FCC TEST REPORT

For

NFC Android Reader

Model Number: FX205F

FCC ID: 2AGQIFX205

Report Number : WT198003467

Test Laboratory : Shenzhen Academy of Metrology and Quality

Inspection

Site Location : NETC Building, No.4 Tongfa Rd., Xili, Nanshan,

Shenzhen, China

Tel : 0086-755-86928965

Fax : 0086-755-86009898-31396

Web : www.smq.com.cn E-mail : emcrf@smq.com.cn

TEST REPORT DECLARATION

Applicant : FAMOCO SAS

Address : 59 avenue Victor Hugo Paris, France

Manufacturer : FAMOCO SAS

Address : 59 avenue Victor Hugo Paris, France

EUT Description : NFC Android Reader

Model No : FX205F

Trade mark : FAMOCO

Serial Number : /

FCC ID : 2AGQIFX205

Test Standards:

FCC Part 15 15.207, 15.209, 15.407(2018)

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.207, 15.209 and 15.407.

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

| Project Engineer: | 族习林 | Date: | _Jul.23, 2019 |
|----------------------|-------------------|-------|---------------|
| | (Chen Silin 陈司林) | | |
| Checked by: | 相互拥 | Date: | _Jul.23, 2019 |
| | (Lin Yixiang 林奕翔) | | |
| Approved by: | 本和人 | Date: | _Jul.23, 2019 |
| | (Lin Bin 林斌) | | |

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1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

| ie i rest results summary | | |
|---|---|--------------|
| Test Items | FCC Rules | Test Results |
| 26dB Bandwidth | FCC §15.407 (a) | Pass |
| Maximum Peak Conducted Power | FCC §15.407 (a) | Pass |
| Maximum Power Spectral Density Level | FCC §15.407 (a) | Pass |
| Radiated Bandedge and Spurious | FCC §15.407 (b) FCC §15.209 FCC §15.205 | Pass |
| Conducted emission test for AC power port | FCC §15.207 | Pass |
| Automatic Discontinue Transmission | FCC §15.407 (c) | Pass |
| Frequency stability | FCC §15.407 (g) | Pass |
| Occupied Bandwidth | | Pass |
| Antenna Requirment | FCC §15.203 | Pass |
| Antenna Requirment | FCC §15.203 | Pass |

Remark: "N/A" means "Not applicable."

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2. GENERAL INFORMATION

2.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.

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2.3. Measurement Uncertainty

Conducted Emission 9kHz~30MHz 3.5dB

Radiated Emission 30MHz~1000MHz 4.5dB 1GHz~40GHz 4.6dB

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3. PRODUCT DESCRIPTION

3.1. EUT Description

Description : NFC Android Reader

Manufacturer : FAMOCO SAS

Model Number : FX205F

Operate : U-NII 1(5150~5250MHz)

Antenna

Designation PIFA Antenna 1.3dBi

Remark: /

Table 2 Working Frequency List U-NII 1 (802.11a, 802.11n HT20)

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

Table 3 Working Frequency List U-NII 1,(802.11n HT40)

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

3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2AGQIFX205** filing to comply with Section 15.207, 15.209, 15.407 of the FCC Part 15, Subpart E.

3.3. Block Diagram of EUT Configuration



Figure 1 EUT setup

3.4. Operating Condition of EUT

The Radiated spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).

Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.

Worst-case data rates as provided by the client were:

802.11a mode: 6 Mbps 802.11n HT20 mode: MCS0 802.11n HT40 mode: MCS0

802.11a operates in SISO mode. For SISO conducted

measurements, the modes tested in this report will be considered as a worst case mode.

802.11n operate in SISO mode. For SISO conducted

measurements, the modes tested in this report will be considered as a worst case mode.

802.11ac operate in SISO mode. For SISO conducted

measurements, the modes tested in this report will be considered as a worst case mode.

3.5. Directional Antenna Gain

The EUT does NOT support a WIFI MIMO function.

Directional gain need NOT to be considered.

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3.6. Support Equipment List

Table 4 Support Equipment List

| Name | Model No | S/N | Manufacturer |
|-------------------|-----------------|-----|--|
| Adapter 1 for EUT | HJ528-0500200 | | Good Fortune (Dongguan) Electronics & Technology Co., Ltd. |
| Adapter 2 for EUT | HJ-0500200W2-US | | Shenzhen Huajin Electronics Co., LTD. |

3.7. Test Conditions

Date of test: Jun.20, 2019 - Jul.08, 2019 Date of EUT Receive: Jun.20, 2019

Temperature: 20 ~ 25 °C Relative Humidity: 42-56%

3.8. Special Accessories

Not available for this EUT intended for grant.

3.9. Equipment Modifications

Not available for this EUT intended for grant.

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4. TEST EQUIPMENT USED

Table 5 Test Equipment

| No. | Equipment | Manufacturer | Model No. | Last Cal. | Cal. Interval |
|------------|-------------------------------------|-----------------|---------------------|--------------|------------------|
| SB2603 | EMI Test Receiver | Rohde & Schwarz | ESCS30 | Feb.20, 2019 | 1 Year |
| SB2604 | AMN | Rohde & Schwarz | ESH2-Z5 | Feb.20, 2019 | 1 Year |
| SB9054/04 | EMI Test Receiver | Rohde & Schwarz | ESU8 | Sep.03, 2018 | 1 Year |
| SB8501/09 | EMI Test Receiver | Rohde & Schwarz | ESU40 | Mar.11, 2019 | 1 Year |
| SB8501/04 | Bilog Antenna | Schwarzbeck | VULB9163 | Jun.01, 2019 | 1 Year |
| SB5472/02 | Bilog Antenna | Schwarzbeck | VULB9163 | Jun.01, 2019 | 1 Year |
| SB3435 | Horn Antenna | Rohde & Schwarz | HF906 | Jan.01, 2018 | 1 Year |
| SB8501/11 | Horn Antenna | ETS-Lindgren | 3160-09 | Jan.21,2017 | 3 Years |
| SB8501/12 | Horn Antenna | ETS-Lindgren | 3160-10 | Jan.21,2017 | 3 Years |
| SB12724/11 | Loop Antenna | Rohde & Schwarz | HFH2-Z2 | Jun.26, 2019 | 1 Year |
| SB8501/17 | Preamplifier | Rohde & Schwarz | SCU-18 | Feb.20, 2019 | 1 Year |
| SB8501/16 | Preamplifier | Rohde & Schwarz | SCU-26 | Feb.18, 2019 | 1 Year |
| SB9059 | Preamplifier | Rohde & Schwarz | SCU-40 | Aug.29, 2018 | 1 Year |
| SB8501/14 | Preamplifier | Rohde & Schwarz | SCU-03 | Feb.20, 2019 | 1 Year |
| SB11873/01 | Power Sensor | Rohde & Schwarz | OSP120+OSP -B157 | Feb.21, 2019 | 1 Year |
| SB9060 | Signal Analyzer | Rohde & Schwarz | FSQ40 | Feb.21, 2019 | 1 Year |
| SB9721/07 | DC Power Supply | Agilent | 66319D | | |
| SB11818 | Temperature & Humidity Test chamber | Espec | EH-010U | Mar.25, 2019 | 1 Year |
| | Radiated Test Software | Rohde & Schwarz | EMC 32 8.50.0 | | |
| | AC Line Conducted Test Software | Rohde & Schwarz | ES-K1 V1.71 | | |

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5. DUTY CYCLE

5.1.LIMITS OF DUTY CYCLE

None; for reporting purposes only

5.2.TEST PROCEDURE

- 1. Set span = Zero
- 2. RBW = 20MHz
- 3. VBW = 30MHz
- 4. Detector = Peak

5.3. TEST SETUP



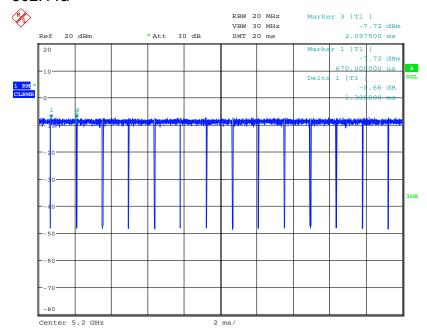
5.4. TEST DATA

Table 6 Duty Cycle Test Data

| Test Mode | On Time (ms) | Duty Cycle(%) | Duty Factor | 1/T Minimum VBW |
|------------------------------|--------------------|------------------|----------------|-----------------------|
| 802.11a | 1.385 | 97.02 | 0.13 | (kHz) 1 |
| 802.11n HT20 802.11n HT40 | 1.295 0.643 | 97 94.14 | 0.13 0.26 | 1.5 |

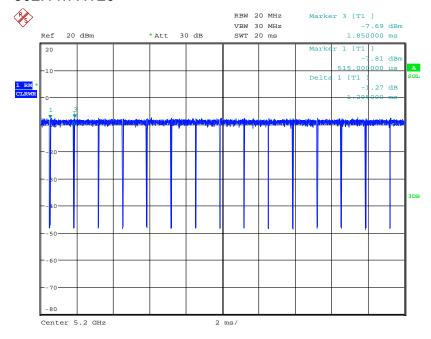
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802.11a



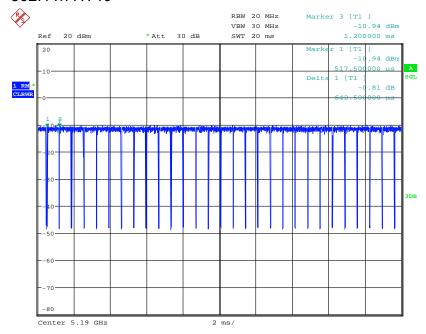
Date: 5.JUL.2019 16:26:15

802.11n HT20



Date: 5.JUL.2019 16:43:05

802.11n HT40



Date: 5.JUL.2019 16:53:44

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6. 26DB BANDWIDTH MEASUREMENT

6.1.LIMITS OF 26dB BANDWIDTH MEASUREMENT

None; for reporting purposes only..

6.2.TEST PROCEDURE

ANSI C63.10-2013 Clause 12.4

- 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 maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

6.3. TEST SETUP



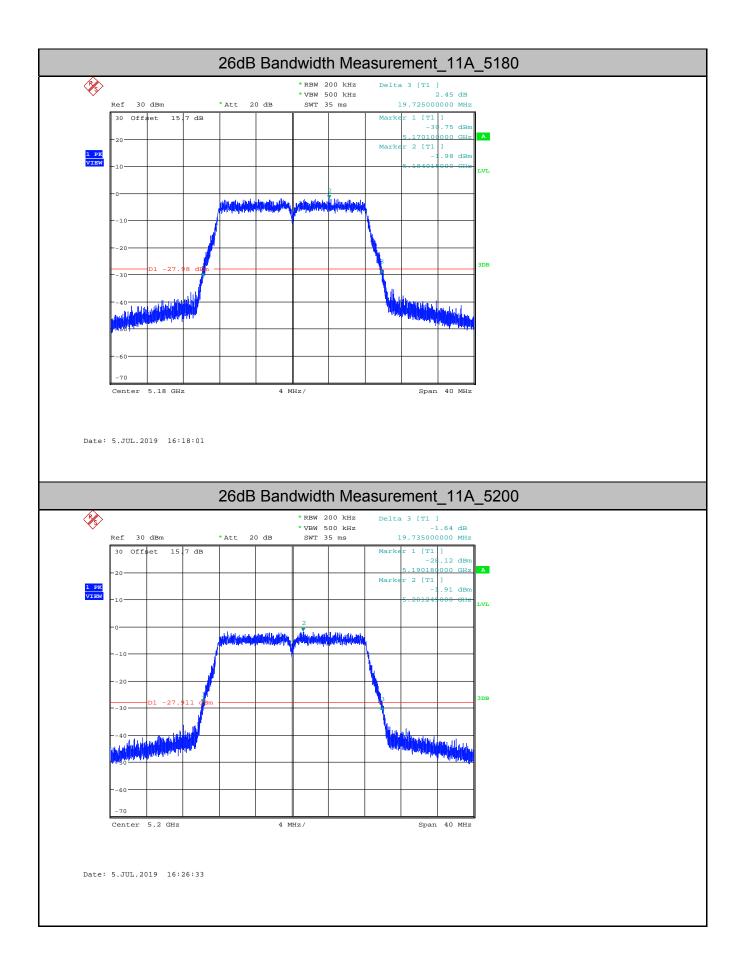
6.4. Test Data

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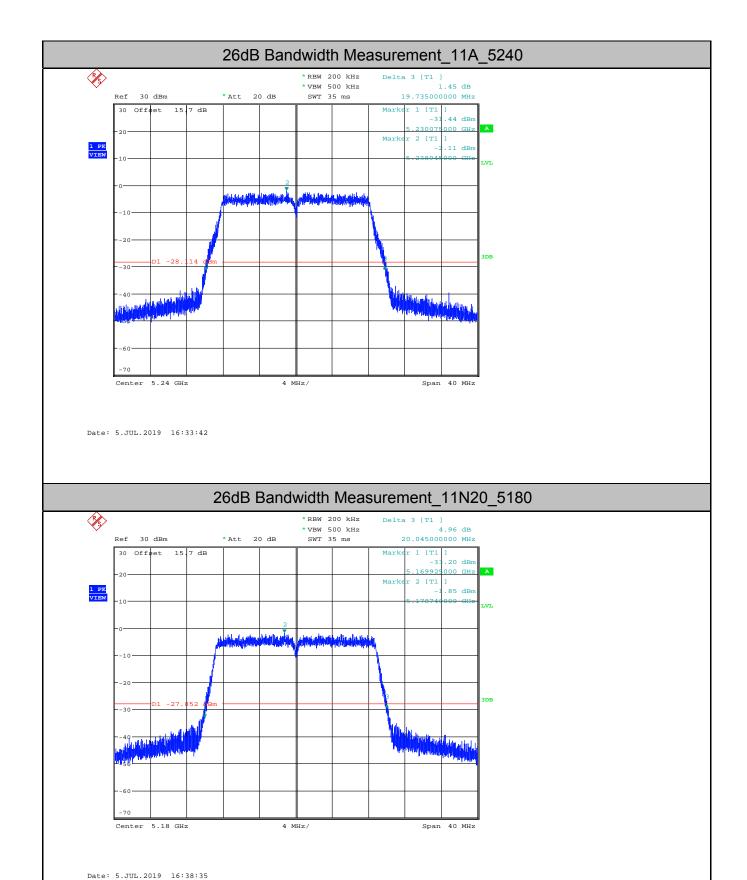
Table 7 26dB Bandwidth Test Data

| Test Mode | Test Channel | 26dB Bandwidth [MHz] | Limit[MHz] | Verdict |
|--------------|--------------|----------------------|------------|---------|
| 802.11a | 5180 | 19.725 | | PASS |
| 802.11a | 5200 | 19.735 | | PASS |
| 802.11a | 5240 | 19.735 | | PASS |
| 802.11n HT20 | 5180 | 20.045 | | PASS |
| 802.11n HT20 | 5200 | 19.990 | | PASS |
| 802.11n HT20 | 5240 | 19.990 | | PASS |
| 802.11n HT40 | 5190 | 40.060 | | PASS |
| 802.11n HT40 | 5230 | 40.050 | | PASS |

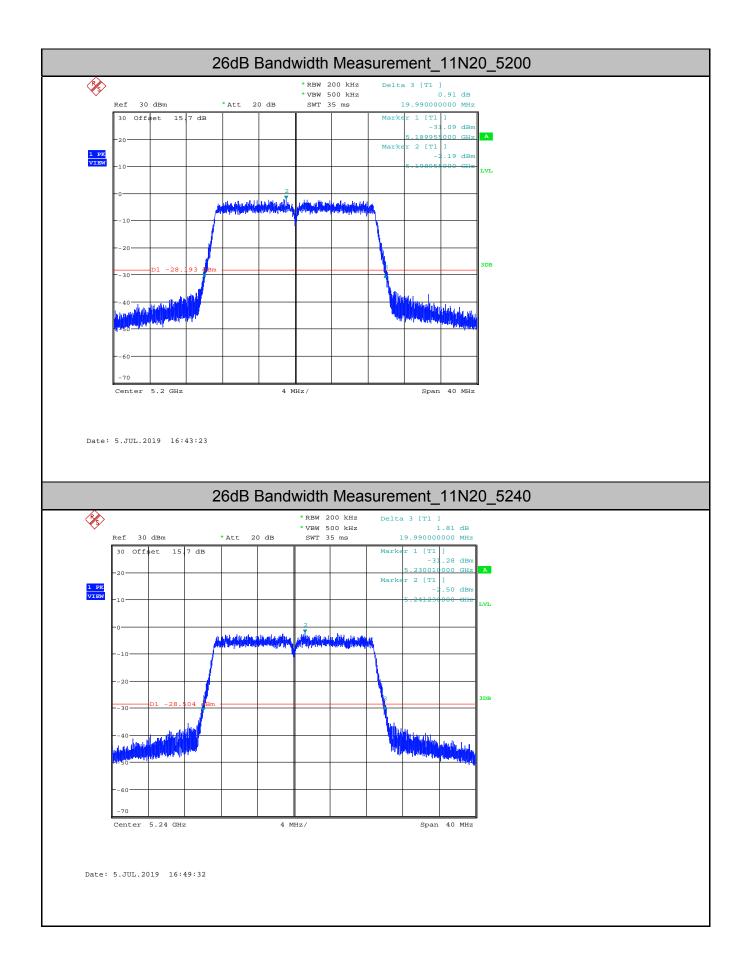
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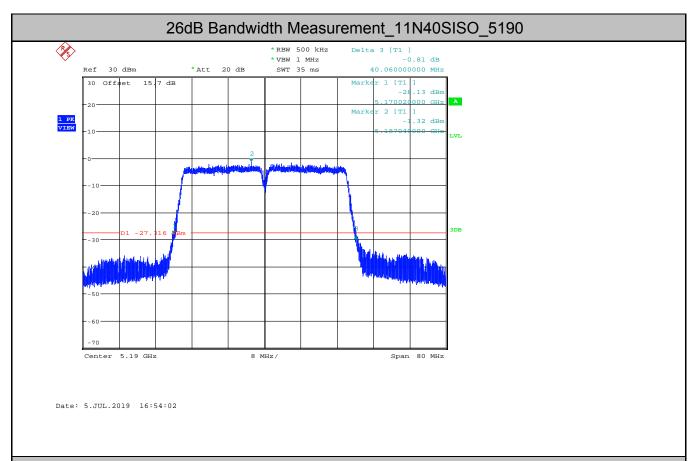
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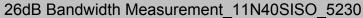


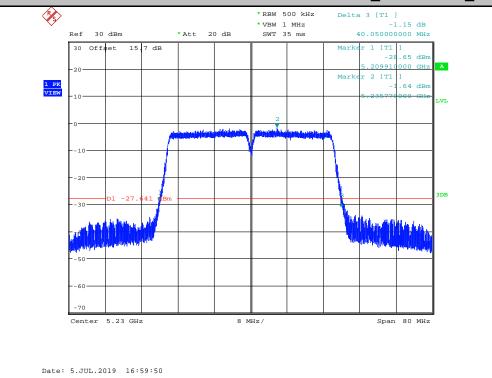
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7. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

7.1.LIMITS OF Maximum Conducted Output Power Measurement

CFR 47 (FCC) part 15.2407 (a)

For the band 5.15–5.25 GHz.

For mobile and portable 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 max-imum antenna gain does not exceed 6 dBi.

7.2. TEST PROCEDURE

ANSI C63.10-2013 Clause 12.3

- a) Measure the duty cycle D
- b) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal.
- c) Set RBW = 1 MHz.
- d) Set VBW ≥ 3 MHz.
- e) Number of points in sweep \geq [2 \times span / RBW]. (This gives bin-to-bin spacing \leq RBW / 2, so that narrowband signals are not lost between frequency bins.)
- f) Manually set sweep time \geq [10 \times (number of points in sweep) \times (total ON / OFF period of the transmitted signal)].
- g) Set detector = RMS (power averaging).
- h) Perform a single sweep.
- i) Compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.
- j) Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1 / 0.25)] = 6 dB if the duty cycle is 25%..

7.3. TEST SETUP

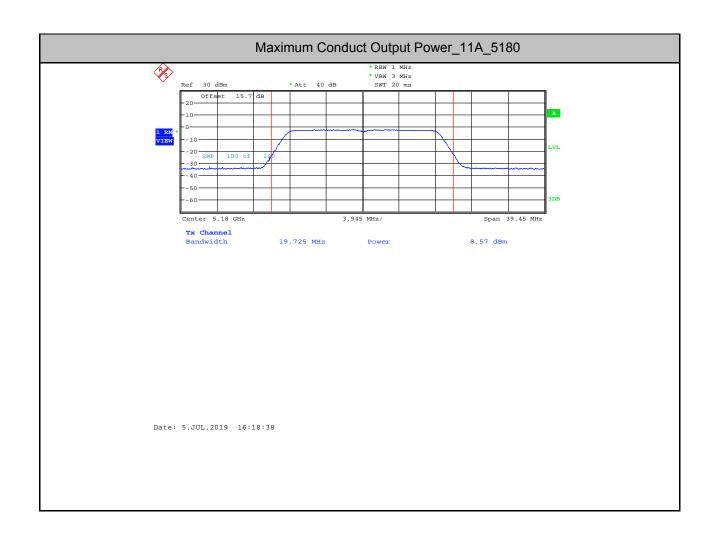


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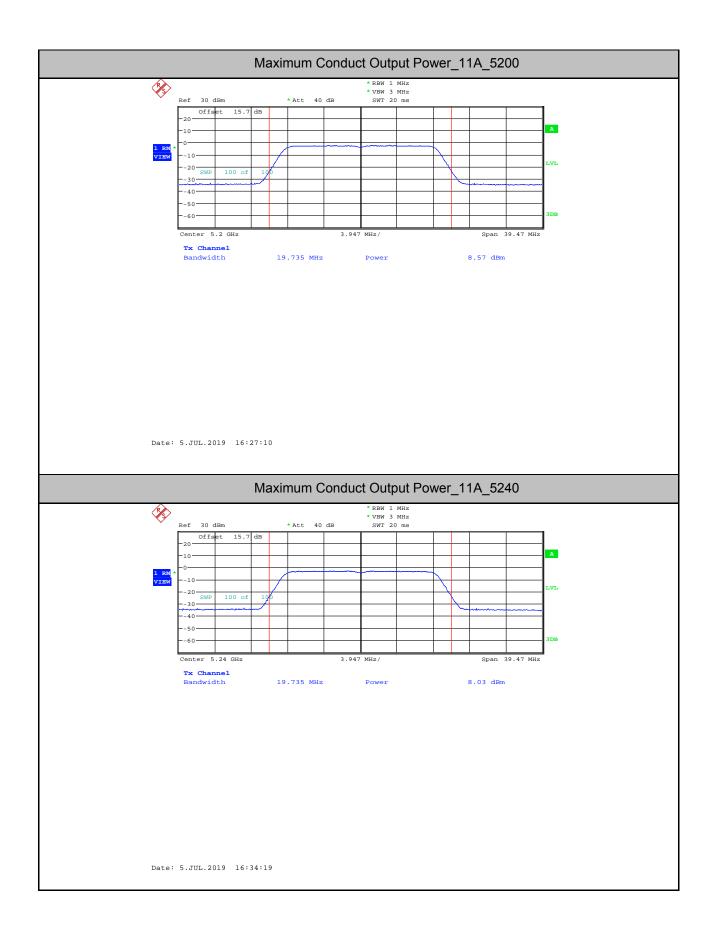
7.4. TEST DATA

Table 8 Maximum Conducted Output Power Test Data

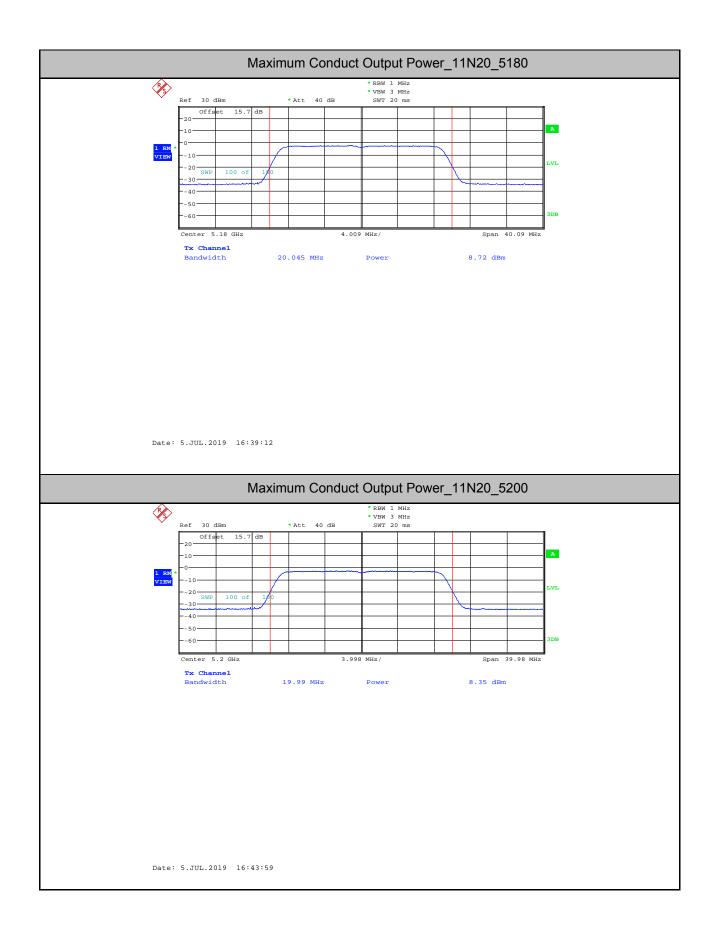
| Test Mode | Test Channel | Level [dBm] | 10log(1/x) Factor [dB] | Power [dBm] | Limit [dBm] | Verdict |
|--------------|-----------------|----------------|---------------------------|----------------|----------------|---------|
| 802.11a | 5180 | 8.57 | 0.13 | 8.70 | 23.98 | PASS |
| 802.11a | 5200 | 8.57 | 0.13 | 8.70 | 23.98 | PASS |
| 802.11a | 5240 | 8.03 | 0.13 | 8.16 | 23.98 | PASS |
| 802.11n HT20 | 5180 | 8.72 | 0.13 | 8.85 | 23.98 | PASS |
| 802.11n HT20 | 5200 | 8.35 | 0.13 | 8.48 | 23.98 | PASS |
| 802.11n HT20 | 5240 | 8.11 | 0.13 | 8.24 | 23.98 | PASS |
| 802.11n HT40 | 5190 | 8.31 | 0.26 | 8.57 | 23.98 | PASS |
| 802.11n HT40 | 5230 | 8.4 | 0.26 | 8.66 | 23.98 | PASS |



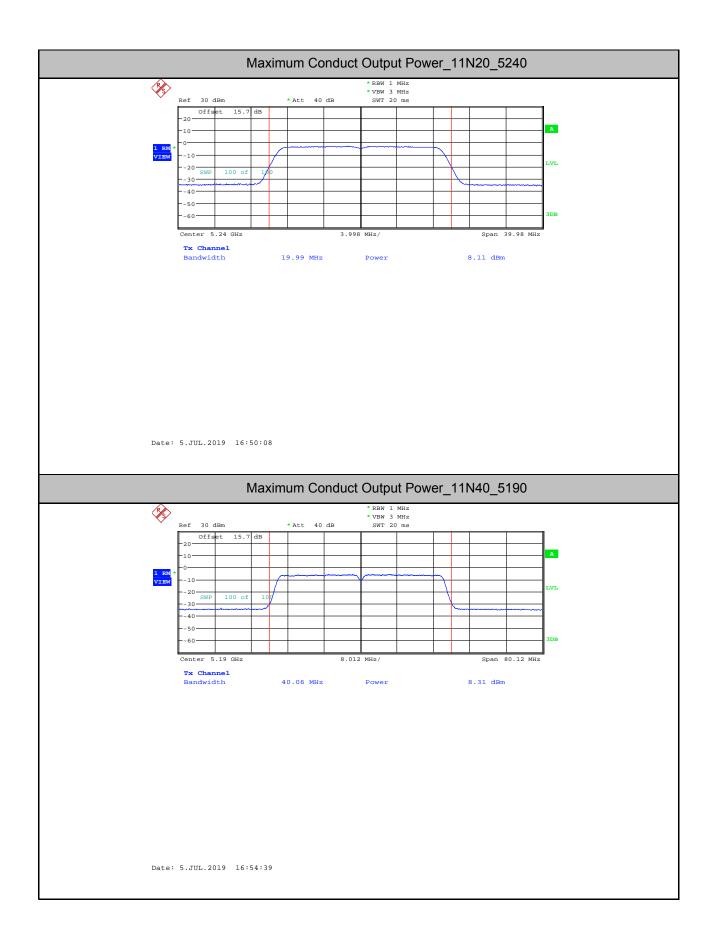
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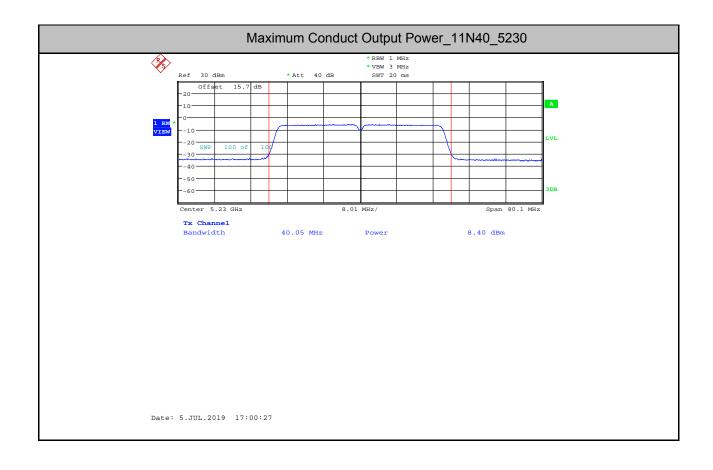
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8. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

8.1.LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.407 (a)

For mobile and portable 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

8.2.TEST PROCEDURE

- 1.Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) 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 a power meter, method PM.)
- 2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
- 3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.
- b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
- 4. The result is the Maximum PSD over 1 MHz reference bandwidth.
- 5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)

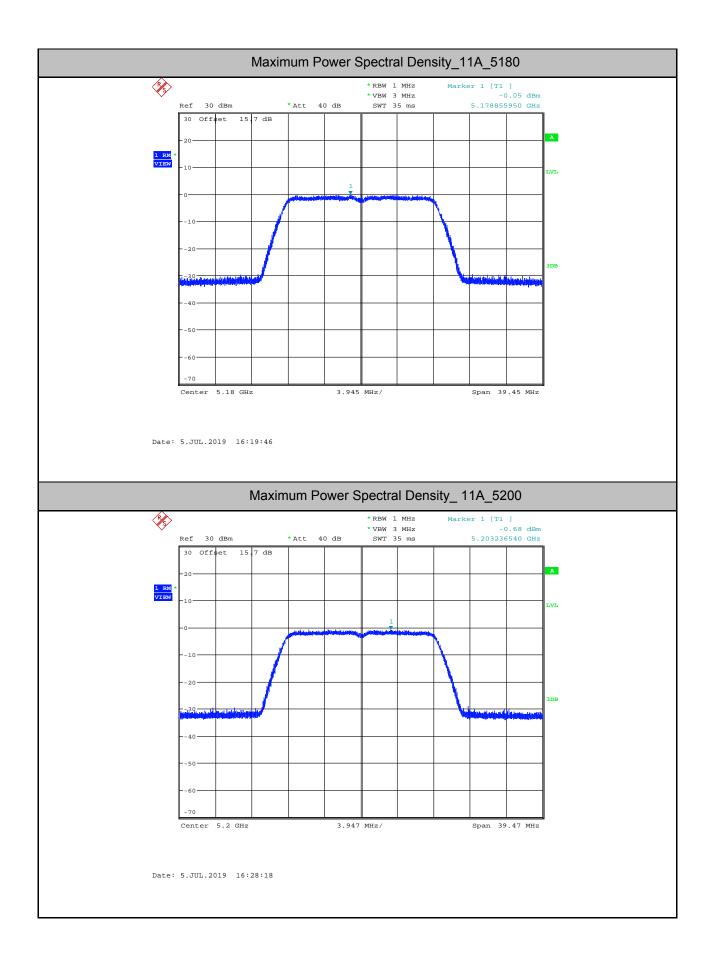
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8.3. TEST DATA

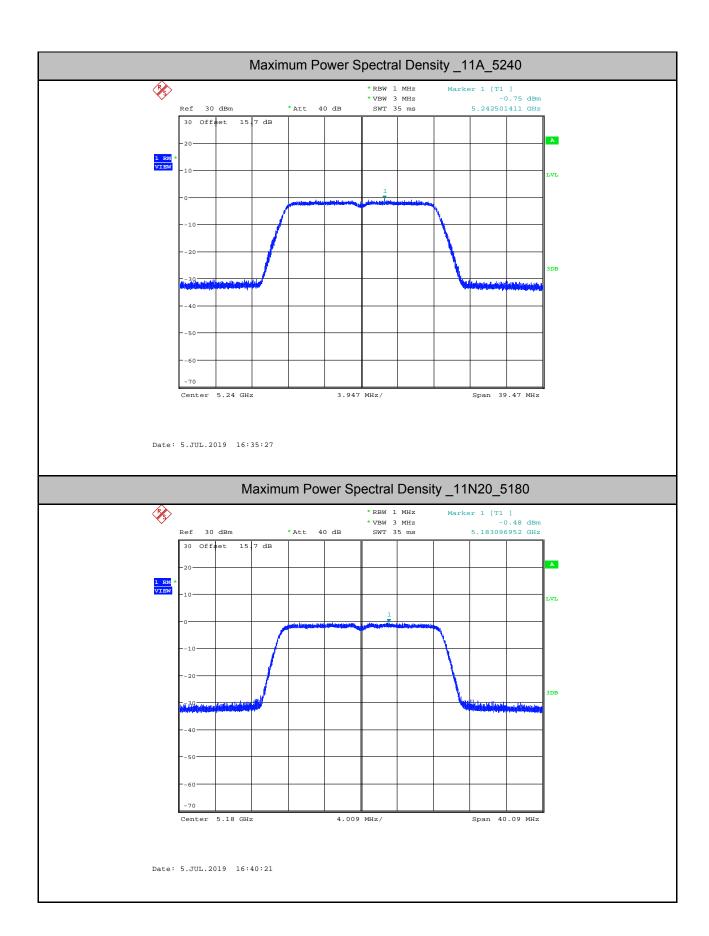
Table 9 Maximum Power Spectral Density Level Test Data

| Test Mode | Test Channel | Level [dBm/MHz] | 10log(1/x) Factor [dB] | PSD [dBm/MHz] | Limit [dBm/MHz] | Verdict |
|--------------|-----------------|--------------------|---------------------------|------------------|--------------------|---------|
| 802.11a | 5180 | -0.05 | 0.13 | 0.08 | 11.00 | PASS |
| 802.11a | 5200 | -0.68 | 0.13 | -0.55 | 11.00 | PASS |
| 802.11a | 5240 | -0.75 | 0.13 | -0.62 | 11.00 | PASS |
| 802.11n HT20 | 5180 | -0.48 | 0.13 | -0.35 | 11.00 | PASS |
| 802.11n HT20 | 5200 | -0.90 | 0.13 | -0.77 | 11.00 | PASS |
| 802.11n HT20 | 5240 | -1.24 | 0.13 | -1.11 | 11.00 | PASS |
| 802.11n HT40 | 5190 | -3.37 | 0.26 | -3.11 | 11.00 | PASS |
| 802.11n HT40 | 5230 | -3.64 | 0.26 | -3.38 | 11.00 | PASS |

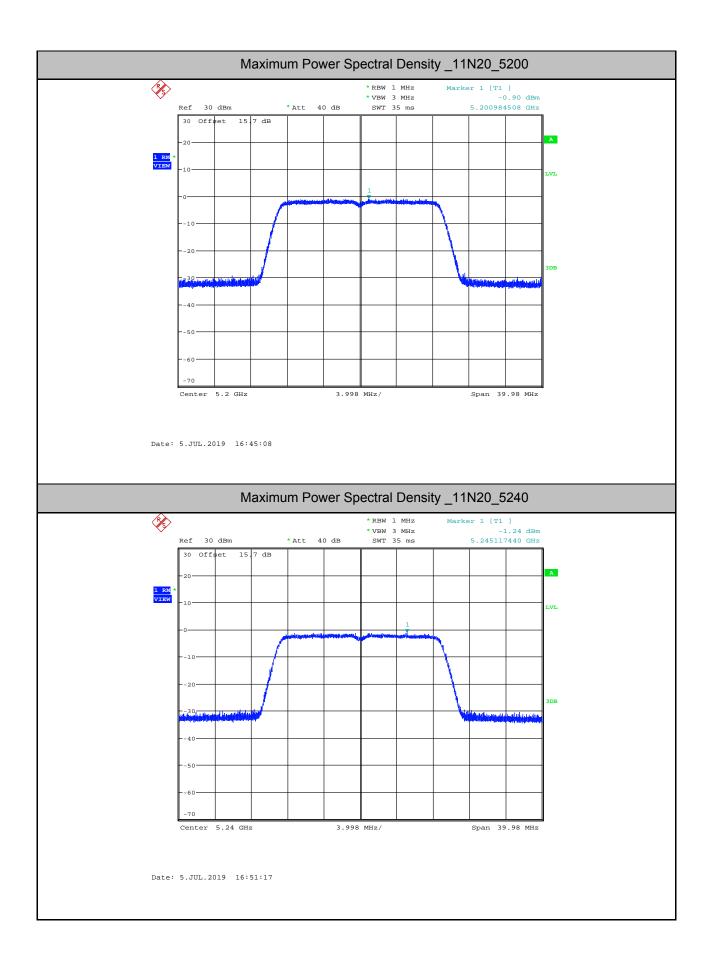
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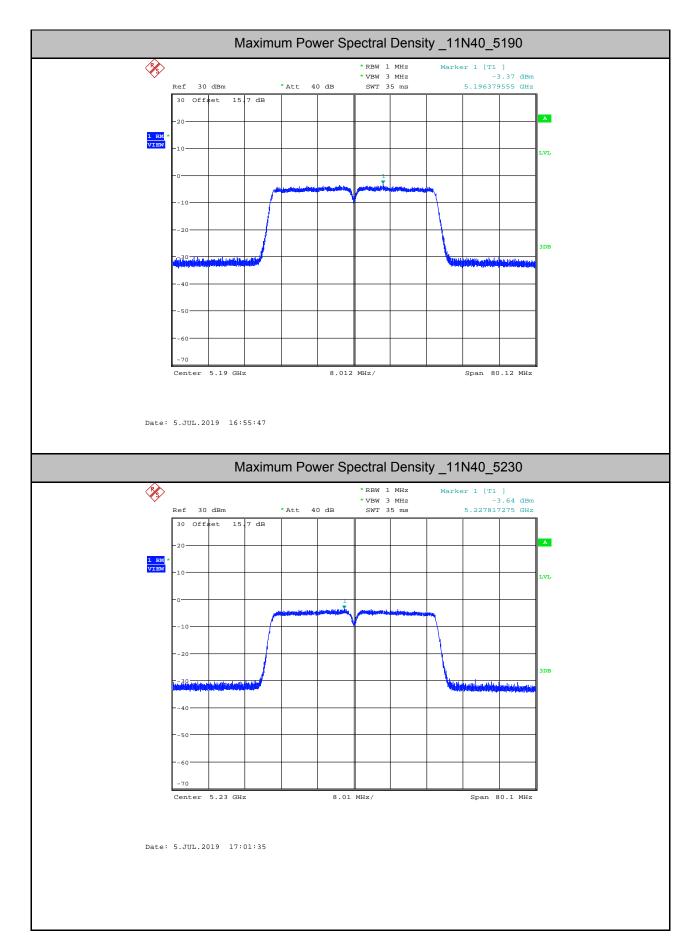
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9. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

9.1.LIMITS OF Radiated Bandedge and Spurious Measurement

FCC Part 15.205 and 15.209

Table 10 Radiation Emission Test Limit for FCC (9KHz-1GHz)

| Frequency | Field Strength | Measurement Distance | | | | | | |
|-------------|--------------------|----------------------|--|--|--|--|--|--|
| (MHz) | (microvolts/meter) | (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 | | | | | | |
| 960~1000 | 500 | 3 | | | | | | |

Table 11 Radiation Emission Test Limit for FCC (Above 1G)

| Frequency (MHz) | (dBuV/m) (at 3 meters) | | |
|-----------------|------------------------|---------|--|
| Frequency (MHZ) | PEAK | AVERAGE | |
| Above 1000 | 74 | 54 | |

^{*} The lower limit shall apply at the transition frequency.

FCC Part 15.407(b)

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.

9.2. TEST PROCEDURE

- 1. The testing follows the guidelines in ANSI C63.10-2013.
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) 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.
- 3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter, above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

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^{*} The test distance is 3m.

- 7. Use the following spectrum analyzer settings:
- (1) Span shall wide enough to fully capture the emission being measured;
- (2) Set RBW=100 kHz for f < 1 GHz; VBW >= RBW; Sweep = auto; Detector function = peak; Trace = max hold;
- (3) Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement. Set RBW = 1 MHz, and 1/T (on time) for average measurement.

9.3. TEST DATA

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Adaptor: 1# 9kHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the r esult which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 12 Radiated Emission Test Data 9k Hz-30MHz

| Frequency MHz | Cable Loss(dB) | Antenna Factor(dB) | Readings(d BµV/m) | Level(dBµ V/m) | Polarity(H/V) | Turntable Angle(deg) | Antenna Height(m) | Limits(dBµV/m) | Margin(d B) |
|------------------|-----------------------|---------------------------|----------------------|-------------------|-------------------|-----------------------------|--------------------------|--------------------|----------------|
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

The emissions don't show in following result tables are more than 20dB below the limits.

Table 13 Radiated Emission Test Data 30MHz-1GHz

| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Readings (dBµV/m) | Level (dBµV/m) | Polarity (H/V) | Limits (dBµV/m) | Margin (dB) | Note |
|--------------------|----------------------------------|---------------------------|----------------------|-------------------|-------------------|--------------------|----------------|------|
| 42.416 | 0.8 | 13.6 | 6.7 | 21.1 | Н | 40 | 18.9 | QP |
| 48.915 | 0.7 | 13.6 | 7.1 | 21.4 | Н | 40 | 18.6 | QP |
| 98.967 | 1.1 | 12.8 | 6.8 | 20.7 | Н | 43.5 | 22.8 | QP |
| 148.146 | 1.4 | 10.5 | 8.5 | 20.4 | Н | 43.5 | 23.1 | QP |
| 264.061 | 1.9 | 12.1 | 9.1 | 23.1 | Н | 46 | 22.9 | QP |
| 558.844 | 2.9 | 16.6 | 8.7 | 28.2 | Н | 46 | 17.8 | QP |
| 33.201 | 0.7 | 12.3 | 11.8 | 24.8 | V | 40 | 15.2 | QP |
| 38.148 | 0.7 | 12.3 | 15.6 | 28.6 | V | 40 | 11.4 | QP |
| 53.474 | 0.7 | 13.3 | 8.6 | 22.6 | V | 40 | 17.4 | QP |
| 93.729 | 1.1 | 11.9 | 7.7 | 20.7 | V | 43.5 | 22.8 | QP |
| 146.109 | 1.4 | 10.5 | 9.7 | 21.6 | V | 43.5 | 21.9 | QP |
| 190.341 | 1.6 | 10.6 | 9.9 | 22.1 | V | 43.5 | 21.4 | QP |

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Adaptor: 2# 9kHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the r esult which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 14 Radiated Emission Test Data 9k Hz-30MHz

| Frequency MHz | Cable Loss(dB) | Antenna Factor(dB) | Readings(d BµV/m) | Level(dBµ V/m) | Polarity(H/V) | Turntable Angle(deg) | Antenna Height(m) | Limits(dBµV/m) | Margin(d B) |
|------------------|-----------------------|---------------------------|----------------------|-------------------|-------------------|-----------------------------|--------------------------|--------------------|----------------|
| | | | | - | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

The emissions don't show in following result tables are more than 20dB below the limits.

Table 15 Radiated Emission Test Data 30MHz-1GHz

| Frequency (MHz) | Cable Loss +preamp (dB) | Antenna Factor (dB) | Readings (dBµV/m) | Level (dBµV/m) | Polarity (H/V) | Limits (dBµV/m) | Margin (dB) | Note |
|--------------------|----------------------------------|---------------------------|----------------------|-------------------|-------------------|--------------------|----------------|------|
| 30.291 | 0.6 | 12.3 | 10.9 | 23.8 | V | 40 | 16.2 | QP |
| 33.201 | 0.7 | 12.3 | 11.4 | 24.4 | V | 40 | 15.6 | QP |
| 38.730 | 0.7 | 12.3 | 10.7 | 23.7 | V | 40 | 16.3 | QP |
| 171.814 | 1.5 | 9.0 | 16.4 | 26.9 | V | 43.5 | 16.6 | QP |
| 197.422 | 1.7 | 10.6 | 18.5 | 30.8 | V | 43.5 | 12.7 | QP |
| 206.734 | 1.7 | 10.6 | 16.0 | 28.3 | V | 43.5 | 15.2 | QP |
| 41.543 | 0.7 | 13.6 | 1.5 | 15.8 | Н | 40 | 24.2 | QP |
| 57.259 | 0.8 | 13.0 | 2.3 | 16.1 | Н | 40 | 23.9 | QP |
| 103.041 | 1.2 | 13.2 | 2.9 | 17.3 | Н | 43.5 | 26.2 | QP |
| 149.116 | 1.5 | 10.5 | 10.5 | 22.5 | Н | 43.5 | 21.0 | QP |
| 242.527 | 1.8 | 12.1 | 11.0 | 24.9 | Н | 46.0 | 21.1 | QP |
| 268.329 | 2.0 | 12.1 | 8.3 | 22.4 | Н | 46.0 | 23.6 | QP |

Remark: Emission level (dBuV)=Read Value(dBuV/m) + Antenna Factor(dB)+ Cable Loss +preamp(dB)

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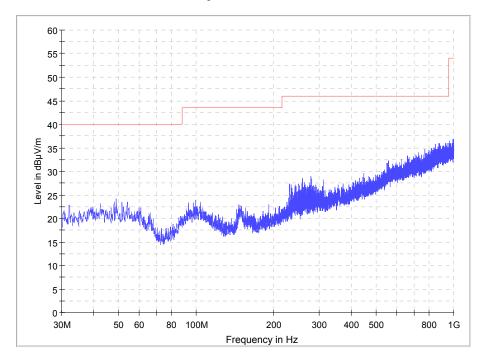
EUT Name: FX205F

Operating Condition: Charging and Transmitting

Test site: SMQ NETC EMC Lab.
Antenna Position: Vertical & Horizontal
Comment: AC 120V/60Hz

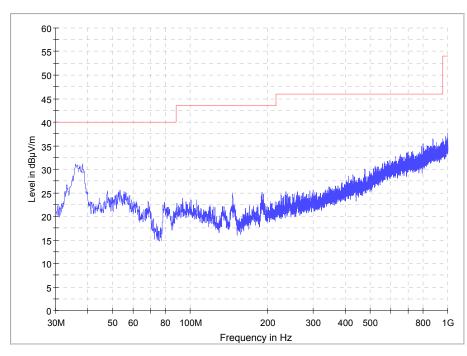
Adaptor: 1#

Field strength 30M-1GHz 1F 3m chamber



(Horizontal)

Field strength 30M-1GHz 1F 3m chamber



(Vertical)

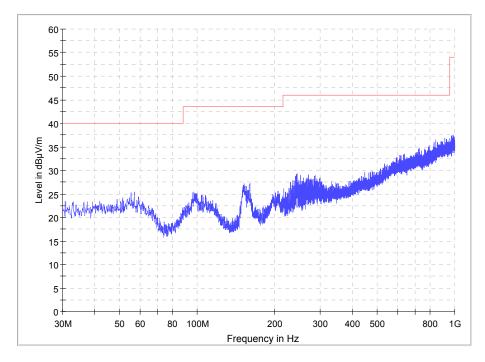
EUT Name: FX205F

Operating Condition: Charging and Transmitting

Test site: SMQ NETC EMC Lab.
Antenna Position: Vertical & Horizontal
Comment: AC 120V/60Hz

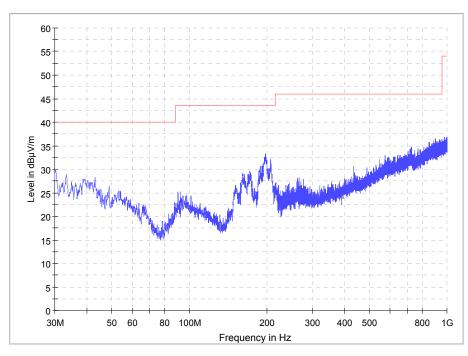
Adaptor: 2#

Field strength 30M-1GHz 1F 3m chamber



(Horizontal)

Field strength 30M-1GHz 1F 3m chamber



(Vertical)

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1-18G 11a IN THE 5.2GHz BAND Ch36

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11a CH36

Test Voltage: Comment:

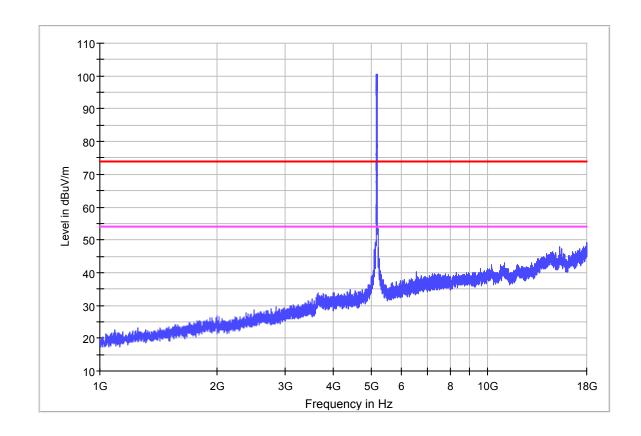
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH36

Test Voltage: Comment:

Common Information

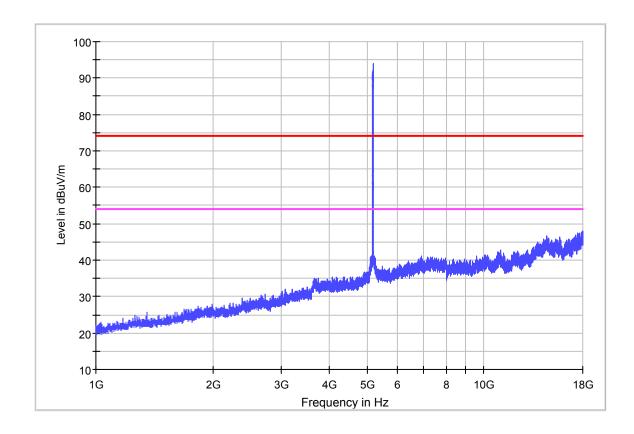
Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:

Vertical

Operator Name:

Comment:



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1-18G 11a IN THE 5.2GHz BAND CH40

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11a CH40

Test Voltage: Comment:

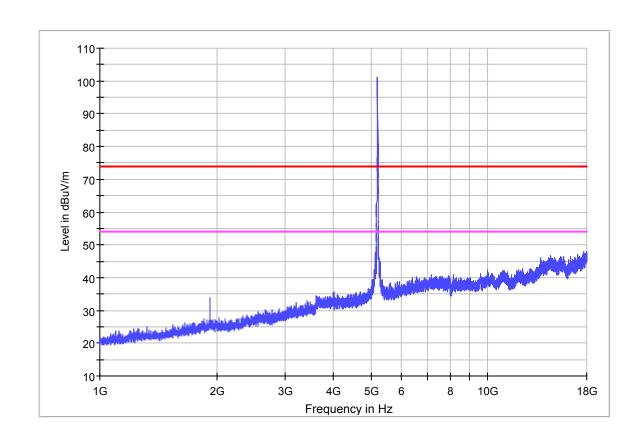
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH40

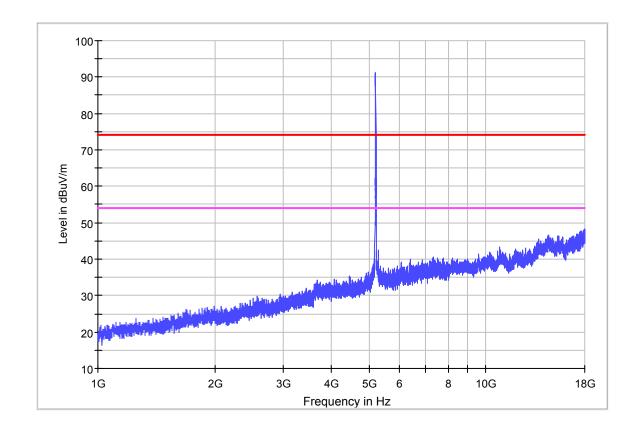
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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1-18G

11a IN THE 5.2GHz BAND

CH48

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11a CH48

Test Voltage: Comment:

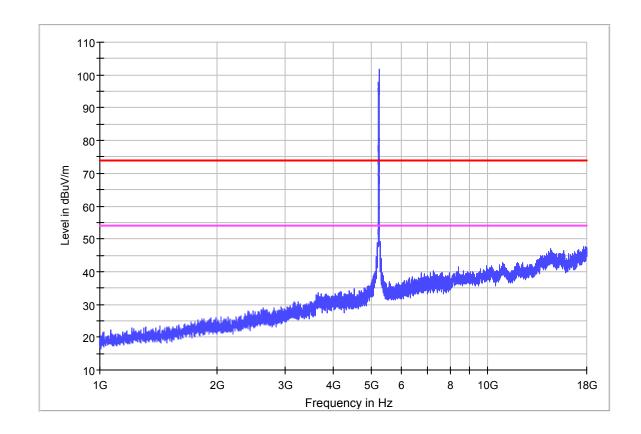
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH48

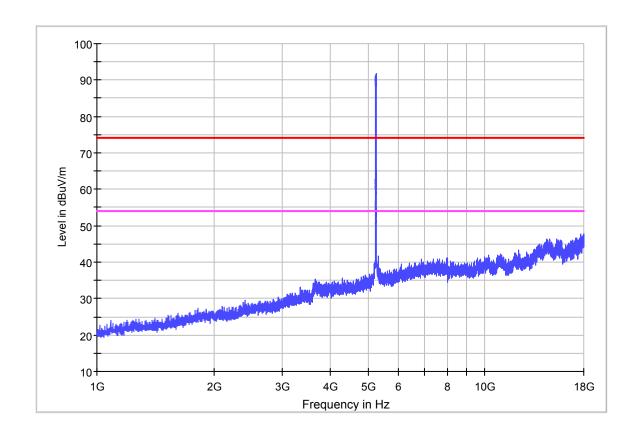
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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1-18G 11n HT20 IN THE 5.2GHz BAND CH36

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11n HT20 CH36

Test Voltage: Comment:

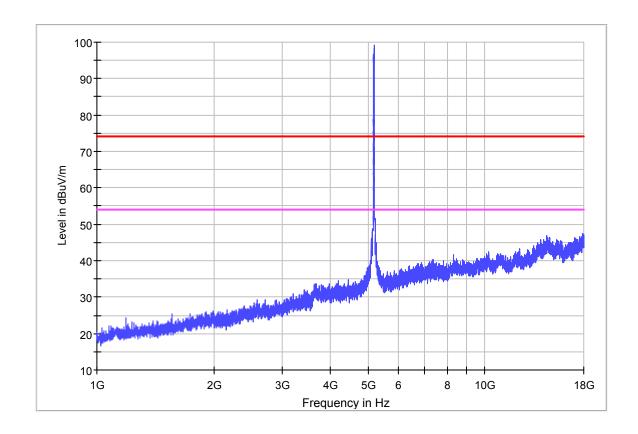
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT20 CH36

Test Voltage: Comment:

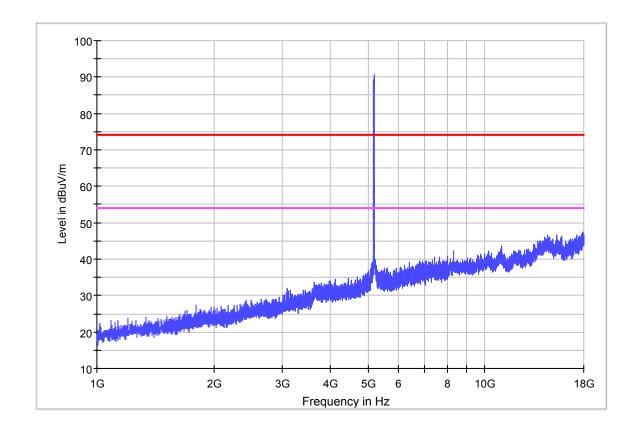
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:

Vertical

Operator Name: Comment:



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1-18G 11n HT20 IN THE 5.2GHz BAND CH40

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11n HT20 CH40

Test Voltage: Comment:

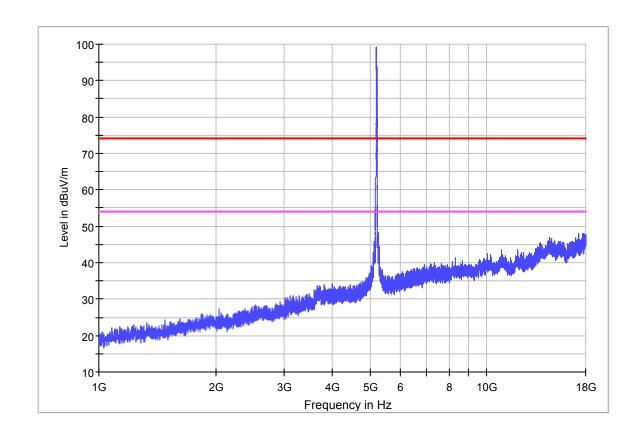
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT20 CH40

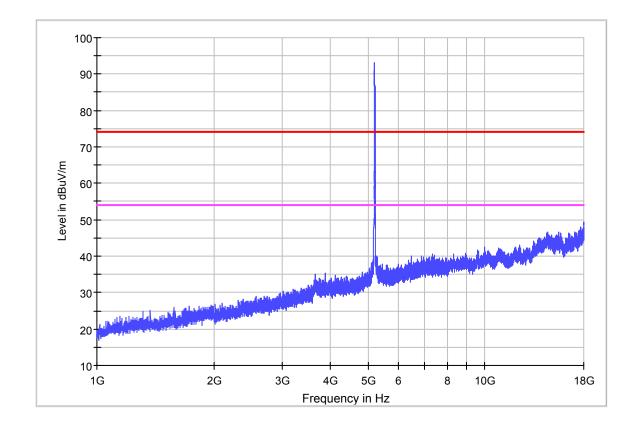
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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1-18G 11n HT20 IN THE 5.2GHz BAND CH48

Radiated Emission

EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT20 CH48

Test Voltage: Comment:

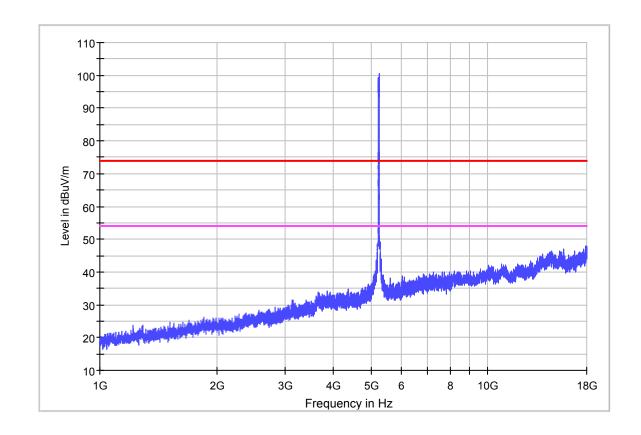
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:

Antenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT20 CH48

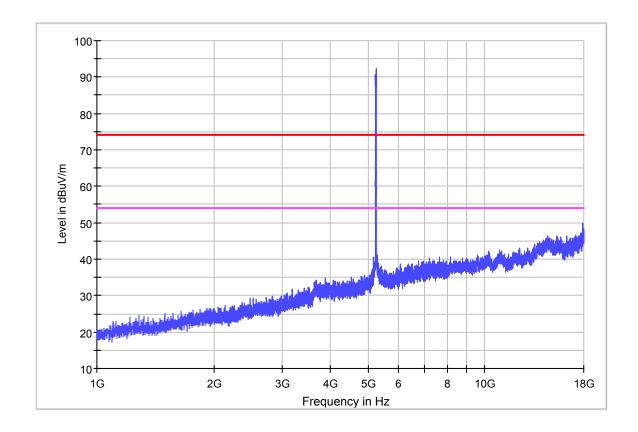
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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1-18G 11n HT40 IN THE 5.2GHz BAND CH38

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11n HT40 CH38

Test Voltage: Comment:

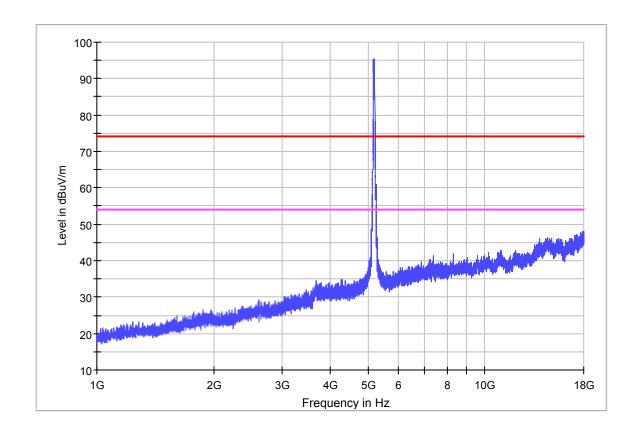
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT40 CH38

Test Voltage: Comment:

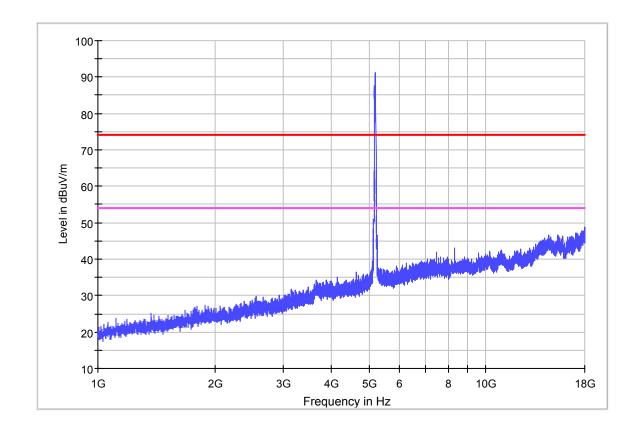
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:

Vertical

Operator Name: Comment:



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1-18G 11n HT40 IN THE 5.2GHz BAND CH46

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11n HT40 CH46

Test Voltage: Comment:

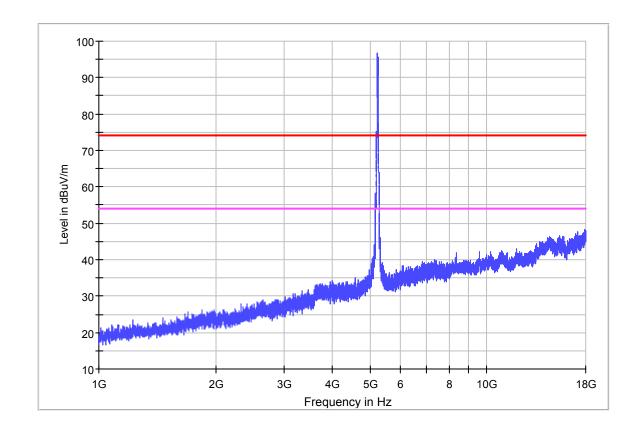
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT40 CH46

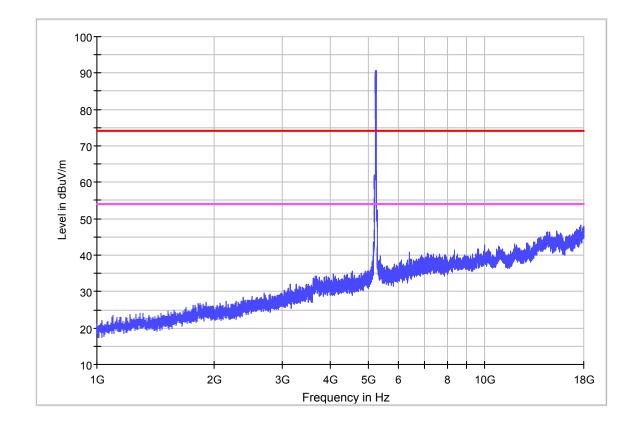
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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18-26.5G

No Peak found in pre-scan, only worst case result is listed in this report.

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11a CH 36

Test Voltage: Comment:

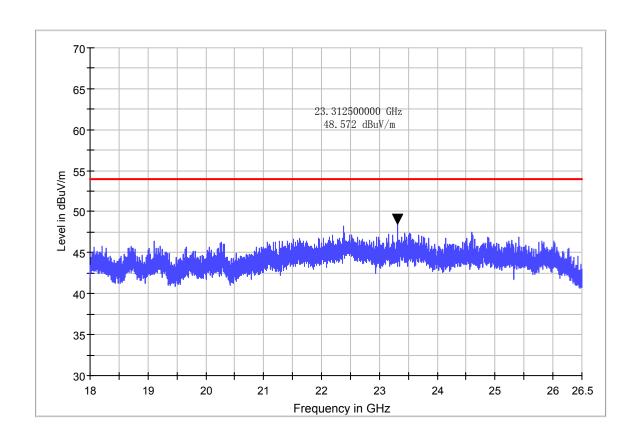
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:

Antenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH 36

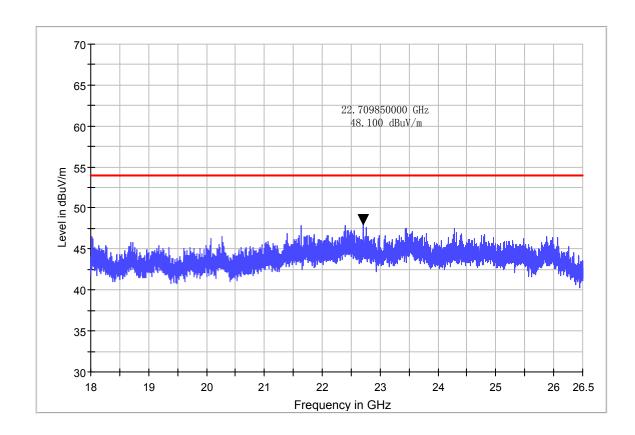
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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26.5-40G

Comment:

No Peak found in pre-scan, only worst case result is listed in this report.

Radiated Emission

EUT Information

EUT Model Name: FX205F
Operation mode: Transmitting
Test Voltage:

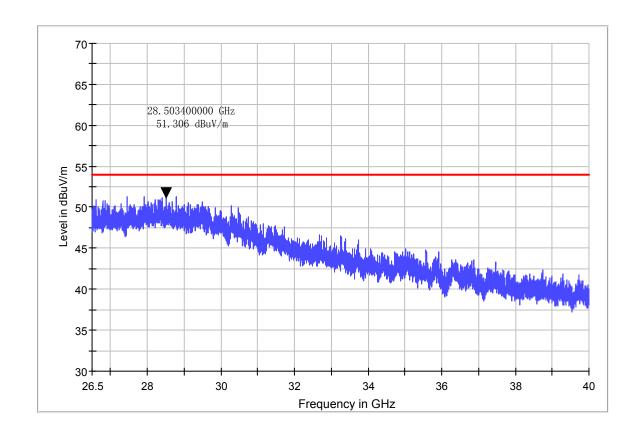
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:

Antenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: Transmitting

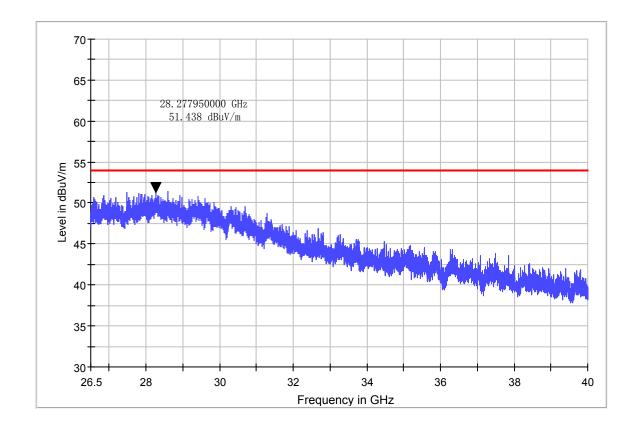
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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Band edge 11a IN THE 5.2GHz BAND CH36

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11a CH36

Test Voltage: Comment:

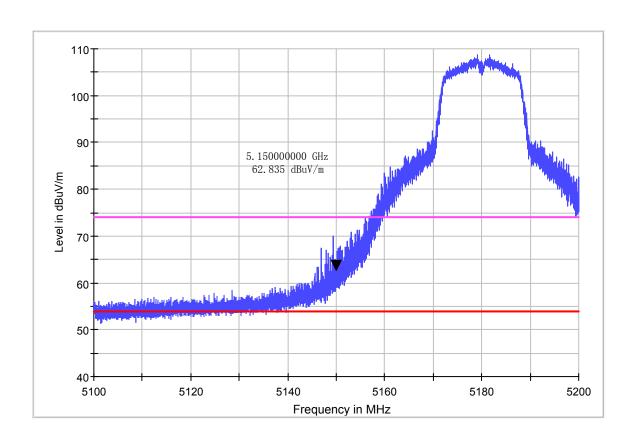
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:

Antenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH36

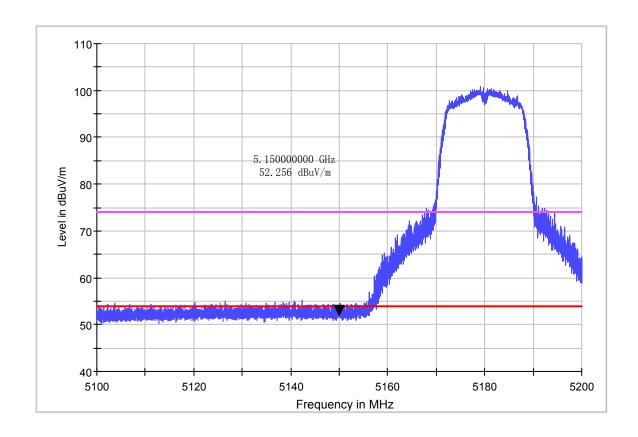
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH36

Test Voltage: Comment:

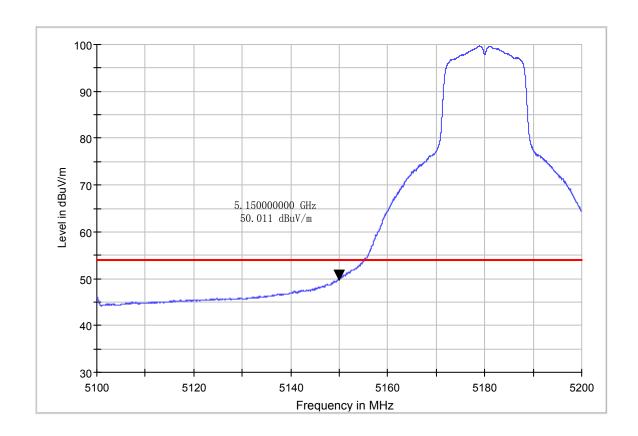
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

ntenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F Operation mode: 11a CH36

Test Voltage: Comment:

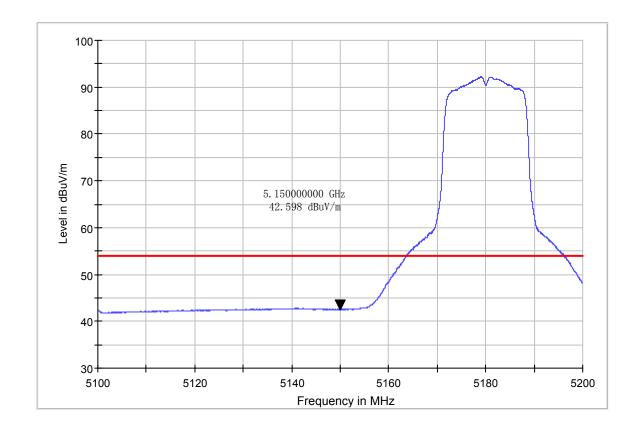
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Vertical

Operator Name: Comment:



Report No.:WT198003467 Page 62 of 86 Band edge 11n HT20 IN THE 5.2GHz BAND CH36

Radiated Emission

EUT Information

EUT Model Name: FX205F Operation mode: 11n HT20 CH36

Test Voltage: Comment:

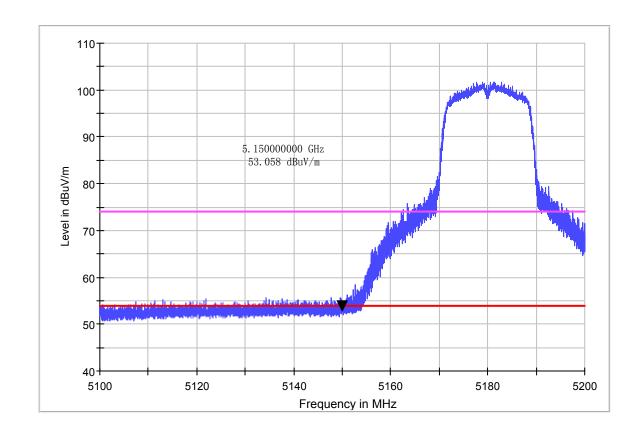
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions: Antenna Polarization:

Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT20 CH36

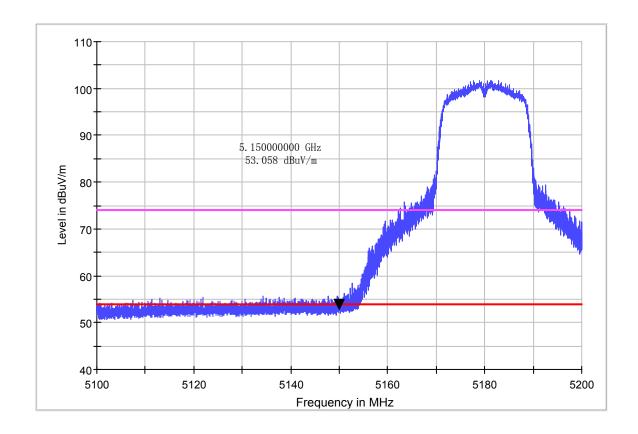
Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization: Vertical

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F

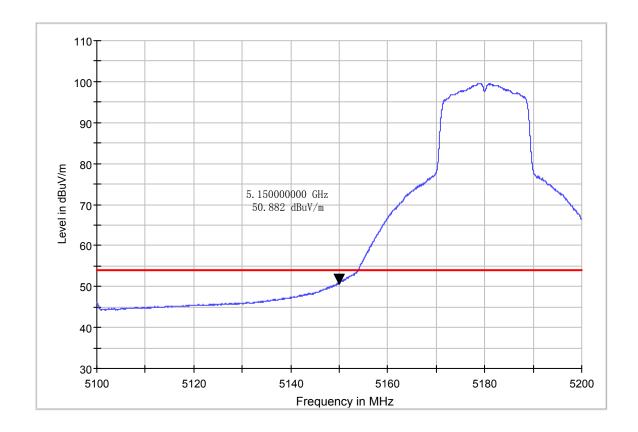
Operation mode: 11n HT20 CH36 Test Voltage: Comment:

Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:
Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT20 CH36

Test Voltage: Comment:

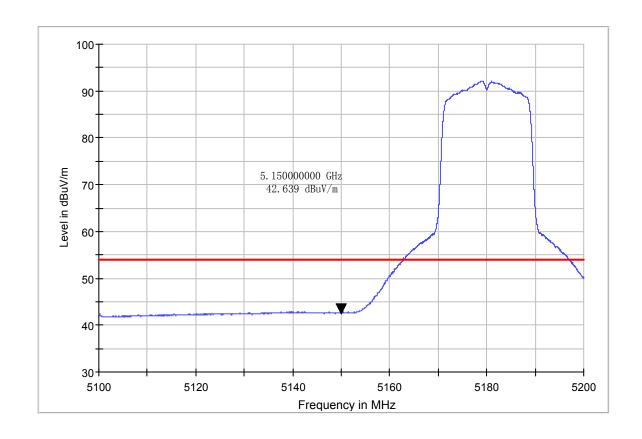
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:

Vertical

Operator Name: Comment:



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Band edge 11n HT40 IN THE 5.2GHz BAND CH38

Radiated Emission

EUT Information

EUT Model Name: FX205F
Operation mode: 11n HT40 CH38

Test Voltage: Comment:

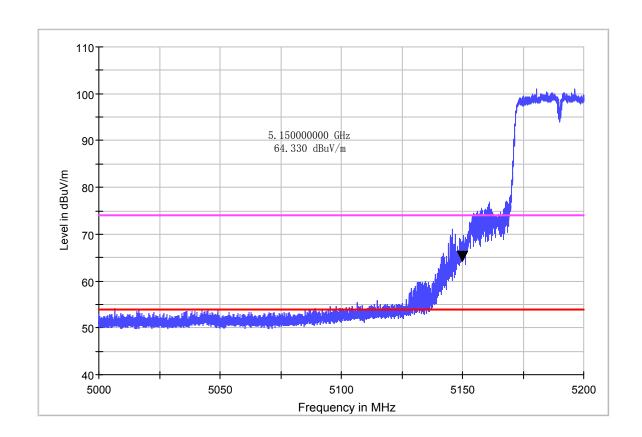
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:

Antenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F

Operation mode: 11n HT40 CH38 Test Voltage:

Common Information

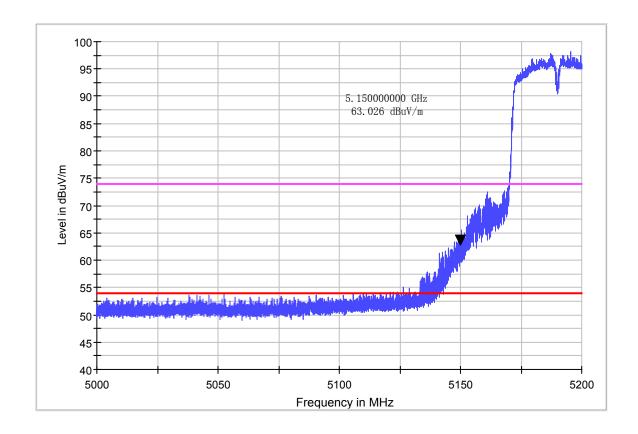
Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:

Vertical

Operator Name: Comment:

Comment:



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EUT Information

EUT Model Name:
Operation mode:

Test Voltage: Comment: FX205F 11n HT40 CH38

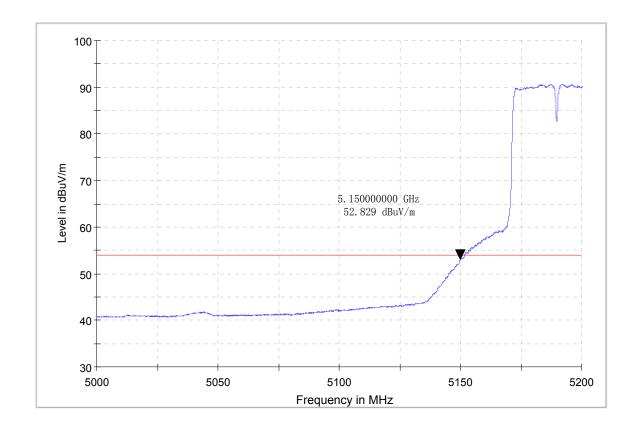
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:

Antenna Polarization: Horizontal

Operator Name: Comment:



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EUT Information

EUT Model Name: FX205F

Operation mode: 11n HT40 CH38
Test Voltage:
Comment:

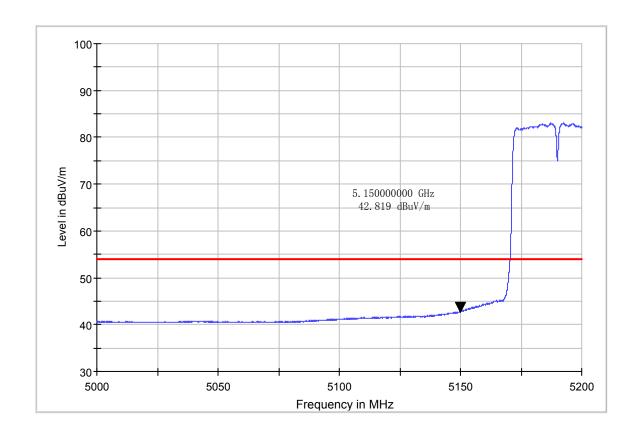
Common Information

Test Site: SMQ EMC Lab.

Environment Conditions:
Antenna Polarization:

Vertical

Operator Name: Comment:



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10. CONDUCTED EMISSION TEST FOR AC POWER PORT

MEASUREMENT

10.1.Test Standard and Limit

Test Standard FCC Part 15 15.207 Test Limit

Table 16 Conducted Disturbance Test Limit

| Fraguency | Maximum RF Line Voltage (dBμV) | | |
|---------------|--------------------------------|---------------|--|
| Frequency | Quasi-peak Level | Average Level | |
| 150kHz~500kHz | 66 ~ 56 * | 56 ~ 46 * | |
| 500kHz~5MHz | 56 | 46 | |
| 5MHz~30MHz | 60 | 50 | |

^{*} Decreasing linearly with logarithm of the frequency

10.2.Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. According to the requirements of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

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

10.3.Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

10.4.Test Data

The emissions don't show in below are too low against the limits. Refer to the test curves.

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^{*} The lower limit shall apply at the transition frequency.

Table 17 Conducted Emission Test Data

Model No.: FX205F

Test mode: Charging and Transmitting

Adaptor:1#

| | Frequency | Correction | Quasi-Peak | | | Average | | |
|---------|-----------|----------------|-------------------|-----------------------------|------------------|-------------------|-----------------------------|------------------|
| | (MHz) | Factor (dB) | Reading (dBμV) | Emission Level (dBµV) | Limits (dBμV) | Reading (dBμV) | Emission Level (dBµV) | Limits (dBμV) |
| Line | 0.150 | 9.7 | 37.0 | 46.7 | 66 | 20.6 | 30.3 | 56 |
| | 0.178 | 9.7 | 37.8 | 47.5 | 64.6 | 22.2 | 31.9 | 54.6 |
| | 0.214 | 9.7 | 35.5 | 45.2 | 63.0 | 18.9 | 28.6 | 53.0 |
| | 0.510 | 9.8 | 36.7 | 46.5 | 56 | 19.6 | 29.4 | 46 |
| | 0.582 | 9.8 | 37.2 | 47.0 | 56 | 20.0 | 29.8 | 46 |
| | 0.950 | 9.8 | 31.7 | 41.5 | 56 | 16.8 | 26.6 | 46 |
| Neutral | 0.150 | 9.7 | 36.2 | 45.9 | 66 | 18.8 | 28.5 | 56 |
| | 0.178 | 9.7 | 35.5 | 45.2 | 64.6 | 19.3 | 29.0 | 54.6 |
| | 0.546 | 9.8 | 35.1 | 44.9 | 56 | 17.6 | 27.4 | 46 |
| | 0.582 | 9.8 | 33.9 | 43.7 | 56 | 16.3 | 26.1 | 46 |
| | 2.646 | 9.9 | 27.9 | 37.8 | 56 | 14.2 | 24.1 | 46 |
| | 10.368 | 9.9 | 27.3 | 37.2 | 60 | 13.5 | 23.4 | 50 |

Table 18 Conducted Emission Test Data

Model No.: FX205F

Test mode: Charging and Transmitting

Adaptor:2#

| | Frequency | equency Correction Quasi-Peak | | | Average | | | |
|---------|-----------|-------------------------------|-------------------|--|------------------|-------------------|--|------------------|
| | (MHz) | Factor (dB) | Reading (dBμV) | Emission Level (dB _µ V) | Limits (dBμV) | Reading (dBμV) | Emission Level (dB _µ V) | Limits (dBμV) |
| Line | 0.150 | 9.7 | 37.8 | 47.5 | 66 | 20.3 | 30.0 | 56 |
| | 0.218 | 9.7 | 34.2 | 43.9 | 62.9 | 19.5 | 29.2 | 52.9 |
| | 0.290 | 9.7 | 31.8 | 41.5 | 60.5 | 16.2 | 25.9 | 50.5 |
| | 0.654 | 9.8 | 35.7 | 45.5 | 56 | 25.5 | 35.3 | 46 |
| | 2.730 | 9.9 | 30.5 | 40.4 | 56 | 18.2 | 28.1 | 46 |
| | 18.052 | 9.9 | 30.7 | 40.6 | 60 | 19.1 | 29.0 | 50 |
| Neutral | 0.166 | 9.7 | 32.0 | 41.7 | 65.2 | 15.1 | 24.8 | 55.2 |
| | 0.674 | 9.8 | 27.8 | 37.6 | 56 | 17.4 | 27.2 | 46 |
| | 0.730 | 9.8 | 31.1 | 40.9 | 56 | 19.2 | 29.0 | 46 |
| | 2.786 | 9.9 | 27.0 | 36.9 | 56 | 15.3 | 25.2 | 46 |
| | 13.600 | 9.9 | 28.1 | 38.0 | 60 | 14.6 | 24.5 | 50 |
| | 18.972 | 9.9 | 31.7 | 41.6 | 60 | 18.3 | 28.2 | 50 |

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REMARKS: 1. Emission level (dBuV) =Read Value (dBuV) + Correction Factor (dB)

- 2. Correction Factor (dB) =LISN Factor (dB) + Cable Factor (dB) +Limiter Factor (dB)
- 3. The other emission levels were very low against the limit.

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Manufacturer:

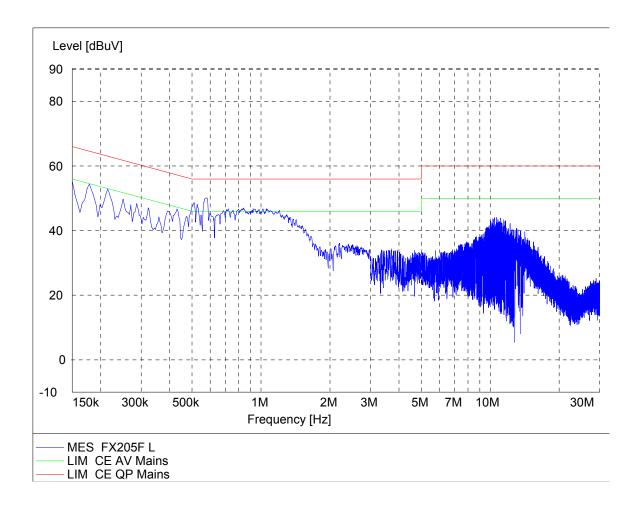
Operating Condition: Charging and Transmitting

Test Site: Operator:

Test Specification: L

Comment: AC 120V/60Hz

Adaptor: 1#



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Manufacturer:

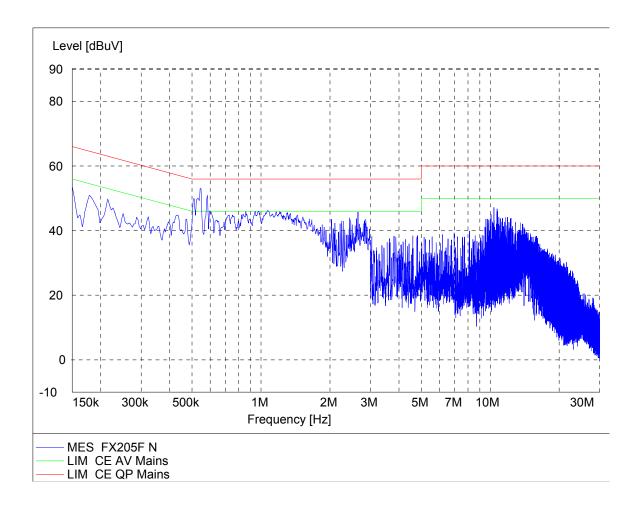
Operating Condition: Charging and Transmitting

Test Site: Operator:

Test Specification: N

Comment: AC 120V/60Hz

Adaptor: 1#



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Manufacturer:

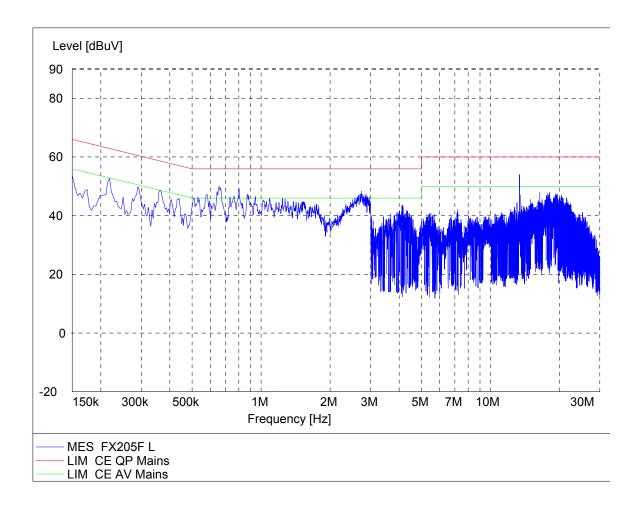
Operating Condition: Charging and Transmitting

Test Site: Operator:

Test Specification: L

Comment: AC 120V/60Hz

Adaptor: 2#



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Manufacturer:

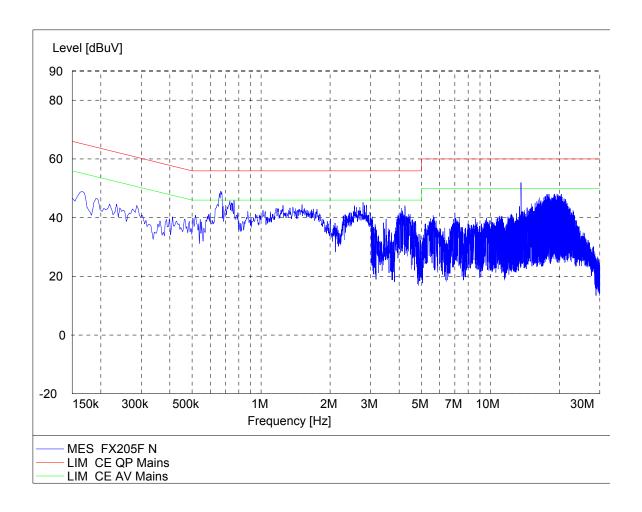
Operating Condition: Charging and Transmitting

Test Site: Operator:

Test Specification: N

Comment: AC 120V/60Hz

Adaptor: 2#



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11. AUTOMATIC DISCONTINUE TRANSMISSION

11.1.Test Standard

FCC Part 15.407

(c) The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

11.2.Test Data

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting for remote device and verify whether it shall resend or discontinue transmission.

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12. FREQUENCY STABILITY

12.1.LIMITS OF Frequency Stability

FCC Part 15.407

(g) Manufacturers 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.

12.2.TEST PROCEDURE

The EUT was placed inside of an environmental chamber as the temperature in chamber was varied between $-30\,^{\circ}\mathrm{C}$ and $+50\,^{\circ}\mathrm{C}$. The temperature was incremented by $10\,^{\circ}$ intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transimitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded. Data for the worst case channel is shown below.

12.3.TEST DATA

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Measurement Results vs. Variation of Temperature—UNII Band1 (CH 36)

| Voltage | Temperature | Frequency (Hz) | Deviation [ppm] |
|----------|-------------|-------------------|--------------------|
| | -30 °C | 5179.97 | -5.79151 |
| | -20 °C | 5180.03 | 5.79151 |
| | -10 °C | 5180.00 | 0.00000 |
| | 0 °C | 5179.99 | -2.89575 |
| DC 3.8V | +10 °C | 5180.00 | 0.00000 |
| | +20 °C | 5180.00 | 0.00000 |
| | +30 °C | 5180.00 | 0.00000 |
| | +40 °C | 5180.02 | 2.88462 |
| | +50 °C | 5180.00 | 0.00000 |
| DC 3.5V | +20 °C | 5180.00 | 0.00000 |
| DC 4.35V | +20 °C | 5180.02 | 2.89575 |

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13. OCCUPIED BANDWIDTH

13.1.LIMITS OF Occupied Bandwidth

For reporting purposes only

13.2.TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.

The transmitter output is connected to a spectrum analyzer.

The RBW is set to \geq 1% to 5% of the actual occupied.

The VBW is set to ≥ 3RBW. The sweep time is coupled

13.3.TEST SETUP

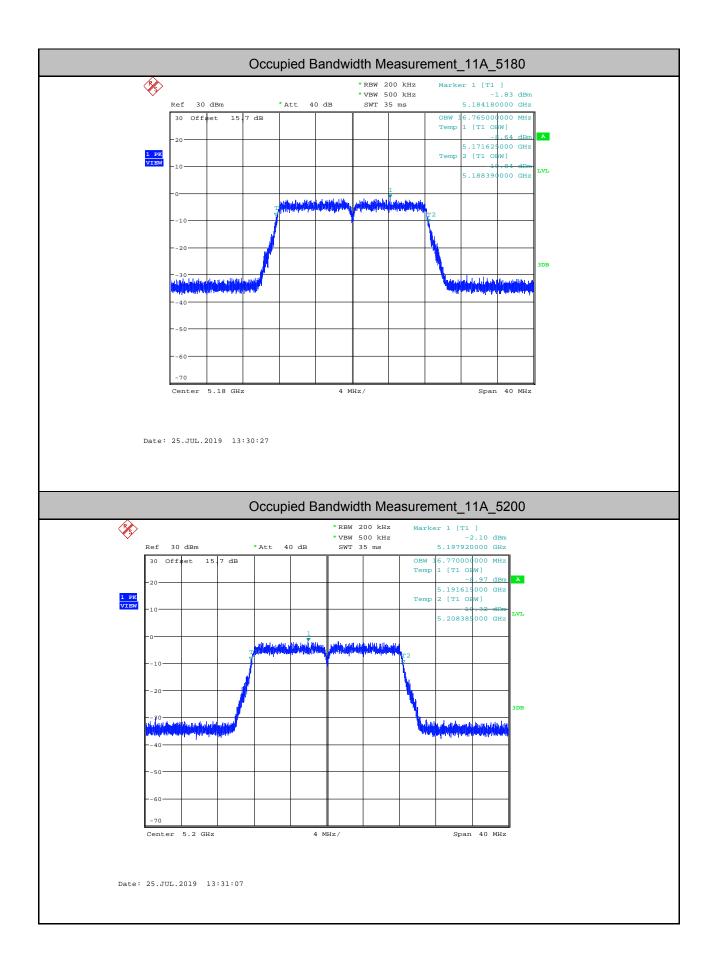


13.4.TEST DATA

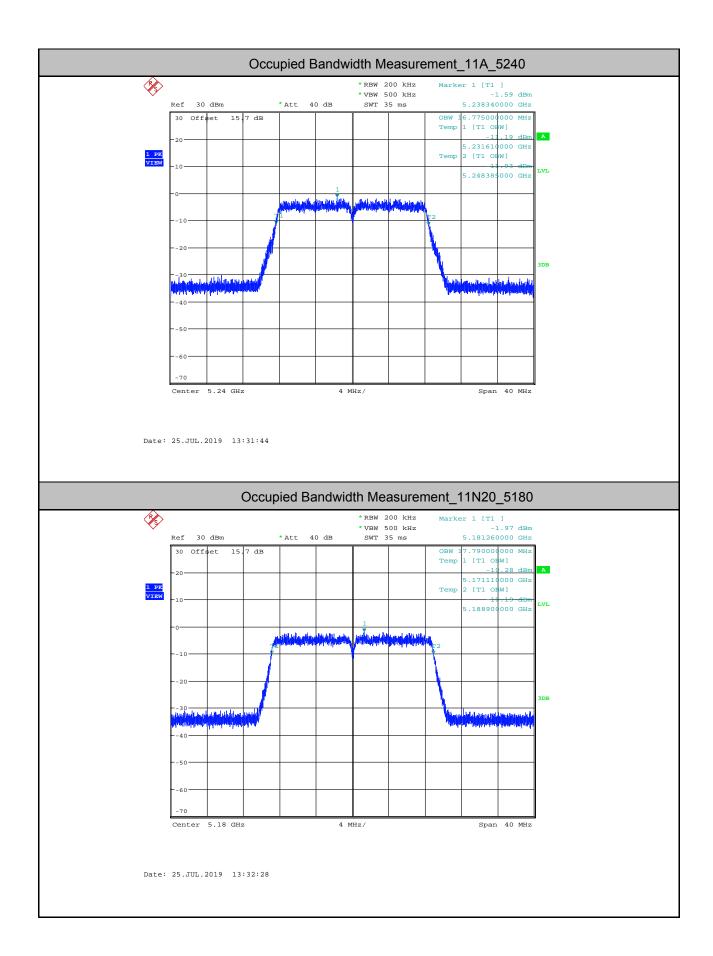
Table 19 99% Bandwidth Test Data

| Test Mode | Test Channel | Ant | OBW[MHz] | Limit[MHz] | Verdict |
|-----------|--------------|------|----------|------------|---------|
| 11A | 5180 | Ant1 | 16.765 | | PASS |
| 11A | 5200 | Ant1 | 16.770 | | PASS |
| 11A | 5240 | Ant1 | 16.775 | | PASS |
| 11N20 | 5180 | Ant1 | 17.790 | | PASS |
| 11N20 | 5200 | Ant1 | 17.795 | | PASS |
| 11N20 | 5240 | Ant1 | 17.805 | | PASS |
| 11N40 | 5190 | Ant1 | 36.420 | | PASS |
| 11N40 | 5230 | Ant1 | 36.400 | | PASS |

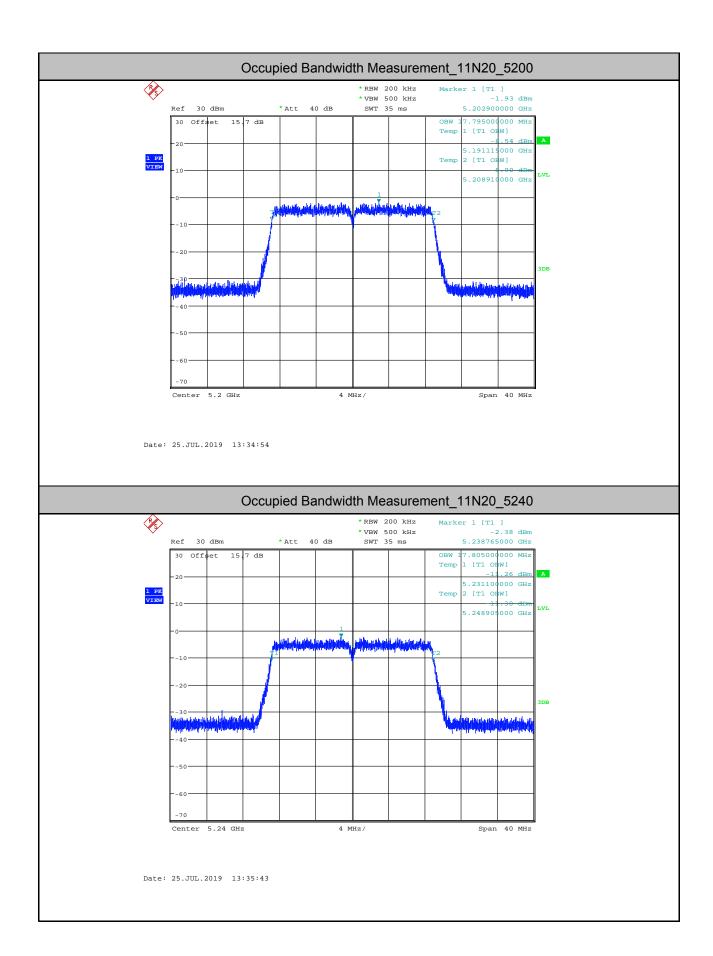
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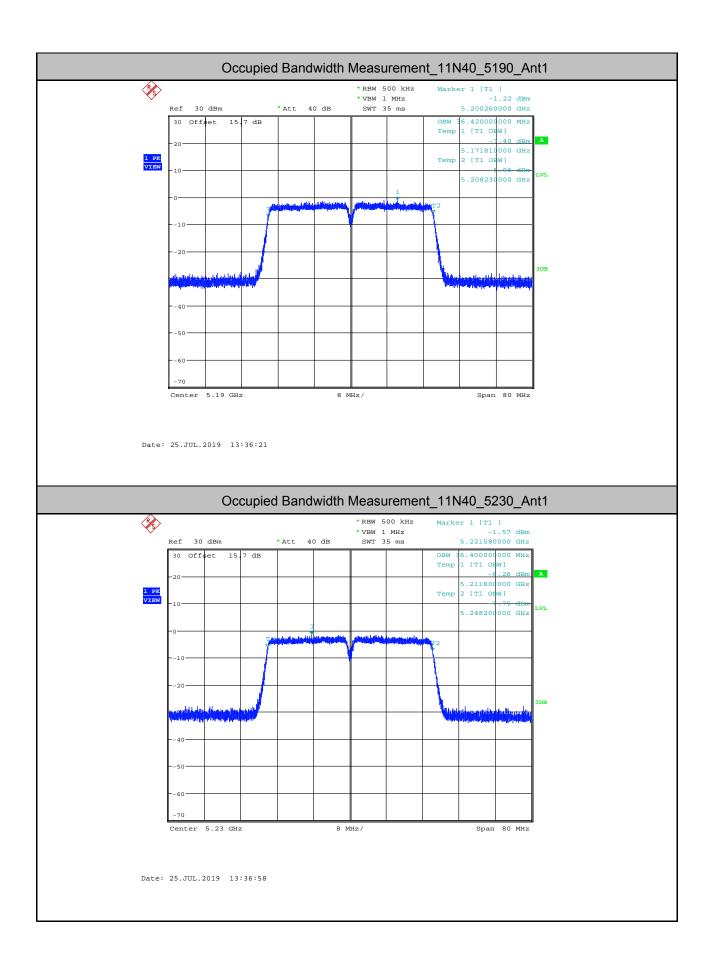
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14. ANTENNA REQUIREMENTS

According to Section 15.203, 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 EUT has a built in antenna which is integrated inside the enclosure, this is permanently attached antenna and meets the requirements of this section.

END OF REPORT

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