# TEST REPORT

# FCC ID:2BBGK-CP8

| | | |
|---|---|---|
| **Product** | : | **PORTABLE CAR SCREEN** |
| **Model Name** | : | **CP8** |
| **Brand** | : | **N/A** |
| **Report No.** | : | **NCT24048715E1-4** |

Prepared for

**Shenzhen Xincheng Times Technology Co.,Ltd**

**104-105, Block C, Donghai Wang Building, No. 369 Bulong Road, Ma'antang Community, Bantian Street, Longgang District, Shenzhen, China**

Prepared by


**Shenzhen NCT Testing Technology Co., Ltd.**

**A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen, People's Republic of China**

**TEL: 400-8868-419**

**FAX: 86-755-27790922**

# 1 TEST RESULT CERTIFICATION

| | | |
|---|---|---|
| Applicant’s name | : | Shenzhen Xincheng Times Technology Co.,Ltd |
| Address | : | 104-105, Block C, Donghai Wang Building, No. 369 Bulong Road, Ma'antang Community, Bantian Street, Longgang District, Shenzhen, China |
| Manufacture's name | : | Shenzhen Xincheng Times Technology Co.,Ltd |
| Address | : | 104-105, Block C, Donghai Wang Building, No. 369 Bulong Road, Ma'antang Community, Bantian Street, Longgang District, Shenzhen, China |
| Product name | : | PORTABLE CAR SCREEN |
| Model name | : | CP8 |
| Standards | : | FCC CFR Title 47 Part 15 Subpart C Section 15.407<br>ANSI C63.10:2020<br>KDB 789033 D02 v02r01 |
| Test procedure | : | ANSI C63.10:2020 |
| Test Date | : | Nov. 28, 2024-Jan. 13, 2025 |
| Date of Issue | : | Jan. 14, 2025 |
| Test Result | : | Pass |

This device described above has been tested by NCT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Test Engineer:

Keven Wu

Keven Wu / Engineer

Technical Manager:

Henry Wang

Henry Wang / Manager

# Contents

## 2 Test Summary

| FCC Part15 (15.407) , Subpart E | | | |
|---|---|---|---|
| Standard Section | Test Item | Judgment | Remark |
| Part 15.203 | Antenna requirement | Pass | |
| 47 CFR Part 15.207(a) | Conducted Emission at AC power line | N/A | |
| 47 CFR Part 15.407(a) | Maximum conducted output power | Pass | |
| 47 CFR Part 15.407(a) | Power spectral density | Pass | |
| 47 CFR Part 15.407(e) | Emission bandwidth and occupied bandwidth | Pass | |
| 47 CFR Part 15.407(h)(2)(ii) | Channel Availability Check Time | N/A | |
| 47 CFR Part 15.407(h)(2) | U-NII Detection Bandwidth | N/A | |
| KDB 905462 D02, Clause 5.1 Table 2 | Statistical Performance Check | N/A | |
| 47 CFR Part 15.407(h)(2)(iii) | Channel Move Time, Channel Closing Transmission Time | Pass | The test results are reflected in the DFS report |
| 47 CFR Part 15.407(h)(2)(iv) | Non-Occupancy Period Test | Pass | |
| KDB 905462 D02, Clause 5.2 Table 3 | DFS Detection Thresholds | N/A | |
| 47 CFR Part 15.407(b) | Band edge emissions | Pass | |
| 47 CFR Part 15.407(b) | Undesirable emission limits | Pass | |

Remark:

1. “N/A” denotes test is not applicable in this Test Report.

# 3 TEST FACILITY

Site Description

| | | |
|---|---|---|
| EMC Lab. | : | Accredited by CNAS, 2022-09-27 |
| | | The certificate is valid until 2028.01.07 |
| | | The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017) |
| | | The Certificate Registration Number is L8251 |
| | | Designation Number: CN1347 |
| | | Test Firm Registration Number: 894804 |
| | | Accredited by A2LA, June 14, 2023 |
| | | The Certificate Registration Number is 6837.01 |
| | | Accredited by Industry Canada, November 09, 2018 |
| | | The Conformity Assessment Body Identifier is CN0150 |
| | | Company Number: 30806 |
| Name of Firm | : | Shenzhen NCT Testing Technology Co., Ltd. |
| Site Location | : | A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen, People’s Republic of China |



Hotline: 400-8868-419 Fax: 86-755-27790922 http://www.ncttesting.cn

# 4 General Information

## 4.1 General Description of E.U.T.

| | |
|---|---|
| Product Name: | PORTABLE CAR SCREEN |
| Model No.: | CP8 |
| HVIN: | 24048715-001# |
| Sample ID | Engineer sample |
| Operation Frequency Range: | U-NII Band 1: 5.18~5.24 GHz<br>U-NII Band 2A: 5.26~5.32 GHz<br>U-NII Band 2C: 5.50~5.70 GHz<br>U-NII Band 3: 5.745~5.825 GHz |
| Frequency Block | U-NII Band 1: 5.15~5.25 GHz<br>U-NII Band 2A: 5.25~5.35 GHz<br>U-NII Band 2C: 5.47~5.725 GHz<br>U-NII Band 3: 5.725~5.85 GHz |
| Modulation type: | OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/n |
| Antenna Type: | Internal Antenna |
| Channel Bandwidth | 802.11a: 20 MHz<br>802.11n: 20 MHz, 40 MHz |
| TPC: | ☒ Supported ☐ Unspported |
| Channel Puncturing Function: | ☒ Supported ☐ Unspported |
| Support RU: | ☒ Full RU ☐ Partial RU |
| Antenna gain: | 4.03 dBi(WIFI5.2G) ; 3.03 dBi(WIFI5.3G)<br>3.09 dBi(WIFI5.6G); 3.43 dBi(WIFI5.8G) |
| Power supply | DC 12V |
| Hardware Version: | N/A |
| Software Version: | N/A |
| Remark: | the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant. |

☒ Wifi 5G with U-NII - 1
Frequency and Channel list for 802.11a/n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 36 | 5180 | 44 | 5220 | | |
| 40 | 5200 | 48 | 5240 | | |

Frequency and Channel list for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 38 | 5190 | | | | |
| 46 | 5230 | | | | |

Test Frequency and Channel for 802.11a/n (HT20):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 36 | 5180 | 40 | 5200 | 48 | 5240 |

Test Frequency and channel for 802.11n (HT40):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 38 | 5190 | N/A | N/A | 46 | 5230 |


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☒ Wifi 5G with U-NII -2A

Frequency and Channel list for 802.11a/n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 52 | 5260 | 60 | 5300 | | |
| 56 | 5280 | 64 | 5320 | | |

Frequency and Channel list for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 54 | 5270 | | | | |
| 62 | 5310 | | | | |

Test Frequency and Channel for 802.11a/n (HT20):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 52 | 5260 | 60 | 5300 | 64 | 5320 |

Test Frequency and channel for 802.11n (HT40):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 54 | 5270 | N/A | N/A | 62 | 5310 |



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☒ Wifi 5G with U-NII -2C

Frequency and Channel list for 802.11a/n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 100 | 5500 | 116 | 5580 | 132 | 5660 |
| 104 | 5520 | 120 | 5600 | 136 | 5680 |
| 108 | 5540 | 124 | 5620 | 140 | 5700 |
| 112 | 5560 | 128 | 5640 | | |

Frequency and Channel list for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 102 | 5510 | 118 | 5590 | 134 | 5670 |
| 110 | 5550 | 126 | 5630 | | |

Test Frequency and Channel for 802.11a/n (HT20):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 100 | 5500 | 120 | 5600 | 140 | 5700 |

Test Frequency and channel for 802.11n (HT40):

| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 102 | 5510 | 118 | 5590 | 134 | 5670 |

☒ Wifi 5G with U-NII -3

Frequency and Channel list for 802.11a/n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 149 | 5745 | 157 | 5785 | 165 | 5825 |
| 153 | 5765 | 161 | 5805 | | |

Frequency and Channel list for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|---|---|
| 151 | 5755 | | | | |
| 159 | 5795 | | | | |

Test Frequency and Channel for 802.11a/n (HT20):

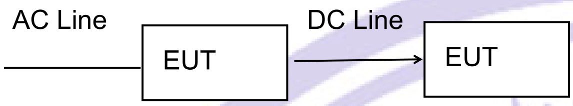
| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 149 | 5745 | 157 | 5785 | 165 | 5825 |

Test Frequency and channel for 802.11n (HT40):

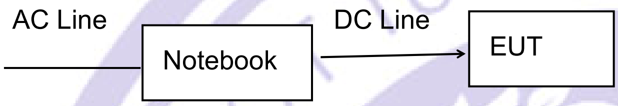
| Lowest Frequency | | Middle Frequency | | Highest Frequency | |
|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 151 | 5755 | N/A | N/A | 159 | 5795 |

## 4.2 Test Setup Configuration

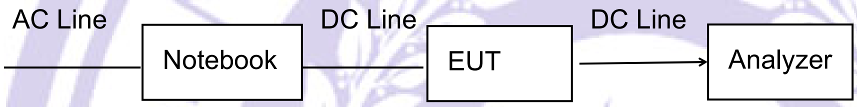
Radiated Emission




Radiated Spurious




Conducted Spurious




## 4.3 Test Mode

| | |
|---|---|
| Transmitting mode | Keep the EUT in continuously transmitting mode. |
| Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data. | |

| | |
|---|---|
| Test Software | FCC RF-Test |
| Power level setup | 0 |

# 5 Equipment During Test

## 5.1 Equipments List

Conducted emission Test Equipment

| Name | Model No. | Serial No. | Manufacturer | Date of Cal. | Due Date |
|---|---|---|---|---|---|
| 944 Shielded Room | 944 Room | / | EMToni | 2022/5/31 | 2025/5/30 |
| EMI Test Receiver | ESPI | 101604 | Rohde & Schwarz | 2024/6/17 | 2025/6/16 |
| LISN | ENV 216 | 102796 | Rohde & Schwarz | 2024/6/17 | 2025/6/16 |
| LISN | VN1-13S | 004023 | CRANAGE | 2024/6/17 | 2025/6/16 |
| Cable | RG223-1500MM | NA | RG | 2024/6/17 | 2025/6/16 |

Radiated emission & Radio Frequency Test Equipment

| Name | Model No. | Serial No. | Manufacturer | Date of Cal. | Due Date |
|---|---|---|---|---|---|
| 966 Shielded Room | 966 Room | / | EMToni | 2022/5/31 | 2025/5/30 |
| EMI Test Receiver | ESCI | 101178 | Rohde & Schwarz | 2024/6/17 | 2025/6/16 |
| Amplifi （30MHz-1GHz） | BBV 9743 B | 00374 | SCHNWARZBECK | 2024/6/17 | 2025/6/16 |
| Bilog Antenna （30MHz-1GHz） | VULB9162 | 00473 | SCHNWARZBECK | 2023/3/19 | 2025/3/18 |
| Horn antenna （1GHz-18GHz） | BBHA 9120 D | 02622 | SCHNWARZBECK | 2023/3/19 | 2025/3/18 |
| Pream plifier （1GHz-18GHz） | BBV 9718D | 0024 | SCHNWARZBECK | 2024/6/17 | 2025/6/16 |
| Spectrum Analyze （10Hz-40GHz） | FSV 40 | 100952 | Rohde & Schwarz | 2024/6/17 | 2025/6/16 |
| Pream plifier （18GHz-40GHz） | BBV 9721 | 0056 | SCHNWARZBECK | 2024/6/17 | 2025/6/16 |
| Double Ridge Guide Horn Antenna （18GHz-40GHz） | SAS-574 | 588 | A.H.System | 2023/3/19 | 2025/3/18 |
| Loop Antenna (9KHz-30MHz) | FMZB 1513-60 | 00115 | SCHNWARZBECK | 2024/6/17 | 2025/6/16 |
| Amplifier (9KHz-30MHz) | BBV 9745 | 00109 | CHNWARZBECK | 2024/6/17 | 2025/6/16 |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| | | | | | |
|---|---|---|---|---|---|
| MXG Signal Analyzer | N9020A | MY50510202 | Agilent | 2024/6/17 | 2025/6/16 |
| MXG Vector Signal Generator | N5182A | MY50140020 | Agilent | 2024/6/17 | 2025/6/16 |
| MXG Analog Signal Generator | N5181A | MY47420919 | Agilent | 2024/6/17 | 2025/6/16 |
| Power Sensor | TR1029-2 | 512364 | Techoy | 2024/6/17 | 2025/6/16 |
| RF Swith | TR1029-1 | 512364 | Techoy | 2024/6/17 | 2025/6/16 |
| Cable | DA800-4000MM | NA | DA | 2024/6/17 | 2025/6/16 |
| Cable | DA800-11000MM | NA | DA | 2024/6/17 | 2025/6/16 |

Other

| Item | Name | Manufacturer | Model | Software version |
|---|---|---|---|---|
| 1 | EMC Conduction Test System | AUDIX | e3 | 6.120718 |
| 2 | EMC radiation test system | AUDIX | e3 | 6.120718 |
| 3 | RF test system | TACHOY | RFTest | V1.0.0 |
| 4 | RF communication test system | TACHOY | RFTest | V1.0.0 |

## 5.2 Measurement Uncertainty

| Parameter | Uncertainty |
|---|---|
| RF output power, conducted | ±1.0dB |
| Power Spectral Density, conducted | ±2.2dB |
| Radio Frequency | $\pm 1 \times 10^{-6}$ |
| Bandwidth | $\pm 1.5 \times 10^{-6}$ |
| Time | ±2% |
| Duty Cycle | ±2% |
| Temperature | ±1°C |
| Humidity | ±5% |
| DC and low frequency voltages | ±3% |
| Conducted Emissions (150kHz~30MHz) | ±3.64dB |
| Radiated Emission(9KHz~30MHz) | ±4.51dB |
| Radiated Emission(30MHz~1GHz) | ±5.03dB |
| Radiated Emission(1GHz~25GHz) | ±4.74dB |
| Radiated Emission(25GHz~40GHz) | ±3.38dB |
| Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95% | |

## 5.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|---|---|---|---|---|---|
| E-1 | PORTABLE CAR SCREEN | N/A | CP8 | N/A | EUT |
| E-2 | Battery | RITAR | RA12-75 | N/A | Auxiliary |
| | | | | | |

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

# 6 Conducted Emission

| | | |
|---|---|---|
| Test Requirement: | : | FCC CFR 47 Part 15 Section 15.207 |
| Test Method: | : | ANSI C63.10:2020 |
| Test Result: | : | PASS |
| Frequency Range: | : | 150kHz to 30MHz |
| Class/Severity: | : | Class B |
| Detector: | : | Peak for pre-scan (9kHz Resolution Bandwidth) |

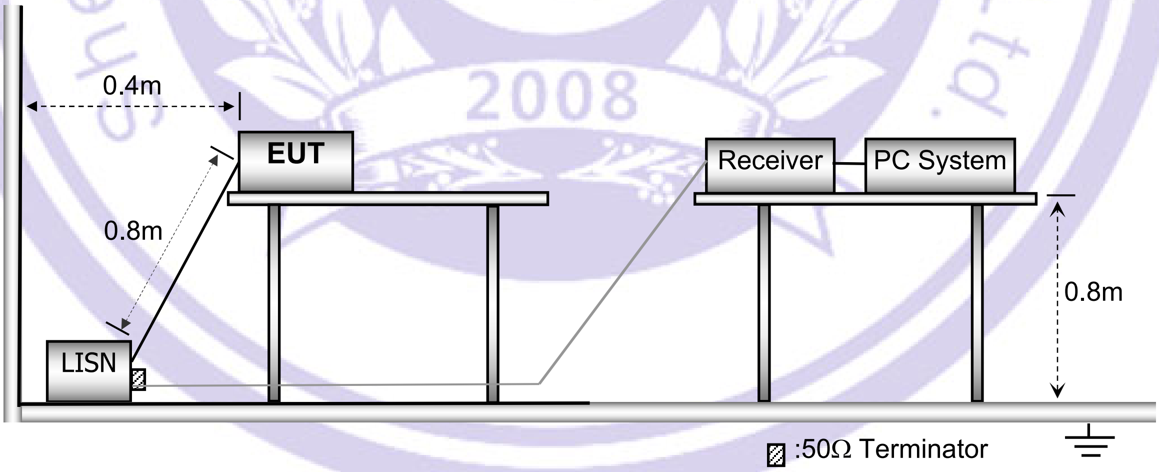
## 6.1 E.U.T. Operation

Operating Environment :

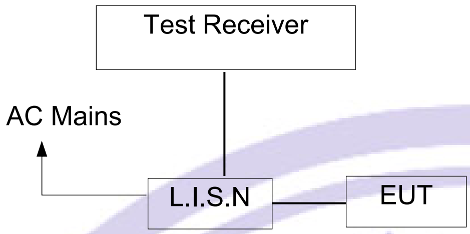
| | | |
|---|---|---|
| Temperature: | : | 23.2°C |
| Humidity: | : | 51 % RH |
| Atmospheric Pressure: | : | 101.12 kPa |
| Test Voltage | : | AC 120V/60Hz |

## 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2020



## 6.3 Test SET-UP (Block Diagram of Configuration)




## 6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

## 6.5 Conducted Emission Limit

**Conducted Emission**

| Frequency(MHz) | Quasi-peak | Average |
|---|---|---|
| 0.15-0.5 | 66-56 | 56-46 |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

**Note:**

1. The lower limit shall apply at the transition frequencies

2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

## 6.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

## 6.7 Conducted Emission Test Result

N/A

# 7 Radiated Spurious Emissions

| | | |
|---|---|---|
| Test Requirement | : | FCC CFR47 Part 15 Section 15.209 & 15.407<br>RSS-Gen §8.9, RSS-Gen §8.10 |
| Test Method | : | ANSI C63.10:2020 |
| Test Result | : | PASS |
| Measurement Distance | : | 3m |
| Limit | : | See the follow table |

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))}$ + 80 |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))}$ + 40 |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)}$ + 40 |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

FCC Part 15.407 (b) Undesirable emission limits. Except as shown in paragraph (b)(10) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating solely in the 5.725-5.850 GHz band:

(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

## 7.1 EUT Operation

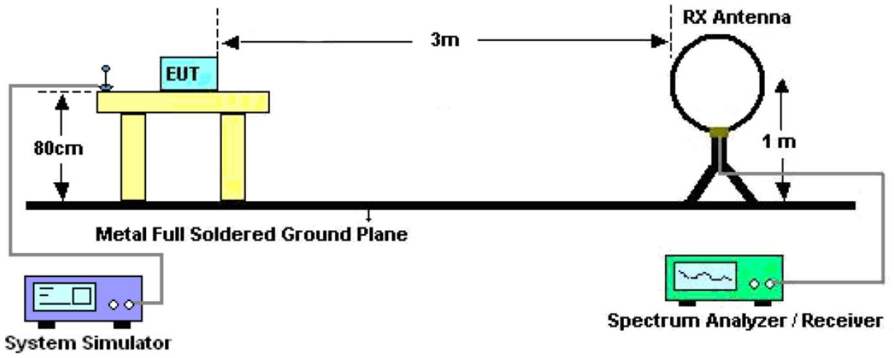
Operating Environment :

| | | |
|---|---|---|
| Temperature | : | 24.5 °C |
| Humidity | : | 55.5% RH |
| Atmospheric Pressure | : | 101.3kPa |
| Test Voltage | : | AC 120V60Hz |

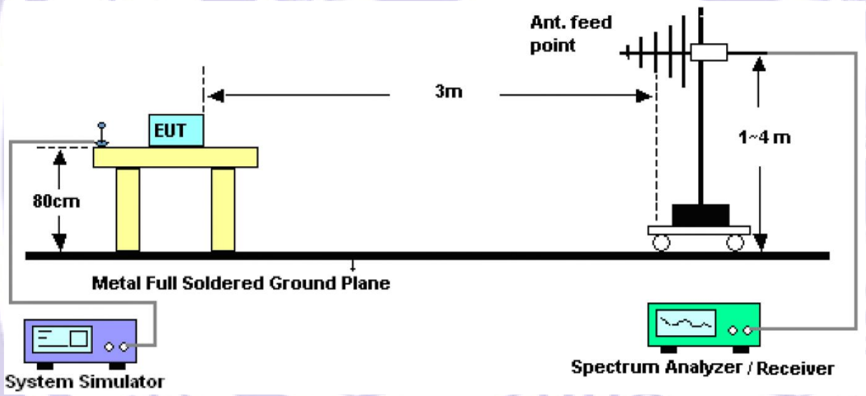
## 7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

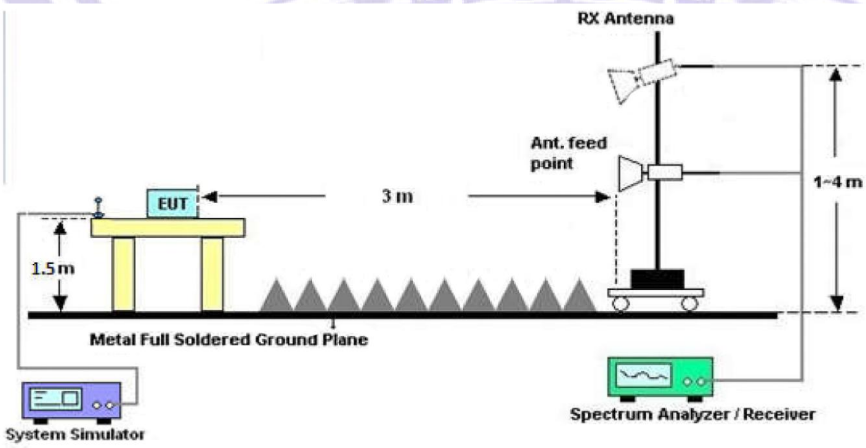
The test setup for emission measurement below 30MHz.




The test setup for emission measurement from 30 MHz to 1 GHz.




The test setup for emission measurement above 1 GHz.



## 7.3 Spectrum Analyzer Setup

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 10th carrier harmonic |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

## 7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2020.

2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.

3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.

5. Set to the maximum power setting and enable the EUT transmit continuously.

6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.

7. Test Procedure of measurement (For Above 1GHz):

1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).

2) Change the antenna polarization and repeat 1) with vertical polarization.

3) Make a hardcopy of the spectrum.

4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.

5) Change the analyser mode to Clear/ Write and found the cone of emission.

6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.

7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.

8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

## 7.5 Summary of Test Results

**Test Frequency: 9KHz-30MHz**

| Freq. (MHz) | Ant.Pol. H/V | Emission Level (dBuV/m) | Limit 3m (dBuV/m) | Over (dB) |
|---|---|---|---|---|
| -- | -- | -- | -- | >20 |

Note:

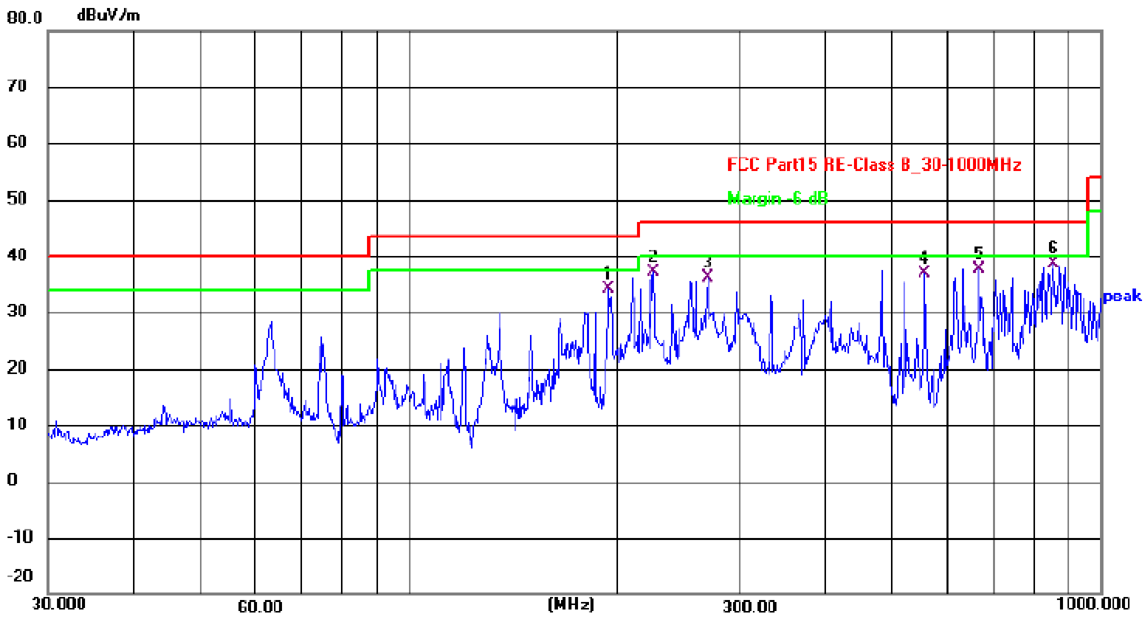
The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor =40log(Specific distance/ test distance)( dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

**Test Frequency: 30MHz ~ 1GHz**

Please refer to the following test plots,Low Channel Worst case 802.11a for record:

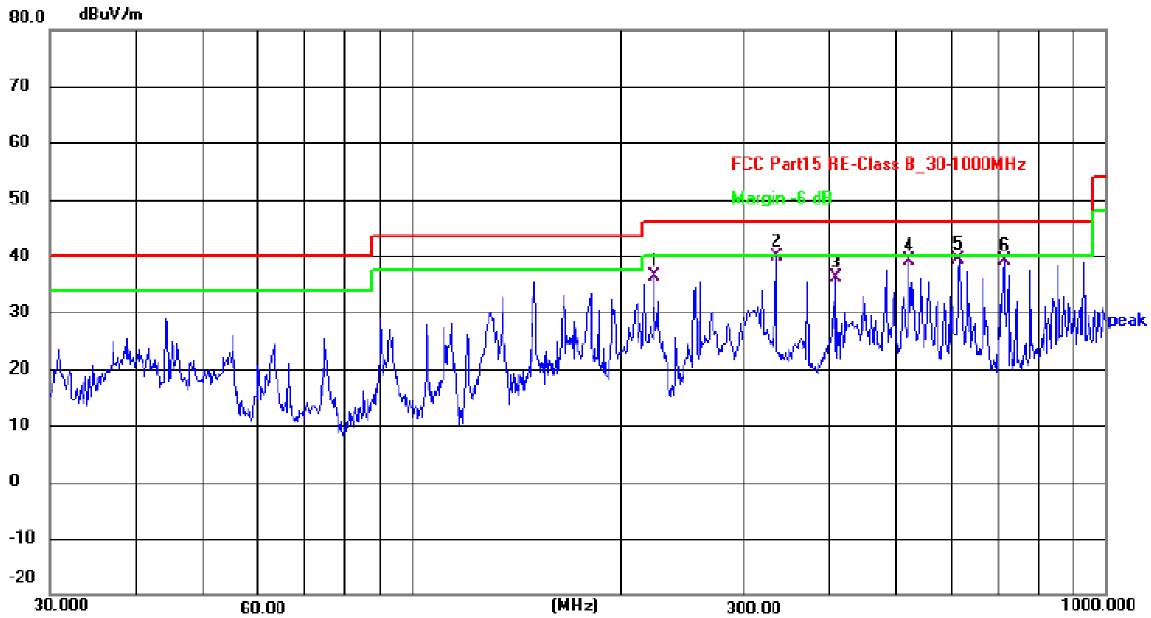
| Temperature: | 26℃ | Relative Humidity: | 54% |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Horizontal |
| Test Voltage: | DC 12V | | |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 194.4533 | 50.79 | -16.67 | 34.12 | 43.50 | -9.38 | QP |
| 2 | 225.3080 | 52.57 | -15.47 | 37.10 | 46.00 | -8.90 | QP |
| 3 | 270.3747 | 50.44 | -14.38 | 36.06 | 46.00 | -9.94 | QP |
| 4 | 556.7743 | 45.65 | -8.88 | 36.77 | 46.00 | -9.23 | QP |
| 5 | 668.1422 | 44.70 | -6.97 | 37.73 | 46.00 | -8.27 | QP |
| 6 | 854.0247 | 42.67 | -4.10 | 38.57 | 46.00 | -7.43 | QP |

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101 kPa | Polarization: | Vertical |
| Test Voltage: | DC 12V | | |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 222.9500 | 51.84 | -15.54 | 36.30 | 46.00 | -9.70 | QP |
| 2 | 334.8586 | 52.87 | -13.07 | 39.80 | 46.00 | -6.20 | QP |
| 3 | 408.9460 | 47.56 | -11.50 | 36.06 | 46.00 | -9.94 | QP |
| 4 | 520.8881 | 48.43 | -9.31 | 39.12 | 46.00 | -6.88 | QP |
| 5 | 616.3716 | 47.66 | -8.36 | 39.30 | 46.00 | -6.70 | QP |
| 6 | 714.1733 | 45.20 | -6.06 | 39.14 | 46.00 | -6.86 | QP |

Remark:Emission Level=Reading+Cable Loss+ANT Factor-AMP Factor

## Test Frequency 1GHz-40GHz

802.11a

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detect or Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5180MHz | | | | | | | | | |
| V | 10360 | 44.56 | 32.7 | 7.72 | 38.59 | 58.17 | 74.00 | -15.83 | PK |
| V | 10360 | 23.15 | 32.7 | 7.72 | 38.59 | 36.76 | 54.00 | -17.24 | AV |
| V | 15540 | 42.35 | 31.74 | 9.44 | 39.29 | 59.34 | 68.20 | -8.86 | PK |
| V | 15540 | 16.89 | 31.74 | 9.44 | 39.29 | 33.88 | 54.00 | -20.12 | AV |
| V | 20720 | 41.78 | 26.93 | 6.64 | 37.94 | 59.43 | 68.20 | -8.77 | PK |
| V | 20720 | 18.58 | 26.93 | 6.64 | 37.94 | 36.23 | 54.00 | -17.77 | AV |
| V | 25900 | 35.63 | 27.1 | 7.9 | 39.32 | 55.75 | 74.00 | -18.25 | PK |
| V | 25900 | 21.15 | 27.1 | 7.9 | 39.32 | 41.27 | 54.00 | -12.73 | AV |
| H | 10360 | 37.58 | 32.7 | 7.72 | 38.59 | 51.19 | 74.00 | -22.81 | PK |
| H | 10360 | 21.78 | 32.7 | 7.72 | 38.59 | 35.39 | 54.00 | -18.61 | AV |
| H | 15540 | 38.03 | 31.74 | 9.44 | 39.29 | 55.02 | 68.20 | -13.18 | PK |
| H | 15540 | 22.59 | 31.74 | 9.44 | 39.29 | 39.58 | 54.00 | -14.42 | AV |
| H | 20720 | 41.23 | 26.93 | 6.64 | 37.94 | 58.88 | 68.20 | -9.32 | PK |
| H | 20720 | 16.16 | 26.93 | 6.64 | 37.94 | 33.81 | 54.00 | -20.19 | AV |
| H | 25900 | 38.36 | 27.1 | 7.9 | 39.32 | 58.48 | 74.00 | -15.52 | PK |
| H | 25900 | 19.85 | 27.1 | 7.9 | 39.32 | 39.97 | 54.00 | -14.03 | AV |

| Polar | Frequency | Meter Reading | Pre-amplifier | Cable Loss | Antenna Factor | Emission Level | Limits | Margin | Detect or Type |
|---|---|---|---|---|---|---|---|---|---|
| (H/V) | (MHz) | (dBuV) | (dB) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | |
| Middle Channel:5200MHz | | | | | | | | | |
| V | 10400 | 43.55 | 32.69 | 7.73 | 38.62 | 57.21 | 74.00 | -16.79 | PK |
| V | 10400 | 24.78 | 32.69 | 7.73 | 38.62 | 38.44 | 54.00 | -15.56 | AV |
| V | 15600 | 39.66 | 31.72 | 9.45 | 39.28 | 56.67 | 68.20 | -11.53 | PK |
| V | 15600 | 19.83 | 31.72 | 9.45 | 39.28 | 36.84 | 54.00 | -17.16 | AV |
| V | 20800 | 37.18 | 26.93 | 6.73 | 37.96 | 54.94 | 68.20 | -13.26 | PK |
| V | 20800 | 20.28 | 26.93 | 6.73 | 37.96 | 38.04 | 54.00 | -15.96 | AV |
| V | 26000 | 37.69 | 27.1 | 7.94 | 39.3 | 57.83 | 74.00 | -16.17 | PK |
| V | 26000 | 15.88 | 27.1 | 7.94 | 39.3 | 36.02 | 54.00 | -17.98 | AV |
| H | 10400 | 41.67 | 32.69 | 7.73 | 38.62 | 55.33 | 74.00 | -18.67 | PK |
| H | 10400 | 20.66 | 32.69 | 7.73 | 38.62 | 34.32 | 54.00 | -19.68 | AV |
| H | 15600 | 38.75 | 31.72 | 9.45 | 39.28 | 55.76 | 68.20 | -12.44 | PK |
| H | 15600 | 20.66 | 31.72 | 9.45 | 39.28 | 37.67 | 54.00 | -16.33 | AV |
| H | 20800 | 38.78 | 26.93 | 6.73 | 37.96 | 56.54 | 68.20 | -11.66 | PK |
| H | 20800 | 18.23 | 26.93 | 6.73 | 37.96 | 35.99 | 54.00 | -18.01 | AV |
| H | 26000 | 37.13 | 27.1 | 7.94 | 39.3 | 57.27 | 74.00 | -16.73 | PK |
| H | 26000 | 15.75 | 27.1 | 7.94 | 39.3 | 35.89 | 54.00 | -18.11 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detect or Type |
|---|---|---|---|---|---|---|---|---|---|
| High Channel:5240MHz | | | | | | | | | |
| V | 10480 | 40.02 | 32.66 | 7.74 | 38.68 | 53.78 | 74.00 | -20.22 | PK |
| V | 10480 | 24.25 | 32.66 | 7.74 | 38.68 | 38.01 | 54.00 | -15.99 | AV |
| V | 15720 | 36.63 | 31.68 | 9.48 | 39.26 | 53.69 | 68.20 | -14.51 | PK |
| V | 15720 | 17.25 | 31.68 | 9.48 | 39.26 | 34.31 | 54.00 | -19.69 | AV |
| V | 20960 | 37.25 | 26.94 | 6.91 | 37.99 | 55.21 | 68.20 | -12.99 | PK |
| V | 20960 | 19.88 | 26.94 | 6.91 | 37.99 | 37.84 | 54.00 | -16.16 | AV |
| V | 26200 | 37.66 | 27.1 | 7.89 | 39.5 | 57.95 | 74.00 | -16.05 | PK |
| V | 26200 | 15.03 | 27.1 | 7.89 | 39.5 | 35.32 | 54.00 | -18.68 | AV |
| H | 10480 | 44.78 | 32.66 | 7.74 | 38.68 | 58.54 | 74.00 | -15.46 | PK |
| H | 10480 | 23.25 | 32.66 | 7.74 | 38.68 | 37.01 | 54.00 | -16.99 | AV |
| H | 15720 | 39.99 | 31.68 | 9.48 | 39.26 | 57.05 | 68.20 | -11.15 | PK |
| H | 15720 | 20.36 | 31.68 | 9.48 | 39.26 | 37.42 | 54.00 | -16.58 | AV |
| H | 20960 | 38.21 | 26.94 | 6.91 | 37.99 | 56.17 | 68.20 | -12.03 | PK |
| H | 20960 | 20.23 | 26.94 | 6.91 | 37.99 | 38.19 | 54.00 | -15.81 | AV |
| H | 26200 | 34.56 | 27.1 | 7.89 | 39.5 | 54.85 | 74.00 | -19.15 | PK |
| H | 26200 | 17.89 | 27.1 | 7.89 | 39.5 | 38.18 | 54.00 | -15.82 | AV |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| Polar (H/V) | Frequency (MHz) | | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5260MHz | | | | | | | | | |
| V | 10520 | 43.66 | 32.64 | 7.75 | 38.70 | 57.47 | 74.00 | -16.53 | PK |
| V | 10520 | 21.16 | 32.64 | 7.75 | 38.70 | 34.97 | 54.00 | -19.03 | AV |
| V | 15780 | 36.98 | 31.67 | 9.49 | 39.24 | 54.04 | 68.20 | -14.16 | PK |
| V | 15780 | 15.53 | 31.67 | 9.49 | 39.24 | 32.59 | 54.00 | -21.41 | AV |
| H | 10520 | 34.69 | 32.64 | 7.75 | 38.70 | 48.50 | 74.00 | -25.50 | PK |
| H | 10520 | 14.62 | 32.64 | 7.75 | 38.70 | 28.43 | 54.00 | -25.57 | AV |
| H | 15780 | 35.02 | 31.67 | 9.49 | 39.24 | 52.08 | 68.20 | -16.12 | PK |
| H | 15780 | 14.96 | 31.67 | 9.49 | 39.24 | 32.02 | 54.00 | -21.98 | AV |

| Polar (H/V) | Frequency (MHz) | | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5300MHz | | | | | | | | | |
| V | 10600 | 44.07 | 32.61 | 7.77 | 38.72 | 57.95 | 68.20 | -10.25 | PK |
| V | 10600 | 26.36 | 32.61 | 7.77 | 38.72 | 40.24 | 54.00 | -13.76 | AV |
| V | 15900 | 42.57 | 31.63 | 9.51 | 39.22 | 59.67 | 68.20 | -8.53 | PK |
| V | 15900 | 26.02 | 31.63 | 9.51 | 39.22 | 43.12 | 54.00 | -10.88 | AV |
| H | 10600 | 43.29 | 32.61 | 7.77 | 38.72 | 57.17 | 68.20 | -11.03 | PK |
| H | 10600 | 25.43 | 32.61 | 7.77 | 38.72 | 39.31 | 54.00 | -14.69 | AV |
| H | 15900 | 41.63 | 31.63 | 9.51 | 39.22 | 58.73 | 68.20 | -9.47 | PK |
| H | 15900 | 24.95 | 31.63 | 9.51 | 39.22 | 42.05 | 54.00 | -11.95 | AV |

| Polar (H/V) | Frequency (MHz) | | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5320MHz | | | | | | | | | |
| V | 10640 | 43.01 | 32.60 | 7.78 | 38.73 | 56.92 | 68.20 | -11.28 | PK |
| V | 10640 | 27.79 | 32.60 | 7.78 | 38.73 | 41.70 | 54.00 | -12.30 | AV |
| V | 15960 | 44.56 | 31.61 | 9.52 | 39.21 | 61.68 | 68.20 | -6.52 | PK |
| V | 15960 | 21.54 | 31.61 | 9.52 | 39.21 | 38.66 | 54.00 | -15.34 | AV |
| H | 10640 | 40.75 | 32.60 | 7.78 | 38.73 | 54.66 | 68.20 | -13.54 | PK |
| H | 10640 | 24.56 | 32.60 | 7.78 | 38.73 | 38.47 | 54.00 | -15.53 | AV |
| H | 15960 | 42.01 | 31.61 | 9.52 | 39.21 | 59.13 | 68.20 | -9.07 | PK |
| H | 15960 | 26.38 | 31.61 | 9.52 | 39.21 | 43.50 | 54.00 | -10.50 | AV |

| Polar (H/V) | Frequency (MHz) | | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5500MHz | | | | | | | | | |
| V | 11000 | 41.44 | 32.47 | 7.85 | 38.80 | 55.62 | 68.20 | -12.58 | PK |
| V | 11000 | 25.66 | 32.47 | 7.85 | 38.80 | 39.84 | 54.00 | -14.16 | AV |
| V | 16500 | 38.12 | 31.50 | 9.52 | 39.60 | 55.74 | 74.00 | -18.26 | PK |
| V | 16500 | 25.15 | 31.50 | 9.52 | 39.60 | 42.77 | 54.00 | -11.23 | AV |
| H | 11000 | 44.03 | 32.47 | 7.85 | 38.80 | 58.21 | 68.20 | -9.99 | PK |
| H | 11000 | 27.92 | 32.47 | 7.85 | 38.80 | 42.10 | 54.00 | -11.90 | AV |
| H | 16500 | 41.93 | 31.50 | 9.52 | 39.60 | 59.55 | 74.00 | -14.45 | PK |



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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| H | 16500 | 26.50 | 31.50 | 9.52 | 39.60 | 44.12 | 54.00 | -9.88 | AV |

| Polar (H/V) | Frequency (MHz) | | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5600MHz | | | | | | | | | |
| V | 11200 | 43.59 | 32.39 | 8.07 | 38.84 | 58.11 | 68.20 | -10.09 | PK |
| V | 11200 | 26.74 | 32.39 | 8.07 | 38.84 | 41.26 | 54.00 | -12.74 | AV |
| V | 16800 | 44.83 | 31.44 | 9.51 | 39.78 | 62.68 | 74.00 | -11.32 | PK |
| V | 16800 | 27.96 | 31.44 | 9.51 | 39.78 | 45.81 | 54.00 | -8.19 | AV |
| H | 11200 | 45.31 | 32.39 | 8.07 | 38.84 | 59.83 | 68.20 | -8.37 | PK |
| H | 11200 | 28.30 | 32.39 | 8.07 | 38.84 | 42.82 | 54.00 | -11.18 | AV |
| H | 16800 | 42.61 | 31.44 | 9.51 | 39.78 | 60.46 | 74.00 | -13.54 | PK |
| H | 16800 | 23.44 | 31.44 | 9.51 | 39.78 | 41.29 | 54.00 | -12.71 | AV |

| Polar (H/V) | Frequency (MHz) | | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:5700MHz | | | | | | | | | |
| V | 11400 | 44.98 | 32.32 | 8.29 | 38.88 | 59.83 | 68.20 | -8.37 | PK |
| V | 11400 | 26.75 | 32.32 | 8.29 | 38.88 | 41.60 | 54.00 | -12.40 | AV |
| V | 17100 | 41.75 | 31.31 | 9.56 | 40.10 | 60.10 | 74.00 | -13.90 | PK |
| V | 17100 | 29.46 | 31.31 | 9.56 | 40.10 | 47.81 | 54.00 | -6.19 | AV |
| H | 11400 | 39.10 | 32.32 | 8.29 | 38.88 | 53.95 | 68.20 | -14.25 | PK |
| H | 11400 | 22.88 | 32.32 | 8.29 | 38.88 | 37.73 | 54.00 | -16.27 | AV |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| H | 17100 | 43.14 | 31.31 | 9.56 | 40.10 | 61.49 | 74.00 | -12.51 | PK |
| H | 17100 | 26.27 | 31.31 | 9.56 | 40.10 | 44.62 | 54.00 | -9.38 | AV |

| Polar | Frequency | Meter Reading | Pre-amplifier | Cable Loss | Antenna Factor | Emission Level | Limits | Margin | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| (H/V) | (MHz) | (dBuV) | (dB) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | |
| Low Channel:5745MHz | | | | | | | | | |
| V | 11490 | 41.69 | 32.29 | 8.39 | 38.9 | 56.69 | 68.20 | 11.51 | PK |
| V | 11490 | 19.89 | 32.29 | 8.39 | 38.9 | 34.89 | 54.00 | -19.11 | AV |
| V | 17235 | 36.58 | 31.19 | 9.62 | 40.37 | 55.38 | 74.00 | -18.62 | PK |
| V | 17235 | 19.78 | 31.19 | 9.62 | 40.37 | 38.58 | 54.00 | -15.42 | AV |
| V | 22980 | 37.89 | 27.02 | 7.2 | 38.98 | 57.05 | 68.20 | 11.15 | PK |
| V | 22980 | 17.78 | 27.02 | 7.2 | 38.98 | 36.94 | 54.00 | -17.06 | AV |
| V | 28725 | 35.88 | 27.1 | 7.56 | 40.18 | 56.52 | 74.00 | -17.48 | PK |
| V | 28725 | 15.98 | 27.1 | 7.56 | 40.18 | 36.62 | 54.00 | -17.38 | AV |
| H | 11490 | 41.69 | 32.29 | 8.39 | 38.9 | 56.69 | 68.20 | -11.51 | PK |
| H | 11490 | 20.96 | 32.29 | 8.39 | 38.9 | 35.96 | 54.00 | -18.04 | AV |
| H | 17235 | 37.78 | 31.19 | 9.62 | 40.37 | 56.58 | 74.00 | -17.42 | PK |
| H | 17235 | 17.57 | 31.19 | 9.62 | 40.37 | 36.37 | 54.00 | -17.63 | AV |
| H | 22980 | 35.13 | 27.02 | 7.2 | 38.98 | 54.29 | 68.20 | -13.91 | PK |
| H | 22980 | 18.88 | 27.02 | 7.2 | 38.98 | 38.04 | 54.00 | -15.96 | AV |
| H | 28725 | 36.58 | 27.1 | 7.56 | 40.18 | 57.22 | 74.00 | -16.78 | PK |
| H | 28725 | 14.78 | 27.1 | 7.56 | 40.18 | 35.42 | 54.00 | -18.58 | AV |

| Polar | Frequency | Meter Reading | Pre-amplifier | Cable Loss | Antenna Factor | Emission Level | Limits | Margin | Detect or Type |
|---|---|---|---|---|---|---|---|---|---|
| (H/V) | (MHz) | (dBuV) | (dB) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | |
| Middle Channel:5785MHz | | | | | | | | | |
| V | 11570 | 40.77 | 32.26 | 8.48 | 38.9 | 55.89 | 68.20 | -12.31 | PK |
| V | 11570 | 16.82 | 32.26 | 8.48 | 38.9 | 31.94 | 54.00 | -22.06 | AV |
| V | 17355 | 36.17 | 31.08 | 9.67 | 40.61 | 55.37 | 74.00 | -18.63 | PK |
| V | 17355 | 15.23 | 31.08 | 9.67 | 40.61 | 34.43 | 54.00 | -19.57 | AV |
| V | 23140 | 34.78 | 27.03 | 7.24 | 39.03 | 54.02 | 74.00 | -19.98 | PK |
| V | 23140 | 15.25 | 27.03 | 7.24 | 39.03 | 34.49 | 54.00 | -19.51 | AV |
| V | 28925 | 34.83 | 27.1 | 7.58 | 40.34 | 55.65 | 74.00 | -18.35 | PK |
| V | 28925 | 15.86 | 27.1 | 7.58 | 40.34 | 36.68 | 54.00 | -17.32 | AV |
| H | 11570 | 36.96 | 32.26 | 8.48 | 38.9 | 52.08 | 68.20 | -16.12 | PK |
| H | 11570 | 18.57 | 32.26 | 8.48 | 38.9 | 33.69 | 54.00 | -20.31 | AV |
| H | 17355 | 34.69 | 31.08 | 9.67 | 40.61 | 53.89 | 74.00 | -20.11 | PK |
| H | 17355 | 14.43 | 31.08 | 9.67 | 40.61 | 33.63 | 54.00 | -20.37 | AV |
| H | 23140 | 34.59 | 27.03 | 7.24 | 39.03 | 53.83 | 74.00 | -20.17 | PK |
| H | 23140 | 15.38 | 27.03 | 7.24 | 39.03 | 34.62 | 54.00 | -19.38 | AV |
| H | 28925 | 34.79 | 27.1 | 7.58 | 40.34 | 55.61 | 74.00 | -18.39 | PK |
| H | 28925 | 12.73 | 27.1 | 7.58 | 40.34 | 33.55 | 54.00 | -20.45 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detect or Type |
|---|---|---|---|---|---|---|---|---|---|
| High Channel:5825MHz | | | | | | | | | |
| V | 11650 | 43.69 | 32.23 | 8.56 | 38.9 | 58.92 | 68.20 | -9.28 | PK |
| V | 11650 | 30.58 | 32.23 | 8.56 | 38.9 | 45.81 | 54.00 | -8.19 | AV |
| V | 17473.3 | 42.18 | 30.97 | 9.73 | 40.85 | 61.79 | 74.00 | -12.21 | PK |
| V | 17473.3 | 27.23 | 30.97 | 9.73 | 40.85 | 46.84 | 54.00 | -7.16 | AV |
| V | 23300 | 40.58 | 27.03 | 7.26 | 39.06 | 59.87 | 74.00 | -14.13 | PK |
| V | 23300 | 23.12 | 27.03 | 7.26 | 39.06 | 42.41 | 54.00 | -11.59 | AV |
| V | 29123.3 | 40.06 | 27.1 | 7.61 | 40.4 | 60.97 | 74.00 | -13.03 | PK |
| V | 29123.3 | 22.36 | 27.1 | 7.61 | 40.4 | 43.27 | 54.00 | -10.73 | AV |
| H | 11650 | 43.78 | 32.23 | 8.56 | 38.9 | 59.01 | 68.20 | -9.19 | PK |
| H | 11650 | 29.25 | 32.23 | 8.56 | 38.9 | 44.48 | 54.00 | -9.52 | AV |
| H | 17473.3 | 43.16 | 30.97 | 9.73 | 40.85 | 62.77 | 74.00 | -11.23 | PK |
| H | 17473.3 | 26.58 | 30.97 | 9.73 | 40.85 | 46.19 | 54.00 | -7.81 | AV |
| H | 23300 | 43.36 | 27.03 | 7.26 | 39.06 | 62.65 | 74.00 | -11.35 | PK |
| H | 23300 | 22.68 | 27.03 | 7.26 | 39.06 | 41.97 | 54.00 | -12.03 | AV |
| H | 29123.3 | 36.78 | 27.1 | 7.61 | 40.4 | 57.69 | 74.00 | -16.31 | PK |
| H | 29123.3 | 23.25 | 27.1 | 7.61 | 40.4 | 44.16 | 54.00 | -9.84 | AV |

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. The worst mode is 802.11a, only the worst data is recorded.

Restricted bands:

| Frequency (MHz) | Meter Reading (dBuV/m) | antenna Factor (dB) | cable loss (dB) | preamp factor (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Polar (H/V) | Detector Type | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 802.11a:5180MHz | | | | | | | | | | |
| 5150 | 52.76 | 33.14 | 5.29 | 33.88 | 57.31 | 74 | -16.69 | V | PK | Pass |
| 5150 | 34.14 | 33.14 | 5.29 | 33.88 | 38.69 | 54 | -15.31 | V | AV | Pass |
| 5145 | 52.21 | 33.14 | 5.29 | 33.88 | 56.76 | 74 | -17.24 | V | PK | Pass |
| 5145 | 34.70 | 33.14 | 5.29 | 33.88 | 39.25 | 54 | -14.75 | V | AV | Pass |
| 5150 | 53.15 | 33.14 | 5.29 | 33.88 | 57.70 | 74 | -16.30 | H | PK | Pass |
| 5150 | 33.69 | 33.14 | 5.29 | 33.88 | 38.24 | 54 | -15.76 | H | AV | Pass |
| 5145 | 50.50 | 33.14 | 5.29 | 33.88 | 55.05 | 74 | -18.95 | H | PK | Pass |
| 5145 | 33.12 | 33.14 | 5.29 | 33.88 | 37.67 | 54 | -16.33 | H | AV | Pass |
| 802.11a:5240MHz | | | | | | | | | | |
| 5350 | 54.79 | 33.06 | 5.44 | 33.72 | 59.57 | 74 | -14.43 | V | PK | Pass |
| 5350 | 35.52 | 33.06 | 5.44 | 33.72 | 40.30 | 54 | -13.70 | V | AV | Pass |
| 5370 | 50.70 | 33.05 | 5.45 | 33.70 | 55.50 | 74 | -18.5 | V | PK | Pass |
| 5370 | 34.04 | 33.05 | 5.45 | 33.70 | 38.84 | 54 | -15.16 | V | AV | Pass |
| 5350 | 54.69 | 33.06 | 5.44 | 33.72 | 59.47 | 74 | -14.53 | H | PK | Pass |
| 5350 | 37.29 | 33.06 | 5.44 | 33.72 | 42.07 | 54 | -11.93 | H | AV | Pass |
| 5370 | 52.96 | 33.05 | 5.45 | 33.70 | 57.76 | 74 | -16.24 | H | PK | Pass |
| 5370 | 33.69 | 33.05 | 5.45 | 33.70 | 38.49 | 54 | -15.51 | H | AV | Pass |
| 802.11n20:5180MHz | | | | | | | | | | |
| 5150 | 52.92 | 33.14 | 5.29 | 33.88 | 57.47 | 74 | -16.53 | V | PK | Pass |
| 5150 | 35.48 | 33.14 | 5.29 | 33.88 | 40.03 | 54 | -13.97 | V | AV | Pass |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5145 | 52.87 | 33.14 | 5.29 | 33.88 | 57.42 | 74 | -16.58 | V | PK | Pass |
| 5145 | 34.29 | 33.14 | 5.29 | 33.88 | 38.84 | 54 | -15.16 | V | AV | Pass |
| 5150 | 53.81 | 33.14 | 5.29 | 33.88 | 58.36 | 74 | -15.64 | H | PK | Pass |
| 5150 | 35.91 | 33.14 | 5.29 | 33.88 | 40.46 | 54 | -13.54 | H | AV | Pass |
| 5145 | 52.52 | 33.14 | 5.29 | 33.88 | 57.07 | 74 | -16.93 | H | PK | Pass |
| 5145 | 34.68 | 33.14 | 5.29 | 33.88 | 39.23 | 54 | -14.77 | H | AV | Pass |
| 802.11n20:5240MHz | | | | | | | | | | |
| 5350 | 55.15 | 33.06 | 5.44 | 33.72 | 59.93 | 74 | -14.07 | V | PK | Pass |
| 5350 | 38.22 | 33.06 | 5.44 | 33.72 | 43.00 | 54 | -11.00 | V | AV | Pass |
| 5370 | 51.66 | 33.05 | 5.45 | 33.70 | 56.46 | 74 | -17.54 | V | PK | Pass |
| 5370 | 35.35 | 33.05 | 5.45 | 33.70 | 40.15 | 54 | -13.85 | V | AV | Pass |
| 5350 | 53.49 | 33.06 | 5.44 | 33.72 | 58.27 | 74 | -15.73 | H | PK | Pass |
| 5350 | 41.27 | 33.06 | 5.44 | 33.72 | 46.05 | 54 | -7.95 | H | AV | Pass |
| 5370 | 53.36 | 33.05 | 5.45 | 33.70 | 58.16 | 74 | -15.84 | H | PK | Pass |
| 5370 | 36.67 | 33.05 | 5.45 | 33.70 | 41.47 | 54 | -12.53 | H | AV | Pass |
| 802.11n40:5190MHz | | | | | | | | | | |
| 5150 | 53.76 | 33.14 | 5.29 | 33.88 | 58.31 | 74 | -15.69 | V | PK | Pass |
| 5150 | 39.40 | 33.14 | 5.29 | 33.88 | 43.95 | 54 | -10.05 | V | AV | Pass |
| 5145 | 50.38 | 33.14 | 5.29 | 33.88 | 54.93 | 74 | -19.07 | V | PK | Pass |
| 5145 | 37.30 | 33.14 | 5.29 | 33.88 | 41.85 | 54 | -12.15 | V | AV | Pass |
| 5150 | 54.91 | 33.14 | 5.29 | 33.88 | 59.46 | 74 | -14.54 | H | PK | Pass |
| 5150 | 41.48 | 33.14 | 5.29 | 33.88 | 46.03 | 54 | -7.97 | H | AV | Pass |
| 5145 | 54.58 | 33.14 | 5.29 | 33.88 | 59.13 | 74 | -14.87 | H | PK | Pass |
| 5145 | 37.55 | 33.14 | 5.29 | 33.88 | 42.10 | 54 | -11.90 | H | AV | Pass |
| 802.11n40:5230MHz | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5350 | 54.58 | 33.06 | 5.44 | 33.72 | 59.36 | 74 | -14.64 | V | PK | Pass |
| 5350 | 37.47 | 33.06 | 5.44 | 33.72 | 42.25 | 54 | -11.75 | V | AV | Pass |
| 5370 | 54.06 | 33.05 | 5.45 | 33.70 | 58.86 | 74 | -15.14 | V | PK | Pass |
| 5370 | 33.19 | 33.05 | 5.45 | 33.70 | 37.99 | 54 | -16.01 | V | AV | Pass |
| 5350 | 53.63 | 33.06 | 5.44 | 33.72 | 58.41 | 74 | -15.59 | H | PK | Pass |
| 5350 | 40.70 | 33.06 | 5.44 | 33.72 | 45.48 | 54 | -8.52 | H | AV | Pass |
| 5370 | 54.05 | 33.05 | 5.45 | 33.70 | 58.85 | 74 | -15.15 | H | PK | Pass |
| 5370 | 34.43 | 33.05 | 5.45 | 33.70 | 39.23 | 54 | -14.77 | H | AV | Pass |

| Frequency | Meter Reading | antenna Factor | cable loss | preamp factor | Emission Level | Limit | Margin | Polar | Detector Type | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| (MHz) | (dBuV/m) | (dB) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (H/V) | | |
| 802.11a:5500MHz | | | | | | | | | | |
| 5450 | 55.59 | 33.03 | 5.47 | 33.91 | 60.18 | 74 | -13.82 | V | PK | Pass |
| 5450 | 33.25 | 33.03 | 5.47 | 33.91 | 37.84 | 54 | -16.16 | V | AV | Pass |
| 5460 | 54.20 | 33.03 | 5.47 | 33.91 | 58.79 | 74 | -15.21 | V | PK | Pass |
| 5460 | 34.58 | 33.03 | 5.47 | 33.91 | 39.17 | 54 | -14.83 | V | AV | Pass |
| 5450 | 53.07 | 33.03 | 5.47 | 33.91 | 57.66 | 74 | -16.34 | H | PK | Pass |
| 5450 | 39.62 | 33.03 | 5.47 | 33.91 | 44.21 | 54 | -9.79 | H | AV | Pass |
| 5460 | 54.63 | 33.03 | 5.47 | 33.91 | 59.22 | 74 | -14.78 | H | PK | Pass |
| 5460 | 32.40 | 33.03 | 5.47 | 33.91 | 36.99 | 54 | -17.01 | H | AV | Pass |
| 802.11n20:5500MHz | | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5450 | 54.10 | 33.03 | 5.47 | 33.91 | 58.69 | 74 | -15.31 | V | PK | Pass |
| 5450 | 38.00 | 33.03 | 5.47 | 33.91 | 42.59 | 54 | -11.41 | V | AV | Pass |
| 5460 | 55.52 | 33.03 | 5.47 | 33.91 | 60.11 | 74 | -13.89 | V | PK | Pass |
| 5460 | 34.31 | 33.03 | 5.47 | 33.91 | 38.90 | 54 | -15.10 | V | AV | Pass |
| 5450 | 55.60 | 33.03 | 5.47 | 33.91 | 60.19 | 74 | -13.81 | H | PK | Pass |
| 5450 | 36.50 | 33.03 | 5.47 | 33.91 | 41.09 | 54 | -12.91 | H | AV | Pass |
| 5460 | 51.73 | 33.03 | 5.47 | 33.91 | 56.32 | 74 | -17.68 | H | PK | Pass |
| 5460 | 37.17 | 33.03 | 5.47 | 33.91 | 41.76 | 54 | -12.24 | H | AV | Pass |
| 802.11n40:5510MHz | | | | | | | | | | |
| 5450 | 52.71 | 33.03 | 5.47 | 33.91 | 57.30 | 74 | -16.70 | V | PK | Pass |
| 5450 | 35.52 | 33.03 | 5.47 | 33.91 | 40.11 | 54 | -13.89 | V | AV | Pass |
| 5460 | 52.47 | 33.03 | 5.47 | 33.91 | 57.06 | 74 | -16.94 | V | PK | Pass |
| 5460 | 30.32 | 33.03 | 5.47 | 33.91 | 34.91 | 54 | -19.09 | V | AV | Pass |
| 5450 | 50.76 | 33.03 | 5.47 | 33.91 | 55.35 | 74 | -18.65 | H | PK | Pass |
| 5450 | 38.50 | 33.03 | 5.47 | 33.91 | 43.09 | 54 | -10.91 | H | AV | Pass |
| 5460 | 52.90 | 33.03 | 5.47 | 33.91 | 57.49 | 74 | -16.51 | H | PK | Pass |
| 5460 | 32.67 | 33.03 | 5.47 | 33.91 | 37.26 | 54 | -16.74 | H | AV | Pass |
| 802.11n40:5510MHz | | | | | | | | | | |
| 5450 | 54.06 | 33.03 | 5.47 | 33.91 | 58.65 | 74 | -15.35 | V | PK | Pass |
| 5450 | 36.05 | 33.03 | 5.47 | 33.91 | 40.64 | 54 | -13.36 | V | AV | Pass |
| 5460 | 50.19 | 33.03 | 5.47 | 33.91 | 54.78 | 74 | -19.22 | V | PK | Pass |
| 5460 | 34.13 | 33.03 | 5.47 | 33.91 | 38.72 | 54 | -15.28 | V | AV | Pass |
| 5450 | 51.93 | 33.03 | 5.47 | 33.91 | 56.52 | 74 | -17.48 | H | PK | Pass |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5450 | 38.89 | 33.03 | 5.47 | 33.91 | 43.48 | 54 | -10.52 | H | AV | Pass |
| 5460 | 52.92 | 33.03 | 5.47 | 33.91 | 57.51 | 74 | -16.49 | H | PK | Pass |
| 5460 | 35.62 | 33.03 | 5.47 | 33.91 | 40.21 | 54 | -13.79 | H | AV | Pass |

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit

# 8 POWER SPECTRAL DENSITY TEST

## 8.1 Test Standard and Limit

**According to FCC §15.407(3)**

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

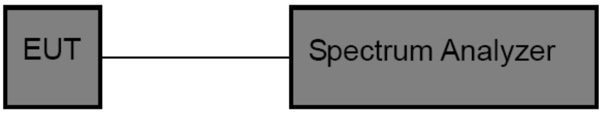
(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

## 8.2 Test Setup




## 8.3 Test Procedure

a) Create an average power spectrum for the EUT operating mode being tested by following the instructions in 12.3.2 for measuring maximum conducted output power using a spectrum analyzer or EMI receiver; that is, select the appropriate test method (SA-1, SA-2, SA-3, or their respective alternatives) and apply it up to, but not including, the step labeled, "Compute power…." (This procedure is required even if the maximum conducted output power measurement was performed using the power meter method PM.)
b) Use the peak search function on the instrument to find the peak of the spectrum.
c) Make the following adjustments to the peak value of the spectrum, if applicable:
1) If method SA-2 or SA-2A was used, then add [10 log (1 / D)], where D is the duty cycle, to the peak of the spectrum.
2) If method SA-3A was used and the linear mode was used in step h) of 12.3.2.7, add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
d) The result is the PPSD.
e) The procedure in item a) through item c) requires the use of 1 MHz resolution bandwidth to satisfy the 1 MHz measurement bandwidth specified by some regulatory authorities.This requirement also permits use of resolution bandwidths less than 1 MHz "provided that the measured power is integrated to show the total power over the measurement bandwidth" (i.e., 1 MHz). If measurements are performed using a reduced resolution bandwidth and integrated over 1 MHz bandwidth, the following adjustments to the procedures apply:
1) Set RBW >= 1 / T, where T is defined in 12.2 a).
2) Set VBW >= [3 × RBW].
3) Care shall be taken such that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

## 8.4 Test Data

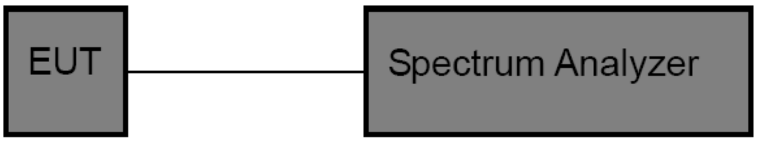
Please Refer to Appendix data 5.2G and 5.3G and 5.6G and 5.8G for Details.

# 9 26DB & 6DB & 99% Emission Bandwidth Test

## 9.1 Test Standard

| | |
|---|---|
| Test Standard | FCC Part15 C Section 15.407 |
| | The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band, the minimum bandwidth 6 dB bandwidth of U-NII devices shall be at least 500KHz. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth. |

## 9.2 Test Setup




## 9.3 Test Procedure

Emission bandwidth:
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Occupied bandwidth:
a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW,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and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
g) If the instrument does not have a 99% power bandwidth function, then the trace data points are
recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

6 dB emission bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

## 9.4 Test Data

Please Refer to Appendix data 5.2G and 5.3G and 5.6G and 5.8G for Details.


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# 10 Maximum Conducted Output Power

## 10.1 Test Standard and Limit

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power.
For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi.
Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

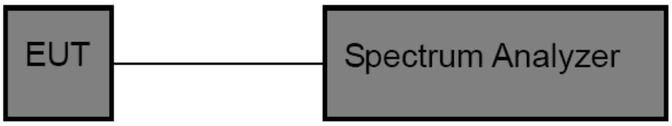
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna

exceeds 6 dBi.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.
If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

## 10.2 Test Setup




## 10.3 Test Procedure

The EUT was directly connected to the Power meter

1. Device Configuration

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level (see section II.B.).

The intent is to test at 100 percent duty cycle; however a small reduction in duty cycle (to no lower than 98 percent) is permitted if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

b) If continuous transmission (or at least 98 percent duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level with the transmit duration as long as possible and the duty cycle as high as possible.

2. Measurement using a Spectrum Analyzer or EMI Receiver (SA)

Measurement of maximum conducted output power using a spectrum analyzer requires integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the

99-percent occupied bandwidth of the signal.1 However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with § 15.407(a).

a) The test method shall be selected as follows: (i) Method SA-1 or SA-1 Alternative (averaging with the EUT transmitting at full power throughout each sweep) shall be applied if either of the following conditions can be satisfied:

• The EUT transmits continuously (or with a duty cycle ≥ 98 percent).

• Sweep triggering or gating can be implemented in a way that the device transmits at the maximum power control level throughout the duration of each of the instrument sweeps to be averaged. This condition can generally be achieved by triggering the instrument's sweep if the duration of the sweep (with the analyzer configured as in Method SA-1, below) is equal to or shorter than the duration T of each transmission from the EUT and if those transmissions exhibit full power throughout their durations.

(ii) Method SA-2 or SA-2 Alternative (averaging across on and off times of the EUT transmissions, followed by duty cycle correction) shall be applied if the conditions of (i) cannot be achieved and the transmissions exhibit a constant duty cycle during the measurement duration. Duty cycle will be considered to be constant if variations are less than ± 2 percent.

(iii) Method SA-3 (RMS detection with max hold) or SA-3 Alternative (reduced VBW with max hold) shall be applied if the conditions of (i) and (ii) cannot be achieved.

b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep):
(i) Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW ≥ 3 MHz.

(iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Sweep time = auto.

(vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

(vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run”.

(viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum

## 10.4 Test Data

Please Refer to Appendix data 5.2G and 5.3G and 5.6G and 5.8G for Details.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# 11 Out of Band Emissions and Spurious Emission

## 11.1 Test Standard and Limit

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

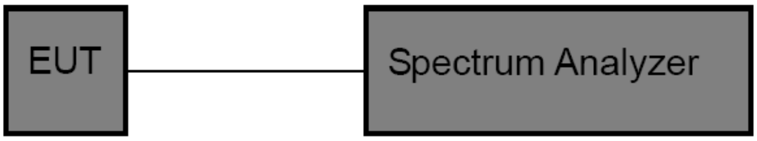
For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

## 11.2 Test Setup




## 11.3 Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect

its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.

3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.

4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.

5. Repeat above procedures until all measured frequencies were complete.

### 11.4 Test Data

Please Refer to Appendix data 5.2G and 5.3G and 5.6G and 5.8G for Details.

# 12 Frequency Stability Measurement

## 12.1 Test Standard and Limit

FCC

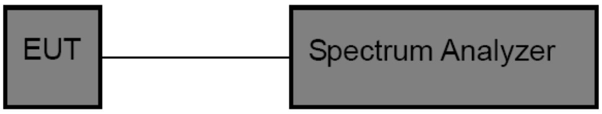
Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE 802.11n specification).

IC

If the frequency stability of the licence-exempt radio apparatus is not specified in the applicable RSS, the fundamental emissions of the radio apparatus should be kept within at least the central 80% of its permitted operating frequency band in order to minimize the possibility of out-of-band operation. In addition, its occupied bandwidth shall be entirely outside the restricted bands and the prohibited TV bands of 54 72 MHz, 76-88 MHz, 174-216 MHz, and 470-602 MHz, unless otherwise indicated.

## 12.2 Test Setup




## 12.3 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.

2. EUT have transmitted absence of modulation signal and fixed channelize.

3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.

4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.

5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).

6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value

7. Extreme temperature is -20°C~50°C.

## 12.4 Test Data

Please Refer to Appendix data 5.2G and 5.3G and 5.6G and 5.8G for Details.

# 13 Antenna Requirement

## 13.1 Test Standard and Requirement

| Test Standard | FCC Part15 Section 15.203 |
|---|---|
| Requirement | 1) 15.203 requirement:<br><br>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.<br><br>According to RSS-GEN section 6.8<br><br>The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.<br><br>For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).<br><br>When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.<br><br>The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested. |

## 13.2 Antenna Connected Construction

The antenna is External Antenna which permanently attached, and the best case gain of the antenna is 2.51 dBi. It complies with the standard requirement.

# 14 DFS TEST

## 14.1 DFS test Requirement

The following table from FCC KDB905462 D02 UNII DFS Compliance procedures new rules list the applicable requirements for the DFS testing.

**Table 1: Applicability of DFS Requirements Prior to Use of a Channel**

| Requirement | Operational Mode | | |
|---|---|---|---|
| | Master | Client Without Radar Detection | Client With Radar Detection |
| Non-Occupancy Period | Yes | Not required | Yes |
| DFS Detection Threshold | Yes | Not required | Yes |
| Channel Availability Check Ti | Yes | Not required | Not required |
| U-NII Detection Bandwidth | Yes | Not required | Yes |

**Table 2: Applicability of DFS requirements during normal operation**

| Requirement | Operational Mode | |
|---|---|---|
| | Master Device or Client with Radar Detection | Client Without Radar Detection |
| DFS Detection Threshold | Yes | Not required |
| Channel Closing Transmission | Yes | Yes |
| Channel Move Time | Yes | Yes |
| U-NII Detection Bandwidth | Yes | Not required |

| Additional requirements for devices with multiple bandwidth modes | Master Device or Client with Radar Detection | Client Without Radar Detection |
|---|---|---|
| U-NII Detection Bandwidth and | All BW modes must be tested | Not required |
| Channel Move Time and Channel Closing Transmission Time | Test using widest BW mode available | Test using the widest BW mode available for the link |
| All other tests | Any single BW mode | Not required |

| |
|---|
| Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency. |

**Master Devices**

a) The Master Device will use DFS in order to detect Radar Waveforms with received signal strength above the DFS Detection Threshold in the 5250~5350 MHz and 5470~5725 MHz bands. DFS is not required in the 5150~5250 MHz or 5725~5825 MHz bands.

b) Before initiating a network on a Channel, the Master Device will perform a Channel Availability Check for a specified time duration (Channel Availability Check Time) to ensure that there is no radar system operating on the Channel, using DFS described under subsection a) above.

c) The Master Device initiates a U-NII network by transmitting control signals that will enable other U-NII devices to Associate with the Master Device.

d) During normal operation, the Master Device will monitor the Channel (In-Service Monitoring) to ensure that there is no radar system operating on the Channel, using DFS described under a).

e) If the Master Device has detected a Radar Waveform during In-Service Monitoring as described under d), the Operating Channel of the U-NII network is no longer an Available Channel. The Master Device will instruct all associated Client Device(s) to stop transmitting on this Channel within the Channel Move Time. The transmissions during the Channel Move Time will be limited to the Channel Closing Transmission Time.

f) Once the Master Device has detected a Radar Waveform it will not utilize the Channel for the duration of the Non-Occupancy Period.

g) If the Master Device delegates the In-Service Monitoring to a Client Device, then the combination will be tested to the requirements described under d) through f) above.

**Client Devices**

a) A Client Device will not transmit before having received appropriate control signals from a Master Device.

b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the

Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.

d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.

e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear.

**Table 4: DFS Response Requirement Values**

| Paramenter | Value |
|---|---|
| Non-occupancy period | Minimum 30 minutes |
| Channel Availability Check Time | 60 seconds |
| Channel Move Time | 10 seconds See Note 1. |
| Channel Closing Transmission Time | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2. |
| U-NII Detection Bandwidth | Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3. |

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.



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## 14.2 DFS Detection Thresholds

**Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection**

| Maximum Transmit Power | Value (See Notes 1, 2, and 3) |
|---|---|
| EIRP ≥ 200 milliwatt | -64 dBm |
| EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz | -62 dBm |
| EIRP < 200 milliwatt that do not meet the power spectral density requirement | -64 dBm |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

## 14.3 Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

### Table 5 Short Pulse Radar Test Waveforms

<table>
<tr><th>Radar Type</th><th>Pulse Width (μsec)</th><th>PRI (μsec)</th><th>Number of Pulses</th><th>Minimum Percentage of Successful Detection</th><th>Minimum Number of Trials</th></tr>
<tr><td>0</td><td>1</td><td>1428</td><td>18</td><td>See Note 1</td><td>See Note 1</td></tr>
<tr><td rowspan="2">1</td><td rowspan="2">1</td><td>Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a</td><td>$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu sec}}\right)\right\}$</td><td rowspan="2">60%</td><td rowspan="2">30</td></tr>
<tr><td>Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A</td><td></td></tr>
<tr><td>2</td><td>1-5</td><td>150-230</td><td>23-29</td><td>60%</td><td>30</td></tr>
<tr><td>3</td><td>6-10</td><td>200-500</td><td>16-18</td><td>60%</td><td>30</td></tr>
<tr><td>4</td><td>11-20</td><td>200-500</td><td>12-16</td><td>60%</td><td>30</td></tr>
<tr><td colspan="4">Aggregate (Radar Types 1-4)</td><td>80%</td><td>120</td></tr>
<tr><td colspan="6">Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.</td></tr>
</table>

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 μsec is selected, the number of pulses would be Round up $\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{3066}\right)\right\}$ = Round up {17.2} = 18.

**Table 5a - Pulse Repetition Intervals Values for Test A**

| Pulse Repetition Frequency Number | Pulse Repetition Frequency (Pulses Per Second) | Pulse Repetition Interval (Microseconds) |
|---|---|---|
| 1 | 1930.5 | 518 |
| 2 | 1858.7 | 538 |
| 3 | 1792.1 | 558 |
| 4 | 1730.1 | 578 |
| 5 | 1672.2 | 598 |
| 6 | 1618.1 | 618 |
| 7 | 1567.4 | 638 |
| 8 | 1519.8 | 658 |
| 9 | 1474.9 | 678 |
| 10 | 1432.7 | 698 |
| 11 | 1392.8 | 718 |
| 12 | 1355 | 738 |
| 13 | 1319.3 | 758 |
| 14 | 1285.3 | 778 |
| 15 | 1253.1 | 798 |
| 16 | 1222.5 | 818 |
| 17 | 1193.3 | 838 |
| 18 | 1165.6 | 858 |
| 19 | 1139 | 878 |
| 20 | 1113.6 | 898 |
| 21 | 1089.3 | 918 |
| 22 | 1066.1 | 938 |
| 23 | 326.2 | 3066 |

**Table 6 – Long Pulse Radar Test Waveform**

| Radar Type | Pulse Width (µsec) | Chirp Width (MHz) | PRI (µsec) | Number of Pulses per Burst | Number of Bursts | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|---|---|---|---|---|---|---|---|
| 5 | 50-100 | 5-20 | 1000-2000 | 1-3 | 8-20 | 80% | 30 |

The parameters for this waveforms are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type wave forms, then each additional waveform must also be unique and not repeated from the previous waveforms.

**Table 7 – Frequency Hopping Radar Test Waveform**

| Radar Type | Pulse Width (µsec) | PRI (µsec) | Pulses per Hop | Hopping Rate (kHz) | Hopping Sequence Length (msec) | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|---|---|---|---|---|---|---|---|
| 6 | 1 | 333 | 9 | 0.333 | 300 | 70% | 30 |

For the Frequency Hopping Radar Type, the same Burst parameters are used for each wave form. The hopping sequence is different for each wave form and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250–5724MHz.Next,the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

## 14.4 Test Item

### 14.4.1 Calibration of Radar Waveform

#### 14.4.1.1 Test Configuration

7.2.1 Setup for Master with injection at the Master

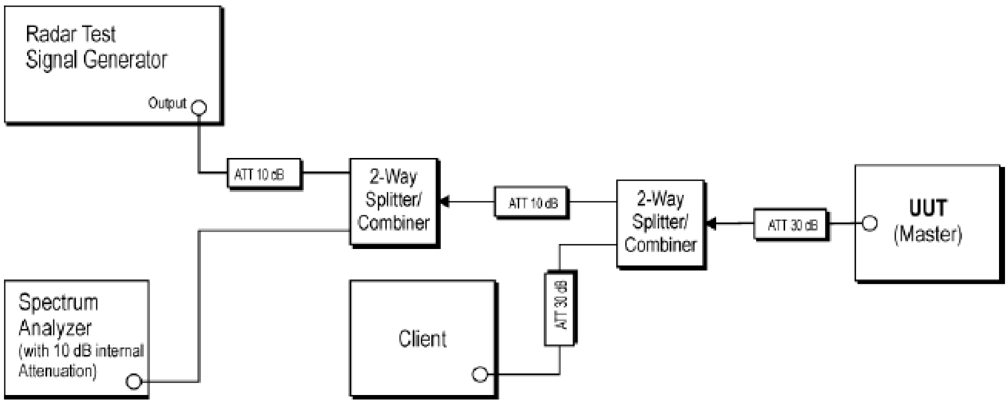


*Figure 2: Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master*

#### 14.4.1.2 Test Procedure

a) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master

b) The interference Radar Detection Threshold Level is -62dBm + 0dBi +1dB = -61dBm that had been taken into account the output power range and antenna gain.

c) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.

d) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was - -62dBm + 0dBi +1dB = -61dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

### 14.4.1.3 Test Result

Please Refer to Appendix data for DFS

## 14.4.2 Channel Move Time, Channel Closing Transmission Time

### 14.4.2.1 Test Configuration

**7.2.1 Setup for Master with injection at the Master**

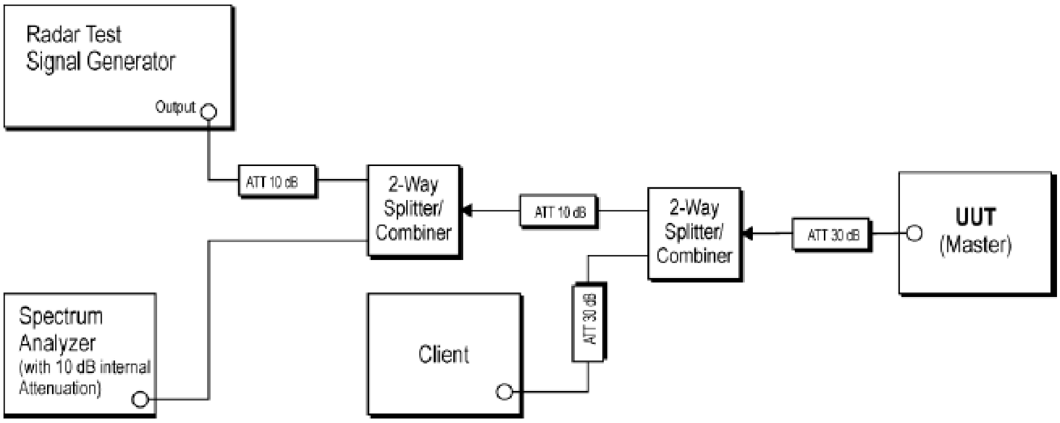


*Figure 2: Example Conducted Setup where UUT is a Master and Radar Test Waveforms are injected into the Master*

### 14.4.2.2 Test Procedure

a) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

b) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

c) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

d) EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

e) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

f) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type

g) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

### 14.4.2.3 Test Result

Please Refer to Appendix data for DFS

# 15 TEST SETUP & EUT PHOTOGRAPH

Please see the attachment for details.

---------------- End of Report ---------------