                   |                        |              |            |
| Used                                                          | Equipment             | Manufacturer      | Type                   | Internal no. | Due date   |
| <input type="checkbox"/>                                      | Spectrum analyzer     | Agilent           | E7402A                 | EC 2254      | 2020-07-14 |
| <input checked="" type="checkbox"/>                           | Therom-Hygrograph     | ZJ1-2A            | S.M.I.F.               | EC 3783      | 2020-03-10 |
| <input checked="" type="checkbox"/>                           | Therom-Hygrograph     | ZJ1-2A            | S.M.I.F.               | EC 5198      | 2020-02-27 |
| <input type="checkbox"/>                                      | Therom-Hygrograph     | ZJ1-2A            | S.M.I.F.               | EC 3325      | 2020-04-07 |
| <input checked="" type="checkbox"/>                           | Pressure meter        | YM3               | Shanghai Mengde        | EC 3320      | 2020-07-14 |

## TEST REPORT

### 2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| Test item                                                   | Measurement uncertainty |
|-------------------------------------------------------------|-------------------------|
| Maximum peak output power                                   | $\pm 0.74\text{dB}$     |
| Radiated Emissions in restricted frequency bands below 1GHz | $\pm 4.90\text{dB}$     |
| Radiated Emissions in restricted frequency bands above 1GHz | $\pm 5.02\text{dB}$     |
| Power line conducted emission                               | $\pm 3.19\text{dB}$     |

## TEST REPORT

### 3 Radiated Emissions

**Test result:** Pass

#### 3.1 Limit

The radiated emissions which fall in the restricted bands, and the radiated emissions below 1GHz, must comply with the radiated emission limits specified showed as below:

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009 ~ 0.490     | 2400/F(kHz)                       | 300                           |
| 0.490 ~ 1.705     | 24000/F(kHz)                      | 30                            |
| 1.705 ~ 30.0      | 30                                | 30                            |
| 30 ~ 88           | 100                               | 3                             |
| 88 ~ 216          | 150                               | 3                             |
| 216 ~ 960         | 200                               | 3                             |
| Above 960         | 500                               | 3                             |

The radiated emissions which fall outside the restrict bands, should comply with the EIRP limit as below:

For transmitters operating in the 5.15 - 5.25 / 5.25 - 5.35 / 5.47 - 5.725GHz band:

| Frequency (MHz) | EIRP Limit (dBm) | Equivalent Field Strength (3m) (dBμV/m) |
|-----------------|------------------|-----------------------------------------|
| <5150           | -27              | 68.20                                   |
| >5350           |                  |                                         |
| <5470           |                  |                                         |
| >5725           |                  |                                         |

For transmitters operating in the 5.725 - 5.85GHz band:

| Frequency (MHz) | EIRP Limit (dBm/MHz) | Equivalent Field Strength (3m) (dBμV/m) |
|-----------------|----------------------|-----------------------------------------|
| <5650           | -27                  | 68.20                                   |
| 5650 ~ 5700     | -27 ~ 10             | 68.20 ~ 105.20                          |
| 5700 ~ 5720     | 10 ~ 15.6            | 105.20 ~ 110.80                         |
| 5720 ~ 5725     | 15.6 ~ 27            | 110.80 ~ 122.20                         |
| 5850 ~ 5855     | 27 ~ 15.6            | 122.20 ~ 110.80                         |
| 5855 ~ 5875     | 15.6 ~ 10            | 110.80 ~ 105.20                         |
| 5875 ~ 5925     | 10 ~ -27             | 105.20 ~ 68.20                          |
| >5925           | -27                  | 68.20                                   |

**TEST REPORT****3.2 Measurement Procedure****For Radiated emission below 30MHz:**

- a) The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) Both X and Y axes of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

**For Radiated emission above 30MHz:**

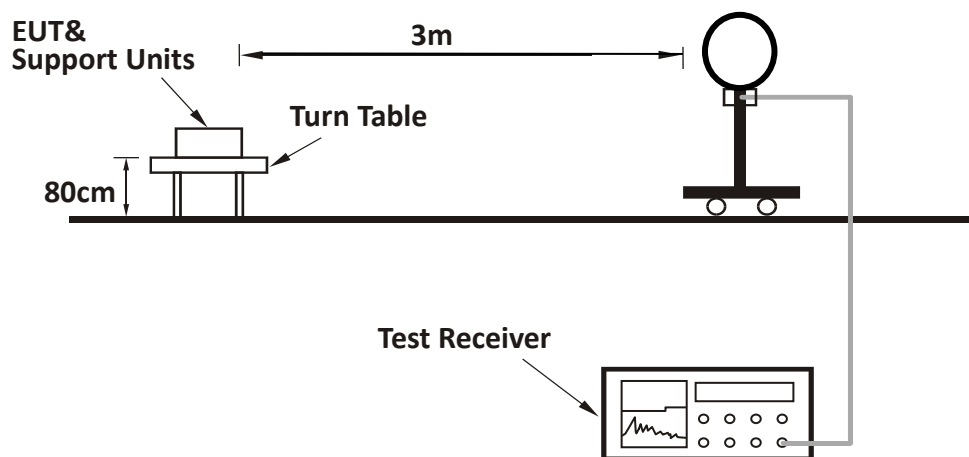
- a) The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

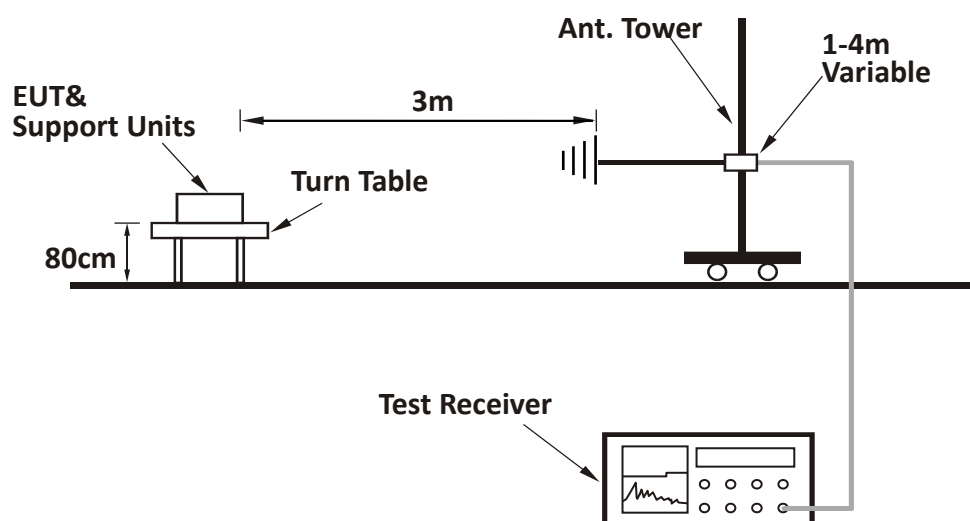
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle  $< 98\%$ ) or  $3 \times \text{RBW}$  (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported

### 3.3 Test Configuration

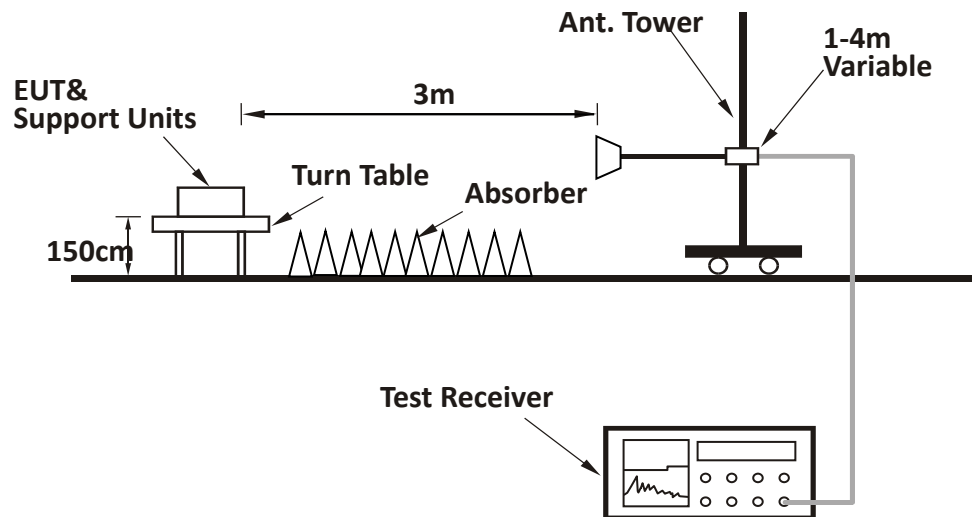
For Radiated emission below 30MHz:



For Radiated emission 30MHz to 1GHz:



**For Radiated emission above 1GHz:**



## TEST REPORT

### 3.4 Test Results of Radiated Emissions

#### Test data below 1GHz

| Antenna | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| H       | 443.948         | 19.9                  | 42.8                       | 56.4           | 13.6        | PK       |
| H       | 742.494         | 25.6                  | 50.2                       | 56.4           | 6.2         | PK       |
| H       | 890.148         | 26.9                  | 47.0                       | 56.4           | 9.4         | PK       |
| V       | 39.993          | 13.2                  | 43.5                       | 49.0           | 5.5         | PK       |
| V       | 259.647         | 10.4                  | 46.6                       | 56.4           | 9.8         | PK       |
| V       | 648.011         | 12.1                  | 44.9                       | 56.4           | 11.5        | PK       |

#### Test result above 1GHz:

The emission was conducted from 1GHz to 40GHz

#### U-NII-1 Band:

802.11a

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5180.00         | 40.8                  | 104.8                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 61.2                       | 74.00          | 12.8        | PK       |
|         | H        | 5150.00         | 40.7                  | 51.2                       | 54.00          | 2.8         | AV       |
|         | H        | 10360.00        | 14.5                  | 45.0                       | 74.00          | 29.0        | PK       |
|         | V        | 10360.00        | 14.5                  | 43.3                       | 74.00          | 30.7        | PK       |
| M       | H        | 5200.00         | 40.9                  | 103.9                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 49.7                       | 74.00          | 24.3        | PK       |
|         | H        | 10400.00        | 14.5                  | 44.5                       | 74.00          | 29.5        | PK       |
|         | V        | 10400.00        | 14.5                  | 43.1                       | 74.00          | 30.9        | PK       |
| H       | H        | 5240.00         | 41.0                  | 103.8                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 52.0                       | 74.00          | 22.0        | PK       |
|         | H        | 10480.00        | 14.5                  | 45.0                       | 74.00          | 29.0        | PK       |
|         | V        | 10480.00        | 14.5                  | 44.1                       | 74.00          | 29.9        | PK       |

# TEST REPORT

## 802.11n20

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5180.00         | 40.8                  | 102.8                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 62.1                       | 74.00          | 11.9        | PK       |
|         | H        | 5150.00         | 40.7                  | 50.7                       | 54.00          | 3.3         | AV       |
|         | H        | 10360.00        | 14.5                  | 46.0                       | 74.00          | 28.0        | PK       |
|         | V        | 10360.00        | 14.5                  | 43.6                       | 74.00          | 30.4        | PK       |
| M       | H        | 5200.00         | 40.9                  | 103.1                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 51.1                       | 74.00          | 22.9        | PK       |
|         | H        | 10400.00        | 14.5                  | 44.4                       | 74.00          | 29.6        | PK       |
|         | V        | 10400.00        | 14.5                  | 42.9                       | 74.00          | 31.1        | PK       |
| H       | H        | 5240.00         | 41.0                  | 102.9                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 51.6                       | 74.00          | 22.4        | PK       |
|         | H        | 10480.00        | 14.5                  | 48.9                       | 74.00          | 25.1        | PK       |
|         | V        | 10480.00        | 14.5                  | 43.0                       | 74.00          | 31.0        | PK       |

## 802.11n40

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5190.00         | 40.8                  | 100.6                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 65.3                       | 74.00          | 8.7         | PK       |
|         | H        | 5150.00         | 40.7                  | 50.4                       | 54.00          | 3.6         | AV       |
|         | H        | 10380.00        | 14.5                  | 45.9                       | 74.00          | 28.1        | PK       |
|         | V        | 10380.00        | 14.5                  | 44.1                       | 74.00          | 29.9        | PK       |
| H       | H        | 5230.00         | 41.0                  | 101.0                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 49.7                       | 74.00          | 24.3        | PK       |
|         | H        | 10460.00        | 14.5                  | 45.7                       | 74.00          | 28.3        | PK       |
|         | V        | 10460.00        | 14.5                  | 42.4                       | 74.00          | 31.6        | PK       |

# TEST REPORT

802.11ac80

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| M       | H        | 5210.00         | 40.9                  | 101.0                      | Fundamental    | /           | PK       |
|         | H        | 5150.00         | 40.7                  | 60.5                       | 74.00          | 13.5        | PK       |
|         | H        | 5150.00         | 40.7                  | 48.7                       | 54.00          | 5.3         | AV       |
|         | H        | 10420.00        | 14.5                  | 45.6                       | 74.00          | 28.4        | PK       |
|         | V        | 10420.00        | 14.5                  | 43.3                       | 74.00          | 30.7        | PK       |

## U-NII-2A Band:

802.11a

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5260.00         | 40.8                  | 103.8                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 50.7                       | 74.00          | 23.3        | PK       |
|         | H        | 10520.00        | 14.4                  | 46.8                       | 74.00          | 27.2        | PK       |
|         | V        | 10520.00        | 14.4                  | 43.8                       | 74.00          | 30.2        | PK       |
| M       | H        | 5300.00         | 40.8                  | 103.4                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 52.0                       | 74.00          | 22          | PK       |
|         | H        | 10600.00        | 14.4                  | 46.1                       | 74.00          | 27.9        | PK       |
|         | V        | 10600.00        | 14.4                  | 43.8                       | 74.00          | 30.2        | PK       |
| H       | H        | 5320.00         | 40.8                  | 102.7                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 63.3                       | 74.00          | 10.7        | PK       |
|         | H        | 5350.00         | 40.8                  | 52.8                       | 54.00          | 1.2         | AV       |
|         | H        | 10640.00        | 14.4                  | 48.1                       | 74.00          | 25.9        | PK       |
|         | V        | 10640.00        | 14.4                  | 44.2                       | 74.00          | 29.8        | PK       |

# TEST REPORT

802.11n20

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5260.00         | 40.8                  | 102.7                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 52.9                       | 74.00          | 21.1        | PK       |
|         | H        | 10520.00        | 14.4                  | 46.6                       | 74.00          | 27.4        | PK       |
|         | V        | 10520.00        | 14.4                  | 44.0                       | 74.00          | 30          | PK       |
| M       | H        | 5300.00         | 40.8                  | 102.9                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 51.7                       | 74.00          | 22.3        | PK       |
|         | H        | 10600.00        | 14.4                  | 47.9                       | 74.00          | 26.1        | PK       |
|         | V        | 10600.00        | 14.4                  | 43.1                       | 74.00          | 30.9        | PK       |
| H       | H        | 5320.00         | 40.8                  | 102.6                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 63.1                       | 74.00          | 10.9        | PK       |
|         | H        | 5350.00         | 40.8                  | 53.1                       | 54.00          | 0.9         | AV       |
|         | H        | 10640.00        | 14.4                  | 49.2                       | 74.00          | 24.8        | PK       |
|         | V        | 10640.00        | 14.4                  | 45.5                       | 74.00          | 28.5        | PK       |

802.11n40

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5270.00         | 40.8                  | 103.5                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 52.0                       | 74.00          | 22.0        | PK       |
|         | H        | 10540.00        | 14.4                  | 45.9                       | 74.00          | 28.1        | PK       |
|         | V        | 10540.00        | 14.4                  | 43.6                       | 74.00          | 30.4        | PK       |
| H       | H        | 5310.00         | 40.8                  | 102.8                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.8                  | 65.0                       | 74.00          | 9.0         | PK       |
|         | H        | 5350.00         | 40.8                  | 50.6                       | 54.00          | 3.4         | AV       |
|         | H        | 10620.00        | 14.4                  | 46.7                       | 74.00          | 27.3        | PK       |
|         | V        | 10620.00        | 14.4                  | 43.4                       | 74.00          | 30.6        | PK       |

## TEST REPORT

802.11ac80

| Channel | Polarity | Frequency (MHz) | Correct Factor (dB/m) | Corrected Reading (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---------|----------|-----------------|-----------------------|----------------------------|----------------|-------------|----------|
| L       | H        | 5290.00         | 40.8                  | 103.1                      | Fundamental    | /           | PK       |
|         | H        | 5350.00         | 40.7                  | 63.8                       | 74.00          | 10.2        | PK       |
|         | H        | 5350.00         | 40.7                  | 50.9                       | 54.00          | 3.1         | AV       |
|         | H        | 10580.00        | 14.4                  | 48.0                       | 74.00          | 26          | PK       |
|         | V        | 10580.00        | 14.4                  | 44.5                       | 74.00          | 29.5        | PK       |

Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.  
2. Corrected Reading = Original Receiver Reading + Correct Factor  
3. Margin = Limit - Corrected Reading  
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,  
Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,  
Limit = 40.00dBuV/m.  
Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;  
Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;  
Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

## 4 Power line conducted emission

**Test result:** Pass

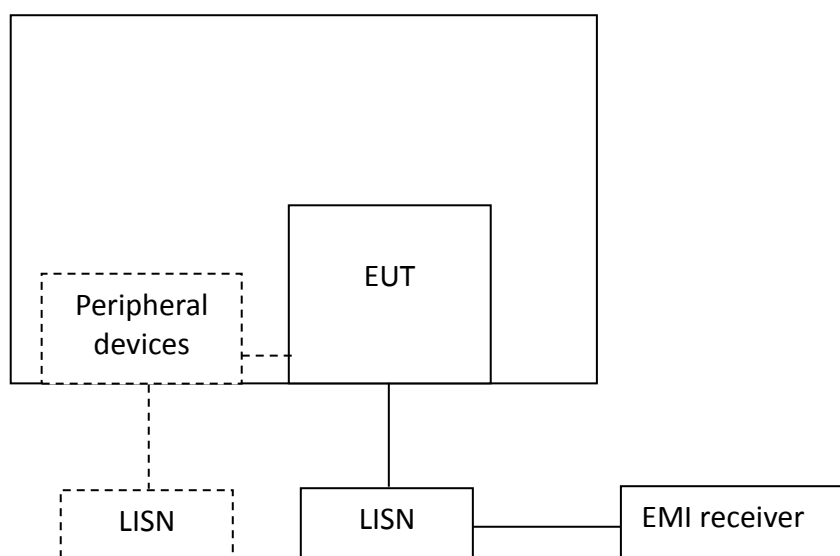
### 4.1 Measurement Procedure

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50  $\Omega$  LISN port (to which the EUT is connected), where permitted, terminated into a 50  $\Omega$  measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50  $\Omega$  measuring port is terminated by a measuring instrument having 50  $\Omega$  input impedance. All other ports are terminated in 50  $\Omega$  loads.

Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

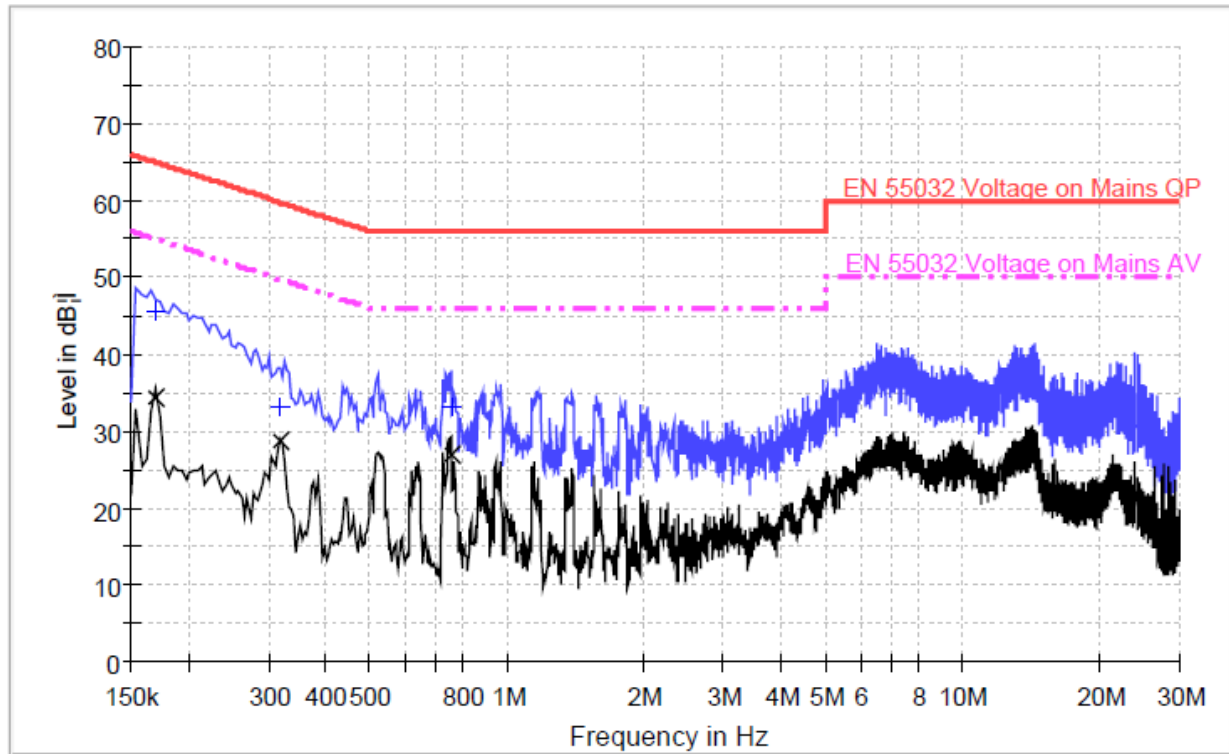
The bandwidth of the test receiver is set at 9 kHz.

### 4.2 Test Configuration



### 4.3 Test Results of Power line conducted emission

Test Curve:

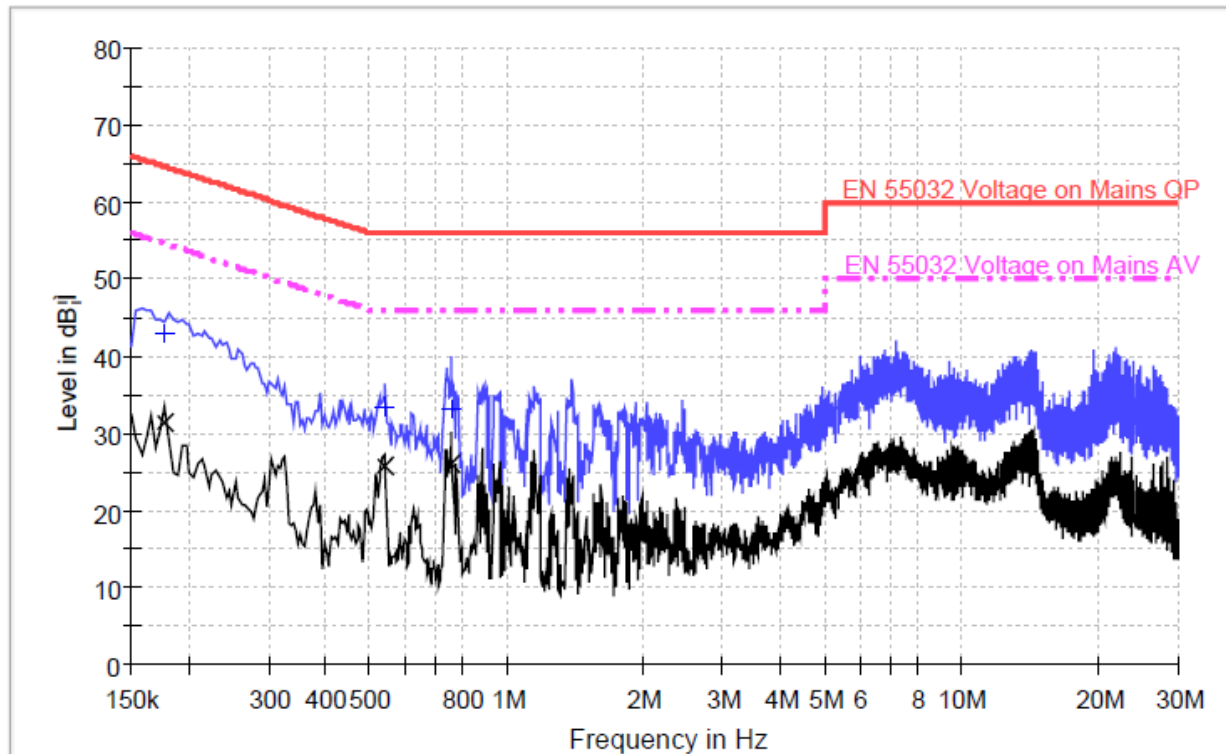


Test Data:

| Frequency (MHz) | Quasi-peak               |              |             | Average                  |              |             | Line |
|-----------------|--------------------------|--------------|-------------|--------------------------|--------------|-------------|------|
|                 | Corrected Reading (dBµV) | Limit (dBµV) | Margin (dB) | Corrected Reading (dBµV) | Limit (dBµV) | Margin (dB) |      |
| 0.170           | 45.7                     | 65.0         | 19.3        | 34.2                     | 55.0         | 20.8        | L    |
| 0.318           | 33.1                     | 59.8         | 26.7        | 28.7                     | 49.8         | 21.1        | L    |
| 0.754           | 33.3                     | 56.0         | 22.7        | 26.8                     | 46.0         | 19.2        | L    |

## TEST REPORT

### Test Curve:



### Test Data:

| Frequency (MHz) | Quasi-peak               |              |             | Average                  |              |             | Line |
|-----------------|--------------------------|--------------|-------------|--------------------------|--------------|-------------|------|
|                 | Corrected Reading (dBuV) | Limit (dBuV) | Margin (dB) | Corrected Reading (dBuV) | Limit (dBuV) | Margin (dB) |      |
| 0.178           | 42.8                     | 64.6         | 21.8        | 31.3                     | 54.6         | 23.3        | N    |
| 0.538           | 33.3                     | 56.0         | 22.7        | 25.7                     | 46.0         | 20.3        | N    |
| 0.758           | 33.3                     | 56.0         | 22.7        | 26.0                     | 46.0         | 20.0        | N    |

Remark: 1. Correct Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.  
 2. Corrected Reading = Original Receiver Reading + Correct Factor  
 3. Margin = Limit - Corrected Reading  
 4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

\*\*\*\*\* END \*\*\*\*\*