

Report No.: SZEM171001055103

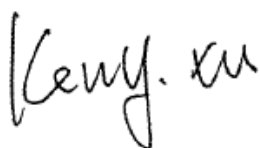
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## **TEST REPORT**

**Application No.:** SZEM1710010551CR  
**Applicant:** Powervision Tech Inc.  
**Address of Applicant:** Fifth floor, Building NO.33 YUNGU park, No.79 SHUANGYING west road, Technology Park, Changping District, Beijing  
**Manufacturer:** Powervision Tech Inc.  
**Address of Manufacturer:** Fifth floor, Building NO.33 YUNGU park, No.79 SHUANGYING west road, Technology Park, Changping District, Beijing  
**Factory:** Powervision Tech Inc.  
**Address of Factory:** Fifth floor, Building NO.33 YUNGU park, No.79 SHUANGYING west road, Technology Park, Changping District, Beijing  
**Equipment Under Test (EUT):**  
**EUT Name:** Remote Controller  
**Model No.:** PRC10, PRC20♣  
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**Trade mark:** PowerVision  
**Trade mark:** 2AKBMPC10  
**Standard(s) :** 47 CFR Part 15, Subpart E 15.407  
**Date of Receipt:** 2017-10-11  
**Date of Test:** 2018-11-03 to 2019-01-08  
**Date of Issue:** 2019-01-10

|                     |              |
|---------------------|--------------|
| <b>Test Result:</b> | <b>Pass*</b> |
|---------------------|--------------|

\* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu  
EMC Laboratory Manager



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| Revision Record |         |            |          |          |
|-----------------|---------|------------|----------|----------|
| Version         | Chapter | Date       | Modifier | Remark   |
| 01              |         | 2019-01-10 |          | Original |
|                 |         |            |          |          |
|                 |         |            |          |          |

|                          |  |                                                                                     |  |
|--------------------------|--|-------------------------------------------------------------------------------------|--|
| Authorized for issue by: |  |                                                                                     |  |
|                          |  |    |  |
|                          |  | <hr/>                                                                               |  |
|                          |  | Hank Yan /Project Engineer                                                          |  |
|                          |  |  |  |
|                          |  | <hr/>                                                                               |  |
|                          |  | Eric Fu /Reviewer                                                                   |  |



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## 2 Test Summary

| Radio Spectrum Technical Requirement |                                  |        |                                      |        |
|--------------------------------------|----------------------------------|--------|--------------------------------------|--------|
| Item                                 | Standard                         | Method | Requirement                          | Result |
| Antenna Requirement                  | 47 CFR Part 15, Subpart E 15.407 | N/A    | 47 CFR Part 15, Subpart C 15.203     | Pass   |
| Transmission in the Absence of Data  | 47 CFR Part 15, Subpart E 15.407 | N/A    | 47 CFR Part 15, Subpart C 15.407 (c) | Pass   |

N/A: Not applicable

| Radio Spectrum Matter Part                            |                                  |                                |                                              |        |
|-------------------------------------------------------|----------------------------------|--------------------------------|----------------------------------------------|--------|
| Item                                                  | Standard                         | Method                         | Requirement                                  | Result |
| 99% Bandwidth                                         | 47 CFR Part 15, Subpart E 15.407 | KDB 789033 II D                | N/A                                          | Pass   |
| Minimum 6 dB bandwidth (5.725-5.85 GHz band)          | 47 CFR Part 15, Subpart E 15.407 | KDB 789033 D02 II C 2          | 47 CFR Part 15, Subpart C 15.407 (e)         | Pass   |
| Maximum Conducted output power                        | 47 CFR Part 15, Subpart E 15.407 | KDB 789033 D02 II E            | 47 CFR Part 15, Subpart C 15.407 (a)         | Pass   |
| Peak Power spectrum density                           | 47 CFR Part 15, Subpart E 15.407 | KDB 789033 D02 II F            | 47 CFR Part 15, Subpart C 15.407 (a)         | Pass   |
| Radiated Emissions                                    | 47 CFR Part 15, Subpart E 15.407 | KDB 789033 D02 II G            | 47 CFR Part 15, Subpart C 15.209 & 15.407(b) | Pass   |
| Radiated Emissions which fall in the restricted bands | 47 CFR Part 15, Subpart E 15.407 | KDB 789033 D02 II G            | 47 CFR Part 15, Subpart C 15.209 & 15.407(b) | Pass   |
| Frequency Stability                                   | 47 CFR Part 15, Subpart E 15.407 | ANSI C63.10 (2013) Section 6.8 | 47 CFR Part 15, Subpart C 15.407 (g)         | Pass   |

N/A: Not applicable

### Declaration of EUT Family Grouping:

Model No.: PRC10, PRC20

Only the model PRC10 was tested, since the electrical circuit design, layout, components used and internal wiring and functions were identical for the above models. The only difference is model number.



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## 4 General Information

### 4.1 Details of E.U.T.

|                      |                                                                                      |                    |                      |                    |
|----------------------|--------------------------------------------------------------------------------------|--------------------|----------------------|--------------------|
| Power supply:        | DC 3.7V Li-ion Battery<br>Battery charged by DC 5.0V via Micro-USB port.             |                    |                      |                    |
| Operation Frequency: | Band                                                                                 | Mode               | Frequency Range(MHz) | Number of channels |
|                      | UNII Band III                                                                        | IEEE 802.11a       | 5745-5825            | 5                  |
|                      |                                                                                      | IEEE 802.11n 20MHz | 5745-5825            | 5                  |
| Modulation Type:     | 802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) |                    |                      |                    |
| Antenna Type         | PCB Antenna                                                                          |                    |                      |                    |
| Antenna Gain         | 3dBi                                                                                 |                    |                      |                    |

#### Channel list for 802.11a/n(HT20)

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

#### Selected Test Channel for 802.11a/n(HT20)

| Band           | Channel                     | Frequency |
|----------------|-----------------------------|-----------|
| U-NII Band III | The lowest channel (CH149)  | 5745MHz   |
|                | The middle channel (CH157)  | 5785MHz   |
|                | The highest channel (CH165) | 5825MHz   |



## 4.2 Description of Support Units

The EUT has been tested as an independent unit.

## 4.3 Measurement Uncertainty

| No. | Item                            | Measurement Uncertainty         |
|-----|---------------------------------|---------------------------------|
| 1   | Radio Frequency                 | $\pm 7.25 \times 10^{-8}$       |
| 2   | Duty cycle                      | $\pm 0.37\%$                    |
| 3   | Occupied Bandwidth              | $\pm 3\%$                       |
| 4   | RF conducted power              | $\pm 0.75\text{dB}$             |
| 5   | RF power density                | $\pm 2.84\text{dB}$             |
| 6   | Conducted Spurious emissions    | $\pm 0.75\text{dB}$             |
| 7   | RF Radiated power               | $\pm 4.5\text{dB}$ (below 1GHz) |
|     |                                 | $\pm 4.8\text{dB}$ (above 1GHz) |
| 8   | Radiated Spurious emission test | $\pm 4.5\text{dB}$ (Below 1GHz) |
|     |                                 | $\pm 4.8\text{dB}$ (Above 1GHz) |
| 9   | Temperature test                | $\pm 1^\circ\text{C}$           |
| 10  | Humidity test                   | $\pm 3\%$                       |
| 11  | Supply voltages                 | $\pm 1.5\%$                     |
| 12  | Time                            | $\pm 3\%$                       |

#### 4.4 Test Location

All tests were performed at:

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No tests were sub-contracted.

#### 4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None



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## 5 Equipment List

| 99% Bandwidth        |                      |                         |              |            |              |
|----------------------|----------------------|-------------------------|--------------|------------|--------------|
| Equipment            | Manufacturer         | Model No                | Inventory No | Cal Date   | Cal Due Date |
| DC Power Supply      | ZhaoXin              | RXN-305D                | SEM011-02    | 2018-09-25 | 2019-09-24   |
| Spectrum Analyzer    | Rohde & Schwarz      | FSP                     | SEM004-06    | 2018-09-27 | 2019-09-26   |
| Measurement Software | JS Tonscend          | JS1120-2<br>BT/WIFI V2. | N/A          | N/A        | N/A          |
| Coaxial Cable        | SGS                  | N/A                     | SEM031-02    | 2018-07-12 | 2019-07-11   |
| Attenuator           | Weinschel Associates | WA41                    | SEM021-09    | N/A        | N/A          |
| Signal Generator     | KEYSIGHT             | N5173B                  | SEM006-05    | 2018-09-27 | 2019-09-26   |
| Power Meter          | Rohde & Schwarz      | NRVS                    | SEM014-02    | 2018-09-25 | 2019-09-24   |

| Minimum 6 dB bandwidth (5.725-5.85 GHz band) |                      |                         |              |            |              |
|----------------------------------------------|----------------------|-------------------------|--------------|------------|--------------|
| Equipment                                    | Manufacturer         | Model No                | Inventory No | Cal Date   | Cal Due Date |
| DC Power Supply                              | ZhaoXin              | RXN-305D                | SEM011-02    | 2018-09-25 | 2019-09-24   |
| Spectrum Analyzer                            | Rohde & Schwarz      | FSP                     | SEM004-06    | 2018-09-27 | 2019-09-26   |
| Measurement Software                         | JS Tonscend          | JS1120-2<br>BT/WIFI V2. | N/A          | N/A        | N/A          |
| Coaxial Cable                                | SGS                  | N/A                     | SEM031-02    | 2018-07-12 | 2019-07-11   |
| Attenuator                                   | Weinschel Associates | WA41                    | SEM021-09    | N/A        | N/A          |
| Signal Generator                             | KEYSIGHT             | N5173B                  | SEM006-05    | 2018-09-27 | 2019-09-26   |
| Power Meter                                  | Rohde & Schwarz      | NRVS                    | SEM014-02    | 2018-09-25 | 2019-09-24   |

| Maximum Conducted output power |                      |                         |              |            |              |
|--------------------------------|----------------------|-------------------------|--------------|------------|--------------|
| Equipment                      | Manufacturer         | Model No                | Inventory No | Cal Date   | Cal Due Date |
| DC Power Supply                | ZhaoXin              | RXN-305D                | SEM011-02    | 2018-09-25 | 2019-09-24   |
| Spectrum Analyzer              | Rohde & Schwarz      | FSP                     | SEM004-06    | 2018-09-27 | 2019-09-26   |
| Measurement Software           | JS Tonscend          | JS1120-2<br>BT/WIFI V2. | N/A          | N/A        | N/A          |
| Coaxial Cable                  | SGS                  | N/A                     | SEM031-02    | 2018-07-12 | 2019-07-11   |
| Attenuator                     | Weinschel Associates | WA41                    | SEM021-09    | N/A        | N/A          |
| Signal Generator               | KEYSIGHT             | N5173B                  | SEM006-05    | 2018-09-27 | 2019-09-26   |
| Power Meter                    | Rohde & Schwarz      | NRVS                    | SEM014-02    | 2018-09-25 | 2019-09-24   |

| Peak Power spectrum density |                 |          |              |            |              |
|-----------------------------|-----------------|----------|--------------|------------|--------------|
| Equipment                   | Manufacturer    | Model No | Inventory No | Cal Date   | Cal Due Date |
| DC Power Supply             | ZhaoXin         | RXN-305D | SEM011-02    | 2018-09-25 | 2019-09-24   |
| Spectrum Analyzer           | Rohde & Schwarz | FSP      | SEM004-06    | 2018-09-27 | 2019-09-26   |



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|                      |                      |                         |           |            |            |
|----------------------|----------------------|-------------------------|-----------|------------|------------|
| Measurement Software | JS Tonscend          | JS1120-2<br>BT/WIFI V2. | N/A       | N/A        | N/A        |
| Coaxial Cable        | SGS                  | N/A                     | SEM031-02 | 2018-07-12 | 2019-07-11 |
| Attenuator           | Weinschel Associates | WA41                    | SEM021-09 | N/A        | N/A        |
| Signal Generator     | KEYSIGHT             | N5173B                  | SEM006-05 | 2018-09-27 | 2019-09-26 |
| Power Meter          | Rohde & Schwarz      | NRVS                    | SEM014-02 | 2018-09-25 | 2019-09-24 |

## Radiated Emissions which fall in the restricted bands

| Equipment                         | Manufacturer                             | Model No        | Inventory No | Cal Date   | Cal Due Date |
|-----------------------------------|------------------------------------------|-----------------|--------------|------------|--------------|
| 3m Semi-Anechoic Chamber          | AUDIX                                    | N/A             | SEM001-02    | 2018-03-13 | 2021-03-12   |
| Measurement Software              | AUDIX                                    | e3 V8.2014-6-27 | N/A          | N/A        | N/A          |
| Coaxial Cable                     | SGS                                      | N/A             | SEM026-01    | 2018-07-12 | 2019-07-11   |
| Spectrum Analyzer                 | Rohde & Schwarz                          | FSU43           | SEM004-08    | 2018-04-02 | 2019-04-01   |
| BiConiLog Antenna<br>(26-3000MHz) | ETS-Lindgren                             | 3142C           | SEM003-01    | 2017-06-27 | 2020-06-26   |
| Horn Antenna<br>(1-18GHz)         | Rohde & Schwarz                          | HF907           | SEM003-07    | 2018-04-13 | 2021-04-12   |
| Horn Antenna<br>(15GHz-40GHz)     | Schwarzbeck                              | BBHA 9170       | SEM003-15    | 2017-10-17 | 2020-10-16   |
| Pre-amplifier<br>(0.1-1300MHz)    | HP                                       | 8447D           | SEM005-02    | 2018-09-25 | 2019-09-24   |
| Pre-Amplifier<br>(0.1-26.5GHz)    | Compliance<br>Directions Systems<br>Inc. | PAP-0126        | SEM004-11    | 2018-09-27 | 2019-09-26   |
| Pre-amplifier(18-26GHz)           | Rohde & Schwarz                          | CH14-H052       | SEM005-17    | 2018-04-02 | 2019-04-01   |
| Pre-amplifier<br>(26GHz-40GHz)    | Compliance<br>Directions Systems<br>Inc. | PAP-2640-50     | SEM005-08    | 2018-04-02 | 2019-04-01   |
| DC Power Supply                   | Zhao Xin                                 | RXN-305D        | SEM011-02    | 2018-09-25 | 2019-09-24   |
| Active Loop Antenna               | ETS-Lindgren                             | 6502            | SEM003-08    | 2017-08-22 | 2020-08-21   |
| Band filter                       | N/A                                      | N/A             | SEM023-01    | N/A        | N/A          |



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| Radiated Emissions             |                                    |                 |              |            |              |
|--------------------------------|------------------------------------|-----------------|--------------|------------|--------------|
| Equipment                      | Manufacturer                       | Model No        | Inventory No | Cal Date   | Cal Due Date |
| 3m Semi-Anechoic Chamber       | AUDIX                              | N/A             | SEM001-02    | 2018-03-13 | 2021-03-12   |
| Measurement Software           | AUDIX                              | e3 V8.2014-6-27 | N/A          | N/A        | N/A          |
| Coaxial Cable                  | SGS                                | N/A             | SEM026-01    | 2018-07-12 | 2019-07-11   |
| Spectrum Analyzer              | Rohde & Schwarz                    | FSU43           | SEM004-08    | 2018-04-02 | 2019-04-01   |
| BiConiLog Antenna (26-3000MHz) | ETS-Lindgren                       | 3142C           | SEM003-01    | 2017-06-27 | 2020-06-26   |
| Horn Antenna (1-18GHz)         | Rohde & Schwarz                    | HF907           | SEM003-07    | 2018-04-13 | 2021-04-12   |
| Horn Antenna (15GHz-40GHz)     | Schwarzbeck                        | BBHA 9170       | SEM003-15    | 2017-10-17 | 2020-10-16   |
| Pre-amplifier (0.1-1300MHz)    | HP                                 | 8447D           | SEM005-02    | 2018-09-25 | 2019-09-24   |
| Pre-Amplifier (0.1-26.5GHz)    | Compliance Directions Systems Inc. | PAP-0126        | SEM004-11    | 2018-09-27 | 2019-09-26   |
| Pre-amplifier(18-26GHz)        | Rohde & Schwarz                    | CH14-H052       | SEM005-17    | 2018-04-02 | 2019-04-01   |
| Pre-amplifier (26GHz-40GHz)    | Compliance Directions Systems Inc. | PAP-2640-50     | SEM005-08    | 2018-04-02 | 2019-04-01   |
| DC Power Supply                | Zhao Xin                           | RXN-305D        | SEM011-02    | 2018-09-25 | 2019-09-24   |
| Active Loop Antenna            | ETS-Lindgren                       | 6502            | SEM003-08    | 2017-08-22 | 2020-08-21   |
| Band filter                    | N/A                                | N/A             | SEM023-01    | N/A        | N/A          |

| Radiated Spurious Emissions    |                      |                 |               |            |               |
|--------------------------------|----------------------|-----------------|---------------|------------|---------------|
| Test Equipment                 | Manufacturer         | Model No.       | Inventory No. | Cal. Date  | Cal. Due date |
| 3m Semi-Anechoic Chamber       | ETS-LINDGREN         | N/A             | SEM001-01     | 2017-08-05 | 2020-08-04    |
| MXE EMI Receiver (20Hz-8.4GHz) | Agilent Technologies | N9038A          | SEM004-05     | 2018-09-25 | 2019-09-24    |
| BiConiLog Antenna (26-3000MHz) | ETS-LINDGREN         | 3142C           | SEM003-01     | 2017-06-27 | 2020-06-26    |
| Pre-amplifier (0.1-1300MHz)    | Agilent Technologies | 8447D           | SEM005-01     | 2018-04-02 | 2019-04-01    |
| Measurement Software           | AUDIX                | e3 V8.2014-6-27 | N/A           | N/A        | N/A           |
| Coaxial Cable                  | SGS                  | N/A             | SEM025-01     | 2018-07-12 | 2019-07-11    |



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Report No.: SZEM171001055103

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| General used equipment          |                                           |          |              |            |              |
|---------------------------------|-------------------------------------------|----------|--------------|------------|--------------|
| Equipment                       | Manufacturer                              | Model No | Inventory No | Cal Date   | Cal Due Date |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory  | ZJ1-2B   | SEM002-03    | 2018-09-27 | 2019-09-26   |
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory  | ZJ1-2B   | SEM002-04    | 2018-09-27 | 2019-09-26   |
| Humidity/ Temperature Indicator | Mingle                                    | N/A      | SEM002-08    | 2018-09-27 | 2019-09-26   |
| Barometer                       | Changchun Meteorological Industry Factory | DYM3     | SEM002-01    | 2018-04-08 | 2019-04-07   |



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## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

#### 6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

#### 6.1.2 Conclusion

Standard Requirement:

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 an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best-case gain of the antenna is 3dBi.

Antenna location: Refer to Internal photos.



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## **6.2 Transmission in the Absence of Data**

### **6.2.1 Test Requirement:**

47 CFR Part 15, Subpart C 15.407 (c)

### **6.2.2 Conclusion**

Standard Requirement:

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.

EUT Details:

WIFI chip (AR9342) support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detects absence of information to transmit or operational failure, it will be automatically shut off.



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## 7 Radio Spectrum Matter Test Results

### 7.1 99% Bandwidth

Test Requirement N/A  
Test Method: KDB 789033 II D

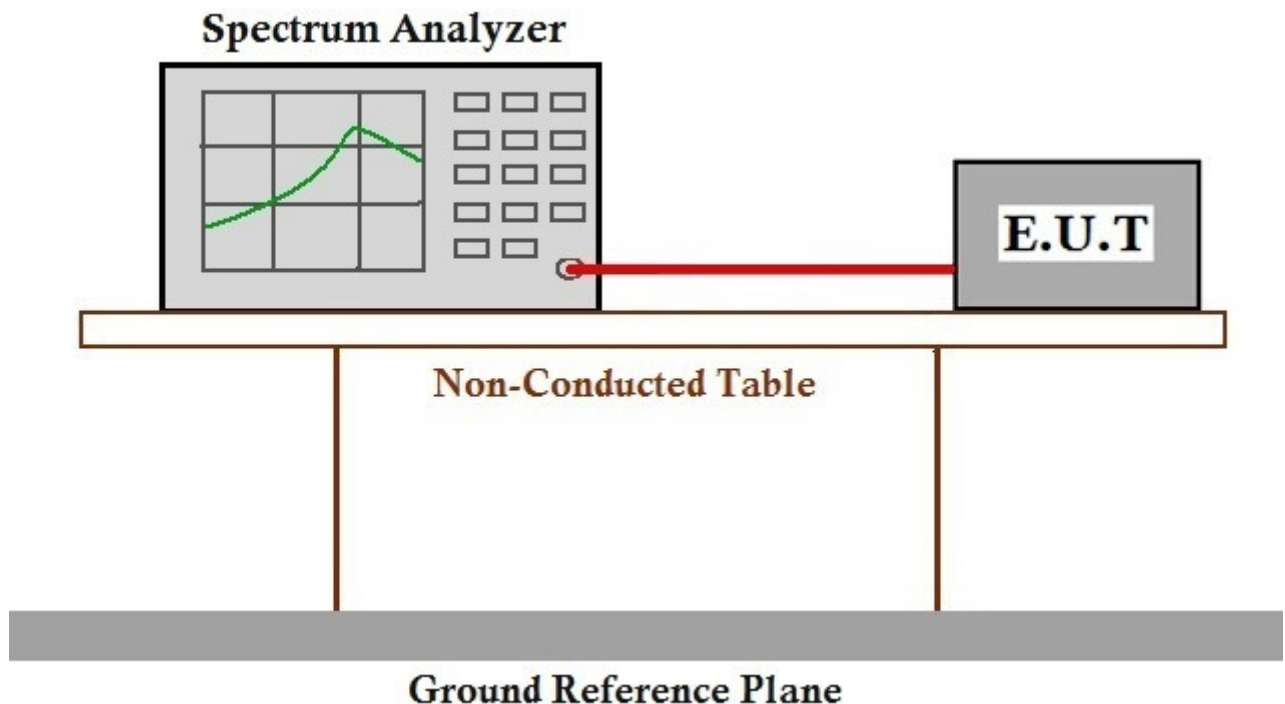
#### 7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1010 mbar

Test mode a:TX mode (Band 3)\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20). Only the data of worst case is recorded in the report.

#### 7.1.2 Test Setup Diagram



#### 7.1.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.407

## 7.2 Minimum 6 dB bandwidth (5.725-5.85 GHz band )

Test Requirement 47 CFR Part 15, Subpart C 15.407 (e)  
Test Method: KDB 789033 D02 II C 2  
Limit:  $\geq 500$  kHz

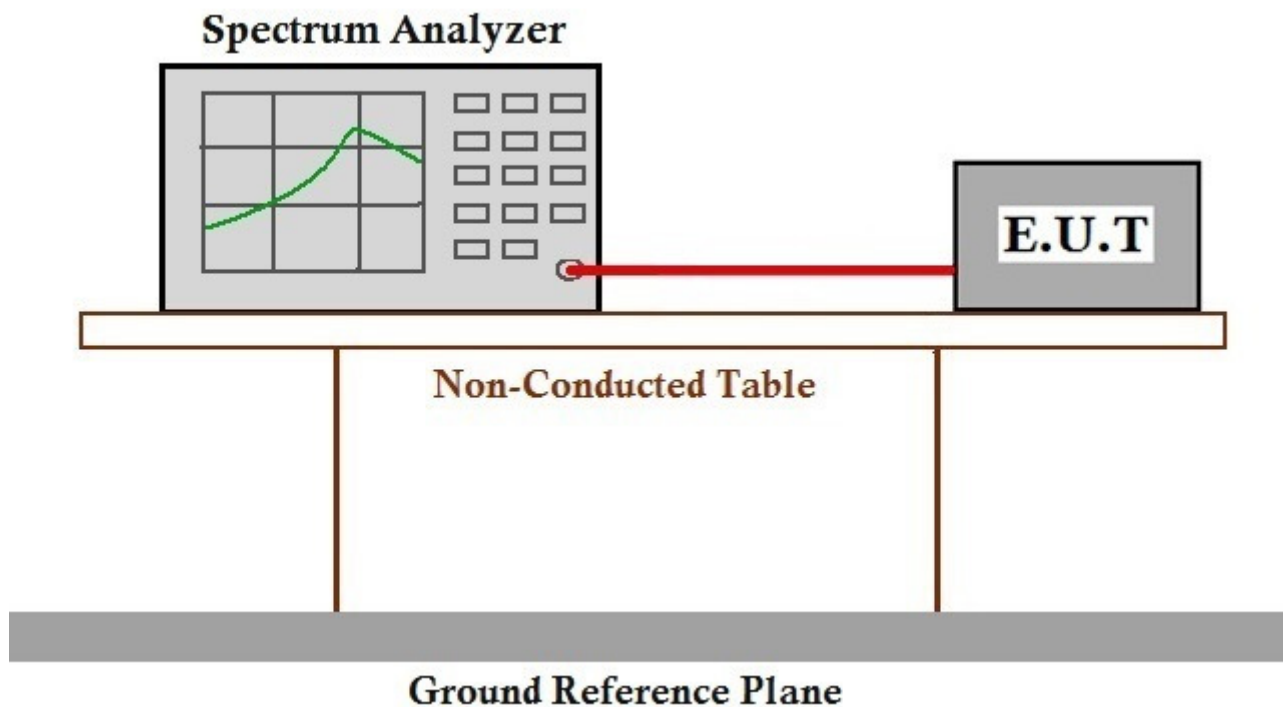
### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1010 mbar

Test mode a:TX mode (Band 3). Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20). Only the data of worst case is recorded in the report.

### 7.2.2 Test Setup Diagram



### 7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.407





### 7.3 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)  
Test Method: KDB 789033 D02 II E  
Limit:

| Frequency band(MHz) | Limit                                                                                                                                                                                                                        |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5150-5250           | ≤1W(30dBm) for master device                                                                                                                                                                                                 |
|                     | ≤250mW(24dBm) for client device                                                                                                                                                                                              |
| 5250-5350           | ≤250mW(24dBm) for client device or 11dBm+10logB*                                                                                                                                                                             |
| 5470-5725           | ≤250mW(24dBm) for client device or 11dBm+10logB*                                                                                                                                                                             |
| 5725-5850           | ≤1W(30dBm)                                                                                                                                                                                                                   |
| Remark:             | * Where B is the 26dB emission bandwidth in MHz.<br>The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. |



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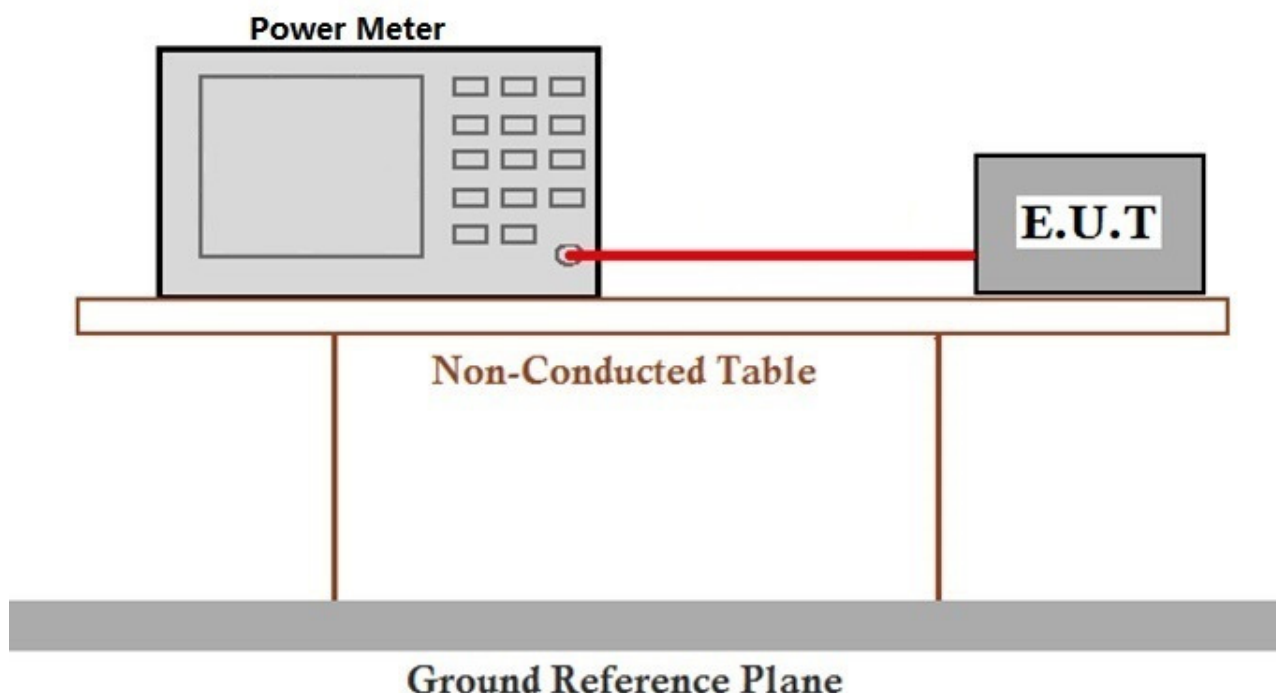
### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1010 mbar

Test mode a:TX mode (Band 3)\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20). Only the data of worst case is recorded in the report.

### 7.3.2 Test Setup Diagram



### 7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.407



#### 7.4 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)  
Test Method: KDB 789033 D02 II F  
Limit:

| Frequency band(MHz) | Limit                                                                                                                                                    |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5150-5250           | ≤17dBm in 1MHz for master device                                                                                                                         |
|                     | ≤11dBm in 1MHz for client device                                                                                                                         |
| 5250-5350           | ≤11dBm in 1MHz for client device                                                                                                                         |
| 5470-5725           | ≤11dBm in 1MHz for client device                                                                                                                         |
| 5725-5850           | ≤30dBm in 500 kHz                                                                                                                                        |
| Remark:             | The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. |



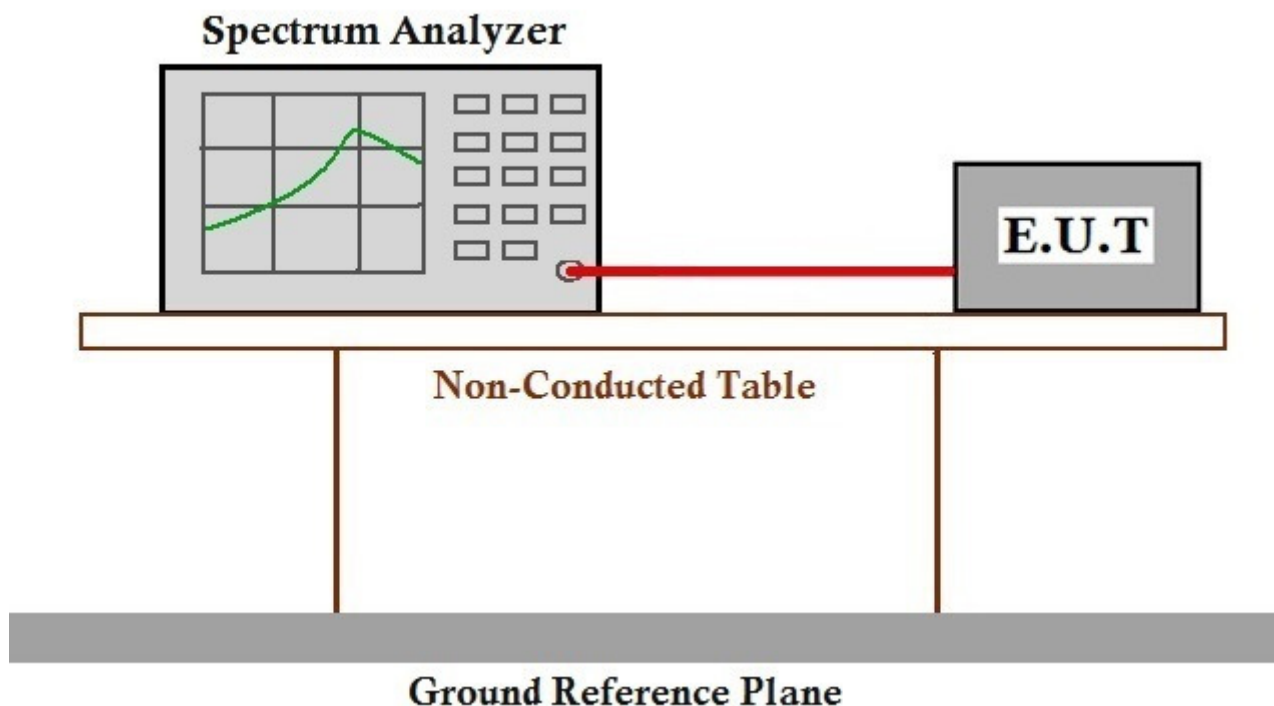
#### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1010 mbar

Test mode a:TX mode (Band 3)\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20). Only the data of worst case is recorded in the report.

#### 7.4.2 Test Setup Diagram



#### 7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.407

## 7.5 Radiated Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.407(b)

Test Method: KDB 789033 D02 II G

Measurement Distance: 3m

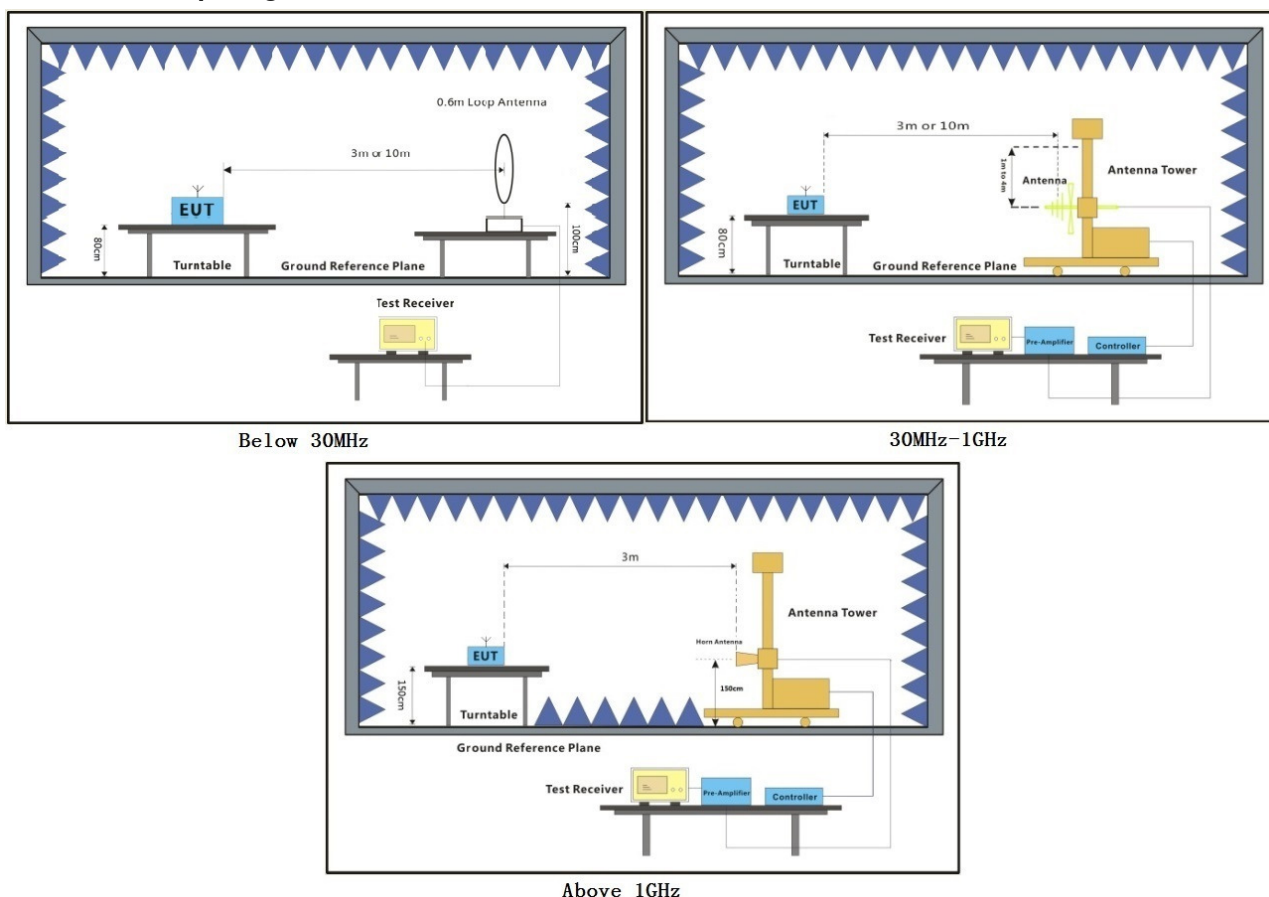
### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C Humidity: 70.1 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode (Band 3)\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20). Only the data of worst case is recorded in the report.

### 7.5.2 Test Setup Diagram



### 7.5.3 Measurement Procedure and Data

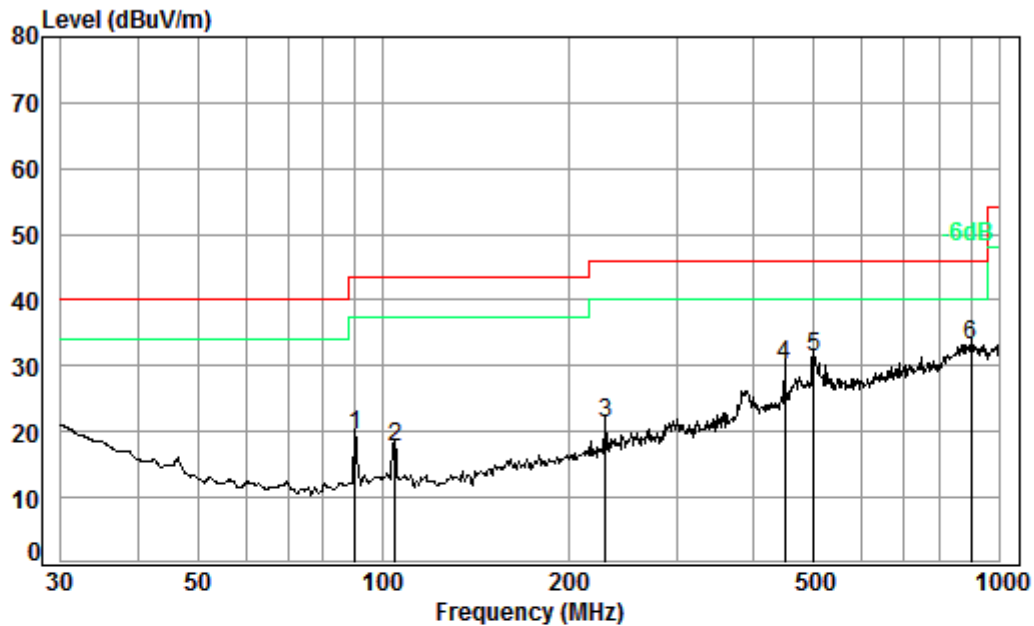
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.
3. Scan from 9kHz to 40GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
4. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

30MHz~1GHz (QP value):

Mode:a; Polarization:Horizontal; Modulation:802.11a; bandwidth:20MHz; Channel:Low

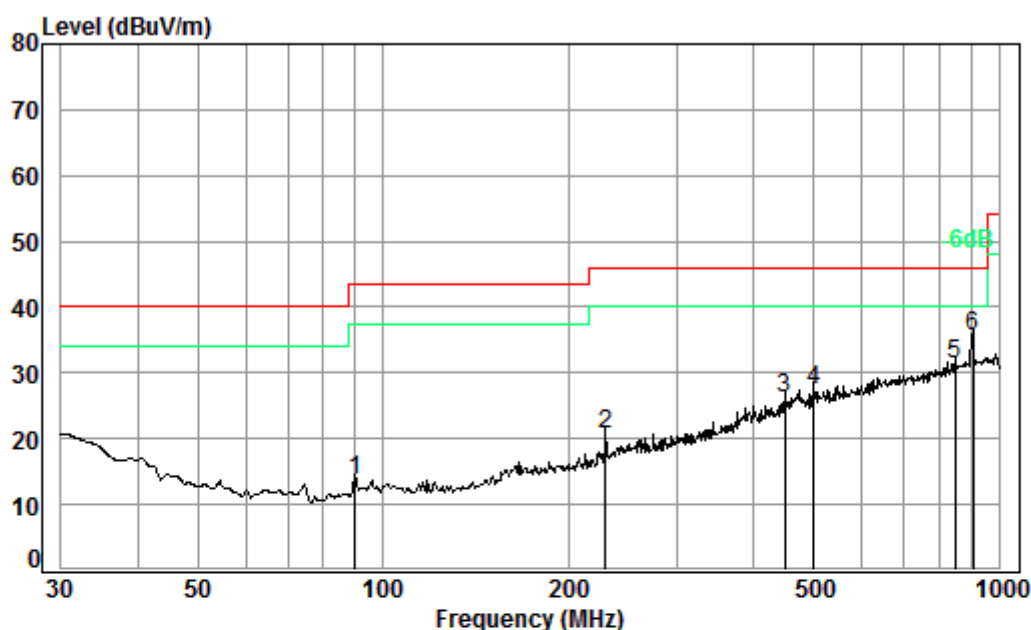


Condition: 3m HORIZONTAL  
Job No. : 10551CR/10552CR  
Test mode: a

|      | Freq   | Cable | Ant    | Preamp | Read  | Limit  | Over   |
|------|--------|-------|--------|--------|-------|--------|--------|
|      | MHz    | Loss  | Factor | Factor | Level | Line   | Limit  |
|      | MHz    | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m |
| 1    | 90.22  | 1.10  | 13.12  | 27.36  | 32.51 | 19.37  | 43.50  |
| 2    | 104.54 | 1.21  | 13.78  | 27.32  | 30.02 | 17.69  | 43.50  |
| 3    | 230.10 | 1.57  | 18.03  | 26.81  | 28.61 | 21.40  | 46.00  |
| 4    | 449.56 | 2.41  | 23.55  | 27.40  | 31.50 | 30.06  | 46.00  |
| 5    | 501.18 | 2.60  | 24.63  | 27.61  | 31.66 | 31.28  | 46.00  |
| 6 pp | 900.15 | 3.60  | 29.80  | 27.05  | 26.86 | 33.21  | 46.00  |



Mode:a; Polarization:Vertical; Modulation:802.11a; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

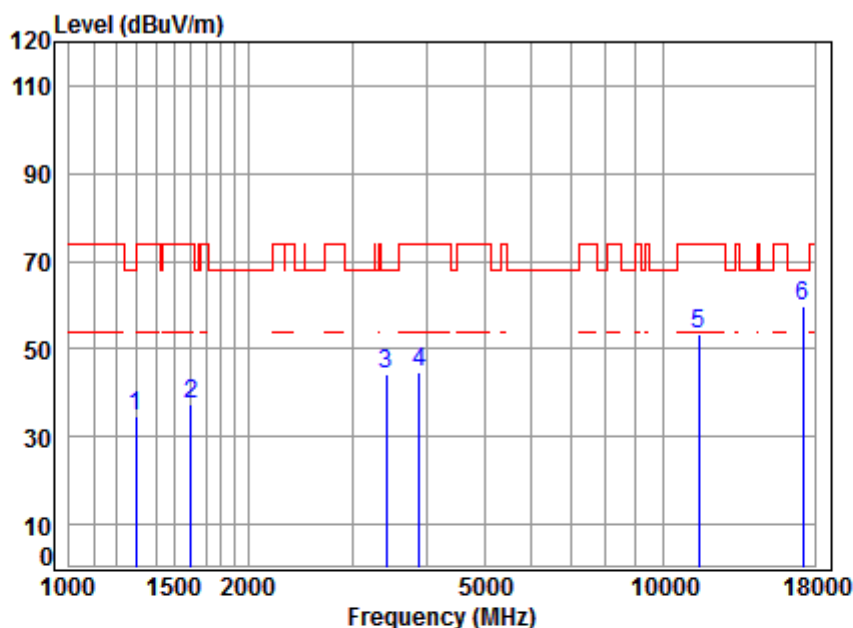
Job No. : 10551CR/10552CR

Test mode: a

|      | Freq   | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level  | Limit Line | Over Limit |
|------|--------|------------|------------|---------------|------------|--------|------------|------------|
|      | MHz    | dB         | dB/m       | dB            | dBuV       | dBuV/m | dBuV/m     | dB         |
| 1    | 90.22  | 1.10       | 13.12      | 27.36         | 26.84      | 13.70  | 43.50      | -29.80     |
| 2    | 230.10 | 1.57       | 18.03      | 26.81         | 27.98      | 20.77  | 46.00      | -25.23     |
| 3    | 449.56 | 2.41       | 23.55      | 27.40         | 27.56      | 26.12  | 46.00      | -19.88     |
| 4    | 501.18 | 2.60       | 24.63      | 27.61         | 27.84      | 27.46  | 46.00      | -18.54     |
| 5    | 848.06 | 3.40       | 29.14      | 27.35         | 26.18      | 31.37  | 46.00      | -14.63     |
| 6 pp | 906.48 | 3.61       | 29.83      | 27.02         | 29.11      | 35.53  | 46.00      | -10.47     |

### Above 1GHz

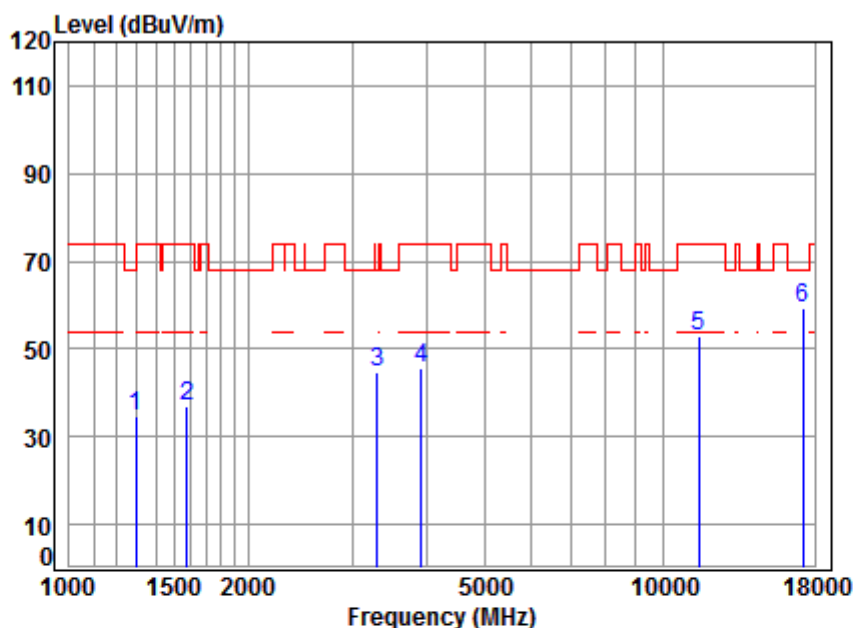
Mode:a; Polarization:Horizontal; Modulation:802.11a; bandwidth:20MHz; Channel:Low



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode : 5745 TX RSE  
Note : 5G WIFI 11A

|   | Freq      | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level  | Limit Line | Over Limit | Remark |
|---|-----------|------------|------------|---------------|------------|--------|------------|------------|--------|
|   | MHz       | dB         | dB/m       | dB            | dBuV       | dBuV/m | dBuV/m     | dB         |        |
| 1 | 1297.103  | 4.79       | 25.01      | 40.56         | 45.50      | 34.74  | 68.20      | -33.46     | peak   |
| 2 | 1601.804  | 5.35       | 26.26      | 40.77         | 46.60      | 37.44  | 74.00      | -36.56     | peak   |
| 3 | 3415.787  | 6.38       | 31.57      | 42.01         | 48.14      | 44.08  | 68.20      | -24.12     | peak   |
| 4 | 3890.255  | 6.87       | 32.49      | 42.62         | 47.98      | 44.72  | 74.00      | -29.28     | peak   |
| 5 | 11490.000 | 12.13      | 37.90      | 38.49         | 41.78      | 53.32  | 74.00      | -20.68     | peak   |
| 6 | 17235.000 | 16.18      | 42.74      | 40.32         | 41.01      | 59.61  | 68.20      | -8.59      | peak   |

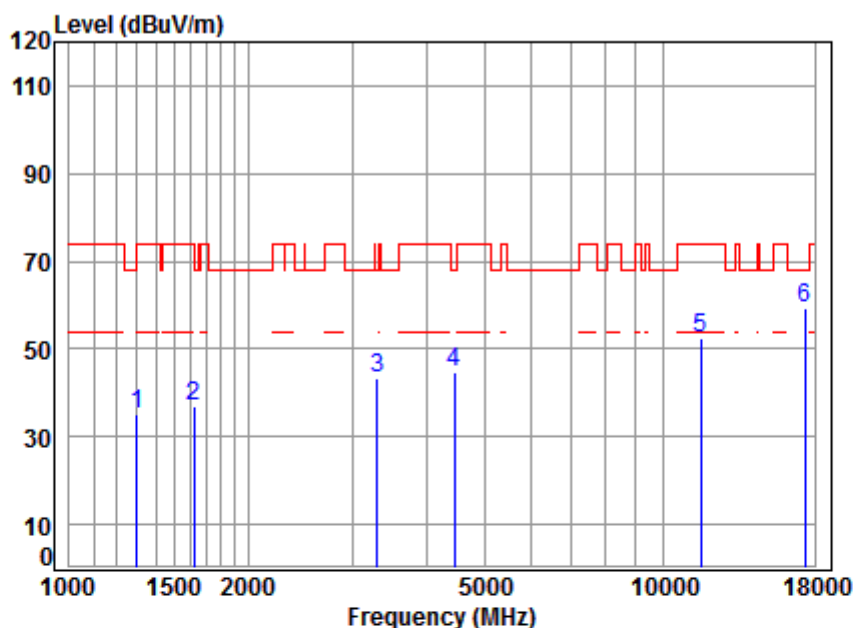
Mode:a; Polarization:Vertical; Modulation:802.11a; bandwidth:20MHz; Channel:Low



Site : chamber  
Condition: 3m VERTICAL  
Job No : 10551CR/10552CR  
Mode : 5745 TX RSE  
Note : 5G WIFI 11A

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1297.103  | 4.79  | 25.01  | 40.56  | 45.57 | 34.81  | 68.20  | -33.39 | peak   |
| 2    | 1578.822  | 5.38  | 26.16  | 40.76  | 46.40 | 37.18  | 74.00  | -36.82 | peak   |
| 3    | 3308.894  | 6.29  | 31.41  | 41.86  | 48.77 | 44.61  | 68.20  | -23.59 | peak   |
| 4    | 3924.135  | 6.91  | 32.56  | 42.66  | 48.70 | 45.51  | 74.00  | -28.49 | peak   |
| 5    | 11490.000 | 12.13 | 37.90  | 38.49  | 41.28 | 52.82  | 74.00  | -21.18 | peak   |
| 6    | 17235.000 | 16.18 | 42.74  | 40.32  | 40.92 | 59.52  | 68.20  | -8.68  | peak   |

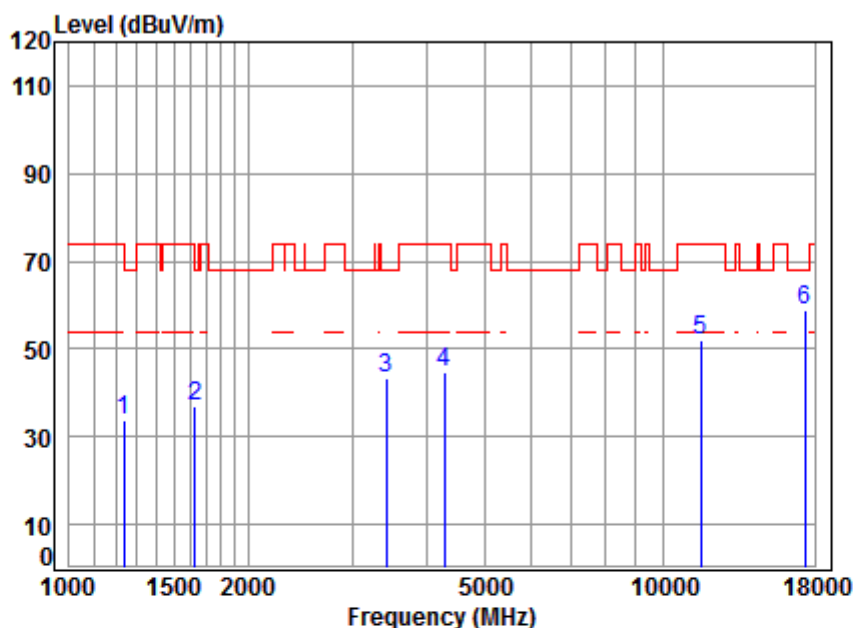
Mode:a; Polarization:Horizontal; Modulation:802.11a; bandwidth:20MHz; Channel:middle



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode : 5785 TX RSE  
Note : 5G WIFI 11A

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1300.858  | 4.80  | 25.03  | 40.56  | 46.05 | 35.32  | 74.00  | -38.68 | peak   |
| 2    | 1620.431  | 5.32  | 26.34  | 40.78  | 46.09 | 36.97  | 74.00  | -37.03 | peak   |
| 3    | 3308.894  | 6.29  | 31.41  | 41.86  | 47.67 | 43.51  | 68.20  | -24.69 | peak   |
| 4    | 4456.315  | 7.51  | 33.53  | 43.26  | 46.94 | 44.72  | 68.20  | -23.48 | peak   |
| 5    | 11570.000 | 12.17 | 37.87  | 38.52  | 40.93 | 52.45  | 74.00  | -21.55 | peak   |
| 6    | 17355.000 | 15.92 | 42.81  | 40.30  | 40.78 | 59.21  | 68.20  | -8.99  | peak   |

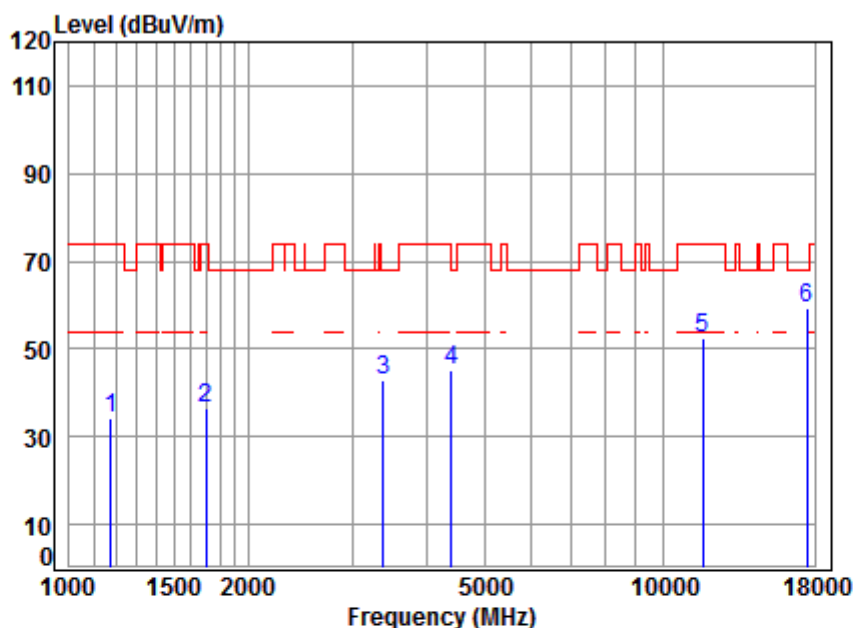
Mode:a; Polarization:Vertical; Modulation:802.11a; bandwidth:20MHz; Channel:middle



Site : chamber  
Condition: 3m VERTICAL  
Job No : 10551CR/10552CR  
Mode : 5785 TX RSE  
Note : 5G WIFI 11A

|   |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|---|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
|   | Freq      | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
|   | MHz       | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 | 1238.483  | 4.57  | 24.76  | 40.51  | 44.94 | 33.76  | 74.00  | -40.24 | peak   |
| 2 | 1629.825  | 5.31  | 26.38  | 40.79  | 46.14 | 37.04  | 68.20  | -31.16 | peak   |
| 3 | 3415.787  | 6.38  | 31.57  | 42.01  | 47.63 | 43.57  | 68.20  | -24.63 | peak   |
| 4 | 4279.589  | 7.31  | 33.22  | 43.07  | 47.06 | 44.52  | 74.00  | -29.48 | peak   |
| 5 | 11570.000 | 12.17 | 37.87  | 38.52  | 40.54 | 52.06  | 74.00  | -21.94 | peak   |
| 6 | 17355.000 | 15.92 | 42.81  | 40.30  | 40.37 | 58.80  | 68.20  | -9.40  | peak   |

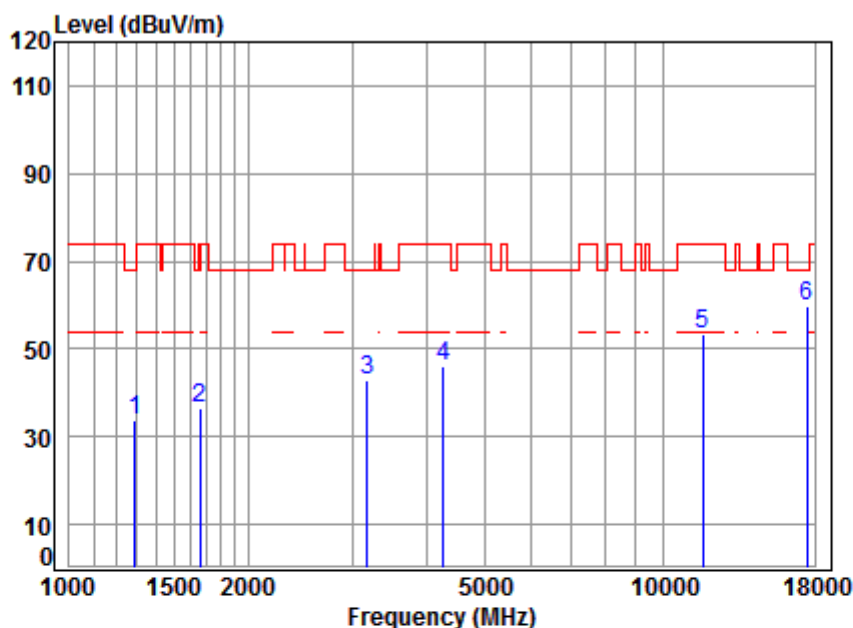
Mode:a; Polarization:Horizontal; Modulation:802.11a; bandwidth:20MHz; Channel:High



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode : 5825 TX RSE  
Note : 5G WIFI 11A

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1175.697  | 4.32  | 24.48  | 40.46  | 46.04 | 34.38  | 74.00  | -39.62 | peak   |
| 2    | 1697.129  | 5.23  | 26.66  | 40.83  | 45.62 | 36.68  | 74.00  | -37.32 | peak   |
| 3    | 3376.523  | 6.35  | 31.51  | 41.96  | 46.97 | 42.87  | 68.20  | -25.33 | peak   |
| 4    | 4405.090  | 7.46  | 33.44  | 43.20  | 47.56 | 45.26  | 68.20  | -22.94 | peak   |
| 5    | 11650.000 | 12.20 | 37.84  | 38.55  | 40.91 | 52.40  | 74.00  | -21.60 | peak   |
| 6    | 17475.000 | 15.65 | 42.89  | 40.28  | 41.13 | 59.39  | 68.20  | -8.81  | peak   |

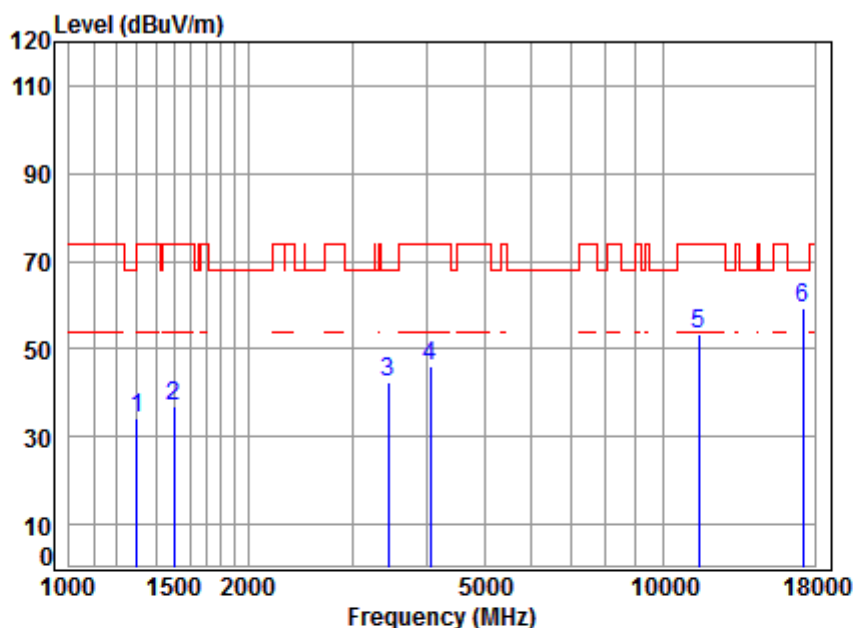
Mode:a; Polarization:Vertical; Modulation:802.11a; bandwidth:20MHz; Channel:High



Site : chamber  
Condition: 3m VERTICAL  
Job No : 10551CR/10552CR  
Mode : 5825 TX RSE  
Note : 5G WIFI 11A

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1289.627  | 4.76  | 24.98  | 40.55  | 44.39 | 33.58  | 68.20  | -34.62 | peak   |
| 2    | 1663.137  | 5.27  | 26.52  | 40.81  | 45.67 | 36.65  | 74.00  | -37.35 | peak   |
| 3    | 3177.672  | 6.16  | 31.20  | 41.67  | 47.30 | 42.99  | 68.20  | -25.21 | peak   |
| 4    | 4267.237  | 7.30  | 33.19  | 43.06  | 48.67 | 46.10  | 74.00  | -27.90 | peak   |
| 5    | 11650.000 | 12.20 | 37.84  | 38.55  | 41.75 | 53.24  | 74.00  | -20.76 | peak   |
| 6    | 17475.000 | 15.65 | 42.89  | 40.28  | 41.38 | 59.64  | 68.20  | -8.56  | peak   |

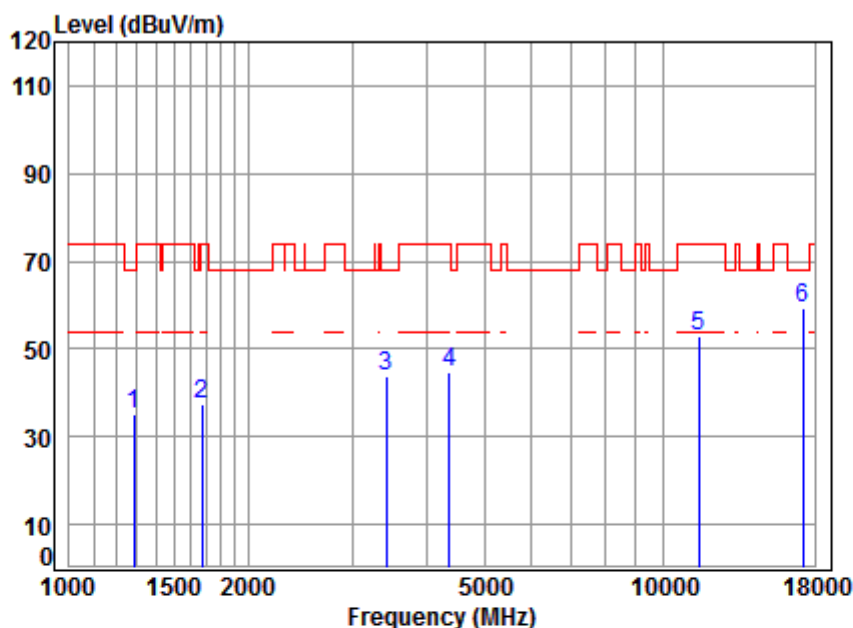
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode : 5745 TX RSE  
Note : 5G WIFI 11N20

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
|      | MHz       | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1300.858  | 4.80  | 25.03  | 40.56  | 45.11 | 34.38  | 74.00  | -39.62 | peak   |
| 2    | 1498.781  | 5.48  | 25.80  | 40.71  | 46.53 | 37.10  | 74.00  | -36.90 | peak   |
| 3    | 3445.535  | 6.41  | 31.62  | 42.05  | 46.64 | 42.62  | 68.20  | -25.58 | peak   |
| 4    | 4062.629  | 7.06  | 32.82  | 42.82  | 48.84 | 45.90  | 74.00  | -28.10 | peak   |
| 5    | 11490.000 | 12.13 | 37.90  | 38.49  | 41.85 | 53.39  | 74.00  | -20.61 | peak   |
| 6    | 17235.000 | 16.18 | 42.74  | 40.32  | 40.83 | 59.43  | 68.20  | -8.77  | peak   |

Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



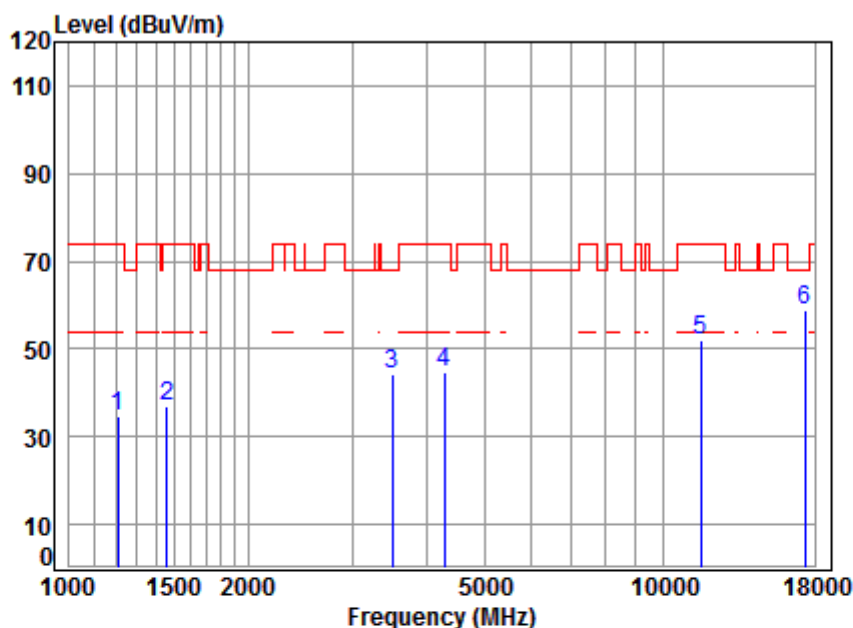
Site : chamber  
Condition: 3m VERTICAL  
Job No : 10551CR/10552CR  
Mode : 5745 TX RSE  
Note : 5G WIFI 11N20

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1285.904  | 4.75  | 24.96  | 40.55  | 46.14 | 35.30  | 68.20  | -32.90 | peak   |
| 2    | 1672.779  | 5.26  | 26.56  | 40.82  | 46.47 | 37.47  | 74.00  | -36.53 | peak   |
| 3    | 3425.675  | 6.39  | 31.59  | 42.02  | 47.86 | 43.82  | 68.20  | -24.38 | peak   |
| 4    | 4367.058  | 7.41  | 33.37  | 43.16  | 47.05 | 44.67  | 74.00  | -29.33 | peak   |
| 5    | 11490.000 | 12.13 | 37.90  | 38.49  | 41.35 | 52.89  | 74.00  | -21.11 | peak   |
| 6    | 17235.000 | 16.18 | 42.74  | 40.32  | 40.84 | 59.44  | 68.20  | -8.76  | peak   |



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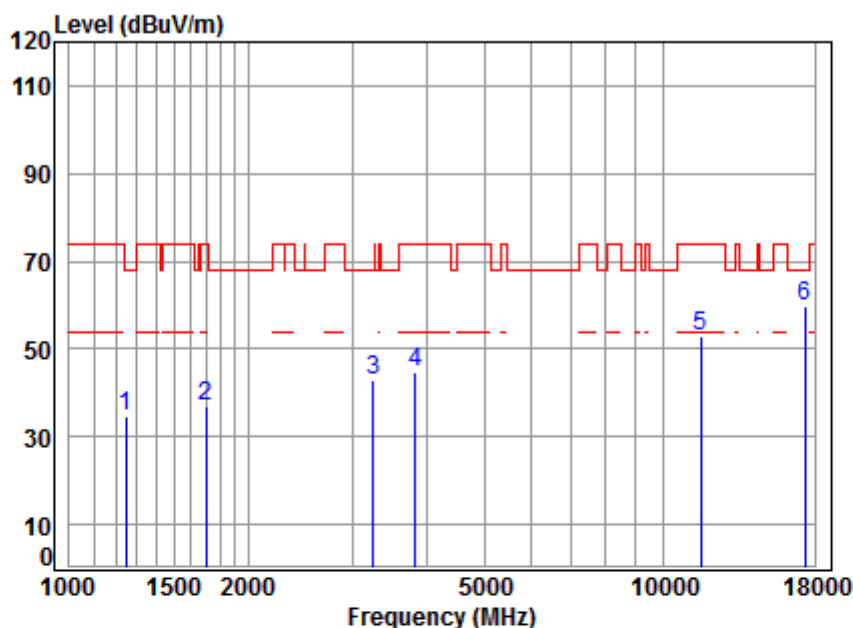
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:middle



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode : 5785 TX RSE  
Note : 5G WIFI 11N20

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1206.682  | 4.44  | 24.62  | 40.49  | 46.06 | 34.63  | 74.00  | -39.37 | peak   |
| 2    | 1460.295  | 5.35  | 25.65  | 40.68  | 46.76 | 37.08  | 74.00  | -36.92 | peak   |
| 3    | 3495.691  | 6.46  | 31.69  | 42.12  | 48.24 | 44.27  | 68.20  | -23.93 | peak   |
| 4    | 4291.977  | 7.33  | 33.24  | 43.08  | 47.45 | 44.94  | 74.00  | -29.06 | peak   |
| 5    | 11570.000 | 12.17 | 37.87  | 38.52  | 40.69 | 52.21  | 74.00  | -21.79 | peak   |
| 6    | 17355.000 | 15.92 | 42.81  | 40.30  | 40.52 | 58.95  | 68.20  | -9.25  | peak   |

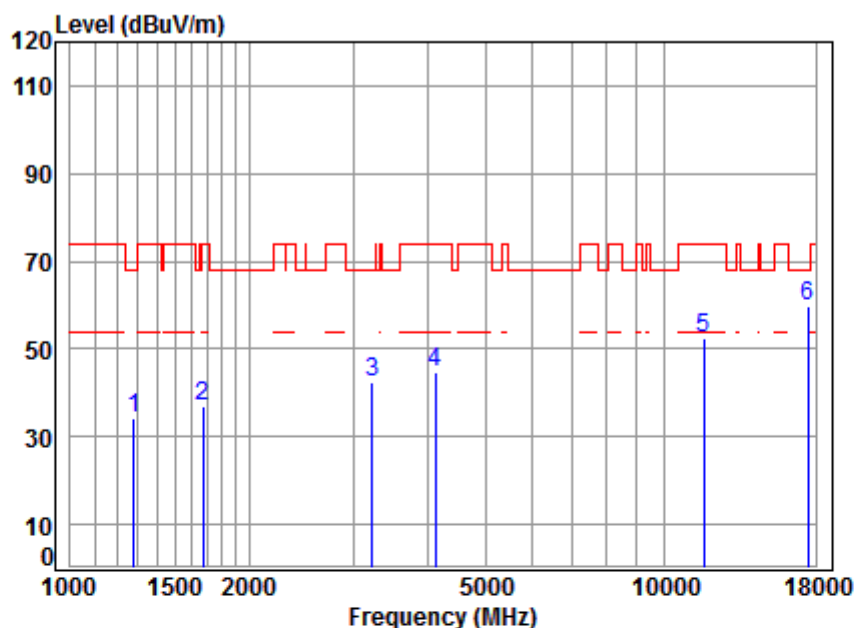
Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:middle



Site : chamber  
Condition: 3m VERTICAL  
Job No : 10551CR/10552CR  
Mode : 5785 TX RSE  
Note : 5G WIFI 11N20

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
|      | MHz       | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1245.663  | 4.60  | 24.79  | 40.52  | 45.83 | 34.70  | 68.20  | -33.50 | peak   |
| 2    | 1697.129  | 5.23  | 26.66  | 40.83  | 46.00 | 37.06  | 74.00  | -36.94 | peak   |
| 3    | 3252.005  | 6.23  | 31.32  | 41.78  | 47.17 | 42.94  | 68.20  | -25.26 | peak   |
| 4    | 3834.438  | 6.82  | 32.38  | 42.55  | 48.07 | 44.72  | 74.00  | -29.28 | peak   |
| 5    | 11570.000 | 12.17 | 37.87  | 38.52  | 41.39 | 52.91  | 74.00  | -21.09 | peak   |
| 6    | 17355.000 | 15.92 | 42.81  | 40.30  | 41.20 | 59.63  | 68.20  | -8.57  | peak   |

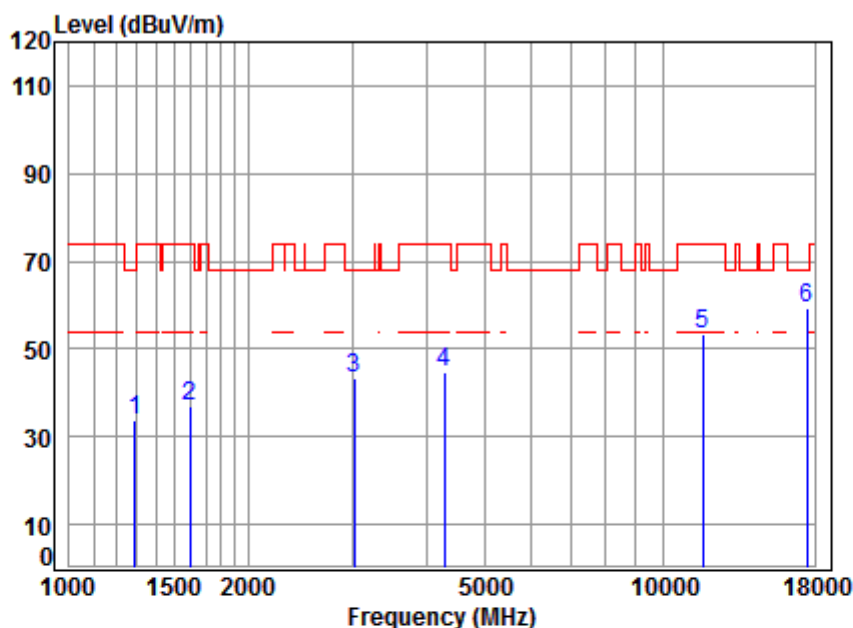
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber  
Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode : 5825 TX RSE  
Note : 5G WIFI 11N20

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1278.492  | 4.72  | 24.93  | 40.55  | 45.03 | 34.13  | 68.20  | -34.07 | peak   |
| 2    | 1672.779  | 5.26  | 26.56  | 40.82  | 45.91 | 36.91  | 74.00  | -37.09 | peak   |
| 3    | 3223.928  | 6.20  | 31.27  | 41.74  | 46.73 | 42.46  | 68.20  | -25.74 | peak   |
| 4    | 4121.768  | 7.13  | 32.93  | 42.89  | 47.50 | 44.67  | 74.00  | -29.33 | peak   |
| 5    | 11650.000 | 12.20 | 37.84  | 38.55  | 40.93 | 52.42  | 74.00  | -21.58 | peak   |
| 6    | 17475.000 | 15.65 | 42.89  | 40.28  | 41.33 | 59.59  | 68.20  | -8.61  | peak   |

Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Site : chamber  
Condition: 3m VERTICAL  
Job No : 10551CR/10552CR  
Mode : 5825 TX RSE  
Note : 5G WIFI 11N20

|      |           | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|-----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |           | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |           | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 1289.627  | 4.76  | 24.98  | 40.55  | 44.38 | 33.57  | 68.20  | -34.63 | peak   |
| 2    | 1597.181  | 5.35  | 26.24  | 40.77  | 46.15 | 36.97  | 74.00  | -37.03 | peak   |
| 3    | 3016.575  | 6.00  | 30.93  | 41.43  | 47.90 | 43.40  | 68.20  | -24.80 | peak   |
| 4    | 4291.977  | 7.33  | 33.24  | 43.08  | 47.31 | 44.80  | 74.00  | -29.20 | peak   |
| 5    | 11650.000 | 12.20 | 37.84  | 38.55  | 41.78 | 53.27  | 74.00  | -20.73 | peak   |
| 6    | 17475.000 | 15.65 | 42.89  | 40.28  | 41.23 | 59.49  | 68.20  | -8.71  | peak   |



## 7.6 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.407(b)  
Test Method: KDB 789033 D02 II G  
Measurement Distance: 3m  
Limit:

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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.



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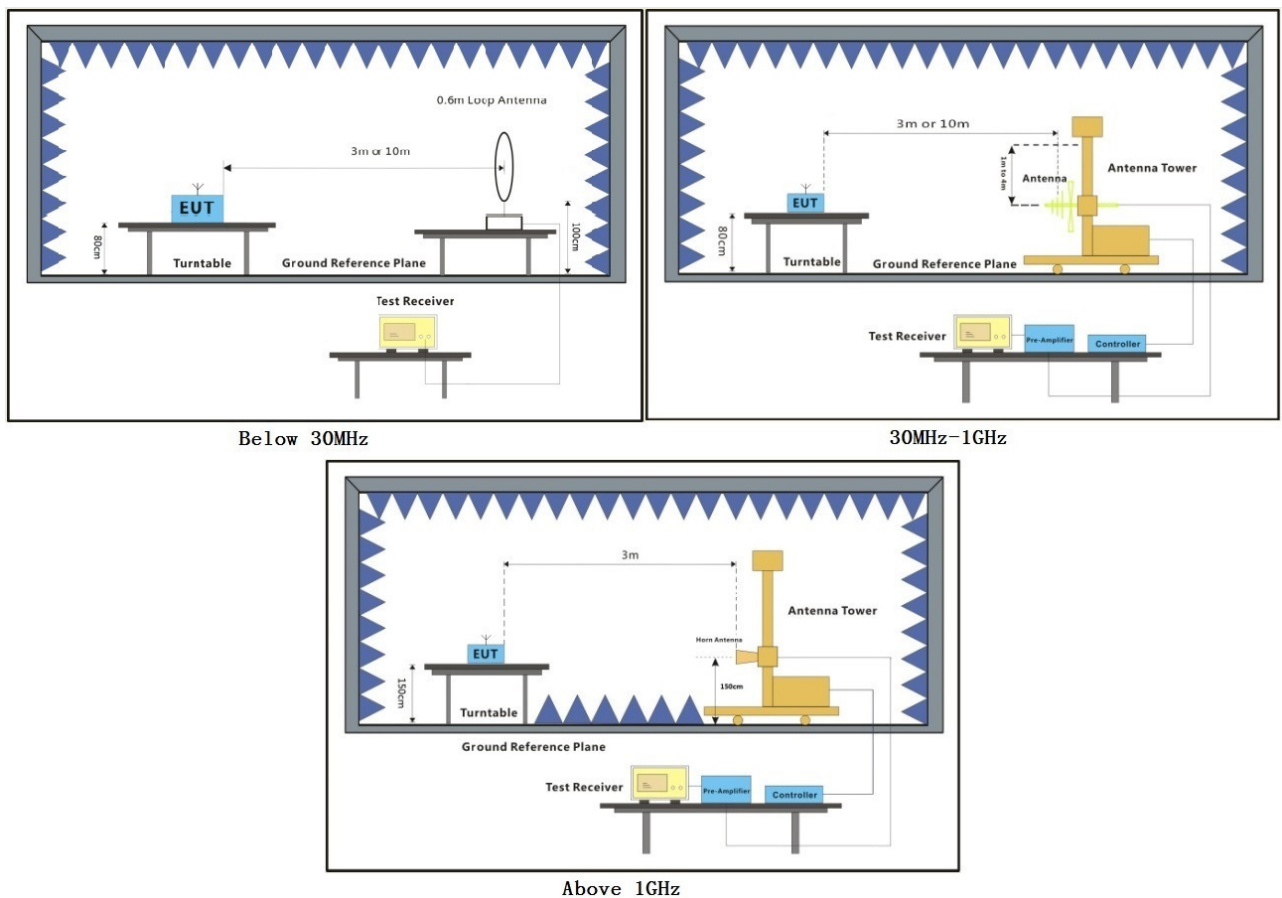
### 7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 21.2 °C Humidity: 50.7 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode (Band 3)\_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n(HT20). Only the data of worst case is recorded in the report.

### 7.6.2 Test Setup Diagram

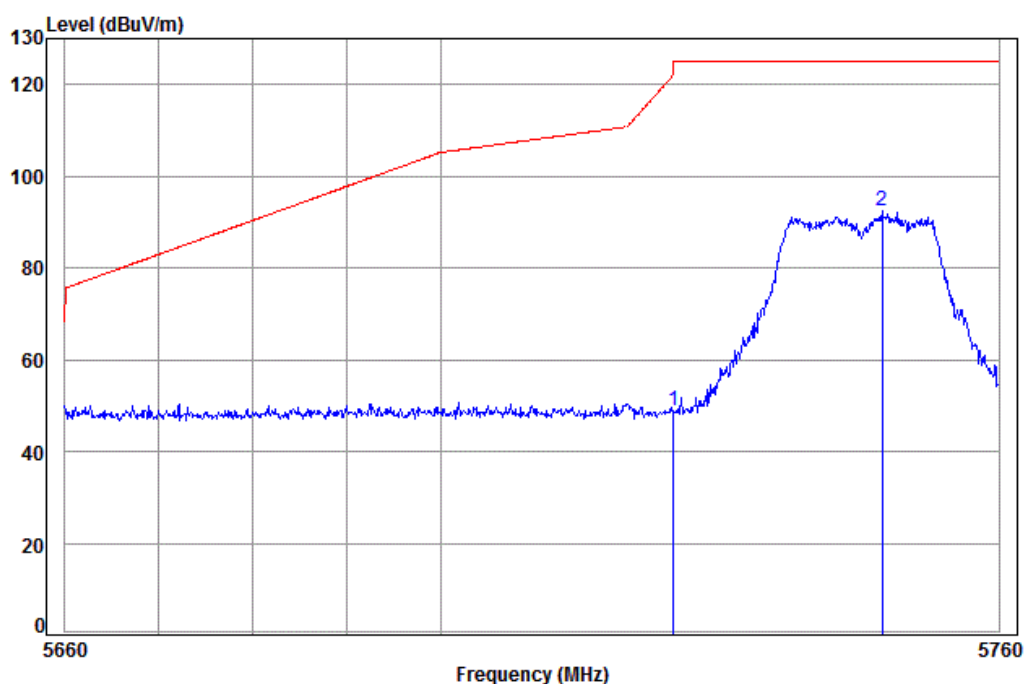


### 7.6.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

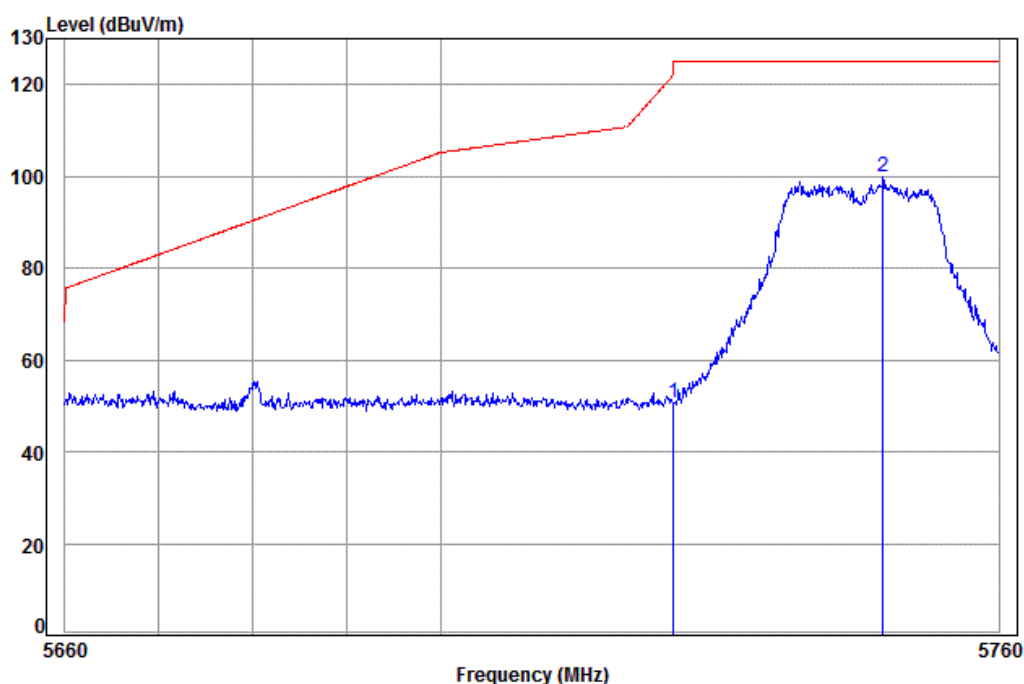
Mode:a; Polarization:Horizontal; Modulation:802.11a; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode: : 5745 Band edge

|   | Freq        | Cable Loss | Ant Factor | Preamplifier Factor | Read Level | Level  | Limit Line | Over Limit | Remark |
|---|-------------|------------|------------|---------------------|------------|--------|------------|------------|--------|
|   | MHz         | dB         | dB/m       | dB                  | dBuV       | dBuV/m | dBuV/m     | dB         |        |
| 1 | 5725.000    | 8.48       | 34.54      | 39.03               | 44.94      | 48.93  | 122.20     | -73.27     |        |
| 2 | pp 5747.404 | 8.50       | 34.55      | 39.02               | 88.54      | 92.57  | 125.20     | -32.63     |        |

Mode:a; Polarization:Vertical; Modulation:802.11a; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

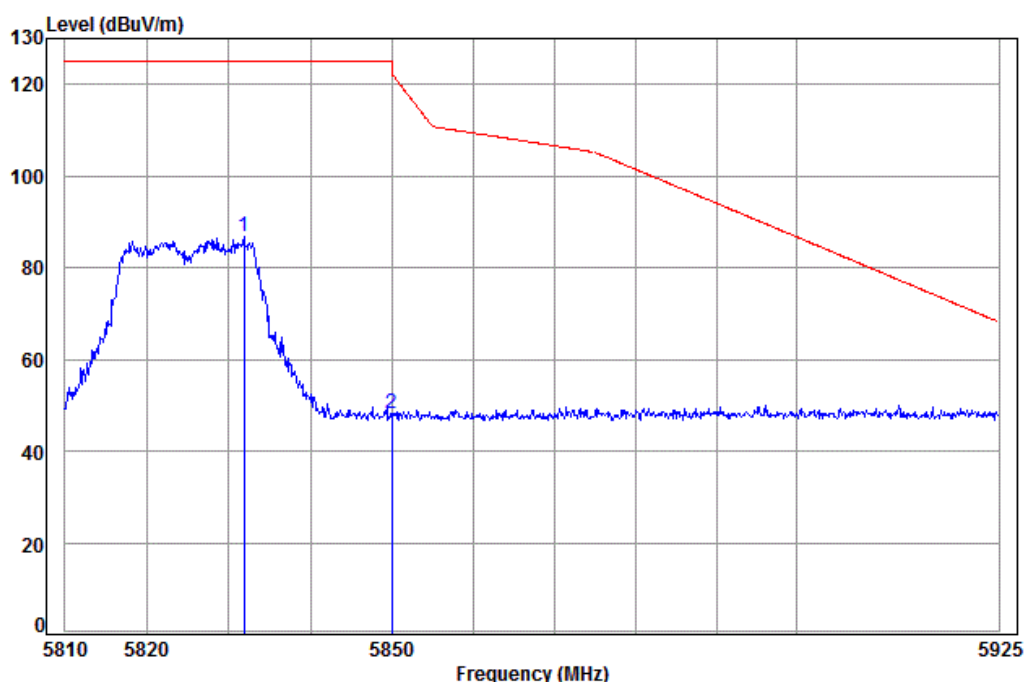
Job No : 10551CR/10552CR

Mode: : 5745 Band edge

|   |             | Cable | Ant    | Preamp | Read  | Limit  | Over   |        |
|---|-------------|-------|--------|--------|-------|--------|--------|--------|
|   | Freq        | Loss  | Factor | Factor | Level | Line   | Limit  | Remark |
|   | MHz         | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |
| 1 | 5725.000    | 8.48  | 34.54  | 39.03  | 46.84 | 50.83  | 122.20 | -71.37 |
| 2 | pp 5747.505 | 8.50  | 34.55  | 39.02  | 95.75 | 99.78  | 125.20 | -25.42 |



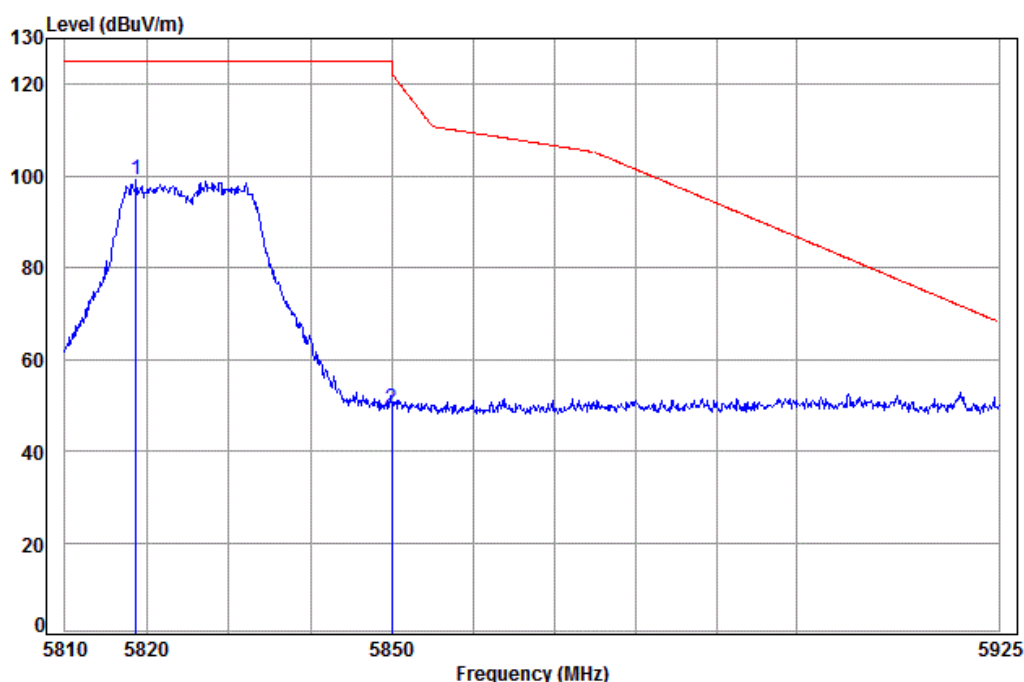
Mode:a; Polarization:Horizontal; Modulation:802.11a; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode: : 5825 Band edge

|      | Freq     | Cable Loss | Ant Factor | Preamplifier Factor | Read Level | Limit Line | Over Limit | Remark |
|------|----------|------------|------------|---------------------|------------|------------|------------|--------|
|      | MHz      | dB         | dB/m       | dB                  | dBuV       | dBuV/m     | dBuV/m     | dB     |
| 1 pp | 5831.905 | 8.59       | 34.60      | 39.02               | 82.73      | 86.90      | 125.20     | -38.30 |
| 2    | 5850.000 | 8.60       | 34.61      | 39.01               | 43.86      | 48.06      | 122.20     | -74.14 |

Mode:a; Polarization:Vertical; Modulation:802.11a; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

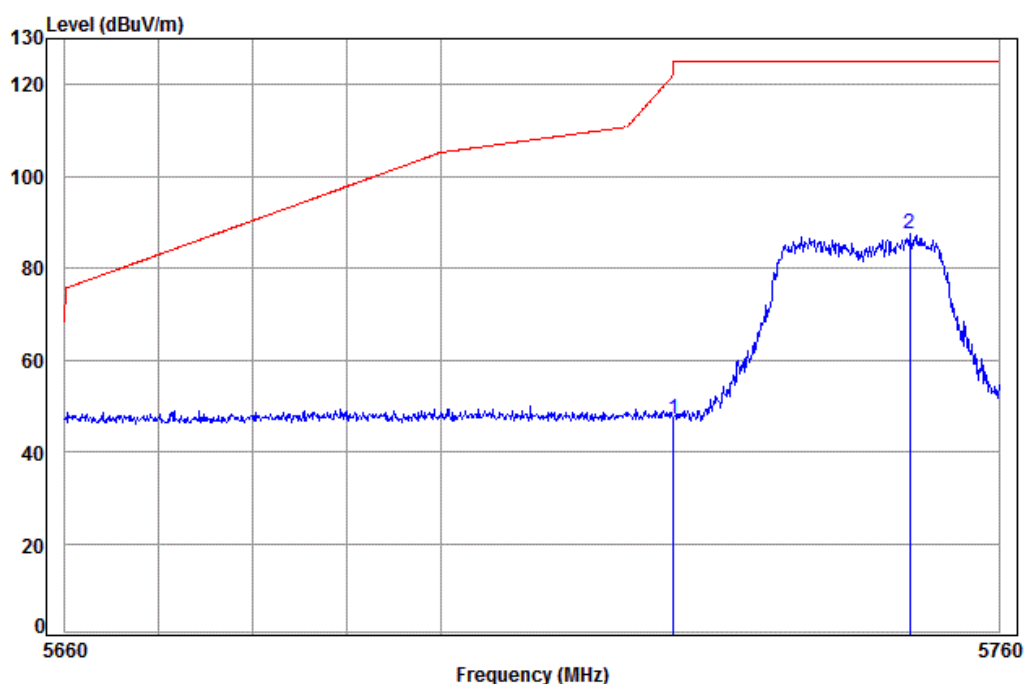
Job No : 10551CR/10552CR

Mode: : 5825 Band edge

|      |          | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|----------|-------|--------|--------|-------|--------|--------|--------|--------|
|      | Freq     | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
|      | MHz      | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 pp | 5818.661 | 8.57  | 34.59  | 39.02  | 95.10 | 99.24  | 125.20 | -25.96 |        |
| 2    | 5850.000 | 8.60  | 34.61  | 39.01  | 44.90 | 49.10  | 122.20 | -73.10 |        |



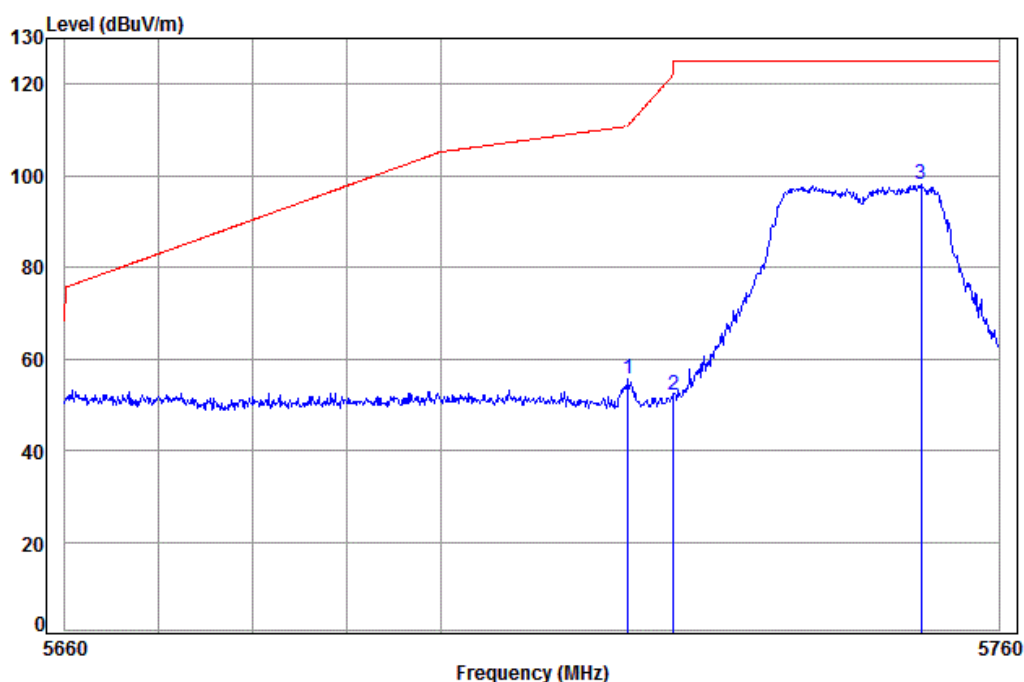
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode: : 5745 Band edge

|   |             | Cable | Ant    | Preamp | Read  | Limit  | Over   |        |
|---|-------------|-------|--------|--------|-------|--------|--------|--------|
|   | Freq        | Loss  | Factor | Factor | Level | Line   | Limit  | Remark |
|   | MHz         | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |
| 1 | 5725.000    | 8.48  | 34.54  | 39.03  | 43.13 | 47.12  | 122.20 | -75.08 |
| 2 | pp 5750.424 | 8.51  | 34.55  | 39.02  | 83.28 | 87.32  | 125.20 | -37.88 |

Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

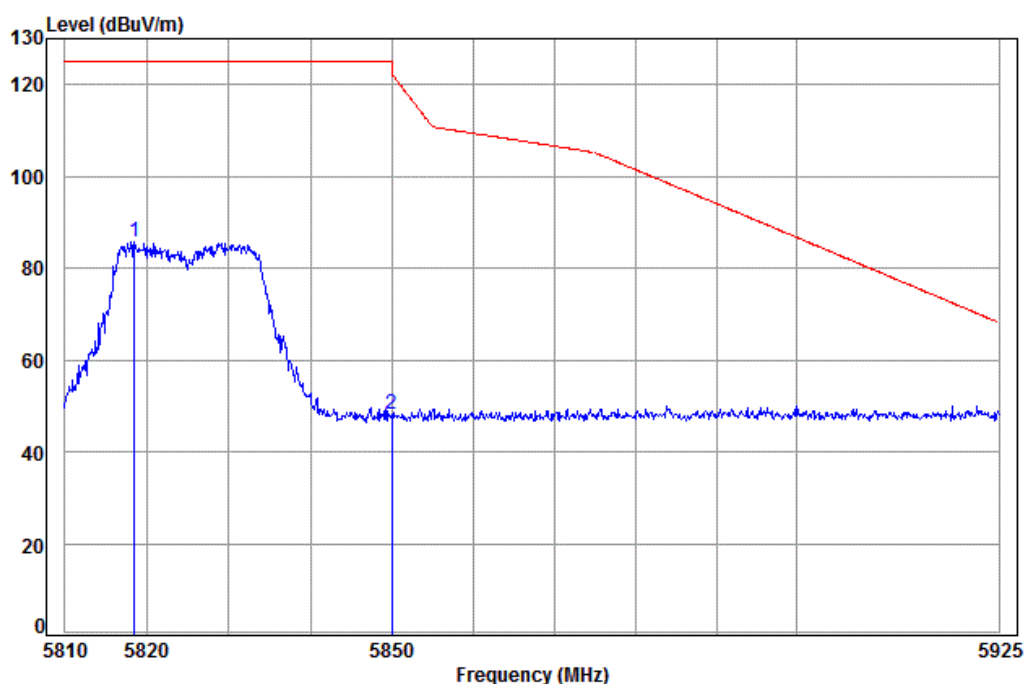
Job No : 10551CR/10552CR

Mode: : 5745 Band edge

|      |          | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| Freq |          | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
| MHz  |          | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1    | 5720.090 | 8.48  | 34.54  | 39.03  | 51.78 | 55.77  | 111.01 | -55.24 |        |
| 2    | 5725.000 | 8.48  | 34.54  | 39.03  | 48.02 | 52.01  | 122.20 | -70.19 |        |
| 3 pp | 5751.633 | 8.51  | 34.55  | 39.02  | 93.98 | 98.02  | 125.20 | -27.18 |        |



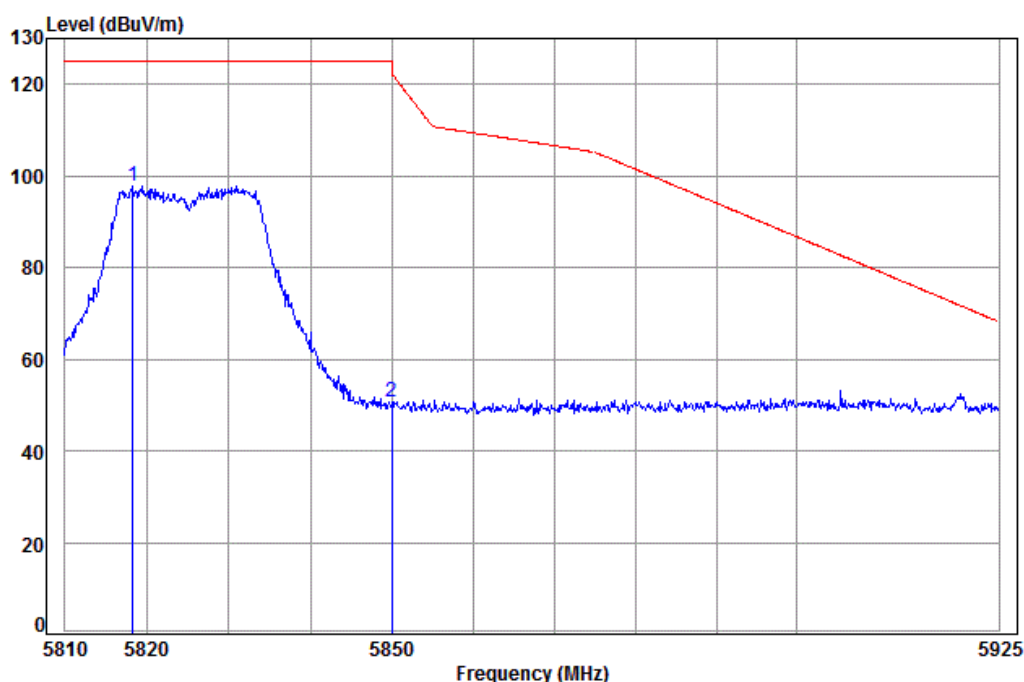
Mode:a; Polarization:Horizontal; Modulation:802.11n; bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL  
Job No : 10551CR/10552CR  
Mode: : 5825 Band edge

|      | Freq     | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level  | Limit Line | Over Limit | Remark |
|------|----------|------------|------------|---------------|------------|--------|------------|------------|--------|
|      | MHz      | dB         | dB/m       | dB            | dBuV       | dBuV/m | dBuV/m     | dB         |        |
| 1 pp | 5818.433 | 8.57       | 34.59      | 39.02         | 81.55      | 85.69  | 125.20     | -39.51     |        |
| 2    | 5850.000 | 8.60       | 34.61      | 39.01         | 43.81      | 48.01  | 122.20     | -74.19     |        |

Mode:a; Polarization:Vertical; Modulation:802.11n; bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No : 10551CR/10552CR

Mode: : 5825 Band edge

|      |          | Cable | Ant    | Preamp | Read  |        | Limit  | Over   |        |
|------|----------|-------|--------|--------|-------|--------|--------|--------|--------|
|      | Freq     | Loss  | Factor | Factor | Level | Level  | Line   | Limit  | Remark |
|      | MHz      | dB    | dB/m   | dB     | dBuV  | dBuV/m | dBuV/m | dB     |        |
| 1 pp | 5818.319 | 8.57  | 34.59  | 39.02  | 93.52 | 97.66  | 125.20 | -27.54 |        |
| 2    | 5850.000 | 8.60  | 34.61  | 39.01  | 46.41 | 50.61  | 122.20 | -71.59 |        |

## 7.7 Frequency Stability

|                  |                                                                                                                                                                                                                                                                                                         |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement | 47 CFR Part 15, Subpart C 15.407 (g)                                                                                                                                                                                                                                                                    |
| Test Method:     | ANSI C63.10 (2013) Section 6.8                                                                                                                                                                                                                                                                          |
| Limit:           | The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. |
| Conclusion:      | Pass.<br>The applicant declares that the emissions are maintained within the band of operation under all conditions of normal operation as specified in the user's manual.                                                                                                                              |





## 8 Photographs

### 8.1 Test Setup

Please refer to setup photos.

### 8.2 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.



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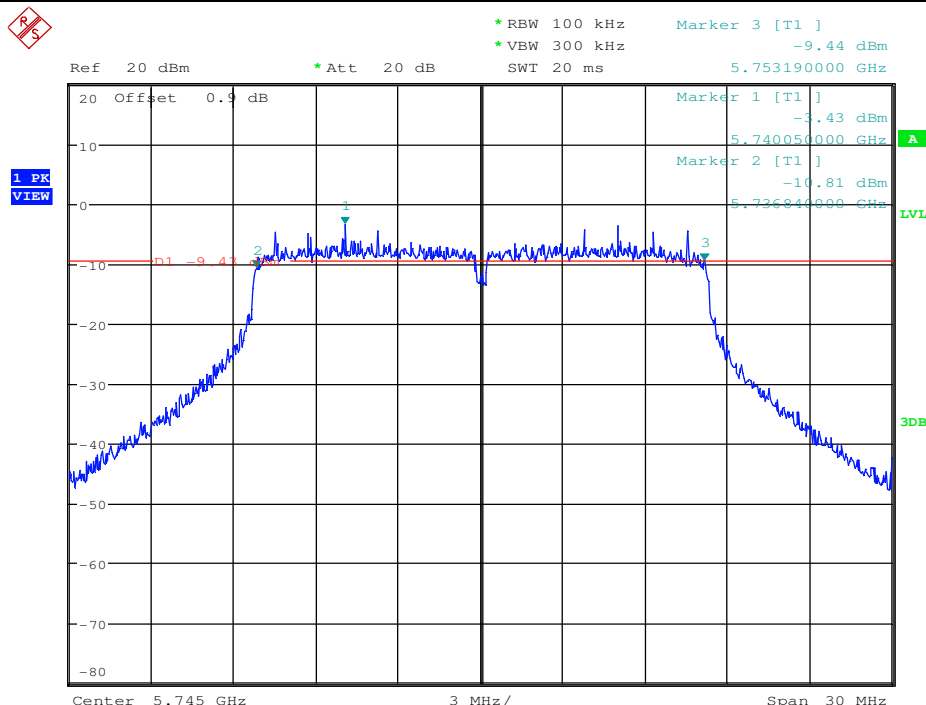
## 9 Appendix

### 9.1 Appendix 15.407

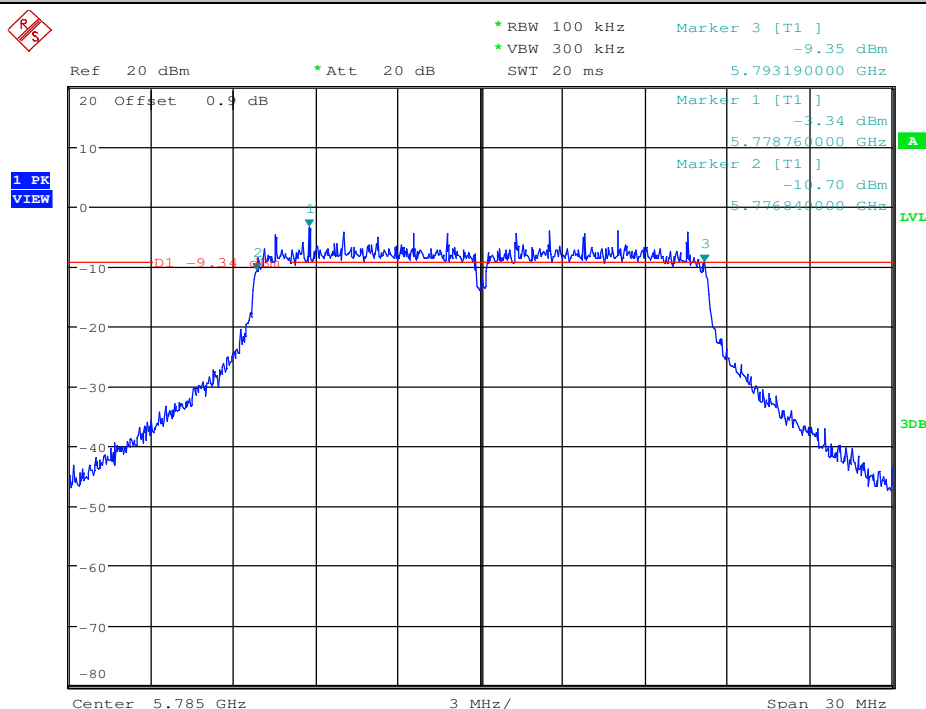
#### 1.Emission Bandwidth Measurement

| Test Mode | Test Channel | Ant  | EBW[MHz] | Limit[MHz] | Verdict |
|-----------|--------------|------|----------|------------|---------|
| 11A       | 5745         | Ant1 | 16.350   | $\geq 0.5$ | PASS    |
| 11A       | 5785         | Ant1 | 16.350   | $\geq 0.5$ | PASS    |
| 11A       | 5825         | Ant1 | 16.380   | $\geq 0.5$ | PASS    |
| 11N20     | 5745         | Ant1 | 17.130   | $\geq 0.5$ | PASS    |
| 11N20     | 5785         | Ant1 | 17.100   | $\geq 0.5$ | PASS    |
| 11N20     | 5825         | Ant1 | 17.340   | $\geq 0.5$ | PASS    |

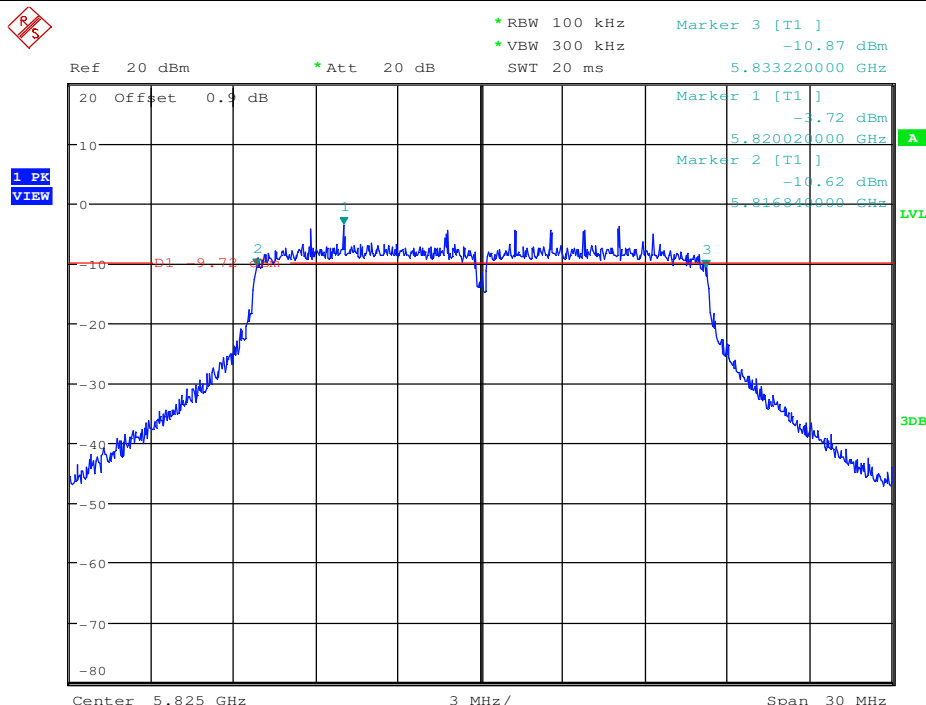
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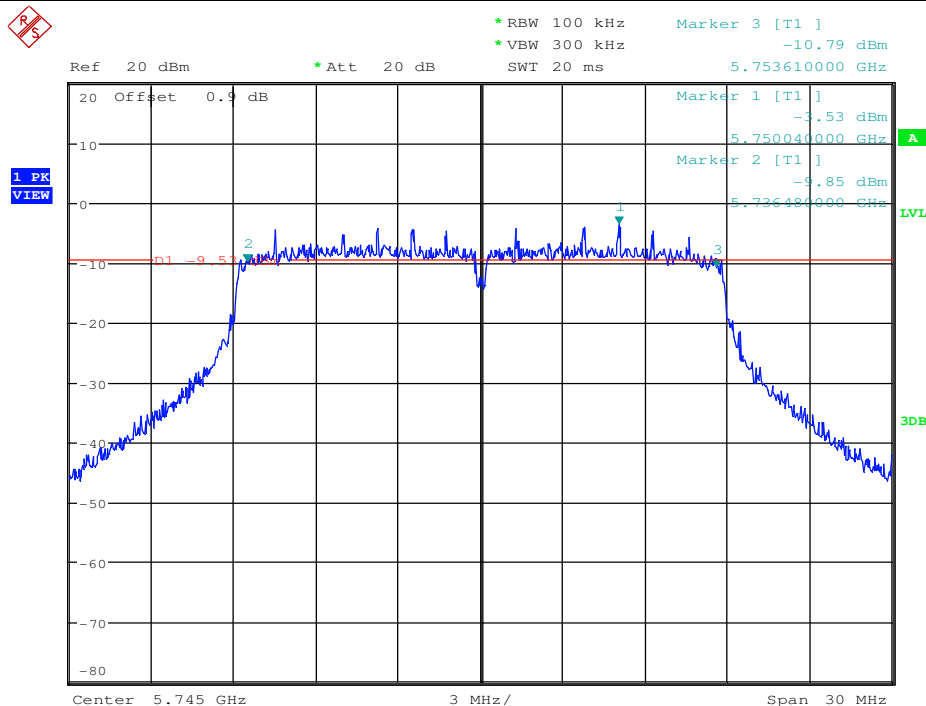
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### Emission Bandwidth Measurement\_11A\_5825\_Ant1



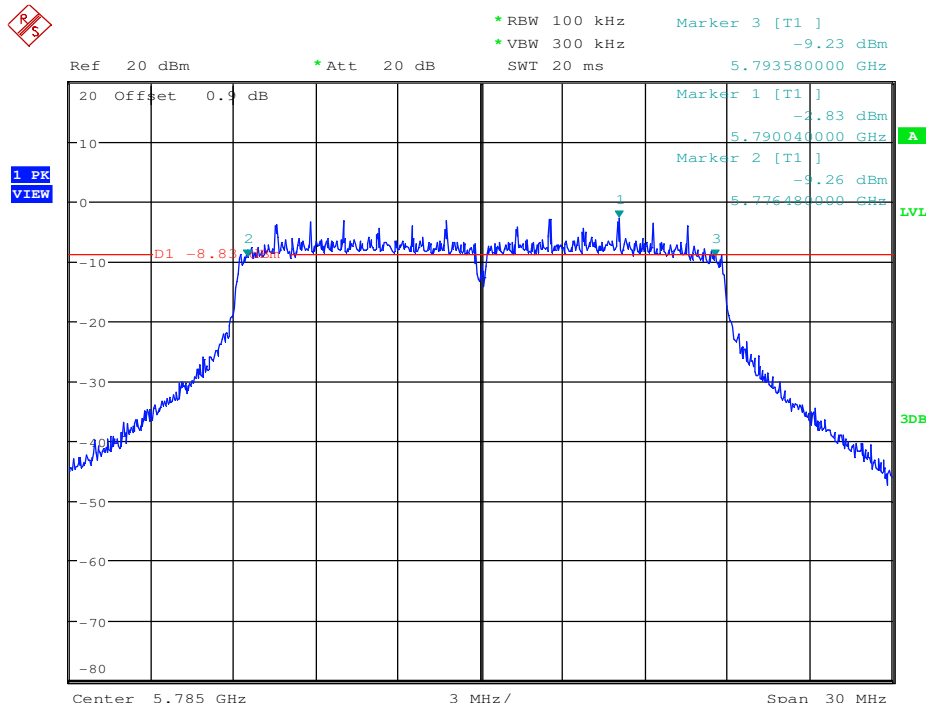
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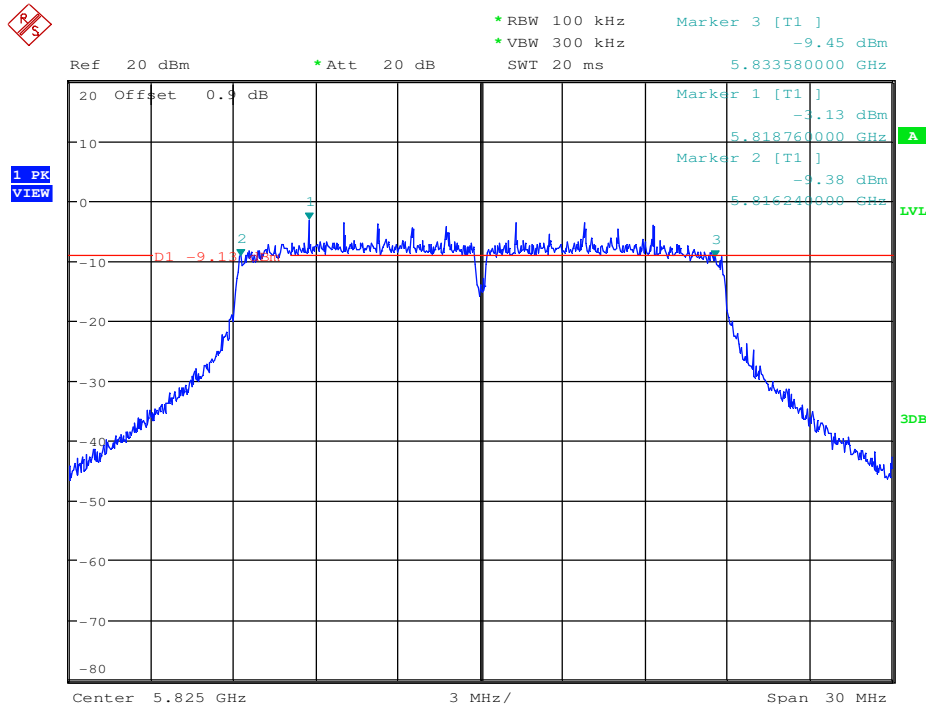
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### Emission Bandwidth Measurement\_11N20\_5785\_Ant1



### Emission Bandwidth Measurement\_11N20\_5825\_Ant1



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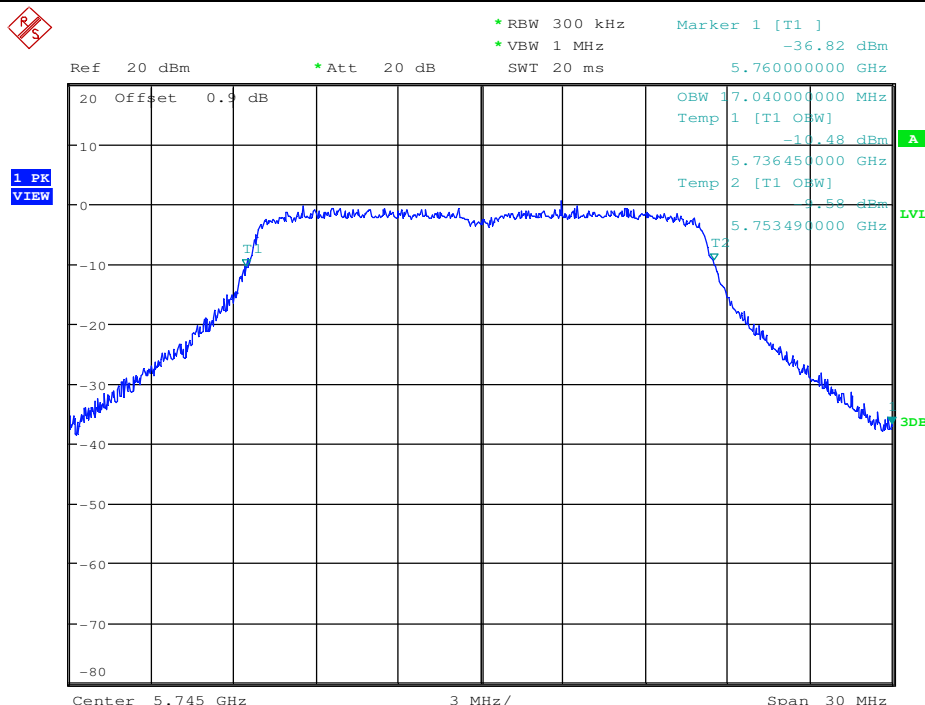
## 2.Occupied Bandwidth Measurement

| Test Mode | Test Channel | Ant  | OBW[MHz] | Limit[MHz] | Verdict |
|-----------|--------------|------|----------|------------|---------|
| 11A       | 5745         | Ant1 | 17.040   | ---        | PASS    |
| 11A       | 5785         | Ant1 | 17.010   | ---        | PASS    |
| 11A       | 5825         | Ant1 | 17.010   | ---        | PASS    |
| 11N20     | 5745         | Ant1 | 18.090   | ---        | PASS    |
| 11N20     | 5785         | Ant1 | 18.090   | ---        | PASS    |
| 11N20     | 5825         | Ant1 | 18.090   | ---        | PASS    |

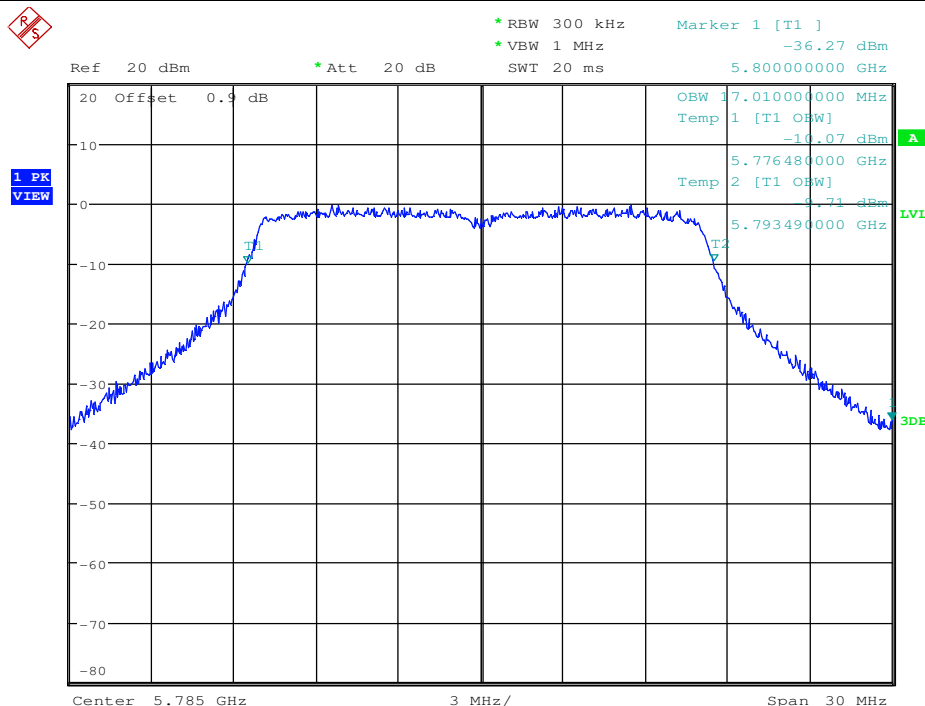


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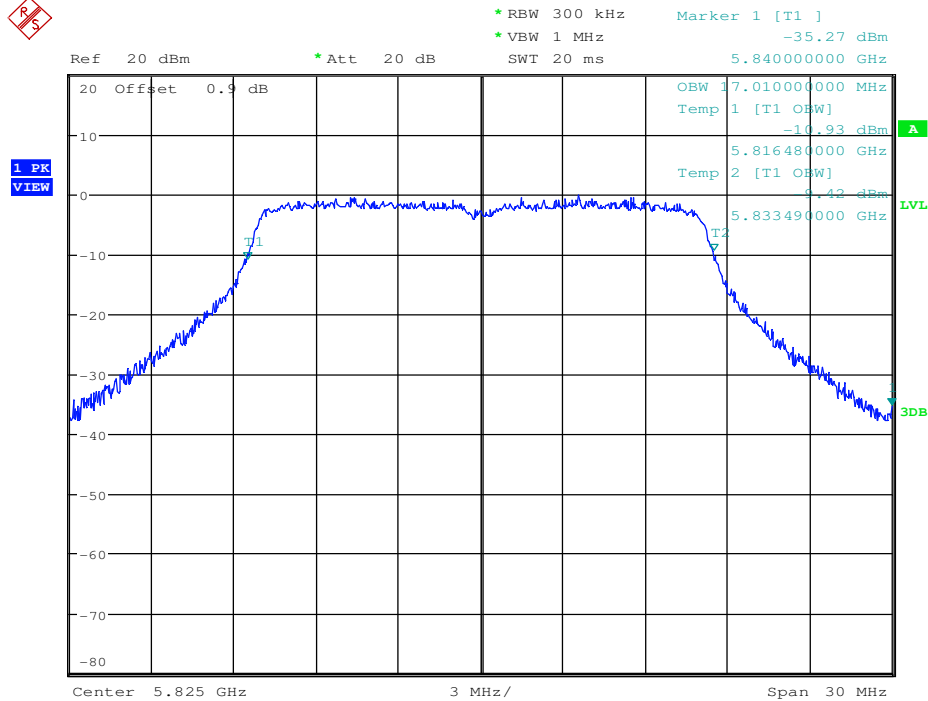
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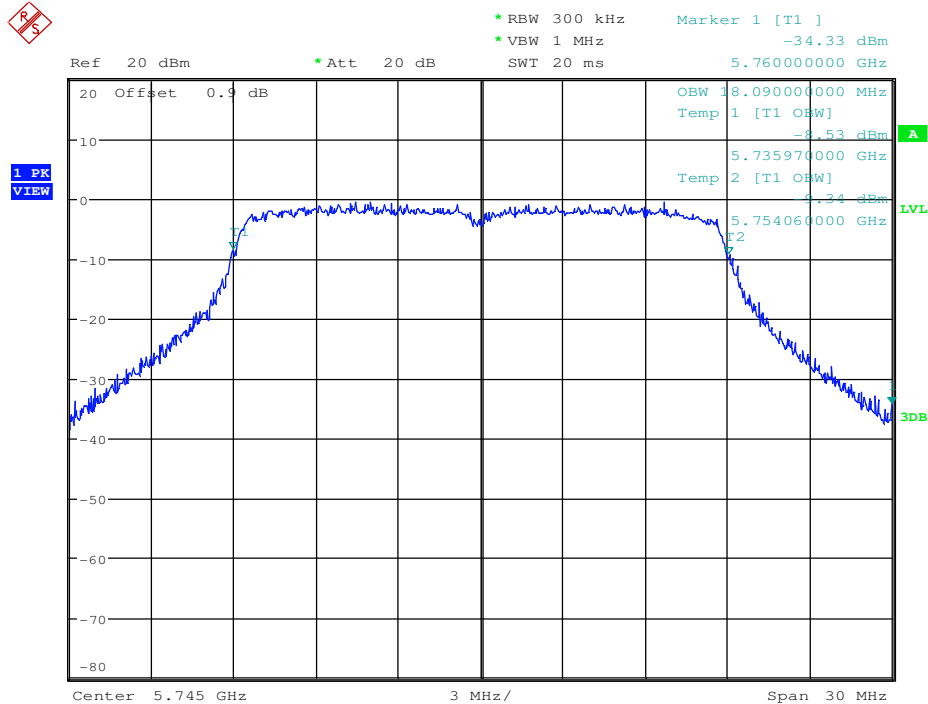
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### Occupied Bandwidth Measurement\_11A\_5825\_Ant1



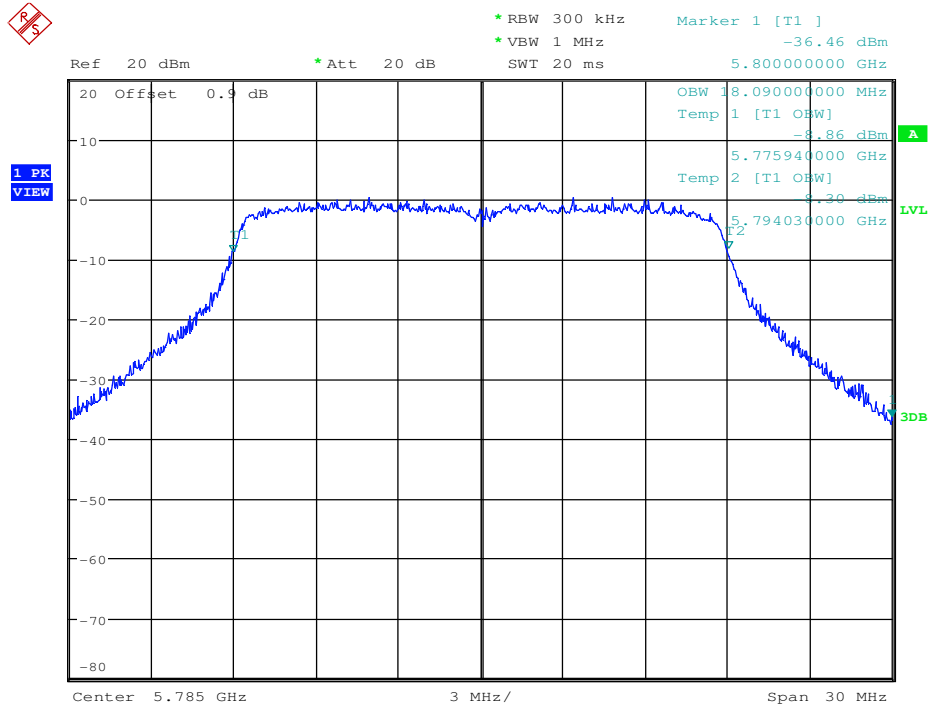
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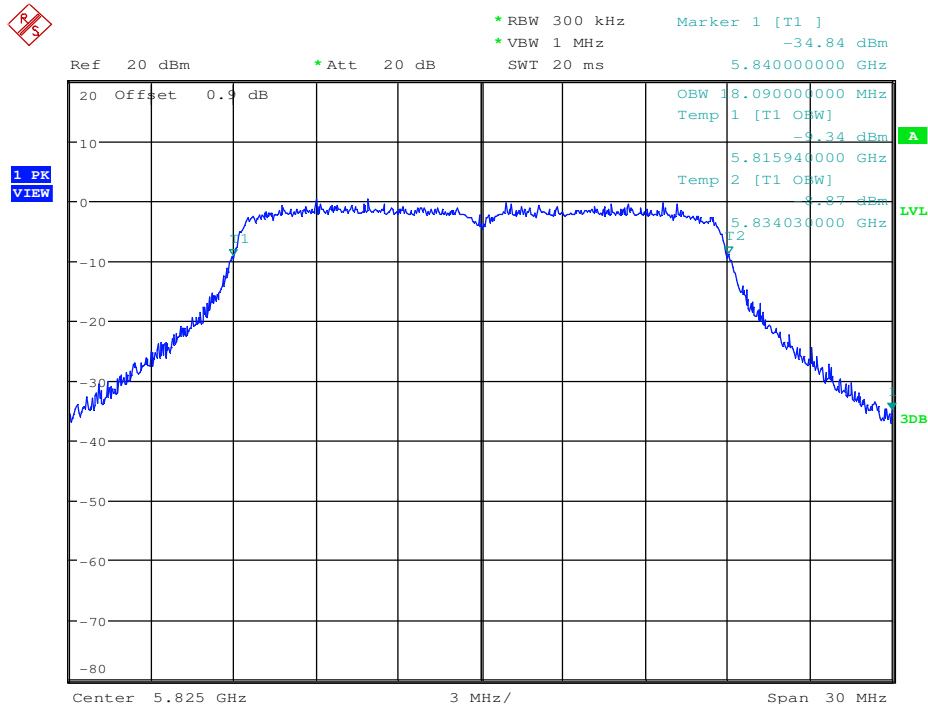
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### Occupied Bandwidth Measurement\_11N20\_5785\_Ant1



### Occupied Bandwidth Measurement\_11N20\_5825\_Ant1



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### 3.Maximum Conduct Output Power

| Test Mode | Test Channel | Ant  | Level [dBm] | 10log(1/x) Factor [dB] | Power [dBm] | Limit [dBm] | Verdict |
|-----------|--------------|------|-------------|------------------------|-------------|-------------|---------|
| 11A       | 5745         | Ant1 | 8.79        | 0.08                   | 8.87        | <30.00      | PASS    |
| 11A       | 5785         | Ant1 | 8.77        | 0.06                   | 8.83        | <30.00      | PASS    |
| 11A       | 5825         | Ant1 | 8.35        | 0.06                   | 8.41        | <30.00      | PASS    |
| 11N20     | 5745         | Ant1 | 8.6         | 0.07                   | 8.67        | <30.00      | PASS    |
| 11N20     | 5785         | Ant1 | 8.75        | 0.07                   | 8.82        | <30.00      | PASS    |
| 11N20     | 5825         | Ant1 | 8.4         | 0.09                   | 8.49        | <30.00      | PASS    |



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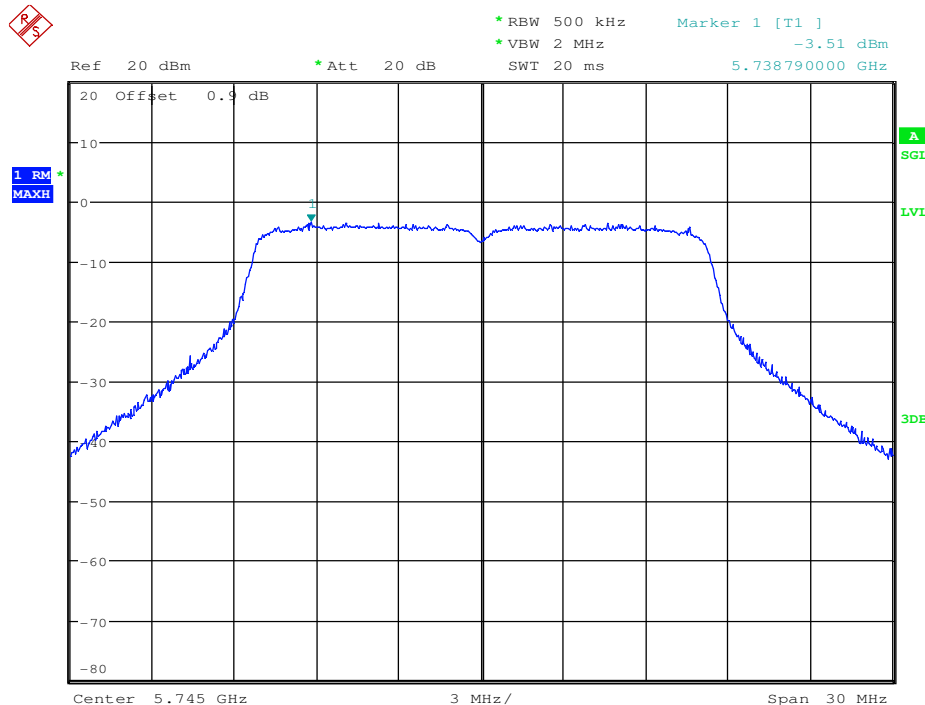


#### 4. Maximum Power Spectral Density

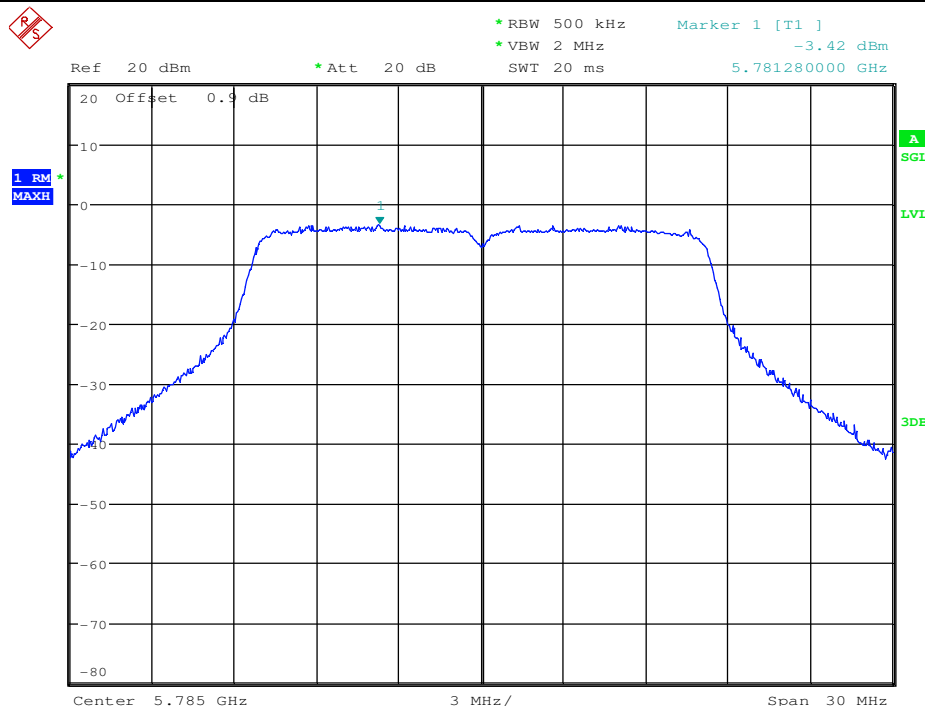
| Test Mode | Test Channel | Ant  | Level [dBm/500kHz] | 10log(1/x) Factor[dB] | 10log(500kHz/RBW) Factor [dB] | PSD [dBm/500kHz] | Limit [dBm/500kHz] | Verdict |
|-----------|--------------|------|--------------------|-----------------------|-------------------------------|------------------|--------------------|---------|
| 11A       | 5745         | Ant1 | -3.51              | 0.08                  | 0                             | -3.43            | <17.00             | PASS    |
| 11A       | 5785         | Ant1 | -3.42              | 0.06                  | 0                             | -3.36            | <17.00             | PASS    |
| 11A       | 5825         | Ant1 | -3.81              | 0.06                  | 0                             | -3.75            | <17.00             | PASS    |
| 11N20     | 5745         | Ant1 | -3.78              | 0.07                  | 0                             | -3.71            | <17.00             | PASS    |
| 11N20     | 5785         | Ant1 | -3.34              | 0.07                  | 0                             | -3.27            | <17.00             | PASS    |
| 11N20     | 5825         | Ant1 | -3.75              | 0.09                  | 0                             | -3.66            | <17.00             | PASS    |



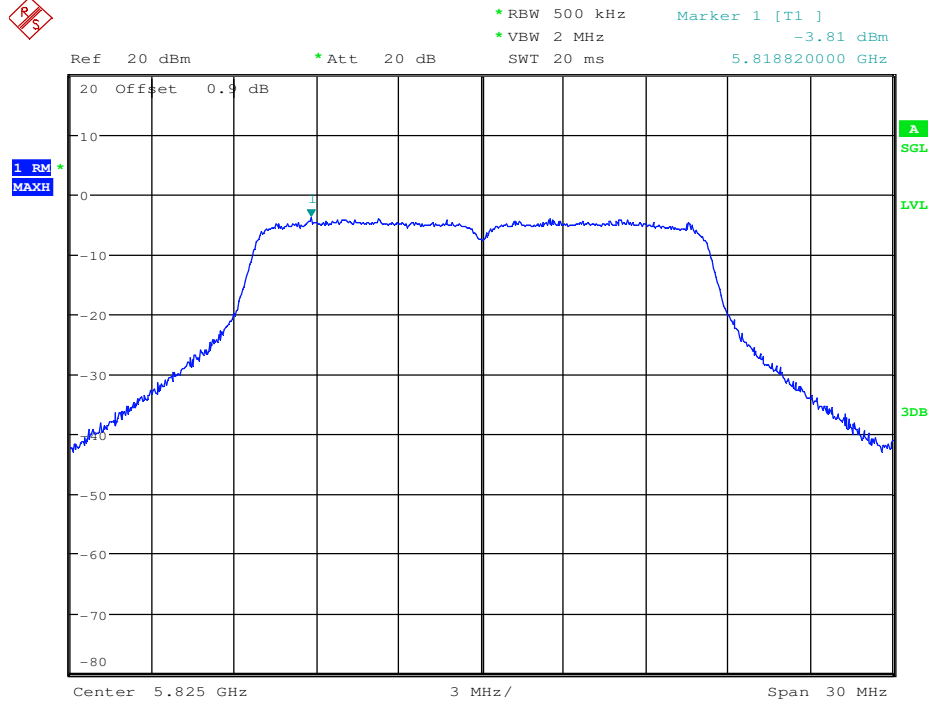
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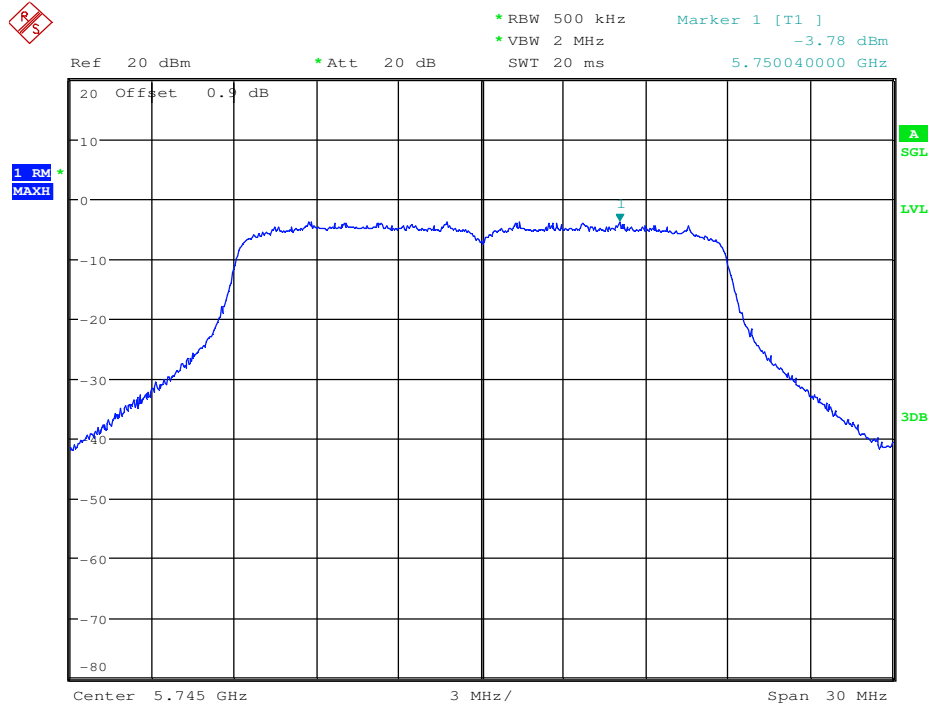
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### Maximum Power Spectral Density\_TNVN\_11A\_5825\_Ant1

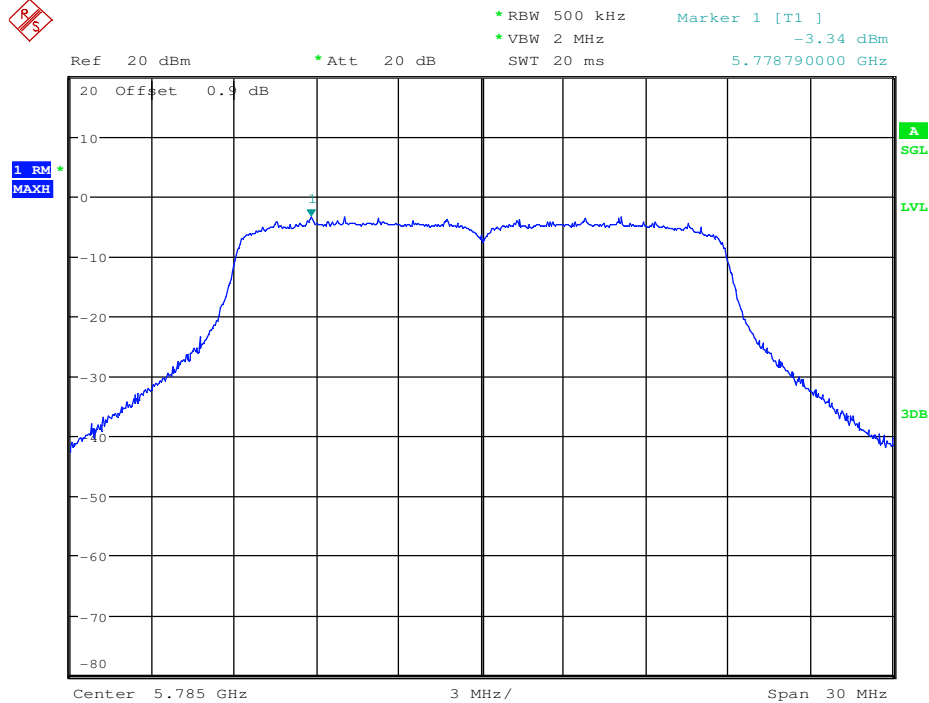


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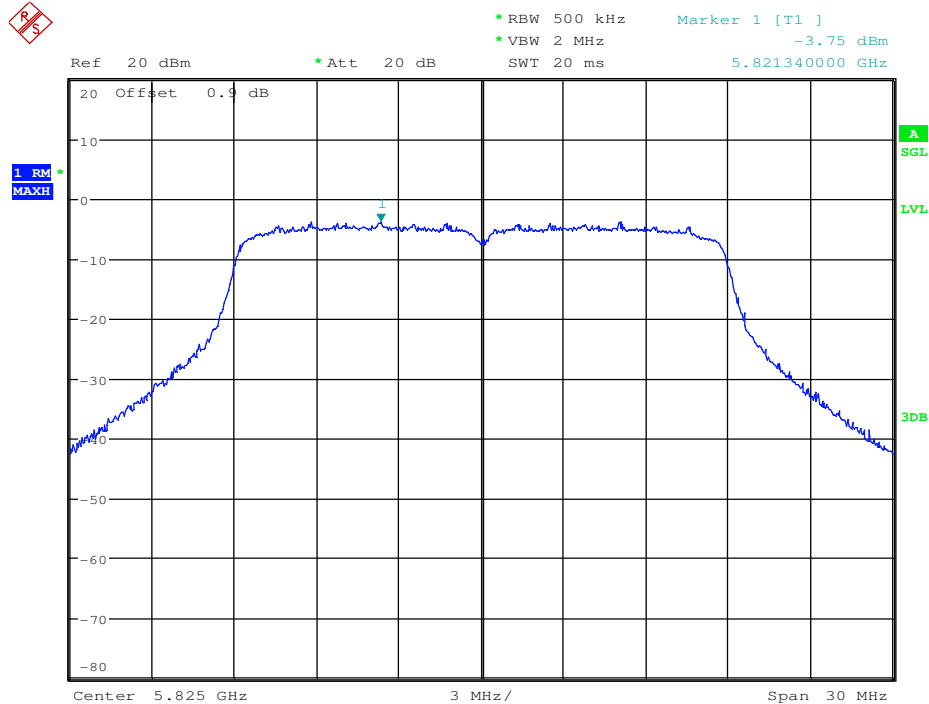


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### Maximum Power Spectral Density\_TNVN\_11N20\_5785\_Ant1



### Maximum Power Spectral Density\_TNVN\_11N20\_5825\_Ant1

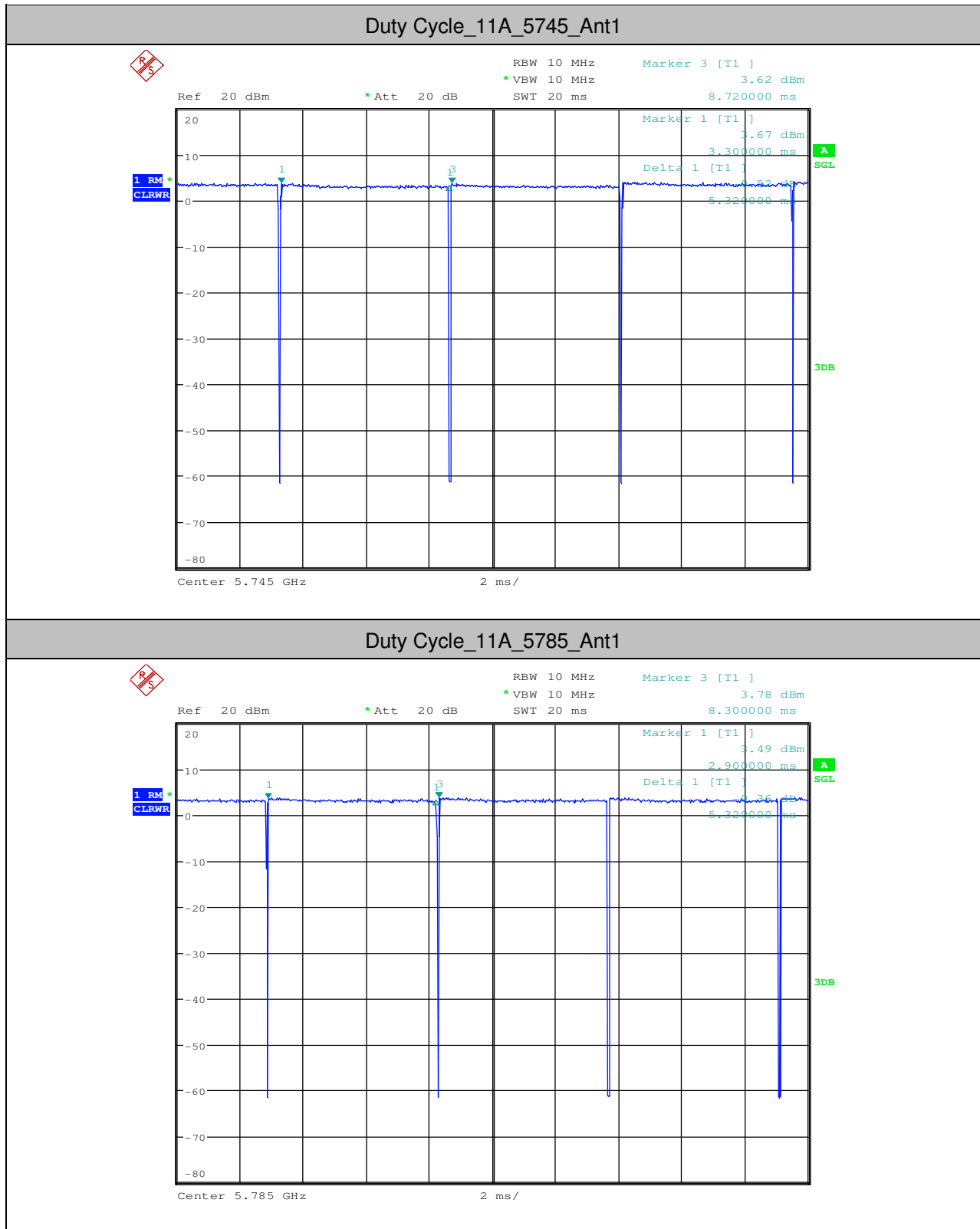




#### 5. Duty Cycle (x)

| Test Mode | Test Channel | Ant  | Duty Cycle[%] | 10log(1/x) Factor[dB] |
|-----------|--------------|------|---------------|-----------------------|
| 11A       | 5745         | Ant1 | 98.15         | 0.08                  |
| 11A       | 5785         | Ant1 | 98.52         | 0.06                  |
| 11A       | 5825         | Ant1 | 98.52         | 0.06                  |
| 11N20     | 5745         | Ant1 | 98.41         | 0.07                  |
| 11N20     | 5785         | Ant1 | 98.41         | 0.07                  |
| 11N20     | 5825         | Ant1 | 98.01         | 0.09                  |

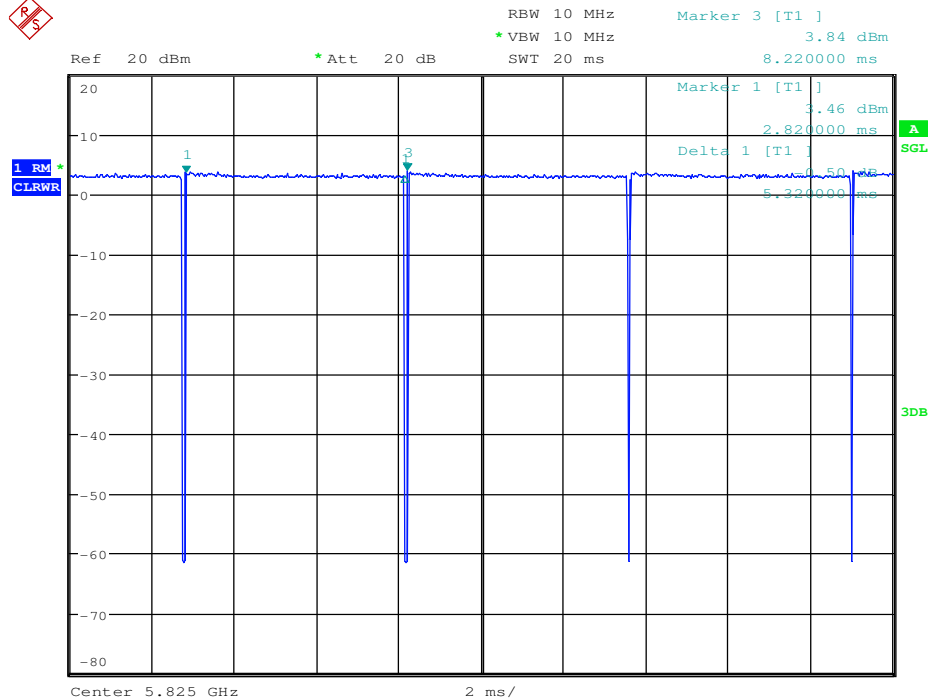




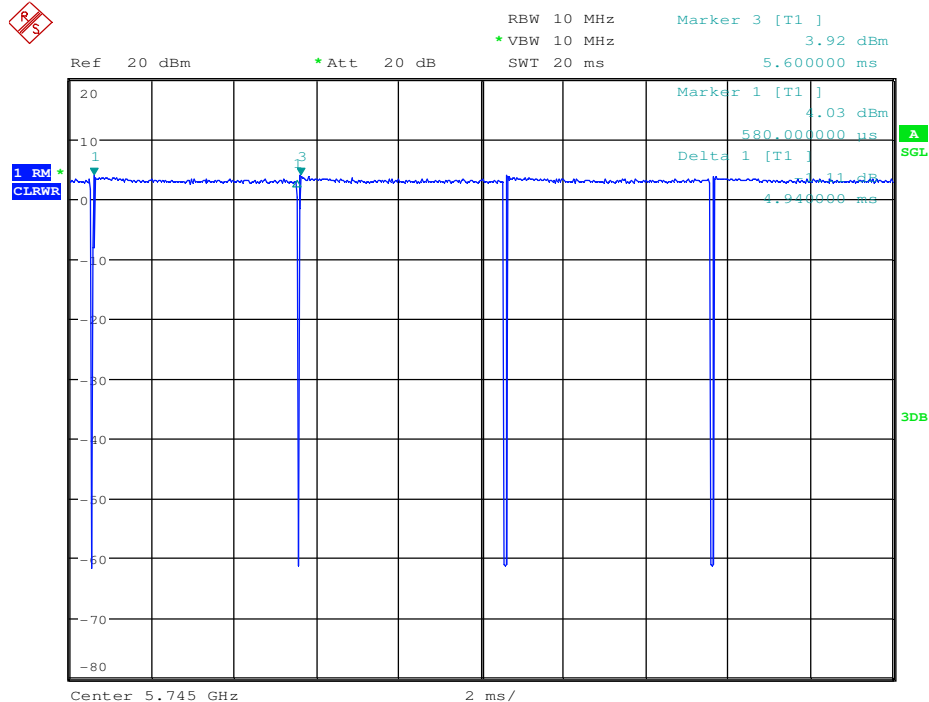
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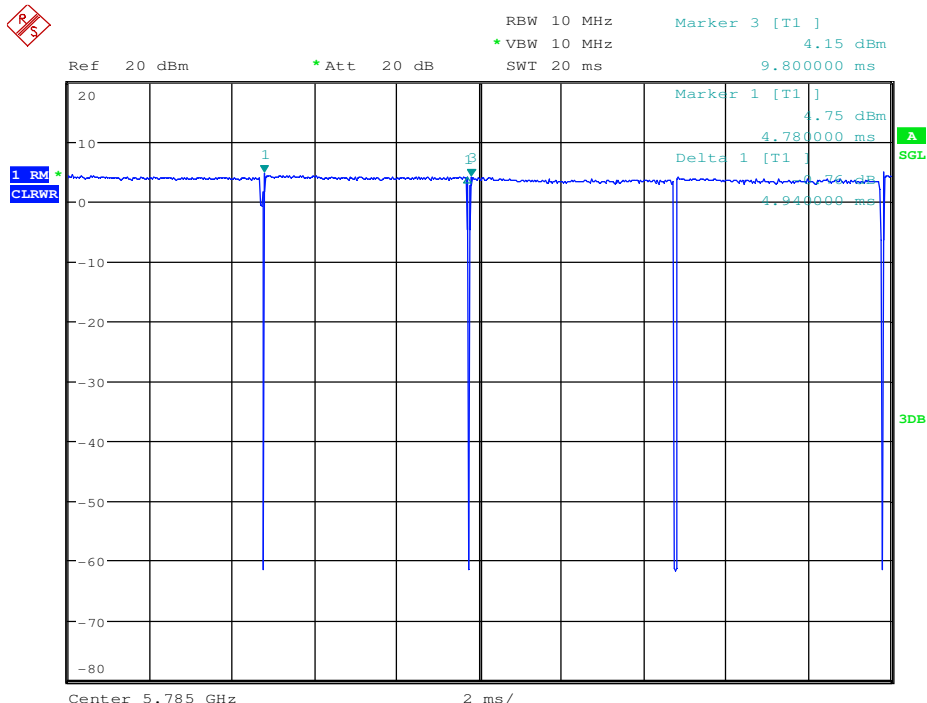
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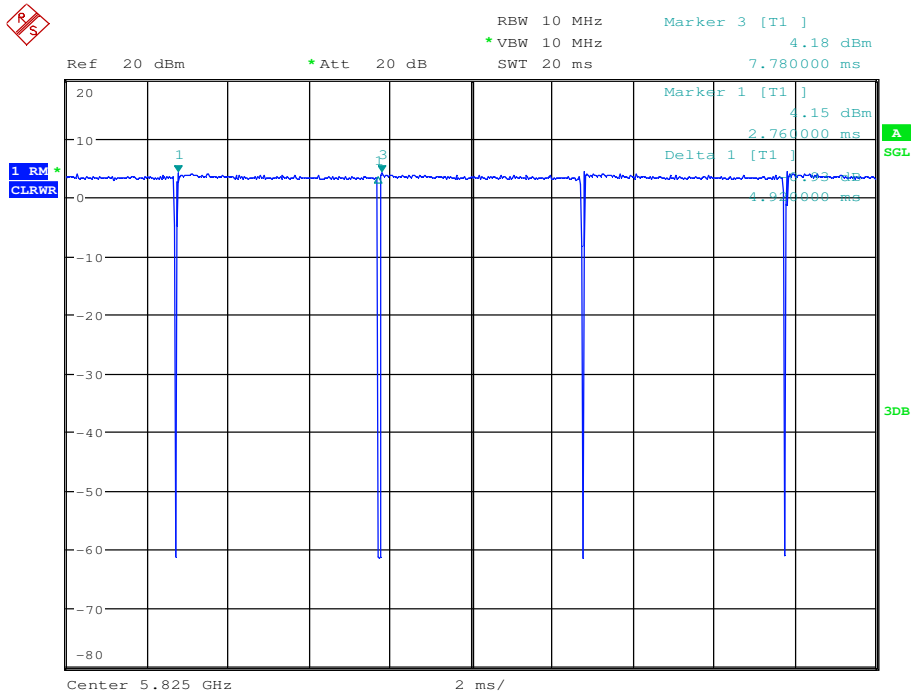
### Duty Cycle\_11N20\_5745\_Ant1



### Duty Cycle\_11N20\_5785\_Ant1



### Duty Cycle\_11N20\_5825\_Ant1



- End of the Report -



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