Accréditation
N°1-0312
Scope available on
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WIFI 5GHz (RF test) Template: Release April 14th, 2021

# TEST REPORT

**N°: 172911-765736-C** **Version : 02**

**Subject** **Radio spectrum matters**
**tests according to standards:**
**47 CFR Part 15.407 & RSS-247 Issue 2 & RSS-Gen Issue 5 (RF Test Only)**

**Issued to**

**SAGEMCOM**
**250 Route de l'Empereur**
**92848 – RUEIL MALMAISON**
**FRANCE**

**Apparatus under test**

| | |
|---|---|
| Product | **TV Set Top Box** |
| Trade mark | **COGECO** |
| Manufacturer | **SAGEMCOM** |
| Model under test | **DIW3930 COGECO** |
| Serial number | **6211130035003** |
| FCC ID | **VW3DIW3930** |
| IC | **9140A-DIW3930** |

**Conclusion** See Test Program chapter

| | |
|---|---|
| **Test date** | : June 17, 2021 to June 24, 2021 |
| **Test location** | Moirans |
| **Test Site** | 6500A-1 & 6500A-3 |
| **Registration Number** | 197516 |
| **Designation Number** | FR0008 |
| **Sample receipt date** | June 7, 2021 |
| **Composition of document** | 287 pages |
| **Document issued on** | September 30, 2021 |

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## PUBLICATION HISTORY

| Version | Date | Author | Modification |
|---|---|---|---|
| 01 | August 3, 2021 | Armand MAHOUNGOU | Creation of the document |
| 02 | September 30, 2021 | Armand MAHOUNGOU | Customer request withdraw the pictures of equipment |

*Each new edition of this test report replaces and cancels the previous edition. The control of the old editions of report is under responsibility of client.*

## SUMMARY


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# 1. TEST PROGRAM

**References**

- **47 CFR Part 15.407**
- **RSS 247 Issue 2**
- **RSS Gen Issue 5**
- **KDB 789033 D02 General U-NII Tests Procedures New Rules v02r01**
- **KDB 662911 D01 Multiple Transmitter Output v02r01**
- **ANSI C63.10-2013**

**Radio requirement:**

| Clause (47CFR Part 15.407 & RSS-247 Issue 2 & RSS-Gen Issue 5) Test Description | Test result - Comments | | | |
|---|---|---|---|---|
| Occupied Bandwidth | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| 26dB Bandwidth | ☑ PASS | ☐ FAIL | ☐ NA(2) | ☐ NP(1) |
| 6dB Bandwidth | ☑ PASS | ☐ FAIL | ☐ NA(3) | ☐ NP(1) |
| Duty Cycle | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| EIRP | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| Maximum Conducted Output Power | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| Power Spectral Density | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| Transmit Power Control | ☑ PASS | ☐ FAIL | ☐ NA(4) | ☐ NP(1) |
| AC Power Line Conducted Emission | ☑ PASS | ☐ FAIL | ☐ NA(5) | ☐ NP(1) |
| Unwanted Emissions & Undesirable Emission | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| Frequency Stability | ☑ PASS | ☐ FAIL | ☐ NA | ☐ NP(1) |
| This table is a summary of test report, see conclusion of each clause of this test report for detail. | | | | |

(1): Limited program
(2): EUT only operates outside the 5725MHz-5850MHz band
(3): EUT only operates inside the 5725MHz-5850MHz band
(4): EIRP below 27dBm or EUT only operates inside 5150MHz-5250MHz or/and 5725MHz-5850MHz bands
(5): EUT not directly or indirectly connected to the AC Power Public Network

# 2. EQUIPMENT UNDER TEST: CONFIGURATION (DECLARED BY PROVIDER)

## 2.1. HARDWARE IDENTIFICATION (EUT AND AUXILIARIES):

**Equipment under test (EUT):**
**COGECO DIW3930 COGECO** **Serial Number: 6211130035003**

**Power supply:**

| Name | Type | Rating | Reference / Sn | Comments |
|---|---|---|---|---|
| Supply1 | ☑ AC ☐ DC ☐ Battery | 100-127Vac; 50/60Hz; 0.3A | NBC12B120100VU / 191636225-xx | |

**Inputs/outputs - Cable:**

| Access | Type | Length used (m) | Declared <3m | Shielded | Under test | Comments |
|---|---|---|---|---|---|---|
| 1 | Main power supply cable | - | ☑ | ☐ | ☐ | - |
| 2 | HDMI cable | - | ☑ | ☐ | ☐ | - |
| 3 | USB cable | - | ☑ | ☐ | ☐ | - |
| 4 | Ethernet cable | - | ☑ | ☐ | ☐ | - |

**Auxiliary equipment used during test:**

| Type | Reference | Sn | Comments |
|---|---|---|---|
| Laptop | - | - | Use to set the EUT |

**Equipment information:**

| | | | | |
|---|---|---|---|---|
| Type: | **WIFI** | | | |
| Chipset Ref : | BCM72180 | | | |
| Frequency band: | ☑ 5150MHz-5250MHz | ☑ 5250MHz-5350MHz | ☑ 5470MHz-5725MHz | |
| | ☑ 5725MHz-5850MHz | | | |
| Standard: | ☑ 802.11a | ☑ 802.11n HT20 | ☑ 802.11n HT40 | |
| | ☑ 802.11ac VHT20 | ☑ 802.11ac VHT40 | ☑ 802.11ac VHT80 | |
| | ☐ 802.11ac VHT160 | | | |
| Spectrum Modulation: | ☑ OFDM | | | |
| Channel bandwidth: | ☑ 20MHz | ☑ 40MHz | ☑ 80MHz | ☐ 160MHz |
| Antenna Type: | ☑ Integral | ☐ External | ☐ Dedicated | |
| Antenna connector: | ☑ Yes | ☐ No | ☐ Temporary for test | |
| Antenna Requirements §15.203 | The transmitter uses an integral antenna with a u.fl connector which is classified as a unique connector | | | |
| Transmit chains: | ☐ 1 | ☑ 2 | ☐ 3 | ☐ 4 |
| | ☐ 5 | ☐ 6 | ☐ 7 | ☐ 8 |
| TPC: | ☐ Yes | | ☐ No | |
| Receiver chains | ☐ 1 | ☑ 2 | ☐ 3 | ☐ 4 |
| | ☐ 5 | ☐ 6 | ☐ 7 | ☐ 8 |
| Type of equipment: | ☑ Stand-alone | ☐ Plug-in | ☐ Combined | |
| Equipment arrangement: | ☑ Tabletop | ☐ Floor-standing | ☐ Multiple orientations | |
| Operating temperature range: | Tmin: | ☐ -20°C | ☑ 0°C | ☐ X °C |
| | Tnom: | 20°C | | |
| | Tmax: | ☐ 35°C | ☐ 55°C | ☑ 45°C |
| Type of power source: | ☑ AC power supply | ☐ DC power supply | ☐ Battery Battery Type | |
| Operating voltage range: | Vmin: | ☑ 110 V/60Hz | ☐ X VDC | |
| | Vnom: | ☑ 120V/60Hz | ☐ X VDC | |
| | Vmax | ☑ 130 V/60Hz | ☐ X VDC | |
| Mode: | ☐ Master | ☐ Slave with radar detection | ☑ Slave without radar detection | |
| | ☐ Bridge | | ☐ Mesh | |
| Fixed outdoor P to P/M application: | ☐ Yes | | ☑ No | |
| System architectures: | ☑ IP based | | ☐ Frame based | |
| User access restriction: | ☑ Yes (The manufacturer declares that information regarding the parameters of the detected Radar Waveforms is not available to the end user) | | ☐ No | |

| Antenna Characteristic | | | |
|---|---|---|---|
| **Antenna assembly** | **Gain (dBi)** | **Frequency Band (MHz)** | **Impedance(Ω)** |
| 1 | 1.37 | 5150-5250 | 50 |
| | 2.76 | 5250-5875 | 50 |
| 2 | 1 | 5150-5250 | 50 |
| | 0.84 | 5250-5875 | 50 |
| Accumulated | 4.2 | 5150-5250 | 50 |
| | 4.86 | 5250-5875 | 50 |

| Accumulated gain calculation | | |
|---|---|---|
| **Formula used for calculation** | **KDB** | **Correlated** |
| 10 log[(10G1 /20 + 10G2 /20 + … + 10GN /20)2 /NANT]dBi | KDB 662911 D01 v02r01 | ☑ Yes / ☐ No |

| Hardware information | | |
|---|---|---|
| Software (if applicable): | **V. :** | 1.1000 RC12.0 wl0: Sep 23 2020 13:56:05 version 18.40.16.20 (189d91e10512e80bb2d12b1a62f0685df28f3968 WLTEST) FWID 01-5932f5f2 |

| CHANNEL PLAN & Target | | |
|---|---|---|
| 802.11a / 802.11n HT20/ 802.11ac VHT20 / 802.11ax20 | | |
| **Channel** | **Frequency (MHz)** | **Available Channel** |
| **C1=36** | 5180 | ☑ |
| **C2=40** | 5200 | ☑ |
| **44** | 5220 | ☑ |
| **C3=48** | 5240 | ☑ |
| **C4=52** | 5260 | ☑ |
| **56** | 5280 | ☑ |
| **C5=60** | 5300 | ☑ |
| **C6=64** | 5320 | ☑ |
| **C7=100** | 5500 | ☑ |
| **104** | 5520 | ☑ |
| **108** | 5540 | ☑ |
| **112** | 5560 | ☑ |
| **C8=116** | 5580 | ☑ |
| **120** | 5600 | ☑ |
| **124** | 5620 | ☑ |
| **128** | 5640 | ☑ |
| **132** | 5660 | ☑ |
| **136** | 5680 | ☑ |
| **C9=140** | 5700 | ☑ |
| **C10=144** | 5720 | ☑ |
| **C11=149** | 5745 | ☑ |
| **153** | 5765 | ☑ |
| **C12=157** | 5785 | ☑ |
| **161** | 5805 | ☑ |
| **C13=165** | 5825 | ☑ |

| CHANNEL PLAN | | |
|---|---|---|
| 802.11n HT40/ 802.11ac VHT40/ 802.11ax 40 | | |
| Channel | Frequency (MHz) | Available Channel |
| C14=36+40 | 5190 | ☑ |
| C15=44+48 | 5230 | ☑ |
| C16=52+56 | 5270 | ☑ |
| C17=60+64 | 5310 | ☑ |
| C18=100+104 | 5510 | ☑ |
| C19=108+112 | 5550 | ☑ |
| 116+120 | 5590 | ☑ |
| 124+128 | 5630 | ☑ |
| C20=132+136 | 5670 | ☑ |
| C21=140+144 | 5710 | ☑ |
| C22=149+153 | 5755 | ☑ |
| C23=157+161 | 5795 | ☑ |

| CHANNEL PLAN | | |
|---|---|---|
| 802.11ac VHT80/ 802.11 ax80 | | |
| Channel | Frequency (MHz) | Available Channel |
| C24=36+40+44+48 | 5210 | ☑ |
| C25=52+56+60+64 | 5290 | ☑ |
| C26=100+104+108+112 | 5530 | ☑ |
| C27=116+120+124+128 | 5610 | ☑ |
| C28=132+136+140+144 | 5690 | ☑ |
| C29=149+153+157+161 | 5775 | ☑ |

| |
|---|
| No DFS Channel |
| DFS Channel |
| Weather DFS Channel (Not Authorised for RSS-247) |

| Wifi 5GHz | | Wifi 5GHz | | Wifi 5GHz | |
|---|---|---|---|---|---|
| **Mode A** | | **Mode n HT20 / ac HT20** | | **Mode ax HT20** | |
| Channel | Target | Channel | Target | Channel | Target |
| C1 | 52 | C1 | 54 | C1 | 60 |
| C2 | 56 | C2 | 56 | C2 | 58 |
| C3 | 56 | C3 | 56 | C3 | 58 |
| C4 | 60 | C4 | 60 | C4 | 60 |
| C5 | 62 | C5 | 60 | C5 | 60 |
| C6 | 60 | C6 | 60 | C6 | 60 |
| C7 | 76 | C7 | 76 | C7 | 80 |
| C8 | 78 | C8 | 76 | C8 | 80 |
| C9 | 78 | C9 | 76 | C9 | 74 |
| C10 | 78 | C10 | 78 | C10 | 76 |
| C11 | 96 | C11 | 96 | C11 | 96 |
| C12 | 96 | C12 | 96 | C12 | 96 |
| C13 | 96 | C13 | 96 | C13 | 96 |

| Wifi 5GHz | | Wifi 5GHz | |
|---|---|---|---|
| **Mode n HT40/ac VHT40** | | **Mode ax 40** | |
| Channel | Target | Channel | Target |
| C14 | 64 | C14 | 64 |
| C15 | 64 | C15 | 64 |
| C16 | 62 | C16 | 62 |
| C17 | 62 | C17 | 62 |
| C18 | 78 | C18 | 76 |
| C19 | 84 | C19 | 84 |
| C20 | 84 | C20 | 80 |
| C21 | 84 | C21 | 84 |
| C22 | 96 | C22 | 92 |
| C23 | 96 | C23 | 96 |

| Wifi 5GHz | | Wifi 5GHz | |
|---|---|---|---|
| **Mode VHT80** | | **Mode ax VHT80** | |
| Channel | Target | Channel | Target |
| C24 | 64 | C24 | 64 |
| C25 | 72 | C25 | 64 |
| C26 | 76 | C26 | 74 |
| C27 | 84 | C27 | 84 |
| C28 | 84 | C28 | 84 |
| C29 | 90 | C29 | 88 |

| DATA RATE | | |
|---|---|---|
| 802.11a | | |
| **Data Rate (Mbps)** | **Modulation Type** | **Modulation Worst Case** |
| 6 | BPSK | ☑ |
| 9 | BPSK | ☐ |
| 12 | QPSK | ☐ |
| 18 | QPSK | ☐ |
| 24 | 16-QAM | ☐ |
| 36 | 16-QAM | ☐ |
| 48 | 64-QAM | ☐ |
| 54 | 64-QAM | ☐ |

| DATA RATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT20 | | | | | | | | | |
| Available for EUT | MCS Index | Spatial streams | Modulation | | | | Data Rate (Mbps) | | Worst Case Modulation |
| | | | | | | | (GI = 800ns) | (GI = 400ns) | |
| ☑ | 0 | 1 | BPSK | | | | 6.5 | 7.2 | ☐ |
| | 1 | 1 | QPSK | | | | 13 | 14.4 | ☐ |
| | 2 | 1 | QPSK | | | | 19.5 | 21.7 | ☐ |
| | 3 | 1 | 16-QAM | | | | 26 | 28.9 | ☐ |
| | 4 | 1 | 16-QAM | | | | 39 | 43.3 | ☐ |
| | 5 | 1 | 64-QAM | | | | 52 | 57.8 | ☐ |
| | 6 | 1 | 64-QAM | | | | 58.5 | 65 | ☐ |
| | 7 | 1 | 64-QAM | | | | 65 | 72.2 | ☐ |
| ☑ | 8 | 2 | BPSK | | | | 13 | 14.4 | ☑ |
| | 9 | 2 | QPSK | | | | 26 | 28.9 | ☐ |
| | 10 | 2 | QPSK | | | | 39 | 43.3 | ☐ |
| | 11 | 2 | 16-QAM | | | | 52 | 57.8 | ☐ |
| | 12 | 2 | 16-QAM | | | | 78 | 86.7 | ☐ |
| | 13 | 2 | 64-QAM | | | | 104 | 115.6 | ☐ |
| | 14 | 2 | 64-QAM | | | | 117 | 130.3 | ☐ |
| | 15 | 2 | 64-QAM | | | | 130 | 144.4 | ☐ |
| ☐ | 16 | 3 | BPSK | | | | 19.5 | 21.7 | ☐ |
| | 17 | 3 | QPSK | | | | 39 | 43.3 | ☐ |
| | 18 | 3 | QPSK | | | | 58.5 | 65 | ☐ |
| | 19 | 3 | 16-QAM | | | | 78 | 86.7 | ☐ |
| | 20 | 3 | 16-QAM | | | | 117 | 130 | ☐ |
| | 21 | 3 | 64-QAM | | | | 156 | 173.3 | ☐ |
| | 22 | 3 | 64-QAM | | | | 175.5 | 195 | ☐ |
| | 23 | 3 | 64-QAM | | | | 195 | 216.7 | ☐ |
| ☐ | 24 | 4 | BPSK | | | | 26 | 28.9 | ☐ |
| | 25 | 4 | QPSK | | | | 52 | 57.8 | ☐ |
| | 26 | 4 | QPSK | | | | 78 | 86.7 | ☐ |
| | 27 | 4 | 16-QAM | | | | 104 | 115.6 | ☐ |
| | 28 | 4 | 16-QAM | | | | 156 | 173.3 | ☐ |
| | 29 | 4 | 64-QAM | | | | 208 | 231.1 | ☐ |
| | 30 | 4 | 64-QAM | | | | 234 | 260 | ☐ |
| | 31 | 4 | 64-QAM | | | | 260 | 288.9 | ☐ |
| ☐ | 32 | 1 | BPSK | - | - | - | - | - | ☐ |
| ☐ | 33 | 2 | 16-QAM | QPSK | - | - | 39 | 43.3 | ☐ |
| | 34 | 2 | 64-QAM | QPSK | - | - | 52 | 57.8 | ☐ |
| | 35 | 2 | 64-QAM | 16-QAM | - | - | 65 | 72.2 | ☐ |
| | 36 | 2 | 16-QAM | QPSK | - | - | 58.5 | 65 | ☐ |
| | 37 | 2 | 64-QAM | QPSK | - | - | 78 | 86.7 | ☐ |
| | 38 | 2 | 64-QAM | 16-QAM | - | - | 97.5 | 108.3 | ☐ |
| ☐ | 39 | 3 | 16-QAM | QPSK | QPSK | - | 52 | 57.8 | ☐ |
| | 40 | 3 | 16-QAM | 16-QAM | QPSK | - | 65 | 72.2 | ☐ |
| | 41 | 3 | 64-QAM | QPSK | QPSK | - | 65 | 72.2 | ☐ |
| | 42 | 3 | 64-QAM | 16-QAM | QPSK | - | 78 | 86.7 | ☐ |
| | 43 | 3 | 64-QAM | 16-QAM | 16-QAM | - | 91 | 101.1 | ☐ |
| | 44 | 3 | 64-QAM | 64-QAM | QPSK | - | 91 | 101.1 | ☐ |
| | 45 | 3 | 64-QAM | 64-QAM | 16-QAM | - | 104 | 115.6 | ☐ |
| | 46 | 3 | 16-QAM | QPSK | QPSK | - | 78 | 86.7 | ☐ |
| | 47 | 3 | 16-QAM | 16-QAM | QPSK | - | 97.5 | 108.3 | ☐ |
| | 48 | 3 | 64-QAM | QPSK | QPSK | - | 97.5 | 108.3 | ☐ |
| | 49 | 3 | 64-QAM | 16-QAM | QPSK | - | 117 | 130 | ☐ |
| | 50 | 3 | 64-QAM | 16-QAM | 16-QAM | - | 136.5 | 151.7 | ☐ |
| | 51 | 3 | 64-QAM | 64-QAM | QPSK | - | 136.5 | 151.7 | ☐ |
| | 52 | 3 | 64-QAM | 64-QAM | 16-QAM | - | 156 | 173.3 | ☐ |
| ☐ | 53 | 4 | 16-QAM | QPSK | QPSK | QPSK | 65 | 72.2 | ☐ |
| | 54 | 4 | 16-QAM | 16-QAM | QPSK | QPSK | 78 | 86.7 | ☐ |
| | 55 | 4 | 16-QAM | 16-QAM | 16-QAM | QPSK | 91 | 101.1 | ☐ |
| | 56 | 4 | 64-QAM | QPSK | QPSK | QPSK | 78 | 86.7 | ☐ |
| | 57 | 4 | 64-QAM | 16-QAM | QPSK | QPSK | 91 | 101.1 | ☐ |
| | 58 | 4 | 64-QAM | 16-QAM | 16-QAM | QPSK | 104 | 115.6 | ☐ |
| | 59 | 4 | 64-QAM | 16-QAM | 16-QAM | 16-QAM | 117 | 130 | ☐ |
| | 60 | 4 | 64-QAM | QPSK | QPSK | QPSK | 104 | 115.6 | ☐ |
| | 61 | 4 | 64-QAM | 16-QAM | 16-QAM | QPSK | 117 | 130 | ☐ |
| | 62 | 4 | 64-QAM | 16-QAM | 16-QAM | 16-QAM | 130 | 144.4 | ☐ |
| | 63 | 4 | 64-QAM | 64-QAM | 64-QAM | QPSK | 130 | 144.4 | ☐ |
| | 64 | 4 | 64-QAM | 64-QAM | 64-QAM | 16-QAM | 143 | 158.9 | ☐ |
| | 65 | 4 | 16-QAM | QPSK | QPSK | QPSK | 97.5 | 108.3 | ☐ |
| | 66 | 4 | 16-QAM | 16-QAM | QPSK | QPSK | 117 | 130 | ☐ |
| | 67 | 4 | 16-QAM | 16-QAM | 16-QAM | QPSK | 136.5 | 151.7 | ☐ |
| | 68 | 4 | 64-QAM | QPSK | QPSK | QPSK | 117 | 130 | ☐ |
| | 69 | 4 | 64-QAM | 16-QAM | QPSK | QPSK | 136.5 | 151.7 | ☐ |
| | 70 | 4 | 64-QAM | 16-QAM | 16-QAM | QPSK | 156 | 173.3 | ☐ |
| | 71 | 4 | 64-QAM | 16-QAM | 16-QAM | 16-QAM | 175.5 | 195 | ☐ |
| | 72 | 4 | 64-QAM | 64-QAM | QPSK | QPSK | 156 | 173.3 | ☐ |
| | 73 | 4 | 64-QAM | 64-QAM | 16-QAM | QPSK | 175.5 | 195 | ☐ |
| | 74 | 4 | 64-QAM | 64-QAM | 16-QAM | 16-QAM | 195 | 216.7 | ☐ |
| | 75 | 4 | 64-QAM | 64-QAM | 64-QAM | QPSK | 195 | 216.7 | ☐ |
| | 76 | 4 | 64-QAM | 64-QAM | 64-QAM | 16-QAM | 214.5 | 238.3 | ☐ |

| DATA RATE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 802.11n HT40 | | | | | | | | | |
| Available for EUT | MCS Index | Spatial streams | Modulation | | | | Data Rate (Mbps) | | Worst Case Modulation |
| | | | | | | | (GI = 800ns) | (GI = 400ns) | |
| ☑ | 0 | 1 | BPSK | | | | 13 | 15 | ☐ |
| | 1 | 1 | QPSK | | | | 27 | 30 | ☐ |
| | 2 | 1 | QPSK | | | | 40.5 | 45 | ☐ |
| | 3 | 1 | 16-QAM | | | | 54 | 60 | ☐ |
| | 4 | 1 | 16-QAM | | | | 81 | 90 | ☐ |
| | 5 | 1 | 64-QAM | | | | 108 | 120 | ☐ |
| | 6 | 1 | 64-QAM | | | | 121.5 | 135 | ☐ |
| | 7 | 1 | 64-QAM | | | | 135 | 150 | ☐ |
| ☑ | 8 | 2 | BPSK | | | | 27 | 30 | ☑ |
| | 9 | 2 | QPSK | | | | 54 | 60 | ☐ |
| | 10 | 2 | QPSK | | | | 81 | 90 | ☐ |
| | 11 | 2 | 16-QAM | | | | 108 | 120 | ☐ |
| | 12 | 2 | 16-QAM | | | | 162 | 180 | ☐ |
| | 13 | 2 | 64-QAM | | | | 216 | 240 | ☐ |
| | 14 | 2 | 64-QAM | | | | 243 | 270 | ☐ |
| | 15 | 2 | 64-QAM | | | | 270 | 300 | ☐ |
| ☐ | 16 | 3 | BPSK | | | | 40.5 | 45 | ☐ |
| | 17 | 3 | QPSK | | | | 81 | 90 | ☐ |
| | 18 | 3 | QPSK | | | | 121.5 | 135 | ☐ |
| | 19 | 3 | 16-QAM | | | | 162 | 180 | ☐ |
| | 20 | 3 | 16-QAM | | | | 243 | 270 | ☐ |
| | 21 | 3 | 64-QAM | | | | 324 | 360 | ☐ |
| | 22 | 3 | 64-QAM | | | | 364.5 | 405 | ☐ |
| | 23 | 3 | 64-QAM | | | | 405 | 450 | ☐ |
| ☐ | 24 | 4 | BPSK | | | | 54 | 60 | ☐ |
| | 25 | 4 | QPSK | | | | 108 | 120 | ☐ |
| | 26 | 4 | QPSK | | | | 162 | 180 | ☐ |
| | 27 | 4 | 16-QAM | | | | 216 | 240 | ☐ |
| | 28 | 4 | 16-QAM | | | | 324 | 360 | ☐ |
| | 29 | 4 | 64-QAM | | | | 432 | 480 | ☐ |
| | 30 | 4 | 64-QAM | | | | 486 | 540 | ☐ |
| | 31 | 4 | 64-QAM | | | | 540 | 600 | ☐ |
| ☐ | 32 | 1 | BPSK | - | - | - | 6.0 | 6.7 | ☐ |
| ☐ | 33 | 2 | 16-QAM | QPSK | - | - | 81 | 90.0 | ☐ |
| | 34 | 2 | 64-QAM | QPSK | - | - | 108 | 120 | ☐ |
| | 35 | 2 | 64-QAM | 16-QAM | - | - | 135 | 150 | ☐ |
| | 36 | 2 | 16-QAM | QPSK | - | - | 121.5 | 135 | ☐ |
| | 37 | 2 | 64-QAM | QPSK | - | - | 162 | 180 | ☐ |
| | 38 | 2 | 64-QAM | 16-QAM | - | - | 202.5 | 225 | ☐ |
| ☐ | 39 | 3 | 16-QAM | QPSK | QPSK | - | 108 | 120 | ☐ |
| | 40 | 3 | 16-QAM | 16-QAM | QPSK | - | 135 | 150 | ☐ |
| | 41 | 3 | 64-QAM | QPSK | QPSK | - | 135 | 150 | ☐ |
| | 42 | 3 | 64-QAM | 16-QAM | QPSK | - | 162 | 180 | ☐ |
| | 43 | 3 | 64-QAM | 16-QAM | 16-QAM | - | 189 | 210 | ☐ |
| | 44 | 3 | 64-QAM | 64-QAM | QPSK | - | 189 | 210 | ☐ |
| | 45 | 3 | 64-QAM | 64-QAM | 16-QAM | - | 216 | 240 | ☐ |
| | 46 | 3 | 16-QAM | QPSK | QPSK | - | 162 | 180 | ☐ |
| | 47 | 3 | 16-QAM | 16-QAM | QPSK | - | 202.5 | 225 | ☐ |
| | 48 | 3 | 64-QAM | QPSK | QPSK | - | 202.5 | 225 | ☐ |
| | 49 | 3 | 64-QAM | 16-QAM | QPSK | - | 243 | 270 | ☐ |
| | 50 | 3 | 64-QAM | 16-QAM | 16-QAM | - | 283.5 | 315 | ☐ |
| | 51 | 3 | 64-QAM | 64-QAM | QPSK | - | 283.5 | 315 | ☐ |
| | 52 | 3 | 64-QAM | 64-QAM | 16-QAM | - | 324 | 360 | ☐ |
| ☐ | 53 | 4 | 16-QAM | QPSK | QPSK | QPSK | 135 | 150 | ☐ |
| | 54 | 4 | 16-QAM | 16-QAM | QPSK | QPSK | 162 | 180 | ☐ |
| | 55 | 4 | 16-QAM | 16-QAM | 16-QAM | QPSK | 189 | 210 | ☐ |
| | 56 | 4 | 64-QAM | QPSK | QPSK | QPSK | 162 | 180 | ☐ |
| | 57 | 4 | 64-QAM | 16-QAM | QPSK | QPSK | 189 | 210 | ☐ |
| | 58 | 4 | 64-QAM | 16-QAM | 16-QAM | QPSK | 216 | 240 | ☐ |
| | 59 | 4 | 64-QAM | 16-QAM | 16-QAM | 16-QAM | 243 | 270 | ☐ |
| | 60 | 4 | 64-QAM | QPSK | QPSK | QPSK | 216 | 240 | ☐ |
| | 61 | 4 | 64-QAM | 16-QAM | 16-QAM | QPSK | 243 | 270 | ☐ |
| | 62 | 4 | 64-QAM | 16-QAM | 16-QAM | 16-QAM | 270 | 300 | ☐ |
| | 63 | 4 | 64-QAM | 64-QAM | 64-QAM | QPSK | 270 | 300 | ☐ |
| | 64 | 4 | 64-QAM | 64-QAM | 64-QAM | 16-QAM | 297 | 330 | ☐ |
| | 65 | 4 | 16-QAM | QPSK | QPSK | QPSK | 202.5 | 225 | ☐ |
| | 66 | 4 | 16-QAM | 16-QAM | QPSK | QPSK | 243 | 270 | ☐ |
| | 67 | 4 | 16-QAM | 16-QAM | 16-QAM | QPSK | 283.5 | 315 | ☐ |
| | 68 | 4 | 64-QAM | QPSK | QPSK | QPSK | 243 | 270 | ☐ |
| | 69 | 4 | 64-QAM | 16-QAM | QPSK | QPSK | 283.5 | 315 | ☐ |
| | 70 | 4 | 64-QAM | 16-QAM | 16-QAM | QPSK | 324 | 360 | ☐ |
| | 71 | 4 | 64-QAM | 16-QAM | 16-QAM | 16-QAM | 364.5 | 405 | ☐ |
| | 72 | 4 | 64-QAM | 64-QAM | QPSK | QPSK | 324 | 360 | ☐ |
| | 73 | 4 | 64-QAM | 64-QAM | 16-QAM | QPSK | 364.5 | 405 | ☐ |
| | 74 | 4 | 64-QAM | 64-QAM | 16-QAM | 16-QAM | 405 | 450 | ☐ |
| | 75 | 4 | 64-QAM | 64-QAM | 64-QAM | QPSK | 405 | 450 | ☐ |
| | 76 | 4 | 64-QAM | 64-QAM | 64-QAM | 16-QAM | 445.5 | 495 | ☐ |

| DATA RATE: 802.11ac VHT20 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Available for EUT | MCS Index | Nbr of spatial streams | Modulation (Stream 1/2/3/4) | Coding rate | GI = 800ns | GI = 400ns | Worst Case Modulation |
| ☑ | 0 | 1 | BPSK | 1/2 | 6,5 | 7,2 | ☐ |
| | 1 | 1 | QPSK | 1/2 | 13 | 14,4 | ☐ |
| | 2 | 1 | QPSK | 3/4 | 19,5 | 21,7 | ☐ |
| | 3 | 1 | 16-QAM | 1/2 | 26 | 28,9 | ☐ |
| | 4 | 1 | 16-QAM | 3/4 | 39 | 43,3 | ☐ |
| | 5 | 1 | 64-QAM | 2/3 | 52 | 57,8 | ☐ |
| | 6 | 1 | 64-QAM | 3/4 | 58,5 | 65 | ☐ |
| | 7 | 1 | 64-QAM | 5/6 | 65 | 72,2 | ☐ |
| | 8 | 1 | 256-QAM | 3/4 | 78 | 86,7 | ☐ |
| | 9 | 1 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☑ | 10 | 2 | BPSK | 1/2 | 13 | 14,4 | ☑ |
| | 11 | 2 | QPSK | 1/2 | 26 | 28,8 | ☐ |
| | 12 | 2 | QPSK | 3/4 | 39 | 43,4 | ☐ |
| | 13 | 2 | 16-QAM | 1/2 | 52 | 57,8 | ☐ |
| | 14 | 2 | 16-QAM | 3/4 | 78 | 86,6 | ☐ |
| | 15 | 2 | 64-QAM | 2/3 | 104 | 115,6 | ☐ |
| | 16 | 2 | 64-QAM | 3/4 | 117 | 130 | ☐ |
| | 17 | 2 | 64-QAM | 5/6 | 130 | 144,4 | ☐ |
| | 18 | 2 | 256-QAM | 3/4 | 156 | 173,4 | ☐ |
| | 19 | 2 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☐ | 20 | 3 | BPSK | 1/2 | 19,5 | 21,6 | ☐ |
| | 21 | 3 | QPSK | 1/2 | 39 | 43,2 | ☐ |
| | 22 | 3 | QPSK | 3/4 | 58,5 | 65,1 | ☐ |
| | 23 | 3 | 16-QAM | 1/2 | 78 | 86,7 | ☐ |
| | 24 | 3 | 16-QAM | 3/4 | 117 | 129,9 | ☐ |
| | 25 | 3 | 64-QAM | 2/3 | 156 | 173,4 | ☐ |
| | 26 | 3 | 64-QAM | 3/4 | 175,5 | 195 | ☐ |
| | 27 | 3 | 64-QAM | 5/6 | 195 | 216,6 | ☐ |
| | 28 | 3 | 256-QAM | 3/4 | 234 | 260,1 | ☐ |
| | 29 | 3 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☐ | 30 | 4 | BPSK | 1/2 | 26 | 28,8 | ☐ |
| | 31 | 4 | QPSK | 1/2 | 52 | 57,6 | ☐ |
| | 32 | 4 | QPSK | 3/4 | 78 | 86,8 | ☐ |
| | 33 | 4 | 16-QAM | 1/2 | 104 | 115,6 | ☐ |
| | 34 | 4 | 16-QAM | 3/4 | 156 | 173,2 | ☐ |
| | 35 | 4 | 64-QAM | 2/3 | 208 | 231,2 | ☐ |
| | 36 | 4 | 64-QAM | 3/4 | 234 | 260 | ☐ |
| | 37 | 4 | 64-QAM | 5/6 | 260 | 288,8 | ☐ |
| | 38 | 4 | 256-QAM | 3/4 | 312 | 346,8 | ☐ |
| | 39 | 4 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☐ | 40 | 5 | BPSK | 1/2 | 32,5 | 36 | ☐ |
| | 41 | 5 | QPSK | 1/2 | 65 | 72 | ☐ |
| | 42 | 5 | QPSK | 3/4 | 97,5 | 108,5 | ☐ |
| | 43 | 5 | 16-QAM | 1/2 | 130 | 144,5 | ☐ |
| | 44 | 5 | 16-QAM | 3/4 | 195 | 216,5 | ☐ |
| | 45 | 5 | 64-QAM | 2/3 | 260 | 289 | ☐ |
| | 46 | 5 | 64-QAM | 3/4 | 292,5 | 325 | ☐ |
| | 47 | 5 | 64-QAM | 5/6 | 325 | 361 | ☐ |
| | 48 | 5 | 256-QAM | 3/4 | 390 | 433,5 | ☐ |
| | 49 | 5 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☐ | 50 | 6 | BPSK | 1/2 | 39 | 43,2 | ☐ |
| | 51 | 6 | QPSK | 1/2 | 78 | 86,4 | ☐ |
| | 52 | 6 | QPSK | 3/4 | 117 | 130,2 | ☐ |
| | 53 | 6 | 16-QAM | 1/2 | 156 | 173,4 | ☐ |
| | 54 | 6 | 16-QAM | 3/4 | 234 | 259,8 | ☐ |
| | 55 | 6 | 64-QAM | 2/3 | 312 | 346,8 | ☐ |
| | 56 | 6 | 64-QAM | 3/4 | 351 | 390 | ☐ |
| | 57 | 6 | 64-QAM | 5/6 | 390 | 433,2 | ☐ |
| | 58 | 6 | 256-QAM | 3/4 | 468 | 520,2 | ☐ |
| | 59 | 6 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☐ | 60 | 7 | BPSK | 1/2 | 45,5 | 50,4 | ☐ |
| | 61 | 7 | QPSK | 1/2 | 91 | 100,8 | ☐ |
| | 62 | 7 | QPSK | 3/4 | 136,5 | 151,9 | ☐ |
| | 63 | 7 | 16-QAM | 1/2 | 182 | 202,3 | ☐ |
| | 64 | 7 | 16-QAM | 3/4 | 273 | 303,1 | ☐ |
| | 65 | 7 | 64-QAM | 2/3 | 364 | 404,6 | ☐ |
| | 66 | 7 | 64-QAM | 3/4 | 409,5 | 455 | ☐ |
| | 67 | 7 | 64-QAM | 5/6 | 455 | 505,4 | ☐ |
| | 68 | 7 | 256-QAM | 3/4 | 546 | 606,9 | ☐ |
| | 69 | 7 | 256-QAM | 5/6 | N/A | N/A | ☐ |
| ☐ | 70 | 8 | BPSK | 1/2 | 52 | 57,6 | ☐ |
| | 71 | 8 | QPSK | 1/2 | 104 | 115,2 | ☐ |
| | 72 | 8 | QPSK | 3/4 | 156 | 173,6 | ☐ |
| | 73 | 8 | 16-QAM | 1/2 | 208 | 231,2 | ☐ |
| | 74 | 8 | 16-QAM | 3/4 | 312 | 346,4 | ☐ |
| | 75 | 8 | 64-QAM | 2/3 | 416 | 462,4 | ☐ |
| | 76 | 8 | 64-QAM | 3/4 | 468 | 520 | ☐ |
| | 77 | 8 | 64-QAM | 5/6 | 520 | 577,6 | ☐ |
| | 78 | 8 | 256-QAM | 3/4 | 624 | 693,6 | ☐ |
| | 79 | 8 | 256-QAM | 5/6 | N/A | N/A | ☐ |

| DATA RATE: 802.11ac VHT40 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Available for EUT | MCS Index | Nbr of spatial streams | Modulation (Stream 1/2/3/4) | Coding rate | GI = 800ns | GI = 400ns | Worst Case Modulation |
| ☑ | 0 | 1 | BPSK | 1/2 | 13,5 | 15 | ☐ |
| | 1 | 1 | QPSK | 1/2 | 27 | 30 | ☐ |
| | 2 | 1 | QPSK | 3/4 | 40,5 | 45 | ☐ |
| | 3 | 1 | 16-QAM | 1/2 | 54 | 60 | ☐ |
| | 4 | 1 | 16-QAM | 3/4 | 81 | 90 | ☐ |
| | 5 | 1 | 64-QAM | 2/3 | 108 | 120 | ☐ |
| | 6 | 1 | 64-QAM | 3/4 | 121,5 | 135 | ☐ |
| | 7 | 1 | 64-QAM | 5/6 | 135 | 150 | ☐ |
| | 8 | 1 | 256-QAM | 3/4 | 162 | 180 | ☐ |
| | 9 | 1 | 256-QAM | 5/6 | 180 | 200 | ☐ |
| ☑ | 10 | 2 | BPSK | 1/2 | 27 | 30 | ☑ |
| | 11 | 2 | QPSK | 1/2 | 54 | 60 | ☐ |
| | 12 | 2 | QPSK | 3/4 | 81 | 90 | ☐ |
| | 13 | 2 | 16-QAM | 1/2 | 108 | 120 | ☐ |
| | 14 | 2 | 16-QAM | 3/4 | 162 | 180 | ☐ |
| | 15 | 2 | 64-QAM | 2/3 | 216 | 240 | ☐ |
| | 16 | 2 | 64-QAM | 3/4 | 243 | 270 | ☐ |
| | 17 | 2 | 64-QAM | 5/6 | 270 | 300 | ☐ |
| | 18 | 2 | 256-QAM | 3/4 | 324 | 360 | ☐ |
| | 19 | 2 | 256-QAM | 5/6 | 360 | 400 | ☐ |
| ☐ | 20 | 3 | BPSK | 1/2 | 40,5 | 45 | ☐ |
| | 21 | 3 | QPSK | 1/2 | 81 | 90 | ☐ |
| | 22 | 3 | QPSK | 3/4 | 121,5 | 135 | ☐ |
| | 23 | 3 | 16-QAM | 1/2 | 162 | 180 | ☐ |
| | 24 | 3 | 16-QAM | 3/4 | 243 | 270 | ☐ |
| | 25 | 3 | 64-QAM | 2/3 | 324 | 360 | ☐ |
| | 26 | 3 | 64-QAM | 3/4 | 364,5 | 405 | ☐ |
| | 27 | 3 | 64-QAM | 5/6 | 405 | 450 | ☐ |
| | 28 | 3 | 256-QAM | 3/4 | 486 | 540 | ☐ |
| | 29 | 3 | 256-QAM | 5/6 | 540 | 600 | ☐ |
| ☐ | 30 | 4 | BPSK | 1/2 | 54 | 60 | ☐ |
| | 31 | 4 | QPSK | 1/2 | 108 | 120 | ☐ |
| | 32 | 4 | QPSK | 3/4 | 162 | 180 | ☐ |
| | 33 | 4 | 16-QAM | 1/2 | 216 | 240 | ☐ |
| | 34 | 4 | 16-QAM | 3/4 | 324 | 360 | ☐ |
| | 35 | 4 | 64-QAM | 2/3 | 432 | 480 | ☐ |
| | 36 | 4 | 64-QAM | 3/4 | 486 | 540 | ☐ |
| | 37 | 4 | 64-QAM | 5/6 | 540 | 600 | ☐ |
| | 38 | 4 | 256-QAM | 3/4 | 648 | 720 | ☐ |
| | 39 | 4 | 256-QAM | 5/6 | 720 | 800 | ☐ |
| ☐ | 40 | 5 | BPSK | 1/2 | 67,5 | 75 | ☐ |
| | 41 | 5 | QPSK | 1/2 | 135 | 150 | ☐ |
| | 42 | 5 | QPSK | 3/4 | 202,5 | 225 | ☐ |
| | 43 | 5 | 16-QAM | 1/2 | 270 | 300 | ☐ |
| | 44 | 5 | 16-QAM | 3/4 | 405 | 450 | ☐ |
| | 45 | 5 | 64-QAM | 2/3 | 540 | 600 | ☐ |
| | 46 | 5 | 64-QAM | 3/4 | 607,5 | 675 | ☐ |
| | 47 | 5 | 64-QAM | 5/6 | 675 | 750 | ☐ |
| | 48 | 5 | 256-QAM | 3/4 | 810 | 900 | ☐ |
| | 49 | 5 | 256-QAM | 5/6 | 900 | 1000 | ☐ |
| ☐ | 50 | 6 | BPSK | 1/2 | 81 | 90 | ☐ |
| | 51 | 6 | QPSK | 1/2 | 162 | 180 | ☐ |
| | 52 | 6 | QPSK | 3/4 | 243 | 270 | ☐ |
| | 53 | 6 | 16-QAM | 1/2 | 324 | 360 | ☐ |
| | 54 | 6 | 16-QAM | 3/4 | 486 | 540 | ☐ |
| | 55 | 6 | 64-QAM | 2/3 | 648 | 720 | ☐ |
| | 56 | 6 | 64-QAM | 3/4 | 729 | 810 | ☐ |
| | 57 | 6 | 64-QAM | 5/6 | 810 | 900 | ☐ |
| | 58 | 6 | 256-QAM | 3/4 | 972 | 1080 | ☐ |
| | 59 | 6 | 256-QAM | 5/6 | 1080 | 1200 | ☐ |
| ☐ | 60 | 7 | BPSK | 1/2 | 94,5 | 105 | ☐ |
| | 61 | 7 | QPSK | 1/2 | 189 | 210 | ☐ |
| | 62 | 7 | QPSK | 3/4 | 283,5 | 315 | ☐ |
| | 63 | 7 | 16-QAM | 1/2 | 378 | 420 | ☐ |
| | 64 | 7 | 16-QAM | 3/4 | 567 | 630 | ☐ |
| | 65 | 7 | 64-QAM | 2/3 | 756 | 840 | ☐ |
| | 66 | 7 | 64-QAM | 3/4 | 850,5 | 945 | ☐ |
| | 67 | 7 | 64-QAM | 5/6 | 945 | 1050 | ☐ |
| | 68 | 7 | 256-QAM | 3/4 | 1134 | 1260 | ☐ |
| | 69 | 7 | 256-QAM | 5/6 | 1260 | 1400 | ☐ |
| ☐ | 70 | 8 | BPSK | 1/2 | 108 | 120 | ☐ |
| | 71 | 8 | QPSK | 1/2 | 216 | 240 | ☐ |
| | 72 | 8 | QPSK | 3/4 | 324 | 360 | ☐ |
| | 73 | 8 | 16-QAM | 1/2 | 432 | 480 | ☐ |
| | 74 | 8 | 16-QAM | 3/4 | 648 | 720 | ☐ |
| | 75 | 8 | 64-QAM | 2/3 | 864 | 960 | ☐ |
| | 76 | 8 | 64-QAM | 3/4 | 972 | 1080 | ☐ |
| | 77 | 8 | 64-QAM | 5/6 | 1080 | 1200 | ☐ |
| | 78 | 8 | 256-QAM | 3/4 | 1296 | 1440 | ☐ |
| | 79 | 8 | 256-QAM | 5/6 | 1440 | 1600 | ☐ |

| DATA RATE: 802.11ac VHT80 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Available for EUT | MCS Index | Nbr of spatial streams | Modulation (Stream 1/2/3/4) | Coding rate | GI = 800ns | GI = 400ns | Worst Case Modulation |
| ☑ | 0 | 1 | BPSK | 1/2 | 29.3 | 32.5 | ☐ |
| | 1 | 1 | QPSK | 1/2 | 58.5 | 65 | ☐ |
| | 2 | 1 | QPSK | 3/4 | 87.8 | 97.5 | ☐ |
| | 3 | 1 | 16-QAM | 1/2 | 117 | 130 | ☐ |
| | 4 | 1 | 16-QAM | 3/4 | 175.5 | 195 | ☐ |
| | 5 | 1 | 64-QAM | 2/3 | 234 | 260 | ☐ |
| | 6 | 1 | 64-QAM | 3/4 | 263.3 | 292.5 | ☐ |
| | 7 | 1 | 64-QAM | 5/6 | 292.5 | 325 | ☐ |
| | 8 | 1 | 256-QAM | 3/4 | 351 | 390 | ☐ |
| | 9 | 1 | 256-QAM | 5/6 | 390 | 433.3 | ☐ |
| ☑ | 10 | 2 | BPSK | 1/2 | 58.6 | 65 | ☑ |
| | 11 | 2 | QPSK | 1/2 | 117 | 130 | ☐ |
| | 12 | 2 | QPSK | 3/4 | 175.6 | 195 | ☐ |
| | 13 | 2 | 16-QAM | 1/2 | 234 | 260 | ☐ |
| | 14 | 2 | 16-QAM | 3/4 | 351 | 390 | ☐ |
| | 15 | 2 | 64-QAM | 2/3 | 468 | 520 | ☐ |
| | 16 | 2 | 64-QAM | 3/4 | 526.6 | 585 | ☐ |
| | 17 | 2 | 64-QAM | 5/6 | 585 | 650 | ☐ |
| | 18 | 2 | 256-QAM | 3/4 | 702 | 780 | ☐ |
| | 19 | 2 | 256-QAM | 5/6 | 780 | 866.6 | ☐ |
| ☐ | 20 | 3 | BPSK | 1/2 | 87.9 | 97.5 | ☐ |
| | 21 | 3 | QPSK | 1/2 | 175.5 | 195 | ☐ |
| | 22 | 3 | QPSK | 3/4 | 263.4 | 292.5 | ☐ |
| | 23 | 3 | 16-QAM | 1/2 | 351 | 390 | ☐ |
| | 24 | 3 | 16-QAM | 3/4 | 526.5 | 585 | ☐ |
| | 25 | 3 | 64-QAM | 2/3 | 702 | 780 | ☐ |
| | 26 | 3 | 64-QAM | 3/4 | 789.9 | 877.5 | ☐ |
| | 27 | 3 | 64-QAM | 5/6 | 877.5 | 975 | ☐ |
| | 28 | 3 | 256-QAM | 3/4 | 1053 | 1170 | ☐ |
| | 29 | 3 | 256-QAM | 5/6 | 1170 | 1299.9 | ☐ |
| ☐ | 30 | 4 | BPSK | 1/2 | 117.2 | 130 | ☐ |
| | 31 | 4 | QPSK | 1/2 | 234 | 260 | ☐ |
| | 32 | 4 | QPSK | 3/4 | 351.2 | 390 | ☐ |
| | 33 | 4 | 16-QAM | 1/2 | 468 | 520 | ☐ |
| | 34 | 4 | 16-QAM | 3/4 | 702 | 780 | ☐ |
| | 35 | 4 | 64-QAM | 2/3 | 936 | 1040 | ☐ |
| | 36 | 4 | 64-QAM | 3/4 | 1053.2 | 1170 | ☐ |
| | 37 | 4 | 64-QAM | 5/6 | 1170 | 1300 | ☐ |
| | 38 | 4 | 256-QAM | 3/4 | 1404 | 1560 | ☐ |
| | 39 | 4 | 256-QAM | 5/6 | 1560 | 1733.2 | ☐ |
| ☐ | 40 | 5 | BPSK | 1/2 | 146.5 | 162.5 | ☐ |
| | 41 | 5 | QPSK | 1/2 | 292.5 | 325 | ☐ |
| | 42 | 5 | QPSK | 3/4 | 439 | 487.5 | ☐ |
| | 43 | 5 | 16-QAM | 1/2 | 585 | 650 | ☐ |
| | 44 | 5 | 16-QAM | 3/4 | 877.5 | 975 | ☐ |
| | 45 | 5 | 64-QAM | 2/3 | 1170 | 1300 | ☐ |
| | 46 | 5 | 64-QAM | 3/4 | 1316.5 | 1462.5 | ☐ |
| | 47 | 5 | 64-QAM | 5/6 | 1462.5 | 1625 | ☐ |
| | 48 | 5 | 256-QAM | 3/4 | 1755 | 1950 | ☐ |
| | 49 | 5 | 256-QAM | 5/6 | 1950 | 2166.5 | ☐ |
| ☐ | 50 | 6 | BPSK | 1/2 | 175.8 | 195 | ☐ |
| | 51 | 6 | QPSK | 1/2 | 351 | 390 | ☐ |
| | 52 | 6 | QPSK | 3/4 | 526.8 | 585 | ☐ |
| | 53 | 6 | 16-QAM | 1/2 | 702 | 780 | ☐ |
| | 54 | 6 | 16-QAM | 3/4 | 1053 | 1170 | ☐ |
| | 55 | 6 | 64-QAM | 2/3 | 1404 | 1560 | ☐ |
| | 56 | 6 | 64-QAM | 3/4 | 1579.8 | 1755 | ☐ |
| | 57 | 6 | 64-QAM | 5/6 | 1755 | 1950 | ☐ |
| | 58 | 6 | 256-QAM | 3/4 | 2106 | 2340 | ☐ |
| | 59 | 6 | 256-QAM | 5/6 | 2340 | 2599.8 | ☐ |
| ☐ | 60 | 7 | BPSK | 1/2 | 205.1 | 227.5 | ☐ |
| | 61 | 7 | QPSK | 1/2 | 409.5 | 455 | ☐ |
| | 62 | 7 | QPSK | 3/4 | 614.6 | 682.5 | ☐ |
| | 63 | 7 | 16-QAM | 1/2 | 819 | 910 | ☐ |
| | 64 | 7 | 16-QAM | 3/4 | 1228.5 | 1365 | ☐ |
| | 65 | 7 | 64-QAM | 2/3 | 1638 | 1820 | ☐ |
| | 66 | 7 | 64-QAM | 3/4 | 1843.1 | 2047.5 | ☐ |
| | 67 | 7 | 64-QAM | 5/6 | 2047.5 | 2275 | ☐ |
| | 68 | 7 | 256-QAM | 3/4 | 2457 | 2730 | ☐ |
| | 69 | 7 | 256-QAM | 5/6 | 2730 | 3033.1 | ☐ |
| ☐ | 70 | 8 | BPSK | 1/2 | 234.4 | 260 | ☐ |
| | 71 | 8 | QPSK | 1/2 | 468 | 520 | ☐ |
| | 72 | 8 | QPSK | 3/4 | 702.4 | 780 | ☐ |
| | 73 | 8 | 16-QAM | 1/2 | 936 | 1040 | ☐ |
| | 74 | 8 | 16-QAM | 3/4 | 1404 | 1560 | ☐ |
| | 75 | 8 | 64-QAM | 2/3 | 1872 | 2080 | ☐ |
| | 76 | 8 | 64-QAM | 3/4 | 2106.4 | 2340 | ☐ |
| | 77 | 8 | 64-QAM | 5/6 | 2340 | 2600 | ☐ |
| | 78 | 8 | 256-QAM | 3/4 | 2808 | 3120 | ☐ |
| | 79 | 8 | 256-QAM | 5/6 | 3120 | 3466.4 | ☐ |

## 2.2. RUNNING MODE

| Test mode | Description of test mode |
|---|---|
| Test mode 1 | Permanent emission with modulation on a fixed channel in the data rate that produced the highest power |
| Test mode 2 | Permanent emission with modulation on a fixed channel in the data rate that produced the lowest power |

| Test | Running mode | |
|---|---|---|
| Occupied Bandwidth | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| 26dB Bandwidth | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| 6dB Bandwidth | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| Duty Cycle | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| EIRP | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| Maximum Conducted Output Power | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| Power Spectral Density | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| Transmit Power Control | ☑ Test mode 2 (1) | ☐ Alternative test mode() |
| AC Power Line Conducted Emission | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| Unwanted Emissions & Undesirable Emission | ☑ Test mode 1 (1) | ☐ Alternative test mode() |
| Frequency Stability | ☑ Test mode 1 (1) | ☐ Alternative test mode() |

(1) Following commands with the specific test software “MTool V3.1.0.2” are used to set the product:

a. – See document “AVS31005949_WIFI test commands of M393 COGECO.docx”(provided by customer) for the command used during test.

## 2.3. EQUIPMENT LABELLING

## 2.4. EQUIPMENT MODIFICATION

☑ None ☐ Modification:

## 2.5. *FIELD STRENGTH CALCULATION*

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follow:

FS = RA + AF + CF – AG

Where FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Factor
AG = Amplifier Gain

Assume a receiver reading of 52.5dBµV is obtained. The antenna factor of 7.4 and a cable factor of 1.1 are added. The amplifier gain of 29dB is subtracted, giving a field strength of 32 dBµV/m.
FS = 52.5 + 7.4 + 1.1 – 29 = 32 dBµV/m
The 32 dBµV/m value can be mathematically converted to its corresponding level in µV/m.
Level in µV/m = Common Antilogarithm [(32dBµV/m)/20] = 39.8 µV/m.

## 2.6. *CALIBRATION DATE*

The calibration intervals are extended at 12+2 months. This extended interval is based on the fact that there is sufficient calibration data to statistically establish a trend or based on experience of use of the test equipment to assure good measurement results for a longer period.

# 3. OCCUPIED BANDWIDTH

## 3.1. TEST CONDITIONS

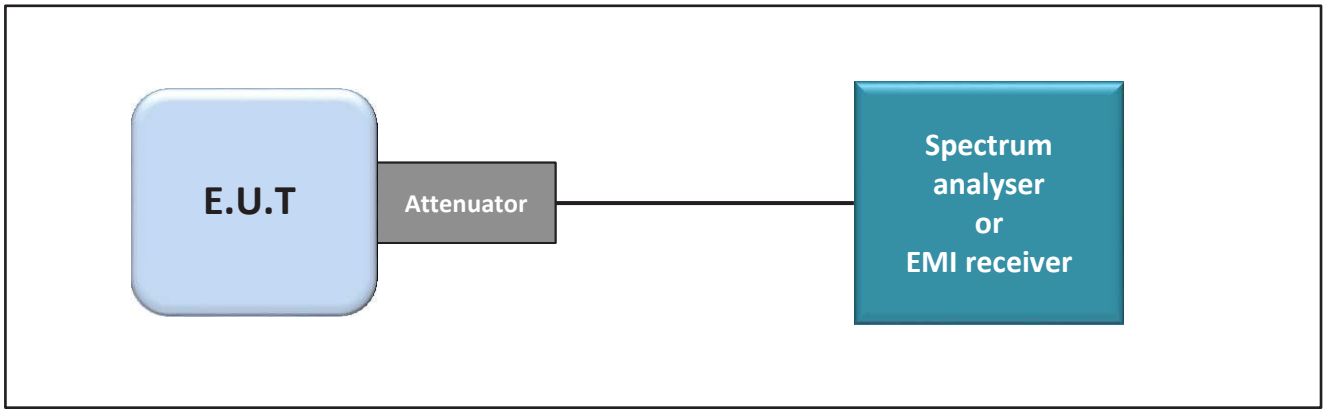
| | |
|---|---|
| Test performed by | : Armand MAHOUNGOU |
| Date of test | : June 15, 2021 |
| Ambient temperature | : 26°C |
| Relative humidity | : 44% |

## 3.2. TEST SETUP

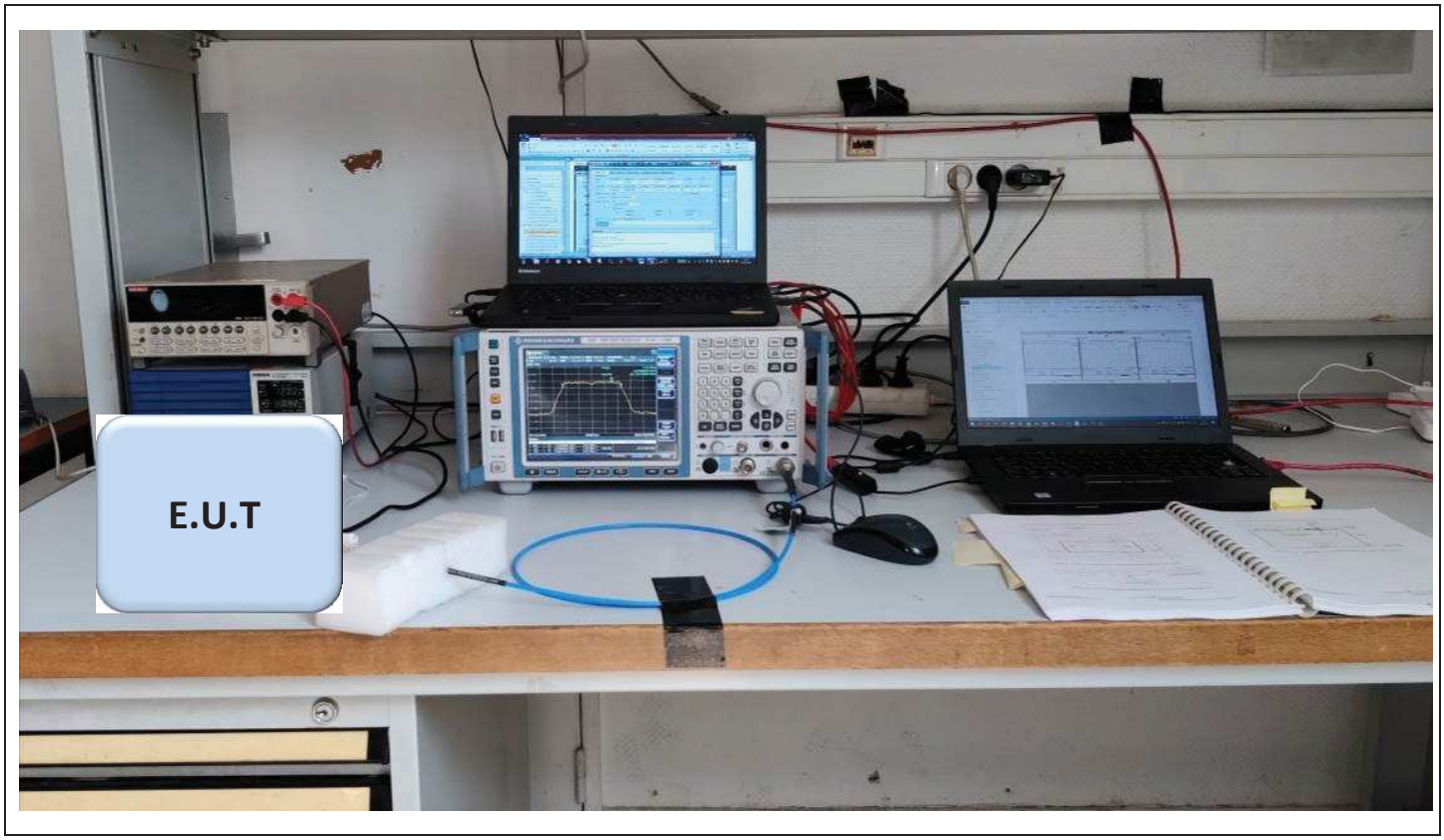
- The Equipment Under Test is installed:
☑ On a table
☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § D




Test set up of Occupied Bandwidth




Photograph for Occupied bandwidth

## 3.3. LIMIT

None

## 3.4. TEST EQUIPMENT LIST

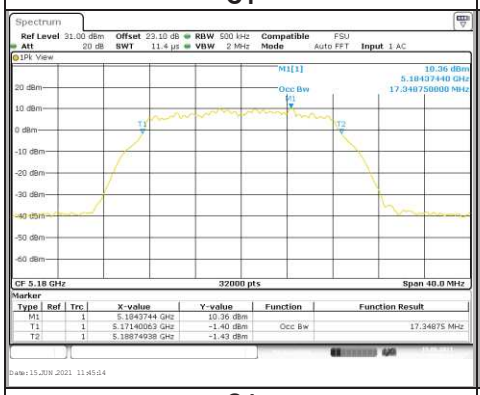
| DESCRIPTION | MANUFACTURER | MODEL | N° LCIE | Cal_Date | Cal_Due |
|---|---|---|---|---|---|
| EMI receiver | ROHDE & SCHWARZ | ESR7 | A2642026 | 2019/07 | 2021/07 |
| Cable + Attenuateur 20dB | PASTERNACK | PE350-150CM | A5329970 | 2020/09 | 2021/09 |
| Power supply | KIKUSUI | PCR500M | A7049006 | See Multimeter | See Multimeter |
| Multimeter | KEITHLEY | 2000 | A1242090 | 2021/03 | 2023/03 |
| R&S Commander Software | ROHDE & SCHWARZ | Version 1,6,4 | - | - | - |
| Load 50 ohms | TELEGARTNER | - | A7150103 | 2021/04 | 2023/04 |
| Load 50 ohms | TELEGARTNER | - | A7150104 | 2021/04 | 2023/04 |

Note: In our quality system, the test equipment calibration due is more & less 2 months

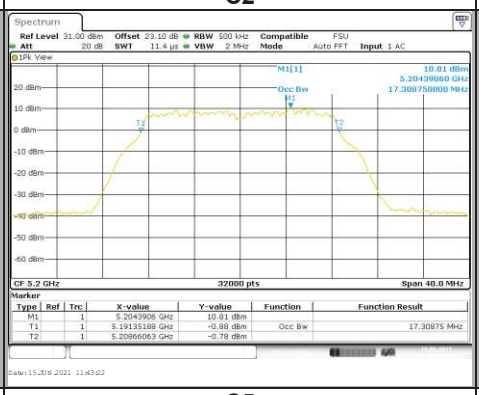
## 3.5. RESULTS

### 802.11a

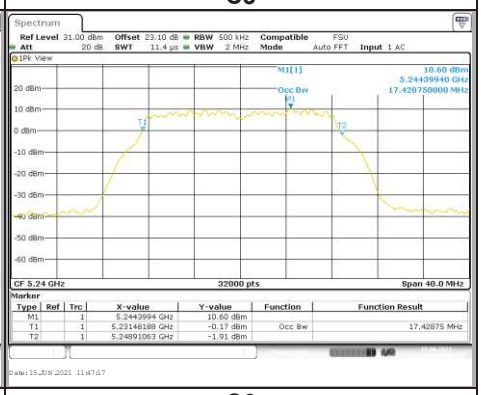
#### C1



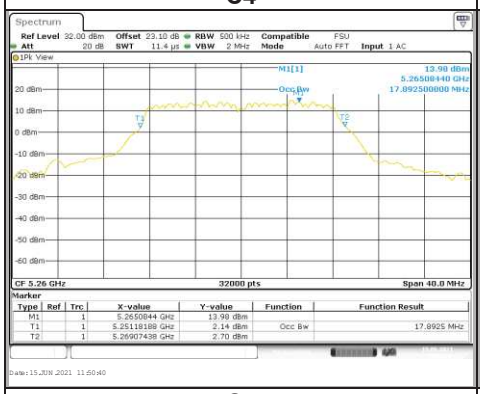

#### C2



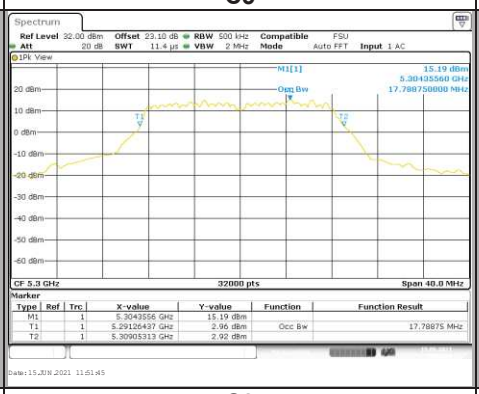

#### C3



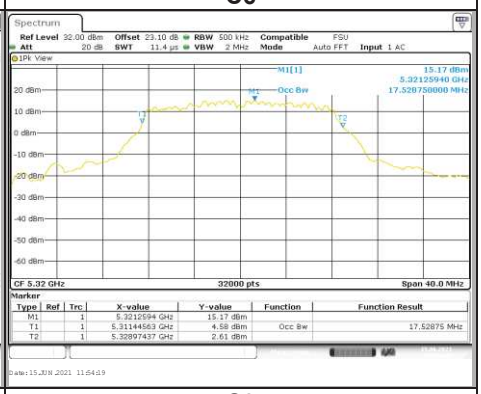

#### C4



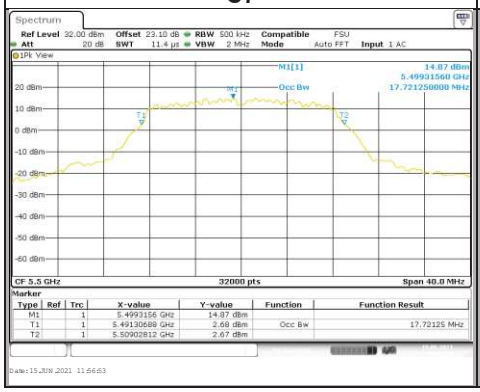

#### C5



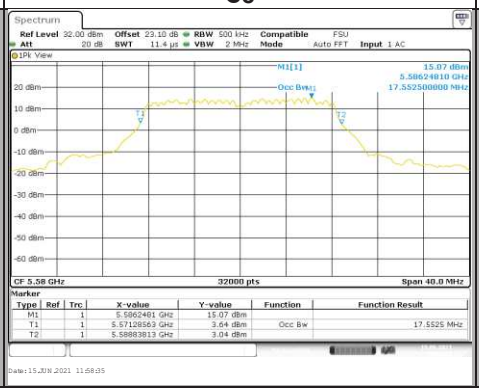

#### C6



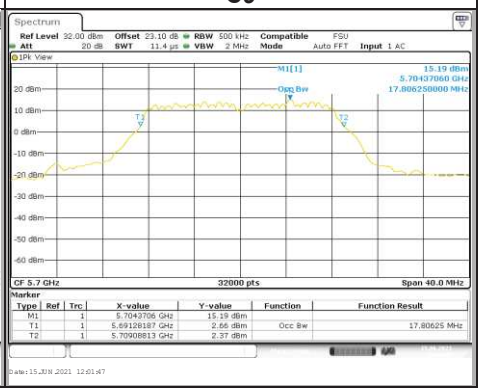

#### C7

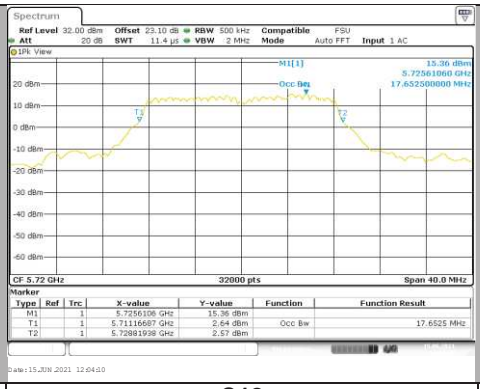
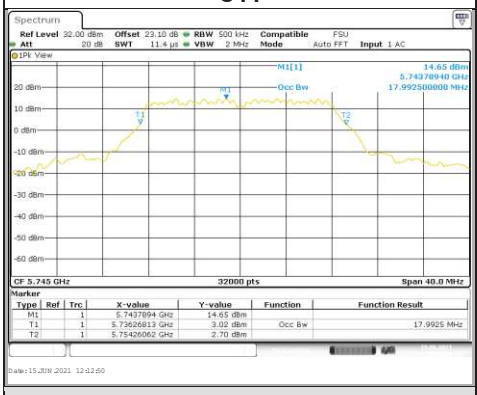
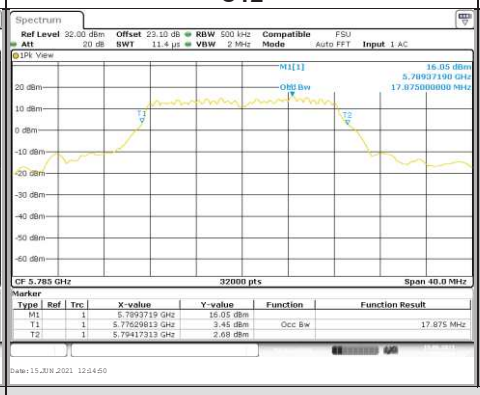
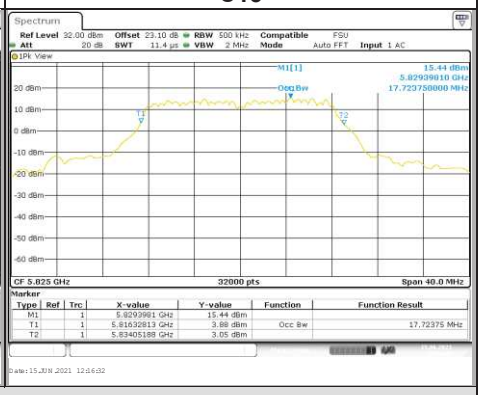



#### C8




#### C9

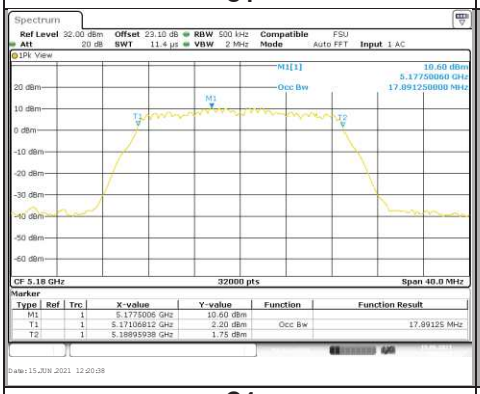


| 802.11a | | |
|---|---|---|
| C10 | | |
|  | | |
| C11 | C12 | C13 |
|  |  |  |

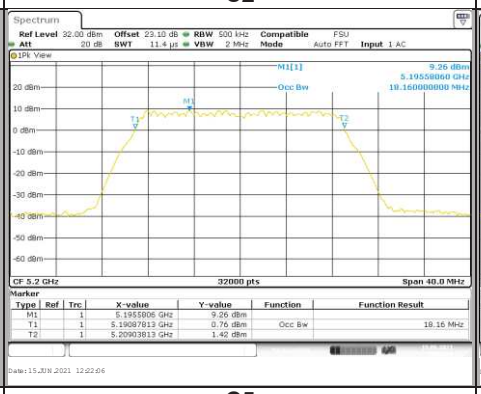
| Channel | Occupied Channel Bandwidth (MHz) |
|---|---|
| **C1** | 17.348 |
| **C2** | 17.309 |
| **C3** | 17.429 |
| **C4** | 17.892 |
| **C5** | 17.788 |
| **C6** | 17.529 |
| **C7** | 17.721 |
| **C8** | 17.552 |
| **C9** | 17.806 |
| **C10** | 17.652 |
| **C11** | 17.992 |
| **C12** | 17.875 |
| **C13** | 17.724 |

## 802.11n HT20/ac VHT20

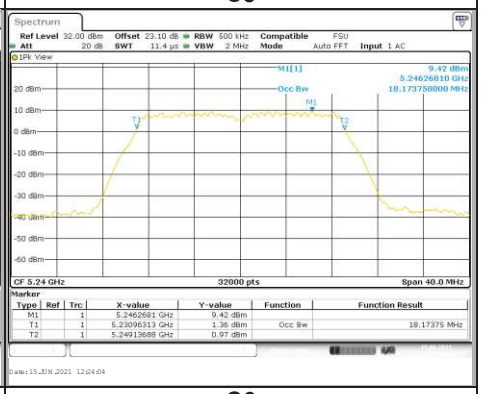
### C1



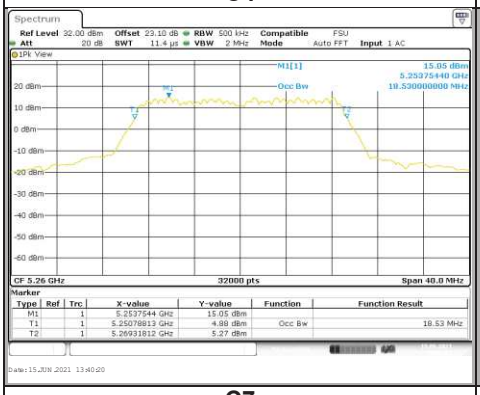

### C2



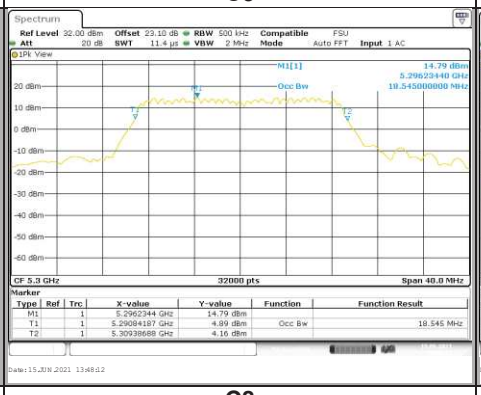

### C3



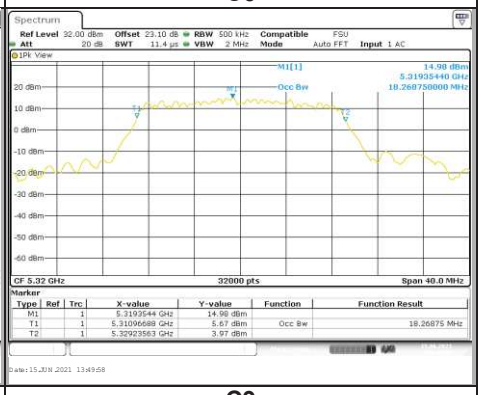

### C4



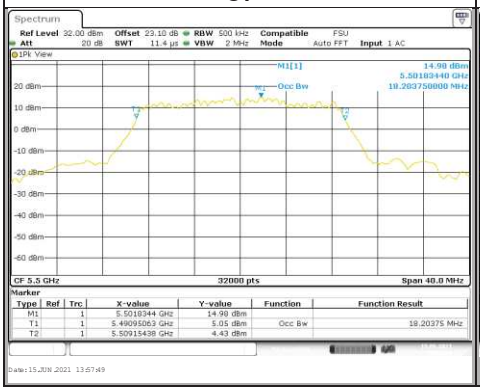

### C5



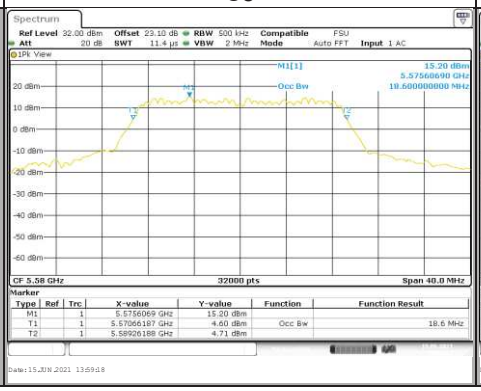

### C6



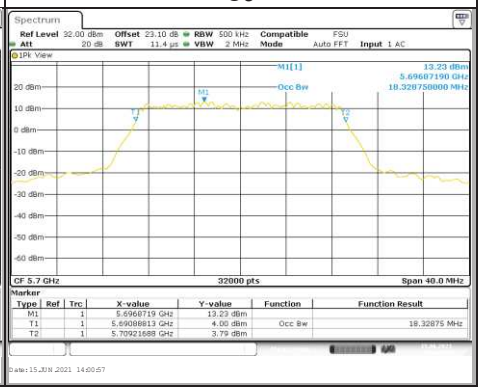

### C7




### C8

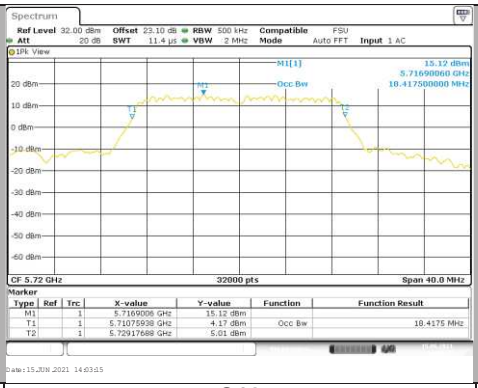



### C9

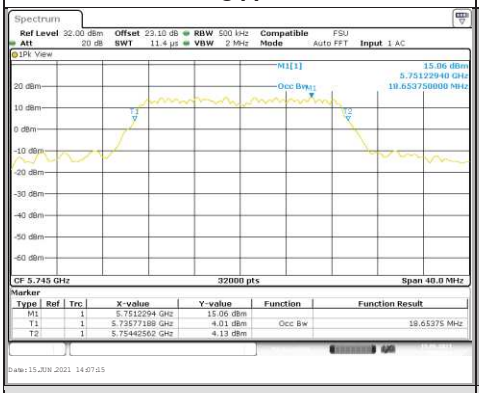


## 802.11n HT20/ac VHT20

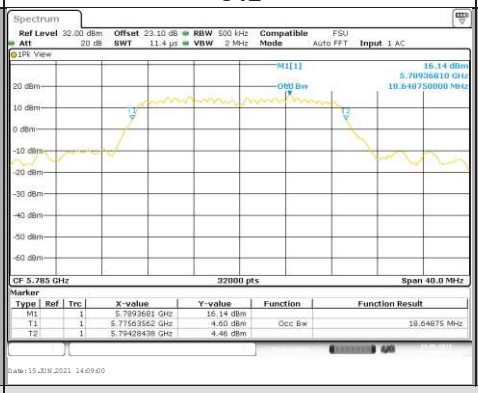
### C10



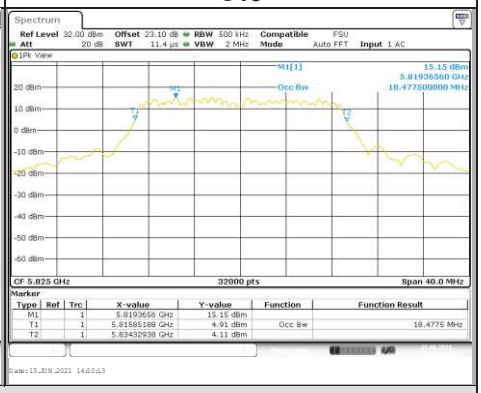

### C11




### C12



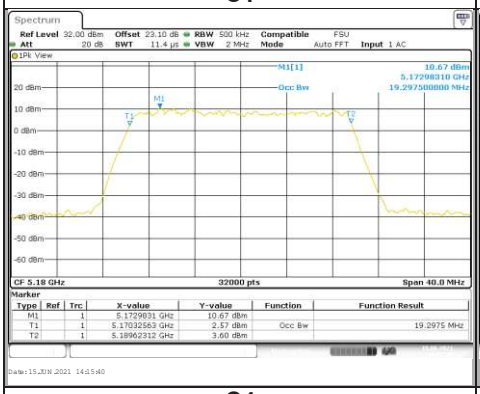

### C13



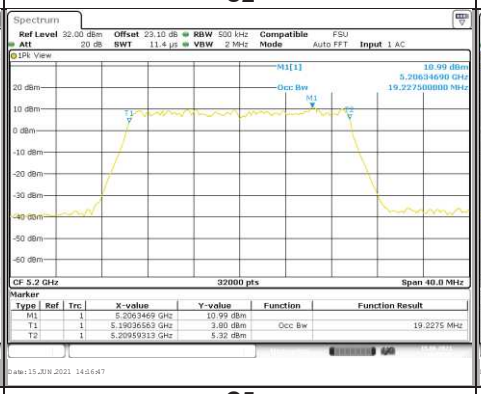

| Channel | Occupied Channel Bandwidth (MHz) |
|---|---|
| **C1** | 17.891 |
| **C2** | 18.16 |
| **C3** | 18.174 |
| **C4** | 18.53 |
| **C5** | 18.545 |
| **C6** | 18.269 |
| **C7** | 18.204 |
| **C8** | 18.6 |
| **C9** | 18.329 |
| **C10** | 18.417 |
| **C11** | 18.654 |
| **C12** | 18.649 |
| **C13** | 18.477 |

## 802.11ax HT20

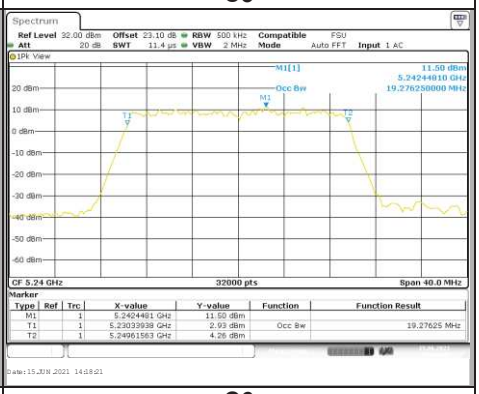
### C1



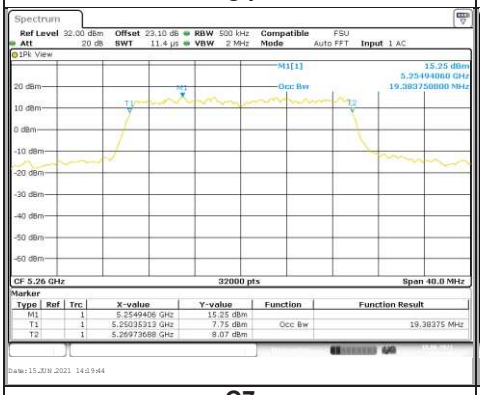

### C2



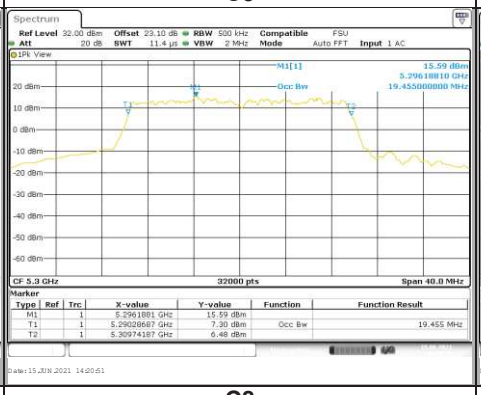

### C3



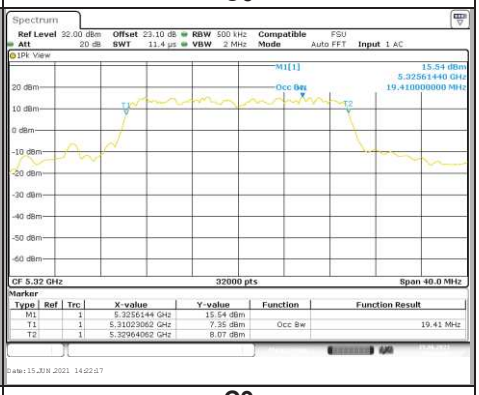

### C4



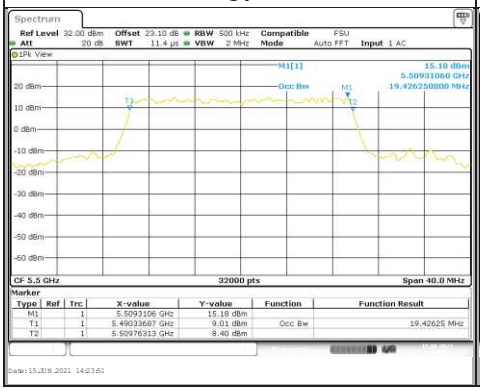

### C5



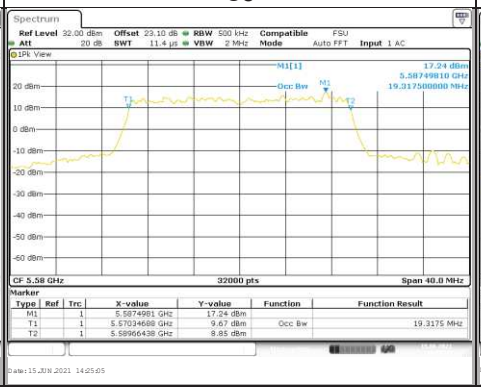

### C6



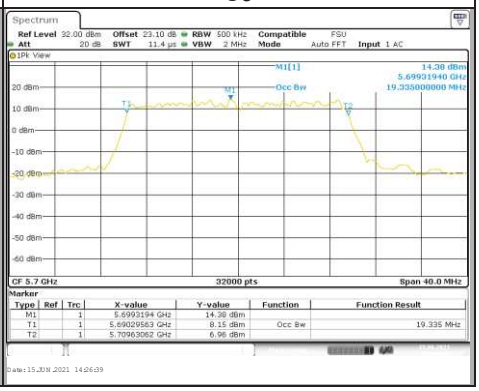

### C7




### C8

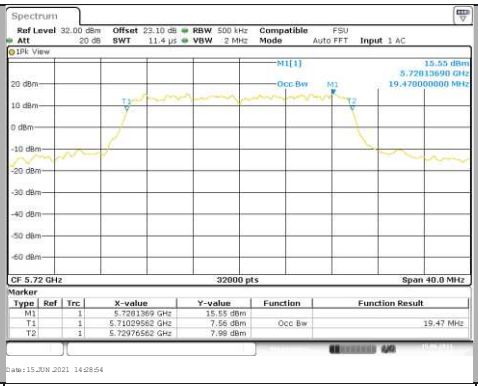



### C9

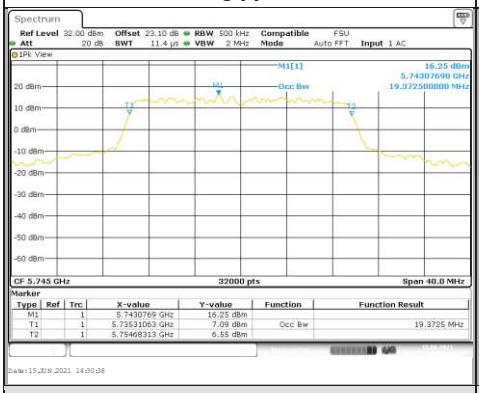


## 802.11ax HT20

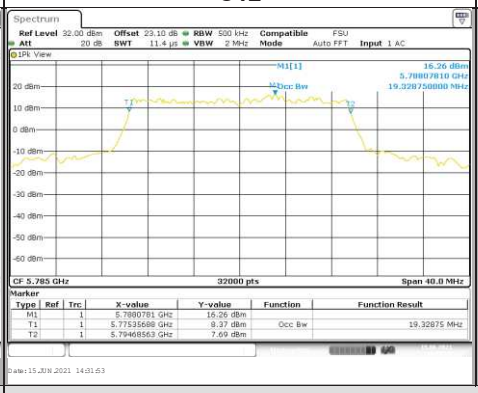
### C10



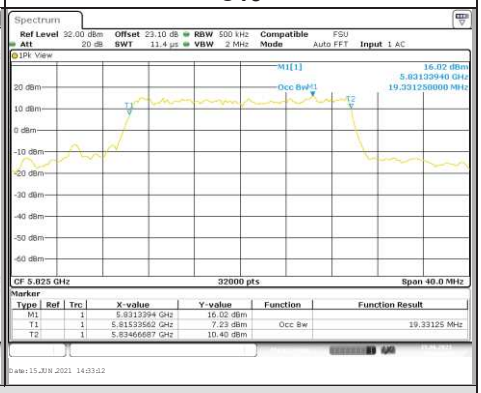

### C11




### C12



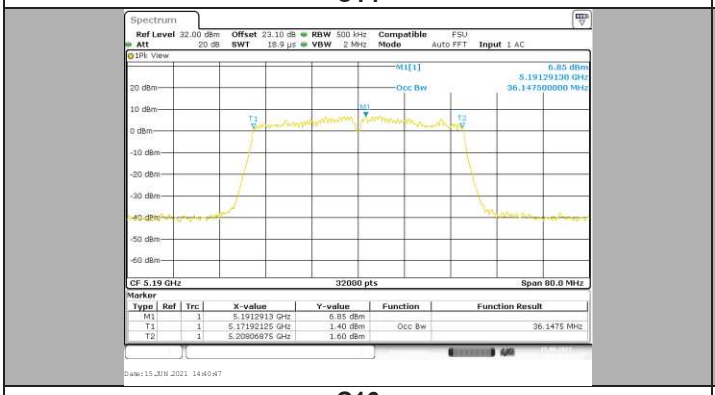

### C13



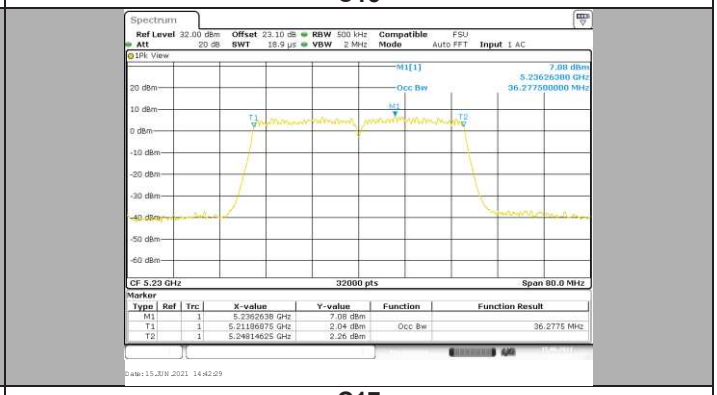

| Channel | Occupied Channel Bandwidth (MHz) |
|---|---|
| **C1** | 19.297 |
| **C2** | 19.227 |
| **C3** | 19.276 |
| **C4** | 19.384 |
| **C5** | 19.455 |
| **C6** | 19.41 |
| **C7** | 19.426 |
| **C8** | 19.317 |
| **C9** | 19.335 |
| **C10** | 19.47 |
| **C11** | 19.372 |
| **C12** | 19.329 |
| **C13** | 19.331 |

## 802.11n HT40/ac VHT40

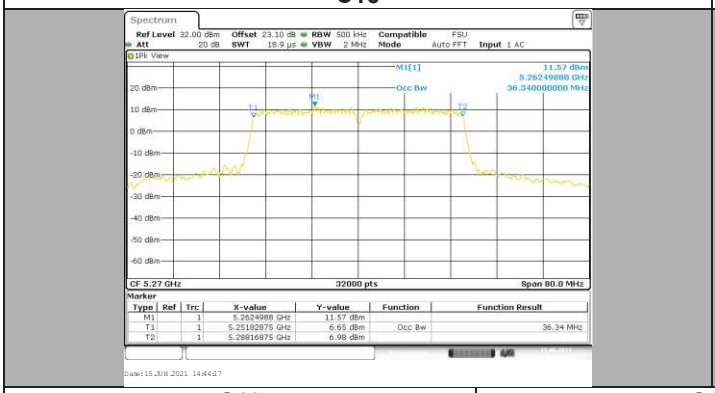
### C14



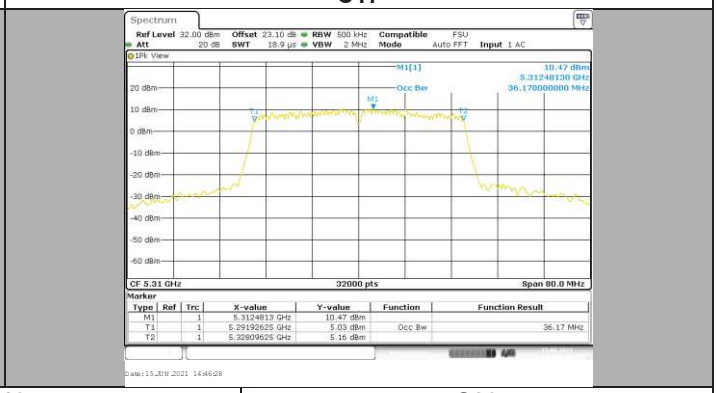

### C15



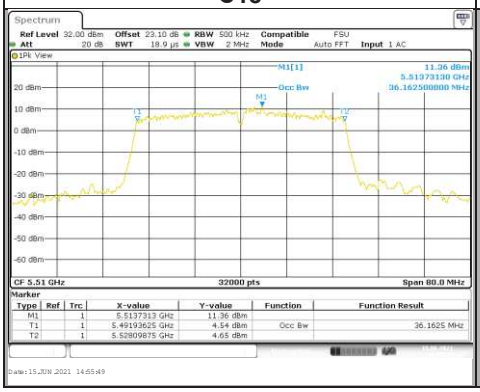

### C16



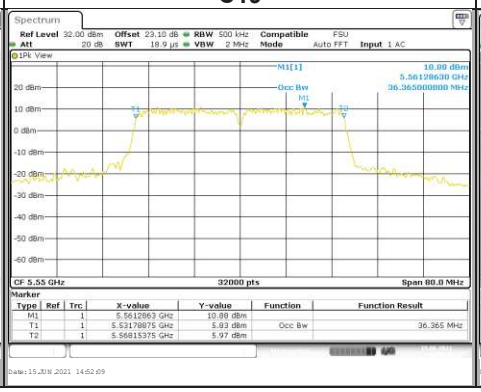

### C17



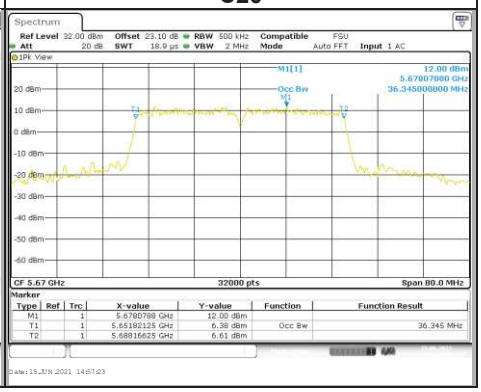

### C18




### C19

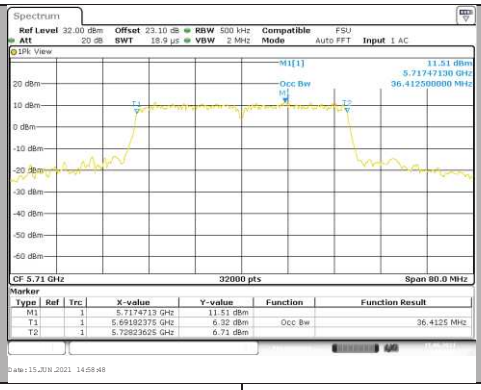



### C20

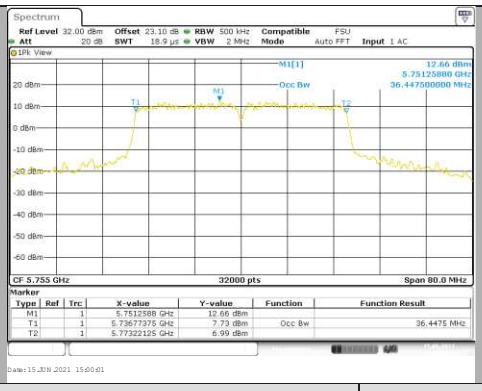


## 802.11n HT40/ac VHT40

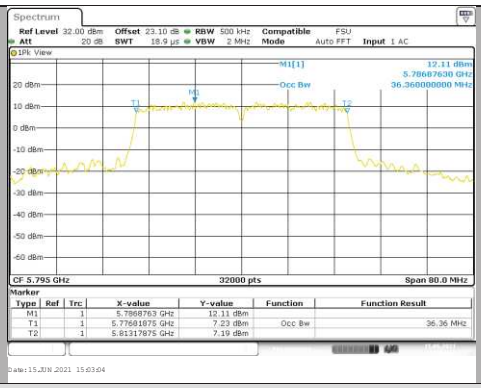
### C21




### C22



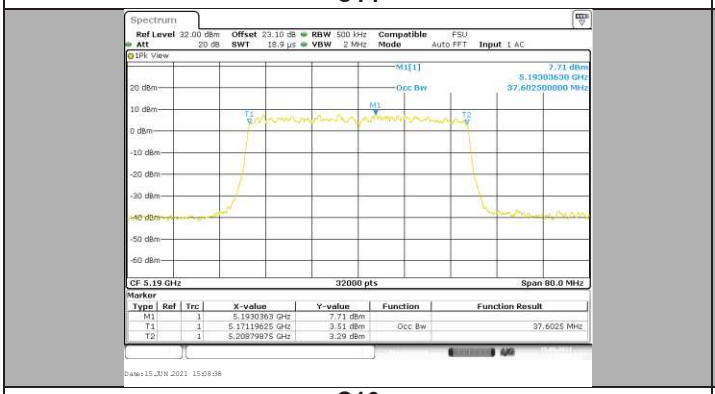

### C23



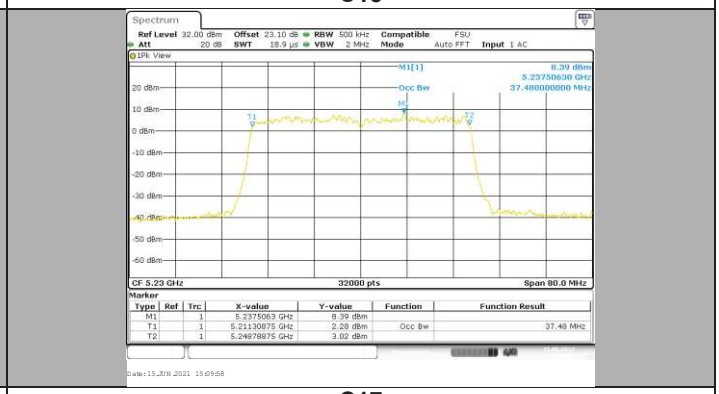

| Channel | Occupied Channel Bandwidth (MHz) |
|---|---|
| **C14** | 36.147 |
| **C15** | 36.277 |
| **C16** | 36.34 |
| **C17** | 36.17 |
| **C18** | 36.162 |
| **C19** | 36.365 |
| **C20** | 36.345 |
| **C21** | 36.412 |
| **C22** | 36.447 |
| **C23** | 36.36 |

## 802.11ax VHT40

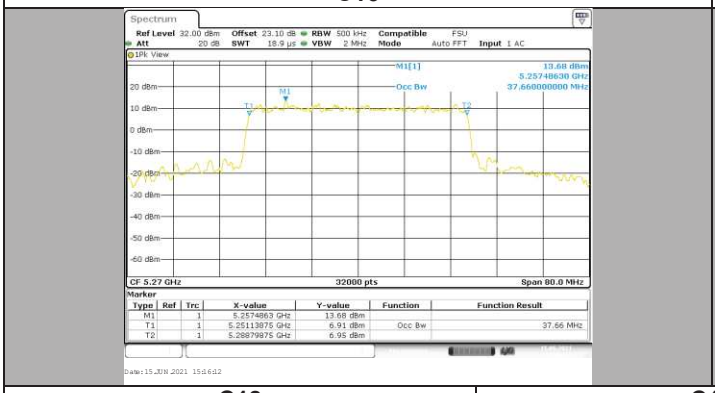
### C14



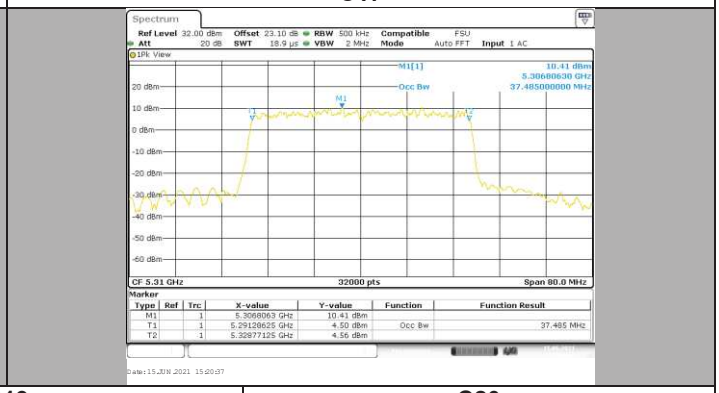

### C15



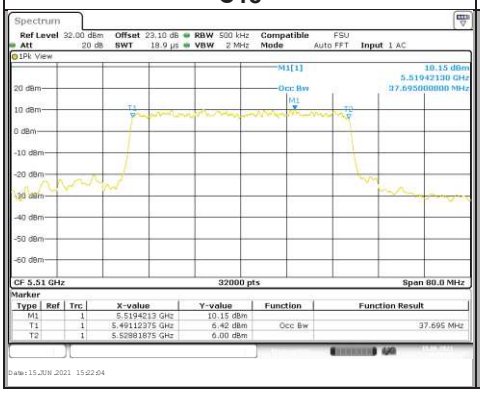

### C16



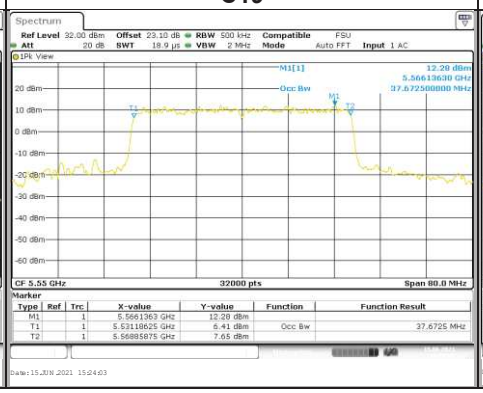

### C17



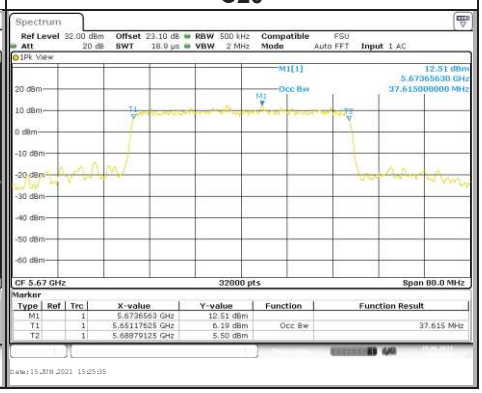

### C18

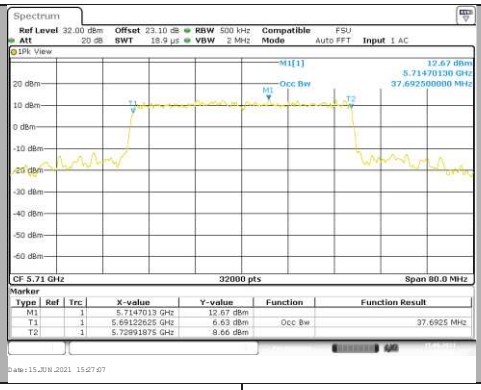
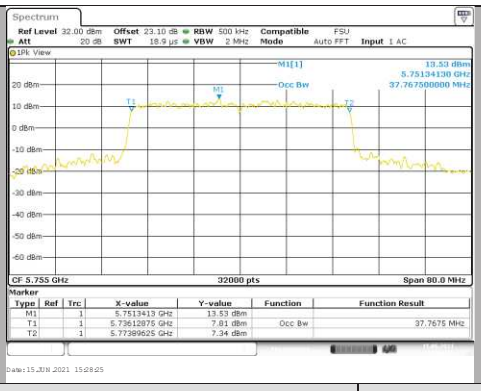
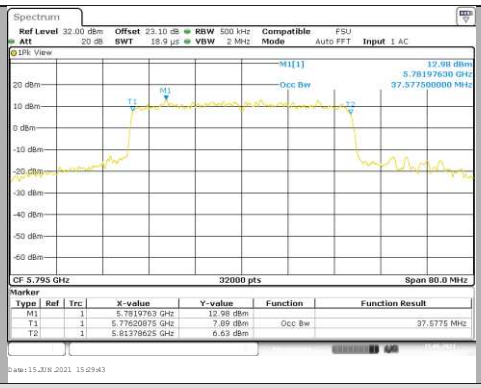



### C19




### C20

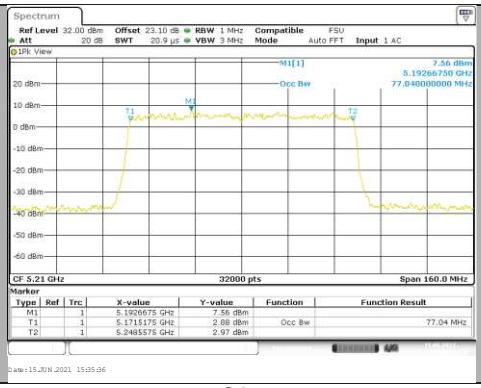


| 802.11ax VHT40 | |
|---|---|
| C21 | |
|  | |
| C22 | C23 |
|  |  |

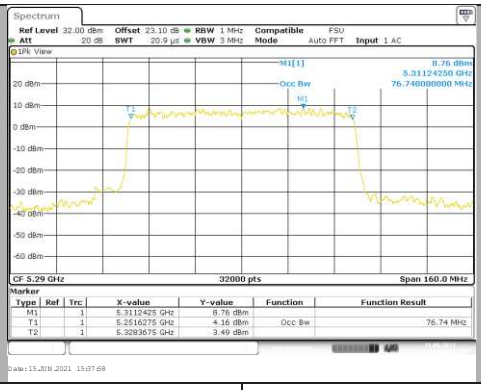
| Channel | Occupied Channel Bandwidth (MHz) |
|---|---|
| **C14** | 37.602 |
| **C15** | 37.48 |
| **C16** | 37.66 |
| **C17** | 37.485 |
| **C18** | 37.695 |
| **C19** | 37.672 |
| **C20** | 37.615 |
| **C21** | 37.692 |
| **C22** | 37.767 |
| **C23** | 37.577 |

## 802.11ac VHT80

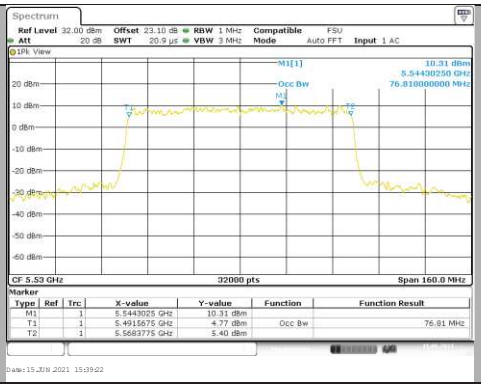
### C24



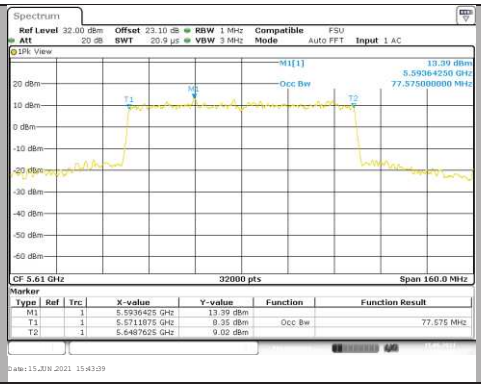

### C25




### C26

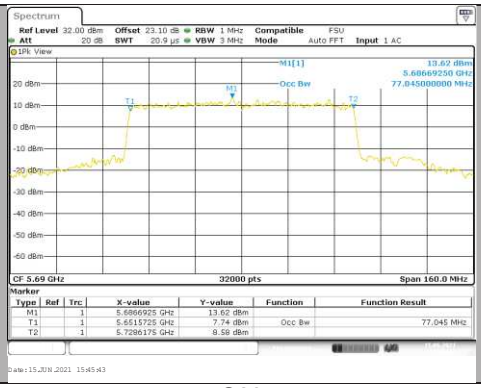



### C27

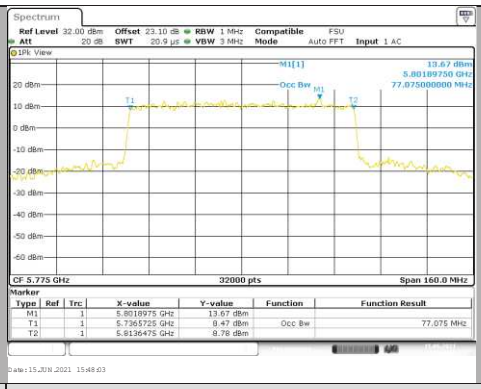


## 802.11ac VHT80

### C28



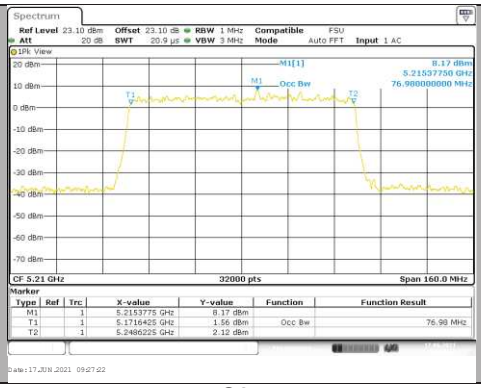

### C29



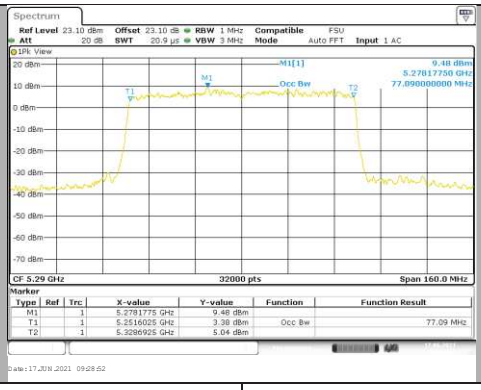

| Channel | Occupied Channel Bandwidth (MHz) |
|---|---|
| **C24** | 77.04 |
| **C25** | 76.74 |
| **C26** | 76.81 |
| **C27** | 77.575 |
| **C28** | 77.045 |
| **C29** | 77.075 |

## 802.11ax VHT80

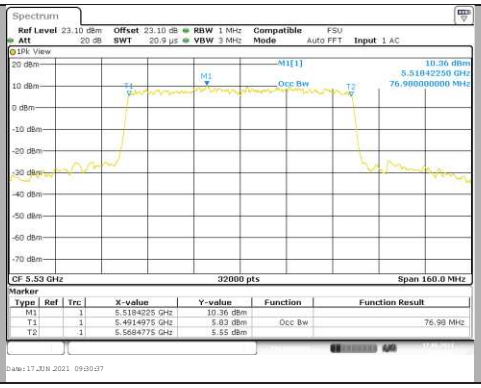
### C24



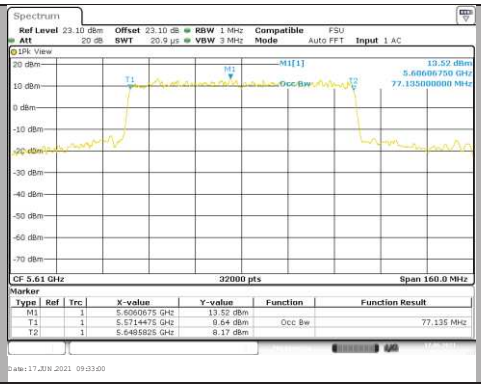

### C25

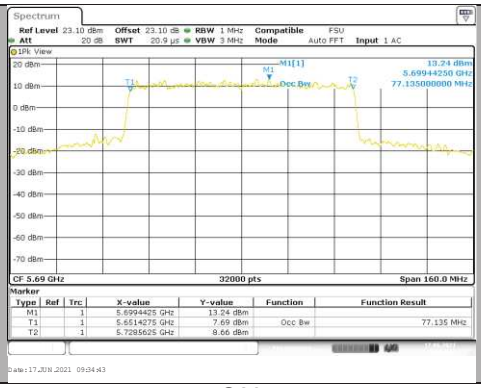
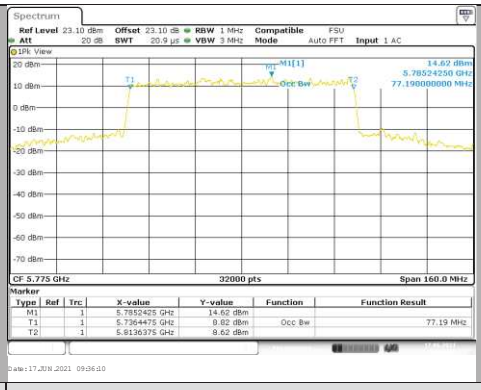



### C26




### C27



| 802.11ax VHT80 | |
|---|---|
| C28 | |
|  | |
| C29 | |
|  | |
| Channel | Occupied Channel Bandwidth (MHz) |
| **C24** | 76.980 |
| **C25** | 77.090 |
| **C26** | 76.980 |
| **C27** | 77.135 |
| **C28** | 77.135 |
| **C29** | 77.190 |

## 3.6. CONCLUSION

Occupied Channel Bandwidth measurement performed on the sample of the product **COGECO DIW3930 COGECO**, SN: **6211130035003**, in configuration and description presented in this test report, show levels **compliant** to the **47 CFR PART 15.407 & RSS-GEN ISSUE 5** limits.

# 4. CARRIER FREQUENCIES

## 4.1. TEST CONDITIONS

| | |
|---|---|
| Test performed by | : Armand MAHOUNGOU |
| Date of test | : June 22, 2021 |
| Ambient temperature | : 26°C |
| Relative humidity | : 41% |

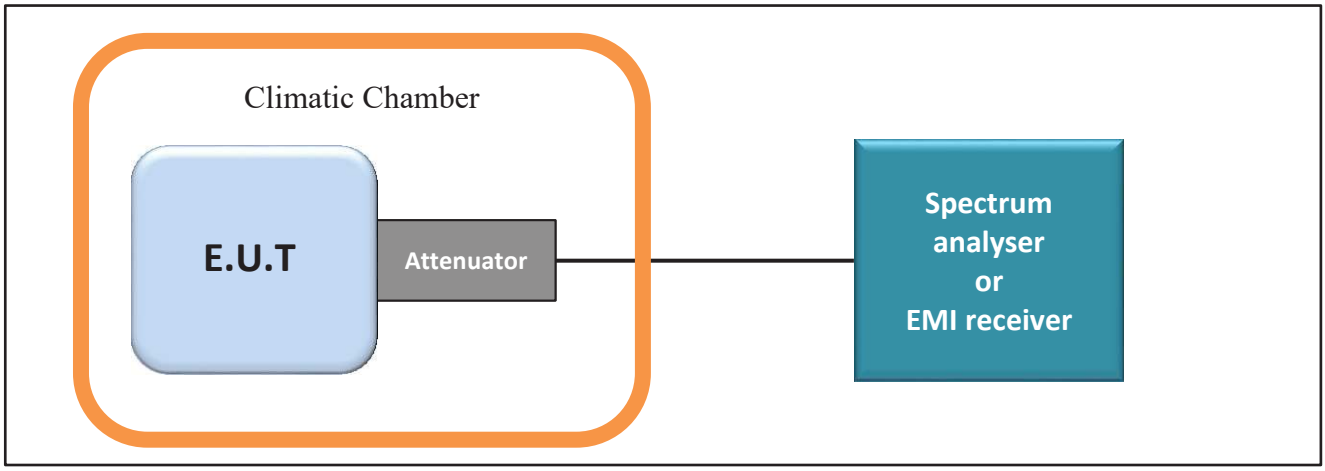
## 4.2. TEST SETUP

- The Equipment under Test is installed:
☑ In the climatic chamber
☐ On a table
☐ In an anechoic chamber

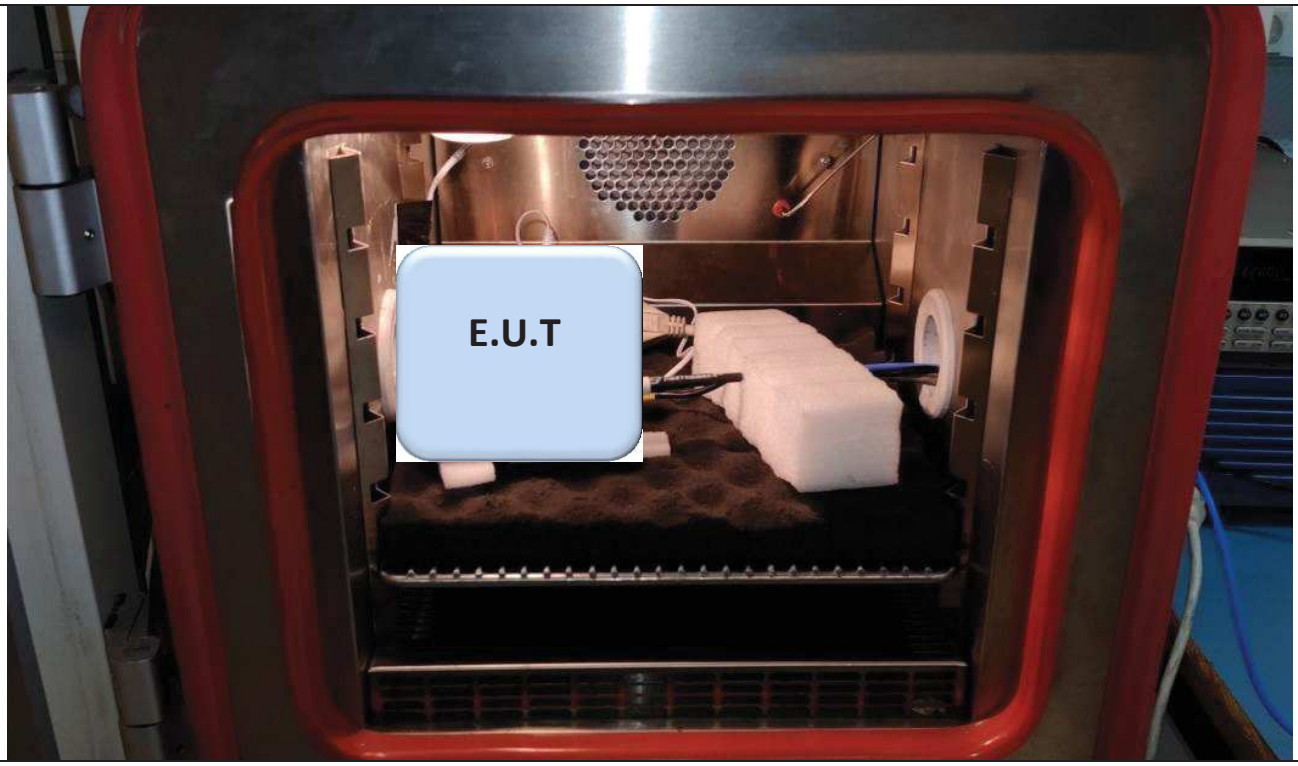
-Measurement is performed with a spectrum analyzer
☑ On the EUT conducted access
☐ With a test fixture

-Method of measurement
☐ Unmodulated (Spectrum Analyzer Counter Function)
☑ Modulated (Spectrum Analyzer NdB down Function)

In case of smart antenna systems operating in a multiple transmit chains active simultaneously, the measurement is only performed on one of the active transmit chains.




Test set up of Carrier Frequencies




Photograph for Carrier Frequencies

Photograph for Carrier Frequencies

Photograph for Carrier Frequencies

## 4.3. LIMIT

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

## 4.4. TEST EQUIPMENT LIST

| DESCRIPTION | MANUFACTURER | MODEL | N° LCIE | Cal_Date | Cal_Due |
|---|---|---|---|---|---|
| EMI receiver | ROHDE & SCHWARZ | ESR7 | A2642026 | 2019/07 | 2021/07 |
| Cable + Attenuateur 20dB | PASTERNACK | PE350-150CM | A5329970 | 2020/09 | 2021/09 |
| Power supply | KIKUSUI | PCR500M | A7049006 | See Multimeter | See Multimeter |
| Multimeter | KEITHLEY | 2000 | A1242090 | 2021/03 | 2023/03 |
| R&S Commander Software | ROHDE & SCHWARZ | Version 1,6,4 | - | - | - |
| Load 50 ohms | TELEGARTNER | - | A7150103 | 2021/04 | 2023/04 |
| Load 50 ohms | TELEGARTNER | - | A7150104 | 2021/04 | 2023/04 |

Note: In our quality system, the test equipment calibration due is more & less 2 months

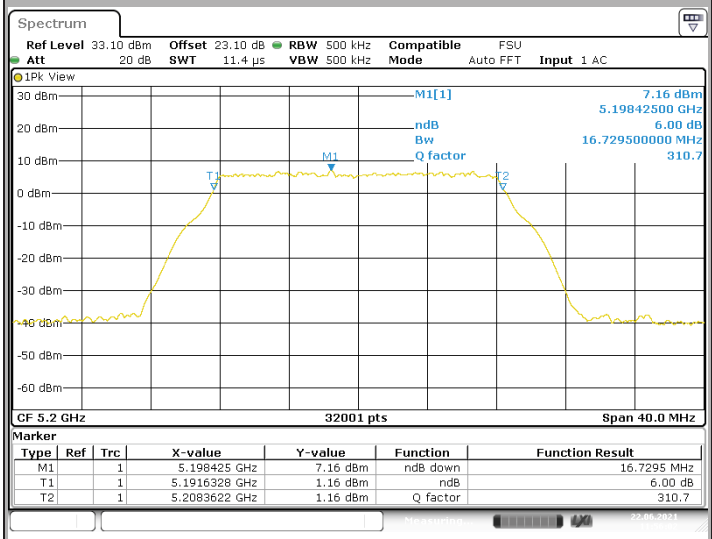
## 4.5. RESULTS

### 802.11a/802.11nHT20/ac VHT20

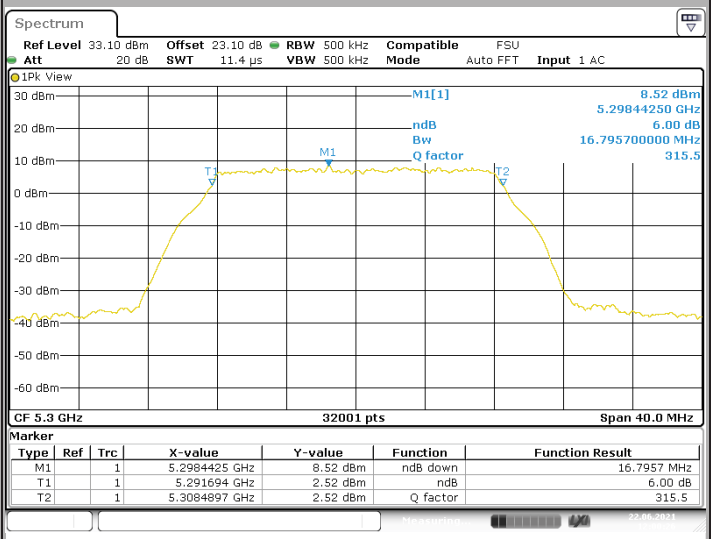
**Tmin**

**Vmin**

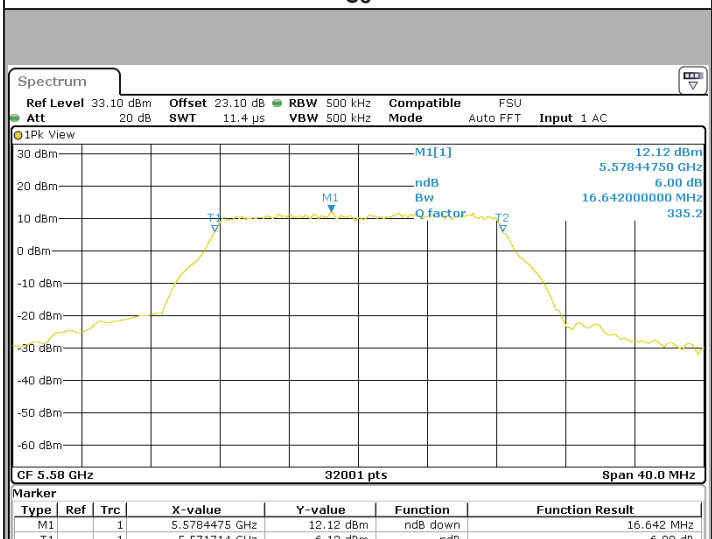
**C2**



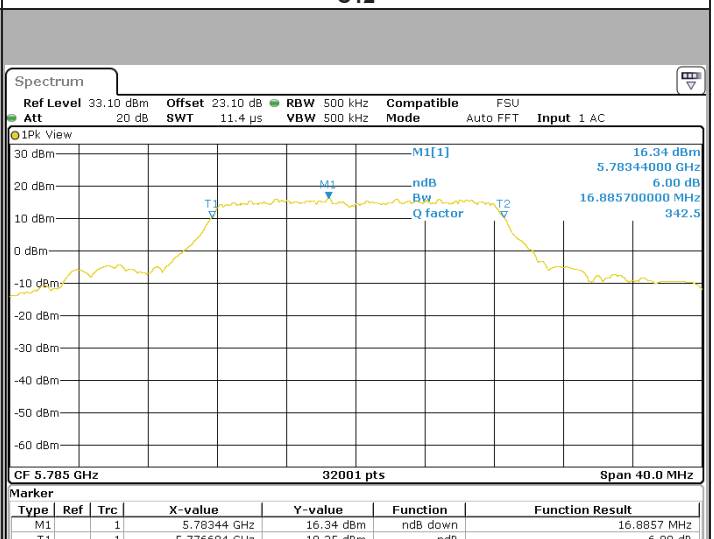

**C5**




**C8**




**C12**

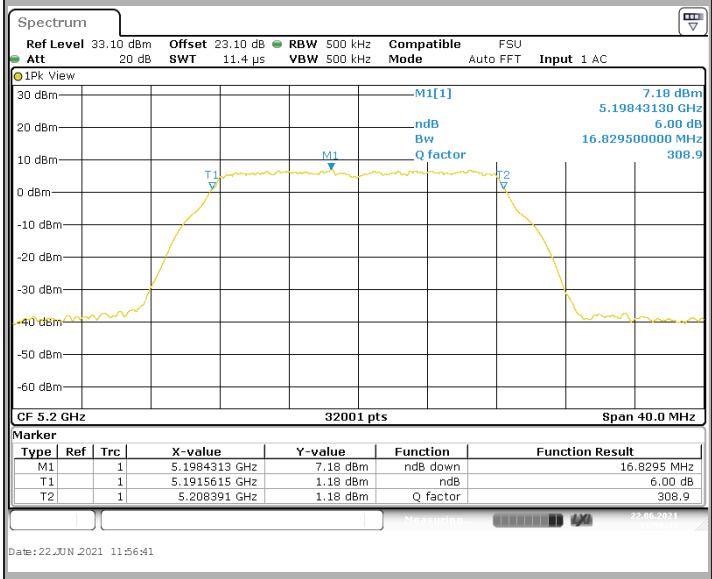


## 802.11a/802.11nHT20/ac VHT20

### Tmin

### Vnom

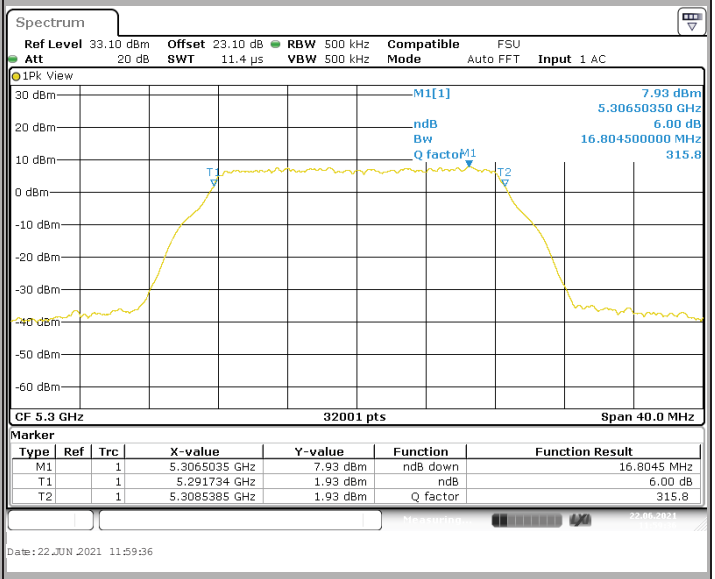
### C2




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.1984313 GHz | 7.18 dBm | ndB down | 16.8295 MHz |
| T1 | | 1 | 5.1915615 GHz | 1.18 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.208391 GHz | 1.18 dBm | Q factor | 308.9 |

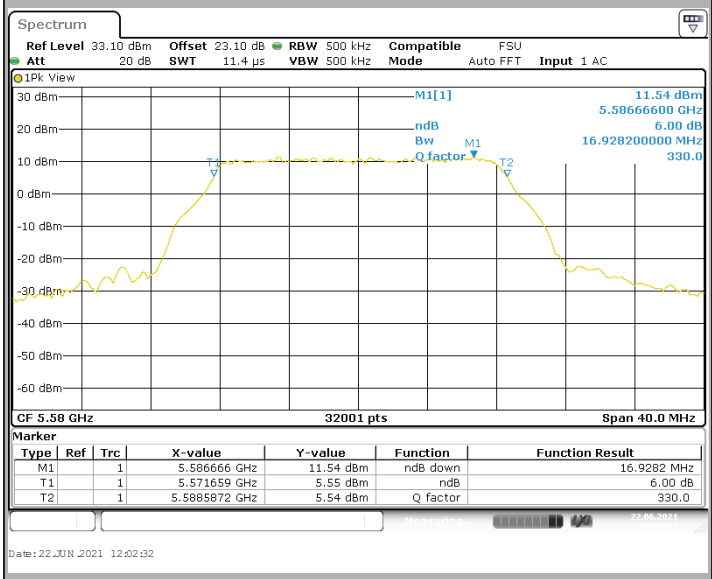
### C5




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.3065035 GHz | 7.93 dBm | ndB down | 16.8045 MHz |
| T1 | | 1 | 5.291734 GHz | 1.93 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.3085385 GHz | 1.93 dBm | Q factor | 315.8 |

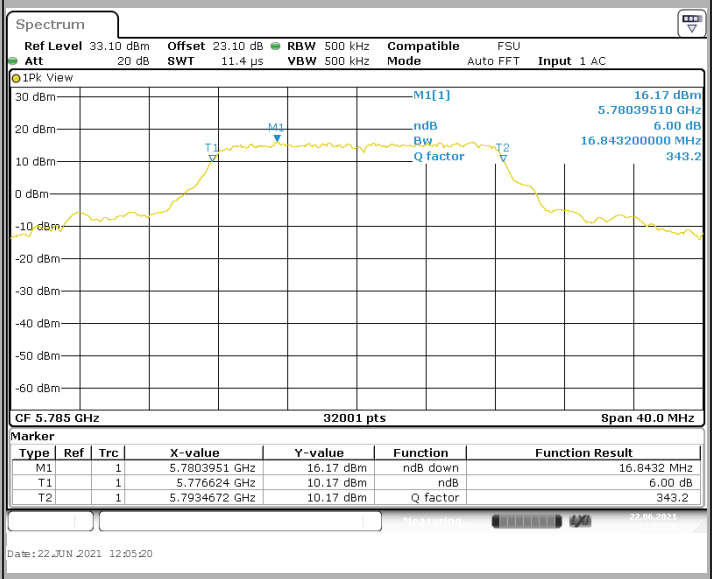
### C8




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.586666 GHz | 11.54 dBm | ndB down | 16.9282 MHz |
| T1 | | 1 | 5.571659 GHz | 5.55 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.5885872 GHz | 5.54 dBm | Q factor | 330.0 |

### C12




Marker

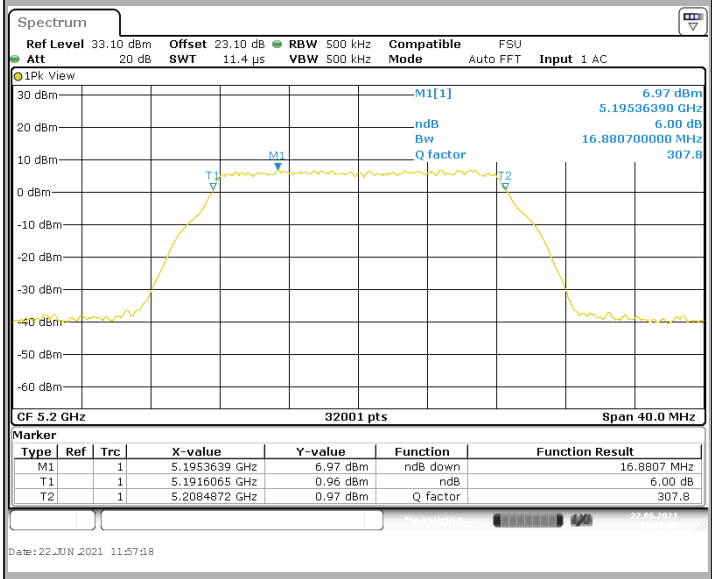
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.7803951 GHz | 16.17 dBm | ndB down | 16.8432 MHz |
| T1 | | 1 | 5.776624 GHz | 10.17 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.7934672 GHz | 10.17 dBm | Q factor | 343.2 |

## 802.11a/802.11nHT20/ac VHT20

### Tmin

### Vmax

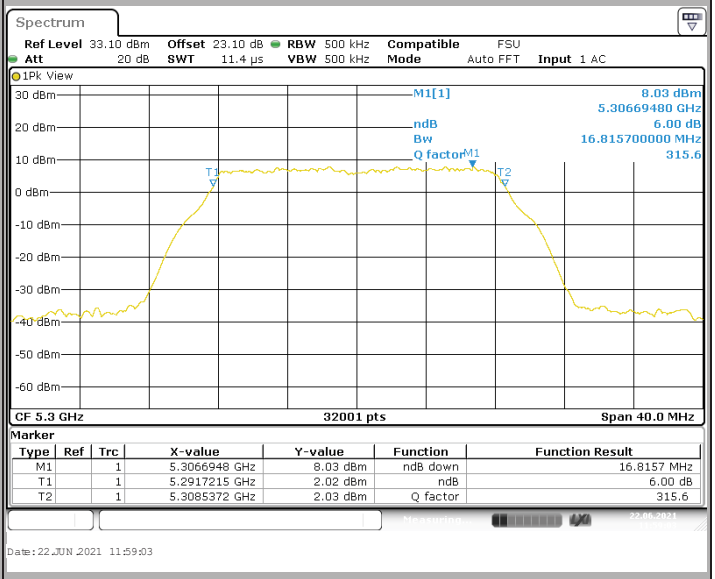
### C2




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.1953639 GHz | 6.97 dBm | ndB down | 16.8807 MHz |
| T1 | | 1 | 5.1916065 GHz | 0.96 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.2084872 GHz | 0.97 dBm | Q factor | 307.8 |

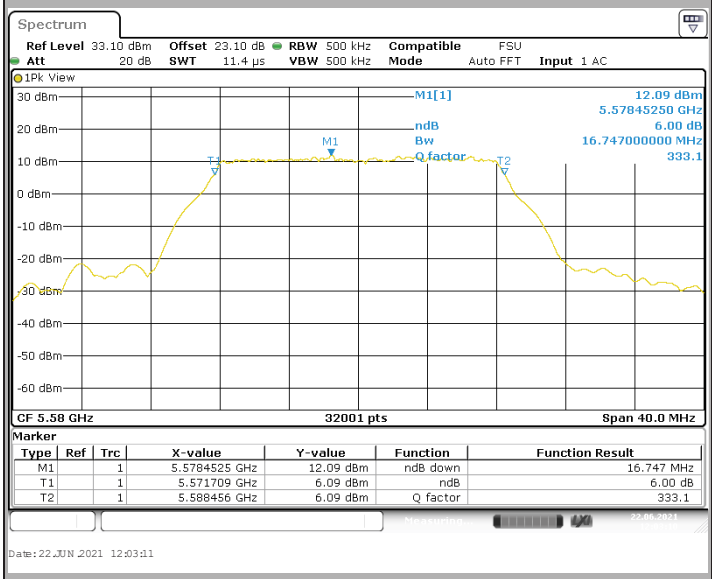
### C5




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.3066948 GHz | 8.03 dBm | ndB down | 16.8157 MHz |
| T1 | | 1 | 5.2917215 GHz | 2.02 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.3085372 GHz | 2.03 dBm | Q factor | 315.6 |

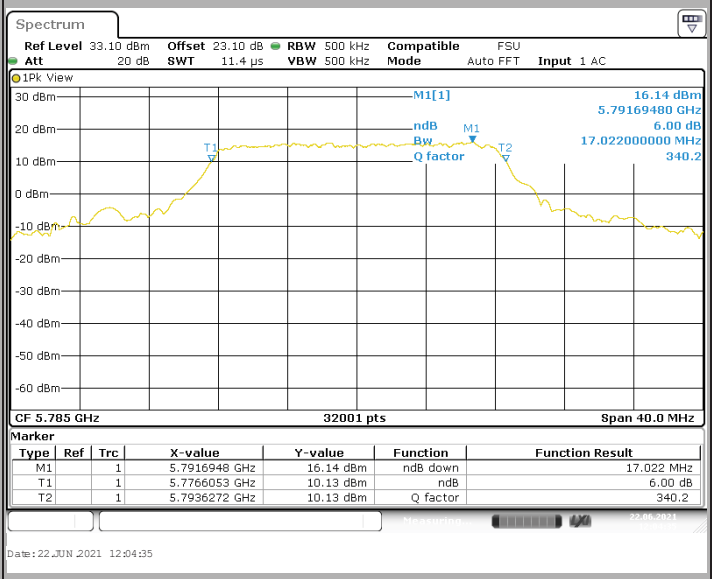
### C8




Marker

| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.5784525 GHz | 12.09 dBm | ndB down | 16.747 MHz |
| T1 | | 1 | 5.571709 GHz | 6.09 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.588456 GHz | 6.09 dBm | Q factor | 333.1 |

### C12




Marker

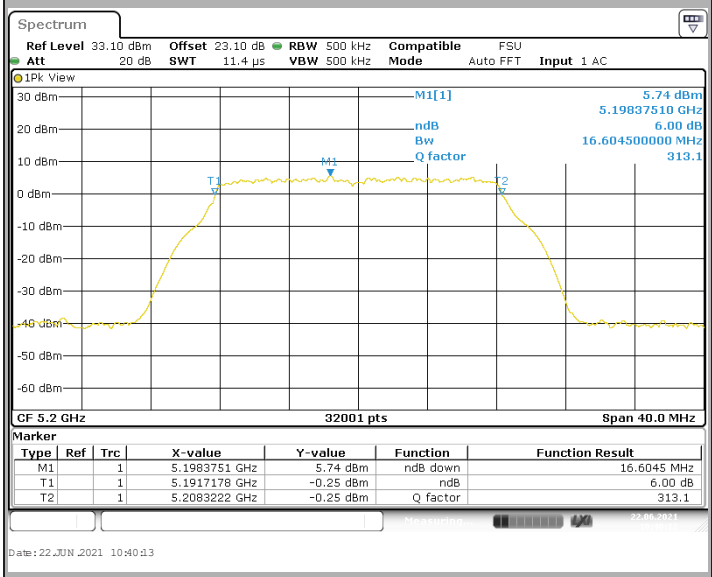
| Type | Ref | Trc | X-value | Y-value | Function | Function Result |
|---|---|---|---|---|---|---|
| M1 | | 1 | 5.7916948 GHz | 16.14 dBm | ndB down | 17.022 MHz |
| T1 | | 1 | 5.7766053 GHz | 10.13 dBm | ndB | 6.00 dB |
| T2 | | 1 | 5.7936272 GHz | 10.13 dBm | Q factor | 340.2 |

## 802.11a/802.11nHT20/ac VHT20

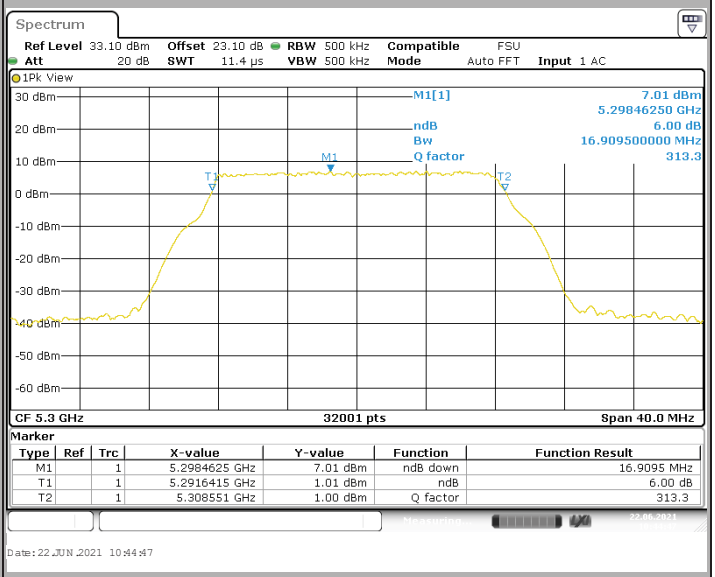
### Tnom

### Vmin

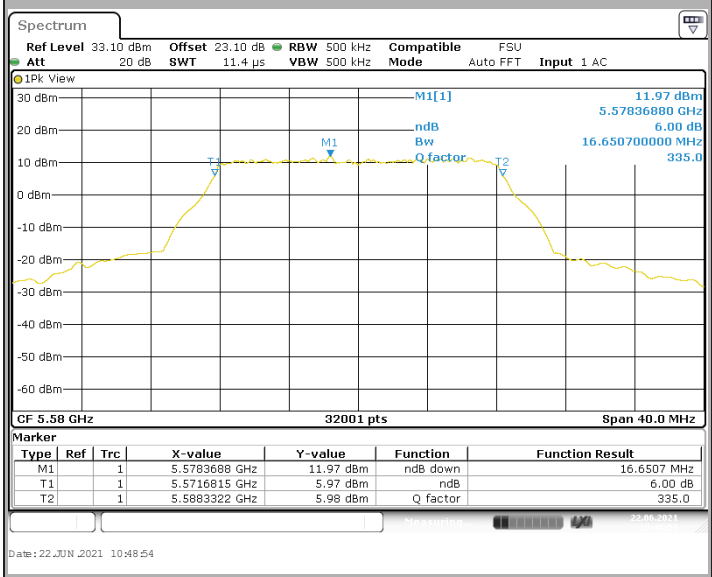
#### C2



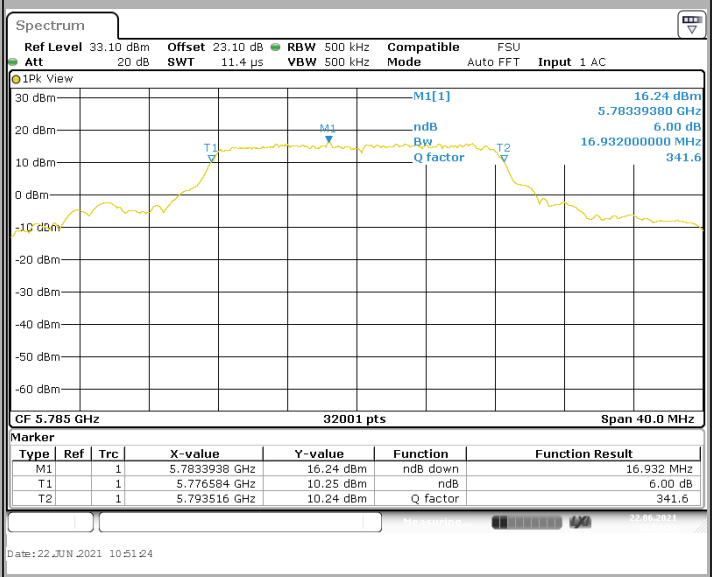

#### C5




#### C8




#### C12

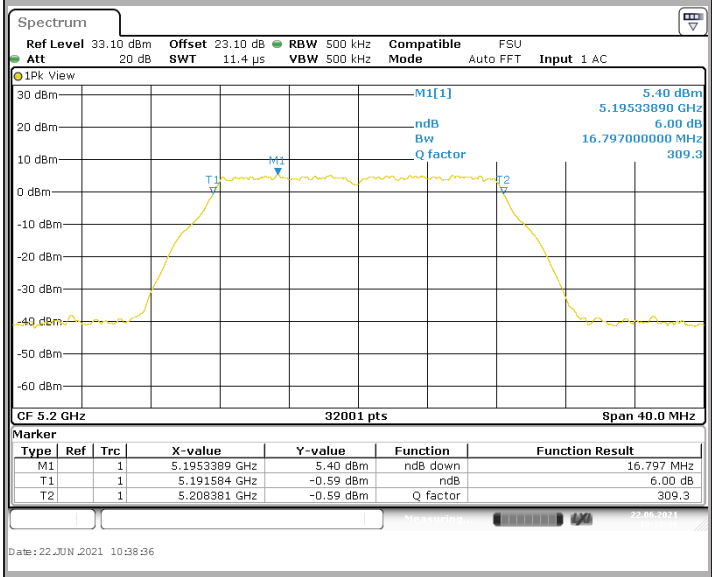


## 802.11a/802.11nHT20/ac VHT20

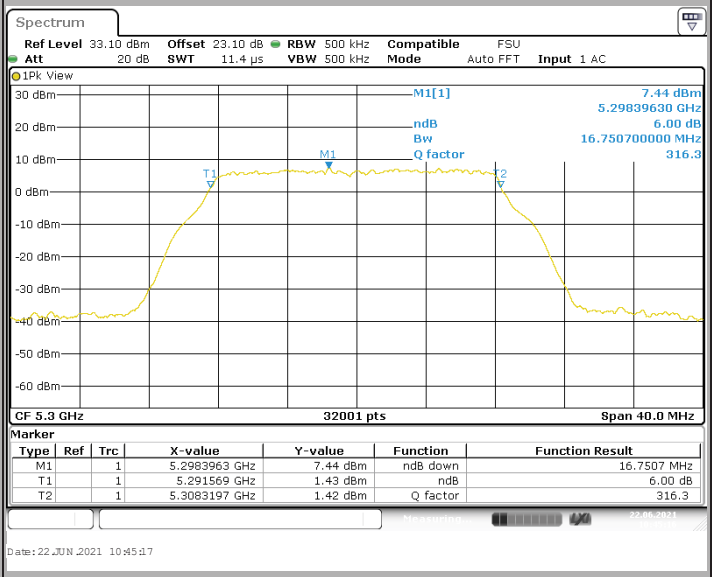
### Tnom

### Vnom

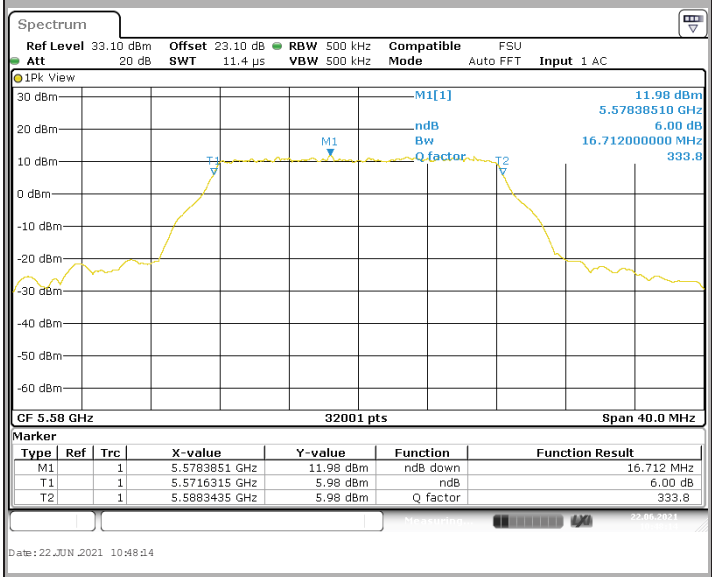
#### C2



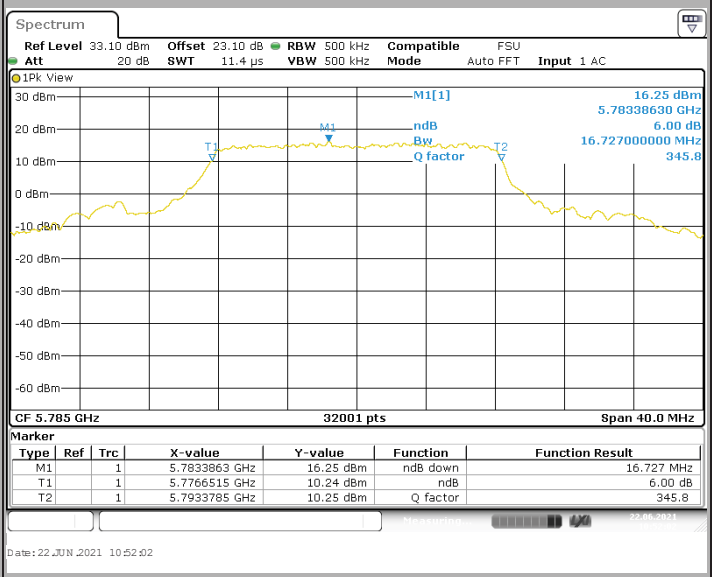

#### C5




#### C8




#### C12

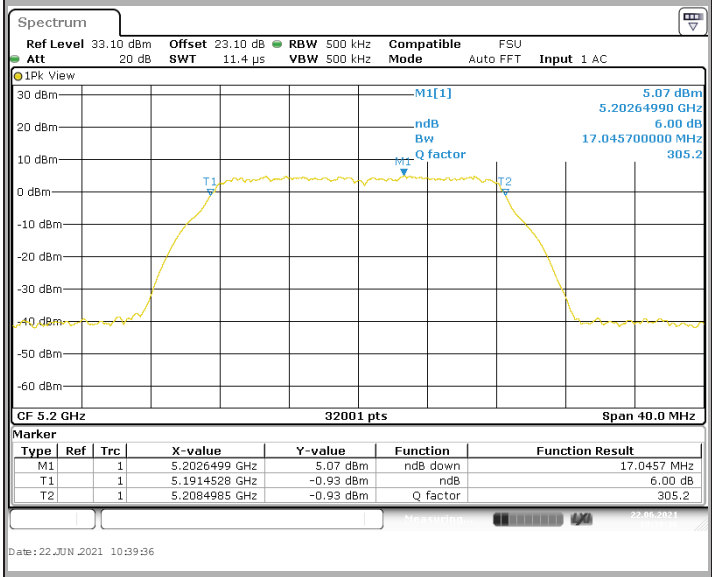


## 802.11a/802.11nHT20/ac VHT20

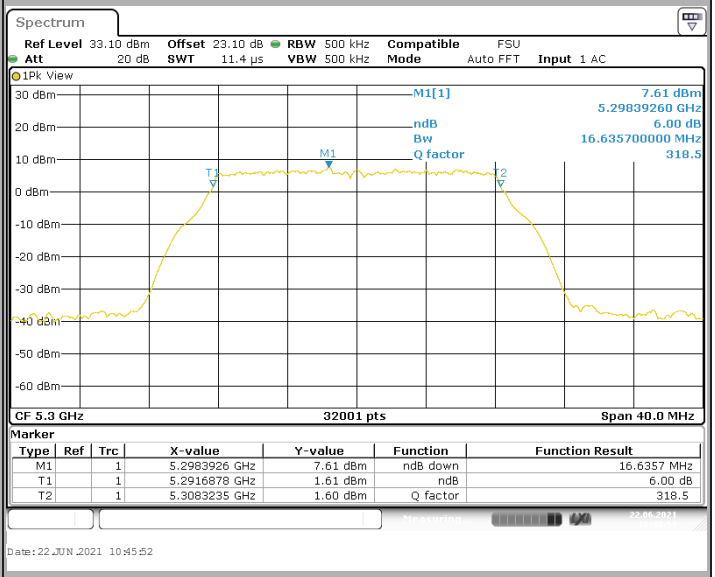
### Tnom

### Vmax

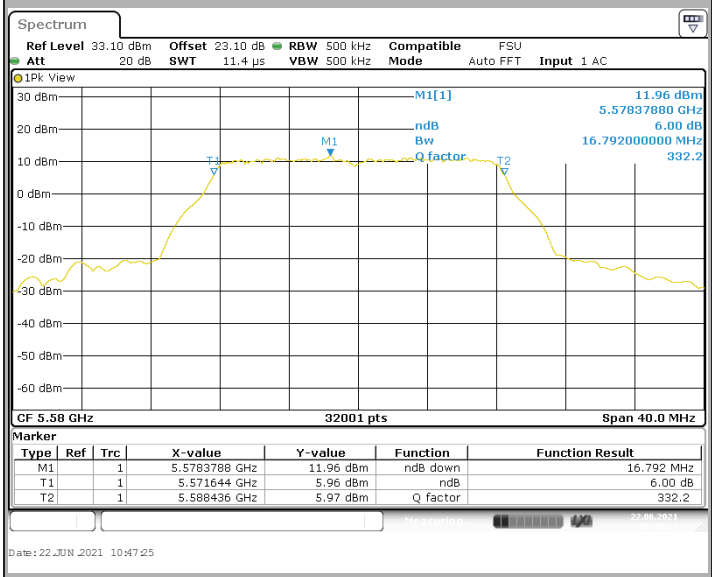
#### C2



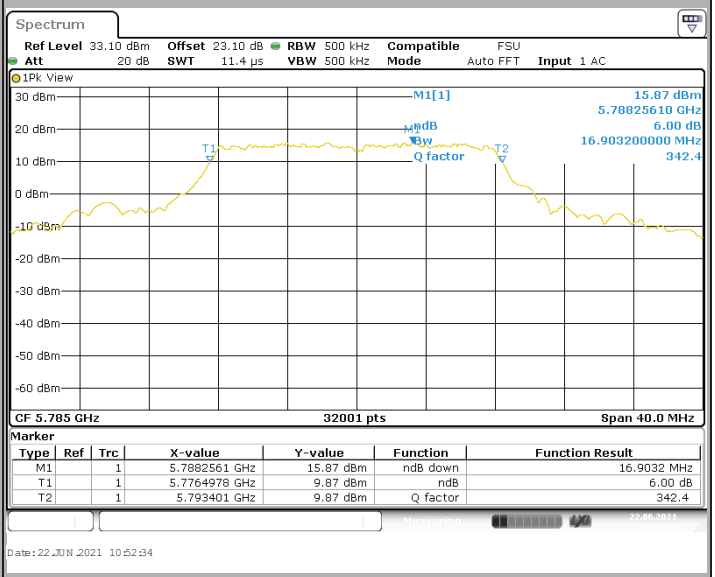

#### C5




#### C8




#### C12

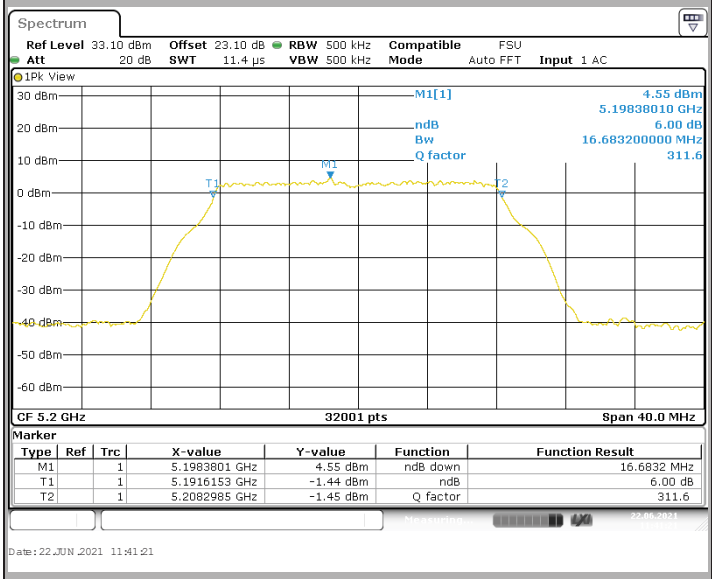


## 802.11a/802.11nHT20/ac VHT20

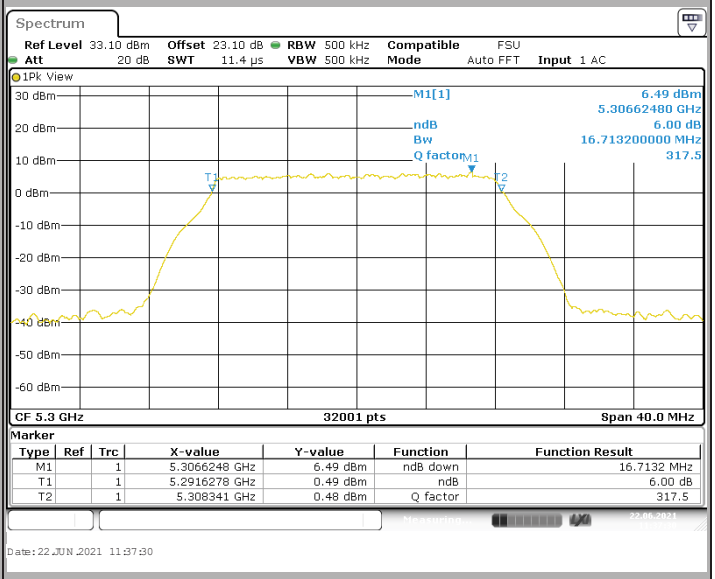
### Tmax

### Vmin

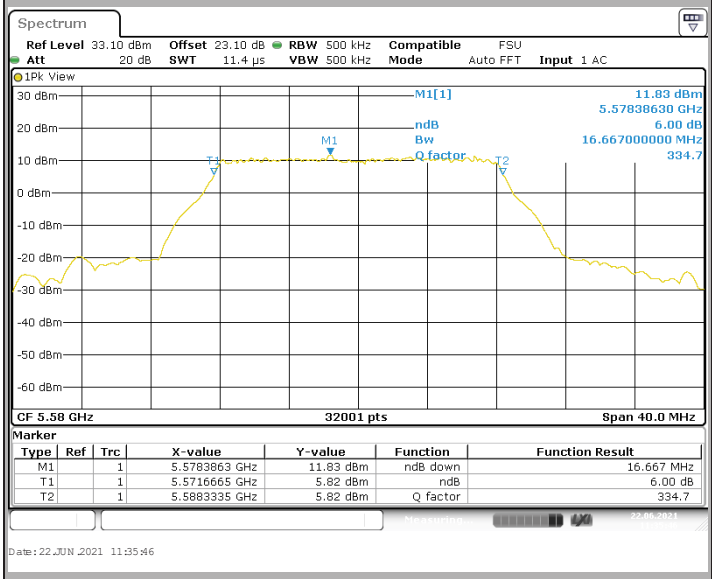
### C2



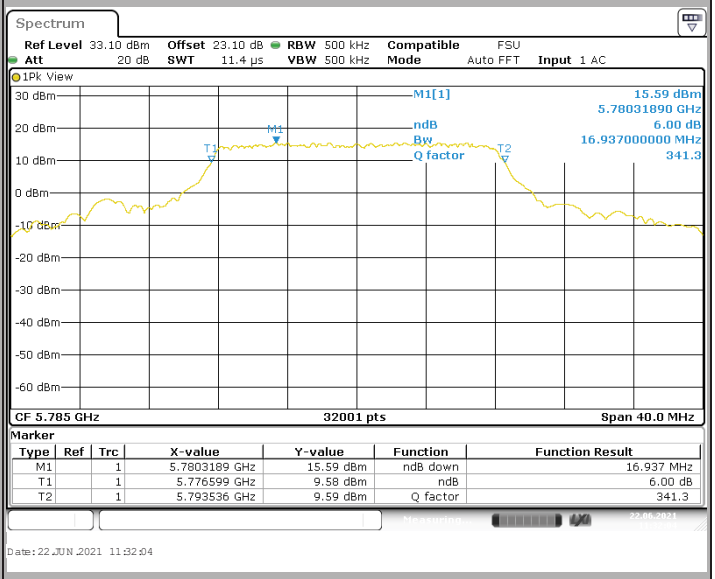

### C5




### C8




### C12

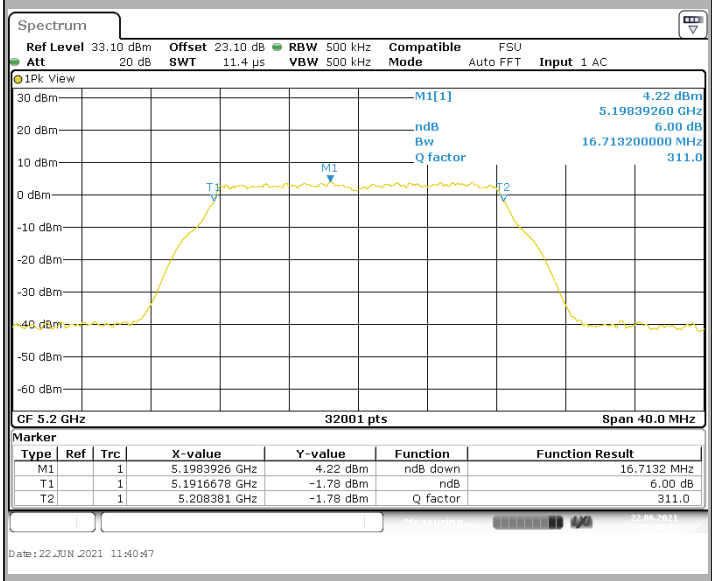


## 802.11a/802.11nHT20/ac VHT20

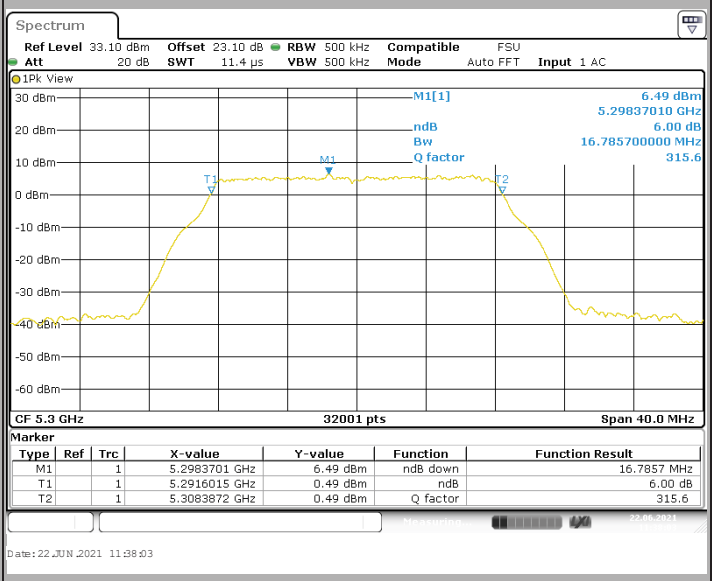
### Tmax

### Vnom

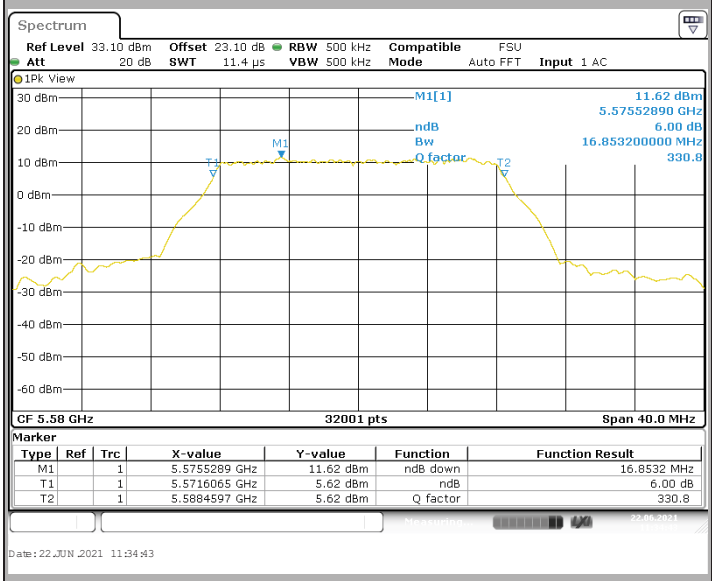
#### C2



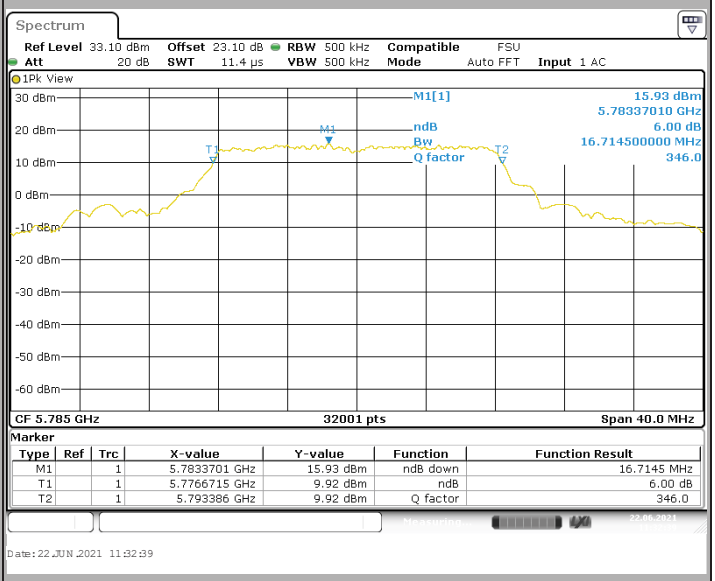

#### C5




#### C8




#### C12

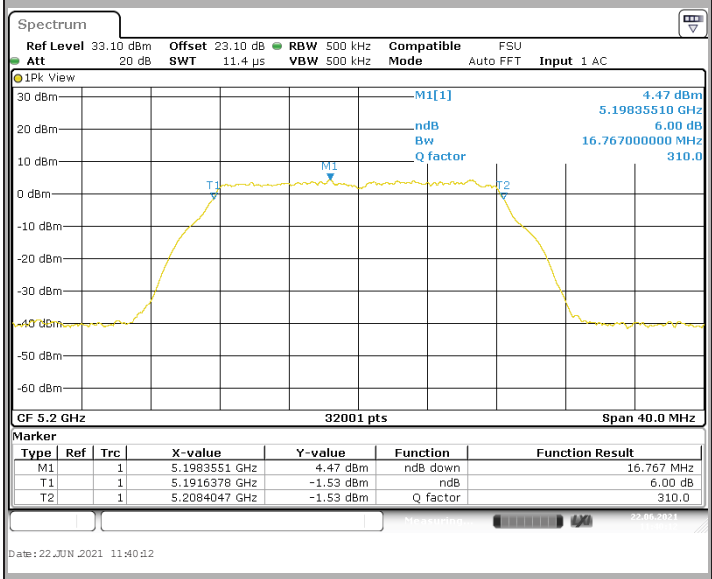


## 802.11a/802.11nHT20/ac VHT20

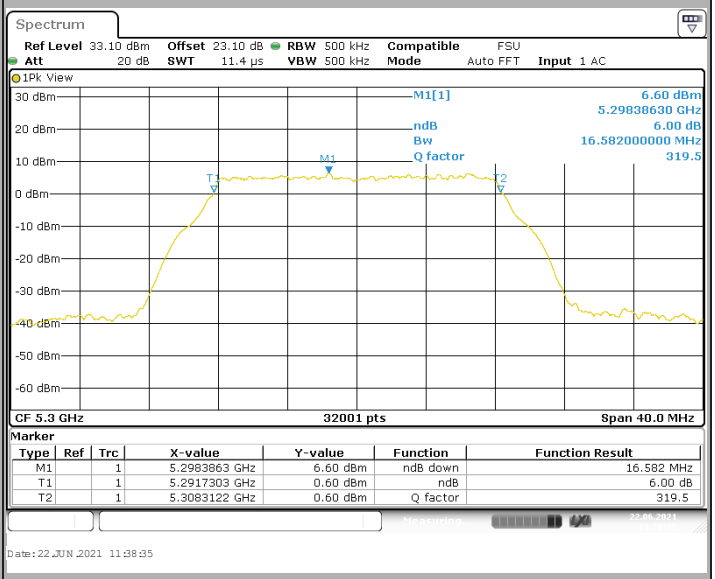
### Tmax

### Vmax

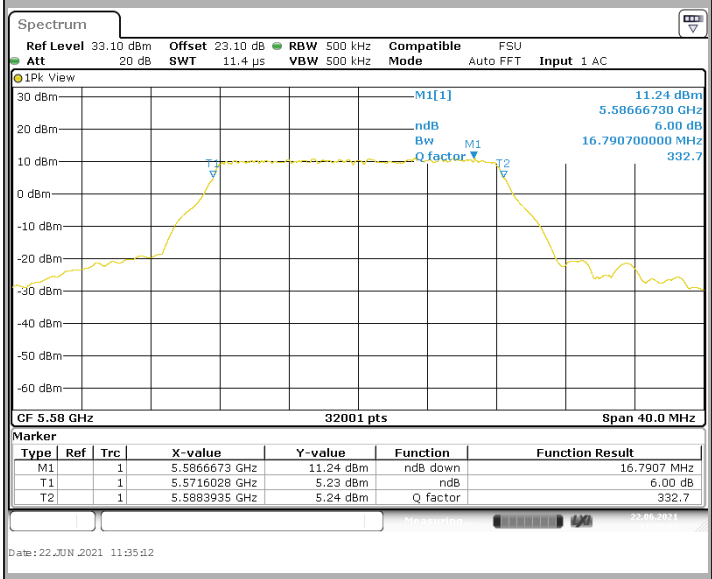
#### C2



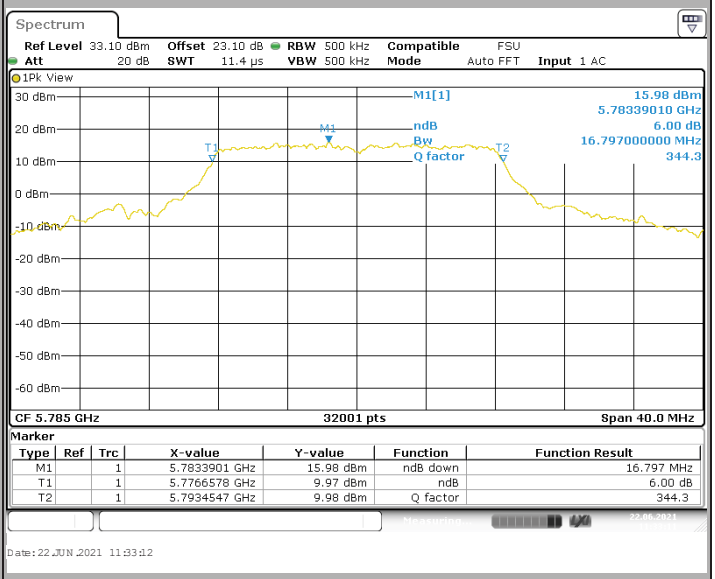

#### C5




#### C8




#### C12



**802.11a/802.11nHT20/ac VHT20**

| Temperature | Tmin | | | | Tnom | | | | Tmax | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Voltage** | **Vmin** | | | | | | | | | | | |
| **Channel** | C2 | C5 | C8 | C12 | C2 | C5 | C8 | C12 | C2 | C5 | C8 | C12 |
| Frequency drift (ppm) | -0,5 | 17,3 | 6,3 | 23,7 | 3,8 | 14,4 | 1,2 | 8,6 | -8,3 | -2,9 | 0,0 | 11,7 |
| **Voltage** | **Vnom** | | | | | | | | | | | |
| **Channel** | C2 | C5 | C8 | C12 | C2 | C5 | C8 | C12 | C2 | C5 | C8 | C12 |
| Frequency drift (ppm) | -4,6 | 25,7 | 21,8 | 7,9 | -3,4 | -10,5 | -2,2 | 2,6 | 4,7 | -1,1 | 5,9 | 5,0 |
| **Voltage** | **Vmax** | | | | | | | | | | | |
| **Channel** | C2 | C5 | C8 | C12 | C2 | C5 | C8 | C12 | C2 | C5 | C8 | C12 |
| Frequency drift (ppm) | 9,0 | 24,4 | 14,8 | 20,1 | -4,7 | 1,1 | 7,2 | -8,7 | 4,1 | 4,0 | -0,3 | 9,7 |

## 4.6. CONCLUSION

Carrier frequencies measurement performed on the sample of the product **COGECO DIW3930 COGECO**, SN: **6211130035003**, in configuration and description presented in this test report, show levels **compliant** to the 47 CFR PART 15.407 & RSS 247 ISSUE 2 limits.

# 5. 26dB Emission Bandwidth

## 5.1. TEST CONDITIONS

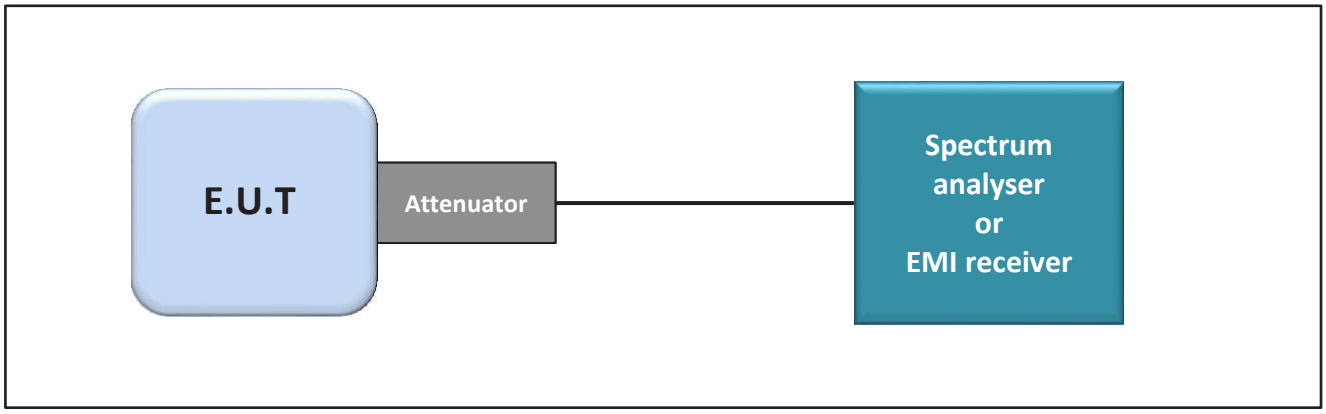
| | |
|---|---|
| Test performed by | : Armand MAHOUNGOU |
| Date of test | : June 16, 2021 |
| Ambient temperature | : 25°C |
| Relative humidity | : 44% |

## 5.2. TEST SETUP

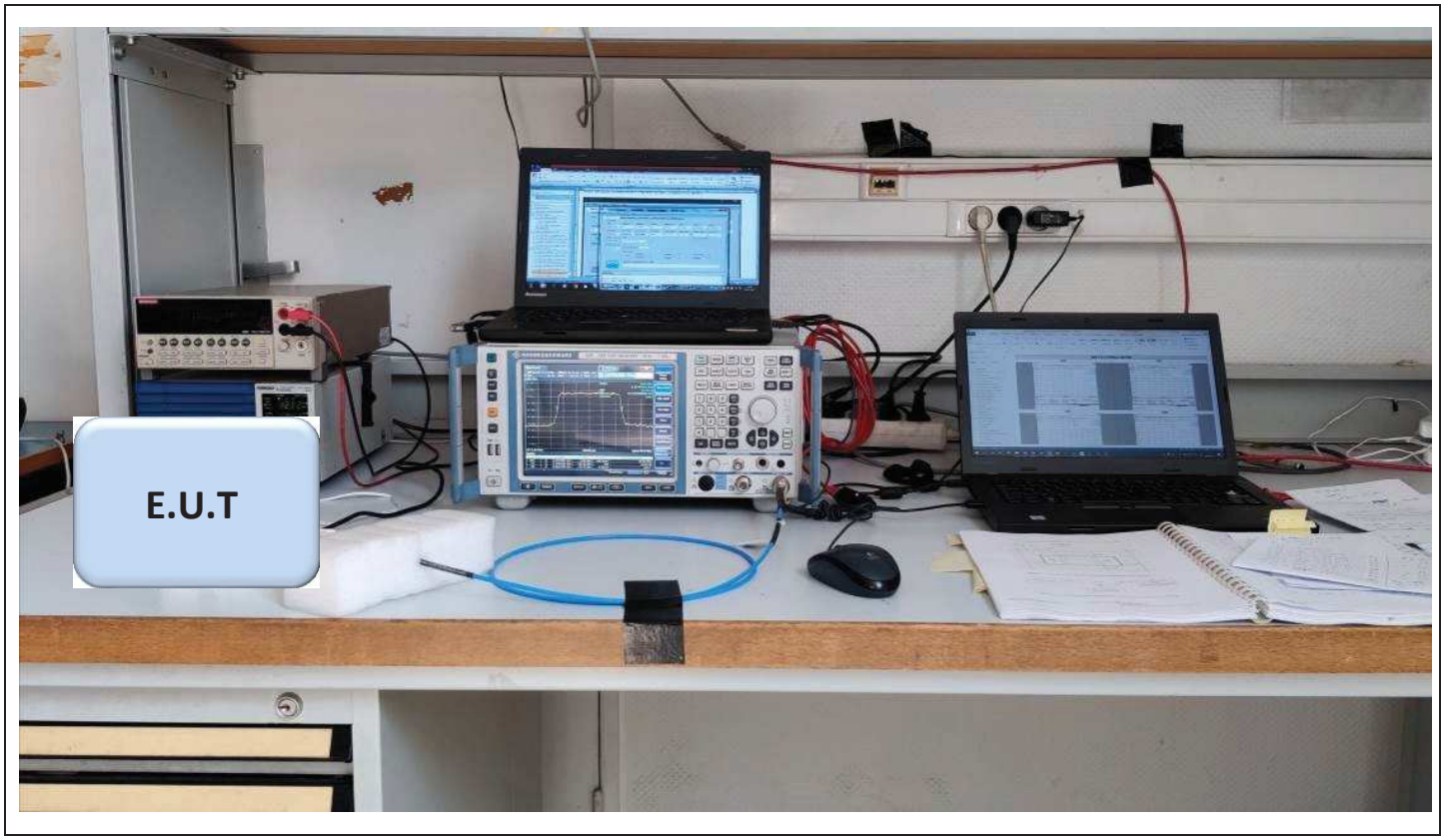
- The Equipment Under Test is installed:
☑ On a table
☐ In an anechoic chamber

- Measurement is performed with a spectrum analyzer in:
☑ Conducted Method
☐ Radiated Method

- Test Procedure:
☑ KDB 789033 D02 General UNII Test Procedures New Rules v02r01 § C1




Test set up of 26dB Emission Bandwidth




Photograph for 26dB emission bandwidth

## 5.3. LIMIT

None

## 5.4. TEST EQUIPMENT LIST

| DESCRIPTION | MANUFACTURER | MODEL | N° LCIE | Cal_Date | Cal_Due |
|---|---|---|---|---|---|
| EMI receiver | ROHDE & SCHWARZ | ESR7 | A2642026 | 2019/07 | 2021/07 |
| Cable + Attenuateur 20dB | PASTERNACK | PE350-150CM | A5329970 | 2020/09 | 2021/09 |
| Power supply | KIKUSUI | PCR500M | A7049006 | See Multimeter | See Multimeter |
| Multimeter | KEITHLEY | 2000 | A1242090 | 2021/03 | 2023/03 |
| R&S Commander Software | ROHDE & SCHWARZ | Version 1,6,4 | - | - | - |
| Load 50 ohms | TELEGARTNER | - | A7150103 | 2021/04 | 2023/04 |
| Load 50 ohms | TELEGARTNER | - | A7150104 | 2021/04 | 2023/04 |

Note: In our quality system, the test equipment calibration due is more & less 2 months