FCC RADIO TEST REPORT

Report No. : FR961308AB



# FCC RADIO TEST REPORT

| : | TE7P9                                                                                                                    |
|---|--------------------------------------------------------------------------------------------------------------------------|
|   | AC1200 + AV1000 Whole Home Powerline Mesh<br>Wi-Fi System                                                                |
|   | tp-link                                                                                                                  |
| • | Deco P9                                                                                                                  |
| : | TP-Link Technologies Co., Ltd.                                                                                           |
|   | Building 24 (floors 1,3,4,5) and 28 (floors1-4)<br>Central Science and Technology Park,Nanshan,<br>Shenzhen,China,518057 |
| : | TP-Link Technologies Co., Ltd.                                                                                           |
|   | Building 24 (floors 1,3,4,5) and 28 (floors1-4)<br>Central Science and Technology Park,Nanshan,<br>Shenzhen,China,518057 |
| : | 47 CFR FCC Part 15.407                                                                                                   |
|   |                                                                                                                          |

The product was received on Jun. 17, 2019, and testing was started from Jul. 19, 2019 and completed on Aug. 23, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cliff Charge

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-656-9065 FAX: 886-3-656-9085 Report Template No.: CB Ver1.0

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# History of this test report

| Report No. | Version | Description             | Issued Date   |
|------------|---------|-------------------------|---------------|
| FR961308AB | 01      | Initial issue of report | Sep. 09, 2019 |
|            |         |                         |               |
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|            |         |                         |               |



# Summary of Test Result

| Report<br>Clause | Ref Std.<br>Clause | Test Items                        | Result<br>(PASS/FAIL) | Remark |
|------------------|--------------------|-----------------------------------|-----------------------|--------|
| 1.1.2            | 15.203             | Antenna Requirement               | PASS                  | -      |
| 3.1              | 15.207             | AC Power-line Conducted Emissions | PASS                  | -      |
| 3.2              | 15.407(a)          | Emission Bandwidth                | PASS                  | -      |
| 3.3              | 15.407(a)          | Maximum Conducted Output Power    | PASS                  | -      |
| 3.4              | 15.407(a)          | Peak Power Spectral Density       | PASS                  | -      |
| 3.5              | 15.407(b)          | Unwanted Emissions                | PASS                  | -      |

### **Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

### **Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

### Reviewed by: Sam Chen

**Report Producer: Wendy Pan** 



# **1** General Description

# 1.1 Information

### 1.1.1 **RF General Information**

| Frequency Range (MHz) | IEEE Std. 802.11        | Ch. Frequency (MHz) | Channel Number |
|-----------------------|-------------------------|---------------------|----------------|
| 5150-5250             | a, n (HT20), ac (VHT20) | 5180-5240           | 36-48 [4]      |
| 5725-5850             |                         | 5745-5825           | 149-165 [5]    |
| 5150-5250             | n (HT40), ac (VHT40)    | 5190-5230           | 38-46 [2]      |
| 5725-5850             |                         | 5755-5795           | 151-159 [2]    |
| 5150-5250             | ac (VHT80)              | 5210                | 42 [1]         |
| 5725-5850             |                         | 5775                | 155 [1]        |

| Band          | Mode              | BWch (MHz) | Nant |
|---------------|-------------------|------------|------|
| 5.15-5.25GHz  | 802.11a           | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT20      | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT20-BF   | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT20    | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT20-BF | 20         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT40      | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11n HT40-BF   | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT40    | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT40-BF | 40         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT80    | 80         | 2TX  |
| 5.15-5.25GHz  | 802.11ac VHT80-BF | 80         | 2TX  |
| 5.725-5.85GHz | 802.11a           | 20         | 2TX  |
| 5.725-5.85GHz | 802.11n HT20      | 20         | 2TX  |
| 5.725-5.85GHz | 802.11n HT20-BF   | 20         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT20    | 20         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT20-BF | 20         | 2TX  |
| 5.725-5.85GHz | 802.11n HT40      | 40         | 2TX  |
| 5.725-5.85GHz | 802.11n HT40-BF   | 40         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT40    | 40         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT40-BF | 40         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT80    | 80         | 2TX  |
| 5.725-5.85GHz | 802.11ac VHT80-BF | 80         | 2TX  |

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Note:

- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 and VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

## 1.1.2 Antenna Information

| Ant. | Port   |      | Brand   | Model Name | Antonno Tuno | Connector | Gain   | (dBi) |
|------|--------|------|---------|------------|--------------|-----------|--------|-------|
| Ant. | 2.4GHz | 5GHz | Dranu   |            | Antenna Type | Connector | 2.4GHz | 5GHz  |
| 1    | 2      | 1    | tp-link | P9         | Monopole     | N/A       | 1.5    | 1     |
| 2    | 1      | 2    | tp-link | P9         | Monopole     | N/A       | 1.5    | 1     |

Note: The above information was declared by manufacturer.

### For 2.4GHz function:

### For IEEE 802.11b/g/n mode (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

### For IEEE 802.11a/n/ac mode (2TX/2RX):

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.



## 1.1.3 Mode Test Duty Cycle

| Mode              | DC    | DCF(dB) | T(s)           | VBW(Hz) ≥ 1/T  |
|-------------------|-------|---------|----------------|----------------|
| 802.11a           | 0.969 | 0.14    | 2.068m         | 1k             |
| 802.11ac VHT20    | 0.986 | 0.06    | n/a (DC>=0.98) | n/a (DC>=0.98) |
| 802.11ac VHT20-BF | 0.969 | 0.14    | 1.975m         | 1k             |
| 802.11ac VHT40    | 0.975 | 0.11    | 2.44m          | 1k             |
| 802.11ac VHT40-BF | 0.723 | 1.41    | 745u           | 3k             |
| 802.11ac VHT80    | 0.949 | 0.23    | 1.153m         | 1k             |
| 802.11ac VHT80-BF | 0.523 | 2.81    | 342.5u         | 3k             |

Note:

- DC is Duty Cycle.
- ٠ DCF is Duty Cycle Factor. ٠

### 1.1.4 EUT Operational Condition

| EUT Power Type                                               | Inte | Internal Power Supply                                                                       |           |                     |  |
|--------------------------------------------------------------|------|---------------------------------------------------------------------------------------------|-----------|---------------------|--|
| Beamforming Function 🛛 With beamforming for 802.11n/ac in 50 |      |                                                                                             |           | Without beamforming |  |
| Function                                                     |      | Outdoor P2M                                                                                 | $\square$ | Indoor P2M          |  |
| Function                                                     |      | Fixed P2P                                                                                   |           | Client              |  |
| Test Software Version                                        |      | For Non-Beamforming Mode: QCRT Verson3.0.187.0<br>For Beamforming Mode: Telnet and Lan Test |           |                     |  |

Note: The above information was declared by manufacturer.



# **1.2 Applicable Standards**

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 789033 D02 v02r01
- FCC KDB 662911 D01 v02r01
- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 D01 v01r01

# **1.3 Testing Location Information**

|             | Testing Location |     |   |                                                                            |  |  |  |  |
|-------------|------------------|-----|---|----------------------------------------------------------------------------|--|--|--|--|
|             | HWA YA           | ADD | : | No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)        |  |  |  |  |
|             |                  | TEL | : | 886-3-327-3456 FAX : 886-3-327-0973                                        |  |  |  |  |
| $\boxtimes$ | JHUBEI           | ADD | : | No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. |  |  |  |  |
|             |                  | TEL | : | 886-3-656-9065 FAX : 886-3-656-9085                                        |  |  |  |  |

| Test Condition | Test Site No. | Test Engineer | Test Environment     | Test Date                     |
|----------------|---------------|---------------|----------------------|-------------------------------|
| RF Conducted   | TH02-CB       | Owen Hsu      | 24.4~26.9°C / 63~65% | Jul. 20, 2019 ~ Aug. 16, 2019 |
| Radiated<1GHz  | 03CH05-CB     | Stim Sung     | 25.4~27.3°C / 62~66% | Jul. 19, 2019 ~ Aug. 19, 2019 |
| Radiated>1GHz  | 03CH06-CB     | Stim Sung     | 24.7~26.5°C / 64~68% | Jul. 19, 2019 ~ Aug. 19, 2019 |
| AC Conduction  | CO02-CB       | Peter Wu      | 23.5~24.7°C / 48~57% | Jul. 19, 2019 ~ Aug. 23, 2019 |

Test site Designation No. TW0006 with FCC

Test site registered number IC 4086B with Industry Canada.

# **1.4 Measurement Uncertainty**

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

| Test Items                           | Uncertainty | Remark                   |
|--------------------------------------|-------------|--------------------------|
| Conducted Emission (150kHz ~ 30MHz)  | 2.0 dB      | Confidence levels of 95% |
| Radiated Emission (30MHz ~ 1,000MHz) | 4.3 dB      | Confidence levels of 95% |
| Radiated Emission (1GHz ~ 18GHz)     | 4.3 dB      | Confidence levels of 95% |
| Radiated Emission (18GHz ~ 40GHz)    | 5.1 dB      | Confidence levels of 95% |
| Conducted Emission                   | 2.4 dB      | Confidence levels of 95% |
| Output Power Measurement             | 1.5 dB      | Confidence levels of 95% |
| Power Density Measurement            | 2.4 dB      | Confidence levels of 95% |
| Bandwidth Measurement                | 2%          | Confidence levels of 95% |



# 2 Test Configuration of EUT

# 2.1 Test Channel Mode

| Mode                              | PowerSetting |  |
|-----------------------------------|--------------|--|
| 802.11a_Nss1,(6Mbps)_2TX          | -            |  |
| 5180MHz                           | 22           |  |
| 5200MHz                           | 26           |  |
| 5240MHz                           | 26           |  |
| 5745MHz                           | 27.5         |  |
| 5785MHz                           | 27.5         |  |
| 5825MHz                           | 27.5         |  |
| 802.11ac VHT20_Nss1,(MCS0)_2TX    | -            |  |
| 5180MHz                           | 22.5         |  |
| 5200MHz                           | 26.5         |  |
| 5240MHz                           | 26.5         |  |
| 5745MHz                           | 27.5         |  |
| 5785MHz                           | 27.5         |  |
| 5825MHz                           | 27.5         |  |
| 802.11ac VHT40_Nss1,(MCS0)_2TX    | -            |  |
| 5190MHz                           | 20.5         |  |
| 5230MHz                           | 24           |  |
| 5755MHz                           | 27.5         |  |
| 5795MHz                           | 27.5         |  |
| 802.11ac VHT80_Nss1,(MCS0)_2TX    | -            |  |
| 5210MHz                           | 18.5         |  |
| 5775MHz                           | 22.5         |  |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | -            |  |
| 5180MHz                           | 24           |  |
| 5200MHz                           | 26           |  |
| 5240MHz                           | 26           |  |
| 5745MHz                           | 26           |  |
| 5785MHz                           | 26           |  |
| 5825MHz                           | 26           |  |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | -            |  |
| 5190MHz                           | 23           |  |
| 5230MHz                           | 26           |  |
| 5755MHz                           | 26           |  |
| 5795MHz                           | 26           |  |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | -            |  |
| 5210MHz                           | 21           |  |
|                                   |              |  |

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| Mode    | PowerSetting |
|---------|--------------|
| 5775MHz | 26           |

Note:

- VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.
- There are two modes of EUT for 802.11n/ac in 5GHz. One is beamforming mode, and the other is non-beamforming mode. Both modes have been tested and recorded in this test report.



# 2.2 The Worst Case Measurement Configuration

| The Worst Case Mode for Following Conformance Tests                |                                                      |  |  |
|--------------------------------------------------------------------|------------------------------------------------------|--|--|
| Tests Item                                                         | Tests Item         AC power-line conducted emissions |  |  |
| Condition AC power-line conducted measurement for line and neutral |                                                      |  |  |
| Operating Mode Normal Link                                         |                                                      |  |  |
| 1 EUT the PLC function with Idle mode (without data transmit)      |                                                      |  |  |

| The Worst Case Mode for Following Conformance Tests             |                                                                                     |  |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
| Tests Item                                                      | Emission Bandwidth<br>Maximum Conducted Output Power<br>Peak Power Spectral Density |  |
| Test Condition         Conducted measurement at transmit chains |                                                                                     |  |

| Th                                                                                                                                                                                                                                                             | The Worst Case Mode for Following Conformance Tests                           |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--|--|--|
| Tests Item                                                                                                                                                                                                                                                     | Unwanted Emissions                                                            |  |  |  |
| Test ConditionRadiated measurementIf EUT consist of multiple antenna assembly (multiple antenna are used in E<br>regardless of spatial multiplexing MIMO configuration), the radiated test sho<br>be performed with highest antenna gain of each antenna type. |                                                                               |  |  |  |
| Operating Mode < 1GHz CTX                                                                                                                                                                                                                                      |                                                                               |  |  |  |
| 1                                                                                                                                                                                                                                                              | EUT CTX – WLAN 2.4GHz                                                         |  |  |  |
| 2                                                                                                                                                                                                                                                              | EUT CTX – WLAN 5GHz                                                           |  |  |  |
| For operating mode 2 is th                                                                                                                                                                                                                                     | For operating mode 2 is the worst case and it was record in this test report. |  |  |  |
| Operating Mode > 1GHz                                                                                                                                                                                                                                          | CTX                                                                           |  |  |  |

| The Worst Case Mode for Following Conformance Tests                                   |  |  |  |
|---------------------------------------------------------------------------------------|--|--|--|
| Tests Item         Simultaneous Transmission Analysis - Radiated Emission Co-location |  |  |  |
| Test Condition Radiated measurement                                                   |  |  |  |
| Operating Mode Normal Link                                                            |  |  |  |
| 1 WLAN 2.4GHz + WLAN 5GHz                                                             |  |  |  |
| Refer to Appendix F for Radiated Emission Co-location.                                |  |  |  |

| The Worst Case Mode for Following Conformance Tests                                        |                           |  |  |
|--------------------------------------------------------------------------------------------|---------------------------|--|--|
| Tests Item         Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation |                           |  |  |
| Operating Mode                                                                             |                           |  |  |
| 1                                                                                          | 1 WLAN 2.4GHz + WLAN 5GHz |  |  |
| Refer to Sporton Test Report No.: FA961308 for Co-location RF Exposure Evaluation.         |                           |  |  |

Note: The EUT can only be used at Y axis.



# 2.3 EUT Operation during Test

For CTX Mode:

non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

### beamforming mode:

During the test, the following programs under WIN 7 were executed.

The program was executed as follows:

- 1. During the test, the EUT operation to normal function.
- 2. Executed command fixed test channel under Telnet.
- 3. Executed "Lantest.exe" to link with the remote workstation to transmit and receive packet by RX Device and transmit duty cycle no less than 98%.

### For Normal Link:

During the test, the EUT operation to normal function.

# 2.4 Accessories

| Accessories                                 |         |                |                   |  |
|---------------------------------------------|---------|----------------|-------------------|--|
| Equipment Name Brand Name Model Name Remark |         |                |                   |  |
| Power cable*1                               | I-SHENG | SP-12N+IS-033C | Non-shielded,1.5m |  |



# 2.5 Support Equipment

### For AC Conduction:

| Support Equipment |                                            |      |        |           |  |  |
|-------------------|--------------------------------------------|------|--------|-----------|--|--|
| No.               | No. Equipment Brand Name Model Name FCC ID |      |        |           |  |  |
| А                 | LAN NB                                     | DELL | E6430  | N/A       |  |  |
| В                 | AP Router                                  | ASUS | RP-N53 | MSQ-RPN53 |  |  |
| С                 | 2.4G NB                                    | DELL | E6430  | N/A       |  |  |
| D                 | 5G NB                                      | DELL | E6430  | N/A       |  |  |

### For Radiated (below 1GHz):

|     | Support Equipment                          |      |       |     |  |
|-----|--------------------------------------------|------|-------|-----|--|
| No. | No. Equipment Brand Name Model Name FCC ID |      |       |     |  |
| А   | Notebook                                   | DELL | E4300 | N/A |  |

### For Radiated (above 1GHz): For Non-beamforming mode:

| Support Equipment |                                            |  |  |  |  |  |  |
|-------------------|--------------------------------------------|--|--|--|--|--|--|
| No.               | No. Equipment Brand Name Model Name FCC ID |  |  |  |  |  |  |
| А                 | A Notebook DELL E4300 N/A                  |  |  |  |  |  |  |

### For Beamforming mode:

|     | Support Equipment |            |            |             |  |
|-----|-------------------|------------|------------|-------------|--|
| No. | Equipment         | Brand Name | Model Name | FCC ID      |  |
| А   | Notebook          | DELL       | E4300      | N/A         |  |
| В   | WLAN AP           | D-LINK     | DIR860L    | KA2IR860LA1 |  |
| С   | RX Device         | tp-link    | Deco P9    | TE7P9       |  |
| D   | Notebook          | DELL       | E4300      | N/A         |  |



### For RF Conducted :

### For Non-beamforming mode:

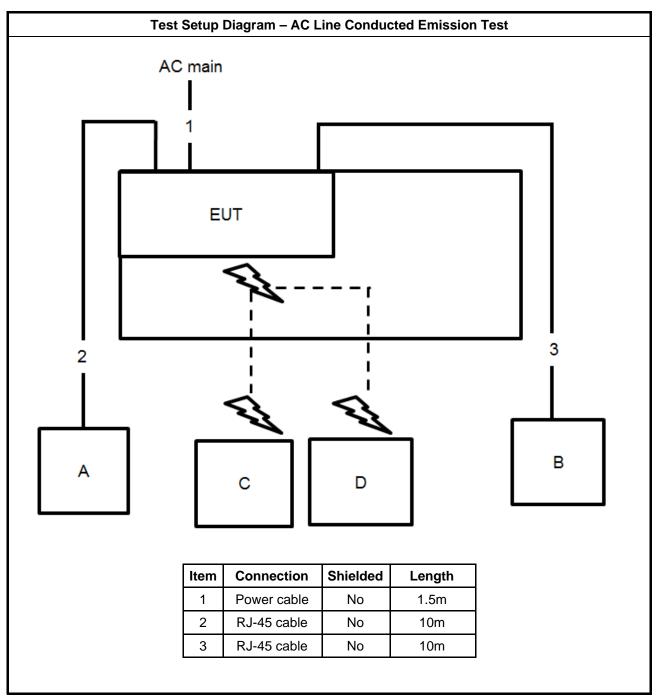
|     | Support Equipment                          |      |       |     |  |
|-----|--------------------------------------------|------|-------|-----|--|
| No. | No. Equipment Brand Name Model Name FCC ID |      |       |     |  |
| А   | Notebook                                   | DELL | E4300 | N/A |  |

### For Beamforming mode:

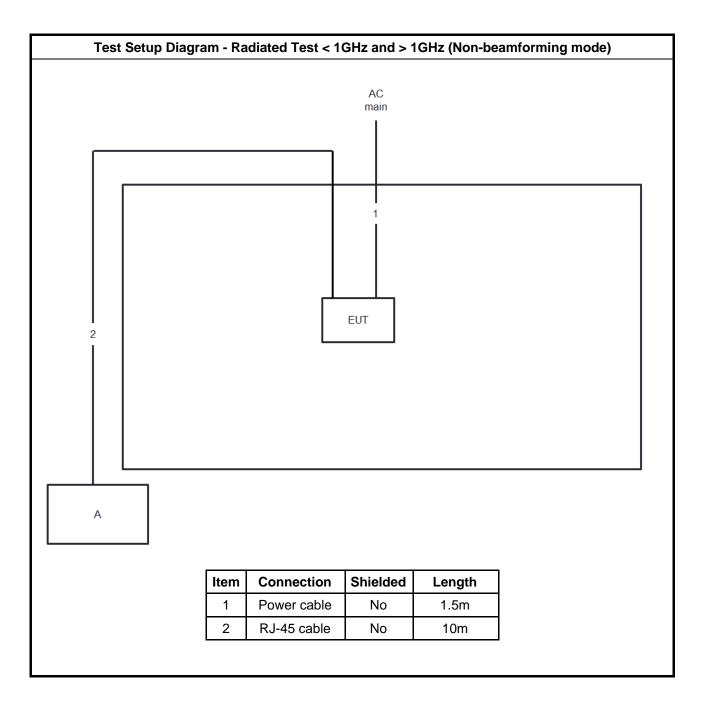
|     | Support Equipment |            |            |             |  |
|-----|-------------------|------------|------------|-------------|--|
| No. | Equipment         | Brand Name | Model Name | FCC ID      |  |
| А   | Notebook          | DELL       | E4300      | N/A         |  |
| В   | Notebook          | DELL       | E4300      | N/A         |  |
| С   | RX Device         | tp-link    | Deco P9    | TE7P9       |  |
| D   | WLAN AP           | D-LINK     | DIR860L    | KA2IR860LA1 |  |



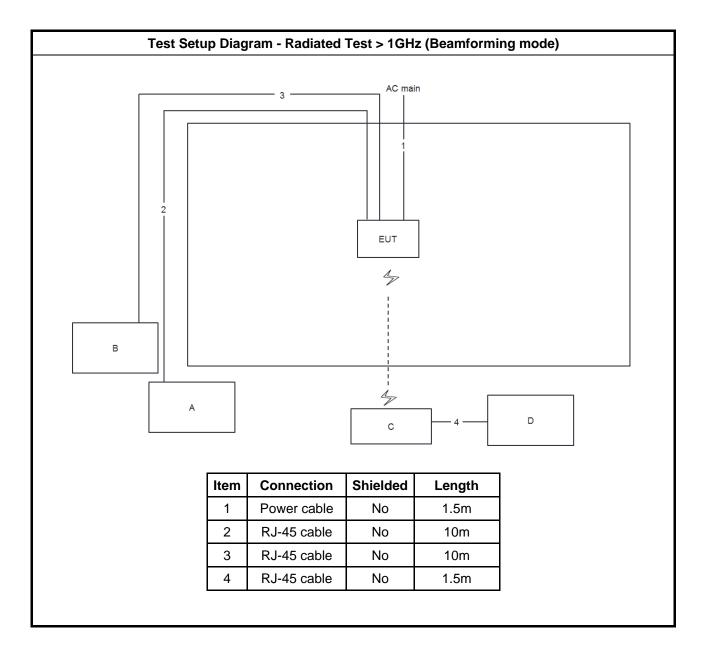
# 2.6 Test Setup Diagram













#### **Transmitter Test Result** 3

#### **AC Power-line Conducted Emissions** 3.1

#### **AC Power-line Conducted Emissions Limit** 3.1.1

| AC Power-line Conducted Emissions Limit                  |    |    |  |  |
|----------------------------------------------------------|----|----|--|--|
| Frequency Emission (MHz) Quasi-Peak Average              |    |    |  |  |
| 0.15-0.5 66 - 56 * 56 - 46 *                             |    |    |  |  |
| 0.5-5                                                    | 56 | 46 |  |  |
| 5-30 60 50                                               |    |    |  |  |
| Note 1: * Decreases with the logarithm of the frequency. |    |    |  |  |

### 3.1.2 Measuring Instruments

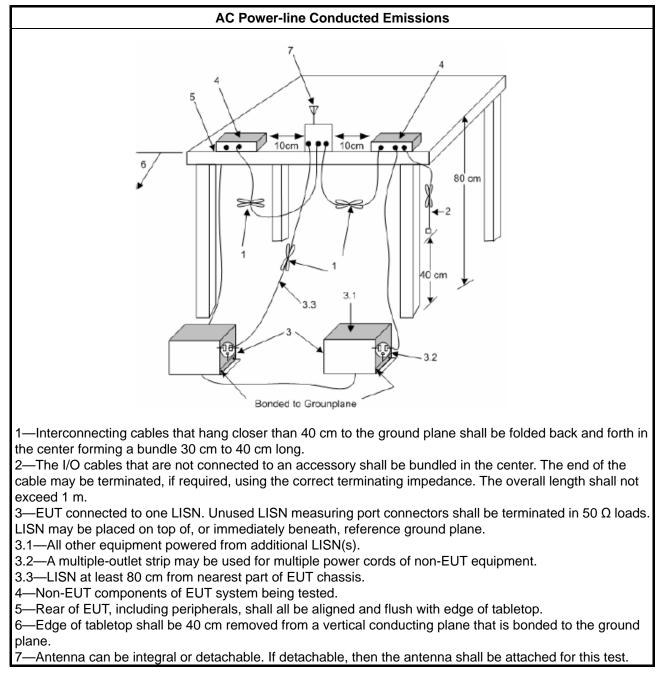
Refer a test equipment and calibration data table in this test report.

#### 3.1.3 **Test Procedures**

**Test Method** 

 $\boxtimes$ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A



# 3.2 Emission Bandwidth

### 3.2.1 Emission Bandwidth Limit

|             | Emission Bandwidth Limit                                                                                                                                                              |  |  |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| UNI         | I Devices                                                                                                                                                                             |  |  |
| $\boxtimes$ | For the 5.15-5.25 GHz band, N/A                                                                                                                                                       |  |  |
|             | For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.            |  |  |
|             | For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.           |  |  |
| $\boxtimes$ | For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.                                                                                                                   |  |  |
| LE-         | LAN Devices                                                                                                                                                                           |  |  |
|             | For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.                      |  |  |
|             | For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz                    |  |  |
|             | For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz |  |  |
|             | For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.                                                                                                                   |  |  |
|             | 2.2.2. Measuring Instruments                                                                                                                                                          |  |  |

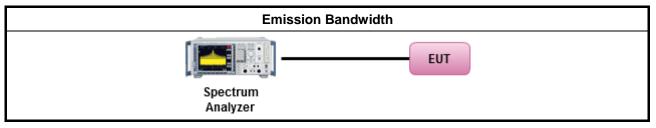
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

|   | Test Method                                                                  |                                                                             |  |
|---|------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--|
| - | For the emission bandwidth shall be measured using one of the options below: |                                                                             |  |
|   | $\boxtimes$                                                                  | Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement. |  |
|   | Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.           |                                                                             |  |
|   | Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.                       |                                                                             |  |
|   |                                                                              |                                                                             |  |

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

### Refer as Appendix B



# 3.3 Maximum Conducted Output Power

## 3.3.1 Maximum Conducted Output Power Limit

| <ul> <li>&gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> <li>Indoor AP: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6)</li> <li>Point-to-point AP: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W If G<sub>TX</sub> &gt; 23 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 23).</li> <li>Mobile or Portable Client: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.25-5.35 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.725-5.85 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     | Maximum Conducted Output Power Limit                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul> <li>Outdoor AP: the maximum conducted output power (P<sub>oul</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> <li>Indoor AP: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point AP: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W If G<sub>TX</sub> &gt; 23 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 23).</li> <li>Mobile or Portable Client: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.25-5.35 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.25 GHz band.</li> <li>Point-to-point systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): t</li></ul> | UNII                                | Devices                                                                                                                                                                                                                                                                   |
| <ul> <li>&gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6). e.ir.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> <li>Indoor AP: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6)</li> <li>Point-to-point AP: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W If G<sub>TX</sub> &gt; 23 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 23).</li> <li>Mobile or Portable Client: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.25-5.35 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.725-5.85 GHz band.</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-multipoint systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W.</li> <li>EL-LAN Devices</li> <li>For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.47-5.6 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.47-5.5.85 GHz band.</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission ba</li></ul>                                                                                                                              | $\square$                           | For the 5.15-5.25 GHz band:                                                                                                                                                                                                                                               |
| 6 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 6)         • Point-to-point AP: the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W If G <sub>TX</sub> > 23 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 23).         • Mobile or Portable Client: the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW. If G <sub>TX</sub> > 6 dBi, then P <sub>out</sub> = 24 - (G <sub>TX</sub> - 6).         □ For the 5.25-5.35 GHz band, the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         □ For the 5.47-5.725 GHz band, the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         □ For the 5.47-5.725 GHz band, the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         □ For the 5.47-5.5.85 GHz band:       • Point-to-multipoint systems (P2M): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 6).         • Point-to-point systems (P2P): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W. <b>LE-LAN Devices</b> □ For the 5.47-5.6 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.         □ For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm,                                                                                                                                                                                                                                                                                                                                                                                                    |                                     | <ul> <li>Outdoor AP: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> </ul> |
| If G <sub>TX</sub> > 23 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 23).         • Mobile or Portable Client: the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         □ For the 5.25-5.35 GHz band, the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         □ For the 5.47-5.725 GHz band, the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         ○ For the 5.47-5.725 GHz band;       For the 5.47-5.725 GHz band;         ■ Point-to-multipoint systems (P2M): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 24 - (G <sub>TX</sub> - 6).         ○ For the 5.47-5.5.35 GHz band:       • Point-to-multipoint systems (P2M): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 6).         • Point-to-point systems (P2P): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W.         LE-LAN Devices         □ For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.         □ For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                                                                                                                                                                                                                                                           |
| <ul> <li>of 250 mW. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 – (G<sub>TX</sub> − 6).</li> <li>For the 5.25-5.35 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 – (G<sub>TX</sub> − 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 – (G<sub>TX</sub> − 6).</li> <li>For the 5.725-5.85 GHz band.</li> <li>For the 5.725-5.85 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 – (G<sub>TX</sub> − 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>LE-LAN Devices</li> <li>For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.47-5.6 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.47-5.6 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 – (G<sub>TX</sub> − 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall</li></ul>                                                                                                                                                                                              |                                     |                                                                                                                                                                                                                                                                           |
| 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then<br>$P_{Out} = 24 - (G_{TX} - 6)$ .<br>For the 5.47-5.725 GHz band, the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser<br>of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then<br>$P_{Out} = 24 - (G_{TX} - 6)$ .<br>For the 5.725-5.85 GHz band:<br>Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed<br>the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .<br>Point-to-point systems (P2P): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the<br>lesser of 1 W.<br><b>LE-LAN Devices</b><br>For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm,<br>whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm,<br>whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or<br>17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.725-5.85 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or<br>17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.725-5.85 GHz band:<br>Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed<br>the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .<br>Point-to-point systems (P2P): the maximum conducted output power ( $P_{Out}$ ) shall not exceed<br>the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .<br>Point-to-point systems (P2P): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the<br>lesser of 1 W.                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                                                                                                                                                                                                                                                           |
| of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$ .<br>For the 5.725-5.85 GHz band:<br>Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .<br>Point-to-point systems (P2P): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W.<br><b>LE-LAN Devices</b><br>For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.<br>For the 5.725-5.85 GHz band:<br>Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{out} = 30 - (G_{TX} - 6)$ .<br>Point-to-point systems (P2P): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{out} = 30 - (G_{TX} - 6)$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     | 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX}$ > 6 dBi, then                                                                                                                                                                    |
| <ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>LE-LAN Devices         <ul> <li>For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.725-5.85 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> </ul> </li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                     | of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then                                                                                                                                                                 |
| the lesser of 1 W. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 6).         • Point-to-point systems (P2P): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W.         LE-LAN Devices         □       For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.         □       For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz         □       For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz         □       For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz         □       For the 5.725-5.85 GHz band:         • Point-to-multipoint systems (P2M): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 6).         • Point-to-point systems (P2P): the maximum conducted output power (P <sub>Out</sub> ) shall not exceed the lesser of 1 W.         Pout = maximum conducted output power in dBm,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | $\square$                           | For the 5.725-5.85 GHz band:                                                                                                                                                                                                                                              |
| Image: Image                                                                                                                                                                                                                                                                                                                                                                                                |                                     | • Point-to-multipoint systems (P2M): the maximum conducted output power ( $P_{Out}$ ) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ .                                                                                       |
| For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.         For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz         For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz         For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz         For the 5.725-5.85 GHz band:         • Point-to-multipoint systems (P2M): the maximum conducted output power (P <sub>out</sub> ) shall not exceed the lesser of 1 W. If G <sub>TX</sub> > 6 dBi, then P <sub>Out</sub> = 30 - (G <sub>TX</sub> - 6).         • Point-to-point systems (P2P): the maximum conducted output power (P <sub>out</sub> ) shall not exceed the lesser of 1 W.         Pout = maximum conducted output power in dBm,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                                                                                                                                                                                                                                                                           |
| <ul> <li>whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.725-5.85 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | LE-L                                | AN Devices                                                                                                                                                                                                                                                                |
| <ul> <li>whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.725-5.85 GHz band: <ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                     |                                                                                                                                                                                                                                                                           |
| <ul> <li>17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.725-5.85 GHz band:         <ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> </ul> </li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                     |                                                                                                                                                                                                                                                                           |
| <ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>Pout = maximum conducted output power in dBm,</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                     |                                                                                                                                                                                                                                                                           |
| <ul> <li>the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>P<sub>Out</sub> = maximum conducted output power in dBm,</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                     | For the 5.725-5.85 GHz band:                                                                                                                                                                                                                                              |
| lesser of 1 W.       Pout = maximum conducted output power in dBm,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |                                                                                                                                                                                                                                                                           |
| $P_{out}$ = maximum conducted output power in dBm,<br>$G_{TX}$ = the maximum transmitting antenna directional gain in dBi.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | P <sub>Out</sub><br>G <sub>TX</sub> | = maximum conducted output power in dBm,<br>= the maximum transmitting antenna directional gain in dBi.                                                                                                                                                                   |



# 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

|   | Test Method                                                                                                                                                                                                                                                                                                                                      |  |  |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| • | Maximum Conducted Output Power                                                                                                                                                                                                                                                                                                                   |  |  |
|   | Average over on/off periods with duty factor                                                                                                                                                                                                                                                                                                     |  |  |
|   | Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).                                                                                                                                                                                                                                                                        |  |  |
|   | Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)                                                                                                                                                                                                                                                         |  |  |
|   | Wideband RF power meter and average over on/off periods with duty factor                                                                                                                                                                                                                                                                         |  |  |
|   | Refer as FCC KDB 789033, clause E Method PM-G (using an RF average power meter).                                                                                                                                                                                                                                                                 |  |  |
| • | For conducted measurement.                                                                                                                                                                                                                                                                                                                       |  |  |
|   | <ul> <li>If the EUT supports multiple transmit chains using options given below:<br/>Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum<br/>approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW)<br/>of all ports for each individual sample and save them.</li> </ul> |  |  |
|   | <ul> <li>If multiple transmit chains, EIRP calculation could be following as methods:<br/>P<sub>total</sub> = P<sub>1</sub> + P<sub>2</sub> + + P<sub>n</sub><br/>(calculated in linear unit [mW] and transfer to log unit [dBm])<br/>EIRP<sub>total</sub> = P<sub>total</sub> + DG     </li> </ul>                                              |  |  |

### 3.3.4 Test Setup

| RF Output Power (Power Meter) |     |  |
|-------------------------------|-----|--|
| Power Meter                   | EUT |  |

### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



# 3.4 Peak Power Spectral Density

## 3.4.1 Peak Power Spectral Density Limit

|             | Peak Power Spectral Density Limit                                                                                                                                                                                                                                                                                                                                                 |  |  |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| UNI         | I Devices                                                                                                                                                                                                                                                                                                                                                                         |  |  |
| $\boxtimes$ | For the 5.15-5.25 GHz band:                                                                                                                                                                                                                                                                                                                                                       |  |  |
|             | • Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .                                                                                                                                                                                                                          |  |  |
|             | • Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .                                                                                                                                                                                                                           |  |  |
|             | • Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$ .                                                                                                                                                                                                                 |  |  |
|             | <ul> <li>Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G<sub>TX</sub> &gt; 6 dBi, then PPSD= 11 - (G<sub>TX</sub> - 6)</li> </ul>                                                                                                                                                                                                            |  |  |
|             | For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz. If G <sub>TX</sub> > 6 dBi, then PPSD= 11 – (G <sub>TX</sub> – 6).                                                                                                                                                                                                                          |  |  |
|             | For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz. If G <sub>TX</sub> > 6 dBi, then PPSD= 11 - (G <sub>TX</sub> - 6).                                                                                                                                                                                                                         |  |  |
| $\boxtimes$ | For the 5.725-5.85 GHz band:                                                                                                                                                                                                                                                                                                                                                      |  |  |
|             | • Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq$ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= 30 – ( $G_{TX} - 6$ ).                                                                                                                                                                                                                          |  |  |
|             | <ul> <li>Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.</li> </ul>                                                                                                                                                                                                                                                                         |  |  |
| LE-         | LAN Devices                                                                                                                                                                                                                                                                                                                                                                       |  |  |
|             | For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) $\leq$ 10 dBm/MHz.                                                                                                                                                                                                                                                                                    |  |  |
|             | For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz.                                                                                                                                                                                                                                                                                             |  |  |
|             | <ul> <li>e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:</li> <li>-13 dBW/MHz for 0° ≤ θ &lt; 8°; -13 - 0.716 (θ-8) dBW/MHz for 8° ≤ θ &lt; 40°</li> <li>-35.9 - 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45°; -42 dBW/MHz for θ &gt; 45°</li> </ul> |  |  |
|             | For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz.                                                                                                                                                                                                                                                                      |  |  |
|             | For the 5.725-5.85 GHz band:                                                                                                                                                                                                                                                                                                                                                      |  |  |
|             | • Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq$ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= 30 - ( $G_{TX} - 6$ ).                                                                                                                                                                                                                          |  |  |
|             | <ul> <li>Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.</li> </ul>                                                                                                                                                                                                                                                                         |  |  |
| pow         | <b>SD</b> = peak power spectral density that he same method as used to determine the conducted output<br>rer shall be used to determine the power spectral density. And power spectral density in dBm/MHz<br>= the maximum transmitting antenna directional gain in dBi.                                                                                                          |  |  |



## 3.4.2 Measuring Instruments

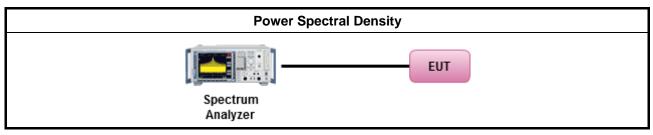
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

|   | Test Method                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| • | outp<br>func                                                                                                                                                           | k power spectral density procedures that the same method as used to determine the conducted<br>ut power shall be used to determine the peak power spectral density and use the peak search<br>tion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density<br>I be measured using below options:                                                                                                                                                                                                                                                                                                                                                         |  |
|   | Refer as FCC KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |
|   | [duty                                                                                                                                                                  | / cycle ≥ 98% or external video / power trigger]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|   | $\square$                                                                                                                                                              | Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
|   |                                                                                                                                                                        | Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
|   | duty                                                                                                                                                                   | cycle < 98% and average over on/off periods with duty factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
|   | $\square$                                                                                                                                                              | Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
|   |                                                                                                                                                                        | Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |
| • | For                                                                                                                                                                    | conducted measurement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
|   |                                                                                                                                                                        | If the EUT supports multiple transmit chains using options given below:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
|   |                                                                                                                                                                        | Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911,<br>In-band power spectral density (PSD). Sample all transmit ports simultaneously using a<br>spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port<br>summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the<br>first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the<br>NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up<br>the amplitude (power) values for the different transmit chains and use this as the new data<br>trace. |  |
|   |                                                                                                                                                                        | Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,                                                                                                                                                                                                                              |  |
|   |                                                                                                                                                                        | Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.                                                                                                                                                                                                                                                                                                                                       |  |
|   | •                                                                                                                                                                      | If multiple transmit chains, EIRP PPSD calculation could be following as methods:<br>$PPSD_{total} = PPSD_1 + PPSD_2 + + PPSD_n$<br>(calculated in linear unit [mW] and transfer to log unit [dBm])<br>$EIRP_{total} = PPSD_{total} + DG$                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |



## 3.4.4 Test Setup



### 3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D



# 3.5 Unwanted Emissions

### 3.5.1 Transmitter Unwanted Emissions Limit

| Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit |                       |                         |                      |  |
|-------------------------------------------------------------------------------|-----------------------|-------------------------|----------------------|--|
| Frequency Range (MHz)                                                         | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |  |
| 0.009~0.490                                                                   | 2400/F(kHz)           | 48.5 - 13.8             | 300                  |  |
| 0.490~1.705                                                                   | 24000/F(kHz)          | 33.8 - 23               | 30                   |  |
| 1.705~30.0                                                                    | 30                    | 29                      | 30                   |  |
| 30~88                                                                         | 100                   | 40                      | 3                    |  |
| 88~216                                                                        | 150                   | 43.5                    | 3                    |  |
| 216~960                                                                       | 200                   | 46                      | 3                    |  |
| Above 960                                                                     | 500                   | 54                      | 3                    |  |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

|                                                                                                                                                                                                                                                                                                                                                                                                                | Un-restricted band emissions above 1GHz Limit                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Operating Band                                                                                                                                                                                                                                                                                                                                                                                                 | Limit                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |
| 🔀 5.15 - 5.25 GHz                                                                                                                                                                                                                                                                                                                                                                                              | e.i.r.p27 dBm [68.2 dBuV/m@3m]                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |
| 🔲 5.25 - 5.35 GHz                                                                                                                                                                                                                                                                                                                                                                                              | e.i.r.p27 dBm [68.2 dBuV/m@3m]                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |
| 🗌 5.47 - 5.725 GHz                                                                                                                                                                                                                                                                                                                                                                                             | e.i.r.p27 dBm [68.2 dBuV/m@3m]                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |
| ⊠ 5.725 - 5.85 GHz                                                                                                                                                                                                                                                                                                                                                                                             | all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above<br>or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or<br>below the band edge, and from 25 MHz above or below the band edge<br>increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band<br>edge, and from 5 MHz above or below the band edge increasing linearly to a<br>level of 27 dBm/MHz at the band edge. |  |  |
| Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of |                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |



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linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

#### 3.5.2 **Measuring Instruments**

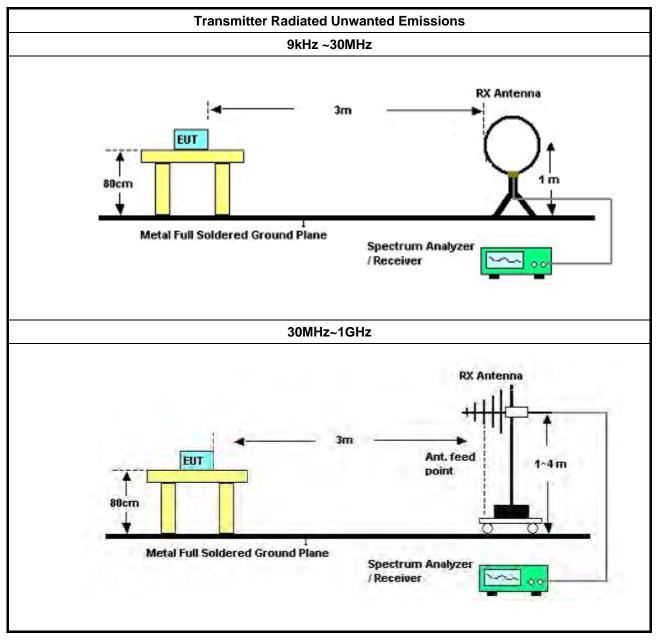
Refer a test equipment and calibration data table in this test report.

#### 3.5.3 **Test Procedures**

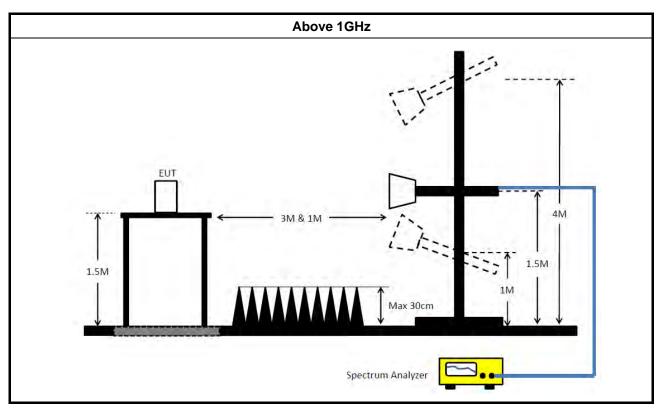
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Test Method                                                                                                                |  |  |  |  |  |  |  |  |  |  |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|
| • | Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). |                                                                                                                            |  |  |  |  |  |  |  |  |  |  |
| • | The                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].                                        |  |  |  |  |  |  |  |  |  |  |
| • | For                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | the transmitter unwanted emissions shall be measured using following options below:                                        |  |  |  |  |  |  |  |  |  |  |
|   | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.                                     |  |  |  |  |  |  |  |  |  |  |
|   | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.                                         |  |  |  |  |  |  |  |  |  |  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).                                                                 |  |  |  |  |  |  |  |  |  |  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).                                                                     |  |  |  |  |  |  |  |  |  |  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.                                  |  |  |  |  |  |  |  |  |  |  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.                                                        |  |  |  |  |  |  |  |  |  |  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.                                                     |  |  |  |  |  |  |  |  |  |  |
|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.                                                   |  |  |  |  |  |  |  |  |  |  |
| • | For                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | radiated measurement.                                                                                                      |  |  |  |  |  |  |  |  |  |  |
|   | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.                              |  |  |  |  |  |  |  |  |  |  |
|   | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.                           |  |  |  |  |  |  |  |  |  |  |
|   | •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.                                                        |  |  |  |  |  |  |  |  |  |  |
| • | The                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | any unwanted emissions level shall not exceed the fundamental emission level.                                              |  |  |  |  |  |  |  |  |  |  |
| • |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value no need to be reported. |  |  |  |  |  |  |  |  |  |  |



## 3.5.4 Test Setup







### 3.5.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

### 3.5.6 Transmitter Unwanted Emissions (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

### 3.5.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E



#### **Test Equipment and Calibration Data** 4

| Instrument                              | Manufacturer     | Model No.             | Serial No.          | Characteristics     | Calibration<br>Date | Calibration<br>Due Date | Remark                   |
|-----------------------------------------|------------------|-----------------------|---------------------|---------------------|---------------------|-------------------------|--------------------------|
| LISN                                    | Schwarzbeck      | NSLK 8127             | 8127650             | 9kHz ~ 30MHz        | Nov. 21, 2018       | Nov. 20, 2019           | Conduction<br>(CO02-CB   |
| LISN                                    | Schwarzbeck      | NSLK 8127             | 8127478             | 9kHz ~ 30MHz        | Nov. 05, 2018       | Nov. 04, 2019           | Conduction<br>(CO02-CB   |
| EMI Receiver                            | Agilent          | N9038A                | MY52260140          | 9kHz ~ 8.4GHz       | Jan. 16, 2019       | Jan. 15, 2020           | Conduction<br>(CO02-CB   |
| COND Cable                              | Woken            | Cable                 | 2                   | 0.15MHz ~<br>30MHz  | Nov. 06, 2018       | Nov. 05, 2019           | Conduction<br>(CO02-CB)  |
| Software                                | Audix            | E3                    | 6.120210n           | -                   | N.C.R.              | N.C.R.                  | Conduction<br>(CO02-CB)  |
| Bilog Antenna<br>with 6dB<br>Attenuator | TESE & EMCI      | CBL 6112D &<br>N-6-06 | 35236 &<br>AT-N0610 | 30MHz ~ 2GHz        | Mar. 28, 2019       | Mar. 27, 2020           | Radiation<br>(03CH05-CB) |
| Loop Antenna                            | Teseq            | HLA 6120              | 24155               | 9kHz - 30 MHz       | Mar. 29, 2019       | Mar. 28, 2020           | Radiation<br>(03CH05-CB) |
| Pre-Amplifier                           | EMCI             | EMC330N               | 980331              | 20MHz ~ 3GHz        | May 02, 2019        | May 01, 2020            | Radiation<br>(03CH05-CB) |
| Spectrum<br>Analyzer                    | R&S              | FSP40                 | 100056              | 9kHz ~ 40GHz        | Jan. 31, 2019       | Jan. 30, 2020           | Radiation<br>(03CH05-CB) |
| EMI Test<br>Receiver                    | R&S              | ESCS                  | 826547/017          | 9kHz ~ 2.75GHz      | May 15, 2019        | May 14, 2020            | Radiation<br>(03CH05-CB) |
| RF Cable-low                            | Woken            | RG402                 | LOW<br>Cable-04+23  | 30MHz~1GHz          | Oct. 08, 2018       | Oct. 07, 2019           | Radiation<br>(03CH05-CB) |
| Horn Antenna                            | SCHWARZBE<br>CK  | BBHA9120D             | 9120D-1292          | 1GHz~18GHz          | Jul. 17, 2019       | Jul. 16, 2020           | Radiation<br>(03CH06-CB) |
| Horn Antenna                            | SCHWARZBE<br>CK  | BBHA 9170             | BBHA9170507         | 15GHz ~ 40GHz       | Jun. 12, 2019       | Jun. 11, 2020           | Radiation<br>(03CH06-CB) |
| Pre-Amplifier                           | Agilent          | 83017A                | MY53270064          | 0.5GHz ~<br>26.5GHz | May 08, 2019        | May 07, 2020            | Radiation<br>(03CH06-CB) |
| Pre-Amplifier                           | MITEQ            | TTA1840-35-H<br>G     | 1864479             | 18GHz ~ 40GHz       | Jul. 03, 2019       | Jul. 02, 2020           | Radiation<br>(03CH06-CB) |
| Spectrum<br>analyzer                    | R&S              | FSP40                 | 100080              | 9kHz~40GHz          | Oct. 03, 2018       | Oct. 02, 2019           | Radiation<br>(03CH06-CB) |
| RF Cable-high                           | HUBER+SUH<br>NER | RG402                 | High Cable-05       | 1GHz~18GHz          | Oct. 08, 2018       | Oct. 07, 2019           | Radiation<br>(03CH06-CB) |
| RF Cable-high                           | HUBER+SUH<br>NER | RG402                 | High<br>Cable-05+24 | 1GHz~18GHz          | Oct. 08, 2018       | Oct. 07, 2019           | Radiation<br>(03CH06-CB) |
| RF Cable-high                           | Woken            | RG402                 | High<br>Cable-40G#1 | 18GHz ~ 40 GHz      | Jul. 27, 2018       | Jul. 26, 2019           | Radiation<br>(03CH06-CB) |
| RF Cable-high                           | Woken            | RG402                 | High<br>Cable-40G#1 | 18GHz ~ 40 GHz      | Jul. 24, 2019       | Jul. 23, 2020           | Radiation<br>(03CH06-CB) |
| RF Cable-high                           | Woken            | RG402                 | High<br>Cable-40G#2 | 18GHz ~ 40 GHz      | Jul. 27, 2018       | Jul. 26, 2019           | Radiation<br>(03CH06-CB) |

Report Version : 01

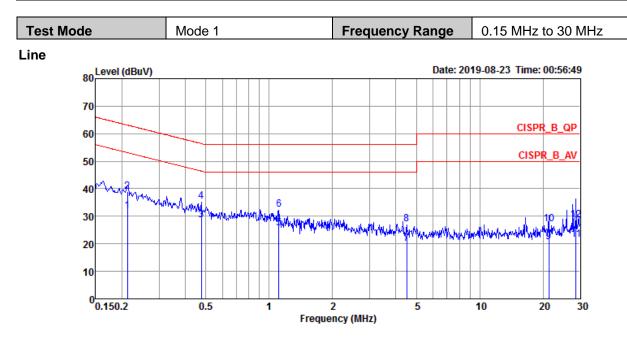


| Instrument           | Manufacturer | Model No. | Serial No.          | Characteristics  | Calibration<br>Date | Calibration<br>Due Date | Remark                   |
|----------------------|--------------|-----------|---------------------|------------------|---------------------|-------------------------|--------------------------|
| RF Cable-high        | Woken        | RG402     | High<br>Cable-40G#2 | 18GHz ~ 40 GHz   | Jul. 24, 2019       | Jul. 23, 2020           | Radiation<br>(03CH06-CB) |
| Spectrum<br>analyzer | R&S          | FSV40     | 101027              | 9kHz~40GHz       | Jul. 02, 2019       | Jul. 01, 2020           | Conducted<br>(TH02-CB)   |
| Power Sensor         | Anritsu      | MA2411B   | 1126203             | 300MHz~40GHz     | Sep. 03, 2018       | Sep. 02, 2019           | Conducted<br>(TH02-CB)   |
| Power Meter          | Anritsu      | ML2495A   | 1210004             | 300MHz~40GHz     | Sep. 03, 2018       | Sep. 02, 2019           | Conducted<br>(TH02-CB)   |
| RF Cable-high        | Woken        | RG402     | High Cable-01       | 1 GHz – 26.5 GHz | Oct. 08, 2018       | Oct. 07, 2019           | Conducted<br>(TH02-CB)   |
| RF Cable-high        | Woken        | RG402     | High Cable-02       | 1 GHz – 26.5 GHz | Oct. 08, 2018       | Oct. 07, 2019           | Conducted<br>(TH02-CB)   |
| RF Cable-high        | Woken        | RG402     | High Cable-3        | 1 GHz – 26.5 GHz | Oct. 24, 2018       | Oct. 23, 2019           | Conducted<br>(TH02-CB)   |
| RF Cable-high        | Woken        | RG402     | High Cable-04       | 1 GHz – 26.5 GHz | Oct. 08, 2018       | Oct. 07, 2019           | Conducted<br>(TH02-CB)   |
| RF Cable-high        | Woken        | RG402     | High Cable-05       | 1 GHz – 26.5 GHz | Oct. 08, 2018       | Oct. 07, 2019           | Conducted<br>(TH02-CB)   |

Note: Calibration Interval of instruments listed above is one year.

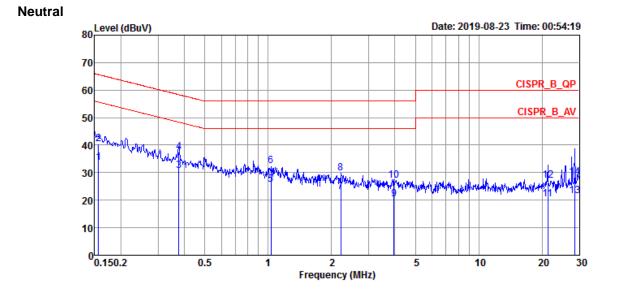
N.C.R. means Non-Calibration required.





|    | Freq    | Level | Over<br>Limit | Limit<br>Line | Read<br>Level | LISN<br>Factor | Cable<br>Loss | Remark  | Pol/Phase |
|----|---------|-------|---------------|---------------|---------------|----------------|---------------|---------|-----------|
|    | MHz     | dBuV  | dB            | dBuV          | dBuV          | dB             | dB            |         |           |
| 1  | 0.2128  | 32.03 | -21.07        | 53.10         | 21.86         | 10.15          | 0.02          | Average | LINE      |
| 2  | 0.2128  | 38.89 | -24.21        | 63.10         | 28.72         | 10.15          | 0.02          | QP      | LINE      |
| 3  | 0.4761  | 28.61 | -17.80        | 46.41         | 18.43         | 10.16          | 0.02          | Average | LINE      |
| 4  | 0.4761  | 35.36 | -21.05        | 56.41         | 25.18         | 10.16          | 0.02          | QP      | LINE      |
| 5  | 1.1114  | 25.63 | -20.37        | 46.00         | 15.44         | 10.17          | 0.02          | Average | LINE      |
| 6  | 1.1114  | 32.43 | -23.57        | 56.00         | 22.24         | 10.17          | 0.02          | QP      | LINE      |
| 7  | 4.5015  | 20.20 | -25.80        | 46.00         | 9.90          | 10.23          | 0.07          | Average | LINE      |
| 8  | 4.5015  | 27.07 | -28.93        | 56.00         | 16.77         | 10.23          | 0.07          | QP      | LINE      |
| 9  | 21.2596 | 20.53 | -29.47        | 50.00         | 9.98          | 10.41          | 0.14          | Average | LINE      |
| 10 | 21.2596 | 27.15 | -32.85        | 60.00         | 16.60         | 10.41          | 0.14          | QP      | LINE      |
| 11 | 28.6030 | 21.65 | -28.35        | 50.00         | 10.92         | 10.50          | 0.23          | Average | LINE      |
| 12 | 28.6030 | 28.51 | -31.49        | 60.00         | 17.78         | 10.50          | 0.23          | QP      | LINE      |





|    | Freq    | Level | Over<br>Limit | Limit<br>Line | Read<br>Level | LISN<br>Factor | Cable<br>Loss | Remark  | Pol/Phase |
|----|---------|-------|---------------|---------------|---------------|----------------|---------------|---------|-----------|
|    | MHz     | dBuV  | dB            | dBuV          | dBuV          | dB             | dB            |         |           |
| 1  | 0.1565  |       | -22.06        | 55.65         | 23.44         | 10.13          |               | Average | NEUTRAL   |
| 2  | 0.1565  |       | -25.33        | 65.65         | 30.17         | 10.13          | 0.02          | -       | NEUTRAL   |
| 3  | 0.3771  | 30.60 | -17.74        | 48.34         | 20.44         | 10.14          | 0.02          | Average | NEUTRAL   |
| 4  | 0.3771  | 37.44 | -20.90        | 58.34         | 27.28         | 10.14          | 0.02          | QP      | NEUTRAL   |
| 5  | 1.0320  | 25.63 | -20.37        | 46.00         | 15.47         | 10.14          | 0.02          | Average | NEUTRAL   |
| 6  | 1.0320  | 32.41 | -23.59        | 56.00         | 22.25         | 10.14          | 0.02          | QP      | NEUTRAL   |
| 7  | 2.2132  | 23.16 | -22.84        | 46.00         | 12.95         | 10.16          | 0.05          | Average | NEUTRAL   |
| 8  | 2.2132  | 29.78 | -26.22        | 56.00         | 19.57         | 10.16          | 0.05          | QP      | NEUTRAL   |
| 9  | 3.9639  | 20.31 | -25.69        | 46.00         | 10.06         | 10.18          | 0.07          | Average | NEUTRAL   |
| 10 | 3.9639  | 27.10 | -28.90        | 56.00         | 16.85         | 10.18          | 0.07          | QP      | NEUTRAL   |
| 11 | 21.2596 | 20.45 | -29.55        | 50.00         | 9.95          | 10.36          | 0.14          | Average | NEUTRAL   |
| 12 | 21.2596 | 27.21 | -32.79        | 60.00         | 16.71         | 10.36          | 0.14          | QP      | NEUTRAL   |
| 13 | 28.6030 | 21.67 | -28.33        | 50.00         | 11.00         | 10.44          | 0.23          | Average | NEUTRAL   |
| 14 | 28.6030 | 28.30 | -31.70        | 60.00         | 17.63         | 10.44          | 0.23          |         | NEUTRAL   |



### Summary

| Mode                           | Max-N dB | Max-OBW | ITU-Code | Min-N dB | Min-OBW |
|--------------------------------|----------|---------|----------|----------|---------|
|                                | (Hz)     | (Hz)    |          | (Hz)     | (Hz)    |
| 5.15-5.25GHz                   | -        | -       | -        | -        | -       |
| 802.11a_Nss1,(6Mbps)_2TX       | 36.9M    | 17.891M | 17M9D1D  | 18.925M  | 16.392M |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | 39.025M  | 19.565M | 19M6D1D  | 19.925M  | 17.616M |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | 47.15M   | 36.082M | 36M1D1D  | 39.85M   | 35.982M |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | 83.5M    | 75.862M | 75M9D1D  | 83.3M    | 75.862M |
| 5.725-5.85GHz                  | -        | -       | -        | -        | -       |
| 802.11a_Nss1,(6Mbps)_2TX       | 16.35M   | 26.062M | 26M1D1D  | 16.275M  | 22.464M |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | 17.625M  | 24.638M | 24M6D1D  | 15.675M  | 19.965M |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | 34.95M   | 53.123M | 53M1D1D  | 34.2M    | 42.029M |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | 75.5M    | 76.062M | 76M1D1D  | 75.4M    | 75.662M |

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum99% occupied bandwidth;

**Min-N dB** = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band; **Min-OBW** = Minimum 99% occupied bandwidth;

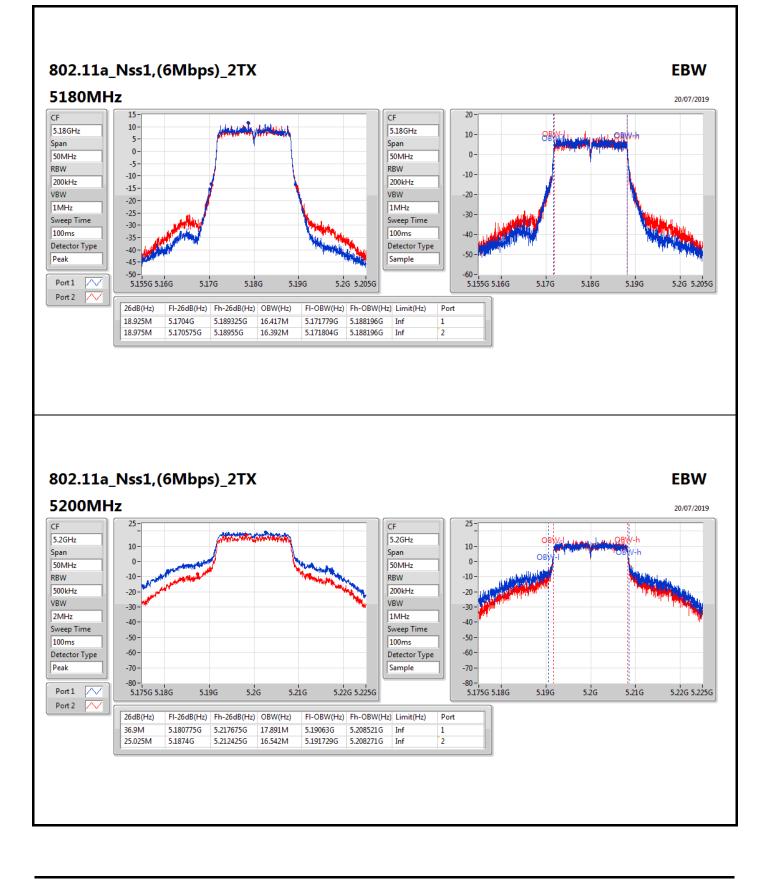


### Result

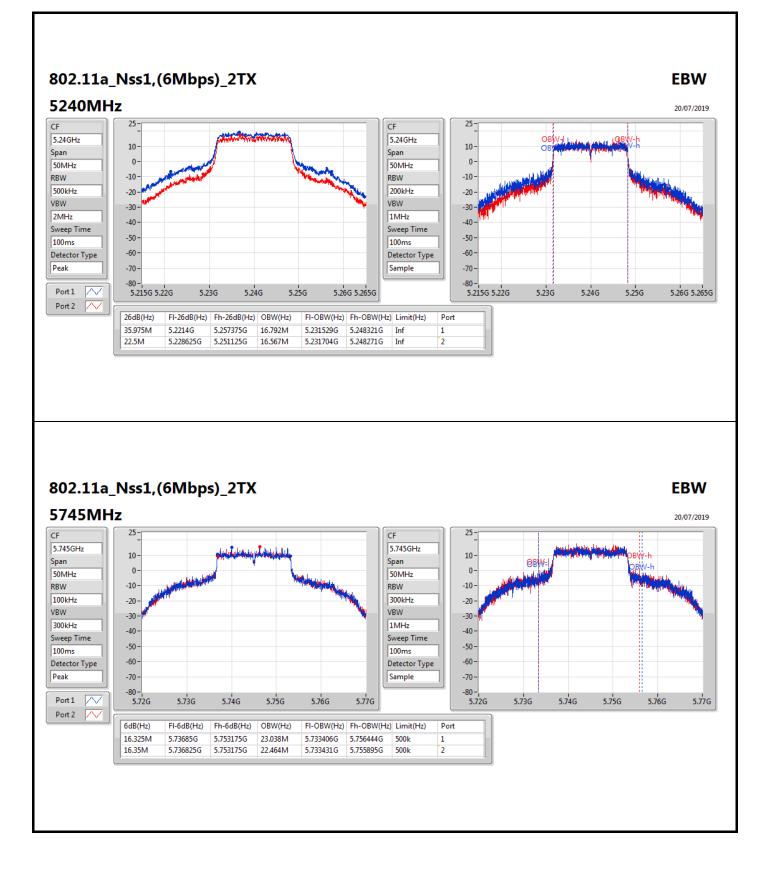
| Mode                           | Result | Limit | Port 1-N dB | Port 1-OBW | Port 2-N dB | Port 2-OBW |
|--------------------------------|--------|-------|-------------|------------|-------------|------------|
|                                |        | (Hz)  | (Hz)        | (Hz)       | (Hz)        | (Hz)       |
| 802.11a_Nss1,(6Mbps)_2TX       | -      | -     | -           | -          | -           | -          |
| 5180MHz                        | Pass   | Inf   | 18.925M     | 16.417M    | 18.975M     | 16.392M    |
| 5200MHz                        | Pass   | Inf   | 36.9M       | 17.891M    | 25.025M     | 16.542M    |
| 5240MHz                        | Pass   | Inf   | 35.975M     | 16.792M    | 22.5M       | 16.567M    |
| 5745MHz                        | Pass   | 500k  | 16.325M     | 23.038M    | 16.35M      | 22.464M    |
| 5785MHz                        | Pass   | 500k  | 16.325M     | 26.062M    | 16.275M     | 25.712M    |
| 5825MHz                        | Pass   | 500k  | 16.3M       | 24.713M    | 16.3M       | 25.712M    |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | -      | -     | -           | -          | -           | -          |
| 5180MHz                        | Pass   | Inf   | 19.925M     | 17.616M    | 20M         | 17.641M    |
| 5200MHz                        | Pass   | Inf   | 39.025M     | 19.565M    | 30.5M       | 17.791M    |
| 5240MHz                        | Pass   | Inf   | 37.4M       | 18.491M    | 31.425M     | 17.816M    |
| 5745MHz                        | Pass   | 500k  | 15.925M     | 19.965M    | 17.575M     | 21.014M    |
| 5785MHz                        | Pass   | 500k  | 17.55M      | 24.638M    | 17.55M      | 24.138M    |
| 5825MHz                        | Pass   | 500k  | 17.625M     | 23.513M    | 15.675M     | 24.238M    |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | -      | -     | -           | -          | -           | -          |
| 5190MHz                        | Pass   | Inf   | 39.9M       | 35.982M    | 40.15M      | 35.982M    |
| 5230MHz                        | Pass   | Inf   | 47.15M      | 35.982M    | 39.85M      | 36.082M    |
| 5755MHz                        | Pass   | 500k  | 34.85M      | 48.876M    | 34.95M      | 53.123M    |
| 5795MHz                        | Pass   | 500k  | 34.2M       | 42.029M    | 34.4M       | 48.076M    |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | -      | -     | -           | -          | -           | -          |
| 5210MHz                        | Pass   | Inf   | 83.3M       | 75.862M    | 83.5M       | 75.862M    |
| 5775MHz                        | Pass   | 500k  | 75.5M       | 75.662M    | 75.4M       | 76.062M    |

**Port X-N dB** = Port **X** 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band **Port X-OBW** = Port **X** 99% occupied bandwidth;





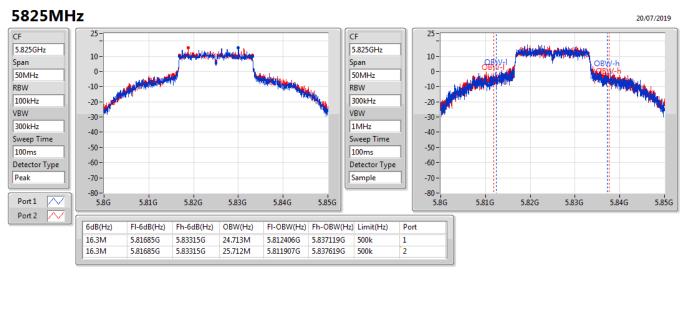






#### 802.11a\_Nss1,(6Mbps)\_2TX **EBW** 5785MHz 20/07/2019 25 25 CF CF 5.785GHz 5.785GHz 10-10 Span Span ØBŴ 2BVX-1 0-0. 50MHz 50MHz -10--10-RBW RBW 100kHz 300kHz -20 -20 VBW VBW -30 -30 300kHz 1MHz -40 --40-Sweep Time Sweep Time -50 --50 -100ms 100ms -60 -Detector Type -<mark>60</mark> -. Detector Type Peak -70 -Sample -70 --80 -5.76G -80 -5.76G $\sim$ Port 1 5.77G 5.78G 5.79G 5.8G 5.81G 5.77G 5.78G 5.79G 5.8G 5.81G Port 2 $\sim$ 6dB(Hz) FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 16.325M 5.77685G 5.797844G 5.793175G 26.062M 5.771782G 500k 1 16.275M 5.776875G 5.79315G 25.712M 5.797669G 500k 5.771957G 2

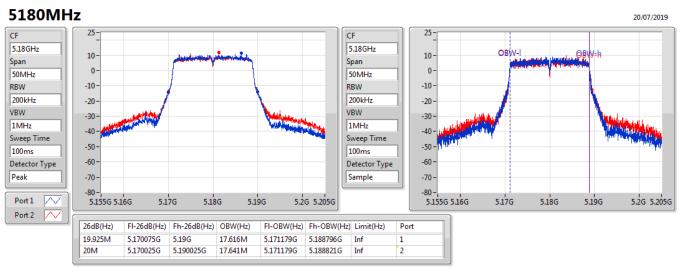
# 802.11a\_Nss1,(6Mbps)\_2TX



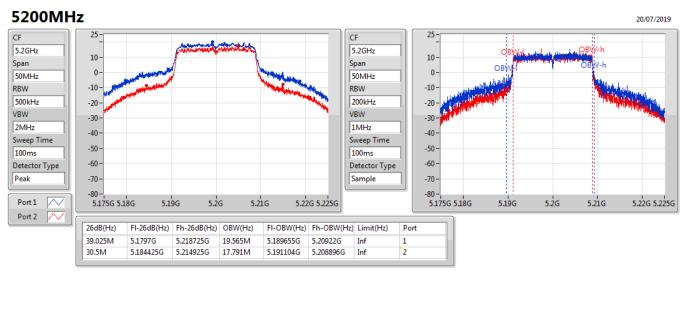
EBW



# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



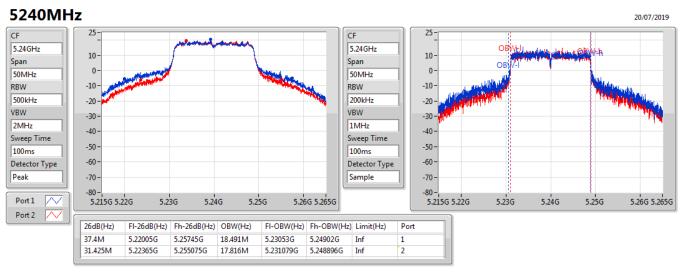
# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



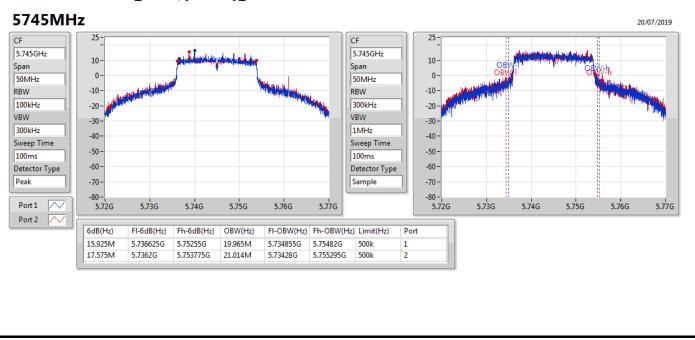
EBW



# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



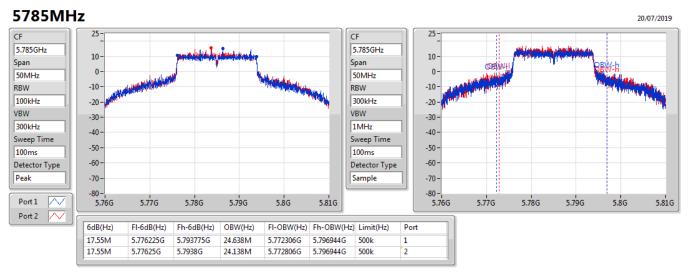
# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



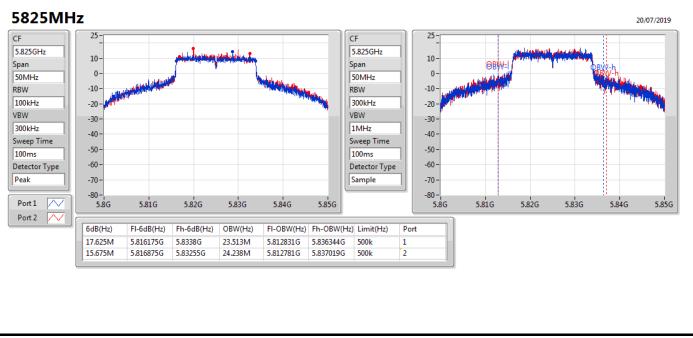
EBW



# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



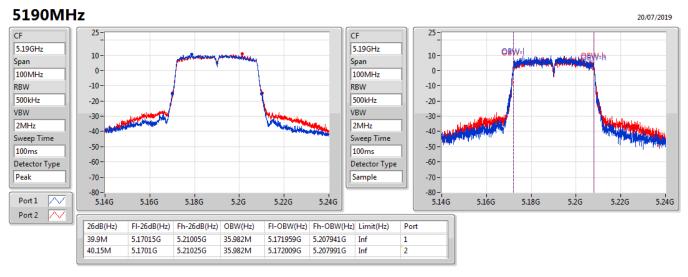
# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



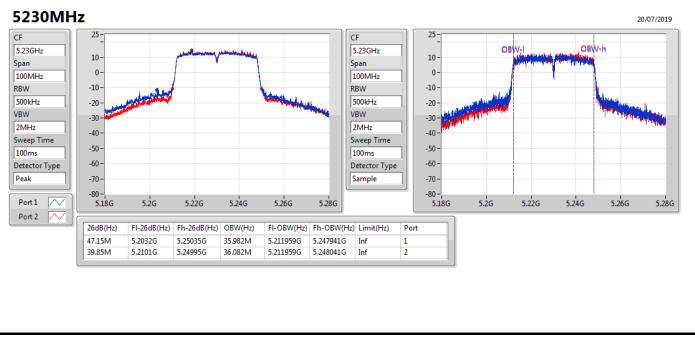
EBW



# 802.11ac VHT40\_Nss1,(MCS0)\_2TX



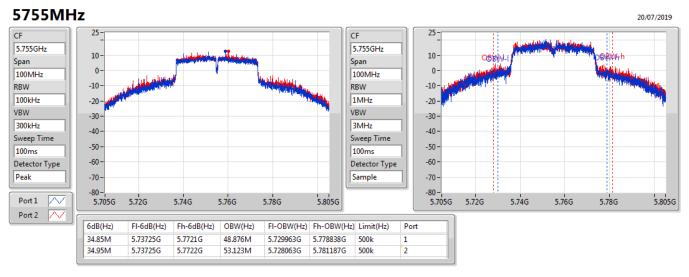
# 802.11ac VHT40\_Nss1,(MCS0)\_2TX



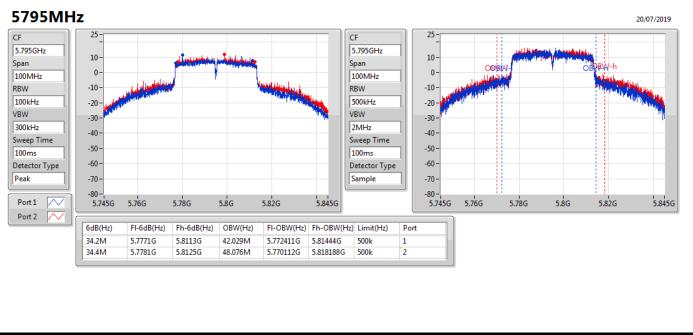
EBW



# 802.11ac VHT40\_Nss1,(MCS0)\_2TX



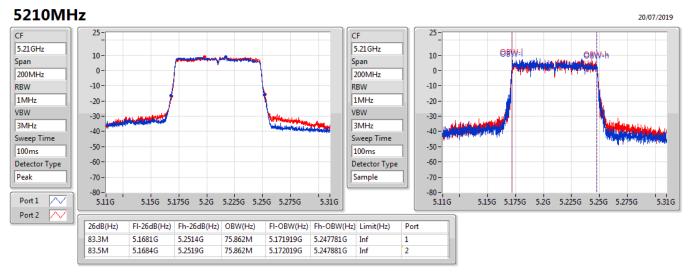
# 802.11ac VHT40\_Nss1,(MCS0)\_2TX



EBW



# 802.11ac VHT80\_Nss1,(MCS0)\_2TX



# 802.11ac VHT80\_Nss1,(MCS0)\_2TX

#### 5775MHz 20/07/2019 25 25 CF CF OBW-I 5.775GHz 5.775GHz OBW-h 10 10 Span Span 0 0. 200MHz 200MHz RBW -10-RBW -10 100kHz 1MHz -20 --20 · VBW VBW -30 -30 -300kHz 3MHz -40 --40 -Sweep Time Sweep Time -50 -50 -100ms 100ms -60 -60 · Detector Type Detector Type Peak -70 -Sample -70 --<mark>80</mark> · -80 · $\sim$ 5.675G 5.7G 5.725G 5.75G 5.775G 5.8G 5.825G 5.85G 5.875G 5.675G 5.7G 5.725G 5.75G 5.775G 5.8G 5.825G 5.85G 5.875G Port 1 Port 2 FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) 6dB(Hz) Port 5.737G 5.8125G 75.662M 5.736919G 5.812581G 75.5M 500k 1 5.7371G 75.4M 5.8125G 76.062M 5.736719G 5.812781G 500k 2

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#### Summarv

| Mode                              | Max-N dB | Max-OBW | ITU-Code | Min-N dB | Min-OBW |
|-----------------------------------|----------|---------|----------|----------|---------|
|                                   | (Hz)     | (Hz)    |          | (Hz)     | (Hz)    |
| 5.15-5.25GHz                      | -        | -       | -        | -        | -       |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | 34.92M   | 17.841M | 17M8D1D  | 23.46M   | 17.721M |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | 57M      | 36.582M | 36M6D1D  | 38.34M   | 35.982M |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | 83.64M   | 75.562M | 75M6D1D  | 81.96M   | 75.322M |
| 5.725-5.85GHz                     | -        | -       | -        | -        | -       |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | 17.73M   | 17.931M | 17M9D1D  | 17.55M   | 17.691M |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | 36.3M    | 36.582M | 36M6D1D  | 35.04M   | 36.462M |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | 62.64M   | 76.042M | 76M0D1D  | 22.8M    | 75.922M |

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum99% occupied bandwidth; Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

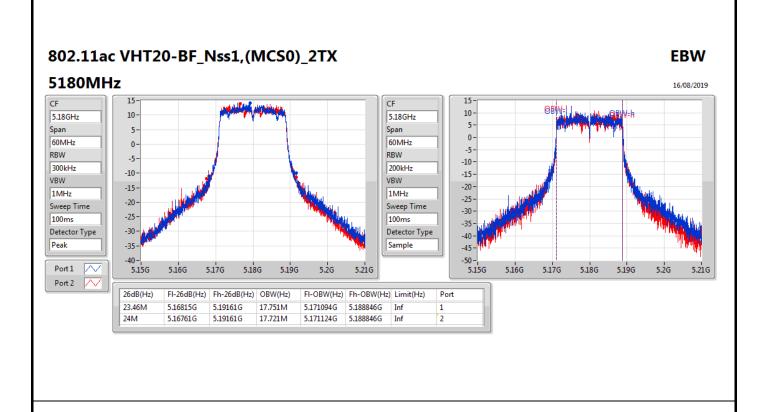
**Min-OBW** = Minimum 99% occupied bandwidth;



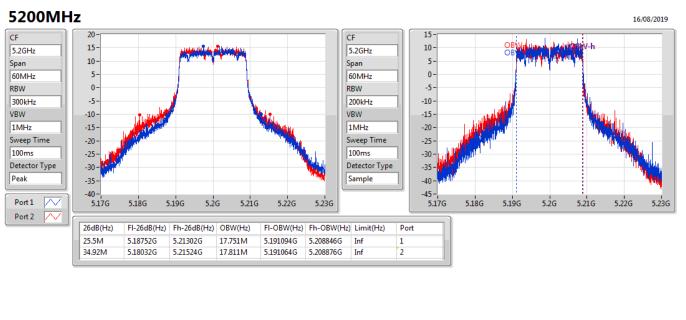
| Mode                              | Result | Limit | Port 1-N dB | Port 1-OBW | Port 2-N dB | Port 2-OBW |
|-----------------------------------|--------|-------|-------------|------------|-------------|------------|
|                                   |        | (Hz)  | (Hz)        | (Hz)       | (Hz)        | (Hz)       |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | -      | -     | -           | -          | -           | -          |
| 5180MHz                           | Pass   | Inf   | 23.46M      | 17.751M    | 24M         | 17.721M    |
| 5200MHz                           | Pass   | Inf   | 25.5M       | 17.751M    | 34.92M      | 17.811M    |
| 5240MHz                           | Pass   | Inf   | 26.79M      | 17.781M    | 31.14M      | 17.841M    |
| 5745MHz                           | Pass   | 500k  | 17.64M      | 17.781M    | 17.55M      | 17.781M    |
| 5785MHz                           | Pass   | 500k  | 17.7M       | 17.691M    | 17.73M      | 17.811M    |
| 5825MHz                           | Pass   | 500k  | 17.67M      | 17.931M    | 17.64M      | 17.841M    |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | -      | -     | -           | -          | -           | -          |
| 5190MHz                           | Pass   | Inf   | 38.34M      | 36.222M    | 39.18M      | 35.982M    |
| 5230MHz                           | Pass   | Inf   | 43.98M      | 36.522M    | 57M         | 36.582M    |
| 5755MHz                           | Pass   | 500k  | 35.04M      | 36.522M    | 36.3M       | 36.462M    |
| 5795MHz                           | Pass   | 500k  | 36.3M       | 36.522M    | 35.4M       | 36.582M    |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | -      | -     | -           | -          | -           | -          |
| 5210MHz                           | Pass   | Inf   | 81.96M      | 75.322M    | 83.64M      | 75.562M    |
| 5775MHz                           | Pass   | 500k  | 62.64M      | 75.922M    | 22.8M       | 76.042M    |

**Port X-N dB** = Port **X** 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band **Port X-OBW** = Port **X** 99% occupied bandwidth;



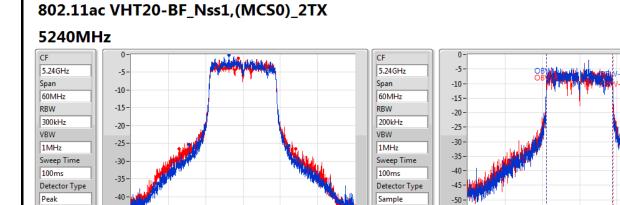


# 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX



16/08/2019





5.26G

5.231064G

5.231034G

5.27G

FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz)

5.248846G

5.248876G

Inf

Inf

5.25G

17.781M

17.841M

5.24G

Fh-26dB(Hz) OBW(Hz)

## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

-45

5.21G

26dB(Hz)

26.79M

31.14M

5.22G

FI-26dB(Hz)

5.22548G

5.2229G

5.23G

5.25227G

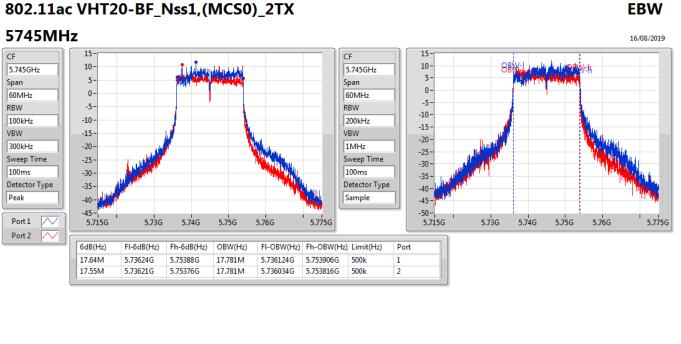
5.25404G

 $\sim$ 

 $\sim$ 

Port 1

Port 2



-55

Port

1

2

5.21G

5.22G

5.23G

5.24G

5.25G

5.26G

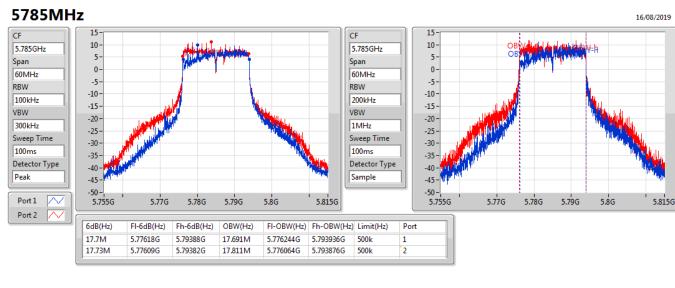
5.27G

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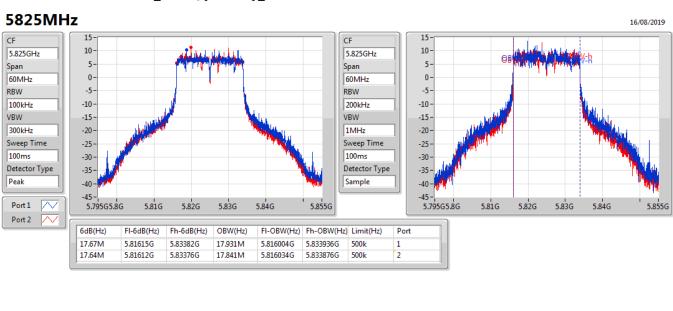
EBW



# 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX



# 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX



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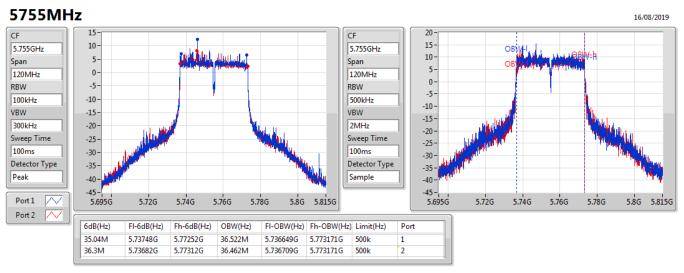


#### 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX EBW 5190MHz 16/08/2019 15 15 CF CF 10-10-5.19GHz 5.19GHz OBWA QBWV-h 5-5 Span Span 0-0-120MHz 120MHz -5--5-RBW RBW -10--10-500kHz 500kHz -15-VBW VBW -15--20 -2MHz -20 -2MHz -25-Sweep Time -25 -Sweep Time -30 -100ms 100ms -30 --35 -Detector Type Detector Type -35--40 Peak Sample -40 --45--45 -50 $\sim$ Port 1 5.16G 5.18G 5.2G 5.22G 5.24G5.25G 5.13G5.14G 5.16G 5.18G 5.2G 5.22G 5.24G5.25G 5.13G5.14G Port 2 $\sim$ 26dB(Hz) FI-26dB(Hz) Fh-26dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 38.34M 5.17086G 5.2092G 36.222M 5.171829G 5.208051G Inf 1 39.18M 5.17038G 5.20956G 35.982M 5.207991G 5.172009G Inf 2 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX EBW 5230MHz 16/08/2019 25 15 CF CF والاساليل والأر والافتر 8 20 -10-5.23GHz 5.23GHz 15-Span Span 5 10-120MHz 120MHz 0-RBW 5-RBW -5-0-1MHz 500kHz -10 -VBW -5-VBW -15-3MHz -10-2MHz -20 Sweep Time -15 Sweep Time -25 100ms 100ms -20 Detector Type -30 Detector Type -25-Peak Sample -35 -30--35 -40 $\sim$ 5.17G5.18G 5.2G 5.22G 5.24G Port 1 5.2G 5.22G 5.24G 5.26G 5.17G5.18G 5.26G 5.28G5.29G 5.28G5.29G Port 2 FI-26dB(Hz) Fh-26dB(Hz) OBW(Hz) 26dB(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 5.20756G 5.25154G 43.98M 36.522M 5.211709G 5.248231G Inf 1 57M 5.1958G 5.2528G 36.582M 5.211649G 5.248231G Inf 2

EBW



# 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX



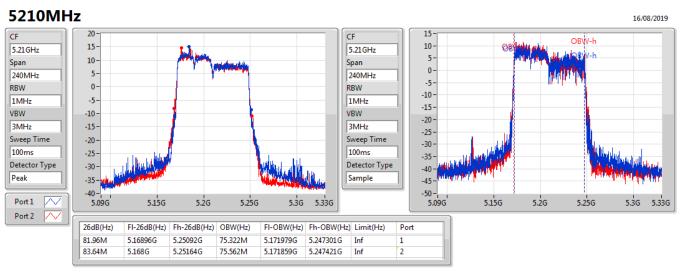
# 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

#### 5795MHz 16/08/2019 15 20 CF CF 10-15-5.795GHz 5.795GHz 10-5-0 Span Span 5-0-120MHz 120MHz 0-RBW -5-RBW -5--10 -100kHz 500kHz -10 -VBW -15-VBW -15-300kHz -20 -2MHz -20 -Sweep Time -25-Sweep Time -25 -100ms 100ms -30 -30-Detector Type Detector Type -35 --35 Peak Sample -40--40 -45 -45 $\overline{}$ 5.76G Port 1 5.78G 5.78G 5.8G 5.82G 5.84G 5.855G 5.735G 5.76G 5.8G 5.82G 5.84G 5.855G 5.7356 Port 2 6dB(Hz) FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 5.813171G 5.77676G 5.81306G 36.522M 36.3M 5.776649G 500k 1 35.4M 5.77712G 5.81252G 36.582M 5.776649G 5.813231G 500k 2

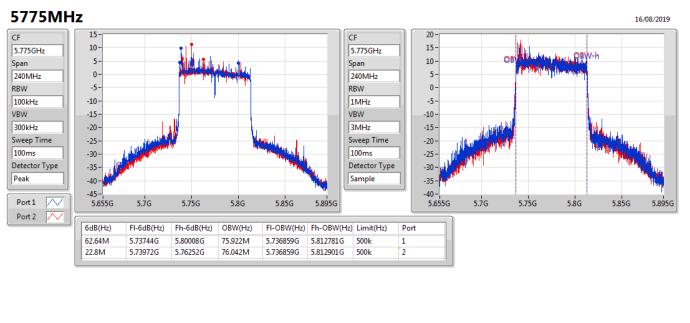
EBW



## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX



# 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX





# Appendix C.1

### Summary

| Mode                           | Total Power | Total Power |
|--------------------------------|-------------|-------------|
|                                | (dBm)       | (W)         |
| 5.15-5.25GHz                   | -           | -           |
| 802.11a_Nss1,(6Mbps)_2TX       | 28.65       | 0.73282     |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | 29.06       | 0.80538     |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | 26.71       | 0.46881     |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | 21.03       | 0.12677     |
| 5.725-5.85GHz                  | -           | -           |
| 802.11a_Nss1,(6Mbps)_2TX       | 29.67       | 0.92683     |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | 29.49       | 0.88920     |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | 29.94       | 0.98628     |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | 25.34       | 0.34198     |



| Mode                           | Result       | DG           | Port 1         | Port 2         | Total Power    | Power Limit    |
|--------------------------------|--------------|--------------|----------------|----------------|----------------|----------------|
|                                |              | (dBi)        | (dBm)          | (dBm)          | (dBm)          | (dBm)          |
| 802.11a_Nss1,(6Mbps)_2TX       | -            | -            | -              | -              | -              | -<br>30.00     |
| 5180MHz                        | Pass         | 1.00         | 21.13          | 20.94          | 24.05          |                |
| 5200MHz                        | Pass         | 1.00         | 25.64          | 25.52          | 28.59          | 30.00          |
| 5240MHz                        | Pass         | 1.00         | 25.61          | 25.66<br>26.50 | 28.65          | 30.00          |
| 5745MHz                        | Pass         | 1.00         | 26.23          |                | 29.38          | 30.00          |
| 5785MHz                        | Pass         | 1.00         | 26.43          | 26.78          | 29.62          | 30.00          |
| 5825MHz                        | Pass         | 1.00         | 26.59          | 26.73          | 29.67          | 30.00          |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | -            | -            | -              | -              | -              | -              |
| 5180MHz                        | Pass<br>Pass | 1.00<br>1.00 | 21.44<br>25.90 | 21.10<br>25.82 | 24.28<br>28.87 | 30.00<br>30.00 |
| 5200MHz                        |              |              |                |                |                |                |
| 5240MHz                        | Pass         | 1.00         | 26.05          | 26.04          | 29.06          | 30.00          |
| 5745MHz                        | Pass         | 1.00         | 26.10          | 26.35          | 29.24          | 30.00          |
| 5785MHz                        | Pass         | 1.00         | 26.13          | 26.61          | 29.39          | 30.00          |
| 5825MHz                        | Pass         | 1.00         | 26.34          | 26.61          | 29.49          | 30.00          |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | -            | -            | -              | -              | -              | -              |
| 5190MHz                        | Pass         | 1.00         | 20.32          | 20.04          | 23.19          | 30.00          |
| 5230MHz                        | Pass         | 1.00         | 23.60          | 23.79          | 26.71          | 30.00          |
| 5755MHz                        | Pass         | 1.00         | 26.86          | 26.99          | 29.94          | 30.00          |
| 5795MHz                        | Pass         | 1.00         | 26.13          | 26.59          | 29.38          | 30.00          |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | -            | -            | -              | -              | -              | -              |
| 5210MHz                        | Pass         | 1.00         | 18.08          | 17.95          | 21.03          | 30.00          |
| 5775MHz                        | Pass         | 1.00         | 22.49          | 22.17          | 25.34          | 30.00          |

DG = Directional Gain; Port X = Port X output power



# Appendix C.2

### Summary

| Mode                              | Total Power<br>(dBm) | Total Power<br>(W) |
|-----------------------------------|----------------------|--------------------|
| 5.15-5.25GHz                      | -                    | -                  |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | 26.27                | 0.42364            |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | 26.36                | 0.43251            |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | 20.95                | 0.12445            |
| 5.725-5.85GHz                     | -                    | -                  |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | 25.69                | 0.37068            |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | 25.83                | 0.38282            |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | 25.50                | 0.35481            |



| Mode                              | Result | DG    | Port 1                  | Port 2                  | Total Power             | Power Limit             |
|-----------------------------------|--------|-------|-------------------------|-------------------------|-------------------------|-------------------------|
|                                   |        | (dBi) | (dBm)                   | (dBm)                   | (dBm)                   | (dBm)                   |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | -      | -     | -                       | -                       | -                       | -                       |
| 5180MHz                           | Pass   | 4.01  | 21.47                   | 21.05                   | 24.28                   | 30.00                   |
| 5200MHz                           | Pass   | 4.01  | 22.88                   | 23.13                   | 26.02                   | 30.00                   |
| 5240MHz                           | Pass   | 4.01  | 23.44                   | 23.07                   | 26.27                   | 30.00                   |
| 5745MHz                           | Pass   | 4.01  | 22.93<br>22.42<br>22.51 | 22.42<br>22.39<br>22.33 | 25.69<br>25.42<br>25.43 | 30.00<br>30.00<br>30.00 |
| 5785MHz                           | Pass   | 4.01  |                         |                         |                         |                         |
| 5825MHz                           | Pass   | 4.01  |                         |                         |                         |                         |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | -      | -     | -                       | -                       | -                       | -                       |
| 5190MHz                           | Pass   | 4.01  | 19.27                   | 19.53                   | 22.41                   | 30.00                   |
| 5230MHz                           | Pass   | 4.01  | 23.40                   | 23.30                   | 26.36                   | 30.00                   |
| 5755MHz                           | Pass   | 4.01  | 22.97                   | 22.66                   | 25.83                   | 30.00                   |
| 5795MHz                           | Pass   | 4.01  | 22.29                   | 22.60                   | 25.46                   | 30.00                   |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | -      | -     | -                       | -                       | -                       | -                       |
| 5210MHz                           | Pass   | 4.01  | 17.84                   | 18.04                   | 20.95                   | 30.00                   |
| 5775MHz                           | Pass   | 4.01  | 22.55                   | 22.43                   | 25.50                   | 30.00                   |

**DG** = Directional Gain; **Port X** = Port X output power



## Summary

| Mode                           | PD        |
|--------------------------------|-----------|
|                                | (dBm/RBW) |
| 5.15-5.25GHz                   |           |
| 802.11a_Nss1,(6Mbps)_2TX       | 15.48     |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | 15.45     |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | 10.55     |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | 1.56      |
| 5.725-5.85GHz                  | -         |
| 802.11a_Nss1,(6Mbps)_2TX       | 14.71     |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | 14.24     |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | 12.07     |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | 4.56      |

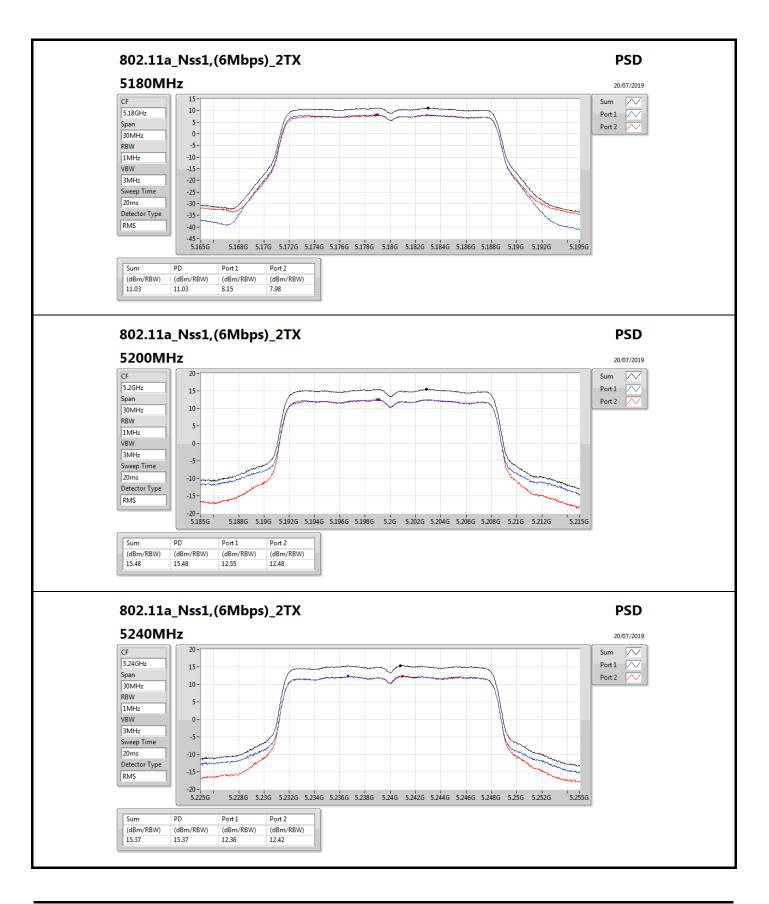
**RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;



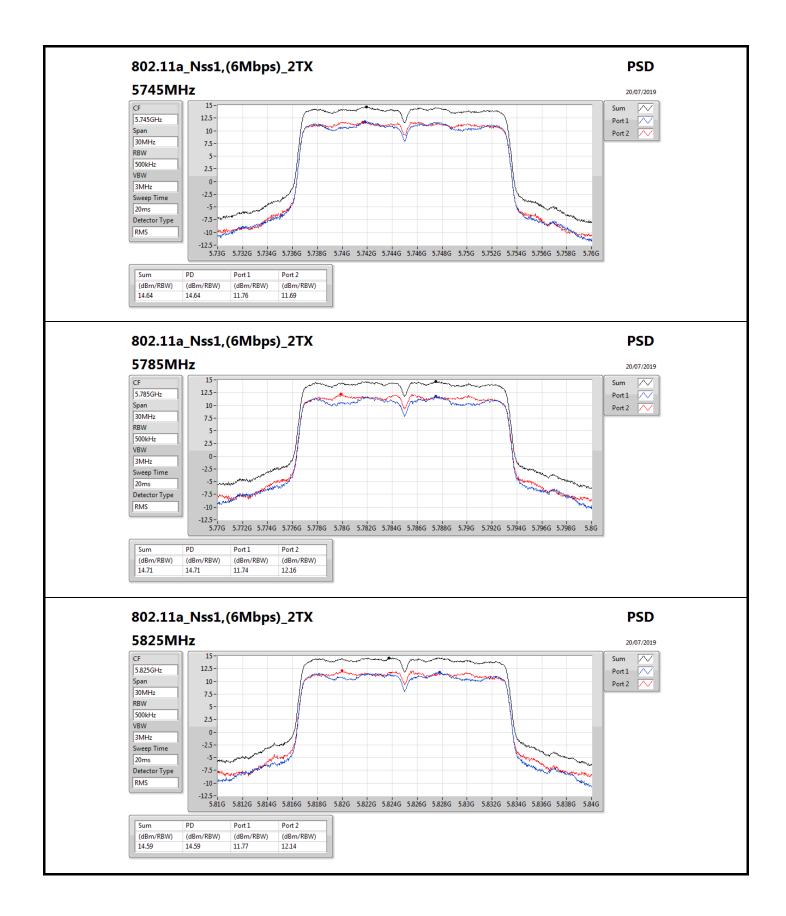
| Mode                           | Result | DG    | Port 1        | Port 2    | PD        | PD Limit       |
|--------------------------------|--------|-------|---------------|-----------|-----------|----------------|
|                                |        | (dBi) | (dBm/RBW)     | (dBm/RBW) | (dBm/RBW) | (dBm/RBW)      |
| 802.11a_Nss1,(6Mbps)_2TX       | -      | -     | -             | -         | -         | -              |
| 5180MHz                        | Pass   | 4.01  | 8.15<br>12.55 | 7.98      | 11.03     | 17.00<br>17.00 |
| 5200MHz                        | Pass   |       |               | 12.48     | 15.48     |                |
| 5240MHz                        | Pass   | 4.01  | 12.36         | 12.42     | 15.37     | 17.00          |
| 5745MHz                        | Pass   | 4.01  | 11.76         | 11.69     | 14.64     | 30.00          |
| 5785MHz                        | Pass   | 4.01  | 11.74         | 12.16     | 14.71     | 30.00          |
| 5825MHz                        | Pass   | 4.01  | 11.77         | 12.14     | 14.59     | 30.00          |
| 802.11ac VHT20_Nss1,(MCS0)_2TX | -      | -     | -             | -         | -         | -              |
| 5180MHz                        | Pass   | 4.01  | 8.09          | 7.89      | 10.94     | 17.00          |
| 5200MHz                        | Pass   | 4.01  | 12.58         | 12.49     | 15.45     | 17.00          |
| 5240MHz                        | Pass   | 4.01  | 12.40         | 12.40     | 15.35     | 17.00          |
| 5745MHz                        | Pass   | 4.01  | 11.28         | 11.40     | 14.24     | 30.00          |
| 5785MHz                        | Pass   | 4.01  | 10.83         | 11.47     | 14.04     | 30.00          |
| 5825MHz                        | Pass   | 4.01  | 11.10         | 11.52     | 14.11     | 30.00          |
| 802.11ac VHT40_Nss1,(MCS0)_2TX | -      | -     | -             | -         | -         | -              |
| 5190MHz                        | Pass   | 4.01  | 4.23          | 4.04      | 7.11      | 17.00          |
| 5230MHz                        | Pass   | 4.01  | 7.35          | 7.81      | 10.55     | 17.00          |
| 5755MHz                        | Pass   | 4.01  | 9.09          | 9.46      | 12.07     | 30.00          |
| 5795MHz                        | Pass   | 4.01  | 8.49          | 8.87      | 11.44     | 30.00          |
| 802.11ac VHT80_Nss1,(MCS0)_2TX | -      | -     | -             | -         | -         | -              |
| 5210MHz                        | Pass   | 4.01  | -1.29         | -1.43     | 1.56      | 17.00          |
| 5775MHz                        | Pass   | 4.01  | 2.14          | 1.54      | 4.56      | 30.00          |

**DG** = Directional Gain; **RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band; **PD** = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

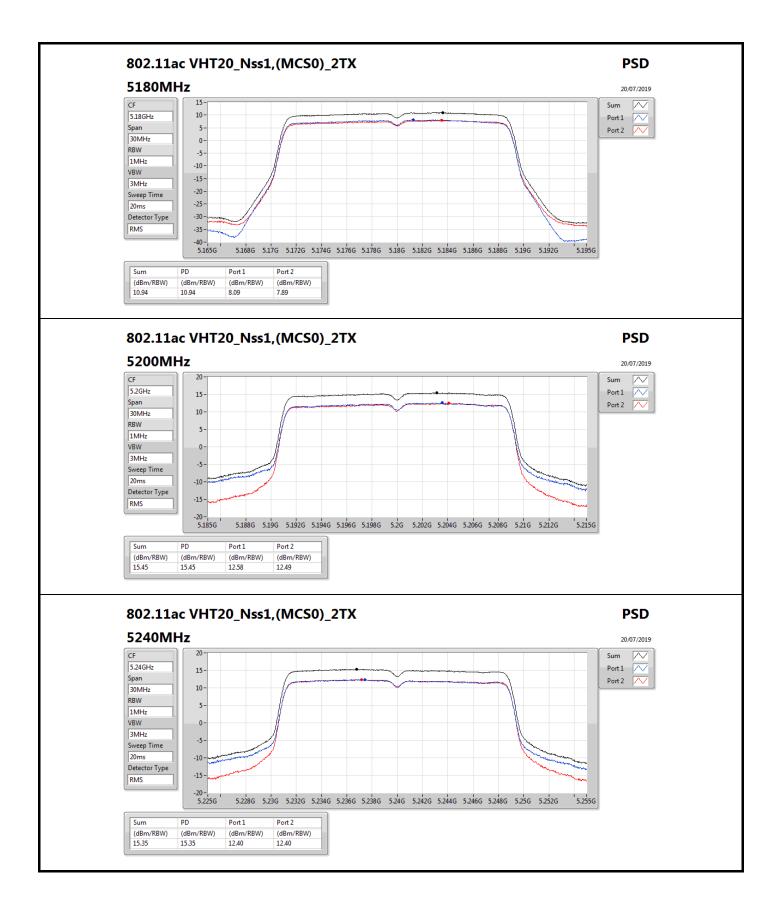




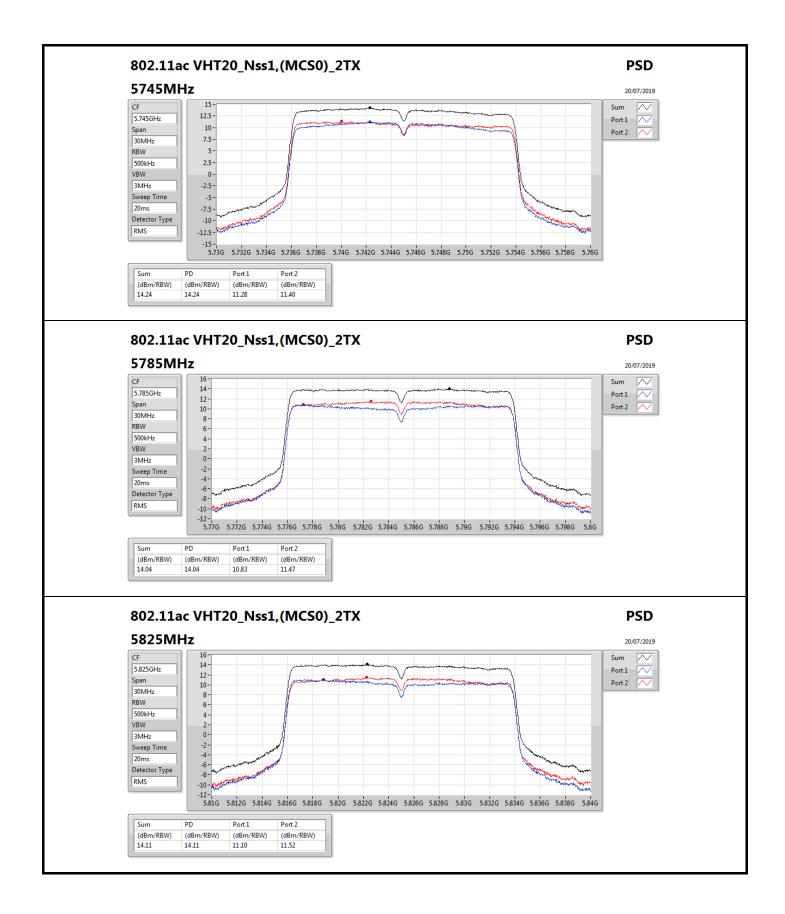




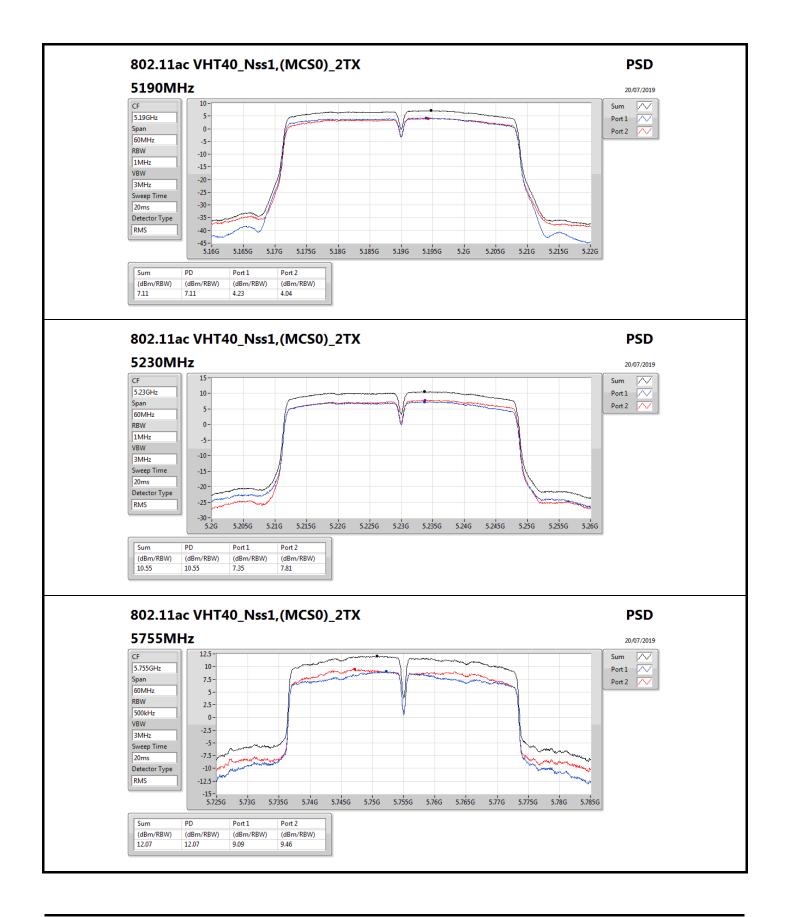




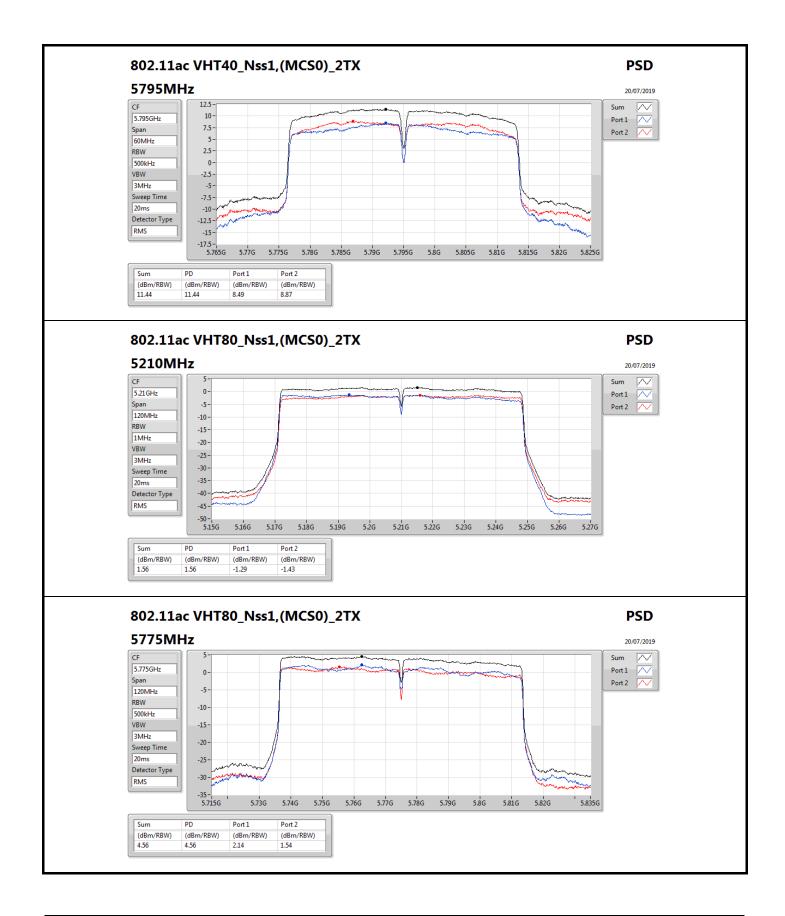














### Summary

| Mode                              | PD        |
|-----------------------------------|-----------|
|                                   | (dBm/RBW) |
| 5.15-5.25GHz                      |           |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | 12.78     |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | 11.07     |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | 5.25      |
| 5.725-5.85GHz                     | -         |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | 10.30     |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | 8.42      |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | 7.25      |

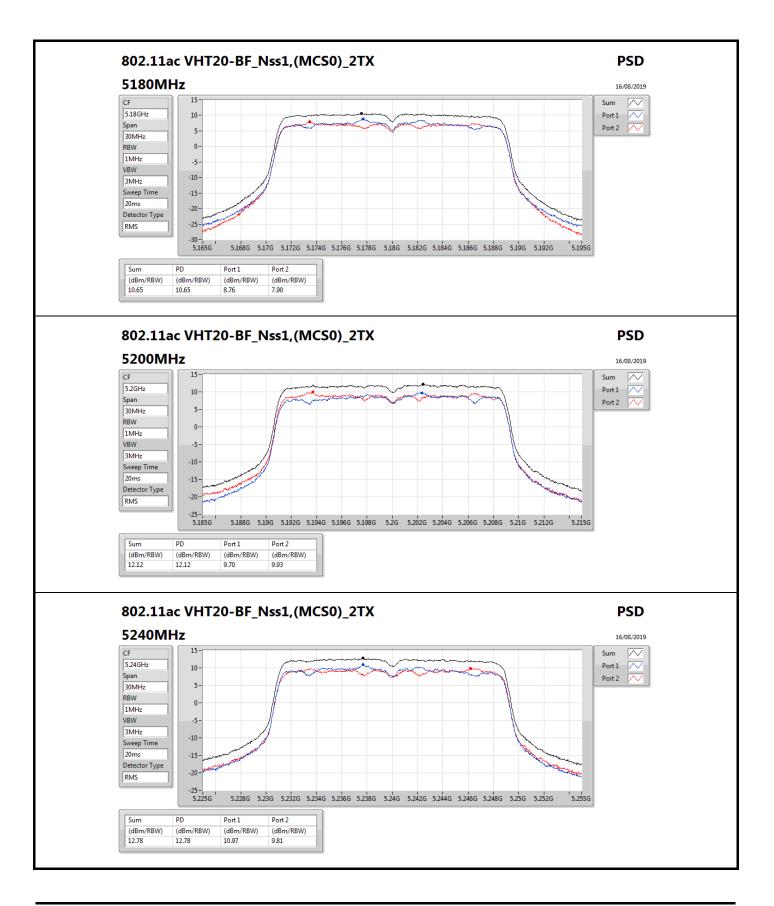
**RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;



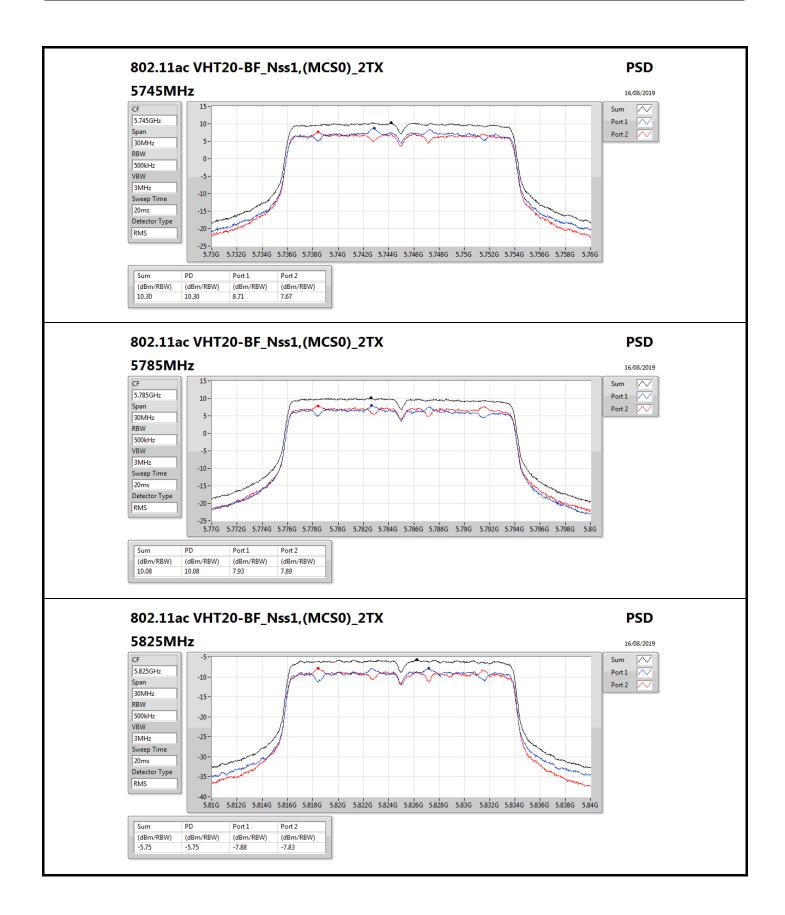
| Mode                              | Result | DG    | Port 1    | Port 2    | PD        | PD Limit  |
|-----------------------------------|--------|-------|-----------|-----------|-----------|-----------|
|                                   |        | (dBi) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) | (dBm/RBW) |
| 802.11ac VHT20-BF_Nss1,(MCS0)_2TX | -      | -     | -         | -         | -         | -         |
| 5180MHz                           | Pass   | 4.01  | 8.76      | 7.90      | 10.65     | 17.00     |
| 5200MHz                           | Pass   | 4.01  | 9.70      | 9.93      | 12.12     | 17.00     |
| 5240MHz                           | Pass   | 4.01  | 10.97     | 9.81      | 12.78     | 17.00     |
| 5745MHz                           | Pass   | 4.01  | 8.71      | 7.67      | 10.30     | 30.00     |
| 5785MHz                           | Pass   | 4.01  | 7.93      | 7.89      | 10.08     | 30.00     |
| 5825MHz                           | Pass   | 4.01  | -7.88     | -7.83     | -5.75     | 30.00     |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | -      | -     | -         | -         | -         | -         |
| 5190MHz                           | Pass   | 4.01  | 4.43      | 4.48      | 6.60      | 17.00     |
| 5230MHz                           | Pass   | 4.01  | 9.05      | 8.76      | 11.07     | 17.00     |
| 5755MHz                           | Pass   | 4.01  | 5.08      | 5.02      | 7.77      | 30.00     |
| 5795MHz                           | Pass   | 4.01  | 6.01      | 6.69      | 8.42      | 30.00     |
| 802.11ac VHT80-BF_Nss1,(MCS0)_2TX | -      | -     | -         | -         | -         | -         |
| 5210MHz                           | Pass   | 4.01  | 3.35      | 2.64      | 5.25      | 17.00     |
| 5775MHz                           | Pass   | 4.01  | 4.94      | 4.72      | 7.25      | 30.00     |

**DG** = Directional Gain; **RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band; **PD** = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

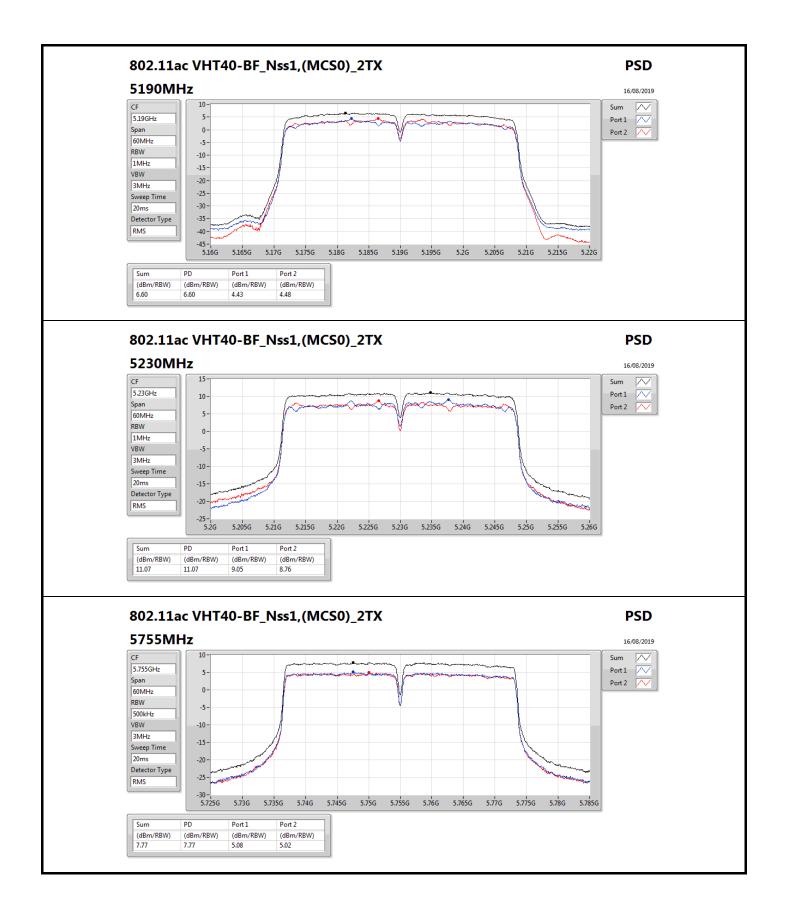




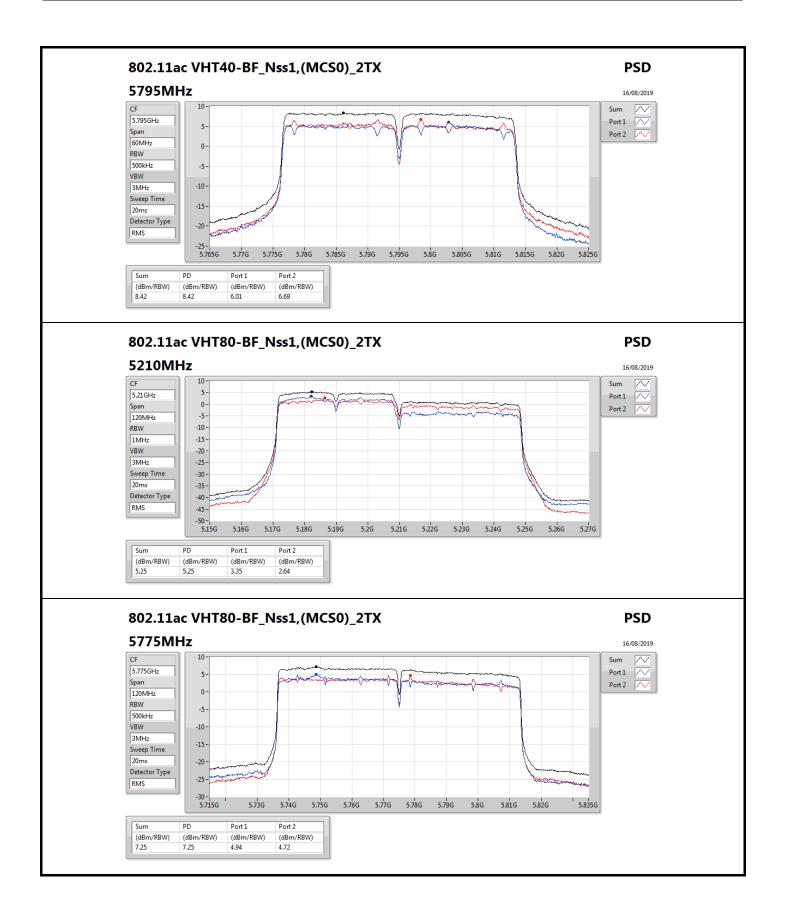




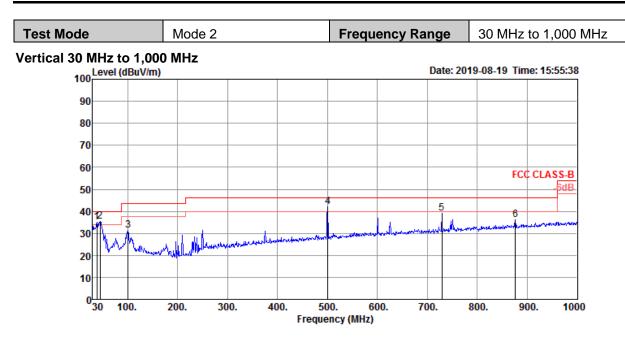








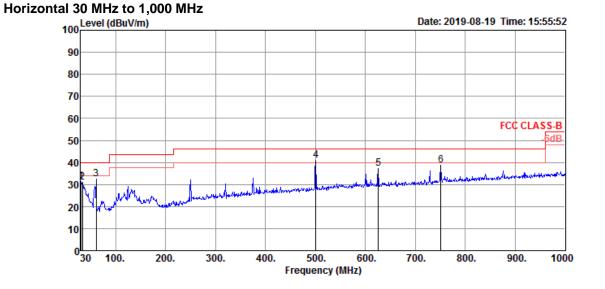




|   | Freq   | Level  |        | Over<br>Limit |       |      |       |       | A/Pos | T/Pos | Remark | Pol/Phase |
|---|--------|--------|--------|---------------|-------|------|-------|-------|-------|-------|--------|-----------|
|   | MHz    | dBuV/m | dBuV/m | dB            | dBuV  | dB   | dB/m  | dB    | cm    | deg   |        |           |
| 1 | 38.73  | 35.19  | 40.00  | -4.81         | 45.37 | 0.81 | 20.51 | 31.50 | 100   | 243   | Peak   | VERTICAL  |
| 2 | 44.55  | 35.33  | 40.00  | -4.67         | 48.78 | 0.89 | 17.25 | 31.59 | 100   | 123   | Peak   | VERTICAL  |
| 3 | 100.81 | 31.22  | 43.50  | -12.28        | 44.68 | 1.31 | 17.22 | 31.99 | 125   | 329   | Peak   | VERTICAL  |
| 4 | 500.45 | 42.04  | 46.00  | -3.96         | 47.75 | 2.94 | 23.83 | 32.48 | 100   | 253   | Peak   | VERTICAL  |
| 5 | 729.37 | 39.03  | 46.00  | -6.97         | 41.89 | 3.57 | 25.96 | 32.39 | 100   | 120   | Peak   | VERTICAL  |
| 6 | 875.84 | 36.12  | 46.00  | -9.88         | 37.10 | 3.92 | 27.50 | 32.40 | 100   | 197   | Peak   | VERTICAL  |



Limit Over



| Freq    | Level  | Line   | Limit | Level | Loss | Factor | Factor |     |     | Remark | Pol/Phase  |
|---------|--------|--------|-------|-------|------|--------|--------|-----|-----|--------|------------|
| <br>MHz | dBuV/m | dBuV/m | dB    | dBuV  | dB   | dB/m   | dB     | cm  | deg |        |            |
| 30.97   | 31.45  | 40.00  | -8.55 | 37.21 | 0.69 | 25.11  | 31.56  | 300 | 357 | Peak   | HORIZONTAL |
| 33.88   | 30.82  | 40.00  | -9.18 | 38.19 | 0.74 | 23.39  | 31.50  | 100 | 86  | Peak   | HORIZONTAL |
| 61.04   | 32.30  | 40.00  | -7.70 | 50.55 | 1.00 | 12.60  | 31.85  | 200 | 267 | Peak   | HORIZONTAL |
| 500.45  | 41.11  | 46.00  | -4.89 | 46.82 | 2.94 | 23.83  | 32.48  | 150 | 102 | Peak   | HORIZONTAL |
| 625.58  | 37.18  | 46.00  | -8.82 | 41.12 | 3.28 | 25.21  | 32.43  | 125 | 125 | Peak   | HORIZONTAL |
| 750.71  | 38.77  | 46.00  | -7.23 | 41.26 | 3.64 | 26.20  | 32.33  | 100 | 196 | Peak   | HORIZONTAL |
|         |        |        |       |       |      |        |        |     |     |        |            |

Read CableAntenna Preamp A/Pos T/Pos

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## . : 2 of 2



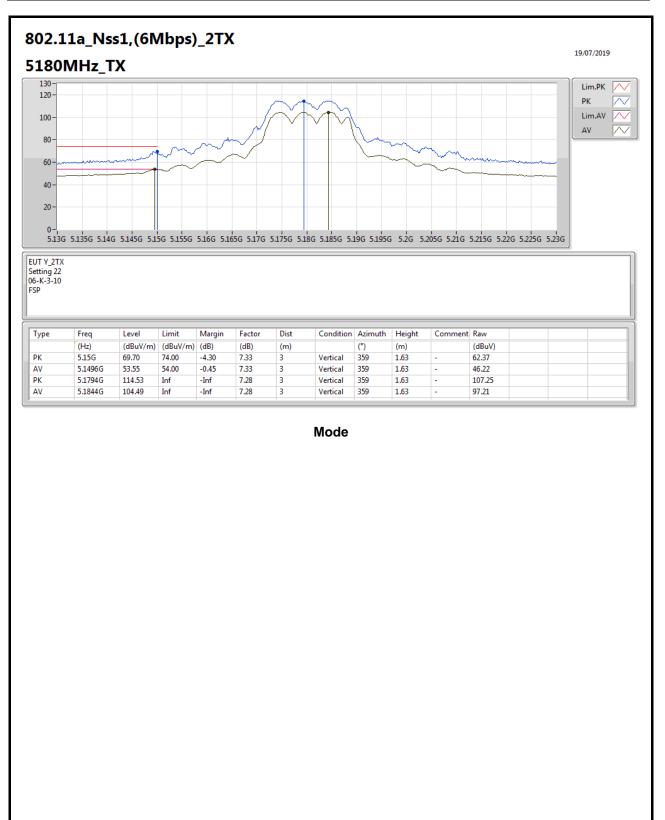
## RSE TX above 1GHz Result

## Summary

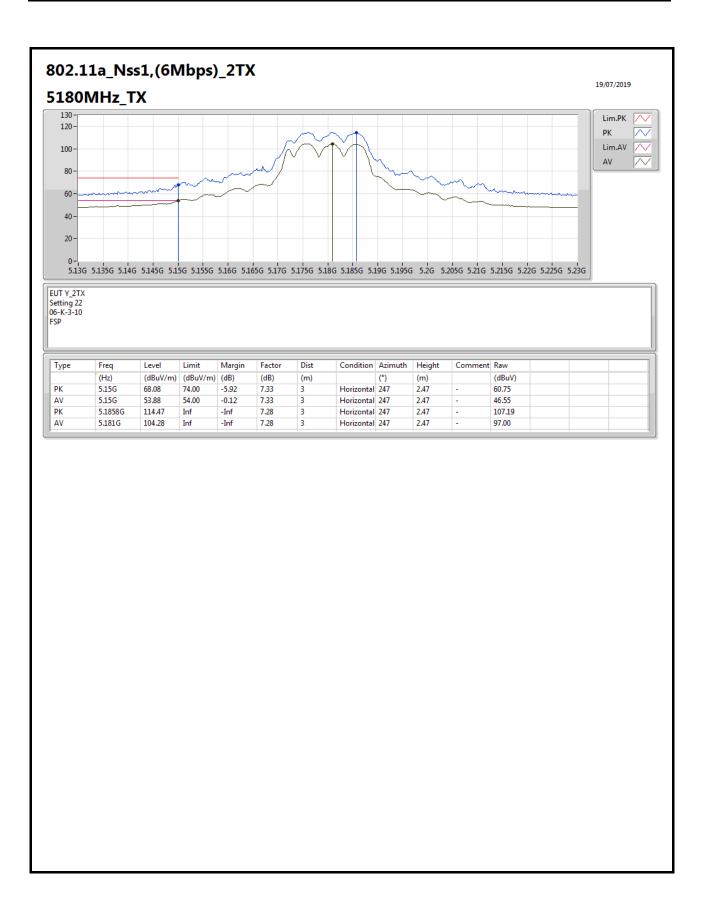
| Mode                     | Result | Туре | Freq    | Level    | Limit    | Margin | Factor | Dist | Condition  | Azimuth | Height | Comments |
|--------------------------|--------|------|---------|----------|----------|--------|--------|------|------------|---------|--------|----------|
|                          |        |      | (Hz)    | (dBuV/m) | (dBuV/m) | (dB)   | (dB)   | (m)  |            | (°)     | (m)    |          |
| 5.15-5.25GHz             | -      | -    | -       | -        | -        | -      | -      | -    | -          | -       | -      | -        |
| 802.11a_Nss1,(6Mbps)_2TX | Pass   | AV   | 5.1492G | 53.99    | 54.00    | -0.01  | 7.33   | 3    | Horizontal | 260     | 1.70   | -        |



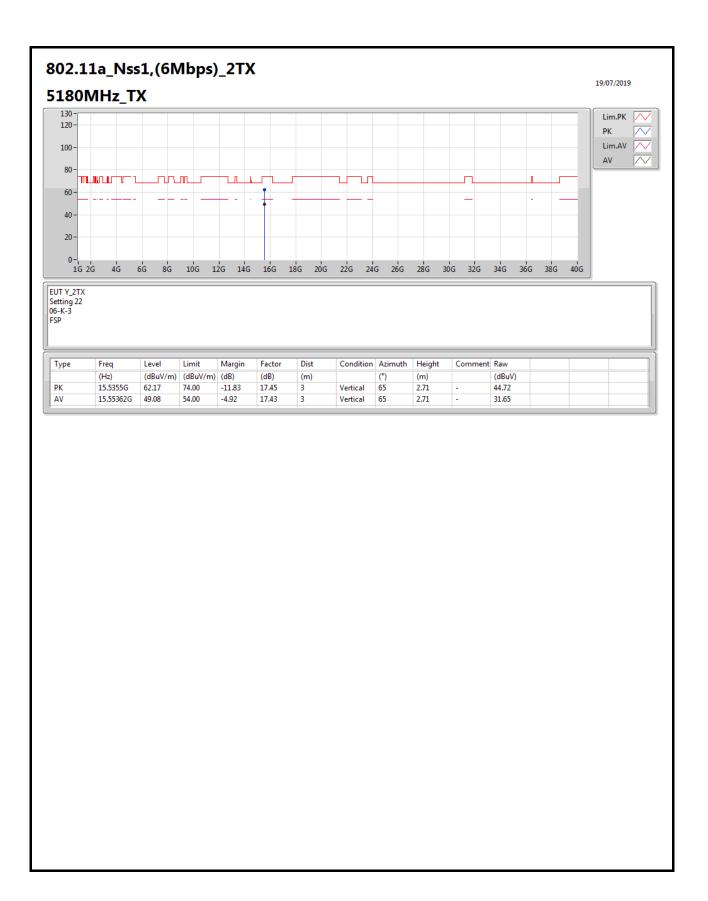
## Appendix E.2



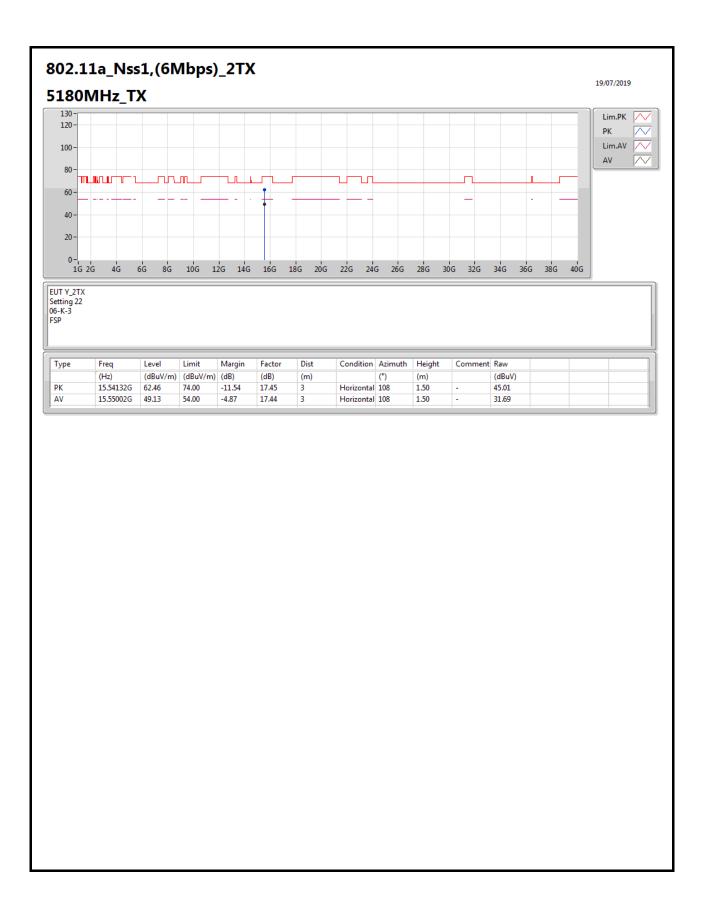




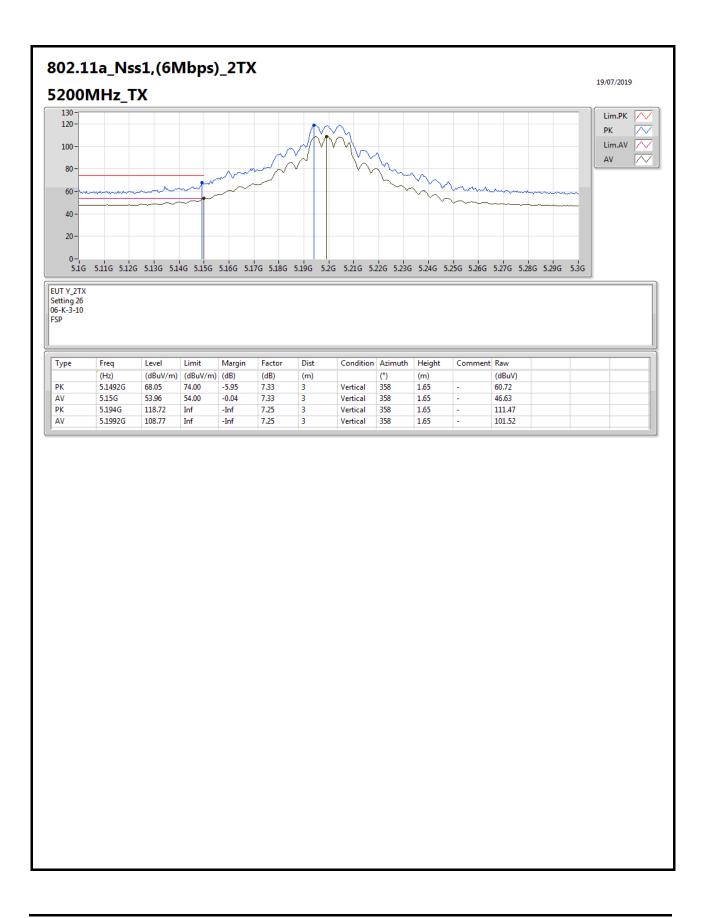




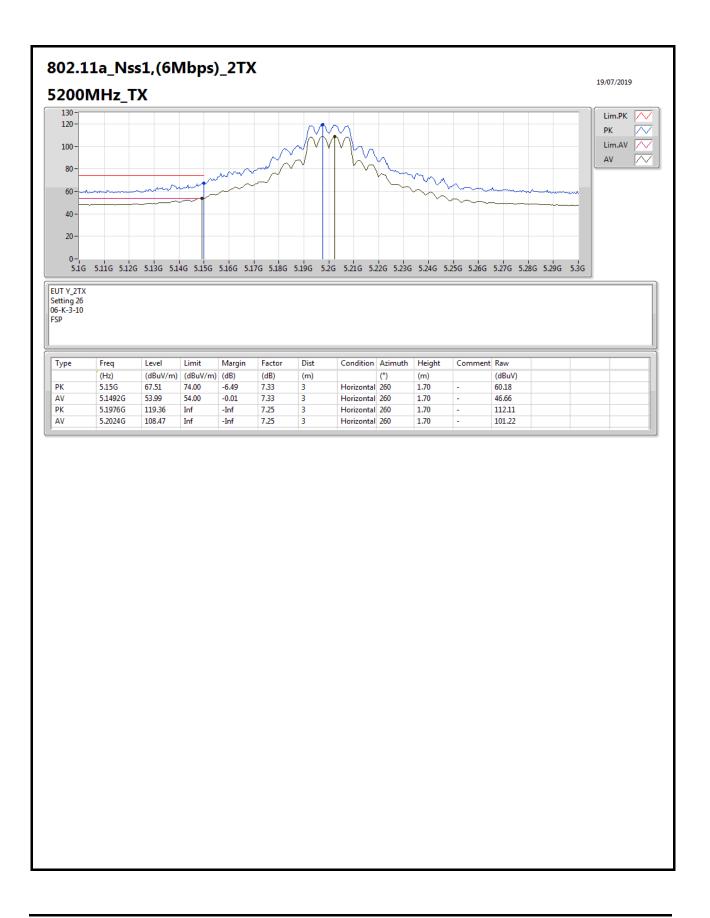




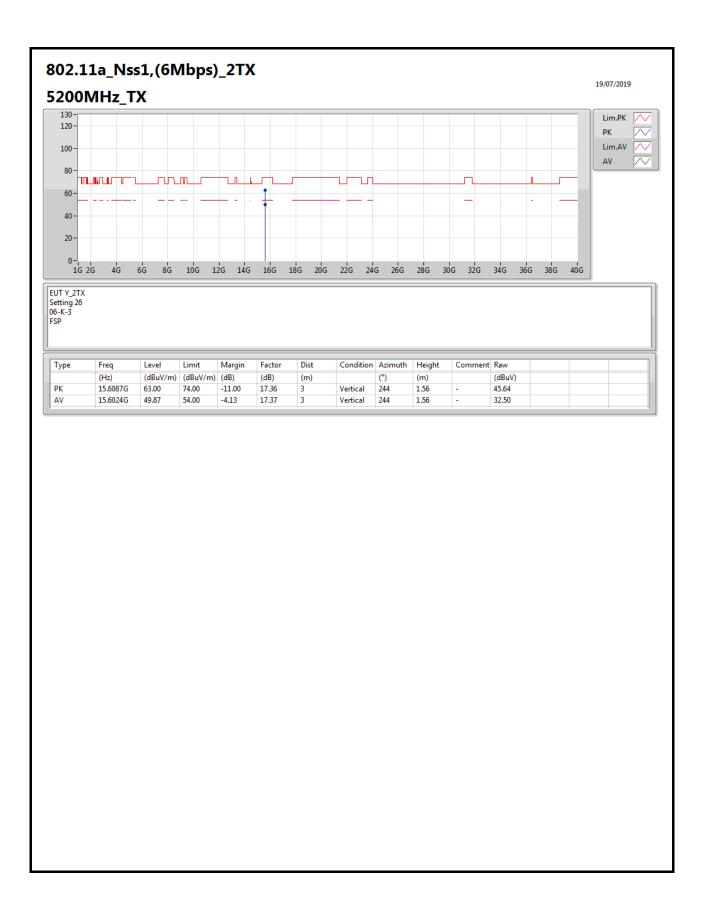




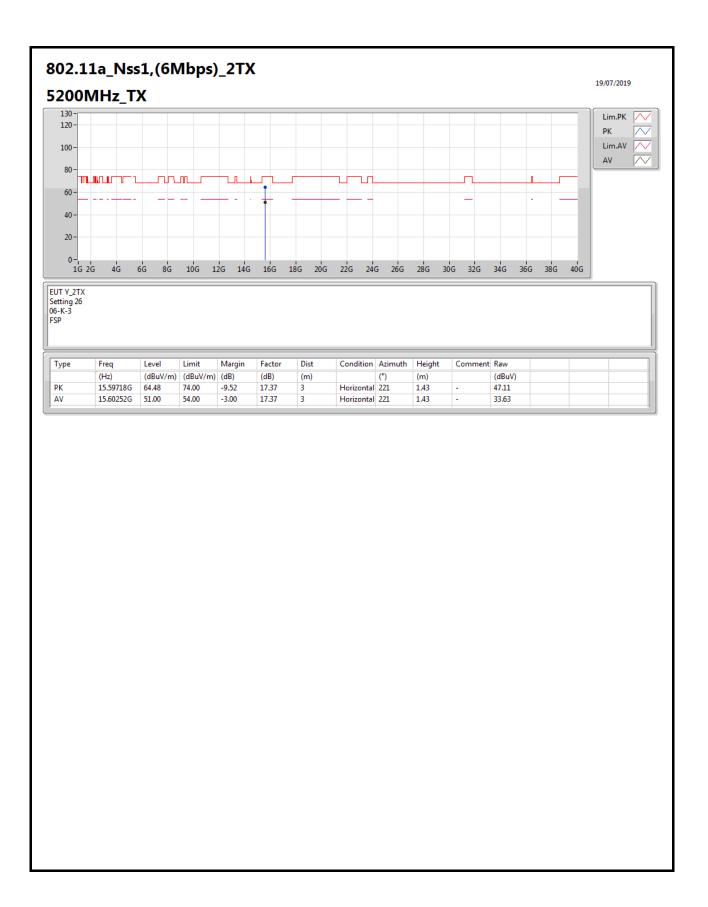




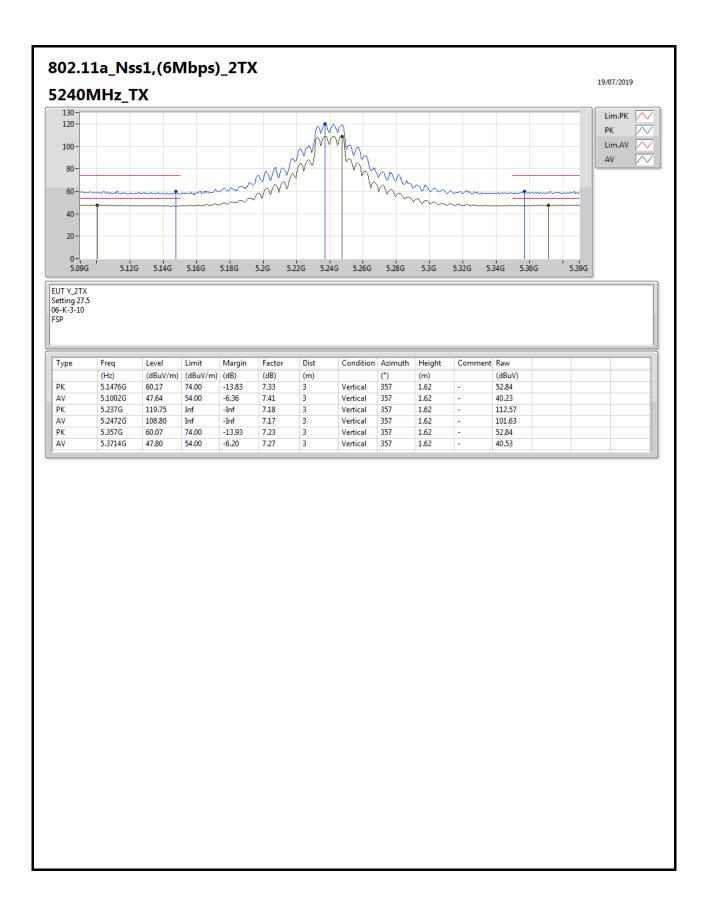




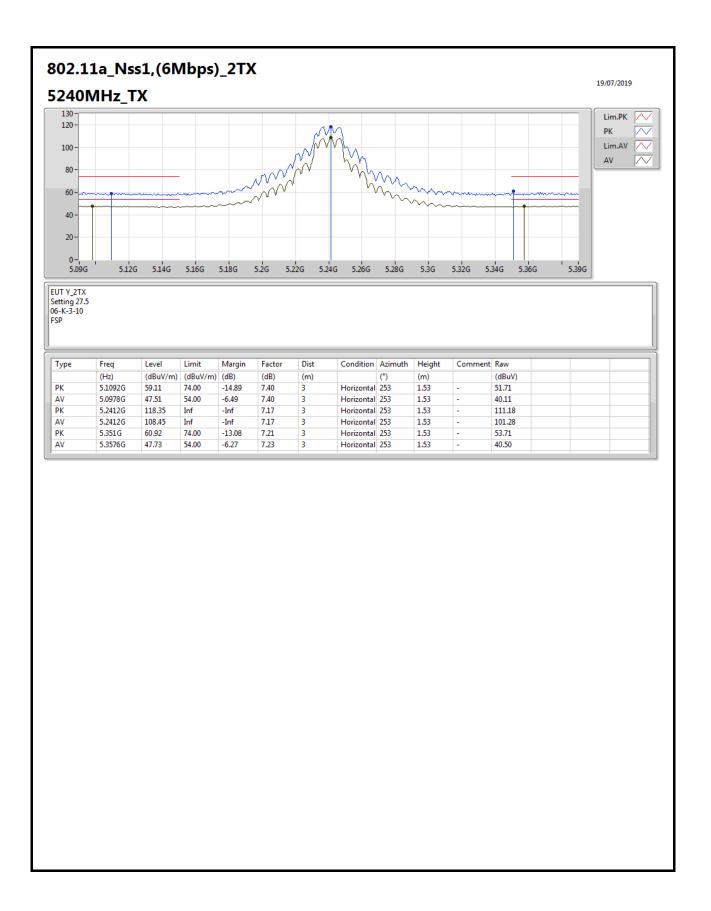




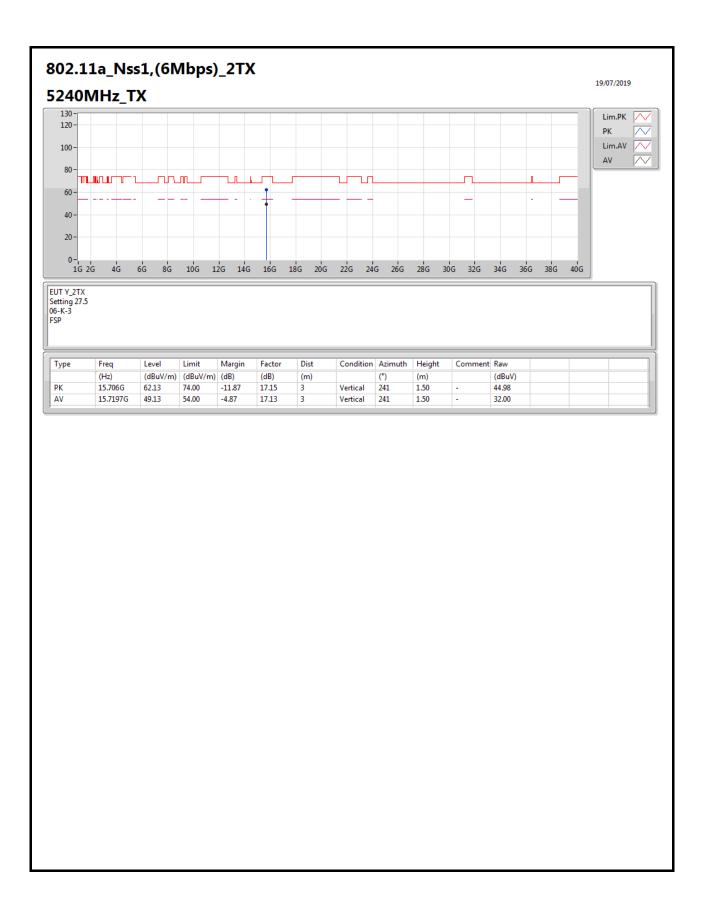




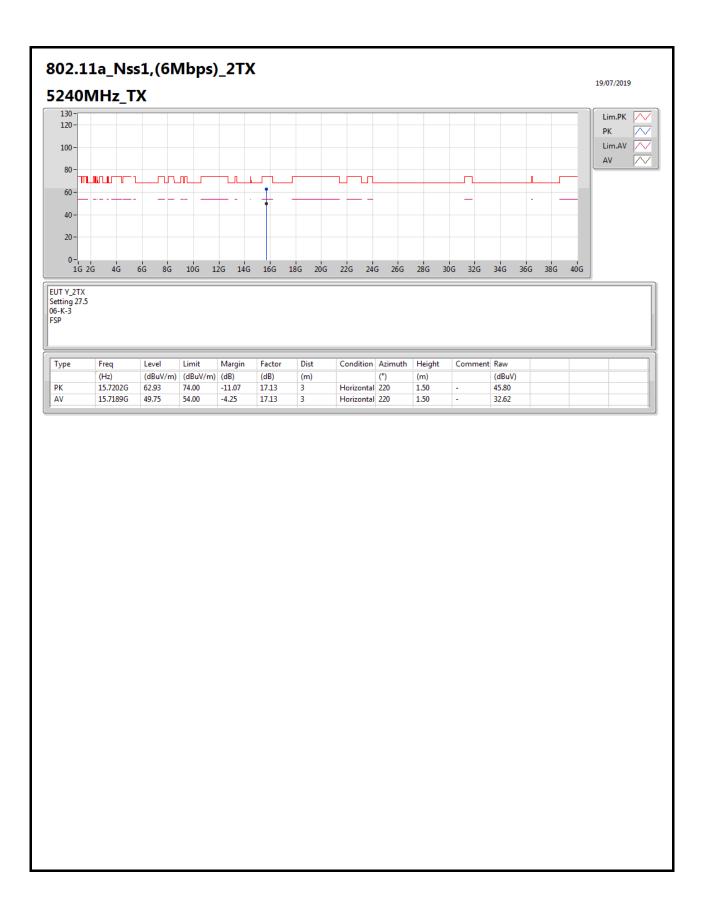




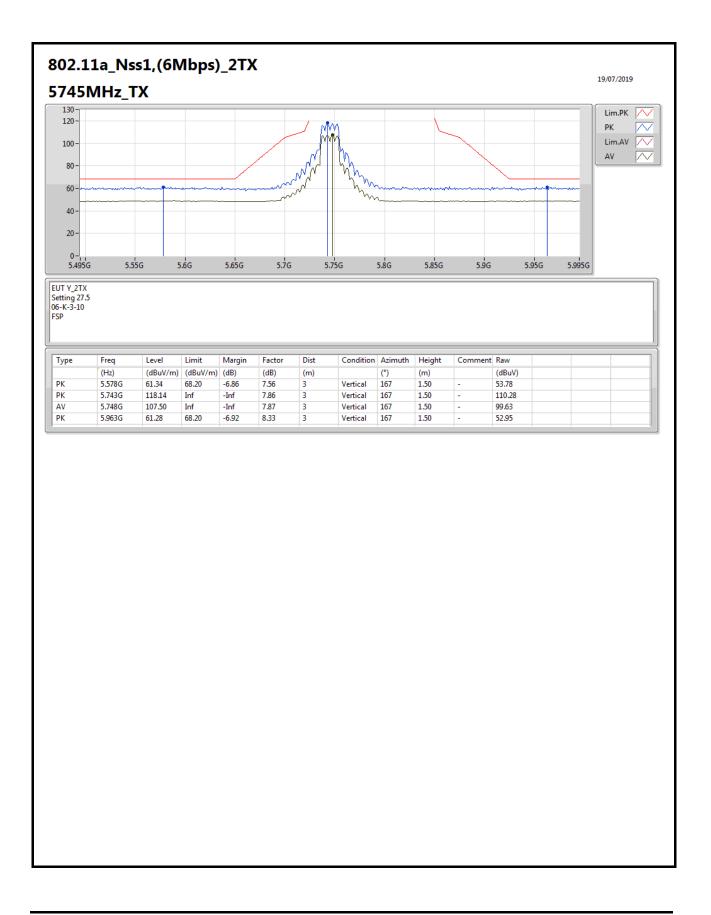




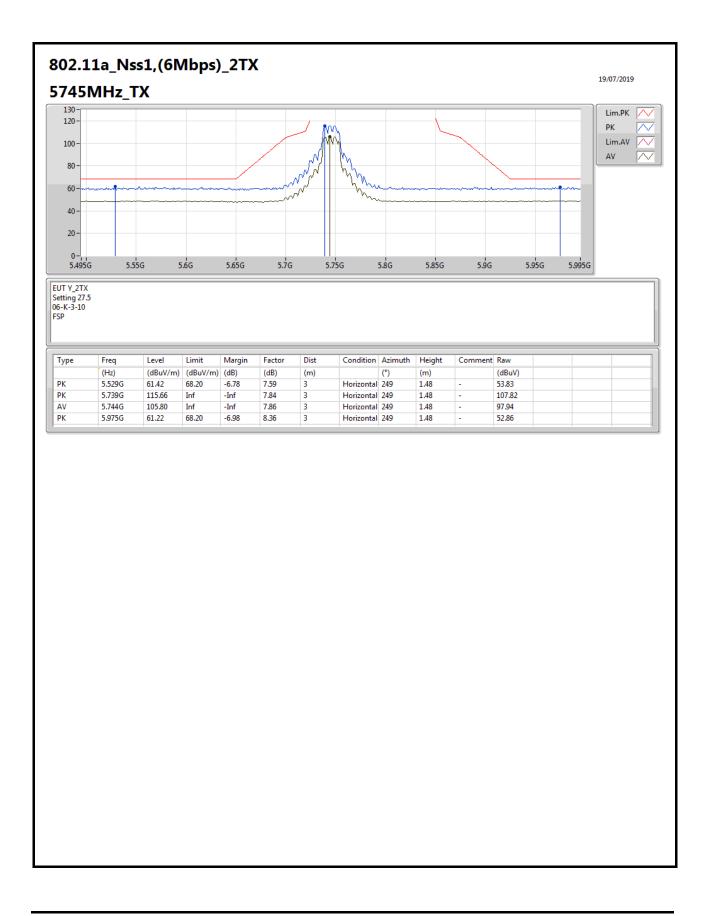




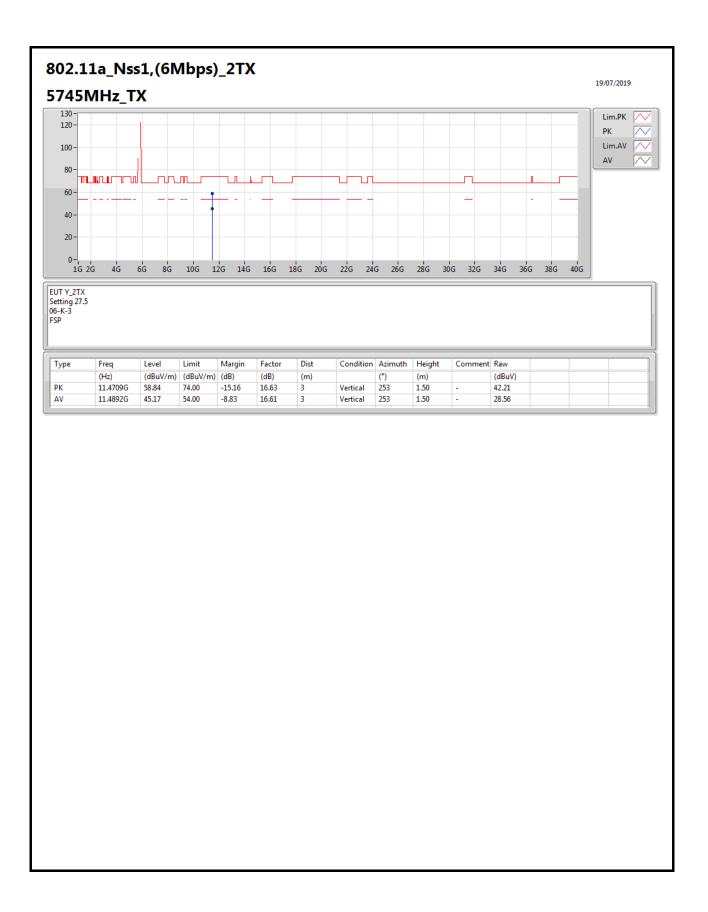




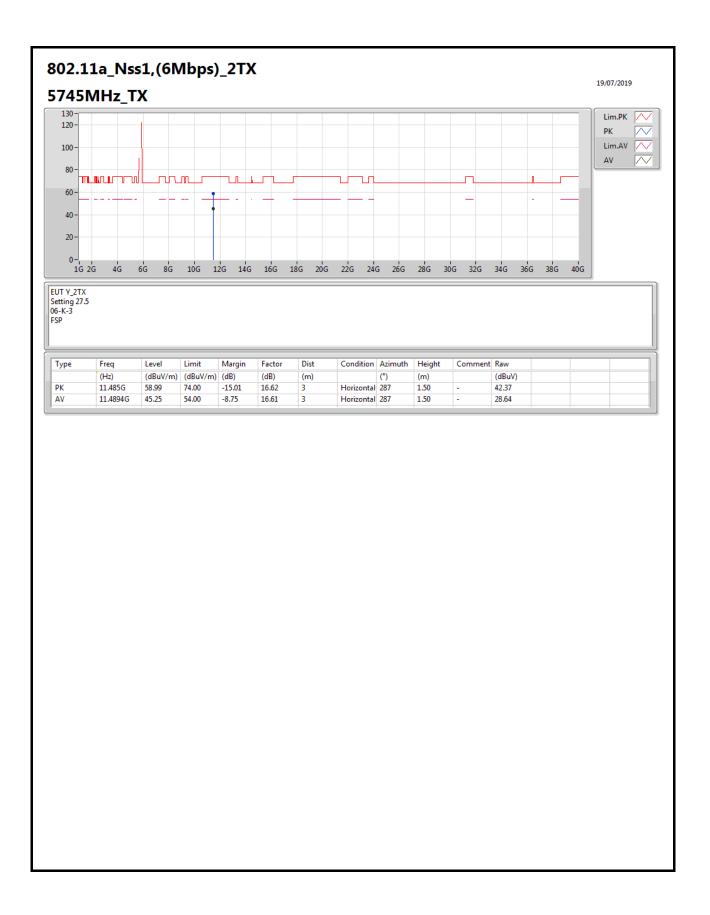




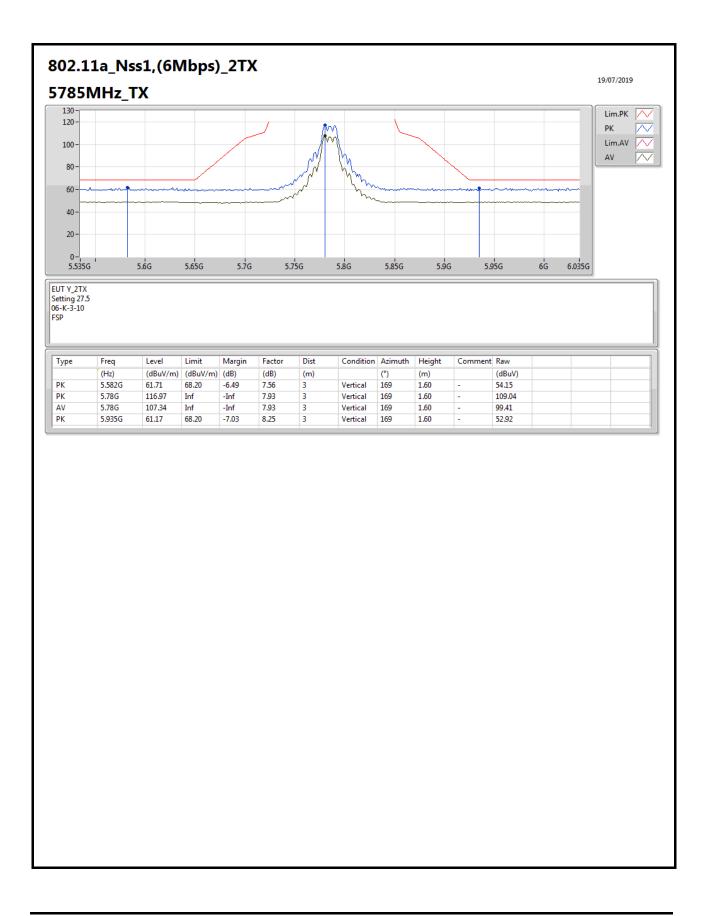




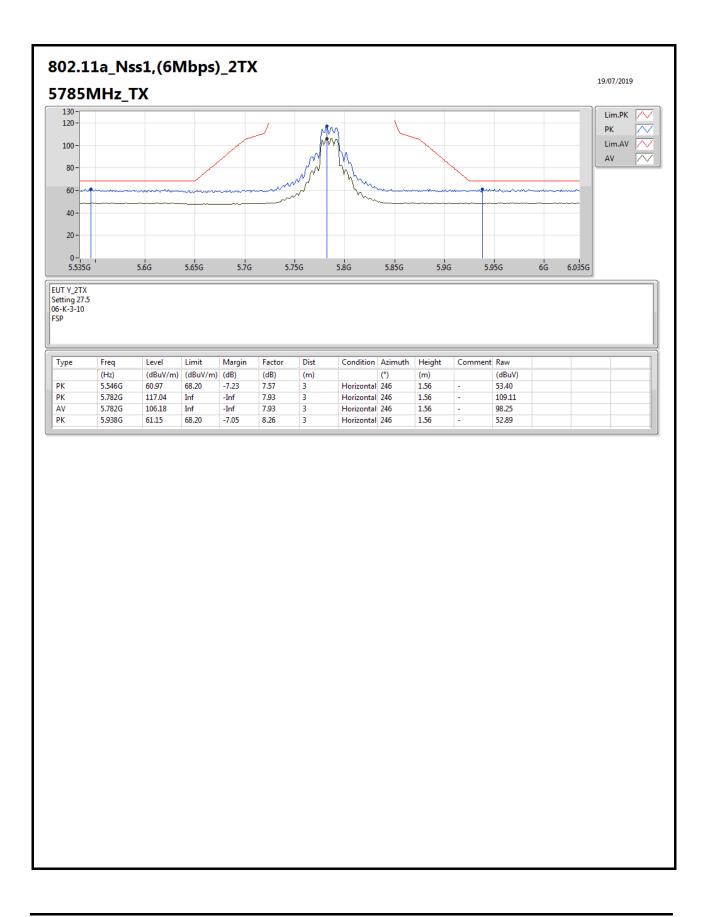




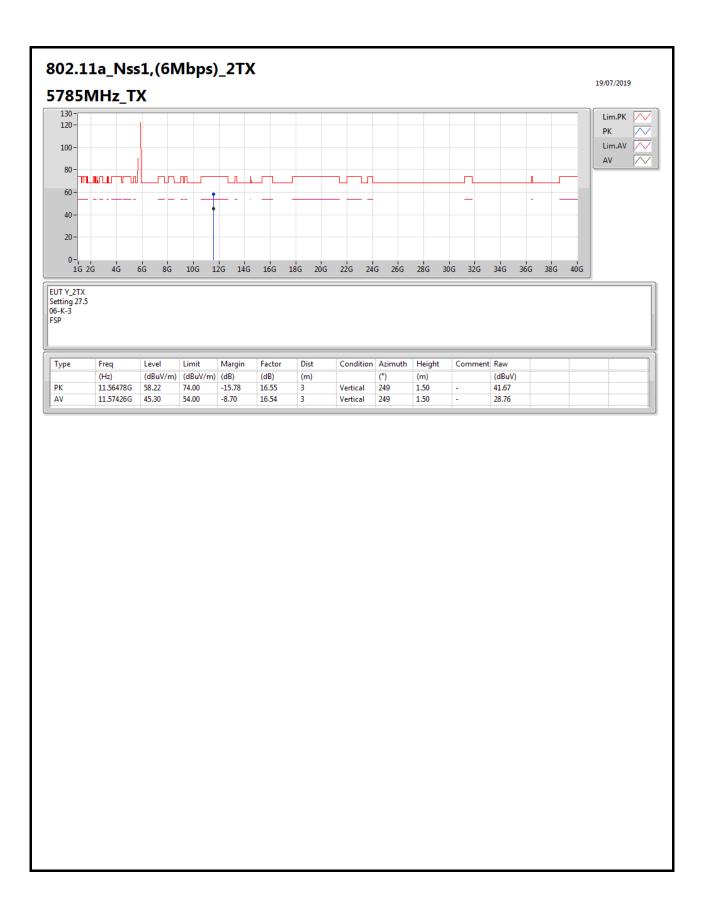




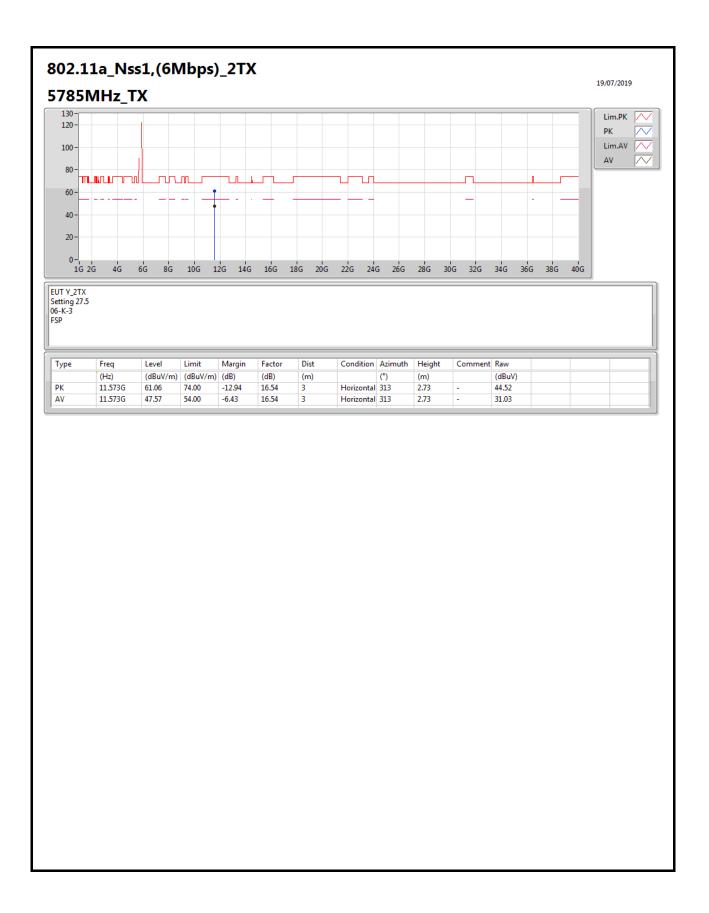




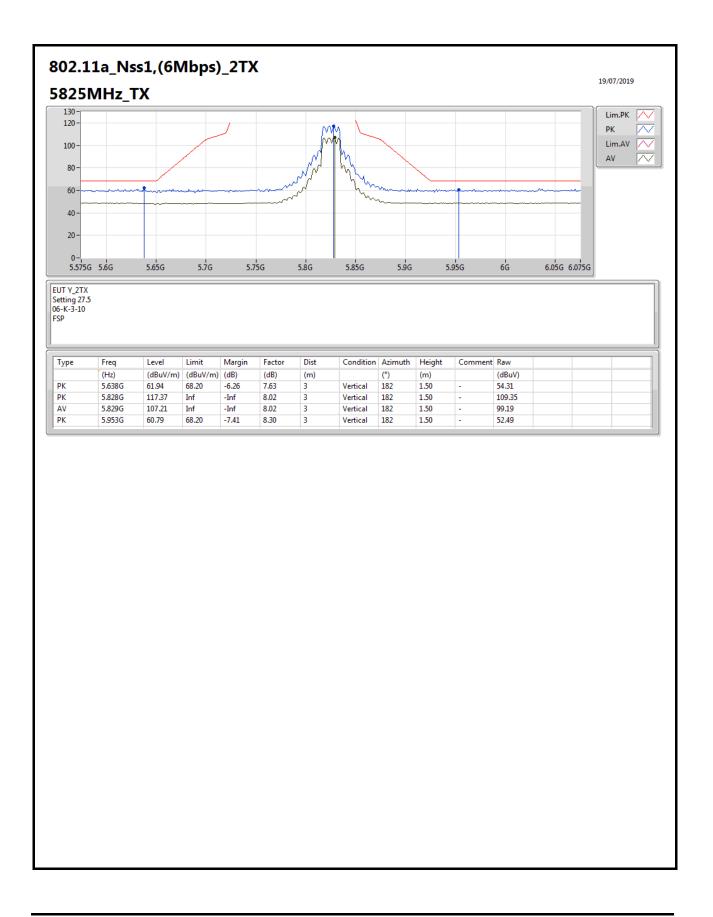




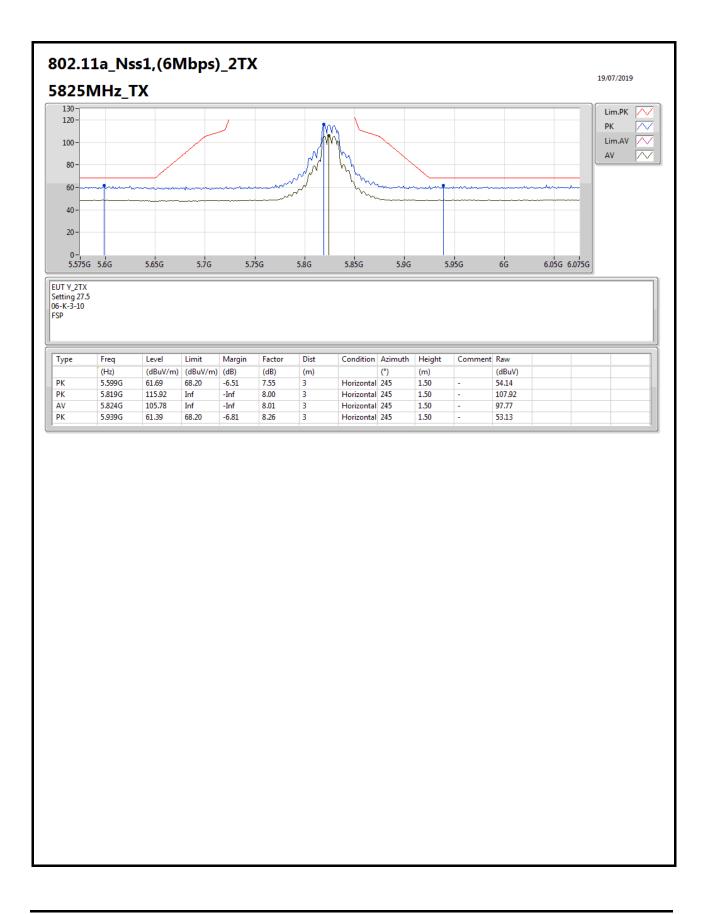




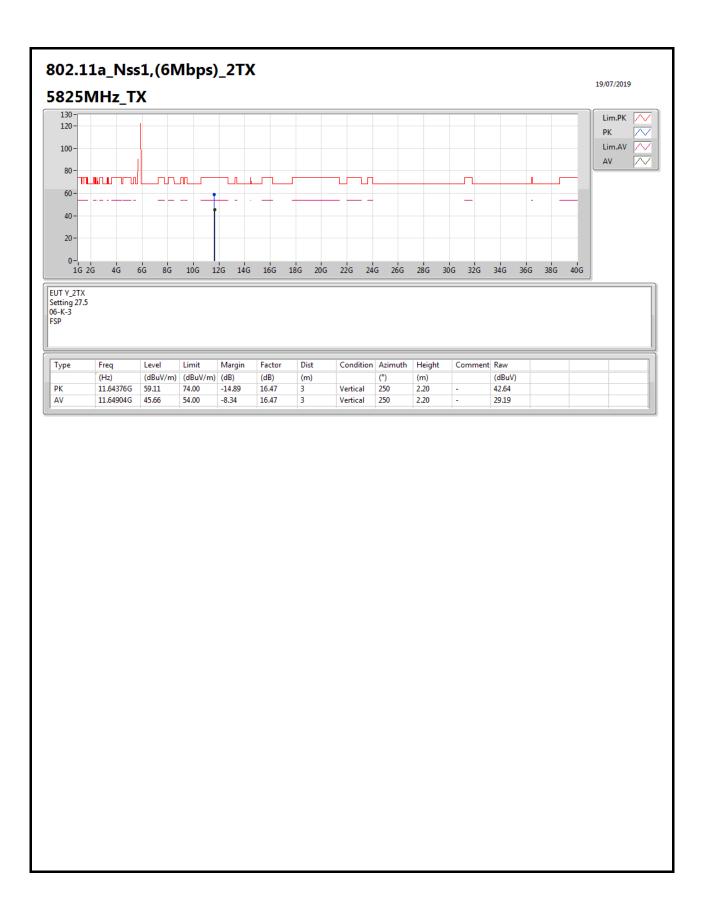




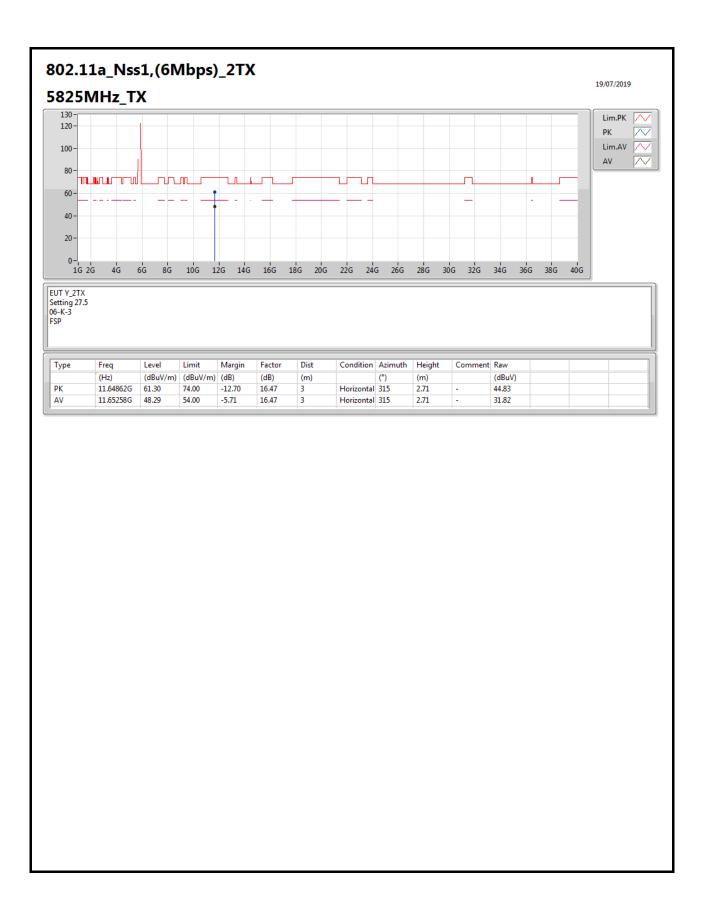




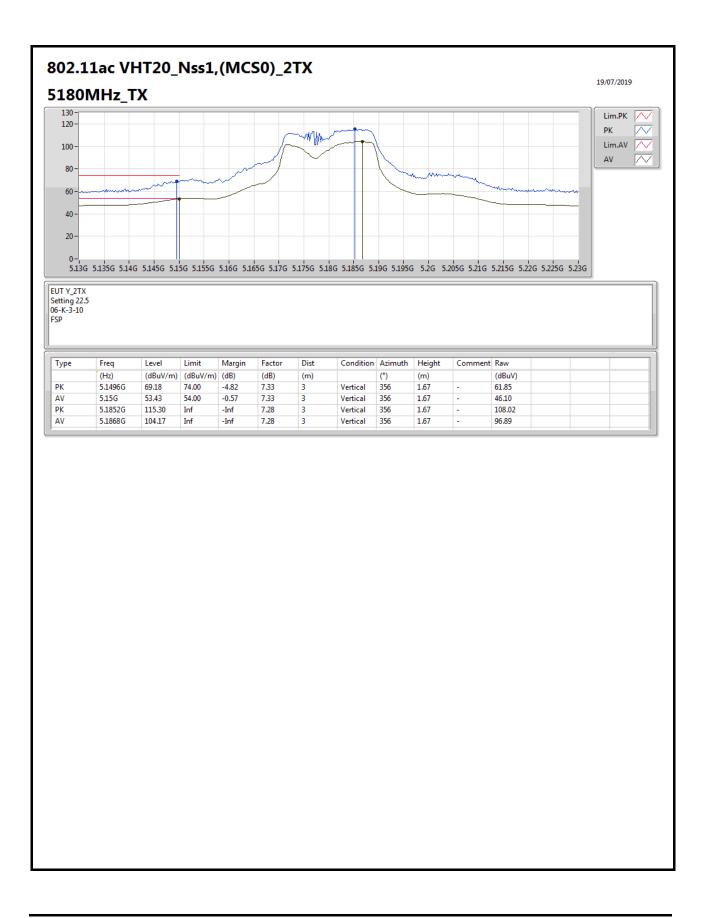




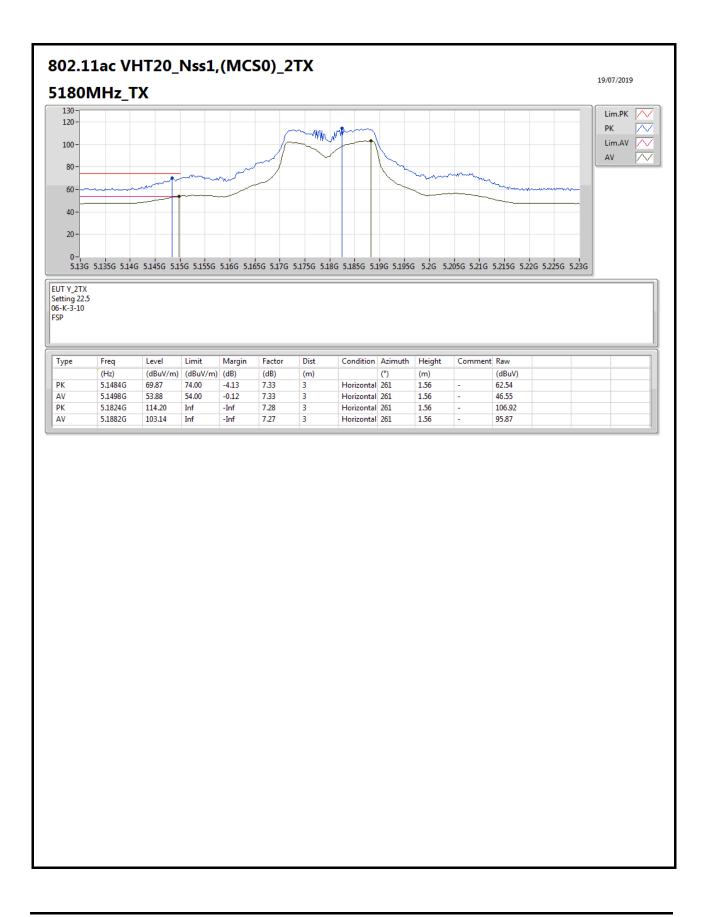




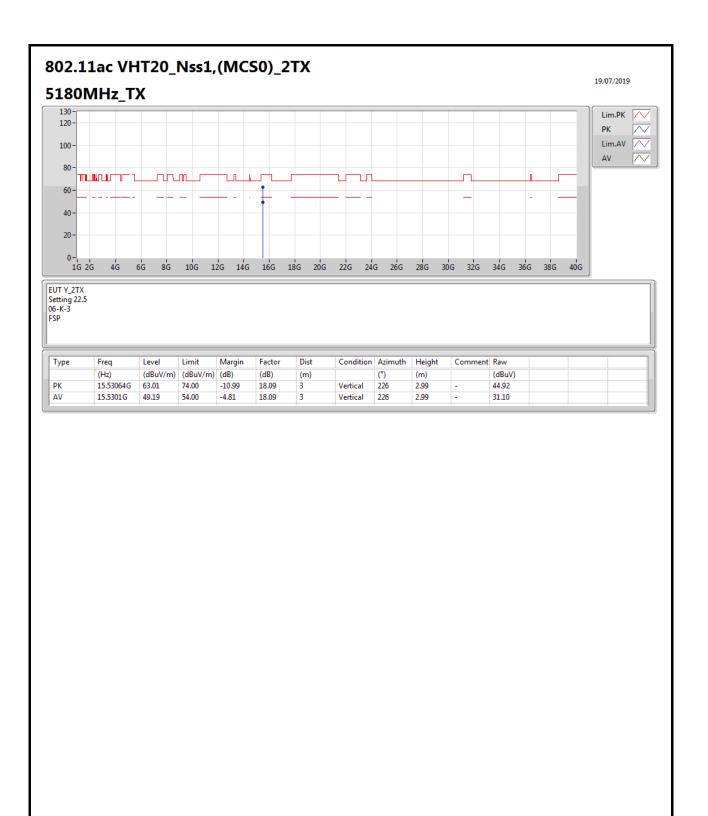




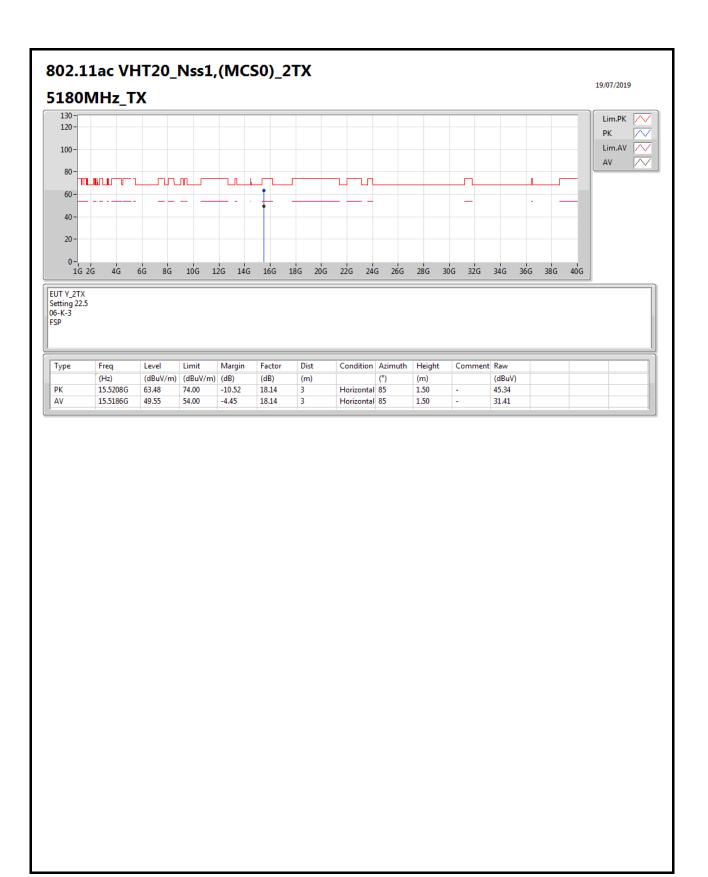




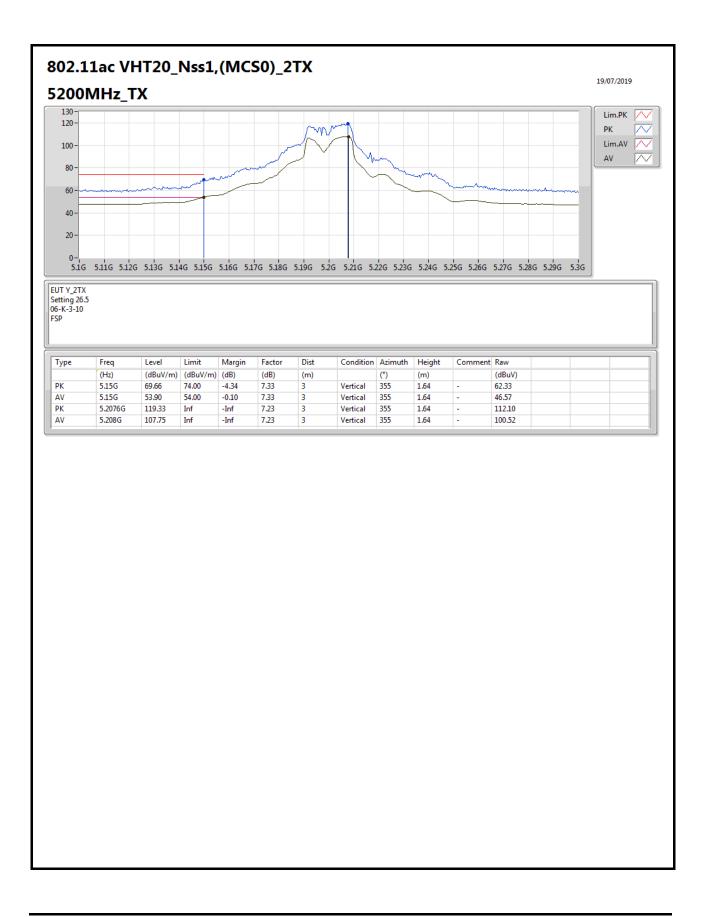




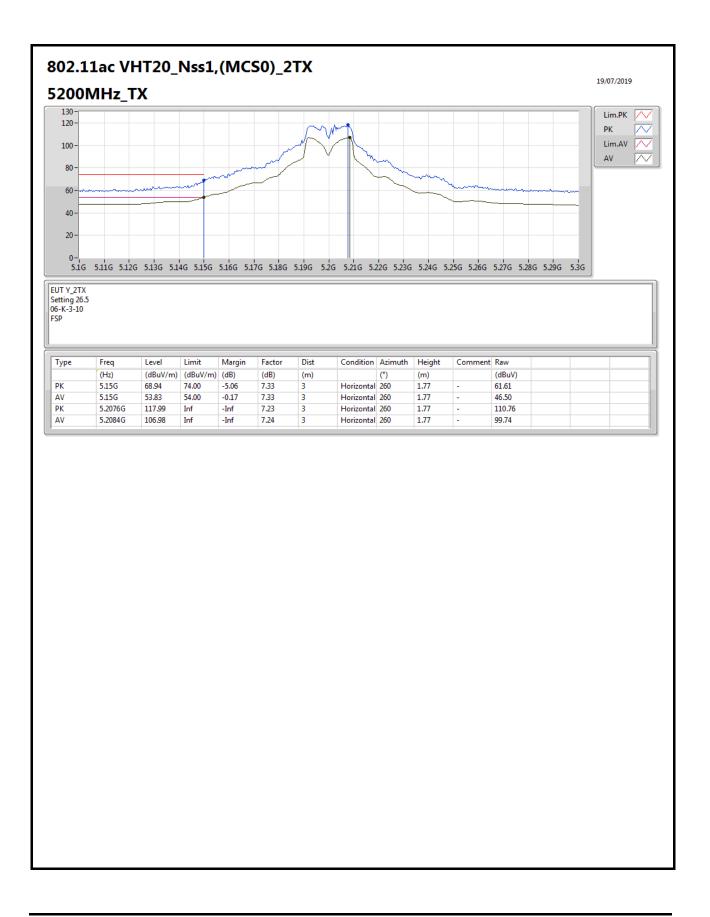




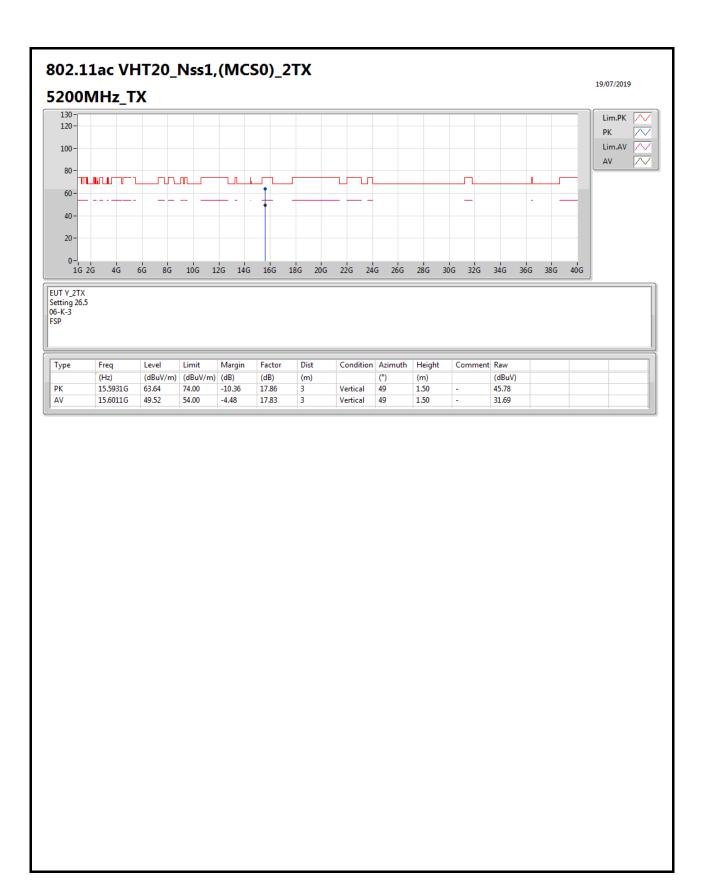




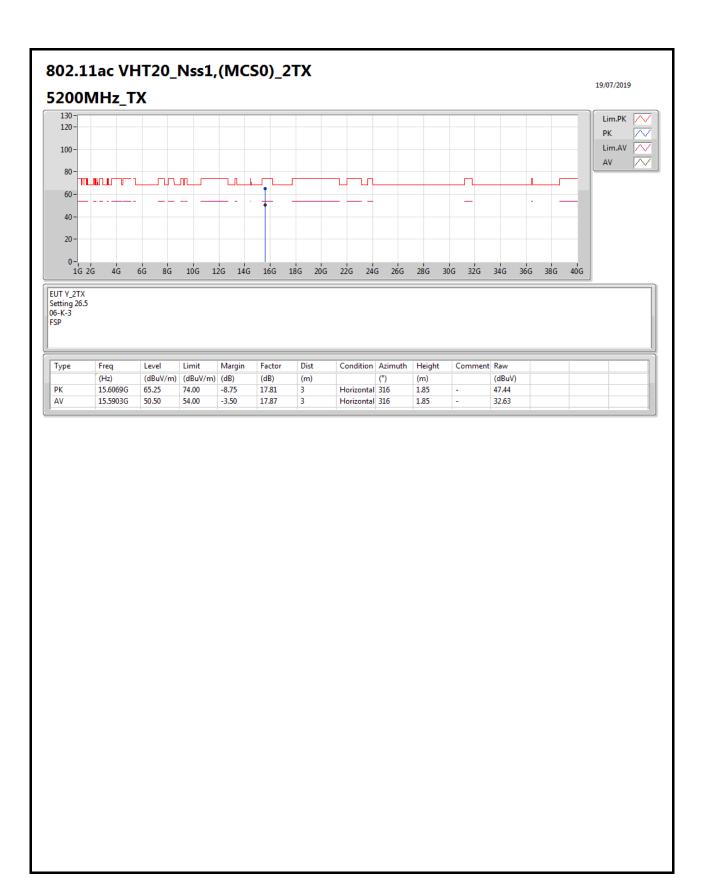




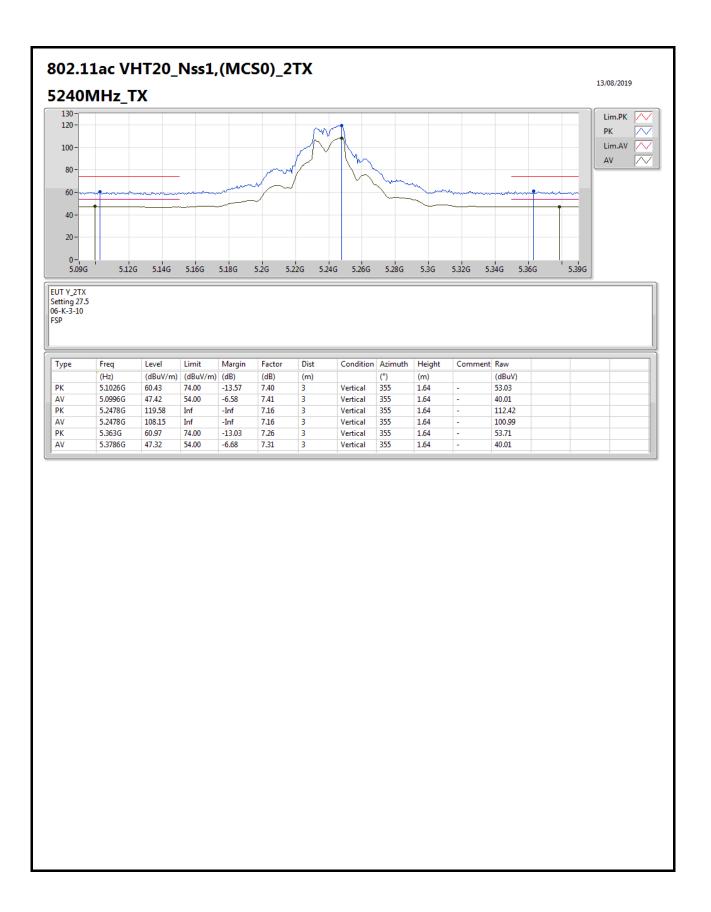




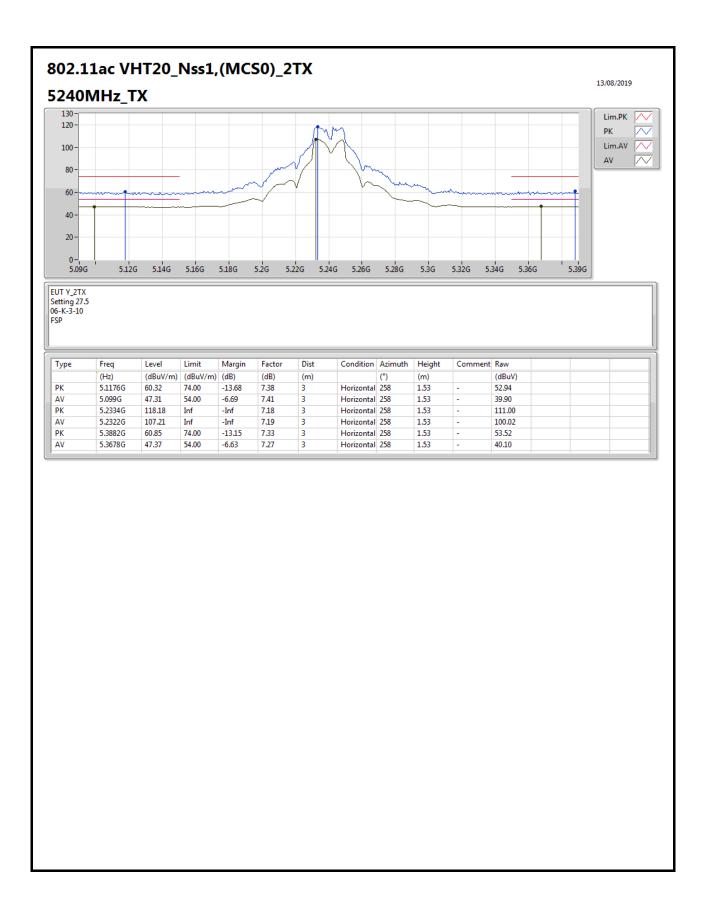




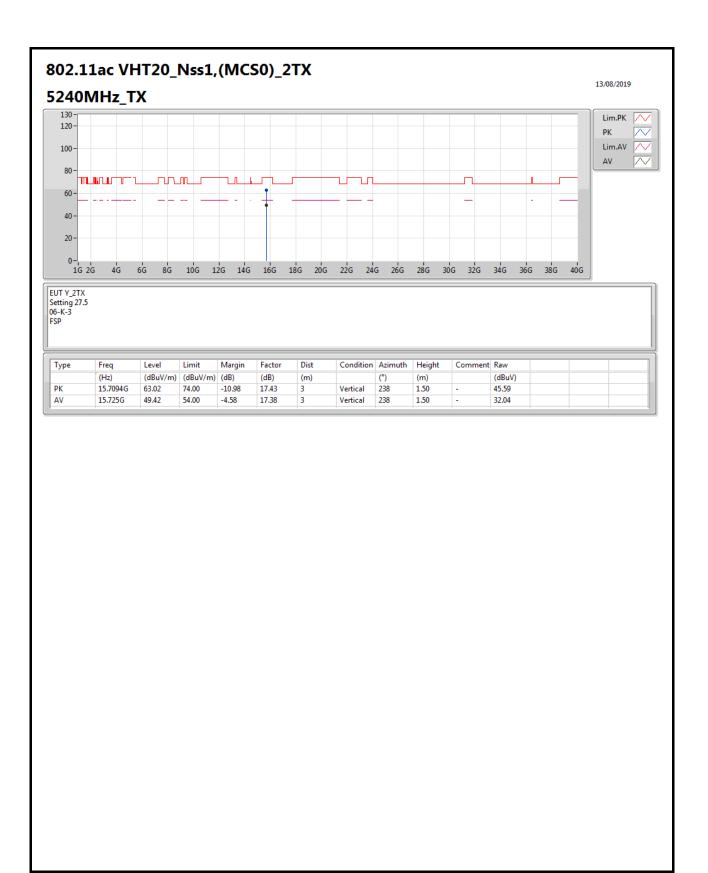




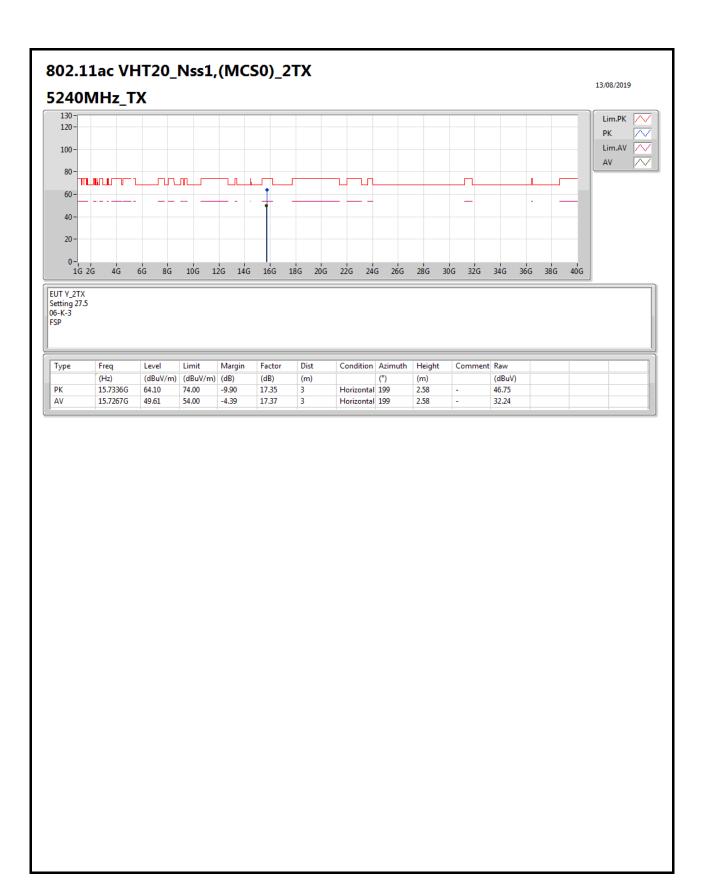




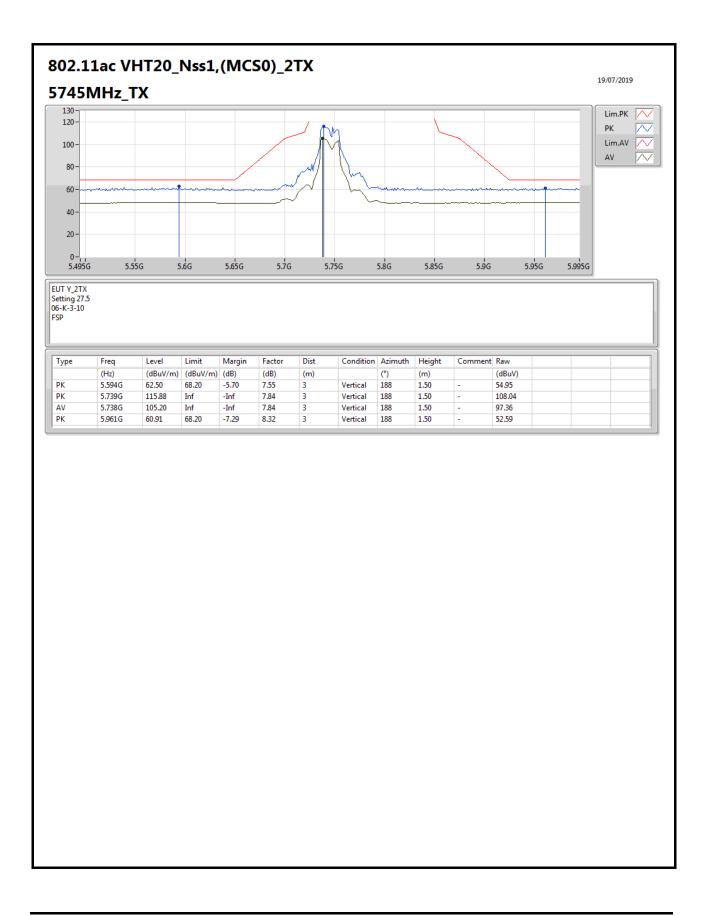




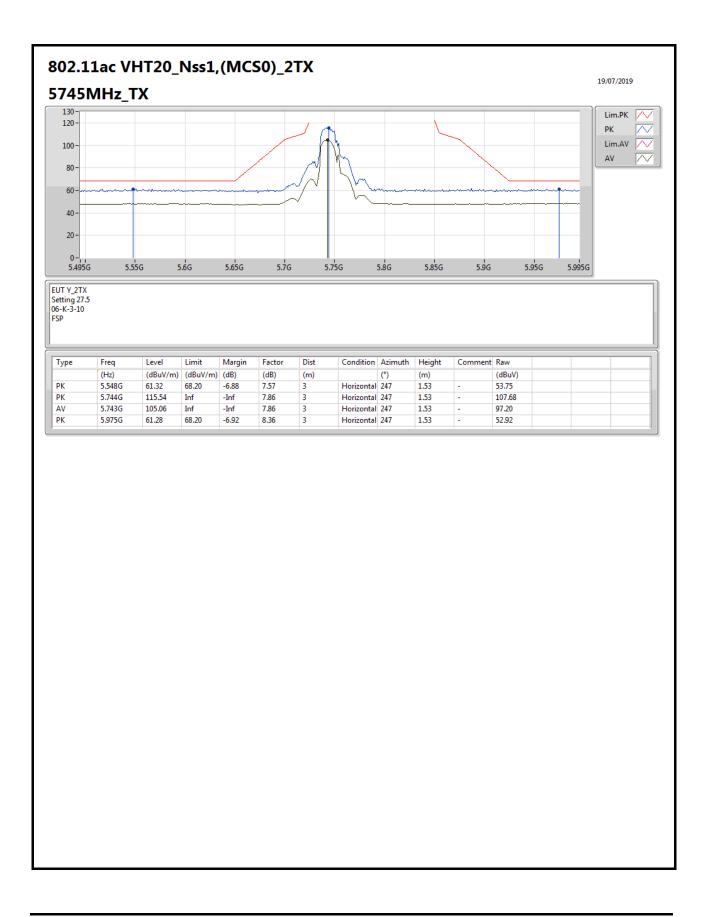




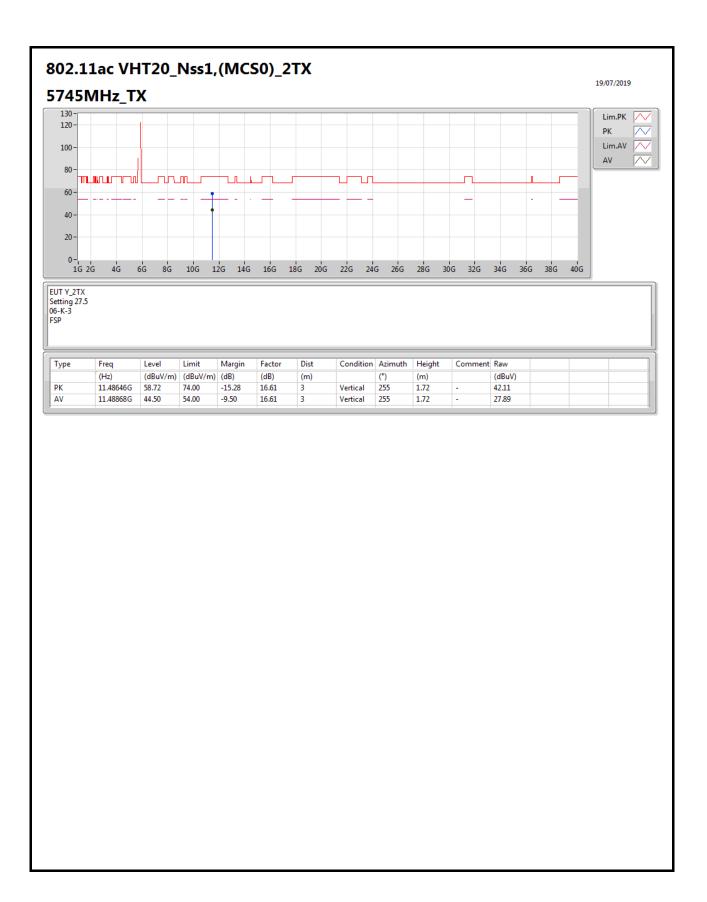




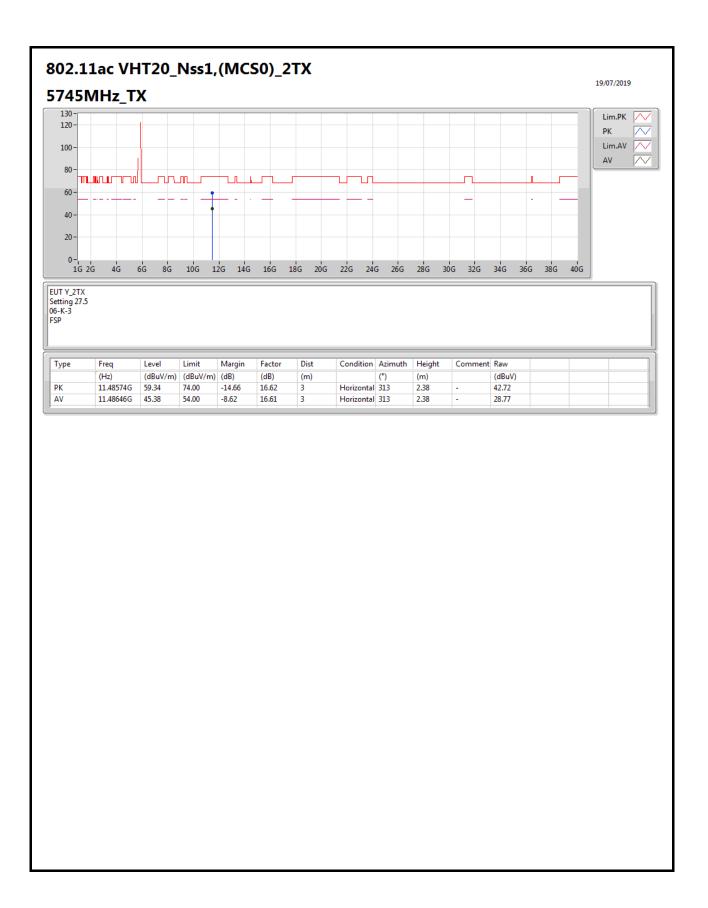




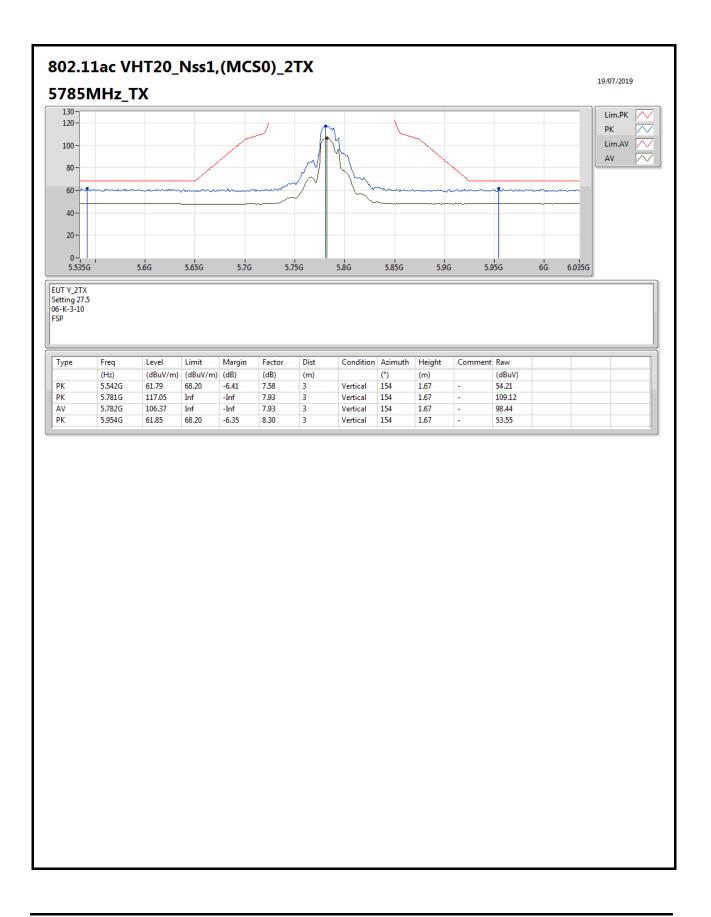




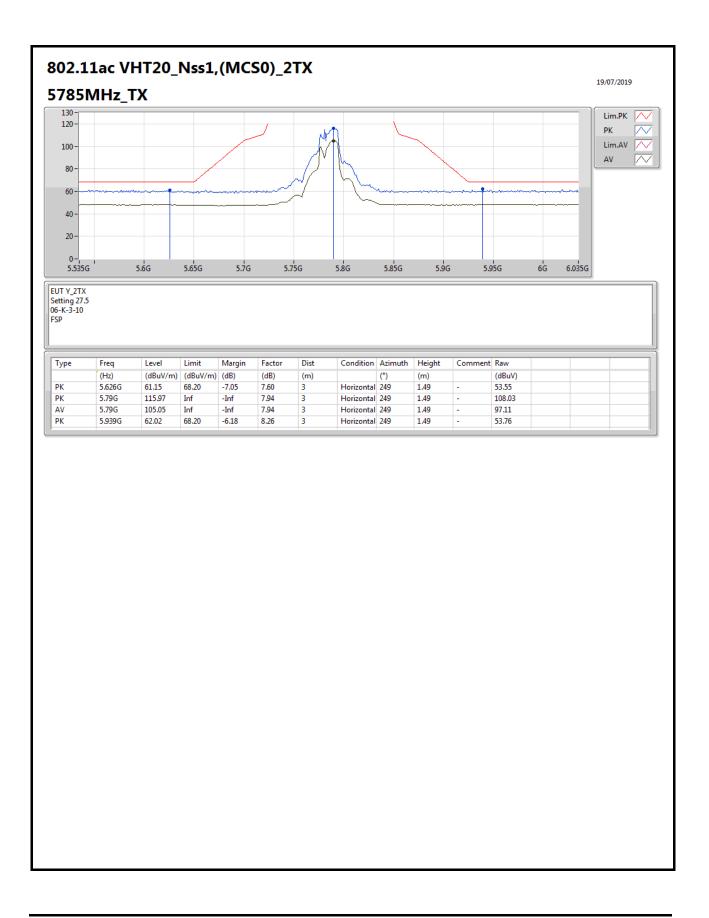




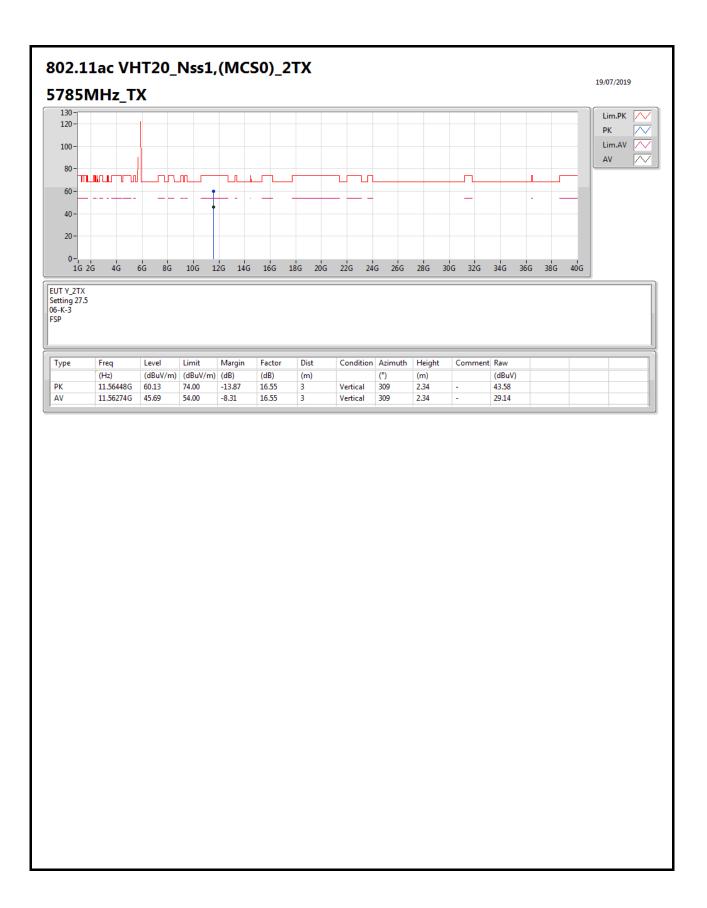




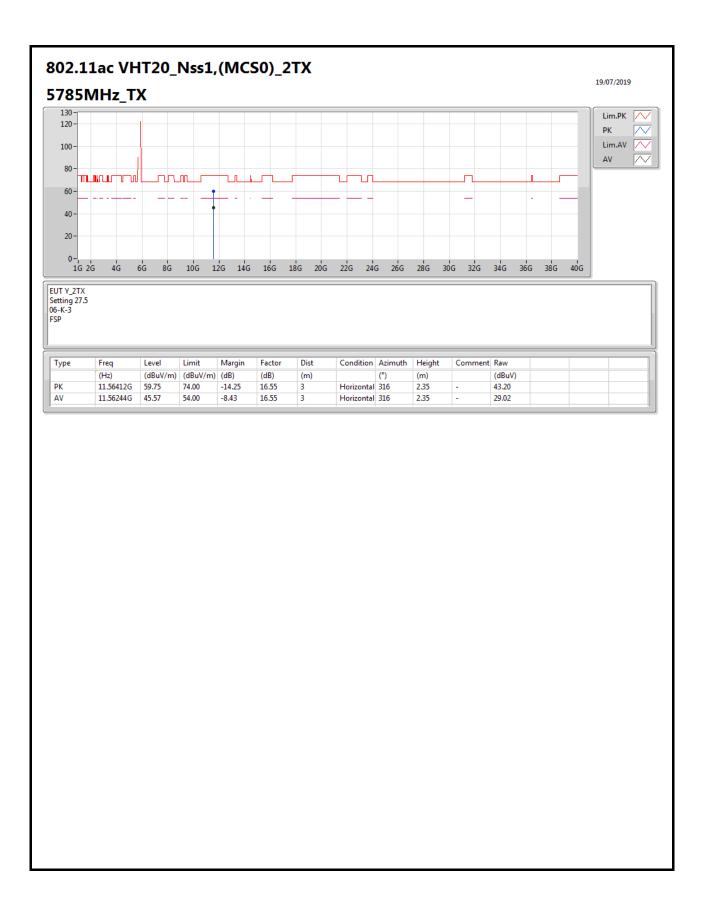




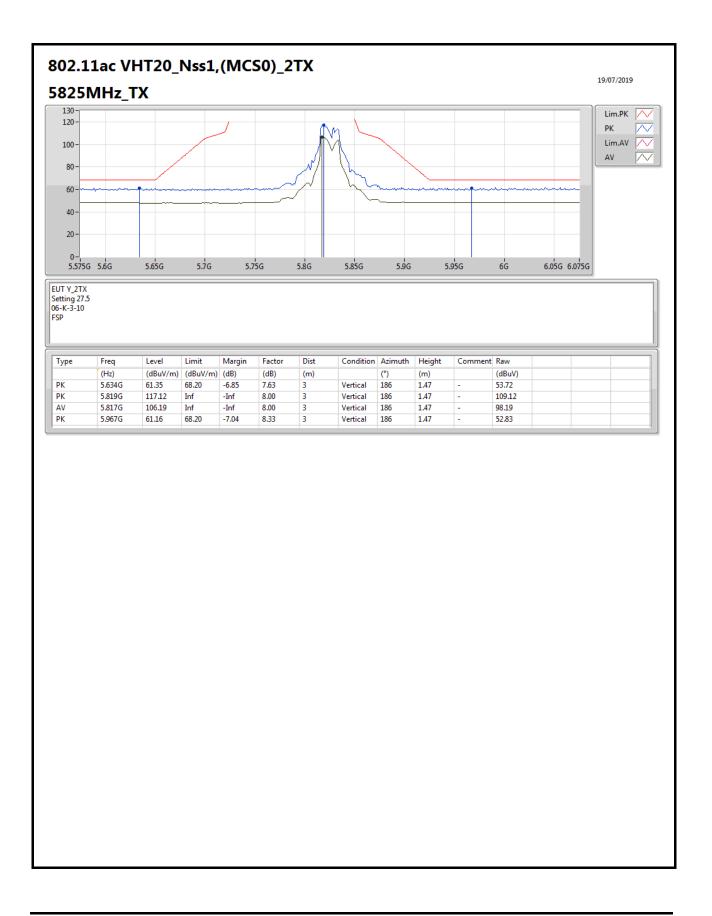




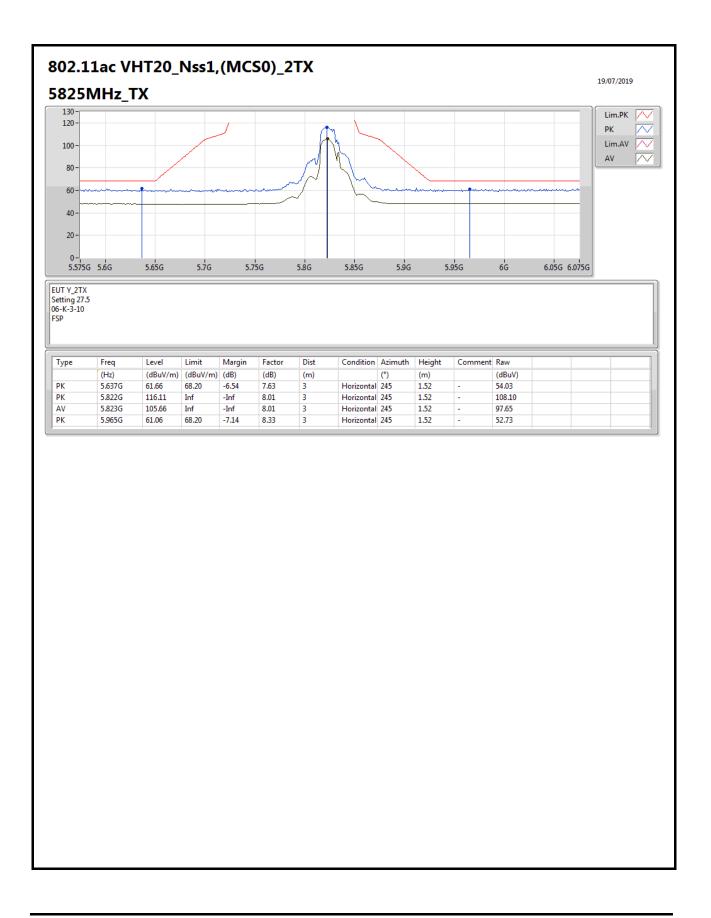




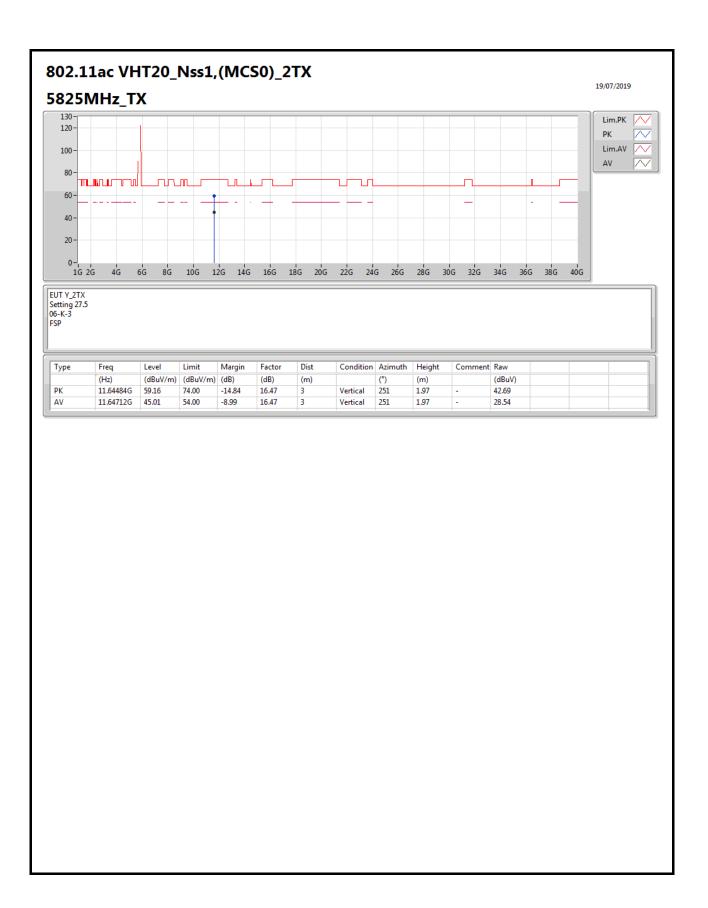




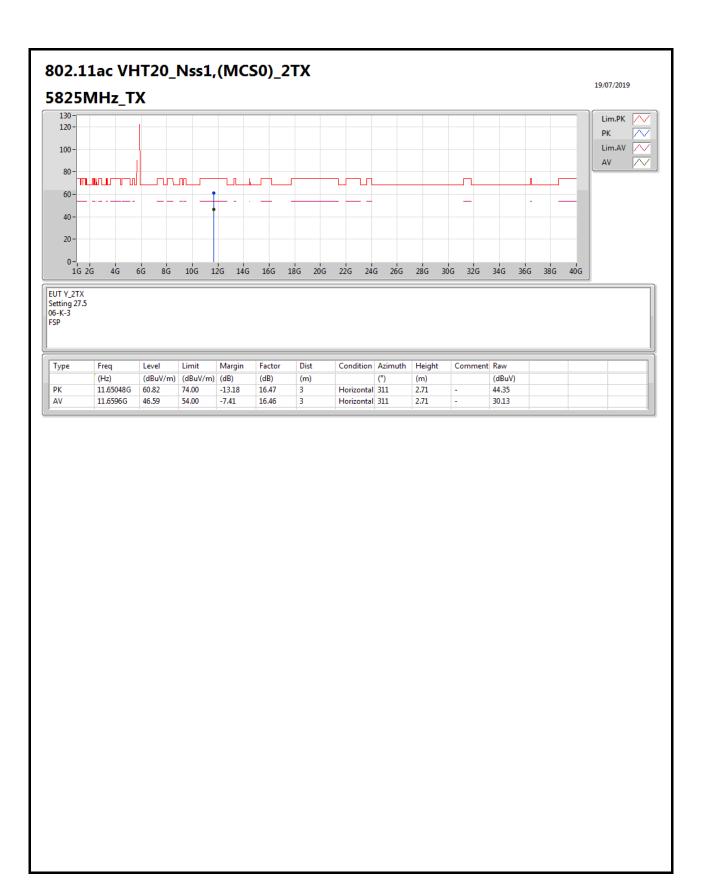




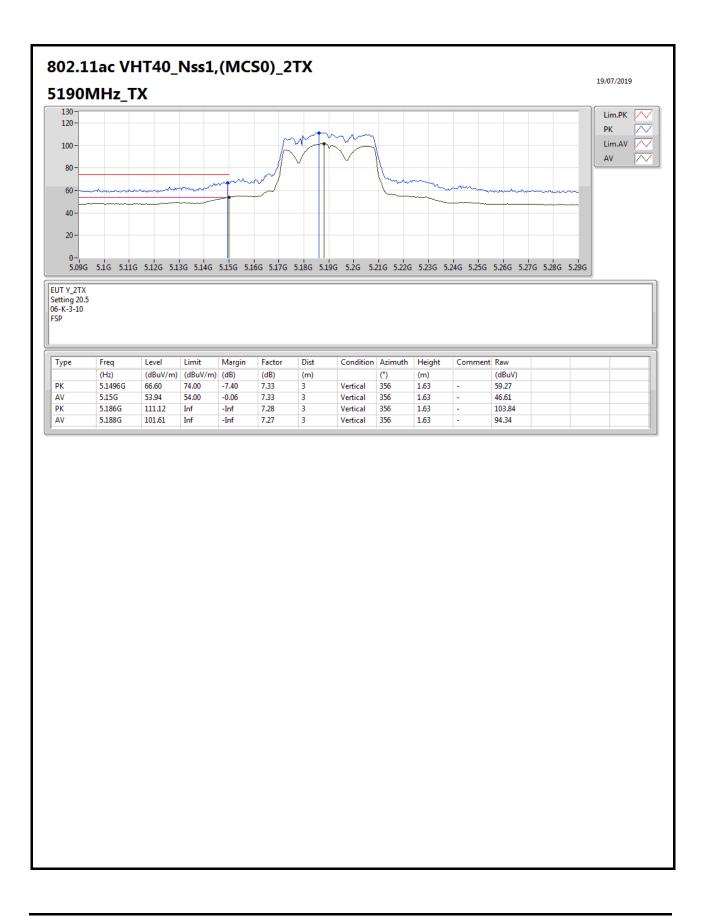




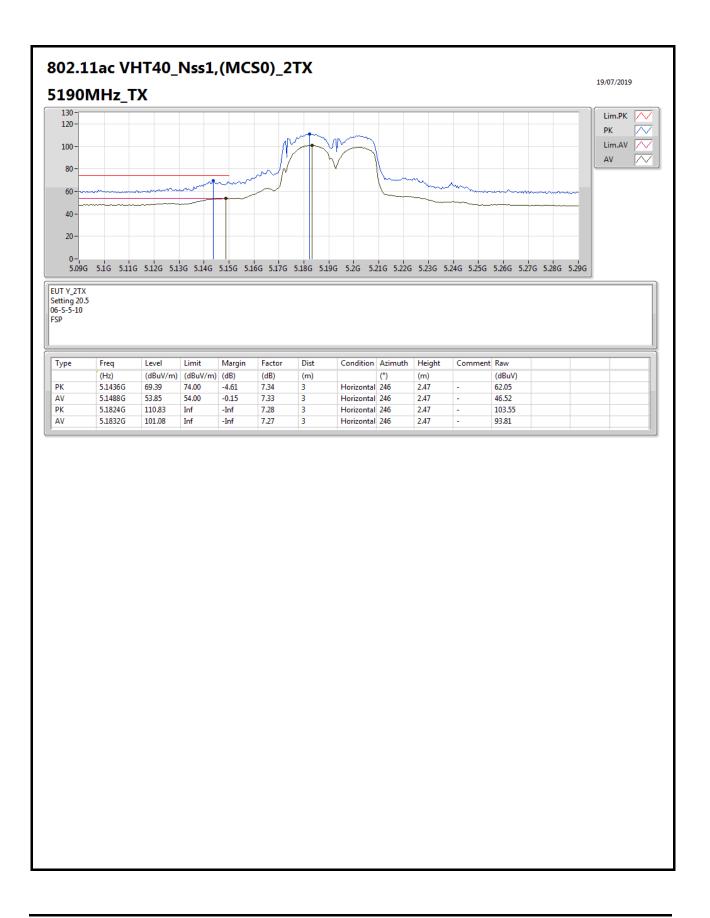




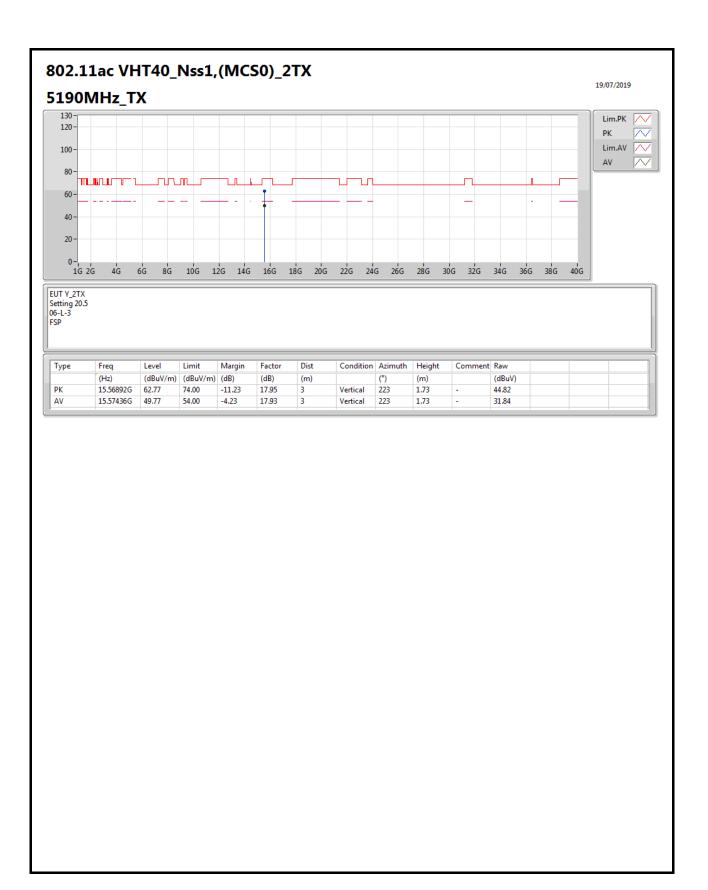




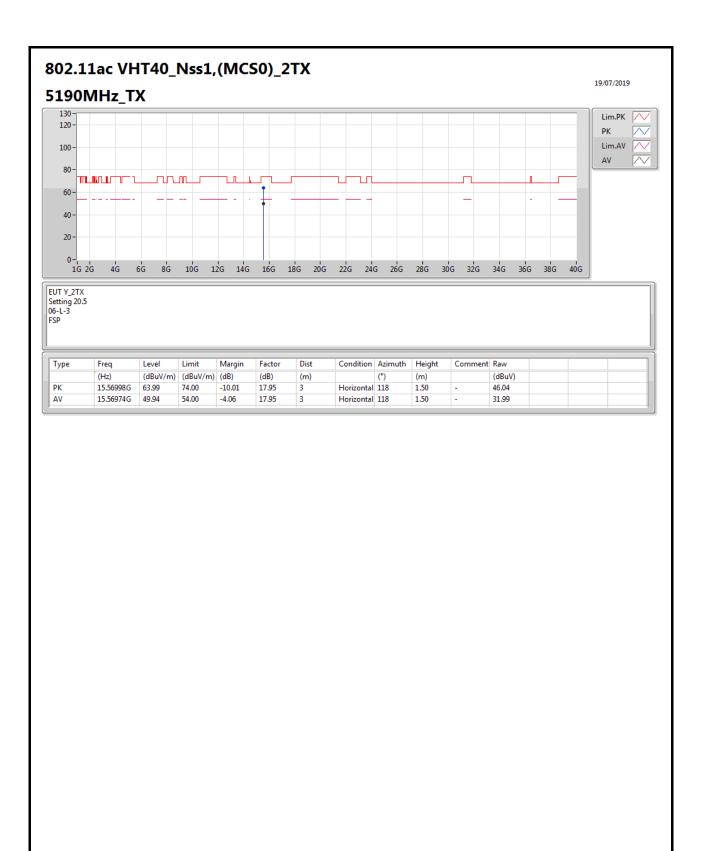




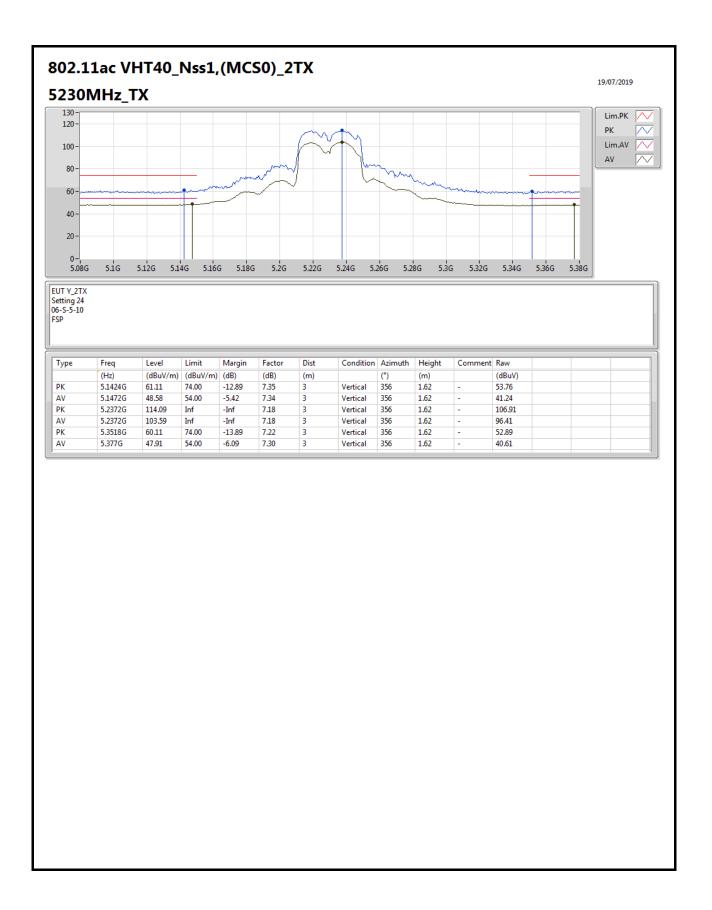




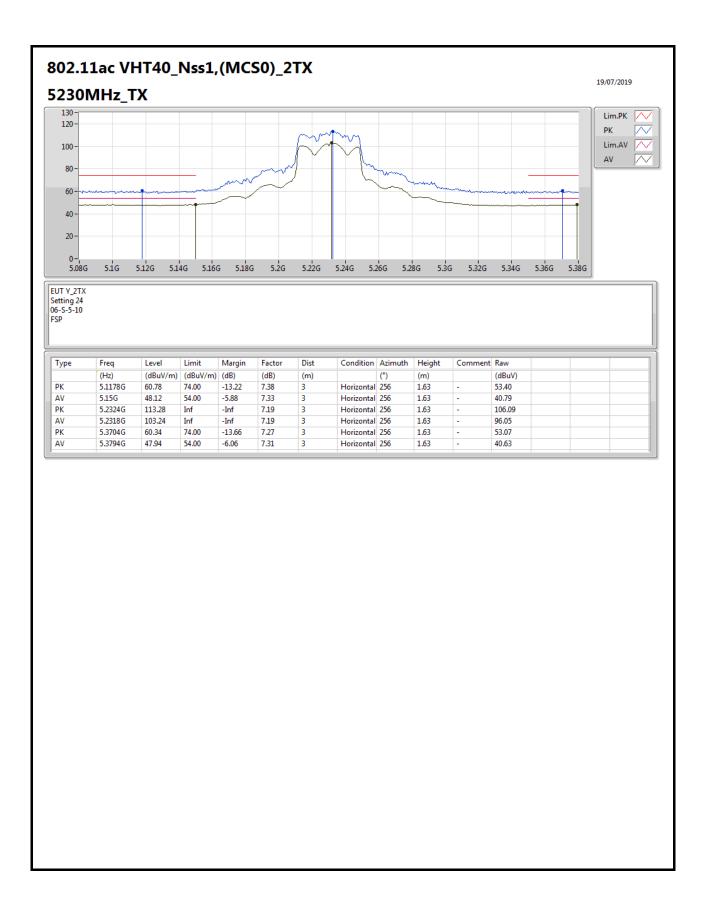




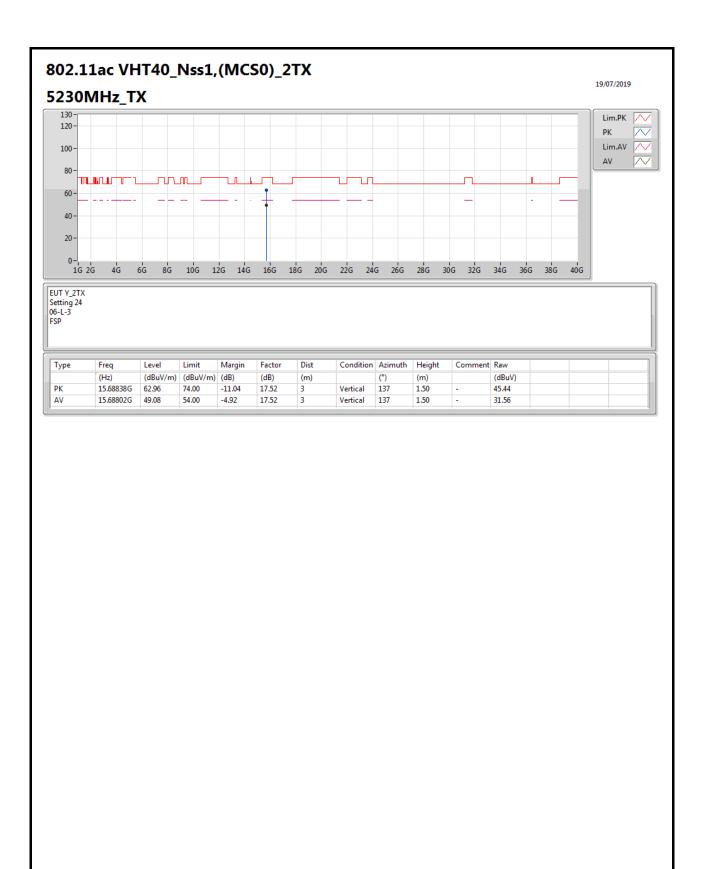




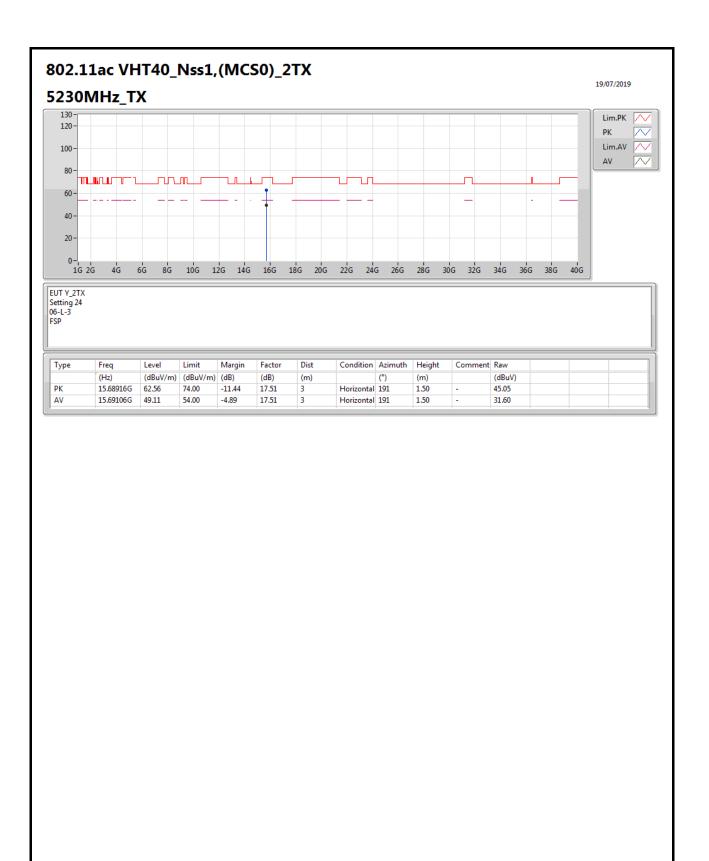




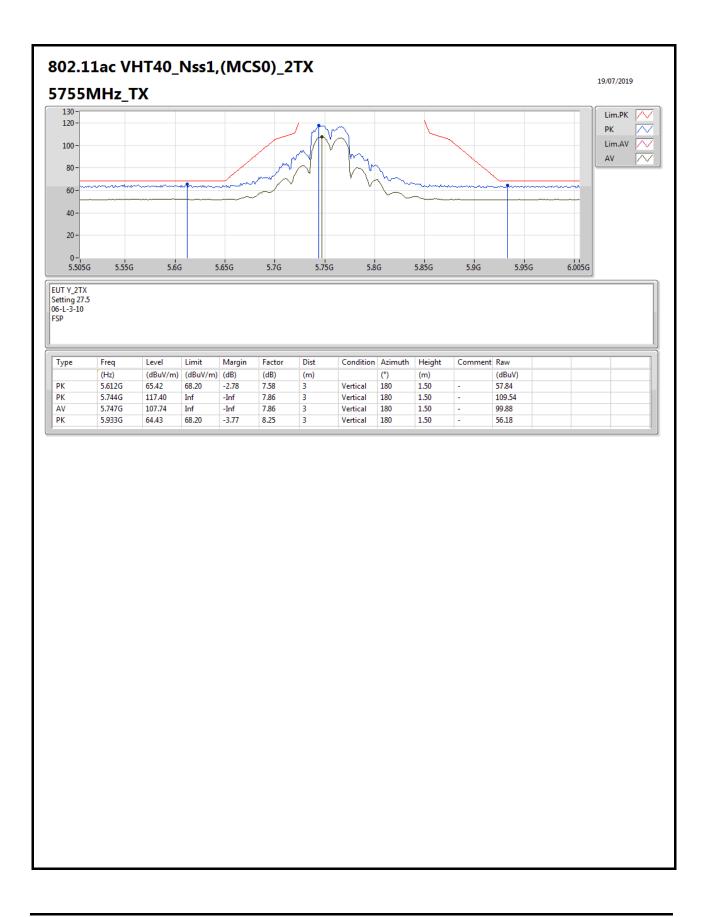




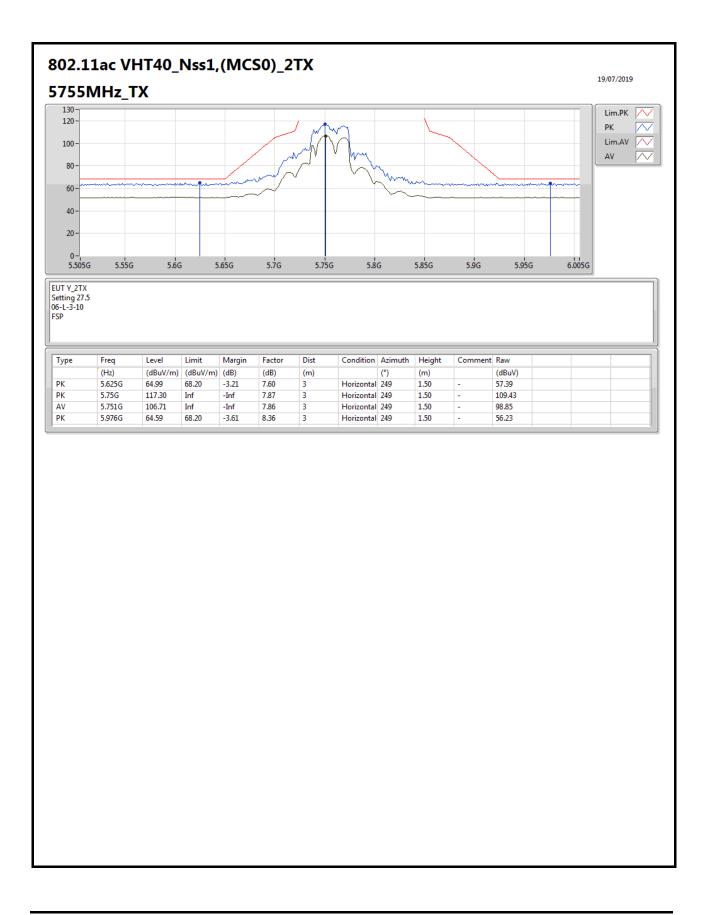




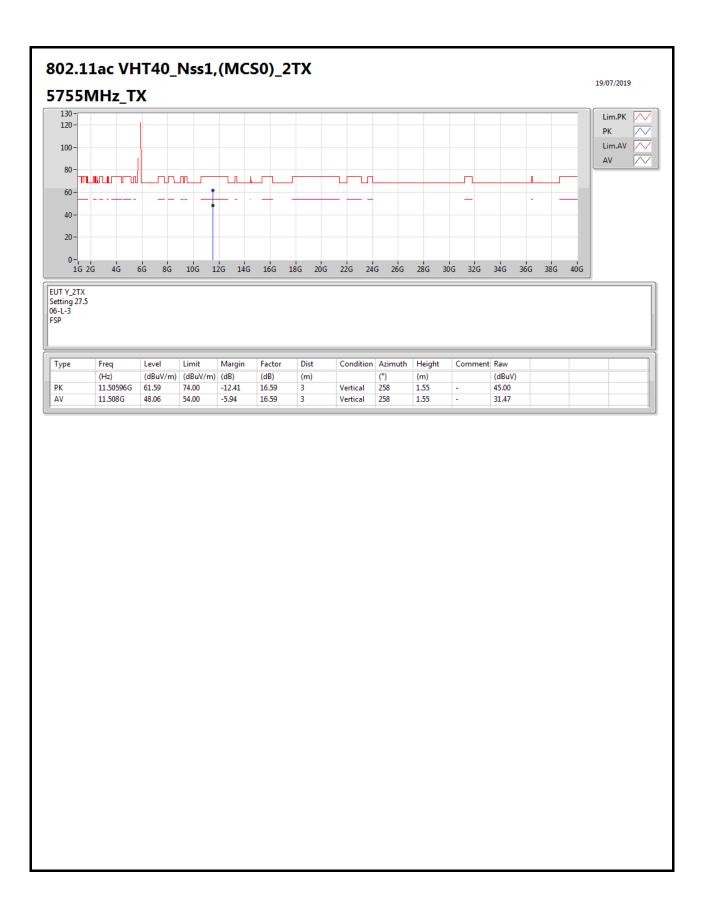




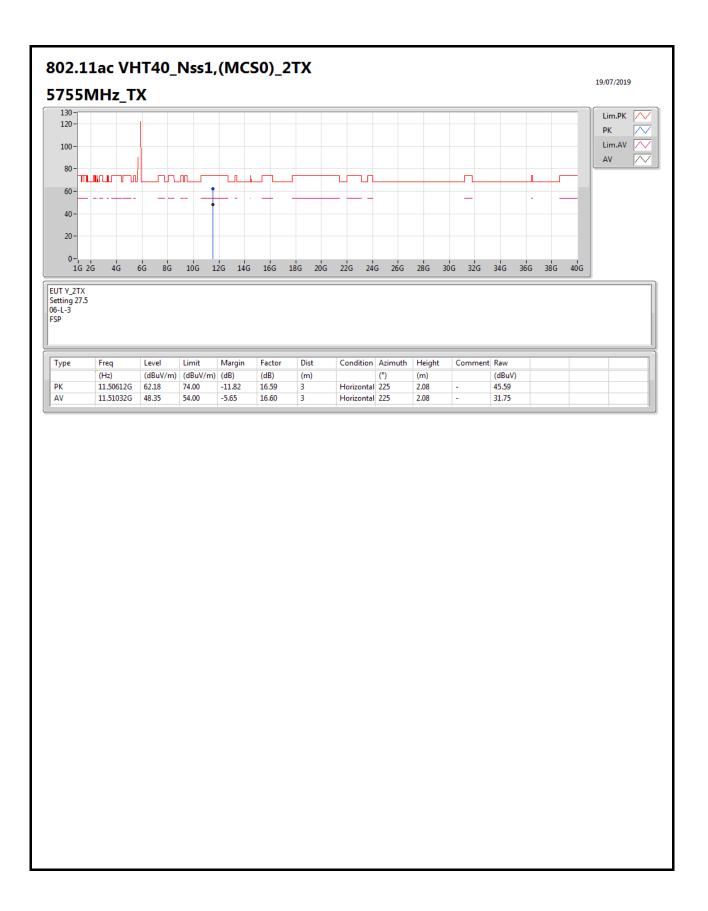




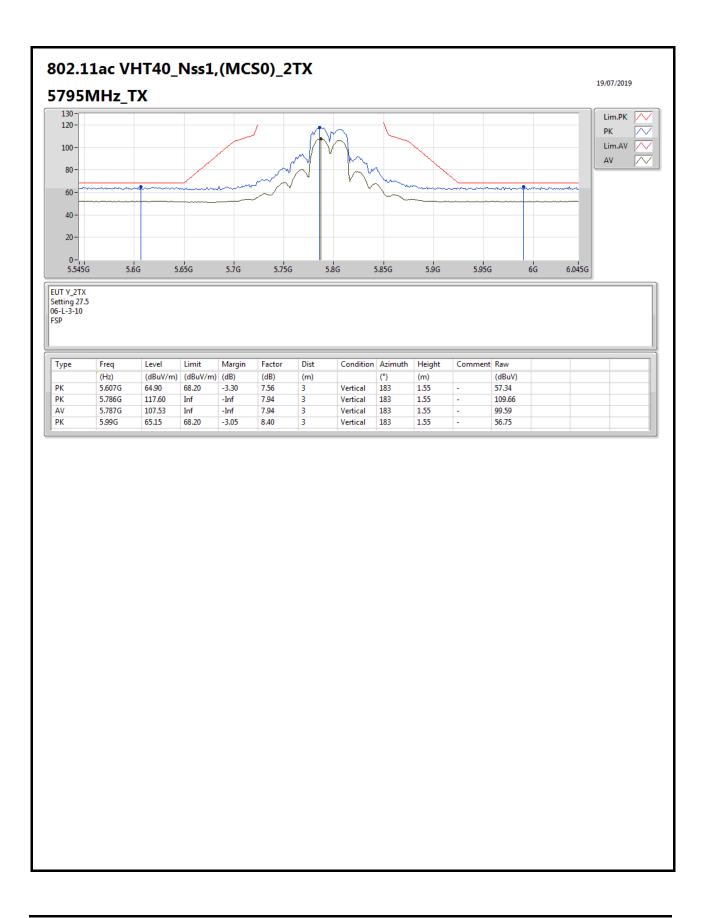




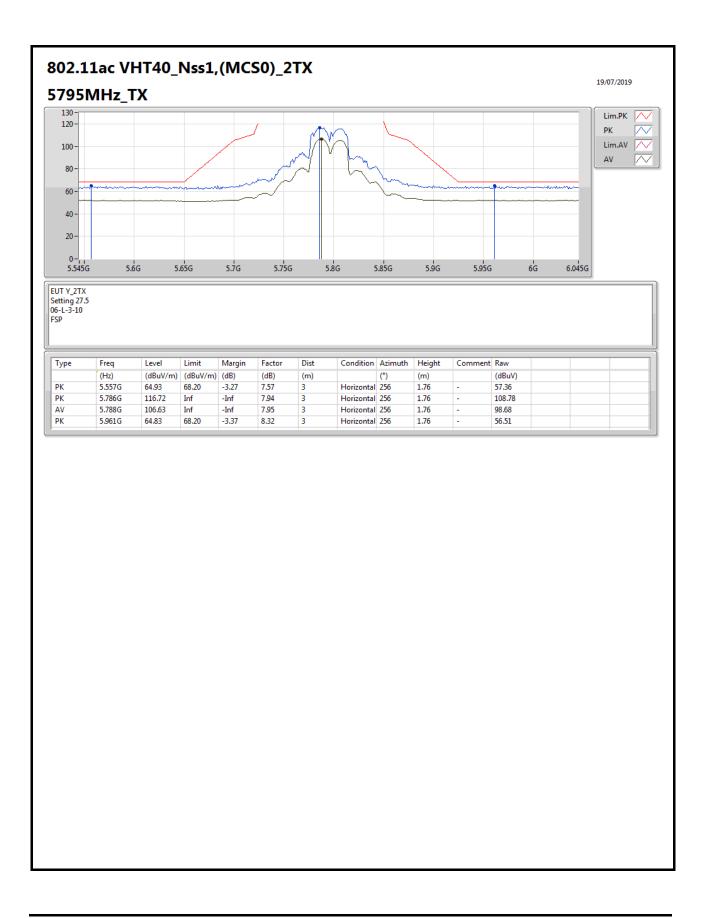




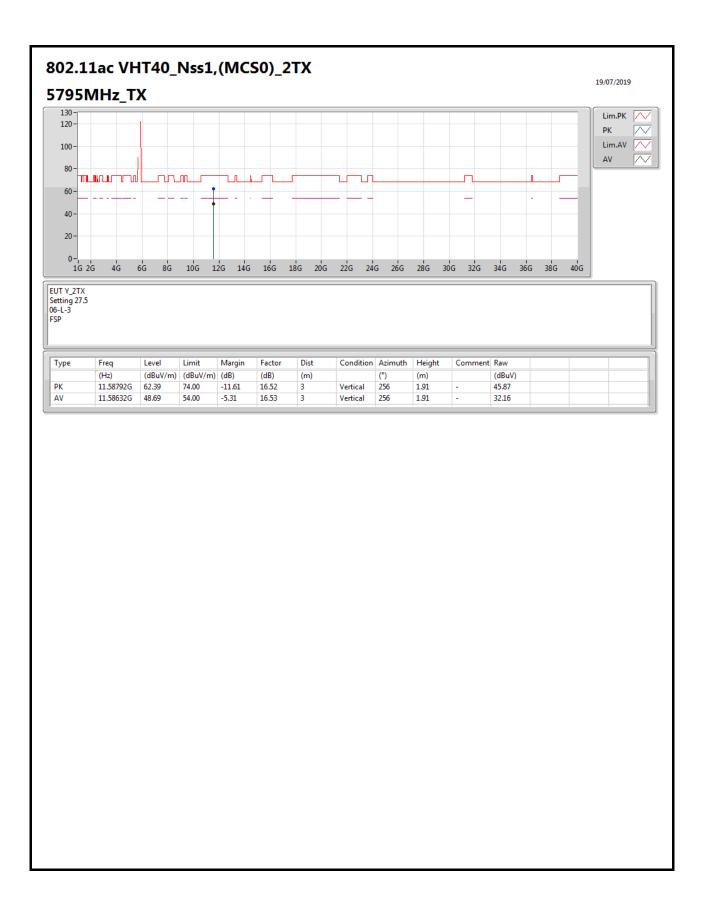




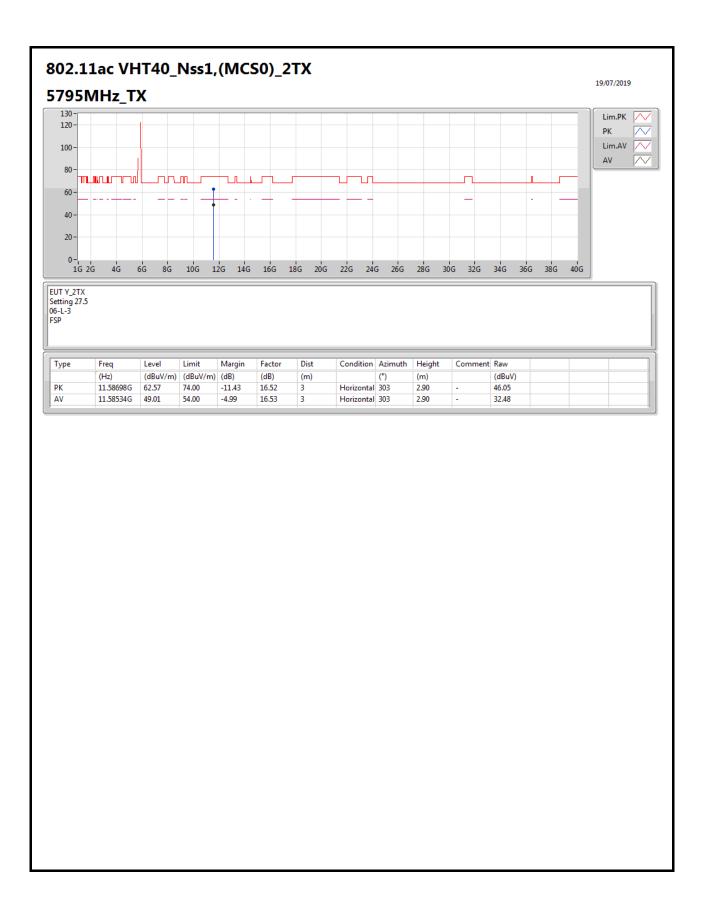




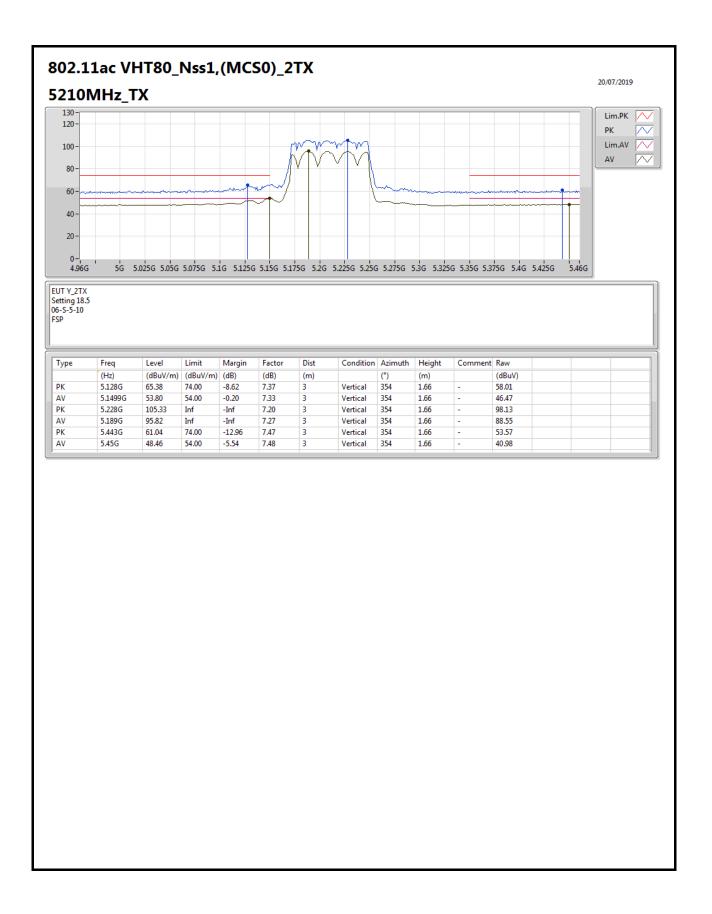




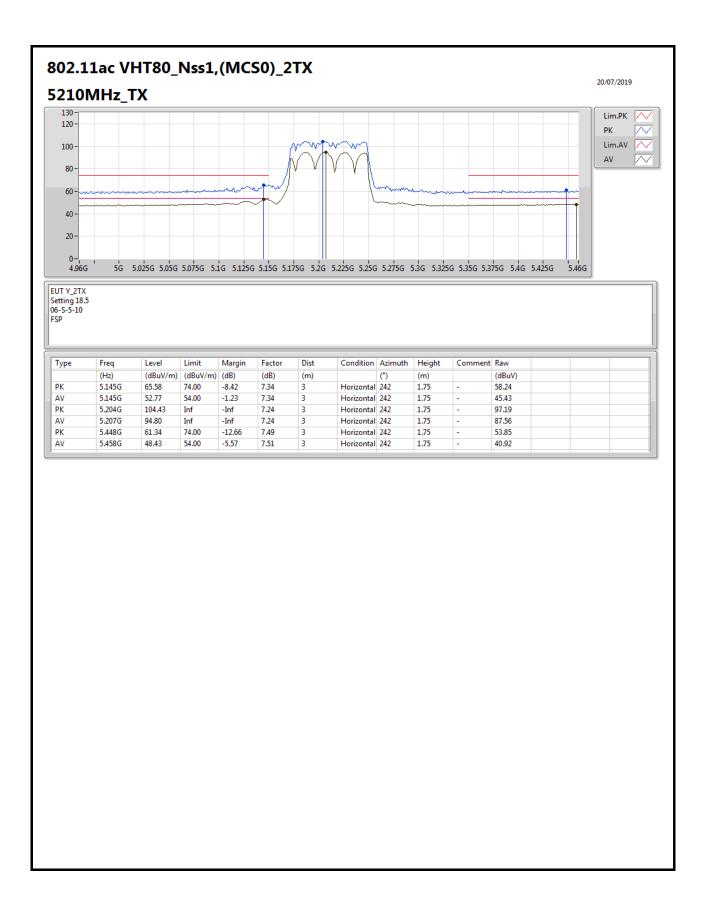




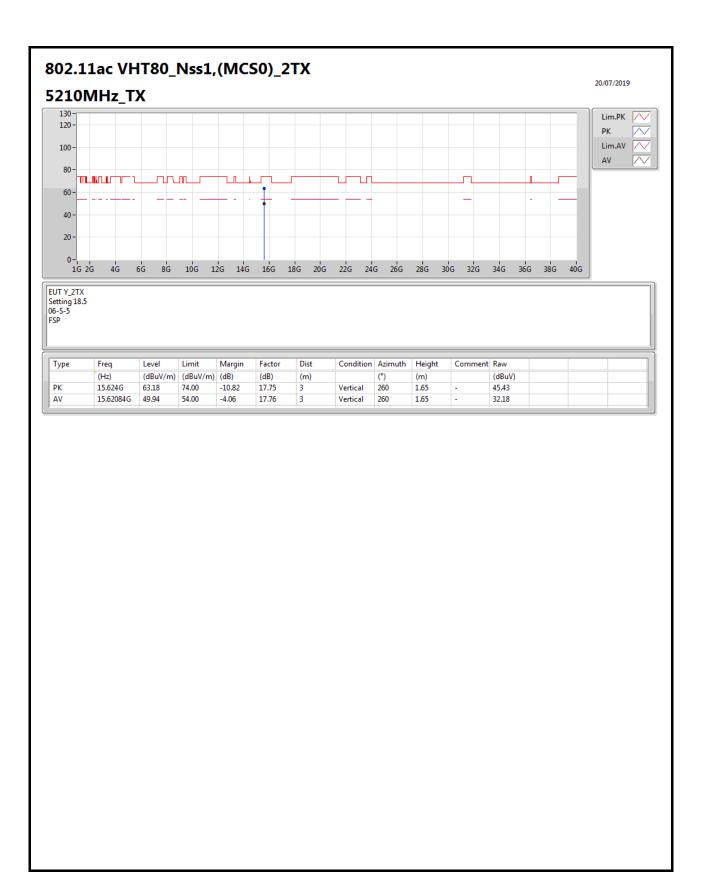




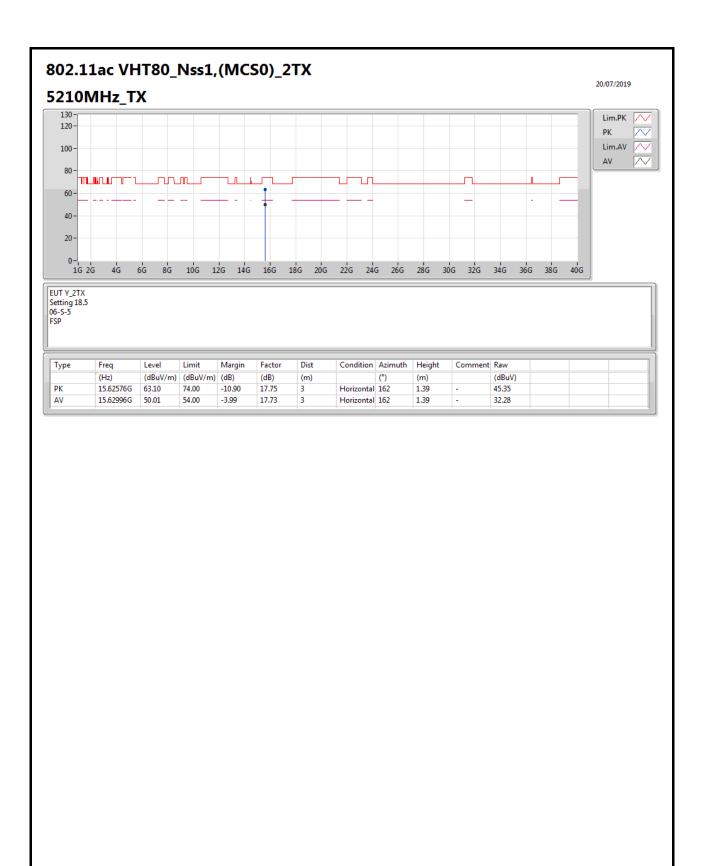




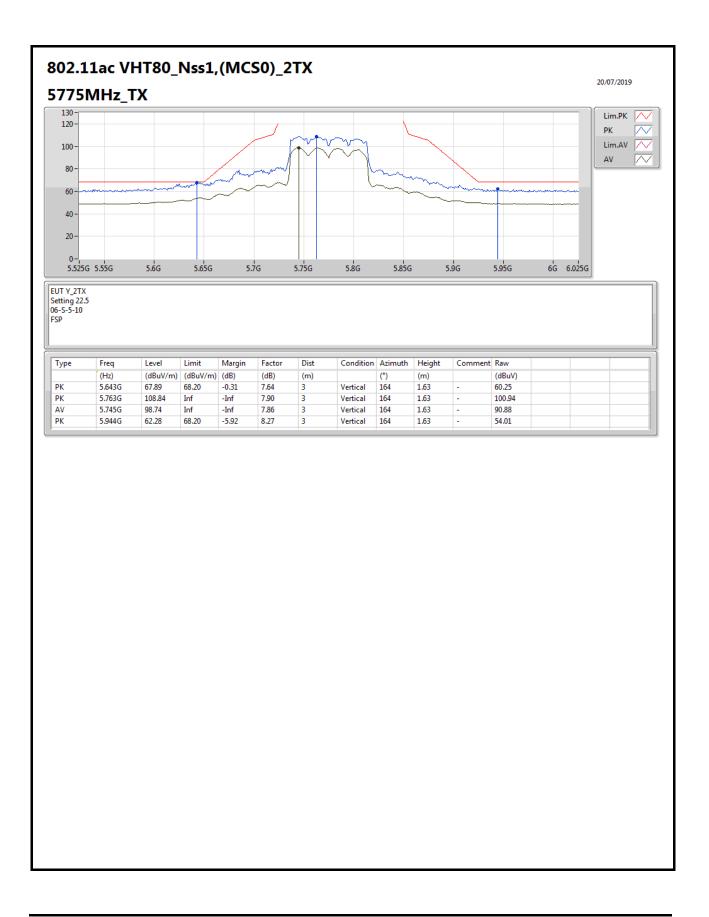




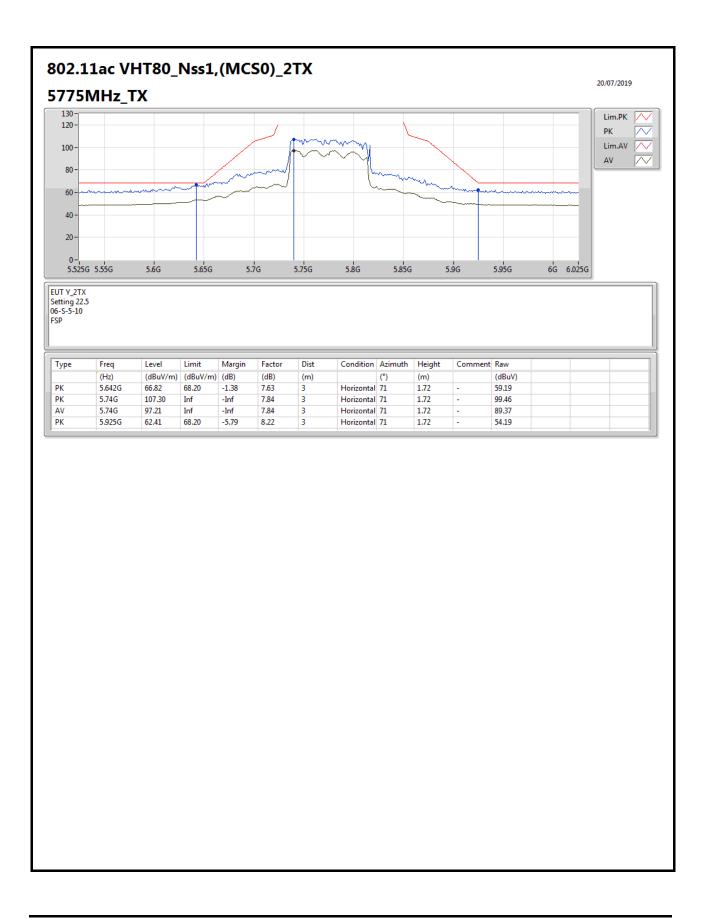




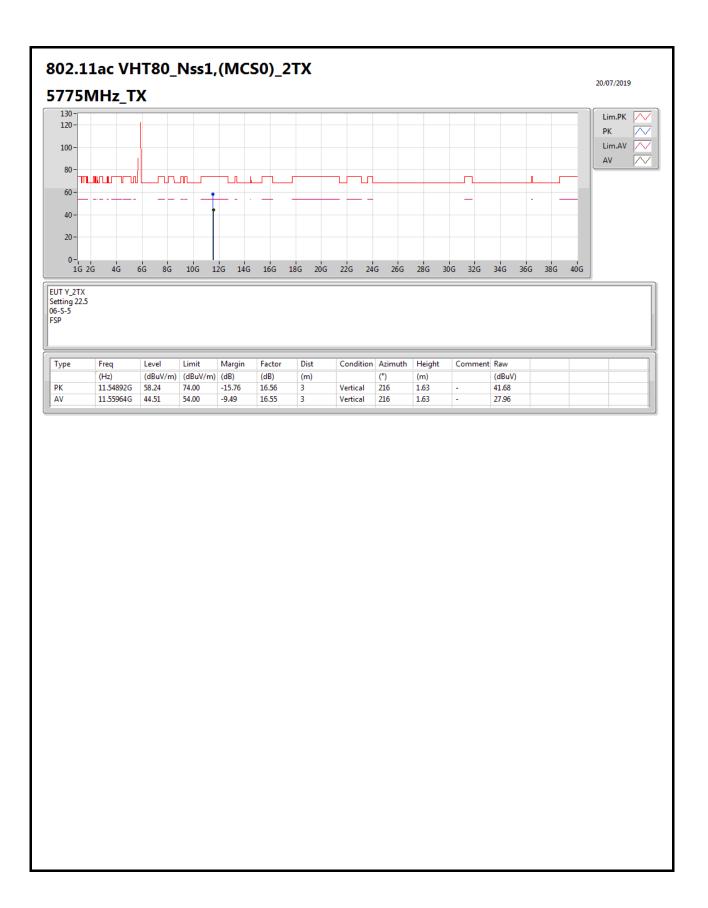




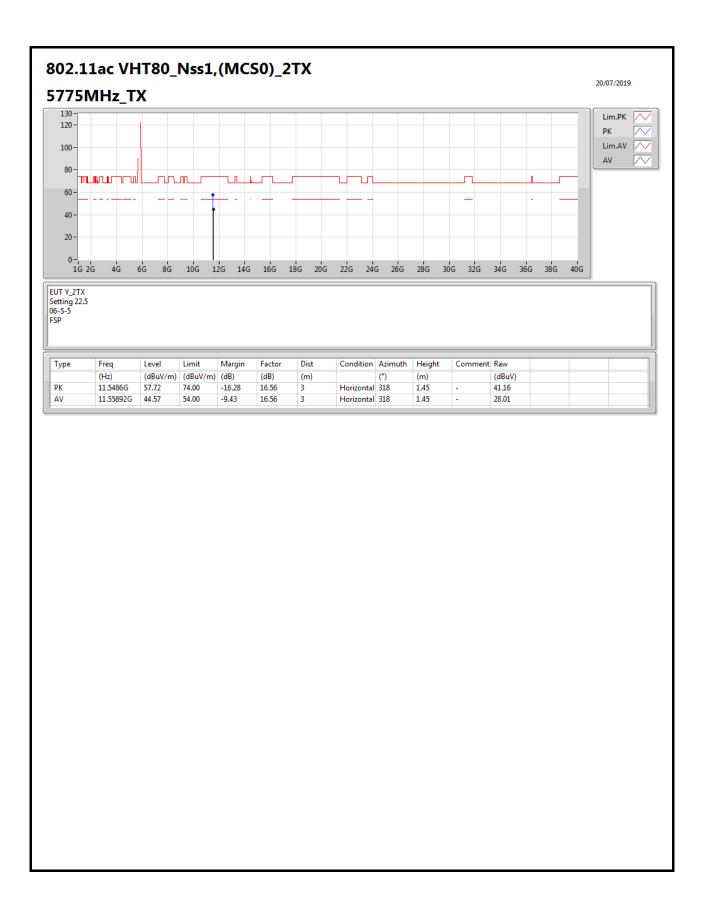














## RSE TX above 1GHz TX BF Result

## Summary

| Mode                              | Result | Туре | Freq  | Level    | Limit    | Margin | Factor | Dist | Condition  | Azimuth | Height | Comments |
|-----------------------------------|--------|------|-------|----------|----------|--------|--------|------|------------|---------|--------|----------|
|                                   |        |      | (Hz)  | (dBuV/m) | (dBuV/m) | (dB)   | (dB)   | (m)  |            | (*)     | (m)    |          |
| 5.15-5.25GHz                      | -      |      | -     | -        | -        | -      | -      | -    | -          | -       | -      | -        |
| 802.11ac VHT40-BF_Nss1,(MCS0)_2TX | Pass   | AV   | 5.15G | 53.91    | 54.00    | -0.09  | 5.09   | 3    | Horizontal | 242     | 1.56   | -        |



